



RIVERSIDE COUNTY EMS AGENCY  
**ANNUAL EPCR EVALUATION REPORT**  
2020

FEBRUARY 18<sup>TH</sup>, 2021  
PREPARED FOR RIVERSIDE COUNTY EMS AGENCY, EMERGENCY MANAGEMENT DEPARTMENT

# ELECTRONIC PATIENT RECORD EVALUATION REPORT SUMMARY

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*This past year (January 1<sup>st</sup>, 2020- December 31<sup>st</sup>, 2020), has presented some unique trends in data behavior. Following the COVID-19 shutdowns, and stay at home orders, there was a sudden drop in electronic patient care record (ePCRs) volume as well as overall 9-1-1 medical responses. This report aims to create a comprehensive view into the Emergency Medical Services (EMS) system from the perspective of ePCR submissions. [REMSA policy 7701](#) requires electronic patient care reports to be completed in compliance with Title 22, Chapter 4, Article 8, and Section 100170 and uploaded into the electronic system within 2 hours of patient transfer to an emergency department or prior to the end of shift when subsequent emergency response is required. An analysis was done on the electronic patient records (ePCR) system which found that less than 1% of ePCR submissions are entered and/or modified the following day which declined to nearly 0% (0.01%) after 7 days. To get a more in depth look at the efficiency of the ePCR entry, data was also pulled each day in weekly increments, and evaluated based on any changes in count or record for the previous days and/or months. The data was also evaluated based on total count of ePCR submissions, hour of day, day of week, transport type, and response. This was done in order to understand the efficiency and overall layout of Riverside County EMS data collection system for the 2020 year.*

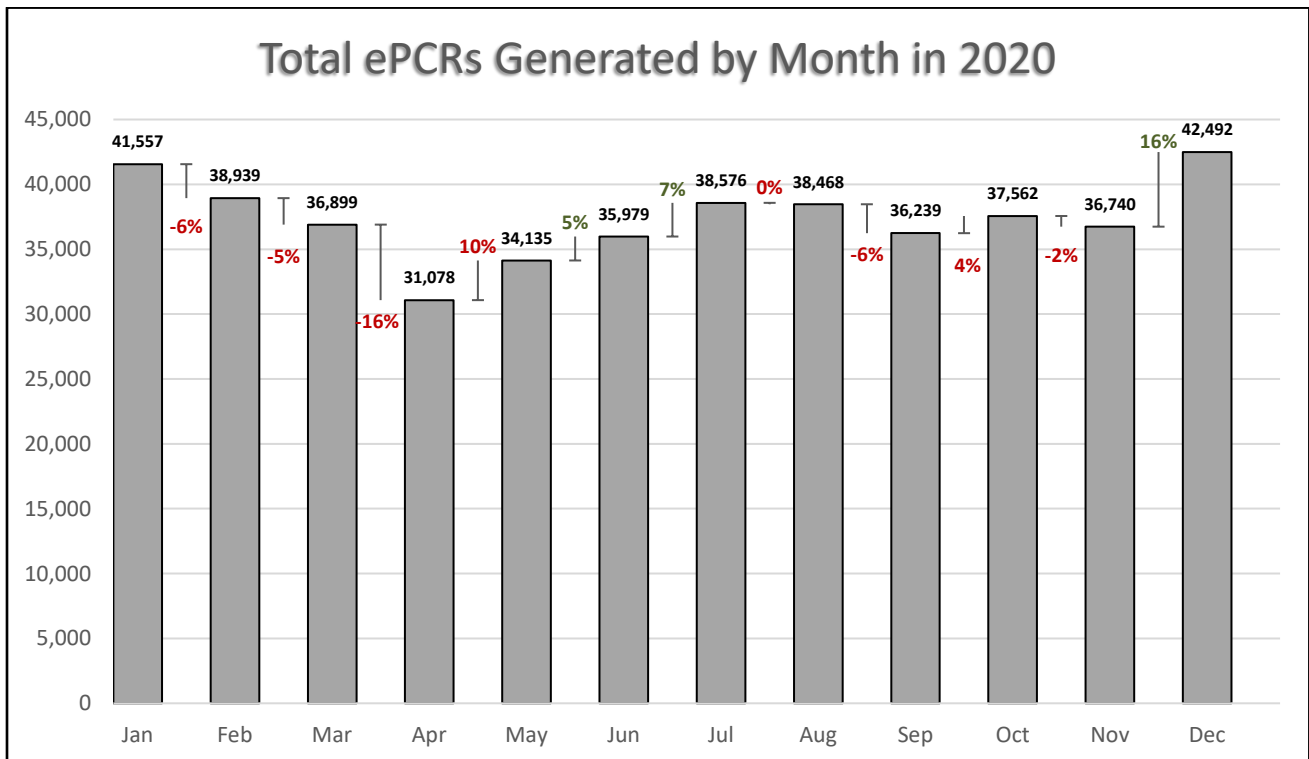
*CONCLUSION: Overall, this evaluation noted that less than 1% of records were entered or modified beyond 24 hours, suggesting most records are entered in compliance with ePCR documentation standards of [REMSA policy 7701](#). After three months, there was an average increase of 0.5% in report submissions. For the entire year, there was a total of 448,664 reports generated. December displayed the greatest number of ePCRs generated in 2020 for a single month with 42,492 reports. More incidents occurred during the 3PM hour (hour 15) than any other. Weekdays generated a greater volume of incidents than weekends. Ambulance records made up the majority of reports submitted each month except for December 2020 which displayed a greater frequency of records from First Response agencies. Emergency responses accounted for nearly 90% (87.7%, 393,325 reports) of all ePCRs submitted, and Riverside County Fire Department and AMR-Riverside submitted the majority of the ePCRs for the year (61%, 273,978 reports).*

# ePCR Evaluation

## METHODOLOGY

Data was extracted each day from ImageTrend Elite® using the Report Writer analysis feature. Variables selected were part of the National EMS Information System (NEMSIS) universal standard for how patient care information resulting from an emergency 911 call for assistance is collected. The variables extracted were Incident Date, Incident Month Name-Year, Incident Week, Agency Name (dAgency.03), Response Type of Service Requested (eResponse.05), Incident Patient Disposition (eDisposition.12), Scene Incident Location Type (eScene.09), and Count of Incident Patient Care Record Number-PCR (eRecord.01). Response categories were developed and collapsed as follows: Emergency- 911 Response; Non-Emergency- Interfacility Transport & Medical Transport; and Other- Intercept, Mutual Aid, Public Assistance.

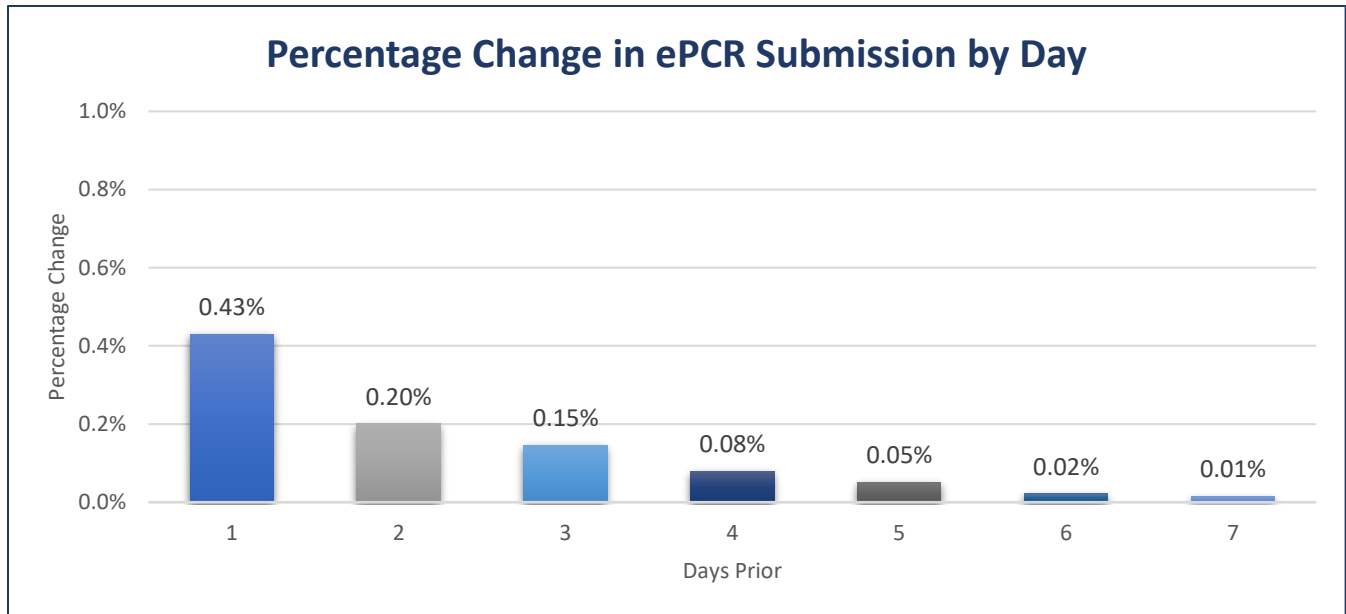
**Figure 1: Total Number of ePCRs Generated in 2020 by Month**



The figure above displays the counts of ePCRs that were generated each month and the variation from month to month. The total number of electronic patient records (ePCRs) generated in 2020 was 448,664. The greatest decrease in ePCR volume occurred from March to April (-16%). This decline in volume followed the COVID-19 epidemic response which created an overall decrease in EMS utilization. The greatest increase occurred from the month of November to December in 2020 (+16%).

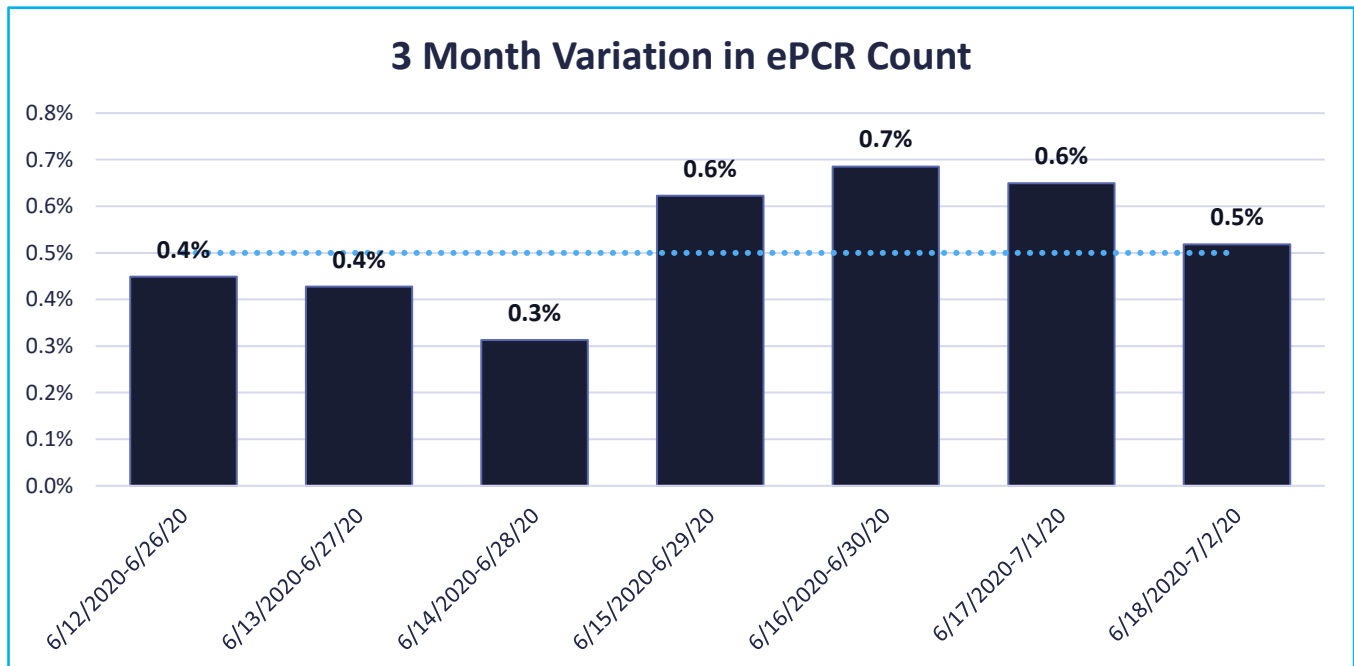
**Figure 2: Average Percentage Difference in ePCR Delivery by Day**

Figure 2 represents the average change in ePCR submission 1-7 days after the incident occurred. The highest rate of change occurred 1 day later with a 0.4% increase in the count of ePCRs, and that rate incrementally decreased on days 2-7. These findings state 99.5% of all intended ePCRs were submitted within 1-day of the incident.



**Figure 3: Percentage Difference in ePCR Submission after 3 months**

The figure below represents change in ePCR submissions following three months. Two week's worth of ePCRs were collected daily for one week and evaluated again three months later. The average rate of change was found to be a 0.5% increase 3 months later. These findings imply that the completion rate remains stable over time, and supports that over 99% of intended ePCRs are submitted within the same day as the incident.



**Figure 4: Total ePCRs Generated in 2020 by Incident Hour of Day**

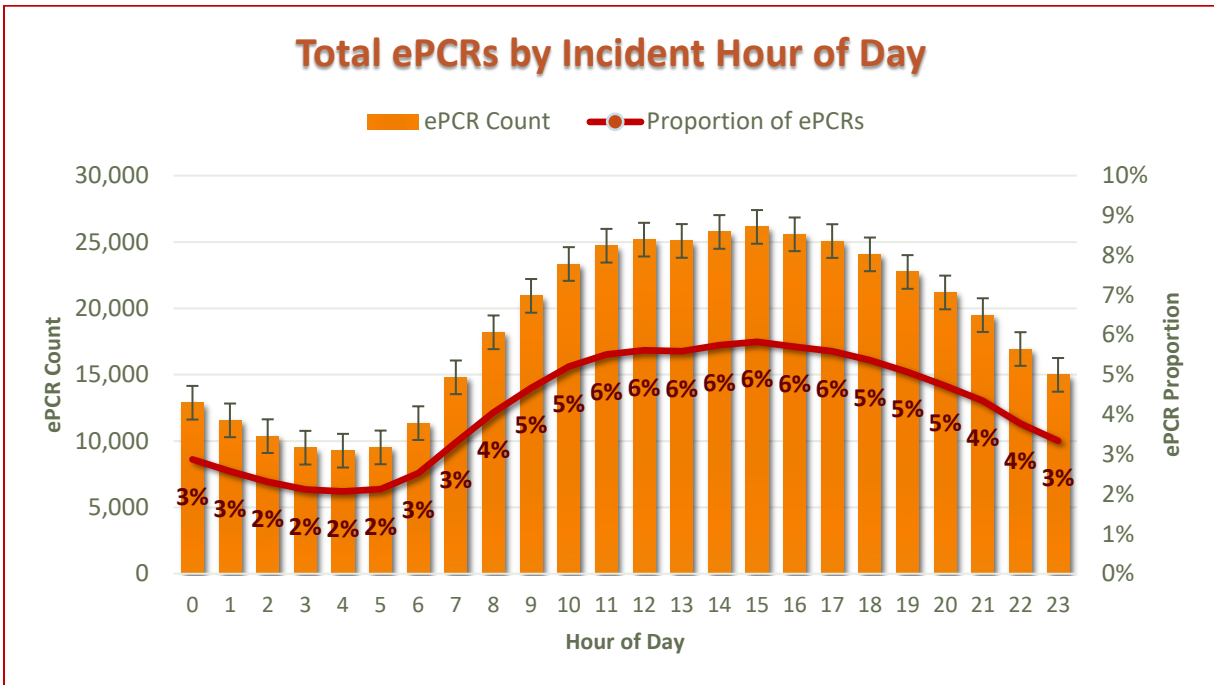


Figure 4 above represents the distribution of EMS incidents by ‘hour of day’ reported in each ePCR generated. It shows that the majority of incidents occurred between the hours of 9AM-9PM (69%). Error bars that do not overlap suggest significant difference between those hours. For instance, there is a significant difference between EMS incidents that occurred at 7AM and 8AM.

**Figure 5: Total ePCRs Generated in 2020 by Incident Day of Week**

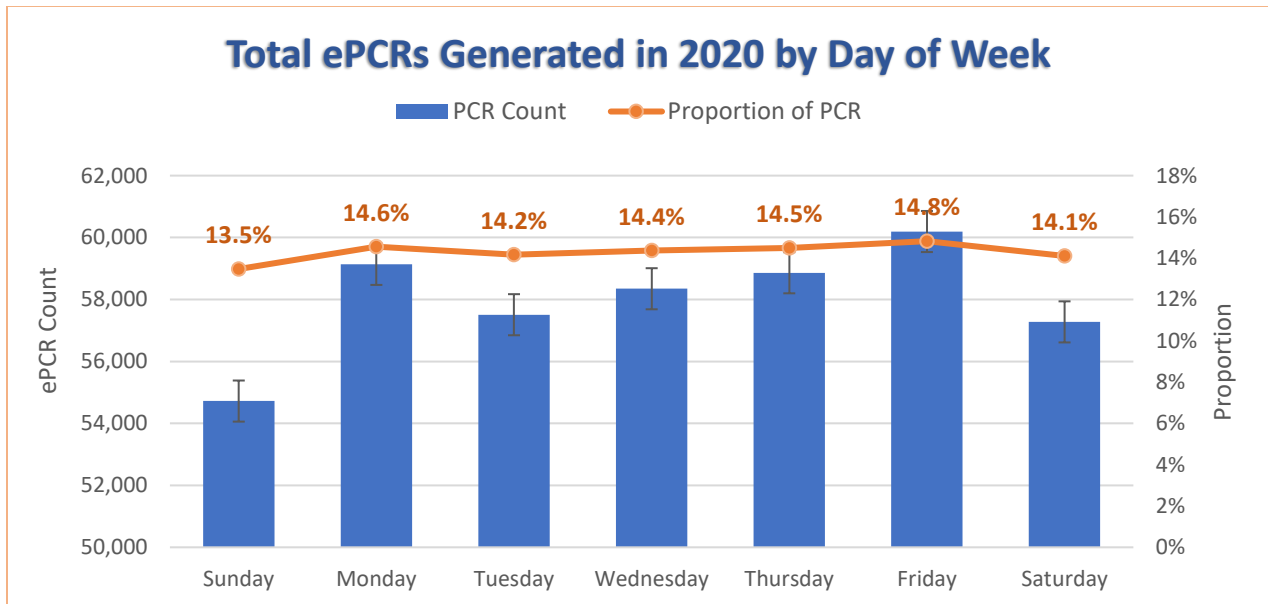


Figure 5 above represents the distribution of EMS incidents by the ‘day of week’ reported in each ePCR generated. Sunday represents the day of the week with the fewest ePCRs generated/fewest EMS responses at 13.5% (54,721 records). Error bars that do not overlap suggest significant difference among those days. For example, there is a significant difference in ePCRs generated on Fridays (60,195 records) compared to Sundays (54,721 records).

**Figure 6: Total ePCRs Generated by EMS Provider Types in 2020 (Monthly Aggregate)**

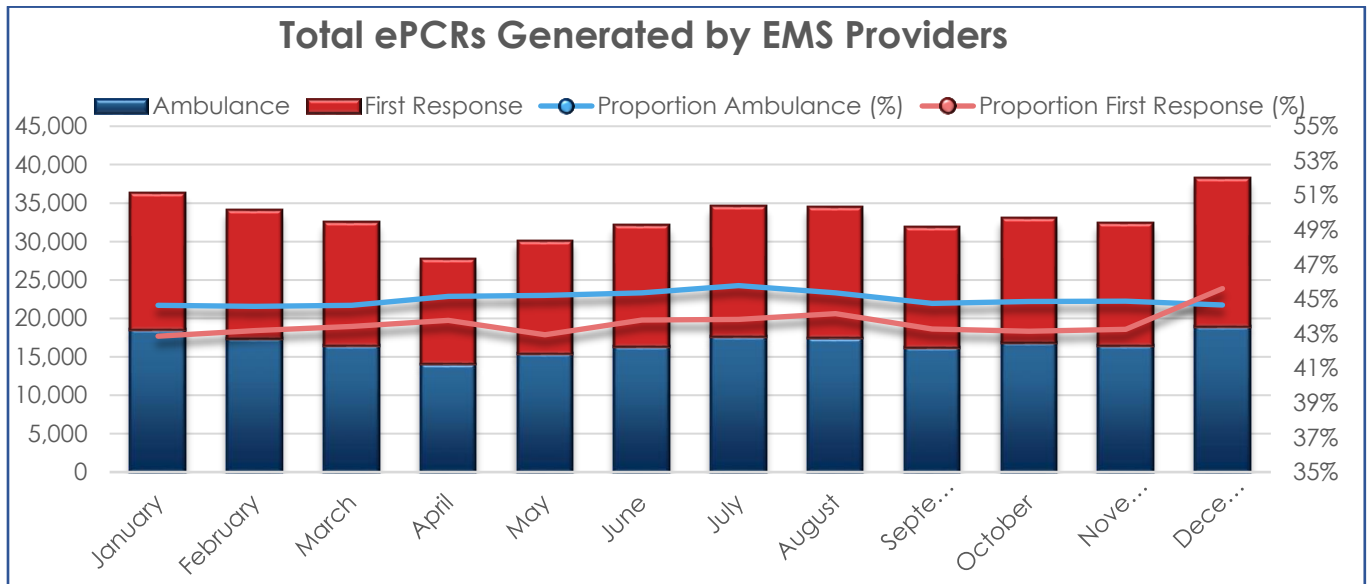
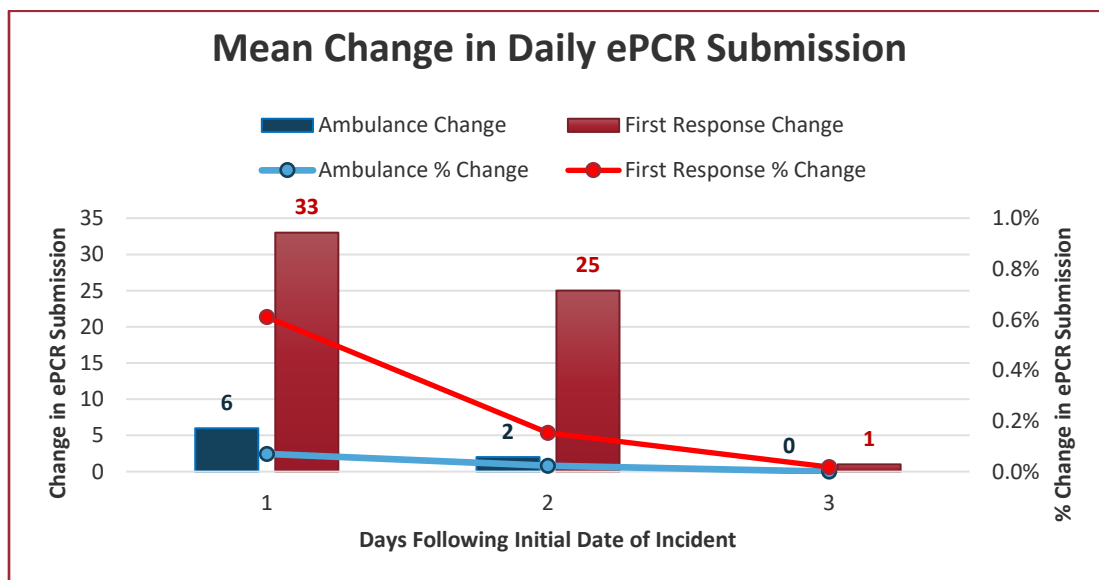


Figure 6 above represents the total number of electronic patient care records generated by EMS Providers in 2020. ‘Ambulance’ accounts for ground ambulance transport providers in Riverside County, and ‘First Response’ includes all fire department agencies. December was the month with the greatest number of ePCRs for both Ambulance and First Response agencies. It was also the only month in which the proportion of first response records surpassed the proportion of ambulance transport records according to ePCR submissions. April was the month with the lowest number of ePCRs for both Ambulance and First Response providers.

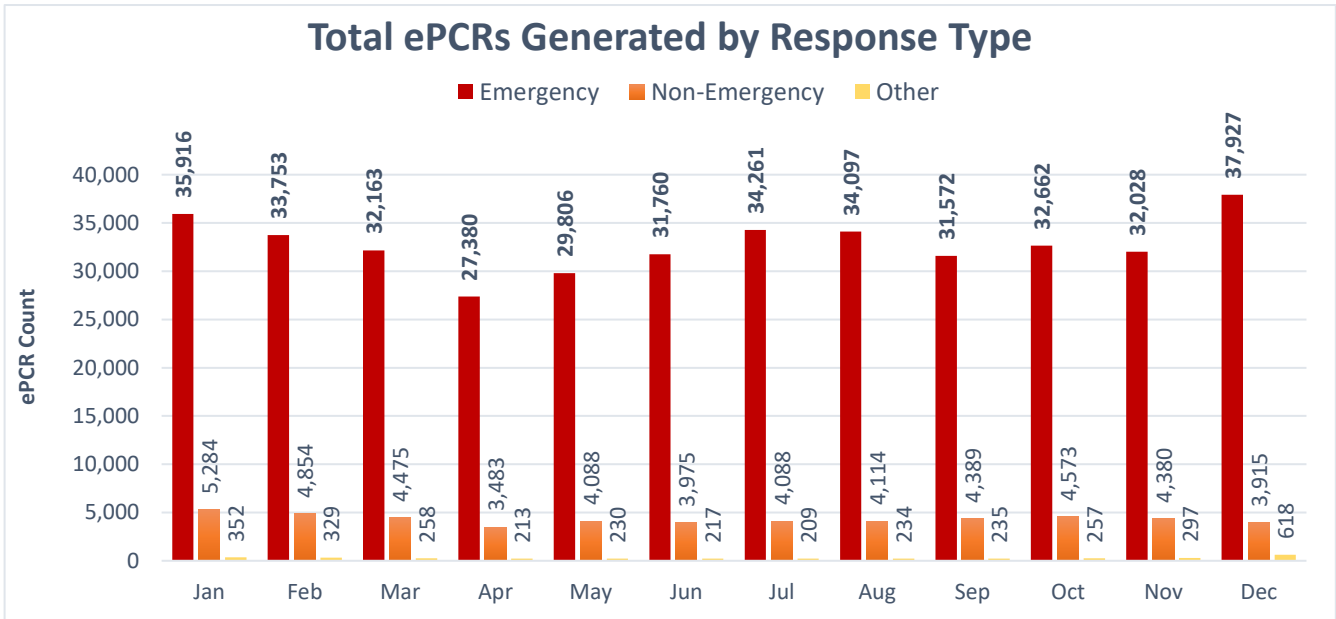
**Figure 7: Change Over Time in ePCR Submissions**

The figure below displays ‘change over time’ in ePCR submission over three days by agency type. ‘Ambulance’ accounts for ground ambulance transport providers in Riverside County, and ‘First Response’ includes all fire department agencies. The rates are shown as percentages and counts to get a more comprehensive look at changes in ePCR submissions. The data indicates First Response agencies submit the largest volume of delayed reports over the course of three days; however, the total delayed records make up less than 1% of records and most of those are submitted the next day, with nearly no delayed records submitted by day three.



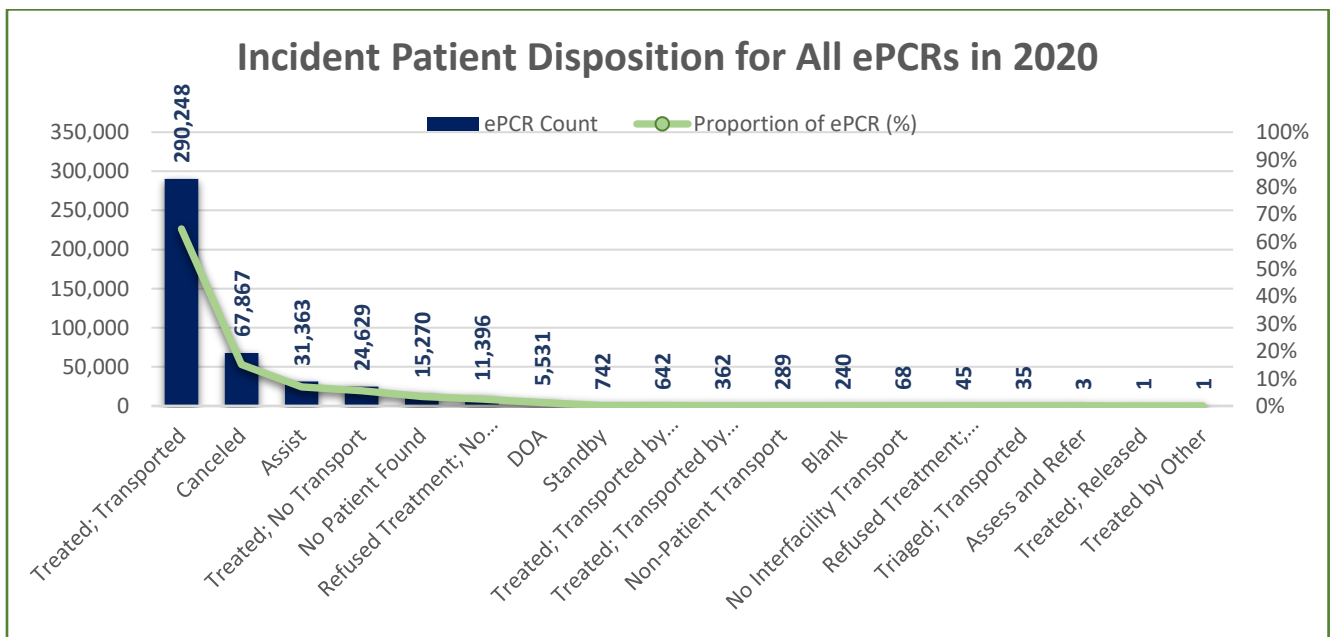
**Figure 8: ePCR by Response Type**

The figure below represents the distribution of ePCRs generated by each type of EMS response in 2020 by 9-1-1 'Emergency Response', 'Non-emergency Response' (interfacility or medical), and 'All Other Classifications'. Emergency responses made up the majority of ePCRs generated throughout 2020 (393,325; 87.7%). December had the greatest number of emergency response records (37,927 reports), while January displayed the greatest number of non-emergency response records (5,284 reports). A total of 272 records did not have a response type.

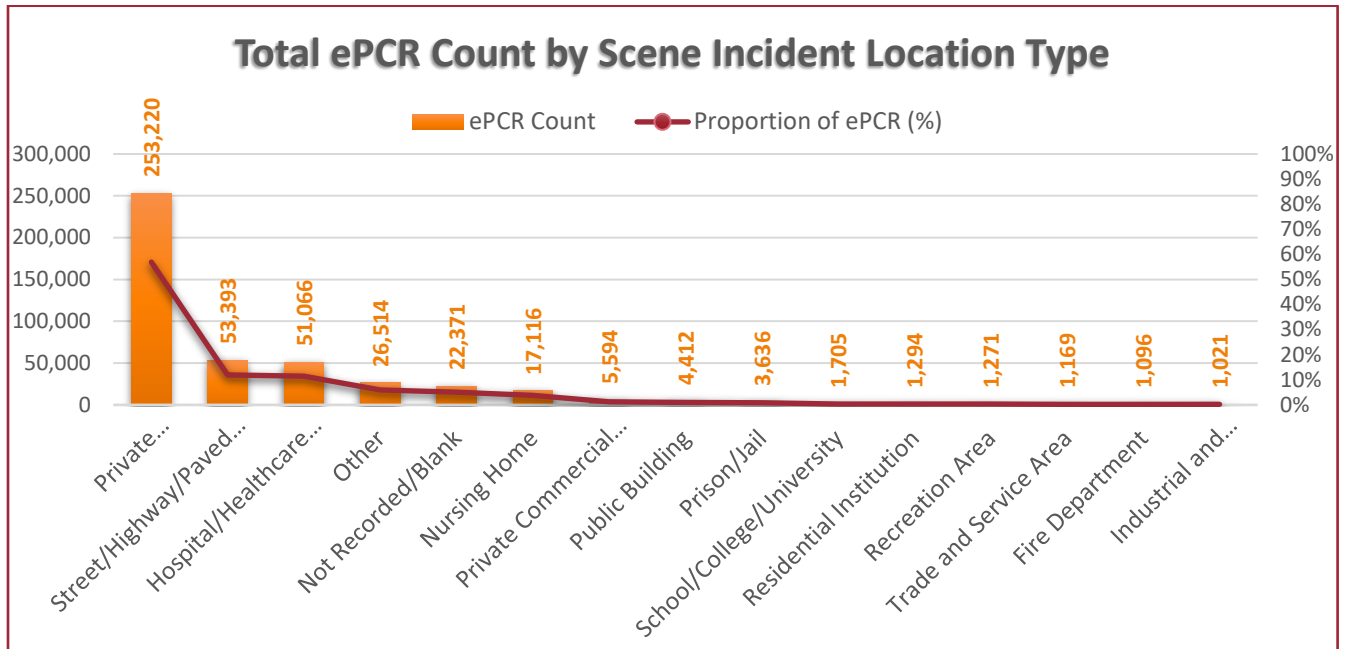


**Figure 9: Incident Patient Disposition by Total Count/Proportion of All ePCRs**

The figure below represents the total number and proportion of ePCRs in 2020 by Incident Patient Disposition. Patient incident disposition is taken from NEMSIS value eDisposition.12. This data shows most patients encountered were treated and transported by an EMS unit (290,248 records, 65%). Approximately, 15% of the reports submitted were documented as canceled calls.

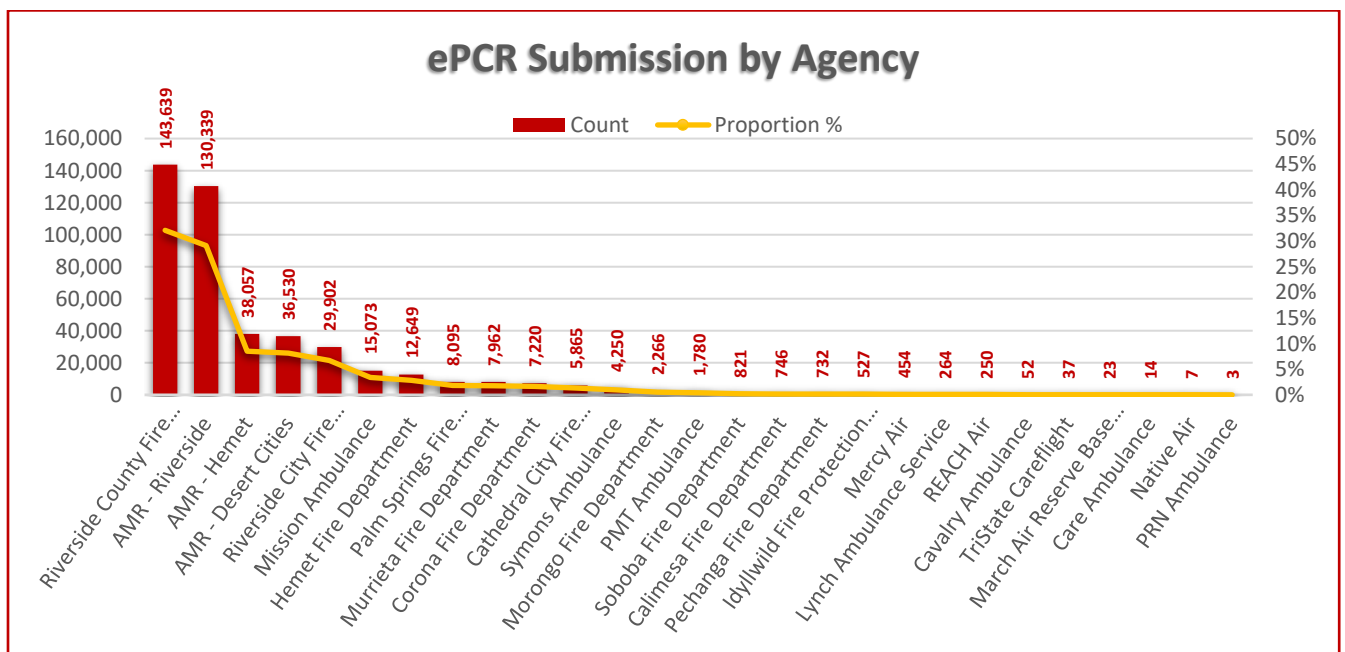


**Figure 10: Total ePCR Count by ‘Scene Incident Location Type’ (see Appendix for full breakdown)**



The figure above displays the total number and proportion of ePCRs in 2020 by ‘Scene Incident Location Type’. The 15 scene types with greatest frequency of records are shown in this figure. There were more than 65 different location types that were then collapsed into 29 categories (shown in appendix). Most of the incidents occurred at a private residence or apartment (253,220 records, 57%). 5% (22,371 records) of the total ePCRs submitted did not include a scene incident location type, shown as “Not Recorded/Blank”.

**Figure 11: Total Number of ePCRs Generated by Agency**



The figure above shows the distribution of EMS patient care reports submitted by each provider agency in 2020. Riverside County Fire Department represents the highest number of ePCRs generated in 2020 with 143,639 reports. AMR- Riverside had the 2<sup>nd</sup> highest with 130,399 reports.



## References

- Riverside County Emergency Medical Services Agency Policy 7701  
<https://www.remsa.us/policy/7701.pdf>
- State of California. California Code of Regulations, Title 22. Social Security, Division 9. Prehospital Emergency Medical Services. State of California Emergency Medical Services Authority / Health and Human Services Agency. 2014.  
<http://www.emsa.ca.gov/Media/Default/PDF/Title%2022%20Division%209%20Regulations.pdf#View=FitV>
- Riverside County Emergency Medical Services Agency Report. All EMS System ePCRs - Week 15, 2019.  
<http://remsa.us/documents/reports/APOT/Week15ePCRs.pdf>

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## Appendix

**Table 1.** The table below is in reference to Figure 10 of this report which outlines the Incident Location Scene Type”. It includes all scene types entered in eScene.09 field to describe the incident scene type.

| Original Scene Location Type  | Count   | Scene Location Type                         | Count   | Proportion |
|---|---------|---|---------|------------|
| Airport/Transport Center  | 754     | Airport/Transport Center                    | 754     | 0.17%      |
| Beach/Ocean/Lake/River  | 175     | Beach/Ocean/Lake/River                      | 175     | 0.04%      |
| Farm  | 4       | Farm/Ranch                                  | 254     | 0.06%      |
| Farm/Ranch  | 250     |   |         |            |
| Fire Department   | 1,096   | Fire Department                             | 1,096   | 0.24%      |
| Health care provider office   | 354     | Hospital/Health Care Provider Office/Clinic | 51,066  | 11.38%     |
| Healthcare provider office/clinic   | 7,776   |   |         |            |
| Hospital  | 40,613  |   |         |            |
| Urgent care   | 2,323   |   |         |            |
| Health Club/Gym   | 314     | Health Club/Gym                             | 314     | 0.07%      |
| Industrial and construction area  | 26      | Industrial and Construction Area            | 1,021   | 0.23%      |
| Industrial and construction area as the place of occurrence of the external cause                         | 7       |   |         |            |
| Industrial or construction area   | 988     |   |         |            |
| Military base   | 43      | Military Base                               | 43      | 0.01%      |
| Institutional (nonprivate) residence  | 392     | Non-Private Residence                       | 504     | 0.11%      |
| Institutional (nonprivate) residence as the place of occurrence of the external cause                     | 112     |   |         |            |
| Not Recorded  | 52      | Not Recorded/Blank                          | 22,371  | 4.99%      |
| (blank)   | 22,319  |   |         |            |
| Nursing home  | 1,523   | Nursing Home                                | 17,116  | 3.81%      |
| Skilled Nursing Facility  | 15,593  |   |         |            |
| Other   | 23,386  |   |         |            |
| Other places  | 2,605   | Other                                       | 26,514  | 5.91%      |
| Other places as the place of occurrence of the external cause   | 523     |   |         |            |
| Other ambulatory health services establishments   | 316     |   |         |            |
| Other ambulatory health services establishments as the place of occurrence of the external cause          | 90      | Other Health Service Facility               | 406     | 0.09%      |
| Prison  | 2       | Prison/Jail                                 | 3,636   | 0.81%      |
| Prison/Jail   | 3,634   |   |         |            |
| Private Commercial Establishment  | 5,594   | Private Commercial Establishment            | 5,594   | 1.25%      |
| Non-institutional (private) residence   | 17,269  | Private Residence/Apartment                 | 253,220 | 56.43%     |
| Non-institutional (private) residence as the place of occurrence of the external cause                    | 3,552   |   |         |            |
| Private Residence/Apartment   | 232,399 |   |         |            |
| Public Building   | 4,412   | Public Building                             | 4,412   | 0.98%      |
| Railroad Track  | 93      | Railroad Track                              | 93      | 0.02%      |
| Recreation area   | 1,271   | Recreation Area                             | 1,271   | 0.28%      |
| Residential institution   | 1,294   | Residential Institution                     | 1,294   | 0.29%      |
| School, other institution and public administrative area  | 395     | School/College/University                   | 1,705   | 0.38%      |
| School, other institution and public administrative area as the place of occurrence of the external cause | 154     |   |         |            |
| School/College/University   | 1,156   |   |         |            |
| Sports and athletics area   | 109     | Sports and Athletics Area                   | 141     | 0.03%      |

|   |        |                              |        |        |
|---|--------|------------------------------|--------|--------|
| Sports and athletics area as the place of occurrence of the external cause                                | 32     |                              |        |        |
| Street, highway and other paved roadways as the place of occurrence of the external cause                 | 744    | Street/Highway/Paved Roadway | 53,392 | 11.90% |
| Street and Highway  | 49,248 |                              |        |        |
| Street, highway and other paved roadways  | 3,400  |                              |        |        |
| Ambulatory surgery center   | 9      | Surgery Center               | 13     | 0.00%  |
| Ambulatory surgery center as the place of occurrence of the external cause                                | 4      |                              |        |        |
| Swimming Pool   | 98     | Swimming Pool                | 214    | 0.05%  |
| Swimming pool (public)  | 1      |                              |        |        |
| Swimming-pool in single-family (private) house or garden as the place of occurrence of the external cause | 10     |                              |        |        |
| Swimming-pool of boarding-house as the place of occurrence of the external cause                          | 1      |                              |        |        |
| Swimming-pool of mobile home as the place of occurrence of the external cause                             | 3      |                              |        |        |
| Swimming-pool of nursing home as the place of occurrence of the external cause                            | 5      |                              |        |        |
| Swimming-pool of other non-institutional residence as the place of occurrence of the external cause       | 3      |                              |        |        |
| Swimming-pool of prison as the place of occurrence of the external cause                                  | 4      |                              |        |        |
| Swimming-pool on military base as the place of occurrence of the external cause                           | 4      |                              |        |        |
| Swimming-pool, boarding-house   | 9      |                              |        |        |
| Swimming-pool, mobile home  | 7      |                              |        |        |
| Swimming-pool, nursing home   | 18     |                              |        |        |
| Swimming-pool, other institutional (nonprivate) residence   | 12     |                              |        |        |
| Swimming-pool, other non-institutional (private) residence  | 12     |                              |        |        |
| Swimming-pool, prison   | 14     |                              |        |        |
| Swimming-pool, reform school  | 1      |                              |        |        |
| Swimming-pool, single-family residence  | 12     |                              |        |        |
| Trade and service area  | 999    | Trade and Service Area       | 1,169  | 0.26%  |
| Trade and service area as the place of occurrence of the external cause                                   | 170    |                              |        |        |
| Unspecified place   | 245    | Unspecified Place            | 245    | 0.05%  |
| Transport vehicle as the place of occurrence of the external cause  | 8      | Vehicle                      | 8      | 0.00%  |
| Wilderness area   | 691    | Wilderness Area              | 691    | 0.15%  |