Title

California's Freeway Service Patrol Program: Management Information System Annual Report Fiscal Year 2011-12

Authors

Mauch, Michael
Skabardonis, Alex

Publication Date

2013-12-08

INSTITUTE OF TRANSPORTATION STUDIES
UNIVERSITY OF CALITFORNIA, BERKELEY

California's Freeway Service Patrol Program

Management Information System Annual Report Fiscal Year 2011-12

Michael Mauch and
Alex Skabardonis

Report Series
UCB-ITS-RR-2013-01

The Institute of Transportation Studies at the University of California, Berkeley, is one of the world's leading centers for transportation research, education, and scholarship.

TECHNICAL REPORT DOCUMENTATION PAGE

1. Report No. UCB-ITS-RR-2013-01	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle CALIFORNIA'S FREEWAY SERVICE PATROL PROGRAM Management Information System Annual Report Fiscal Year 2011-12		**5. Report Date** December 8, 2013 **6. Performing Organization Code**
7. Author(s) Michael Mauch and Alex Skabardonis		**8. Performing Organization Report No.** UCB-ITS-RR-2013-01
9. Performing Organization Name and Address Institute of Transportation Studies University of California, Berkeley 109 McLaughlin Hall Berkeley CA 94720-1720		**10. Work Unit No.** 11. Contract or Grant No. 51A0440
12. Sponsoring Agency Name and Address California Department of Transportation Division of Transportation Operations 1120 N Street Sacramento, CA 95814		**13. Type of Report and Period Covered** Final Annual Report for Caltrans Fiscal Year 2011-2012 **14. Sponsoring Agency Code**

15. Supplementary Notes

16. Abstract

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 2012, there were fourteen participating FSP Programs operating in California, deploying over 350 tow trucks and covering over 1,750 (center-line) miles of congested California freeways.

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 2011-2012. 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.

17. Key Words	18. Distribution Statement
Freeway Service Patrol (FSP), freeway incident management,	No restrictions.

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified.	Unclassified.	50	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

CALIFORNIA'S FREEWAY SERVICE PATROL PROGRAM

Management Information System Annual Report

Fiscal Year 2011/12

Prepared for the California Department of Transportation

Traffic Operations Division

Prepared by

Institute of Transportation Studies
University of California at Berkeley

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

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 collects and records their operational data in substantially different formats.

The following points summarize the primary outputs of the FSP programs into the statewide Management Information System (MIS) databases for fiscal year 2011/12**:**

(1) In fiscal year 2011/12, the roving tow trucks of the FSP program provided over 670,000 assists on California's highway system. This is approximately 2.6 percent (%) increase over the previous year. Over 46% 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 19% of total statewide assists.

(2) The estimated benefit/cost ratios for FSP programs ranged from 1.2-to-1 for San Joaquin to 10.2-to-1 for Los Angeles. The statewide average B/C ratio (weighted on FSP beat costs) was 7.8-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 state FSP in 2011/12 was about 13 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 2011/12 the state's fourteen FSP programs operated 188 Caltrans sponsored beats with 357 trucks (during the PM peak period) covering about 1,772 centerline freeway miles. Together they provided over 805,000 total truck hours of service. On average, California's FSP trucks in FY 2011/12 supplied almost one assist for every hour of service (0.83 assists per tow truck-hour). These assists were primarily given to automobiles and vans, which constituted 73 percent of all assists. The two most common types of assists given were for flat tires (16%) and mechanical problems (17%).

(5) The number of FSP trucks and truck hours the state and its partner agencies can deploy is determined by funding availability. In FY 2011/12, the state allocated about $25.5 million to the locally run FSP programs and another $4.0 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 2011/12, the local partner transportation agencies provided over $21 million in matching funds – over an 83 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 emissions.

Table 1: Statewide FSP Program Annual Summary (Combined Weekday and Weekend Service on Caltrans Sponsored Beats)

Program	Area	# of Wkdy Beats	# of Peak Period Trucks	Wkdy Center - line Miles	Truck Hours	Total Assists	Avg. Assist Duration (min.)	Assist Rate[1]	B/C Ratio[2]	State FSP Funds ($)	% of State FSP Funds	Local Match Funds ($)	% of Local Match Funds	CHP Allocation ($)	% of CHP Allocation
3-SY	Sac / Yolo	17	17	84	27,999	33,159	6.6	1.18	5.2	1,186,499	4.7%	729,250	61.5%	229,029	5.8%
3-P	Placer	2	2	25	3,394	5,316	5.0	1.57	2.9	253,159	1.0%	63,290	25.0%	n/a	n/a
3-ED	El Dorado	1	1	11	1,547	1,152	13.8	0.74	2.5	79,244	0.3%	19,811	25.0%	n/a	n/a
4	Bay Area	36	77	570	163,747	130,007	11.5	0.79	5.8	5,877,393	23.1%	4,408,044	75.0%	1,080,877	27.3%
5-M	Monterey	2	2	22	3,096	2,187	14.8	0.71	3.8	240,392	0.9%	60,098	25.0%	n/a	n/a
5-SC	Santa Cruz	2	2	16	3,432	1,587	14.3	0.46	2.0	204,723	0.8%	51,181	25.0%	n/a	n/a
5-SB	Santa Barbara	3	2	23	2,952	697	9.9	0.24	1.6	261,944	1.0%	65,487	25.0%	n/a	n/a
6	Fresno	3	3	21	3,375	3,579	14.7	1.06	3.6	276,960	1.1%	69,240	25.0%	80,231	2.0%
7	Los Angeles	39	152	474	395,968	310,025	16.6	0.78	10.2	8,581,176	33.7%	12,665424	147.6%	1,076,356	27.2%
8-R	Riverside	9	21	82	39,081	42,748	10.3	1.09	6.2	1,653,564	6.5%	511,034	30.9%	252,994	6.4%
8-SB	San Bernardino	8	16	67	28,000	35,893	9.3	1.28	6.7	1,420,178	5.6%	236,909	16.7%	252,994	6.4%
10	San Joaquin	1	2	13	4,664	6,475	7.9	1.39	1.2	497,653	2.0%	57,115	11.5%	n/a	n/a
11	San Diego	26	26	235	50,879	42,191	10.0	0.83	4.0	2,352,016	9.2%	496,401	21.1%	502,494	12.7%
12	Orange	39	34	131	75,156	57,456	11.4	0.76	8.5	2,594,099	10.2%	1,876,866	72.4%	487,992	12.3%
Total or Average		**188**	**357**	**1,772**	**803,289**	**672,472**	**13.3**	**0.84**	**7.8**	**25,479,000**	**100.0%**	**21,310,151**	**83.6%**	**3,962,968**	**100.0%**

Notes: 1 – Total Assists divided by Total Truck Hours; 2 – B/C Ratios were calculated for the 2011/12 Fiscal Year; n/a = Not Applicable, No CHP allocations are made for these small programs.

Table 2: Statewide FSP Program Annual Summary (Combined Weekday and Weekend Service on Caltrans Sponsored Beats)

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	456,048	795,139	36.89	441.64	19.88	7.11	6,997,226	105.57	285.93
3-P	32,211	55,370	2.61	31.19	1.40	0.50	487,260	7.46	20.20
3-ED	10,149	17,445	0.82	9.83	0.44	0.16	153,519	2.35	6.36
4	2,746,361	4,720,994	222.18	2,659.58	119.74	42.84	41,544,750	635.76	1,721.91
5-M	40,109	68,947	4.39	95.93	32.95	1.14	606,738	9.28	25.15
5-SC	31,662	54,427	3.47	75.73	26.01	0.90	478,955	7.33	19.85
5-SB	18,441	31,701	2.02	44.11	15.15	0.52	278,968	4.27	11.56
6	62,561	107,542	5.06	60.58	2.73	0.98	946,368	14.48	39.22
7	9,821,608	16,883,345	794.57	9,511.25	428.22	153.22	148,573,434	2,273.60	6,157.95
8-R	655,214	1,126,314	63.03	1,133.33	301.18	14.68	9,911,560	151.68	410.81
8-SB	485,736	834,980	39.30	470.39	21.18	7.58	7,347,827	112.44	304.55
10	14,607	25,110	1.60	34.94	12.00	0.41	220,964	3.38	9.16
11	527,910	907,477	42.71	511.23	23.02	8.24	7,985,794	122.21	330.99
12	1,837,192	3,158,132	148.63	1,779.14	80.10	28.66	27,791,564	425.29	1,151.88
Statewide	16,739,808	28,786,923	1,367.27	16,858.85	1,084.01	266.93	253,324,927	3,875.10	10,495.52

1.3 *Recommendation Summary*

Better FSP Tow Provider Monitoring and Automated Data Collection

Caltrans Headquarters, the FSP county and regional agency partners and CHP should work together to implement better methods of 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 now available which could help FSP management teams (local agencies and CHP) monitor the activity of the FSP tow providers – in real time. For example, Sacramento County developed and has been using *FSPTrack* for about a year 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.

With the newly available Apple and Android apps and customized web based server interfaces comes the availability to more effectively monitor and track the activities of the FSP tow providers. However, this new technology also creates the need for policy decisions and incorporation of standardized monitoring practices and procedures assuring that these new technical tools are used effectively by FSP managers. Policies need to be in place assuring that the CHP and other managers responsible for FSP monitoring use these newly available tools effectively and incorporate FSP monitoring activities into their daily routines. Further, additional questions need to be explored about plausible changes and enhancements to these applications that could aid in the monitoring activities. For example, could the monitoring system automatically alert Caltrans/CHP personnel in Traffic Management Centers (TMCs) when a FSP tow truck roves outside its expected beat limits? Or when a FSP tow truck is idle (not moving) for long periods of time?

It is further recommended that Caltrans Headquarters very actively encourage statewide standardization (across all FSP programs) of data collection and FSP tow truck activity monitoring. This should be done in the near term (and before several of the FSP programs independently implement varying forms of a GPS-based monitoring and automated FSP data collection system). Additionally, the FSP assist data are not readily available to FSP managers in some of the FSP programs. An automated FSP tow truck monitoring and data collection system would make up-to-date FSP assist data and summary performance reports readily available to all FSP managers, thus alleviating this problem.

Performance Based Management Practices and Effective Monitoring

There is some concern about how efficiently the FSP tow trucks are allocated to beats with a few of the FSP program managers (especially within the Los Angeles FSP program) and with Caltrans FSP management. To address this concern and to improve the FSP program's performance (i.e., the cost effectiveness), a standardized 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 beat vehicle miles of travel (VMT), beat vehicle hours of travel (VHT), vehicle hours of delay, and/or accident rate indicators. These indicators and comparisons between the demand for FSP services and the supply of FSP resources would help 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 2011/12, the FSP program provided over 672,000 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 2011/12 Management Information System (MIS) databases
2) Produce FSP 2011/12 California Local Program Report
3) Produce FSP 2011/12 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 2011/12 MIS Databases

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

1) Solicit and Collect the 2011/12 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 2011/12 California Local Program Report

The development of the FSP 2011/12 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 2011/12 California Statewide MIS Program Report

The development of the FSP 2011/12 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 FSP 2010/11 MIS annual report as a template for the FSP 2011/12 report. Create the shell of the FSP 2011/12 report.
4) Add all relevant text and tables from the FSP 2010/11 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 2011/12 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 almost 672,000 records for the fiscal year 2011/12. 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 ($15.90/vehicle-hour) and fuel consumption ($3.95/gallon).

The value of time for motorists (in terms of $ per vehicle hour) were obtained from the Caltrans 2009 Performance Mobility Report. The 2009 MPR states that statewide travel time is priced at $15.90 for each vehicle hour of delay, which includes an average vehicle occupancy of 1.15 and a 9 percent truck volume.

The California statewide annual average fuel costs of $3.95/gallon of gasoline for FY 2010-11 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.

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 by approximately 2.6% (655,686 to 672,472) from FY 2010/11 to 2011/12. This is shown graphically in Figure 1.

Table 3: Total Assists and Annual Change by Fiscal Year

Fiscal Year	Total Assists	Annual Change (%)
91/92	152,526	0.0%
92/93	295,613	93.8%
93/94	452,018	52.9%
94/95	448,170	-0.9%
95/96	540,874	20.7%
96/97	587,941	8.7%
97/98	583,699	-0.7%
98/99	568,276	-2.6%
99/00	625,090	10.0%
00/01	631,161	1.0%
01/02	643,607	2.0%
02/03	651,710	1.3%
03/04	646,749	-0.8%
04/05	618,440	-4.4%
05/06	669,895	8.3%
06/07	666,612	-0.5%
07/08	668,142	0.2%
08/09	638,880	-4.4%
09/10	649,155	1.6%
10/11	655,686	1.0%
11/12	672,472	2.6%

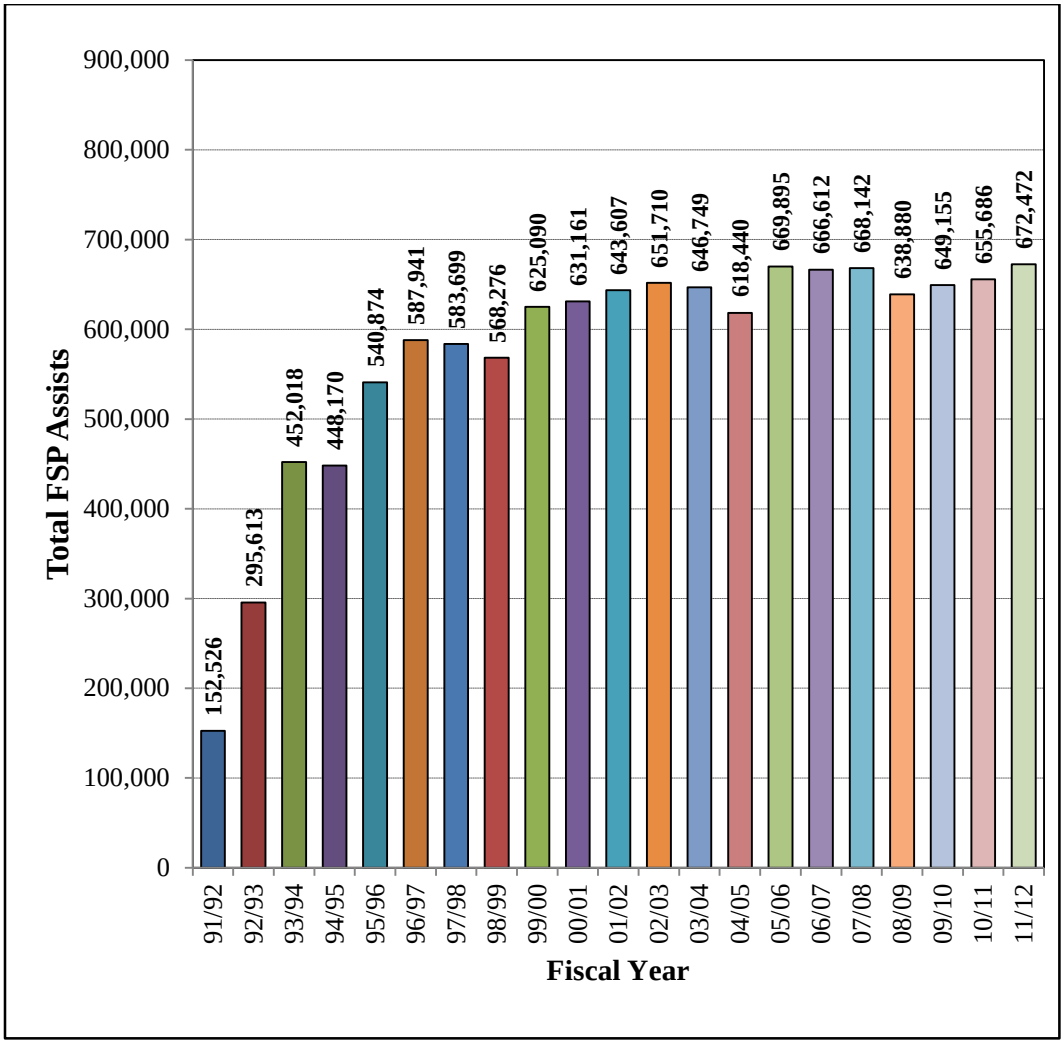

Figure 1: Bar Chart – Total FSP Assists by Fiscal Year

4.2 *Benefit/Cost Ratios for FSP Programs*

Table 4: B/C Ratio for Each FSP Program

Program	Name	Annual B/C Ratio
3-SY	Sacramento/Yolo	5.2
3-P	Placer	2.9
3-ED	El Dorado	2.5
4	Bay Area	5.8
5-M	Monterey	3.8
5-SC	Santa Cruz	2.0
5-SB	Santa Barbara	1.6
6	Fresno	3.6
7	Los Angeles	10.2
8-R	Riverside	6.3
8-SB	San Bernardino	6.7
10	San Joaquin	1.2
11	San Diego	4.0
12	Orange	8.5
Statewide		**7.8**

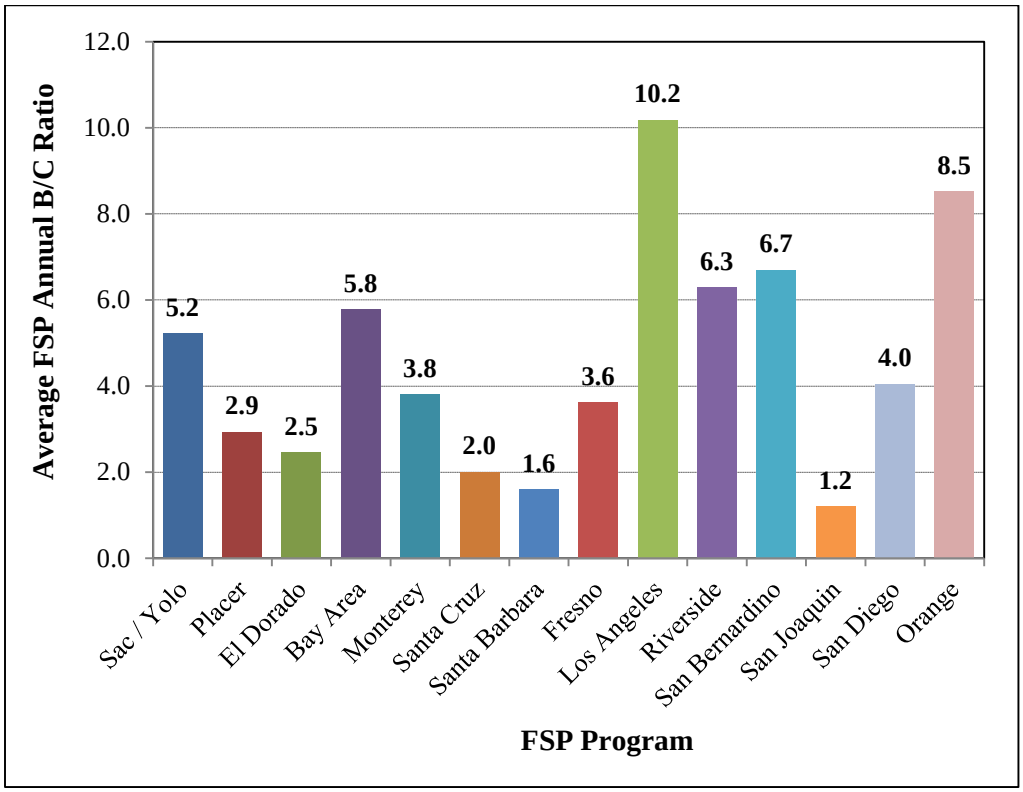

Figure 2: Bar Chart of FSP Benefit/Cost Ratios by Program

4.3 *Statewide FSP Total Assists by Quarter & Program*

Table 5: Total Assists by Quarter & Program

		Jul 11 - Sep 11	Oct 11 - Dec 11	Jan 12 - Mar 12	Apr 12 - Jun 12		
Program	**Name**	**Quarter 3**	**Quarter 4**	**Quarter 1**	**Quarter 2**	**Total Assists**	**%**
3-SY	Sac / Yolo	9,346	7,044	8,132	8,637	33,159	4.9%
3-P	Placer	1,464	1,500	1,003	1,349	5,316	0.8%
3-ED	El Dorado	328	306	259	259	1,152	0.2%
4	Bay Area	34,501	30,849	31,008	33,649	130,007	19.3%
5-M	Monterey	634	494	488	571	2,187	0.3%
5-SC	Santa Cruz	454	355	357	421	1,587	0.2%
5-SB	Santa Barbara	155	137	170	235	697	0.1%
6	Fresno	851	1,014	862	852	3,579	0.5%
7	Los Angeles	85,924	67,577	76,291	80,233	310,025	46.1%
8-R	Riverside	11,956	9,798	9,669	11,325	42,748	6.4%
8-SB	San Bernardino	10,135	8,848	8,083	8,827	35,893	5.3%
10	San Joaquin	1,590	1,310	1,566	2,009	6,475	1.0%
11	San Diego	12,005	9,736	10,265	10,185	42,191	6.3%
12	Orange	15,809	13,702	13,331	14,614	57,456	8.5%
Total Assists		**185,153**	**152,670**	**161,483**	**173,165**	**672,472**	**100.0%**
% of Total Assists		**27.5%**	**22.7%**	**24.0%**	**25.8%**	**100.0%**	

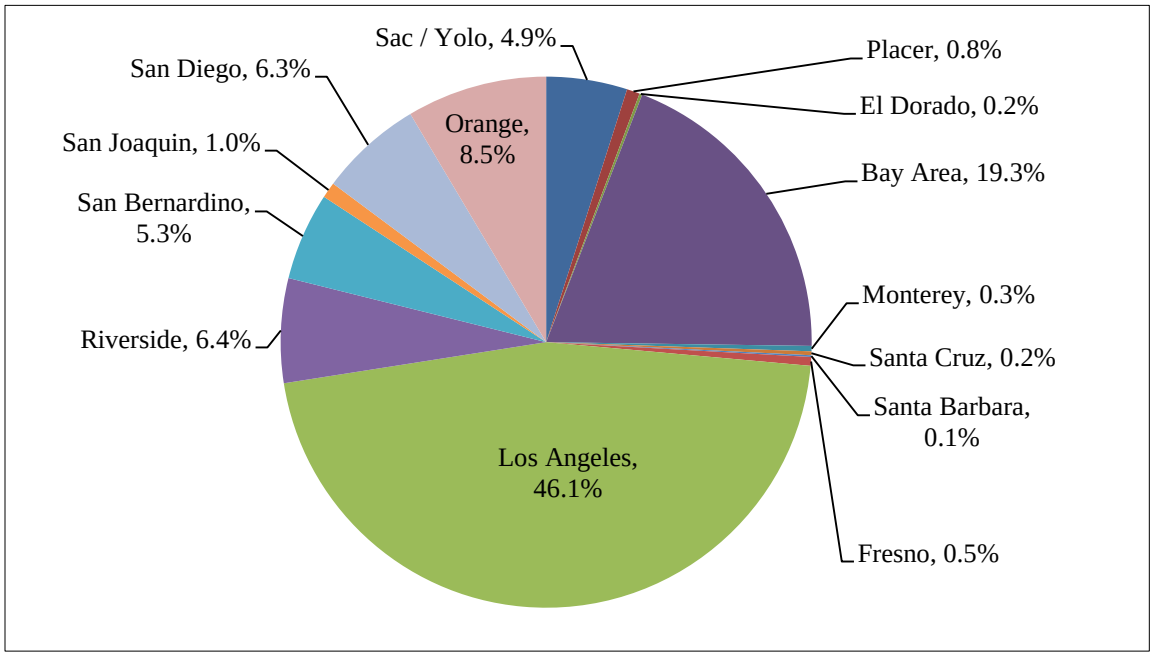

Figure 3: Pie Chart of Total Assists by Program

4.4 *Statewide FSP Total Assists by Problem Type*

Table 6: Total Assists by Problem Type

Problem Type	Total Assists	%
Abandoned	26,727	4.0%
Accident	89,049	13.2%
Debris Removed	15,786	2.3%
Flat Tire	105,707	15.7%
Mechanical Problems	114,647	17.0%
Other*	209,275	31.1%
Out of Gas	75,220	11.2%
Over Heated	36,061	5.4%
Total Assists	**672,472**	**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.

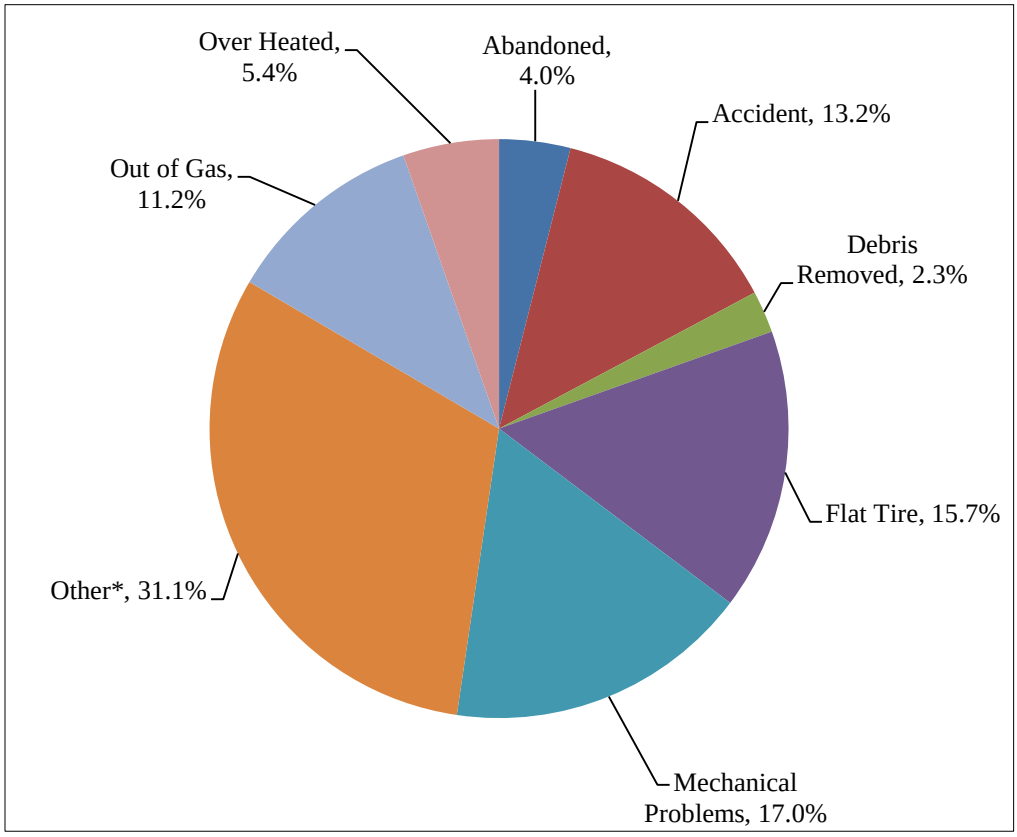

Figure 4: Pie Chart of Total Assists by Problem Type

4.5 *Statewide FSP Total Assists by Problem Type & Program*

Table 7: 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	1,670	9,737	627	4,943	5,850	4,909	4,293	1,130	33,159
3-P	Placer	405	1,402	102	624	904	1,240	504	134	5,316
3-ED	El Dorado	94	116	41	159	229	333	116	64	1,152
4	Bay Area	8,921	8,718	201	17,222	14,350	62,954	12,375	5,266	130,007
5-M	Monterey	148	214	386	284	321	456	301	76	2,187
5-SC	Santa Cruz	86	299	62	177	349	273	208	134	1,587
5-SB	Santa Barbara	45	96	44	122	187	59	117	27	697
6	Fresno	431	439	53	544	1,172	50	888	2	3,579
7	Los Angeles	6,637	50,803	5,626	55,238	54,495	79,725	36,003	21,498	310,025
8-R	Riverside	2,112	2,991	2,178	5,703	7,018	16,679	3,728	2,339	42,748
8-SB	San Bernardino	1,309	2,152	3,014	5,788	5,673	13,008	3,441	1,508	35,893
10	San Joaquin	229	234	658	1,093	779	1,871	1,212	399	6,475
11	San Diego	3,702	3,265	559	6,313	6,486	14,151	6,039	1,675	42,191
12	Orange	937	8,582	2,235	7,497	16,834	13,567	5,995	1,809	57,456
Total Assists		**26,727**	**89,049**	**15,786**	**105,707**	**114,647**	**209,275**	**75,220**	**36,061**	**672,472**
Average %		**4.0%**	**13.2%**	**2.3%**	**15.7%**	**17.0%**	**31.1%**	**11.2%**	**5.4%**	**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 8: 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
3	Sac / Yolo	5.0%	29.4%	1.9%	14.9%	17.6%	14.8%	12.9%	3.4%	4.9%
3-P	Placer	7.6%	26.4%	1.9%	11.7%	17.0%	23.3%	9.5%	2.5%	0.8%
3-ED	El Dorado	8.2%	10.1%	3.6%	13.8%	19.9%	28.9%	10.1%	5.6%	0.2%
4	Bay Area	6.9%	6.7%	0.2%	13.2%	11.0%	48.4%	9.5%	4.1%	19.3%
5-M	Monterey	6.8%	9.8%	17.7%	13.0%	14.7%	20.9%	13.7%	3.5%	0.3%
5-SB	Santa Barbara	6.5%	13.8%	6.3%	17.5%	26.8%	8.5%	16.8%	3.9%	0.2%
5-SC	Santa Cruz	5.4%	18.9%	3.9%	11.1%	22.0%	17.2%	13.1%	8.4%	0.1%
6	Fresno	12.0%	12.3%	1.5%	15.2%	32.7%	1.4%	24.8%	0.1%	0.5%
7	Los Angeles	2.1%	16.4%	1.8%	17.8%	17.6%	25.7%	11.6%	6.9%	46.1%
8-R	Riverside	4.9%	7.0%	5.1%	13.3%	16.4%	39.0%	8.7%	5.5%	6.4%
8-SB	San Bernardino	3.6%	6.0%	8.4%	16.1%	15.8%	36.2%	9.6%	4.2%	5.3%
10	San Joaquin	3.5%	3.6%	10.2%	16.9%	12.0%	28.9%	18.7%	6.2%	1.0%
11	San Diego	8.8%	7.7%	1.3%	15.0%	15.4%	33.5%	14.3%	4.0%	6.3%
12	Orange	1.6%	14.9%	3.9%	13.0%	29.3%	23.6%	10.4%	3.1%	8.5%
Average %		**4.0%**	**13.2%**	**2.3%**	**15.7%**	**17.0%**	**31.1%**	**11.2%**	**5.4%**	**100.0%**

4.6 *Statewide FSP Total Assists by Vehicle Type*

Table 9: Total Assists by Vehicle Type

Vehicle Type	Total Assists	%
Auto / Van	491,646	73.1%
Big Rig	22,606	3.4%
Other / Unknown	37,629	5.6%
SUV / Pickup	109,920	16.3%
Trucks	10,671	1.6%
Total Assists	**672,472**	**100.0%**

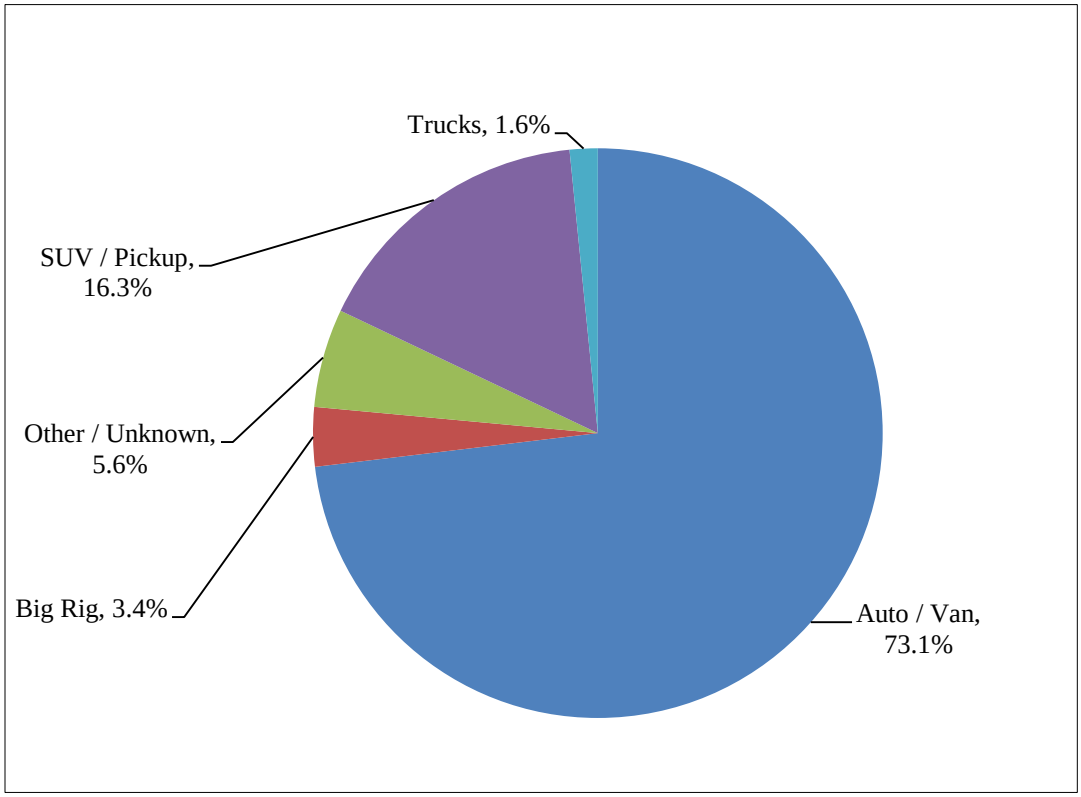

Figure 5: Pie Chart of Total Assists by Vehicle Type

4.7 *Statewide FSP Total Assists by Vehicle Type & Program*

Table 10: Total Assists by Vehicle Type & Program

Program	Name	Auto / Van	Big Rig	Other / Unknown	SUV / Pickup	Trucks	Total Assists
3-SY	Sac / Yolo	18,535	437	3,977	9,192	1,018	33,159
3-P	Placer	2,635	90	536	1,926	129	5,316
3-ED	El Dorado	565	0	115	472	0	1,152
4	Bay Area	93,340	3,802	7,233	20,818	4,814	130,007
5-M	Monterey	1,338	40	447	362	0	2,187
5-SC	Santa Cruz	1,151	26	171	239	0	1,587
5-SB	Santa Barbara	503	1	81	110	2	697
6	Fresno	2,553	43	388	568	27	3,579
7	Los Angeles	263,414	5,057	11,951	29,603	0	310,025
8-R	Riverside	23,689	6,004	2,988	7,915	2,152	42,748
8-SB	San Bernardino	19,524	5,777	3,861	5,458	1,273	35,893
10	San Joaquin	4,066	81	821	1,439	68	6,475
11	San Diego	25,811	221	1,719	14,117	324	42,191
12	Orange	34,523	1,027	3,341	17,701	864	57,456
Total Assists		**491,646**	**22,606**	**37,629**	**109,920**	**10,671**	**672,472**
Average %		**73.1%**	**3.4%**	**5.6%**	**16.3%**	**1.6%**	**100.0%**

Table 11: The % of Total Assists by Vehicle Type & Program

Program	Name	Auto / Van	Big Rig	Other / Unknown	SUV / Pickup	Trucks	Total Assists
3-SY	Sac / Yolo	55.9%	1.3%	12.0%	27.7%	3.1%	4.9%
3-P	Placer	49.6%	1.7%	10.1%	36.2%	2.4%	0.8%
3-ED	El Dorado	49.0%	0.0%	10.0%	41.0%	0.0%	0.2%
4	Bay Area	71.8%	2.9%	5.6%	16.0%	3.7%	19.3%
5-M	Monterey	61.2%	1.8%	20.4%	16.6%	0.0%	0.3%
5-SB	Santa Barbara	72.5%	1.7%	10.8%	15.1%	0.0%	0.2%
5-SC	Santa Cruz	72.2%	0.1%	11.6%	15.8%	0.3%	0.1%
6	Fresno	71.3%	1.2%	10.8%	15.9%	0.8%	0.5%
7	Los Angeles	85.0%	1.6%	3.9%	9.5%	0.0%	46.1%
8-R	Riverside	55.4%	14.0%	7.0%	18.5%	5.0%	6.4%
8-SB	San Bernadino	54.4%	16.1%	10.8%	15.2%	3.5%	5.3%
10	San Joaquin	62.8%	1.3%	12.7%	22.2%	1.1%	1.0%
11	San Diego	61.2%	0.5%	4.1%	33.5%	0.8%	6.3%
12	Orange	60.1%	1.8%	5.8%	30.8%	1.5%	8.5%
Average %		**73.1%**	**3.4%**	**5.6%**	**16.3%**	**1.6%**	**100.0%**

4.8 *Statewide FSP Total Assists by Vehicle Location*

Table 12: Total Assists by Vehicle Location

Vehicle Location	Total Assists	%
In Lane	64,419	9.6%
On Left Shoulder	26,947	4.0%
On Right Shoulder	501,796	74.6%
Other	33,656	5.0%
Ramp / Connector	42,100	6.3%
Unable to Locate	3,553	0.5%
Total Assists	**672,472**	**100.0%**

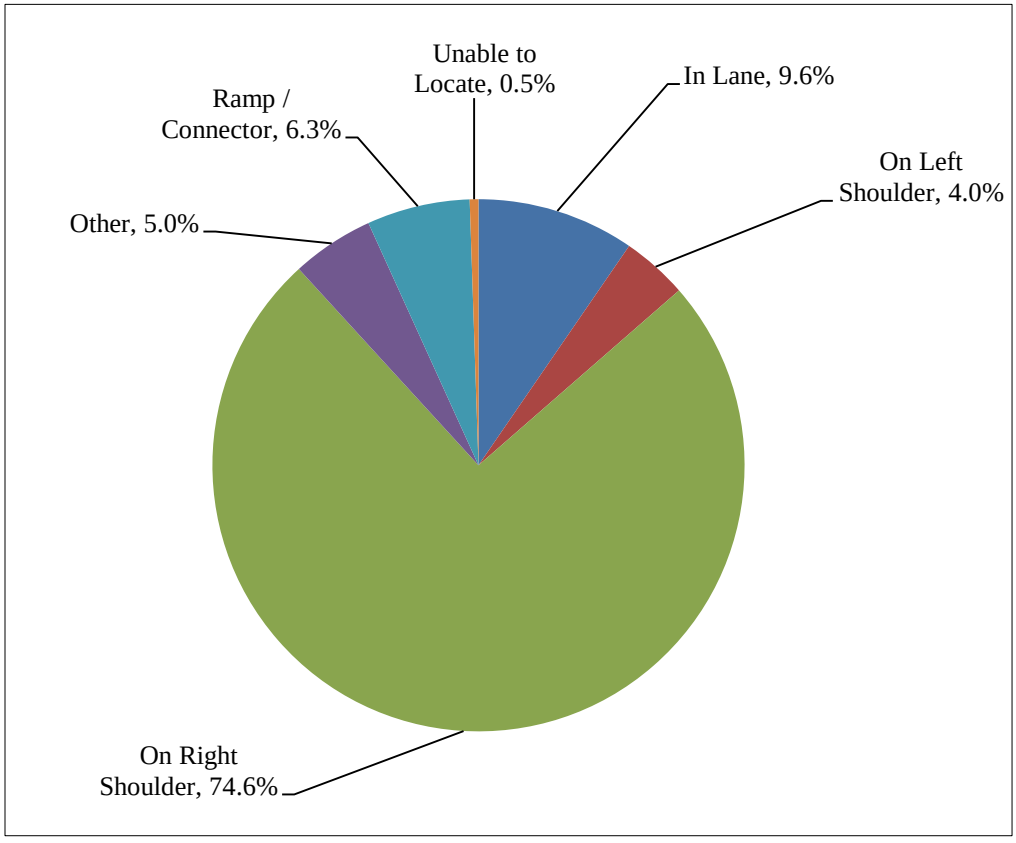

Figure 6: Pie Chart of Total Assists by Vehicle Location

4.9 *Statewide FSP Total Assists by Vehicle Location & Program*

Table 13: 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	2,667	2,548	21,404	4,368	2,143	29	33,159
3-P	Placer	367	295	3,996	290	363	6	5,316
3-ED	El Dorado	51	81	900	57	63	0	1,152
4	Bay Area	10,280	5,533	96,445	0	17,749	0	130,007
5-M	Monterey	527	142	1,437	2	74	5	2,187
5-SC	Santa Cruz	242	111	981	77	91	86	1,587
5-SB	Santa Barbara	105	47	406	55	84	0	697
6	Fresno	325	137	2,679	143	295	0	3,579
7	Los Angeles	35,848	8,878	233,380	25,799	3,864	2,256	310,025
8-R	Riverside	2,863	1,648	32,584	764	4,466	423	42,748
8-SB	San Bernardino	3,107	1,229	25,941	1,043	4,265	308	35,893
10	San Joaquin	217	515	4,579	123	1,041	0	6,475
11	San Diego	1,770	3,700	32,733	791	3,129	67	42,191
12	Orange	6,051	2,084	44,331	144	4,473	373	57,456
Total Assists		64,419	26,947	501,796	33,656	42,100	3,553	672,472
Average %		9.6%	4.0%	74.6%	5.0%	6.3%	0.5%	100.0%

Table 14: The % 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	8.0%	7.7%	64.5%	13.2%	6.5%	0.1%	4.9%
3-P	Placer	6.9%	5.5%	75.2%	5.5%	6.8%	0.1%	0.8%
3-ED	El Dorado	4.4%	7.0%	78.1%	4.9%	5.5%	0.0%	0.2%
4	Bay Area	7.9%	4.3%	74.2%	0.0%	13.7%	0.0%	19.3%
5-M	Monterey	24.1%	6.5%	65.7%	0.1%	3.4%	0.2%	0.3%
5-SB	Santa Barbara	15.2%	7.0%	61.8%	4.8%	5.7%	5.4%	0.2%
5-SC	Santa Cruz	15.1%	6.7%	58.2%	7.9%	12.1%	0.0%	0.1%
6	Fresno	9.1%	3.8%	74.9%	4.0%	8.2%	0.0%	0.5%
7	Los Angeles	11.6%	2.9%	75.3%	8.3%	1.2%	0.7%	46.1%
8-R	Riverside	6.7%	3.9%	76.2%	1.8%	10.4%	1.0%	6.4%
8-SB	San Bernardino	8.7%	3.4%	72.3%	2.9%	11.9%	0.9%	5.3%
10	San Joaquin	3.4%	8.0%	70.7%	1.9%	16.1%	0.0%	1.0%
11	San Diego	4.2%	8.8%	77.6%	1.9%	7.4%	0.2%	6.3%
12	Orange	10.5%	3.6%	77.2%	0.3%	7.8%	0.6%	8.5%
Average %		**9.6%**	**4.0%**	**74.6%**	**5.0%**	**6.3%**	**0.5%**	**100.0%**

4.10 *Statewide FSP Average Assist Duration by Program*

Table 15: The Average Assist Duration by Program

Program	Name	Average Duration (minutes)
3-SY	Sac / Yolo	6.6
3-P	Placer	5.0
3-ED	El Dorado	13.8
4	Bay Area	11.5
5-M	Monterey	14.8
5-SC	Santa Cruz	14.3
5-SB	Santa Barbara	9.9
6	Fresno	14.7
7	Los Angeles	16.6
8-R	Riverside	10.3
8-SB	San Bernardino	9.3
10	San Joaquin	7.9
11	San Diego	10.1
12	Orange	11.4
Average Duration		**13.3**

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

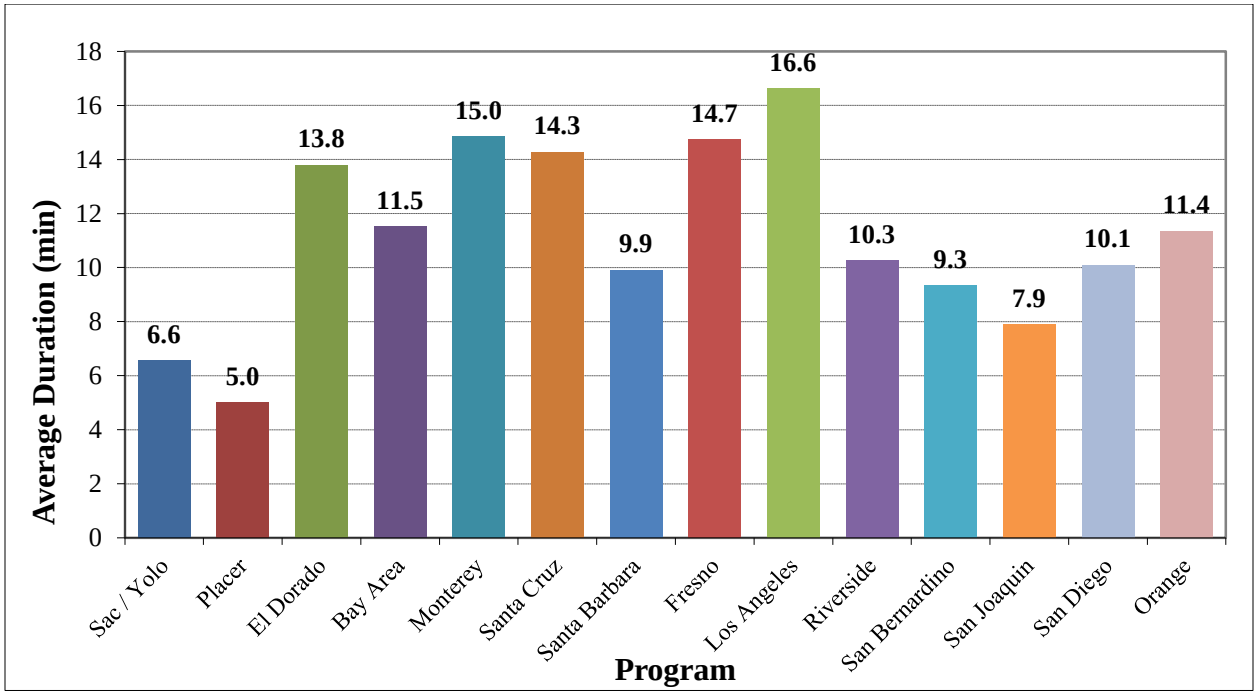

Figure 7: Bar Chart of Average Assist Duration by Program

4.11 *Statewide FSP Average Assist Duration by Problem Type & Program*

Table 16: 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	2.4	6.5	1.7	9.3	10.1	3.1	4.2	8.6	6.6
3-P	Placer	1.7	6.6	1.0	7.3	6.9	2.1	3.6	8.1	5.0
3-ED	El Dorado	4.6	25.3	5.7	16.8	17.6	9.4	10.7	18.2	13.8
4	Bay Area	5.2	18.0	9.3	16.2	21.1	8.4	8.5	14.6	11.5
5-M	Monterey	10.8	22.9	4.9	19.1	23.4	17.0	9.3	10.8	14.8
5-SC	Santa Cruz	7.1	22.0	8.5	16.0	20.9	6.4	9.6	15.5	14.3
5-SB	Santa Barbara	4.4	18.4	3.3	10.8	10.3	6.6	7.8	8.7	9.9
6	Fresno	7.1	26.6	19.8	17.1	14.5	15.7	11.2	10.0	14.7
7	Los Angeles	10.1	21.5	12.1	19.3	21.2	10.3	14.0	18.2	16.6
8-R	Riverside	6.4	13.6	5.8	15.0	18.5	5.6	8.9	14.0	10.3
8-SB	San Bernardino	6.5	13.4	6.0	13.7	16.1	4.6	8.8	13.4	9.3
10	San Joaquin	4.5	15.5	2.3	14.2	16.9	2.7	5.3	13.0	7.9
11	San Diego	5.4	14.8	7.8	13.6	14.8	7.5	8.2	10.9	10.1
12	Orange	5.9	9.3	7.0	15.3	12.7	11.2	8.4	10.8	11.4
Average Duration		**6.5**	**17.4**	**8.1**	**17.0**	**18.2**	**8.6**	**10.8**	**16.1**	**13.3**

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.

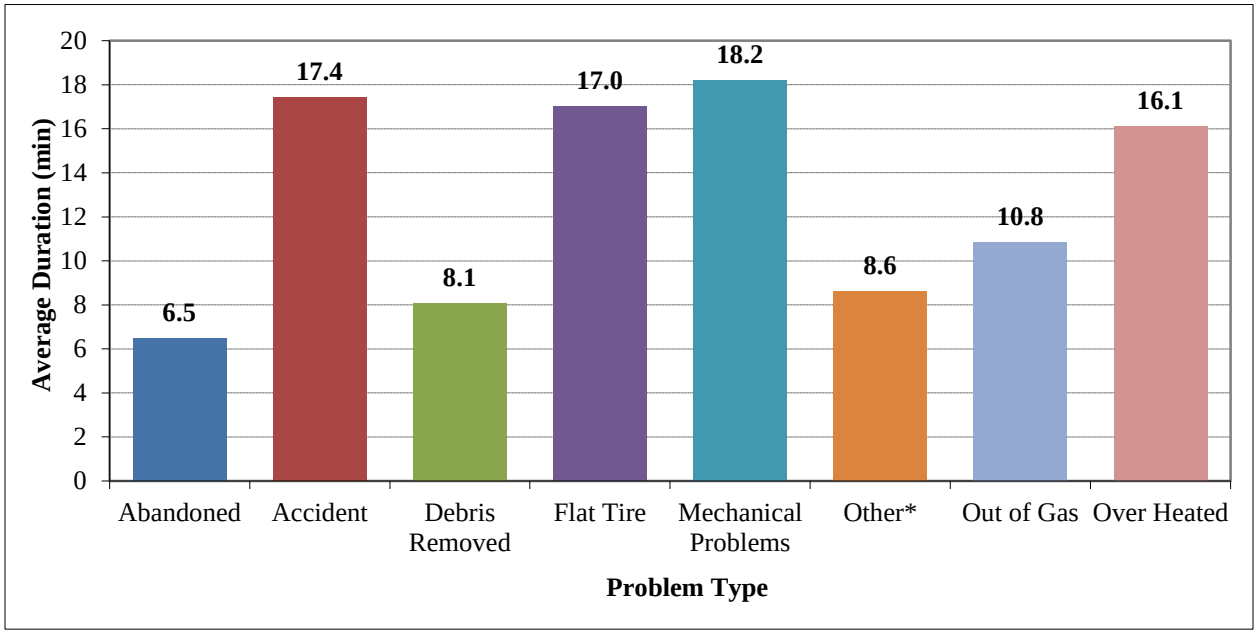

Figure 8: Bar Chart of Average Assist Duration by Problem Type and Program

4.12 *Statewide FSP Average Assist Duration by Vehicle Type & Program*

Table 17: 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	7.0	5.3	5.1	6.3	7.0	6.6
3-P	Placer	6.1	1.7	2.6	4.4	5.6	5.0
3-ED	El Dorado	14.5	0.0	12.9	13.8	0.0	13.8
4	Bay Area	12.2	8.7	8.4	10.5	10.2	11.5
5-M	Monterey	18.3	13.7	5.7	13.3	0.0	14.8
5-SC	Santa Cruz	15.8	21.1	7.9	13.9	NA	14.3
5-SB	Santa Barbara	10.1	10.0	7.4	10.6	24.5	9.9
6	Fresno	15.1	12.8	13.9	13.7	17.9	14.7
7	Los Angeles	16.9	13.0	14.4	15.6	0.0	16.6
8-R	Riverside	11.8	6.6	6.7	10.1	8.6	10.3
8-SB	San Bernardino	11.2	5.3	6.4	9.4	7.9	9.3
10	San Joaquin	9.0	9.6	3.5	7.2	6.9	7.9
11	San Diego	10.3	9.7	7.9	8.5	8.0	10.0
12	Orange	11.6	8.5	6.6	11.6	9.4	11.4
Average Duration		**14.3**	**8.2**	**9.3**	**11.4**	**9.1**	**13.3**

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

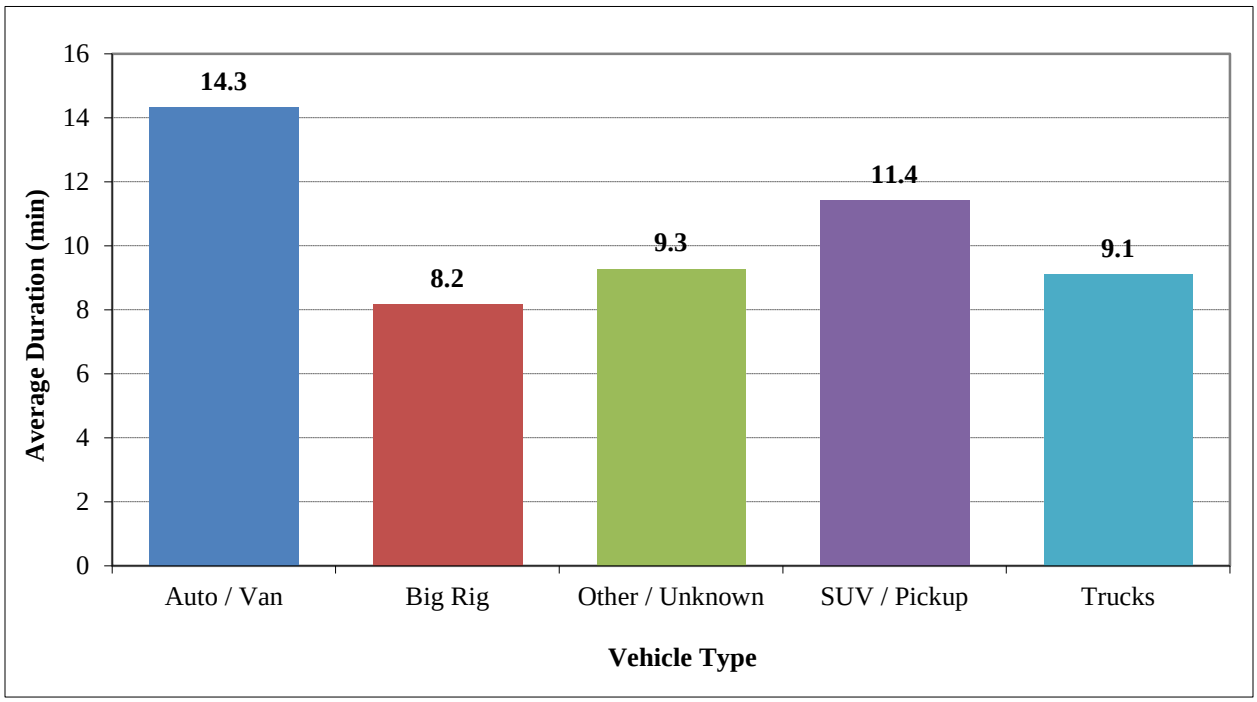

Figure 1: Bar Chart of Average Assist Duration by Vehicle Type

4.13 *Statewide FSP Average Assist Rate by Program*

Table 18: The Average Assist Rate by Program

Program	Name	Annual Assists	Annual Truck-Hours	Assist Rate
3-SY	Sac / Yolo	33,159	27,999	1.18
3-P	Placer	5,316	3,394	1.57
3-ED	El Dorado	1,152	1,547	0.74
4	Bay Area	130,007	163,747	0.79
5-M	Monterey	2,187	3,096	0.71
5-SC	Santa Cruz	1,587	3,432	0.46
5-SB	Santa Barbara	697	2,952	0.24
6	Fresno	3,579	3,375	1.06
7	Los Angeles	310,025	395,968	0.78
8-R	Riverside	42,748	39,081	1.09
8-SB	San Bernardino	35,893	28,000	1.28
10	San Joaquin	6,475	4,664	1.39
11	San Diego	42,191	50,879	0.83
12	Orange	57,456	75,156	0.76
Statewide		**672,472**	**803,289**	**0.84**

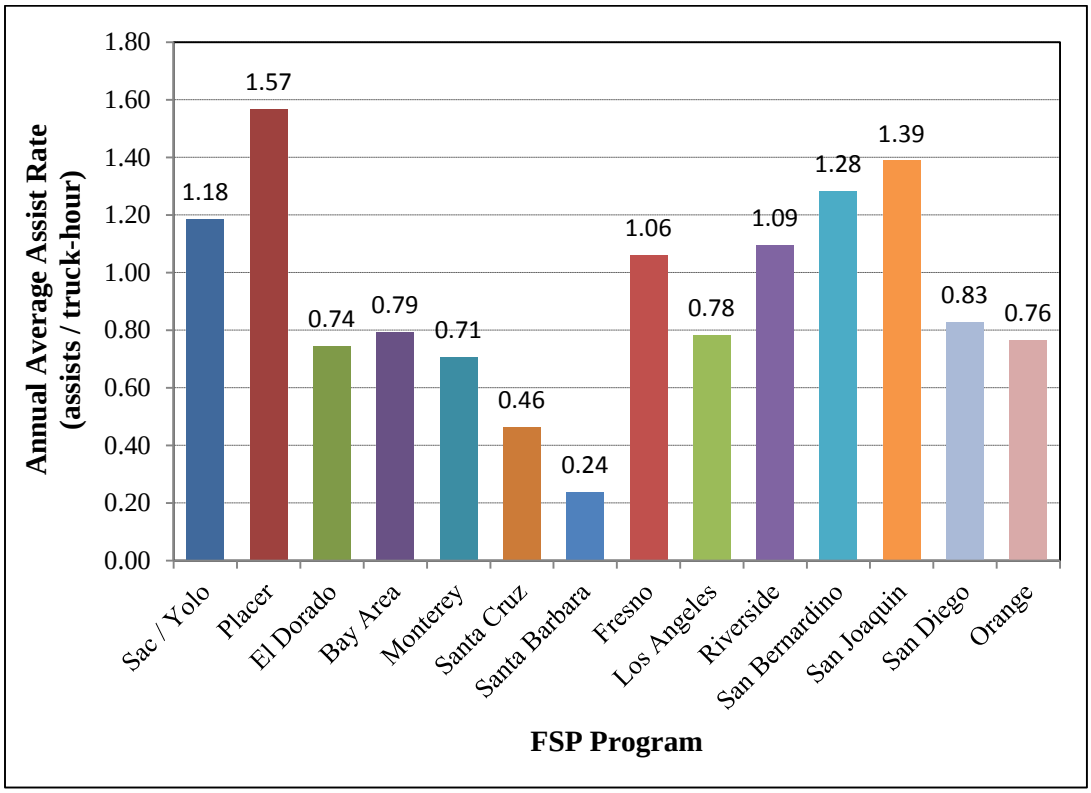

Figure 2: Bar Chart of Average Weekday Assist Rate by Program

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 19: 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 20: 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 21: 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 22: Standardized Towed to Location Category

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

5.2.5 Vehicle Found Category

Table 23: 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 2011/12 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 2011/12 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. The following tables list the required FSP assist data collection categories for

- Vehicle Type
- Problem Type
- Vehicle Location on Road
- Tow To
- How vehicle was found

Table 24 "Vehicle Type" Category

Vehicle Type	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
Motorcycle	●	●	●	●	●	●	●	●	●	●	●	●
Auto	●	●	●	●	●	●	●	●	●	●	●	●
Van		●		●	●		●	●	●	●	●	●
SUV	●	●					●				●	●
Pickup Truck	●	●	●	●	●	●	●	●	●	●	●	●
Truck – LTE 1 Ton	●		●			●	●	●	●	●	●	●
Truck – Over 1 Ton	●		●			●	●	●	●	●		
RV / Motorhome	●											●
Bus							●					●
Big Rig			●	●	●	●	●	●	●	●	●	●
No Assist Oversize		●						●	●	●	●	
Other / Unknown		●	●	●	●	●	●	●	●	●	●	●
Debris				●	●		●		●	●		●

Notes:
D-06 FresnoCOG also have a "Bicycle" and a "UHAUL" category.
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 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
Abandoned	●	●	●	●	●	●	●	●	●	●	●	●
Accident	●	●	●	●	●	●	●	●	●	●	●	●
Debris Removal	●	●	●	●	●	●	●	●	●	●	●	●
Dead Battery			●			●						●
Drove Off			●	●	●						●	
Electrical	●	●		●	●		●	●	●	●	●	
Fire		●		●	●	●	●	●	●	●	●	
Flat Tire	●	●	●	●	●	●	●	●	●	●	●	●
Help Enroute			●	●	●						●	
Info				●	●				●	●		●
Locked Out	●	●		●	●			●	●	●	●	
Mechanical	●	●	●	●	●	●	●	●	●	●	●	●
Other	●	●	●	●	●	●	●	●				
Out of Gas	●	●	●	●	●	●	●	●	●	●	●	●
Over Heat	●	●	●	●	●	●	●	●	●	●	●	●
Refused Service	●		●	●	●						●	●
Unable to Locate			●	●	●				●	●		●

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 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
Freeway Lane(s)	●	●	●	●	●	●	●	●	●	●	●	●
Left Shoulder	●	●	●	●	●	●	●	●	●	●	●	●
Right Shoulder	●	●	●	●	●	●	●	●	●	●	●	●
Ramp / Connector	●	●	●	●	●	●	●	●	●	●	●	●
Other	●	●		●	●	●		●	●	●	●	●
Unable to Locate	●			●	●	●	●	●	●		●	●

Notes:
D-06 FresnoCOG had separate categories for "Gore Point", "Center Divide" and "Embankment".
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 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
No Tow		•	•	•		•	•	•	•	•	•	•
Off Fwy Or Drop Zone	•	•	•	•	•	•	•	•	•	•	•	•
Pushed			•		•				•	•	•	
Shoulder						•		•	•	•	•	•
Other Location		•		•	•	•						
Unknown												•

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	•	•		•	•	•	•	•	•	•	•	
FSP – Found by You	•	•		•	•	•	•	•	•	•	•	
Other	•			•	•			•				
Partner Assist	•	•										
Revisit	•											

Notes:
D-04 MTC and D12 OCTA do not collect "How Found" Information.

Appendix 1

FSP Beat Benefit/Cost Ratio Summaries
Fiscal Year 2011/2012

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 3: Sacramento & Yolo Counties

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
10	2.3	1.1	2.0
106	3.0	0.5	1.7
108	4.2	n/a	4.2
108A	2.0	n/a	2.0
150	11.0	n/a	11.0
151	5.5	n/a	5.5
152	1.2	n/a	1.2
153	3.5	n/a	3.5
153A	9.2	n/a	9.2
181	10.0	n/a	10.0
182	8.1	n/a	8.1
182A	8.5	n/a	8.5
184	3.0	n/a	3.0
184A	2.3	n/a	2.3
191A	7.1	n/a	7.1
192	5.9	n/a	5.9
193	9.0	n/a	9.0
Average Benefit/Cost Ratio	**5.6**	**0.6**	**5.2**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 3: Placer County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
265	5.1	n/a	5.1
281	1.0	0.6	0.9
Average Benefit/Cost Ratio	**3.0**	**0.6**	**2.9**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 3: El Dorado County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	2.5	n/a	2.5
Average Benefit/Cost Ratio	**2.5**	**n/a**	**2.5**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 4: Bay Area Counties

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	7.7	0.1	7.2
2	6.7	1.5	6.5
3	7.2	0.3	6.8
4	9.0	0.8	8.5
5	4.7	n/a	4.7
6	5.8	n/a	5.8
8	6.7	0.0	6.4
9	9.8	n/a	9.8
10	8.4	n/a	8.4
11	7.0	0.0	6.6
12	3.5	0.3	3.4
13	6.1	0.1	5.7
14	3.7	n/a	3.7
15	3.7	n/a	3.7
16	5.7	3.5	5.4
17	0.4	0.1	0.2
18	4.9	n/a	4.9
19	9.6	n/a	9.6
20	4.2	n/a	4.2
21	5.8	n/a	5.8
22	7.6	0.2	7.0
23	8.6	n/a	8.6
24	4.7	n/a	4.7
25	6.8	n/a	6.8
26	5.0	n/a	5.0
27	5.7	0.1	5.4
28	1.2	n/a	1.2
29	7.7	1.5	6.8
30	7.9	n/a	7.9
31	1.3	0.0	1.3
32	1.9	n/a	1.9
34	1.9	0.1	1.6
35	5.6	n/a	5.6
36	3.4	n/a	3.4
37	1.5	2.5	2.4
Average Benefit/Cost Ratio	**6.1**	**1.2**	**5.8**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 5: Monterey County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	2.9	2.2	2.8
2	5.0	1.0	4.7
Average Benefit/Cost Ratio	**4.0**	**1.8**	**3.8**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 5: Santa Cruz County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	1.9	1.6	1.8
2	2.4	1.5	2.2
Average Benefit/Cost Ratio	**2.1**	**1.5**	**2.0**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 5: Santa Barbara County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	1.5	n/a	1.5
2	0.9	n/a	0.9
3	2.5	n/a	2.5
Average Benefit/Cost Ratio	**1.6**	**n/a**	**1.6**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 6: Fresno County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	4.1	n/a	4.1
2	3.8	n/a	3.8
3	3.0	n/a	3.0
Average Benefit/Cost Ratio	**3.6**	**n/a**	**3.6**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 7: Los Angeles County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	10.6	6.2	10.3
2	13.1	3.7	12.3
3	11.2	7.1	10.9
4	10.6	8.7	10.4
5	21.2	18.2	21.0
6	9.9	15.4	10.5
7	13.4	7.3	12.9
8	9.2	10.2	9.3
9	11.2	5.1	10.7
10	4.2	7.2	4.8
11	9.9	2.7	9.1
12	11.3	5.9	10.7
13	11.3	3.7	10.8
14	14.1	3.4	13.2
16	12.8	16.8	13.1
17	10.0	6.5	9.7
18	7.8	2.4	7.4
19	11.8	2.5	11.1
20	12.3	5.2	11.6
21	6.9	0.8	6.4
23	13.4	0.8	10.9
24	8.0	0.0	7.2
27	14.2	2.0	13.3
28	6.4	2.6	6.0
29	11.9	1.2	11.1
30	8.5	0.1	7.8
31	6.3	2.8	6.0
33	7.4	0.0	6.7
34	19.2	2.2	17.8
36	2.3	0.0	2.1
37	12.3	15.0	12.5
38	7.2	0.8	6.6
39	18.5	7.6	17.3
40	15.5	6.6	14.8
41	1.0	0.1	0.9
42	4.3	1.7	4.0
43	14.9	8.5	14.3
50	10.1	1.5	9.2
51	11.5	4.7	10.7
Average Benefit/Cost Ratio	**10.7**	**4.9**	**10.2**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 8: Riverside County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	6.5	n/a	6.5
2	3.0	n/a	3.0
4	10.2	n/a	10.2
7	3.0	n/a	3.0
8	5.7	n/a	5.7
18	10.6	n/a	10.6
19	1.5	n/a	1.5
25	2.8	n/a	2.8
26	9.6	n/a	9.6
Average Benefit/Cost Ratio	**6.7**	**n/a**	**6.7**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 8: San Bernardino County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	10.3	n/a	10.3
2	4.4	n/a	4.4
3	6.2	n/a	6.2
4	13.5	n/a	13.5
5	4.7	n/a	4.7
6	5.5	n/a	5.5
7	5.0	n/a	5.0
8	4.0	n/a	4.0
Average Benefit/Cost Ratio	**6.7**	**n/a**	**6.7**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 10: San Joaquin County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
1	1.4	0.3	1.2
Average Benefit/Cost Ratio	**1.4**	**0.3**	**1.2**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 11: San Diego County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
125	4.8	n/a	4.8
151	6.6	n/a	6.6
152	4.1	n/a	4.1
153	1.5	n/a	1.5
154	2.0	n/a	2.0
163	2.9	n/a	2.9
501	2.0	n/a	2.0
503	9.8	n/a	9.8
505	3.4	n/a	3.4
506	2.5	n/a	2.5
508	5.1	n/a	5.1
509	2.0	n/a	2.0
521	3.1	n/a	3.1
522	1.3	n/a	1.3
541	2.3	n/a	2.3
561	3.2	n/a	3.2
671	1.6	n/a	1.6
781	1.7	n/a	1.7
782	11.8	n/a	11.8
801	2.8	n/a	2.8
802	2.1	n/a	2.1
851	3.4	n/a	3.4
852	5.0	n/a	5.0
853	9.0	n/a	9.0
854	6.7	n/a	6.7
941	3.4	n/a	3.4
Average Benefit/Cost Ratio	**4.0**	**n/a**	**4.0**

FY: 2011/12 FSP Beat Benefit/Cost Ratio Summary
District 12: Orange County

Beat	Weekday Benefit/Cost Ratio	Weekend Benefit/Cost Ratio	Total Benefit/Cost Ratio
220	1.9	n/a	1.9
221	3.6	n/a	3.6
222	3.8	n/a	3.8
405	7.5	n/a	7.5
406	13.3	n/a	13.3
407	14.2	n/a	14.2
408	13.0	n/a	13.0
409	9.7	n/a	9.7
410	9.8	n/a	9.8
411	11.8	n/a	11.8
501	1.1	n/a	1.1
502	12.8	n/a	12.8
503	8.4	n/a	8.4
504	13.7	n/a	13.7
505	11.5	n/a	11.5
506	4.3	n/a	4.3
507	12.3	n/a	12.3
508	11.1	n/a	11.1
509	10.7	n/a	10.7
510	2.1	n/a	2.1
511	n/a	3.6	3.6
512	n/a	1.2	1.2
551	8.1	n/a	8.1
552	8.3	n/a	8.3
553	15.1	n/a	15.1
554	2.2	n/a	2.2
570	14.3	n/a	14.3
571	10.7	n/a	10.7
572	8.1	n/a	8.1
910	7.5	n/a	7.5
911	3.2	n/a	3.2
912	14.8	n/a	14.8
913	3.2	n/a	3.2
914	9.3	n/a	9.3
915	9.8	n/a	9.8
916	5.7	n/a	5.7
Average Benefit/Cost Ratio	**8.7**	**2.4**	**8.5**