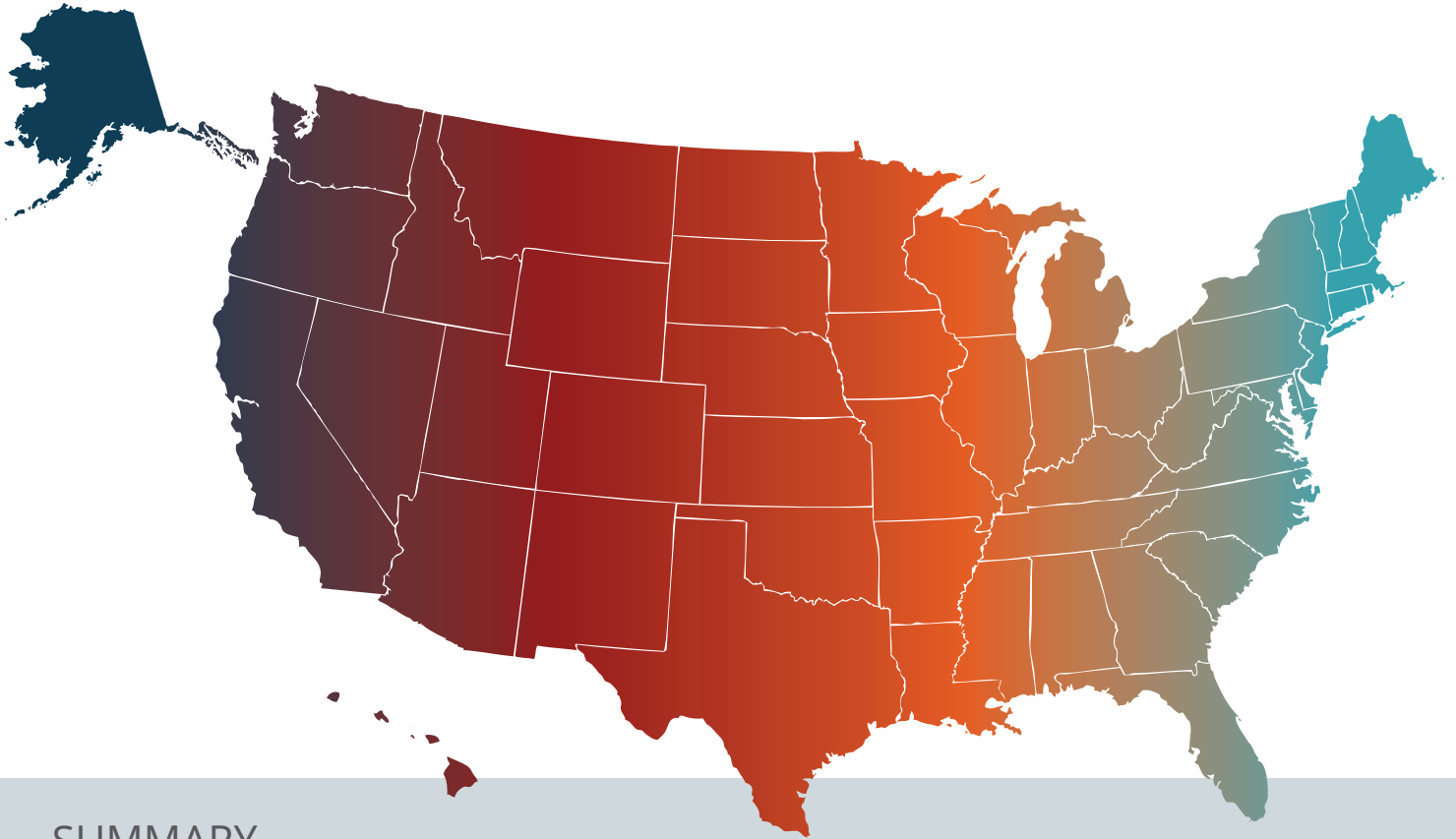


# ImageTrend Collaborate™ Short Report:

## 2018 – 2020 National Trends in Firearm-Related Incidents in the Prehospital Setting

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### SUMMARY

#### What is already known about this topic?

Firearm-related incidents are among the five leading causes of death for individuals under age 65.<sup>1</sup>

#### What does this report add?

Rate of firearm-related prehospital incidents over the last three years amongst age groups and regions across the US.

#### What is the call to action?

Identify the population most at risk for firearm-related incidents to focus resources and prevention efforts.



## Overview

The Centers for Disease Control (CDC) has identified firearm-related incidents as the top five leading causes of death for individuals under the age of 65.<sup>1</sup> While intentionality of firearm-related incidents is not always known in the prehospital setting, U.S. trauma centers have seen an increase in patients with violent injuries, including firearm-related, over the past 12 months.<sup>2</sup> Firearm-related incidents are a public health concern and can utilize valuable and often strained Emergency Medical Services (EMS).

## Methodology

### DATA COLLECTION METHOD:

All data is collected and stored within ImageTrend Collaborate. Each organization has given permission to utilize their data for Collaborate research purposes. Data reported within this report is based on the National Emergency Medical Services Information System (NEMSIS) data elements.

### DATA DE-IDENTIFICATION:

ImageTrend Collaborate follows federally established HIPAA Safe Harbor Regulations to ensure data anonymity and protection of patient records.

### DATA ANALYSIS:

- Data was aggregated and analyzed within Microsoft PowerBI Version 2.88.1385.0.
- Incidents were included in the analysis of the type of service request (eResponse.05) was 911 response and incident/patient disposition (eDisposition.12) that resulted in patient contact.
- Incidents were from 2018 to 2020.
- NEMSIS Version 3.4 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>3</sup>
- Chi-square analysis was performed to measure differences from 2018 to 2020.

## Assumptions and Limitations

Data included within this report is retrospective and includes all submissions to ImageTrend Collaborate between 1/1/2018 and 12/31/2020. If corrections/edits or changes to the ePCR documentation were made after the date the report was created, the changes are not shown in this report, but will be available updated within Collaborate for future reporting.

Financial support for this report was provided by ImageTrend, Inc.

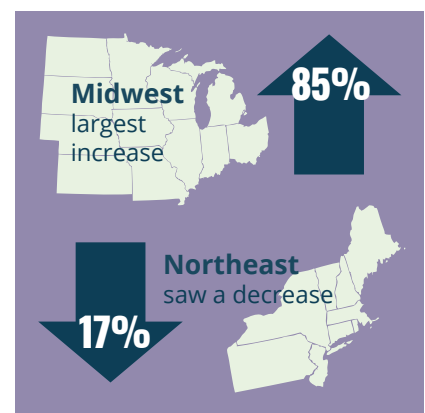
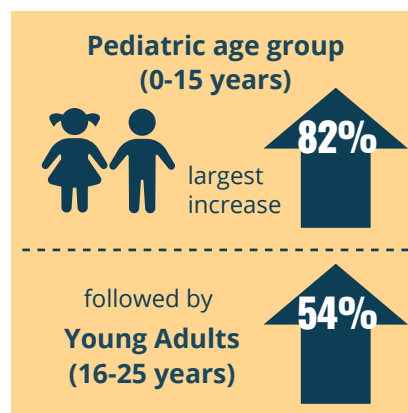
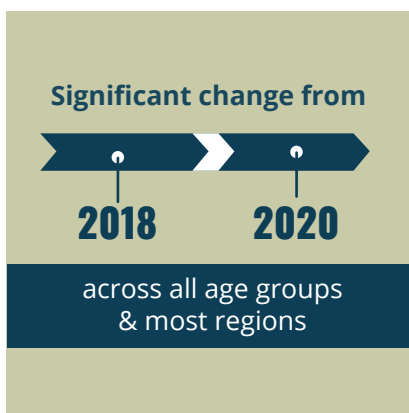
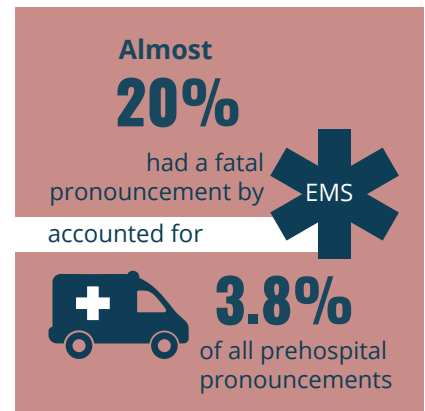
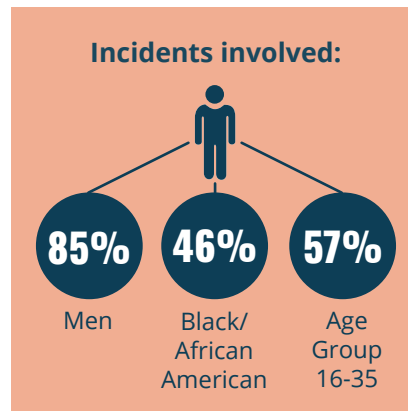


## Results

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.

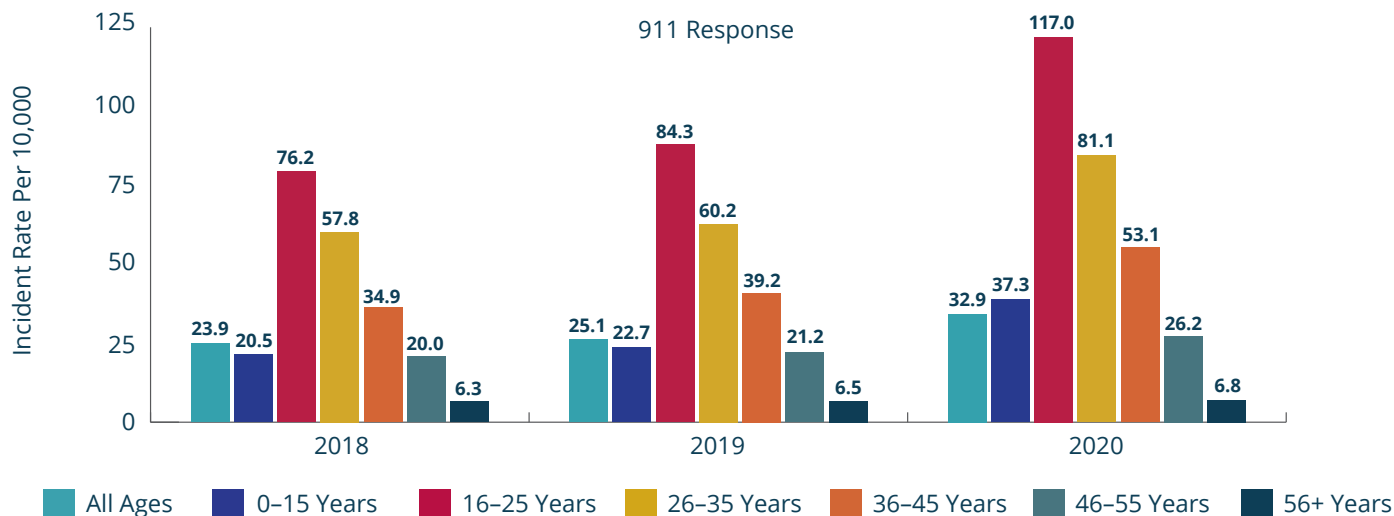
- Most of the firearm-related incidents involved males (85%), Black/African Americans (46%) and the age group of 16-35 (57%).
- Almost 20% of firearm-related incidents had a fatal pronouncement by EMS services, this accounted for 3.8% of all prehospital pronouncements.
- There was a significant change from 2018 to 2020 (chi-square p-value < 0.01) across all age groups and most regions.
- There was an overall 38% increase in firearm-related incidents 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%).

### Prehospital Firearm-Related Incidents



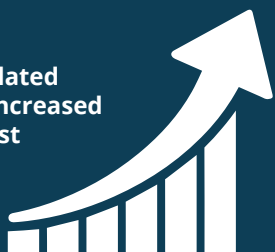


### Prehospital Firearm-Related Incidents by Age Groups and Year



## Key Finding & Action Items

Firearm-related incidents increased over the last 3 years



Evaluate firearm prevention policies across highest risk groups and regions

Further research needed intentionality:

Unintentional

Self-harm

Assault

## Further Questions to Consider

- Do regions with high firearm incidents increase firearm injury risk to providers?
- Where is there a need for increased public health awareness and prevention methods?
- If intentionality is self harm-related, what at-risk groups are in need of easier access to mental health resources?
- What prehospital interventions influence patient outcomes?
- Which destination types or designations influence patient outcomes in rural vs. urban environments?



Table 1. Prehospital Firearm-Related Descriptives				
	2018	2019	2020	Total
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%)	1,880 (11.2%)*	4,409 (11.8%)
<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)				

Table 2. Prehospital Firearm-Related Rates by Age and Region					
	2018	2019	2020	Total	% Change 2018 vs. 2020
Rates per 10,000 Incidents by Age Groups					
0-15 years	20.5 (4.6%)	22.7 (4.7%)	37.3* (4.8%)	26.9 (4.7%)	+82.0%
16-25 years	76.2 (30.6%)	84.3 (30.9%)	117.0* (31.3%)	93.9 (31.0%)	+53.5%
26-35 years	57.8 (26.2%)	60.2 (25.3%)	81.1* (27.0%)	67.6 (26.3%)	+40.3%
36-45 years	34.9 (14.6%)	39.2 (15.4%)	53.1* (16.5%)	43.4 (15.7%)	+52.2%
46-55 years	20.0 (10.4%)	21.2 (10.0%)	26.2* (9.2%)	22.7 (9.7%)	+31.0%
+55 years	6.3 (13.6%)	6.5 (13.7%)	6.8* (11.1%)	6.5 (12.5%)	+7.9%
All Age Groups	23.9	25.1	32.9*	27.8	+37.7%
Rates per 10,000 Incidents by US Regions					
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%
*Significant difference from 2018 to 2020 (Chi-square P-value < 0.01)					

## References

- Centers for Disease Control and Prevention. Violence Prevention: Firearm Violence Prevention. Retrieved Aug 23, 2021. <https://www.cdc.gov/violenceprevention/firearms/fastfact.html>
- R. Fojut, How trauma centers are responding to the increase of violence in the U.S. Trauma System News. (2021) <https://www.trauma-news.com/2021/08/how-trauma-centers-are-responding-to-the-increase-of-violence-in-the-u-s/>
- Census Regions and Divisions of the United States. Retrieved Aug 23, 2021. [https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us\\_regdiv.pdf](https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf)



## To Our Contributors

We want to thank our clients who have opted to provide their data to better the industry. Without you, our efforts to advance prehospital research to improve patient care, agency efficiencies, and industry knowledge would be limited.

thank  
you

## About Collaborate

The EMS and healthcare industry is full of underutilized data that can be used to make a lasting, positive impact on the community. The ImageTrend Collaborate initiative provides insight into clinical, operational, and public health data that will contribute to healthcare provided by organizations, specific sectors, and the industry at large. We will dive into research topics relevant to the urgent topics affecting the care provided within your community. Collaborate aggregates, de-identifies and reports on data to empower data-driven decision-making. As of 2021, Collaborate data includes over 30 million incident records representing all regions of the United States. | [www.ImageTrend.com/Collaborate](http://www.ImageTrend.com/Collaborate)

### Suggested Citation:

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## About ImageTrend

ImageTrend, Inc. is dedicated to connecting life's most important data in the healthcare and emergency response community. We deliver software solutions, data analytics and services for EMS, hospitals, community paramedicine/mobile integrated healthcare programs (CP/MIH), critical care, fire, and preparedness to enable fully integrated patient-centric healthcare and public safety. Our commitment to innovation, our clients, and providing world-class implementation and support is unsurpassed. Based in Lakeville, Minnesota, we combine business analysis, creative design, and data-driven architecture to offer scalable solutions and strategies for today and the future. | [www.ImageTrend.com](http://www.ImageTrend.com)