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Shelby M Scott* (sscott41@vols.utk.edu), 569 Dabney Hall, Knoxville, TN 37996. *Handguns and Hotspots: Cellular Automata Models of Gun Crime in Chicago, Illinois*. Preliminary report.

Gun violence annually leads to the death of 31,000 individuals and the non-fatal injury of 78,000 others. It also costs the United States \$229 billion each year. Chicago, Illinois, experienced the highest number of citywide murders in 2012 and has seen inexplicable spikes in gun crime during the past four years. Gun crime in Chicago shows temporal variation in intensity, specifically related to seasonal changes. As a city, Chicago is divided into 77 discrete community areas. Statistical analyses of available data find that gun crime in Chicago shows contagious behavior and that socio-economic conditions within a community area contribute significantly to the number of gun crimes that occur in each region. With this information, we create a discrete-time and discrete-space cellular automata model. Each cell represents a community area of Chicago and the internal states represent the amount of crime present at a given time period. Cell states are updated at each time step based on community area characteristics and local interactions. This presentation discusses how methods from ecology, epidemiology, and mathematics can be used to observe, predict, and reduce gun crime in Chicago. (Received September 10, 2019)