



EMSA Pre-Hospital and Traffic Safety Data Report Calendar Years 2013 and 2014

Executive Summary

Emergency Medical Services Authority
California Health and Human Services Agency





**HOWARD BACKER, MD, MPH, FACEP
DIRECTOR**

**DANIEL R. SMILEY
CHIEF DEPUTY DIRECTOR**

**TOM M^CGINNIS
CHIEF, EMS SYSTEMS DIVISION**

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Acknowledgements

CALIFORNIA EMERGENCY MEDICAL SERVICES AUTHORITY STAFF

Kathleen Bissell, Data Program Manager
Adrienne Kim, Data Coordinator
Nancy Marker, Research Program Specialist I
Maria Alisangco, Data Specialist
Lori O'Brien, Office Technician

DATA ADVISORY GROUP

Bruce Barton, LEMSA Administrator, Riverside County EMS Agency
Ed Hill, LEMSA Administrator, Kern County EMS Agency
Dave Magnino, LEMSA Administrator, Sacramento County EMS Agency
Kenneth Miller, MD, Medical Director, Orange County Fire Authority
Karl Sporer, MD, Medical Director Alameda County EMS Agency
Joe Barger, MD, Contractor, EMSA
Mark Roberts, Data Liaison, Inland Counties EMS Agency (ICEMA)

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EMSA Pre-Hospital and Traffic Safety Data Report – Calendar Years 2013 and 2014

Executive Summary

Data is a primary issue for EMSA and this report is intended to provide a starting point for discussions on data quality and data submissions. This report reflects the data that are maintained in the CEMSIS system for LEMSAs that have submitted data from July 2013 through December 2014. The data submitted to CEMSIS for this report reflect data from the 14 LEMSAs that reported in 2013 and the 17 that reported in 2014 which encompass approximately 35% (13,657,745) of California's total population of 38,907,642. Since this is the first report EMSA has developed, we expect some feedback and we expect that future reports may include additional or different data elements.

EMSA recently formed an Executive Data Advisory Group (EDAG) consisting of three local EMS agency administrators and three medical directors to develop a cooperative strategy for improving EMS data and its application of services. EMSA looks forward to developing useful, quality data to improve EMS system effectiveness.

PURPOSE OF THE ANNUAL REPORT

The purpose of this report is to provide a general description of statewide emergency medical services for CY 2013 and 2014 in an effort to comply with EMSA's mandate to annually report on the effectiveness of EMS systems related to the system's impact on death and disability (HSC 1797.121).

STATUTORY AUTHORITY AND RESPONSIBILITY

EMSA is mandated by HSC 1797.102 to evaluate the statewide effectiveness of the local emergency medical services, need for additional emergency care services, and coordination of emergency medical services. In addition, HSC 1797.103 (f) further identifies that one of the required elements of an EMS system is data collection and evaluation. Finally, HSC 1797.174 requires development of quality improvement. This report is intended to meet these mandates by providing useful feedback to the LEMSAs that submit data to CEMSIS.

DATA SUBMISSION AND DATA QUALITY

Historically, EMS data collection in California has been decentralized with the local EMS agencies collecting and organizing their data in the way that best meets their specific needs or resources. This focus on local control is unique to California; other states generally have a more direct relationship with the providers and the local data submittal process. The responsibility and authority for review of data being submitted from the providers belong to the LEMSAs which have contractual relationships with the providers. EMSA aims to collect data from 100% of LEMSAs, which in turn would collect data from 100% of their providers. When this is

accomplished, it is estimated that CEMSIS will catalogue over 3 million EMS events per year.

Regional Data

EMSA aims to develop regional data to allow LEMSAs to get a sense of how local areas are doing in comparison to a larger regional area. The regions used in this report are based on location and population. Regional data are useful because LEMSAs submitting data are only able to see their own data on the ImageTrend system; organizing data into regions allows LEMSAs to evaluate their services relative to regional data and provides a mechanism for LEMSAs to view and address regional needs.

Region 1 is composed of: Coastal Valleys; Northern California; North Coast; and Sierra-Sacramento Valley. These LEMSAs were grouped in region because they are largely rural.

Region 2 is composed of: Marin; Napa; Solano; Contra Costa; Alameda; Santa Clara; San Mateo; Santa Cruz; and San Francisco. These LEMSAs were grouped in this region because they are largely urban and coastal.

Region 3 is composed of: Yolo; Sacramento; El Dorado; San Joaquin; Mountain Valley; Merced; and Tuolumne. These LEMSAs were grouped in this region because they have an urban / rural mix in the central valley.

Region 4 is composed of: San Benito; Monterey, San Luis Obispo; Santa Barbara; and Ventura. These LEMSAs were grouped in this region because they are largely coastal and rural.

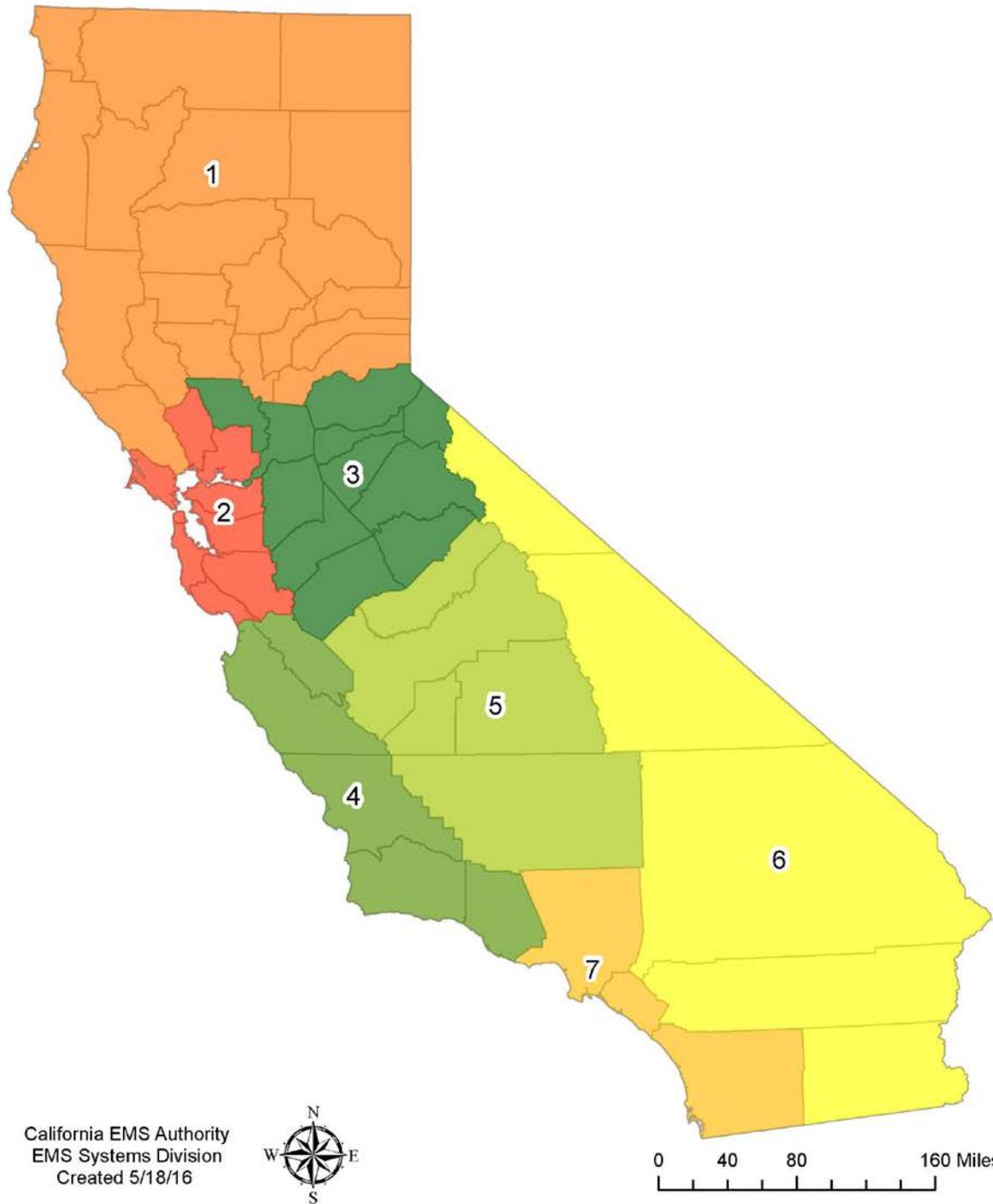
Region 5 is: Central California and Kern. These LEMSAs were grouped in this region because they are largely rural and inland.

Region 6 is: ICEMA; Riverside; and Imperial. These LEMSAs were grouped in this region because they are largely similar.

Region 7 is: Los Angeles; San Diego; and Orange. These LEMSAs were group in this region because they are all highly urban.

It should be noted that while none of the three LEMSAs in Region 7 reported during the two year period of this report, data are now being submitted from one of the Region 7 LEMSAs.

California Data Regions



California EMS Authority
EMS Systems Division
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DATA COLLECTION SYSTEM AND METHODOLOGY

Data presented in this report were collected in CEMSIS based on the Version 2.2.1 standard from the National Emergency Medical Services Information System (NEMSIS). EMSA and local agencies will adopt new national data standards known as NEMSIS Version 3.4, effective January 1, 2017. The data in this report are obtained from the LEMSAs, which in turn obtain data from approximately 877 providers. LEMSAs submit data to this system on their own individual schedule, so that data could be submitted daily, annually, or on any other schedule in between. For this reason the report reflects data for 2013 and 2014 because submissions for those calendar years have stabilized and are most likely to have been completed by 2016.

SELECTED DATA ELEMENTS

This report presents 48 tables and related pie charts based largely on the use of 12 data elements in the NEMSIS Version 2.2.1 software application. These data elements are listed below:

Data Element Name	Data Element Code	Accepts Null Values
CMS Defined Service Level	E07_34	Yes
EMS Cause of Injury	E10_01	Yes
Gender	E06_11	Yes
Patient Race	E06_12	Yes
Patient Age	E06_14	Yes
Patient Age Units	E06_15	Yes
Patient Ethnicity	E06_13	Yes
Primary Payment Method	E07_01	Yes
Provider's Primary Impressions	E09_15	Yes
Procedures	E19_03	Yes
Type of Service Requested	E02_04	No
Incident/Patient Disposition	E20_10	No

Source: NEMSIS Version 2.2.1

DATA LIMITATIONS

Several limitations are present in the EMS data for CY 2013 and 2014.

Mapping

Most of the data submitted to CEMSIS are data mapped to the NEMSIS data elements and/or value. EMS data submission is typically a two-step process. Data are mapped from the providers to a LEMSA then from a LEMSA to CEMSIS. Disparate data mapping will negatively impact data quality.

Null Values

This includes data which were coded as shown below. The codes for these values include:

- Not Applicable
- Not Recorded
- Not Reporting
- Not Available
- Not Known
- Blanks (*in some cases, the blank is a null value when no specific code is listed*)

The NEMSIS Version 2.2.1 standards have several status levels for data: Mandatory, Required, and Optional. Mandatory means that a value MUST be entered, but the value cannot be a null; Required means that a value MUST be entered and that value can be a null; Optional means no value is needed. Most of the data elements in this report have a “required” status, meaning the system will accept null values. Unknown or null values appear in many NEMSIS / CEMSIS data elements that are not mandatory. It is possible that the presence of the unknown values reflect data entry processes in the field, although it is not known at this time what the specific processes may be. This use of the null values, as found in a high number of records, decreases the usefulness and significance of the data. The distribution of this report spotlights the need for data quality review by EMS providers and educational efforts by provider agencies and LEMSAs. The matrix below indicates the tables where there are unknown or null value counts.

Data Element Name	Data Element Code	Null / Unknown Count 2013	Null / Unknown Count 2014	Table Name
Type of Service Requested	E02_04	0	0	Table A
CMS Defined Service Level	E07_34	398,784	540,354	Table B
Type of Service Requested by Region	E02_04	0	0	Table C1
Type of Service Requested by LEMSA	E02_04	0	0	Table D1
Type of Service Requested by Provider Type	E02_04	23,680	22,419	Table E1
Cause of Injury	E10_01	31,313	30,612	Table G
Primary Impression	E09_15	424,761	461,592	Table H1
Procedures	E19_03	Unknown	Unknown	Table I
Incident/Patient Disposition	E20_10	2,525	4,286	Table J
Gender	E06_11	130,754	167,461	Table K
Age	E06_14	130,323	165,791	Table M
Patient Race	E06_12	593,143	571,012	Table L1
Primary Payment Method	E07_01	468,720	497,477	Table N
Patient Ethnicity	E06_13	503,334	605,256	Table L3
Primary Method of Payment	E07_01	653,032	779,401	Table N
Provider Type	D01_08	23,680	22,420	Table E1

NOTE: Total Calls for 2013 and 2014 are **923,643** and **1,091,545**, respectively

Time Periods

Data submitted during this time period began July 2013 and continued through December 2014. The six month period in 2013 resulted in a much lower frequency.

Data Definitions

The EMS data collection system in CY 2013 and 2014 did not mandate a specific data dictionary, which impacts the accuracy and quality of the data submitted. This has allowed the local agencies as well as the individual providers to work with their individual software vendors to define each data element as they wish. These non-standard definitions dilute data quality and introduce complexities which confound accurate data analysis; however, EMSA and its partners are moving toward more standardized data definitions for future reports.

Electronic Patient Care Records (ePCRs)

The transition from paper to electronic records is an on-going process. Most of the providers within the LEMSAs have updated their processes to an electronic data collection format; however, as of January 2016 about 30% of the local provider services are still using paper reports and it is not clear when they will be able to transition to a fully electronic system. Use of paper charts increases the opportunity for data errors.

DATA PROFILE***Totals***

The EMS data for CY 2013 and 2014 shows an 18.2% (168,106) increase in calls from CY 2013 to 2014 (923,643 to 1,091,545). Of these calls, 911 calls increased 21% (160,277) from 2013 to 2014 (774,654 to 934,931). Inter-facility transfers (scheduled and unscheduled) increased 6.1% (5,209) from 2013 to 2014 (80,133 to 85,342).

Defined Service Levels (E07_34)

A little less than 50% of the service levels were coded as unknown or not available with 398,784 of 923,643 in 2013 and 540,354 of 1,091,749 in 2014. This represents an increase of 141,570 over the two year period. Defined Service Levels indicate how the patient was transported, for example with BLS, ALS, or by air service.

Type of Service Requested (E02_04) – 911 Calls

The number of 911 calls increased 21.0% from CY 2013 (774,654) to 2014 (934,931), yet the percent of 911 from all calls was similar for both years (84% in 2013 and 86% in 2014). The table below shows the percent of 911 calls by LEMSA. Most LEMSAs show a percentage rate of 911 calls that hover between the high 70s to the high 90s; however, San Luis Obispo and San Francisco are lower at mid-20s and mid-50s, respectively. One LEMSA presents numbers that suggest all calls to that LEMSA are 911 calls.

EMS Calls by LEMSA (E02_04)	All Calls		911 Calls			
	CY 2013	CY 2014	CY 2013	CY 2014		
	Count	Count	Count	Count	2013	2014
Central California EMS	187,695	179,340	146,499	141,105	78.1%	78.7%
Contra Costa County EMS	85,629	90,135	85,586	90,135	99.9%	100.0%
El Dorado County EMS	12,732	3,173	10,651	2,831	83.7%	89.2%
Inland Counties EMS	266,022	341,664	222,251	292,625	83.5%	85.6%
Marin County EMS	12,109	14,846	12,109	14,846	100.0%	100.0%
Monterey County EMS	29,709	30,535	26,342	27,424	88.7%	89.8%
Mountain Valley EMS	62,826	60,931	49,299	48,893	78.5%	80.2%
Napa County EMS	14,790	15,234	12,232	13,049	82.7%	85.7%
North Coast EMS	366	22,282	314	18,092	85.8%	81.2%
Northern California EMS	10,667	10,100	8,416	7,780	78.9%	77.0%
San Benito County EMS	2,857	2,937	2,507	2,739	87.7%	93.3%
San Francisco County EMS	36,553	28,662	19,844	14,588	54.3%	50.9%
San Luis Obispo County EMS	14,610	18,666	3,568	4,328	24.4%	23.2%
Santa Cruz County EMS	22,836	32,617	22,781	32,569	99.8%	99.9%
Sierra-Sacramento Valley EMS	58,145	113,738	54,248	105,252	93.3%	92.5%
Ventura County EMS	88,993	108,019	81,544	101,073	91.6%	93.6%
Yolo County EMS	17,104	18,666	16,463	17,417	96.3%	93.3%
TOTAL CALLS	923,643	1,091,545	774,654	934,746	83.9%	85.6%

Cause of Injury (E10_01)

Cause of Injury is somewhat confusing because only patients who are noted both as having a possible injury (E09_04) **and** also are noted as having a traumatic injury (Primary Impression E09_15 **or** Secondary Impression E09_16) are included in the count. Only about 11% of the patients served meet these criteria: 89,887 in CY 2013 and 168,106 in 2014. This accounts for about a 13% increase in this population served.

Primary Payment (E07_01)

Null values were high in this data element as well, increasing 14% from CY 2013 to 2014 (653,032 to 779,401). The null values for this data element were 74% of the total in 2013 and 71% of the total in 2014. It is not clear why the count of this data element is skewed towards the unknown values. Of the values available, there is a large increase in persons covered by insurance, Medi-Cal (Medicaid), and Medi-Care. This is most likely a result of the Affordable Care Act.

Provider Types (D01_08)

There was an increase of 107,615 (74%) from CY 2013 to 2014 in Fire providers. In CY 2013, 16% of providers were Fire (public). In CY 2014, 24% were Fire (EMS services by public) and 76% were private.

Average Scene Time (Unit Arrived on Scene Date/Time E05_06; Arrived at Patient Date/Time E05_07; Patient Arrived at Destination Date/Time E05_10)

Overall, the average statewide scene time from arrival on the scene to the patient is 2 minutes and from the patient to destination is 26 minutes. These figures are very similar for both CY 2013 and 2014.

Cause of Injury (E10_01)

Of all the calls that met the Cause of Injury criteria (coded yes for Possible Injury E09_04 and determined to be a traumatic injury), 42,270 are 2013 injuries (15,734 traffic and 26,536 non-traffic) and 51,950 are 2014 injuries (17,540 traffic and 34,410 non-traffic). Most of the traffic injuries in both years were vehicle traffic accidents (75% and 72%) while most of the non-traffic accidents were falls (53% and 59%). This increase reflects the 6 month data period for 2013.

Primary Impressions (E09_15)

The count of null values for Primary Impression approached one-half of the incidents counted (424,761 in 2013 and 461,592 in 2014). More troubling is the fact that the number of unknown primary impressions rose 8.7 % (36,831) over the one year from CY 2013 to 2014; however, it should be noted that the overall percent of the calls that were coded unknown fell about 2.5% from 45.9% in 2013 to 42.2% in 2014. The decrease is encouraging, although a large number is of concern and may be indicative of a need for training at the local level for providers. The most common Primary Impressions related to Stroke or STEMI is Chest and Pain Discomfort (7% for both CY 2013 and 2014).

Incident/Patient Disposition (E20_10)

The count of Patient Disposition appeared to be off by about 2,525 in CY 2013 and by about 4,286 in CY 2014. It is unclear why this is the case and EMSA is researching the matter.

Generally, the Incident/Patient Disposition shows the vast majority of patients (53% in 2013 and 47% in 2014) are transported by EMS but not with an indication if the transport is ALS or BLS. The next most frequent disposition is transported by ALS (15% in 2013 and 16% in 2014). The figures for calls cancelled are 12% for 2013 and 13% for 2014. About 10% (79,777 in 2013 and 103,860 in 2014) were calls where a patient was not transported.

CONTACT

EMSA hopes the data in this report are useful to the reader; we expect future reports will incorporate feedback received from LEMSAs or other stakeholders from this document.

For more information on this report, please contact Kathleen Bissell at 916-431-3687 or by email at kathy.bissell-benabides@emsa.ca.gov or email the EMSA Systems Division at SysDivData@emsa.ca.gov.