



RIVERSIDE COUNTY EMS AGENCY  
**WIC-5150 IMPACT REPORT**  
2021

APRIL 4<sup>TH</sup>, 2022

PREPARED BY RIVERSIDE COUNTY EMS AGENCY, EMERGENCY MANAGEMENT DEPARTMENT

# WIC-5150 EMS IMPACT SUMMARY

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California Welfare and Institutional Code (WIC) 5150 enables law enforcement and designated medical professionals to place individuals posing imminent risk to self or others on involuntary 72-hour hold. These holds are intended for psychiatric evaluation at a designated mental health facility; however, many of these patients are transported to emergency departments (ED) based on proximity and lack of alternative resources. **In 2021, Riverside County Emergency Medical Services (EMS) providers made approximately 12,846 emergency and non-emergency WIC-5150 responses.** In Riverside County alone, this amounts to over one-thousand 5150 responses made every month by EMS providers. This comes to a conservatively estimated annual cost of \$3 million for the pre-hospital care system alone. While many WIC-5150 patients require immediate behavioral health intervention to ensure safety and transport, most are not experiencing an imminent medical risk consistent with the life-saving response EMS is intended to provide. As a result, 5150 responses can overutilize complex and costly emergency services. Alternative behavioral health response and transport strategies can reduce the current impact of WIC-5150 on the EMS system, deploy more suitable care for this patient population, and help ensure emergency services are more rapidly available for those experiencing life-threatening medical conditions.

## Methodology

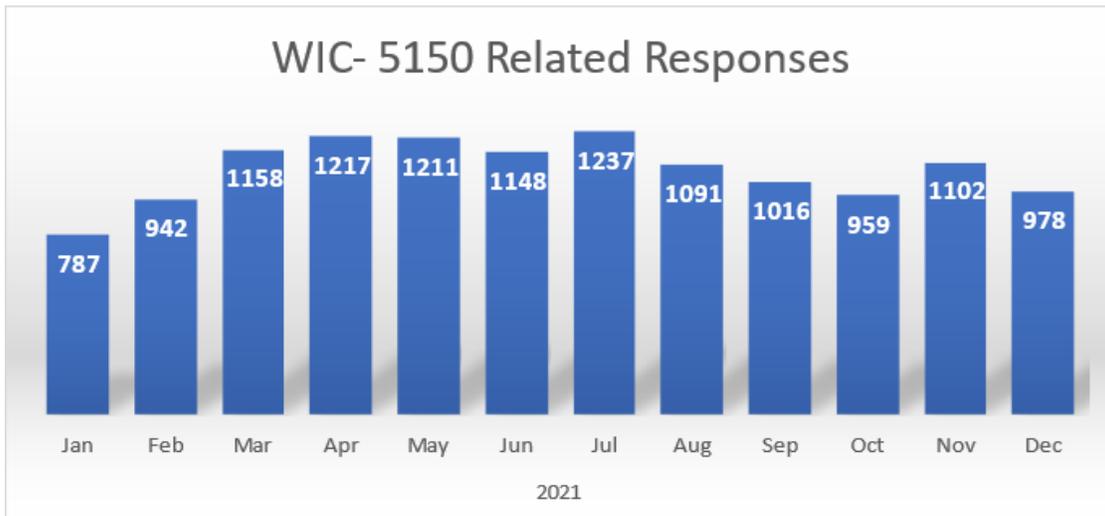
To determine the frequency of WIC-5150 responses by Riverside County EMS, **electronic patient care reports (ePCRs)** completed by on-scene 9-1-1 emergency providers, and non-emergency transport providers between July 1, 2020 through June 30, 2021 were analyzed. Patient records were entered into ImageTrend® Elite and extracted from the Elite Reportwriter feature. While a 5150-hold can be identified by 9-1-1 dispatch as the call reason, it is not a nationally recognized value defined by the National Emergency Medical Services Information System (NEMSIS). Therefore, medics cannot document it in the ePCR as a specific presenting problem in the appropriate field (eSituation.11 or.12). Instead, medics typically and consistently use the term “5150” in a narrative field. Using the ImageTrend® Report Writer analysis tool, the following parameters were used to identify and extract WIC-5150 records from the ePCRs:

- Inclusion of ePCRs with the terms “5150”, “51/50”, “51-50”, “Psych Hold”, or “5585” (minor code for 5150) in the *Patient Care Report Narrative* (eNarrative.01) or *Situation Primary Complaint Statement* (eSituation04)
- Exclusion of records where on-scene time was equal to zero
- Selection of “Distinct Only” rows to account for duplication

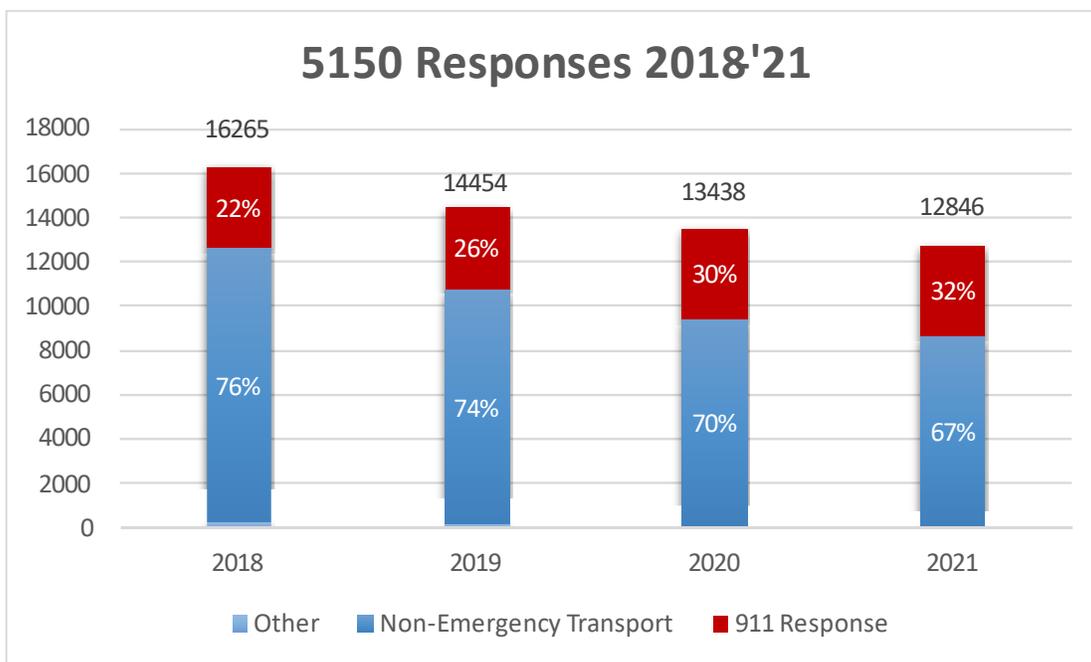
Riverside County has a dual response EMS system where a fire and ambulance unit respond to the same 9-1-1 medical incident. Therefore, counts reflect the number of responses and not patients, while percentages can represent either.

## Findings

The following data reflects all responding agencies in Riverside County including 9-1-1 emergency responders (fire), and ambulance transport agencies (emergency and non-emergency).



Analysis of electronic patient care reports (ePCRs) indicates Riverside County EMS agencies generated **12,846 WIC-5150 responses** between January 1, 2021 and December 31, 2021. This count is **4.4% below** the total count observed in 2020. This reduction in 2021 is consistent with a significant drop in total 9-1-1 and non-emergency responses since the emergence of COVID-19 and the response to it.



### Response Types vs Acuity Levels

In 2021, **67% of 5150 responses were for non-emergency transports while 32% involved 9-1-1 emergencies.** Only 0.4% fell into an “Other” category consisting of calls classified as Intercept, Public Assistance, or Mutual Aid. Call types were further classified by patient acuity.

**Initial Patient Acuity (eSituation.13)** is a universal standard description code (Lower, Emergent, Critical, or Dead) defined by the NEMSIS and assigned by EMS responders to broadly describe the patient’s condition upon encounter. A systemic review of ePCRs using randomly selected samples revealed “Initial Acuity” level can be

used to predict when an EMS response involved a WIC-5150 alone (*lower acuity*) or involved additional risk factors or comorbidity such as self-inflicted injury, overdose or neurological condition (*emergent/critical acuity*).

Findings were as follows:

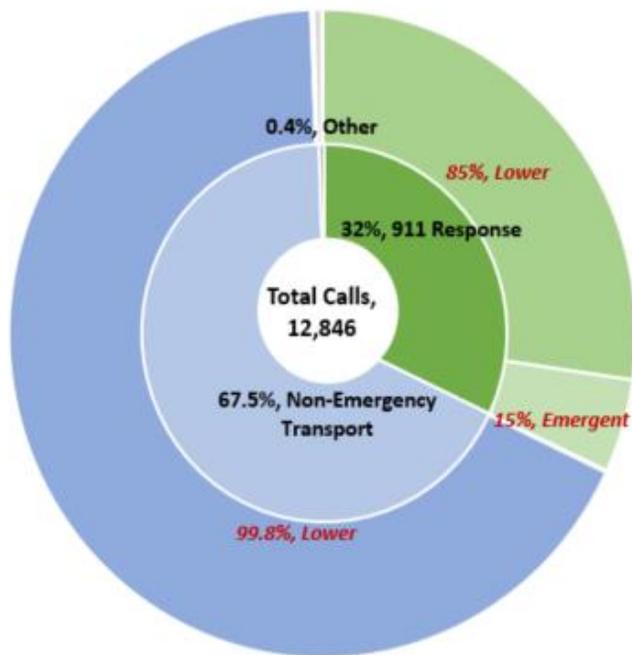
- Approximately **85% of 9-1-1 responses** and over **99% of non-emergency transports** (interfacility or medical) were coded as **Lower Acuity** calls.
- The 2<sup>nd</sup> most frequently used acuity was ‘Emergent’ making up 5% of the total responses.
- Of the nearly 12,846 records, less than 18 were designated as Critical Acuity calls.

**Final Patient Acuity (eDisposition.19)** is defined by NEMSIS as the acuity of the patient after EMS care. It was also evaluated to determine change in the condition of these patients from EMS encounter to intervention.

Key points noted are as follows:

- 31% of *Emergent* Acuity cases were downgraded to *Lower* acuity.
- 74% of *Critical* Acuity cases were downgraded to *Emergent* or *Lower* Acuity.

### WIC- 5150 Response Type by Initial Acuity

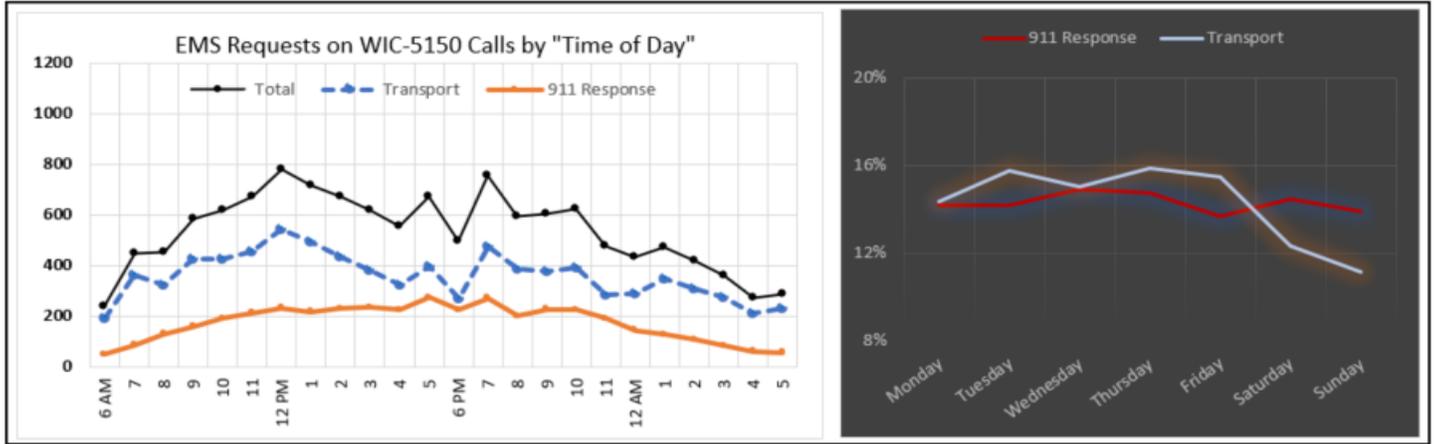


	911 Response	Non-Emergency Transport	Other	
Lower	3476	8583	56	95.1%
Emergent	594	14	1	4.8%
Critical	12	6		0.1%
	32.0%	67.5%	0.4%	

- 911 Response
- Non-Emergency Transport
- Other

**Day and Time Factors**

Peak times for WIC-5150 responses occur between 10AM and 10PM. This can be a function of resource availability during business hours as most calls are for transport, however 9-1-1 responses which are less influenced by peak operating times follow a similar pattern. For both transport and 9-1-1 responses, WIC-5150 calls are greatly reduced between 11PM and 7AM. Interestingly, a similar pattern exists for non-transport responses reduced on weekends; however, 9-1-1 responses tend to decrease on Fridays.

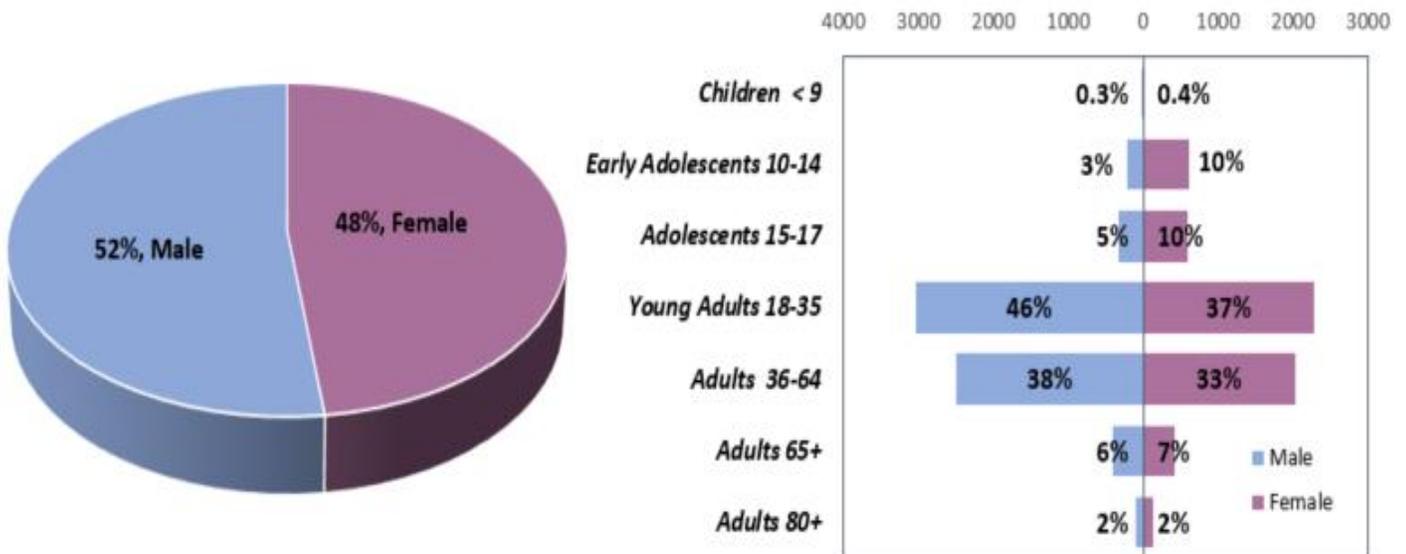


**Patient Demographics**

12,719 valid data points were used to analyze patient demographic information. Below is the graphical representation of gender distribution and categorical age distribution by gender.

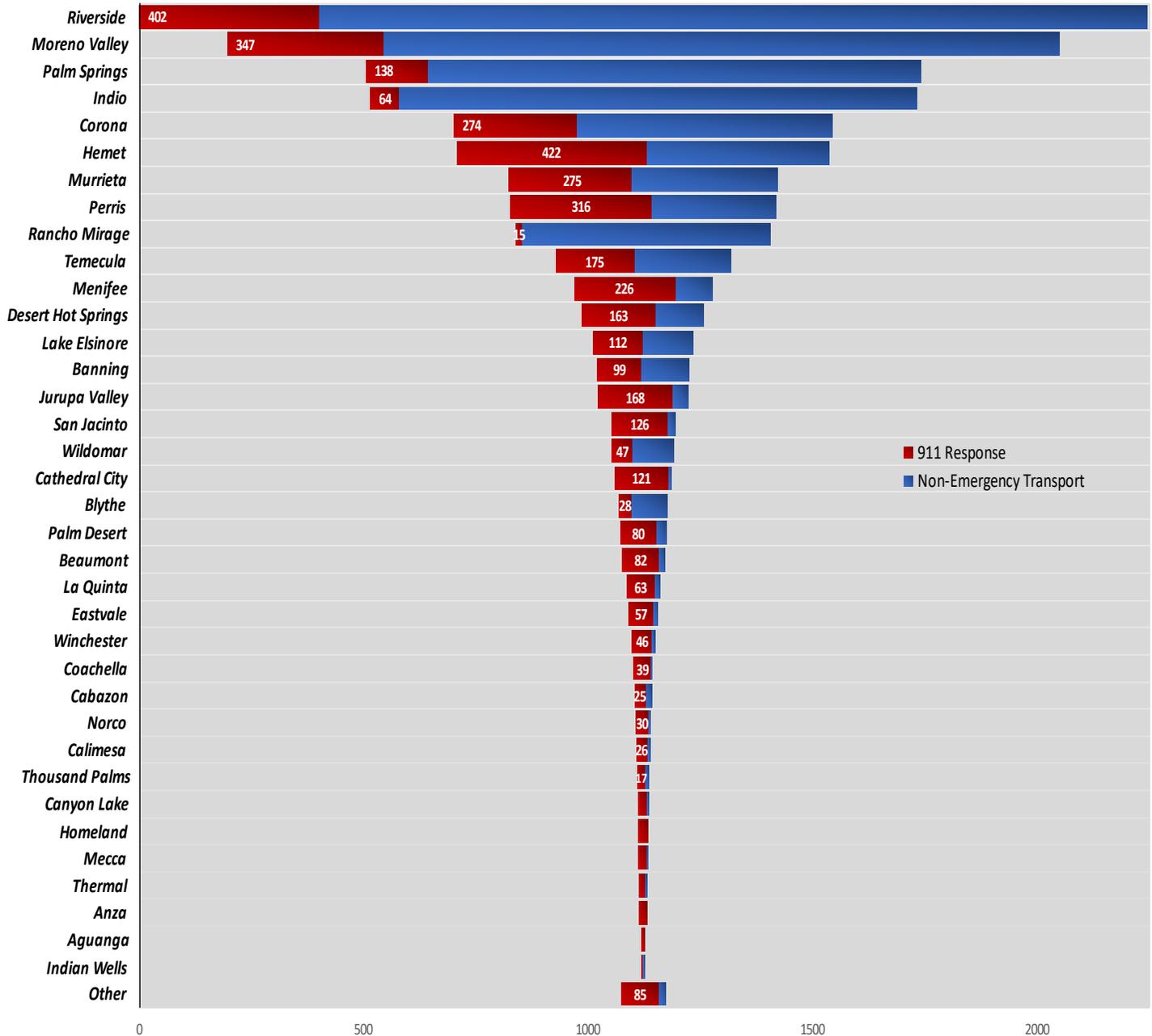
Notable finding on patient demographics are as follows:

- Males make up a greater proportion of WIC-5150s at 52% of the total number of responses
- The most common age group are young adults making up 42% of all responses (Age:18-35)
- Adolescents are the only age group where WIC-5150s are more common for females than males



## Response Type by City

Cities with the highest density of WIC-5150 Non-Emergency Transports vs. 9-1-1 Responses exhibit different characteristics. The majority of 5150 responses involve Interfacility Transport, thus higher densities for transport are expected in cities with hospitals embedded, notwithstanding predictive factors such as population. **The following is a graph of 5150 call origin by city and response type between January 2021 and December 2021.**

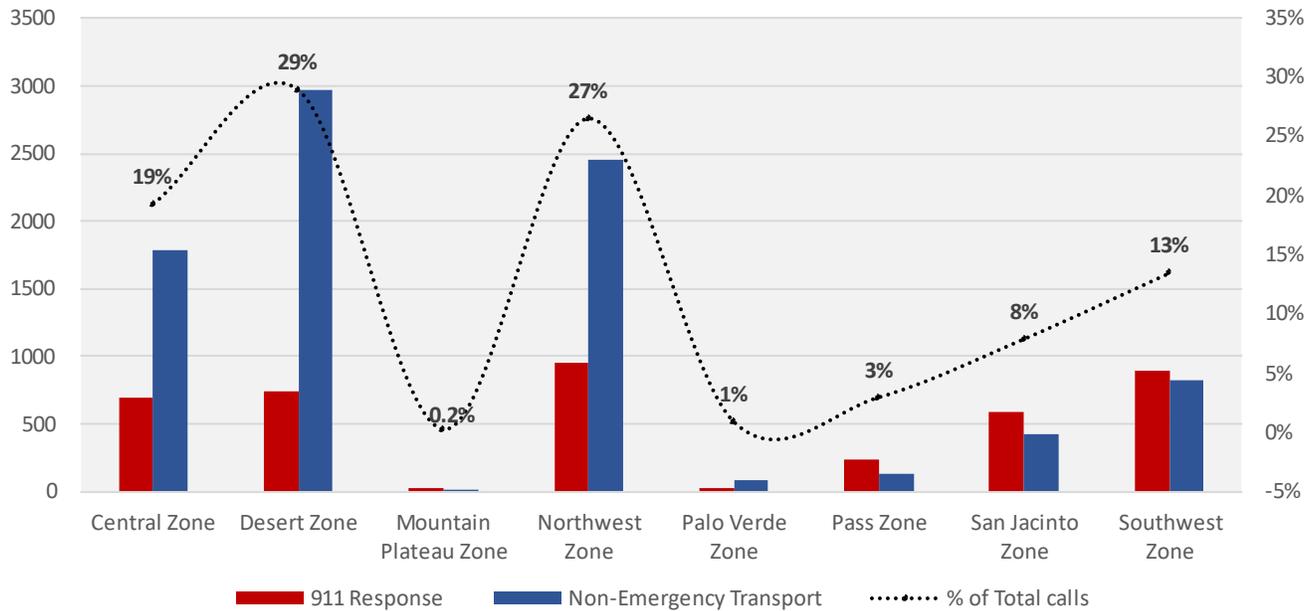


## Response Types by Ambulance Zones:

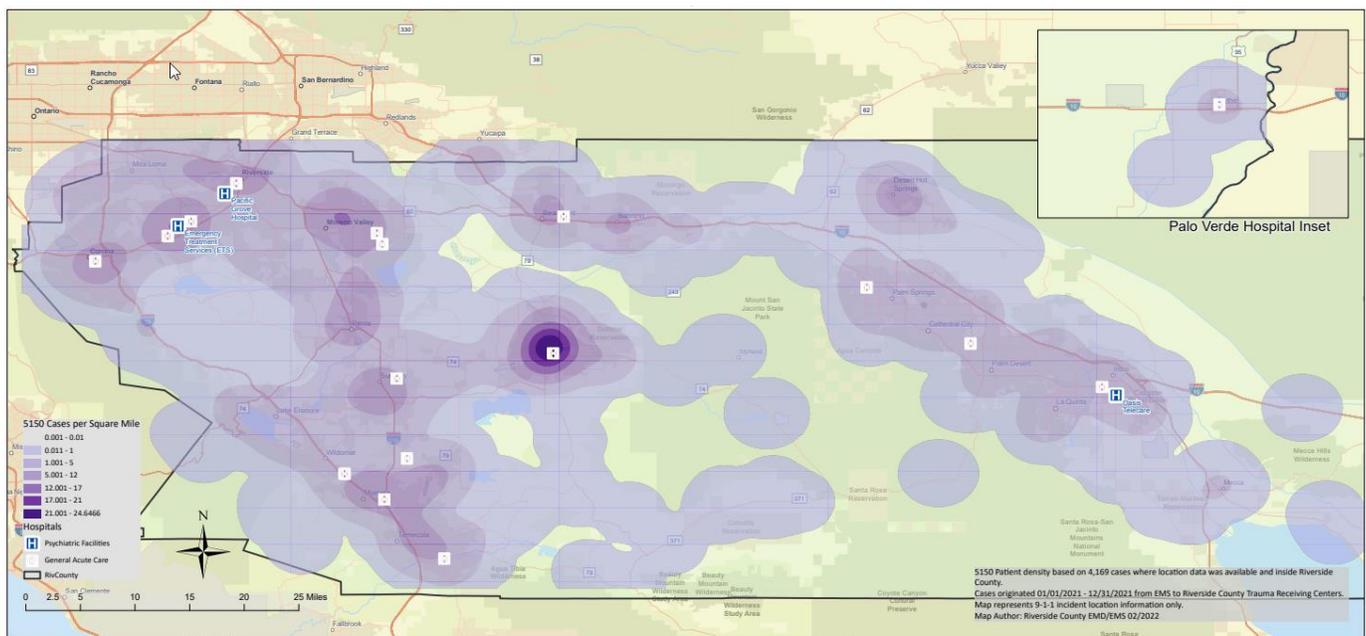
Zones are defined by the transporting agency. Based on the data, the findings are listed below:

- Desert Zones has the highest 5150 total responses (29%) compared to the other zones
- Northwest has the highest number of 9-1-1 responses to 5150, followed by the Southwest zone which is the most populated zone.
- While most regions have proportionately more non-emergency 5150 responses, San Jacinto zone has more 9-1-1 responses than non-emergency, and Southwest zone has nearly equal call types generated.

### 5150 Response Type by Zone



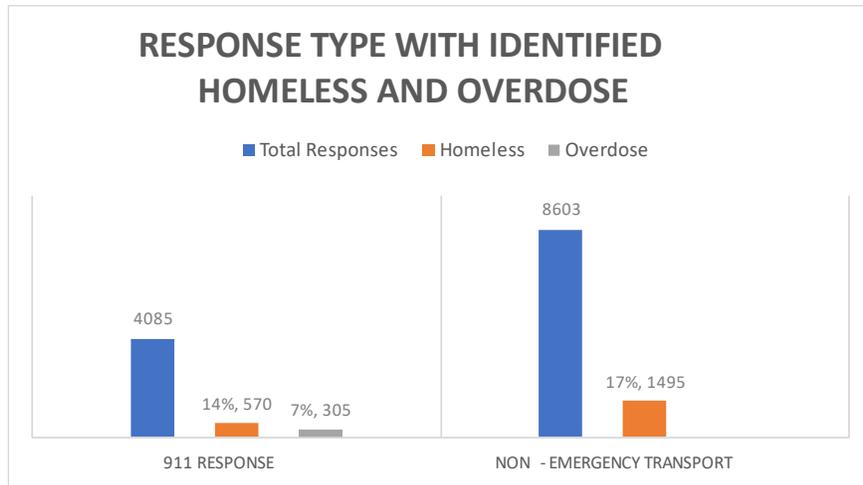
## Heat Map Distribution of WIC 5150 9-1-1 Responses



**5150 with identified Homeless and Overdose:**

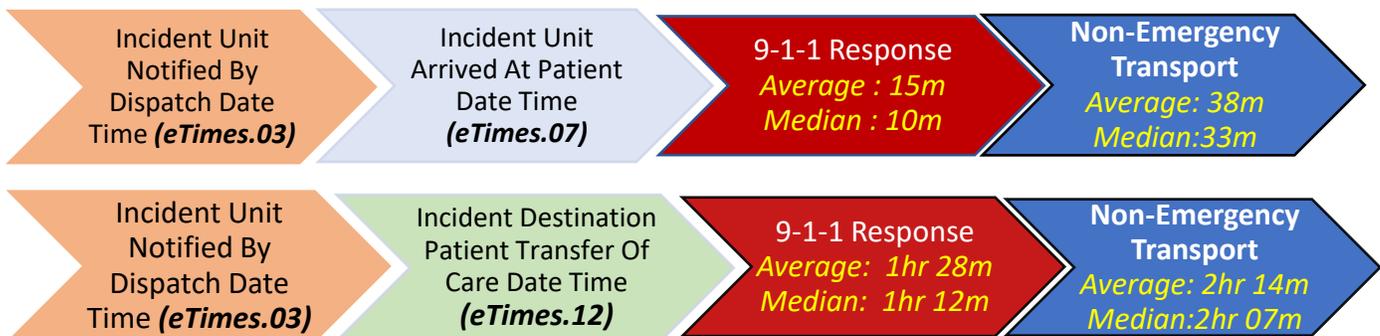
With the increase in homelessness and overdose reported in Riverside County, the relationship between 5150 calls and these social factors were evaluated. The findings are as follows:

- 16% of total 5150 records had patients identified as being homeless
  - This accounted for 14% of 9-1-1 emergency response calls and 17% of Non-Emergency transport calls
- 2% of all 5150 records were identified as involving a patient who had overdosed with the majority of them being 9-1-1 responses (7% of total 9-1-1 records alone).



**Response Times**

EMS response timestamps are standardized and defined by the National Emergency Medical Services Information System (NEMSIS). [REMSA Policy 2203](#) further defines some time intervals between timestamps for data collection and reporting. In this report, the time at which a unit was notified (eTimes.03) to the time at which the unit arrived at the patient (eTimes.07), along with the time at which a unit was notified (eTimes.03) to when a transfer of care occurred (eTimes.12), were analyzed for the available WIC-5150 emergency and non-emergency transports. The findings are as follows:



## Summary of Findings / Recommendations

- In Riverside County alone, approximately 1,070 WIC-5150 responses are made by Emergency Medical Services (EMS) each month. There was a marked reduction in total responses in 2021 compared to previous years. However, this was dependent on call type: non-emergency transports were reduced while 9-1-1 responses increased.
- Two-thirds of WIC-5150 responses were documented as non-emergency EMS transport requests ('Interfacility' or 'Medical'). This is in stark contrast to the Riverside County EMS system which operates 90% of its responses toward 9-1-1 medical emergencies and only 10% toward non-emergency transports.
- While the causes are not yet known, a shift in WIC-5150 EMS volume and response patterns in 2021 particularly in January 2021, may be attributed to COVID-19 and the response to it.
- 95% of all WIC-5150 responses are patients reported as 'lower acuity'; suggesting that in most cases, little to no medical attention beyond transport to an appropriate facility was required.
- Developing alternative transportation, resources, and response protocols to WIC-5150 incidents can significantly reduce impact on the EMS system and provide better, more appropriate care for these patients.

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*Data in this report is provided by the efforts of the Riverside County EMS System and its EMS Providers in ensuring quality care and documentation of patient encounters.*

*Report prepared by Sudha Mahesh & Catherine Borna Farrokhi, Data & Reporting Unit, Riverside County EMS Agency*

*For more information, please contact Riverside County EMS Administrator, Trevor Douville [tdouville@rivco.org](mailto:tdouville@rivco.org)*

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