

# Prehospital Firearms-Related Injury Descriptives: National Trends

## INTRODUCTION

**Background:**  
Firearm-related injuries are among the five leading causes of death for individuals under the age of 65<sup>1</sup>. Understanding the population most at risk for firearm-related injuries can help aid public health in targeting specific populations with prevention efforts. This could help reduce the resource burden placed on Emergency Medical Services.

**Purpose:**  
To evaluate the rate of firearm-related prehospital incidents over the last three years amongst age groups and regions across the US.

## METHODOLOGY

From the ImageTrend Collaborate™ database, retrospective prehospital 911 response firearm-related incidents from 2018 to 2020 were analyzed. To efficiently analyze the data, several were grouped into one "Cancellations" variable. National EMS Information System Version 3.4 (NEMESIS) data elements were grouped into similar categories (ex. eDisposition.12 False Alarm" and "Canceled Call." Cause of Injury (eInjury.01), Provider Primary Impression (eSituation.11), and Provider Secondary Impression (eSituation.12) fields were searched for terms "gun" or "firearm". US regions were identified utilizing the US Census region groups<sup>2</sup>. Chi-square analysis was performed to measure differences from 2018 to 2020.

## RESULTS

There were a total 37,280 firearm-related incidents out of 13,661,127 overall incidents with 911 response and where patient contact was made from 2018 to 2020.

Most of the firearm-related incidents involved males (85%), Black/African Americans (46%) and the age group of 16-35 (57%).

## RESULTS

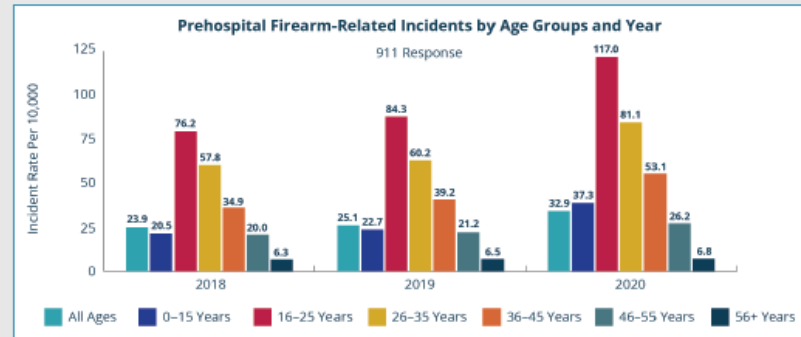
- Almost 20% of firearm-related incidents had a fatal pronouncement by EMS services, this accounted for 3.8% of all prehospital pronouncements.
- There was a significant change from 2018 to 2020 (chi-square p-value < 0.01) across all age groups and all regions except the west.
- There was an overall 38% increase in firearm-related injuries in 2020 compared to 2018.
- The pediatric age group (0-15 years) saw the largest increase (82%) followed by young adults (16-25 years) (54%).
- The Midwest saw the largest increase in firearm-related incidents (85%) and the Northeast saw a decrease (17%).

## ASSUMPTIONS & LIMITATIONS

Data included within this report is retrospective and includes all submissions to ImageTrend Collaborate between 1/1/2018 and 05/30/2021. If corrections/edits or changes to the ePCR documentation are made after this date, these changes will not be reflected within this report, but will be automatically updated within Collaborate for future reporting.

## CONCLUSION

Firearm-related incidents continue to be a major public health problem and has drastically increased over the last 3 years. Continue to evaluate and promote firearm prevention policies and strategies across the highest risk age groups and regions. Further research is needed to understand if these injuries are unintentional, self-harm, or assault-related.



	2018	2019	2020	Total	% Change 2018 vs 2020
All Incidents <sup>a</sup>	3,830,897	4,604,480	5,225,750	13,661,127	
Firearm Incidents	9,030 (0.2%)	11,390 (0.3%)	16,860 (0.3%)	37,280 (0.3%)	
Fatal Firearm Disposition	1,730 (19.2%)	2,242 (19.7%)	3,069 (18.2%)	6,822 (18.9%)	
Female	1,289 (14.3%)	1,722 (15.2%)	2,642 (15.7%)	5,653 (15.2%)	
Male	7,704 (85.7%)	9,628 (84.8%)	14,188 (84.3%)	31,520 (84.8%)	
Black/African American <sup>b</sup>	3,930(43.5%)	5,178(45.5%)	8,121(48.2%)*	17,229(46.2%)	
White <sup>b</sup>	2,583(28.6%)	3,245(28.5%)	4,701(27.9%)	10,529(28.2%)	
Hispanic <sup>b</sup>	1,287(14.3%)	1,242(10.9%)	18,80(11.2%)*	4,409(11.8%)	
<b>Rates per 10,000 Incidents by Age Groups</b>					
0-15 years	20.5	22.7	37.3*	26.9	+82.0%
16-25 years	76.2	84.3	117.0*	93.9	+53.5%
26-35 years	57.8	60.2	81.1*	67.6	+40.3%
36-45 years	34.9	39.2	53.1*	43.4	+52.2%
46-55 years	20.0	21.2	26.2*	22.7	+31.0%
+55 years	6.3	6.5	6.8	6.5	+7.9%
All Age Groups	23.9	25.1	32.9*	27.8	+37.7%
<b>Rates per 10,000 Incidents by US Regions</b>					
Midwest (2,274,026)	9.1	11.2	16.8*	13.0	+84.6%
Northeast (1,508,614)	8.6	7.6	7.1*	7.8	-17.4%
West (2,286,861)	17.5	15.8	18.1	17.6	+3.4%
South (7,375,688)	29.2	35.1	48.4*	39.3	+65.8%
All U.S. (13,661,127)	23.5	24.7	32.3*	27.3	+37.4%

<sup>a</sup>Incidents were 911 Response where patient contact was made  
<sup>b</sup>Top 3 Races by counts  
 \*Significant difference from 2018 to 2020 (Chi-square P-value < 0.01)

REFERENCES:  
 1. Centers for Disease Control and Prevention. Violence Prevention: Firearm Violence Prevention. Retrieved Aug 23, 2021. <https://www.cdc.gov/violenceprevention/firearms/fact.html>  
 2. Census Regions and Divisions of the United States. Retrieved Aug 23, 2021. [https://www2.census.gov/geopl/maps-data/maps/reference/us\\_regdiv.pdf](https://www2.census.gov/geopl/maps-data/maps/reference/us_regdiv.pdf)