

Is gun violence contagious?

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Is gun violence contagious? According to new findings from the University of Pennsylvania and the University of Oxford, the answer is mostly no. Rather, this violence is a chronic issue for particular neighborhoods and requires place-specific solutions.

"It's been known for some time that gun violence, like many other forms of crime and other social problems, can be clustered within certain neighborhoods," says Charles Loeffler, the Jerry Lee Assistant Professor of Criminology in the University of Pennsylvania's School of Arts & Sciences. "So when we observe that a particular part of the city has an elevated risk, how do we understand what that phenomenon actually is?"

Loeffler and Oxford statistician Seth Flaxman, who published their findings in the *Journal of Quantitative Criminology*, turned to data from Washington, D.C., firearm-related 9-1-1 calls and acoustical sensors around the city that listen for and record the latitude and longitude of every shot fired.

Starting from the baseline that gun violence doesn't occur randomly, the researchers ran the numbers for two hypotheses. First, they asked whether such behavior could be an epidemic, something that spreads quickly and diffuses into the surrounding environment. One incident begets the next, such as a victim retaliating against a former perpetrator.

"The alternative hypothesis," Loeffler says, "is that you have clustering of gun violence in certain neighborhoods at certain times, but it may not actually be spreading in any real sense." The researchers call this an endemic pattern.

As an example, consider an encounter in a bar: Two individuals bump into each other. One takes offense at being accidentally shoved and pulls out or quickly gains access to a gun. The same scenario might happen during a drug deal, where one party feels slighted by another. In either case, the resulting action is not retaliation, but rather an aggressive response to a commonly reoccurring stimulus.

"It may not last more than a couple minutes and may not lead to further acts of violence," Loeffler says. "It could be self-extinguishing."

For Washington, D.C., the data were compelling.

"We found that a substantial fraction of the gun [violence](#) was better characterized as this endemic, non-random clustering rather than as an epidemic, contagious, diffusing process," he says.

Effective use of this information requires implementing problem-solving tactics with a better chance for success, place-based interventions that target features of a neighborhood rather than those aimed at individuals or groups, the researchers say. For instance, the greening of vacant lots or hotspot policing that puts resources toward watching crime clusters rather than toward a generic patrol.

Right now, the researchers don't know whether the results hold up for other locales, but say they plan to find out.

"It's possible to use the statistical test that we demonstrated here to understand the nature of these two hypotheses in different cities," Loeffler says. "The reality of D.C. may be different than the nature of [gun-violence](#) problems in Chicago or Los Angeles or Philadelphia."

More information: Charles Loeffler et al, Is Gun Violence Contagious? A Spatiotemporal Test, *Journal of Quantitative Criminology* (2017). [DOI: 10.1007/s10940-017-9363-8](https://doi.org/10.1007/s10940-017-9363-8)

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