NAPA COUNTY TRAVEL BEHAVIOR STUDY

DRAFT SURVEY RESULTS AND DATA ANALYSIS REPORT

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1. INTRODUCTION

The Napa County Transportation and Planning Agency (NCTPA) directed the Napa County Travel Behavior Study to gather information on the travel behavior of visitors, employees, residents, and students who make work and non-work trips in Napa County. Numerous studies have been conducted to gather information on visitors to Napa County but very little data has been collected on resident, employee, and student trips, which comprise a majority of the travel within Napa County. The resulting data is expected to provide the basis for multiple planning efforts by NCTPA and other planning agencies within Napa County. Such uses may include but are not limited to the refinement of the Napa-Solano Travel Demand Model (NSTDM) and the update of the Countywide Transportation Plan. The data is also expected to be used to help direct the expansion of transit and paratransit services in Napa County.

The traditional approach to gathering data on travel behavior is through the use of a survey as this type of data cannot be collected by the typical traffic count process. Data for trips that pass through the region is usually collected by a license plate survey while data for trips that start from or end inside the region is usually collected by a roadside, mail, or telephone survey. These traditional survey methods tend to be very costly and generally provide very small sample sizes. They are also prone to human error during the data collection process as well as from the survey responders who may misinterpret the questions.

In order to minimize the shortcomings of traditional approaches, Fehr & Peers evaluated various innovative data collection techniques as well as enhancements to traditional methods for use in this study. Pros and cons of each technique and method were identified as well as the ways in which multiple data sources could be combined to maximize the benefits from the data collection plan. Through previous and on-going project experience, the wide range of data collection techniques and methods was narrowed down to five to be used for the Napa County Travel Behavior Study, combining innovative data collection techniques with enhancements to traditional methods to offer an unprecedented look into travel behavior in Napa County. Results from the five data collection methods were then combined to provide a robust, comprehensive dataset, specific to Napa County and the NSTDM, which was then presented to NCTPA, Napa County, and the Community Advisory Committee (CAC) in an innovative and meaningful way.

STUDY APPROACH

The Napa County Travel Behavior Study utilized and combined the results of the five data collection methods described in **Table 1**, which provides a list of the methods along with a list of advantages and limitations of each.

TABLE 1
STUDY APPROACH

Method	Advantages	Limitations
Vehicle Classification Counts	• Very accurate and only way to directly measure total traffic volume passing through a count location. • Provides control total to refine data collected via other methods. • Can be used to compare to travel demand model roadway volume by class. • Relatively cheap data collection method.	• Does not provide the origin, destination, or purpose of the vehicle trip or any other trip making or demographic information.
Winery Regression Analysis	• Can use observed data at a few representative locations to predict data for the remaining locations, saving time and money. • Can be used to reveal causal relationships between independent and dependent variables. • Can be used to predict how a change in an independent variable will affect the dependent variable.	• Assumes the sample is representative of the population which may not be the case, especially with wineries. • Sample size is often determined by pragmatic considerations. In this case, a wineries willingness to participate was a big determinant. • Key quantitative variables do not always behave in a way that fits neatly into a statistical model.
License Plate Matching	• Provides information such as the number of vehicles that travel through the region, their entry and exit points, their travel time between points, and percent makeup of total traffic. • Provides data in a format more suitable for comparison and integration with travel demand models such as the NSTDM.	• Unable to provide information regarding trip purpose, frequency, starting or ending point, characteristics of travel or demographics. • Only captures trips that pass through a count location.
In-Person Winery, Vehicle Intercept, and Online Employer Surveys	• Provides detailed information regarding trip purpose, occupancy, frequency of travel, demographics, class of vehicle, and other travel characteristics. • Provides data in a format and at a level of disaggregation more suitable for comparison and integration with travel demand models such as the NSTDM.	• Depending on the response rate, may only provide detailed trip purpose, occupancy, and class of vehicle information for a percentage of observed trips. • Only captures trips that pass through at least one survey location. • Development and implementation of survey of a sufficient size to be statistically valid can be costly. • Prone to human error during the data collection process as well as from the survey responders who may misinterpret the questions.

Mobile Device Data	• Very large sample size able to provide information regarding all types of trips that occur in Napa County. • Provides origin-destination data in a format more suitable for comparison and integration with travel demand models such as the NSTDM. • Data can be queried, aggregated and disaggregated to match desired level of analysis. • Data collection method does not require set up time or human transcribing of observed field data which can potentially introduce error.	• Unable to directly measure information regarding trip purpose, frequency, characteristics of travel or demographics. However, much of this information can be inferred or supplemented with information from other sources. • Collection and aggregation of data can be costly but provides a much larger sample size than other methods.

2. VEHICLE CLASSIFICATION COUNTS

Vehicle classification counts play a pivotal role in any data collection or travel behavior study as they provide the total traffic volume by class of vehicle and desired time period at all survey data locations and can be used as a control total to refine the travel data collected from other methods.

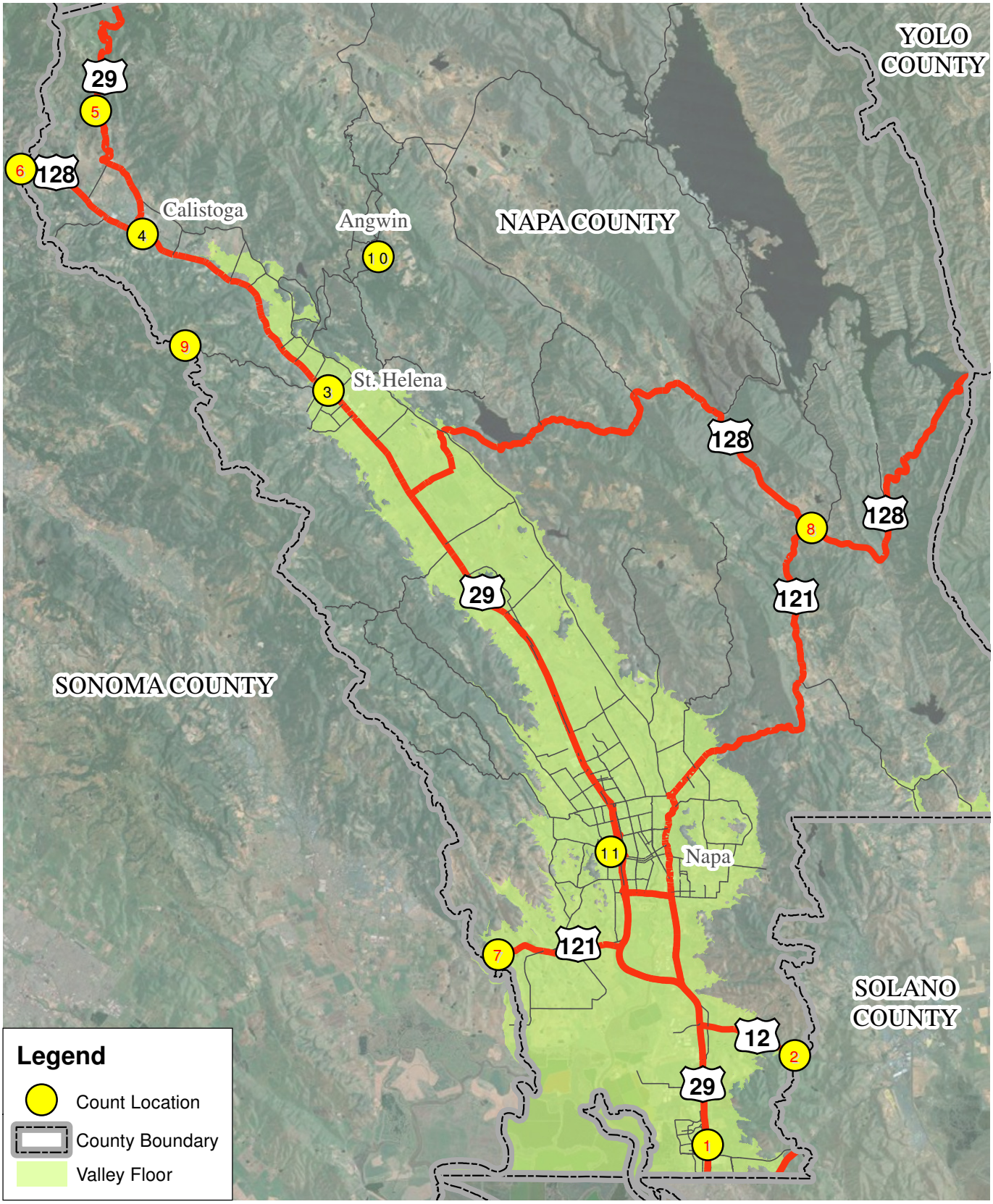
VEHICLE CLASSIFICATION COUNT DATA COLLECTION

MioVision coordinated, collected, and summarized the vehicle classification counts collected at 11 survey data locations over a 24-hour period on Friday, October 4, 2013. A Friday in October was selected in order to capture weekday commute trips along with winery and other visitor trips during the "crush" or peak winery visitation season.

The 11 survey data locations where vehicle classification counts were collected are listed below and shown on **Figure 1.** The locations include the seven major Napa County external gateways to capture all inter-regional travel and four locations within Napa County to capture a sample of local trips. The specific data collection locations were selected based on proximity to the region's boundary, safety, and logistics.

- Location 1: SR 29 – North of American Canyon Rd (external gateway)
- Location 2: SR 12 - Napa/Solano County Line (external gateway)
- Location 3: SR 29 – Southeast of Adams St in St. Helena
- Location 4: SR 29 – Southeast of SR 128 in Calistoga
- Location 5: SR 29 – Napa/Lake County Line (external gateway)
- Location 6: SR 128 – Sonoma/Napa County Line (external gateway)
- Location 7: SR 121 – Sonoma/Napa County Line (external gateway)
- Location 8: SR 128 - East of SR 121 (external gateway)
- Location 9: Spring Mountain Rd - Napa/Sonoma County Line (external gateway)
- Location 10: Howell Mountain Road - South of Cold Springs Road
- Location 11: First St - West of SR 29

The data was collected through the use of infrared video cameras in order to provide a classification of vehicles into passenger vehicle, medium truck, heavy truck, and bus classes over the entire 24-hour period. MioVision also utilized sophisticated computer software to tally the various classes of vehicles, reducing potential human error, man-hour cost, and data delivery time.



N

Not to Scale

FEHR PEERS

VEHICLE CLASSIFICATION COUNT LOCATIONS
NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 1

Upon delivery of the vehicle classification data, Fehr & Peers summarized the data by the vehicle classification categories listed above and the following time periods, providing additional stratification variables than are currently utilized by the NSTDM.

- Early-Morning (Midnight to 6:00 AM)
- AM Peak Period (6:00 to 10:00 AM)
- Mid-Day (10:00 AM to 3:00 PM)
- PM Peak Period (3:00 to 7:00 PM)
- Late Night (7:00 PM to Midnight)
- Daily (24-Hour)

The bidirectional daily vehicle count data was then compared to Caltrans 2011 bidirectional annual average daily traffic (AADT) data at nearby locations to check the reasonableness of the collected count data, an important step as this data will be used to weight the survey and mobile device data to the total population of travelers at each of the survey data locations.

VEHICLE CLASSIFICATION COUNT DATA SUMMARY

A summary of the bidirectional vehicle classification count data collected by MioVision is shown in **Table 2**. The traffic count sheets and detailed directional vehicle classification count data including time distribution graphs are provided in **Appendix A**.

As shown in **Table 2** and **Appendix A**, 181,330 total vehicles were observed (many vehicles were likely counted more than once) passing through the 11 vehicle classification count locations on Friday, October 4, 2013, approximately 10% higher than the Caltrans 2011 AADT data. This is an acceptable difference given the traffic counts were collected on a Friday during peak winery visitation season while the Caltrans volumes are intended to represent an average day from 2011. Additionally, of the 181,330 total observed vehicles approximately 23% and 28% were counted during the 4-hour AM and PM peak periods, respectively, while approximately 6% and 7% were counted during the AM (7 to 8 AM) and PM (5 to 6 PM) peak hours, respectively.

181,330 total vehicles were observed passing through the

11 vehicle classification count locations on Friday, October 4, 2013

TABLE 2
VEHICLE CLASSIFICATION COUNT DATA SUMMARY

#	Survey Data Location	Total Bidirectional Traffic Volume						
		Early AM (12 AM to 6 AM)	AM 4-Hr (6 AM to 10 AM)	Mid-Day (10 AM to 3 PM)	PM 4-Hr (3 PM to 7 PM)	Late Night (7 PM to 12 AM)	Daily	2011 Caltrans AADT
1	SR 29 – North of American Canyon Rd	3,607	11,058	16,384	13,618	8,211	52,878	43,000
2	SR 12 - Napa/Solano County Line	2,076	7,420	9,748	8,219	4,171	31,634	31,500
3	SR 29 – Southeast of Adams St in St. Helena	551	3,661	5,118	4,012	2,555	15,897	17,900
4	SR 29 – Southeast of SR 128 in Calistoga	394	3,080	4,122	3,957	1,523	13,076	12,500
5	SR 29 – Napa/Lake County Line	436	1,640	2,125	2,608	1,176	7,985	7,400
6	SR 128 – Sonoma/Napa County Line	58	503	706	726	170	2,163	2,550
7	SR 121 – Sonoma/Napa County Line	1,259	7,460	9,071	9,072	3,324	30,186	25,000
8	SR 128 - East of SR 121	27	215	309	503	69	1,123	4,550
9	Spring Mountain Rd - Napa/Sonoma County Line	5	184	262	266	50	767	420
10	Howell Mountain Road - South of Cold Springs Road	144	1,141	1,682	1,496	699	5,162	2,093
11	First St - West of SR 29	722	4,449	6,050	6,322	2,916	20,459	18,366
Total of All 11 Locations		**9,279**	**40,811**	**55,577**	**50,799**	**24,864**	**181,330**	**165,279**
% of Total of All 11 Locations		**5%**	**23%**	**31%**	**28%**	**14%**	**100%**	**--**

STATE ROUTE 12 JAMESON CANYON ROAD WIDENING PROJECT

On September 12, 2014 the State Route 12 Jameson Canyon Road Widening Project was completed. The project doubled the highway width from two to four lanes along the six-mile route from State Route 29 in Napa County to Red Top Road near Interstate 80 in Solano County. Traffic count data was originally collected on Friday, October 4, 2013, nearly one full year before the completion of the project. In order to determine potential shifts in traffic patterns after the completion of the project, traffic count data was collected at two of the same locations on Friday, October 24, 2014, more than one full month after the completion of the project. The data was analyzed and compared to Friday traffic count data collected at the same two locations in October 2013. **Table 3** summarizes the traffic count data and observed shifts in traffic patterns.

TABLE 3
STATE ROUTE 12 JAMESON CANYON ROAD WIDENING PROJECT COUNT DATA SUMMARY

#	Survey Data Location	Date of Collection	Total Bidirectional Traffic Volume					
			Early AM (12 AM to 6 AM)	AM 4-Hr (6 AM to 10 AM)	Mid-Day (10 AM to 3 PM)	PM 4-Hr (3 PM to 7 PM)	Late Night (7 PM to 12 AM)	Daily
1	SR 29 – North of American Canyon Rd	Friday, October 4, 2013	3,607	11,058	16,384	13,618	8,211	52,878
		Friday, October 24, 2014	3,633	10,335	14,582	12,920	6,831	48,301
		Absolute Change	26	-723	-1,802	-698	-1,380	-4,577
		Percent Change	1%	-7%	-11%	-5%	-17%	-9%
2	SR 12 - Napa/Solano County Line	Friday, October 4, 2013	2,076	7,420	9,748	8,219	4,171	31,634
		Friday, October 24, 2014	2,384	9,942	9,963	10,149	3,478	35,916
		Absolute Change	308	2,522	215	1,930	-693	4,282
		Percent Change	15%	34%	2%	23%	-17%	14%

As shown in **Table 3**, traffic volumes along SR 12 at the Napa/Solano County Line increase by approximately 4,300 daily vehicles (a 14% increase) and traffic volumes along SR 29 North of American Canyon Road decrease by approximately 4,600 vehicles (a 9% decrease), suggesting that roughly 4,000 vehicles shifted their traffic pattern.

3. WINERY REGRESSION ANALYSIS

Due to the unique and variable nature of wineries, the vehicle trip generation for the existing 434 winery parcels in Napa County was determined based on simple linear regression analysis, which relies on data collected at a sample of representative locations to predict data for the remaining locations. This method was selected due to the impracticality of and inability to collect driveway counts at all 434 winery parcels. The resulting regression formulas were used to estimate average Monday to Wednesday weekday, Thursday, Friday, Saturday, and Sunday daily vehicle trip generation for all 434 winery parcels in Napa County. The vehicle trip generation estimates were then used to refine the mobile device data as discussed in Chapter 6.

WINERY DRIVEWAY TRAFFIC COUNTS

TRAFFIC COUNTS WERE COLLECTED AT 22 EXISTING NAPA COUNTY WINERIES OVER A 7-DAY PERIOD FROM THURSDAY, OCTOBER 23, 2014 TO WEDNESDAY, OCTOBER 29, 2014.LINEAR REGRESSION ANALYSIS

Simple linear regression analysis was used to determine separate average Monday to Wednesday weekday, Thursday, Friday, Saturday, and Sunday regression formulas for the dependent variable (daily total vehicle trip generation) based on the independent variables (square footage, annual gallons produced, approved visitation, number of parking spots, number of employees, whether the winery is located on the valley floor, and whether the winery requires advanced appointments). Below is a summary of the limitations of the simple linear regression analysis approach that should be taken into consideration when using the resulting data.

- Very small sample size (22 wineries) for the population (434 winery parcels) due to the requirement that the winery must be willing to participate in the study.
- Very small sample of wineries likely results in a sample that is not entirely representative of the population.
- Limited key quantitative variables to choose from that likely do not behave in a way that fits neatly into a statistical model due to the unique and variable nature of wineries.

The first step in the simple linear regression analysis was to determine which, if any, of the independent variables are correlated. These variables need to be removed from the analysis to prevent multicollinearity (when one variable can be linearly predicted from the others with a non-trivial degree of accuracy), which can reduce the accuracy of the analysis. In this case, it was determined that square footage and approved visitation were both very closely correlated with annual gallons produced, and that annual gallons produced was a better predictor of vehicle trip generation. As a result, the square footage and approved visitation variables were removed from the analysis.

Additionally, the variables for number of parking spots and number of employees were removed as it was perceived they fluctuate in response to demand rather than serve as a predictor of demand.

Therefore, the following three independent variables were used in the simple linear regression analysis.

- Annual gallons produced (in thousands)
- Whether the winery requires advanced appointments (binary – yes or no)
- Whether the winery is located on the valley floor (binary – yes or no)

The data for the dependent and independent variables is summarized in **Table 4**. The resulting regression coefficients for the predictive regression formulas are shown in **Table 5.**

TABLE 4
VARIABLES FOR WINERY REGRESSION ANALYSIS

	Daily Total Vehicle Trip Generation (Dependent Variable)					Winery Data (Independent Variables)		
Winery	**Average Monday to Wednesday**	**Thursday**	**Friday**	**Saturday**	**Sunday**	**Annual Gallons Produced (in thousands)**	**Requires Advanced Appointments (binary)**	**On the Valley Floor (binary)**
Winery 1	92	118	112	21	13	450	1	0
Winery 2	76	68	74	50	51	40	1	1
Winery 3	53	80	58	19	7	59	1	0
Winery 4	69	266	295	244	191	500	1	1
Winery 5	75	101	87	202	54	20	1	1
Winery 6	113	194	196	198	117	340	1	1
Winery 7	92	91	97	14	15	10	1	1
Winery 8	48	47	59	23	7	12	1	1
Winery 9	84	96	102	63	33	36	1	1
Winery 10	178	227	237	203	158	180	1	1
Winery 11	250	267	287	196	128	180	1	1
Winery 12	42	31	60	9	0	9	1	0
Winery 13	103	101	171	109	79	32	1	0
Winery 14	89	97	72	40	10	49	1	1
Winery 15	24	16	18	6	5	20	1	0
Winery 16	286	345	431	646	357	144	0	1
Winery 17	110	66	100	84	52	155	0	1
Winery 18	209	309	366	339	252	1,260	0	1
Winery 19	868	1,208	1,352	1,518	1,084	3,000	0	1
Winery 20	377	531	651	675	351	210	0	1
Winery 21	197	177	356	324	220	360	0	1
Winery 22	166	188	243	355	170	81	0	1
Total	**3,600**	**4,624**	**5,424**	**5,338**	**3,354**			

TABLE 5
WINERY REGRESSION COEFFICIENTS

Independent Variable	Average Monday to Wednesday	Thursday	Friday	Saturday	Sunday
Constant	126	102	196	222	100
Annual gallons produced (thousands)	0.20	0.31	0.33	0.35	0.28
Advanced Appointments (binary)	-86	-68	-150	-229	-110
On the Valley Floor (binary)	40	69	59	83	49
R-Squared	0.79	0.82	0.82	0.79	0.86

As shown in **Table 5**, the predictive regression formulas include a constant, which suggests all wineries produce daily vehicle trips regardless of their other characteristics. The formulas also predict 0.20 to 0.35 daily vehicle trips are generated per thousand annual gallons of wine produced with a reduction of 68 to 229 daily vehicle trips if the winery requires an appointment and an increase of 40 to 83 daily vehicle trips if the winery is located on the valley floor. The results are intuitive as an increase in gallons produced, which is closely correlated with winery square footage and approved visitation, results in an increase in daily vehicle trip generation while requiring an appointment results in a decrease in vehicle trip generation and being located on the valley floor results in an increase.

In addition to checking the intuitiveness of the results, the model estimated total vehicle trip generation for all 22 wineries was compared to the observed vehicle trip generation (determined from the winery driveway traffic counts). The comparison along with the R-squared results (a statistical measure of how close the data are to the fitted regression line) is shown in **Table 6**. In general, the closer to one the R-Squared result is the better the model fits your data.

TABLE 6
WINERY REGRESSION RESULTS

Performance Measure	Average Monday to Wednesday	Thursday	Friday	Saturday	Sunday
Regression Model Total Vehicle Trip Generation	3,600	4,624	5,424	5,338	3,354
Observed/Counted Total Vehicle Trip Generation	3,600	4,624	5,424	5,338	3,354
Difference	0	0	0	0	0
% Difference	0%	0%	0%	0%	0%
R-Squared Results	0.79	0.82	0.82	0.79	0.86

As shown in **Table 6**, the regression formulas accurately predict daily vehicle trip generation on all five days with an R-Squared of approximately 79% to 82%. These results are considered reasonable given the relatively small sample size and unique and variable nature of wineries.

WINERY TRIP GENERATION

The regression formulas were then used to predict the vehicle trip generation of the 412 existing winery parcels for which driveway traffic counts were not collected. However, 40 of the wineries in the Napa County winery database were identified as having no public or appointment tasting. These wineries were considered to generate zero daily visitor trips since all 22 of the wineries from the representative sample offered tasting, indicating the sample was not representative of these 40 wineries.

The observed or predicted Thursday, Friday, and Saturday daily vehicle trip generation for each of the 434 winery parcels in Napa County is provided in **Appendix B**. A summary of the estimated total daily vehicle trip generation of all wineries in Napa County is presented in **Table 7**. Daily vehicle trip generation is only estimated for Thursday, Friday, and Saturday as the primary purpose for the data is the refinement of the personal automobile origin-destination trip tables described in Chapter 6, which only provide data for an average Monday to Thursday weekday, Friday, and Saturday.

TABLE 7
ESTIMATED TOTAL DAILY WINERY VEHICLE TRIP GENERATION

Day of the Week	Total Daily Vehicle Trip Generation
Thursday	52,245
Friday	62,217
Saturday	54,713

The daily vehicle trip generation data presented in **Appendix B** was then used to refine the mobile device data discussed in Chapter 6. Additionally, the regression coefficients and formulas can be used to predict how a change in an independent variable such as gallons of wine produced in a year will affect the daily total vehicle trip generation of the winery in the future, as well as serve as a way to estimate the daily total vehicle trip generation of a proposed winery.

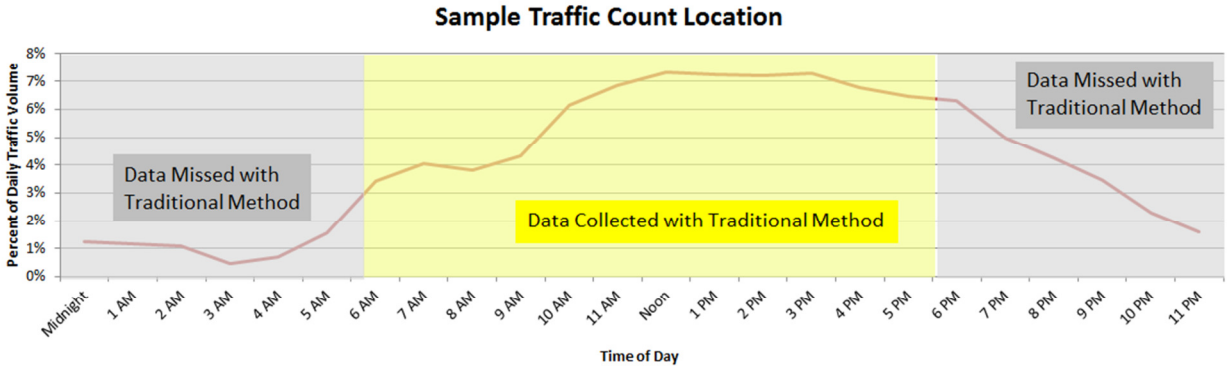
4. LICENSE PLATE MATCHING

License plate matching involves the positioning of cameras at multiple locations to record the license plate of passing vehicles – typically positioned at regional external gateways. The outcome of this method is a list of observed license plates with location and time information that can be used to generate vehicle trip tables for various inferred trip types by desired time period and location.

LICENSE PLATE DATA COLLECTION

For the license plate data collection effort, MioVision used the same cameras that were placed at the 11 vehicle classification count locations on Friday, October 4, 2013 (locations shown on **Figure 1** above). Seven of the 11 locations represented the major Napa County regional external gateways where inter-regional trips can enter and exit Napa County. The remaining four locations were located within Napa County and were selected with the intent of capturing a sample of trips with an origin and destination within Napa County (internal trips). License plate numbers collected as part of this effort were matched between locations and then used to create vehicle trip tables. Additionally, the observed travel direction, time of travel, and number of observations was used to stratify the data into separate vehicle trip tables representing the time periods described in Chapter 2 and the various trip types that typically occur.

The same infrared technology utilized by MioVision to collect vehicle classification counts over a 24-hour period also allowed license plate data to be collected over the entire 24-hour period (daytime and nighttime), capturing the roughly 30% of data points that typically fall outside the daylight hours as shown at a sample traffic count location below. MioVision also utilized the same sophisticated computer software to transcribe the individual license plates, reducing potential human error, man-hour cost, and data delivery time. The use of computer software rather than manual transcription was especially important for this study given the high speed of travel at the state highway locations where most of the data was collected.



LICENSE PLATE DATA SUMMARY

Upon delivery of the license plate data, Fehr & Peers summarized the data to determine the number of observed license plates and the number of properly transcribed license plates for each location. The data was then compared to the number of counted vehicles to ensure the reasonableness of the data. The properly transcribed license plate data at each location is summarized in **Table 8**.

TABLE 8
OBSERVED LICENSE PLATES BY LOCATION

#	Location	Counted Vehicles	Properly Transcribed Plates	% Properly Transcribed Plates
1	SR 29 – North of American Canyon Rd	52,878	43,913	83%
2	SR 12 - Napa/Solano County Line	31,634	26,828	85%
3	SR 29 – Southeast of Adams St in St. Helena	15,897	14,148	89%
4	SR 29 – Southeast of SR 128 in Calistoga	13,076	11,244	86%
5	SR 29 – Napa/Lake County Line	7,985	6,850	86%
6	SR 128 – Sonoma/Napa County Line	2,163	1,893	88%
7	SR 121 – Sonoma/Napa County Line	30,186	25,949	86%
8	SR 128 - East of SR 121	1,123	907	81%
9	Spring Mountain Rd - Napa/Sonoma County Line	767	715	93%
10	Howell Mountain Road - South of Cold Springs Road	5,162	4,701	91%
11	First St - West of SR 29	20,459	17,241	84%
Total of All 11 Locations		181,330	154,389	85%

As shown in **Table 8**, of the 181,330 vehicles observed passing through the 11 survey data locations, the sophisticated computer software was able to properly transcribe 154,389 license plate numbers (85% of observed vehicles), a reasonable percentage given the high speed of travel at the survey data locations, most of which were located along state highways.

Sophisticated computer software was able to properly transcribe

154,389 license plate numbers (85% of observed vehicles)

After summarizing the license plate data by location, the data was summarized by the time periods listed in Chapter 2. Additionally, the license plates were divided into passenger and commercial motor vehicle groups based on standard California license plate nomenclature. For instance, California passenger vehicle license plates utilize a "number-letter-l-l-n-n-n" format such as "3SAM123" while California commercial motor vehicles utilize a

"number-letter-n-n-n-n-n" format such as "5M32750". License plate numbers not fitting either category were assumed to be passenger vehicle license plates.

Each license plate number was then checked to see if it matched a license plate number at the same location later in the day or at a different survey location on the same day in order to infer the trip type. However, license plate matching at survey data locations does not provide information about the origin or destination of the trip, the trip purpose, or any demographic information. Therefore, each license plate observation could only be grouped into one of the following five inferred trip types. The information not provided by the license plate matching procedure was collected through the use of a license plate mail survey and extrapolated to the non-surveyed license plate observations, which is discussed in more detail in Chapter 5.

- Internal Trip – inferred if a license plate was observed at a location within Napa County and not earlier/later observed entering/leaving Napa County.
- Imported Trip – inferred if a license plate was observed entering Napa County and later observed leaving Napa County at the same survey data location.
- Exported Trip – inferred if a license plate was observed exiting Napa County and later observed entering Napa County at the same survey data location.
- One-Way Trip – inferred if a license plate was observed at a single external gateway location.
- Pass-Through Trip – inferred if a license plate was observed entering Napa County at one survey data location and later observed leaving Napa County at a different survey data location.

Additionally, the direction and time of travel (interval between observation points not the start time or end time of the trip) was used to infer additional information regarding the inferred trips. For instance, if a license plate was observed entering Napa County at 8 AM and later observed leaving Napa County at 5 PM at the same location, it can be inferred that this vehicle was an imported worker with an inbound trip in the AM peak period and an outbound trip in the PM peak period. If for instance the same trip was observed but the interval between observations was only one hour, it can be inferred that this vehicle was an imported non-worker entering Napa County for shopping, recreation, or something other than work.

The license plate matching data for passenger and commercial motor vehicles grouped by time period and inferred trip type for each of the 11 locations are presented in **Appendix C**. Providing this information by location allows for the identification of the composition of traffic at each location for a given time period. For instance, as shown in **Appendix C**, approximately 30% of vehicles on SR 29 north of American Canyon Road are imported work trips in the AM peak period while 8% of vehicles are passing through Napa County on their way to destinations outside Napa County.

A summary of passenger vehicle license plate matching data by time period and inferred trip type for only the seven external gateway locations is presented in **Table 9**. The four locations within Napa County were not included in this summary table because the information for internal trips when looking at the summation of all locations is misleading since the four locations are a small sample of roadway segments within Napa County.

However, the summation of all external gateway locations is appropriate since all major Napa County external gateways are included.

TABLE 9
PASSENGER VEHICLE LICENSE PLATE MATCHING DATA

Trip Type	Daily	Early AM (12 AM to 6 AM)	AM 4-Hr (6 AM to 10 AM)	Mid-Day (10 AM to 3 PM)	PM 4-Hr (3 PM to 7 PM)	Late Night (7 PM to 12 AM)
Inbound Trips	45%	55%	51%	45%	40%	46%
Outbound Trips	45%	31%	39%	45%	52%	46%
Pass-Through Trips	9%	14%	10%	10%	8%	8%
Trip Type	**Daily**	**Early AM**	**AM Peak**	**Mid-Day**	**PM Peak**	**Late Night**
Imported Work Trips	25%	37%	31%	17%	28%	22%
Imported Other Trips	16%	7%	12%	23%	14%	16%
Exported Work Trips	16%	20%	20%	12%	17%	18%
Exported Other Trips	11%	4%	8%	14%	10%	9%
One-Way Total	23%	18%	19%	24%	23%	28%
Pass-Through	9%	14%	10%	10%	8%	8%

As shown in **Table 9**, approximately 9% of daily trips at Napa County external gateways are pass-through trips. The 9% pass through percentage was found to be consistent with the approximately 9% observed daily pass-through percentage from the mobile device data collection method (discussed in more detail in Chapter 6). Additionally, approximately 41% of daily trips are imported trips and 27% are exported trips.

9% of daily trips at Napa County external gateways are pass-through trips

41% of daily trips are imported trips and 27% are exported trips

Visitor Trips

Approximately 16% of daily trips were classified as "imported other" trips. These trips were inferred when a license plate was observed entering Napa County and later observed leaving Napa County at the same survey data location less than eight hours after entering. It was assumed that if the vehicle was observed eight or more hours later, it would likely be an imported worker returning home. But if the vehicle was observed leaving less than eight

hours later, the driver was likely visiting Napa County for a non-work or "other" purpose and returning home. Therefore, it was inferred that 16% of total daily trips into Napa County were "imported other" or "visitor" trips.

However, 23% of daily trips were also classified as "one-way" trips. These trips were inferred if a license plate was observed at a single external gateway location. While it can be assumed that a portion of this traffic is visitors to the county, it is difficult to quantify based solely on license plate matching as 15% of license plates were not properly transcribed. A one-way vehicle could have passed a survey location more than once but only had their license plate properly transcribed a single time, resulting in their trip being incorrectly classified as a one-way trip.

Therefore, to more accurately estimate daily "visitor" trips to Napa County, "one-way" trips were removed from the total trips and the percent "imported other" was recalculated. Upon recalculation, it was estimated that 21% of total daily trips into Napa County were "visitor" trips, a number four percentage points higher than the percentage of visitor trips from the vehicle intercept survey (discussed in more detail in Chapter 5). However, visitors to Napa County are likely underrepresented in the vehicle intercept survey as potential respondents who live or work in Napa County are generally considered to be more likely to complete the survey.

PASS-THROUGH ORIGIN-DESTINATION VEHICLE TRIP TABLES

The license plate matching data, organized by vehicle type, time period, and inferred trip type as described above, was then used to create origin-destination vehicle trip tables representing pass-through travel within Napa County. A total of 12 origin-destination vehicle trip tables were developed, one for each combination of time period and vehicle type.

Each individual vehicle trip table contains seven rows and seven columns, one for each of the seven external gateway locations where vehicles can enter and exit Napa County. The format of the trip tables allows them to easily be compared to external-to-external vehicle trip tables that can be produced by the NSTDM. The daily total pass-through trips for passenger and commercial motor vehicles (factored to account for license plates that were not properly transcribed) are shown in **Table 10** and **Table 11**, respectively. All 12 pass-through origin-destination vehicle trip tables resulting from the license plate matching effort are shown in **Appendix C**. Additionally, **Appendix C** provides average observed travel times between external gateway locations for trips with and without an intermediate stop.

TABLE 10
DAILY TOTAL PASS-THROUGH TRIPS FOR PASSENGER VEHICLES

Total: 10,590		Destination Survey Data Location						
		1-SR 12 North of AC-SB	2-SR 12 at Solano CL-EB	5-SR 29 at Lake CL-NB	6-SR 128 at Sonoma CL-NB	7-SR 121 at Sonoma CL-WB	8-SR 128 east of SR 121-EB	9-Spring Mountain-WB
Origin Survey Data Location	1-SR 12 North of AC-NB	--	816	217	5	1,344	5	0
	2-SR 12 at Solano CL-WB	794	--	128	5	2,751	39	10
	5-SR 29 at Lake CL-SB	147	89	--	12	31	2	0
	6-SR 128 at Sonoma CL-SB	2	0	5	--	0	2	0
	7-SR 121 at Sonoma CL-EB	1,262	2,801	27	2	--	24	10
	8-SR 128 east of SR 121-WB	5	17	0	0	17	--	2
	9-Spring Mountain-EB	10	5	0	0	2	2	--

TABLE 11
DAILY TOTAL PASS-THROUGH TRIPS FOR COMMERCIAL MOTOR VEHICLES

Total: 1,035		Destination Survey Data Location						
		1-SR 12 North of AC-SB	2-SR 12 at Solano CL-EB	5-SR 29 at Lake CL-NB	6-SR 128 at Sonoma CL-NB	7-SR 121 at Sonoma CL-WB	8-SR 128 east of SR 121-EB	9-Spring Mountain-WB
Origin Survey Data Location	1-SR 12 North of AC-NB	--	79	18	2	130	1	0
	2-SR 12 at Solano CL-WB	73	--	18	0	260	11	0
	5-SR 29 at Lake CL-SB	14	5	--	1	2	0	0
	6-SR 128 at Sonoma CL-SB	0	0	0	--	0	0	0
	7-SR 121 at Sonoma CL-EB	112	285	2	0	--	9	3
	8-SR 128 east of SR 121-WB	2	5	0	0	3	--	0
	9-Spring Mountain-EB	0	0	0	0	0	0	--

As shown in **Table 10** and **Table 11**, a vast majority (approximately 52%) of Napa County pass-through traffic travels between SR 121 at the Napa/Sonoma county line and SR 12 at the Napa/Solano county line.

5. SURVEYS

Three types of surveys were conducted as part of the Napa County Travel Behavior Study to supplement data previously collected through surveys such as the Visit Napa Survey and the California Household Travel Survey (CHTS). An in-person survey was conducted at 13 wineries in Napa County to gather more detailed information on the travel behavior and demographics of winery patrons. An online survey was provided to major employers in Napa County to gather travel behavior and commute data for local employees. A vehicle intercept mail survey was also conducted to gather travel behavior and origin-destination data for local residents and visitors to the region. The surveys provided detailed information on the trip making and travel characteristics of a sample of residents, visitors, winery patrons, students, and employees who live, work, and visit Napa County.

To increase the survey response rate, an incentive was provided if certain questions were answered and the survey returned by a specific date. Participants were entered into separate raffles (one for each survey) to win one of three cash prizes if they completely answered all questions designated as "required" on the survey within two weeks of receiving the survey.

IN-PERSON WINERY SURVEY

On Friday, October 4, 2013 15 surveyors comprised of local volunteers, NCTPA and Fehr & Peers staff conducted an in-person survey at 13 wineries in Napa County. One representative from a group of winery patrons was asked a total of 23 questions and their responses were transcribed on a paper copy of the survey. Copies of the survey were also available for winery patrons to take home, complete, and return using a self-addressed stamped envelope. The questions on the survey were aimed at gathering origin-destination, trip making, and demographic information of the winery patrons. The survey handout is provided in **Appendix D** along with a printout of the online version of the survey used to enter the data for analysis purposes.

A total of 172 surveys were completed with roughly 169 of respondents answering every question. The most common unanswered questions were in regards to education level and household income. 162 of the surveys were filled out by the surveyors while 10 were received in the mail.

The response rate for the survey was estimated at 50% of groups of winery patrons. The estimated response rate was drawn from anecdotal evidence obtained from speaking with the individual surveyors. For instance, at one winery the surveyor estimated that 83% of groups were surveyed while at another winery the surveyor estimated that 50% of groups were surveyed. It is important to note that although only 172 surveys were completed, the answers to the questions on each survey reflect the average answer for the group, the size of which is identified by Question 18 on the survey handout in **Appendix D**. Taking the average group size of approximately 2.8 into consideration it can be inferred that the 172 survey responses accounted for the trip making and demographic characteristics of 482 winery patrons.

172 surveys were completed with an estimated response rate of 50%

In-Person Winery Survey Response Data

The in-person winery survey responses to all 23 questions for all 172 completed surveys are provided in **Appendix D** along with a detailed summary of the results. Key takeaways from the in-person winery survey are presented below.

- 92% of groups were visitors to Napa County, only 6% of groups were full-time residents
- Only 21% of patrons were from the Bay Area, 10% of patrons were from outside the United States
- 35% of patrons started their day in Napa County, 23% of patrons started their day in San Francisco County
- 64% of patrons started their day from a hotel
- A higher percentage (45%) ended their day in Napa County, the same percent (23%) ended their day in San Francisco County
- Roughly the same percent (62%) of patrons ended their day in a hotel
- The average departure time for wineries was 10 AM and the average travel time was 74 minutes
- The average number of wineries groups planned to visit was 3.1. However, most groups did not know the names of the planned wineries or whether they would actually make it to all of them.
- 61% of groups visit Napa County wineries less than once a year
- Almost 70% of groups were first-time visitors to the winery they were surveyed at
- 52% of groups traveled by rental car, 36% of groups by personal auto
- Average party size was 2.8 persons
- 19% said public transit was a reasonable option but 0% utilized transit that day
- 58% said they would use transit if it was an option
- 80% of visitors were age 25 to 54
- 92% have an undergraduate college degree or higher
- Roughly 80% have an average household income over $100,000 a year, the median Bay Area average household income is around $75,000 a year

ONLINE EMPLOYER SURVEY

On October 25, 2013 an email with a description of the Napa County Travel Behavior Study and a link to an online employer survey was mailed to 100 employers with a total of approximately 20,000 employees in Napa County. The online survey included a total of 24 questions designed to gather travel behavior and commute data for local employees. A printout of the online version of the survey is provided in **Appendix D**.

A total of 1,444 surveys were completed with roughly 1,333 (92%) respondents answering every question. As with the winery survey, the most common unanswered questions were in regards to education level and household income. Responses were received from over 400 departments and companies (most respondents identified the department as well as the company they worked for). The most survey responses were received from Napa County (292 or 20%) followed by City of Napa (95 or 7%). The response rate for the survey was approximately 7%.

1,444 surveys were completed with a response rate of approximately 7%

Online Employer Survey Response Data

The online employer survey responses to all 24 questions for all 1,444 completed surveys are provided in **Appendix D** along with a detailed summary of the results. Key takeaways from the online employer survey are presented below.

- 71% of respondents live in Napa County
- 51% of respondents live in the City of Napa
- 56% of respondents work in the City of Napa
- 462 (32%) respondents live and work in the City of Napa
- The average home departure time was 7:50 AM
- The average travel time to work was 31 minutes (estimated by respondents)
- 34% make at least 1 intermediate stop on the way to work
- The most common stop on the way to work was school (168 or 35%), followed by coffee (126 or 26%)
- 61% of respondents use SR 29 to travel to work
- The average work departure time was 4:00 PM
- The average travel time home was 37 minutes (estimated by respondents)
- 30% make at least 1 intermediate stop on the way home
- The most common stop on the way home was shopping (150 or 35%), followed by school (22%)
- 55% of respondents use SR 29 to travel home from work (fewer than in the morning to work)
- 97% commute using their personal automobile more than half the time
- 20% carpool in one form or another
- 79% commute 5 days a week
- 88% do not primarily work from home
- 35% have flexible commute schedules that allow them to alter their commute time
- The average household size is 2.5 person and the average household has 2.2 vehicles
- 43% said they would use public transit if service was expanded and it became a reasonable option
- Similar age distribution to winery visitors but fewer in the 35 to 44 age bracket
- 62% have an undergraduate degree or higher (compared to 92% for winery patrons)
- Roughly 47% have an average household income over $100,000 a year (compared to 80% for winery patrons)

VEHICLE INTERCEPT MAIL SURVEY

A vehicle intercept mail survey involves the gathering of unique license plate listings which are then matched to a Department of Motor Vehicles (DMV) database of addresses of license plate owners (all of the license plate and address information was destroyed after use for this survey). Typically, short survey questionnaires are implemented by mailer and responses are entered online using a unique survey identification number. The respondent data can then be used to gather information about the origin and destination of the trip, the trip purpose, and the demographic characteristics of the driver and their household, data typically not provided by vehicle classification count data, license plate matching, or mobile device data.

Unique License Plate Listings

The properly transcribed license plate numbers provided by MioVision were the basis for developing a list of unique license plate listings to be sent to the DMV for a list of addresses of the license plate owners. A total of 85,531 unique license plate numbers were identified from the 154,389 properly transcribed license plate numbers at the 11 vehicle classification count locations. The 85,531 unique license plate numbers were then sent to the DMV to obtain a mailing address for each of the unique license plate listings.

85,531 unique license plate numbers were identified

Upon receipt of the mailing addresses from the DMV, they were reviewed in order to remove duplicate addresses, likely resulting from the observation of multiple vehicles from the same rental car company, incomplete addresses, out-of-state addresses, and addresses of businesses where the likelihood of the survey reaching the observed motorist was low. It was determined that approximately 5,000, or 6%, of the addresses associated with the 85,531 unique license plate numbers were duplicates.

The screened list of unique license plate listings and addresses was then sorted by the inferred trip types listed in Chapter 4 to ensure a proportionate amount of addresses associated with imported, exported, and one-way (both in and out) trips were selected to be surveyed (select pass-through trips were also surveyed), as well as by survey data location to ensure a proportionate amount of addresses associated with vehicles observed at each of the 11 survey data locations were selected for the survey. The sorting process resulted in 45 separate lists of addresses, from which a calculated number of randomly selected addresses were drawn, to which a license plate survey was mailed. To ensure the survey response data could not be tracked to an individual person or place of residence, an anonymous unique survey identification number was used to link the household address, license plate number, and survey response data, allowing all of the license plate and address information to be destroyed after use for the survey.

Mail Survey

In order to obtain information about the origins and destinations of the observed vehicle trips, as well as information regarding trip purpose, trip frequency, and demographic characteristics of the driver and their

household, a mail survey was conducted using a survey instrument reflecting the California Household Travel Survey (CHTS) questionnaire, input from NCTPA and the Community Advisory Committee (CAC), and addresses obtained from the DMV.

Survey Sample Size

The screened list of unique license plate listings and addresses, sorted by inferred trip type and survey data location, were used to draw a random sample of observed inter-regional vehicle trips to survey. The number of samples was determined by a calculation of the sample size needed to obtain a statistically significant sample of usable surveys based on the number of unique license plate listings, observed traffic volumes at individual survey data locations, and experience on survey response rates. A 95% overall confidence level and 10% confidence interval were used along with an assumed 8% response rate to determine the license plate survey sample size.

A separate sample size was calculated for each of the 11 survey data locations, resulting in a total calculated sample size of 7,863. However, 8,500 unique addresses were selected from the 45 sorted lists of unique addresses described above. A total of 8,250 addresses were randomly, and proportionately, selected from the individual lists of non-pass-through trips to increase the odds of receiving the desired 625 responses. An additional 250 addresses associated with pass-through trips were manually chosen if a longer than average travel time from entry to exit point was observed. This method was chosen for the pass-through trips over a random sampling due to the likelihood that the longer than average trip time was due to an intermediate stop, providing the opportunity to gather information related to diverted/pass-by through trips. The selected addresses were then reviewed a second time, in more detail, to ensure there were no duplicate or out-of-state addresses and that none of the addresses appeared to be that of businesses.

Survey Instrument

The online survey instrument was developed using SurveyMonkey to reflect the CHTS questionnaire along with input from NCTPA and the CAC, and contained questions including but not limited to: origin and destination of the trip, purpose of the trip, arrival and departure time, frequency, number of vehicles available in the household, number of passengers, household income, household size, age of driver, age of head of household, and education level.

For the questions regarding the origin and destination of the trip, the survey instrument allowed for the specification of an address, cross street, and/or name of the establishment to make it easier on the survey participants. Additionally, the questions regarding the purpose of the trip provided multiple choices that included standard trip purposes such as home-based work and home-based other, along with more unique trip purposes such as winery-based, with the trip purposes rephrased to be more understandable to the survey participants.

An online survey was used in an effort to increase the response rate, as the online version provided a convenient way for participants to complete the survey and utilized branched questions that reduced the survey length and response time. Fehr & Peers staff, acting as mock survey participants, was able to complete the online version of the survey in less than two minutes. An online version, while more work for the survey team to develop, also has

the added benefit of minimizing return postage costs, data entry and cleaning time, and post-processing time for the survey team.

The online survey instrument was then reviewed by NCTPA staff prior to the mailing of a postcard to potential survey participants. The postcard informed the recipient their vehicle had been observed at a specific time and place on the periphery of Napa County and provided a unique survey ID and web address for them to complete the online survey. The vehicle intercept mail survey postcard mailer is provided in **Appendix D** along with a printout of the online version of the survey.

8,500 survey postcards were mailed to randomly selected potential participants

A total of 183 surveys were completed with roughly 168 (92%) respondents answering every question. As with the other two surveys, the most common unanswered questions were in regards to education level and household income. The response rate for the survey was approximately 2.2%, a much lower response rate than anticipated. As described above, the desire for 625 responses (achieved by an 8% response rate) was based on the desire to obtain a statistically significant sample of usable surveys for each of the seven external gateways. Due to the lower than anticipated response rate, a statistically significant sample of usable surveys was only obtained for a population of all seven external gateways combined. The resulting confidence interval when working with a population based on all seven external gateways combined using a 95% confidence level was 7%.

183 surveys were completed with a response rate of approximately 2.2%

Vehicle Intercept Mail Survey Response Data

The vehicle intercept mail survey responses to all 24 questions for all 1,444 completed surveys are provided in **Appendix D** along with a detailed summary of the results. The number of vehicle intercept mail survey responses by survey data location is summarized in **Table 12**.

TABLE 12
VEHICLE INTERCEPT MAIL SURVEY RESPONSES BY SURVEY DATA LOCATION

Survey Data Location	License Plate Survey Responses	% of Total Responses
Highway 29 - Southeast of Adams St in St. Helena	28	15%
Highway 121 - at the Sonoma/Napa County Line	26	14%
Highway 12 - at the Napa/Solano County Line	25	14%
Highway 29 - at the Napa/Lake County Line	22	12%
First Street - West of SR 29	20	11%
Highway 29 - North of American Canyon Rd	17	9%
Howell Mountain Road - South of Cold Springs Road	16	9%
Highway 29 - Southeast of SR 128 in Calistoga	15	8%
Highway 128 - East of SR 121	7	4%
Highway 128 - at the Sonoma/Napa County Line	4	2%
Spring Mountain Road - at the Napa/Sonoma County Line	3	2%
Pass-Through Trips	0	0%
Total of All 11 Locations and Pass-Through Trips	**183**	**100%**

Key takeaways from the vehicle intercept mail survey are presented below.

- The highest number of surveys (28 or 15%) were from respondents who traveled through Highway 29 Southeast of Adams Street in St. Helena which comprised 9% of the total counted vehicles
- Only 9% of the surveys were from respondents who traveled through Highway 29 North of American Canyon Road which comprised 30% of the total counted vehicles
- 52% of respondents are full-time residents of Napa County, 26% are non-residents but employed in Napa County
- 17% of vehicle intercept survey respondents said they were visitors to Napa County. However, visitors to Napa County are likely underrepresented as potential respondents who live or work in Napa County are generally considered to be more likely to complete the survey.
- 60% of respondents started their trip in Napa County
- 26% of respondents who started their trips outside Napa County started their trip in Sonoma County, followed by Solano County with 24%, and Lake County with 15%
- External county of origin percentages very closely resemble mobile device data with the exception of Lake County which comprised only 1% of the cell phone data but 15% of the survey data (likely due to the older population which tend to have more time to complete surveys – according to http://www.city-data.com/county/Lake_County-CA.html the average age of Lake County residents is ten years more than the average for California)

- 80% of trips started at home, 13% at work
- 37% of trips ended in the City of Napa, 19% in the City of St. Helena, 7% in the City of Calistoga
- 40% of trips ended at work, 11% at shopping, 10% at visiting family/friends
- 66% of external trips were imported, consistent with license plate matching data which estimated 61%, and mobile device data which estimated 65%
- 34% of trips were home-based work trips, 40% were home-based other trips, and 26% were non-home-based trips, consistent with mobile device data (36%, 33%, 31%) and national averages (25%, 50%, 25%)
- Average departure time was 10:07 AM
- Average travel time for the singular trip in which the vehicle was making when it's license plate was observed was 57 minutes (estimated by respondents)
- 21% of trips were said to be made "less than one time per month", likely indicating visitor trips
- Average auto occupancy was 1.37 and 72% of vehicles were single occupant
- 62% said their trips could have been made with another mode of travel but since this was a vehicle intercept survey all 183 trips were made by automobile
- 53% of respondents said they would not be willing to use public transit
- 85% of respondents said they rarely or never use public transit
- Those that use transit said they predominately use it for recreational purposes which seems counterintuitive
- 67% were aware Napa County has a transit system that connects to the Ferry, BART, and Sonoma and Solano counties but only 23% had used it
- More respondents felt "safer bicycle infrastructure/conditions" would entice them to make their trip by bicycle
- 18% of respondents used van pools or car pools
- Average household size was 2.45 persons
- Average vehicles per household was 2.15
- The average age of respondents had a bias toward the older age group, likely due to older people generally having more time to complete surveys
- 65% of respondents have an undergraduate college degree or higher, compared to 92% for winery patrons
- Roughly 45% have an average household income over $100,000 a year, compared to 80% for winery patrons

TABLE 13
VEHICLE INTERCEPT MAIL SURVEY RESPONSE STATISITICS

Statistic	Possible Responses	Number of Responses	Percent of Responses	Percent of Observed License Plates from License Plate Matching
Internal Trips		79	43%	--
Trip Direction	Inbound Trip	58	56%	45%
	Outbound Trip	46	44%	45%
	Pass-Through	0	0%	9%
Time Period	Early AM (12 AM to 6 AM)	7	4%	3%
	AM Peak Period (6 AM to 10 AM)	70	38%	24%
	Mid-Day (10 AM to 3 PM)	54	30%	31%
	PM Peak Period (3 PM to 7 PM)	41	22%	29%
	Late Night (7 PM to 12 AM)	11	6%	12%
Trip Type	Imported Trip	44	42%	41%
	Exported Trip	28	27%	27%
	One-Way In	14	13%	12%
	One-Way Out	18	17%	11%
	Pass-Through	0	0%	9%

As shown in **Table 13**, the vehicle intercept mail survey response statistics generally match the total observed license plate data statistics from the license plate matching, implying that the sorting of the unique addresses into 45 separate lists was beneficial in obtaining completed surveys for auto trips that occurred with the various directions of travel, time periods, and trip types that occur in Napa County.

SURVEY DATA LIMITATIONS

As with all user-input surveys, certain data limitations exist that should be taken into consideration before working with the raw or analyzed data as these types of surveys are prone to human error during the data collection process as well as from the survey responders who may misinterpret the questions. Below are examples of user-input data that demonstrate potential user-input survey data limitations.

- A respondent indicated they were a full-time resident of Napa County but provided a home zip code in Fairfield – possible misunderstanding of the question or human error
- A respondent indicated it took them 45 minutes to travel from downtown San Francisco to a winery in Calistoga, a distance of approximately 72 miles – possible misconception of time or human error
- A respondent indicated they planned to visit 12 wineries – likely did not make it to all 12 wineries but we have no way of knowing

6. MOBILE DEVICE DATA

Mobile devices such as cell phones and GPS units (in cars, on phones, and handheld units) frequently communicate with the mobile network, both during use (on a call or sending/receiving text or data) and in idle mode. INRIX and StreetLight Data are able to collect and analyze this data while the device is in use to record the anonymous location (ensuring user privacy) and movement of mobile devices (and thus the population of mobile users) on the roadway network, both in real-time and historically, based on this mobile signaling data.

In order to infer the travel patterns and trip making characteristics of the mobile devices, such as the origin and destination of individual trips as well as the purpose of those trips, StreetLight Data obtained from INRIX movement and usage patterns over a 61-day period from September 1, 2013 to October 31, 2013 for the entire State of California in order to determine the "Home Zone" and the "Work Zone" for each mobile device. For instance, a "Home Zone" is designated if a particular device spends a majority of nighttime hours (i.e. 9 PM to 6 AM) at a specific location, whereas a "Work Zone" is designated if a particular device spends a majority of daytime hours (i.e. 8 AM to 5 PM) at a specific location over the 61-day period.

StreetLight Data then uses sophisticated algorithms to create trip distribution tables by first identifying mobile devices which were seen in a single zone multiple times over a specified time interval and subsequently seen in a different zone multiple times over a specified time interval. All of the sightings for the mobile device in a single zone over this specified time interval are then combined to create an "Origin-Destination Point". The "Origin-Destination Points" of each mobile device are then paired to create a table of trips with origin and destination coordinate points as well as the observed time period. Population and land use data from the NSTDM was also used during this effort to help determine the trip purpose of the StreetLight Data inferred trips.

STREETLIGHT DATA OVERALL STATISTICS

The table of trips provided by StreetLight Data was derived from 206,152 Napa County data samples. Of the 206,152 data samples, approximately 74,400 or 36% touched a Napa County external gateway, indicating an external trip. Additionally, approximately 6,700 or 9% of trips were observed passing through Napa County via Napa County external gateways.

206,152 Napa County data samples

36% of which were external trips and 9% of which were pass-through trips

As indicated above, approximately 45% of Napa County data samples touched one or more Napa County external gateways. The remaining 55% of trips had both their origin and their destination within Napa County, indicating an internal trip. This statistic is extremely useful and important as measuring the amount of internal trips within an area as large as a county would be almost impossible using traditional methods. Even the four other data collection methods used as part of this study are unable to accurately capture this information.

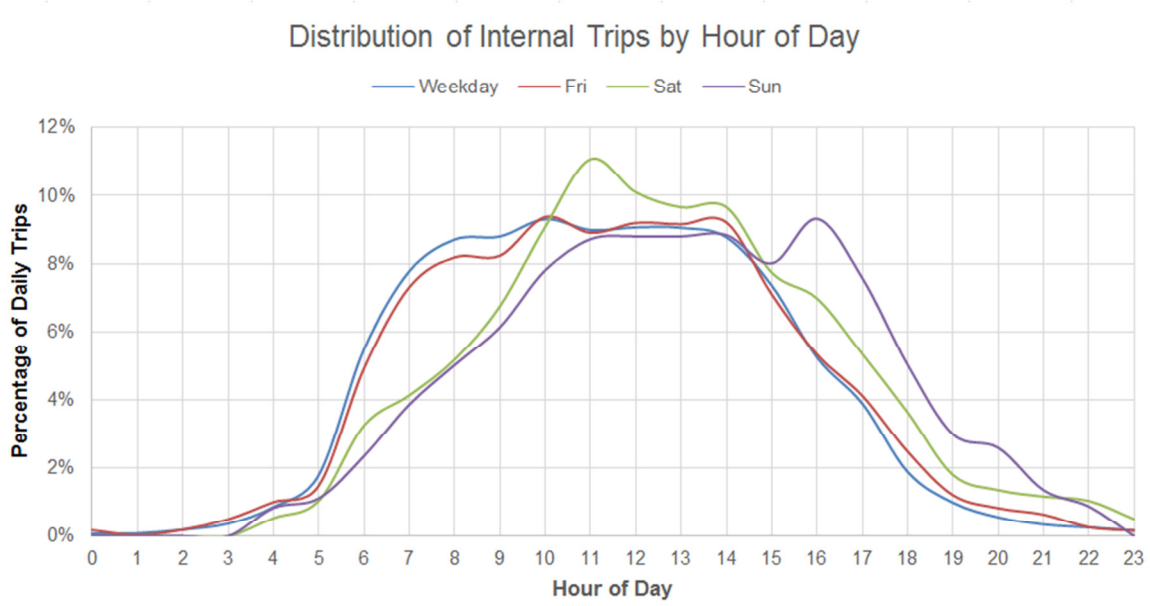
- Traffic counts – do not provide the origin and destination information necessary to differentiate internal from external or pass through trips
- Winery regression analysis – only provides trip generation information for wineries
- License plate matching – license plate collection was limited to four local survey data locations to capture a small sample of local trips, would need to capture license plate data at a majority of Napa County roadways to accurately differentiate internal from external or pass through trips (used primarily to capture external trip information as external gateways are usually limited and well-defined)
- Surveys – same limitation as license plate matching, data collected for an indeterminable percentage of local trips

Due to the limitations listed above, there is unfortunately no data source collected as part of this project to accurately compare the 55% internal trips calculation. However, information from a regional travel demand model such as the Metropolitan Transportation Commission (MTC) Travel Demand Model can be used for comparison purposes with the understanding that information from travel demand models is forecasted, not observed, using aggregate land use and roadway network information in combination with average trip making rates, trip distribution patterns, and time-of-day factors. This comparison is presented later in this chapter after the raw StreetLight Data has been refined based on data collected from the four other data collection sources.

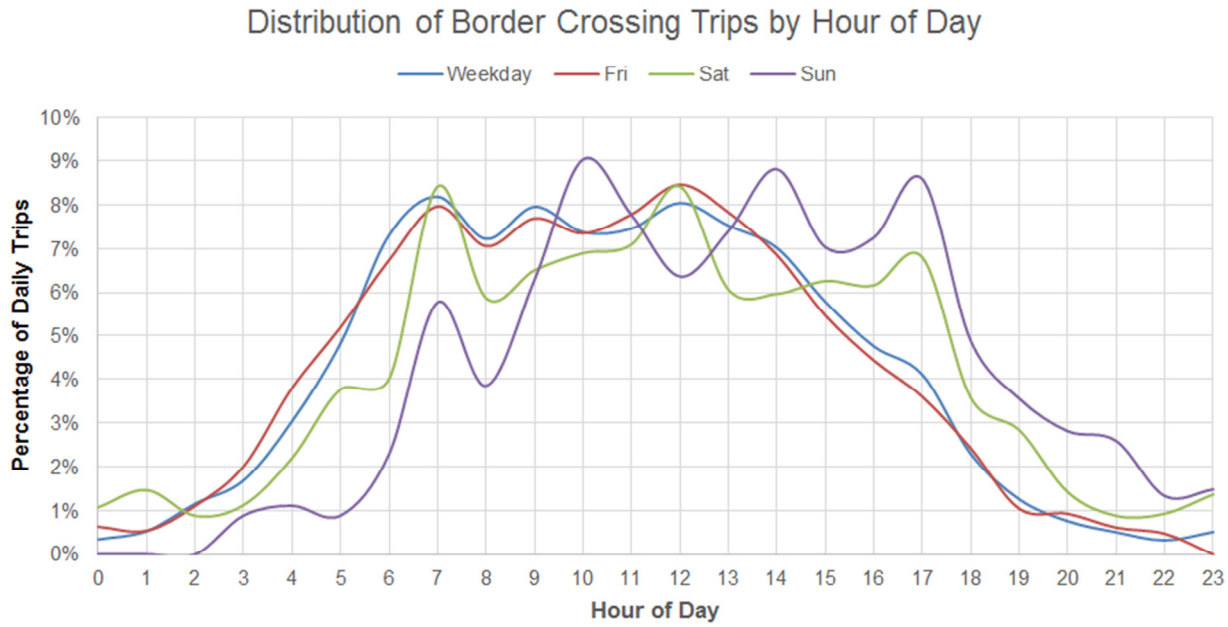
The remaining 55% were internal trips (measured no other way in this study)

"Hour of Day" and "Day of Year" Statistics

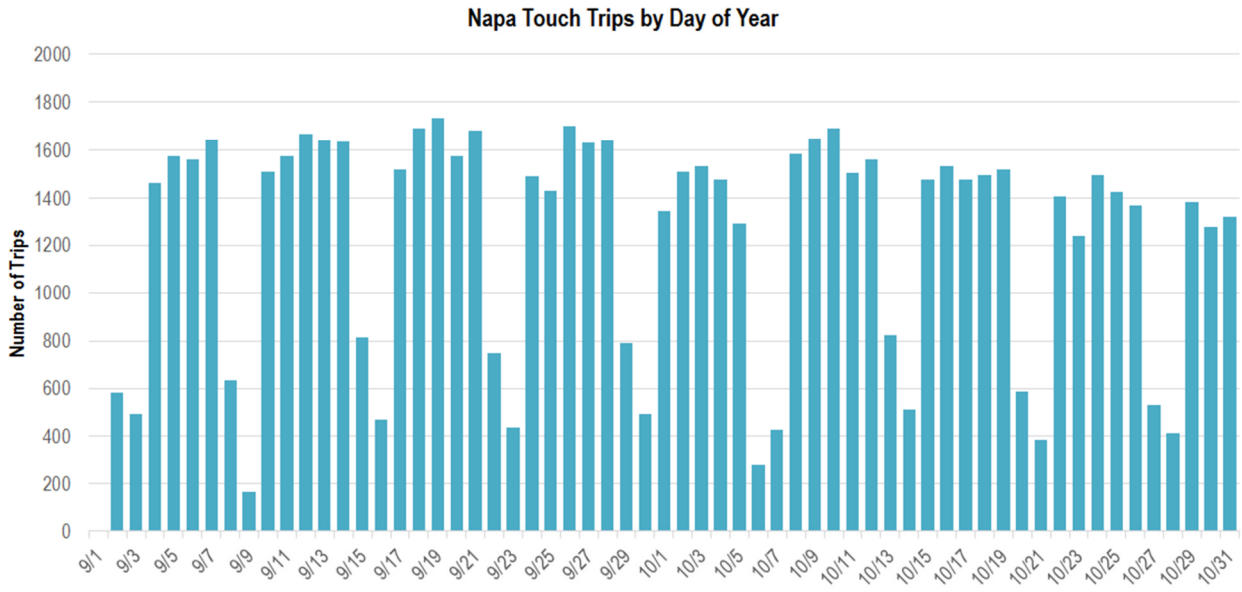
StreetLight Data also stratified their data samples by "hour of day" and "day of year" as shown on the charts below.



The above chart shows the percent of daily trips with their start and end point within Napa County by hour of day.



The above chart shows the percent of daily trips that passed through a Napa County external gateway by hour of day. For example, roughly 8% of weekday, Friday, and Saturday daily trips were observed at 7 AM.



The above chart shows the number of trips within Napa County for each day between September 1, 2013 and October 31, 2013.

STREETLIGHT DATA ORIGIN-DESTINATION DATA

After the "Origin-Destination Points" of each mobile device are calculated from the 206,152 Napa County data samples, they are paired to create a table of trips with origin and destination coordinate points by day of week, time of day, vehicle type (personal automobile and commercial vehicle), and trip type (internal and external). These trips are then "tagged" to a pre-determined geographic layer based on their origin and destination coordinate points.

For the Napa County Travel Behavior Study, the starting point was the NSTDM traffic analysis zone (TAZ) system to which all 434 wineries were added. Additional subdivisions were also made to ensure each middle school, high school, college, airport, and major employer were represented by their own TAZ. The final geographic layer included 658 TAZs with six external gateways and is shown on **Figure 2**. Population and land use data from the NSTDM was also used during this effort to help determine the trip purpose of the StreetLight Data observed trips.

The resulting origin-destination trip tables provide the number of trips for each TAZ to TAZ origin-destination pair for inter-regional (imported and exported trips only) as well as internal (both ends of the trip within Napa County) trips stratified as described below.

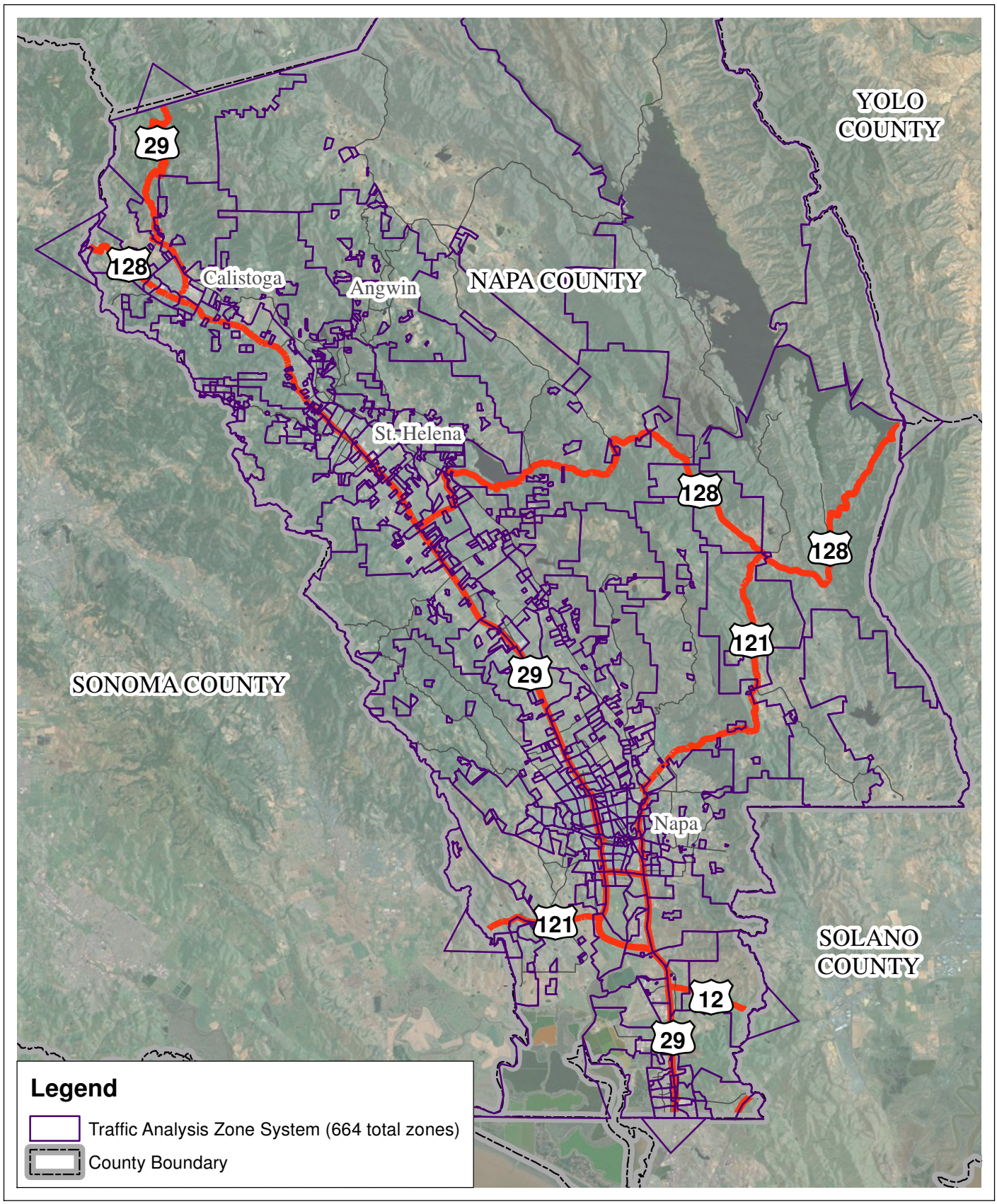
- Inferred trip purpose - 12 different purposes including internalized, home-based work, home-based other, non-home-based, school, airport, home to winery, external to winery, other to winery, home to external, other to external, external to work
- Time of day - same 6 from Chapter 2 including Early AM, AM Peak Period, Mid-Day, PM peak period, Late-Night, and Daily
- Vehicle type - personal automobile and commercial vehicles
- Day of week – 3 different categories including average Monday-Thursday weekday, Friday, and Saturday
- Trip type – internal trips, internal to external trips, external to internal trips

Relative Rather than Absolute Trips

Due to privacy concerns, the trip values in the origin-destination trip tables described above represent "relative" rather than "absolute" trips. In other words, the tables do not provide the total number of trips that occur on a daily basis within Napa County but provide the relative relationship of trips from each TAZ to every other TAZ. Therefore, data from the other four data collection methods was used to refine the origin-destination trip tables to represent a single day of absolute data as described below.

- Traffic counts – used to develop control totals to factor the relative trips in order to obtain absolute trips
- Winery regression analysis – used to develop factors to match calculated winery trip generation data
- License plate matching – used to help refine trip purpose and trip type
- Surveys – used to help further refine trip purpose and trip type, and to refine origin-destination pairs

The resulting trip tables represent a single meaningful dataset of all data collected as part of the Napa County Travel Behavior Study.



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MOBILE DEVICE DATA GEOGRAPHIC LAYER
NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 2

Data from the other four data collection methods

was used to refine the origin-destination trip tables

Final Absolute Origin-Destination Trip Tables

The final absolute origin-destination trip tables for personal automobile and commercial vehicle trips for an average Monday-Thursday weekday, Friday, and Saturday are provided in tabular format in **Appendix E.** The data is provided in a format such that column "A" is the TAZ from which the trips originate and column "B" is the TAZ to which the trips terminate. The subsequent columns provide the number of trips for the origin-destination pair for the days of week and times of day described above.

The final absolute origin-destination trip tables for personal automobile trips are summarized in **Table 14**.

TABLE 14
PERSONAL AUTOMOBILE FINAL ORIGIN-DESTINATION TRIP TABLES SUMMARY

Trip Purpose	Average Monday to Thursday Trips	Friday Trips	Saturday Trips	Monday to Thursday Trip Percent	Friday Trip Percent	Saturday Trip Percent
Total	345,346	362,253	159,541	100%	100%	100%
Internalized	26,369	25,223	8,647	8%	7%	5%
Home-Based Work	60,393	62,932	10,618	17%	17%	7%
Home-Based Other	57,867	58,163	16,015	17%	16%	10%
Non Home-Based	49,803	53,261	6,399	14%	15%	4%
Winery	47,811	56,639	50,273	14%	16%	32%
Imported Trip	66,194	67,963	34,995	19%	19%	22%
Exported Trip	36,909	38,072	32,593	11%	11%	20%
Total Winery Trips (including work trips)	52,070	61,333	54,883	15%	17%	34%
Winery Trips from Winery Regression Analysis	52,245	62,217	54,713	--	--	--
Difference	-175	-883	170	--	--	--
External Trips (including pass-through)	125,490	128,431	88,046	36%	35%	55%
External Trips from Vehicle Classification Counts	--	126,736	--	--	--	--
Difference	--	1,695	--	--	--	--

As shown in **Table 14**, approximately 345,000, 362,000, and 160,000 daily personal automobile vehicle trips were generated within Napa County on an average Monday to Thursday weekday, Friday, and Saturday, respectively, in September/October of 2013.

The final absolute origin-destination trip tables for commercial vehicle trips are summarized in **Table 15**.

TABLE 15
COMMERCIAL VEHICLE FINAL ORIGIN-DESTINATION TRIP TABLES SUMMARY

Trip Purpose	Average Monday to Thursday Trips	Friday Trips	Saturday Trips	Monday to Thursday Trip Percent	Friday Trip Percent	Saturday Trip Percent
Total	16,922	17,649	5,206	100%	100%	100%
External Trips (including pass-through)	6,854	7,085	2,116	41%	40%	41%
External Trips from Vehicle Classification Counts	--	6,866	--	--	--	--
Difference	--	728	--	--	--	--

As shown in **Table 15**, approximately 16,900, 17,600, and 5,200 daily commercial vehicle trips were generated within Napa County on an average Monday to Thursday weekday, Friday, and Saturday, respectively, in September/October of 2013.

Comparison of Final Absolute Origin-Destination Trip Table Data to Data from Existing Travel Demand Models

Starting with the NSTDM TAZ system allows the final absolute origin-destination trip table data to be easily compared to trip tables generated by existing travel demand models such as the NSTDM, providing a substantial amount of observed travel data for base year calibration and validation purposes. It is important to note however that the mobile device trip tables do not represent person-level trip productions and attractions (P-A) similar to those produced in the early stages of traditional four-step travel demand models (i.e. trip generation and trip distribution). Instead, the mobile device trip tables represent vehicle trip origins and destinations (O-D) similar to those used during the trip assignment stage of traditional four-step travel demand models. The main difference is that cell values in a model's productions and attractions trip tables are non-directional, only indicating the magnitude of interaction between two TAZs, whereas the cell values in an origins and destinations trip table are directional, indicating the magnitude and direction of interaction between two TAZs.

Provides a substantial amount of observed travel data

for base year calibration and validation purposes

Since the final absolute origin-destination trip table data from the mobile device data collection will likely be used to help update, refine, calibrate, and validate the NSTDM, an attempt was made to compare total daily trips from the mobile device trip tables to total daily trips from the NSTDM. However, the current NSTDM does not have a daily component to compare the mobile device daily trip information provided in **Table 14** and **Table 15**.

Therefore, to ensure the total number of daily trips from the mobile device trip tables were reasonable, the total average Monday to Thursday weekday daily personal automobile and commercial vehicle trips from the final mobile device trip tables were compared to total daily trips with an origin or destination in Napa County from the 2010 Contra Costa Transportation Authority (CCTA) Model. The results of the comparison are shown in **Table 16** and indicate the observed daily mobile device total daily trip data very closely resemble forecasted weekday daily total daily trip data from the 2010 CCTA Model.

TABLE 16
COMPARISON OF DAILY MOBILE DEVICE DATA TO THE 2010 CCTA MODEL TRIP TABLES

Vehicle Type	Daily Mobile Device Trips	Daily 2010 CCTA Model Trips in Napa County
Personal Automobile	345,346	353,521
Commercial Vehicles	16,922	8,731
Total	362,268	362,252

Final Absolute Origin-Destination Trip Matrices

The origin-destination trip tables are provided in tabular format in **Appendix E** to reduce the size of the data and to display the data in a more easily understandable format. As described above the data is provided in a format such that column "A" is the TAZ from which the trips originate and column "B" is the TAZ to which the trips terminate. However, the trip tables generated by the NSTDM are in a matrix rather than tabular format. The matrix format is a rectangular array of numbers arranged in rows and columns with the first row and first column populated with each TAZ in the model. In order to compare the origin-destination trip tables to trip tables generated by the NSTDM the daily tabular trip tables were converted to matrix format. An example of the matrix format to which the tabular tables were converted is illustrated below with each model TAZ in the first row and column.

	1	2	3	4	5	6	7	8	9	10	11
1	194.41	6.78	–	20.35	6.78	6.78	27.13	6.78	47.47	6.78	6.78
2	33.91	–	–	13.56	–	–	6.78	–	–	6.78	6.78
3	–	6.78	–	–	–	6.78	33.91	–	–	0.00	–
4	137.90	–	–	97.21	–	0.00	27.13	–	–	6.78	33.91
5	6.78	–	–	–	–	–	–	–	–	–	–
6	13.56	–	–	0.00	–	13.56	6.78	–	0.00	13.56	6.78
7	47.47	13.56	20.35	13.56	6.78	6.78	20.35	–	20.35	–	13.56
8	–	–	–	–	–	–	–	–	–	6.78	–
9	13.56	6.78	–	27.13	–	–	0.00	–	20.35	47.47	131.12
10	40.69	6.78	–	20.35	–	–	103.99	–	20.35	6.78	13.56
11	13.56	13.56	–	6.78	–	20.35	20.35	–	–	6.78	83.64

The final absolute origin-destination trip matrices for daily personal automobile and commercial vehicle trips for an average Monday-Thursday weekday, Friday, and Saturday are provided in matrix format in **Appendix E.**

Conversion of the tabular format origin-destination trip tables to matrix format allows for comparison to trip tables generated by the NSTDM but also allows for the aggregation of data by desired geographic level. In the example below, the matrix data was aggregated to the city level to illustrate the flow of vehicles to and from the five major cities in Napa County. The results are summarized for an average Monday-Thursday weekday, Friday, and Saturday in **Table 17**, **Table 18**, and **Table 19**, respectively.

TABLE 17
DAILY AVERAGE WEEKDAY VEHICLE TRIPS TO AND FROM THE FIVE MAJOR CITIES IN NAPA COUNTY

Total: 356,424		Destination Location							
		Calistoga	St. Helena	Yountville	Napa	American Canyon	Unincorporated County	Winery	External Gateway
Origin Location	Calistoga	2,062	444	47	360	95	1,586	544	780
	St. Helena	655	6,450	98	1,896	125	3,948	1,616	801
	Yountville	7	246	870	905	54	1,332	475	303
	Napa	397	1,793	1,018	63,359	2,766	19,801	3,099	17,329
	American Canyon	14	256	118	3,320	6,316	3,814	333	11,367
	Unincorporated County	1,381	4,474	1,106	18,514	3,267	40,469	12,053	21,083
	Winery	665	2,111	497	3,376	962	11,041	3,646	3,993
	External Gateway	1,723	841	270	17,464	12,780	18,803	3,902	11,203

TABLE 18
DAILY FRIDAY VEHICLE TRIPS TO AND FROM THE FIVE MAJOR CITIES IN NAPA COUNTY

Total: 373,812		Destination Location							
		Calistoga	St. Helena	Yountville	Napa	American Canyon	Unincorporated County	Winery	External Gateway
Origin Location	Calistoga	3,117	385	31	459	61	1,746	756	824
	St. Helena	949	5,055	211	1,340	61	3,750	2,008	455
	Yountville	0	282	1,275	1,063	92	1,652	1,129	511
	Napa	287	1,006	1,070	62,456	3,427	21,513	4,308	15,923
	American Canyon	0	176	158	3,497	6,312	3,343	299	12,558
	Unincorporated County	1,826	4,368	1,318	19,383	3,763	42,853	13,633	22,239
	Winery	940	2,588	813	4,673	211	14,392	3,778	3,626
	External Gateway	1,707	795	622	16,634	13,630	20,513	4,403	11,559

TABLE 19
DAILY SATURDAY VEHICLE TRIPS TO AND FROM THE FIVE MAJOR CITIES IN NAPA COUNTY

Total: 373,812		Destination Location							
		Calistoga	St. Helena	Yountville	Napa	American Canyon	Unincorporated County	Winery	External Gateway
Origin Location	Calistoga	1,815	251	0	62	12	74	878	1,470
	St. Helena	265	2,037	37	564	25	160	1,779	1,255
	Yountville	0	40	609	552	12	69	561	608
	Napa	191	494	538	21,296	357	2,196	2,701	19,181
	American Canyon	12	13	39	347	2,071	365	157	8,732
	Unincorporated County	91	131	80	2,040	298	2,547	12,282	4,494
	Winery	411	2,844	588	2,883	238	12,145	3,438	4,472
	External Gateway	2,241	1,267	533	16,104	7,692	4,827	6,066	7,924

In the second example below, the matrix data was aggregated to the external gateway level to illustrate the flow of vehicles into Napa County from each of the six major external gateways. The results are summarized for an average Monday-Thursday weekday, Friday, and Saturday in **Table 20**, **Table 21**, and **Table 22**, respectively.

TABLE 20
DAILY AVERAGE WEEKDAY VEHICLE TRIPS INTO NAPA COUNTY FROM MAJOR EXTERNAL GATEWAYS

Total: 66,986		Destination Location								
		Calistoga	St. Helena	Yountville	Napa	American Canyon	Unincorporated County	Winery	External Gateway	Total
Origin Location	1-SR 29 North of AC	429	241	66	4,396	8,924	5,391	340	2,526	**22,314**
	2-SR 12 at Solano CL	1,055	283	77	5,312	1,572	5,078	612	3,947	**17,937**
	7-SR 121 at Sonoma CL	46	260	112	7,517	2,206	7,453	2,215	4,379	**24,188**
	8-SR 128 east of SR 121	0	0	0	8	0	140	103	49	**300**
	6-SR 128 at the Sonoma CL	135	49	15	185	70	337	624	9	**1,424**
	5-SR 29 at Lake CL	58	8	0	46	8	404	7	292	**824**
	Total	**1,723**	**841**	**270**	**17,464**	**12,780**	**18,803**	**3,902**	**11,203**	**66,986**

TABLE 21
DAILY FRIDAY VEHICLE TRIPS INTO NAPA COUNTY FROM MAJOR EXTERNAL GATEWAYS

Total: 69,863		Destination Location								
		Calistoga	St. Helena	Yountville	Napa	American Canyon	Unincorporated County	Winery	External Gateway	Total
Origin Location	1-SR 29 North of AC	309	217	116	4,359	9,311	5,952	471	2,606	**23,341**
	2-SR 12 at Solano CL	1,133	327	0	4,957	1,595	5,713	855	4,072	**18,652**
	7-SR 121 at Sonoma CL	37	144	507	7,032	2,686	7,687	2,703	4,519	**25,315**
	8-SR 128 east of SR 121	0	0	0	0	0	65	35	51	**150**
	6-SR 128 at the Sonoma CL	153	107	0	217	37	603	286	9	**1,412**
	5-SR 29 at Lake CL	75	0	0	70	0	493	53	302	**992**
	Total	**1,707**	**795**	**622**	**16,634**	**13,630**	**20,513**	**4,403**	**11,559**	**69,863**

TABLE 22
DAILY SATURDAY VEHICLE TRIPS INTO NAPA COUNTY FROM MAJOR EXTERNAL GATEWAYS

Total: 46,654		Destination Location								
		Calistoga	St. Helena	Yountville	Napa	American Canyon	Unincorporated County	Winery	External Gateway	Total
Origin Location	1-SR 29 North of AC	205	144	77	2,896	6,185	3,954	313	1,787	**15,561**
	2-SR 12 at Solano CL	752	217	0	3,293	1,059	3,795	568	2,792	**12,477**
	7-SR 121 at Sonoma CL	25	96	337	4,671	1,785	5,107	1,796	3,098	**16,912**
	8-SR 128 east of SR 121	0	0	0	0	0	43	23	35	**101**
	6-SR 128 at the Sonoma CL	101	71	0	144	25	400	190	6	**938**
	5-SR 29 at Lake CL	50	0	0	46	0	328	35	207	**665**
	Total	**1,134**	**528**	**413**	**11,050**	**9,054**	**13,626**	**2,925**	**7,924**	**46,654**

Inter-Regional Trips

For inter-regional trips, StreetLight data was able to provide the county of origin and destination for trips that started or ended outside of Napa County, which is typically very difficult to obtain but required for SB 375

compliance. They were also able to provide the specific external gateway the inter-regional trip passed through, a very important step in understanding Napa County inter-regional travel. The percent of inter-regional trips to/from Napa County by county and external gateway are provided in **Appendix E**.

Pass-Through Inter-Regional Trips

A comparison of final mobile device data pass-through inter-regional trips to pass-through inter-regional trips calculated based on license plate matching as discussed in Chapter 4 is presented in **Table 23** and indicate the final mobile device data very closely resemble Friday license plate matching from Chapter 4.

TABLE 23
COMPARISON OF PASS-THROUGH INTER-REGIONAL TRIPS

Vehicle Type	Mobile Device Data			Friday License Plate Matching Data
	Monday to Thursday	Friday	Saturday	
Personal Automobile	11,203	11,559	7,924	10,590
Commercial Vehicles	617	638	190	1,035
Total	11,820	12,197	8,114	11,625

SEASONAL VARIATION

According to VisitNapaValley.com research statistics, approximately 2.94 million people visited Napa County in 2012[1]. However, due to the distinct "growing" and "harvesting" seasons visitation can vary widely by month of the year. This seasonal variation can be observed and quantified by obtaining mobile device data for various months of the year. As part of the Napa County Travel Behavior Study, mobile device data was obtained for March and June of 2013 and compared to the mobile device data obtained for September/October of 2013. A summary of March 2013 and June 2013 trip data is provided in **Table 24** and **Table 25**, respectively, along with a comparison of average Monday to Thursday weekday, Friday, and Saturday trip data to Friday trip data from September/October 2013.

[1] http://www.visitnapavalley.com/research_statistics.htm

TABLE 24
MARCH 2013 SEASONAL VARIATION

Trip Purpose	March 2013 Trip Data			Comparison to Friday Trip Data from September/October 2013		
	Monday to Thursday Trips	Friday Trips	Saturday Trips	Monday to Thursday Change	Friday Change	Saturday Change
Total	317,181	329,164	153,414	-11%	-7%	-57%
Internalized	25,728	24,773	9,005	1%	-3%	-65%
Home-Based Work	58,581	61,044	10,300	-7%	-3%	-84%
Home-Based Other	56,130	56,353	15,549	-3%	-3%	-73%
Non Home-Based	48,309	51,663	6,207	-9%	-3%	-88%
Winery	29,454	33,537	47,469	-40%	-32%	-4%
Imported Trip	63,546	65,244	33,595	-6%	-4%	-51%
Exported Trip	35,433	36,549	31,290	-7%	-4%	-18%

TABLE 25
JUNE 2013 SEASONAL VARIATION

Trip Purpose	June 2013 Trip Data			Comparison to Friday Trip Data from September/October 2013		
	Monday to Thursday Trips	Friday Trips	Saturday Trips	Monday to Thursday Change	Friday Change	Saturday Change
Total	313,932	326,615	159,785	-12%	-8%	-55%
Internalized	23,076	22,219	8,076	-10%	-13%	-68%
Home-Based Work	52,542	54,751	9,238	-17%	-13%	-85%
Home-Based Other	50,343	50,544	13,946	-13%	-13%	-76%
Non Home-Based	43,329	46,337	5,567	-19%	-13%	-90%
Winery	36,384	41,428	51,989	-26%	-16%	5%
Imported Trip	69,504	71,361	36,745	2%	5%	-46%
Exported Trip	38,755	39,976	34,223	2%	5%	-10%

MAPPING OF THE FINAL MOBILE DEVICE ORIGIN-DESTINATION TRIP TABLES

As shown in **Table 14**, the mobile device data collection effort provided trip making characteristics for over 867,000 daily trips, which was then used to create 108 stratified origin-destination trip tables, each consisting of approximately 440,000 cells of trips. While this data had advantages over the other four data collection methods, such as having a very large sample size at a relatively low cost per sample and being less reliant on observed field data and user responses which can potentially introduce error, the method required a lot of inference and lacked the ability to directly obtain demographic characteristics. However, given that the data was aggregated to origin-destination trips tables consistent with the NSTDM TAZ system, demographic data can be inferred for observed trips based on census data or other available sources of demographic information.

Trip making characteristics for over 867,000 daily trips

Due to the overwhelming amount of data, it was imperative to develop an innovative and meaningful way to display the results.

Heat Maps

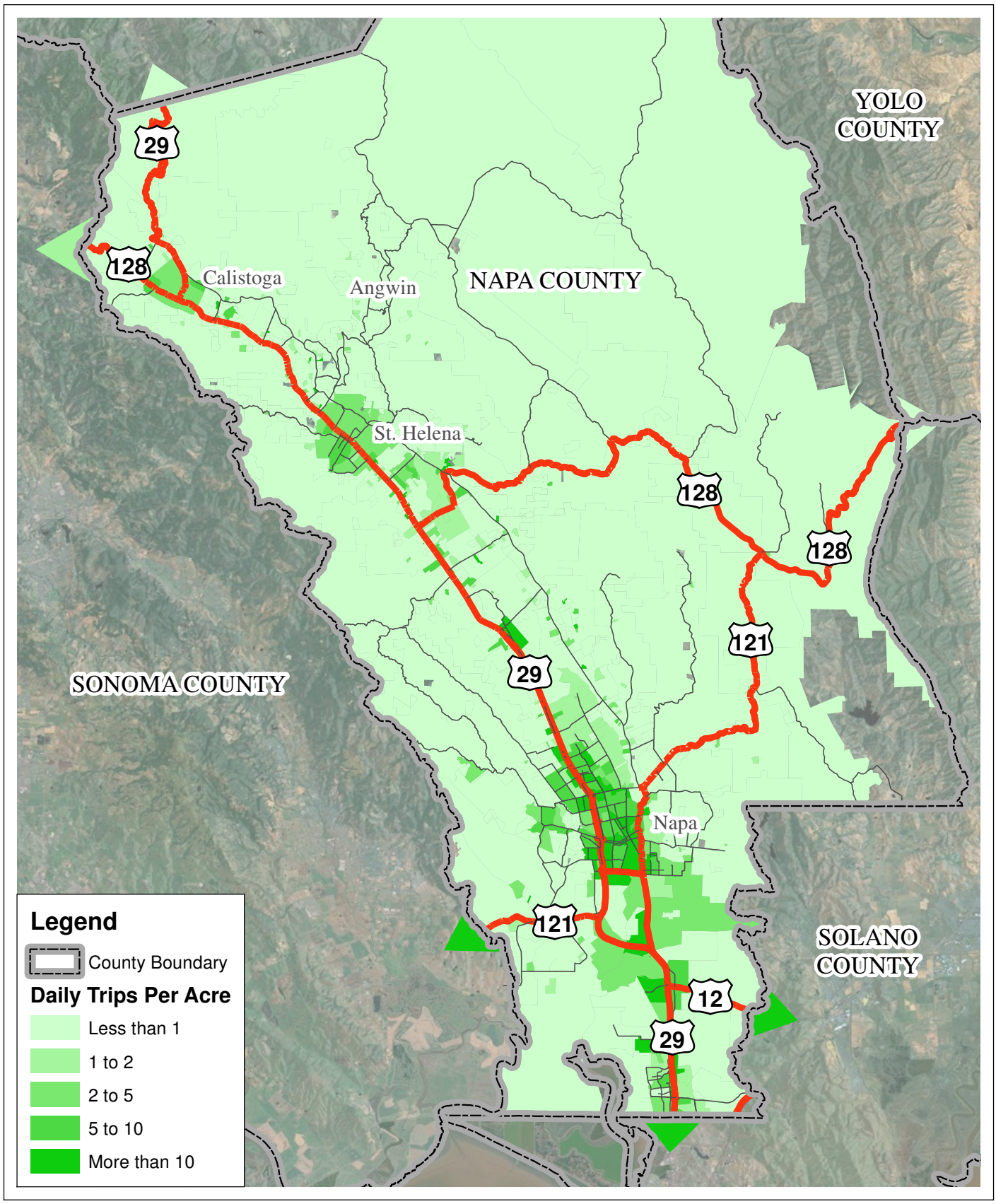
The trip origin and trip destination information from the mobile device data collection effort was used to create various heat maps showing the relative magnitude of trips generated by each TAZ. The relative magnitude of Friday daily trip origins is shown on **Figure 3**.

While heat maps provide an effective way to display the relative magnitude of trip generation, they are unable to display the directionality and overall pattern of the generated trips. Therefore, a series of desire line maps were also created to supplement this information.

County of Origin Maps

The trip origin and trip destination information from the mobile device data collection effort was also used to create county of origin maps for each of the six major external gateways locations. These maps show the percentage of total trips that passed through each external gateway by the county the observed inbound trip originated. For example, **Figures 4** illustrates that based on the mobile device data 44% of inbound trips on SR 29 North of American Canyon Road originated in Solano County while 18% originated in Contra Costa County. County of origin maps for each of the six major external gateway locations listed below are shown on **Figures 4 through 9**.

- Location 1: SR 29 – North of American Canyon Road
- Location 2: SR 12 - Napa/Solano County Line
- Location 7: SR 121 – Sonoma/Napa County Line
- Location 8: SR 128 - East of SR 121
- Location 6: SR 128 – Sonoma/Napa County Line
- Location 5: SR 29 – Napa/Lake County Line



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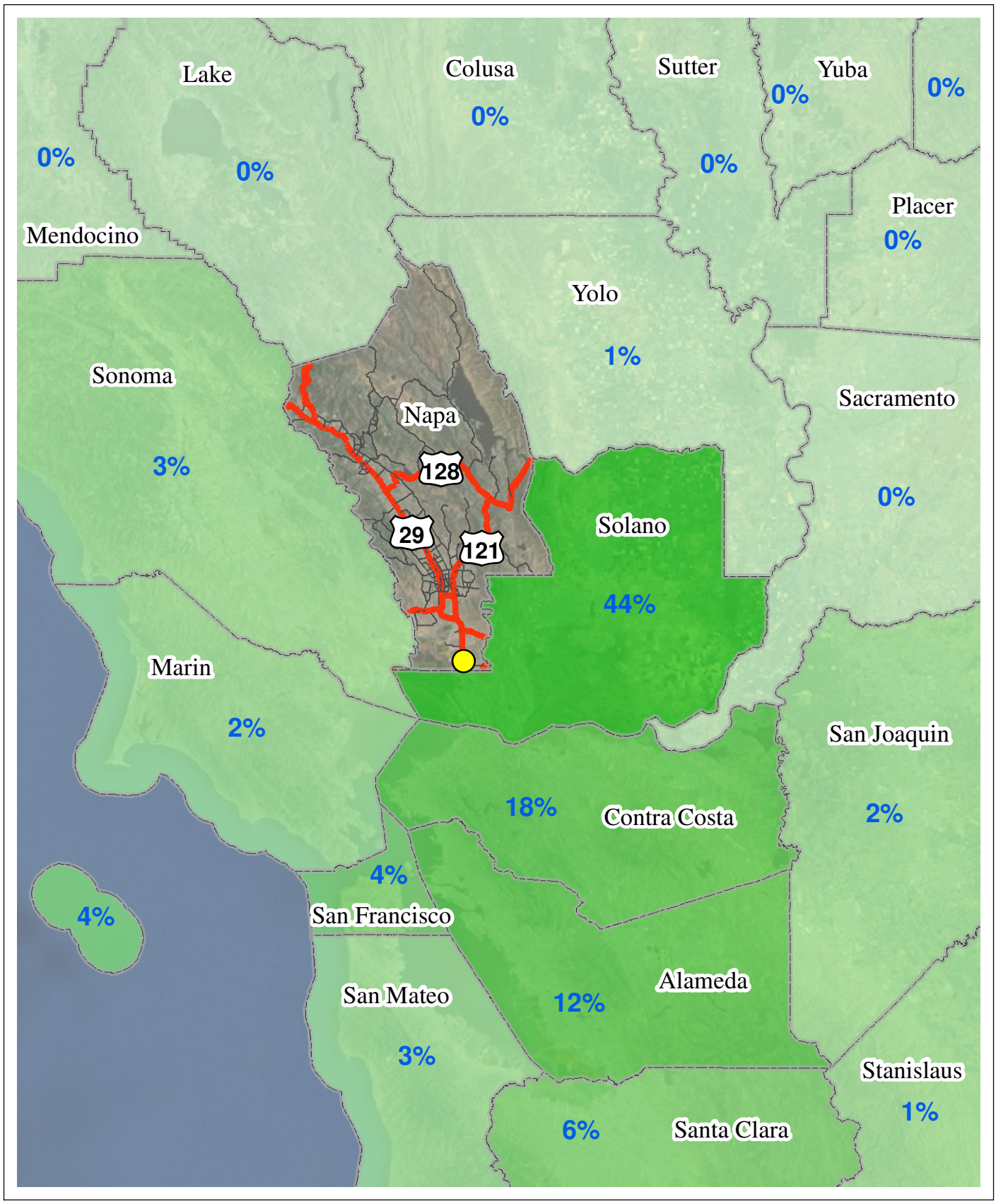
HEAT MAP OF FRIDAY DAILY TRIP ORIGINS
NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 3



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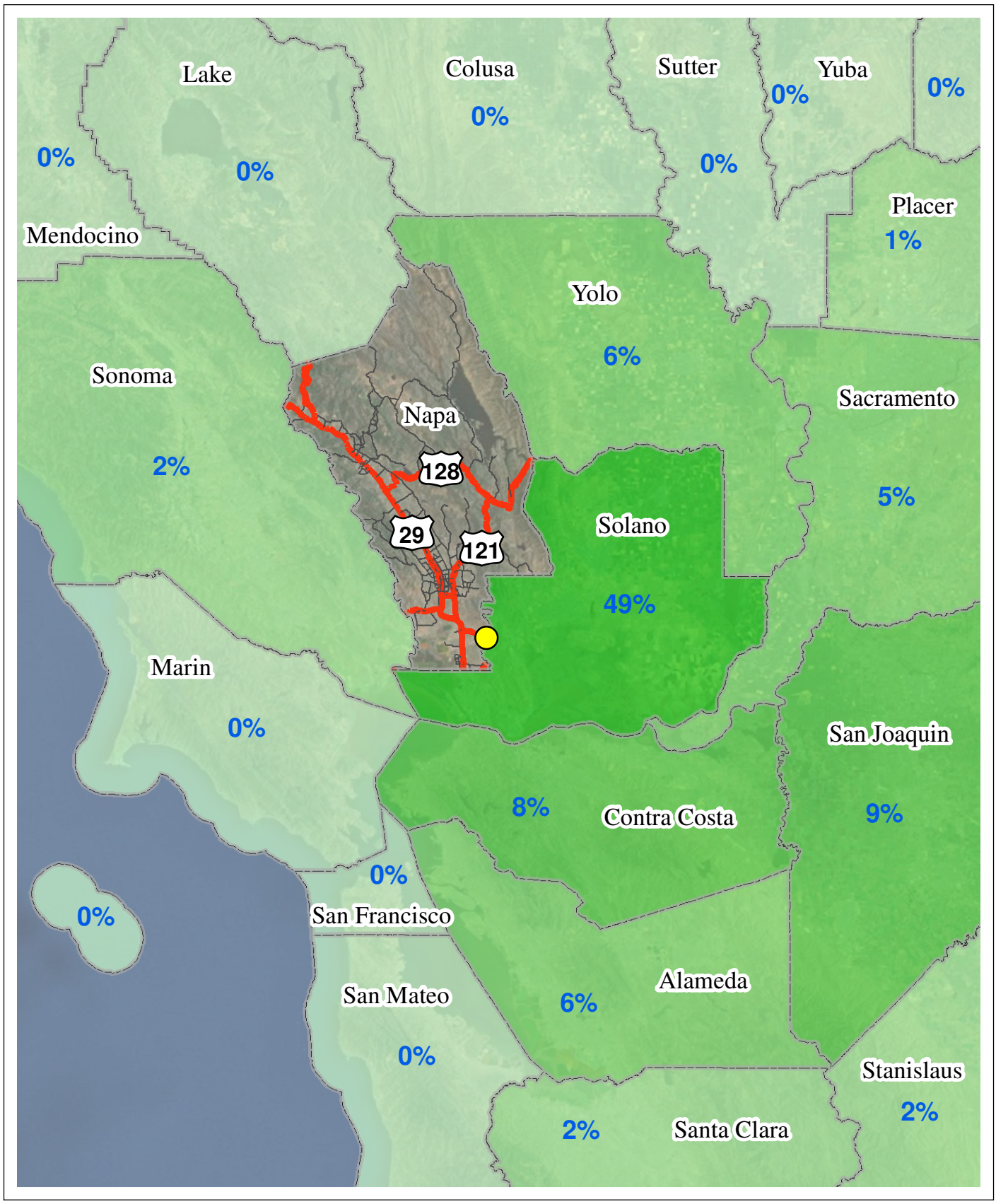
Not to Scale

COUNTY OF ORIGIN FOR TRIPS ON SR 29 NORTH OF AMERICAN CANYON ROAD

FEHR & PEERS

NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 4



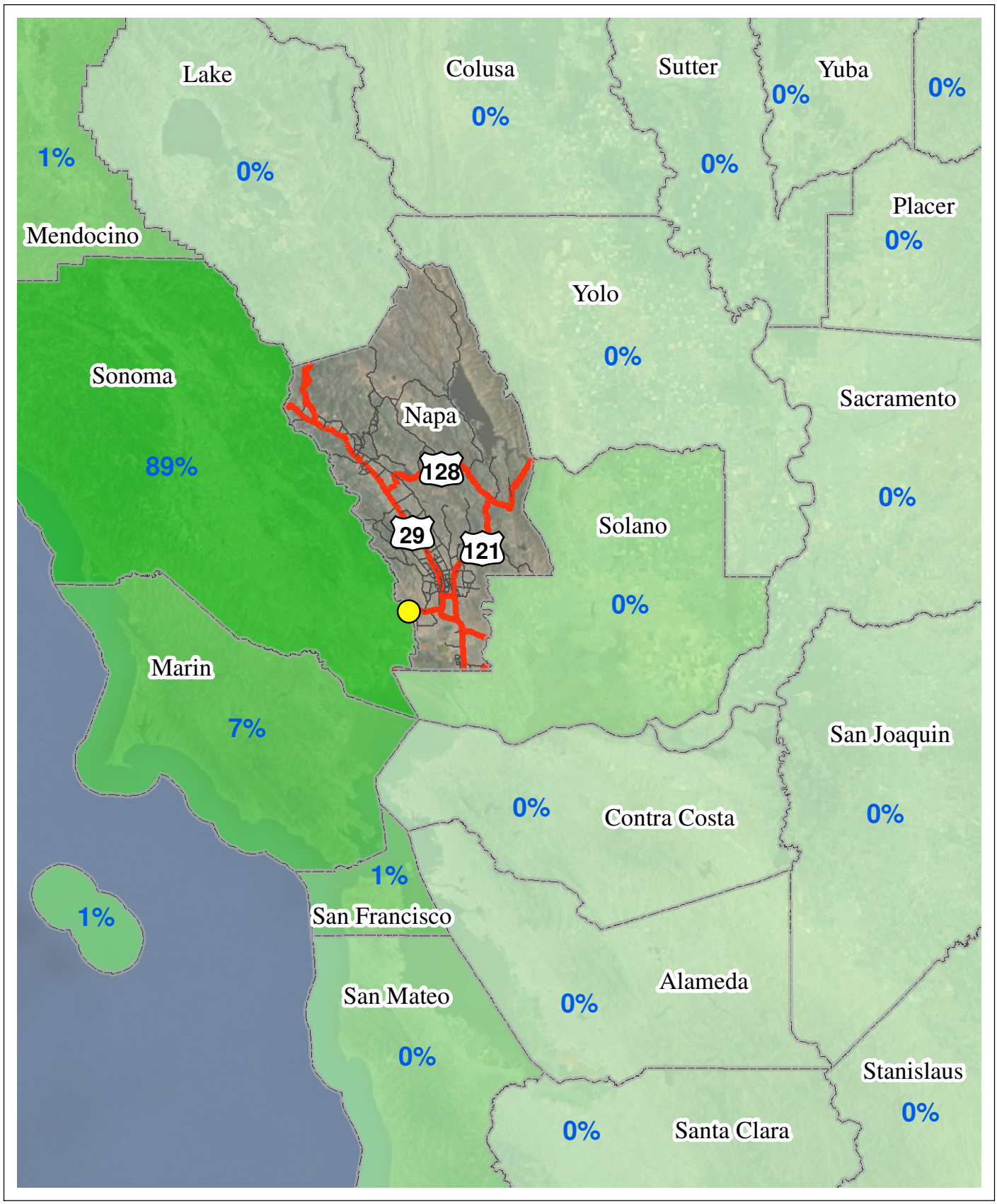
Not to Scale

COUNTY OF ORIGIN FOR TRIPS ON SR 12 AT THE NAPA/SOLANO COUNTY LINE

NAPA VALLEY TRAVEL BEHAVIOR STUDY

FEHR PEERS

FIGURE 5



N

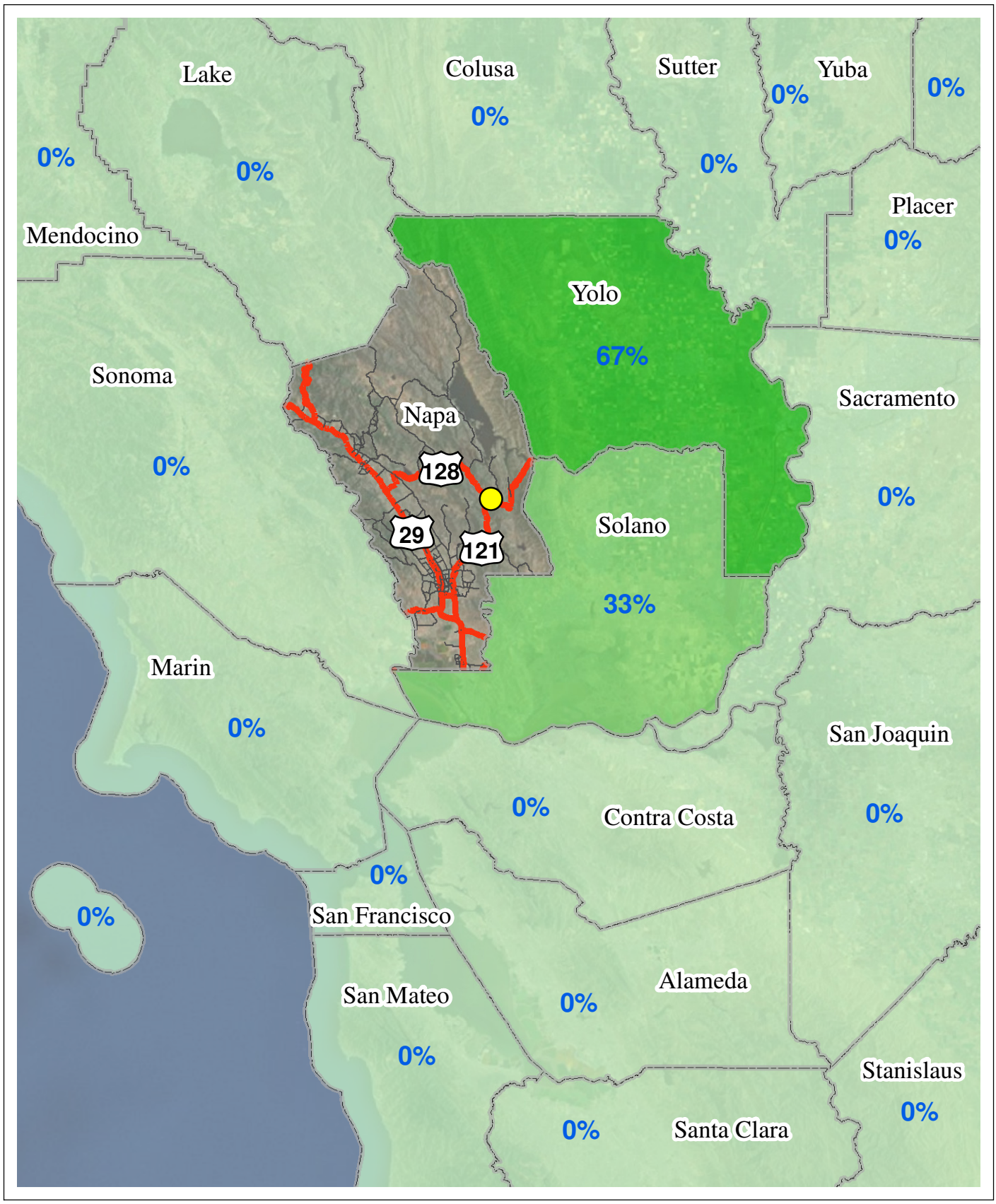
Not to Scale

COUNTY OF ORIGIN FOR TRIPS ON SR 121 AT THE NAPA/SONOMA COUNTY LINE

FEHR PEERS

NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 6



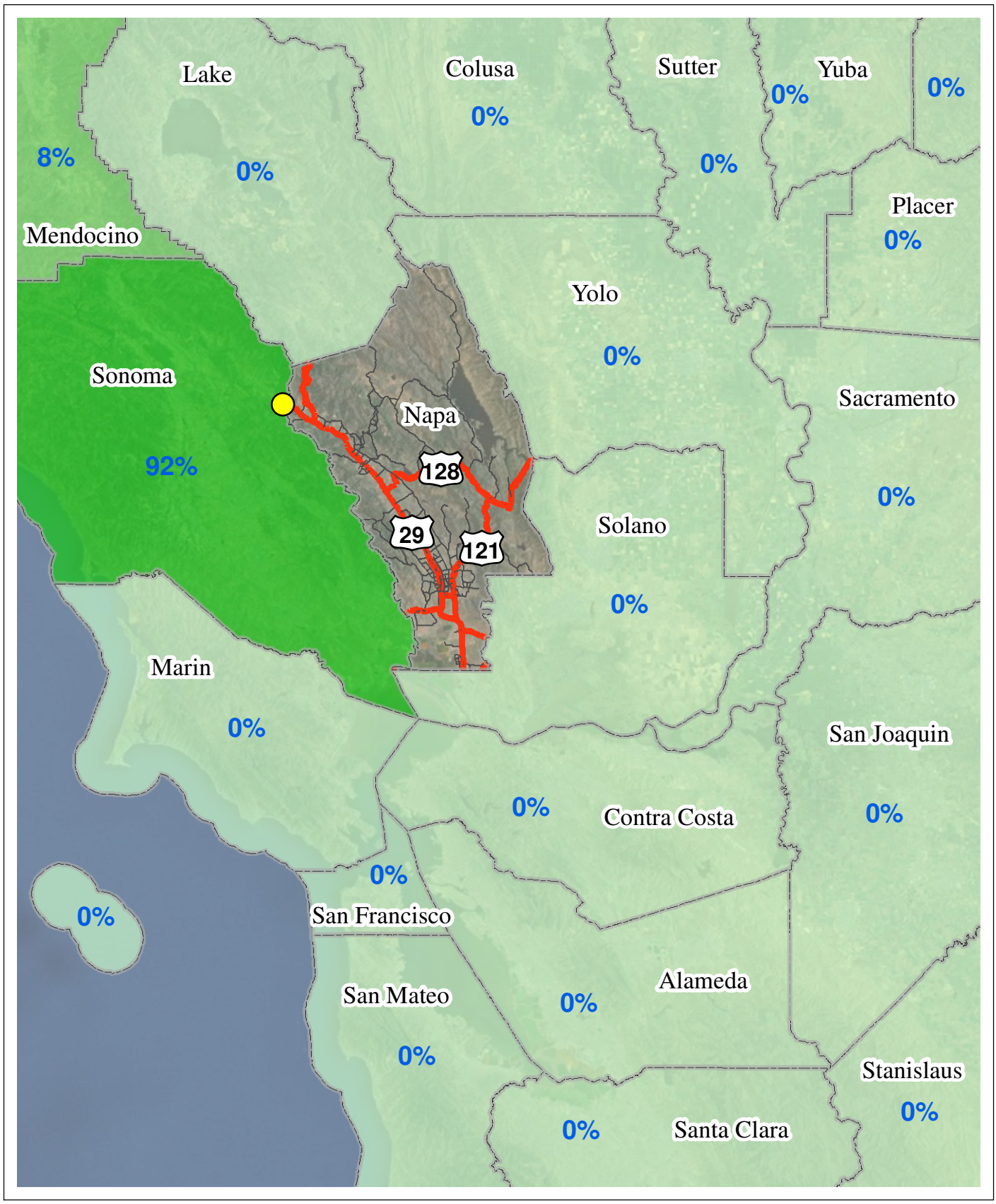
Not to Scale

FEHR PEERS

COUNTY OF ORIGIN FOR TRIPS ON SR 128 EAST OF SR 121

NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 7



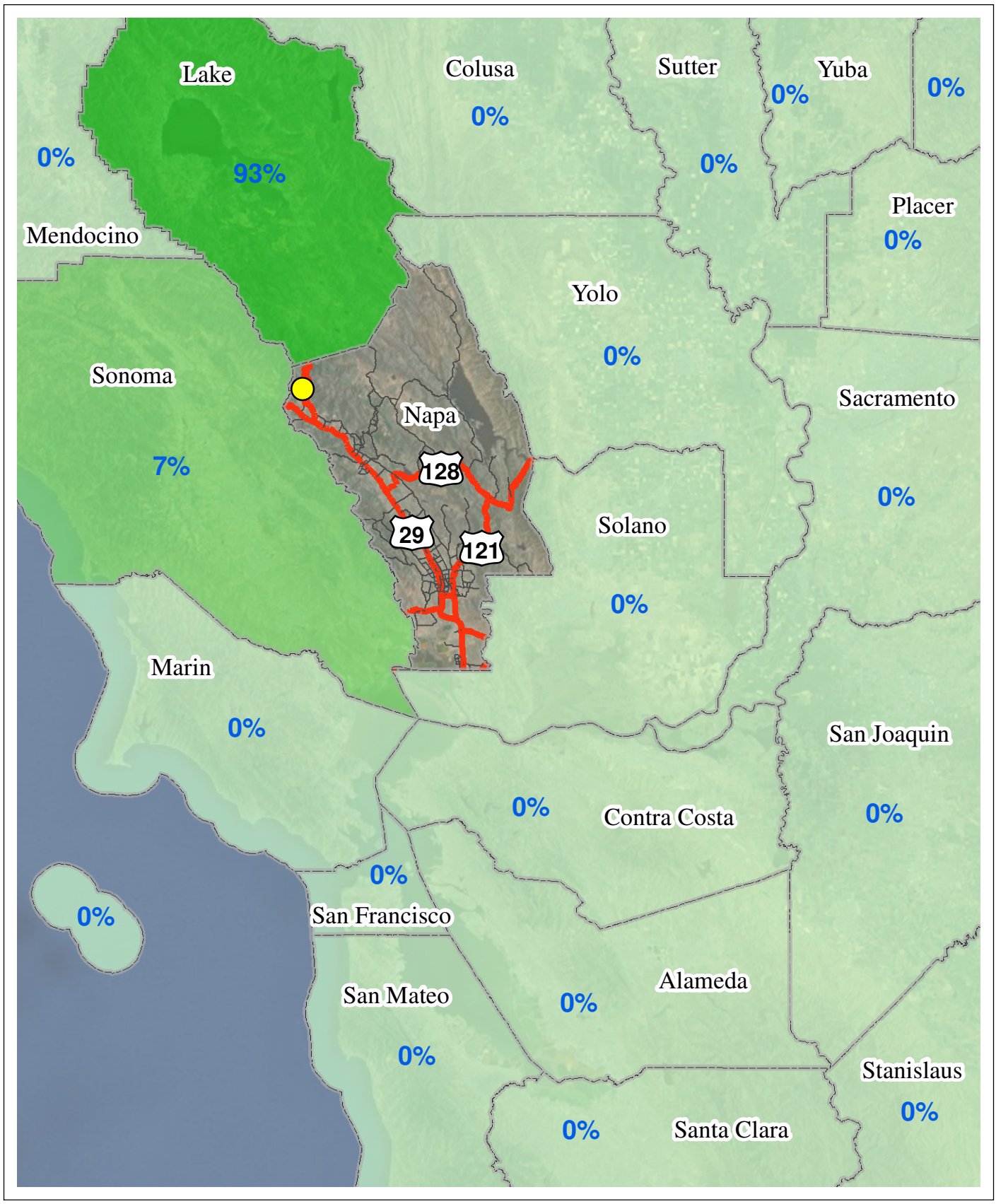
N
Not to Scale

COUNTY OF ORIGIN FOR TRIPS ON SR 128 AT THE NAPA/SONOMA COUNTY LINE

FEHR PEERS

NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 8



N

Not to Scale

COUNTY OF ORIGIN FOR TRIPS ON SR 29 AT THE NAPA/LAKE COUNTY LINE

NAPA VALLEY TRAVEL BEHAVIOR STUDY

FEHR PEERS

FIGURE 9

7. CONCLUSIONS

SUMMARY OF STUDY APPROACH

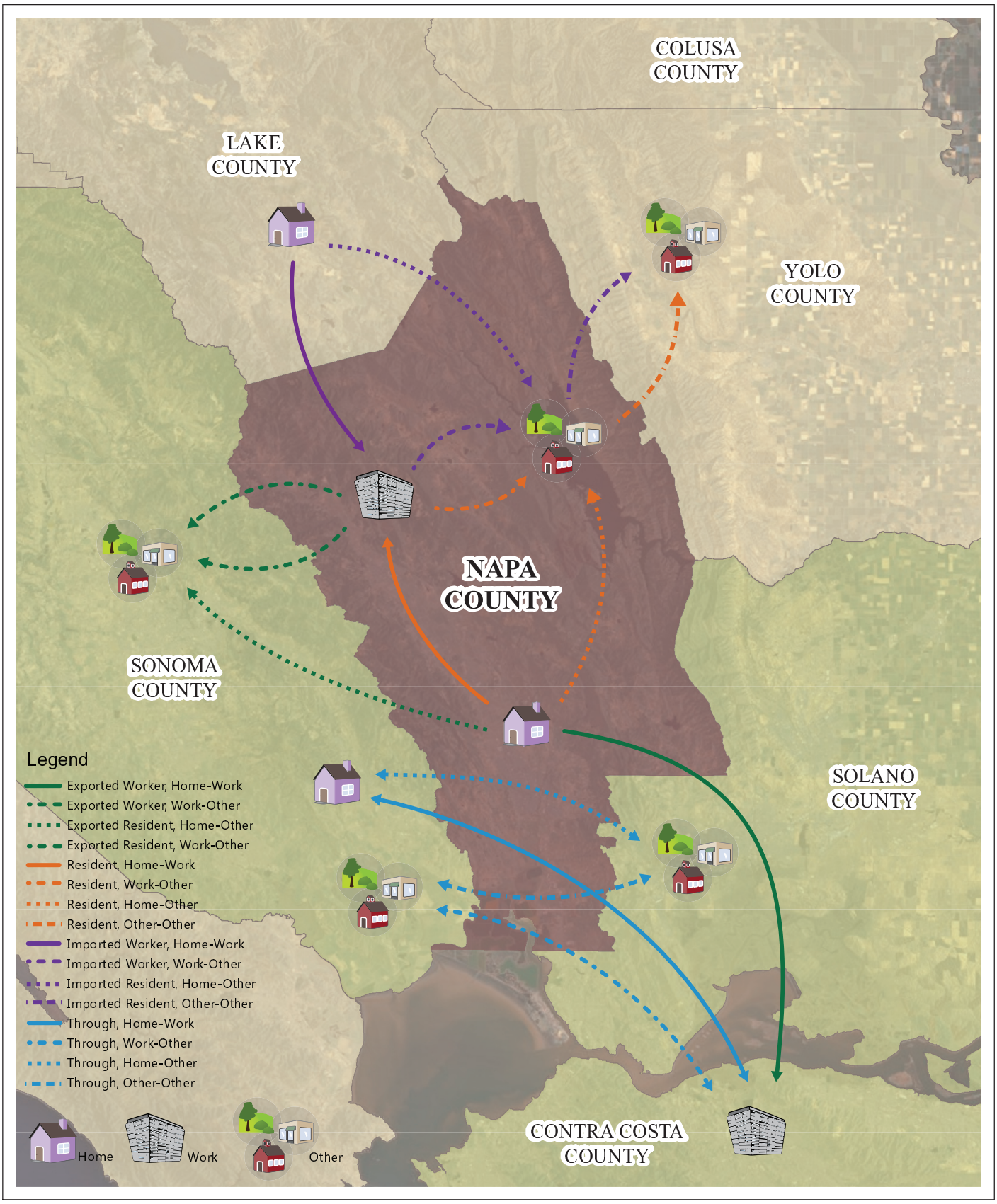
The vehicle classification count data collected as part of the Napa County Travel Behavior Study provided the total number of vehicles (by class and time period) passing through each of the Napa County regional external gateways and on four roadways within Napa County, providing a control total for other data collection methods but very little information about the travel characteristics or demographic information of the observed trips. Winery regression analysis was also performed to predict the total winery trip generation within Napa County, providing an additional control total for other data collection methods.

When coupled with license plate matching data, limited trip type information was inferred based on the number of observations, direction of travel, and time of day. For instance, the number of through trips was identified when license plates were observed at two different regional external gateways. Likewise, a rough estimate of exported trips was obtained when license plate numbers were observed leaving the region in the morning and returning through the same regional gateway in the late afternoon or evening. However, only limited information on inter-regional travel was obtained, while no information was obtained about trips that had their origin and destination within Napa County or about the demographic characteristics of the driver and their household.

In order to gather more detailed travel characteristics for all types of trips that occur within Napa County, three types of surveys were conducted. An in-person survey was conducted at 13 wineries in Napa County, an online survey was provided to major employers in Napa County, and a vehicle intercept mail survey was conducted. The surveys provided detailed information on the trip making and travel characteristics of a sample of residents, visitors, winery patrons, students, and employees who live, work, and visit Napa County. However, as discussed in Chapter 5, the surveys provided a limited amount of sample data at a very high cost with a high potential for error.

When combined, the four data collection methods provided valuable, but limited, information regarding the imported, exported, and through regional trip types illustrated on **Figure 10**, but provided limited information regarding the four types of internal resident trips. To supplement and compliment this data, mobile device data was obtained from INRIX and StreetLight Data, which provided information about all 16 regional trip types illustrated on **Figure 10**. While this data had advantages over the other four data collection methods, such as having a very large sample size at a relatively low cost per sample and being less reliant on observed field data and user responses which can potentially introduce error, the method required a lot of inference and lacked the ability to obtain demographic characteristics.

Therefore, data from all five data collection methods was used, with the data for each individual method being compiled into separate datasets for comparison with and integration into NSTDM. The resulting data was provided in a format nearly identical to trip tables from the NSTDM, and offered a substantial amount of real-life origin and destination-level travel data to supplement the CHTS for base year calibration and validation purposes.



N

Not to Scale

FEHR PEERS

REGIONAL TRIP TYPES CAPTURED

NAPA VALLEY TRAVEL BEHAVIOR STUDY

FIGURE 10

CONCLUSIONS

The Napa County Travel Behavior Study provides NCTPA with several data sets. The resulting data will provide NCTPA and its member jurisdictions the basis for future planning efforts. Such uses may include but are not limited to the refinement of the Napa-Solano Travel Demand Model (NSTDM) and the update of the Countywide Transportation Plan. The data put forth in this study is to provide a data set for specific plans or projects that need baseline data. Data highlights that may be useful for future planning efforts include:

Vehicle Classification Counts

- Of the 181,330 total observed vehicles approximately 23% and 28% were counted during the 4 hour AM and PM peak periods, respectively, while approximately 6% and 7% were counted during the AM (7 to 8 AM) and PM (5 to 6 PM) peak hours, respectively.
- In the AM Peak Period (6 to 10 AM) 58% of total trips are inbound (including pass-through trips).
- In the PM Peak Period (3 to 7 PM) 56% of total trips are outbound (including pass-through trips).

Winery Regression Analysis

- The winery regression analysis estimated total daily vehicles trip generation of all wineries in Napa County is 52,245 for Thursday, 62,217 for Friday, and 54,713 for Saturday.

License Plate Matching

- Approximately 9% of daily trips at Napa County external gateways are pass-through trips.
- 41% of daily trips are imported trips and 27% are exported trips.
- 25% of traffic coming in to Napa County is imported work trips.
- 23% of traffic was one-way (it can be assumed that a portion of this traffic is visitors to the county but is difficult to quantify based solely on license plate matching).
- A vast majority (approximately 52%) of Napa County pass-through traffic travels between SR 121 at the Napa/Sonoma county line and SR 12 at the Napa/Solano county line. Approximately 22% and 28% of daily pass-through trips between these two locations occur during the AM (6 to 10 AM) and PM (3 PM to 7 PM) peak periods, respectively.
- In the AM Peak Period (6 to 10 AM) 56% of total trips are inbound (including pass-through trips), very closely matching the vehicle classification count data.
- In the PM Peak Period (3 to 7 PM) 56% of total trips are outbound (including pass-through trips), very closely matching the vehicle classification count data.

- It was estimated that 21% of total daily trips into Napa County were "visitor" trips, a number four percentage points higher than the percentage of visitor trips from the vehicle intercept survey. However, visitors to Napa County are likely underrepresented in the vehicle intercept survey as potential respondents who live or work in Napa County are generally considered to be more likely to complete the survey.

Surveys

- Only 21% of winery patrons were from the Bay Area, 10% of patrons were from outside the United States.
- 35% of winery patrons started their day in Napa County, 23% of patrons started their day in San Francisco County.
- 71% of employer survey respondents live in Napa County.
- 51% of employer survey respondents live in the City of Napa.
- 32% of employer survey respondents live and work in the City of Napa.
- 61% of employer survey respondents use SR 29 to travel to work.
- 20% of employee survey respondents said they carpooled in one form or another.
- 35% of employee survey respondents said they have flexible schedules that allow them to alter their commute times.
- 43% of employee survey respondents said they would use public transit if services was expanded and it became a reasonable option.
- 97% of employee survey respondents use their personal automobile to commute more than half the time.
- 37% of vehicle intercept survey trips ended in the City of Napa, 19% in the city of St. Helena, and 7% in the city of Calistoga.
- 17% of vehicle intercept survey respondents said they were visitors to Napa County. However, visitors to Napa County are likely underrepresented as potential respondents who live or work in Napa County are generally considered to be more likely to complete the survey.
- 21% of vehicle intercept survey trips were said to be made "less than one time per month", likely indicating visitor trips, consistent with the license plate matching data.
- Sonoma , Solano, Lake, and Contra Costa are the counties where most trips are originating.

Mobile Device Data

- 55% of trips had both their origin and their destination within Napa County.
- 9% of trips were pass-through trips, consistent with the license plate matching data.
- Approximately 345,000, 362,000, and 160,000 daily personal automobile vehicle trips were generated within Napa County on an average Monday to Thursday weekday, Friday, and Saturday, respectively.
- Approximately 16,900, 17,600, and 5,200 daily commercial vehicle trips were generated within Napa County on an average Monday to Thursday weekday, Friday, and Saturday, respectively.

APPENDIX A:
VEHICLE CLASSIFICATION COUNTS

Appendix A - Vehicle Classification Counts Tabular Summary

1) SR 29 – North of American Canyon Rd		Northbound (Inbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	25,607	204	96	95	148	386	1,005	1,771	1,588	1,421	1,451	1,447	1,487	1,582	1,685	1,639	1,496	1,721	1,537	1,238	959	878	706	701	366
Medium	656	0	3	4	2	13	24	39	60	59	81	61	55	49	39	52	36	24	13	12	13	4	1	4	8
Heavy	580	4	6	1	6	17	24	51	53	39	52	74	31	63	39	34	24	17	12	12	3	8	6	2	2
Bus	75	0	0	0	0	0	1	2	4	5	7	11	4	3	7	2	9	5	2	7	1	1	3	0	1
'Pedal Bike (Road)'	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	63	0	0	0	0	0	0	1	5	5	0	1	8	5	9	10	6	7	4	1	1	0	0	0	0
1) SR 29 – North of American Canyon Rd NB	**26,982**	**208**	**105**	**100**	**156**	**416**	**1,054**	**1,864**	**1,710**	**1,530**	**1,591**	**1,594**	**1,585**	**1,702**	**1,779**	**1,737**	**1,571**	**1,774**	**1,568**	**1,270**	**977**	**891**	**716**	**707**	**377**
Caltrans 2011 Two-Way AADT Count Divided by 2	21,500									AM Peak Period	*6,695*								PM Peak Period	*6,183*					

1) SR 29 – North of American Canyon Rd		Southbound (Outbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	24,560	316	164	106	153	241	496	771	983	1,119	1,154	1,254	1,328	1,496	1,542	1,780	1,792	1,747	1,774	1,856	1,275	925	807	845	636
Medium	578	1	1	1	0	11	23	31	25	42	46	64	47	54	57	33	29	44	32	16	10	7	3	1	0
Heavy	621	2	4	2	2	13	25	30	29	47	51	62	69	55	60	41	49	27	12	15	15	2	3	2	4
Bus	101	1	0	0	0	3	3	8	4	4	10	4	4	14	4	8	8	7	8	3	3	1	0	4	0
'Pedal Bike (Road)'	2	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	37	0	0	0	0	0	0	3	0	3	4	4	2	2	3	0	6	6	4	0	0	0	0	0	0
1) SR 29 – North of American Canyon Rd SB	**25,899**	**320**	**169**	**109**	**155**	**268**	**547**	**843**	**1,041**	**1,215**	**1,265**	**1,388**	**1,450**	**1,622**	**1,667**	**1,862**	**1,884**	**1,831**	**1,830**	**1,890**	**1,303**	**935**	**813**	**852**	**640**
Caltrans 2011 Two-Way AADT Count Divided by 2	21,500									AM Peak Period	*4,364*								PM Peak Period	*7,435*					

2) SR 12 - Napa/Solano County Line		Westbound (Inbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	14,534	51	45	37	78	224	772	1,145	1,065	854	883	837	851	790	897	790	785	795	1,001	842	506	421	359	330	176
Medium	398	0	1	2	14	7	15	58	16	30	30	49	38	29	37	10	27	13	3	9	3	0	4	2	1
Heavy	774	5	4	6	5	18	46	64	66	69	89	91	77	77	46	15	8	22	21	16	16	3	4	4	2
Bus	24	0	1	0	0	0	3	3	1	3	1	1	1	2	1	2	0	2	0	1	0	0	1	0	1
'Pedal Bike (Road)'	5	0	0	1	0	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	29	0	0	0	0	1	0	2	3	2	0	3	5	3	2	3	1	3	0	1	0	0	0	0	0
2) SR 12 - Napa/Solano County Line WB	**15,764**	**56**	**51**	**46**	**97**	**250**	**836**	**1,272**	**1,154**	**958**	**1,003**	**982**	**972**	**901**	**983**	**820**	**821**	**835**	**1,025**	**869**	**525**	**424**	**368**	**336**	**180**
Caltrans 2011 Two-Way AADT Count Divided by 2	15,750									AM Peak Period	*4,387*								PM Peak Period	*3,550*					

2) SR 12 - Napa/Solano County Line		Eastbound (Outbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	14,489	85	54	51	60	116	264	594	764	694	699	725	834	852	1,003	1,034	1,052	1,045	1,162	1,131	888	408	318	351	305
Medium	373	2	2	3	2	5	5	10	19	22	27	32	35	39	42	33	33	13	13	16	6	6	4	3	1
Heavy	939	10	6	9	19	28	20	35	29	62	72	73	117	97	69	72	47	48	50	31	19	16	2	7	1
Bus	24	0	0	0	0	0	0	1	0	0	0	1	1	1	4	3	5	3	1	2	0	0	0	2	0
'Pedal Bike (Road)'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	50	0	0	0	0	0	0	0	4	2	2	4	4	4	5	7	6	4	5	2	0	1	0	0	0
2) SR 12 - Napa/Solano County Line EB	**15,875**	**97**	**62**	**63**	**81**	**149**	**289**	**640**	**816**	**780**	**800**	**835**	**991**	**993**	**1,123**	**1,149**	**1,143**	**1,113**	**1,231**	**1,182**	**913**	**431**	**324**	**363**	**307**
Caltrans 2011 Two-Way AADT Count Divided by 2	15,750									AM Peak Period	*3,036*								PM Peak Period	*4,669*					

3) SR 29 – Southeast of Adams St in St. Helena		Northbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	7,759	47	38	20	13	35	89	354	486	477	478	491	457	475	485	473	500	457	504	426	337	310	350	273	184
Medium	255	0	0	1	4	5	16	16	25	17	27	29	27	21	19	17	11	9	3	2	1	1	4	0	0
Heavy	113	1	0	1	0	1	5	6	16	6	9	14	12	9	6	10	7	4	0	4	1	1	0	0	0
Bus	55	0	0	1	0	1	2	5	5	4	3	1	5	2	0	4	3	5	4	3	3	1	2	1	0
'Pedal Bike (Road)'	10	0	0	0	0	0	0	0	0	1	1	1	1	1	0	1	1	3	0	0	0	0	0	0	0
'Motor Bike'	15	0	0	0	0	0	0	1	0	0	2	1	3	1	3	1	2	1	0	0	0	0	0	0	0
3) SR 29 – Southeast of Adams St in St. Helena NB	**8,207**	**48**	**38**	**23**	**17**	**42**	**112**	**382**	**532**	**505**	**520**	**537**	**505**	**509**	**513**	**506**	**524**	**479**	**511**	**435**	**342**	**313**	**356**	**274**	**184**
Caltrans 2011 Two-Way AADT Count Divided by 2	8,950									AM Peak Period	*1,939*								PM Peak Period	*1,949*					

Appendix A - Vehicle Classification Counts Tabular Summary

3) SR 29 – Southeast of Adams St in St. Helena		Southbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	7,266	50	15	14	14	36	117	270	444	448	425	457	434	511	498	472	445	462	581	506	375	224	161	161	146
Medium	238	0	0	0	2	4	8	20	28	21	17	19	31	23	13	16	12	7	7	3	5	1	0	1	0
Heavy	123	1	0	0	3	1	5	4	12	11	8	12	16	6	14	6	6	6	6	3	3	0	0	0	0
Bus	58	0	0	0	0	0	1	1	6	4	3	4	0	3	4	2	8	3	7	3	2	2	2	3	0
'Pedal Bike (Road)'	10	0	0	0	0	0	1	0	0	0	2	4	1	0	0	0	0	1	0	0	0	0	0	1	0
'Motor Bike'	15	0	0	0	0	0	0	1	1	0	0	1	1	3	3	3	2	0	0	0	0	0	0	0	0
3) SR 29 – Southeast of Adams St in St. Helena SB	**7,710**	**51**	**15**	**14**	**19**	**41**	**132**	**296**	**491**	**484**	**455**	**497**	**483**	**546**	**532**	**499**	**473**	**479**	**601**	**515**	**385**	**227**	**163**	**166**	**146**
Caltrans 2011 Two-Way AADT Count Divided by 2	8,950								AM Peak Period		*1,726*								PM Peak Period		*2,068*				

4) SR 29 – Southeast of SR 128 in Calistoga		Northbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	6,305	32	22	15	4	13	45	119	204	295	291	303	352	418	428	478	618	678	660	405	243	192	193	161	136
Medium	206	1	0	0	1	3	3	10	27	9	8	23	25	22	14	16	10	15	6	4	2	0	4	0	3
Heavy	83	1	0	0	0	1	9	3	4	4	16	7	7	6	3	4	1	6	3	4	0	3	1	0	0
Bus	41	0	0	0	0	0	0	2	6	3	1	2	2	3	1	2	2	6	0	6	3	0	1	1	0
'Pedal Bike (Road)'	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
'Motor Bike'	9	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	0	2	1	0	0	0	0	0	0
4) SR 29 – Southeast of SR 128 in Calistoga NB	**6,646**	**34**	**22**	**15**	**5**	**17**	**57**	**134**	**242**	**311**	**317**	**336**	**386**	**451**	**446**	**502**	**631**	**707**	**671**	**419**	**248**	**195**	**199**	**162**	**139**
Caltrans 2011 Two-Way AADT Count Divided by 2	6,250								AM Peak Period		*1,004*								PM Peak Period		*2,428*				

4) SR 29 – Southeast of SR 128 in Calistoga		Southbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	6,114	18	7	11	10	37	137	458	585	538	392	377	351	374	398	388	406	385	387	292	184	106	105	113	55
Medium	189	0	0	1	1	4	8	11	20	15	18	15	20	13	12	8	9	6	3	13	4	6	0	2	0
Heavy	75	1	1	0	2	4	1	3	7	9	6	5	10	4	4	2	6	1	2	3	3	1	0	0	0
Bus	42	0	0	0	0	0	1	3	6	1	4	1	1	2	3	2	6	5	3	3	0	0	0	1	0
'Pedal Bike (Road)'	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	2	0	0	0	0	0	0	0
'Motor Bike'	12	0	0	0	0	0	0	0	0	1	0	1	1	0	4	5	0	0	0	0	0	0	0	0	0
4) SR 29 – Southeast of SR 128 in Calistoga SB	**6,437**	**19**	**8**	**12**	**13**	**45**	**147**	**475**	**618**	**564**	**420**	**399**	**384**	**393**	**421**	**406**	**428**	**399**	**395**	**311**	**191**	**113**	**105**	**116**	**55**
Caltrans 2011 Two-Way AADT Count Divided by 2	6,250								AM Peak Period		*2,077*								PM Peak Period		*1,533*				

5) SR 29 – Napa/Lake County Line		Southbound (Inbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	3,571	14	11	13	22	82	142	328	366	302	242	232	207	210	190	182	196	196	182	101	104	74	85	49	41
Medium	81	0	1	0	3	0	3	2	3	7	7	0	4	6	4	7	7	10	5	10	1	0	1	0	0
Heavy	50	1	0	0	1	2	2	2	2	2	4	7	5	3	5	7	3	1	1	1	0	1	0	0	0
Bus	8	0	0	0	0	0	0	2	1	1	0	0	0	0	1	1	0	1	0	0	0	0	1	0	0
'Pedal Bike (Road)'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	20	0	0	0	0	0	0	1	0	3	0	2	1	6	4	1	2	0	0	0	0	0	0	0	0
5) SR 29 – Napa/Lake County Line SB	**3,730**	**15**	**12**	**13**	**26**	**84**	**147**	**335**	**372**	**315**	**253**	**241**	**217**	**225**	**204**	**198**	**208**	**208**	**188**	**112**	**105**	**75**	**87**	**49**	**41**
Caltrans 2011 Two-Way AADT Count Divided by 2	3,700								AM Peak Period		*1,275*								PM Peak Period		*716*				

5) SR 29 – Napa/Lake County Line		Northbound (Outbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	4,096	38	24	12	5	14	26	53	76	80	119	137	162	186	218	286	370	499	566	420	261	168	161	146	69
Medium	84	0	0	0	1	0	3	4	9	5	2	5	4	4	4	3	6	9	1	11	11	0	1	1	0
Heavy	51	1	0	0	4	2	9	3	7	4	2	2	1	7	2	4	0	1	2	0	0	0	0	0	0
Bus	7	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	2	0	0	0	0	1	0
'Pedal Bike (Road)'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	17	0	0	0	0	0	0	0	0	0	1	1	8	1	3	0	0	1	0	2	0	0	0	0	0
5) SR 29 – Napa/Lake County Line NB	**4,255**	**39**	**24**	**12**	**10**	**16**	**38**	**60**	**92**	**89**	**124**	**147**	**175**	**198**	**227**	**293**	**377**	**511**	**571**	**433**	**272**	**168**	**162**	**148**	**69**
Caltrans 2011 Two-Way AADT Count Divided by 2	3,700								AM Peak Period		*365*								PM Peak Period		*1,892*				

Appendix A - Vehicle Classification Counts Tabular Summary

6) SR 128 – Sonoma/Napa County Line	Southbound (Inbound)																								
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	1,082	3	3	1	4	1	13	69	72	56	55	59	70	64	65	74	82	106	102	73	27	21	33	16	13
Medium	37	0	0	0	0	0	0	2	2	3	4	1	6	6	1	3	2	1	2	1	2	0	1	0	0
Heavy	5	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	0	0
Bus	3	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0
'Pedal Bike (Road)'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	6	0	0	0	0	0	0	0	1	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0
6) SR 128 – Sonoma/Napa County Line SB	**1,133**	**3**	**3**	**1**	**4**	**1**	**13**	**71**	**76**	**60**	**60**	**62**	**78**	**71**	**67**	**78**	**86**	**108**	**104**	**74**	**29**	**21**	**34**	**16**	**13**
Caltrans 2011 Two-Way AADT Count Divided by 2	1,275	AM Peak Period *267*															PM Peak Period *372*								

6) SR 128 – Sonoma/Napa County Line	Northbound (Outbound)																								
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	991	3	4	1	5	3	16	43	68	58	58	64	48	50	83	85	95	110	96	45	21	12	4	9	10
Medium	27	0	0	0	0	0	0	2	3	0	3	4	3	3	4	0	1	3	0	0	0	1	0	0	0
Heavy	3	0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0
Bus	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
'Pedal Bike (Road)'	5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3	0	0	0	0	0	0	0
'Motor Bike'	7	0	0	0	0	0	0	0	0	0	0	0	1	0	2	2	1	0	1	0	0	0	0	0	0
6) SR 128 – Sonoma/Napa County Line NB	**1,035**	**3**	**4**	**1**	**5**	**3**	**17**	**45**	**72**	**58**	**61**	**68**	**53**	**54**	**89**	**87**	**99**	**116**	**98**	**45**	**21**	**13**	**4**	**9**	**10**
Caltrans 2011 Two-Way AADT Count Divided by 2	1,275	AM Peak Period *236*															PM Peak Period *358*								

7) SR 121 – Sonoma/Napa County Line	Westbound (Outbound)																								
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	13,849	86	30	28	34	102	339	994	914	871	711	660	740	654	829	909	959	1,194	1,451	851	462	359	249	259	164
Medium	492	0	0	1	1	8	18	35	44	40	28	54	42	31	40	34	49	24	21	7	7	3	2	3	0
Heavy	302	4	0	1	0	3	21	35	15	20	30	34	24	19	16	16	35	17	2	2	5	2	0	0	1
Bus	44	0	0	0	1	0	1	1	1	4	4	5	1	0	2	3	7	8	1	3	1	1	0	0	0
'Pedal Bike (Road)'	3	0	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0
'Motor Bike'	44	0	0	0	0	0	0	1	4	2	4	0	3	4	1	9	4	11	1	0	0	0	0	0	0
7) SR 121 – Sonoma/Napa County Line WB	**14,734**	**90**	**30**	**30**	**36**	**113**	**379**	**1,066**	**978**	**937**	**778**	**753**	**810**	**709**	**888**	**972**	**1,054**	**1,254**	**1,476**	**863**	**475**	**365**	**251**	**262**	**165**
Caltrans 2011 Two-Way AADT Count Divided by 2	12,500	AM Peak Period *3,759*															PM Peak Period *4,647*								

7) SR 121 – Sonoma/Napa County Line	Eastbound (Inbound)																								
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	14,601	72	57	29	51	91	230	588	1,084	970	826	815	854	840	981	1,085	1,175	1,133	1,068	919	586	363	282	303	199
Medium	458	0	0	0	1	9	10	25	33	28	37	52	44	38	37	36	29	22	18	4	6	1	5	8	15
Heavy	286	0	0	1	13	8	7	21	15	21	31	20	30	21	23	21	16	10	6	2	6	3	3	5	3
Bus	45	1	0	0	1	0	0	0	5	0	2	10	3	3	1	8	4	3	1	0	0	0	1	2	0
'Pedal Bike (Road)'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	65	0	0	0	0	0	0	3	1	8	4	6	1	6	2	4	3	5	7	0	15	0	0	0	0
7) SR 121 – Sonoma/Napa County Line EB	**15,455**	**73**	**57**	**30**	**66**	**108**	**247**	**637**	**1,138**	**1,027**	**900**	**903**	**932**	**908**	**1,044**	**1,154**	**1,227**	**1,173**	**1,100**	**925**	**613**	**367**	**291**	**318**	**217**
Caltrans 2011 Two-Way AADT Count Divided by 2	12,500	AM Peak Period *3,702*															PM Peak Period *4,425*								

8) SR 128 - East of SR 121	Westbound (Inbound)																								
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	413	3	1	0	0	0	10	38	38	30	23	20	18	21	24	33	37	24	34	20	17	8	7	4	3
Medium	5	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	0	0	0	0	0
Heavy	9	0	0	0	0	0	0	0	1	2	2	0	2	0	0	1	0	0	0	1	0	0	0	0	0
Bus	4	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0
'Pedal Bike (Road)'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	14	0	0	0	0	0	0	0	0	0	0	8	2	0	2	1	1	0	0	0	0	0	0	0	0
8) SR 128 - East of SR 121 WB	**445**	**3**	**1**	**0**	**0**	**0**	**10**	**38**	**39**	**32**	**30**	**29**	**24**	**21**	**26**	**35**	**38**	**24**	**35**	**21**	**17**	**8**	**7**	**4**	**3**
Caltrans 2011 Two-Way AADT Count Divided by 2	2,275	AM Peak Period *139*															PM Peak Period *118*								

Appendix A - Vehicle Classification Counts Tabular Summary

8) SR 128 - East of SR 121		Eastbound (Outbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	637	0	0	1	0	4	7	14	18	18	14	23	22	32	29	50	104	139	91	41	9	6	7	6	2
Medium	9	0	0	0	0	0	0	0	0	2	0	1	3	1	1	0	0	0	1	0	0	0	0	0	0
Heavy	21	0	0	1	0	0	0	4	0	1	3	3	0	3	2	2	1	0	1	0	0	0	0	0	0
Bus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
'Pedal Bike (Road)'	2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0
'Motor Bike'	11	0	0	0	0	0	0	0	0	0	2	0	1	0	0	1	4	3	0	0	0	0	0	0	0
8) SR 128 - East of SR 121 EB	**680**	**0**	**0**	**2**	**0**	**4**	**7**	**18**	**18**	**21**	**19**	**27**	**27**	**36**	**32**	**53**	**110**	**142**	**93**	**41**	**9**	**6**	**7**	**6**	**2**
Caltrans 2011 Two-Way AADT Count Divided by 2	2,275									AM Peak Period	*76*								PM Peak Period	*386*					

9) Spring Mountain Rd - Napa/Sonoma County Line		Westbound (Outbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	377	0	0	0	0	0	0	11	15	33	17	26	24	26	26	20	39	50	38	20	12	5	7	5	3
Medium	12	1	0	0	1	0	0	0	0	1	1	2	0	1	0	0	2	1	0	1	0	0	0	0	1
Heavy	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bus	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
'Pedal Bike (Road)'	3	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	0	0	0	0	0	0
'Motor Bike'	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9) Spring Mountain Rd - Napa/Sonoma County Line WB	**393**	**1**	**0**	**0**	**1**	**0**	**0**	**11**	**15**	**34**	**18**	**29**	**24**	**29**	**26**	**20**	**41**	**52**	**38**	**21**	**12**	**5**	**7**	**5**	**4**
Caltrans 2011 Two-Way AADT Count Divided by 2	210									AM Peak Period	*78*								PM Peak Period	*152*					

9) Spring Mountain Rd - Napa/Sonoma County Line		Eastbound (Inbound)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	359	0	0	0	1	1	1	25	36	18	24	19	27	34	19	29	38	31	31	8	8	4	2	1	2
Medium	14	0	0	0	0	0	0	1	0	1	1	2	1	1	1	0	3	2	1	0	0	0	0	0	0
Heavy	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Bus	2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
'Pedal Bike (Road)'	3	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0
'Motor Bike'	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
9) Spring Mountain Rd - Napa/Sonoma County Line EB	**380**	**0**	**0**	**0**	**1**	**1**	**1**	**26**	**36**	**19**	**26**	**21**	**29**	**37**	**20**	**30**	**42**	**34**	**32**	**8**	**8**	**4**	**2**	**1**	**2**
Caltrans 2011 Two-Way AADT Count Divided by 2	210									AM Peak Period	*107*								PM Peak Period	*116*					

10) Howell Mountain Road - South of Cold Springs Road		Northbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	2,504	23	12	6	2	1	20	95	109	110	92	99	131	139	160	161	191	240	221	195	160	101	96	81	59
Medium	43	0	0	0	0	1	0	3	4	6	3	2	5	4	6	1	4	2	1	0	0	0	1	0	0
Heavy	10	0	0	0	0	0	1	1	2	0	1	2	1	1	0	0	0	1	0	0	0	0	0	0	0
Bus	3	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
'Pedal Bike (Road)'	3	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
'Motor Bike'	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	1	0	0	0	0	0	0
10) Howell Mountain Road - South of Cold Springs Road NB	**2,569**	**23**	**12**	**6**	**2**	**2**	**22**	**99**	**116**	**116**	**97**	**104**	**138**	**144**	**166**	**163**	**196**	**247**	**223**	**195**	**160**	**101**	**97**	**81**	**59**
Caltrans 2011 Two-Way AADT Count Divided by 2	1,047									AM Peak Period	*428*								PM Peak Period	*861*					

10) Howell Mountain Road - South of Cold Springs Road		Southbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	2,531	12	2	2	2	14	45	143	211	196	144	125	143	197	225	249	209	168	147	99	68	30	43	40	17
Medium	45	0	0	0	0	0	0	4	2	7	2	4	3	5	5	4	3	2	0	1	0	1	2	0	0
Heavy	12	0	0	0	0	0	0	0	1	1	1	4	1	1	1	1	0	0	1	0	0	0	0	0	0
Bus	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
'Pedal Bike (Road)'	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0
'Motor Bike'	6	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	3	1	0	0	0	0	0	0	0
10) Howell Mountain Road - South of Cold Springs Road SB	**2,600**	**12**	**2**	**2**	**2**	**14**	**45**	**147**	**216**	**204**	**147**	**133**	**147**	**203**	**231**	**258**	**216**	**172**	**148**	**100**	**68**	**31**	**45**	**40**	**17**
Caltrans 2011 Two-Way AADT Count Divided by 2	1,047									AM Peak Period	*714*								PM Peak Period	*636*					

Appendix A - Vehicle Classification Counts Tabular Summary

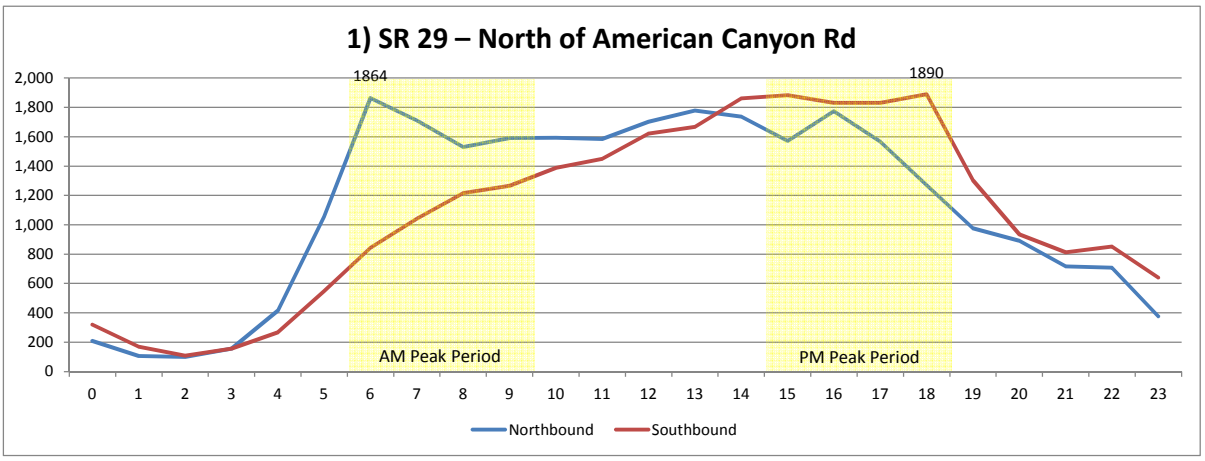
11) First St - West of SR 29		Westbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	10,082	109	59	32	11	28	52	167	382	572	368	426	502	585	666	709	978	920	1,013	743	464	389	332	352	223
Medium	90	0	0	0	0	0	2	1	4	7	7	10	7	8	15	2	7	5	9	1	3	1	0	0	1
Heavy	19	0	0	0	0	1	0	2	2	2	1	3	2	2	3	0	0	0	0	0	0	0	1	0	0
Bus	28	0	0	0	0	0	0	1	4	1	2	5	1	0	2	2	6	2	2	0	0	0	0	0	0
'Pedal Bike (Road)'	14	0	0	0	0	0	1	0	1	2	1	1	0	2	0	0	0	1	3	1	0	0	1	0	0
'Motor Bike'	30	0	0	0	0	0	1	0	1	1	0	0	3	3	4	4	3	4	3	3	0	0	0	0	0
11) First St - West of SR 29 WB	**10,263**	**109**	**59**	**32**	**11**	**29**	**56**	**171**	**394**	**585**	**379**	**445**	**515**	**600**	**690**	**717**	**994**	**932**	**1,030**	**748**	**467**	**390**	**334**	**352**	**224**
Caltrans 2011 Two-Way AADT Count Divided by 2	9,183								AM Peak Period	*1,529*								PM Peak Period	*3,704*						

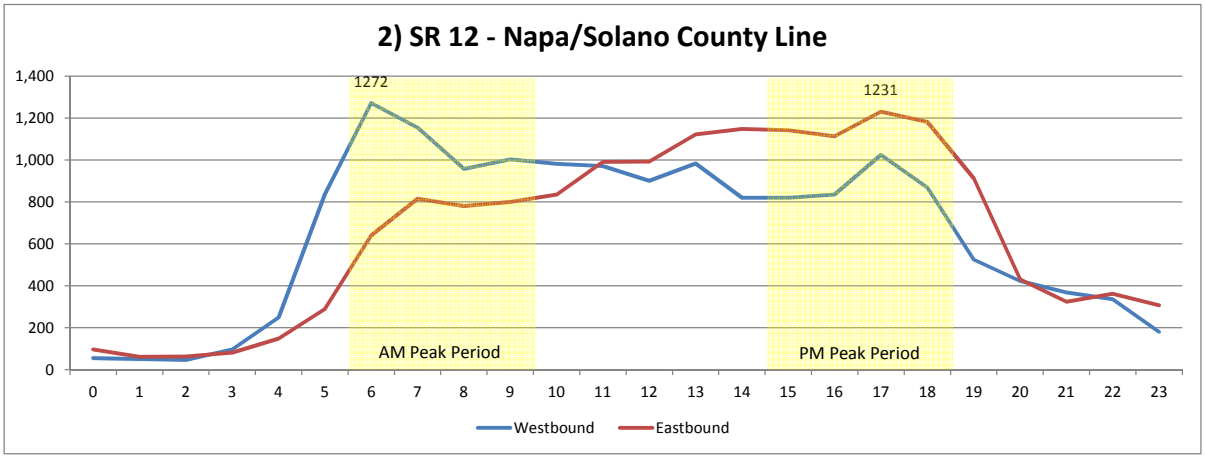
11) First St - West of SR 29		Eastbound (Not Gateway)																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	10,040	30	24	15	22	97	234	448	845	941	646	573	572	606	587	665	769	656	622	542	399	277	219	153	98
Medium	112	0	0	0	1	0	3	1	6	6	10	10	12	16	9	12	8	4	8	3	1	1	0	1	0
Heavy	11	0	0	0	0	0	1	0	1	1	2	0	3	1	0	0	1	0	0	0	0	0	1	0	0
Bus	16	0	0	0	0	0	0	1	3	2	1	1	0	0	1	3	2	1	1	0	0	0	0	0	0
'Pedal Bike (Road)'	24	0	0	0	0	0	1	0	2	6	2	1	2	0	3	0	3	3	0	1	0	0	0	0	0
'Motor Bike'	31	0	0	0	0	0	0	2	4	2	2	1	6	5	0	3	4	2	0	0	0	0	0	0	0
11) First St - West of SR 29 EB	**10,234**	**30**	**24**	**15**	**23**	**97**	**239**	**452**	**861**	**958**	**663**	**586**	**595**	**628**	**600**	**683**	**787**	**666**	**631**	**546**	**400**	**278**	**220**	**154**	**98**
Caltrans 2011 Two-Way AADT Count Divided by 2	9,183								AM Peak Period	*2,934*								PM Peak Period	*2,630*						

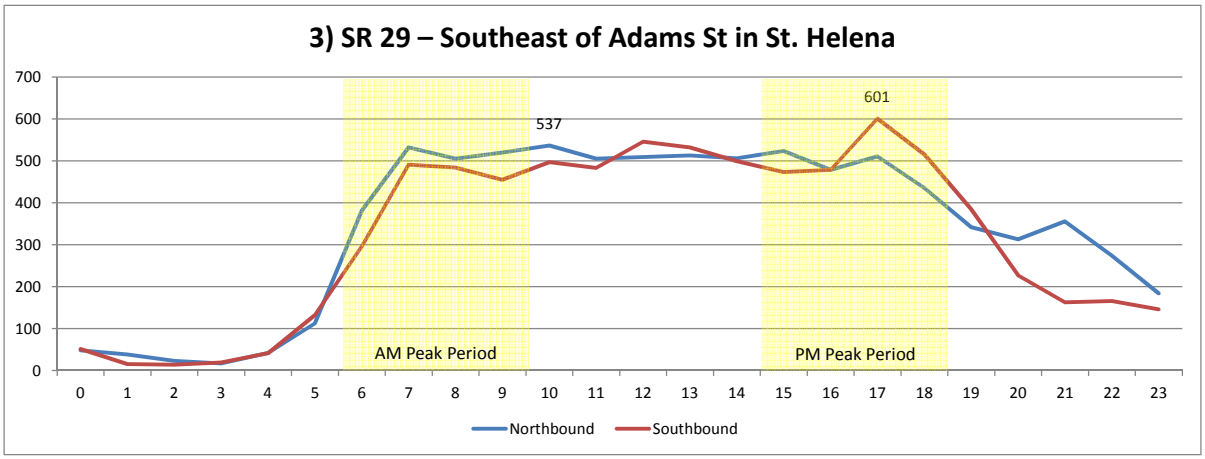
Total of all 11 Locations		All Directions																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	171,767	1,196	668	489	639	1,526	4,060	8,498	10,353	10,101	9,112	9,169	9,614	10,142	11,038	11,591	12,336	12,756	13,268	10,773	7,365	5,281	4,526	4,359	2,907
Medium	4,402	5	8	13	34	70	141	275	330	328	361	439	414	374	360	287	288	216	148	114	75	33	33	26	30
Heavy	4,088	31	21	22	55	99	177	264	262	302	381	413	408	376	293	237	206	162	120	94	71	40	21	20	13
Bus	585	2	1	1	2	4	13	30	50	32	41	51	23	34	31	43	63	54	32	31	13	6	11	15	2
'Pedal Bike (Road)'	96	0	0	1	0	0	3	0	7	10	9	9	8	8	4	6	8	15	4	2	0	0	1	1	0
'Motor Bike'	488	0	0	0	0	1	1	15	25	29	22	35	53	46	48	58	49	53	27	9	16	1	0	0	0
Total	**181,426**	**1,234**	**698**	**526**	**730**	**1,700**	**4,395**	**9,082**	**11,027**	**10,802**	**9,926**	**10,116**	**10,520**	**10,980**	**11,774**	**12,222**	**12,950**	**13,256**	**13,599**	**11,023**	**7,540**	**5,361**	**4,592**	**4,421**	**2,952**
Total Vehicles	**181,330**	**1,234**	**698**	**525**	**730**	**1,700**	**4,392**	**9,082**	**11,020**	**10,792**	**9,917**	**10,107**	**10,512**	**10,972**	**11,770**	**12,216**	**12,942**	**13,241**	**13,595**	**11,021**	**7,540**	**5,361**	**4,591**	**4,420**	**2,952**
Caltrans 2011 Two-Way AADT Count	165,279				Early AM	*9,279*		AM Peak Period	*#####*				Mid-Day	*#####*			PM Peak Period	*#####*				Late night	*#####*	
					% of Daily	*5%*		% of Daily	*23%*				% of Daily	*31%*			% of Daily	*28%*				% of Daily	*14%*	
								AM Peak Hour	*#####*								PM Peak Hour	*#####*						
								AM Peak Hour	*7 AM*								PM Peak Hour	*5 PM*						
								% of Daily	6%								% of Daily	7%						

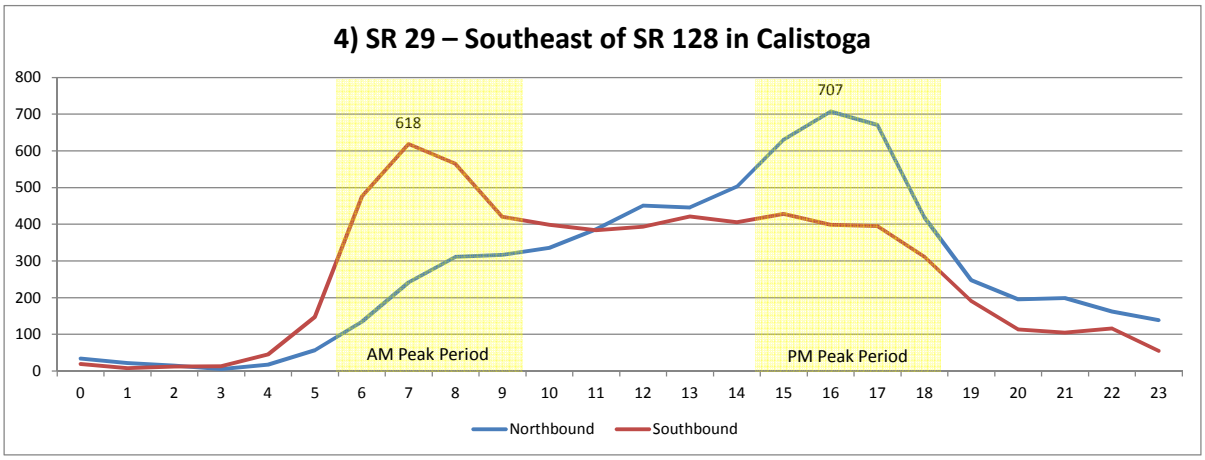
Total of all 7 Gateway Locations		All Directions																							
		Hour																							
Vehicle Type	Daily	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Car	119,166	875	489	374	561	1,265	3,321	6,444	7,087	6,524	6,276	6,318	6,672	6,837	7,591	7,996	8,220	8,790	9,133	7,565	5,135	3,652	3,027	3,025	1,989
Medium	3,224	4	8	11	25	53	101	209	214	240	269	327	284	262	267	211	224	166	111	87	59	22	22	22	26
Heavy	3,642	27	20	21	50	91	155	245	217	268	337	366	356	346	262	214	185	144	108	80	64	35	18	20	13
Bus	340	2	1	0	2	3	8	17	18	17	27	37	14	24	20	28	36	30	15	16	5	3	6	9	2
'Pedal Bike (Road)'	24	0	0	1	0	0	0	0	3	1	2	1	2	5	1	1	2	5	0	0	0	0	0	0	0
'Motor Bike'	364	0	0	0	0	1	0	11	18	25	17	30	39	32	34	38	34	40	22	6	16	1	0	0	0
Total	**126,760**	**908**	**518**	**407**	**638**	**1,413**	**3,585**	**6,926**	**7,557**	**7,075**	**6,928**	**7,079**	**7,367**	**7,506**	**8,175**	**8,488**	**8,701**	**9,175**	**9,389**	**7,754**	**5,279**	**3,713**	**3,073**	**3,076**	**2,030**
Total Vehicles	**126,736**	**908**	**518**	**406**	**638**	**1,413**	**3,585**	**6,926**	**7,554**	**7,074**	**6,926**	**7,078**	**7,365**	**7,501**	**8,174**	**8,487**	**8,699**	**9,170**	**9,389**	**7,754**	**5,279**	**3,713**	**3,073**	**3,076**	**2,030**
Caltrans 2011 Two-Way AADT Count	114,420				Early AM	*7,468*		AM Peak Period	*#####*				Mid-Day	*#####*			PM Peak Period	*#####*				Late night	*#####*	
					% of Daily	*6%*		% of Daily	*22%*				% of Daily	*30%*			% of Daily	*28%*				% of Daily	*14%*	
								AM Peak Hour	*7,554*								PM Peak Hour	*9,389*						
								AM Peak Hour	*7 AM*								PM Peak Hour	*5 PM*						
								% of Daily	6%								% of Daily	7%						

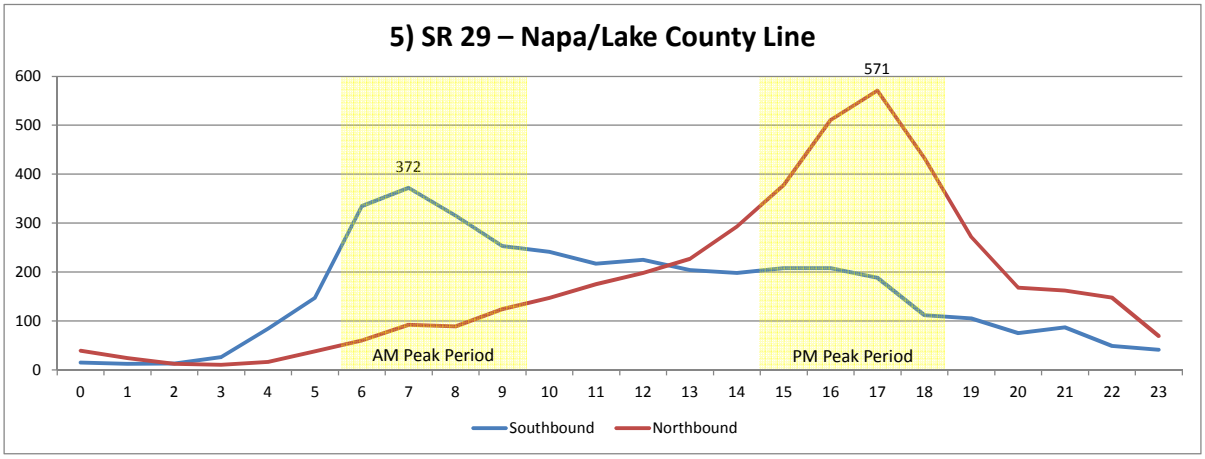
Appendix A - Vehicle Classification Counts Chart Summary

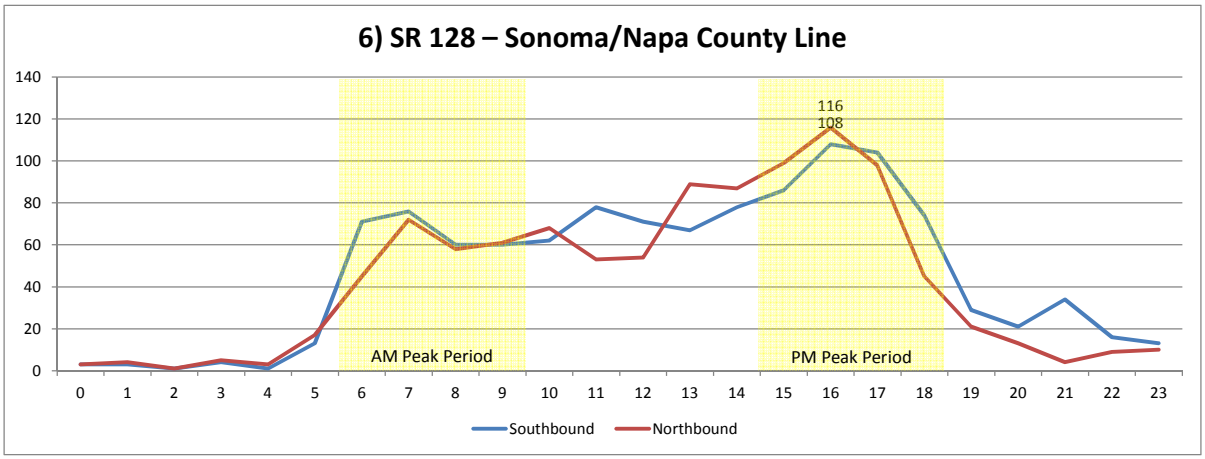




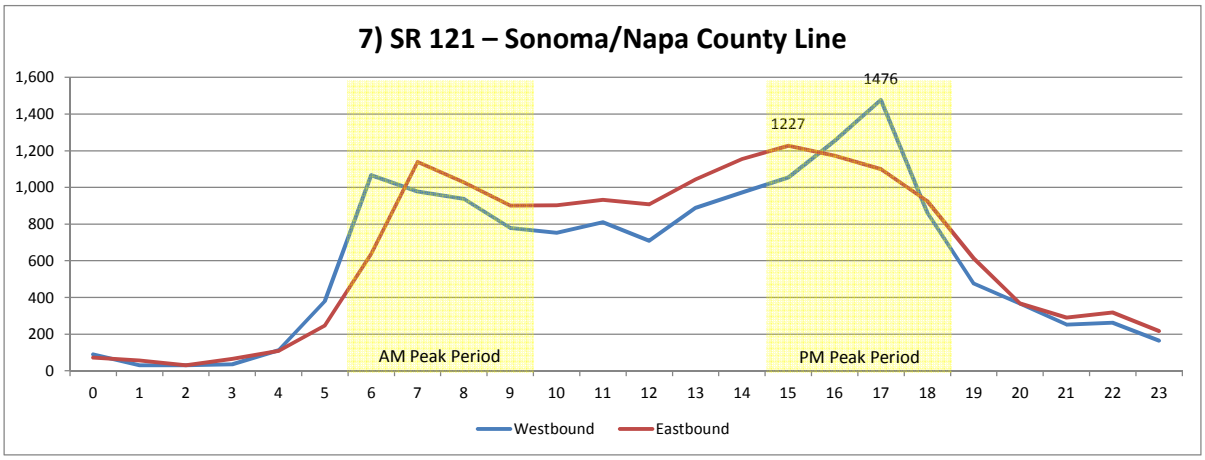


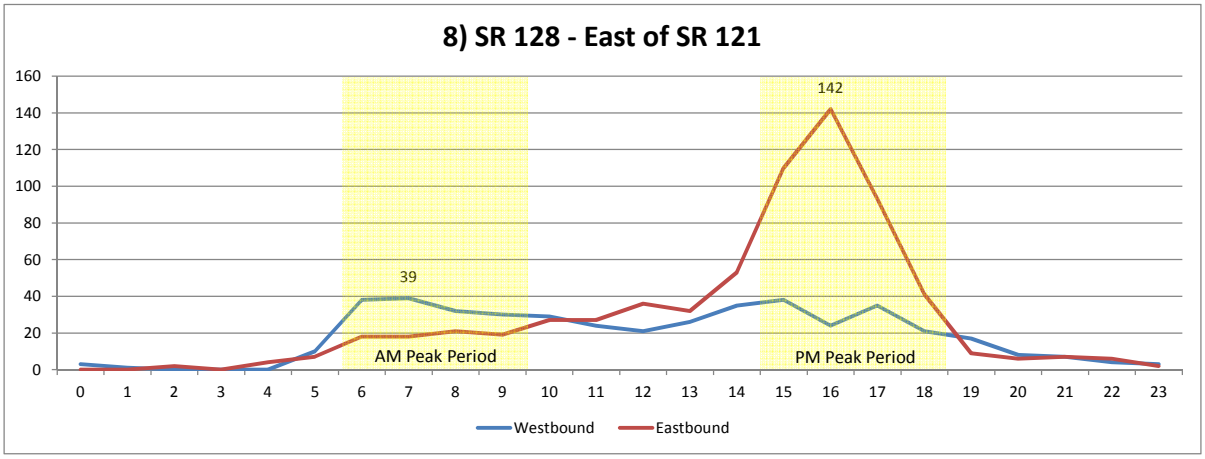

4) SR 29 – Southeast of SR 128 in Calistoga
800
700
600
500
400
300
200
100
0
618
707
AM Peak Period
PM Peak Period
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Northbound
Southbound

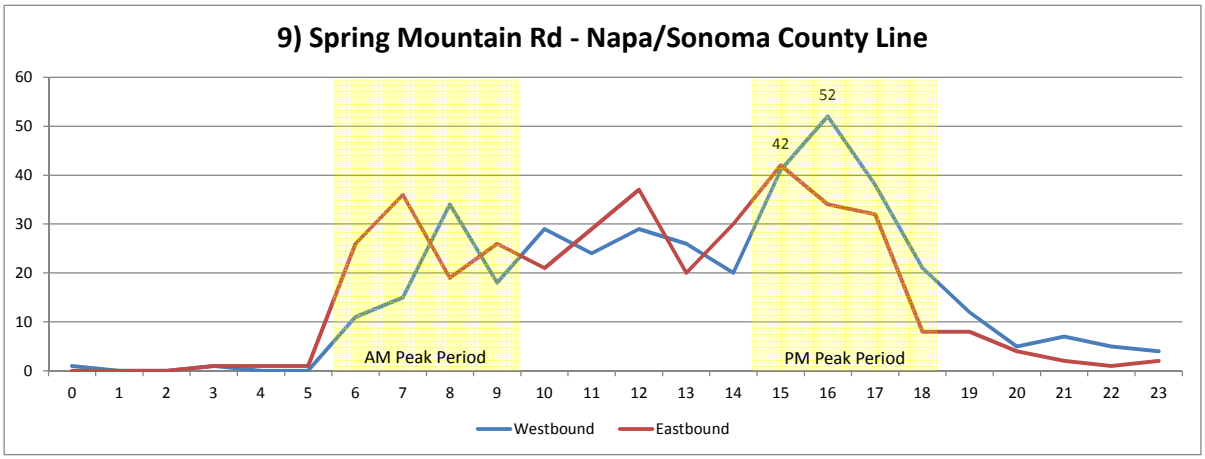

5) SR 29 – Napa/Lake County Line
600
500
400
300
200
100
0
372
571
AM Peak Period
PM Peak Period
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Southbound
Northbound


6) SR 128 – Sonoma/Napa County Line
140
120
100
80
60
40
20
0
116
108
AM Peak Period
PM Peak Period
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Southbound
Northbound

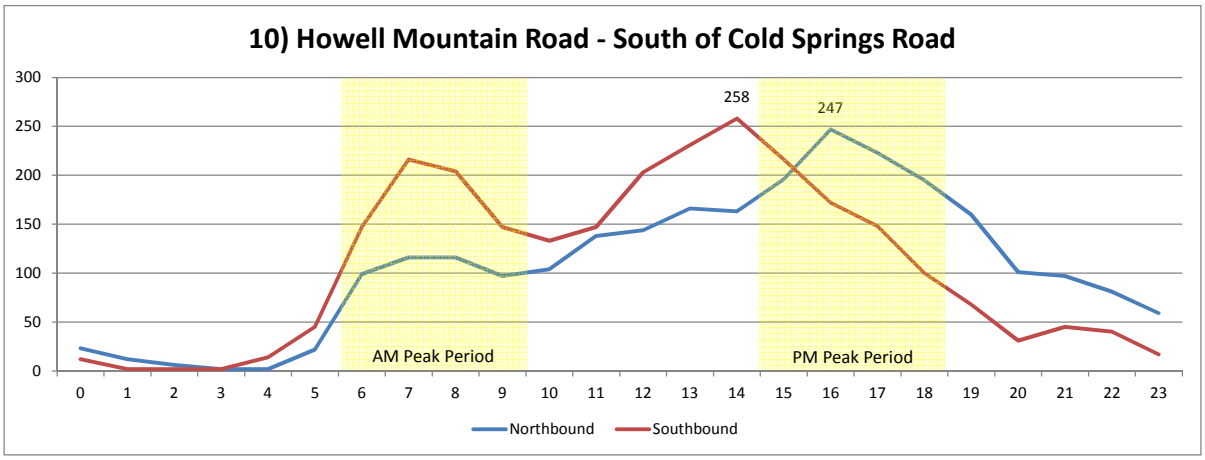
Appendix A - Vehicle Classification Counts Chart Summary

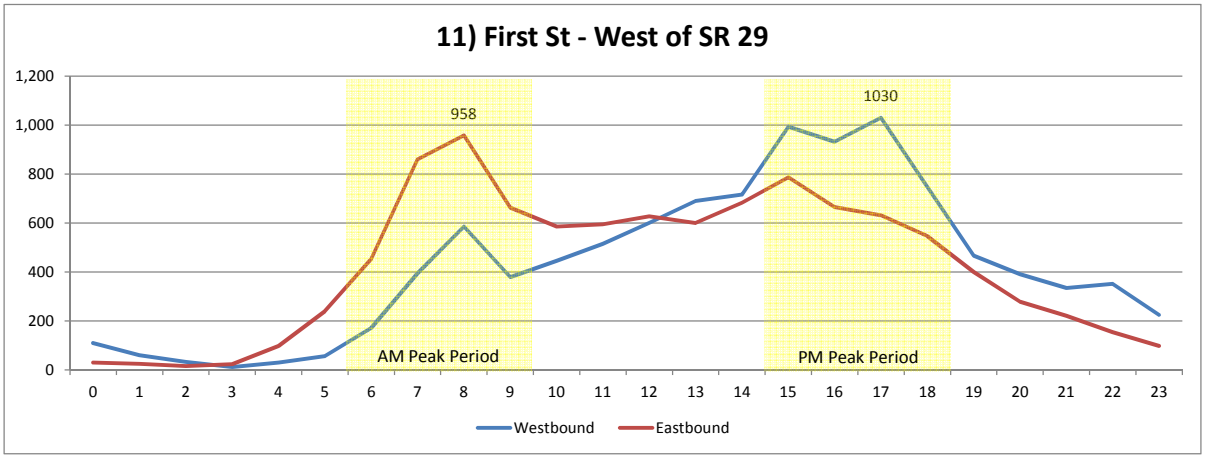


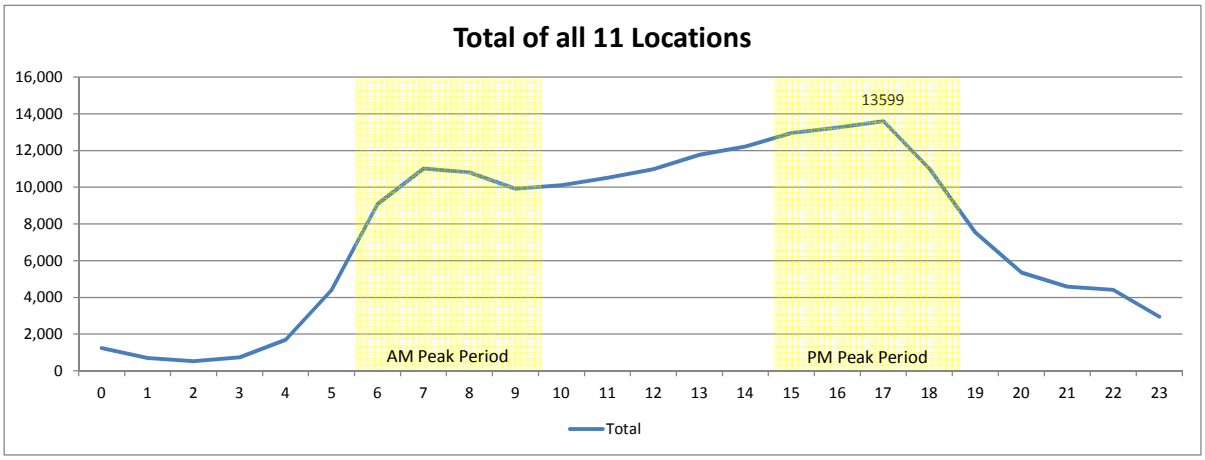




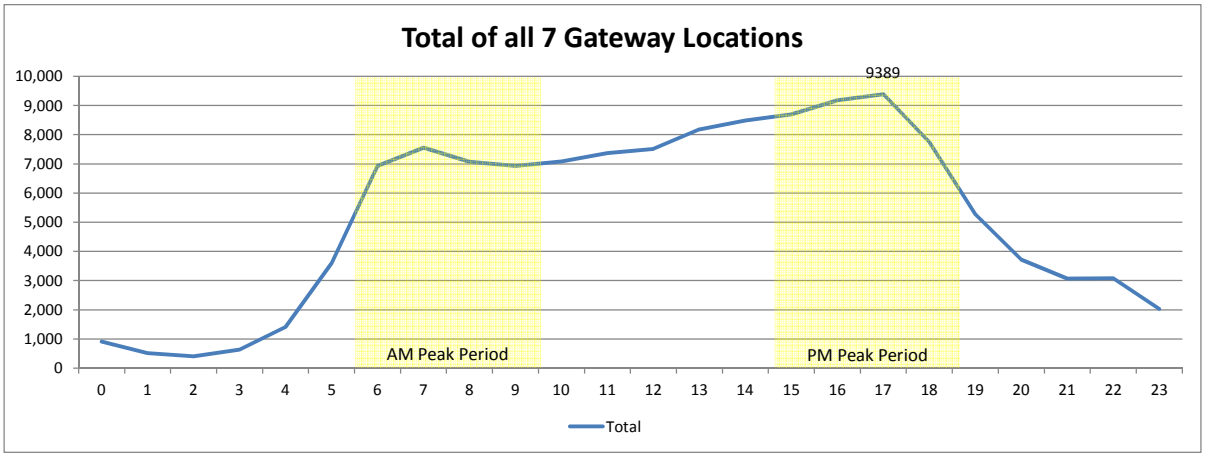
Appendix A - Vehicle Classification Counts Chart Summary







Appendix A - Vehicle Classification Counts Chart Summary



APPENDIX B:
WINERY REGRESSION ANALYSIS

Appendix B - Winery Regression Analysis Winery Trip Generation

	Independent Variables			Estimated Daily Vehicle Trip Generation		
Winery	Gallons (000s)	Type (Binary)	Location (Binary)	Thursday	Friday	Saturday
Winery 1	20	1	0	40	53	6
Winery 2	250	1	1	181	188	163
Winery 3	20	1	0	40	53	6
Winery 4	12	1	1	106	110	80
Winery 5	144	0	1	345	431	646
Winery 6	5	1	0	35	48	6
Winery 7	250	1	0	112	128	80
Winery 8	50	1	0	49	63	11
Winery 9	12	1	0	37	50	6
Winery 10	20	1	0	40	53	6
Winery 11	100	0	1	202	288	340
Winery 12	12	1	1	106	110	80
Winery 13	30	1	1	112	116	86
Winery 14	20	1	0	40	53	6
Winery 15	48	1	0	49	62	10
Winery 16	125	1	1	142	147	119
Winery 17	20	1	0	40	53	6
Winery 18	900	0	1	452	551	617
Winery 19	12	1	0	37	50	6
Winery 20	2.5	1	1	104	107	77
Winery 21	20	1	0	40	53	6
Winery 22	450	1	0	118	112	21
Winery 23	12.5	1	0	38	51	6
Winery 24	20	1	1	109	112	83
Winery 25	50	1	1	118	122	93
Winery 26	20	1	0	40	53	6
Winery 27	43000	0	1	1,208	1,352	1,518
Winery 28	1800	0	1	733	846	929
Winery 29	10	1	0	37	50	6
Winery 30	40	1	1	68	74	50
Winery 31	50	1	0	49	63	11
Winery 32	4005	0	1	1,208	1,352	1,518
Winery 33	315	1	1	201	209	185
Winery 34	1.5	1	0	34	47	6
Winery 35	30	1	1	112	116	86
Winery 36	100	0	1	202	288	340
Winery 37	12	1	1	106	110	80
Winery 38	10	1	1	106	109	79
Winery 39	225	0	1	241	329	383
Winery 40	60	1	1	121	125	97
Winery 41	20	1	0	40	53	6
Winery 42	14.4	1	0	38	51	6
Winery 43	20	1	0	40	53	6
Winery 44	50	1	0	49	63	11
Winery 45	8.5	1	0	36	49	6
Winery 46	50	1	0	49	63	11
Winery 47	70	1	0	55	69	18
Winery 48	75	1	1	126	130	102
Winery 49	30	1	0	43	56	6
Winery 50	20	1	0	40	53	6
Winery 51	59	1	0	80	58	19
Winery 52	500	1	1	266	295	244
Winery 53	25	1	0	41	55	6
Winery 54	1280	1	1	502	526	520
Winery 55	100	1	1	134	139	111
Winery 56	240	0	1	246	334	388
Winery 57	20	1	0	40	53	6
Winery 58	5	0	1	173	257	307
Winery 59	59	1	0	52	66	14
Winery 60	2.5	1	1	104	107	77
Winery 61	110	0	1	205	292	343
Winery 62	100	1	0	65	79	28
Winery 63	45	1	1	117	121	92
Winery 64	150	0	0	149	246	274
Winery 65	2728	0	1	1,023	1,151	1,251
Winery 66	48	0	1	186	271	322
Winery 67	24.5	1	0	41	54	6
Winery 68	5	1	1	104	107	78
Winery 69	20	1	1	109	112	83
Winery 70	128	0	0	142	238	267
Winery 71	48	0	0	117	212	239
Winery 72	15	1	0	38	51	6
Winery 73	145	0	1	216	303	355
Winery 74	20	1	1	109	112	83
Winery 75	10	1	0	37	50	6
Winery 76	20	1	0	40	53	6
Winery 77	16	1	0	39	52	6
Winery 78	60	0	1	190	275	326
Winery 79	350	0	1	280	370	426
Winery 80	200	0	0	164	262	292
Winery 81	20	1	0	40	53	6
Winery 82	10	1	1	106	109	79
Winery 83	28	1	0	42	56	6
Winery 84	30	1	0	43	56	6
Winery 85	20	1	1	101	87	202
Winery 86	30	0	1	180	265	315
Winery 87	155.048	0	0	66	100	84
Winery 88	340	1	1	194	196	198

Winery Regression Analysis Results			
Coefficient	Thu	Fri	Sat
Intercept	102	196	222
Gallons (000s)	0.31	0.33	0.35
Type (Binary)	-68	-150	-229
Location (Binary)	69	59	83
R Square	0.82	0.82	0.79
Total	58,285	68,900	60,191

Appendix B - Winery Regression Analysis Winery Trip Generation

	Independent Variables			Estimated Daily Vehicle Trip Generation		
Winery	Gallons (000s)	Type (Binary)	Location (Binary)	Thursday	Friday	Saturday
Winery 89	20	1	0	40	53	6
Winery 90	10	1	1	91	97	14
Winery 91	15	1	0	38	51	6
Winery 92	100	0	1	202	288	340
Winery 93	30	1	0	43	56	6
Winery 94	50	1	1	118	122	93
Winery 95	38	1	1	115	118	89
Winery 96	48	1	1	118	122	93
Winery 97	20	1	1	109	112	83
Winery 98	1	1	1	103	106	76
Winery 99	8	1	0	36	49	6
Winery 100	10	1	0	37	50	6
Winery 101	20	1	0	40	53	6
Winery 102	10	1	0	37	50	6
Winery 103	432	0	1	306	397	455
Winery 104	1980	0	1	789	905	991
Winery 105	20	1	0	40	53	6
Winery 106	20	1	1	109	112	83
Winery 107	100	1	1	134	139	111
Winery 108	125	1	1	142	147	119
Winery 109	110	0	1	205	292	343
Winery 110	5	1	0	35	48	6
Winery 111	20	0	0	108	203	229
Winery 112	30	1	1	112	116	86
Winery 113	24	1	1	110	114	84
Winery 114	15	1	0	38	51	6
Winery 115	25	0	1	179	264	314
Winery 116	25	1	1	111	114	85
Winery 117	3	1	0	35	47	6
Winery 118	15	1	0	38	51	6
Winery 119	60	1	1	121	125	97
Winery 120	20	1	0	40	53	6
Winery 121	150	0	1	218	305	357
Winery 122	20	1	0	40	53	6
Winery 123	175	0	1	226	313	366
Winery 124	12.5	1	1	107	110	80
Winery 125	10	1	1	106	109	79
Winery 126	30	1	0	43	56	6
Winery 127	20	1	1	109	112	83
Winery 128	120	1	1	140	145	118
Winery 129	50	0	1	187	272	322
Winery 130	30	1	0	43	56	6
Winery 131	0.7	1	0	34	47	6
Winery 132	18	1	0	39	52	6
Winery 133	1200	0	1	546	649	721
Winery 134	564.5	0	1	347	441	501
Winery 135	50	1	1	118	122	93
Winery 136	60	0	1	190	275	326
Winery 137	20	1	1	109	112	83
Winery 138	240	1	1	178	185	159
Winery 139	10	1	1	106	109	79
Winery 140	12	1	1	47	59	23
Winery 141	20	1	0	40	53	6
Winery 142	20	1	1	109	112	83
Winery 143	15	1	0	38	51	6
Winery 144	600	1	1	290	303	284
Winery 145	30	1	1	112	116	86
Winery 146	7	1	1	105	108	78
Winery 147	20	1	0	40	53	6
Winery 148	250	1	1	181	188	163
Winery 149	15	1	0	38	51	6
Winery 150	2.4	1	1	103	107	77
Winery 151	20	1	1	109	112	83
Winery 152	200	1	1	165	171	145
Winery 153	19.2	1	0	40	53	6
Winery 154	50	1	1	118	122	93
Winery 155	20	1	0	40	53	6
Winery 156	1260	0	1	309	366	339
Winery 157	20	1	0	40	53	6
Winery 158	15	1	0	38	51	6
Winery 159	12	1	1	106	110	80
Winery 160	120	1	1	140	145	118
Winery 161	20	1	1	109	112	83
Winery 162	60	1	1	121	125	97
Winery 163	144	0	0	147	244	272
Winery 164	59	1	1	121	125	96
Winery 165	50	1	1	118	122	93
Winery 166	1000	0	0	414	524	569
Winery 167	10	1	0	37	50	6
Winery 168	30	1	1	112	116	86
Winery 169	150	1	1	150	155	128
Winery 170	20	1	1	109	112	83
Winery 171	20	1	1	109	112	83
Winery 172	30	1	0	43	56	6
Winery 173	20	1	0	40	53	6
Winery 174	60	1	1	121	125	97
Winery 175	30	1	1	112	116	86
Winery 176	13.2	1	1	107	110	81

Appendix B - Winery Regression Analysis Winery Trip Generation

	Independent Variables			Estimated Daily Vehicle Trip Generation		
Winery	Gallons (000s)	Type (Binary)	Location (Binary)	Thursday	Friday	Saturday
Winery 177	10	1	1	106	109	79
Winery 178	40	1	0	46	60	7
Winery 179	20	1	0	40	53	6
Winery 180	20	1	0	40	53	6
Winery 181	20	1	0	40	53	6
Winery 182	420	1	1	234	244	222
Winery 183	30	1	1	112	116	86
Winery 184	20	1	1	109	112	83
Winery 185	20	1	1	109	112	83
Winery 186	18	1	0	39	52	6
Winery 187	10	1	1	106	109	79
Winery 188	75	1	1	126	130	102
Winery 189	40	1	1	115	119	90
Winery 190	20	1	1	109	112	83
Winery 191	85	1	0	60	74	23
Winery 192	200	1	1	165	171	145
Winery 193	5	1	1	104	107	78
Winery 194	12	1	0	37	50	6
Winery 195	72	1	1	125	129	101
Winery 196	75	1	0	57	71	19
Winery 197	10	1	1	106	109	79
Winery 198	20	1	0	40	53	6
Winery 199	20	1	0	40	53	6
Winery 200	3	1	0	35	47	6
Winery 201	150	1	0	80	96	45
Winery 202	5	1	0	35	48	6
Winery 203	12	1	0	37	50	6
Winery 204	900	1	1	384	401	388
Winery 205	36	1	1	114	118	88
Winery 206	57	1	0	51	65	13
Winery 207	20	1	0	40	53	6
Winery 208	3	1	0	35	47	6
Winery 209	50	1	1	118	122	93
Winery 210	3.5	1	1	104	107	77
Winery 211	20	1	0	40	53	6
Winery 212	16	1	0	39	52	6
Winery 213	70	1	1	125	129	100
Winery 214	2000	0	1	795	912	998
Winery 215	150	1	1	150	155	128
Winery 216	8	1	0	36	49	6
Winery 217	36	1	1	96	102	63
Winery 218	20	1	0	40	53	6
Winery 219	20	1	1	109	112	83
Winery 220	20	1	1	109	112	83
Winery 221	300	0	1	265	354	409
Winery 222	20	1	1	109	112	83
Winery 223	5	1	0	35	48	6
Winery 224	8	1	1	105	108	79
Winery 225	8	1	0	36	49	6
Winery 226	50	1	1	118	122	93
Winery 227	50	1	0	49	63	11
Winery 228	96	1	1	133	137	109
Winery 229	48	1	1	118	122	93
Winery 230	190	0	1	230	318	371
Winery 231	0.8	1	0	34	47	6
Winery 232	20	0	1	177	262	312
Winery 233	10	1	1	106	109	79
Winery 234	300	0	1	265	354	409
Winery 235	15	1	0	38	51	6
Winery 236	50	0	1	187	272	322
Winery 237	100	0	1	202	288	340
Winery 238	20	1	1	109	112	83
Winery 239	100	0	0	133	229	257
Winery 240	6	1	0	35	48	6
Winery 241	10	1	0	37	50	6
Winery 242	850	0	1	436	535	600
Winery 243	36	1	0	45	58	6
Winery 244	48	1	1	118	122	93
Winery 245	4000	1	1	1,208	1,352	1,463
Winery 246	35	1	0	45	58	6
Winery 247	10	1	1	106	109	79
Winery 248	130	1	0	74	89	38
Winery 249	40	1	0	46	60	7
Winery 250	12	0	0	106	200	226
Winery 251	125	1	1	142	147	119
Winery 252	250	0	1	249	338	392
Winery 253	50	1	1	118	122	93
Winery 254	50	1	0	49	63	11
Winery 255	144	0	1	216	303	355
Winery 256	20	1	1	109	112	83
Winery 257	25	1	1	111	114	85
Winery 258	110	1	1	137	142	114
Winery 259	15	1	0	38	51	6
Winery 260	1.8	1	0	34	47	6
Winery 261	18	1	0	39	52	6
Winery 262	100	1	0	65	79	28
Winery 263	120	1	0	71	86	35
Winery 264	5	1	1	104	107	78

Appendix B - Winery Regression Analysis Winery Trip Generation

	Independent Variables			Estimated Daily Vehicle Trip Generation		
Winery	Gallons (000s)	Type (Binary)	Location (Binary)	Thursday	Friday	Saturday
Winery 265	35	1	1	114	117	88
Winery 266	16	1	0	39	52	6
Winery 267	13	1	1	107	110	80
Winery 268	156	1	1	151	157	130
Winery 269	20	1	1	109	112	83
Winery 270	120	1	1	140	145	118
Winery 271	20	1	1	109	112	83
Winery 272	4.8	1	0	35	48	6
Winery 273	20	1	0	40	53	6
Winery 274	5	1	1	104	107	78
Winery 275	12	1	0	37	50	6
Winery 276	16	1	1	108	111	81
Winery 277	20	1	1	109	112	83
Winery 278	300	0	1	265	354	409
Winery 279	25	0	1	179	264	314
Winery 280	12	1	0	37	50	6
Winery 281	20	0	0	108	203	229
Winery 282	12	1	0	37	50	6
Winery 283	75	1	0	57	71	19
Winery 284	8.5	0	1	174	258	308
Winery 285	50	1	0	49	63	11
Winery 286	85	0	1	198	284	334
Winery 287	20	1	1	109	112	83
Winery 288	180	1	1	227	237	203
Winery 289	20	1	1	109	112	83
Winery 290	750	0	1	405	502	565
Winery 291	20	1	1	109	112	83
Winery 292	25	1	1	111	114	85
Winery 293	20	1	0	40	53	6
Winery 294	18	1	0	39	52	6
Winery 295	15	1	1	107	111	81
Winery 296	20	1	1	109	112	83
Winery 297	5	1	0	35	48	6
Winery 298	20	1	1	109	112	83
Winery 299	10	1	0	37	50	6
Winery 300	250	1	1	181	188	163
Winery 301	5	1	0	35	48	6
Winery 302	40	1	1	115	119	90
Winery 303	25	1	0	41	55	6
Winery 304	30	1	0	43	56	6
Winery 305	50	1	0	49	63	11
Winery 306	340	1	1	209	217	194
Winery 307	3000	0	1	1,208	1,352	1,518
Winery 308	60	1	0	52	66	14
Winery 309	65	0	1	191	277	327
Winery 310	15	1	1	107	111	81
Winery 311	20	1	1	109	112	83
Winery 312	15	1	0	38	51	6
Winery 313	35	1	0	45	58	6
Winery 314	30	1	0	43	56	6
Winery 315	450	1	1	243	253	232
Winery 316	880	1	1	377	394	381
Winery 317	20	1	0	40	53	6
Winery 318	1250	1	1	493	516	509
Winery 319	100	1	1	134	139	111
Winery 320	12	1	1	106	110	80
Winery 321	75	1	1	126	130	102
Winery 322	5	1	0	35	48	6
Winery 323	35	0	1	182	267	317
Winery 324	640	0	1	371	466	527
Winery 325	8	1	1	105	108	79
Winery 326	15	1	0	38	51	6
Winery 327	135	1	1	145	150	123
Winery 328	30	1	1	112	116	86
Winery 329	96	0	1	201	287	338
Winery 330	20	1	0	40	53	6
Winery 331	10	1	1	106	109	79
Winery 332	180	1	0	267	287	196
Winery 333	20	1	0	40	53	6
Winery 334	10	1	0	37	50	6
Winery 335	20	1	1	109	112	83
Winery 336	20	1	0	40	53	6
Winery 337	24	1	0	41	54	6
Winery 338	50	0	1	187	272	322
Winery 339	1	1	0	34	47	6
Winery 340	10	1	1	106	109	79
Winery 341	200	1	1	165	171	145
Winery 342	0.6	1	0	34	47	6
Winery 343	40	1	1	115	119	90
Winery 344	50	1	0	49	63	11
Winery 345	20	0	1	177	262	312
Winery 346	210	0	1	531	651	675
Winery 347	200	1	1	165	171	145
Winery 348	360	0	1	177	356	324
Winery 349	5	1	1	104	107	78
Winery 350	2.377	1	0	34	47	6
Winery 351	15	1	0	38	51	6
Winery 352	7.5	1	0	36	49	6

Appendix B - Winery Regression Analysis Winery Trip Generation

	Independent Variables			Estimated Daily Vehicle Trip Generation		
Winery	Gallons (000s)	Type (Binary)	Location (Binary)	Thursday	Friday	Saturday
Winery 353	18	1	0	39	52	6
Winery 354	30	1	0	43	56	6
Winery 355	20	1	1	109	112	83
Winery 356	150	1	0	80	96	45
Winery 357	40	1	1	115	119	90
Winery 358	60	1	1	121	125	97
Winery 359	0	1	1	103	106	76
Winery 360	48	1	0	49	62	10
Winery 361	20	1	0	40	53	6
Winery 362	72	0	1	193	279	330
Winery 363	450	0	1	312	403	461
Winery 364	36	1	1	114	118	88
Winery 365	330	0	1	274	364	419
Winery 366	60	1	1	121	125	97
Winery 367	315	1	1	201	209	185
Winery 368	2.09	1	0	34	47	6
Winery 369	30	1	1	112	116	86
Winery 370	20	1	1	109	112	83
Winery 371	59.999	1	1	121	125	97
Winery 372	12	1	0	37	50	6
Winery 373	1500	0	1	639	748	825
Winery 374	20	1	1	109	112	83
Winery 375	8.7	1	0	31	60	9
Winery 376	15	1	0	38	51	6
Winery 377	2.5	1	0	34	47	6
Winery 378	22.5	1	1	110	113	84
Winery 379	12	1	0	37	50	6
Winery 380	600	1	1	290	303	284
Winery 381	200	0	1	233	321	374
Winery 382	3247	1	1	1,117	1,171	1,202
Winery 383	42.5	1	1	116	120	91
Winery 384	5	1	0	35	48	6
Winery 385	5	1	0	35	48	6
Winery 386	360	1	0	146	165	118
Winery 387	12520	1	1	1,208	1,352	1,518
Winery 388	20	1	0	40	53	6
Winery 389	30	1	1	112	116	86
Winery 390	48	1	0	49	62	10
Winery 391	500	0	1	327	420	478
Winery 392	20	1	1	109	112	83
Winery 393	100	0	1	202	288	340
Winery 394	60	1	1	121	125	97
Winery 395	3.5	1	1	104	107	77
Winery 396	2.4	1	1	103	107	77
Winery 397	65	1	0	54	68	16
Winery 398	250	1	1	181	188	163
Winery 399	20	1	0	40	53	6
Winery 400	62.5	1	0	53	67	15
Winery 401	15	1	0	38	51	6
Winery 402	81.48	0	0	188	243	355
Winery 403	22.5	1	0	41	54	6
Winery 404	8	1	1	105	108	79
Winery 405	20	1	0	40	53	6
Winery 406	32	1	0	101	171	109
Winery 407	850	0	1	436	535	600
Winery 408	250	0	0	180	278	309
Winery 409	50	1	0	49	63	11
Winery 410	6	1	1	105	108	78
Winery 411	20	1	1	109	112	83
Winery 412	48	1	1	118	122	93
Winery 413	10	1	0	37	50	6
Winery 414	48.5	1	1	97	72	40
Winery 415	20	1	0	16	18	6
Winery 416	24	1	0	41	54	6
Winery 417	20	1	0	40	53	6
Winery 418	30	1	0	43	56	6
Winery 419	30	1	0	43	56	6
Winery 420	20	0	1	177	262	312
Winery 421	20	1	0	40	53	6
Winery 422	20	1	1	109	112	83
Winery 423	125	0	1	210	297	348
Winery 424	20	1	1	109	112	83
Winery 425	310	1	1	200	207	183
Winery 426	20	1	1	109	112	83
Winery 427	335	1	1	207	216	192
Winery 428	20	1	0	40	53	6
Winery 429	12.5	1	0	38	51	6
Winery 430	19	1	1	109	112	83
Winery 431	20	1	0	40	53	6
Winery 432	5	1	0	35	48	6
Winery 433	70	1	1	125	129	100
Winery 434	50	1	1	118	122	93

APPENDIX C:
LICENSE PLATE MATCHING

Appendix C - License Plate Matching Auto Pass-Through Trips by Time of Day

XX Trips Early AM	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	10	1	1	65	0	0
2-WB	30	0	0	0	54	2	0
5-SB	2	2	0	0	0	0	0
6-SB	0	0	0	0	0	0	0
7-EB	7	17	0	0	0	0	0
8-WB	0	0	0	0	0	0	0
9-EB	0	0	0	0	0	0	0

XX Trips AM Peak	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	143	9	1	201	1	0
2-WB	118	0	8	0	251	6	0
5-SB	14	7	0	2	1	1	0
6-SB	1	0	1	0	0	0	0
7-EB	118	250	2	1	0	0	1
8-WB	0	4	0	0	2	0	0
9-EB	0	0	0	0	0	0	0

XX Trips Mid-Day	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	126	46	0	171	0	0
2-WB	126	0	26	2	397	7	1
5-SB	25	14	0	1	10	0	0
6-SB	0	0	1	0	0	0	0
7-EB	190	392	3	0	0	5	1
8-WB	1	3	0	0	5	0	1
9-EB	3	2	0	0	1	1	0

XX Trips PM Peak	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	48	24	0	82	0	0
2-WB	45	0	16	0	287	1	2
5-SB	11	10	0	2	1	0	0
6-SB	0	0	0	0	0	1	0
7-EB	155	349	6	0	0	5	0
8-WB	1	0	0	0	0	0	0
9-EB	0	0	0	0	0	0	0

XX Trips Late Night	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	11	10	0	38	1	0
2-WB	10	0	3	0	151	0	1
5-SB	9	4	0	0	1	0	0
6-SB	0	0	0	0	0	0	0
7-EB	53	153	0	0	0	0	2
8-WB	0	0	0	0	0	0	0
9-EB	1	0	0	0	0	0	0

Appendix C - License Plate Matching Truck Pass-Through Trips by Time of Day

XX Trips Early AM	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	4	0	0	9	0	0
2-WB	8	0	0	0	27	5	0
5-SB	1	0	0	0	0	0	0
6-SB	0	0	0	0	0	0	0
7-EB	2	10	0	0	0	0	0
8-WB	0	1	0	0	0	0	0
9-EB	0	0	0	0	0	0	0

XX Trips AM Peak	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	35	1	1	64	1	0
2-WB	29	0	3	0	88	5	0
5-SB	4	5	0	1	0	0	0
6-SB	0	0	0	0	0	0	0
7-EB	17	65	1	0	0	0	0
8-WB	1	1	0	0	3	0	0
9-EB	0	0	0	0	0	0	0

XX Trips Mid-Day	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	32	8	1	35	0	0
2-WB	32	0	6	0	69	1	0
5-SB	5	0	0	0	1	0	0
6-SB	0	0	0	0	0	0	0
7-EB	51	94	1	0	0	4	1
8-WB	1	2	0	0	0	0	0
9-EB	0	0	0	0	0	0	0

XX Trips PM Peak	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	6	7	0	20	0	0
2-WB	2	0	7	0	52	0	0
5-SB	2	0	0	0	1	0	0
6-SB	0	0	0	0	0	0	0
7-EB	34	87	0	0	0	5	2
8-WB	0	1	0	0	0	0	0
9-EB	0	0	0	0	0	0	0

XX Trips Late Night	1-SB	2-EB	5-NB	6-NB	7-WB	8-EB	9-WB
1-NB	0	2	2	0	2	0	0
2-WB	2	0	2	0	24	0	0
5-SB	2	0	0	0	0	0	0
6-SB	0	0	0	0	0	0	0
7-EB	8	29	0	0	0	0	0
8-WB	0	0	0	0	0	0	0
9-EB	0	0	0	0	0	0	0

Appendix C - License Plate Matching for Location 1: SR 29 North of American Canyon Road

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	14%	12%	13%	13%	13%	18%
	Imported Work In	12%	38%	30%	9%	3%	1%
	Imported Other In	13%	7%	11%	17%	11%	10%
	Exported Work In	7%	0%	0%	5%	12%	15%
	Exported Other In	4%	1%	2%	6%	4%	6%
Outbound	One-Way Out	13%	9%	11%	14%	14%	13%
	Imported Work Out	12%	0%	0%	7%	24%	19%
	Imported Other Out	10%	1%	6%	13%	10%	13%
	Exported Work Out	6%	17%	15%	5%	2%	0%
	Exported Other Out	5%	3%	4%	6%	4%	3%
Pass-Through	XX	4%	9%	5%	4%	3%	2%
	XX with Stop	1%	2%	3%	1%	0%	0%
Internal Total		0%	0%	0%	0%	0%	0%
Inbound Total		49%	58%	55%	49%	43%	49%
Outbound Total		46%	31%	36%	45%	53%	49%
Pass-Through Total		5%	11%	8%	5%	3%	2%
Total		100%	3%	22%	33%	27%	14%
Internal Total		0%	0%	0%	0%	0%	0%
Imported Work		23%	38%	30%	16%	27%	20%
Imported Other		23%	8%	17%	30%	21%	23%
Exported Work		13%	17%	15%	10%	14%	15%
Exported Other		9%	4%	5%	12%	8%	9%
One-Way Total		27%	21%	24%	27%	27%	31%
Pass-Through Total		5%	11%	8%	5%	3%	2%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 1: SR 29 North of American Canyon Road

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	14%	10%	14%	14%	13%	12%
	Imported Work In	11%	35%	25%	5%	3%	1%
	Imported Other In	13%	5%	14%	15%	9%	12%
	Exported Work In	8%	0%	0%	6%	16%	20%
	Exported Other In	5%	0%	3%	7%	4%	6%
Outbound	One-Way Out	11%	13%	9%	11%	11%	13%
	Imported Work Out	11%	0%	0%	9%	27%	17%
	Imported Other Out	10%	0%	6%	15%	9%	14%
	Exported Work Out	7%	29%	14%	4%	2%	0%
	Exported Other Out	5%	0%	4%	7%	2%	3%
Pass-Through	XX	5%	4%	7%	5%	4%	2%
	XX with Stop	2%	2%	4%	1%	0%	0%
Internal Total		0%	0%	0%	0%	0%	0%
Inbound Total		49%	50%	57%	47%	44%	50%
Outbound Total		44%	43%	33%	46%	51%	47%
Pass-Through Total		6%	6%	10%	6%	4%	2%
Total		100%	5%	27%	35%	24%	8%
Internal Total		0%	0%	0%	0%	0%	0%
Imported Work		22%	35%	25%	14%	30%	18%
Imported Other		23%	5%	20%	30%	17%	26%
Exported Work		15%	29%	15%	10%	18%	20%
Exported Other		9%	0%	7%	14%	6%	9%
One-Way Total		24%	23%	23%	25%	25%	25%
Pass-Through Total		6%	6%	10%	6%	4%	2%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 2: SR 12 at the Napa/Solano County Line

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	12%	14%	11%	12%	13%	15%
	Imported Work In	14%	42%	32%	11%	4%	2%
	Imported Other In	7%	4%	8%	10%	6%	5%
	Exported Work In	8%	0%	0%	6%	15%	18%
	Exported Other In	3%	0%	1%	5%	2%	5%
Outbound	One-Way Out	11%	5%	9%	12%	12%	11%
	Imported Work Out	14%	0%	0%	9%	28%	25%
	Imported Other Out	5%	0%	3%	7%	4%	5%
	Exported Work Out	8%	14%	19%	6%	3%	1%
	Exported Other Out	4%	1%	3%	6%	2%	3%
Pass-Through	XX	12%	12%	10%	14%	12%	11%
	XX with Stop	2%	8%	4%	3%	1%	0%
Internal Total		0%	0%	0%	0%	0%	0%
Inbound Total		45%	60%	52%	44%	39%	44%
Outbound Total		40%	20%	34%	40%	48%	44%
Pass-Through Total		14%	20%	14%	16%	12%	11%
Total		100%	4%	25%	31%	26%	13%
Internal Total		0%	0%	0%	0%	0%	0%
Imported Work		28%	42%	33%	20%	31%	26%
Imported Other		12%	4%	10%	17%	10%	10%
Exported Work		16%	14%	19%	12%	17%	19%
Exported Other		7%	1%	4%	11%	5%	7%
One-Way Total		23%	19%	20%	23%	24%	26%
Pass-Through Total		14%	20%	14%	16%	12%	11%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 2: SR 12 at the Napa/Solano County Line

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	1%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	13%	14%	15%	10%	13%	11%
	Imported Work In	12%	36%	26%	5%	3%	1%
	Imported Other In	10%	9%	10%	14%	6%	6%
	Exported Work In	7%	0%	0%	5%	17%	20%
	Exported Other In	3%	0%	1%	5%	2%	7%
Outbound	One-Way Out	10%	4%	5%	13%	12%	12%
	Imported Work Out	11%	0%	0%	14%	23%	20%
	Imported Other Out	6%	1%	3%	10%	5%	4%
	Exported Work Out	8%	13%	16%	5%	2%	1%
	Exported Other Out	4%	1%	5%	5%	3%	5%
Pass-Through	XX	13%	16%	14%	11%	11%	14%
	XX with Stop	2%	5%	5%	2%	0%	0%
Internal Total		0%	1%	1%	0%	0%	0%
Inbound Total		46%	59%	52%	40%	41%	44%
Outbound Total		39%	19%	28%	46%	47%	41%
Pass-Through Total		15%	21%	19%	13%	12%	14%
Total		100%	8%	28%	34%	22%	8%
Internal Total		0%	1%	1%	0%	0%	0%
Imported Work		24%	36%	26%	19%	26%	21%
Imported Other		16%	10%	13%	24%	11%	9%
Exported Work		15%	13%	16%	10%	20%	21%
Exported Other		7%	1%	6%	11%	5%	12%
One-Way Total		22%	18%	19%	23%	26%	23%
Pass-Through Total		15%	21%	19%	13%	12%	14%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 3: SR 29 Southeast of Adams St in St. Helena

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	28%	30%	30%	19%	31%	36%
	Internal Other	37%	32%	34%	44%	35%	34%
	Internal Unknown	21%	23%	24%	19%	19%	22%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	0%
	Imported Other In	0%	0%	0%	0%	0%	0%
	Exported Work In	1%	0%	0%	0%	2%	2%
	Exported Other In	0%	0%	0%	0%	0%	0%
Outbound	One-Way Out	0%	2%	0%	0%	0%	1%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	3%	7%	5%	5%	1%	0%
	Exported Other Out	9%	5%	7%	12%	11%	4%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		86%	86%	89%	82%	85%	92%
Inbound Total		1%	0%	0%	1%	2%	2%
Outbound Total		13%	14%	11%	17%	13%	5%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	1%	23%	31%	28%	16%
Internal Total		86%	86%	89%	82%	85%	92%
Imported Work		0%	0%	0%	0%	0%	0%
Imported Other		0%	0%	0%	0%	0%	0%
Exported Work		4%	7%	5%	5%	3%	2%
Exported Other		9%	5%	7%	12%	11%	5%
One-Way Total		0%	2%	0%	0%	0%	1%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 3: SR 29 Southeast of Adams St in St. Helena

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	24%	17%	21%	21%	33%	29%
	Internal Other	44%	63%	47%	43%	38%	42%
	Internal Unknown	22%	9%	24%	25%	19%	20%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	0%
	Imported Other In	0%	0%	0%	0%	0%	0%
	Exported Work In	1%	0%	0%	1%	0%	4%
	Exported Other In	0%	0%	0%	0%	1%	0%
Outbound	One-Way Out	0%	0%	0%	0%	0%	1%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	2%	6%	4%	2%	0%	0%
	Exported Other Out	7%	6%	5%	8%	8%	3%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		90%	89%	91%	89%	90%	91%
Inbound Total		1%	0%	0%	1%	1%	4%
Outbound Total		9%	11%	9%	10%	9%	4%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	3%	36%	34%	21%	6%
Internal Total		90%	89%	91%	89%	90%	91%
Imported Work		0%	0%	0%	0%	0%	0%
Imported Other		0%	0%	0%	0%	0%	0%
Exported Work		3%	6%	4%	3%	0%	4%
Exported Other		7%	6%	5%	8%	9%	3%
One-Way Total		0%	0%	0%	0%	0%	1%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 4: SR 29 Southeast of SR 128 in Calistoga

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	34%	33%	38%	24%	40%	34%
	Internal Other	44%	58%	42%	50%	38%	48%
	Internal Unknown	9%	6%	10%	9%	9%	9%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	0%
	Imported Other In	0%	0%	0%	0%	0%	0%
	Exported Work In	1%	0%	0%	1%	1%	0%
	Exported Other In	0%	0%	0%	0%	0%	0%
Outbound	One-Way Out	1%	0%	1%	2%	1%	1%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	2%	2%	4%	4%	1%	0%
	Exported Other Out	8%	2%	5%	10%	9%	7%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		87%	96%	90%	83%	87%	92%
Inbound Total		1%	0%	1%	1%	2%	1%
Outbound Total		12%	4%	10%	16%	11%	8%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	1%	26%	31%	32%	9%
Internal Total		87%	96%	90%	83%	87%	92%
Imported Work		0%	0%	0%	0%	0%	0%
Imported Other		0%	0%	0%	0%	0%	0%
Exported Work		3%	2%	4%	4%	2%	0%
Exported Other		8%	2%	5%	10%	9%	7%
One-Way Total		1%	0%	1%	2%	1%	1%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 4: SR 29 Southeast of SR 128 in Calistoga

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	31%	27%	31%	23%	45%	17%
	Internal Other	44%	54%	45%	54%	28%	55%
	Internal Unknown	12%	14%	13%	9%	13%	13%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	0%
	Imported Other In	0%	0%	0%	0%	0%	0%
	Exported Work In	1%	0%	0%	1%	2%	2%
	Exported Other In	0%	0%	0%	0%	0%	0%
Outbound	One-Way Out	1%	3%	1%	1%	1%	4%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	2%	3%	4%	2%	0%	0%
	Exported Other Out	8%	0%	7%	10%	10%	9%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		87%	95%	89%	86%	87%	85%
Inbound Total		1%	0%	0%	1%	3%	2%
Outbound Total		12%	5%	11%	14%	11%	13%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	3%	33%	33%	26%	4%
Internal Total		87%	95%	89%	86%	87%	85%
Imported Work		0%	0%	0%	0%	0%	0%
Imported Other		0%	0%	0%	0%	0%	0%
Exported Work		3%	3%	4%	3%	2%	2%
Exported Other		9%	0%	7%	10%	10%	9%
One-Way Total		1%	3%	1%	1%	1%	4%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 5: SR 29 at the Napa/Lake County Line

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	13%	6%	10%	18%	10%	15%
	Imported Work In	19%	47%	51%	17%	3%	1%
	Imported Other In	9%	20%	13%	12%	5%	4%
	Exported Work In	5%	0%	0%	3%	9%	13%
	Exported Other In	2%	0%	1%	3%	2%	4%
Outbound	One-Way Out	15%	5%	5%	15%	22%	23%
	Imported Work Out	18%	0%	0%	10%	35%	30%
	Imported Other Out	4%	0%	1%	5%	5%	4%
	Exported Work Out	5%	11%	9%	6%	2%	1%
	Exported Other Out	3%	2%	3%	4%	3%	1%
Pass-Through	XX	5%	9%	6%	6%	3%	5%
	XX with Stop	1%	2%	2%	1%	0%	0%
Internal Total		0%	0%	0%	0%	0%	0%
Inbound Total		49%	73%	75%	53%	29%	36%
Outbound Total		45%	17%	17%	40%	67%	58%
Pass-Through Total		6%	11%	8%	8%	3%	5%
Total		100%	2%	24%	28%	35%	11%
Internal Total		0%	0%	0%	0%	0%	0%
Imported Work		37%	47%	51%	27%	38%	31%
Imported Other		13%	20%	14%	17%	10%	8%
Exported Work		10%	11%	9%	9%	11%	13%
Exported Other		5%	2%	4%	6%	5%	5%
One-Way Total		28%	11%	15%	33%	32%	38%
Pass-Through Total		6%	11%	8%	8%	3%	5%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 5: SR 29 at the Napa/Lake County Line

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	12%	13%	9%	16%	10%	16%
	Imported Work In	17%	41%	45%	12%	3%	1%
	Imported Other In	10%	16%	19%	8%	5%	1%
	Exported Work In	5%	0%	0%	5%	9%	10%
	Exported Other In	3%	0%	1%	3%	2%	9%
Outbound	One-Way Out	20%	3%	6%	20%	30%	22%
	Imported Work Out	16%	0%	0%	14%	29%	24%
	Imported Other Out	4%	0%	2%	6%	4%	4%
	Exported Work Out	5%	13%	9%	7%	2%	0%
	Exported Other Out	3%	0%	1%	4%	3%	6%
Pass-Through	XX	5%	16%	6%	4%	3%	6%
	XX with Stop	0%	0%	1%	0%	0%	0%
Internal Total		0%	0%	0%	0%	0%	0%
Inbound Total		47%	69%	74%	44%	29%	38%
Outbound Total		48%	16%	19%	51%	68%	56%
Pass-Through Total		5%	16%	7%	4%	3%	6%
Total		100%	4%	26%	26%	35%	9%
Internal Total		0%	0%	0%	0%	0%	0%
Imported Work		33%	41%	45%	25%	32%	25%
Imported Other		14%	16%	21%	15%	9%	6%
Exported Work		11%	13%	9%	13%	11%	10%
Exported Other		5%	0%	2%	7%	5%	15%
One-Way Total		32%	16%	16%	36%	40%	38%
Pass-Through Total		5%	16%	7%	4%	3%	6%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 6: SR 128 at the Napa/Sonoma County Line

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	5%	0%	6%	8%	3%	6%
	Internal Unknown	3%	0%	1%	4%	3%	0%
Inbound	One-Way In	8%	17%	4%	9%	9%	13%
	Imported Work In	10%	0%	25%	6%	1%	0%
	Imported Other In	4%	0%	2%	8%	3%	0%
	Exported Work In	7%	0%	0%	2%	14%	29%
	Exported Other In	4%	0%	5%	3%	4%	3%
Outbound	One-Way Out	5%	0%	5%	5%	5%	6%
	Imported Work Out	9%	0%	0%	5%	20%	10%
	Imported Other Out	3%	0%	1%	5%	2%	3%
	Exported Work Out	5%	17%	9%	6%	2%	0%
	Exported Other Out	36%	67%	40%	38%	32%	29%
Pass-Through	XX	0%	0%	0%	1%	1%	0%
	XX with Stop	1%	0%	1%	1%	1%	0%
Internal Total		8%	0%	7%	12%	6%	6%
Inbound Total		32%	17%	37%	28%	30%	45%
Outbound Total		58%	83%	55%	58%	62%	48%
Pass-Through Total		1%	0%	1%	2%	2%	0%
Total		100%	1%	29%	31%	34%	6%
Internal Total		8%	0%	7%	12%	6%	6%
Imported Work		19%	0%	25%	12%	21%	10%
Imported Other		6%	0%	3%	12%	5%	3%
Exported Work		12%	17%	9%	8%	17%	29%
Exported Other		40%	67%	45%	41%	36%	32%
One-Way Total		13%	17%	9%	13%	14%	19%
Pass-Through Total		1%	0%	1%	2%	2%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 6: SR 128 at the Napa/Sonoma County Line

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	2%	0%
	Internal Other	4%	0%	3%	6%	3%	0%
	Internal Unknown	1%	0%	1%	0%	3%	0%
Inbound	One-Way In	6%	40%	5%	8%	3%	13%
	Imported Work In	13%	40%	30%	5%	2%	0%
	Imported Other In	6%	0%	11%	9%	0%	0%
	Exported Work In	8%	0%	0%	8%	16%	38%
	Exported Other In	4%	0%	4%	5%	3%	13%
Outbound	One-Way Out	4%	0%	4%	5%	3%	0%
	Imported Work Out	13%	0%	0%	6%	36%	25%
	Imported Other Out	6%	0%	4%	14%	2%	0%
	Exported Work Out	5%	0%	9%	2%	3%	13%
	Exported Other Out	27%	20%	26%	33%	25%	0%
Pass-Through	XX	1%	0%	1%	2%	0%	0%
	XX with Stop	0%	0%	1%	0%	0%	0%
Internal Total		5%	0%	4%	6%	8%	0%
Inbound Total		38%	80%	50%	33%	23%	63%
Outbound Total		55%	20%	43%	59%	69%	38%
Pass-Through Total		1%	0%	3%	2%	0%	0%
Total		100%	2%	35%	30%	29%	4%
Internal Total		5%	0%	4%	6%	8%	0%
Imported Work		26%	40%	30%	11%	38%	25%
Imported Other		12%	0%	14%	23%	2%	0%
Exported Work		13%	0%	9%	9%	19%	50%
Exported Other		31%	20%	30%	38%	28%	13%
One-Way Total		10%	40%	9%	12%	6%	13%
Pass-Through Total		1%	0%	3%	2%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 7: SR 121 at the Napa/Sonoma County Line

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	9%	7%	5%	10%	10%	14%
	Imported Work In	13%	26%	32%	10%	4%	2%
	Imported Other In	8%	4%	7%	13%	6%	4%
	Exported Work In	10%	0%	0%	8%	18%	22%
	Exported Other In	3%	0%	2%	4%	3%	3%
Outbound	One-Way Out	8%	5%	7%	8%	8%	8%
	Imported Work Out	12%	0%	0%	7%	25%	19%
	Imported Other Out	6%	1%	3%	8%	6%	7%
	Exported Work Out	11%	43%	27%	7%	3%	1%
	Exported Other Out	4%	2%	4%	5%	3%	2%
Pass-Through	XX	14%	9%	10%	17%	14%	17%
	XX with Stop	1%	2%	2%	2%	1%	0%
Internal Total		0%	1%	0%	0%	0%	0%
Inbound Total		44%	37%	46%	45%	41%	46%
Outbound Total		40%	52%	41%	36%	45%	36%
Pass-Through Total		15%	11%	12%	19%	14%	18%
Total		100%	2%	27%	28%	32%	11%
Internal Total		0%	1%	0%	0%	0%	0%
Imported Work		25%	26%	32%	16%	29%	22%
Imported Other		14%	5%	10%	21%	12%	11%
Exported Work		21%	43%	27%	15%	21%	23%
Exported Other		7%	2%	6%	9%	6%	5%
One-Way Total		17%	13%	13%	19%	18%	22%
Pass-Through Total		15%	11%	12%	19%	14%	18%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 7: SR 121 at the Napa/Sonoma County Line

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	1%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	9%	2%	5%	11%	10%	13%
	Imported Work In	11%	25%	25%	4%	4%	1%
	Imported Other In	8%	6%	9%	12%	4%	6%
	Exported Work In	11%	0%	0%	9%	23%	22%
	Exported Other In	4%	0%	2%	7%	3%	3%
Outbound	One-Way Out	8%	7%	8%	8%	7%	6%
	Imported Work Out	9%	0%	0%	7%	21%	14%
	Imported Other Out	6%	1%	4%	9%	5%	8%
	Exported Work Out	12%	40%	29%	4%	2%	1%
	Exported Other Out	5%	2%	6%	7%	2%	3%
Pass-Through	XX	16%	15%	10%	20%	18%	23%
	XX with Stop	1%	0%	1%	1%	0%	0%
Internal Total		0%	1%	1%	0%	0%	0%
Inbound Total		43%	33%	41%	43%	44%	45%
Outbound Total		40%	51%	47%	35%	37%	32%
Pass-Through Total		17%	15%	11%	21%	19%	23%
Total		100%	3%	31%	30%	29%	7%
Internal Total		0%	1%	1%	0%	0%	0%
Imported Work		20%	25%	25%	12%	25%	15%
Imported Other		15%	7%	13%	21%	10%	14%
Exported Work		23%	40%	29%	13%	24%	23%
Exported Other		9%	2%	8%	14%	5%	6%
One-Way Total		16%	10%	13%	19%	17%	19%
Pass-Through Total		17%	15%	11%	21%	19%	23%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 8: SR 128 East of SR 121

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	1%	0%	0%	2%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	18%	20%	20%	18%	15%	24%
	Imported Work In	9%	40%	24%	5%	0%	0%
	Imported Other In	8%	20%	9%	6%	8%	6%
	Exported Work In	8%	0%	0%	4%	18%	18%
	Exported Other In	3%	0%	3%	2%	3%	6%
Outbound	One-Way Out	22%	0%	15%	23%	26%	24%
	Imported Work Out	9%	0%	0%	10%	14%	6%
	Imported Other Out	3%	0%	0%	4%	3%	18%
	Exported Work Out	8%	20%	18%	8%	2%	0%
	Exported Other Out	4%	0%	1%	3%	8%	0%
Pass-Through	XX	5%	0%	7%	10%	1%	0%
	XX with Stop	2%	0%	3%	3%	1%	0%
Internal Total		1%	0%	0%	2%	0%	0%
Inbound Total		46%	80%	57%	36%	44%	53%
Outbound Total		46%	20%	34%	49%	54%	47%
Pass-Through Total		8%	0%	9%	13%	2%	0%
Total		100%	2%	25%	34%	33%	6%
Internal Total		1%	0%	0%	2%	0%	0%
Imported Work		17%	40%	24%	15%	14%	6%
Imported Other		11%	20%	9%	10%	11%	24%
Exported Work		16%	20%	18%	12%	20%	18%
Exported Other		7%	0%	4%	5%	11%	6%
One-Way Total		40%	20%	35%	42%	41%	47%
Pass-Through Total		8%	0%	9%	13%	2%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 8: SR 128 East of SR 121

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	0%
	Internal Other	0%	0%	0%	0%	0%	0%
	Internal Unknown	0%	0%	0%	0%	0%	0%
Inbound	One-Way In	17%	0%	19%	18%	17%	22%
	Imported Work In	12%	40%	28%	13%	0%	0%
	Imported Other In	6%	20%	7%	10%	2%	0%
	Exported Work In	8%	0%	0%	5%	12%	44%
	Exported Other In	4%	0%	2%	8%	3%	11%
Outbound	One-Way Out	15%	20%	9%	10%	25%	0%
	Imported Work Out	13%	0%	0%	8%	25%	22%
	Imported Other Out	4%	0%	0%	10%	5%	0%
	Exported Work Out	9%	0%	16%	10%	5%	0%
	Exported Other Out	4%	0%	5%	3%	5%	0%
Pass-Through	XX	4%	0%	12%	0%	2%	0%
	XX with Stop	3%	20%	2%	8%	0%	0%
Internal Total		0%	0%	0%	0%	0%	0%
Inbound Total		48%	60%	56%	53%	33%	78%
Outbound Total		45%	20%	30%	40%	65%	22%
Pass-Through Total		7%	20%	14%	8%	2%	0%
Total		100%	3%	27%	25%	38%	6%
Internal Total		0%	0%	0%	0%	0%	0%
Imported Work		25%	40%	28%	20%	25%	22%
Imported Other		10%	20%	7%	20%	7%	0%
Exported Work		17%	0%	16%	15%	17%	44%
Exported Other		8%	0%	7%	10%	8%	11%
One-Way Total		32%	20%	28%	28%	42%	22%
Pass-Through Total		7%	20%	14%	8%	2%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 9: Spring Mountain Rd at the Napa/Sonoma County Line

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	--	0%	1%	0%	0%
	Internal Other	1%	--	2%	1%	0%	0%
	Internal Unknown	0%	--	0%	0%	0%	0%
Inbound	One-Way In	7%	--	6%	6%	8%	10%
	Imported Work In	17%	--	43%	13%	4%	10%
	Imported Other In	16%	--	16%	17%	14%	30%
	Exported Work In	9%	--	0%	5%	18%	10%
	Exported Other In	10%	--	2%	13%	13%	0%
Outbound	One-Way Out	4%	--	3%	3%	4%	10%
	Imported Work Out	9%	--	0%	4%	19%	20%
	Imported Other Out	3%	--	3%	4%	3%	0%
	Exported Work Out	9%	--	22%	5%	4%	0%
	Exported Other Out	12%	--	3%	18%	14%	0%
Pass-Through	XX	2%	--	0%	3%	0%	10%
	XX with Stop	2%	--	0%	5%	0%	0%
Internal Total		1%	--	2%	2%	0%	0%
Inbound Total		58%	--	67%	54%	56%	60%
Outbound Total		37%	--	32%	35%	44%	30%
Pass-Through Total		3%	--	0%	9%	0%	10%
Total		100%	0%	24%	36%	37%	4%
Internal Total		1%	--	2%	2%	0%	0%
Imported Work		26%	--	43%	17%	23%	30%
Imported Other		19%	--	19%	21%	17%	30%
Exported Work		17%	--	22%	11%	22%	10%
Exported Other		22%	--	5%	31%	26%	0%
One-Way Total		11%	--	10%	10%	13%	20%
Pass-Through Total		3%	--	0%	9%	0%	10%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 9: Spring Mountain Rd at the Napa/Sonoma County Line

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	0%	0%	0%	0%	0%	--
	Internal Other	0%	0%	0%	0%	0%	--
	Internal Unknown	0%	0%	0%	0%	0%	--
Inbound	One-Way In	7%	0%	6%	10%	6%	--
	Imported Work In	23%	0%	52%	14%	6%	--
	Imported Other In	20%	100%	23%	24%	11%	--
	Exported Work In	9%	0%	0%	0%	25%	--
	Exported Other In	3%	0%	3%	7%	0%	--
Outbound	One-Way Out	3%	0%	3%	3%	3%	--
	Imported Work Out	14%	0%	0%	21%	22%	--
	Imported Other Out	6%	0%	0%	7%	11%	--
	Exported Work Out	10%	0%	10%	3%	17%	--
	Exported Other Out	4%	0%	3%	10%	0%	--
Pass-Through	XX	0%	0%	0%	0%	0%	--
	XX with Stop	0%	0%	0%	0%	0%	--
Internal Total		0%	0%	0%	0%	0%	--
Inbound Total		62%	100%	84%	55%	47%	--
Outbound Total		38%	0%	16%	45%	53%	--
Pass-Through Total		0%	0%	0%	0%	0%	--
Total		100%	1%	32%	30%	37%	0%
Internal Total		0%	0%	0%	0%	0%	--
Imported Work		37%	0%	52%	34%	28%	--
Imported Other		26%	100%	23%	31%	22%	--
Exported Work		20%	0%	10%	3%	42%	--
Exported Other		7%	0%	6%	17%	0%	--
One-Way Total		10%	0%	10%	14%	8%	--
Pass-Through Total		0%	0%	0%	0%	0%	--

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 10: Howell Mountain Rd South of Cold Springs Rd

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	36%	37%	43%	27%	39%	36%
	Internal Other	45%	33%	39%	53%	42%	42%
	Internal Unknown	10%	11%	9%	10%	11%	16%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	0%
	Imported Other In	0%	0%	0%	0%	0%	1%
	Exported Work In	1%	0%	0%	0%	1%	2%
	Exported Other In	0%	0%	0%	0%	0%	0%
Outbound	One-Way Out	0%	0%	0%	0%	0%	0%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	2%	0%	5%	2%	1%	0%
	Exported Other Out	6%	19%	4%	8%	5%	4%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		91%	81%	91%	89%	92%	94%
Inbound Total		1%	0%	0%	0%	1%	2%
Outbound Total		8%	19%	9%	10%	6%	4%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	1%	26%	35%	28%	10%
Internal Total		91%	81%	91%	89%	92%	94%
Imported Work		0%	0%	0%	0%	0%	0%
Imported Other		0%	0%	0%	0%	0%	1%
Exported Work		3%	0%	5%	2%	2%	2%
Exported Other		6%	19%	4%	8%	5%	4%
One-Way Total		0%	0%	0%	0%	0%	0%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 10: Howell Mountain Rd South of Cold Springs Rd

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	39%	43%	39%	30%	47%	56%
	Internal Other	45%	57%	47%	53%	34%	26%
	Internal Unknown	11%	0%	8%	11%	14%	11%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	0%
	Imported Other In	0%	0%	0%	0%	0%	0%
	Exported Work In	1%	0%	0%	1%	0%	7%
	Exported Other In	0%	0%	0%	0%	0%	0%
Outbound	One-Way Out	0%	0%	0%	0%	0%	0%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	1%	0%	1%	2%	1%	0%
	Exported Other Out	3%	0%	5%	3%	3%	0%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		95%	100%	95%	94%	96%	93%
Inbound Total		1%	0%	0%	1%	0%	7%
Outbound Total		5%	0%	5%	5%	4%	0%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	2%	35%	33%	24%	6%
Internal Total		95%	100%	95%	94%	96%	93%
Imported Work		0%	0%	0%	0%	0%	0%
Imported Other		0%	0%	0%	0%	0%	0%
Exported Work		2%	0%	1%	3%	1%	7%
Exported Other		3%	0%	5%	3%	3%	0%
One-Way Total		0%	0%	0%	0%	0%	0%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 11: First St West of SR 29

License Plate Matching - Auto Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	27%	33%	29%	20%	31%	31%
	Internal Other	43%	27%	40%	49%	39%	41%
	Internal Unknown	19%	23%	17%	19%	21%	20%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	1%
	Imported Other In	0%	0%	0%	0%	0%	0%
	Exported Work In	1%	0%	0%	1%	2%	2%
	Exported Other In	0%	0%	0%	0%	0%	0%
Outbound	One-Way Out	0%	0%	0%	0%	0%	0%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	2%	5%	3%	2%	1%	0%
	Exported Other Out	8%	13%	10%	9%	5%	5%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		89%	83%	86%	88%	91%	92%
Inbound Total		1%	0%	0%	1%	2%	3%
Outbound Total		10%	17%	14%	11%	6%	5%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	1%	28%	32%	28%	10%
Internal Total		89%	83%	86%	88%	91%	92%
Imported Work		0%	0%	0%	0%	0%	1%
Imported Other		0%	0%	0%	0%	0%	0%
Exported Work		3%	5%	3%	3%	3%	2%
Exported Other		8%	13%	10%	9%	5%	5%
One-Way Total		0%	0%	0%	0%	0%	0%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

Appendix C - License Plate Matching for Location 11: First St West of SR 29

License Plate Matching - Truck Trips		Time Period					
Trip Type		Daily	Early AM	AM Peak	Mid-Day	PM Peak	Late Night
Internal	Internal Work	23%	29%	26%	15%	27%	31%
	Internal Other	44%	29%	38%	52%	42%	39%
	Internal Unknown	23%	14%	24%	21%	25%	23%
Inbound	One-Way In	0%	0%	0%	0%	0%	0%
	Imported Work In	0%	0%	0%	0%	0%	0%
	Imported Other In	0%	0%	0%	0%	0%	0%
	Exported Work In	1%	0%	0%	1%	1%	1%
	Exported Other In	0%	0%	0%	0%	0%	0%
Outbound	One-Way Out	0%	0%	0%	0%	0%	0%
	Imported Work Out	0%	0%	0%	0%	0%	0%
	Imported Other Out	0%	0%	0%	0%	0%	0%
	Exported Work Out	2%	7%	3%	3%	0%	0%
	Exported Other Out	8%	21%	9%	10%	5%	6%
Pass-Through	XX	0%	0%	0%	0%	0%	0%
	XX with Stop	0%	0%	0%	0%	0%	0%
Internal Total		90%	71%	88%	87%	94%	93%
Inbound Total		1%	0%	0%	1%	1%	1%
Outbound Total		10%	29%	12%	12%	5%	6%
Pass-Through Total		0%	0%	0%	0%	0%	0%
Total		100%	1%	28%	35%	28%	7%
Internal Total		90%	71%	88%	87%	94%	93%
Imported Work		0%	0%	0%	0%	0%	0%
Imported Other		0%	0%	0%	0%	0%	0%
Exported Work		3%	7%	3%	3%	2%	1%
Exported Other		8%	21%	9%	10%	5%	6%
One-Way Total		0%	0%	0%	0%	0%	0%
Pass-Through Total		0%	0%	0%	0%	0%	0%

Note: License plate matching does not provide a true O-D pattern because it is based on locations where vehicles are observed rather than start or end points. It can however provide an XX O-D pattern for gateway locations. It can also provide inferred trip type for the region as well as individual intercept locations.

APPENDIX D:
SURVEYS

Napa County Transportation Planning Agency

Win 1 of 3 Visa Prepaid Gift Cards ($250, $100, $100)

Napa County Travel Survey

Help Improve Travel in Napa County

Survey ID: _____

Winery Name: _____

Napa County Transportation and Planning Agency (NCTPA) is conducting a travel survey which is a joint project with Napa County and the first step in developing a comprehensive Countywide Transportation Plan. This study will allow us to better understand how travelers move inside Napa County, including visitors. Most standard transportation data sources focus on the daily commute travel because this is generally when the system is most congested. In Napa, with nearly 3 million visitors per year, understanding the movements of visitors within the county is of critical importance to understand traffic patterns and transportation demand. This study will make use of several different sources of information including traffic counts, mailed surveys, cell phone location data, and intercept interviews at 30 wineries throughout the county. Fehr & Peers is conducting this study on behalf of NCTPA and Napa County. Please help us improve travel in Napa County.

Please simply fill out the survey below and mail it using the enclosed prepaid envelope.

1. Are you a resident, worker, or visitor of Napa County?
   - ☐ Full-time resident
   - ☐ Part-time resident
   - ☐ Non-resident but employed in the region
   - ☐ Visitor

2. Where were you immediately before visiting wineries today? (Starting location) (**Required**)
   Address: _____
   OR Cross Streets: _____
   Business Name (Optional): _____
   City: _____

3. Which of the following categories best describes this location? (Select **Only one** category) (**Required**)
   - ☐ Home
   - ☐ Work
   - ☐ School
   - ☐ Shopping
   - ☐ Winery
   - ☐ Hotel
   - ☐ Visiting friends/family
   - ☐ Personal business
   - ☐ Household errands
   - ☐ Leisure/entertainment
   - ☐ Medical Appointment

4. Where will you go immediately after visiting wineries today? (Ending location) (**Required**)
   Address: _____
   OR Cross Streets: _____
   Business Name (Optional): _____
   City: _____

5. Which of the following categories best describes this location? (Select **Only one** category) (**Required**)
   - ☐ Home
   - ☐ Work
   - ☐ School
   - ☐ Shopping
   - ☐ Winery
   - ☐ Hotel
   - ☐ Visiting friends/family
   - ☐ Personal business
   - ☐ Household errands
   - ☐ Leisure/entertainment
   - ☐ Medical Appointment

6. What time did you leave your starting location? (Enter time and circle am or pm)
   Time: _____ am / pm

7. What was your total travel time to the first winery you visited today?
   Time in Minutes: _____

8. How many total wineries or tasting rooms do you plan to visit today? (Include this winery)
   Total Wineries: _____
   Which wineries? (In order if known)

9. How often do you visit wineries in Napa?
   - ☐ Less than once a year
   - ☐ 1 to 3 times a year
   - ☐ More than 3 times a year

PLEASE CONTINUE SURVEY ON THE BACK OF THIS PAGE.

10. Did you make an appointment to visit here? yes / no

    If so, how far in advance did you make the appointment?
    - ☐ Within the last hour
    - ☐ One day ahead
    - ☐ More than one day ahead

11. How did you make the appointment?
    - ☐ On the phone
    - ☐ Online
    - ☐ In person
    - ☐ Hotel/concierge
    - ☐ Limo/tour company

12. How likely are you to visit a winery that requires advance appointments for wine tasting?
    - ☐ Very likely
    - ☐ Likely
    - ☐ Unlikely
    - ☐ Very unlikely

13. Did the business hours of this winery affect your decision to visit this winery? yes / no

14. Are you a member of this winery's wine club? yes / no

15. Have you been to this winery before? yes / no

    If so, was it for
    - ☐ Wine tasting
    - ☐ Wine tasting with food pairing
    - ☐ Special event

16. Which method of transportation did you utilize to get to this winery? (**Required**)
    - ☐ Personal automobile
    - ☐ Rental Car
    - ☐ Taxi
    - ☐ Limousine/wine tour vehicle
    - ☐ Hotel shuttle or courtesy vehicle
    - ☐ Walking
    - ☐ Bicycling
    - ☐ Public transit

17. What is your home zip/postal code? (**Required**)

    _____

18. How many persons are in your party? (Include yourself) (**Required**)

    ☐ 1 ☐ 2 ☐ 3 ☐ 4 or more

19. Of those, how many are household members? (Include yourself) (**Required**)

    ☐ 1 ☐ 2 ☐ 3 ☐ 4 or more

20. Could you have reasonably visited this winery with any of these modes of transportation?
    - ☐ Walking
    - ☐ Bicycling
    - ☐ Public transit or shuttle service

    If public transit or shuttle service was provided to this winery, would you use it? yes / no

21. What is the average age of your party?
    - ☐ under 21 years of age
    - ☐ 21 to 24 years of age
    - ☐ 25 to 34 years of age
    - ☐ 35 to 44 years of age
    - ☐ 45 to 54 years of age
    - ☐ 55 to 64 years of age
    - ☐ 65 to 74 years of age
    - ☐ 75 to 84 years of age
    - ☐ 85 years of age or older

22. What is the average level of education for your party?
    - ☐ 12th grade or less
    - ☐ High school graduate
    - ☐ Some college credit
    - ☐ Associate or technical school degree
    - ☐ Bachelor's or undergraduate degree
    - ☐ Graduate degree
    - ☐ Other:_____

23. What is the average household income for your party?
    - ☐ Less than $15,000 per year
    - ☐ $15,000 to $24,999 per year
    - ☐ $25,000 to $34,999 per year
    - ☐ $35,000 to $49,999 per year
    - ☐ $50,000 to $74,999 per year
    - ☐ $75,000 to $99,999 per year
    - ☐ $100,000 to $149,999 per year
    - ☐ $150,000 to $199,999 per year
    - ☐ $200,000 per year or more

If you would like to be entered in the drawing to win one of three Visa prepaid gift cards, please provide your name, email address and/or contact phone number:

Name:_____

Email: _____

Phone: _____

Eligibility: To be eligible to win, all required responses must be completed and legible. Three winners will be chosen on October 18th, 2013 and will be notified by telephone or email. Winners will have 5 business days to claim their prize - until 5 p.m. PST on Friday, October 25th, 2013.

For questions, please email k.johnson@fehrandpeers.com or call (925) 930-7100

Appendix D - In-Person Winery Survey Summary of Results

Napa Winery Travel Survey Results

General Statistics

172 responses
169 out of 172 answered almost every question

Winery	Survey Responses
Winery 1	54
Winery 2	25
Winery 3	17
Winery 4	14
Winery 5	13
Winery 6	10
Winery 7	10
Winery 8	8
Winery 9	7
Winery 10	7
Winery 11	4
Winery 12	2
Winery 13	1

Response Rate

Varied by winery but estimated to be around 50%
At one winery we had an 83% response rate
At another winery we had a 50% response rate

Visitor Type	Survey Responses	%
Full-time resident	11	6%
Part-time resident	2	1%
Non-resident but employed in the region	0	0%
Visitor	159	92%

92% of groups were visitors of Napa County

Where do you live?	Count	%
Alameda County	5	3%
Contra Costa County	5	3%
Napa County	11	6%
San Francisco County	5	3%
San Mateo County	2	1%
Santa Clara County	7	4%
Solano County	1	1%
Bay Area	36	21%
Other USA	110	64%
Outside USA	17	10%
Unspecified	9	5%

Only 21% of visitors were from the Bay Area
and 10% were from outside the USA

Start Location Statistics

Very few provided address or cross street information
Can map by City instead

Start City	Count	%
Napa	39	23%
San Francisco	39	23%
St. Helena	10	6%
Calistoga	8	5%
Fairfield	6	3%
San Jose	6	3%
Sonoma	6	3%
Outside State	6	3%
Petaluma	4	2%
Los Angeles	3	2%
Sacramento	3	2%
Walnut Creek	3	2%
Yountville	3	2%
Davis	2	1%
Fremont	2	1%
Healdsburg	2	1%
Kenwood	2	1%
Palo Alto	2	1%
Pleasanton	2	1%
San Ramon	2	1%
South San Francisco	2	1%
Vallejo	2	1%
American Canyon	1	1%
Brentwood	1	1%
Castro Valley	1	1%
Daly City	1	1%
Danville	1	1%
Emeryville	1	1%
Folsom	1	1%
Los Altos Hills	1	1%
Manteca	1	1%
Menlo Park	1	1%
Newport Beach	1	1%
Oakland	1	1%
Porterville	1	1%
Richmond	1	1%
Santa Clara	1	1%
Santa Rosa	1	1%
South Lake Tahoe	1	1%
Suisun City	1	1%

Start County	Count	%
Napa County	61	35%
San Francisco County	39	23%
Sonoma County	15	9%
Santa Clara County	10	6%
Solano County	9	5%
Alameda County	7	4%
Contra Costa County	7	4%
Outside State	6	3%
Los Angeles County	4	2%
Sacramento County	4	2%
San Mateo County	4	2%
Yolo County	2	1%
El Dorado County	1	1%
Orange County	1	1%
San Joaquin County	1	1%
Tulare County	1	1%

Most start their day in Napa or San Francisco
Only 35% start their day in Napa County

Start Location	Count	%
Hotel	110	64%
Home	49	28%
Visiting friends/family	6	3%
Work	2	1%
Winery	2	1%
Leisure/entertainment	2	1%
Personal business	1	1%
School	0	0%
Shopping	0	0%
Household errands	0	0%
Medical appointment	0	0%

64% started their day from a hotel

End Location Statistics

Very few provided address or cross street information
Can map by City instead

End City	Count	%
Napa	53	31%
San Francisco	39	23%
St. Helena	10	6%
Calistoga	8	5%
Fairfield	6	3%
Yountville	6	3%
Sacramento	4	2%
San Jose	4	2%
Sonoma	4	2%
Vallejo	3	2%
Walnut Creek	3	2%
Fremont	2	1%
Healdsburg	2	1%
Petaluma	2	1%
Pleasanton	2	1%
San Ramon	2	1%
Outside State	2	1%
American Canyon	1	1%
Benicia	1	1%
Berkeley	1	1%
Brentwood	1	1%
Cloverdale	1	1%
Danville	1	1%
Davis	1	1%
Emeryville	1	1%
Green Valley	1	1%
Kenwood	1	1%
South Lake Tahoe	1	1%
Lakeport	1	1%
Newport Beach	1	1%
Oakland	1	1%
Palo Alto	1	1%
Richmond	1	1%
San Mateo	1	1%
Santa Rosa	1	1%
South San Francisco	1	1%
Suisun City	1	1%

End County	Count	%
Napa County	78	45%
San Francisco County	39	23%
Solano County	12	7%
Sonoma County	11	6%
Alameda County	7	4%
Contra Costa County	7	4%
Santa Clara County	5	3%
Sacramento County	4	2%
Outside State	2	1%
San Mateo County	2	1%
El Dorado County	1	1%
Los Angeles County	1	1%
Orange County	1	1%
Yolo County	1	1%
Lake County	1	1%

Most end their day in Napa or San Francisco
Only 45% (higher than start) end their day in Napa County

End Location	Count	%
Hotel	107	62%
Home	41	24%
Visiting friends/family	8	5%
Leisure/entertainment	6	3%
Shopping	4	2%
Winery	4	2%
Personal business	2	1%
Work	0	0%
School	0	0%
Household errands	0	0%
Medical appointment	0	0%

62% end their day at a hotel (same as start)

Travel & Frequency

Average Departure Time
10:14 AM

Average Travel Time (Minutes)
74

Average Number of Wineries Planned to Visit
3.1

Very few specified the other wineries they visited.
Most did not know and a lot of these were guesses
or planned and may not have happened

How often do you visit wineries in Napa?	Count	%
Less than once a year	103	61%
1 to 3 times a year	41	24%
More than 3 times a year	24	14%

More than half the groups (61%) infrequently visit Napa wineries

Make an appointment?	Count	%
No	109	65%
Yes - Within the last hour	10	6%
Yes - One day ahead	4	2%
Yes - More than one day ahead	45	27%

How did you make the appointment?	Count	%
On the phone	33	56%
Online	20	34%
In person	2	3%
Hotel/concierge	3	5%
Limo/tour company	1	2%

How likely to visit winery requiring appointment?	Count	%
Very likely	48	28%
Likely	53	31%
Unlikely	31	18%
Very unlikely	37	22%

88% said the business
hours did NOT affect
their decision

89% were NOT members
of the wine club

Have you been to this winery before?	Count	%
No	117	69%
Yes - Wine tasting	48	28%
Yes - Wine tasting with food pairing	1	1%
Yes - Special event	3	2%

Almost 70% were first-time visitors to the winery

Transportation & Demographics

Which method of transportation did you use?	Count	%
Rental car	89	52%
Personal automobile	62	36%
Limousine/wine tour vehicle	18	10%
Bicycling	2	1%
Taxi	1	1%
Hotel shuttle or courtesy vehicle	0	0%
Walking	0	0%
Public transit	0	0%

52% traveled by rental car, only 36% by personal auto

Average party size is 2.8 persons
Of those, about 1.9 (68%) are household members

19% said public transit or shuttle was a reasonable option
but 0% used public transit (10% used limo our wine tour though)

58% said they would use
transit if it was an option

Average Age	Count	%
under 21 years of age	1	1%
21 to 24 years of age	2	1%
25 to 34 years of age	37	23%
35 to 44 years of age	47	29%
45 to 54 years of age	45	27%
55 to 64 years of age	24	15%
65 to 74 years of age	8	5%
75 to 84 years of age	0	0%
85 years of age or older	0	0%

80% of visitors wre age 25 to 54

Average Level of Education	Count	Percent
12th grade or less	0	0%
High school graduate	1	1%
Some college credit	6	4%
Associate or technical school degree	4	2%
Bachelor's or undergraduate degree	87	53%
Graduate degree	64	39%
Other	1	1%

92% have an undergraduate college degree or higher

Average Household Income	Count	%
Less than $15,000 per year	1	1%
$15,000 to $24,999 per year	1	1%
$25,000 to $34,999 per year	0	0%
$35,000 to $49,999 per year	2	1%
$50,000 to $74,999 per year	8	6%
$75,000 to $99,999 per year	15	11%
$100,000 to $149,999 per year	42	30%
$150,000 to $199,999 per year	21	15%
$200,000 per year or more	49	35%

Roughly 80% have an average household income over $100,000 a year
Median US household income is around $50,000
Median California household income is around $60,000
Median Bay Area household income is around $75,000

Napa County Employer Travel Survey

Help Improve Travel in Napa County

Your information will not be shared.

1) Where do you live? (Home location)

Address

Or Cross Streets (name both streets)

*2) Home City (Required):

*3) Where do you work? (Work location) (Required)

Business name

Address

Or Cross Streets (name both streets)

*4) Work City (Required):

*Response required for eligibility of one of three $100 prepaid Visa Gift Cards.

Help Improve Travel in Napa County

5) What time do you typically leave your home for work?

	HH	MM	AM/PM
Time		:	

6) Please describe any intermediate stops you typically make on your way to work.

Stop 1 Purpose (school, coffee, etc.):

Stop 1 Location (cross streets or business name):

Stop 2 Purpose (school, coffee, etc.):

Stop 2 Location (cross streets or business name):

Stop 3 Purpose (school, coffee, etc.):

Stop 3 Location (cross streets or business name):

7) What is your typical travel time to work (including any intermediate stops)?

Time in Minutes

Napa County Employer Travel Survey

8) Please list (in order if possible) the major roadways you travel to get to work including roadways used for typical intermediate stops (e.g., State Route 29).

Help Improve Travel in Napa County

9) What time do you typically leave work for home?

	HH	MM	AM/PM
Time		:	

10) Please describe any intermediate stops you typically make on your way home.

Stop 1 Purpose (school, coffee, etc.):

Stop 1 Location (cross streets or business name):

Stop 2 Purpose (school, coffee, etc.):

Stop 2 Location (cross streets or business name):

Stop 3 Purpose (school, coffee, etc.):

Stop 3 Location (cross streets or business name):

11) What is your typical travel time home (including any intermediate stops)?

Time in Minutes

12) Please list (in order if possible) the major roadways you travel to get home including roadways used for typical intermediate stops (if different than to work).

Help Improve Travel in Napa County

13) How many days in a typical week do you commute to/from your work location?

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7

Napa County Employer Travel Survey

***14) What percent of the time do you use the following modes of transportation to commute to/from your work location? (Should add up to 100) (Required)**

Personal automobile	
Walking	
Bicycling	
Public transit or shuttle service	
Car pool/van pool	

15) How many days in a typical week do you work from home?

○ 0 ○ 1 ○ 2 ○ 3 ○ 4 ○ 5 ○ 6 ○ 7

16) Do you have flexible work hours that allow you to alter your commute times?

○ Yes

○ No

17) Is your typical work week Monday to Friday?

○ Yes

○ No

*Response required for eligibility of one of three $100 prepaid Visa Gift Cards.

Help Improve Travel in Napa County

18) Can you reasonably travel to work using any of these modes of transportation? (Select ALL that apply)

☐ Walking

☐ Bicycling

☐ Public transit or shuttle service

☐ Car pool/van pool

19) If public transit or a shuttle service was expanded and became a reasonable option for your work trip, would you be willing to use it?

○ Yes

○ No

20) If yes, please describe the changes necessary to make public transit or a shuttle service a reasonable option for your work trip.

Help Improve Travel in Napa County

***21) Please answer the following questions: (Required)**

	1	2	3	4 or more
What is typically the highest number of passengers in your vehicle on your way to/from work? (Include yourself)	○	○	○	○
How many people are in your household? (Include yourself)	○	○	○	○
How many vehicles are available to your household?	○	○	○	○

22) What is your age?

23) What is your highest level of education?

Other (please specify)

24) What is your annual household income?

*Response required for eligibility of one of three $100 prepaid Visa Gift Cards.

Help Improve Travel in Napa County

Thank you for participating! To be entered to win one of three $100 prepaid Visa gift cards, please provide your name and email (or phone number):

Name

Email

Phone

Appendix D - Online Employer Survey Summary of Results

Napa Employer Travel Survey Results

General Statistics

1,444 responses
1,333 (92%) answered almost evey questior

Responses from almost 400 employers
Some are duplicates due to departments, etc
Largest responder was County of Napa (292 or 20%
Followed by City of Napa (95 or 7%)

Home and Work Location

Live City	Count	%
Napa	742	51%
St. Helena	83	6%
Vallejo	65	5%
American Canyon	63	4%
Fairfield	54	4%
Angwin	47	3%
santa rosa	47	3%
Calistoga	46	3%
Vacaville	39	3%
Sonoma	36	2%
Yountville	27	2%
Petaluma	20	1%
Benicia	16	1%
Suisun City	14	1%
Hidden Valley Lake	12	1%
Novato	8	1%
San Francisco	8	1%
Rohnert Park	7	0%
Cotati	6	0%
Pope Valley	6	0%
Sacramento	6	0%
Healdsburg	5	0%
Concord	4	0%
Glen Ellen	4	0%
Martinez	4	0%
San Rafael	4	0%
Kelseyville	3	0%
middletown	3	0%
Oakland	3	0%
Oakville	3	0%
Walnut Creek	3	0%
winters	3	0%
Woodland	3	0%
Unspecified	2	0%
Albany	2	0%
Berkeley	2	0%
Danville	2	0%
Deer Park	2	0%
El Cerrito	2	0%
rodeo	2	0%
Rutherford	2	0%
Sebastopol	2	0%
Windsor	2	0%
Alameda	1	0%
Atlanta, GA	1	0%
Bethel Island	1	0%
Brentwood	1	0%
Burlingame	1	0%
Cazadero	1	0%
Chico	1	0%
Clearlake Oaks	1	0%
Cobb	1	0%
Cordelia	1	0%
Crockett	1	0%
Elk Grove	1	0%
Galt	1	0%
Hayward	1	0%
La quinta	1	0%
Lafayette	1	0%
Lake Forest	1	0%
Loch Lomond	1	0%
Lower Lake	1	0%
mill valley	1	0%
Orangevale	1	0%
Pinole	1	0%
Redding	1	0%
Riverbank	1	0%
Ryde	1	0%
San Anselmo	1	0%
san lorenzo	1	0%
San Pablo	1	0%
Stockton	1	0%
west sacramento	1	0%

Live County	Count	%
Napa County	1021	71%
Solano County	189	13%
Sonoma County	130	9%
Contra Costa County	22	2%
Lake County	22	2%
Marin County	14	1%
Alameda County	10	1%
Sacramento County	10	1%
San Francisco County	8	1%
Yolo County	7	0%
Unspecified	2	0%
Butte County	1	0%
Los Angeles County	1	0%
Orange County	1	0%
Outside California	1	0%
Riverside County	1	0%
San Joaquin County	1	0%
San Mateo County	1	0%
Shasta County	1	0%
Stanislaus County	1	0%

51% live in City of Napa and 71% live in Napa County

Work City	Count	%
Napa	808	56%
St. Helena	208	14%
Yountville	110	8%
Rutherford	90	6%
Calistoga	84	6%
american canyon	60	4%
Angwin	48	3%
Oakville	23	2%
Unspecified	7	0%
Healdsburg	1	0%
Lodi	1	0%
Redding	1	0%
Santa Rosa	1	0%
Sonoma	1	0%
unincorpirated napa	1	0%

56% of respondents work in the City of Napa

"To Work" Statistics

Average Home Departure Time
7:50 AM

Average Travel Time to Work (Minutes)
31

Way to Work Intermediate Stops
485 (34%) make at least 1 stop
142 (10%) make at least 2 stops
56 (4%) make 3 or more stops

Most Common Stop Purposes
Coffee - 126 (26%)
Schoool - 168 (35%)
Gas - 26 (5%)

66% make no stops on the way to work

To Work Route	Count	%
SR 29	829	61%
Silverado Trail	344	25%
Soscol Ave	173	13%
I-80	168	12%
1st St	127	9%
SR 121	125	9%
SR 12	119	9%
Imola Ave	108	8%
Trancas St	91	7%
Lincoln Ave	87	6%
SR 128	41	3%
Howell Mountain Rd	35	3%
Spring Mountain Rd	32	2%
SR 221	27	2%

61% of surveyed commuters use SR 29 to get to Work

"Return Home" Statistics

Average Work Departure Time
4:00 PM

Average Travel Time to Home (Minutes)
37

Way Home Intermediate Stops
426 (30%) make at least 1 stop
131 (9%) make at least 2 stops
52 (4%) make 3 or more stops

Most Common Stop Purposes
Coffee - 7 (2%)
Schoool - 92 (22%)
Gas - 25 (6%)
Gym - 41 (10%)
Shopping - 150 (35%)

70% make no stops on the way home
compared to 66% on the way to work

To Home Route	Count	%	Change
SR 29	619	55%	-6%
Silverado Trail	269	24%	-1%
Soscol Ave	152	13%	1%
I-80	136	12%	0%
1st St	98	9%	-1%
SR 121	102	9%	0%
SR 12	79	7%	-2%
Imola Ave	83	7%	-1%
Trancas St	104	9%	3%
Lincoln Ave	73	6%	0%
SR 128	26	2%	-1%
Howell Mountain Rc	27	2%	0%
Spring Mountain Rc	18	2%	-1%
SR 221	17	2%	0%

55% of surveyed commuters use SR 29 to go Home

Transportation

Mode Split	>90% of the Time		>50% of the Time	
Personal automobile	1,220	92%	1,283	97%
Walking	11	0.8%	20	1.5%
Bicycling	8	0.6%	17	1.3%
Public transit or shut	5	0.4%	14	1.1%
Car pool/van pool	6	0.5%	20	1.5%

97% commute using their personal automobile more than half the time

20% carpool in one form or another

Typical Commute Week	Count	%
0 Days	20	2%
1 Day	5	0%
2 Days	34	3%
3 Days	52	4%
4 Days	114	9%
5 Days	1046	79%
6 Days	43	3%
7 Days	8	1%

79% commute 5 days a week

Work from Home	Count	%
0 Days	1175	88%
1 Day	67	5%
2 Days	36	3%
3 Days	12	1%
4 Days	4	0%
5 Days	26	2%
6 Days	2	0%
7 Days	11	1%

88% do not work from home

35% have flexible work hours that allow
them to alter their commute time

79% have a typical work week

Can you reasonably commute using these modes of transportation?

Walking	Bicycling	Public Transit	Car Pool
165	297	242	327
12%	22%	18%	25%

But 86% say they use their personal automobile 100% of the time

43% said they would use public transit if service was
expanded and became a reasonable optio

Responders listed a lot of great ideas for changes to make
public transit a reasonable optior
Proximity to home, more frequent headways,
and late-night service are mentioned the mos

Demographics

Average household size is 2.5 persons

Average household has 2.2 vehicles

Average Age	Count	%
18 to 24 years of age	38	3%
25 to 34 years of age	301	23%
35 to 44 years of age	289	22%
45 to 54 years of age	373	28%
55 to 64 years of age	272	21%
65 to 74 years of age	34	3%
75 to 84 years of age	2	0%
85 years of age or older	0	0%

Similar age distribution to winery visitors,
Fewer in the 35 to 44 age bracket (22% vs. 29% for wineries

Average Level of Education	Count	Percent
12th grade or less	10	1%
High school graduate	53	4%
Some college credit	252	19%
Associate or technical school degree	165	12%
Bachelor's or undergraduate degree	530	40%
Graduate degree	286	22%
Other	6	0%

62% have an undergraduate college degree or higher
(compared to 92% for winery visitors)

Average Household Income	Count	%
Less than $15,000 per year	10	1%
$15,000 to $24,999 per yea	14	1%
$25,000 to $34,999 per yea	43	4%
$35,000 to $49,999 per yea	99	8%
$50,000 to $74,999 per yea	245	20%
$75,000 to $99,999 per yea	233	19%
$100,000 to $149,999 per yea	320	26%
$150,000 to $199,999 per yea	154	13%
$200,000 per year or more	106	9%

Roughly 47% have an average household income over $100,000 a yea
(compared to 80% for winery visitors)
Median US household income is around $50,00
Median California household income is around $60,00
Median Bay Area household income is around $75,00

BLEED

KEEP CLEAR OF CRITICAL ART

SAFE ZONE

NC TPA Napa County Transportation Planning Agency

Win 1 of 3
Visa Prepaid Gift Cards
($250, $100, $100)

Napa County Travel Survey

Help Improve Travel in Napa County

Napa County Transportation and Planning Agency (NCTPA) is conducting a travel survey which is a joint project with Napa County and the first step in developing a comprehensive Countywide Transportation Plan. This study will allow us to better understand how travelers move inside Napa County, including visitors. Most standard transportation data sources focus on the daily commute travel because this is generally when the system is most congested. In Napa, with nearly 3 million visitors per year, understanding the movements of visitors within the county is of critical importance to understand traffic patterns and transportation demand. This study will make use of several different sources of information including traffic counts, mailed surveys, cell phone location data, and intercept interviews at wineries throughout the county. Fehr & Peers is conducting this study on behalf of NCTPA and Napa County. You have been invited to participate because a vehicle registered to your address traveled in the region on Friday, November 15, 2013.

Your Unique Survey ID: >>Survey ID<< **Date and Time:** >>Date and Time<<

Location Surveyed: >>Location 1<<

>>Location 2<<

Take the survey online or on your smart phone at:

www.surveymonkey.com/s/NapaTravelSurvey

For questions, please email Kevin Johnson at kjohnson@fehrandpeers.com or call (925) 930-7100

Napa County Travel Survey

Help Improve Travel in Napa County

Your information will not be shared.

*1. Unique Survey ID (Required)

You can find your Unique Survey ID near the bottom of the mailer.

2. At the time of travel were you a resident, worker, student, or visitor of Napa County?

*Response required for eligibility of one of three prepaid Visa Gift Cards ($250, $100, $100).

Help Improve Travel in Napa County

*3. Where did you begin this auto trip? (Starting location) (Required)

Address

Or Cross Streets (name both streets)

Business name (optional)

*4. City:

*5. Where did you come from for this auto trip? Which of the following categories best describes this location? (Required)

*Response required for eligibility of one of three prepaid Visa Gift Cards ($250, $100, $100).

Help Improve Travel in Napa County

*6. Where did you end this auto trip? (Ending location) (Required)

Address

Or Cross Streets (name both streets)

Business name (optional)

*7. City:

Napa County Travel Survey

***8. Where did you go on this auto trip? Which of the following categories best describes this location? (Required)**

*Response required for eligibility of one of three prepaid Visa Gift Cards ($250, $100, $100).

Help Improve Travel in Napa County

9. What time did you begin this auto trip?

	HH	MM	AM/PM
Time		:	

10. What was your total travel time for this auto trip (Starting Location to Ending Location)?

Time in Minutes

11. How often do you make this trip?

***12. Please answer the following questions: (Required)**

	1	2	3	4 or more
How many passengers were in the vehicle at the time of the auto trip? (Include yourself)				
Of those, how many were household members? (Include yourself)				
How many people are in your household? (Include yourself)				
How many vehicles are available to your household?				

*Response required for eligibility of one of three prepaid Visa Gift Cards ($250, $100, $100).

Help Improve Travel in Napa County

Napa County Travel Survey

13. Could this trip have been made with other modes of transportation? If so, which modes? (Select ALL that apply)

- ☐ No Other Modes
- ☐ Walking
- ☐ Bicycling
- ☐ Public transit, shuttle, limo, or taxi
- ☐ Van pool/car pool
- ☐ Don't know

14. If public transit or shuttle service was expanded to these areas, would you be willing to make this trip using public transit or a shuttle?

- ○ Yes
- ○ No

15. Do you use public transit systems (bus, ferry, light rail)? How often?

16. If yes, for what purposes? (Select ALL that apply)

- ☐ Work
- ☐ School
- ☐ Shopping or Dining
- ☐ Recreational
- ☐ Other

Help Improve Travel in Napa County

17. Were you aware that Napa County has a transit system that connects to the Ferry, BART, Sonoma County and Solano County?

- ○ Yes
- ○ No

18. If yes, have you ever used public transit to get to/from Napa County to other locations in the Bay Area or Lake County?

- ○ Yes
- ○ No

19. What would entice you to consider public transit on your next trip to Napa County? (Select ALL that apply)

- ☐ Service frequency where buses would operate at least every 15 minutes apart to Ferry or BART
- ☐ Service frequency where buses would operate at least every 15 minutes in/around Napa
- ☐ Late night service
- ☐ Rail Service
- ☐ Intercity shuttle service

20. What would entice you to make this trip by bicycle?

- ☐ Safer bicycle infrastructure/conditions
- ☐ Better road quality
- ☐ Dedicated bicycle lanes
- ☐ Separated bicycle path
- ☐ This trip is not feasible to make on bike

21. Do you use van pools or car pools?

- ○ Yes
- ○ No

Help Improve Travel in Napa County

22. What is your age?

23. What is your highest level of education?

Other (please specify)

24. What is your annual household income?

Help Improve Travel in Napa County

25. Thank you for participating! To be entered to win one of three prepaid Visa gift cards ($250, $100, $100), please provide your name and email (or phone number):

Name

Email

Phone

*Response required for eligibility of one of three prepaid Visa Gift Cards ($250, $100, $100).

Appendix D - Vehicle Intercept Mail Survey Summary of Results

Napa Vehicle Intercept Mail Survey Results

General Statistics

183 responses
168 answered almost every question

Population (# of unique License Plates	85,531
Survey's Mailed	8,500
Responses needed for 95% confidence leve and 10% confidence interval at each of the 11 survey location	625
Response Rate	2.2%

Due to the low response rate the responses are only statistical valid looking **at all locations together** rather than individual location

Confidence Interval for **all locations together** using a 95% confidence level	7%

Vehicle Intercept Location	Count	%
Highway 29 - Southeast of Adams St in St. Helen	28	15%
Highway 121 - at the Sonoma/Napa County Line	26	14%
Highway 12 - at the Napa/Solano County Line	25	14%
Highway 29 - at the Napa/Lake County Line	22	12%
First Street - West of SR 25	20	11%
Highway 29 - North of American Canyon R	17	9%
Howell Mountain Road - South of Cold Springs Roa	16	9%
Highway 29 - Southeast of SR 128 in Calistog	15	8%
Highway 128 - East of SR 12	7	4%
Highway 128 - at the Sonoma/Napa County Line	4	2%
Spring Mountain Road - at the Napa/Sonoma County Line	3	2%

Only 17 responses for SR 29 North of American Canyon R
which is the location with the most observed vehicles (30% of total observed vehicle

Classification	Count	%
Full-time resident	97	52%
Part-time resident	2	1%
Non-resident but employed in the region	49	26%
Student	3	2%
Visitor	31	17%

More than half the respondents are full-time residents of Napa County

Start Information

Start City	Count	%
Napa	57	31%
St. Helena	18	10%
calistoga	14	8%
Angwin	9	5%
Santa Rosa	7	4%
Sonoma	6	3%
Vallejo	6	3%
Hidden Valley Lake	5	3%
Suisun City	4	2%
Yountville	4	2%
American Canyon	3	2%
Fairfield	3	2%
Kelseyville	3	2%
Novato	3	2%
Sacramento	3	2%
Dixon	2	1%
middletown	2	1%
Petaluma	2	1%
Pope Valley	2	1%
San Francisco	2	1%
Vacaville	2	1%
Alamo	1	1%
Benicia	1	1%
Chico	1	1%
Citrus Heights	1	1%
clearlake	1	1%
Cotati	1	1%
davis	1	1%
Glendale	1	1%
Grass Valley	1	1%
healdsburg	1	1%
Martinez	1	1%
mckinleyville	1	1%
Mill valley	1	1%
Oakland	1	1%
Oakville	1	1%
Pinole	1	1%
Pleasant Hil	1	1%
Rancho Cordova	1	1%
Redwood City	1	1%
richmond	1	1%
Rocklin	1	1%
Rohnert Park	1	1%
Rutherford	1	1%
Santa Clara	1	1%
Sebastopol	1	1%
Woodbridge	1	1%

Start County	Count	%	From Cell Data
Napa County	109	—	—
Sonoma County	19	26%	32%
Solano County	18	24%	30%
Lake County	11	15%	1%
Contra Costa County	5	7%	9%
Marin County	4	5%	3%
Sacramento County	4	5%	3%
San Francisco County	2	3%	2%
Alameda County	1	1%	5%
Butte County	1	1%	0%
Humboldt County	1	1%	0%
Los Angeles County	1	1%	0%
Nevada County	1	1%	0%
Placer County	1	1%	1%
Sacramento	1	1%	1%
San Joaquin County	1	1%	4%
San Mateo County	1	1%	1%
Santa Clara County	1	1%	2%
Yolo County	1	1%	2%

County of origin very closely resembles the cell phone dat
Can only compare for external trips because we collecte
counts at all external gateways but only a few internal locatior

Likely need to redistribute Lake County to Sonoma and Solano

Can map the starting address and/or cross street

Where did you come from?	Count	%
Home	147	80%
Work	23	13%
Personal business	4	2%
Shopping	3	2%
Work business	2	1%
School	1	1%
Hotel	1	1%
Visiting friends/famil	1	1%
Household errands	1	1%
Winery	0	0%
Leisure/entertainmen	0	0%
Medical appointment	0	0%

End Information

End City	Count	%
Napa	66	37%
St. Helena	34	19%
calistoga	12	7%
Santa Rosa	12	7%
Angwin	9	5%
American Canyon	5	3%
Yountville	4	2%
fairfield	3	2%
Petaluma	3	2%
Vallejo	3	2%
Clearlake	2	1%
Hidden Valley Lake	2	1%
Novato	2	1%
Rutherford	2	1%
san rafael	2	1%
Belmont	1	1%
Citrus Heights	1	1%
davis	1	1%
Ft. Bragg	1	1%
Kelseyville	1	1%
Los Gatos	1	1%
Lower Lake	1	1%
Martinez	1	1%
oakville	1	1%
Point Arena	1	1%
Pt Reyes Statior	1	1%
Rio vista	1	1%
Rohnert Park	1	1%
Sacramento	1	1%
San Francisco	1	1%
Sonoma	1	1%

End County	Count	%
Napa County	133	—
Sonoma County	17	39%
Solano County	7	16%
Lake County	6	14%
Marin County	5	11%
Mendocino County	2	5%
Sacramento County	2	5%
Contra Costa County	1	2%
San Francisco County	1	2%
San Mateo County	1	2%
Santa Clara County	1	2%
Yolo County	1	2%

Can map the ending address and/or cross street

Where did you end at?	Count	%
Work	71	40%
Shopping	20	11%
Visiting friends/famil	18	10%
Home	16	9%
School	9	5%
Work business	9	5%
Winery	8	5%
Leisure/entertainmen	8	5%
Personal business	6	3%
Medical appointment	5	3%
Household errands	4	2%
Hotel	3	2%

Trip Information

Imported vs. Exported Trips	Mail Survey	LP Matching	Cell Data
% of External Trips Exporte	34%	39%	35%
% of External Trips Importe	66%	61%	65%

Trip Purpose	Mail Survey	National Avgs	Cell Data
HBW	34%	25%	36%
HBO	40%	50%	33%
NHB	26%	25%	31%

Average Departure Time
10:07 AM

Average Travel Time (Minutes)
57

How Often?	Count	%
Less than 1 time per month	35	21%
1 to 3 times per month	31	19%
1 to 3 times per week	26	16%
4 or more times per week	74	45%

21% of trips were "less than 1 time per month" which could be tourists (17% were visitor

Average Auto Occupancy
1.37

72% were single occupant trips

Average # of Household Members in Automobile
1.30

94% of occupants were household member

Other Mode Information

62% of respondents said their trip could have been made with another mor
but all 183 trips were made by automobil

53% said they would not be willing to use public trans

85% said they rarely or never use public trans

Those that use transit predominantly use it for recreational purpose

67% were aware Napa County has a transit syster
that connects to the Ferry, BART, and Sonoma an
Solano Counties

However, only 23% have used i

In general, the choices regarding "what would entice you to use public transit" were equally selec

More people felt "safer bicycle infrastructure/conditions" would entice them to make their trip by bicy

18% use van pools or car pools

Demographic Information

Average Household Size
2.45

Average Vehicles Per Household
2.15

Average Age	Count	%
18 to 24 years of age	2	1%
25 to 34 years of age	21	13%
35 to 44 years of age	30	18%
45 to 54 years of age	36	21%
55 to 64 years of age	51	30%
65 to 74 years of age	19	11%
75 to 84 years of age	8	5%
85 years of age or olde	1	1%

Bias towards older age group who likely have more time to fill out the surv

Average Level of Education	Count	Percent
12th grade or less	2	1%
High school graduate	8	5%
Some college credit	26	15%
Associate or technical school degree	21	12%
Bachelor's or undergraduate degree	62	36%
Graduate degree	49	29%
Other	0	0%

65% have an undergraduate college degree or highe
(compared to 92% for winery visitors

Average Household Income	Count	%
Less than $15,000 per yea	4	3%
$15,000 to $24,999 per yea	1	1%
$25,000 to $34,999 per yea	7	4%
$35,000 to $49,999 per yea	15	9%
$50,000 to $74,999 per yea	33	21%
$75,000 to $99,999 per yea	27	17%
$100,000 to $149,999 per yea	37	23%
$150,000 to $199,999 per yea	15	9%
$200,000 per year or more	20	13%

Roughly 45% have an average household income over $100,000 a yea
(compared to 80% for winery visitors
Median income appears to be above $75,00
Median US household income is around $50,00
Median California household income is around $60,00
Median Bay Area household income is around $75,00

APPENDIX E:
MOBILE DEVICE DATA

Appendix E - Mobile Device Data County of Origin for External Trips

County Name	Friday Trips	Friday % of Trips	From Vehicle Intercept Survey
Sonoma	40,973	35%	26%
Solano	32,765	28%	24%
Contra Costa	9,740	8%	7%
Alameda	6,810	6%	1%
Marin	3,642	3%	5%
San Joaquin	3,543	3%	1%
San Benito	3,535	3%	
Santa Clara	2,891	3%	1%
San Francisco	2,505	2%	3%
Yolo	1,986	2%	1%
Sacramento	1,424	1%	5%
Lake	1,392	1%	15%
San Mateo	1,329	1%	1%
Stanislaus	1,137	1%	
Mendocino	779	1%	1%
Merced	510	0%	
Placer	503	0%	
El Dorado	54	0%	
Sutter	54	0%	
Total	**115,574**	**100%**	**91%**