Toward a Better Estimate of Domestic Violence in America

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There has been a considerable volume of research and attention given to domestic violence over the past 50 years. This can be traced to the start of the battered women's movement of the 1970s by national organizations.[1] While interest has ebbed and flowed since, an increased amount of attention was placed on incidents of domestic violence that occurred amid stay-at-home orders issued during the COVID-19 pandemic, as documented by the Council on Criminal Justice[2] and other researchers.[3] Still, this crime type remains one of the most difficult and perplexing to examine, due to varying definitions of what constitutes domestic violence, underreporting of domestic violence to law enforcement, and challenges stemming from the existence of multiple avenues of reporting and the multiple agencies that receive reports. Because of such factors, the United States has no solid grasp on how much domestic violence actually occurs in communities.

The absence of a true prevalence rate for domestic violence hinders the development of effective prevention programs, policy options, and responses to the crime. Documenting the extent of domestic violence is important to help service providers, policymakers, and law enforcement better understand current trends and identify what works and what does not work when implementing interventions in response to those trends. An accurate measure of domestic violence at the local level would allow agencies to effectively allocate resources and identify specific populations who may underreport victimization.

Domestic violence can be counted in the following data collection systems:

- Official reporting to law enforcement through the Federal Bureau of Investigation's (FBI's) National Incident-Based Reporting System (NIBRS)
- Self-report survey data collected through the Bureau of Justice Statistics' National Crime

Victimization Survey (NCVS)

- Informal reports that are received by local and national domestic violence hotlines, domestic violence shelters, social service agencies, pastors, doctor's offices, and emergency rooms that are not captured or not coded

The range of reporting avenues for domestic violence underscores how difficult it is to arrive at a true prevalence, both in general and across demographic and other categories. It is possible that the same victimization experience may be documented in one or more of the data sources – or perhaps not even at all.

Given these challenges, this report estimates sub-national domestic violence trends, using a combination of the NCVS and the FBI's NIBRS.[4] The novel contribution of this approach is that it not only recognizes the underreporting that exists with respect to domestic violence, but also offers a methodology that fully takes this underreporting into account. Additionally, the proposed methodology can easily be applied to other crime types where similar underreporting is problematic, such as hate crimes.

Key Takeaways

- Victimization surveys indicate that about **70% of aggravated domestic violence incidents are reported** to law enforcement authorities.
- Combining law enforcement reports and victimization survey data, it is possible to **produce more accurate estimates** of the number of aggravated domestic violence incidents that occur in individual jurisdictions.
- Using that methodology, **aggravated domestic violence incidents in cities are estimated to be 29% to 53% higher than those reflected in law enforcement data** in a sample of the top 20 cities with the highest number of NIBRS reported incidents.
- Obtaining an accurate measure of aggravated domestic violence at the local level is important because it allows cities to **more effectively allocate resources** and to identify specific populations who may underreport victimization.
- The methodology described in this report **can be applied to other crime types** where underreporting is problematic, such as hate crimes.

Glossary

- **Domestic Violence**: Although domestic violence incidents can be categorized as simple or aggravated assaults, this report focuses on aggravated domestic violence assaults. The FBI defines aggravated assault as an unlawful attack by one person upon another wherein the offender uses a weapon or displays it in a threatening manner, or the victim suffers obvious severe or aggravated bodily injury involving apparent broken bones, loss of teeth, possible internal injury, severe laceration, or loss of consciousness. This also includes assault with disease (as in cases when the offender is aware that they are infected with a deadly disease and deliberately attempts to inflict the disease by biting, spitting, etc.). Domestic violence incidents are defined as aggravated assaults where there is or was a romantic relationship between the victim and offender.
- **National Crime Victimization Survey (NCVS)**: A survey developed by the Bureau of Justice Statistics and conducted annually by the Census Bureau, serving as the primary national data source on criminal victimization. The survey collects information from approximately 240,000 individuals in 150,000 U.S. households, representative of the nation's demographics. Participants, aged 12 and above (excluding those homeless or in correctional facilities), are interviewed about their experiences with criminal victimization, including frequency, types, and impacts. Data cover non-fatal personal crimes (e.g., assault, robbery, sexual assault) and household property crimes (e.g., burglary, motor vehicle theft), along with reporting to law enforcement.
- **National Incident Based Reporting System (NIBRS)**: A comprehensive system for collecting and reporting incident-level data on crimes reported to law enforcement in the United States. Part of the FBI's Uniform Crime Reporting Program, NIBRS is the successor to the Summary Reporting System (SRS), which provides limited information on a select number of crimes. NIBRS captures information on a wide range of offenses and includes details such as victim demographics, offender characteristics, and the relationship between the victim and offender.
- **Underreporting**: Underreporting of crime refers to the situation where the incidence of criminal activity is higher than what is captured by law enforcement data or reflected in official crime statistics. This discrepancy is often attributed to factors such as victims' reluctance to report incidents, concerns about retaliation, stigma, inadequate awareness of reporting mechanisms, and inefficiencies within the reporting system itself. The phenomenon of underreporting can result in a distorted portrayal of crime rates and may undermine the effectiveness of crime prevention efforts and the allocation of resources.

Background

The NCVS is a large national-level survey of criminal victimization and cannot be used to generate sub-national estimates of aggravated domestic violence at the county, city, or jurisdiction level. The most readily available data to generate sub-national estimates of domestic violence are drawn from direct reports to law enforcement recorded in NIBRS. However, due to underreporting, data from law enforcement underestimate the true incidence of domestic violence in communities. This report uses a combination of data from each source to provide estimates for a single jurisdiction of how many domestic violence incidents occur in states with large NIBRS coverage. Using model-based estimates from the NCVS, the estimated proportion of underreporting can be calculated, and used to adjust NIBRS data for a single jurisdiction, thereby providing a better estimate of domestic violence.

The purpose of this report is to describe a methodology that takes into consideration how underreporting affects the true prevalence of aggravated domestic violence. This methodology is designed to help researchers, practitioners, academics, policymakers, members of the general public, and others who have a stake in understanding the nature of domestic violence craft appropriate prevention and intervention strategies. In so doing, it offers a novel approach for improving the reliability and accuracy of domestic violence counts and rates in the U.S.

Methodology

The goal of this methodology is to take the aggravated domestic violence incidents reported to individual law enforcement agencies and *adjust* them for underreporting. For example, if a law enforcement agency had 100 domestic violence incidents reported in 2022, then the number of domestic violence incidents that actually occurred in that jurisdiction is unclear, given that we know that 100 reported incidents *is an undercount*.

If one knows that the reporting rate for domestic violence events was only 50%, one would then up-adjust the observed rate of 100 events by 100/0.5, which would suggest there are a total of 200 events. Yet, not all crime events have the same reporting rate. Imagine that out of the 100 events, 80 were for older victims, who had a reporting rate of 50%, and 20 were for younger victims, who had a reporting rate of 40%. In this scenario, the total up-adjusted weight for the jurisdiction will be 80/0.5 + 20/0.4, which would suggest that 210 incidents

actually occurred. The older individuals in the sample could be weighted to adjust for their lower reporting rates.

This report shows how to take this methodology further by allowing every observed criminal incident to have its own weight to up-adjust. Using a set of normalized data across the NCVS and NIBRS, this report shows how to create tailored estimates to up-adjust incidents of domestic violence reported to law enforcement. This uses not only the age of the victim, as discussed in the above hypothetical, but also other demographic characteristics (gender, race and ethnicity), regional characteristics (region of nation and population size of jurisdiction), as well as the year in which the report was filed.

This methodology fills a critical gap in our current data ecosystem: While the NCVS provides domestic violence rates for the entire nation, it does not allow users to drill down into more specific geographics. The approach presented here allows individuals to account for underreporting and generate estimates for counties, cities, and jurisdictions. Given that law enforcement agencies can report NIBRS data in a timely manner, this methodology also provides an opportunity for jurisdictions to document trends in near real-time, rather than relying on the NCVS, which is published every fall.

For a more in-depth description of the methodology, as well as the code to replicate the results, see the supplementary methodology report.

Top 20 Large NIBRS-Reporting Cities With the Highest Rates of Reported Domestic Violence

Figure 1 shows cities with a population over 250,000 with the highest rate of aggravated domestic violence reported to law enforcement and recorded in NIBRS in 2022. It is important to note that several large cities–including Chicago, Los Angeles, Miami, New York City, Phoenix, and San Francisco–did not report to NIBRS in 2022 and are therefore not included.

Figure 1. Aggravated Domestic Violence Rates for the Top 20 NIBRS-Reporting Cities with 250k+ Population, 2022

Figure 2 shows the number of domestic violence incidents reported to NIBRS for each of the top 20 cities and the up-weighted estimates of underreported domestic violence incidents given these models. The gap between reported and underreported domestic violence

incidents varied among the 20 cities and even within them. Based on the incident characteristics, the average probability of reporting in the sample was approximately 70%, so the reported counts were increased by about 140%. This is due to the reciprocal of 70% being 1.4.

Although Lubbock, TX had the highest rate of reported domestic violence, Las Vegas, NV had the greatest number of reported incidents of domestic violence and the largest up-weighted adjustment for underreported incidents based on demographic and regional characteristics. In 2022, there were 1,437 aggravated domestic violence incidents reported to law enforcement and recorded in NIBRS for the Las Vegas metropolitan area. After adjusting for underreporting, however, the estimated number of incidents that occurred rose to approximately 2,000.

Across these 20 cities, domestic violence was underreported by an average of 336 incidents per city, with a range of 69 (Chesapeake Bay, VA) to 564 (Las Vegas). Using characteristics from each city (e.g., the age, gender, race and ethnicity of the victim, regional characteristics, and the year in which the report was filed), domestic violence incidents were up-weighted 29% to 53% for the 20 cities in the sample to account for underreporting. Many smaller cities that had fewer reported domestic violence incidents tended to also have a smaller correction for underreporting.

Figure 2: Aggravated Domestic Violence Incidents by Size of Estimated Underreported Incidents, 2022

Two Agency Examples

NIBRS reporting is voluntary, and despite a concerted effort from the FBI to increase NIBRS reporting beginning in 2015,[5] not all agencies report and those that do began reporting in different years.[6] For example, Las Vegas began reporting to NIBRS in 2020 and therefore had only three years of available data to analyze. Tables detailing the years of available data for the cities and five-year incident trend data are available in the supplemental methodology report. For ease of presentation, this report provides examples of the methodological approach for two cities–Denver, CO and Lubbock, TX–to show how the relative size of the up-weighted adjustment for underreporting changes over time. Denver was selected because NIBRS reporting began there in 2005, providing the opportunity to examine a long-term trend. Lubbock was selected because it had the highest rate of domestic violence and only

five years of available data in NIBRS. Trend data for all of the top 20 cities are provided in the supplemental methodology report.

Figure 3 shows the annual count of domestic violence incidents from the Denver Police Department. Denver began reporting to NIBRS in 2005, and the relatively flat trend in reported domestic violence began to increase starting in 2015. In 2022, there were more than double the number of reported domestic violence incidents compared to 2015. Although the *trends* are similar between the NIBRS data and our estimates that take underreporting into account, the reported NIBRS counts alone underestimate the prevalence of domestic violence in Denver by roughly 1,600 incidents since 2015.

Figure 3. Denver, CO Aggravated Domestic Violence Incident Counts, 2005-2022

Because the regression model is a statistical estimator, confidence intervals can be generated around the aggregated up-adjusted weight. We use a simulation approach to generate different probabilities for the individual reported NIBRS events (given the standard errors of the predicted probabilities), then calculate the up-adjusted counts (and population rates) for the simulations, and then take the 1st and 99th quantile (so these show 98% confidence intervals). As shown in Figure 4, the errors in the regression modelling are small compared to the yearly variability in Denver, increasing our confidence that the estimated number of domestic violence incidents that account for underreporting reflect the total number of incidents that occurred each year.[7]

Figure 4. Error Estimates in Overall Domestic Violence Incidents in Denver, CO per 100,000 Population

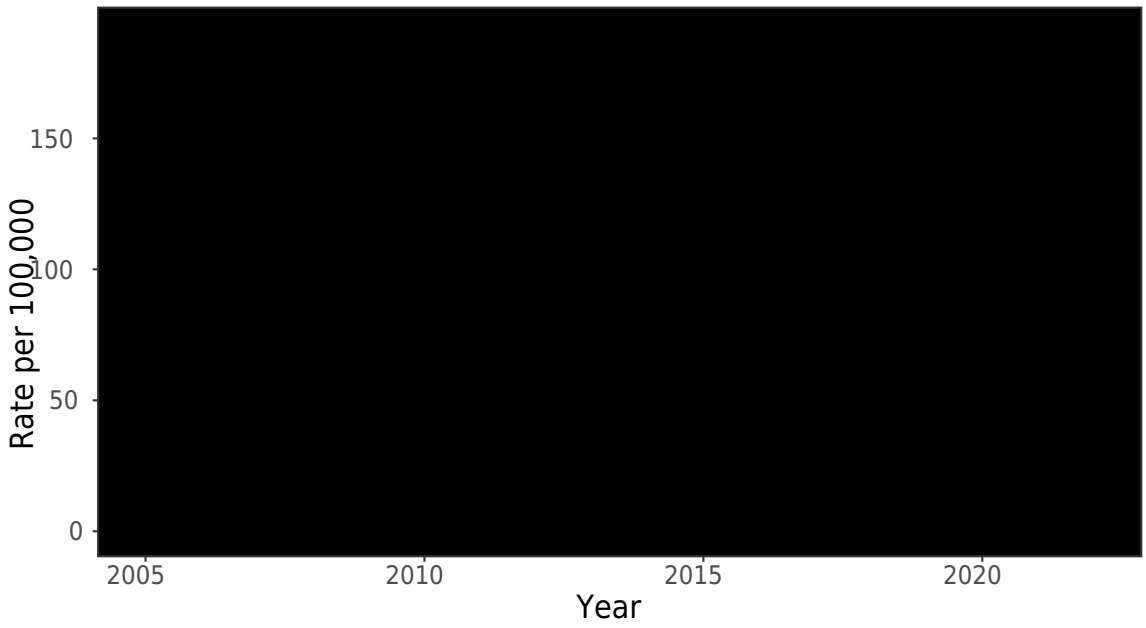
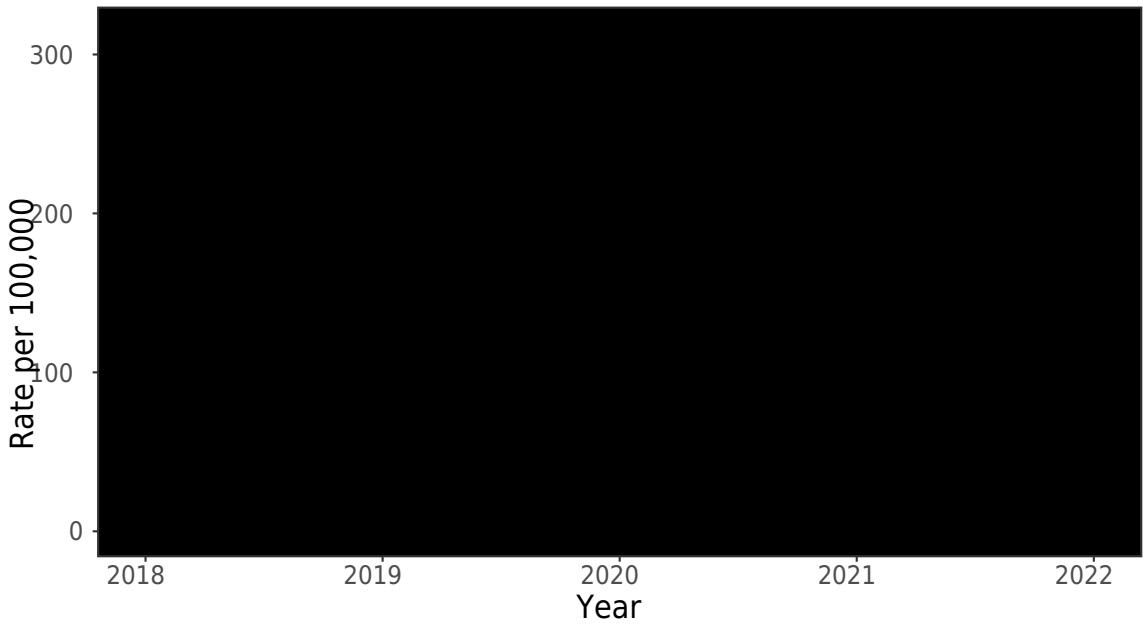


Figure 5 shows the count of domestic violence incidents in Lubbock, which began reporting to NIBRS in 2018. The relatively stable number of reported domestic violence incidents results in a similarly stable up-weighted adjustment for the estimated underreported incidents.

Figure 5. Lubbock, TX Aggravated Domestic Violence Incident Counts, 2018-2022

Errors in the rates (Figure 6) for Lubbock appear wider in the graph than they do for Denver (Figure 4) because Lubbock has less variability in its annual rates and only five years of available data. In other words, fewer reported domestic violence incidents for a given city in a given year results in an increase of the estimated range of underreported incidents.

Figure 6. Error Estimates in Overall Domestic Violence Incidents in Lubbock, TX per 100,000 Population



Conclusion

The number of domestic violence incidents reported to law enforcement varies over time and across agencies. Similarly, the level of underreporting varies over time, agencies, and respondent characteristics. The methodology presented in this report illustrates how factoring in variables associated with reporting and underreporting can be used to adjust official statistics and generate an estimate of the true prevalence of domestic violence in a community. Analyses indicate that solely using aggravated assaults for domestic violence reported to law enforcement and recorded in NIBRS undercounts these incidents by about 40%. The estimates provided by our methodology offer a count of domestic violence that takes underreporting into account.

This analysis is limited to large cities that submitted information on aggravated domestic violence to NIBRS in 2022. As noted above, NIBRS reporting is voluntary and not all jurisdictions report their crime data to NIBRS. Several large cities–notably Chicago, Los Angeles, Miami, New York City, Phoenix, and San Francisco–were not reporting to NIBRS in 2022. Tables detailing available data and five-year incident trends for included cities are available in the supplemental methodology report.

Future work can extend these analyses in multiple ways. One opportunity is to expand the models to produce sub-national prevalence estimates for additional crimes. Violent crimes such as aggravated assault domestic violence have relatively high reporting rates; property crimes and less serious violent crimes–including simple assault domestic violence–have lower reporting rates. For example, in the most recent NCVS report, more than 70% of property crimes in 2023 were not reported to law enforcement.[8] Therefore, it is critical to account for underreporting, as it has the potential to impact sub-national trends over time. Increasing the accuracy of modeling of reporting rates can likely be done, given that more serious events such as aggravated assault domestic violence are rare compared to thefts, simple assaults, or other highly prevalent crimes that occur in communities. A multi-level modeling approach could be used to estimate reporting rates across multiple types of victimizations, rather than limiting the model to one specific crime type. It bears investigating whether decreasing reporting rates for domestic violence are idiosyncratic to that crime type, or reflect a more general pattern.

A final aspect for future work is applying such estimates in real time. Currently, this methodology relies on NIBRS data, which are published every fall by the FBI and include crimes that occurred in the previous calendar year. The FBI has recently begun to release quarterly reports, but these include only a subsample of agencies. Law enforcement agencies could apply this methodology to their own data in real time, generating a more accurate count of the number of domestic violence incidents that occur within their jurisdictions. An agency could generate such estimates using the open data they maintain on their website or in regular reports to routinely publish accurate counts of domestic violence. These models aggregate up to the yearly level, but there is no reason they could not be applied to smaller periods of time.

Much like the cone-of-uncertainty surrounding hurricane forecasting, the methodological approach advanced in this report is designed to generate better estimates of the true amount of domestic violence that occurs in communities across our nation. Only with more accurate, reliable, and timely data will researchers, practitioners, and policymakers be in a better position to prevent domestic violence and promote public health and public safety across the U.S.

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Endnotes

[1] Schechter, S. (1982). *Women and male violence: The visions and struggles of the battered women's movement*. South End Press.

[2] Piquero, A. R., Jennings, W. G., Jemison, E., Kaukinen, C., & Knaul, F. M. (2021). *Domestic violence during COVID-19: Evidence from a systematic review and meta-analysis*. Council on Criminal Justice. https://counciloncj.org/wp-content/uploads/2024/06/Domestic-Violence-During-COVID-19-February-2021.pdf

[3] See, for example: Boserup, B., McKenney, M., & Elkbuli, A. (2020). Alarming trends in US domestic violence during the COVID-19 pandemic. *The American Journal of Emergency Medicine*, *38*(12), 2753. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7195322/; Kourti, A.,

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[4] After an extensive scoping review, it was determined that the NCVS, a survey of about 240,000 persons in 150,000 households, and NIBRS, which amasses incidents and arrests from the nation's law enforcement agencies were best suited to our purposes for generating sub-national estimates of domestic violence trends in a timely fashion.

[5] Federal Bureau of Investigation. (2015, December 14). The transition to NIBRS. *FBI This Week*. https://www.fbi.gov/audio-repository/news-podcasts-thisweek-the-transition-to-nibrs.mp3/view

[6] Bureau of Justice Statistics. (2022). *National incident-based reporting system* (NIBRS). https://bjs.ojp.gov/national-incident-based-reporting-system-nibrs

[7] Confidence intervals are useful ways to describe the variation or spread around an estimate. The smaller the intervals, the greater the confidence that the estimate is within those bounds, while the opposite is true regarding larger confidence intervals. Another way to think about this is through the cone of a hurricane's path prediction. One day or a half day out, the cone is very small but gets wider as the days accumulate showing a greater level of uncertainty.

[8] See Table 6: Tapp, S. N., & Coen, E. J. (2024). *Criminal victimization, 2023* (NCJ 309335). Bureau of Justice Statistics. https://bjs.ojp.gov/document/cv23.pdf