RIVERSIDE COUNTY EMS AGENCY

SUMMARY REPORT

EMERGENCY MEDICAL DISPATCH

2020

FEBRUARY 17TH, 2021

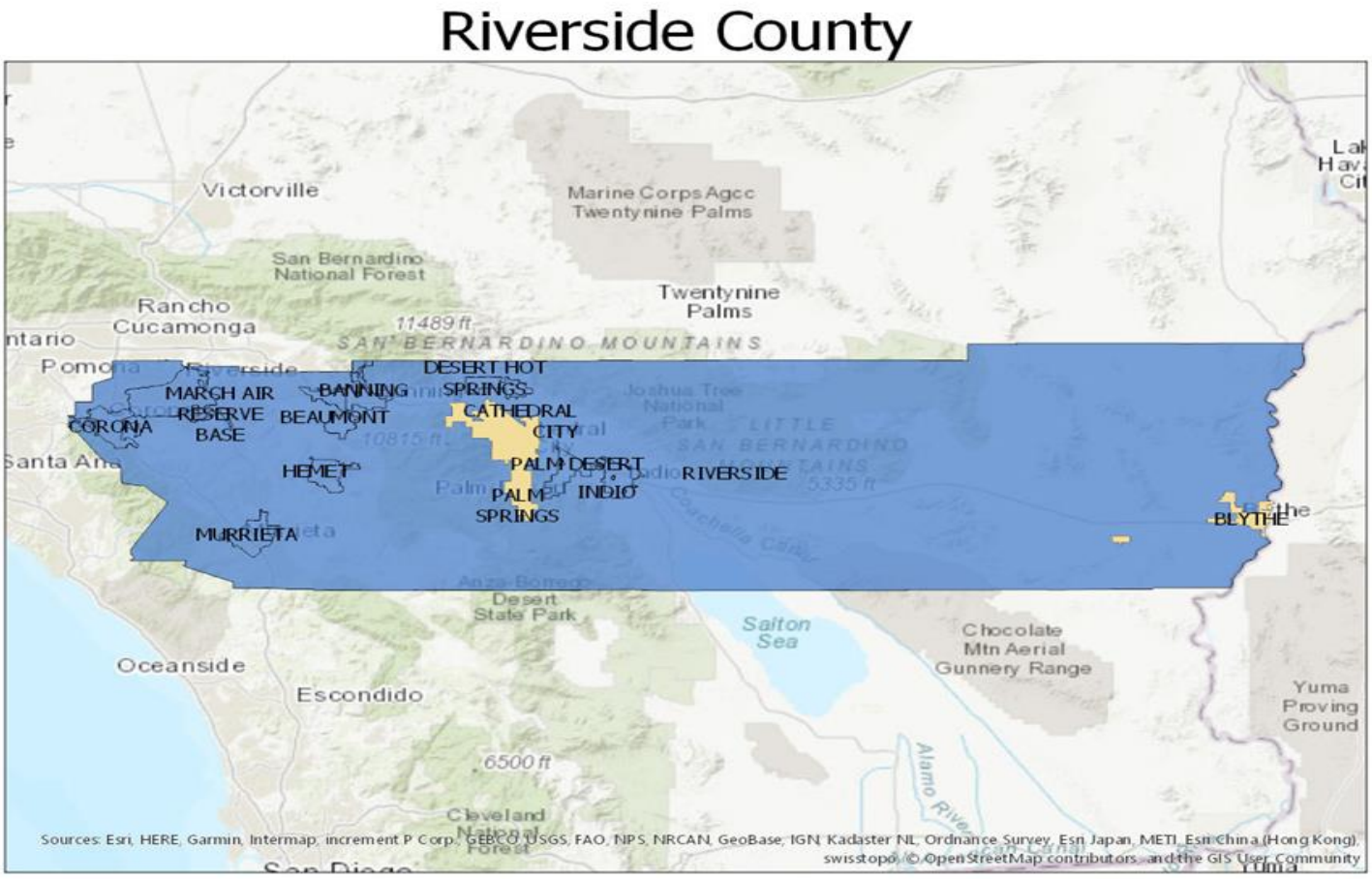
PREPARED BY RIVERSIDE COUNTY EMS AGENCY, EMERGENCY MANAGEMENT DEPARTMENT

EMERGENCY MEDICAL DISPATCH SUMMARY

The Medical Priority Dispatch System (MPDS) is utilized by Public Safety Answering Points to assist call-takers in rapidly narrowing down a caller's medical or trauma condition, dispatching emergency services, and providing standardized medical instructions to callers before help arrives. The following is the Riverside County Emergency Medical Dispatch (EMD) Response Summary Report for the 2020 calendar year.

This data in this report was collected by responding agencies between January 1st, 2020 through December 31st, 2020. To be included, the EMD Card Number (eDispatch.03) had to contain at minimum, a two- digit card number followed by an alphabetic character.

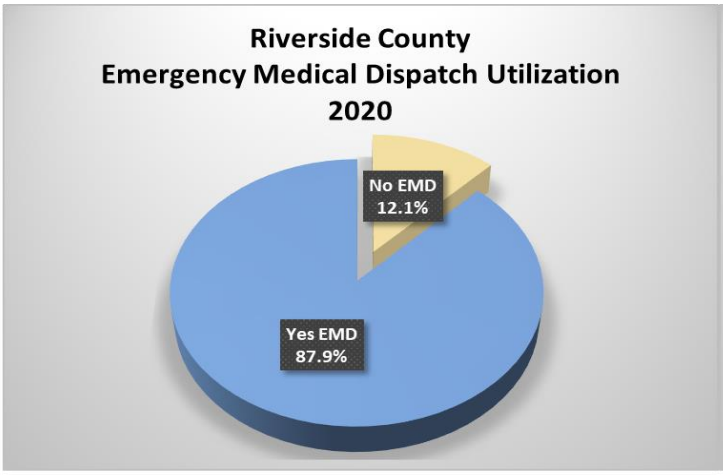
The majority of Riverside County is covered by MPDS through the EMD program.

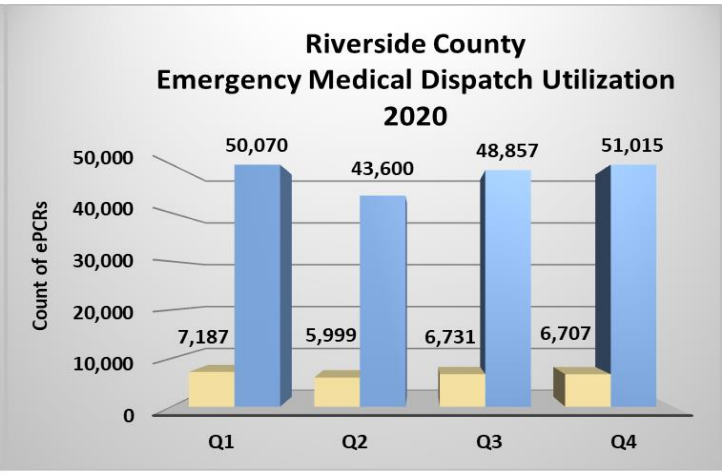


PSAP Without MPDS **PSAP With MPDS or Currently Implementing MPDS**

EMD Utilization

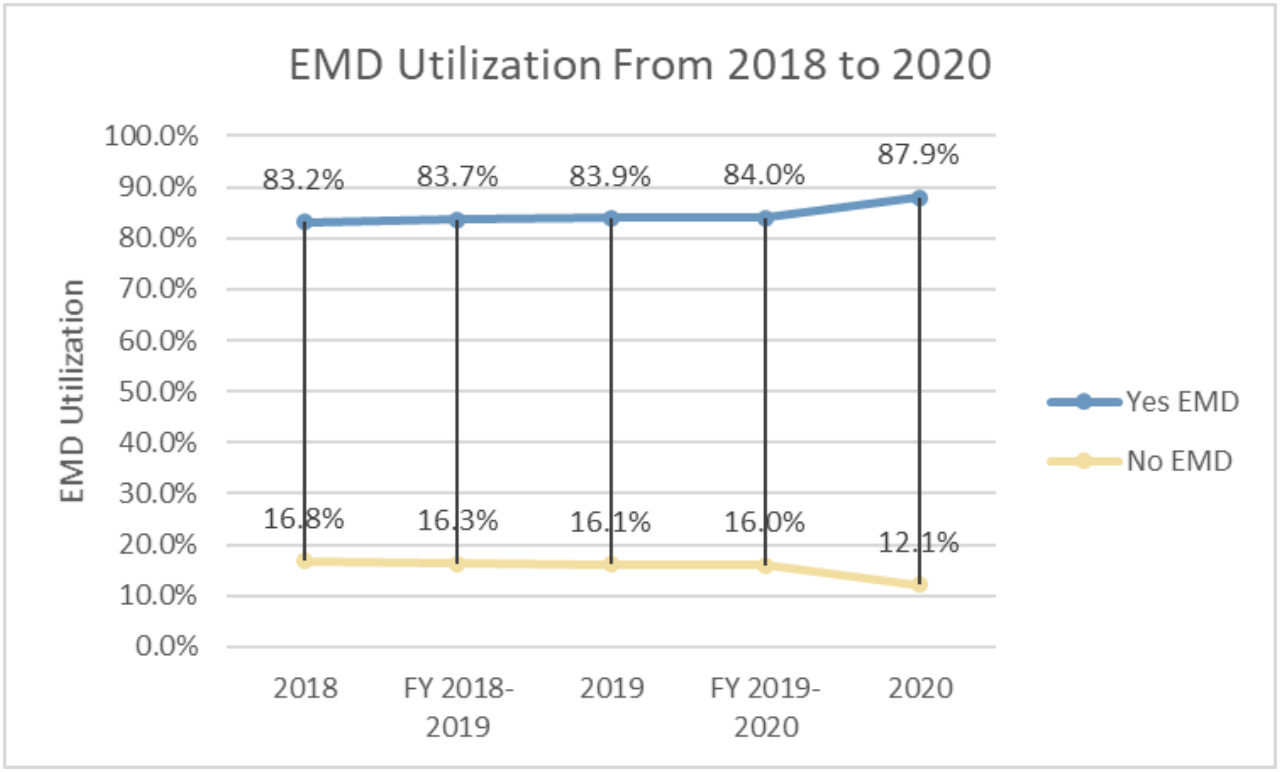
The following data is shown to reflect EMD utilization in Riverside County in 2020. Electronic patient records (eRecord.01) were collected and grouped according to EMD participating and non-participating agencies, respectively. To reduce duplication, transport agency data was excluded from this analysis.





Change in EMD Card Utilization Over Time

The line chart below shows the change in the utilization of EMD by Riverside County PSAPs as recorded in the semiannual Emergency Medical Dispatch Reports. The percentage of EMD utilization grew by 5% between 2018 and 2020.



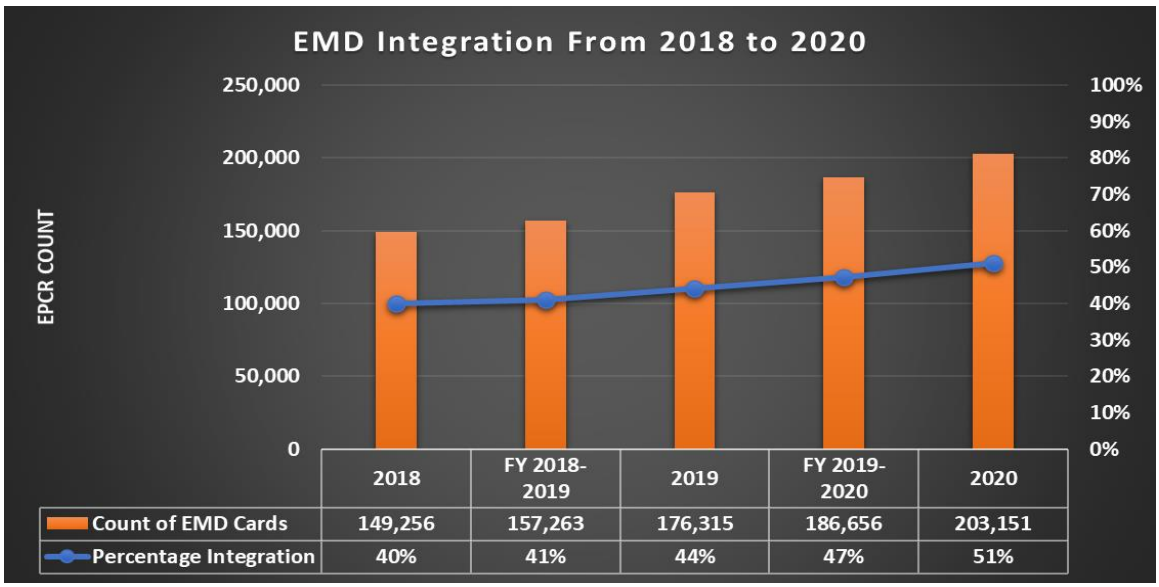
EMD Integration

The table below shows the *rate of EMD integration* with EMS Electronic Patient Care Reports (ePCRs) for all 911 provider agencies in Riverside County. A count of *eRecord.01*, a number generated with each ePCR created, was used to determine the theoretical integration of EMD by responding agency. *EMD Integration with ePCR* is a total count of eDispatch.03, the EMD card and dispatch determinant level, which is used to determine raw integration numbers of EMD by the responding agency. *EMD Card Missing* is defined here as an ePCR having a blank eDispatch.03, or no recorded EMD card and dispatch determinant level. *Percentage of EMD Integration* was calculated by dividing the total ePCR count (eRecord.01) by the EMD Integration count (eDispatch.03).

All 911 Agencies	ePCR Count (eRecord.01)	EMD Integration w/ ePCR (eDispatch.03)	EMD Cards Missing from ePCR	Percentage of EMD Integration to ePCR (Actual/ePCR Total)	911 Agency With EMD Call Center
Transport					
AMR - Desert Cities	29,829	5,546	24,283	18.6%	No
AMR - Hemet	36,274	10,455	25,819	28.8%	No
AMR - Riverside	110,288	37,833	72,455	34.3%	No
Total EMD Integration	**176,391**	**53,834**	**122,557**	**30.5%**	**0/3**
911 Responders (Non-EMD)					
Cathedral City Fire Department	5,867	7	5,860	**0.1%**	No
Hemet Fire Department	12,658	3	12,655	**0.0%**	No
Palm Springs Fire Department	8,099	0	8,099	**0.0%**	No
Total EMD Integration	**26,624**	**10**	**26,614**	**0.0%**	**0/3**
EMD 911 Responders					
Calimesa Fire Department	**747**	**724**	**23**	**96.9%**	**Yes**
Corona Fire Department	**6,848**	**4,604**	**2,244**	**67.2%**	**Yes**
Idyllwild Fire Protection District	**522**	**168**	**354**	**32.2%**	**Yes**
March Air Reserve Base Fire Department	**23**	**1**	**22**	**4.3%**	**Yes**
Morongo Fire Department	**2,266**	**936**	**1,330**	**41.3%**	**Yes**
Murrieta Fire Department	**7,962**	**2,628**	**5,334**	**33.0%**	**Yes**
Pechanga Fire Department	**732**	**686**	**46**	**93.7%**	**Yes**
Riverside City Fire Department	**29,933**	**2**	**29,931**	**0.0%**	**Yes**
Riverside County Fire Department	**143,688**	**138,786**	**4,902**	**96.6%**	**Yes**
Soboba Fire Department	**821**	**772**	**49**	**94.0%**	**Yes**
Total EMD Integration	**193,542**	**149,307**	**44,235**	**77.1%**	**10/10**
Total EMD Integration for Riverside County	**396,557**	**203,151**	**193,406**	**51.23%**	**10/16**

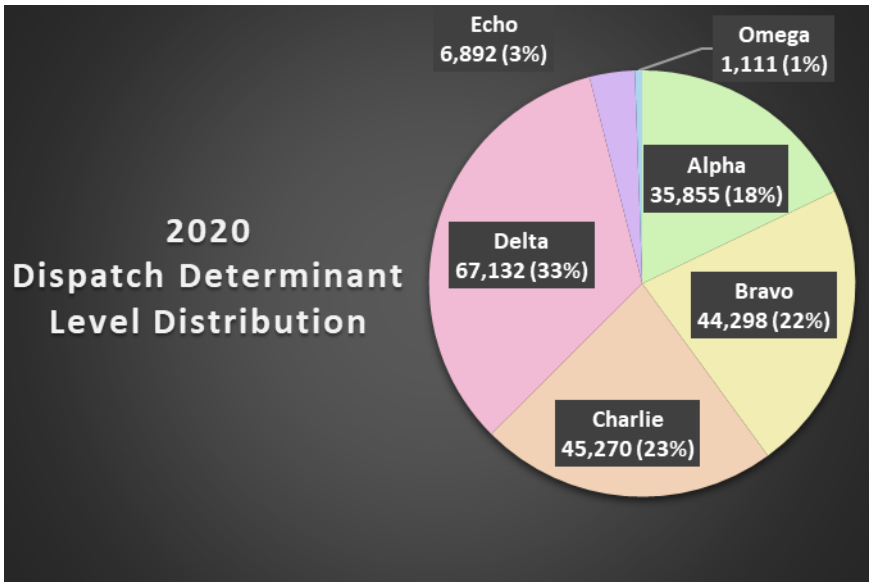
Change in EMD Card Integration Over Time

The combination chart below shows the change in the integration of EMD cards into ePCRs recorded in our semiannual Emergency Medical Dispatch Reports. The total count of EMD cards for all 911 agencies grew by 36% from 2018 to 2020. While the Perctentage Integration of EMD cards into ePCRs for all 911 agencies grew by 28% from 2018 to 2020.



Medical Priority Dispatch System Breakdown

The Medical Priority Dispatch System (MPDS) allows rapid assignment of call type using determinant levels (Alpha, Bravo, Charlie, Delta, Echo, Omega) which can identify response time and type of emergency services required (i.e. ALS vs. BLS). While Riverside County does not rely on EMD to guide response type and time, assigned determinant codes which define modes of response (whether lights and sirens are used) for emergency vehicles. The 2020 calendar year distribution of determinant levels was analyzed using ePCR data. This data reflects determinant levels for 911 responding agencies with ePCR integration of dispatch data. While most Riverside County 911 responding agencies utilize EMD, only half currently have ePCR integration.



Top EMD Cards & Dispatch Complaints

EMD Card	Count	Percentage
26 Sick Person	28,723	14.1%
06 Breathing Problem	25,377	12.5%
17 Falls	23,712	11.7%
10 Chest Pain / Chest Discomfort (Non-Traumatic)	14,931	7.4%
31 Unconscious / Fainting (Near)	14,725	7.3%
77 Vehicle Collision	14,564	7.2%
32 Unknown Problem (Person Down)	13,986	6.9%
12 Convulsions / Seizures	7,913	3.9%
21 Hemmorrhage / Lacerations	6,958	3.4%
28 Stroke (CVA) / Transient Ischemic Attack (TIA)	6,188	3.0%
Other	*46,018*	*22.7%*
Total	**203,095**	**100.0%**
Dispatch Complaint	**Count**	**Percentage**
Sick Person	61,007	15.4%
Breathing Problem	44,049	11.1%
Falls	41,442	10.5%
Unknown Problem/Person Down	41,169	10.4%
Traffic/Transportation Incident	27,575	7.0%
Chest Pain (Non-Traumatic)	25,653	6.5%
Unconscious/Fainting/Near-Fainting	22,336	5.6%
Convulsions/Seizure	13,559	3.4%
Abdominal Pain/Problems	12,043	3.0%
Traumatic Injury	10,819	2.7%
Other Dispatch Complaint	*96,892*	*24.4%*
Dispatch Complaint Total	**396,544**	**100.0%**

The table to the left shows a comparison of Dispatch Complaints to EMD Card Numbers utilized by call takers at public safety answering points for the 2020 calendar year. Dispatch complaints are the reason why an emergency medical response is required and are used to categorize each request. EMD Cards are similar and are utilized by public safety answering points participating in the Medical Priority Dispatch System to categorize each emergency medical response request.

Key Performance Intervals by Dispatch Determinant Level

In Riverside County, Determinant Codes do not govern response times; however, determinant levels help describe how rapidly care is needed, and providers may intrinsically respond more rapidly to higher acuity calls. To review potential differences in response time based on determinant levels, an aggregate analysis of key performance time intervals is described below. Only half of the county's EMD-based calls have been integrated with the ePCRs analyzed, so *these values may not represent average response times for individual agencies.*

Statistics Definitions Used

- **N Total** is the total number of ePCRs.
- **N Valid** is the number of cases which met criteria for the time interval analysis.
- **N Invalid** is the number of cases excluded from the N Valid cases for calculation of the time interval due to incorrect or erroneous data points.
- **N Missing** is the number of cases excluded from the N Valid cases for calculation of the time interval due to missing data points.
- **Mean** represents the average of the data in minutes.
- **Median** represents the midpoint in the data in minutes.
- **Standard Deviation** measures distribution of the data in minutes.
- **90th Percentile** represents time in minutes at which 90% of the responses fall under.
- **95% Confidence Interval For Mean** is the range for which we are 95% confident the true value of the mean exists.

Total Prehospital Time by Dispatch Determinant Level

Total Prehospital Time (eTimes.01 to eTimes.11) begins when a 911 call is placed and ends when the responding unit arrives at the hospital with the patient. This is a key performance interval because it measures all parts of the prehospital system and how they interact with each other to deliver a patient to definitive care.

Total Prehospital Time (eTimes.01 to eTimes.11)		Dispatch Determinant Level Not Recorded	OMEGA	ALPHA	BRAVO	CHARLIE	DELTA	ECHO
N	Total	195,994	1,111	35,856	44,299	45,270	67,135	6,892
	Valid	92,877	239	10,898	8,280	16,116	22,923	1,999
	Invalid	2,851	7	291	153	163	273	52
	Missing	100,266	865	24,667	35,866	28,991	43,939	4,841
Mean		36.1	40.8	41.4	40.1	38.3	39.3	38.8
Median		12.6	13.1	13.2	12.5	11.7	11.8	11.9
Standard Deviation		54.3	58.4	61.1	58.7	55.3	56.2	56.0
90th Percentile		54.3	58.4	61.1	58.7	55.3	56.2	56.0
95% Confidence Interval for Mean		(37.93-38.09)	(40.71-44.04)	(43.21-43.70)	(41.56-42.10)	(39.63-39.99)	(40.67-40.98)	(39.75-40.80)

Total Response Time by Dispatch Determinant Level

Total Response Time (eTimes.01 to eTimes.07) begins when a 911 call is placed and ends when the responding unit arrives at the patient's side. This is a key performance interval because it measures the experience of the patient accessing the 911 system.

Total Response Time (eTimes.01 to eTimes.07)		Dispatch Determinant Level Not Recorded	OMEGA	ALPHA	BRAVO	CHARLIE	DELTA	ECHO
N	Total	195,994	1,111	35,856	44,299	45,270	67,135	6,892
	Valid	139,280	668	24,763	15,764	32,925	46,412	5,213
	Invalid	4,534	15	547	359	501	777	99
	Missing	52,180	428	10,546	28,176	11,844	19,946	1,580
Mean		8.8	12.5	12.7	11.4	11.1	10.9	10.0
Median		5.7	5.7	6.2	5.3	4.6	4.9	4.4
Standard Deviation		16.7	20.1	21.6	18.9	17.2	17.6	15.7
90th Percentile		16.7	20.1	21.6	18.9	17.2	17.6	15.7
95% Confidence Interval for Mean		(10.22-10.28)	(13.31-14.18)	(14.12-14.27)	(12.56-12.73)	(11.95-12.05)	(11.89-11.98)	(10.75-10.99)

Unit Response Time by Dispatch Determinant Level

Unit Response Time (eTimes.03 to eTimes.06) begins when a responding unit receives the call or page from the dispatcher and ends when the responding unit arrives on the scene. This is a key performance interval because it measures the experience of the unit responding to the 911 emergency medical call.

Unit Response Time (eTimes.03 to eTimes.06)		Dispatch Determinant Level Not Recorded	OMEGA	ALPHA	BRAVO	CHARLIE	DELTA	ECHO
N	Total	195,994	1,111	35,856	44,299	45,270	67,135	6,892
	Valid	139,292	668	24,764	15,768	32,924	46,412	5,217
	Invalid	46,301	369	9,704	24,663	10,857	17,657	1,170
	Missing	10,401	74	1,388	3,868	1,489	3,066	505
Mean		6.5	8.3	8.6	7.5	7.2	7.3	6.6
Median		4.7	4.6	5.1	4.6	4.2	4.4	3.9
Standard Deviation		12.8	14.5	16.0	14.3	13.3	13.5	12.3
90th Percentile		12.8	14.5	16.0	14.3	13.3	13.5	12.3
95% Confidence Interval for Mean		(7.55-7.60)	(8.80-9.50)	(9.63-9.76)	(8.55-8.69)	(8.13-8.22)	(8.28-8.36)	(7.43-7.63)

References

Culley, Linda L. et al. (1994). **Increasing the efficiency of emergency medical services by using criteria based dispatch. Annals of Emergency Medicine**. Volume 24, Issue 5, 867 – 872.

https://www.emergencydispatch.org/articles/princdocpull03.pdf

https://www.emergencydispatch.org/articles/ArticleMPDS%28Cady%29.html

http://remsa.us/policy/2203.pdf

For more information, please contact Riverside County EMS Administrator, Trevor Douville tdouville@rivco.orgReport prepared by Sean Hakam & Catherine Borna Farrokhi, Data & Reporting Unit, Riverside County EMS Agency