RESEARCH PAPER

Firearm-Related Hospitalizations Across a National Healthcare System, 2016–2020

Selected results of research on the national trends in firearm injuries and fatalities

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Abstract

Firearm violence remains one of the most pressing public health issues in the United States.

This study examines the epidemiology of fatal and nonfatal firearm-related hospitalizations across 164 US hospitals. Trends in assault, self-harm, and unintentional injuries over the five years are described alongside demographic characteristics such as gender, age, and race/ethnicity.

BY CHELSEA MCQUEEN

Introduction

PART 1

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Objectives

WHAT I SEEK TO ACHIEVE

- To describe the magnitude and characteristics of firearm-related injuries treated in HCA Healthcare hospitals.
- To identify trends in firearm injuries across intent and demographic characteristics.
- To characterize differences in the lethality of firearm-related injuries in selected demographic subgroups.

Review of Related Literature

PART 2

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Related Literature

KAUFMAN ET AL., 2021

Epidemiologic trends in fatal and nonfatal firearm injuries in the US, 2009-2017
JAMA Internal Medicine

SPITZER ET AL., 2020

Incidence, distribution, and lethality of firearm injuries in California from 2005 to 2015
JAMA Network Open

FOWLER ET AL., 2015

Firearm injuries in the United States
Preventive Medicine

WINTEMUTE, 2015

The epidemiology of firearm violence in the twenty-first century United States
Annual Review of Public Health

Methods

PART 3

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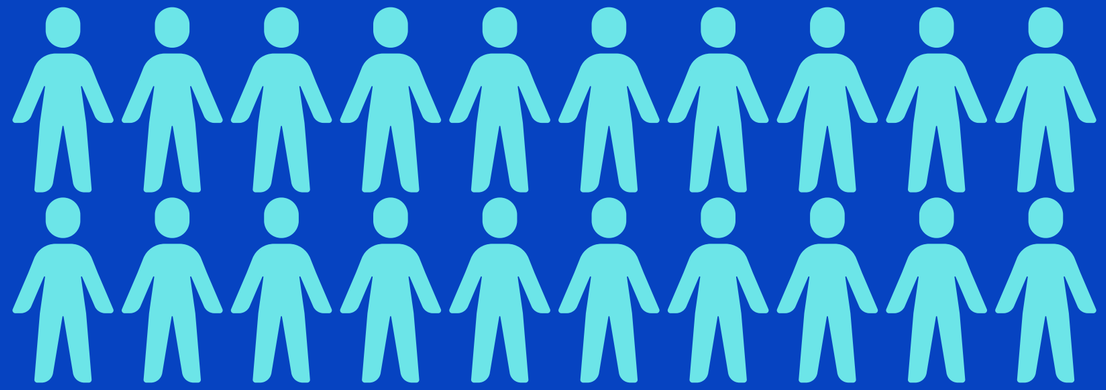
Research Participants

SUBJECTS OF THIS STUDY MET THE FOLLOWING CONDITIONS:

- Admission between 1/01/2016 and 12/31/2020 (5 years)
- Attended HCA Healthcare hospital
- Initial encounter for firearm injury



What is a firearm injury?

A firearm injury is defined as a wound or penetrating injury from a weapon that uses a powder charge to fire a projectile.

- includes injuries sustained from handguns, rifles, and shotguns
- excludes wounds from air-powered, gas-powered, BB, and pellet guns
- excludes non-penetrating injuries from firearms

ICD 10 Code	Description
W32-W34	Unintentional firearm injuries
X72–X74	Intentional self-harm by firearm
X93–X95	Firearm assaults
Y35	Legal intervention injuries by firearm
Y36-Y37	Military operation injuries by firearm
Y22–Y24	Firearm injuries of undetermined intent

Results

PART 4

Research findings

- **OVER 29,400 FIREARM INJURIES**

  164 HCA Hospitals treated an average of 5,881 annual firearm injuries.

- **MEN ARE OVERREPRESENTED**

  85% of all firearm injuries were men. This majority remained stable across all intent categories.

- **FIREARM INJURIES ARE INCREASING**

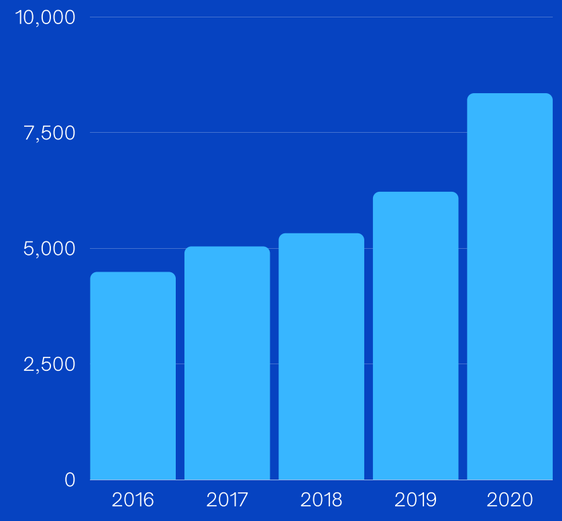
  Hospitals experienced a 17% average annual increase.

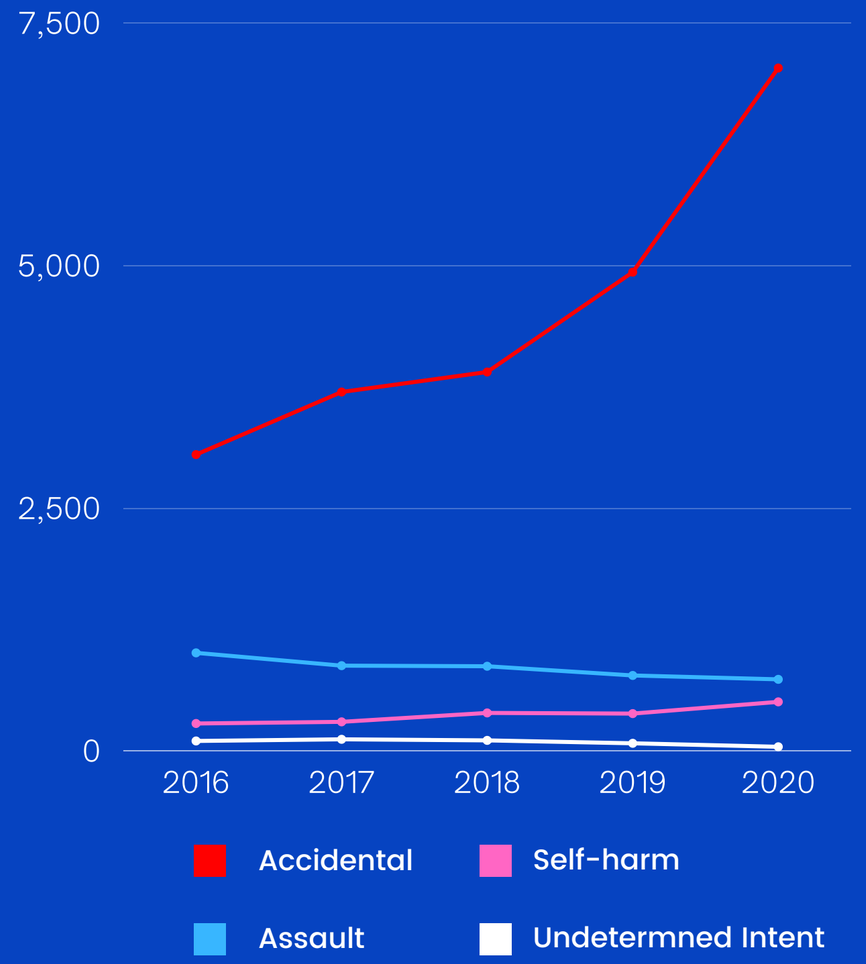
- **MOST INJURIES ARE ACCIDENTAL**

  77% of firearm-related injuries were accidental.

Firearm injuries by year

- Firearm injuries increased by over 86% from 2016 to 2020.
- Accidental injuries increased by 130% during the study period.
- Injury due to assaults decreased each year.
- Rates of injury from intentional self-harm and undetermined intent remained stable.

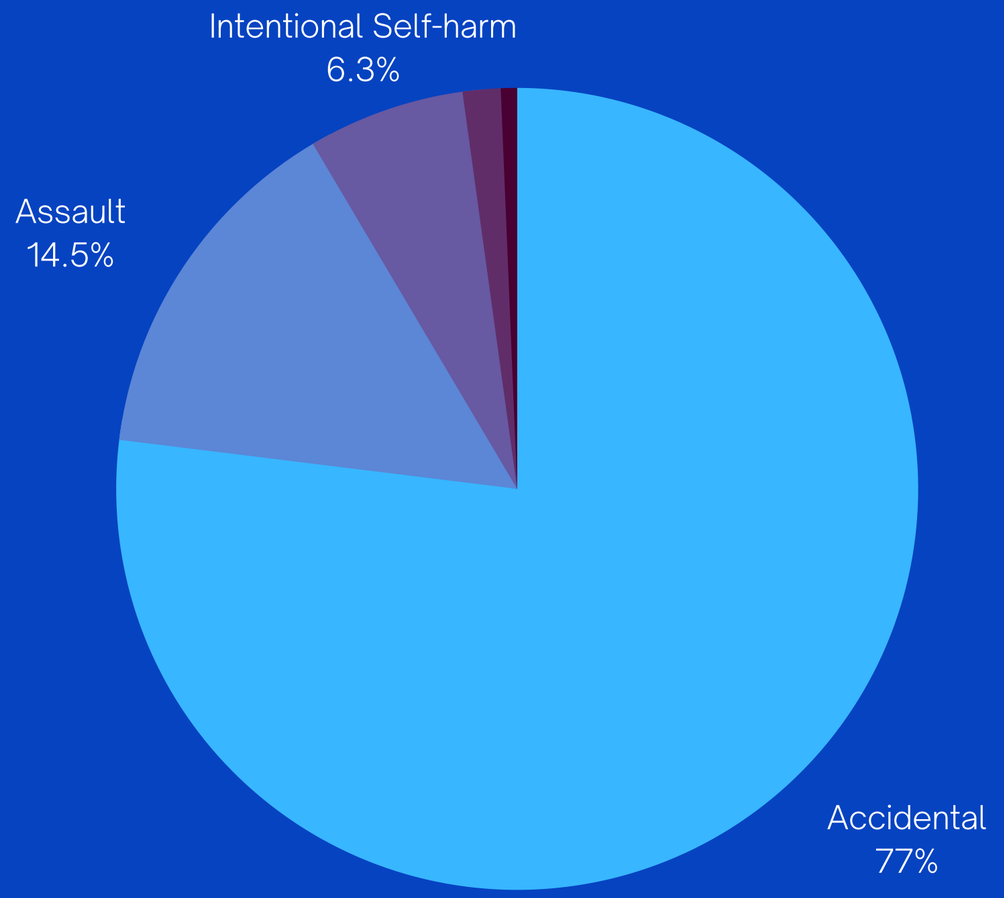




Firearm injuries by intent

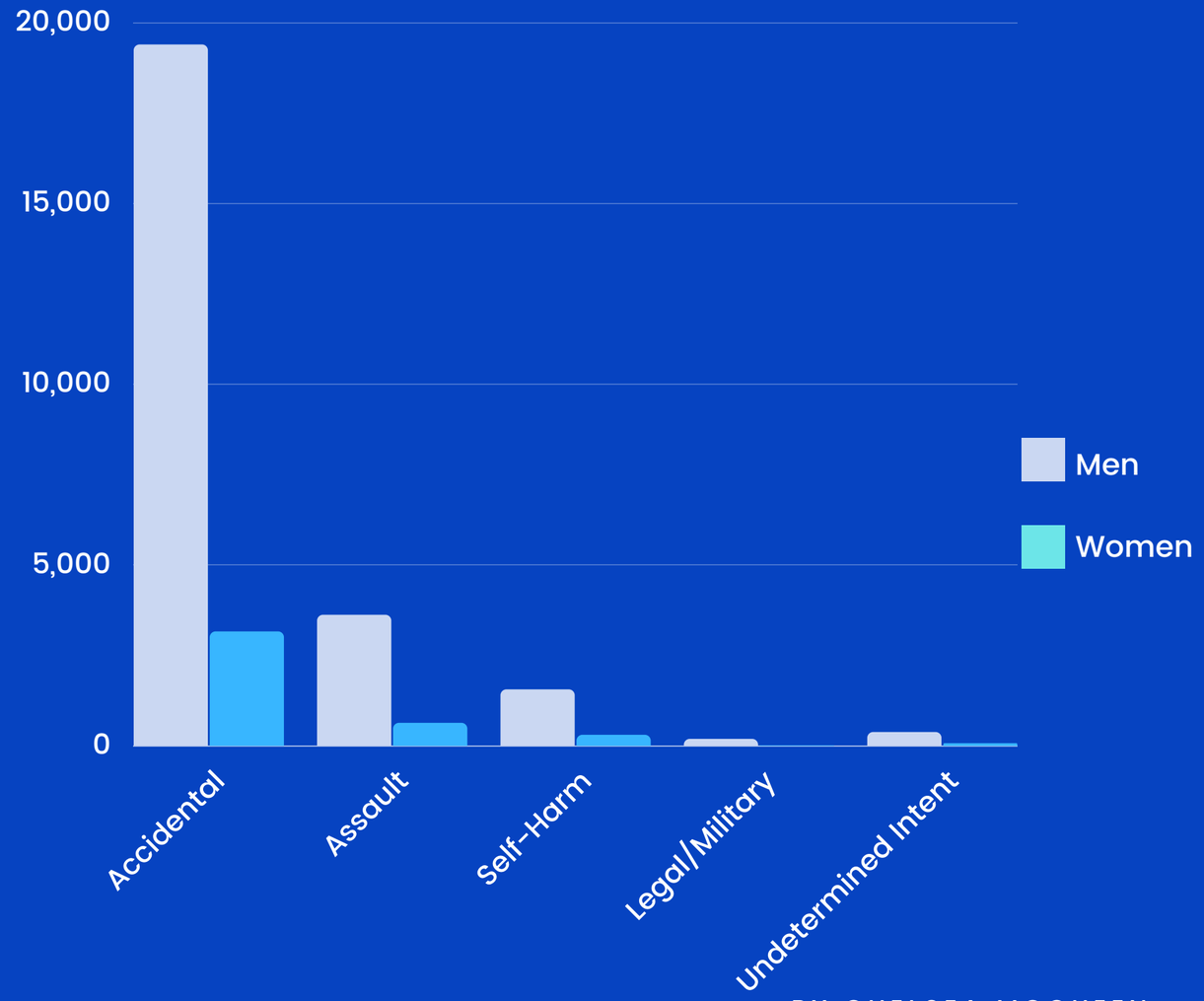
The majority of firearm injuries were accidental.

- The proportion of annual accidental injuries rose from 68% to 84% over 5 years.
- Accidental injuries were highest in the 15-24 age range.
- 86% of injuries in patients aged 0-14 were accidental.
- Possible explanations for accidental injuries:
  - lack of firearm experience
  - weapon use (injury as a product of hunting/shooting),
  - unsafe gun behavior (playing with guns, displaying loaded guns)



Firearm injuries by gender

- Men represented 85% of all firearm injuries.
- Rates of male injuries were nearly 5x higher than those of females.
- Men have higher death rates from intentional self-harm.
- Women are slightly more likely to be hospitalized for assault by firearm.



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Conclusion

PART 5

Study findings reinforce data on the magnitude of firearm violence in the United States.

The number of annual accidental injuries doubled within five years.

The risk of firearm self–harm was concentrated among White males and increased with age.

Limitations of the Study

LIMITS OF ICD 10 DIAGNOSES

Codes do not provide context around the circumstances of injury nor the relationship between the victim and transgressor.

LIMITS OF RACIAL/ETHNIC CLASSIFICATION

Race/ethnicity have been recorded by medical staff if the patient was unresponsive at the time of admission.

LIMITS OF SCOPE

Case information is limited to that from the claims database and patient electronic health records. If a patient succumbed to injuries after a routine discharge, they would not be included as a fatality.

Research Implications

There is no comprehensive data source for all firearm injuries and deaths in the United States.

Databases by the CDC collect non-fatal injury data from >100 OF 5,000 emergency departments.

Data from electronic medical records can bridge this knowledge gap.

Understanding the nature and magnitude of gun violence is one step in creating a public health approach to prevent this loss of life.

Questions?

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