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**California's Freeway Service Patrol
Program
Management Information System Annual Report
Fiscal Year 2014-2015**

**Michael Mauch and
Alex Skabardonis**

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<p>16. Abstract</p> <p>The Freeway Service Patrol (FSP) is an incident management program implemented by Caltrans, the California Highway Patrol and local partner agencies to quickly detect and assist disabled vehicles and reduce non-recurring congestion along the freeway during peak commute hours. The first FSP program was piloted in Los Angeles, and was later expanded to other regions by state legislation in 1991. As of June 2015, there were fourteen participating FSP Programs operating in California, deploying over 340 tow trucks and covering over 1,800 (center-line) miles of congested California freeways.</p> <p>The purpose of this research project was to evaluate the effectiveness of the Caltrans FSP program in reducing incident durations and removal of other obstructions that directly contribute to freeway congestion for Caltrans fiscal year 2014-2015. The project provides valuable information to agencies managing the FSP program so that resources are distributed within the various statewide FSP operations in the most efficient and cost-effective manner possible. The tools used and the operational performance measures provided by this research effort will significantly contribute on the ongoing agencies' efforts to improve the efficiency and effectiveness of the FSP program.</p>			
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CALIFORNIA'S FREEWAY SERVICE PATROL PROGRAM

Management Information System Annual Report
Fiscal Year 2014-15

*Prepared for the California Department of Transportation
Traffic Operations Division*



Prepared by

Institute of Transportation Studies
University of California at Berkeley

Final Report, September 12, 2016

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Section 1: Executive Summary

1.1 Introduction

The Freeway Service Patrol (FSP) is a program run jointly by Caltrans, the California Highway Patrol (CHP) and local transportation agencies. Whether fixing a flat tire, towing a disabled vehicle to a safe location, clearing debris from a lane of traffic, or providing a gallon of gasoline to a motorist that has run out of fuel, California's fleet of FSP roving tow trucks have two primary benefits. First, the patrolling trucks of the FSP find congestion-causing incidents and clear them quickly. Second, tow truck drivers provide direct assistance to stranded motorists, increasing safety and security for them in a moment of need. This service reduces delay for other motorists by maintaining the capacity of our highway system and increases safety for motorists by clearing hazards that may cause secondary incidents. The operational performance measures contained in this report were developed for program managers at Caltrans and partner agencies as tools for improving the efficiency and effectiveness of the FSP program.

This report seeks to increase the information available to state and local agencies running the FSP programs so that resources are distributed within the various statewide FSP operations in the most cost-effective manner possible.

1.2 FSP Database Summary

The bulk of the data used to develop the measures contained in this report were obtained directly from each FSP program. Each dataset was standardized to the greatest extent possible to allow data comparability between FSP programs. Unfortunately, the majority of the FSP programs collect and records their operational data in somewhat different formats.

The following points summarize the primary outputs of the FSP programs into the statewide Management Information System (MIS) databases for fiscal year 2014-15:

- (1) In fiscal year 2014-15, the roving tow trucks of the FSP program provided over 660,000 assists on California's highway system. This is approximately 2.3 percent (%) increase over the previous year. About 42% of total statewide assists were provided by the Los Angeles FSP program in that county, while the next largest program, covering the nine counties of the San Francisco Bay Area, provided about 15% of total statewide assists.
- (2) The estimated benefit/cost ratios for FSP programs ranged from 2 -to-1 (for the Santa Barbara and San Joaquin County FSP programs) to 18-to-1 for Orange County. The statewide average B/C ratio was 10-to-1.
- (3) Once a driver spots an incident, they are instructed to work for up to 10 to 15 minutes to get the stranded vehicle moving or provide a tow to a safe location. The average assist duration for the statewide FSP in 2014-15 was about 15 minutes.
- (4) The speed at which FSP locates and clears incidents is determined in part by the number of FSP trucks patrolling a stretch of road and the amount and type of traffic on that road. In FY 2014-15 the state's fourteen FSP programs operated 191 beats with 340 trucks

(during the PM peak period) covering over 1,800 centerline freeway miles. Together they provided about 836,000 total truck hours of service. On average, California's FSP trucks in FY 2014-15 supplied almost one assist for every hour of service (0.80 assists per tow truck-hour). These assists were primarily given to automobiles and vans, which constituted 69 percent of all assists. The three most common types of motorist's assists provided were for mechanical problems including electrical problems and overheated vehicles (23.0%), flat tires (15.9%) and vehicle collisions (16.0%).

- (5) The number of FSP trucks and truck hours the state and its partner agencies can deploy is determined by funding availability. In FY 2014-15, the state allocated about \$25.5 million to the locally run FSP programs and another \$3 million to CHP for field supervisors, monitoring and training activities. The local transportation agency partners that run each program are required to provide 25 percent matching funds. In FY 2014-15, the local partner transportation agencies provided just over \$20 million in matching funds – about an 80 percent match. Many of the smaller FSP programs did not surpass the 25 percent local match requirement. Los Angeles County had the highest proportion of local match funding. All matching funds are used by the contributing local transportation agencies for their own FSP operations.

Table 1 provides a more detailed summary of the data and performance measures contained within this report. Table 2 lists additional environmental benefits attributable to the California FSP program such as motorist delay savings, fuel savings and mobile source emission reductions.

Table 1-a: Statewide FSP Program Annual Summary (Combined Weekday and Weekend Service)

Program	Area	Number of Weekday Beats	Number of Peak Period Trucks	Weekday Center-line Miles	Total Truck Hours	Total FSP Assists	Average Assist Duration (min.)	Average Assist Rate ¹	Average B/C Ratio
3-SY	Sac / Yolo	17	17	96	29,756	30,452	11.9	1.02	7.0
3-P	Placer	2	2	25	3,840	4,007	9.9	1.04	6.0
3-ED	El Dorado	1	1	11	1,342	805	13.1	0.60	3.0
4	Bay Area	35	79	558	151,419	101,663	0.0	0.67	7.0
5-M	Monterey	2	2	22	3,370	3,941	11.4	1.17	3.0
5-SC	Santa Cruz	2	2	16	3,594	1,539	18.2	0.43	3.0
5-SB	Santa Barbara	3	2	22	2,928	495	8.9	0.17	2.0
6	Fresno	4	4	21	5,020	6,972	10.1	1.39	5.0
7	Los Angeles	40	123	474	380,136	282,277	16.4	0.74	12.0
8-R	Riverside	9	21	81	38,316	42,485	10.3	1.11	12.0
8-SB	San Bernardino	8	16	70	26,882	34,141	10.4	1.27	10.0
10	San Joaquin	3	6	37	13,785	10,414	6.4	0.76	2.0
11	San Diego	31	31	244	92,568	78,450	10.0	0.85	5.0
12	Orange	34	34	135	83,455	69,045	14.5	0.83	18.0
Total or Average		191	340	1,811	836,411	666,686	11.7	0.80	10.0

Notes: 1 – Assist Rate = Total Assists divided by Total Truck Hours.

Table 2-b: Statewide FSP Program Annual Summary (Combined Weekday and Weekend Service)

Program	Area	State FSP Funds (\$)	Percent of State FSP Funds	Local Match Funds (\$)	Percent of Local Match Funds	CHP Allocation (\$)	Percent of CHP Allocation
3-SY	Sac / Yolo	1,176,786	4.6%	287,451	1.4%	141,413	3.4%
3-P	Placer	249,311	1.0%	117,517	0.6%	28,030	0.7%
3-ED	El Dorado	102,060	0.4%	25,515	0.1%	13,674	0.3%
4	Bay Area	6,212,417	24.4%	2,862,247	14.1%	981,491	23.9%
5-M	Monterey	228,607	0.9%	57,152	0.3%	0	0.0%
5-SC	Santa Cruz	204,240	0.8%	130,179	0.6%	0	0.0%
5-SB	Santa Barbara	160,000	0.6%	40,000	0.2%	0	0.0%
6	Fresno	344,466	1.4%	87,447	0.4%	92,316	2.2%
7	Los Angeles	8,545,373	33.5%	12,808,445	63.0%	1,253,521	30.5%
8-R	Riverside	1,635,846	6.4%	773,618	3.8%	278,247	6.8%
8-SB	San Bernardino	1,414,272	5.6%	353,568	1.7%	278,247	6.8%
10	San Joaquin	0*	0.0%	0	0.0%	0	0.0%
11	San Diego	2,498,610	9.8%	788,863	3.9%	514,149	12.5%
12	Orange	2,707,013	10.6%	1,993,642	9.8%	533,487	13.0%
Total or Average		24,479,000	100.0%	20,325,643	100.0%	4,114,575	100.0%

* San Joaquin (SICOG) used all prior year funding for FSP in FY 2014-15, as they had remaining funds carried over.

Table 3: Statewide FSP Program Annual Summary (Combined Weekday and Weekend Service)

Program	Total Vehicle Delay Savings (veh-hr)	Total Fuel Savings (gallons)	Total ROG Reductions (kg)	Total CO Reductions (kg)	Total NOx Reductions (kg)	Total PM10 Reductions (kg)	Total CO2 Reductions (kg)	Total N2O Reductions (kg)	Total CH4 Reductions (kg)
3-SY	640,026	1,100,205	51.78	619.80	27.91	9.98	9,681,806	148.16	401.28
3-P	72,228	124,160	5.84	69.95	3.15	1.13	1,092,610	16.72	45.29
3-ED	17,075	29,352	1.38	16.54	0.74	0.27	258,299	3.95	10.71
4	3,124,114	5,370,352	252.74	3,025.39	136.21	48.74	47,259,101	723.20	1,958.76
5-M	23,845	40,989	1.93	23.09	1.04	0.37	360,707	5.52	14.95
5-SC	45,209	77,715	3.66	43.78	1.97	0.71	683,891	10.47	28.35
5-SB	19,067	32,776	1.54	18.46	0.83	0.30	288,426	4.41	11.95
6	96,949	166,655	7.84	93.89	4.23	1.51	1,466,563	22.44	60.78
7	11,287,446	19,403,119	913.15	10,930.76	492.13	176.08	170,747,451	2,612.93	7,077.00
8-R	1,176,330	2,022,111	95.17	1,139.16	51.29	18.35	17,794,580	272.31	737.54
8-SB	793,768	1,364,487	64.22	768.69	34.61	12.38	12,007,489	183.75	497.68
10	75,871	130,423	6.14	73.47	3.31	1.18	1,147,719	17.56	47.57
11	1,055,523	1,814,444	85.39	1,022.17	46.02	16.47	15,967,111	244.34	661.79
12	4,041,881	6,947,994	326.99	3,914.16	176.23	63.05	61,142,343	935.66	2,534.18
Statewide	22,469,333	38,624,784	1,817.77	21,759.30	979.66	350.52	339,898,096	5,201.43	14,087.82

1.3 Summary of Recommendations

FSP Assist Data Collection Procedures

Caltrans Headquarters, the FSP agency partners and CHP should continue working to keep current with best practices for data management technologies and for monitoring the activities of the FSP tow providers. With WiFi/Bluetooth /cell phone technical advancements, new and very affordable GPS enabled data collection systems are readily available. These technologies would enable FSP management teams (local agencies and CHP) to monitor the activity of the FSP tow providers in real time, and ease the tasks of preparing FSP performance reports.

The majority of the FSP programs have migrated to using customized applications with laptop, iPad or some other portable device for collecting FSP assist data. Sacramento's FSP program was one of the first programs to automate this process. Sacramento County developed and has been using *FSPTrack* for several now. *FSPTrack* is a Google Android application with server support that enables FSP managers to monitor FSP tow truck activity. *FSPTrack* also allows FSP tow truck drivers to log incidents via the Android app which is uploaded to a database on a server, thus making the FSP assist data available to FSP management in near real time.

A few of the FSP programs (Los Angeles MTA, Santa Barbara SBCAG, San Diego SANDAG and Fresno COG) are still using manual paper-form based FSP assist data collection technologies. The Los Angeles MTA and San Diego SANDAG FSP program managers are looking into electronic data collection options. The Bay Area MTC program has recently upgraded their FSP data management technologies to an enterprise system very similar to OCTA's data management system. Appendix B contains additional information on the FSP data management systems currently being used to collect and manage the California FSP assist data.

It is recommended that Caltrans Headquarters continue to work with the FSP managers in their efforts as they update their data management practices and as they make changes to the FSP assist data that is being collected by the FSP tow truck drivers/providers. One recent concern that has been raised is "How is it tracked when multiple FSP tow trucks respond to a single incident?" Do these multiple FSP responses to a single incident result in an over reporting of incidents (i.e., duplicate incident records) in the FSP tracking databases? The over-reporting of freeway incidents could result in an over-reporting of FSP delay savings.

Performance Based Management Practices

Additionally, there are concerns about efficiencies in the allocation of FSP tow trucks to FSP beats, the currently assigned FSP hours of operation, and levels of FSP service being provided. Basically, the questions boil down to: 1) How many FSP tow trucks should we have? 2) Where should the tow truck be? And, 3) When should they be operating?

To address these concerns and to improve the FSP program's performance (i.e., the cost effectiveness), a method should be developed that compares the allocation of FSP tow trucks (and truck-hours) to the need for FSP service. The need for FSP service could be measured using other freeway utilization & performance indicators such as freeway corridor vehicle miles of travel (VMT), vehicle hours of travel (VHT), vehicle hours of delay, and accident/incident rates. These indicators provide the means for comparisons between the demand for FSP services and the supply

of FSP resources, which would facilitate FSP managers to allocate the FSP resources in proportion to the demand for FSP service. The method of matching FSP service to the need for tow assistance should be temporal as well as geographical –that is it should provide information on FSP operating hours (and number of tow trucks required by time of day) as well as showing how the required number of tow trucks varies by freeway segments. This tool could also be utilized to identify freeway segments where new FSP service would most probably be cost effective.

When implementing changes to the FSP service, the effects of these changes on the performance of the FSP program should be closely monitored to assure that the changes (improvements) to the FSP program actually deliver the expected increases in performance. This need for follow through and performance monitoring holds true whether the changes to FSP service is extending FSP hours of operation, new weekend or midday FSP service, increases or reductions to the number of FSP tow trucks on a beat or FSP service on a new beat. Tracking FSP performance metrics using ‘Before and After’ techniques and/or by the use of control groups needs to accompany implementing changes in FSP service otherwise it cannot be shown that the expected gains in FSP performance are actually realized (in the real world) as forecasted in planning exercises.

Section 2: Introduction

2.1 Background

The FSP program is a free motorist assistance service using contracted tow trucks that patrol designated routes on congested urban California freeways. Typically the FSP operates Monday through Friday during peak commute hours. In heavily congested freeway corridors it is becoming more commonplace for FSP to operate during the midday and on weekends/holidays in addition to the weekday peak period service.

The goal of the FSP is to maximize the efficiency of the freeway transportation system. The FSP is a traffic congestion management tool that strategically addresses non-recurring traffic problems by quickly finding and removing disabled/stranded vehicles or roadway obstructions from the freeway system. Deployment of FSP trucks is driven by congestion windows and traffic patterns in major metropolitan areas.

The rapid removal of freeway obstructions has a positive effect on traffic conditions by reducing incident durations and removal of other obstructions that directly contribute to non-recurrent congestion. In fiscal year 2014-15, the FSP program provided over 666,000 assists from the fourteen FSP programs across nine of the twelve Caltrans districts.

Because the traffic conditions of the state's freeway system and the demand for its services are constantly changing, it is necessary for the FSP program to respond to these changing and increasing needs for traffic mitigation. This report seeks to centralize and summarize the information available to state and local agencies managing the FSP programs so that resources are distributed within the various statewide FSP operations in the most efficient and cost-effective manner possible. The database constructed for this project was used to generate a series of indicators that measured and compared the performance of each FSP program. The following provides an overview of the scope of work for this project:

2.2 Project Scope

The project scope included FSP assist data collection, database design and programming, calculate summary statistics for reporting purposes using the FSP assist database and report generation. The project objectives were accomplished in four phases:

- 1) Develop FSP 2014-15 Management Information System (MIS) databases
- 2) Produce FSP 2014-15 California Local Program Report
- 3) Produce FSP 2014-15 California Statewide MIS Program Report
- 4) Make Recommendations for future data collection policies, procedures and report content.

Each phase is described in more detail in the following sections.

2.2.1 Develop FSP 2014-15 MIS Databases

The development of the FSP MIS databases consisted of the following sub-tasks:

- 1) Solicit and collect the 2014-15 FSP program data from each of the FSP Programs.

- 2) Analyze the data for consistency and accuracy. Clean the data as necessary to correct any inconsistencies and/or inaccuracies.
- 3) Compile the cleaned data into a set of sub-databases, with each database containing the data for individual FSP programs.

2.2.2 Produce FSP 2014-15 California Local Program Report

The development of the FSP 2014-15 California Local Program Report consisted of the following sub-tasks:

- 1) Generate database queries to compile each local program data into summary tables that will identify how each program is performing in the customer defined set of performance areas.
- 2) Format the resulting set of tables and graphs so they are consistent in format and easily understandable.
- 3) Load the formatted tables and graphs into the report with the content of each table or graph identified by the section heading. This report will not contain any text or state summary data. It will only contain summarized FSP program data.

2.2.3 Produce FSP 2014-15 California Statewide MIS Program Report

The development of the FSP 2014-15 California Statewide MIS Program Report consisted of the following sub-tasks:

- 1) Generate database queries for the statewide database to compile FSP program data into summary tables that will identify how the FSP statewide program is performing in the customer defined set of performance areas.
- 2) Format the resulting set of tables and graphs so they are consistent in format and easily understandable.
- 3) Use the format of the previous FSP MIS annual report as a template for the FSP 2014-15 report. Create the shell of the FSP 2014-15 report.
- 4) Add all relevant text and tables from the previous FSP annual report. There is no need to recreate information that has already been created and will stay the same from yearly report to yearly report.
- 5) Load the formatted state summary tables and graphs into the report with the content of each table or graph identified by the caption heading.
- 6) Fill in all the report information that is unique to the FSP 2014-15 Fiscal Year.

2.2.4 Make Recommendations for Improving FSP Program Reporting

The development of recommendations to improve the California FSP Program's data collection, storage and reporting consisted of the following sub-tasks:

- 1) Take notes when collecting and compiling the received FSP data. The notes should contain references to problems and inconsistencies with the received FSP data.
- 2) Compile those notes into a complete set of meaningful recommendations that will help the state and local FSP Program representatives collect, process and report FSP data that is both accurate and consistent across all programs.

Section 3: FSP Data Compilation Methodology

3.1 FSP MIS Development Methodology

The integrated statewide MIS database was created to combine the FSP assist data from each of the California FSP programs into one single database. The data was provided by the local partner agencies managing the FSP programs. Since each program independently collects and stores their FSP assist data, the format of each of the program's datasets varies (somewhat) in data completeness, data coding consistency, data recording accuracy and in format. The Recommendations section in this report provides a description of some of the more serious problems with the collected data and recommendations on how to improve the quality of the data.

Each local program's raw data was cleaned, standardized and combined into a single, unified database. In the final databases there are over 666,000 records for the fiscal year 2014-15. They are stored in and manipulated using Microsoft Excel. Each FSP program's dataset is stored in its own database file. The local program queries and reports can be run from the associated program's database file. The following sections provide the statewide summary tables and graphs based on this final database. The Trucks and Centerline Miles Excel file includes information such as the Total Number of Trucks, Total Truck Hours, Centerline Miles of each beat, and the number of beats in each FSP program.

3.2 FSP Evaluation Methodology

The effectiveness of the FSP Program is assessed by calculating the annual benefit/cost (B/C) ratio of each FSP beat. First the annual savings in incident delay, fuel consumption and air pollutant emissions due to FSP service are calculated based on the number of assists, beat geometries and traffic volumes. The savings are then translated into benefits using monetary values for delay (\$17.35/vehicle-hour) and fuel consumption (\$3.48/gallon).

The value of time for motorists was obtained from the Caltrans 2011 Performance Mobility Report (MPR) which states that for 2011 travel time is priced at \$17.35 for each vehicle hour of delay for year 2011. (The Caltrans 2011 MPR was the most up-to-date MPR at the time of the FSP cost effectiveness evaluation and the production of this report.) Additionally, the Caltrans Life-Cycle Benefit-Cost Analysis procedures (Cal-B/C) in its 2012 Economic Parameters lists the statewide average Auto/Truck Composite (Weighted-Average) value of time as \$17.35 per vehicle hour¹

The California statewide annual average fuel costs of \$3.48/gallon of gasoline for FY 2014-15 was estimated from weekly California statewide average prices are compiled by the U.S. Department of Energy's Energy Information Administration (EIA) from a telephone survey that includes a sample of 38 California gasoline stations. These stations were sampled with a likelihood equal to the company's proportional size to the total annual volume of gasoline, by grade, sold in California.

¹ Source: Caltrans Website: http://www.dot.ca.gov/hq/tpp/offices/eab/benefit_cost/LCBCA-economic_parameters.html

The annual FSP program costs include the annual capital, operating and administrative costs for providing FSP service. The FSP evaluation methodology has been incorporated into an Excel spreadsheet. Input data requirements consist of beat geometries (number of lanes, presence of shoulders), traffic volumes, and the number and characteristics of FSP assists.

Section 4: FSP Performance Summary

4.1 Statewide Total Assists by Fiscal Year

Table 3 shows that the annual statewide total assists increased only nominally, by about 2.3% (from 651,441 in FY 2013-14 to 666,686 in FY 2014-15). This is shown graphically in Figure 1.

Table 4: Total Assists and Annual Change by Fiscal Year

Fiscal Year	Total Assists	Annual Change (percent)
1991-92	152,526	0.0%
1992-93	295,613	93.8%
1993-94	452,018	52.9%
1994-95	448,170	-0.9%
1995-96	540,874	20.7%
1996-97	587,941	8.7%
1997-98	583,699	-0.7%
1998-99	568,276	-2.6%
1999-00	625,090	10.0%
2000-01	631,161	1.0%
2001-02	643,607	2.0%
2002-03	651,710	1.3%
2003-04	646,749	-0.8%
2004-05	618,440	-4.4%
2005-06	669,895	8.3%
2006-07	666,612	-0.5%
2007-08	668,142	0.2%
2008-09	638,880	-4.4%
2009-10	649,155	1.6%
2010-11	655,686	1.0%
2011-12	672,472	2.6%
2012-13	651,315	-3.1%
2013-14	651,441	0.0%
2014-15	666,686	2.3%

Summary

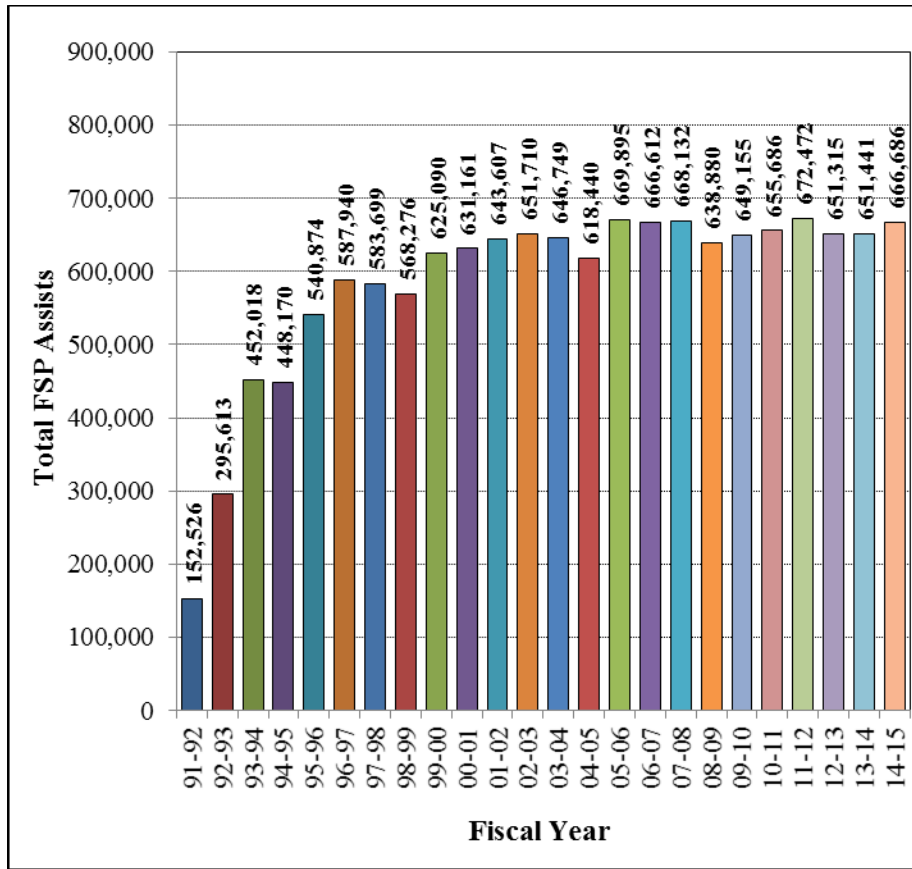


Figure 1: Bar Chart – Total FSP Assists by Fiscal Year

Summary

4.2 Benefit/Cost Ratios for FSP Programs

Table 5: B/C Ratio for Each FSP Program

Program	Name	Peak Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday (Pk+Md) B/C Ratio	Weekend B/C Ratio	Annual (Total) B/C Ratio
3-SY	Sacramento/Yolo	7.0	-	7.0	2.0	7.0
3-P	Placer	6.0	-	6.0	0.0	6.0
3-ED	El Dorado	3.0	-	3.0	-	3.0
4	Bay Area	7.0	2.0	7.0	1.0	7.0
5-M	Monterey	3.0	-	3.0	-	3.0
5-SC	Santa Cruz	3.0	-	3.0	3.0	3.0
5-SB	Santa Barbara	2.0	-	2.0	-	2.0
6	Fresno	5.0	-	5.0	-	5.0
7	Los Angeles	14.0	9.0	13.0	5.0	12.0
8-R	Riverside	12.0	-	12.0	-	12.0
8-SB	San Bernardino	10.0	-	10.0	-	10.0
10	San Joaquin	2.0	0.0	2.0	-	2.0
11	San Diego	6.0	1.0	6.0	1.0	5.0
12	Orange	18.0	15.0	18.0	10.0	18.0
Statewide		11.0	7.0	11.0	4.0	10.0

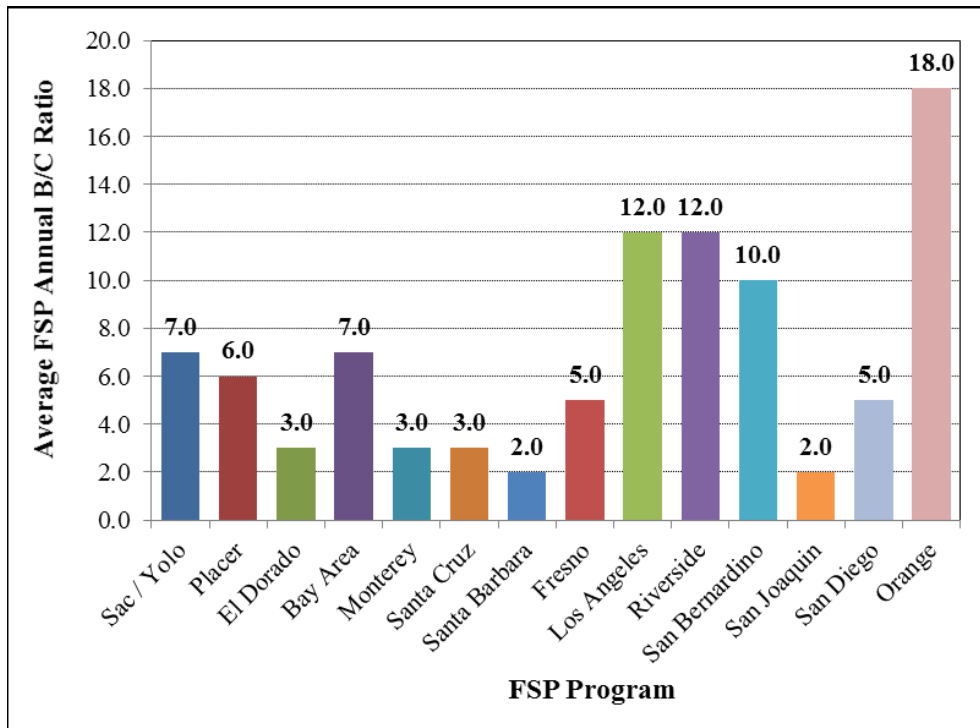


Figure 2: Bar Chart of FSP Benefit/Cost Ratios by Program

Summary

4.3 Statewide FSP Total Assists by Quarter & Program

Table 6: Total Assists by Quarter & Program

		Jul 14 - Sep 14	Oct 14 - Dec 14	Jan 15 - Mar 15	Apr 15 - Jun 15		
Program	Name	Quarter 3	Quarter 4	Quarter 1	Quarter 2	Total Assists	Percent
3-SY	Sac / Yolo	7,789	7,407	6,956	8,300	30,452	4.6%
3-P	Placer	1,109	1,175	926	797	4,007	0.6%
3-ED	El Dorado	223	171	176	235	805	0.1%
4	Bay Area	24,977	28,158	25,056	23,472	101,663	15.2%
5-M	Monterey	1,389	997	761	794	3,941	0.6%
5-SC	Santa Cruz	464	331	310	434	1,539	0.2%
5-SB	Santa Barbara	141	133	98	123	495	0.1%
6	Fresno	1,702	1,787	1,589	1,894	6,972	1.0%
7	Los Angeles	74,312	64,180	67,147	76,638	282,277	42.3%
8-R	Riverside	12,024	9,777	9,393	11,291	42,485	6.4%
8-SB	San Bernardino	8,929	8,045	7,954	9,213	34,141	5.1%
10	San Joaquin	2,690	2,613	2,352	2,759	10,414	1.6%
11	San Diego	22,799	14,975	19,887	20,789	78,450	11.8%
12	Orange	17,936	15,716	17,261	18,132	69,045	10.4%
Total Assists		176,484	155,465	159,866	174,871	666,686	100.0%
% of Total Assists		26.5%	23.3%	24.0%	26.2%	100.0%	

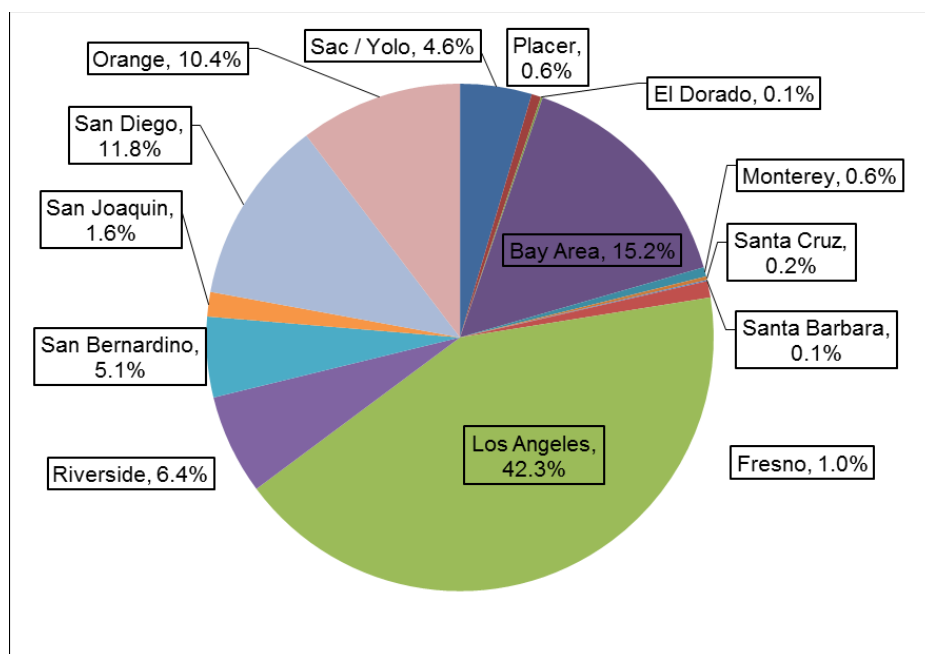


Figure 3: Pie Chart of Total Assists by Program

Summary

4.4 Statewide FSP Total Assists by Problem Type

Table 7: Total Assists by Problem Type

Problem Type	Total Assists	Percent
Abandoned	25,963	3.9%
Accident	106,794	16.0%
Debris Removed	32,736	4.9%
Flat Tire	106,269	15.9%
Mechanical Problems	115,997	17.4%
Other*	181,027	27.2%
Out of Gas	60,727	9.1%
Over Heated	37,173	5.6%
Total Assists	666,686	100.0%

* “Other” includes the assist records for refused service, informational assistance, unable to locate, drive off, service en-route, and/or incidents with too little information.

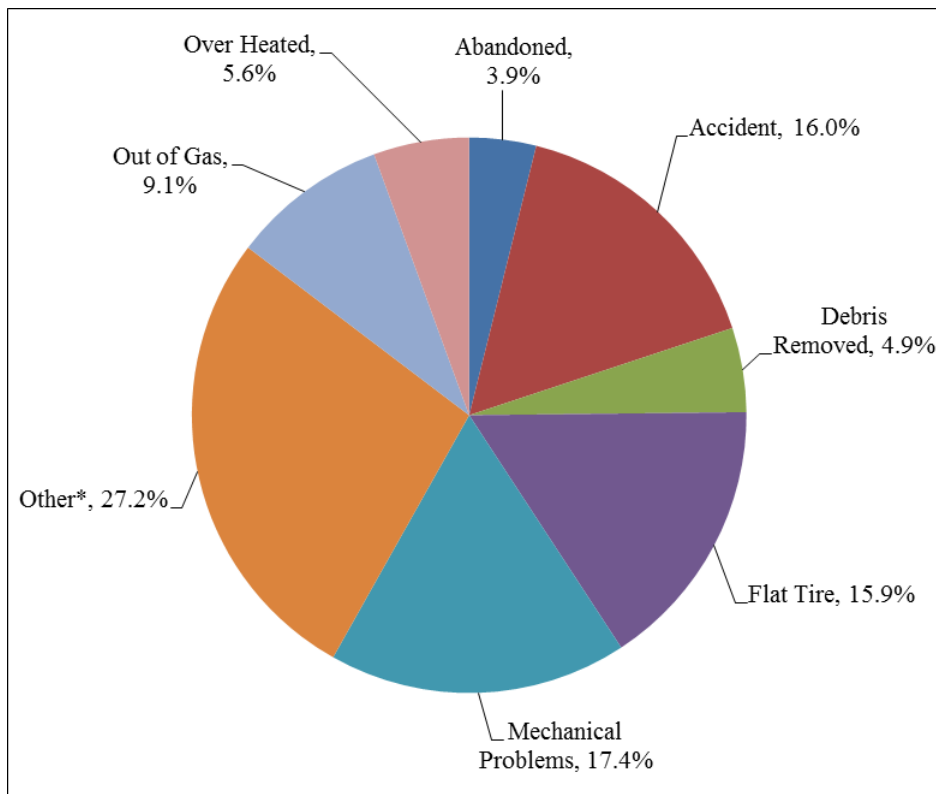


Figure 4: Pie Chart of Total Assists by Problem Type

Summary

4.5 Statewide FSP Total Assists by Problem Type & Program

Table 8: Total Assists by Problem Type & Program

Program	Name	Abandoned	Accident	Debris Removed	Flat Tire	Mechanical Problems	Other*	Out of Gas	Over Heated	Total Assists
3-SY	Sac / Yolo	1,327	10,430	777	5,029	6,637	2,454	2,832	966	30,452
3-P	Placer	217	1,305	98	646	805	481	354	101	4,007
3-ED	El Dorado	56	243	62	45	204	91	83	21	805
4	Bay Area	6,711	11,454	15,514	14,151	14,033	28,043	7,495	4,261	101,663
5-M	Monterey	186	364	888	245	313	1,638	216	91	3,941
5-SC	Santa Cruz	121	249	94	178	367	277	132	121	1,539
5-SB	Santa Barbara	21	73	11	103	143	44	83	17	495
6	Fresno	689	2,163	82	764	1,781	156	1,324	13	6,972
7	Los Angeles	4,952	55,937	4,316	49,430	49,723	71,497	25,510	20,912	282,277
8-R	Riverside	1,815	4,056	2,370	6,437	8,022	14,173	2,956	2,656	42,485
8-SB	San Bernardino	1,670	2,466	2,652	5,137	5,654	12,302	2,794	1,466	34,141
10	San Joaquin	428	1,616	668	2,020	1,552	1,699	1,955	476	10,414
11	San Diego	5,088	6,731	1,880	12,537	14,086	25,518	8,514	4,096	78,450
12	Orange	2,681	9,707	3,324	9,547	12,677	22,654	6,479	1,976	69,045
Total Assists		25,963	106,794	32,736	106,269	115,997	181,027	60,727	37,173	666,686
Average %		3.9%	16.0%	4.9%	15.9%	17.4%	27.2%	9.1%	5.6%	100.0%

* "Other" includes assist records for refused service, informational assistance, unable to locate, drive off, service en-route, and/or incidents with too little information.

Table 9: Total Assists by Problem Type & Program (in Percent)

Program	Name	Abandoned	Accident	Debris Removed	Flat Tire	Mechanical Problems	Other*	Out of Gas	Over Heated	Total Assists (percent)
3	Sac / Yolo	4.4%	34.3%	2.6%	16.5%	21.8%	8.1%	9.3%	3.2%	4.6%
3-P	Placer	5.4%	32.6%	2.4%	16.1%	20.1%	12.0%	8.8%	2.5%	0.6%
3-ED	El Dorado	7.0%	30.2%	7.7%	5.6%	25.3%	11.3%	10.3%	2.6%	0.1%
4	Bay Area	6.6%	11.3%	15.3%	13.9%	13.8%	27.6%	7.4%	4.2%	15.2%
5-M	Monterey	4.7%	9.2%	22.5%	6.2%	7.9%	41.6%	5.5%	2.3%	0.6%
5-SB	Santa Barbara	4.2%	14.7%	2.2%	20.8%	28.9%	8.9%	16.8%	3.4%	0.2%
5-SC	Santa Cruz	7.9%	16.2%	6.1%	11.6%	23.8%	18.0%	8.6%	7.9%	0.1%
6	Fresno	9.9%	31.0%	1.2%	11.0%	25.5%	2.2%	19.0%	0.2%	1.0%
7	Los Angeles	1.8%	19.8%	1.5%	17.5%	17.6%	25.3%	9.0%	7.4%	42.3%
8-R	Riverside	4.3%	9.5%	5.6%	15.2%	18.9%	33.4%	7.0%	6.3%	6.4%
8-SB	San Bernardino	4.9%	7.2%	7.8%	15.0%	16.6%	36.0%	8.2%	4.3%	5.1%
10	San Joaquin	4.1%	15.5%	6.4%	19.4%	14.9%	16.3%	18.8%	4.6%	1.6%
11	San Diego	6.5%	8.6%	2.4%	16.0%	18.0%	32.5%	10.9%	5.2%	11.8%
12	Orange	3.9%	14.1%	4.8%	13.8%	18.4%	32.8%	9.4%	2.9%	10.4%
Average %		3.9%	16.0%	4.9%	15.9%	17.4%	27.2%	9.1%	5.6%	100.0%

4.6 Statewide FSP Total Assists by Vehicle Type

Table 10: Total Assists by Vehicle Type

Vehicle Type	Total Assists	Percent
Auto / Van	460,566	69.1%
Big Rig	26,060	3.9%
Other / Unknown	40,263	6.0%
SUV / Pickup	125,989	18.9%
Trucks	13,808	2.1%
Total Assists	666,686	100.0%

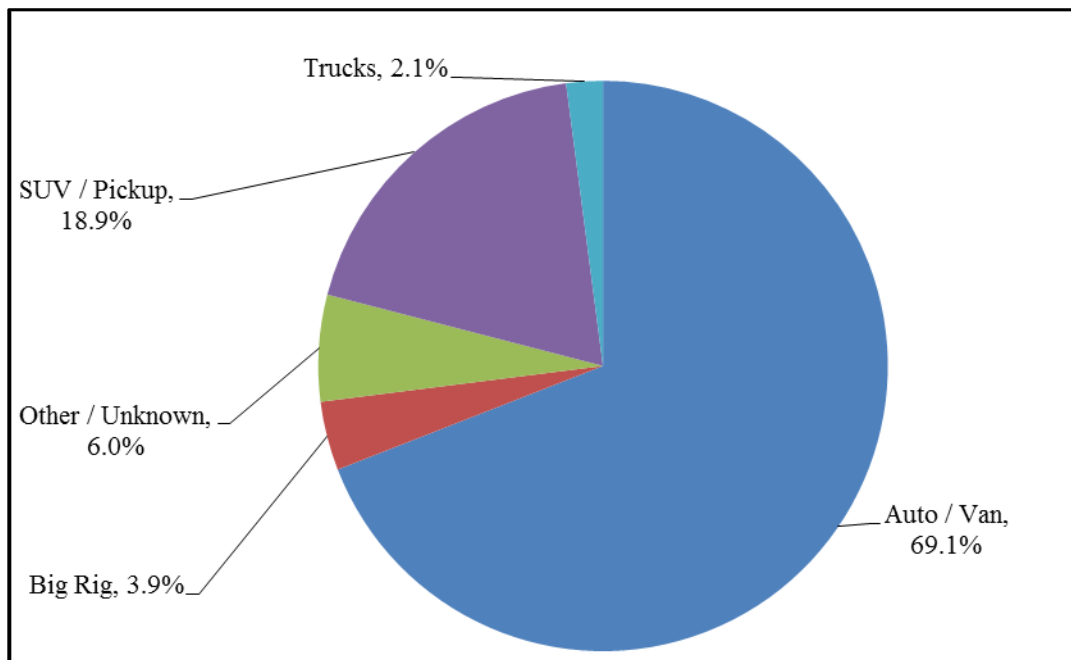


Figure 5: Pie Chart of Total Assists by Vehicle Type

Summary

4.7 Statewide FSP Total Assists by Vehicle Type & Program

Table 11: Total Assists by Vehicle Type & Program

Program	Name	Auto / Van	Big Rig	Other / Unknown	SUV / Pickup	Trucks	Total Assists
3-SY	Sac / Yolo	17,794	321	3,300	8,411	626	30,452
3-P	Placer	2,122	84	492	1,201	108	4,007
3-ED	El Dorado	446	10	101	243	5	805
4	Bay Area	76,214	2,069	5,225	14,891	3,263	101,663
5-M	Monterey	1,878	139	1,318	571	35	3,941
5-SC	Santa Cruz	1,099	29	186	207	18	1,539
5-SB	Santa Barbara	368	4	55	67	1	495
6	Fresno	5,268	77	180	1,397	49	6,972
7	Los Angeles	217,810	7,047	12,822	40,138	4,460	282,277
8-R	Riverside	23,835	6,077	3,388	7,320	1,865	42,485
8-SB	San Bernardino	18,496	5,900	3,514	4,949	1,282	34,141
10	San Joaquin	7,258	104	904	1,956	192	10,414
11	San Diego	45,447	801	5,499	25,982	721	78,450
12	Orange	42,530	3,397	3,279	18,656	1,183	69,045
Total Assists		460,566	26,060	40,263	125,989	13,808	666,686
Average %		69.1%	3.9%	6.0%	18.9%	2.1%	100.0%

Table 12: The Percent of Total Assists by Vehicle Type & Program

Program	Name	Auto / Van	Big Rig	Other / Unknown	SUV / Pickup	Trucks	Total Assists
3-SY	Sac / Yolo	58.4%	1.1%	10.8%	27.6%	2.1%	4.6%
3-P	Placer	53.0%	2.1%	12.3%	30.0%	2.7%	0.6%
3-ED	El Dorado	55.4%	1.2%	12.5%	30.2%	0.6%	0.1%
4	Bay Area	75.0%	2.0%	5.1%	14.6%	3.2%	15.2%
5-M	Monterey	47.7%	3.5%	33.4%	14.5%	0.9%	0.6%
5-SB	Santa Barbara	71.4%	1.9%	12.1%	13.5%	1.2%	0.2%
5-SC	Santa Cruz	74.3%	0.8%	11.1%	13.5%	0.2%	0.1%
6	Fresno	75.6%	1.1%	2.6%	20.0%	0.7%	1.0%
7	Los Angeles	77.2%	2.5%	4.5%	14.2%	1.6%	42.3%
8-R	Riverside	56.1%	14.3%	8.0%	17.2%	4.4%	6.4%
8-SB	San Bernardino	54.2%	17.3%	10.3%	14.5%	3.8%	5.1%
10	San Joaquin	69.7%	1.0%	8.7%	18.8%	1.8%	1.6%
11	San Diego	57.9%	1.0%	7.0%	33.1%	0.9%	11.8%
12	Orange	61.6%	4.9%	4.7%	27.0%	1.7%	10.4%
Average %		69.1%	3.9%	6.0%	18.9%	2.1%	100.0%

4.8 Statewide FSP Total Assists by Vehicle Location

Table 13: Total Assists by Vehicle Location

Vehicle Location	Total Assists	Percent
In Lane	69,398	10.4%
On Left Shoulder	29,965	4.5%
On Right Shoulder	500,361	75.1%
Other	29,773	4.5%
Ramp / Connector	34,490	5.2%
Unable to Locate	2,698	0.4%
Total Assists	666,686	100.0%

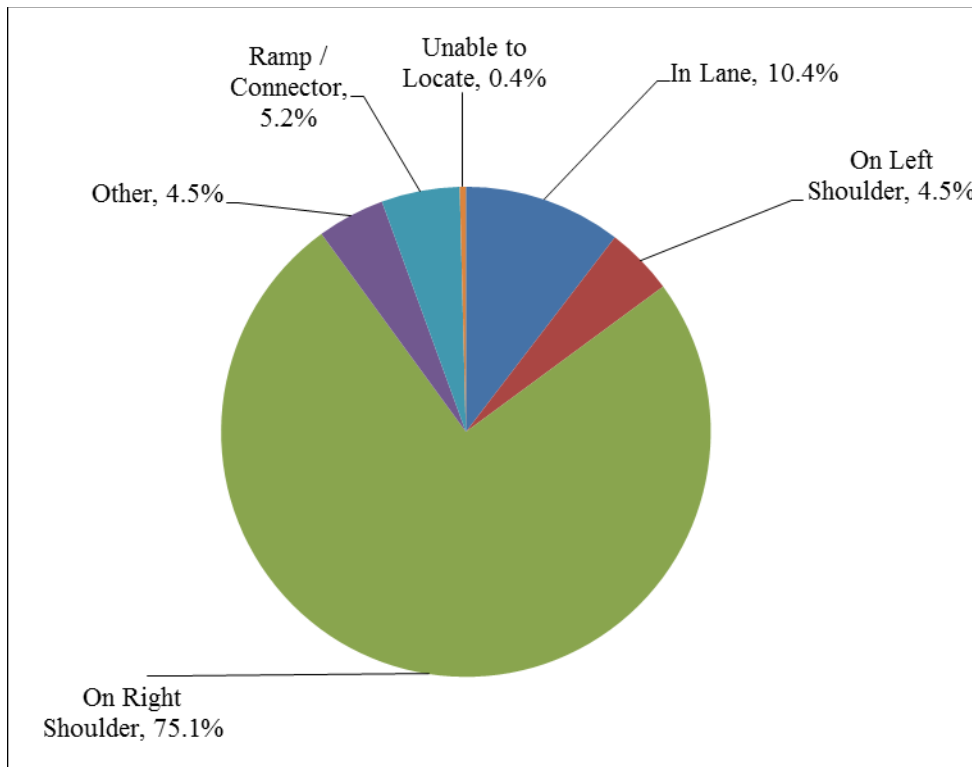


Figure 6: Pie Chart of Total Assists by Vehicle Location

Summary

4.9 Statewide FSP Total Assists by Vehicle Location & Program

Table 14: Total Assists by Vehicle Location & Program

Program	Name	In Lane	On Left Shoulder	On Right Shoulder	Other	Ramp / Connector	Unable to Locate	Total Assists
3-SY	Sac / Yolo	3,239	2,289	19,530	2,329	3,016	49	30,452
3-P	Placer	320	238	2,933	250	261	5	4,007
3-ED	El Dorado	64	33	645	23	40	0	805
4	Bay Area	10,481	5,693	72,388	0	12,883	218	101,663
5-M	Monterey	873	355	1,989	471	198	55	3,941
5-SC	Santa Cruz	243	107	988	44	114	43	1,539
5-SB	Santa Barbara	66	30	292	36	71	0	495
6	Fresno	953	637	4,858	521	3	0	6,972
7	Los Angeles	31,070	7,742	216,677	22,255	2,980	1,553	282,277
8-R	Riverside	5,189	1,705	32,446	3	3,138	4	42,485
8-SB	San Bernardino	4,316	1,229	24,310	560	3,496	230	34,141
10	San Joaquin	1,011	1,373	6,854	145	1,030	1	10,414
11	San Diego	3,690	5,977	60,544	3,053	4,646	540	78,450
12	Orange	7,883	2,557	55,907	83	2,615	0	69,045
Total Assists		69,398	29,965	500,361	29,773	34,490	2,698	666,686
Average %		10.4%	4.5%	75.1%	4.5%	5.2%	0.4%	100.0%

Table 15: The Percent of Total Assists by Vehicle Location & Program

Program	Name	In Lane	On Left Shoulder	On Right Shoulder	Other	Ramp / Connector	Unable to Locate	Total Assists
3-SY	Sac / Yolo	10.6%	7.5%	64.1%	7.6%	9.9%	0.2%	4.6%
3-P	Placer	8.0%	5.9%	73.2%	6.2%	6.5%	0.1%	0.6%
3-ED	El Dorado	8.0%	4.1%	80.1%	2.9%	5.0%	0.0%	0.1%
4	Bay Area	10.3%	5.6%	71.2%	0.0%	12.7%	0.2%	15.2%
5-M	Monterey	22.2%	9.0%	50.5%	12.0%	5.0%	1.4%	0.6%
5-SB	Santa Barbara	15.8%	7.0%	64.2%	2.9%	7.4%	2.8%	0.2%
5-SC	Santa Cruz	13.3%	6.1%	59.0%	7.3%	14.3%	0.0%	0.1%
6	Fresno	13.7%	9.1%	69.7%	7.5%	0.0%	0.0%	1.0%
7	Los Angeles	11.0%	2.7%	76.8%	7.9%	1.1%	0.6%	42.3%
8-R	Riverside	12.2%	4.0%	76.4%	0.0%	7.4%	0.0%	6.4%
8-SB	San Bernardino	12.6%	3.6%	71.2%	1.6%	10.2%	0.7%	5.1%
10	San Joaquin	9.7%	13.2%	65.8%	1.4%	9.9%	0.0%	1.6%
11	San Diego	4.7%	7.6%	77.2%	3.9%	5.9%	0.7%	11.8%
12	Orange	11.4%	3.7%	81.0%	0.1%	3.8%	0.0%	10.4%
Average %		10.4%	4.5%	75.1%	4.5%	5.2%	0.4%	100.0%

Summary

4.10 Statewide FSP Average Assist Duration by Program

Table 16: The Average Assist Duration by Program

Program	Name	Average Duration (minutes)
3-SY	Sac / Yolo	11.9
3-P	Placer	9.9
3-ED	El Dorado	13.1
4	Bay Area	15.7
5-M	Monterey	11.4
5-SC	Santa Cruz	18.2
5-SB	Santa Barbara	9.7
6	Fresno	10.1
7	Los Angeles	16.4
8-R	Riverside	10.3
8-SB	San Bernardino	10.4
10	San Joaquin	6.4
11	San Diego	10.0
12	Orange	23.3
Average Duration		15.0

Note: Only records with assist durations greater than zero minutes were included in average duration calculations.

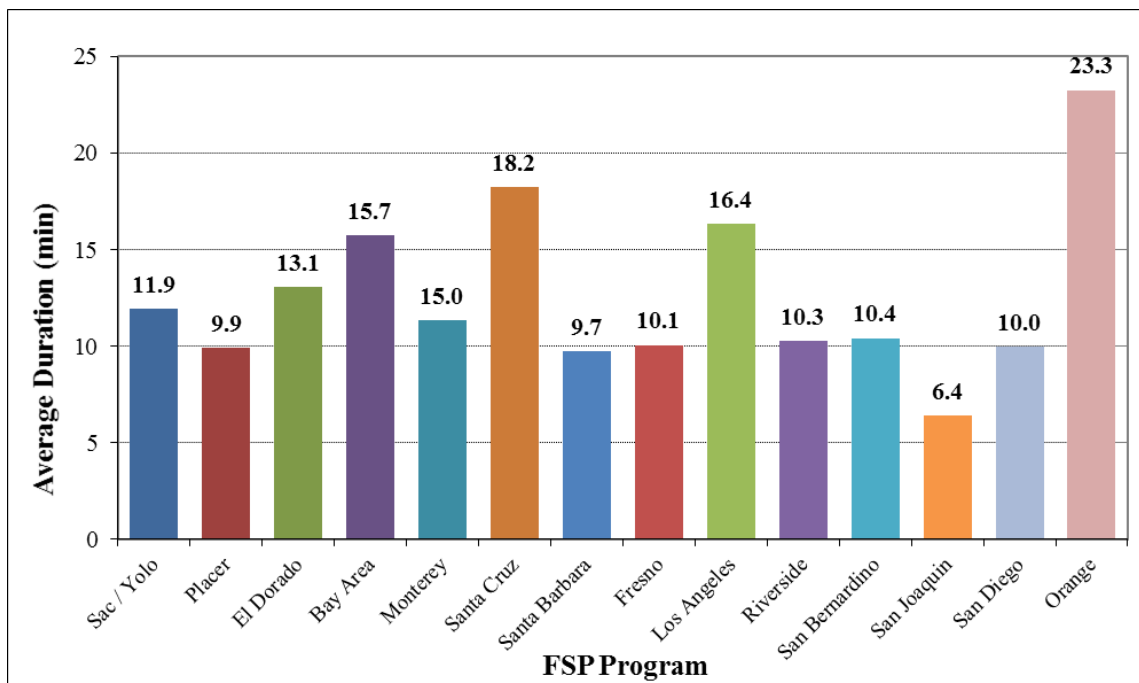


Figure 7: Bar Chart of Average Assist Duration by Program

Summary

4.11 Statewide FSP Average Assist Duration by Problem Type & Program

Table 17: The Average Assist Duration by Problem Type & Program

Program	Name	Abandoned	Accident	Debris Removed	Flat Tire	Mechanical Problems	Other*	Out of Gas	Over Heated	Average Duration
3-SY	Sac / Yolo	4.1	14.2	3.9	13.6	14.7	4.7	6.8	12.2	11.9
3-P	Placer	4.2	11.9	5.0	12.4	12.1	4.2	6.5	10.0	9.9
3-ED	El Dorado	10.8	12.6	14.5	8.9	18.9	9.1	7.9	9.9	13.1
4	Bay Area	7.2	22.5	18.6	18.9	22.3	9.4	10.8	17.6	15.7
5-M	Monterey	3.9	31.7	2.7	16.7	16.5	8.7	18.0	15.9	11.4
5-SC	Santa Cruz	12.3	17.3	8.9	11.2	17.7	12.7	9.3	14.2	18.2
5-SB	Santa Barbara	2.3	15.9	5.0	9.6	11.2	6.9	6.8	6.3	9.7
6	Fresno	4.6	16.4	8.7	8.9	8.3	7.6	5.9	10.0	10.1
7	Los Angeles	9.5	22.2	10.4	18.0	19.3	10.2	13.1	17.2	16.4
8-R	Riverside	5.9	14.3	5.9	14.5	17.1	4.4	8.7	13.6	10.3
8-SB	San Bernardino	6.6	14.8	7.2	15.0	17.7	5.4	9.3	13.6	10.4
10	San Joaquin	4.0	6.1	1.9	8.5	10.4	2.7	5.6	10.8	6.4
11	San Diego	5.6	15.0	8.0	13.2	14.4	5.9	8.1	12.1	10.0
12	Orange	19.4	24.2	20.1	26.0	31.4	19.0	20.0	23.5	23.3
Average Duration		8.1	20.2	14.0	17.4	19.5	9.6	11.7	16.3	15.0

Note:

- ❖ Only records with assist durations greater than zero minutes were included in the average duration calculations.
- ❖ The "Other*" category includes the assist records for refused service, informational assistance, unable to locate, drive off, service en route, and/or incidents with too little information.

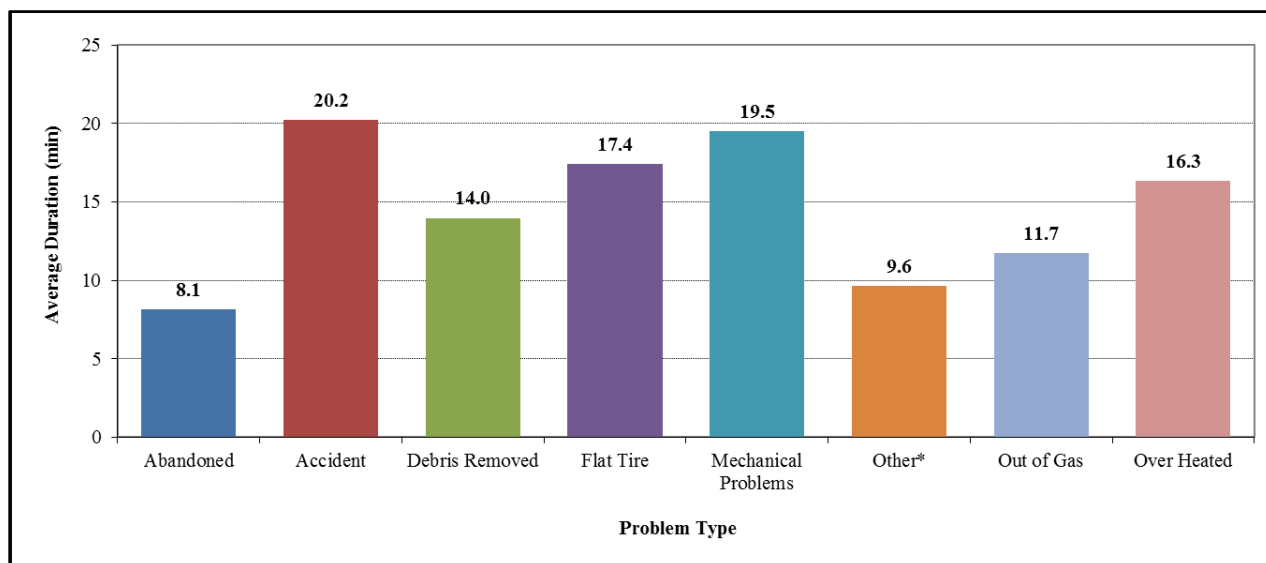


Figure 8: Bar Chart of Average Assist Duration by Problem Type and Program

Summary

4.12 Statewide FSP Average Assist Duration by Vehicle Type & Program

Table 18: The Average Assist Duration by Vehicle Type & Program

Program	Name	Auto / Van	Big Rig	Other / Unknown	SUV / Pickup	Trucks	Average Duration
3-SY	Sac / Yolo	12.1	14.7	11.1	11.8	12.7	11.9
3-P	Placer	10.0	6.9	8.5	10.3	11.5	9.9
3-ED	El Dorado	12.3	20.1	13.7	13.8	12.8	13.1
4	Bay Area	16.0	14.8	13.8	15.3	15.7	15.7
5-M	Monterey	13.1	12.6	3.8	17.4	12.2	11.4
5-SC	Santa Cruz	19.0	25.7	15.8	15.6	16.1	18.2
5-SB	Santa Barbara	9.5	29.8	8.3	11.0	10.0	9.7
6	Fresno	8.9	8.9	8.8	9.1	10.2	10.1
7	Los Angeles	16.7	15.0	13.4	15.6	15.6	16.4
8-R	Riverside	11.8	6.6	6.9	10.3	8.2	10.3
8-SB	San Bernardino	12.1	7.0	7.8	10.6	7.8	10.4
10	San Joaquin	6.7	4.7	3.6	6.5	8.6	6.4
11	San Diego	10.3	9.7	9.1	8.5	7.6	10.0
12	Orange	23.5	19.3	21.5	24.0	21.4	23.3
Average Duration		15.7	11.5	11.7	14.3	13.7	15.0

Note: Only records with assist durations greater than zero minutes were included in average duration calculations.

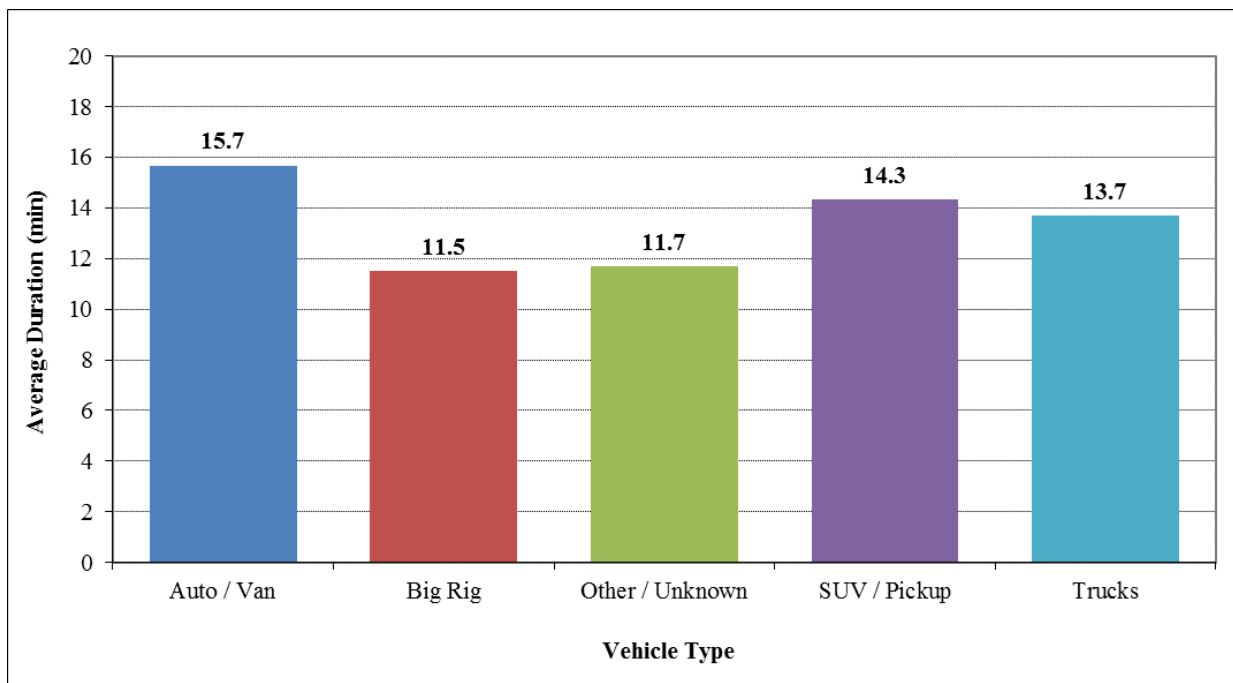


Figure 9: Bar Chart of Average Assist Duration by Vehicle Type

Summary

4.13 Statewide FSP Average Assist Rate by Program

Table 19: The Average Assist Rate by Program

Program	Name	Annual Assists	Annual Truck-Hours	Assist Rate
3-SY	Sac / Yolo	30,452	29,756	1.02
3-P	Placer	4,007	3,840	1.04
3-ED	El Dorado	805	1,342	0.60
4	Bay Area	101,663	151,419	0.67
5-M	Monterey	3,941	3,370	1.17
5-SC	Santa Cruz	1,539	3,594	0.43
5-SB	Santa Barbara	495	2,928	0.17
6	Fresno	6,972	5,020	1.39
7	Los Angeles	282,277	380,136	0.74
8-R	Riverside	42,485	38,316	1.11
8-SB	San Bernardino	34,141	26,882	1.27
10	San Joaquin	10,414	13,785	0.76
11	San Diego	78,450	92,568	0.85
12	Orange	69,045	83,455	0.83
Statewide		666,686	836,411	0.80

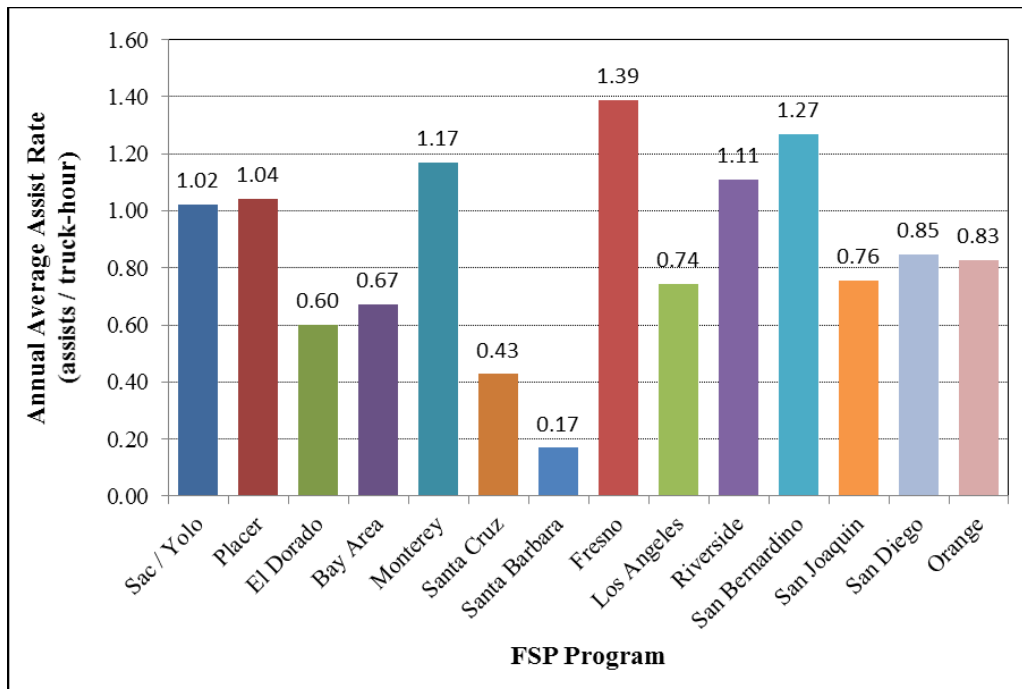


Figure 10: Bar Chart of Average Weekday Assist Rate by Program

Section 5: Statewide Reporting Procedures

This section reports on the FSP assist reporting procedures that were agreed upon by the FSP partner agencies in the 2004/05 FSP review and annual meeting. The statewide motorist aid committee recommended reporting procedures are listed first, and followed by observed data discrepancies.

5.1 *Consistent Assist Record set of Description Fields*

At a minimum, the following fields for each and every FSP Assist Record are required.

- FSP Program
- Beat
- Assist Date
- Arrival Time
- Departure Time
- Problem Type
- Vehicle Type
- Vehicle Location on Road
- Tow To
- How vehicle was found

5.2 *Data Coding and Categories*

Based on an agreement of the FSP technical committee, the standardized motorist assist description codes used to process the FSP program assist data is shown in the tables in the following sections.

5.2.1 Vehicle Type

Table 20: Standardized Vehicle Type Category

Code	Vehicle Type
1	Auto /Van
2	Motorcycle
3	SUV /Pickup
4	Truck
5	Big Rig
6	Other

5.2.2 Problem Type

Table 21: Standardized Problem Type Category

Code	Problem Type
1	Abandoned
2	Accident
3	Debris Removal
4	Drive Off
5	Electrical Problem
6	Flat Tire
7	Help En Route
8	Locked Out
9	Mechanical Problem
10	Other
11	Out of Gas
12	Over Heated
13	Refuse Service
14	Rollover
15	Unable to Locate
16	Vehicle Fire

5.2.3 Vehicle Location Category

Table 22: Standardized Disabled Vehicle Location Category

Code	Disabled Vehicle Location
1	In Freeway Lane
2	Left Shoulder
3	Other
4	Ramp/Connector
5	Right Shoulder
6	Unable to Locate

5.2.4 Towed To Location

Table 23: Standardized Towed to Location Category

Code	Towed to Location
1	Shoulder
2	Off Freeway
3	No Tow

5.2.5 Vehicle Found Category

Table 24: Standardized Found Category

Code	Found Category
1	Dispatched
2	Found by FSP Driver
3	Other

5.3 Data Entry Errors

During the processing of the FSP 2014-15 assist data, occasional random data errors were encountered. The errors were in the beat IDs, dates, times and some descriptive code categories. The errors consisted of data entries that were not within the range of valid pre-defined values. For example, assist records had invalid assist dates and start times that were after the end times. Many of the FSP Arrival and FSP Departure time errors resulted in negative durations that could not be used in the calculation of the average assist durations. Upon review of these errors, it appears these problems are most likely the result of data entry errors. These errors have become less frequent over the years as automated data management techniques have become more common.

5.4 Reporting of “Other/Unknown/Blank” Problem Type

The Problem Type category “Other/Unknown/Blank” category contains the count of not only the empty and unknown problem types but also the count of the problem types that do not easily fall in the condensed set of reported problem type categories. Combining these two different groupings of problem types takes information away from the data shown on the Problem Type statistical tables and graphs. The Problem Type category could be split into “Other” and “Unknown” for more accurate FSP Assist reporting.

5.5 FSP Data Collection Reporting Categories by FSP Program

The FY 2014-15 FSP assist data were visually inspected to determine the FSP assist data categories used by the FSP programs. All FSP programs collect the assist data for the following required FSP assist data categories:

- FSP Program
- Beat
- Assist Date
- Arrival Time
- Departure Time

There are some minor differences between the FSP programs for the FSP Assist data categories that describe the type of problem, FSP service provided, the vehicle's location and vehicle type. FSP assist data reporting categories are summarized in Tables 24 through 28:

- Table 24: Vehicle Type
- Table 25: Problem Type
- Table 26: Vehicle Location on Road
- Table 27: Towed-to Location
- Table 28: How Vehicle Was Found

The Sacramento/Yolo County (STA) and the Placer County (PCTPA) FSP programs use the same reporting technology and procedures (i.e., the same system and app). Similarly, the Riverside County (RCTC) and the San Bernardino County (SANBAG) FSP programs use the same reporting technology and procedures. As such, the STA & PCTPA programs are represented in a single column in Tables 24-28 as are the RCTC & SANBAG FSP programs.

Table 24 “Vehicle Type” Category

Vehicle Type	D-03 STA & PCTPA	D-03 EDCTC	D-04 MITC	D-05 TAMC	D-05 SCCRTC	D-05 SBCAG	D-06 Fresno COG	D-07 MTA	D-08 RCTC & SANBAG	D-10 SJCOG	D-11 SANDAG	D-12 OCTA
Motorcycle	•	•	•	•	•	•	n/a	•	•	•	•	•
Auto	•	•	•	•	•	•	n/a	•	•	•	•	•
Van		•		•	•		n/a	•	•	•	•	•
SUV	•	•		•	•		n/a		•		•	•
Pickup Truck	•	•	•	•	•	•	n/a	•	•	•	•	•
Truck – LTE 1 Ton	•		•				n/a	•	•	•	•	•
Truck – Over 1 Ton	•		•				n/a	•	•	•		
RV / Motorhome	•						n/a					•
Bus							n/a					•
Big Rig			•	•	•	•	n/a	•	•	•	•	•
No Assist Oversize		•					n/a	•	•	•	•	
Other / Unknown		•	•	•	•	•	n/a	•	•	•	•	•
Debris				•	•		n/a		•	•		•

Notes:

All FSP Programs track “Debris Removal” as a category in the “Vehicle Problem” question.

D-11 SANDAG and D-12 OCTA only have one truck category – “Box Truck”.

Table 25: “Problem Type” Category

Problem Type	D-03 STA & PCTPA	D-03 EDCTC	D-04 MITC	D-05 TAMC	D-05 SCCRTC	D-05 SBCAG	D-06 Fresno COG	D-07 MTA	D-08 RCTC & SANBAG	D-10 SJCOG	D-11 SANDAG	D-12 OCTA
Abandoned	•	•	•	•	•	•	n/a	•	•	•	•	•
Accident	•	•	•	•	•	•	n/a	•	•	•	•	•
Debris Removal	•	•	•	•	•	•	n/a	•	•	•	•	•
Dead Battery			•			•	n/a					•
Drove Off			•	•	•		n/a				•	
Electrical	•	•		•	•		n/a	•	•	•	•	
Fire		•		•	•	•	n/a	•	•	•	•	
Flat Tire	•	•	•	•	•	•	n/a	•	•	•	•	•
Help En-route			•	•	•		n/a				•	
Info				•	•		n/a		•	•		•
Locked Out	•	•		•	•		n/a	•	•	•	•	
Mechanical	•	•	•	•	•	•	n/a	•	•	•	•	•
Other	•	•	•	•	•	•	n/a	•				
Out of Gas	•	•	•	•	•	•	n/a	•	•	•	•	•
Over Heat	•	•	•	•	•	•	n/a	•	•	•	•	•
Refused Service	•		•	•	•		n/a				•	•
Unable to Locate			•	•	•		n/a		•	•		•

Notes:

‘Refused Service’ includes the ‘None – Service Not Needed’ and ‘No Service Provided’ categories.

Table 26: “Vehicle Location” Category

Vehicle Location	D-03 STA & PCTPA	D-03 EDCTC	D-04 MITC	D-05 TAMC	D-05 SCCRTC	D-05 SBCAG	D-06 Fresno COG	D-07 MTA	D-08 RCTC & SANBAG	D-10 SJCOG	D-11 SANDAG	D-12 OCTA
Freeway Lane(s)	•	•	•	•	•	•	n/a	•	•	•	•	•
Left Shoulder	•	•	•	•	•	•	n/a	•	•	•	•	•
Right Shoulder	•	•	•	•	•	•	n/a	•	•	•	•	•
Ramp / Connector	•	•	•	•	•	•	n/a	•	•	•	•	•
Other	•	•		•	•	•	n/a	•	•	•	•	•
Unable to Locate	•			•	•	•	n/a	•	•		•	•

Notes:

D-07 MTA and D-12 OCTA had separate category for “Center Median”.

Table 27: “Towed To Location” or “Did You Tow” Category

Did You Tow Categories	D-03 STA & PCTPA	D-03 EDCTC	D-04 MITC	D-05 TAMC	D-05 SCCRTC	D-05 SBCAG	D-06 Fresno COG	D-07 MTA	D-08 RCTC & SANBAG	D-10 SJCOG	D-11 SANDAG	D-12 OCTA
No Tow		•	•	•		•	n/a	•	•	•	•	•
Off Fwy Or Drop Zone	•	•	•	•	•	•	n/a	•	•	•	•	•
Pushed			•		•		n/a		•	•	•	
Shoulder						•	n/a	•	•	•	•	•
Other Location		•		•	•	•	n/a					
Unknown							n/a					•

Notes:

D-05 TAMC and D-05 SCCRTC tracked “Towed To” by individual drop zone locations.

Table 28: “Vehicle Found” or “How Found” Category

How Found Categories	D-03 STA & PCTPA	D-03 EDCTC	D-04 MTC	D-05 TAMC	D-05 SCCRTC	D-05 SBCAG	D-06 Fresno COG	D-07 MTA	D-08 RCTC & SANBAG	D-10 SJCOG	D-11 SANDAG	D-12 OCTA
CHP	•	•		•	•	•	n/a	•	•	•	•	
FSP – Found by You	•	•		•	•	•	n/a	•	•	•	•	
Other	•			•	•		n/a	•				
Partner Assist	•	•					n/a					
Revisit	•						n/a					

Notes:

D-04 MTC and D12 OCTA do not collect “How Found” Information.

Appendix A

FSP Beat Benefit/Cost Ratio Summaries (Fiscal Year 2014-15 Analysis)

FSP Beat Benefit/Cost Ratio Summary

District 3: Sacramento & Yolo Counties

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
10	6.0	-	6.0	2.0	5.0
106	1.0	-	1.0	-	1.0
108	7.0	-	7.0	-	7.0
108A	4.0	-	4.0	-	4.0
150	10.0	-	10.0	-	10.0
151	9.0	-	9.0	-	9.0
152	6.0	-	6.0	-	6.0
153	4.0	-	4.0	-	4.0
153A	6.0	-	6.0	-	6.0
181	4.0	-	4.0	-	4.0
182	4.0	-	4.0	-	4.0
182A	8.0	-	8.0	-	8.0
184	10.0	-	10.0	-	10.0
184A	13.0	-	13.0	-	13.0
191A	17.0	-	17.0	-	17.0
192	13.0	-	13.0	-	13.0
193	7.0	-	7.0	-	7.0
Average Benefit/Cost Ratio	7.0	-	7.0	2.0	7.0

FSP Beat Benefit/Cost Ratio Summary

District 3: Placer County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
265	8.0	-	8.0	-	8.0
281	4.0	-	4.0	0.0	4.0
281-A	8.0	-	8.0	-	8.0
Average Benefit/Cost Ratio	6.0	-	6.0	0.0	6.0

FSP Beat Benefit/Cost Ratio Summary

District 3: El Dorado County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	3.0	-	3.0	-	3.0
Average Benefit/Cost Ratio	3.0	-	3.0	-	3.0

FSP Beat Benefit/Cost Ratio Summary

District 4: Bay Area Counties

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	4.0	-	4.0	-	4.0
2	3.0	1.0	3.0	1.0	3.0
3	6.0	3.0	5.0	-	5.0
4	5.0	2.0	4.0	-	4.0
5	12.0	-	12.0	-	12.0
6	7.0	2.0	6.0	-	6.0
7	18.0	-	18.0	-	18.0
8	7.0	-	7.0	-	7.0
9	12.0	-	12.0	-	12.0
10	13.0	-	13.0	-	13.0
11	10.0	3.0	8.0	-	8.0
12	12.0	-	12.0	-	12.0
13	7.0	-	7.0	-	7.0
14	7.0	-	7.0	-	7.0
15	2.0	-	2.0	-	2.0
16	4.0	-	4.0	0.0	3.0
17	0.0	0.0	0.0	-	0.0
18	4.0	-	4.0	-	4.0
19	9.0	-	9.0	-	9.0
20	8.0	-	8.0	-	8.0
21	5.0	-	5.0	-	5.0
22	9.0	-	9.0	1.0	8.0
23	4.0	-	4.0	-	4.0
24	0.0	-	0.0	-	0.0
25	14.0	-	14.0	-	14.0
26	11.0	-	11.0	-	11.0
27	5.0	-	5.0	-	5.0
28	3.0	-	3.0	-	3.0
29	2.0	-	2.0	-	2.0
30	3.0	-	3.0	-	3.0
32	5.0	-	5.0	-	5.0
34	7.0	-	7.0	-	7.0
35	2.0	-	2.0	-	2.0
37	1.0	-	1.0	0.0	1.0
Average Benefit/Cost Ratio	7.0	2.0	7.0	1.0	7.0

FSP Beat Benefit/Cost Ratio Summary

District 5: Monterey County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	2.0	-	2.0	-	2.0
2	3.0	-	3.0	-	3.0
Average Benefit/Cost Ratio	3.0	-	3.0	-	3.0

FSP Beat Benefit/Cost Ratio Summary

District 5: Santa Cruz County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	3.0	-	3.0	-	3.0
2	4.0	-	4.0	3.0	4.0
Average Benefit/Cost Ratio	3.0	-	3.0	3.0	3.0

FSP Beat Benefit/Cost Ratio Summary

District 5: Santa Barbara County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	2.0	-	2.0	-	2.0
2	1.0	-	1.0	-	1.0
3	4.0	-	4.0	-	4.0
Average Benefit/Cost Ratio	2.0	-	2.0	-	2.0

FSP Beat Benefit/Cost Ratio Summary

District 6: Fresno County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	4.0	-	4.0	-	4.0
2	4.0	-	4.0	-	4.0
3	3.0	-	3.0	-	3.0
4	12.0	-	12.0	-	12.0
Average Benefit/Cost Ratio	5.0	-	5.0	-	5.0

FSP Beat Benefit/Cost Ratio Summary

District 7: Los Angeles County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	21.0	8.0	19.0	19.0	19.0
2	24.0	13.0	23.0	7.0	21.0
3	6.0	9.0	6.0	5.0	6.0
4	16.0	9.0	15.0	4.0	14.0
5	10.0	9.0	9.0	3.0	9.0
6	6.0	10.0	7.0	12.0	7.0
7	8.0	8.0	8.0	8.0	8.0
8	4.0	3.0	4.0	3.0	4.0
9	12.0	14.0	12.0	9.0	12.0
10	4.0	4.0	4.0	4.0	4.0
11	7.0	3.0	6.0	2.0	5.0
12	16.0	9.0	14.0	5.0	13.0
13	14.0	5.0	13.0	4.0	12.0
14	16.0	4.0	14.0	3.0	13.0
16	34.0	67.0	38.0	38.0	38.0
17	7.0	7.0	7.0	10.0	7.0
18	14.0	5.0	10.0	2.0	9.0
19	16.0	8.0	15.0	2.0	14.0
20	16.0	8.0	14.0	6.0	14.0
21	23.0	21.0	23.0	1.0	21.0
23	24.0	10.0	22.0	2.0	18.0
24	9.0	1.0	8.0	0.0	7.0
27	16.0	3.0	14.0	2.0	13.0
28	4.0	3.0	4.0	4.0	4.0
29	14.0	10.0	13.0	2.0	12.0
30	14.0	7.0	13.0	0.0	11.0
31	7.0	7.0	7.0	6.0	7.0
33	11.0	0.0	9.0	0.0	8.0
34	19.0	6.0	17.0	1.0	16.0
36	6.0	0.0	5.0	0.0	4.0
37	5.0	3.0	5.0	1.0	4.0
38	8.0	1.0	7.0	1.0	6.0
39	15.0	11.0	14.0	5.0	13.0
40	26.0	21.0	25.0	3.0	21.0
41	3.0	0.0	2.0	1.0	2.0
42	7.0	5.0	7.0	2.0	6.0
43	16.0	10.0	16.0	4.0	15.0
50	16.0	6.0	15.0	3.0	13.0
51	15.0	8.0	14.0	8.0	13.0
Average Benefit/Cost Ratio	14.0	9.0	13.0	5.0	12.0

FSP Beat Benefit/Cost Ratio Summary

District 8: Riverside County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	12.0	-	12.0	-	12.0
2	9.0	-	9.0	-	9.0
4	35.0	-	35.0	-	35.0
7	9.0	-	9.0	-	9.0
8	4.0	-	4.0	-	4.0
18	16.0	-	16.0	-	16.0
19	4.0	-	4.0	-	4.0
25	9.0	-	9.0	-	9.0
26	9.0	-	9.0	-	9.0
Average Benefit/Cost Ratio	12.0	-	12.0	-	12.0

FSP Beat Benefit/Cost Ratio Summary

District 8: San Bernardino County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	17.0	-	17.0	-	17.0
2	6.0	-	6.0	-	6.0
3	6.0	-	6.0	-	6.0
4	10.0	-	10.0	-	10.0
5	4.0	-	4.0	-	4.0
6	26.0	-	26.0	-	26.0
7	3.0	-	3.0	-	3.0
8	11.0	-	11.0	-	11.0
Average Benefit/Cost Ratio	10.0	-	10.0	-	10.0

FSP Beat Benefit/Cost Ratio Summary

District 10: San Joaquin County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
1	2.0	-	2.0	-	2.0
2	5.0	1.0	4.0	-	4.0
3	1.0	0.0	1.0	-	1.0
Average Benefit/Cost Ratio	2.0	0.0	2.0	-	2.0

FSP Beat Benefit/Cost Ratio Summary

District 11: San Diego County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
851	3.0	0.0	2.0	1.0	2.0
852	12.0	-	12.0	-	12.0
501	3.0	0.0	2.0	0.0	2.0
503	14.0	-	14.0	-	14.0
541	2.0	1.0	2.0	1.0	2.0
125	5.0	-	5.0	-	5.0
941	6.0	0.0	4.0	1.0	3.0
505	8.0	-	8.0	-	8.0
151	11.0	0.0	7.0	1.0	6.0
152	5.0	-	5.0	-	5.0
163	10.0	1.0	8.0	2.0	7.0
522	5.0	-	5.0	-	5.0
801	7.0	0.0	5.0	1.0	4.0
802	3.0	-	3.0	-	3.0
506	10.0	2.0	7.0	1.0	6.0
521	10.0	-	10.0	-	10.0
853	7.0	1.0	7.0	1.0	6.0
508	4.0	3.0	3.0	2.0	3.0
509	1.0	-	1.0	-	1.0
153	2.0	0.0	1.0	0.0	1.0
781	7.0	1.0	5.0	4.0	5.0
951	1.0	-	1.0	-	1.0
100	10.0	-	10.0	-	10.0
200	7.0	-	7.0	-	7.0
300	6.0	-	6.0	-	6.0
400	7.0	-	7.0	-	7.0
500	10.0	-	10.0	-	10.0
600	3.0	-	3.0	-	3.0
700	6.0	-	6.0	-	6.0
800	5.0	-	5.0	-	5.0
Average Benefit/Cost Ratio	6.0	1.0	6.0	1.0	5.0

FSP Beat Benefit/Cost Ratio Summary

District 12: Orange County

Beat	Peak Period Weekday B/C Ratio	Midday Weekday B/C Ratio	Weekday B/C Ratio	Weekend B/C Ratio	Combined B/C Ratio
910	1.0	-	1.0	-	1.0
911	20.0	-	20.0	-	20.0
912	15.0	-	15.0	-	15.0
913	16.0	-	16.0	-	16.0
573	-	36.0	36.0	-	36.0
225	-	-	-	15.0	15.0
914	7.0	-	7.0	-	7.0
915	9.0	-	9.0	-	9.0
916	4.0	-	4.0	-	4.0
922	-	-	-	4.0	4.0
220	14.0	-	14.0	-	14.0
221	13.0	-	13.0	-	13.0
222	16.0	-	16.0	-	16.0
223	-	18.0	18.0	-	18.0
224	-	13.0	13.0	-	13.0
405	21.0	-	21.0	-	21.0
406	20.0	-	20.0	-	20.0
407	2.0	-	2.0	-	2.0
408	21.0	-	21.0	-	21.0
409	27.0	-	27.0	-	27.0
410	38.0	-	38.0	-	38.0
411	10.0	-	10.0	-	10.0
501	5.0	-	5.0	-	5.0
502	16.0	-	16.0	-	16.0
500	-	8.0	8.0	-	8.0
503	54.0	-	54.0	-	54.0
504	51.0	-	51.0	-	51.0
505	28.0	-	28.0	-	28.0
506	20.0	-	20.0	-	20.0
511	-	-	-	12.0	12.0
512	-	-	-	8.0	8.0
513	-	10.0	10.0	-	10.0
507	11.0	-	11.0	-	11.0
508	43.0	-	43.0	-	43.0
509	16.0	-	16.0	-	16.0
510	4.0	-	4.0	-	4.0
570	5.0	-	5.0	-	5.0
571	27.0	-	27.0	-	27.0
572	18.0	-	18.0	-	18.0
551	3.0	-	3.0	-	3.0
552	34.0	-	34.0	-	34.0
555	-	7.0	7.0	-	7.0
553	29.0	-	29.0	-	29.0
554	13.0	-	13.0	-	13.0
550	-	10.0	10.0	-	10.0
Average B/C Ratio	18.0	15.0	18.0	10.0	18.0

Appendix B

Current FSP Assist Data Collection & Management Technologies

FSP Program	Paper or Electronic Reporting	AVL Vehicle Tracking	Data Transfer Technology (Tow provider to Managing Agency)
Sac/Yolo STA	small business solution (mobile workforce management)	yes	electronic, real-time
Placer PCTPA	small business solution (mobile workforce management)	yes	electronic, real-time
El Dorado EDCTC	small business solution (mobile workforce management)	yes	electronic, real-time
Bay Area MTC	enterprise system	yes	electronic, real-time
Monterey TAMC	iPAD mini with app (small business solution)	yes	electronic, twice daily (end of shift)
Santa Cruz SCCRTC	iPAD mini with app (small business solution)	yes	electronic, twice daily (end of shift)
Santa Barbara SBCAG	paper form (with motorist survey)	no	paper, monthly
Fresno Fresno-COG	paper form	no	paper, monthly
Los Angeles LAMTA	paper (scantron)	no	paper, monthly
Riverside RCTC	small business solution (mobile workforce management)	yes	electronic, real-time
San Bernardino SANBAG	small business solution (mobile workforce management)	yes	electronic, real-time
San Joaquin SJCOG	small business solution (mobile workforce management)	no	electronic, daily
San Diego SANDAG	paper (scantron) & CHP data logs	no	paper, monthly
Orange OCTA	enterprise system	yes	electronic, real-time