

Abstract: Since the Columbine shootings in 1999, gun violence and mass shootings in the United States have received major attention. However, the focus on highly publicized mass shootings has obscured a more private type of mass shooting: those related to domestic violence (DV), which make up more than half of U.S. mass shootings. Despite the importance of this issue, research on DV-related gun violence has been limited, largely due to the lack of data. Furthermore, the analyses that have been performed rarely address the spatial dependence in gun violence. Here, we work towards three aims: 1) We explore the potential of Gun Violence Archive data for DV-related gun violence research and compare it to other sources of gun violence data. We find that Gun Violence Archive data are comparable to other data sources for studying DV-related gun violence, but they are not appropriate for all gun violence research. 2) We assess the spatial dependence in DV-related gun violence and find that DV-related gun violence exhibits strong spatial dependence on the state level. We recommend that future researchers take this dependence into account in their analyses. 3) We use a Poisson spatial-temporal generalized linear mixed model (Haran and Hughes, 2013) to study the relationship between state gun policies and the incidence of DV-related gun violence. We find that increased gun access and the absence of policies to restrict domestic violence offenders' firearm access are associated with a statistically significant increase in shootings related to domestic violence. Overall, we encourage statisticians and data scientists to engage in gun violence research, both to address the key statistical issues in gun violence research and to contribute to the body of evidence for effective solutions to gun violence in the United States.