

Effects of Covid-19 Pandemic on Spatial Patterns of Burglaries (2019–2020) in Chicago, Illinois

Esther Akoto Amoako ^{a,*}, Owusua Yamoah ^b, Dennis Donkor ^a

^a University of Toledo, USA. esther.amoako@rockets.utoledo.edu, denn233@gmail.com

^b Case Western Reserve University, USA. oxy14@case.edu

* Corresponding author

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Abstract:

Routine activity (Cohen & Felson, 1979) and crime patterns theory (Brantingham & Brantingham, 1995) emphasize that individual characteristics and daily routine interactions command the number, severity, spatial distribution, and patterns of criminal events and victimization. The crime patterns theory postulates that offenders and targets usually intercept during everyday non-criminal activities (Brantingham & Brantingham, 1995). During everyday routines, a potential offender and a suitable target converge in space and time without a capable guardian.

The novel Covid-19 public health emergency resulted in many containment policies that limited the movement of individuals and disrupted daily routine activities necessary for a crime to occur. In many cities, including Chicago, existing data shows significant declines in crime rates during this time. The limited existing literature reveals that the changes in crime rates varied by type of crime and existing land use. For instance, Felson, Jaing, and Xu (2020) found that the burglary rate significantly increased in mixed-use block groups in Detroit compared to predominantly residential block groups.

We explore changes in the incidence of burglaries across 61 zip codes in the City of Chicago in 2019 and 2020. Individual burglary incidents were geocoded and aggregated to the block group level. We employed Getis-Ord G_i^* statistics to identify significant hot spots of burglary rate in 2019 and 2020 at the block group level using ArcGIS Pro 3.1.1. Categories of hotspots were then identified; 1. Block groups that were hotspots in both 2019 and 2020 were classified as consecutive hotspots, 2. Block groups that were hotspots in only 2019 are classified as diminishing hotspots, and 3. Block groups that were hotspots in only 2020 are considered emerging hotspots. We explore associations between these three categories of hotspot patterns and 12 land use classifications in Chicago.

Overall, about 9612 and 8667 burglaries were recorded in 2019 and 2020, respectively, a 9.83 percent decrease over the one year being studied. Most of these burglaries occur in residential land use, accounting for 72.6% and 59.2% of all burglaries in 2019 and 2020, respectively. Burglaries in mixed land use tripled between 2019 and 2020, recording the largest change between both years. The Getis Ord hot spot analysis revealed that hotspots in 2019 were located in zip codes south of Chicago, where the land use was predominantly residential. In 2020, hotspots spread into downtown Chicago where there were mixed land uses in the eastern parts of the city. Hotspots in the southern part of the city in 2019 declined in 2020. Diminishing hotspots were mostly in the south of Chicago in residential and business areas. Emerging hotspots in 2020 were in Downtown mixed-use areas and residential and business land-use areas in the southeast. Consecutive hotspots were largely in the southern parts of Chicago, where the dominant land use was residential and business.

The COVID-19 pandemic and associated emergency stay-at-home orders resulted in changes in routine activities, which may have significantly affected the occurrence and spatial location of crimes. During the pandemic, crime rates in many cities declined (Ashby, 2020). Our results indicate that changes in burglary rates during this period were, however, associated with land use patterns. Stay-at-home orders and the closure of certain businesses and institutions may have resulted in less routine activities in these areas, resulting in the concentration of emerging hotspots in these areas. The concentration of diminishing hotspots can be attributed to the increase in time spent at home during the pandemic as compared to periods prior to the pandemic. Future research must investigate factors accounting for differences in the changes in burglary rates among the same land uses across Chicago.

References

- Ashby, M. P. J. (2020). Initial evidence on the relationship between the coronavirus pandemic and crime in the United States. *Crime Science*, 9(1), 6. <https://doi.org/10.1186/s40163-020-00117-6>
- Brantingham, P., & Brantingham, P. (1995). Criminality of place: Crime generators and crime attractors. *European Journal on Criminal Policy and Research*, 3(3), 5–26. <https://doi.org/10.1007/BF02242925>
- Cohen, L. E., & Felson, M. (1979). Social Change and Crime Rate Trends: A Routine Activity Approach. *American Sociological Review*, 44(4), 588–608. <https://doi.org/10.2307/2094589>
- Felson, M., Jiang, S., & Xu, Y. (2020). Routine activity effects of the Covid-19 pandemic on burglary in Detroit, March 2020. *Crime Science*, 9(1), 10. <https://doi.org/10.1186/s40163-020-00120-x>