California EMS System
Core Quality Measures Report
Calendar Year 2021

Emergency Medical Services Authority
California Health and Human Services Agency
November 2022
Elizabeth Basnett, Acting Director

ELIZABETH BASNETT
ACTING DIRECTOR

BRIAN AIELLO
CHIEF DEPUTY DIRECTOR

TOM MᶜGINNIS
CHIEF, EMS SYSTEMS DIVISION

ACKNOWLEDGEMENTS

If you have any questions or comments about this report, please contact:
Michelle McEuen
Quality Improvement Coordinator
(916) 903-9624
Michelle.McEuen@emsa.ca.gov

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BACKGROUND

Data and quality improvement (QI) leaders from local EMS agencies (LEMSAs), LEMSA medical directors, hospitals, prehospital EMS providers, and the California Emergency Medical Services Authority (EMSA) joined together to develop the California EMS System Core Quality Measures Project. The project's measures focus on evidence-based processes and treatments for a condition or illness. Each year, the task force updates these measures according to data system changes and operational considerations. Core quality measures are intended to help EMS systems improve the quality of patient care by focusing measurement specifications on key processes and results of care. The *California EMS Systems Core Quality Measures Instruction Manual (EMSA #SYS 100-10)* defines the specific data elements and provides instructions for reporting each performance measure. The EMS system quality improvement regulations (CCR, Title 22, Division 9, Chapter 12) define the reporting requirements for local EMS agencies, EMS service providers, and base hospitals in their role as part of the EMS system. These requirements include, but are not limited to, the implementation of an EMS Quality Improvement Program and the use of defined indicators to assess the local EMS system as found in EMSA #SYS 100-10.

For the 2021 calendar year, EMSA requested that each LEMSA use the National Emergency Medical Services Information System (NEMSIS) Version 3.4.0 standard to report data for six performance measures . The six measures are:
- TRA-2: Transport of Trauma Patients to a Trauma Center
- HYP-1: Treatment Administered for Hypoglycemia
- STR-1: Prehospital Screening for Suspected Stroke Patients
- PED-3: Respiratory Assessment for Pediatric Patients
- RST-4: 911 Requests for Services That Included a Lights and/or Sirens Response
- RST-5: 911 Requests for Services That Included a Lights and/or Sirens Transport

LEMSA participation in the California Emergency Medical Services Information System (CEMSIS) is required consistent with HSC 1797.102. The LEMSAs execute their core quality measure reports from their local database and submit aggregate results to EMSA. Since each of the 33 LEMSAs maintains their own EMS database and each is dependent on their EMS provider agencies to submit data, there is variability in their capability to report core quality measures and some intrinsic variation in the results exists.

METHODOLOGY

For the 2021 calendar year, EMSA requested that all LEMSAs use the specifications in the *California EMS Systems Core Quality Measures Instruction Manual (EMSA #SYS 100-10)* when executing their data reports and to refrain from using any custom elements or fields specific to their local jurisdiction or EMS providers. The specifications were drafted by a work group consisting of EMSA and LEMSA representatives. The revised specifications were finalized in February 2022. These specifications were incorporated into the most current version of the Core Quality Measures Instruction Manual. Adherence to the consensus specifications is critical to maintaining the integrity of this statewide assessment. LEMSA questions and comments regarding the specifications are an essential part of the Core Quality Measure improvement process. Universal fidelity to the consensus specifications is key to meaningfully comparing the reported results throughout the State of California.

LIMITATIONS AND CHALLENGES

Quality measure analysis depends on the development of compatible data systems and standardized data collection regimes at various levels of the EMS system. Commonly understood data measures are essential to quality improvement efforts and to data driven medical decision making. The demonstrated commitment of all of California's EMS decision makers to meaningful quality measures promises to provide our State's citizens with the reliable medical quality assurance that they have come to expect from mature healthcare sectors. Ongoing efforts to improve the quality and validity between CEMSIS and LEMSA data will increase the reliability and usability of the measure results. Limitations and challenges to reporting the measures are enumerated below.

Non-Responses to Core Quality Measures Request

All 33 LEMSAs in California were contacted to provide core quality measure information to EMSA by a set date. For the 2021 reporting year, 32 of the 33 LEMSAs provided a formal response to EMSA's request for information. One LEMSA did not provide a response to the request. Of the 33 LEMSAs, 32 reported the data for at least one measure. Most participating LEMSAs (29 of 32) reported data for 6 of the 6 measures.

Partial System Representation

Only a portion of the actual EMS business conducted in California is represented in this report; the values reported by the LEMSAs do not represent 100% of the providers in the State. Some LEMSAs reported that not all providers in their region were represented in their reporting for various reasons, or the providers were not using the proper data elements or values specified in the 2021 Core Quality Measures Instruction Manual (#SYS 100-10).

TABLES AND CHARTS GENERATED FROM CORE QUALITY MEASURES REPORTS

LEMSAs Reporting Data for Core Quality Measures 2009-2021
The table shows which LEMSAs submitted data for years 2009-2021.
For the 2021 reporting year, 32 LEMSAs reported information for at least one measure. If a LEMSA submitted a value for any of the measures found in the California EMS System Core Quality Measures Instruction Manual (EMSA #SYS 100-10), the cell associated with that data year is populated with a check mark "✓" and shaded light blue. For LEMSAs that did not submit any core quality measure data to EMSA, the cell for that corresponding year appears blank.

LEMSA Participation in the 2021 Core Quality Measures Report
The map of California shows which LEMSAs (single county and multi-county EMS agencies) submitted data for 2021. These regions are shaded light yellow. LEMSA participation in the California Core Quality Measures Report increased by 21% from the 2020 to 2021 reporting calendar year. 97% (32 of 33) of LEMSAs participated in the 2021 Core Quality Measures Report by providing data for at least one measure. 91% (29 of 32) of participating LEMSAs reported data for all measures (6 of 6) requested.

2021 Core Quality Measures Aggregate Values for California
The aggregate values table includes the total number of LEMSAs that reported a value for each measure (response count), the percentage of LEMSAs that reported a value for each measure (response rate), the aggregate numerator total (subpopulation) of all responses, the aggregate denominator total (population) of all responses, and the mean (average) and median reported value for each measure.

2021 Core Quality Measures Results – Charts and Tables
This report includes the LEMSA responses to the measures as they were reported to EMSA. Each measure includes a column chart based on the reported values provided by the LEMSAs and the mean and median values for all submissions. Additionally, there are two tables provided for each measure. The first table includes all of the reported values for the measure, and the second table includes the LEMSA response count, response rate, numerator, denominator, and the mean and median values for all responses. The charts and tables are populated directly from the values provided by the LEMSAs. The blue text box includes a brief evaluation on the measure and responses from LEMSAs. A link to the corresponding measure specifications is also provided for reference.

Appendix: Responses from LEMSAs for the 2021 Core Quality Measures Report

The appendix contains tables with the information provided by each LEMSA for the 2021 Core Quality Measures Report. All notes and feedback provided from the LEMSAs will be considered by EMSA for the 2022 reporting calendar year.

LEMSAs REPORTING DATA FOR CORE QUALITY MEASURES 2009-2021

Local EMS Agency	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Alameda County EMS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Central California EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Coastal Valleys EMS				✓	✓	✓	✓	✓	✓				✓
Contra Costa County EMS		✓	✓	✓	✓	✓	✓	✓	✓			✓	✓
El Dorado County EMS				✓	✓	✓					✓		✓
Imperial County EMS													✓
Inland Counties EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kern County EMS		✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Los Angeles County EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Marin County EMS		✓	✓		✓	✓	✓	✓	✓		✓	✓	✓
Merced County EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Monterey County EMS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mountain-Valley EMS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Napa County EMS				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
North Coast EMS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Northern California EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Orange County EMS					✓	✓	✓	✓	✓		✓		
Riverside County EMS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Sacramento County EMS		✓	✓	✓	✓	✓			✓		✓	✓	✓
San Benito County EMS					✓	✓	✓	✓	✓		✓	✓	✓
San Diego County EMS		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
San Francisco EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
San Joaquin County EMS				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
San Luis Obispo County EMS		✓	✓		✓	✓	✓	✓	✓				✓
San Mateo County EMS		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
Santa Barbara County EMS	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓
Santa Clara County EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Santa Cruz County EMS	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Sierra-Sacramento Valley EMS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Solano County EMS				✓	✓	✓					✓		✓
Tuolumne County EMS		✓	✓	✓		✓	✓		✓			✓	✓
Ventura County EMS		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Yolo County EMS					✓	✓	✓	✓	✓	✓	✓	✓	✓
TOTAL PARTICIPANTS:	10	24	24	23	32	32	29	28	30	20	26	25	32

LEMSA participation in the California Core Quality Measures Report increased by **21%** from the 2020 to 2021 reporting calendar year.

97% (32 of 33) of LEMSAs in California participated in the 2021 Core Quality Measures Report by providing data for at least one measure.

91% (29 of 32) of participating LEMSAs reported data for 6 of the 6 measures.

Single County and Multi-County LEMSAs Reporting Data for Core Quality Measures Calendar Year 2021

2021 CORE QUALITY MEASURES RESULTS

Considerations for the information presented in the following tables and charts:

- Non-responding LEMSA(s) did not indicate why they were unable to report information on the measures for 2021.
- Multiple factors impact the validity and analysis of these retrospective data, including but not limited to incomplete documentation, documentation not reflective of services provided prior to ambulance arrival, inability to collect hospital outcome data, inconsistent data dictionary definitions between local jurisdictions, LEMSA policy not aligning with measure specifications causing a misrepresentation of patient volume and/or EMS performance, and geographic resource disparities.
- These retrospective data have not been validated. These limitations caution against comparison between jurisdictions and limit the reliability of the aggregate values.
- Adjustments to the measures will be made for the 2022 reporting year to provide clarification on the intent of the measures and to report EMS performance in the field more accurately.

2021 CORE QUALITY MEASURES AGGREGATE VALUES FOR CALIFORNIA

Measure ID	TRA-2	HYP-1	STR-1	PED-3	RST-4	RST-5
LEMSA Response Count*	30	32	31	32	30	31
Response Rate (n=33)	91%	97%	94%	97%	91%	94%
Numerator Total	33,151	25,006	49,362	10,230	2,487,574	402,389
Denominator Total	44,820	35,663	54,868	10,814	3,260,399	2,171,131
Mean (Average)	68%	75%	86%	89%	76%	10%
Median	74%	77%	91%	95%	82%	8%

*LEMSA Response Count is defined as the number of LEMSAs that submitted a reported value for a measure.
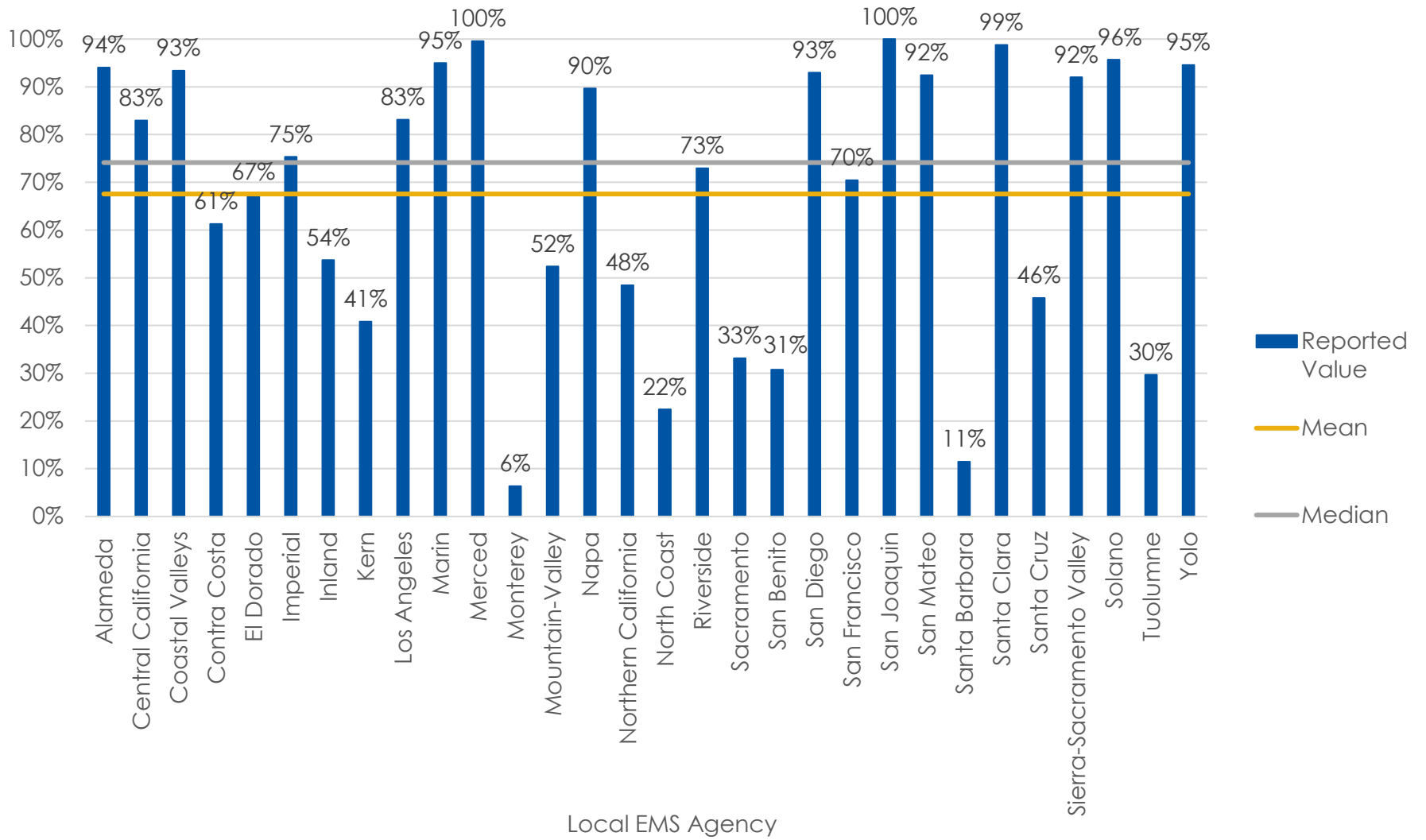
TRA-2 Description: Percentage of trauma patients meeting CDC Step 1 or 2 or 3 criteria that were transported to a trauma center originating from a 911 response.

LEMSA	Numerator	Denominator	Reported Value
Alameda County	2825	3004	94%
Central California	1701	2051	83%
Coastal Valleys	381	408	93%
Contra Costa County	1838	2999	61%
El Dorado County	137	203	67%
Imperial County	55	73	75%
Inland Counties	2093	3898	54%
Kern County	462	1132	41%
Los Angeles County	9302	11190	83%
Marin County	247	260	95%
Merced County	227	228	100%
Monterey County	11	173	6%
Mountain-Valley	77	147	52%
Napa County	365	407	90%
Northern California	46	95	48%
North Coast	48	214	22%
Riverside County	2013	2761	73%
Sacramento County	918	2771	33%
San Benito County	175	569	31%
San Diego County	1457	1567	93%
San Francisco	2199	3123	70%
San Joaquin County	89	89	100%
San Mateo County	623	674	92%
Santa Barbara County	57	497	11%
Santa Clara County	2154	2181	99%
Santa Cruz County	124	271	46%
Sierra-Sacramento Valley	2360	2565	92%
Solano County	642	671	96%
Tuolumne County	19	64	30%
Yolo County	506	535	95%

Not Reporting: Orange County, San Luis Obispo County, Ventura County

Response Count	30
Response Rate (n=33)	91%
Numerator Total	33,151
Denominator Total	44,820
Mean	68%
Median	74%

Of the 30 LEMSAs reporting TRA-2 data for 2021, the mean (average) value of the data set was 68% and the median value was 74%.

10 LEMSAs self-reported documentation issues, primarily with the collection or mapping of NEMSIS data element eDisposition.23 (Hospital Capability). One LEMSA reported limitations with eInjury.03 (Trauma Center Criteria), and eInjury.04 (Vehicular, Pedestrian, or Other Injury Risk Factor) per local policy. Several LEMSAs reported that the measure value improves significantly when using custom fields or criteria to account for trauma centers. Based on the feedback from LEMSAs, EMSA anticipates the revision of this measure to include eDisposition.02 (Destination/Transferred To, Code) for the 2022 reporting calendar year. This should greatly improve the reported data for LEMSAs experiencing year-to-year documentation issues with eDisposition.23 (Hospital Capability).

Select this link to view the measure specifications for TRA-2

HYP-1: TREATMENT ADMINISTERED FOR HYPOGLYCEMIA

Bar chart titled "HYP-1: Treatment Administered for Hypoglycemia" showing Reported Value (blue bars), Mean (orange line), and Median (gray line) by Local EMS Agency.

Local EMS Agency	Reported Value
Alameda	73%
Central California	90%
Coastal Valleys	74%
Contra Costa	87%
El Dorado	78%
Imperial	86%
Inland	60%
Kern	61%
Los Angeles	76%
Marin	80%
Merced	87%
Monterey	73%
Mountain-Valley	23%
Napa	81%
Northern California	49%
North Coast	83%
Riverside	46%
Sacramento	71%
San Benito	100%
San Diego	79%
San Francisco	50%
San Joaquin	90%
San Luis Obispo	89%
San Mateo	83%
Santa Barbara	72%
Santa Clara	77%
Santa Cruz	71%
Sierra-Sacramento Valley	91%
Solano	97%
Tuolumne	69%
Ventura	61%
Yolo	82%

HYP-1 Description: Percentage of patients that received treatment to correct their hypoglycemia originating from a 911 response.

LEMSA	Numerator	Denominator	Reported Value
Alameda County	1108	1523	73%
Central California	1724	1908	90%
Coastal Valleys	230	311	74%
Contra Costa County	985	1136	87%
El Dorado County	198	254	78%
Imperial County	137	160	86%
Inland Counties	2120	3538	60%
Kern County	921	1504	61%
Los Angeles County	6551	8637	76%
Marin County	144	180	80%
Merced County	288	332	87%
Monterey County	361	496	73%
Mountain-Valley	349	1541	23%
Napa County	142	176	81%
Northern California	41	83	49%
North Coast	201	243	83%
Riverside County	1458	3139	46%
Sacramento County	1583	2241	71%
San Benito County	33	33	100%
San Diego County	331	418	79%
San Francisco	440	877	50%
San Joaquin County	798	888	90%
San Luis Obispo	160	180	89%
San Mateo County	315	379	83%
Santa Barbara County	271	377	72%
Santa Clara County	1238	1614	77%
Santa Cruz County	104	147	71%
Sierra-Sacramento Valley	1474	1625	91%
Solano County	548	564	97%
Tuolumne County	52	75	69%
Ventura County	556	908	61%
Yolo County	145	176	82%

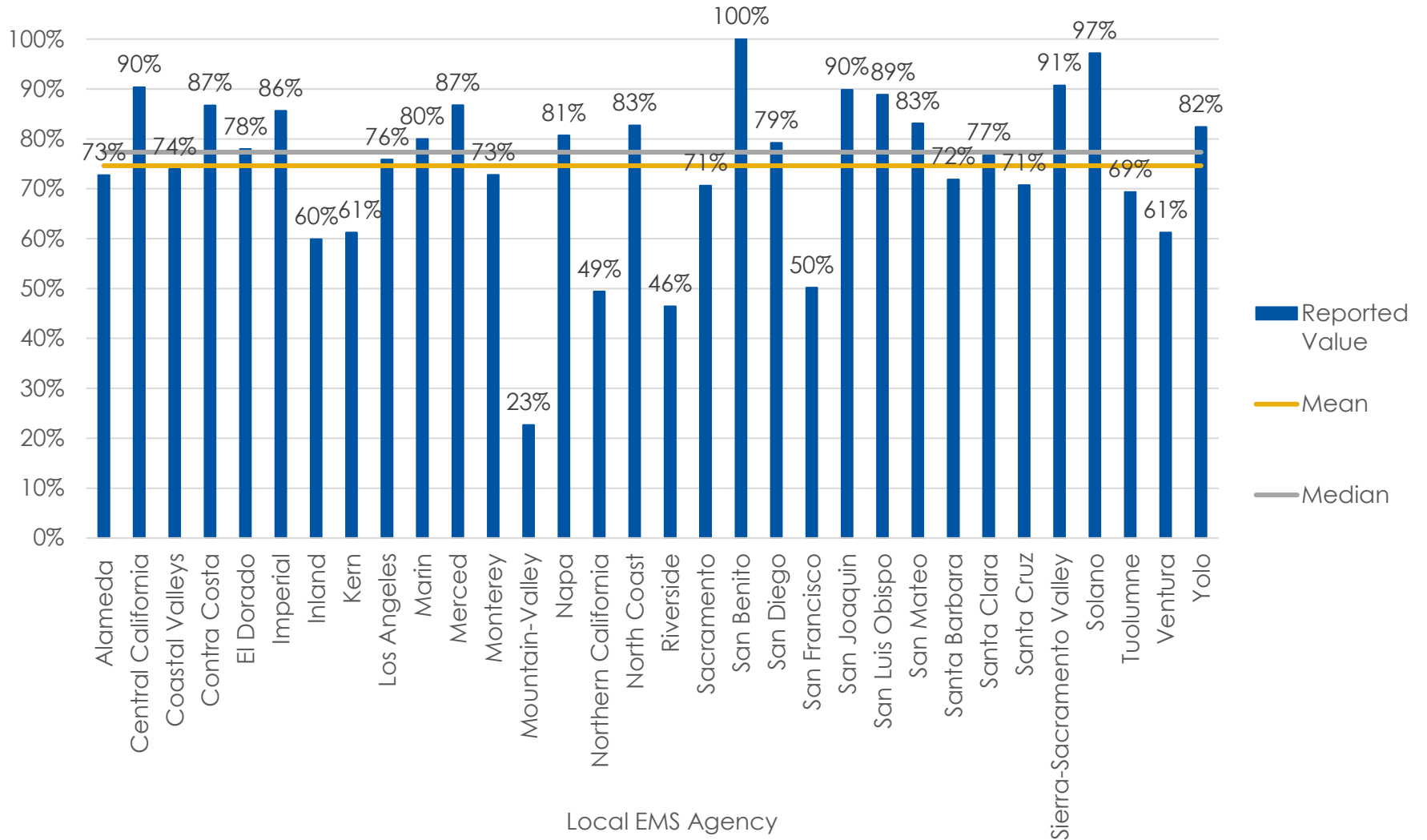|	
Response Count	32
Response Rate (n=33)	97%
Numerator Total	25,006
Denominator Total	35,663
Mean	75%
Median	77%

Of the 32 LEMSAs reporting HYP-1 data for 2021, the mean (average) value of the data set was 75% and the median value was 77%.

Six LEMSAs self-reported documentation issues, collection or mapping issues with the data. Three LEMSAs stated that providers were documenting medication given in the narrative rather than the medication drop-down. The specifications for this measure will be further evaluated for the 2022 reporting calendar year.

Select this link to view the measure specifications for HYP-1

Not Reporting: Orange County

Local EMS Agency

Legend:
- Reported Value
- Mean
- Median

Reported values by Local EMS Agency: Alameda 99%, Central California 100%, Coastal Valleys 67%, Contra Costa 91%, El Dorado 23%, Imperial 84%, Inland 97%, Kern 92%, Los Angeles 90%, Marin 98%, Merced 100%, Monterey 87%, Mountain-Valley 86%, Napa 82%, Northern California 91%, North Coast 42%, Riverside 99%, Sacramento 95%, San Benito 100%, San Diego 81%, San Francisco 96%, San Joaquin 97%, San Mateo 88%, Santa Barbara 44%, Santa Clara 84%, Santa Cruz 99%, Sierra-Sacramento Valley 84%, Solano 99%, Tuolumne 100%, Ventura 80%, Yolo 91%

STR-1 Description: Percentage of suspected stroke patients that received a prehospital stroke screening originating from a 911 response.

LEMSA	Numerator	Denominator	Reported Value
Alameda County	1984	2012	99%
Central California	2446	2446	100%
Coastal Valleys	910	1366	67%
Contra Costa County	1890	2087	91%
El Dorado County	116	496	23%
Imperial County	124	148	84%
Inland Counties	5067	5213	97%
Kern County	162	176	92%
Los Angeles County	10147	11295	90%
Marin County	362	369	98%
Merced County	434	434	100%
Monterey County	955	1101	87%
Mountain-Valley	933	1082	86%
Napa County	293	358	82%
Northern California	174	192	91%
North Coast	204	481	42%
Riverside County	6317	6362	99%
Sacramento County	3785	3969	95%
San Benito County	35	35	100%
San Diego County	1237	1535	81%
San Francisco	1366	1420	96%
San Joaquin County	1334	1377	97%
San Mateo County	925	1051	88%
Santa Barbara County	390	881	44%
Santa Clara County	1954	2332	84%
Santa Cruz County	476	482	99%
Sierra-Sacramento Valley	2985	3534	84%
Solano County	862	870	99%
Tuolumne County	124	124	100%
Ventura County	927	1152	80%
Yolo County	444	488	91%

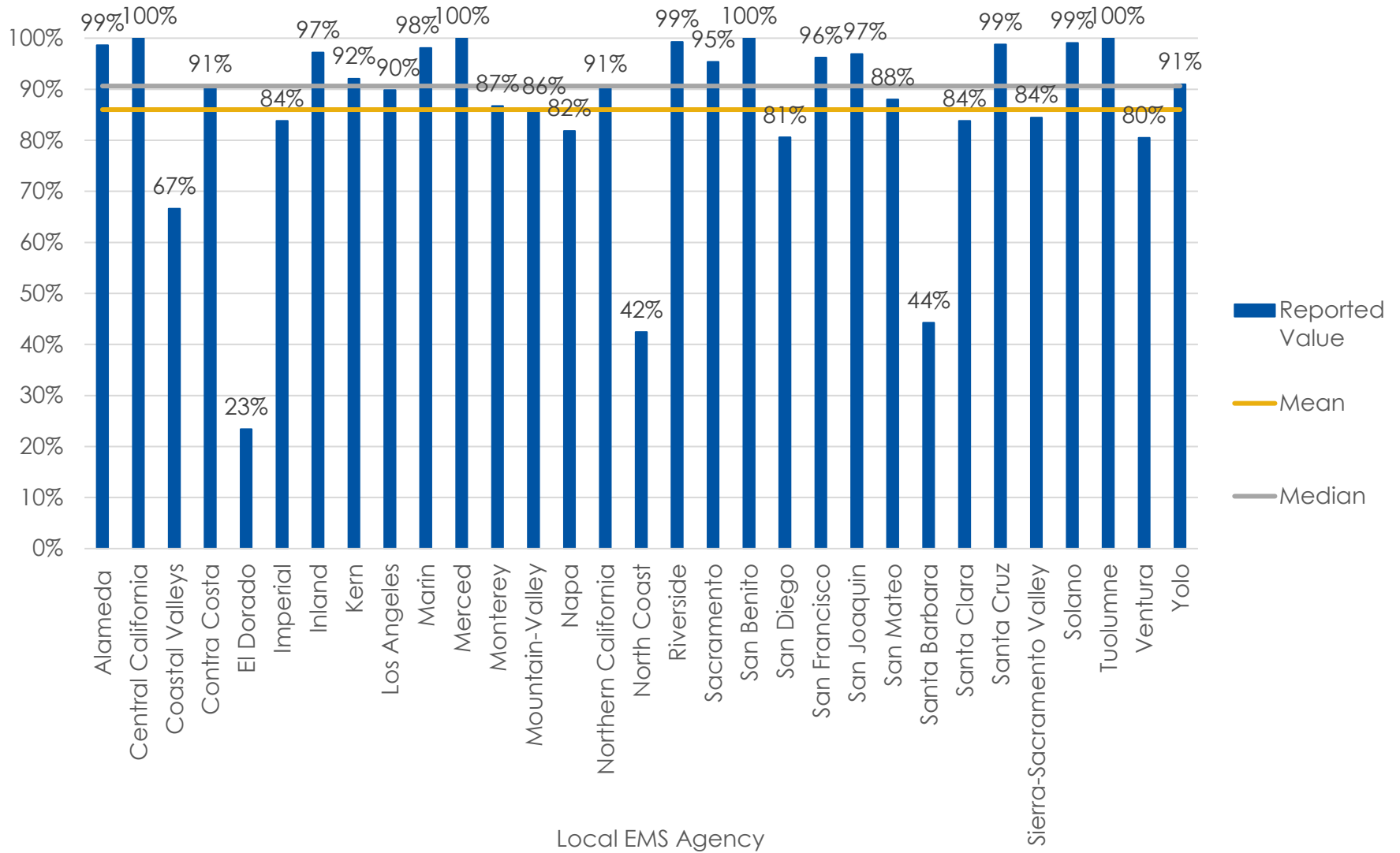|	
Response Count	31
Response Rate (n=33)	94%
Numerator Total	49,362
Denominator Total	54,868
Mean	86%
Median	91%

Of the 31 LEMSAs reporting STR-1 data for 2021, the mean (average) value of the data set was 86% and the median value was 91%.

Three LEMSAs self-reported documentation issues or variations with this measure, including NEMSIS codes not captured in the ePCR, numerator values with partial or full assessment using the GFAST scale, and CSS scale documented in the narrative portion rather than drop-down sections of the ePCR.
The specifications for this measure will be further evaluated for the 2022 reporting calendar year.

Select this link to view the measure specifications for STR-1

Not Reporting: Orange County, San Luis Obispo County

PED-3: RESPIRATORY ASSESSMENT FOR PEDIATRIC PATIENTS

Bar chart titled "PED-3: Respiratory Assessment for Pediatric Patients" showing Reported Value by Local EMS Agency, with Mean and Median reference lines.

Local EMS Agency	Reported Value
Alameda	95%
Central California	100%
Coastal Valleys	85%
Contra Costa	97%
El Dorado	84%
Imperial	96%
Inland	96%
Kern	93%
Los Angeles	98%
Marin	93%
Merced	100%
Monterey	97%
Mountain-Valley	93%
Napa	73%
Northern California	60%
North Coast	82%
Riverside	88%
Sacramento	91%
San Benito	100%
San Diego	99%
San Francisco	96%
San Joaquin	100%
San Luis Obispo	100%
San Mateo	0%
Santa Barbara	81%
Santa Clara	96%
Santa Cruz	96%
Sierra-Sacramento Valley	92%
Solano	100%
Tuolumne	100%
Ventura	92%
Yolo	60%

PED-3 Description: Percentage of pediatric patients that had a primary or secondary impression of respiratory distress and received a documented respiratory assessment originating from a 911 response.

LEMSA	Numerator	Denominator	Reported Value
Alameda County	167	176	95%
Central California	323	323	100%
Coastal Valleys	82	96	85%
Contra Costa County	258	266	97%
El Dorado County	42	50	84%
Imperial County	23	24	96%
Inland Counties	1542	1611	96%
Kern County	404	435	93%
Los Angeles County	1364	1390	98%
Marin County	37	40	93%
Merced County	88	88	100%
Monterey County	3210	3293	97%
Mountain-Valley	190	204	93%
Napa County	24	33	73%
Northern California	6	10	60%
North Coast	27	33	82%
Riverside County	682	772	88%
Sacramento County	361	395	91%
San Benito County	11	11	100%
San Diego County	213	216	99%
San Francisco	128	134	96%
San Joaquin County	79	79	100%
San Luis Obispo	27	27	100%
San Mateo County	0	73	0%
Santa Barbara County	48	59	81%
Santa Clara County	216	224	96%
Santa Cruz County	44	46	96%
Sierra-Sacramento Valley	360	391	92%
Solano County	66	66	100%
Tuolumne County	15	15	100%
Ventura County	152	166	92%
Yolo County	41	68	60%

Response Count	32
Response Rate (n=33)	97%
Numerator Total	10,230
Denominator Total	10,814
Mean	89%
Median	95%

Of the 32 LEMSAs reporting PED-3 data for 2021, the mean (average) value of the data set was 89% and the median value was 95%.
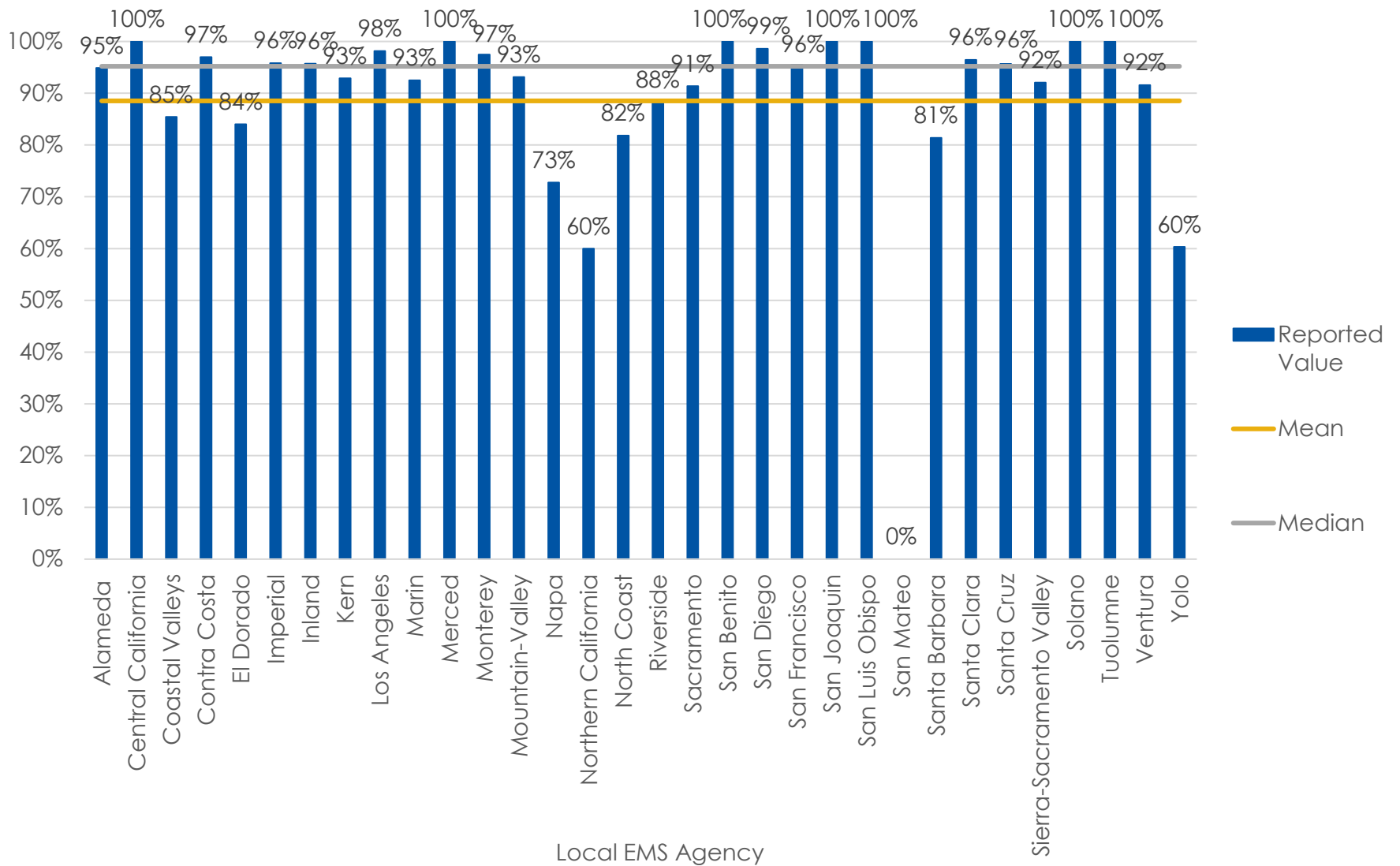
Two LEMSA self-reported documentation issues with capturing vital signs.
The specifications for this measure will be further evaluated for the 2022 reporting calendar year.

Select this link to view the measure specifications for PED-3

Not Reporting: Orange County

Local EMS Agency

Legend: Reported Value, Mean, Median
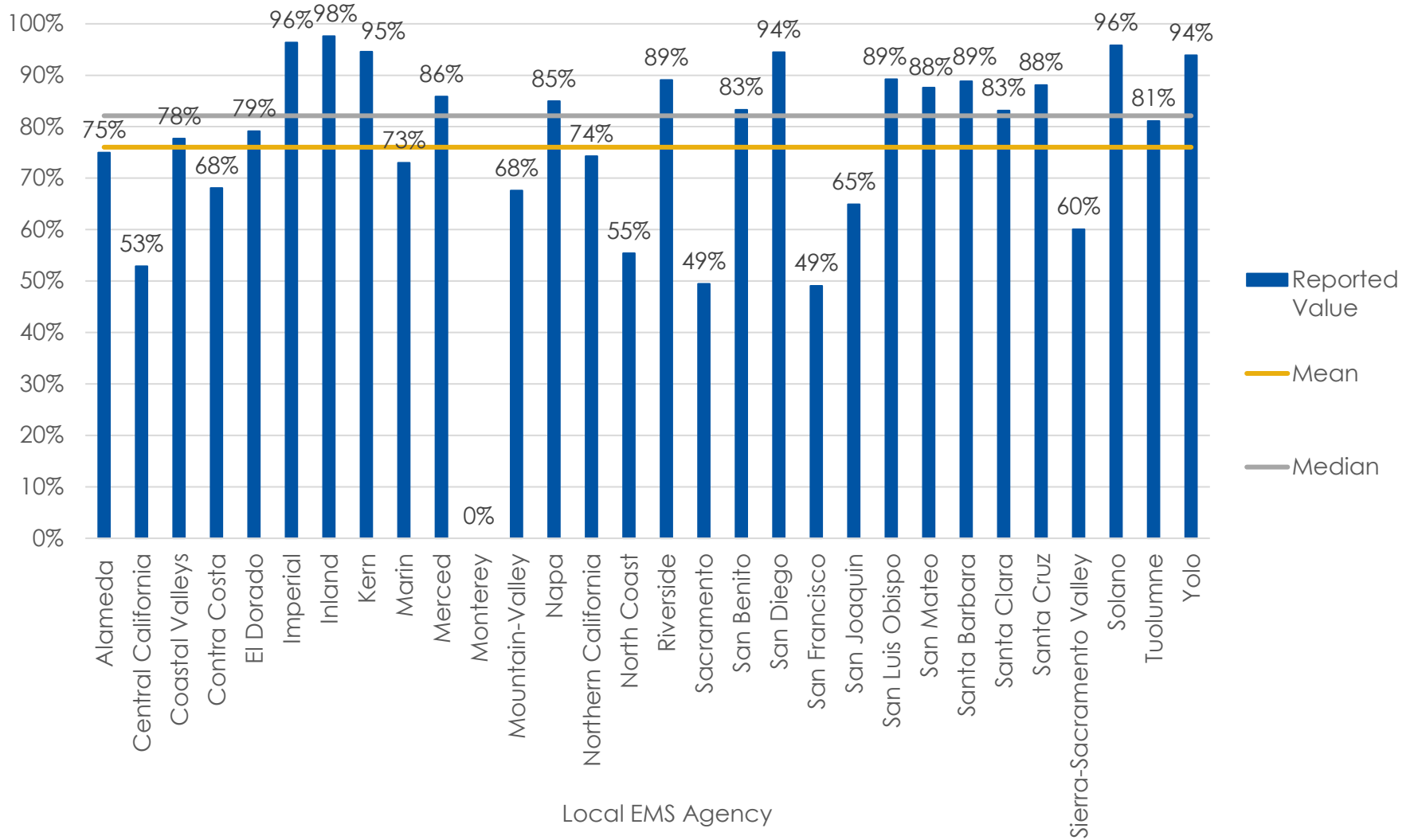
RST-4 Description: Percentage of EMS responses originating from a 911 request that included the use of lights and/or sirens during a response.

LEMSA	Numerator	Denominator	Reported Value
Alameda County	219550	292776	75%
Central California	130983	247598	53%
Coastal Valleys	68240	87831	78%
Contra Costa County	78887	115897	68%
El Dorado County	13336	16849	79%
Imperial County	10253	10639	96%
Inland Counties	462713	474062	98%
Kern County	192172	203128	95%
Marin County	15787	21631	73%
Merced County	25009	29134	86%
Monterey County	172	60320	0%
Mountain-Valley	51823	76666	68%
Napa County	17474	20569	85%
Northern California	6678	8992	74%
North Coast	14278	25770	55%
Riverside County	387721	435278	89%
Sacramento County	116470	235540	49%
San Benito County	3199	3840	83%
San Diego County	48451	51271	94%
San Francisco	54807	111683	49%
San Joaquin County	57938	89230	65%
San Luis Obispo	21437	24024	89%
San Mateo County	50328	57467	88%
Santa Barbara County	64341	72422	89%
Santa Clara County	184931	222450	83%
Santa Cruz County	18367	20854	88%
Sierra-Sacramento Valley	101689	169258	60%
Solano County	40838	42621	96%
Tuolumne County	5761	7102	81%
Yolo County	23941	25497	94%

Not Reporting: Los Angeles County, Orange County, Ventura County

|	
Response Count	30
Response Rate (n=33)	91%
Numerator Total	2,487,574
Denominator Total	3,260,399
Mean	76%
Median	82%

Of the 30 LEMSAs reporting RST-4 data for 2021, the mean (average) value of the data set was 76% and the median value was 82%. For this measure, a lower value generally indicates better quality.

Six LEMSAs self-reported documentation issues, including challenges with collecting, mapping, or reporting the NEMSIS data element eResponse.24 (Additional Response Mode Descriptors). The specifications for this measure will be further evaluated for the 2022 reporting calendar year.

Local EMS Agency
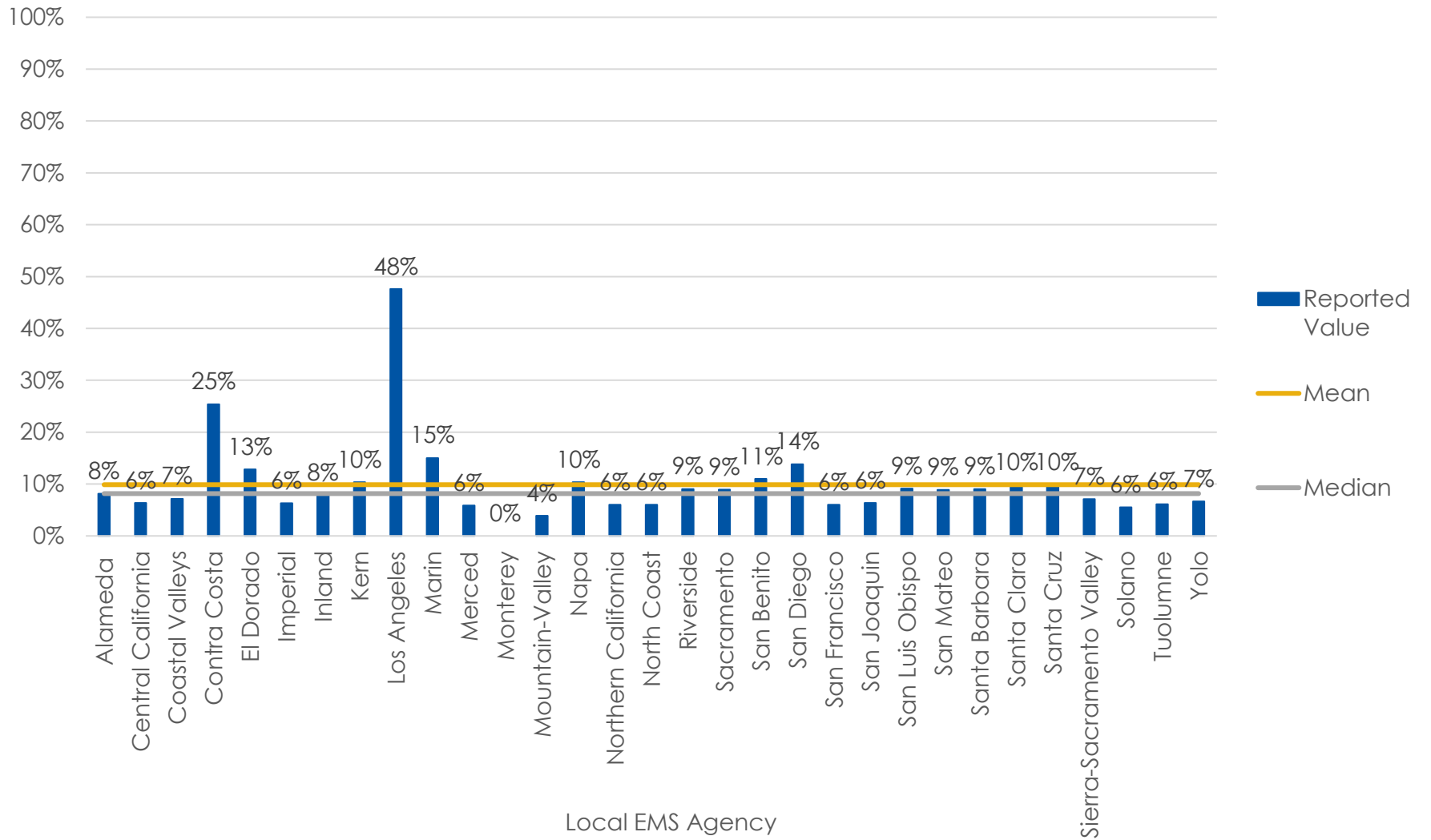
RST-5 Description: Percentage of EMS transports originating from a 911 request that included the use of lights and/or sirens during patient transport.

LEMSA	Numerator	Denominator	Reported Value
Alameda County	8508	104318	8%
Central California	9953	157128	6%
Coastal Valleys	2914	40729	7%
Contra Costa County	25406	100043	25%
El Dorado County	1521	11879	13%
Imperial County	531	8411	6%
Inland Counties	11677	148832	8%
Kern County	7439	71905	10%
Los Angeles County	257489	541074	48%
Marin County	2234	14874	15%
Monterey County	1238	21203	6%
Mountain-Valley	46	25264	0%
Napa County	2135	55143	4%
Northern California	990	9556	10%
North Coast	373	5892	6%
Riverside County	1023	17018	6%
Sacramento County	14025	163376	9%
San Benito County	11724	131497	9%
San Diego County	257	2341	11%
San Francisco	5418	39261	14%
San Joaquin County	4619	79015	6%
San Mateo County	4270	67308	6%
Santa Barbara County	1338	14699	9%
Santa Clara County	3248	36578	9%
Santa Cruz County	2206	25778	9%
Sierra-Sacramento Valley	8795	88822	10%
Solano County	2312	41948	6%
Tuolumne County	1388	14124	10%
Yolo County	8026	113365	7%

Not Reporting: Orange County, Ventura County

|	
Response Count	31
Response Rate (n=33)	94%
Numerator Total	402,389
Denominator Total	2,171,131
Mean	10%
Median	8%

Of the 31 LEMSAs reporting RST-5 data for 2021, the mean (average) value of the data set was 10% and the median value was 8%. For this measure, a lower value generally indicates better quality.

Three LEMSAs self-reported documentation issues with collecting, mapping, or reporting the NEMSIS data element eDisposition.18 (Additional Transport Mode Descriptors). Two LEMSAs self-reported the use of additional filters such as eResponse.03 (Incident Number) and eResponse.12 (Vehicle Dispatch GPS Location). The specifications for this measure will be further evaluated for the 2022 reporting calendar year.

California Core Quality Measures Averages: 2019-2021

Measure	2019 Mean	2020 Mean	2021 Mean
TRA-2	58%	61%	68%
HYP-1	72%	69%	75%
STR-1	81%	80%	86%
PED-3	84%	92%	89%
RST-4	77%	73%	76%
RST-5	11%	19%	10%
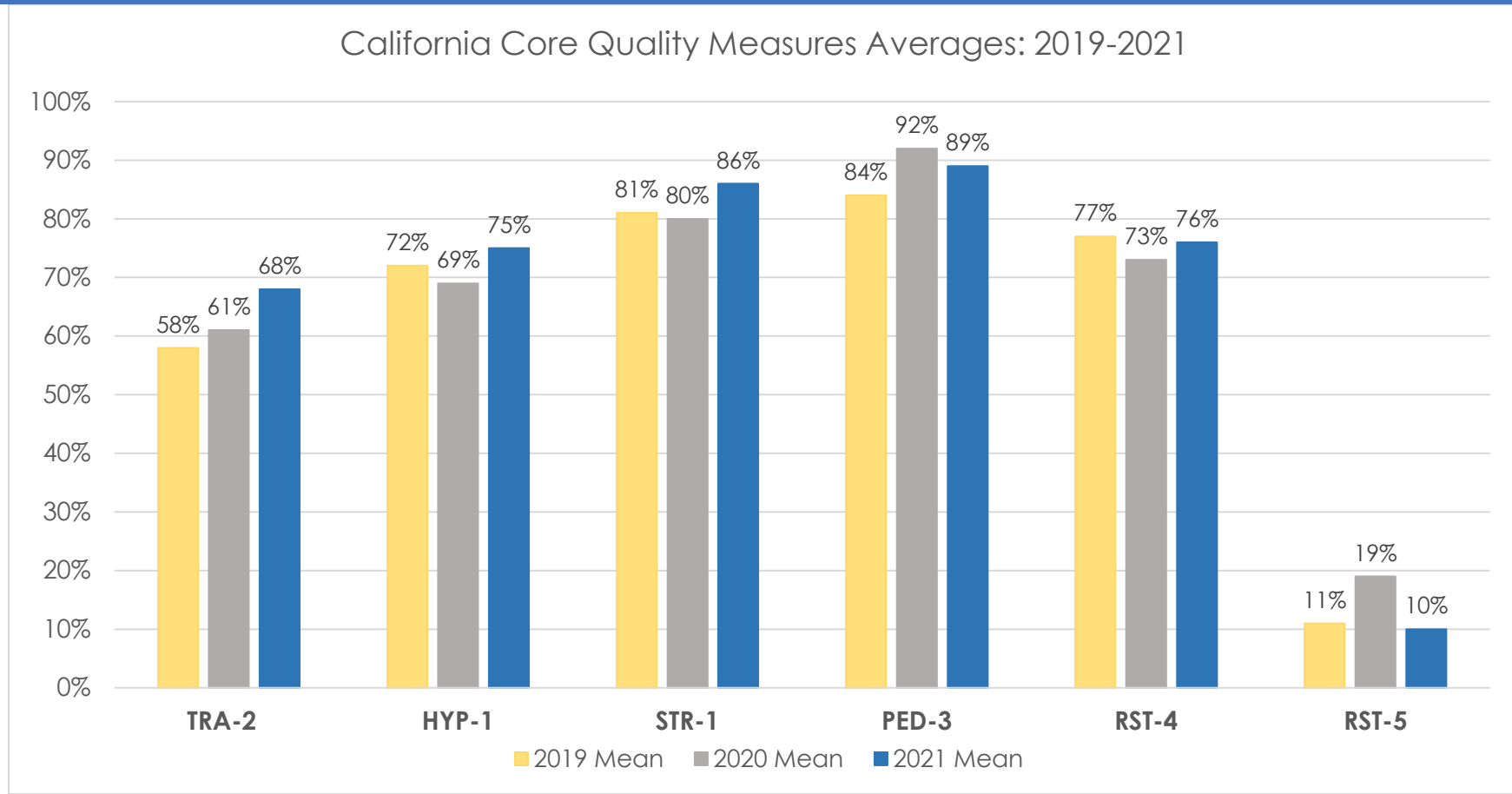
Clustered Column Chart: Average core quality measure results as reported by LEMSAs over the last three calendar years (2019-2021). Full reports for the 2019 and 2020 calendar years are accessible via the California Emergency Medical Services Authority Quality Improvement webpage at https://emsa.ca.gov/quality-improvement/.

Please note, these results may not accurately represent EMS performance or changes in performance across the State. Results may be impacted by revisions to measure specifications over time; improvements in data collection, training, and other efforts at the LEMSA level; variations in LEMSA participation/reporting from year to year; and other considerations as listed on page 13 of this report.

APPENDIX: RESPONSES FROM LEMSAs FOR THE 2021 CORE QUALITY MEASURES REPORT

The following tables include information, as described by the methodology on page 7, that was provided by each LEMSA for the 2021 Core Quality Measures Report. All notes and feedback provided by the LEMSAs will be considered by EMSA for the 2022 reporting calendar year.

ALAMEDA COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	2825	3004	94%	
HYP-1	1108	1523	73%	A sample audit of the 27% without a documented Tx for hypoglycemia primarily revealed that many providers are documenting txs in the narrative and not the dropdowns.
STR-1	1984	2012	99%	
PED-3	167	176	95%	
RST-4	219550	292776	75%	Falck uses MPDS priority codes to determine RLS response. Other agencies identify a much higher proportion of responses as emergent.
RST-5	8508	104318	8%	

CENTRAL CALIFORNIA EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	1701	2051	83%	
HYP-1	1724	1908	90%	
STR-1	2446	2446	100%	
PED-3	323	323	100%	
RST-4	130983	247598	53%	
RST-5	9953	157128	6%	

COASTAL VALLEYS EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	381	408	93%	ImageTrend data was recoded to reflect the trauma level of receiving hospital.
HYP-1	230	311	74%	
STR-1	910	1366	67%	AMR/SRF data calculated separately because of data transfer to ImageTrend.
PED-3	82	96	85%	
RST-4	68240	87831	78%	Includes first response fire agencies, BLS and ALS. To get full representation of all agencies, used eresponse.23.
RST-5	2914	40729	7%	To get full representation of all agencies/transports, used edisposition.17.

CONTRA COSTA COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	1838	2999	61%	
HYP-1	985	1136	87%	
STR-1	1890	2087	91%	
PED-3	258	266	97%	
RST-4	78887	115897	68%	
RST-5	25406	100043	25%	

EL DORADO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	137	203	67%	Source = ImageTrend
HYP-1	198	254	78%	Source = ImageTrend
STR-1	116	496	23%	Source = ImageTrend
PED-3	42	50	84%	Source = ImageTrend
RST-4	13336	16849	79%	Source = ImageTrend
RST-5	1521	11879	13%	Source = ImageTrend

IMPERIAL COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	55	73	75%	
HYP-1	137	160	86%	
STR-1	124	148	84%	
PED-3	23	24	96%	
RST-4	10253	10639	96%	
RST-5	531	8411	6%	

INLAND COUNTIES EMERGENCY MEDICAL AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	2093	3898	54%	
HYP-1	2120	3538	60%	
STR-1	5067	5213	97%	
PED-3	1542	1611	96%	
RST-4	462713	474062	98%	
RST-5	11677	148832	8%	

KERN COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	462	1132	41%	
HYP-1	921	1504	61%	
STR-1	162	176	92%	
PED-3	404	435	93%	
RST-4	192172	203128	95%	
RST-5	7439	71905	10%	Hall Ambulance replaced "Lights and Sirens" with "Intersection Navigation-With Automated Light Changing Technology". This would increase our numerator number to 13,026.

LOS ANGELES COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	9302	11190	83%	
HYP-1	6551	8637	76%	
STR-1	10147	11295	90%	
PED-3	1364	1390	98%	
RST-4				Level of Response to scene is not collected.
RST-5	257489	541074	48%	

MARIN COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	247	260	95%	
HYP-1	144	180	80%	
STR-1	362	369	98%	
PED-3	37	40	93%	
RST-4	15787	21631	73%	
RST-5	2234	14874	15%	

MERCED COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	227	228	100%	
HYP-1	288	332	87%	
STR-1	434	434	100%	
PED-3	88	88	100%	
RST-4	25009	29134	86%	
RST-5	1238	21203	6%	

MONTEREY COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	11	173	6%	The number of transports to trauma centers are greater than the report due to underuse of Hospital Capability field in ePCR reporting on the field level.
HYP-1	361	496	73%	
STR-1	955	1101	87%	
PED-3	3210	3293	97%	
RST-4	172	60320	0%	No data available for response mode descriptors 2224041 and 2224023 but with all other additional response mode descriptors, numerator equal to 7760 total responses (13%).
RST-5	46	25264	0%	No data available specific to transport mode descriptors 4218017 and 4218019. However, when including available additional transport mode descriptors numerator value total of 6466 (26%) found.

MOUNTAIN-VALLEY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	77	147	52%	
HYP-1	349	1541	23%	
STR-1	933	1082	86%	
PED-3	190	204	93%	
RST-4	51823	76666	68%	
RST-5	2135	55143	4%	

NAPA COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	365	407	90%	1) We had 15 cases with the destination as "Other not listed," or "Landing Zone," that most likely went to Trauma Centers. This revealed a system issue we can address locally to have crews put a hospital destination whenever possible. These 15 are not included in our Numerator. 2) Adding the edisposition.12 "4212033" was a huge improvement. 3) eDisposition.23 was problematic. If I relied on the Trauma Center codes, our numerator would have been higher than our denominator. Instead of the codes I captured the numerator based on the names of each hospital that is also certified as a Trauma Center Level 1-4.
HYP-1	142	176	81%	Documentation challenges, many hypoglycemia treatments are captured in the narrative.
STR-1	293	358	82%	No issues with this measure.
PED-3	24	33	73%	Thoughts for next year, we could consider adding, 8801019 - Refused, and 8801023 - Unable to Complete into the denominator and numerator criteria. These were common reasons for not obtaining a pulse oximetry reading.
RST-4	17474	20569	85%	No issues with this measure.
RST-5	990	9556	10%	No issues with this measure.

NORTHERN CALIFORNIA EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	46	95	48%	
HYP-1	41	83	49%	
STR-1	174	192	91%	
PED-3	6	10	60%	
RST-4	6678	8992	74%	
RST-5	373	5892	6%	

NORTH COAST EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	48	214	22%	48
HYP-1	201	243	83%	201
STR-1	204	481	42%	204
PED-3	27	33	82%	27
RST-4	14278	25770	55%	14278
RST-5	1023	17018	6%	1023

RIVERSIDE COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	2013	2761	73%	Data is based on Patient level using incident date/hour, name, age, gender. Addition of eDisposition.12 = "Treated and transported by this unit" significantly improved this measure in Riverside (73% v. 58% in 2020). However, still problematic in Riverside County is the use of criteria eDisposition.23 instead of actual hospital names or codes (i.e. eDisposition.01) to identify Trauma centers since many have other have other specialty cares. When accounting for that, actual transport to a trauma center is ~95%. Note lower denominator/numerator also a function of eDispo.12.
HYP-1	1458	3139	46%	Data is based on Patient level using incident date/hour, name, age, gender. Same data by response level : Numerator: 1583, Denominator: 4012. Internal issue noted last year where dextrose was not an eMedication being accounted for in Riverside's ePCR system. When accounted for, actual % is approx. ~90%; however, % this year is similar to 2020 @ 49% requiring internal follow up by REMSA. We will update if issue found.
STR-1	6317	6362	99%	Data is based on Patient level using incident date/hour, name, age, gender. Same data by response level : Numerator: 7544, Denominator: 7652. (Count significantly higher in 2021but metric in 2020 also = 99%)
PED-3	682	772	88%	Data is based on Patient level using incident date/hour, name, age, gender. (Count significantly higher in 2021 but metric in 2020 similar @ 86%).
RST-4	387721	435278	89%	Response level only. No patient level modifications made so all responses could be accounted for (Fire and Ambulance). (Count significantly higher in 2021 but metric in 2020 similar @ 88%).
RST-5	14025	163376	9%	No modifications or patient level needed as criteria already includes eResponse.07="Ground Transport"; and eDispositon12= "Treated, Transported by this EMS Unit" which accounts predominantly for patient level. (Count significantly higher in 2021 but metric in 2020 similar @ 8%).

SACRAMENTO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	918	2771	33%	If adjusted to include Trauma center names the numerator increases to 2028 with a percent value increase to 83%.
HYP-1	1583	2241	71%	
STR-1	3785	3969	95%	
PED-3	361	395	91%	
RST-4	116470	235540	49%	
RST-5	11724	131497	9%	

SAN BENITO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	175	569	31%	2021 complete
HYP-1	33	33	100%	2021 complete
STR-1	35	35	100%	2021 complete
PED-3	11	11	100%	2021 complete
RST-4	3199	3840	83%	2021 complete
RST-5	257	2341	11%	2021 complete

SAN DIEGO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	1457	1567	93%	Only agencies that enter directly into the LEMSA's ePCR system are used
HYP-1	331	418	79%	Only agencies that enter directly into the LEMSA's ePCR system are used
STR-1	1237	1535	81%	Only agencies that enter directly into the LEMSA's ePCR system are used
PED-3	213	216	99%	Only agencies that enter directly into the LEMSA's ePCR system are used
RST-4	48451	51271	94%	Only agencies that enter directly into the LEMSA's ePCR system are used
RST-5	5418	39261	14%	Only agencies that enter directly into the LEMSA's ePCR system are used

SAN FRANCISCO EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	2199	3123	70%	Numerator calculated using validated destination instead of Hospital Capacity (eDisposition.23). San Francisco only has one trauma center (ZSFG) and eDisposition.23 only contains a value in 1% of ePCRs.
HYP-1	440	877	50%	Reporting value is incorrect. This had to be calculated using Biospatial, and the numerator counts the occurrence of a valid Medication Given (eMedications.03). However, local ePCRs are classifying Dextrose 10% as a fluid, not a medication. The 440 in the reported numerator is the number of events in which Oral Glucose was given. A sample chart review of some of the FALSE events showed that all patients were administered what appears to be Dextrose 10%, but eMedications.03 is null. Biospatial does not offer a way of filtering within the environment, or extracting out of it, in a way that would let us identify these events and calculate them using an alternate method.
STR-1	1366	1420	96%	
PED-3	128	134	96%	
RST-4	54807	111683	49%	17% of events were unknown, this is due to one of our 911 providers using values in eResponse.24.
RST-5	4619	79015	6%	18% of events were unknown, this is due to one of our 911 providers using values in eDisposition.18.

SAN JOAQUIN COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	89	89	100%	The denominator is too low and does not reflect the volume of Major Trauma patients because the inclusion criteria was limited to either eInjury.03 or eInjury.04 and does not capture major trauma patients consistent with SJCEMSA policies. There were 1966 patients transported to trauma centers based on SJCEMSA policies. The denominator shown is calculated by using the criteria exactly as written.
HYP-1	798	888	90%	The percentage increase (compared to 29% in 2020) is the result of solving a data filter issue.
STR-1	1334	1377	97%	
PED-3	79	79	100%	
RST-4	57938	89230	65%	
RST-5	4270	67308	6%	

SAN LUIS OBISPO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	Unable to Obtain	Unable to Obtain		NEMSIS codes for this core measure not found in SIMON/NOMIS ePCR.
HYP-1	160	180	89%	
STR-1	Unable to Obtain	Unable to Obtain		NEMSIS codes for this core measure not found in SIMON/NOMIS ePCR.
PED-3	27	27	100%	
RST-4	21437	24024	89%	
RST-5	1338	14699	9%	

SAN MATEO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	623	674	92%	
HYP-1	315	379	83%	
STR-1	925	1051	88%	
PED-3	0	73	0%	
RST-4	50328	57467	88%	
RST-5	3248	36578	9%	

SANTA BARBARA COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	57	497	11%	
HYP-1	271	377	72%	
STR-1	390	881	44%	
PED-3	48	59	81%	
RST-4	64341	72422	89%	
RST-5	2206	25778	9%	

SANTA CLARA COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	2154	2181	99%	Some prehospital crews do not document anything in the eDisposition.23 field, so the criteria was changed to eDisposition.01 is equal to Stanford, Regional, or Valley Medical Centers (trauma centers).
HYP-1	1238	1614	77%	Report was restructured structured to obtain accurate treatment numbers without procedural duplication. Report and cleaning was run independently between two staff members with matching values.
STR-1	1954	2332	84%	Denominator includes all patients with a primary impression (esituation.11), Stroke/CVA/TIA and/or Secondary Impression list (esituation.12) of Stroke/CVA/TIA. SCCEMS uses the GFAST scale for prehospital screening. The numerator value is all patients with partial or full assessment using this scale. Partial includes a value in at least one of the four fields documented in evitals fields.
PED-3	216	224	96%	Some prehospital crews do not document vital signs. However, typically the ambulance crew does document those vital signs. Our actual values were done on a per patient basis instead of per response.
RST-4	184931	222450	83%	We added additional filters that eResponse.03 and eResponse.24 must not be blank.
RST-5	8795	88822	10%	We added an additional filter that eResponse.03 must not be blank.

SANTA CRUZ COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	124	271	46%	
HYP-1	104	147	71%	
STR-1	476	482	99%	
PED-3	44	46	96%	
RST-4	18367	20854	88%	
RST-5	1388	14124	10%	

SIERRA-SACRAMENTO VALLEY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	2360	2565	92%	Replaced eDisposition.23 with eDisposition.01 = designated trauma center & eDisposition.20 = Regional Specialty Center. Crew documentation of eDisposition.23 (facility capabilities) remains inconsistent/inaccurate.
HYP-1	1474	1625	91%	No changes made.
STR-1	2985	3534	84%	No changes made.
PED-3	360	391	92%	No changes made.
RST-4	101689	169258	60%	No changes made.
RST-5	8026	113365	7%	No changes made.

SOLANO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	642	671	96%	
HYP-1	548	564	97%	
STR-1	862	870	99%	
PED-3	66	66	100%	
RST-4	40838	42621	96%	
RST-5	2312	41948	6%	

TUOLUMNE COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	19	64	30%	
HYP-1	52	75	69%	
STR-1	124	124	100%	
PED-3	15	15	100%	
RST-4	5761	7102	81%	
RST-5	310	5086	6%	

VENTURA COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2				This is collected as a locally defined field. Ventura County Step 3s may also be transported to a Non-Trauma Center by the Trauma Center's Discretion. Using our locally defined fields our numbers are 971 / 994 = 98%.
HYP-1	556	908	61%	Numbers represented here are using the criteria outlined in the measure. But the Tx has been found in the narrative as well, instead of just the medication drop-down.
STR-1	927	1152	80%	Numbers represented here are using the criteria outlined in the measure. But the CSS Scale has been found in the narrative as well, instead of just the CSS Scale drop-down.
PED-3	152	166	92%	All criteria in the measure are able to be captured.
RST-4				We collect eResponse.23, using that field our numbers are 53584 / 59496 = 90%.
RST-5				We collect eResponse.17, using that field our numbers are 5465 / 45215 = 12%.

YOLO COUNTY EMS AGENCY

Measure ID	Numerator (Subpopulation)	Denominator (Population)	Reported Value	Notes
TRA-2	506	535	95%	506
HYP-1	145	176	82%	145
STR-1	444	488	91%	444
PED-3	41	68	60%	41
RST-4	23941	25497	94%	23941
RST-5	976	14664	7%	976

Additional information about the California Core Quality Measures Project, including reports for previous years, is accessible via the California Emergency Medical Services Authority Quality Improvement webpage at https://emsa.ca.gov/quality-improvement/.

For questions or comments about the California Core Quality Measures Report – CY 2021, please contact Michelle McEuen at (916) 903-9624 or Michelle.McEuen@emsa.ca.gov.

California EMS System
Core Quality Measures Report

Gavin Newsom
Governor
State of California

Mark Ghaly, MD, MPH
Secretary
Health and Human Services Agency

Elizabeth Basnett, Acting Director
Emergency Medical Services Authority

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