A MORE COMPLETE PICTURE: THE CONTOURS OF GUN INJURY IN THE UNITED STATES

The story of gun violence in the United States is often told in terms of the tragic deaths that come with numbing regularity—an average of 100 gun deaths each day. But an often-overlooked part of today's gun violence crisis is injuries, and these nonfatal injuries are also occurring with disturbing frequency, with many more gun injuries than gun deaths.

UNDERSTANDING THE CONTOURS OF THESE INJURIES—WHERE, TO WHOM, AND HOW—IS ESSENTIAL FOR EFFORTS TO DEVELOP SOLUTIONS.

Understanding the contours of these injuries—where, to whom, and how—is essential for efforts to develop solutions. The Centers for Disease Control and Prevention (CDC), the federal agency responsible for collecting data to protect the US from dangerous health threats, has faced challenges with the expansion of its injury data collection, an essential requirement for obtaining more reliable numbers on this under-recognized aspect of gun violence. The CDC's estimate for 2015 totaled 84,997 nonfatal firearm injuries, but this estimate was qualified by a confidence interval of 36,636 to 133,357 injuries, too large a range to estimate the true burden of gun injury with accuracy or to know whether year-to-year increases or decreases indicate true changes or rather, are an artifice of data limitations. In the face of increasing scrutiny of the reliability of this data, the CDC recently removed 2016 and 2017 nonfatal injury data for firearms and all other injury types from its website.

Everytown for Gun Safety strongly supports equipping the CDC with the funds necessary to thoroughly measure and examine gun violence. In the absence of a national database tracking shootings, or reliable nonfatal injury estimates, Everytown has calculated the total number of nonfatal gun injuries and conducted original analysis using the federal Nationwide Emergency Department Sample (NEDS) data set. The NEDS is the largest publicly available emergency department database in the US, a part of the Healthcare Cost and Utilization Project (HCUP). This data set includes data from approximately 950 hospitals, 16 times the number included in the CDC survey, and provides the most reliable nonfatal injury estimates currently available.

Using the HCUP data set, which contains roughly 30 million hospital discharge records each year, we estimate the total number of nonfatal firearm injuries and injuries by demographic group. Read more about our methodology here.

THIS IS WHAT WE FOUND:

For every one person shot and killed by a gun, two more are wounded. Approximately 73,330 people are shot and injured by firearms every year in the US, an average of 200 gun injuries sustained every day.[1] This means that for every gun death, there are two more gun injuries.[2] In fact, the number of people wounded by guns in just one year is more than triple the number of service members wounded in action in the US War in Afghanistan (20,609).[3]

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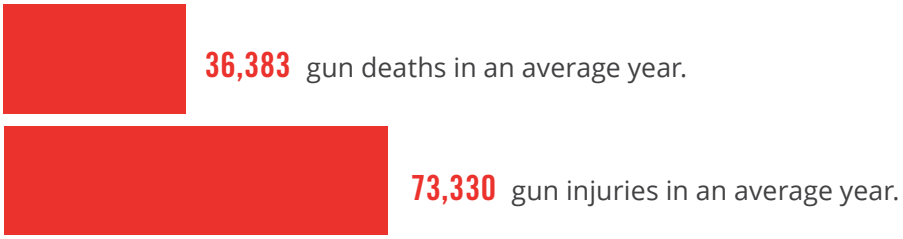
20,609 service members were wounded in action in the US War in Afghanistan.

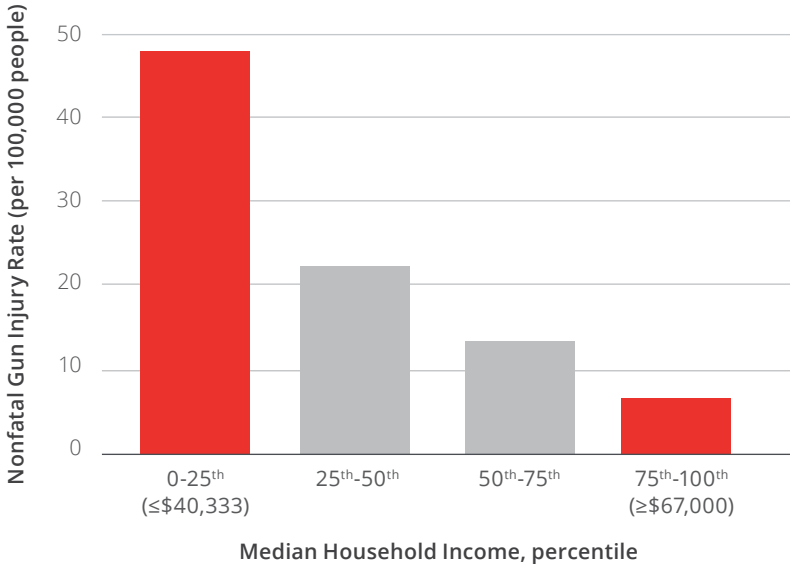
There are twice as many gun injuries as gun deaths.[4]



The lower the household income in a community, the higher the chance of gun injury.

Despite accounting for a quarter of the US population, individuals living in zip codes with a median household income at the bottom fourth of the income scale—$40,333 or less—account for over half (52.9%) of nonfatal firearm injuries.[5] Across all years, the rate of injuries among those living in these zip codes is over seven times higher than among those living in zip codes with median household incomes at the top fourth of the income scale—$67,000 or more.[6] Rates of injuries per 100,000 people range from 47.7 in the bottom fourth of the income distribution to 6.5 injuries per 100,000 people in the top quartile. Gun injuries decrease as median household income by zip code increases. **In short, for those living in low-income areas, the likelihood of sustaining a gun injury is many orders of magnitude higher than for those living in higher-income neighborhoods.**

Those in households in the bottom fourth of the income scale are seven times more likely to experience gun injury than those in the top quarter.



Men and young adults are disproportionately at risk of gun injury.

Men are nearly eight times more likely to be wounded by guns than are women (41.1 and 5.3 injuries per 100,000 people, respectively). When it comes to age, the nonfatal gun injury rate increases as age increases, peaks among 20-to-24-year-olds (76.7 injuries per 100,000 people), and decreases thereafter.

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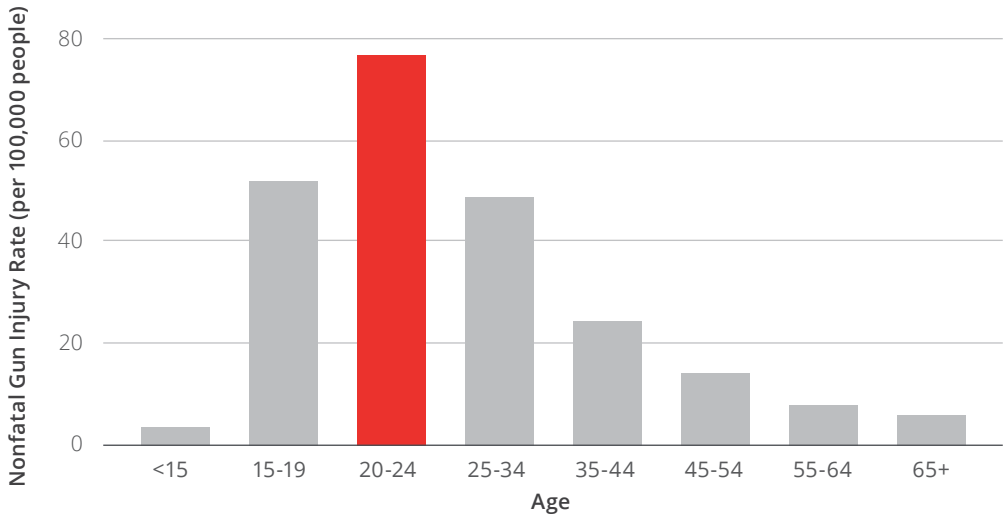


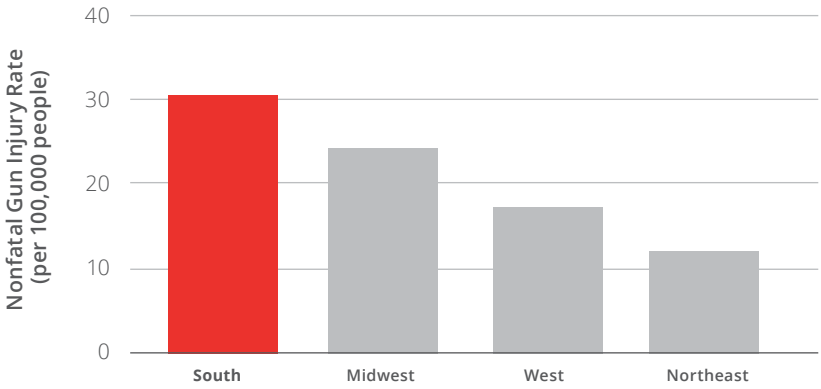
APPROXIMATELY EVERY 40 MINUTES, A CHILD OR TEENAGER IS WOUNDED WITH A GUN.

One in six gun injuries involves a child or teenager.
Approximately 12,706 nonfatal injury gun injuries are sustained by America's children and teens every year. Children and teens account for 17.3% of nonfatal firearm injuries, compared to 7.7% of firearm deaths. This means that while roughly one in 13 firearm deaths occurs among children and teens, one in six gun injuries is among people under the age of 20. Approximately every 40 minutes, a child or teenager is wounded with a gun.

Gun injury rates are similar across rural and urban areas.
Nonfatal gun injury rates are relatively stable across levels of urbanization. The most urban counties (large central metro) have a nonfatal gun injury rate of 28.3 injuries per 100,000 people, whereas the rate in the most urban counties (noncore) is 25.7 per 100,000 people. The only county type with a markedly lower nonfatal gun injuries rate than the rest were city suburbs (large fringe metro) with a rate of 15.6 injuries per 100,000 people.

Half of all gun injuries occur in the South.
While gun injury rates vary little between US rural and urban counties, there are considerable differences by region. Half of all injuries took place in one region, the American **South**. In fact, the South has the highest rate of nonfatal firearm injuries, with 30.5 injuries per 100,000 people—about 2.5 times that of the lowest region, the Northeast. These findings are consistent with other research finding higher rates of gun injury in the South.[7] The second highest rate is in the **Midwest**, with 24.2 injuries per 100,000 people. The **West** is third overall, with a rate of 17.4 injuries per 100,000 people. The **Northeast** has the lowest rate of gun injury, with a rate of 12.7 injuries per 100,000 people.

Across all regions, the South has the highest rate of gun injury.



WHAT ARE THE BOTTLENECKS TO BETTER FEDERAL DATA?

"In order to effectively study anything, researchers need accurate, comprehensive data. That's true with infectious diseases. It's true with environmental threats, and with drug addiction. And it's true with gun violence."

Dr. Daniel Webster, Johns Hopkins Bloomberg School of Public Health

Unlike gun deaths, of which a full census of national, state, and county data is available from the death certificate-based National Vital Statistics System, standardized nonfatal gun injury data at the state or local level are limited. Rather, researchers and the public rely on estimates from a sample of hospital emergency departments.

The limitations of CDC firearm injury data stem in part from the small sample size of such emergency departments. Currently, the agency's survey includes only about 100 hospitals, of which 66—less than 2% of all hospitals in the US—submit data related to gunshot wounds.[8] But missing a key trauma hospital within a city with high rates of gun assault can skew the survey, because gun assaults tend to be concentrated in very small areas within specific city neighborhoods. Further, as hospitals transition out of the data set, the replacement hospital may treat a very different mix of injuries, which can further disrupt the estimates.[9]

GUN INJURIES REPRESENT LOSS TOO: THE LOSS OF A SENSE OF SAFETY, OF MENTAL WELLBEING, OF PHYSICAL ABILITY, A LOSS OF INCOME FOR THOSE WHOSE INJURY AFFECTS THEIR WORK, AND A LOSS OF INNOCENCE...

Researchers and many others have called for federal and state government agencies to provide funding to collect gun violence data and conduct gun violence research necessary for policy-making that can save lives. This type of data collection is costly. The current CDC nonfatal injuries data come from collaboration with an existing surveillance system operated by the Consumer Product Safety Commission based on a small sample of hospitals. CDC officials are exploring an expansion of the roster of reporting hospitals but have made it clear that this would require additional funding.[10]

A CLEARER PICTURE

The tens of thousands of Americans injured by firearms each year face many difficulties, including, but not limited to, physical disability, psychological trauma, increased healthcare costs, and the risk of additional injury in cycles of violence.[11]

While the data in this paper are collected when a patient is discharged from the emergency department or inpatient care, the impact of a gun injury does not end

there. Every gun death is a tragic loss of life. But gun injuries represent loss too: the loss of a sense of safety, of mental wellbeing, of physical ability, a loss of income for those whose injury affects their work, and a loss of innocence—particularly for the thousands of American children who are injured with guns.

As the crisis of gun violence in this country continues, so must the CDC's investment in nonfatal injury data. While Everytown has endeavored to fill this gap, ultimately the federal government has an important role to play. The CDC has historically conducted rigorous research on many causes of injuries and diseases in fulfillment of its mission to "protect our nation against **expensive** and **dangerous** health threats." Make no mistake—firearm injury is one such threat.

APPENDIX

Estimated number, rate, and three-year average of nonfatal, hospital treated firearm injuries: US 2013, 2014, and 2016.

		3-year Total No. (%)	95% Confidence Interval	Average Annual Rate per 100,000 People	3-year average
	All injuries	219,989 (100)	196,810—243,168	23.0	73,330
Sex	**Male**	194,025 (88.3)	173,437—214,613	41.1	64,675
	Female	25,768 (11.7)	23,175—28,362	5.3	8,589
Age	**<15**	5,367 (2.4)	4,672—6,062	2.9	1,789
	15-19	32,751 (14.9)	28,870—36,633	51.7	10,917
	20-24	52,256 (23.8)	45,992—58,519	76.7	17,419
	25-34	63,688 (29.0)	56,437—70,938	48.6	21,229
	35-44	29,713 (13.5)	26,661—32,766	24.5	9,904
	45-54	18,456 (8.4)	16,562—20,349	14.2	6,152
	55-64	10,194 (4.6)	9,238—11,151	8.4	3,398
	65+	7,564 (3.4)	6,692—8,435	5.4	2,521
Child under the age of 20	**Yes**	38,118 (17.3)	33,985—42,252	15.5	12,706
	No	181,870 (82.7)	162,480—201,261	25.6	60,623
Region	**Northeast**	21,393 (9.7)	16,302—26,484	12.7	7,131
	Midwest	49,209 (22.4)	39,364—59,054	24.2	16,403
	South	109,948 (50.0)	90,855—129,042	30.5	36,649
	West	39,438 (17.9)	32,378—46,499	17.4	13,146
Urbanization	**Large central metro**	83,126 (38.2)	67,710—98,542	28.3	27,709
	Large fringe metro	37,073 (17.0)	28,321—45,824	15.6	12,358
	Medium metro	46,433 (21.3)	39,164—53,702	23.2	15,478
	Small metro	18,739 (8.6)	15,469—22,008	21.4	6,246
	Micropolitan	17,739 (8.1)	15,732—19,746	21.7	5,913
	Noncore	14,623 (6.7)	13,124—16,123	25.7	4,874
Median household income for patient's zip code, percentile	**0-25th**	113,376 (52.9)	98,408—128,344	47.7	37,792
	26th-50th	52,863 (24.7)	46,720—59,006	22.1	17,621
	51th-74th	32,702 (15.3)	29,207—36,196	13.6	10,901
	75th-100th	15,287 (7.1)	13,114—17,459	6.5	5,096
Year	**2013**	62,856 (28.6)	52,166—73,546	19.9	20,952
	2014	79,127 (36.0)	63,518—94,735	24.8	26,376
	2016	78,006 (35.5)	65,635—90,378	24.1	26,002

Everytown for Gun Safety would like to acknowledge and thank Cathy Barber, MPA at Harvard School of Public Health's Injury Control Research Center (HICRC) for advising on this report.

1. A yearly average was developed using three years of data: 2013, 2014, and 2016. The three-year sum of gun injuries is 219,989 (95% CI, 196,810 to 243,168).
2. There are an average 36,383 gun deaths a year. A yearly average was developed using five years of most recent available data: 2013 to 2017. Centers for Disease Control and Prevention. National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS) Fatal Injury Reports.
3. Nese F. DeBruyne, "American War and Military Operations Casualties: Lists and Statistics," Congressional Research Service (September 24, 2019). https://bit.ly/2qOCavj. The sum reflects those wounded in action for Operation Enduring Freedom (October 7, 2001 to December 31, 2014; 20,144 wounded) and Operation Freedom's Sentinel (January 1, 2015, to present; 465 wounded), primarily in Afghanistan but including smaller operations in other arenas.
4. Gun deaths: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, Web-based Injury Statistics Query and Reporting System (WISQARS) Fatal Injury Reports. A yearly average was developed using five years of most recent available data: 2013 to 2017. Nonfatal injuries: Everytown calculations using Healthcare Cost and Utilization Project, Nationwide Emergency Department Sample (NEDS). A yearly average was developed using three years of available data: 2013, 2014, and 2016.
5. $40,333 represents a three year average of the uppermost bounds of the lowest median household income quartile: 2013, 2014, and 2016. The 25th percentile of income scale was ≤$38k in 2013, ≤$40k in 2014, and ≤$43k in 2016.
6. $67,000 represents a three year average of the lowermost bounds of the highest median household income quartile: 2013, 2014, 2016. The 75th percentile of the income scale was ≥$64k in 2013, ≥$66k in 2014, and ≥$71k in 2016.
7. Shilpa J. Patel, Gia M. Badolato, Kavita Parikh, Sabah F. Iqbal, and Monika K. Goyal, "Regional Differences in Pediatric Firearm-Related Emergency Department Visits and the Association with Firearm Legislation," *Pediatric Emergency Care* (February 2019), doi: 10.1097/PEC.0000000000001779.
8. Sean Campbell, Daniel Nass, and Mai Nguyen, "The CDC Is Publishing Unreliable Data on Gun Injuries. People Are Using It Anyway," *FiveThirtyEight*, October 4, 2018, https://53eig.ht/2Paa485.
9. Sean Campbell and Daniel Nass, "How One Hospital Dramatically Skewed the CDC's Estimate of Nonfatal Gun Injuries," *The Trace*, August 13, 2019, https://bit.ly/2OVPvAC.
10. Robert Redfield, official correspondence to US Department of Health and Human Services, "Centers for Disease Control and Prevention's Responses to Questions About Firearm Injury Data," May 3, 2019, https://bit.ly/2km0WDb.
11. Carla DiScala and Robert Sege, "Outcomes in Children and Young Adults Who Are Hospitalized for Firearms-Related Injuries," *Pediatrics* 113, no. 5 (May 2004): 1306-1312; Carla DiScala and Robert Sege, "Outcomes in Children and Young Adults Who Are Hospitalized for Firearms-Related Injuries," *Pediatrics* 113, no. 5 (May 2004): 1306-1312; James Garbarino, Catherine P. Bradshaw, and Joseph A. Vorras, "Mitigating the Effects of Gun Violence on Children and Youth," The Future of Children 12, no. 2 (Summer-Autumn 2002): 73-85. Angela Scarpa, Jimmy D. Hurley, Howard W. Shumate, Sara Chiara Haden, "Lifetime Prevalence and Socioemotional Effects of Hearing about Community Violence," *Journal of Interpersonal Violence* 21, no. 1 (January 1, 2006): 5-23. Nikeea Copeland-Linder, Sara B. Johnson, Denise L. Haynie, Shang-en Chung, and Tina L. Cheng, "Retaliatory Attitudes and Violent Behaviors among Assault-Injured Youth," *Journal of Adolescent Health* 50, no. 3 (March 2012): 215-20. Catherine Juillard, Laya Cooperman, Isabel Allen, Romain Pirracchio, Terrell Henderson, Ruben Marquez, Julia Orellana, Michael Texada, and Rochelle Ami Dicker, "A Decade of Hospital-Based Violence Intervention," *Journal of Trauma and Acute Care Surgery* 81, no. 6 (December 2016): 1156-1161; Corinne Peek-Asa, Brandon Butcher, and Joseph E. Cavanaugh, "Cost of Hospitalization for Firearm Injuries by Firearm Type, Intent, and Payer in the United States," *Injury Epidemiology* 4 (December 2017): 20; Carnell Cooper, Dawn M. Eslinger, and Paul D. Stolley, "Hospital-Based Violence Intervention Programs Work," The *Journal of Trauma and Acute Care Surgery* 61, no. 3 (September 2006): 534-537.