

Increased incidence of poor mental health among youths after school shootings

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Credit: AI-generated image ([disclaimer](#))

The toll from gun violence at schools has only escalated in the 20 years since the jolting, horrific massacre at Columbine High.

By December 2019, at least 245 primary and [secondary schools](#) in the United States had experienced a shooting, killing 146 people and

injuring 310.

Now, new Stanford-led research sounds an alarm to what was once a silent reckoning: the mental [health](#) impact to tens of thousands of surviving students who were attending schools where gunshots rang out.

A study has found that local exposure to fatal school shootings increased antidepressant use among youths.

Specifically, the average rate of antidepressant use among youths under age 20 rose by 21 percent in the local communities where fatal school shootings occurred, according to the study. And the rate increase—based on comparisons two years before the incident and two years after—persisted even in the third year out.

"There are articles that suggest school shootings are the new norm—they're happening so frequently that we're getting desensitized to them—and that maybe for the people who survive, they just go back to normal life because this is just life in America. But what our study shows is that does not appear to be the case," said Maya Rossin-Slater, a faculty fellow at the Stanford Institute for Economic Policy Research (SIEPR). "There are real consequences on an important marker of mental health."

The study is detailed in a [working paper](#) published Monday by the *National Bureau of Economic Research*. It was co-authored by Rossin-Slater, an assistant professor of health policy in the Stanford School of Medicine; Molly Schnell, a former postdoctoral fellow at SIEPR now an assistant professor at Northwestern University; Hannes Schwandt, an assistant professor at Northwestern and former visiting fellow at SIEPR; Sam Trejo, a Stanford doctoral candidate in economics and education; and Lindsey Uniat, a former predoctoral research fellow at SIEPR now a Ph.D. student at Yale University.

Their collaborative research—accelerated by their simultaneous stints at SIEPR—is the largest study to date on the effects of school shootings on youth mental health.

The study comes as the issue of gun safety continues to stoke political wrangling and public debate. And the researchers say their findings suggest policymakers should take a wide lens to their decision-making process.

"When we think about the cost of school shootings, they're often quantified in terms of the cost to the individuals who die or are injured, and their families," Rossin-Slater noted. "Those costs are unfathomable and undeniable. But the reality is that there are many more students exposed to school shootings who survive. And the broad implication is to think about the cost not just to the direct victims but to those who are indirectly affected."

A driver for antidepressant use

More than 240,000 students have been exposed to school shootings in America since the mass shooting in Columbine in April 1999, according to data used in the study. And the number of school shootings per year has been trending up since 2015.

Yet despite this "uniquely American phenomenon"—since 2009, over 50 times more school shootings have occurred in the U.S. than in Canada, Japan, Germany, Italy, France and the United Kingdom combined—little is known about the effects of such gun violence on the mental health of the nation's youth, the study stated.

"We know that poor mental health in childhood can have negative consequences throughout life," Schwandt said. "At the same time, children are known to show significant levels of resilience, so it really

wasn't clear what we would find as we started this project."

The researchers examined 44 shootings at schools across the country between January 2008 and April 2013. They used a database that covered the near universe of prescriptions filled at U.S. retail pharmacies along with information on the address of the medical provider who prescribed each drug. They compared the antidepressant prescription rates of providers practicing in areas within a 5-mile radius of a school shooting to those practicing in areas 10-to-15 miles away, looking at two years prior and two to three years after the incident.

Of those 44 school shootings, 15 of them involved at least one death. The 44 shootings occurred in 10 states: Alabama, California, Connecticut, Florida, Nebraska, North Carolina, Ohio, South Carolina, Tennessee and Texas.

Researchers found a marked increase in the rate of antidepressant prescriptions for youths nearby, but only for the shootings that were fatal. They did not see a significant effect on prescriptions for youths exposed to non-fatal school shootings.

"The immediate impact on antidepressant use that we find, and its remarkable persistence over two, and even three years, certainly constitutes a stronger effect pattern than what we would have expected," Schwandt said.

Meanwhile, adult antidepressant use did not appear to be significantly impacted by local exposure to school shootings.

Layers of costs, more unknowns

The researchers also analyzed whether the concentration of child mental health providers in areas affected by fatal school shootings made a

difference in the antidepressant rates, and they drilled a further comparison between the prevalence of those who can prescribe drugs, such as psychiatrists and other medical doctors, and those who cannot prescribe drugs, such as psychologists and licensed social workers.

Increases in antidepressant rates were the same across areas with both high and low concentrations of prescribing doctors, the researchers found. But in areas with higher concentrations of non-prescribing mental health providers, the increases in antidepressant use were significantly smaller—indicating perhaps a greater reliance on non-pharmacological treatments or therapy for shooting-related trauma.

The researchers also found no evidence that the rise in antidepressant usage stemmed from mental health conditions that were previously undiagnosed prior to the shootings.

In totality, the researchers say the results in the study clearly pointed to an adverse impact from a fatal [shooting](#) on the mental health of youths in the local community. Furthermore, the results capture only a portion of the mental health consequences: Non-drug related treatments could have been undertaken as well.

"Increased incidence of poor mental health is at least part of the story," Schnell said.

Though their analysis included only 44 schools and 15 fatal school shootings, Rossin-Slater noted how the trend of school shootings is growing. She believes the [mental health](#) impact found on the local communities they studied "can be generalizable to other communities' experiences."

That's all the more reason why policymakers should consider the overall negative effects of [school](#) shootings, and how further research will be

needed to gauge other societal consequences, the researchers said.

"Think of it as layers of costs," Rossin-Slater said. And when it comes to evaluating gun violence at schools, "we think our numbers say, "Hey, these are costly things, and it's costlier than we previously thought."

Provided by Stanford University

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