RESEARCH ARTICLE

Victim-Offender Overlap in Violent Crime: Targeting Crime Harm in a Canadian Suburb

Natalie Hiltz[1] · Matthew Bland[2] · Geoffrey C. Barnes[3]

Abstract

Research Question To what extent are victims of violent crime also offenders, and vice versa, with what concentrations of total crime harm across each person who has ever been reported as both a victim and an offender within the study period?

Data We analyse 27,233 unique individuals who were the subject of violent crime reports to the Peel Regional Police Service in Canada, either as offenders, victims, or both, for crimes reported between January 1, 2014, and December 31, 2016. Each individual linked to a violent crime in this period was tracked for the 730 days subsequent to the first crime report naming them.

Methods We coded each crime with the Canadian Crime Severity Index (CCSI) to calculate victimization and offending harm totals across all incidents for each individual. We then computed each individual's ratio of total CCSI from victimization to total CCSI from victimization. Based on the distribution of these ratios of CCSI from all offending to all victimization, we show how police can distinguish three categories of victim-offenders (VOs): predominant victims (PVs), predominant offenders (POs), and balanced victim-offenders (BVOs), as well as the single-category absolute offenders (AOs) and absolute victims (AVs).

Findings Across all 27,233 individuals tracked, 17,138 (64%) appeared first as victims, and 10,095 (36%) appeared first as suspects. Of those appearing first as victims, 997 (6%) are linked to a violent crime as an offender within 730 days. Among those appearing first as offenders, 1019 (10%) are subsequently reported as victimized within

✉ Matthew Bland
  mpb57@cam.ac.uk

  Natalie Hiltz
  1881@peelpolice.ca

1   Peel Regional Police Service, Ontario, Canada

2   University of Cambridge, Cambridge, UK

3   Metropolitan Police Service, University of Cambridge, London, UK

730 days. The total of this combined group (VOs) = 1665 individuals (6% of the entire population). Using a 3.5:1 ratio of victim to offender harm, we subdivide the 1665 VOs further into 322 predominant victims, 280 predominant offenders, and 1063 balanced victim-offenders. The 20% of individuals ($n = 5455$) with highest harm are linked to 71% of overall harm. On average, predominant offenders (who have also been victimized) are associated with 2.7 times as much harm as absolute offenders, and predominant victims (who have also been offenders) have three times as much harm as absolute victims.

Conclusions This research shows how combining records of victimization and offending to target higher harm levels with greater potential benefits for police investments in harm reduction and prevention.

Introduction

Since Goldstein (1979) first identified problem-oriented policing as a quest for disrupting patterns of harm, a key question for policing has been how to set priorities across patterns. Sherman's (2007: 313) discussion of the "power few" members of any group of police targets suggested the need for a precise metric of harm, if only to rank-order them for police intervention. Weinborn et al. (2017) applied this metric for high-harm places, as did Dudfield et al. (2017) for high-harm victims, and Liggins et al. (2019) for high-harm offenders.

Yet other possibilities for targeting police resources may be found in combining two or more of these categories. For example, Sandall et al. (2018) have reported such an analysis across the categories of victims and offenders, showing that people who are identified in separate incidents as *both* victims and offenders have far greater harm scores than persons who are only victims or only offenders. This discovery opens further possibilities for simple classifications of crime patterns that police can understand in relation to setting priorities for resource allocation. Those possibilities logically extend to further parsing by harm levels of different categories within the population of victim-offenders.

In this paper, we track victim-offenders over a 2-year follow-up period and explore how a combined analysis of both dimensions of involvement in violent crime might refine targeting for harm reduction strategies. Our primary research question touches upon a wider societal issue: are we policing only to bring people to justice or are we policing for building safer communities? If the latter, it may be possible to disaggregate the rather broad category of victim-offenders into several subgroups. Such refinement could assist in generating greater understanding and definition to inform police prevention and intervention efforts.

We begin with a summary of what research has concluded about victim-offenders to date to set the context for our research questions. We then discuss our specific dataset and the primarily descriptive methods we have used to explore it. Finally, we present our findings and discuss the possibilities they suggest for future development of strategy.

Existing Evidence

Theoretical and empirical research on the victim-offender overlap is wide enough that the concept has been described as a "criminological fact" (Erdmann and Reinecke 2019, p2). Yet the strength of evidence remains weak. If nothing else, there is no targeting research in a Canadian context (apart from Regoeczi et al. 2000), ensuring that the higher harm levels associated with victim-offender (VO) overlap is not just an isolated phenomenon (Sandall et al. 2018).

The broad term of "victim-offender" itself is generally well defined. Reingle (2014, p. 911) uses a definition from Gottfredson (1981) that conveys the overlap as a "strong empirical and theoretical relationship occurring between victimization and the perpetration of crime and delinquency". Bottoms and Costello (2010, pp. 104–105) limit the victim-offender definition to "situations within a reasonably short time frame in which an individual enters the criminal justice system as both a victim and offender". This overlap does not suggest that all victims are potential offenders nor are all offenders' potential victims (Broidy et al. 2006). Indeed, prior scholarship in criminological research on victim-offenders has largely concentrated on offending and victimization separately without considering the interrelationship of the two.

In a review of the literature in this field, Jennings et al. (2011) identified a general lack of attention to the overlap phenomenon. This overlap is not new. The earliest pioneer of the victim-offender overlap was Wolfgang (1958), whose classic Philadelphia study first established that overlap was common leading up to homicides. Work on specific mechanisms of the interrelationship began later, with Wolfgang and Ferracuti (1967), who investigated the subculture of violence that provided the foundation for further study. Gottfredson (1984) and Broidy et al. (2006) agree that the strongest association between the victim-offender overlap presents within the highest harming forms of violent personal crimes, including homicide.

According to Lauritsen and Laub (2007), Wolfgang's early research discovered that a substantial portion of both victims and offenders had previous arrest records. Wolfgang's findings sparked much systematic research into distinguishing characteristics of individuals and their socialization that might contribute to the interrelationship. Since that time, Jennings et al. (2011) identified 31 studies spanning five decades that showed consistent support across different settings. We note that of the six studies that did not support the existence of the overlap, one of these was Canadian (i.e. Regoeczi et al. 2000). Despite this relative consistency, Lauritsen and Laub (2007) observe that longitudinal studies have seldom covered the victim-offender overlap issue. Bottoms and Costello (2010) speculate that a political sensitivity may play a role in de-emphasizing this unpopular pattern that describes criminals as victims and victims as criminals.

The late Norwegian criminologist Nils Christie (1986) suggested that the public, police, and politicians can dehumanize offenders by treating them as playing this role exclusively, even though offenders may also be suffering as victims. The social stigma surrounding offending can result in harmful, multi-systems failures, as described by Jones (2017), who demonstrated the inadequate handling of the victim-offender interrelationship within an inmate population incarcerated in an Alberta (Canada) prison.

Research Questions

Our starting point is to evaluate the extent to which victims and offenders overlap among a population of individuals involved in violent crimes in suburban Canada. We expect there to be overlap, but we do not know to what extent. Crucially, we do not know the extent to which overlap, and the ratio of harm between victimization and offending, is associated with total crime harm for each individual.

We explore the overlap between victims and offenders known to a suburban Canadian police agency of some 2000 police officers and 900 staff over a 2-year follow-up for each victim individual involved in a violent crime between 2014 and 2016. This research examines how a combined analysis of both victimization and offending might better define who suffers and/or causes the highest violent crime harm. In particular, we ask:

A) For all individuals with a linked violent offence (as either victim or offender) between 2014 and 2016, what is the distribution of offending and victimization counts, including the extent of overlap between the victims and offenders in a censored 2-year follow-up?
B) What is the distribution of these individuals when they are rank-ordered by using a Crime Harm Index to compute total harm scores from both victimization and offending?
C) What patterns of harm exist in subgroups of victim-offenders?
D) To what extent are the highest harm individuals composed of victim-offenders?

Data

This study relies on police recorded crime data from the Peel Regional Police Service in Ontario, Canada. Data collection and recording by all Canadian police agencies are required to conform to the standards of the Canadian Centre for Justice Statistics (CCJS). Police-reported crime data are housed within the "Uniform Crime Reporting Survey" that was designed to measure the incidence and characteristics of crime within Canada.

We extracted the crime records for Peel Regional Police using a 3-year triggering "intake" period, from January 2014 through December 2016. During this period, a total of 27,233 unique persons were recorded as either victims or suspects (or both) of a violent crime. There were 41,457 violent crimes in the jurisdiction in the same period. For each individual identified, we calculated a 2-year (730-day) censored follow-up period for each individual. For example, a victim of violent crime recorded on January 1, 2014, was tracked for subsequent violent crime involvements until December 31, 2016. To enable a full 730-day follow-up for all individuals in the "intake" period, we tracked crime records up to the end of 2018.

All raw data were accessed via the police agency records system that came into effect on April 2, 2008, 6 years before the start of the triggering incident window. To extract our data, a database query identified specific fields of data:

Occurrence Number
Occurrence Type
Occurrence Start Date
Patrol Zone (area of incident)

Atom [location]
Victim (crimes against persons, including both adults and young persons)
Accused (adults only involved in crimes against persons)
Young Person Accused (ages 12–17)
Wanted (Responsible for crime but not yet apprehended)
Gender
Date of Birth
Race
Person ID (unique identifier)

We used violation codes and subcodes from the national standard set of codes that originate from the Canadian Crime Severity Index (Babyak et al. 2009) as a filter to isolate all violent offences, including assault level one and above. Violent criminal events were not included for unknown offenders, as unknown persons within the data have a person involvement of "suspect" which was not specified in the query.

By referencing the CCSI codes, we apply a crime severity score for each crime record. CCSI scores are derived from sentence lengths (see Babyak et al. 2009), measured in days of imprisonment, in the same manner as other indices that have been developed throughout the world in the last decade (see Andersen and Mueller-Johnson 2018; Bland and Ariel 2020; Chong 2019; Curtis-Ham and Walton 2017; House and Neyroud 2018; Kärrholm et al. 2020; Mitchell 2019; Sherman et al. 2016). In the case of CCSI, weightings are based on mean actual sentence lengths, expressed in number of days.[1]

Methods

Our method for breaking down the broad classification of victim-offender into subcategories was to compare, for each individual, the relative proportion of their CCSI-measured harm associated with victimization or with offending. We used the CCSI scores to develop this framework by mapping the ratio of victim harm against offender harm and assessing a natural cut-off point in sample size. We visualize this process in Fig. 1.

As Fig. 1 shows, we selected a ratio of 3.5:1 as an illustrative cut off point. This cut off can be described as follows: any victim-offender we identified whose victimization harm total was at least 3.5 times greater than their offending harm total was classified as a "predominant victim" (PV). Any victim-offender whose offending harm total was at least 3.5 times greater than their victimization harm total was classified as a "predominant offender" (PO). All other victim-offenders (who were neither PVs nor POs) were classified as a balanced victim offender (BVO).

---

[1] As described by Statistics Canada (Babyak et al. 2009), serious crimes drive the CCSI, as opposed to more trivial offences driving crime counts to assist in achieving a more effective focus and balance of police resources. Significant volumes of minor offences (which have low crime weights) are no longer influential, highlighting that the performance of a weighted index operates in sharp contrast to crime counts. While overall crime in any given area may be low, the community may be simultaneously experiencing higher crime harm from a variety of violent crimes. Conversely, when crime rates for any police service are significantly higher than the national average, garnering political and public attention, the application of the CCSI may tell a completely different story (Babyak et al. 2009).
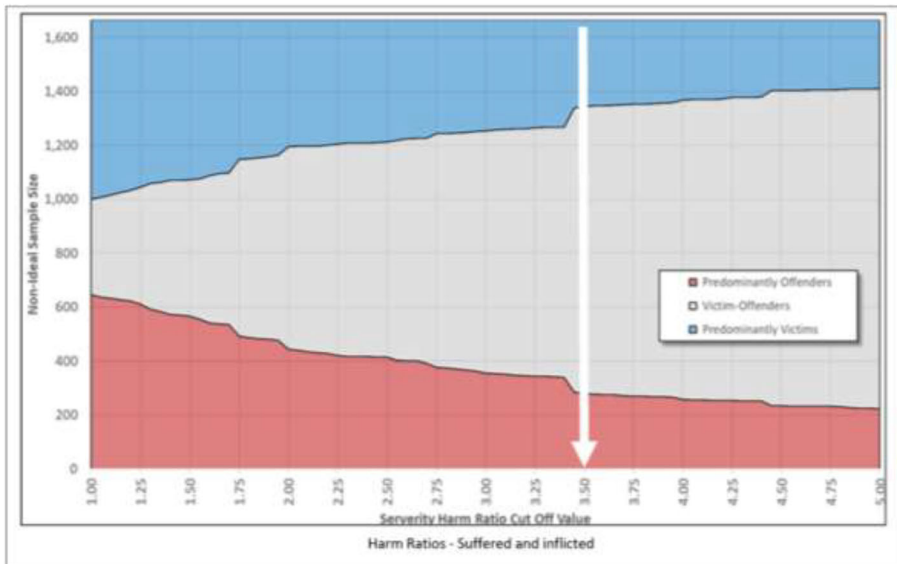
Fig. 1 Ratios of victim harm to offender harm

We selected the ratio of 3:5 for an illustrative cut off point on empirical grounds, rather than theoretical grounds. As the tracking lines in Fig. 1 demonstrate, the sample sizes of the predominant groups fall away after 3.5 is reached—but they do the same after 3.0 to 1 as well. The Severity Index used here, however, sets the harm value of a higher order assault (level 2) as being 3.42 times larger (90.26 days vs. 26.39 days) than the least serious form of assault (level 1). Because many members of our sample had single instances of each offence on opposite sides of the victim-offender divide, a ratio of 3.42:1 was quite common. One could easily make the case for setting the ratio elsewhere (e.g. twice as much harm could equal predominance), especially in places where a different harm index was employed. As with most data coding decisions, this cut off value would likely shift in other contexts, depending on resource availability and other factors in any specific policing agency.

Highest Harm Offenders To analyse the composition of the "highest harm" group, we rank-ordered each individual by their total harm score (from both offending and victimization, combined) and divided the list into fifths (quintiles). We selected the top 20% as a definition of the highest harm group, cutting across all victim-offenders. As with other aspects of the methodology, replications may make a case for a different cut off point, and this should be considered at the outset.

Findings

Number of Victims and Offenders

Figure 2 shows the breakdown of all 27,233 people in our dataset into 17,138 (63.8%) individuals who entered as a victim and 10,095 (36.2%) as an offender, irrespective of whether subsequent incidents in the time period also made them victim-offenders.
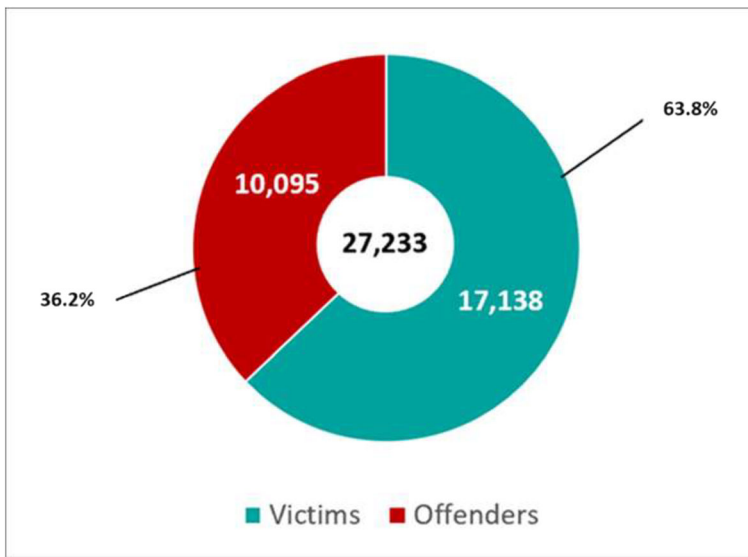
Fig. 2 Initial status of all individuals within the dataset

Overlap Between Victims and Offenders

The majority of individuals in the dataset did not go on to suffer or commit another violent crime within 2 years. Yet more than one-third (36%) of individuals initially recorded as violent offenders were linked to at least one more violent crime within 2 years as an offender. Among those initially recorded as victims, 26% were named in another violent offence within 2 years as either offenders or victims of this overall 30% of individuals involved in repeat violence, and 1665 (6%) experienced repeat violence in the other category of involvement (i.e. as "victim-offenders" or VOs in our terminology). Thus, the combined population consisted of three broad categories, in which:

- 59% were only victims or "absolute" victims (AVs)
- 35% were only offenders or "absolute" offenders (AOs)
- 6% became both victims and offenders (VOs)

Harm Distributions

As Table 1 shows, the VOs were associated with far higher levels of harm than either the AVs or AOs, with the latter two showing similar levels of harm and the VOs over twice as high.

Although BVOs commit a higher count of violent crimes than they experience as victims, they suffer much higher levels of harm as victims than they cause by their offending.

Subcategories of Victim-Offenders

Figure 3 provides a detailed scatterplot of applying the 3.5: 1 harm ratio to all 27,233 individuals in the research population. The bold blue points along the vertical axis

Table 1 Harm and count profile of different categories

		Absolute victims	Absolute offenders	Victim-offenders
All groups	% of all individuals	59%	35%	6%
	Cumulative crime count	52%	35%	13%
	Cumulative harm	51%	36%	13%
	Per person crime count	1.4	1.6	3.3
	Per person harm score	195.8	238.6	495.5

represent the 16,141 AVs. The bold red points on the horizontal axis represent the AOs. Those points in between represent all the VOs. The blue and red lines denote the 3.5:1 ratio of harm that we determined as indicating a tendency toward a particular type of harm. The blue line indicates predominant harm from victimization—and everyone to the left of this line who is not an AV, we label as a predominant victim (PV). The red line indicates the same predominance, but from offending. People to the right of this line who are not AOs, we label as predominant offenders (POs). Everyone in between the red and blue lines, we label as balanced victim offenders (BVOs). The grey line running diagonally through the chart represents a 1:1 ratio—an equal split of harm from victimization and offending.

This harm ratio division breaks the 1665 victim-offenders into 322 PVs, 280 POs, and 1063 BVOs. Table 2 shows the differences between the five categories (including absolutes) in terms of the population composition relative to count and harm. It emphasizes that predominant individuals in both victim and offender groups are involved in both a higher number of offences and far more aggregate severity, than those whose experiences were balanced between victimization and offending.
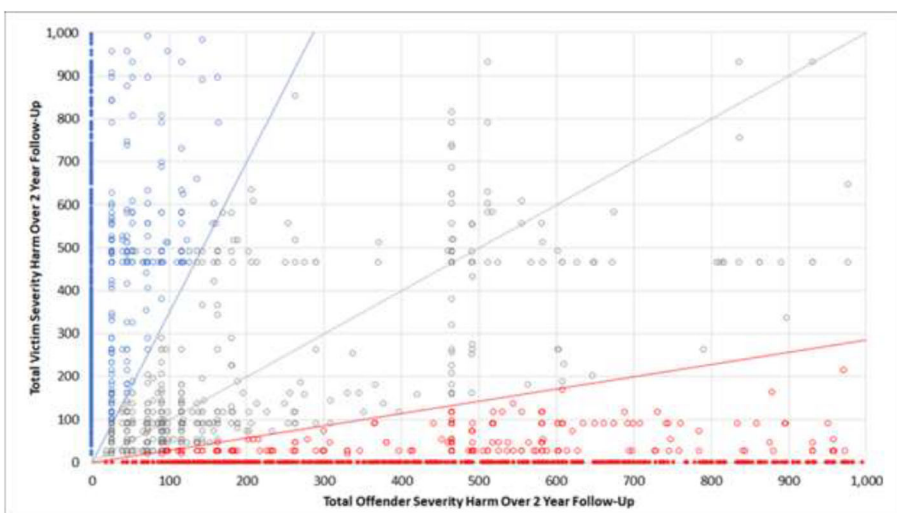

Fig. 3 Victim-offender scatter plot, 3.5:1 harm ratio application

Table 2 Harm and count profile of harm ratio classifications

		Absolute victims	Absolute offenders	All victim-offenders		
				Predominant victims	Balanced victim offenders	Predominant offenders
All groups	% of all individuals	59%	35%	1%	4%	1%
	Cumulative crime count	52%	35%	3%	7%	3%
	Cumulative harm	51%	36%	4%	5%	4%
	Per person crime count	1.4	1.6	3.4	2.9	4.5
	Per person harm score	195.8	238.6	765.1	299.0	948.1

Highest Harm Analysis

We can identify the highest-ranked 20% of the entire population of 27,233 individuals as the 5455 individuals who collectively account for 71% of total harm from violent crime. Of these 4455, 12% (643) were victim-offenders, all of whom combined contributed 8% of total crime harm with just 2.4% of the population. That concentration (8% divided by 2.4% = 3.3), however, is little different from the total concentration of the entire highest-ranked 20% (71% divided by 20% = 3.55). Thus, while PVs have the highest mean harm scores, the top quintile analysis is just as efficient a method for identifying all individuals with high harm scores as the selection of a subcategory (Table 3).

Discussion and Conclusions

This study confirms and extends previous research in demonstrating the importance of classifying crimes in relation to victims who have also been offenders and vice versa. It confirms the Leicestershire (UK) finding by Sandall et al. (2018) that victim-offenders have far higher crime harm per 730 days than both victim-only victims (AVs) and offender-only offenders (AOs). It extends that finding to show that victim-offenders

Table 3 Top 20% against remaining 80% in total cumulative harm, 5 groups

Involvement	Top 20%		Remaining 80%		Total harm
	Total harm	% Harm	Total harm	% Harm	
Absolute victims (AV)	2,138,708	69%	993,571	31%	3,177,279
VO - predominant victims (PV)	131,301	53%	115,061	47%	246,363
Balanced victim offenders (BVO)	220,525	69%	97,296	31%	317,821
VO - predominant offenders (PO)	150,434	57%	115,030	43%	265,465
Absolute offenders (AO)	1,754,230	77%	511,892	23%	2,266,122
Totals	4,440,198	70.8%	1,832,850	29.2%	6,273,050

whose crime-harm comes predominantly from offending have far higher mean harm per 730 days than any other category of offender or victim, almost five times higher than offenders who are not also victims. At a 730-day average per individual of over 900 prison-days worth of harm under the Canadian Crime Severity Scores, the predominant offenders are by far the most harm-concentrated category in the analysis.

Translating this analysis into targeting decisions requires a next step in evidence-based policing. That step is the use of these descriptive, retrospectively identified categories to predict high levels of crime harm in the near future. The limitation of the present analysis is that it does not describe the conditional probability of high harm in the next year or two after someone has been identified as a "predominant offender" or as any category of victim-offender. The value of the present analysis is that it points to testing such categories as predictors of high crime harm, both as victims and as offenders.

Meanwhile, the data systems needed to support such analyses can be designed and implemented, so that the "problem" at the core of any pattern of victim-offending can be better understood in terms of harm. That is particularly relevant with respect to domestic violence, which this study has not separated from the overall violence analysis. Given the vast differences between gang relationships versus domestic partnerships, there is every reason to pursue the possible differences they may imply in victim-offending overlap. As global demand grows for better evidence in targeting proactive policing more precisely to disrupt, reduce, and prevent high harm, this study should offer a firm step forward to more and better evidence.

References

Andersen, H. A., & Mueller-Johnson, K. (2018). The Danish crime harm index: How it works and why it matters. *Cambridge Journal of Evidence-Based Policing, 2*(1–2), 52–69.

Babyak, C., Alavi, A., Collins, K., Halliday, A., Tapper, D. (2009) The methodology of the police reported crime severity index, Household Survey Records Division, Statistics Canada.

Bland, M. P., & Ariel, B. (2020). *Targeting domestic abuse with police data*. Cham: Springer.

Bottoms, A., Costello, A. (2010). Hearing the victim: Adversarial justice, crime victims and the state/edited by Anthony Bottoms and Julian V. Roberts. Cambridge criminal justice series. Cullompton: Willan. Chapter 5: The phenomenon of victim-offender overlap: A study against households 104-140.

Broidy, L. M., Daday, J. K., Crandall, C. S., Sklar, D. P., & Jost, P. F. (2006). Exploring demographic, structural, and behavioural overlap among homicide offenders and victims. *Homicide Studies, 10*, 155–180.

Chong O. (2019). Developing a crime harm index for Hong Kong: Measuring crime severity as well as crime volume. Master thesis University of Cambridge, Institute of Criminology.

Christie, N. (1986) 'The ideal victim', in E.A. Fattah 9ed, From crime policy to victim policy: Reorienting the justice system: London Macmillan.

Curtis-Ham, S., & Walton, D. (2017). The New Zealand crime harm index: Quantifying harm using sentencing data. *Policing: A Journal of Policy and Practice, 12*(4), 455–467.

Dudfield, G., Angel, C., Sherman, L. W., & Torrence, S. (2017). The "power curve" of victim harm: Targeting the distribution of crime harm index values across all victims and repeat victims over 1 year. *Cambridge Journal of Evidence-Based Policing, 1*(1), 38–58.

Erdmann, A. and Reinecke, J., 2019. What influences the victimization of high-level offenders? A dual trajectory analysis of the victim–offender overlap from the perspective of routine activities with peer groups. Journal of Interpersonal Violence, p.0886260519854556.

Goldstein, H. (1979). Improving policing: A problem-oriented approach. *Crime & Delinquency, 25*(2), 236–258.

Gottfredson, M. R. (1981). On the etiology of criminal victimization. *The Journal of Criminal Law and Criminology, 72*(2), 714–726.

Gottfredson, M.G. (1984) Victims of crime: The dimensions of risk. United Kingdom Home Office. Research and Planning Unit.

House, P. D., & Neyroud, P. W. (2018). Developing a crime harm index for Western Australia: The WACHI. *Cambridge Journal of Evidence-Based Policing, 2*(1–2), 70–94.

Jennings, W., Piquero, G., & A., R. Reingle, J., M. (2011). On the overlap between victimization and offending: A review of the literature. *Aggression and Violent Behavior, 17*, 16–26.

Jones, D (2017) The cycle of victimization and offending among incarcerated offenders: An exploratory analysis. (M.St. Thesis in applied Criminology and police management, Institute of Criminology, University of Cambridge). Unpublished.

Kärrholm, F., Neyroud, P. and Smaaland, J., 2020. Designing the Swedish crime harm index: An evidence-based strategy. *Cambridge Journal of Evidence-Based Policing*, pp.1-19.

Lauritsen, J.L. and Laub, J.H (2007). 'Understanding the link between victimization and offending: new reflections on an old idea', in M.Hough and in M.Hough and M. Maxfield (eds), Surveying Crime in the 21st Century, Crime Prevention Studies, Vol.22. Monsey, NY: Criminal Justice Press and Cullompton: William Publishing pp.55–75.

Liggins, A., Ratcliffe, J. H., & Bland, M. (2019). Targeting the most harmful offenders for an English Police Agency: Continuity and Change of Membership in the "Felonious Few." *Cambridge Journal of Evidence-Based Policing, 3*(3–4), 80–96.

Mitchell, R. J. (2019). The usefulness of a crime harm index: Analyzing the Sacramento Hot Spot Experiment using the California crime harm index (CA-CHI). *Journal of Experimental Criminology, 15*(1), 103–113.

Regoeczi, W. C., Kennedy, L. W., Silverman, R.A. (2000) Uncleared homicides: A Canada/United States Comparison, Cleveland State University, Sociology and Criminology Faculty Publications 118.

Reingle, J. (2014) The Victim Offender Overlap, The Encyclopedia of Theoretical Criminology, 1st Edition, Blackwell Publishing Ltd. pp. 911–913.

Sandall, D., Angel, C. M., & White, J. (2018). 'Victim-offenders': A third category in police targeting of harm reduction. *Cambridge Journal of Evidence-Based Policing, 2*(3–4), 95–110.

Sherman, L. W. (2007). The power few: Experimental criminology and the reduction of harm. *Journal of Experimental Criminology, 3*(4), 299–321.

Sherman, L., Neyroud, P. W., & Neyroud, E. (2016). The Cambridge crime harm index: measuring total harm from crime based on sentencing guidelines. *Policing: A Journal of Policy and Practice, 10*(3), 171–183.

Weinborn, C., Ariel, B., Sherman, L. W., & O'Dwyer, E. (2017). Hotspots vs. harmspots: Shifting the focus from counts to harm in the criminology of place. *Applied Geography, 86*, 226–244.

Wolfgang, M. E. (1958). *Patterns in criminal homicide*. Philadelphia: University of Pennsylvania Press.

Wolfgang, M., & Ferracuti, F. (1967). *The subculture of violence: Toward an integrated theory in criminology*. London: Tavistock.

Natalie Hiltz M.St. (Cantab) is a Detective Sergeant with the Peel Regional Police Service, Ontario, CA.

Matthew Bland Ph.D. (Cantab) is a Lecturer in Evidence-Based Policing at the University of Cambridge, Cambridge, UK.

Geoffrey C. Barnes Ph.D. (Maryland) is Deputy Head of the Strategic Insight Unit, Metropolitan Police, and an affiliated lecturer at the Cambridge University Institute of Criminology.