



CEMSIS Data Report Calendar Years 2015 and 2016

**Emergency Medical Services Authority
California Health and Human Services Agency**



EMSA #R002-2018



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The content of this report is the sole responsibility of the author(s) and does not necessarily represent the official views of the Centers for Disease Control and Prevention, the National Highway Traffic Safety Administration, or the California Office of Traffic Safety.

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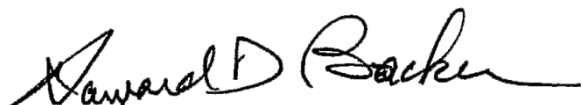
Message from the Director

This is the third annual CEMSIS Report, which covers data for calendar years 2015 and 2016. This report allows a starting point for discussions on data quality and data submissions and to provide a general description of statewide emergency medical services. This will be the final report of NEMSIS version 2.2.1 data that has been a challenge to due to inconsistent data dictionaries and incomplete reporting.

Nevertheless, CEMSIS saw some successes during this time. From 2013 to 2016, the number of LEMSAs that submitted data into CEMSIS increased from seventeen to twenty-one. Null values are decreasing, which signifies better data being transmitted into CEMSIS.

2016 was a challenging year for all of us as we transition from NEMSIS version 2.2.1 to 3.3.4 to 3.4. On January 1, 2017, the data standard changed for the entire nation. NEMSIS version 3.4 is expected to improve available data for EMS and yield better information on patient care since it is compatible with Health Level 7 (HL7) and based on Internal Classification of Disease (ICD) 10.

Although this report still focuses on descriptive data, it provides us with significant information. We are in discussion with various partners and vendors to determine how to best display our growing CEMSIS data. Our goal is to develop worthwhile and timely data reports for use at the state and local levels.



Howard Backer, MD, MPH, FACEP
Director

EMSA Mission and Vision

The mission of EMSA is to prevent injuries, reduce suffering, and save lives by developing standards for and administering an effective statewide coordinated system of quality emergency medical care and disaster medical response that integrates public health, public safety, and healthcare.

EMSA's vision is to be a leader in innovative effective and collaborative emergency medical services, and inspire EMS Systems to advance the quality, safety, and satisfaction of healthcare in local communities.

One tool used to further EMSAs mission and vision is the California Emergency Medical Services Information System (CEMSIS), which provides a means to study trends and variations in EMS systems and practices. To optimize this, 100% participation from both Local EMS Agencies (LEMSAs) and providers is required. It is estimated that full data entry into CEMSIS will catalog over 6.5 million EMS (911 and emergency calls) events per year¹ ultimately. EMSA will use this data to promote high quality emergency medical care in California through activities such as

- healthcare quality improvement programs that are based on patient care outcomes;
- agency collaboration across jurisdictional boundaries;
- local, regional, and state-level public health surveillance; and
- increased public awareness of emergency medical services in California.

Receipt of all EMS data allows linkage of specialty care data for stroke, STEMI, and Emergency Medical Services for Children (EMSC), as well as supporting efforts for future Health Information Exchange (HIE) projects.

Beginning in 2017, the National Emergency Medical Services Information System (NEMSIS) implemented an updated data standard (Version 3.4) that will provide an improved, nationally standardized tool for more detailed data collection and analysis. While this new version may provide an avenue for improved data, the primary data quality issue in California appears to be at the point of data entry in the field. As data collection processes and efforts continue to grow and improve, EMSA's ability to trend key EMS issues over time will promote stronger relationships among all stakeholders across the care spectrum for EMS patients and improve the local data entry processes. Future reports will incorporate feedback received from LEMSAs or other stakeholders from this document.

¹ Galindo, L. (Ed.). (n.d.). Local EMS Agency - EMS Plan Submissions. Retrieved April & May, 2017, from http://www.emsa.ca.gov/LEMSA_EMSPan_Submissions

Methodology

In CY 2015, EMSA collected data from 21(64%) of the 33 LEMSAs and all but one submitted V2.2.1 data. CEMSIS received data from El Dorado County EMS Agency for CY 2015 but did not for CY 2016. Data presented in this report was collected in CEMSIS based on the Version 2.2.1 standards from NEMSIS. To both improve local data quality and to prepare California EMS for health information exchange, EMSA and local agencies have adopted the new national data standards NEMSIS v3.4.

Local agencies obtain data from their providers and send their data to CEMSIS on a voluntary basis. LEMSAs that use ImageTrend[®] software have access to digital analytic tools for creating comprehensive reports on their own data

The data in this report are extracted from CEMSIS, which is maintained by Inland Counties Emergency Medical Agency (ICEMA), the current EMSA data system contractor. The data is obtained from 21 LEMSAs that submit data from approximately 195 providers. There are approximate 877 EMS providers within the state of California so 20% currently submit data into CEMSIS. The CEMSIS system offers two regions for data collection and storage: a transactional region and a cube region or online analytical processing. The data for this report were pulled from the transactional region because the data generated by that tool are more robust. LEMSAs submit data to this system on their own schedule, so that data may be submitted daily, annually, or on any other schedule in between. For this reason the report reflects data for CY 2015 and 2016 because submissions for those calendar years have largely stabilized and are most likely to have been completed by the end of CY 2016. The next report will be for the period of CY 2017 in version 3.4. EMSA expects to generate reports more regularly including a set of frequently updated dashboard measures.

The data submitted into CEMSIS for this report, which was sent from the providers to the LEMSAs, was generated using both electronic and paper systems. AB503 now requires data collection to be submitted in a format consistent with the most recent NEMSIS data collection system. This will be reflected in the CY 2017 report. The LEMSAs and the providers may use any electronic data system they prefer; this means there is often a significant degree of data mapping that must occur to move the data successfully from the provider to the LEMSA, from the LEMSA to CEMSIS, and successfully pass the validation tests for ImageTrend[®]. For this report period, differences in data definitions existed. It is unknown to what degree this difference in definitions impact the data. This report reflects only simple frequencies and does not address any duplicate counts. Data used for this report was accessed from November 14 to November 29, 2017.

This report is not intended to provide in-depth statistical information. A report with more statistical depth is dependent on more and improved data being submitted.

SELECTED DATA ELEMENTS

This report presents 50 tables and charts based largely on the use of 16 data elements in the NEMESIS Version 2.2.1 standard. The data elements are listed below.

Data Element Name	Data Element Code	Accepts Null Values
Type of Service Requested	E02_04	No
CMS Defined Service Level	E07_34	Yes
Agency Organizational Type (Provider Type)	D01_08	Yes
Cause of Injury	E10_01	Yes
Dates: Arrived on Scene	E05_06	Yes
Dates: Left Scene	E05_09	Yes
Dates: Arrived at Destination	E05_10	Yes
Primary Impression	E09_15	Yes
Incident/Patient Disposition	E20_10	No
Procedures	E19_03	Yes
Gender	E06_11	Yes
Patient Race	E06_12	Yes
Patient Ethnicity	E06_13	Yes
Patient Age	E06_14	Yes
Patient Age Units	E06_15	Yes
Primary Payment Method	E07_01	Yes

Source: NEMESIS Version 2.2.1

LEMSA DATA SUBMISSIONS						
LEMSA	Submission Start Year	Expected Annual Calls*	CY 2014 Incidents	CY 2015 Incidents	Population**	Expected Annual Response/1,000 Population
Alameda County EMS Agency	2015	270,153	0	27,688	1,638,215	165
Central California EMS Agency	2014	280,798	179,340	197,237	1,740,687	161
Contra Costa County EMS Agency	2014	145,929	90,135	99,414	1,126,745	130
Coastal Valleys EMS Agency	N/A	57,336	N/A	N/A	589,795	97
El Dorado County EMS Agency	2013	12,716	3,173	2,420	184,452	69
Imperial County EMS Agency	N/A	18,797	N/A	N/A	180,191	104
Inland Counties Emergency Medical Agency	2013	306,898	341,668	406,472	2,160,302	142
Kern County EMS Agency	N/A	105,361	N/A	N/A	882,176	119
Los Angeles County EMS Agency	N/A	2,575,472	N/A	N/A	10,170,292	253
Marin County EMS Agency	2014	16,786	14,846	14,170	261,221	64
Merced County EMS Agency	N/A	43,920	N/A	N/A	268,455	164
Monterey County EMS Agency	2013	38,795	30,535	33,079	433,898	89
Mountain Valley EMS Agency	2013	79,029	60,933	62,914	638,858	124
Napa County EMS Agency	2013	27,883	15,234	15,457	142,456	196
North Coast EMS Agency	2013	21,004	22,282	29,732	227,572	92
Northern California EMS Agency	2013	10,709	10,101	10,637	102,772	104
Orange County EMS Agency	2016	521,143	165	313,626	3,169,776	164
Riverside County EMS Agency	N/A	244,933	N/A	N/A	2,361,026	104
Sacramento County EMS Agency	2015	268,732	41	35,552	1,501,335	179
San Benito County EMS Agency	2014	6,252	2,937	3,218	58,792	106
San Diego County EMS Agency	N/A	859,246	N/A	N/A	3,299,521	260

LEMSA DATA SUBMISSIONS						
LEMSA	Submission Start Year	Expected Annual Calls*	CY 2014 Incidents	CY 2015 Incidents	Population**	Expected Annual Response/1,000 Population
San Francisco County EMS Agency	2013	150,920	28,662	31,404	864,816	175
San Joaquin County EMS Agency	N/A	68,990	N/A	N/A	726,106	95
San Luis Obispo County EMS Agency	2013	14,720	18,666	14,185	281,401	52
San Mateo County EMS Agency	N/A	61,631	N/A	N/A	765,135	81
Santa Barbara County EMS Agency	2015	66,266	514	42,923	444,769	149
Santa Clara County EMS Agency	N/A	227,755	N/A	N/A	1,918,044	119
Santa Cruz County EMS Agency	2014	18,000	32,617	33,334	274,146	66
Sierra-Sacramento Valley EMS Agency	2014	137,800	113,754	146,130	1,178,511	117
Solano County EMS Agency	N/A	31,683	N/A	N/A	436,092	73
Tuolumne County EMS Agency	N/A	11,349	N/A	N/A	53,709	211
Ventura County EMS Agency	2014	75,928	108,019	112,577	850,536	89
Yolo County EMS Agency	2014	15,718	18,666	19,596	213,016	74
Grand Totals:		6,792,652	1,092,288	1,651,765	39,144,818	

*Taken from LEMSA EMS Plans (Table 8); numbers likely (or most certainly) include non-911 calls.

**Taken from the United State Census Bureau, 03-27-2017

N/A is defined as no data submitted into CEMSIS.

Data Evaluation Regions (DER)

EMSA has developed regional data to allow LEMSAs to get a sense of how the local areas are doing in comparison to a larger regional area. This is useful because LEMSAs submitting data are only able to see their own data on ImageTrend® or their CEMSIS specific software. 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.

The DERs used in this report are based on the Regional Trauma Coordinating Committees.

Northern California Region: Coastal Valleys EMS Agency, North Coast EMS Agency, Northern California EMS Agency, Sierra-Sacramento Valley EMS Agency, Sacramento County EMS Agency, El Dorado County EMS Agency, San Joaquin County EMS Agency, Napa County EMS Agency and Yolo County EMS Agency.

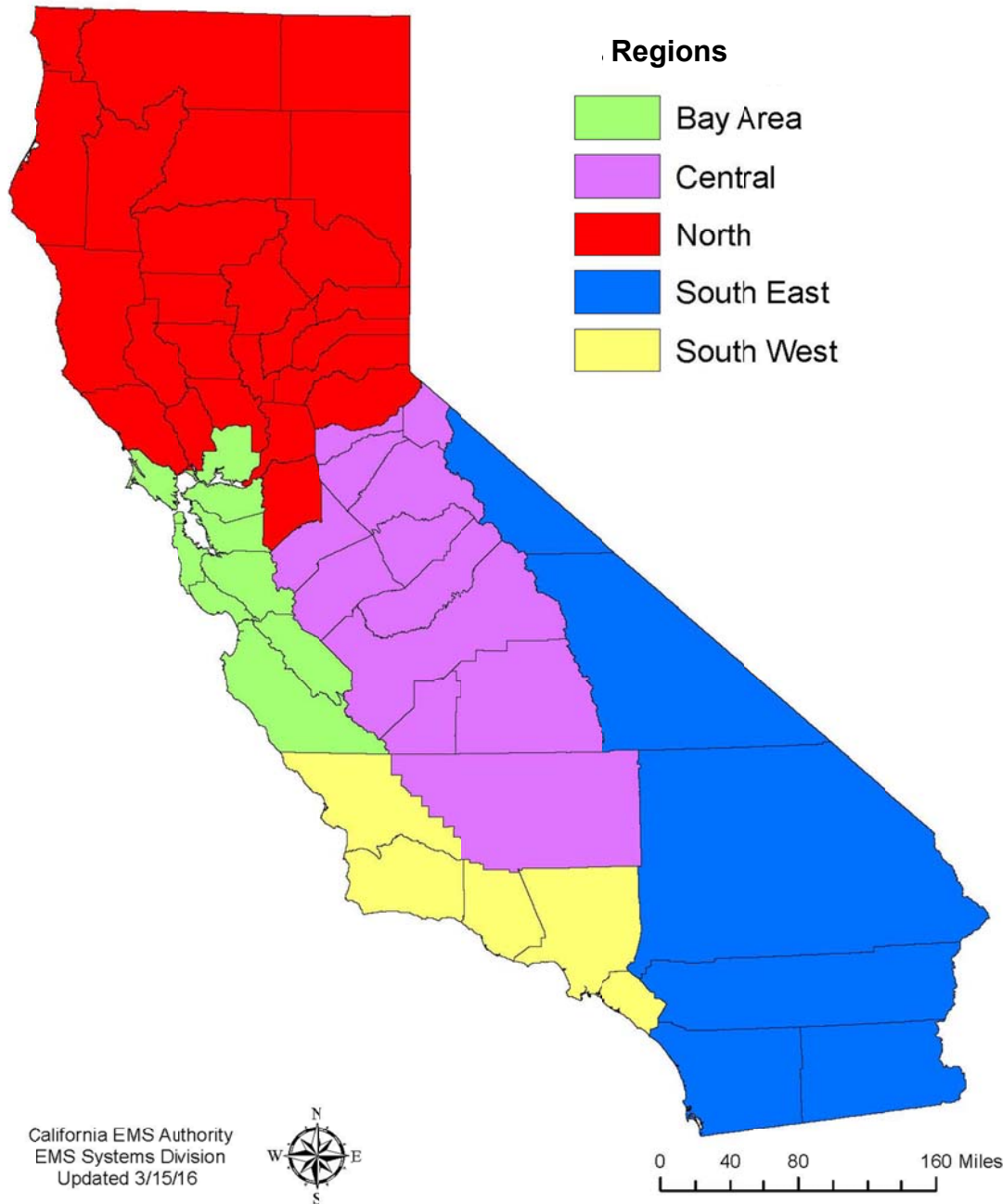
Bay Area Region: Solano County EMS Agency, Contra Costa County EMS Agency, San Francisco County EMS Agency, San Mateo County EMS Agency, Alameda County EMS Agency, Santa Clara County EMS Agency, Santa Cruz County EMS Agency, San Benito County EMS Agency, Monterey County EMS Agency and Marin County EMS Agency.

Central California Region: Central California EMS Agency, Mountain Valley EMS Agency, Tuolumne County EMS Agency, Merced County EMS Agency and Kern County EMS Agency.

South Eastern California Region: Inland Counties Emergency Services Agency, Riverside County EMS Agency, San Diego County EMS Agency and Imperial County EMS Agency.

Southern Region: San Luis Obispo County EMS Agency, Santa Barbara County EMS Agency, Ventura County EMS Agency, Los Angeles County EMS Agency and Orange County EMS Agency.

California Data Evaluation Regions



Data Analysis

Data organized in this report is provided according to stakeholder interest. This includes data categories as follows:

- Traffic and Non-Traffic: This supports efforts to collect data to increase highway safety.
- Age: This supports efforts to collect data for the Emergency Medical Services for Children program, which funds EMS services aimed at patients 0 through age 14 years. The report also organizes data for patients aged 64 and over to support public health efforts aimed at older persons.
- Demographics: This provides data by race, ethnicity, and gender in addition to age. Ethnicity and race seem to have large numbers of “null” values so it is unclear how useful the data is for these elements. Gender has a much smaller number of “null” values.
- Primary Source of Payment: This supports data analysis related to the Affordable Care Act. It is expected that the source of payment will shift to Insurance and Medi-Cal (Medicaid), reflecting the impact of the ACA.

Limitations of Analysis

This report uses descriptive statistics. The data and analysis are limited because of the high number of unknown or null values that occur within the variables utilized in this report.

Null Values

The NEMIS version 2.2.1 standard has three 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* allows Null values or blank entries. Most of the data elements in this report have a *Required* status, meaning the system will accept Null values. In 2.2.1, the null values include:

- Not Applicable
- Not Recorded
- Not Reporting
- Not Available
- Not Known

Null values found in a high number of records inhibit meaningful analysis and usefulness of the data. These basic patients' values are more likely due to provider input and service descriptors than to other data quality issues.

Cancelled Calls

The number of unavailable calls may include a large percentage of cancelled calls. It appears that many of these calls coded as *Not Available* represent cancelled calls.

Duplicates

This report did not remove duplicate values; for example, two records for a single patient encounter, one from a first responder and one from a transport provider. This is a national issue and one that will likely take some time to resolve.

Data Definitions

The EMS data collection system in CY 2015 and 2016 did not mandate a specific data dictionary, which may impact the accuracy and quality of the data in CEMSIS.

Data Mapping

The EMS data collection system for CY 2015 and 2016 allows a certain amount of data element mapping in order to facilitate the movement of the data from the provider's vendor software to the LEMSA's ImageTrend[®] software, which may impact data quality.

Electronic Patient Care Records (ePCRs)

The transition from paper to ePCRs is an on-going process. Most of the EMS providers within the LEMSAs have updated their processes to an electronic data collection format; however, as of January 2013, about 30% of the local provider services are still using paper reports² 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.

²Lumetra Healthcare Solutions. Health Information Exchange Readiness Assessment/Survey. Rep. no. RFO#: EMS-1324. 2013. Print.



Emergency Medical Services Annual Report

Calendar Years 2015 and 2016

EMS SYSTEM UTILIZATION

Type of Service Requested

The total number of EMS calls submitted into CEMSIS statewide increased 6% (1,657,515 to 1,761,563) between CY 2015 and 2016. This increase is due to an increase in the number of LEMSAs submitting data into CEMSIS in CY 2016. *911 Response (Scene)* represented 84% in the type of service requested for CY 2015 and 2016. This is predictable since calling 911 or the local emergency number activates immediate assistance from the police, fire department, and/or ambulance.

Interfacility Transfer (Scheduled) and *Interfacility Transfer (Unscheduled)*, combined, was the second most common type of service requested. This is also unsurprising as patient transfers between facilities or between facilities and a specialty care resource have increased as a result of regionalization, specialization, and facility designation by payers³.

Although *Not Available* had a low count for CY 2015 and 2016 (5,665 and 3,234), it should not be accepted for this data element.

Definitions for Types of Services Requested can be located in Appendix A on page A-1.

Type of Service Requested	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
911 Response (Scene)	1,394,775	84%	1,474,846	84%	0%
Intercept	526	<.01%	493	<.01%	0%
Interfacility Transfer (Scheduled)	117,771	7%	95,660	5%	-2%
Interfacility Transfer (Unscheduled)	28,818	2%	31,569	2%	0%
Medical Transport	91,288	6%	134,631	8%	2%
Mutual Aid	1,048	0.1%	953	0.1%	0%
Standby	16,315	1%	18,746	1%	0%
Other*	1,309	0.1%	1,431	0.1%	0%
Not Available	5,665	0.3%	3,234	0.2%	0%
Total EMS Calls	1,657,515	100%	1,761,563	100%	

*Other includes values of $\leq 1\%$: *Community Paramedicine, Flag-down/Walk-in Emergent, Flag down/Walk-in Non-emergent, Intercept, and Mutual Aid.*

³ N. (2006, April). Guide for Interfacility Patient Transfer. Retrieved April, 2017, from <https://www.ems.gov>

CMS Service Level

The most common *CMS Service Level* was *ALS, Level 1* for both CY 2015 and 2016. The second most common CMS service level in 2015 and 2016 was *ALS, Level 1 Emergency*.

BLS and *BLS, Emergency* had a smaller count for EMS calls compared to *ALS*. The most likely reason for the decline in *BLS* numbers may be that many emergency response agencies appear to be moving away from *BLS* and towards *ALS* because doing so offers the opportunity to provide a more complete level of care and also allows for a higher level of billing.

Not Available represented 61% and 63% for CY 2015 and 2016, respectively (875,986 and 956,671). The large percentage of *Not Available* makes it difficult to create a meaningful analysis. It is unknown why there is a large count for *Not Available* in *CMS Service Level*.

Definitions for *CMS Service Level* can be found in Appendix A on page A-1.

CMS Service Level	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
ALS, Level 1	269,326	19%	256,289	17%	-2%
ALS, Level 1 Emergency	109,463	8%	133,596	9%	1%
ALS, Level 2	74,864	5%	64,609	4%	-1%
BLS	91,953	6%	79,316	5%	-1%
BLS, Emergency	2,988	0.2%	18,129	1%	1%
Fixed Wing (Airplane)	334	<.01%	359	<.01%	0%
Paramedic Intercept	8,422	0.6%	4,597	0.3%	-0.3%
Rotary Wing (Helicopter)	517	<.01%	902	<.01%	0%
Specialty Care Transport	7,305	0.5%	6,094	0.4%	-0.1%
Not Available	875,986	61%	956,671	63%	2%
Total EMS Calls	1,441,158	100%	1,520,562	100%	

*This table excludes cancelled calls. Cancelled calls represent 13% of all calls for CY 2015 and 2016.

**See page 39 for Incident/Patient Disposition.

Provider Type

The most common *Provider Type* for CY 2015 and 2016 was *Private, Non-Hospital*. Based on the California Ambulance Zones⁴, the majority of zones have a private ambulance company providing EMS transport exclusively and non-exclusively. The information from the California Ambulance Zones is based on the most recent EMS plan the LEMSAs have submitted.

Provider Type	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Community, Non-Profit	13,548	1%	12,988	1%	0%
Fire Department	481,160	33%	572,975	38%	4%
Governmental, Non-Fire	475	<.01%	650	<.01%	0%
Hospital	22,655	2%	26,578	2%	0%
Private, Non-Hospital	902,173	63%	888,127	58%	-4%
Not Available	21,147	1%	19,243	1%	0%
Total EMS Calls	1,441,158	100%	1,520,561	100%	

*This table excludes cancelled calls. Cancelled calls represent 13% of all calls for CY 2015 and 2016.

**See page 39 for Incident/Patient Disposition.

⁴ Little, L. (n.d.). EMS Systems Division - Transportation. Retrieved April, 2017, from <http://www.emsa.ca.gov/Transportation>

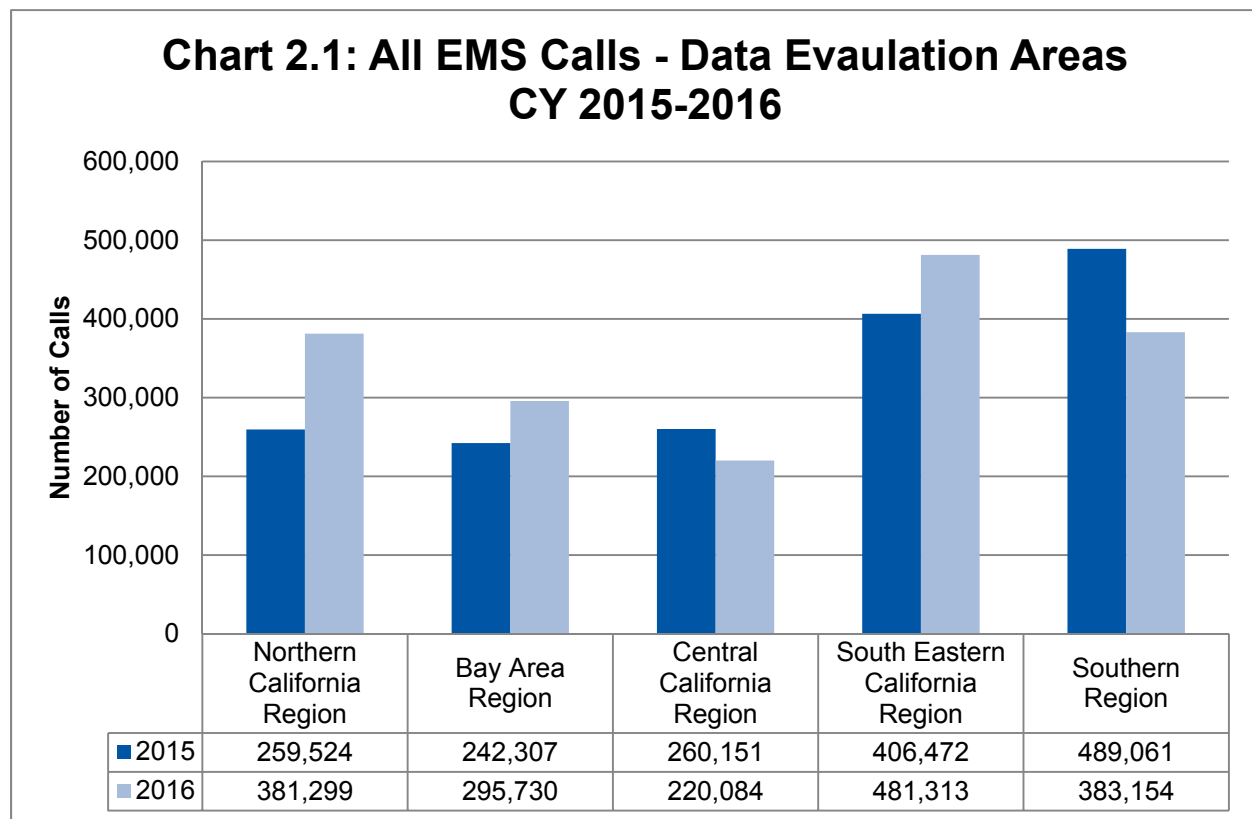
DATA EVALUATION REGIONS (DER)

To see all LEMSAs submitting data and their expected calls, see page 5.

All EMS Calls

The highest numbers of EMS calls reported to CEMSIS come from the South Eastern California Region at 25% and 27% in CY 2015 and 2016, respectively.

For the list and map of the DEAs, please see page 7.



Provider Type

Northern California Region

Of these LEMSAs, Coastal Valleys EMS Agency and San Joaquin County EMS Agency are not submitting data into CEMSIS while El Dorado County EMS Agency submitted data for CY 2015.

Based on all the EMS Plans from LEMSAs that currently submit data into CEMSIS for the Northern California Region, there are a total of 172 transport and non-transport providers reported by the LEMSAs in this region. Of the 172 providers, 35% are private and 65% are public. (This includes first responses as well as transport providers).

Bay Area Region

Of these LEMSAs, San Mateo County EMS Agency, Solano County EMS Agency, and Santa Clara County EMS Agency are not submitting EMS data into CEMSIS.

Based on all the EMS Plans from LEMSAs that currently submit data into CEMSIS from the Bay Area Region, there are a total of 92 providers reported by the LEMSAs in the Bay Area Region. Of the 92 providers, 29% are private and 69% are public.

Central California Region

Of these LEMSAs, Tuolumne County EMS Agency, Merced County EMS Agency and Kern County EMS Agency are not submitting data.

Based on the EMS Plans from LEMSAs that currently submit data into CEMSIS for the Central California Region, there are a total of 58 providers reported by the LEMSAs in this region. Of the 58 providers, 19% are private and 89% are public.

South Eastern California Region

Of these LEMSAs, Riverside County EMS Agency, San Diego County EMS Agency and Imperial County EMS Agency are not submitting data into CEMSIS.

Based on the EMS Plans from LEMSAs that currently submit data into CEMSIS for the South Eastern California Region, there are a total of 66 providers reported by the LEMSAs in the South Eastern California Region. Of the 66 providers, 24% are private and 76% are private.

Southern Region

Of these LEMSAs, Los Angeles County EMS is not submitting EMS data into CEMSIS.

Based on the EMS Plans from the LEMSAs that currently submit data into CEMSIS for the Southern Region, there are a total of 86 providers reported by the LEMSAs in this region. Of the 86 providers, 49% are private and 51% are public.

**Table 2.2: All EMS Calls - Data Evaluation Areas
Calendar Year 2015**

Provider Type	Region									
	Northern California		Bay Area		Central California		South Eastern California		Southern Region	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Community, Non-Profit	3,116	1%	0	0%	4,912	2%	6,676	2%	0	0%
Fire Department	53,344	21%	29,102	12%	28,759	11%	160,522	39%	288,270	59%
Governmental, Non-Fire	370	0.1%	0	0%	0	0%	127	<.01%	0	0%
Hospital	25,819	10%	0	0%	0	0%	0	0%	0	0%
Private, Non-Hospital	176,875	68%	213,205	88%	226,480	87%	239,147	59%	177,400	36%
Not Available	0	0%	0	0%	0	0%	0	0%	23,391	5%
Total EMS Calls	259,524	100%	242,307	100%	260,151	100%	406,472	100%	489,061	100%

**Table 2.3: All EMS Calls - Data Evaluation Areas
Calendar Year 2016**

Provider Type	Region									
	Northern California		Bay Area		Central California		South Eastern California		Southern Region	
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Community, Non-Profit	3,091	1%	0	0%	4,995	2%	6,288	1%	1	0%
Fire Department	170,483	45%	32,233	11%	24,478	11%	227,578	47%	211,636	55%
Governmental, Non-Fire	196	0.1%	0	0%	0	0%	468	0.1%	0	0%
Hospital	30,766	8%	0	0%	0	0%	0	0%	0	0%
Private, Non-Hospital	176,763	46%	263,497	89%	190,611	87%	246,979	51%	151,100	39%
Not Available	0	0%	0	0%	0	0%	0	0%	20,451	5%
Total EMS Calls	381,299	100%	295,730	100%	220,084	100%	481,313	100%	383,188	100%

CAUSE OF INJURY

The counts in this section reflect only those patients for whom *Possible Injury* (E09_04) was selected **AND** *Primary* or *Secondary Impression* equals *Traumatic Injury*.

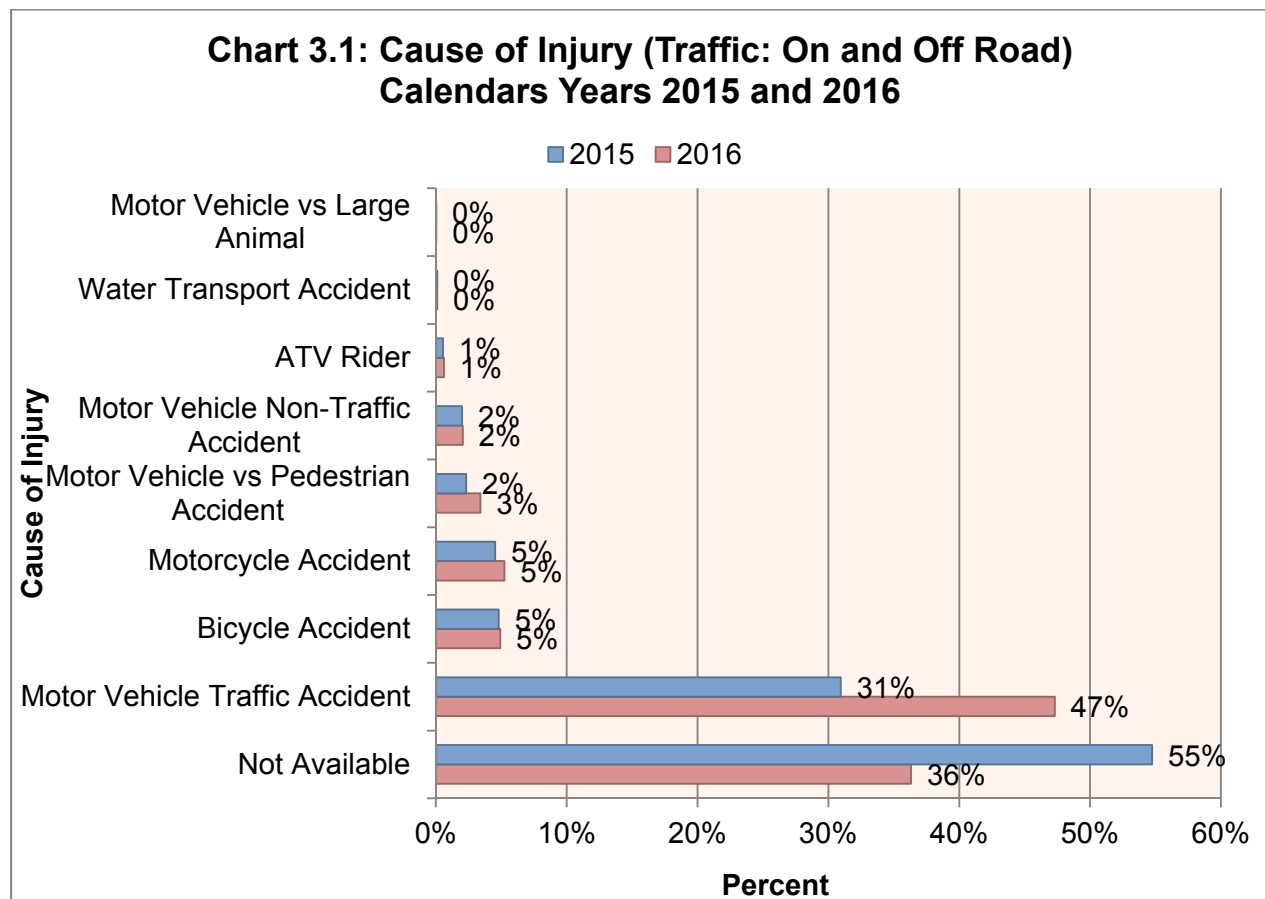
Therefore, the total in this table reflects the counts of patients that were noted as YES for E09_04 in 2015 and 2016 **AND** *Traumatic Injury* was noted under either *Primary Impression* (E09_15) or *Secondary Impression* (E09_16). The percentage for *Not Available* did not have a *Cause of Injury* but had *Possible Injury* marked yes and had a *Primary* or *Secondary Impression* equals *Traumatic Injury*. All patients whose *Incident Patient Disposition* was cancelled are not included.

Traffic: On and Off Road

Based on a the Statewide Integrated Traffic Records System (SWITRS) 2014 Report for California, there were 162,742 injury collisions and 230,904 persons injured while 3,126 persons were killed in 2,882 fatal collisions.

The most common cause of injury in CEMESIS for CY 2015 and 2016 was *Motor Vehicle Traffic Accident* (18,375 and 26,347, respectively).

Not Available had the largest number of counts at 32,503 and 20,228 in CY 2015 and 2016.



Gender

Males had a higher count than *Females* in the overall count of *Cause of Injury (Traffic: On and Off Road)* for both CY 2015 and 2016. This is also consistent with CEMISIS Trauma data where a higher incidence of trauma injury for males is found. Based on Census data, *Females* represent 50.3% of California's population.

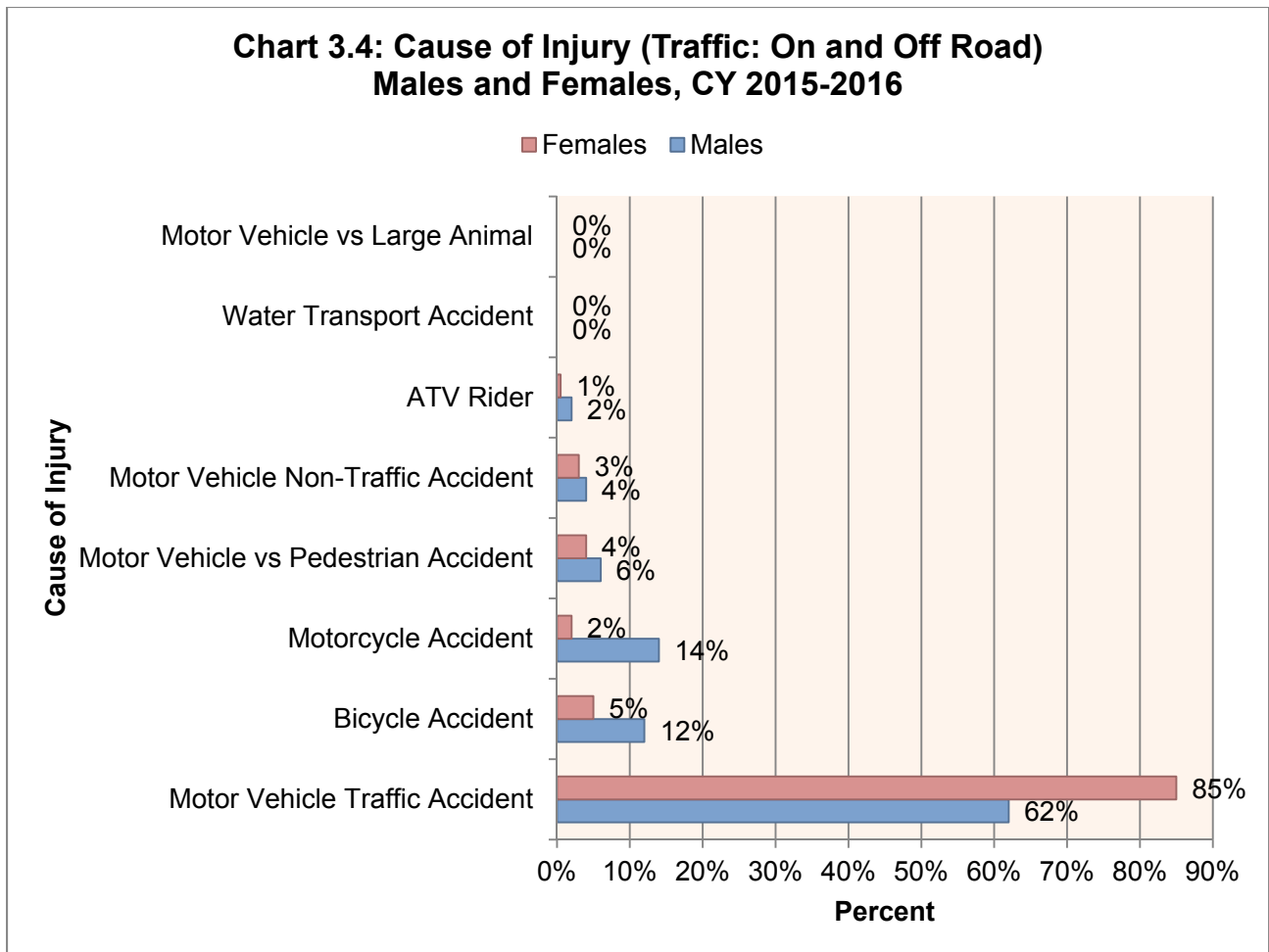
Cause of Injury (Traffic: On and Off Road)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
ATV Rider	253	2%	280	1%	-1%
Bicycle Accident	2,153	14%	2,091	10%	-4%
Motor Vehicle Non-Traffic Accident	682	4%	700	4%	0%
Motor Vehicle Traffic Accident	9,254	59%	13,064	65%	6%
Motor Vehicle vs Large Animal	15	<.01%	9	<.01%	0%
Motor Vehicle vs Pedestrian Accident	864	6%	1,199	6%	0%
Motorcycle Accident	2,357	15%	2,597	13%	-2%
Water Transport Accident	37	<.01%	38	<.01%	0%
Total Cause of Injury	15,615	100%	19,978	100%	

The most common cause of injury for *Males* and *Females* was *Motor Vehicle Traffic Accident*. *Females* had a higher count of *Motor Vehicle Traffic Accidents* in CY 2015 and 2016 (10,280 and 15,235, respectively) than *Males*. *Males* also showed a higher count for *Motorcycle Accident* for both CY 2015 and 2016 (2,357 and 2,597, respectively) as well as *Bicycle Accident* (2,153 and 2,091, respectively).

Cause of Injury (Traffic: On and off Road)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
ATV Rider	68	1%	65	0%	-1%
Bicycle Accident	694	6%	654	4%	-2%
Motor Vehicle Non-Traffic Accident	511	4%	447	3%	-1%
Motor Vehicle Traffic Accident	10,280	83%	15,235	87%	4%
Motor Vehicle vs Large Animal	4	<.01%	10	<.01%	0%
Motor Vehicle vs Pedestrian Accident	517	4%	702	4%	0%
Motorcycle Accident	356	3%	356	2%	-1%
Water Transport Accident	23	<.01%	19	<.01%	0%
Total Cause of Injury	12,453	100%	17,488	100%	

According to the National Highway Traffic Safety Administration (NHTSA), within California more men than women die each year in motor vehicle accidents. Men typically drive more miles than women and more often engage in risky driving practices including not using safety belts, driving while impaired by alcohol, and speeding⁵. Yet *Females* account for a higher percentage of fatalities in *Motor Vehicle Traffic Accidents*.

The Insurance Institute for Highway Safety Loss Data Institute (IIHSHLDI) showed that 91% of motorcyclists killed in 2015 were *Males*. The Centers for Disease Control and Prevention (CDC) showed that males are more likely to be killed or injured on bicycles than females. In 2015, 85% of bicyclists/pedalcyclists killed and 80% injured were *Males*⁶.



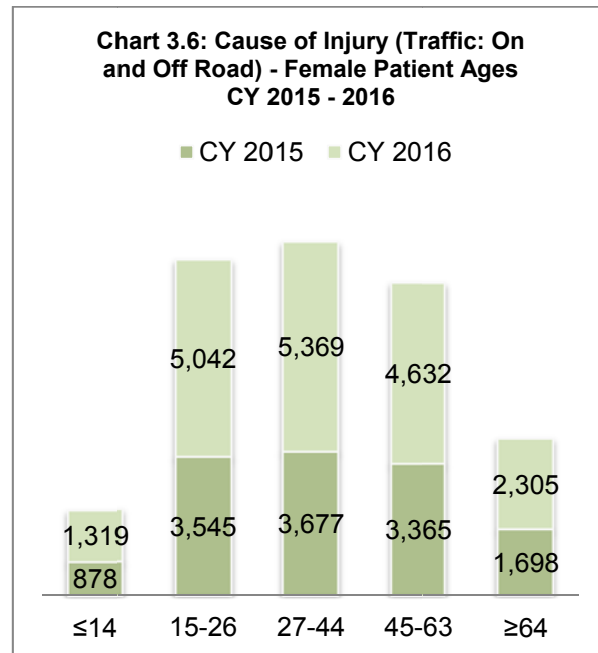
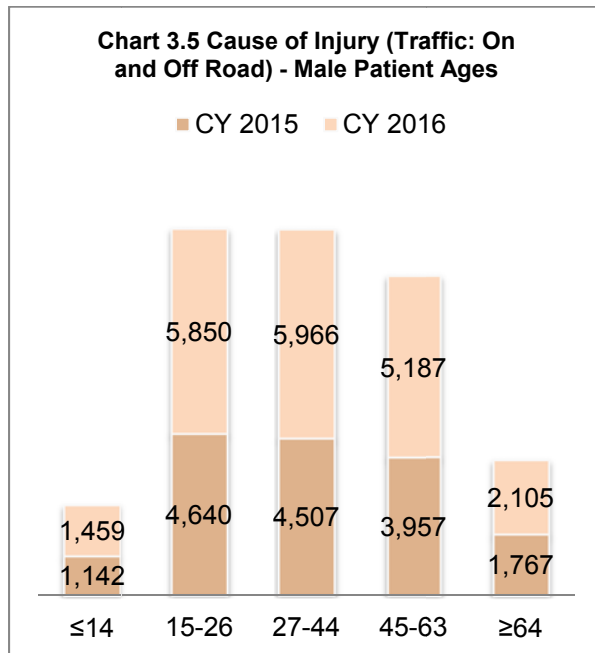
*Percentages are weighted averages for CY 2014 and 2015.

⁵ Highway safety topics. (2017). Retrieved December, 2017, from <http://www.iihs.org/iihs/topics>

⁶ N. (2017, March). Traffic Safety Facts 2015 Data: Bicyclists and Other Cyclists. Retrieved December 15, 2017, from <https://crashstats.nhtsa.dot.gov>

Patient Ages by Gender

There were more injuries for all ages in males than females.



Age – Pediatrics (≤14)

Based on research by the Insurance Institute for Highway Safety, motor vehicle accidents are a leading cause of death for children younger than 13.

According to the CDC, children (5–14 years), adolescents and young adults (15–24 years) have the highest rate of nonfatal bicycle-related injuries.

The most common cause of injuries for pediatrics (≤14 years old) was *Motor Vehicle Traffic Accident* for CY 2015 and 2016. The second most common was *Bicycle Accident*.

Table 3.7: Cause of Injury (Traffic: On and Off Road) Pediatrics ≤14 Years Old Calendar Years 2015 and 2016					
Cause of Injury (Traffic: On and Off Road)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Motor Vehicle Traffic Accident	1,468	69%	2,209	75%	6%
Bicycle Accident	293	14%	308	11%	-3%
Motor Vehicle vs Pedestrian Accident	187	9%	249	8%	-1%
Motor Vehicle Non-Traffic Accident	69	3%	63	2%	-1%
Motorcycle Accident	53	3%	43	1%	-2%
ATV Rider	42	2%	53	2%	0%
Water Transport Accident	6	<.01%	6	<.01%	0%
Motor Vehicle vs Large Animal	1	<.01%	1	<.01%	0%
Total Cause of Injury	2,119	100%	2,932	100%	

Age – Adolescents (15–26)

According to the Insurance Institute for Highway Safety, in the United States, the fatal crash rate for 16 to 19 year olds is nearly 3 times the rate for drivers ages 20 and over. In 2014, 56% of the deaths of teenage passengers in passenger vehicles occurred in vehicles driven by another teenager. Among deaths of passengers of all ages, 14% occurred when a teenager was driving. Driving under the influence is also a factor for motor vehicle accidents. Drivers younger than age 21 are more likely to be involved in car accidents than older drivers.

The most common cause of injury for adolescents (15–26 years old) was *Motor Vehicle Traffic Accident* for CY 2015 and 2016. The next two most common causes of injury were *Bicycle Accident* and *Motorcycle Accident*.

Cause of Injury (Traffic: On and Off Road)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Motor Vehicle Traffic Accident	6,096	72%	8,808	78%	6%
Motorcycle Accident	848	10%	936	8%	-2%
Bicycle Accident	675	8%	560	5%	-3%
Motor Vehicle Non-Traffic Accident	348	4%	381	3%	-1%
Motor Vehicle vs Pedestrian Accident	326	4%	415	4%	0%
ATV Rider	97	1%	112	1%	0%
Water Transport Accident	18	<.01%	16	<.01%	0%
Motor Vehicle vs Large Animal	5	<.01%	3	<.01%	0%
Total Cause of Injury	8,413	100%	11,231	100%	

Age – Adults (27–44)

The most common cause of injury for adults 27–44 years old was *Motor Vehicle Traffic Accident*.

This age range represents the majority of the workforce and as such, is on the road more frequently. According to the IIHSHLDI, Motor vehicle crashes were 2.4 times higher in rural areas than in urban areas on a rate of crash deaths per 100 million miles traveled. Other factors can include, but are not limited to, distracted driving, not wearing safety belts, and speed

According to the Insurance Institute for Highway Safety, ages 27–30 had the highest rate of alcohol impaired driving among fatalities.

Table 3.10: Cause of Injury (Traffic: On and Off Road) Adults 27-44 Years Old Calendar Years 2015 and 2016					
Cause of Injury (Traffic: On and Off Road)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Motor Vehicle Traffic Accident	5,909	71%	9,023	78%	7%
Motorcycle Accident	917	11%	995	9%	-2%
Bicycle Accident	674	8%	680	6%	-2%
Motor Vehicle vs Pedestrian Accident	362	4%	465	4%	0%
Motor Vehicle Non-Traffic Accident	336	4%	316	3%	-1%
ATV Rider	107	1%	99	1%	0%
Water Transport Accident	17	<.01%	14	<.01%	0%
Motor Vehicle vs Large Animal	8	<.01%	4	<.01%	0%
Total Cause of Injury	8,330	100%	11,596	100%	

Age – Adults (45–63)

This age range also represents the majority of the workforce in the United States. The most common cause of injury for adults 45–63 years old was *Motor Vehicle Traffic Accident*.

Table 3.10: Cause of Injury (Traffic: On and Off Road) Adults 45-63 Years Old Calendar Years 2015 and 2016					
Cause of Injury (Traffic: On and Off Road)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Motor Vehicle Traffic Accident	5,037	68%	7,321	73%	6%
Bicycle Accident	949	13%	958	10%	-3%
Motorcycle Accident	756	10%	805	8%	-2%
Motor Vehicle vs Pedestrian Accident	335	4%	553	6%	2%
Motor Vehicle Non-Traffic Accident	289	4%	268	3%	-1%
ATV Rider	63	1%	70	1%	0%
Water Transport Accident	17	<.01%	14	<.01%	0%
Motor Vehicle vs Large Animal	5	<.01%	9	<.01%	0%
Total Cause of Injury	7,451	100%	9,998	100%	

Age – Geriatrics (≥64)

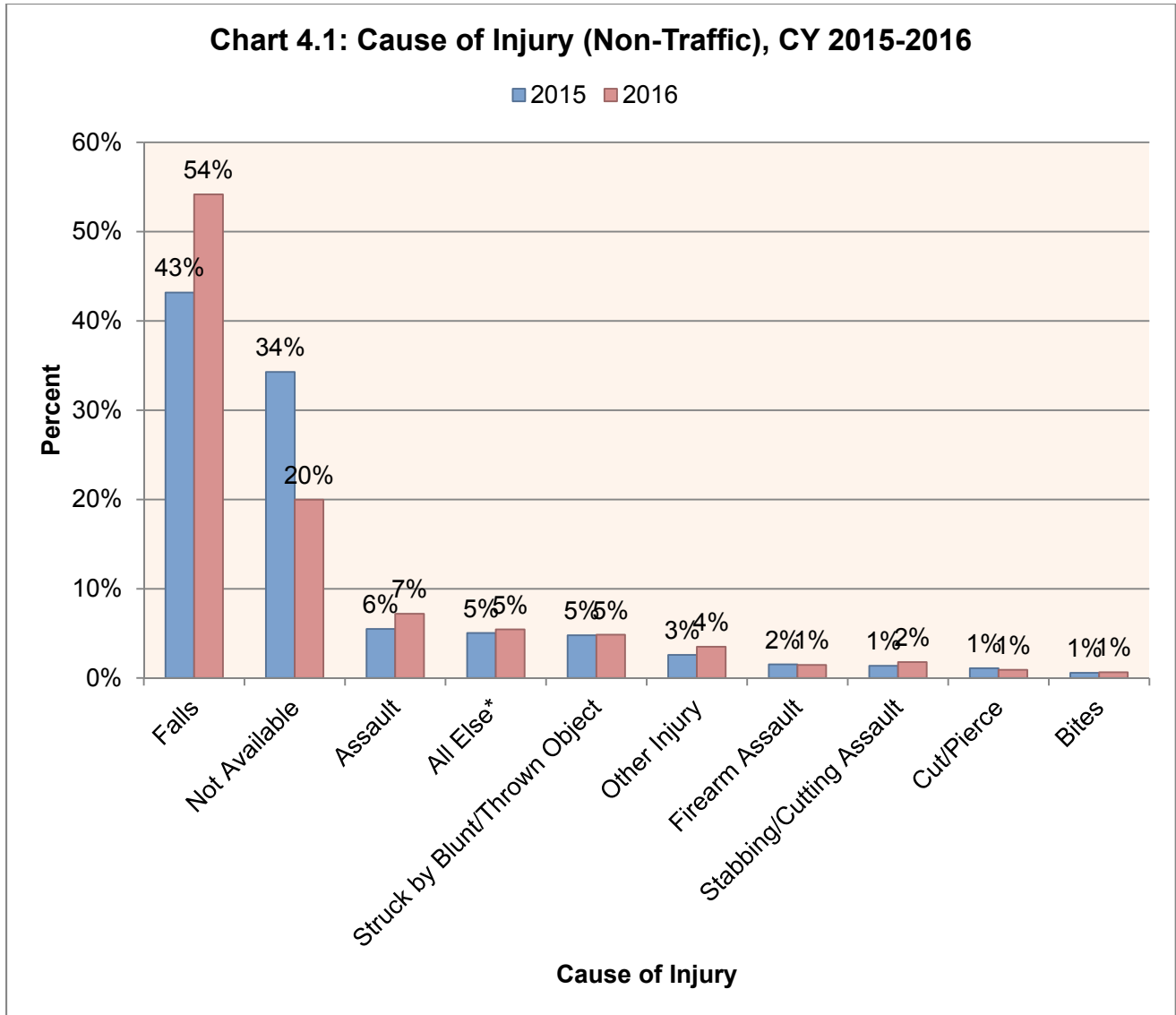
According to the CDC, injuries are more frequent among drivers ages 70–74. This trend has been attributed more to an increased susceptibility to injury and medical complications among older drivers rather than an increased risk of crash involvement. However, age-related decline in vision and cognitive functioning as well as physical changes may affect the driving ability of older adults.

The most common cause of injury for persons ≥64 years old was *Motor Vehicle Traffic Accident*.

Cause of Injury (Traffic: On and Off Road)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Motor Vehicle Traffic Accident	2,717	77%	3,636	81%	4%
Bicycle Accident	271	8%	254	6%	-2%
Motor Vehicle Non-Traffic Accident	180	5%	141	3%	-2%
Motor Vehicle vs Pedestrian Accident	178	5%	230	5%	0%
Motorcycle Accident	156	4%	193	4%	0%
ATV Rider	13	<.01%	14	<.01%	0%
Water Transport Accident	3	<.01%	9	<.01%	0%
Motor Vehicle vs Large Animal	1	<.01%	3	<.01%	0%
Total Cause of Injury	3,519	100%	4,480	99%	

Non-Traffic

The most common cause of injury for non-traffic calls was *Falls* for both CY 2015 and 2016. *Falls* increased from 43% to 54%. This may be due to additional LEMSAs and providers submitting data into CEMSIS in CY 2016.



*Each individual count of *All Else* was less than 1% of the values returned. A complete list of the *Cause of Injury* for the category *All Else* can be found on page 1 in Appendix B at the end of the report.

Gender

The most common cause of injury (non-traffic) was *Falls* for *Males* in 2015 and 2016 (17,343 and 22,777, respectively).

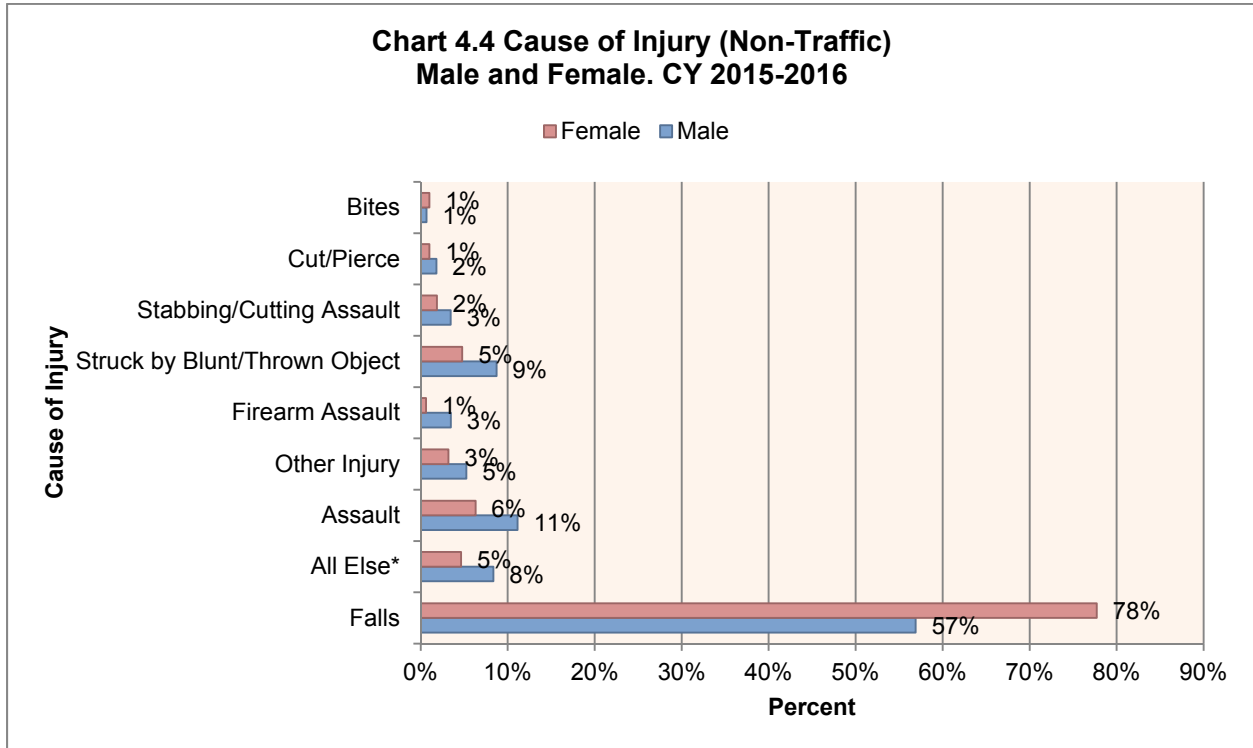
Cause of Injury (Non-Traffic)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Falls	17,343	57%	22,777	57%	0%
Assault	3,394	11%	4,649	12%	1%
All Else*	1,988	7%	4,082	10%	3%
Struck by Blunt/Thrown Object	2,959	10%	3,094	8%	-2%
Other Injury	1,604	5%	2,095	5%	0%
Firearm Assault	1,165	4%	1,252	3%	-1%
Stabbing/Cutting Assault	1,044	3%	1,392	3%	0%
Cut/Pierce	653	2%	595	1%	-1%
Bites	310	1%	133	0.3%	-0.7%
Total Cause of Injury	30,460	100%	40,069	100%	

The most common cause of injury (non-traffic) was *Falls* for *Females* in 2015 and 2016 (23,526 and 31,978, respectively).

Cause of Injury (Non-Traffic)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Falls	23,526	77%	31,978	78%	1%
Assault	1,853	6%	2,677	7%	1%
Struck by Blunt/Thrown Object	1,567	5%	1,804	4%	-1%
All Else*	1,468	5%	1,820	4%	-1%
Other Injury	853	3%	1,462	4%	1%
Cut/Pierce	385	1%	342	1%	0%
Firearm Assault	303	1%	102	0.2%	-0.7%
Stabbing/Cutting Assault	262	1%	426	1%	0%
Bites	243	1%	282	1%	0%
Total Cause of Injury	30,460	100%	40,893	100%	

Although the most common cause of injury (non-traffic) was *Falls*, *Females* had a higher count for *Falls* than *Males* for both CY 2015 and 2016. This is likely due to higher life expectancy (older). *Males* had a higher count in *Assault* and *Struck by Blunt/Thrown Object* than *Females*. In 2016, 21.4 of 1,000 males and 20.8 of 1,000 females experienced one or more violent victimizations in the United States⁷.

⁷ Morgan, R. E., Ph.D. & Kena, G. (2017, December). Criminal Victimization, 2016. Retrieved December 18, 2017, from <https://www.bjs.gov/>

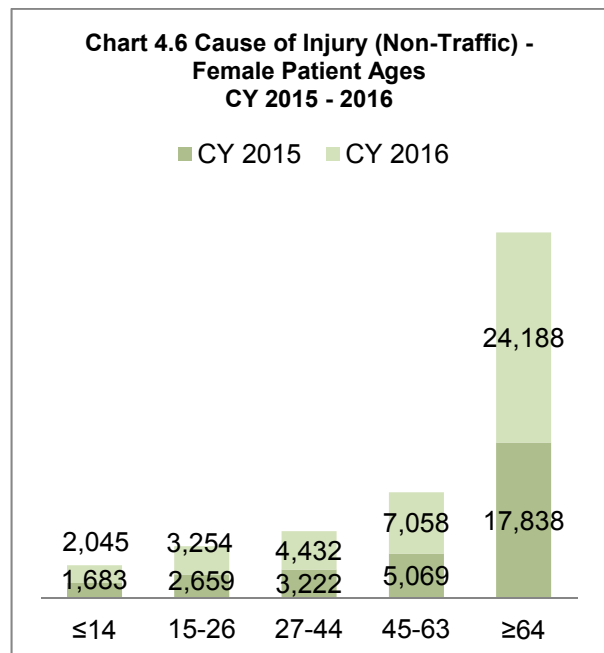
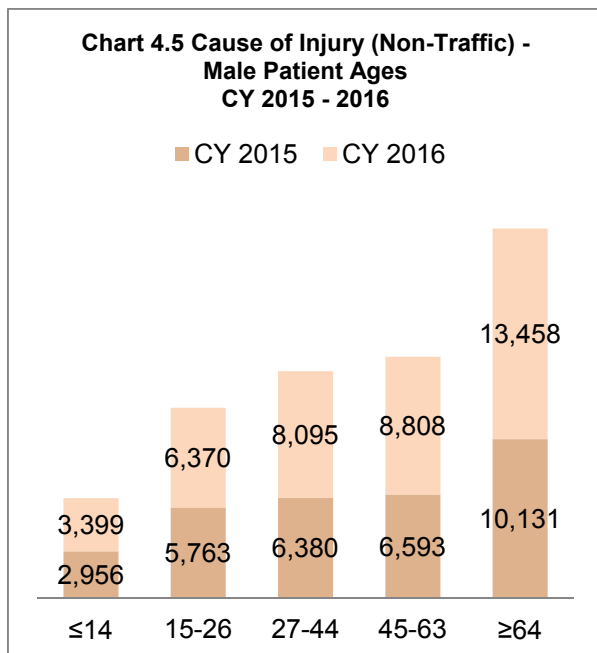


*Each individual count of *All Else* was less than 1% of the values returned. A complete list of the *Cause of Injury* for the category *All Else* can be found on page B-1 in Appendix B at the end of the report.

*Percentages are weighted averages for CY 2015 and 2016.

Patient Ages by Gender

Males ages 64 and lower were higher than females. However, females ≥ 64 were much larger than males.



Age – Pediatrics (≤14)

The most common cause of injuries (non-traffic) to persons ≤14 years old was *Falls* for CY 2015 and 2016 (2,805 and 3,398, respectively). According to the CDC, falls are the leading cause of non-fatal injuries for all children ages 0 to 19.

Cause of Injury (Non-Traffic)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Falls	2,805	60%	3,398	62%	2%
All Else*	571	12%	616	11%	-1%
Struck by Blunt/Thrown Object	458	10%	547	10%	0%
Other Injury	436	9%	428	8%	-1%
Assault	135	3%	191	3%	0%
Cut/Pierce	114	2%	97	2%	0%
Bites	86	2%	108	2%	0%
Stabbing/Cutting Assault	52	1%	57	1%	0%
Firearm Assault	27	1%	39	1%	0%
Total Cause of Injury	4,684	100%	5,481	100%	

Age – Adolescents (15–26)

The most common cause of injury (non-traffic) for persons between 15–26 years of age was *Falls* for CY 2015 and 2016 (2,417 and 2,839, respectively). The second and third most common cause of injury (non-traffic) was *Assault* and *Struck by Blunt/Thrown Object*.

Cause of Injury (Non-Traffic)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Falls	2,417	28%	2,839	29%	1%
Assault	1,581	19%	2,047	21%	2%
All Else*	1,229	14%	1,288	13%	-1%
Struck by Blunt/Thrown Object	1,151	14%	1,142	12%	-2%
Other Injury	637	8%	797	8%	1%
Firearm Assault	613	7%	616	6%	-1%
Stabbing/Cutting Assault	446	5%	577	6%	1%
Cut/Pierce	323	4%	287	3%	-1%
Bites	94	1%	102	1%	0%
Total Cause of Injury	8,491	100%	9,695	100%	

Age – Adults (27–44)

The most common cause of injury (non-traffic) for persons 27–44 years of age was *Falls* for CY 2015 and 2016 (3,003 and 4,149, respectively). The second/third most common cause of injury (non-traffic) was *Assault* and *Struck by Blunt/Thrown Object*. According to the Bureau of Justice Statistics, the rates of violent victimization committed against persons ages 25-34 was higher than all other age groups (31.8 per 1,000 persons).

Table 4.9: Cause of Injury (Non-Traffic) Adults 27-44 Years Old Calendar Years 2015 and 2016					
Cause of Injury (Non-Traffic)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Falls	3,003	31%	4,149	33%	2%
Assault	2,063	21%	2,899	23%	2%
Struck by Blunt/Thrown Object	1,258	13%	1,387	11%	-2%
All Else*	1,252	13%	1,520	12%	-1%
Other Injury	572	6%	846	7%	1%
Firearm Assault	544	6%	586	5%	-1%
Stabbing/Cutting Assault	534	6%	733	6%	0%
Cut/Pierce	287	3%	269	2%	-1%
Bites	142	1%	176	1%	0%
Total Cause of Injury	9,655	100%	12,565	100%	

Age – Adults (45–63)

The most common cause of injury (non-traffic) for persons 46–63 years was *Falls* for CY 2015 and 2016 (6,850 and 9,640, respectively). The second and third most common cause of injury (non-traffic) was *Assault* and *Struck by Blunt/Thrown Object*. According to the BJS, persons aged 50 and older had the lowest rate of violence (16.1 of 1,000 persons aged 50-64 and 4.4 persons per 1,000 persons aged 65 or older).

Table 4.10: Cause of Injury (Non-Traffic) Adults 45-63 Years Old Calendar Years 2015 and 2016					
Cause of Injury (Non-Traffic)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Falls	6,850	58%	9,640	61%	3%
Assault	1,320	11%	1,922	12%	1%
All Else*	1,185	10%	1,455	9%	-1%
Struck by Blunt/Thrown Object	1,005	9%	1,136	7%	-2%
Other Injury	471	4%	755	5%	1%
Firearm Assault	259	2%	221	1%	-1%
Stabbing/Cutting Assault	250	2%	371	2%	0%
Cut/Pierce	218	2%	186	1%	-1%
Bites	154	1%	202	1%	0%
Total Cause of Injury	11,712	100%	15,888	100%	

Age – Geriatrics (≥64)

The most common cause of injury (non-traffic) for persons ≥64 years was *Falls* for CY 2015 and 2016 (25,876 and 34,828, respectively).

According to the CDC, one out of four Americans aged ≥65 fall each year. Falls are the leading cause of injury and even ground level falls can lead to serious injuries such as traumatic brain injuries or fractures.

Cause of Injury (Non-Traffic)	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Falls	25,876	92%	34,828	92%	0%
Struck by Blunt/Thrown Object	718	3%	765	2%	-1%
All Else*	585	2%	679	2%	0%
Other Injury	346	1%	731	2%	1%
Assault	201	1%	345	1%	0%
Cut/Pierce	99	0.4%	100	0.3%	0%
Bites	82	0.3%	71	0.2%	0%
Firearm Assault	45	0.2%	54	0.1%	0%
Stabbing/Cutting Assault	40	0.1%	91	0.2%	0%
Total Cause of Injury	27,992	100%	37,664	100%	

PRIMARY IMPRESSION

The data reflect a large number of calls where no primary impression is noted by the field staff. This could be indicative of several things, including: lack of staff training with ePCRs or other data collection tools, non-intuitive placement of the information in the text or narrative area of the ePCR, or issues related to the provider software when data is submitted to the LEMSA.

The most common primary impression was *Traumatic Injury* for CY 2015 and 2016 at 11%.

Each individual count of *All Else* was less than 1% of the values returned. A complete list of the category *All Else* can be found on page B-2 in Appendix B at the end of the report.

Primary Impression	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Traumatic Injury	151,804	11%	168,509	11%	0%
Altered Level of Consciousness	84,913	6%	90,702	6%	0%
Syncope/Fainting	77,611	6%	78,378	5%	-1%
Other	75,827	5%	68,191	5%	0%
Respiratory Distress	69,123	5%	82,192	6%	1%
Behavioral/Psychiatric Disorder	69,132	5%	71,612	5%	0%
Abdominal Pain/Problems	67,816	5%	79,561	5%	0%
Chest Pain/Discomfort	60,793	4%	69,656	5%	1%
Pain	54,874	4%	57,895	4%	0%
Other Illness/Injury	37,455	3%	41,910	3%	0%
Weakness	35,110	3%	41,910	3%	0%
Seizure	33,765	2%	36,486	2%	0%
No Apparent Illness/Injury	16,813	1%	18,343	1%	0%
Nausea/Vomiting (Unknown Etiology)	16,090	1%	16,000	1%	0%
Stroke/CVA	13,921	1%	15,463	1%	0%
All Else*	188,263	14%	187,162	13%	-1%
Not Available	332,455	24%	354,920	24%	0%
Total Primary Impressions	1,385,765	100%	1,478,890	89%	

This table excludes Cancelled calls.

Primary Impressions that may be Associated with Stroke/STEMI

The *Primary Impressions* for this table were specifically selected for stroke/STEMI. Stroke is the fifth leading cause of death in the United States according to the CDC. Every year, about 790,000 Americans have a heart attack⁸.

The most common primary impression was *Chest Pain/Discomfort* for CY 2015 and 2016.

A complete list of the category *All Else* can be found on page B-3 in Appendix B at the end of the report.

Primary Impression	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Chest Pain/Discomfort	60,793	6%	69,656	6%	0%
Stroke/CVA	13,921	1%	15,463	1%	0%
Cardiac Arrest	11,699	1%	13,182	1%	0%
Cardiac Rhythm Disturbance	11,335	1%	11,743	1%	0%
CHF (Congestive Heart Failure)	1,404	<.01%	1,450	<.01%	0%
TIA (Transient Ischemic Attack)	542	<.01%	502	<.01%	0%
All Else*	953,616	91%	1,011,981	90%	-1%
Total Primary Impressions	1,053,310	100%	1,123,977	100%	

This table excludes Cancelled calls.

⁸ Heart Attack. (2017, August 18). Retrieved January 29, 2018, from https://www.cdc.gov/heartdisease/heart_attack.htm

Age – Pediatrics (≤14)

The most common primary impression for this age group was *Traumatic Injury* for CY 2015 and 2016. *Seizure* and *Respiratory Distress* are the second and third most common primary impressions.

There was a high percentage for *Seizure* for persons under 14 years old (13% in CY 2015 and 2016). It was the second most common primary impression, following *Traumatic Injury*. One reason is febrile seizures, which are common in young children. According to the CDC, about 1% of children aged 0–17 years have had a diagnosis of epilepsy or seizure disorder. Children younger than 2 years of age are more likely to have epilepsy because risk factors are more common in the age group. The level of EMS transports may not match actual prevalence in the general population.

Each individual count of *All Else* was less than 1% of the values returned. A complete list of the category *All Else* can be found on page B-4 in Appendix B at the end of the report.

Primary Impression	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Traumatic Injury	11,325	20%	12,056	21%	1%
Seizure	7,520	13%	7,784	13%	0%
Respiratory Distress	5,046	9%	5,112	9%	0%
Other	5,645	10%	4,853	8%	-2%
Behavioral/Psychiatric Disorder	3,207	6%	3,123	5%	-1%
Pain	2,749	5%	2,946	5%	0%
Other Illness/Injury	2,510	4%	2,324	4%	0%
Altered Level of Consciousness	2,190	4%	2,305	4%	0%
Abdominal Pain/Problems	2,162	4%	2,215	4%	0%
Syncope/Fainting	2,171	4%	2,139	4%	0%
No Apparent Illness/Injury	1,980	3%	2,091	4%	1%
Fever	1,832	3%	1,714	3%	0%
Allergic Reaction	1,309	2%	1,297	2%	0%
Poisoning/Drug Ingestion	840	1%	836	1%	0%
Airway Obstruction	709	1%	718	<.01%	-1%
All Else*	6,662	12%	6,627	11%	-1%
Total Primary Impressions	57,857	100%	58,140	99%	

This table excludes Cancelled calls.

Age – Adolescents (15–26)

The most common primary impression for this age group was *Traumatic Injury* for CY 2014 and 2015. *Behavioral/Psychiatric Disorder* was the second most common primary impression.

There was a higher percentage in *Behavioral/Psychiatric Disorder* for persons 15–26 years old (14% in CY 2015 and 13% in 2016). Within California, 1 in 13 children suffers from a mental illness that limits participation in daily activities.⁹

Each individual count of *All Else* was less than 1% of the values returned. A complete list of the *Cause of Injury* for the category *All Else* can be found on page B-5 in Appendix B at the end of the report.

Primary Impression	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Traumatic Injury	26,386	22%	28,546	23%	1%
Behavioral/Psychiatric Disorder	16,929	14%	16,731	13%	-1%
Abdominal Pain/Problems	8,118	7%	9,408	7%	1%
Pain	7,519	6%	7,646	6%	0%
Altered Level of Consciousness	7,219	6%	7,622	6%	0%
Seizure	6,587	5%	7,208	6%	0%
Other	7,094	6%	6,314	5%	-1%
Poisoning/Drug Ingestion	5,941	5%	6,103	5%	0%
Syncope/Fainting	5,592	5%	5,773	5%	0%
Other Illness/Injury	4,176	3%	4,046	3%	0%
Respiratory Distress	3,100	3%	3,530	3%	0%
Chest Pain/Discomfort	2,133	2%	2,537	2%	0%
ETOH Abuse	2,341	2%	2,244	2%	0%
No Apparent Illness/Injury	2,091	2%	2,237	2%	0%
Nausea/Vomiting (Unknown Etiology)	1,665	1%	1,652	1%	0%
All Else*	14,134	12%	14,608	12%	0%
Total Primary Impressions	121,025	100%	126,205	100%	

This table excludes Cancelled calls.

⁹ Mental Health Care in California: Painting a Picture. (2013, July). Retrieved December, 2017, from <http://www.chcf.org/publications/2013/07/mental-health-california>

Age – Adults (27–44)

The most common primary impression for this age group was *Traumatic Injury* for CY 2015 and 2016. *Behavioral/Psychiatric Disorder* was the second most common primary impression.

Each individual count of *All Else* was less than 1% of the values returned. A complete list of the *Cause of Injury* for the category *All Else* can be found on page B-6 in Appendix B at the end of the report.

Primary Impression	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Traumatic Injury	33,845	19%	33,845	18%	-1%
Behavioral/Psychiatric Disorder	22,088	13%	23,282	12%	-1%
Abdominal Pain/Problems	14,848	9%	17,616	9%	1%
Altered Level of Consciousness	11,450	7%	12,595	7%	0%
Pain	10,274	6%	10,741	6%	0%
Chest Pain/Discomfort	8,398	5%	9,918	5%	0%
Seizure	8,617	5%	9,551	5%	0%
Other	10,534	6%	9,490	5%	-1%
Syncope/Fainting	7,709	4%	7,914	4%	0%
Poisoning/Drug Ingestion	6,417	4%	6,837	4%	0%
Respiratory Distress	5,233	3%	6,762	4%	1%
Other Illness/Injury	5,612	3%	5,559	3%	0%
ETOH Abuse	3,514	2%	3,579	2%	0%
Nausea/Vomiting (Unknown Etiology)	2,922	2%	3,012	2%	0%
Weakness	2,747	2%	3,034	2%	0%
All Else*	20,270	12%	26,744	14%	2%
Total Primary Impressions	174,478	100%	190,479	100%	

This table excludes Cancelled calls.

Age – Adults (45–63)

The most common primary impression for this age group was *Traumatic Injury* for CY 2015 and 2016. The second most common primary impression was *Chest Pain/Discomfort*.

According to the American Heart Association (AHA), heart disease, of which chest pain/discomfort is a symptom, increases with age for men after 45 years of age and for women after 55 years of age.

Each individual count of *All Else* was less than 1% of the values returned. A complete list of the *Cause of Injury* for the category *All Else* can be found on page B-7 in Appendix B at the end of the report.

Primary Impression	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Traumatic Injury	37,354	14%	37,354	13%	-1%
Chest Pain/Discomfort	23,195	8%	26,365	9%	1%
Altered Level of Consciousness	22,643	8%	23,947	8%	0%
Abdominal Pain/Problems	19,691	7%	23,693	8%	1%
Respiratory Distress	17,254	6%	21,191	7%	1%
Behavioral/Psychiatric Disorder	18,785	7%	18,785	6%	-1%
Syncope/Fainting	17,396	6%	17,849	6%	0%
Other	16,587	6%	16,924	6%	0%
Pain	15,351	6%	15,920	5%	-1%
Other Illness/Injury	9,210	3%	10,246	3%	0%
Seizure	7,659	3%	8,247	3%	0%
Weakness	7,847	3%	8,093	3%	0%
Poisoning/Drug Ingestion	6,612	2%	6,382	2%	0%
ETOH Abuse	6,020	2%	5,735	2%	0%
Diabetic Symptoms (Hypoglycemia)	4,145	2%	4,219	1%	-1%
All Else*	45,222	16%	49,816	17%	1%
Total Primary Impressions	274,971	100%	294,766	100%	

This table excludes Cancelled calls.

Age – Geriatrics (≥64)

The most common primary impression for this age group was *Traumatic Injury* for CY 2015 and 2016. The second most common primary impression was *Syncope/Fainting* and *Altered Level of Consciousness*.

Each individual count of *All Else* was less than 1% of the values returned. A complete list of the *Cause of Injury* for the category *All Else* can be found on page B-8 in Appendix B at the end of the report.

Primary Impression	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Traumatic Injury	55,845	13%	60,938	13%	0%
Syncope/Fainting	44,722	10%	44,668	10%	0%
Altered Level of Consciousness	41,428	10%	44,101	10%	0%
Respiratory Distress	38,702	9%	45,784	10%	1%
Chest Pain/Discomfort	26,806	6%	30,446	7%	1%
Other	34,078	8%	30,183	7%	-1%
Abdominal Pain/Problems	23,392	5%	26,613	6%	1%
Weakness	22,818	5%	24,250	5%	0%
Pain	19,603	5%	21,169	5%	0%
Other Illness/Injury	15,960	4%	19,735	4%	1%
Stroke/CVA	9,728	2%	10,751	2%	0%
Behavioral/Psychiatric Disorder	8,098	2%	8,937	2%	0%
No Apparent Illness/Injury	6,779	2%	7,406	2%	0%
Cardiac Rhythm Disturbance	7,000	2%	6,945	2%	0%
Diabetic Symptoms (Hypoglycemia)	5,310	1%	5,960	1%	0%
All Else*	69,476	16%	70,425	15%	-1%
Total Primary Impressions	429,745	100%	458,311	100%	

This table excludes Cancelled calls.

Procedures

There were an average of four procedures per patient in CY 2015 and 2016.

Each individual count of *All Else* was less than 1% of the values returned. A complete list of the *Procedures* for the category *All Else* can be found on page B-9 in Appendix B at the end of the report.

Procedures	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Venous Access*	321,992	18%	324,599	16%	-2%
Cardiac Monitor	223,392	13%	234,333	12%	-1%
Pulse Oximetry	209,041	12%	244,377	12%	0%
Blood Glucose Analysis	178,375	10%	191,707	10%	0%
Spinal Assessment - Deficits Noted	170,126	10%	176,410	9%	-1%
Pain Measurement	161,982	9%	243,424	12%	3%
12 Lead ECG-Obtain & Transmitted	140,911	8%	152,851	8%	0%
Other*	50,070	3%	91,271	5%	2%
Spinal Immobilization (Combined)	54,598	3%	47,048	2%	-1%
Airway (Combined)	42,767	2%	45,045	2%	0%
Assessment-Adult	37,425	2%	40,738	2%	0%
Wound Care (Combined)	20,042	1%	18,774	1%	0%
Temperature Measurement	12,670	1%	18,410	1%	0%
Restraints-Physical	12,315	1%	12,837	1%	0%
Splinting	12,279	1%	11,664	1%	0%
All Else	103,353	6%	121,409	6%	0%
Total Procedures	1,751,338	100%	1,974,897	100%	

*Not defined

This table excludes Cancelled calls.

Patient/Incident Disposition

The most common Incident/Patient Disposition was *Treated, Transported by EMS* in CY 2015 and 2016.

Patient Not Transported is of great significance to track, since these can be patients at high risk for a poor outcome. This category represents 10% in CY 2015 and 12% in 2016.

There were some dispositions with a null value for CY 2015 and 2016 (4,286 and 6,789, respectively). *Not Available* was very low for this data element (0.4%). However, this data element does not accept null values.

Note: *Cancelled* does not have a standard definition because there is no mandate to use the same data dictionary.

Incident/Patient Disposition	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Cancelled	209,049	13%	234,491	13%	0%
No Patient Found	26,230	2%	33,480	2%	0%
Treated, Transferred Care	158,934	10%	161,228	9%	-1%
Treated, Transported by EMS	805,415	49%	838,389	48%	-1%
Treated, Transported by EMS (ALS)	211,815	13%	232,783	13%	0%
Treated, Transported by EMS (BLS)	42,157	3%	44,487	3%	0%
Patient Not Transported*	142,021	9%	142,179	8%	-1%
All Else*	54,586	3%	68,427	4%	1%
Not Available	7,305	0.4%	6,631	0.4%	0%
Total EMS Calls	1,657,512	100%	1,762,095	100%	

*Patient Not Transported includes values: Fatality on Scene, No Treatment Required and Patient Refused Care

**All Else includes values of $\leq 1\%$: Standby; No Patient Contact; Ambulance Assist only, Treated and Released, Treated, Transported by Law Enforcement, Treated, Transported by Private Vehicle, and Unable to Locate Patient/Scene

Incident/Patient Disposition	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Cancelled	209,049	55%	234,491	56%	2%
No Patient Found	26,230	7%	33,514	8%	1%
Fatality on Scene	19,250	5%	17,184	4%	-1%
No Treatment Required	26,359	7%	33,520	8%	1%
Patient Refused Care	96,412	26%	101,241	24%	-2%
Total EMS Calls	377,300	100%	419,950	100%	

DEMOGRAPHICS

The purpose for including race and ethnicity information is to determine if there are populations that may under or over utilize 911 emergency services due to cultural, financial or other reasons. In this case, it may be hard to identify such populations because of the high number of “Not Available” codes. The high counts of *Not Available* or “nulls” limits the usefulness of demographic data.

Gender

Based on Census data, *Females* represent 50.3% of California’s population.

Table 6.1: All EMS Calls by Gender Calendar Years 2015 and 2016					
Gender	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Female	675,984	49%	716,014	49%	0%
Male	638,692	47%	679,970	46%	-1%
Not Available	56,135	4%	73,833	5%	1%
Total EMS Calls	1,370,811	100%	1,469,817	100%	

This table excludes Cancelled calls.

Table 6.2: 911 Calls by Gender Calendar Year 2015 and 2016					
Gender	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Female	561,323	49%	587,604	49%	0%
Male	525,761	46%	553,004	46%	0%
Not Available	48,660	4%	66,367	5%	1%
Total 911 Calls	1,135,744	100%	1,206,975	100%	

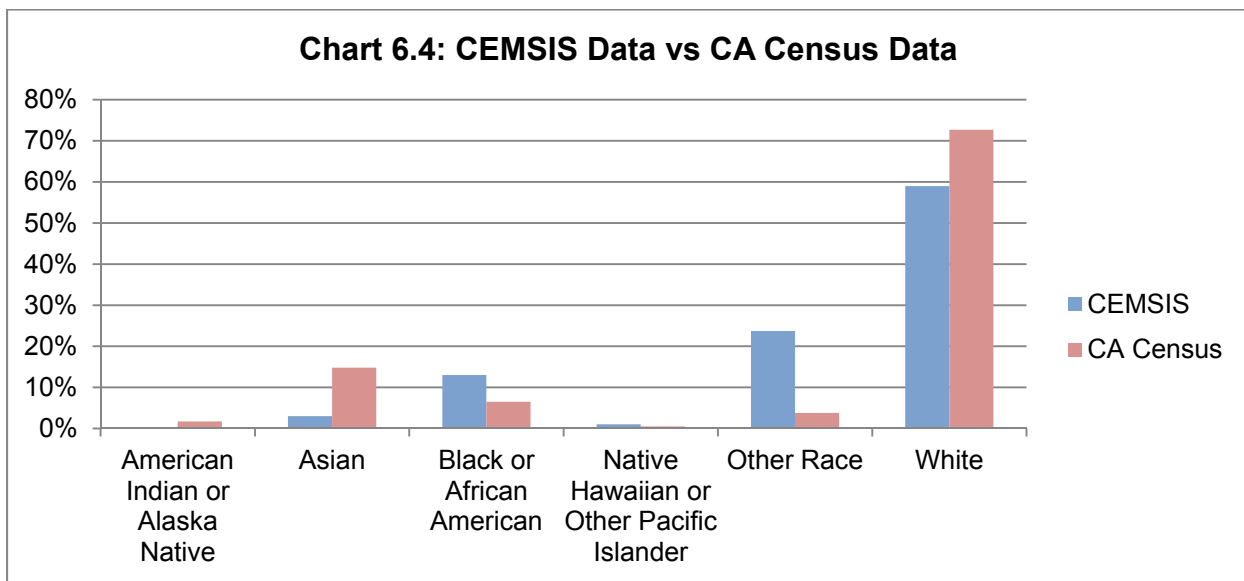
This table excludes Cancelled calls.

Race

Data on race are included to determine if there are populations that do not tend to call 911. This may reflect refugee or immigrant populations or other groups who may not use the EMS for a variety of reasons. This is included to help EMSA comply with the legislative mandate to provide data reflecting level of emergency medical services statewide.

Based on Census data, California’s population consists of a majority of *White* 72.7%, *Asian* 14.8%, *Black or African American* 6.5%, and *Native Hawaiian or Other Pacific Islander* .5%, *American Indian and Alaska Native* 1.7%, and *Other Race* 3.8%.

When compared, *Asian* is not as represented in the CEMSIS data compared to the state census. *Other Race* and *Black or African American* were both represented at a higher percentage than in the state census.



*CEMSIS Data was taken from a weighted average from CY 2014 and 2015.

Table 6.3: All EMS Calls by Race Calendar Year 2015 and 2016					
Race	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
American Indian or Alaska Native	2,653	0%	2,851	0%	0%
Asian	19,774	1%	25,165	2%	1%
Black or African American	80,826	6%	103,368	7%	1%
Native Hawaiian or Other Pacific Islander	4,027	0.3%	4,219	0.3%	0%
Other Race	144,007	11%	156,475	11%	0%
White	365,996	27%	402,894	28%	1%
Not Available	746,330	55%	768,673	53%	-2%
Total EMS Calls	1,363,613	100%	1,463,645	100%	

This table excludes Cancelled calls.

Table 6.5: 911 Calls by Race Calendar Years 2015 and 2016					
Race	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
American Indian or Alaska Native	2,154	0.2%	2,446	0.2%	0%
Asian	15,994	1%	20,607	2%	1%
Black or African American	71,329	6%	92,530	8%	2%
Native Hawaiian or Other Pacific Islander	3,363	0.3%	3,564	0.3%	0%
Other Race	122,731	11%	136,106	11%	0%
White	311,460	28%	348,353	29%	1%
Not Available	603,630	53%	598,338	50%	-3%
Total 911 Calls	1,130,661	100%	1,201,944	100%	

This table excludes Cancelled calls.

Ethnicity

Data on Ethnicity is included to determine if there are populations which do not tend to call 911. This may reflect refugee or immigrant populations or other groups who may not use the EMS for a variety of reasons. This is included to help EMSA comply with the legislative mandate to provide data reflecting the level of emergency medical services statewide.

Based on Census data, Hispanic or Latino represents 38.9% of California's population.

Ethnicity	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Hispanic or Latino	126,846	9%	133,635	9%	0%
Not Hispanic or Latino	417,697	31%	441,644	31%	0%
Other Race	16	<.01%	7	<.01%	0%
Not Available	817,121	60%	866,063	60%	0%
Total EMS Calls	1,361,680	100%	1,441,349	100%	

This table excludes Cancelled calls.

Ethnicity	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Hispanic or Latino	107,354	10%	114,448	10%	0%
Not Hispanic or Latino	351,985	31%	374,530	31%	0%
Other Race	16	<.01%	0	<.01%	0%
Not Available	669,536	59%	710,772	59%	0%
Total 911 Calls	1,128,891	100%	1,199,750	100%	

This table excludes Cancelled calls.

Note: Ethnicity is not collected in NEMSIS V3.

Patient Age

Age	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
≤14	75,934	5%	76,208	5%	0%
15-26	150,248	11%	156,735	11%	0%
27-44	221,130	16%	241,321	16%	0%
45-63	348,616	25%	372,920	25%	0%
≥64	545,592	39%	569,188	38%	-1%
Not Available	49,915	4%	67,661	5%	1%
Total EMS Calls	1,391,435	100%	1,484,033	100%	

* This table excludes Cancelled calls.

Primary Method of Payment

The Affordable Care Act (ACA) appears to be driving an increase in Medicaid (Medi-Cal). The ACA became law in 2014 so patients with *Medicaid* should increase in subsequent years, depending on federal policy and subsequent legislation.

The age range, 15–26 years old, facilitates analysis of the Affordable Care Act (ACA) data for persons who stay on their parent's healthcare, up to age 26.

Based on Census data, 8.3% (3,257,751 of 39,250,017) of California's population were uninsured. The majority of people living in California had some form of health insurance. The large percentage of *Not Available* makes it difficult to create a meaningful analysis.

Primary Method of Payment	CY 2015		CY 2016		Percent Change
	Count	Percent	Count	Percent	
Insurance	233,863	17%	272,073	19%	2%
Medicaid	98,364	7%	101,681	7%	0%
Medicare	139,933	10%	147,540	10%	0%
Not Billed (for any reason)	924	<.01%	983	<.01%	0%
Other Government	13,882	1%	16,036	1%	0%
Self Pay	101,206	7%	106,401	7%	0%
Workers Compensation	1,649	<.01%	1,584	<.01%	0%
Not Available	778,038	57%	822,683	56%	-1%
Total EMS Calls	1,367,859	100%	1,468,981	100%	

**This table excludes Cancelled calls.*

APPENDIX A

GLOSSARY OF SELECTED TERMS

(Source: NEMSIS, unless otherwise noted)

Advanced Life Support, Level 1 (ALS1) *related to CMS Service Level (E07_34)*

Advanced life support, Level 1 (ALS1) is the transportation by ground ambulance vehicle and the provision of medically necessary supplies and services including the provision of an ALS assessment or at least one ALS intervention. An advanced life support (ALS) assessment is an assessment performed by an ALS crew as part of an emergency response that was necessary because the patient's reported condition at the time of dispatch was such that only an ALS crew was qualified to perform the assessment. An ALS assessment does not necessarily result in a determination that the patient requires an ALS level of service. An ALS intervention is a procedure that in accordance with State and local laws is required to be done by an emergency medical technician-intermediate (EMT Intermediate) or EMT-Paramedic.

Advanced Life Support, Level 1 (ALS1) – Emergency *related to CMS Service Level (E07_34)*

When medically necessary, the provision of ALS1 services, as specified above, in the context of an emergency response. An emergency response is one that initiates an immediate response when the ambulance provider or supplier is called. An immediate response is one in which the ambulance provider/supplier begins as quickly as possible to take the steps necessary to respond to the call.

Advanced Life Support, Level 2 (ALS2) *related to CMS Service Level (E07_34)*

Advanced life support, level 2 (ALS2) is the transportation by ground ambulance vehicle and the provision of medically necessary supplies and services including (1) at least three separate administrations of one or more medications by intravenous push/bolus or by continuous infusion (excluding crystalloid fluids) or (2) ground ambulance transport, medically necessary supplies and services, and the provision of at least one of the ALS2 procedures listed below:

- a. manual defibrillation/cardioversion,
- b. endotracheal intubation,
- c. central venous line,
- d. cardiac pacing,
- e. chest decompression,
- f. surgical airway, or
- g. intraosseous line.

Age (E06_14)

The patient's age (either calculated from date of birth or best approximation)

Age Units (E06_15)

The units which the age is documented in (Hours, Days, Months, Years)

Basic Life Support (BLS) *related to CMS Service Level E07_34*

Basic life support (BLS) is transportation by ground ambulance vehicle and the provision of medically necessary supplies and services, including BLS ambulance services as defined by the State. The ambulance must be staffed by an emergency medical technician-basic (EMT-Basic), qualified in accordance with State and local laws. These laws may vary from State to State or within a State. For example, only in some jurisdictions is an EMT-Basic permitted to operate the limited equipment onboard the vehicle, assist more qualified personnel in performing assessments and interventions, and establish a peripheral intravenous (IV) line.

Basic Life Support (BLS) – Emergency- *related to CMS Service Level E07_34*

When medically necessary, the provision of BLS services, as specified above, in the context of an emergency response. An emergency response is one that initiates an immediate response at the time the ambulance provider or supplier is called. An immediate response is one in which the ambulance provider/supplier begins as quickly as possible to take the steps necessary to respond to the call.

CMS Service Level (E07_34)

The CMS service level for this EMS encounter.

Cause of Injury (E10_01)

The category of the reported/suspected external cause of the injury

Ethnicity (E06_13)

The patient's ethnicity as defined by the OMB (US Office of Management and Budget)

Fixed Wing (FW) Air Ambulance *related to CMS Service Level E07_34*

Fixed Wing air ambulance is the transportation by a fixed wing aircraft that is certified by the Federal Aviation Administration (FAA) as a fixed wing air ambulance and the provision of medically necessary services and supplies.

Gender (E06_11)

The patient's gender

Paramedic Intercept (PI) *related to CMS Service Level E07_34*

Paramedic Intercept services are ALS services provided by an entity that does not provide the ambulance transport. This type of service is most often provided for an emergency ambulance transport in which a local volunteer ambulance that can provide only basic life support (BLS) level of service is dispatched to transport a patient. If the patient needs ALS services such as EKG monitoring, chest decompression, or I.V. therapy, another entity dispatches a paramedic to meet the BLS ambulance at the scene or once the ambulance is on the way to the hospital. The ALS paramedics then provide services to the patient. This tiered approach to life saving is cost effective in many areas because most volunteer ambulances do not charge for their services and one paramedic service can cover many communities.

Primary Method of Payment (E07_01)

The primary method of payment or type of insurance associated with this EMS encounter.

Providers Primary Impression (E09_15)

The EMS personnel's impression of the patient's primary problem or most significant condition which led to the management given to the patient (treatments, medications, or procedures).

Rotary Wing (RW) Air Ambulance *related to CMS Service Level E07_34*

Rotor Wing air ambulance is the transportation by a helicopter that is certified by the FAA as a rotary wing ambulance, including the provision of medically necessary services and supplies.

Specialty Care Transport (SCT) *related to CMS Service Level E07_34*

Specialty care transport (SCT) is the inter-facility transportation of a critically injured or ill beneficiary by a ground ambulance vehicle, including the provision of medically necessary supplies and services, at a level of service beyond the scope of the EMT-Paramedic. SCT is necessary when a beneficiary's condition requires ongoing care that must be furnished by one or more health professionals in an appropriate specialty area, for example, emergency or critical care nursing, emergency medicine, respiratory care, cardiovascular care, or a paramedic with additional training. The EMT Paramedic level of care is set by each State. Care above that level that is medically necessary and that is furnished at a level of service above the EMT Paramedic level of care is considered SCT.

Type of Service Requested (E02_04)

The type of service or category of service requested of the EMS service responding for this specific EMS incident.

- **911 Response (Scene)*** - Emergent or immediate response to an incident location, regardless of method of notification (for example, 911, direct dial, walking, or flagging down)
- **Intercept*** – When one EMS Provider meets a transporting EMS unit with the intent of receiving a patient or providing a higher level of care Inter-facility Transfer – Transfer of a patient from one hospital to another hospital
- **Medical Transport*** – Transports that are not between hospitals or that do not require an immediate response
- **Mutual Aid*** – Request from another ambulance service to provide emergent or immediate response to an incident location
- **Standby*** – Initial request for service was not tied to a patient but to a situation where a person may become ill or injured

**Source: NASEMSO Data Managers Council National Element and Value Definition Project*

Type of Turn-around Delay (E02_10)

The turn-around delays, if any, associated with the EMS unit associated with the patient encounter.

APPENDIX B

LIST OF CAUSE OF INJURY (NON-TRAFFIC) FOR “ALL ELSE” CATEGORY

TABLES 4.1 to 4.10

Aircraft Related Accident	Lightning
Caught in/between Objects	Machinery Accidents
Chemical Poisoning	Mechanical Suffocation
Child Battering	Neglect/Malnutrition
Drowning	Non-Motorized Vehicle Accident (E848.0)
Drug Poisoning	Overexertion
Electrocution (Non-Lightning)	Pedestrian Traffic Accident
Excessive Cold	Radiation Exposure
Excessive Heat	Sexual Assault
Explosion	Smoke Inhalation
Fire and Flames	Snowmobile Accident
Firearm Injury (Accidental)	Stabbing/Cutting Accidental (E986.0)
Firearm Self Inflicted	Struck by or Against
Foreign body entering eye/orifice	Unarmed Fight/Brawl
Hot Object/Substance	Venomous Stings (Plants, Animals)
Housing/Dangerous Condition	

LIST OF PRIMARY IMPRESSIONS FOR “ALL ELSE” CATEGORY

TABLE 5.1: Top 15 Most Common Primary Impressions

Abdominal Aortic Aneurysm	Hypovolemia/Shock
Airway Obstruction	Inhalation Injury (Toxic Gas)
Allergic Reaction	Migraine
Asthma	Nausea/Vomiting (Unknown Etiology)
Back Pain (Non-Traumatic)	OB/Delivery
Bowel Obstruction	Obvious Death
Cancer	Other Abdominal/GI Problem
Cardiac Arrest	Other Cardiovascular Problem
Cardiac Rhythm Disturbance	Other CNS Problem
CHF (Congestive Heart Failure)	Other Endocrine/Metabolic Problem
COPD (Emphysema/Chronic Bronchitis)	Other GU Problems
Dehydration	Other OB/Gyn
Diabetic Hyperglycemia	Patient Assist Only
Diarrhea	Pregnancy/OB Delivery
Electrocution	Respiratory Arrest
Epistaxis (Non-Traumatic)	Sepsis
ETOH Abuse	Sexual Assault/Rape
Fever	Smoke Inhalation
G.I. Bleed	Stings/Venomous Bites
General Malaise	Stroke/CVA
Headache	Substance/Drug Abuse
Heat Exhaustion/Stroke	TIA (Transient Ischemic Attack)
Hypertension	Toxic Exposure
Hyperthermia	Unconscious
Hypotension	Unknown Problem
Hypothermia	Vaginal Hemorrhage

TABLE 5.2: Primary Impressions that may be associated with Stroke/STEMI

Abdominal Aortic Aneurysm	No Apparent Illness/Injury
Abdominal Pain/Problems	OB/Delivery
Airway Obstruction	Obvious Death
Allergic Reaction	Other
Altered Level of Consciousness	Other Abdominal/GI Problem
Asthma	Other Cardiovascular Problem
Back Pain (Non-Traumatic)	Other CNS Problem
Behavioral/Psychiatric Disorder	Other Endocrine/Metabolic Problem
Bowel Obstruction	Other GU Problems
Cancer	Other Illness/Injury
COPD (Emphysema/Chronic Bronchitis)	Other OB/Gyn
Dehydration	Pain
Diabetic Hyperglycemia	Patient Assist Only
Diabetic Symptoms (Hypoglycemia)	Poisoning/Drug Ingestion
Diarrhea	Pregnancy/OB Delivery
Electrocution	Respiratory Arrest
Epistaxis (Non-Traumatic)	Respiratory Distress
ETOH Abuse	Seizure
Fever	Sepsis
G.I. Bleed	Sexual Assault/Rape
General Malaise	Smoke Inhalation
Headache	Stings/Venomous Bites
Heat Exhaustion/Stroke	Substance/Drug Abuse
Hypertension	Syncope/Fainting
Hyperthermia	Toxic Exposure
Hypotension	Traumatic Injury
Hypothermia	Unconscious
Hypovolemia/Shock	Unknown Problem
Inhalation Injury (Toxic Gas)	Vaginal Hemorrhage
Migraine	Weakness
Nausea/Vomiting (Unknown Etiology)	

TABLE 5.3: Top 15 Most Primary Impression - Pediatrics ≤14 years old

Abdominal Aortic Aneurysm	Inhalation Injury (Toxic Gas)
Airway Obstruction	Migraine
Asthma	Nausea/Vomiting (Unknown Etiology)
Back Pain (Non-Traumatic)	OB/Delivery
Bowel Obstruction	Obvious Death
Cancer	Other Abdominal/GI Problem
Cardiac Arrest	Other Cardiovascular Problem
Cardiac Rhythm Disturbance	Other CNS Problem
Chest Pain/Discomfort	Other Endocrine/Metabolic Problem
CHF (Congestive Heart Failure)	Other GU Problems
COPD (Emphysema/Chronic Bronchitis)	Other OB/Gyn
Dehydration	Patient Assist Only
Diabetic Hyperglycemia	Pregnancy/OB Delivery
Diabetic Symptoms (Hypoglycemia)	Respiratory Arrest
Diarrhea	Sepsis
Electrocution	Sexual Assault/Rape
Epistaxis (Non-Traumatic)	Smoke Inhalation
ETOH Abuse	Stings/Venomous Bites
G.I. Bleed	Stroke/CVA
General Malaise	Substance/Drug Abuse
Headache	TIA (Transient Ischemic Attack)
Heat Exhaustion/Stroke	Toxic Exposure
Hypertension	Unconscious
Hyperthermia	Unknown Problem
Hypotension	Vaginal Hemorrhage
Hypothermia	Weakness
Hypovolemia/Shock	

TABLE 5.4: Top 15 Most Common Primary Impressions - Adolescents 15–26 Years Old

Abdominal Aortic Aneurysm	Inhalation Injury (Toxic Gas)
Airway Obstruction	Migraine
Allergic Reaction	OB/Delivery
Asthma	Obvious Death
Back Pain (Non-Traumatic)	Other Abdominal/GI Problem
Bowel Obstruction	Other Cardiovascular Problem
Cancer	Other CNS Problem
Cardiac Arrest	Other Endocrine/Metabolic Problem
Cardiac Rhythm Disturbance	Other GU Problems
CHF (Congestive Heart Failure)	Other OB/Gyn
COPD (Emphysema/Chronic Bronchitis)	Patient Assist Only
Dehydration	Pregnancy/OB Delivery
Diabetic Hyperglycemia	Respiratory Arrest
Diabetic Symptoms (Hypoglycemia)	Sepsis
Diarrhea	Sexual Assault/Rape
Electrocution	Smoke Inhalation
Epistaxis (Non-Traumatic)	Stings/Venomous Bites
Fever	Stroke/CVA
G.I. Bleed	Substance/Drug Abuse
General Malaise	Syncope/Fainting
Headache	TIA (Transient Ischemic Attack)
Heat Exhaustion/Stroke	Toxic Exposure
Hypertension	Unconscious
Hyperthermia	Unknown Problem
Hypotension	Vaginal Hemorrhage
Hypothermia	Weakness
Hypovolemia/Shock	

TABLE 5.5: Top 15 Most Common Primary Impressions - Adult 27–44 Years Old

Abdominal Aortic Aneurysm	Hypovolemia/Shock
Airway Obstruction	Inhalation Injury (Toxic Gas)
Allergic Reaction	Migraine
Asthma	No Apparent Illness/Injury
Back Pain (Non-Traumatic)	OB/Delivery
Bowel Obstruction	Obvious Death
Cancer	Other Abdominal/GI Problem
Cardiac Arrest	Other Cardiovascular Problem
Cardiac Rhythm Disturbance	Other CNS Problem
CHF (Congestive Heart Failure)	Other Endocrine/Metabolic Problem
COPD (Emphysema/Chronic Bronchitis)	Other GU Problems
Dehydration	Other OB/Gyn
Diabetic Hyperglycemia	Patient Assist Only
Diabetic Symptoms (Hypoglycemia)	Pregnancy/OB Delivery
Diarrhea	Respiratory Arrest
Electrocution	Sepsis
Epistaxis (Non-Traumatic)	Sexual Assault/Rape
Fever	Smoke Inhalation
G.I. Bleed	Stings/Venomous Bites
General Malaise	Stroke/CVA
Headache	Substance/Drug Abuse
Heat Exhaustion/Stroke	TIA (Transient Ischemic Attack)
Hypertension	Toxic Exposure
Hyperthermia	Unconscious
Hypotension	Unknown Problem
Hypothermia	Vaginal Hemorrhage

TABLE 5.6: Top 15 Most Common Primary Impressions - Adults 45–63 Years Old

Abdominal Aortic Aneurysm	Inhalation Injury (Toxic Gas)
Airway Obstruction	Migraine
Allergic Reaction	Nausea/Vomiting (Unknown Etiology)
Asthma	No Apparent Illness/Injury
Back Pain (Non-Traumatic)	OB/Delivery
Bowel Obstruction	Obvious Death
Cancer	Other Abdominal/GI Problem
Cardiac Arrest	Other Cardiovascular Problem
Cardiac Rhythm Disturbance	Other CNS Problem
CHF (Congestive Heart Failure)	Other Endocrine/Metabolic Problem
COPD (Emphysema/Chronic Bronchitis)	Other GU Problems
Dehydration	Other OB/Gyn
Diabetic Hyperglycemia	Patient Assist Only
Diarrhea	Pregnancy/OB Delivery
Electrocution	Respiratory Arrest
Epistaxis (Non-Traumatic)	Sepsis
Fever	Sexual Assault/Rape
G.I. Bleed	Smoke Inhalation
General Malaise	Stings/Venomous Bites
Headache	Stroke/CVA
Heat Exhaustion/Stroke	Substance/Drug Abuse
Hypertension	TIA (Transient Ischemic Attack)
Hyperthermia	Toxic Exposure
Hypotension	Unconscious
Hypothermia	Unknown Problem
Hypovolemia/Shock	Vaginal Hemorrhage

TABLE 5.7: Top 15 Most Common Primary Impression - Geriatrics ≥64 Years Old

Abdominal Aortic Aneurysm	Inhalation Injury (Toxic Gas)
Airway Obstruction	Migraine
Allergic Reaction	Nausea/Vomiting (Unknown Etiology)
Asthma	OB/Delivery
Back Pain (Non-Traumatic)	Obvious Death
Bowel Obstruction	Other Abdominal/GI Problem
Cancer	Other Cardiovascular Problem
Cardiac Arrest	Other CNS Problem
CHF (Congestive Heart Failure)	Other Endocrine/Metabolic Problem
COPD (Emphysema/Chronic Bronchitis)	Other GU Problems
Dehydration	Other OB/Gyn
Diabetic Hyperglycemia	Patient Assist Only
Diarrhea	Poisoning/Drug Ingestion
Electrocution	Pregnancy/OB Delivery
Epistaxis (Non-Traumatic)	Respiratory Arrest
ETOH Abuse	Seizure
Fever	Sepsis
G.I. Bleed	Sexual Assault/Rape
General Malaise	Smoke Inhalation
Headache	Stings/Venomous Bites
Heat Exhaustion/Stroke	Substance/Drug Abuse
Hypertension	TIA (Transient Ischemic Attack)
Hyperthermia	Toxic Exposure
Hypotension	Unconscious
Hypothermia	Unknown Problem
Hypovolemia/Shock	Vaginal Hemorrhage

LIST OF PROCEDURES USED FOR “ALL ELSE” CATEGORY**TABLE I: Top 15 Procedures Used**

12 Lead ECG-Transmitted
Activation-Advanced Hazmat Specialty Service/Response Team
Activation-Other Specialty Service/Response Team
Activation-Rescue Specialty Service/Response Team
Activation-Tactical or SWAT Specialty Service/Response Team
Airway – Manual
Airway-Bagged (via BVMask)
Airway-Bagged (via tube)
Airway-BiPAP
Airway-Bougie-Assisted Intubation
Airway-Change Tracheostomy Tube
Airway-Cleared, Opened, or Heimlich
Airway-Combitube
Airway-CPAP
Airway-Direct Laryngoscopy
Airway-ECO2 Monitoring
Airway-Endotracheal Intubation
Airway-Endotracheal Tube Existing/Monitoring
Airway-EOA/EGTA
Airway-Extubation
Airway-Foreign Body Removal
Airway-Gastric Tube Inserted Nasally
Airway-Gastric Tube Inserted Orally
Airway-Impedance Threshold Device
Airway-Intubation Confirm Colorimetric ETCO2
Airway-Intubation Confirm Esophageal Detector Device/Bulb (EDD)
Airway-Intubation of Existing Tracheostomy Stoma
Airway-King LT Blind Insertion Airway Device
Airway-Laryngeal Mask
Airway-Nasopharyngeal
Airway-Nasotracheal Intubation
Airway-Nebulizer Treatment
Airway-Needle Cricothyrotomy
Airway-Oropharyngeal
Airway-PEEP
Airway-Rapid Sequence Intubation
Airway-Respirator Operation
Airway-Sellick Maneuver
Airway-Suctioning
Airway-Surgical Cricothyrotomy
Airway-Ventilator
Airway-Ventilator Setting Adjustment
Airway-Ventilator with PEEP

Airway-Verification
Airway-Video Laryngoscopy
Arterial Access - Femoral Line
Arterial Access/Blood Draw
Arterial Line Maintenance
Assessment-Pediatric
Back Blows
Backboard-Short
Bleeding/Hemorrhage Control
Blood Pressure
Burn Care
Cardiac Arrest
Cardiac Pacing-External
Cardiac Pacing-Transvenous
Cardioversion (Synchronized)
Chest Decompression
Chest Tube Placement
Childbirth
CNS Catheter-Epidural Maintenance
CNS Catheter-Intraventricular
Contact Medical Control
CPR - Citizen (trained)
CPR - Citizen (untrained/coached)
CPR by Other External Automated Device
CPR-AutoPulse Device
CPR-Hold
CPR-Mechanical Thumper Type Device
CPR-Precordial Thump Only
CPR-Start Compressions and Ventilations
CPR-Start Compressions only without Ventilation
CPR-Start Rescue Breathing without Compressions
CPR-Stop
Decontamination
Defibrillation (Semi-Automatic)
Defibrillation-Automated (AED)
Defibrillation-Manual
Defibrillation-Placement for Monitoring/Analysis
Escharotomy
Esophageal/Tracheal Airway
Extrication
Fluid Challenge - 0.9% NS
Injections-SQ/IM
INO - Intubation/Other
Intra-Aortic Balloon Pump
Intraosseous Infusion
Isolation Procedures
Last Seen Normal

Left Ventricular Assist Device Maintenance
ME - Medication Administered
Needle Thoracostomy
None
Orthostatic Blood Pressure Measurement
Patient Cooling (Cold Pack, etc.)
Patient Cooling-Post Resuscitation
Patient Loaded
Patient Loaded-Helicopter Hot-Load
Patient Monitoring of Pre-existing Devices, Equipment, or Ongoing Medications
Patient Off-Loaded
Patient Off-Loaded Helicopter Hot Off-Load
Patient Warming (Hot Pack, etc.)
Pedimate / Safeguard
Pericardiocentesis
Pharyngeal Tracheal Lumen (PtL)
Psych Assist
Rescue
Restraints-Pharmacological
ROSC
Snakebite Treatment
Specialty Center Activation-Adult Trauma
Specialty Center Activation-Cardiac Arrest
Specialty Center Activation-Pediatric Trauma
Specialty Center Activation-STEMI
Specialty Center Activation-Stroke
Spinal Assessment - No Deficits Noted
Spinal Immobilization – Clear
Spinal Immobilization - K.E.D.
Spinal Immobilization - Long Back Board
Spinal Immobilization - Rigid Cervical Collar
Spinal Immobilization - Soft Cervical Collar
Splinting
Splinting-Traction
Stretcher
Stroke Scale
Thrombolytic Screen
Transferred Patient Care
Umbilical Venous Catheter
Urinary Catheterization
Vagal Maneuver-Carotid Massage
Valsalva Maneuver
Venous Access-Blood Draw
Venous Access-Central Line Maintenance
Venous Access-Discontinue
Venous Access-Existing Catheter/IV Monitoring
Venous Access-External Jugular Line

Venous Access-Femoral Line
Venous Access-Internal Jugular Line
Venous Access-Intraosseous Adult
Venous Access-Intraosseous Pediatric
Venous Access-Saline Lock
Venous Access-Subclavian Line
Venous Access-Swan Ganz Maintain
Wound Care - Burn Care
Wound Care - Pressure Dressing
Wound Care-Hemostatic Agent
Wound Care-Irrigation
Wound Care-Taser Barb Removal
Wound Care-Tourniquet
Zofran - Post Assessment
Zofran - Pre Assessment

APPENDIX C

POPULATION BY LEMSA

Local EMS Agency Counties	Population
Alameda	1,647,704
Central California (Madera, Fresno, Kings, Tulare)	1,744,834
Contra Costa	1,135,127
Coastal Valleys (Mendocino, Sonoma)	590,698
El Dorado	185,625
Imperial	180,883
Inland Counties (Mono, Inyo, San Bernardino)	2,172,221
Kern	884,788
Los Angeles	10,137,915
Marin	260,651
Merced	268,672
Monterey	435,232
Mountain Valley (Alpine, Amador, Calaveras, Stanislaus, Mariposa)	642,595
Napa	142,166
North Coast (Del Norte, Humboldt, Lake)	228,302
Northern California (Modoc, Lassen, Plumas, Sierra, Glenn, Trinity)	102,106
Orange	3,172,532
Riverside	2,387,741
Sacramento	1,514,460
San Benito	59,414
San Diego	3,317,749
San Francisco	870,887
San Joaquin	733,709
San Luis Obispo	282,887
San Mateo	764,797
Santa Barbara	446,170
Santa Clara	1,919,402
Santa Cruz	274,673
Sierra-Sacramento Valley (Siskiyou, Shasta, Tehama, Butte, Colusa, Sutter, Yuba, Nevada, Placer)	1,186,526
Solano	440,207
Tuolumne	53,804
Ventura	849,738
Yolo	215,802
Total California Population:	39,250,017

Note: Census Data, www.census.gov

POPULATION BY REGION

Regions	Local EMS Agencies	Population
Northern California:	Coastal Valleys, Northern California, North Coast, Sierra-Sacramento Valley, Sacramento, El Dorado, San Joaquin, Napa, Yolo	4,899,394
Bay Area:	Marin, Solano, Contra Costa, Alameda, Santa Clara, San Mateo, Santa Cruz, San Francisco, San Benito, Monterey	7,808,094
Central California:	Central California, Mountain Valley, Tuolumne, Merced, Kern	3,594,693
South Eastern California:	Inland Counties, Riverside, San Diego, Imperial	8,058,594
Southern:	San Luis Obispo, Santa Barbara, Ventura, Los Angeles, Orange	14,889,242
	Total:	39,250,017

Note: Census Data, www.census.gov