

Handguns and Hotspots: Spatio-Temporal Models for Gun Violence in Chicago, IL

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Abstract: Gun violence is an issue across the United States, but Chicago, Illinois, is often cited as a major producer of gun crime. In 2012, Chicago had the highest number of city-wide murders in the United States. Despite decreasing trends in gun violence since 2011, 2016 showed an increase in gun crimes, the cause of which has yet to be determined, and 2017 is showing similar trends of increased violence. Officials regularly cite gun availability and poverty as the main causes of increased gun violence, but these claims have not been adequately tested in Chicago. We use tenets from spatio-temporal statistics to determine whether socio-economic conditions contribute to hotspots of gun violence. We then determine the best way to incorporate statistical findings into a cellular automata model of the gun violence epidemic in Chicago, Illinois.