Lerner Center FOR PUBLIC HEALTH PROMOTION
Maxwell | Syracuse University

RESEARCH BRIEF #68

March 22, 2022

Medical Visits Related to Firearm Injuries Increased During COVID-19

Rachel Chernet and Margaret K. Formica

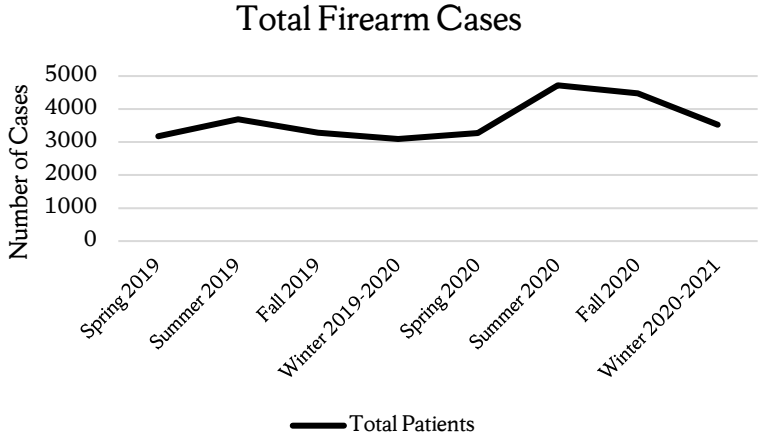
KEY FINDINGS

- The number of total firearm injury medical visits increased in the Spring and Summer of 2020.
- This rise in cases is evident across age, sex, race/Hispanic ethnicity, and region.
- From March 2019 to February 2021, firearm injuries were primarily unintentional (74.8%), with 16.6% due to assaults, 6.5% undetermined, and 2.1% self-inflicted.
- Cases were highest for blacks, males, ages 20-29, and for individuals residing in the South.

When COVID-19 began its initial wave in the United States in March of 2020, gun sales surged across the country. According to estimates from industry analyst Small Arms Analytics & Forecasting (SAAF), Americans bought more than 2.5 million firearms in March 2020 alone, an 85% increase from 2019.[1]

The increase in the number of first-time gun owners during the pandemic has been striking - an estimated 6,451,163 adults bought guns for the first time between March and July 2020.[2] This increase in gun purchasing, particularly among first-time gun owners, has significant implications for public health due to firearm accidents and misuse by people who are not well-trained or equipped to use them. In the context of the COVID-19 pandemic, where proper safety training courses are limited and stress and anxiety in society are common, the surge in gun sales both overall and among first-time purchasers may correspond to an increase in firearm injuries. In fact, recent research has demonstrated a 30% increase in firearm injuries in the U.S. during the pandemic compared to right before the pandemic.[3]

This brief summarizes an analysis of firearm injury data from March 2019 to February 2021 by intent (assault, self-inflicted, unintentional, undetermined), sex, age group, and race/ethnicity from TriNetX, a global, federated network of electronic medical record (EMR) data from 57 healthcare organizations (HCOs).



Data Source: TriNetX, Firearm Injury Medical Visits, 2019-2021

Firearm Injuries Increased in the Spring and Summer of 2020, and Most are Unintentional

There was a notable spike in firearm injuries in the Spring and Summer of 2020, when COVID-19 emerged in the U.S. and gun sales skyrocketed (see Figure 1). Firearm injuries were 28% higher in Summer 2020 compared to Summer 2019. We also found that most firearm injuries between Spring 2019 and Winter 2020/21 were unintentional (75%), and firearm injuries followed expected seasonal variability, with peaks in the summer months. This pattern held true for all intents, other than self-inflicted firearm injuries which were declining until the Summer 2020 peak. This distinct pattern may be due to variability around small case numbers, as up to 85% of self-inflicted firearm injuries result in death and are not likely to be captured in EMR data.[4]

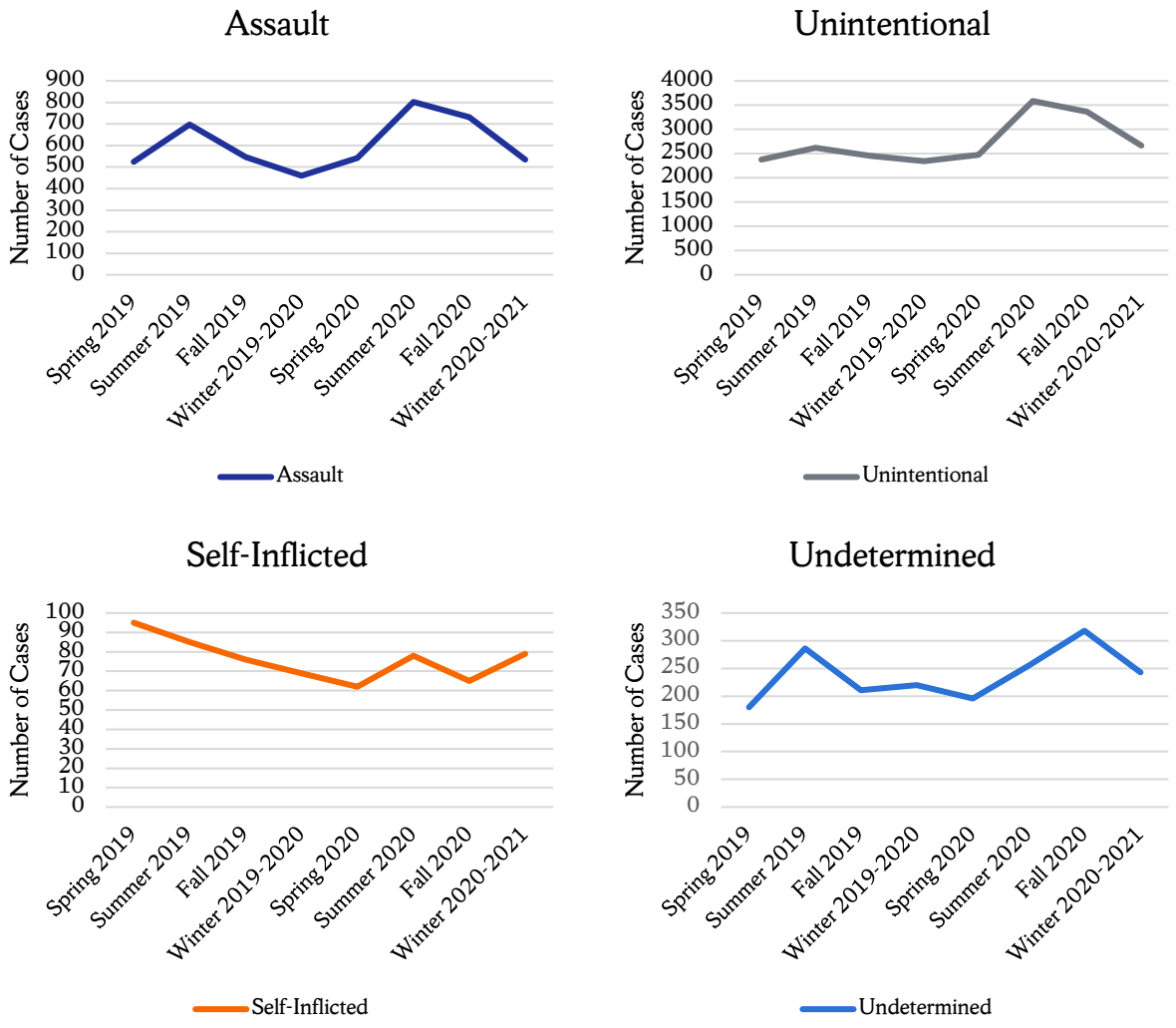


Figure 2. Firearm Cases by Intent, Spring 2019 to Winter 2020/2021
Data Source: TriNetX, Firearm Injury Medical Visits, 2019-2021

Firearm Injuries during COVID-19 Varied by Age, Sex, and Race/Ethnicity

Demographic patterns in firearm injuries during COVID-19 are consistent with previous literature.[5] As seen in Figure 3, the number of firearm cases are the highest among individuals who are Black, male, adolescents and young adults, and reside in the South. Of note, 50% of hospital visits specific to firearms were in the South. Of these cases in the South, most of the intents were deemed "undetermined", which may reflect medical coding practices in that region. Cases across all demographic groups appear to have increased during the Spring and Summer of 2020, but the greatest spikes were among individuals who are Black, male, aged 20-29, and in the Midwest.

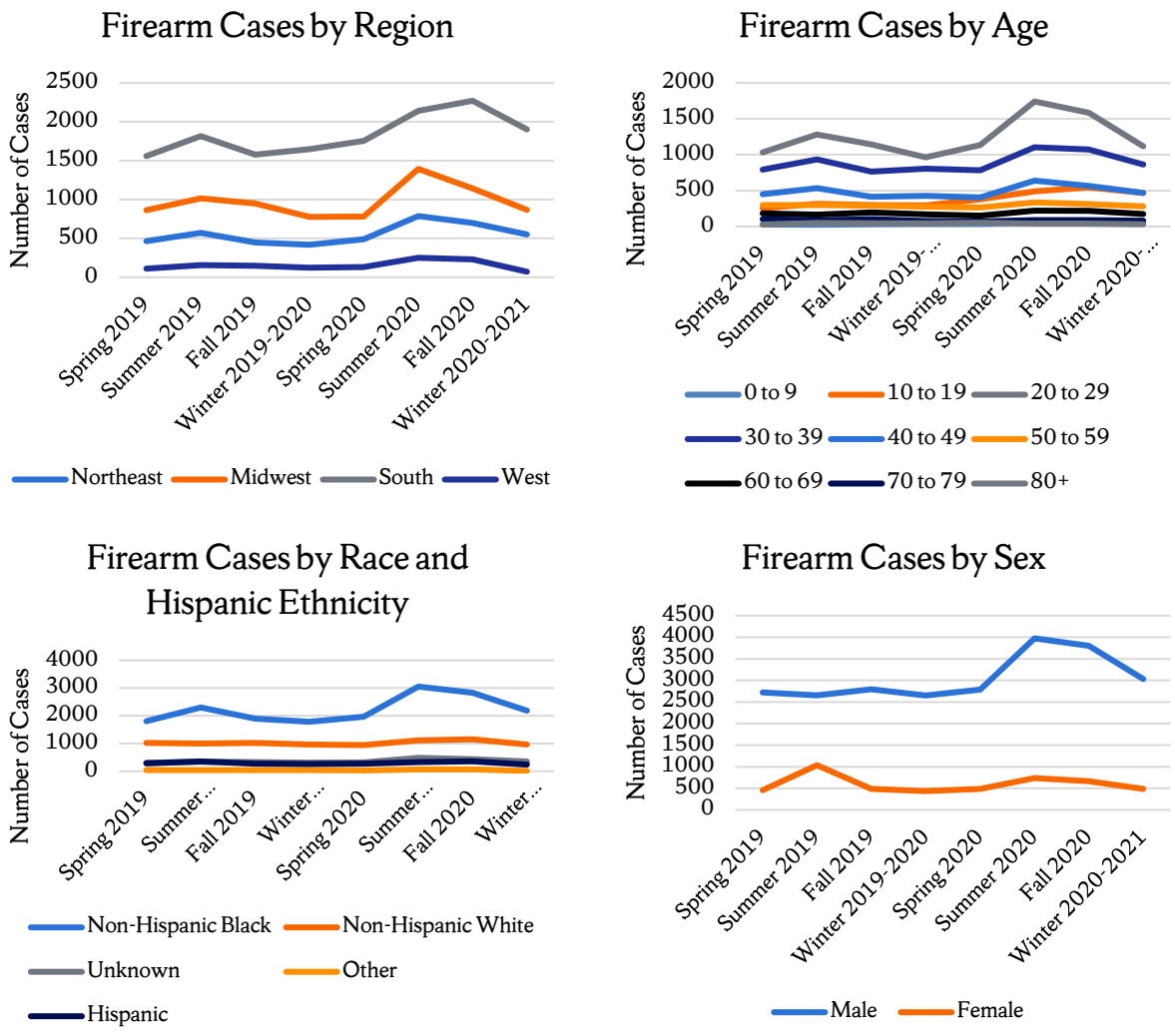


Figure 3. Firearm Cases by Age Category, Sex, Race and Hispanic Ethnicity, and Geographic Region, Spring 2019 to Winter 2020/2021

Data Source: TriNetX, Firearm Injury Medical Visits, 2019-2021

What Can Be Done about the Rising Incidence of Firearm Injuries?

The particularly tumultuous time amidst a global pandemic, coupled with rising rates of gun sales and first-time gun ownership, has likely contributed to the increases we have observed in firearm injuries. Further understanding of the conditions and factors that led to the increase is needed to inform firearm policy and guide firearm injury prevention efforts. Policymakers should pay particular attention to the large percentage of unintentional firearm cases amidst this rise in first-time gun owners as a call for increased education, training, and regulation over safe firearm access and storage. Additionally, resources and support to increase implementation of evidence-based firearm violence prevention efforts, such as hospital-based violence intervention programs and violence interrupters (trusted community members trained to mediate conflict and disrupt the cycle of violence) is needed. Finally, policymakers should seek to improve data reporting, especially in areas of high caseloads, such as in the South, to better understand the nature of these injuries and ultimately prevent them.

Data and Methods

We used the TriNetX Research Network, which includes data on over 84 million patients, primarily in the U.S. The platform is largely dedicated to providing researchers access to continuously updated, de-identified aggregate EMR data including demographics, diagnoses, procedures, medications, and laboratory values of patients. We determined all patient visits for a new firearm injury between March 1, 2019, and February 28, 2021. We categorized firearm injuries by intent (assault, self-harm, unintentional and undetermined) and by eight 3-month seasons before and during the pandemic (Spring 2019, Summer 2019, Fall 2019, Winter 2019/2020, Spring 2020, Summer 2020, Fall 2020, and Winter 2020/2021).

References

1. Gun Sales Continue To Boom During The Pandemic. (2020, June 01). Retrieved from https://gunsandamerica.org/story/20/06/01/gun-sales-continue-to-boom-during-the-pandemic/
2. Crifasi, C. K., Ward, J. A., McGinty, E. E., Webster, D. W., & Barry, C. L. (2021). Gun purchasing behaviours during the initial phase of the COVID-19 pandemic, March to mid-July 2020. *International Review of Psychiatry*, 1-5.
3. Ssentago, P., Fronterrre, C., Ssentago, A. E., Advani, S., Heilbrunn, E. S., Hazelton, J. P., Oh, J. S., McCall-Hosenfeld, J. S., & Chinchilli, V. M. (2021). Gun violence incidence during the COVID-19 pandemic is higher than before the pandemic in the United States. *Scientific Reports*, 11, 20654.
4. Drexler, M. Guns and suicide: the hidden toll. *Harvard Public Health*, https://www.hsph.harvard.edu/magazine/magazine_article/guns-suicide/.
5. Fowler, K. A., Dahlberg, L. L., Haileyesus, T., & Annest, J. L. (2015). Firearm injuries in the United States. *Preventive Medicine*, Oct (79): 5-14.

Acknowledgments

The authors thank Shannon Monnat, Alexandra Punch, and Katherine Pacelli for their edits and feedback on previous versions of this brief.

About the Author

Rachel Chernet (chernetr@upstate.edu) is an MD/MPH student and graduate research assistant at SUNY Upstate Medical University. **Margaret K. Formica** (formicam@upstate.edu) is an Associate Professor of Public Health & Preventive Medicine and Urology at SUNY Upstate Medical University

and a Research Affiliate with the Lerner Center for Public Health Promotion in the Maxwell School of Citizenship and Public Affairs at Syracuse University. She is also a fellow of the New York Academy of Medicine.

The mission of the SU Lerner Center for Public Health Promotion is to improve population and community health through research, education, and outreach focused on the social, spatial, and structural determinants of physical, mental, and behavioral health and health disparities.

426 Eggers Hall | Syracuse | New York | 13244
syracuse.edu | lernercenter.syr.edu
To access all our briefs, visit: https://surface.syr.edu/lerner/