Towards an Index for Harm-Focused Policing

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Abstract   Measuring the effectiveness of the police in reducing harm to communities is often limited to comparing violent crime counts from one year to another, and occasionally separately measuring traffic accidents. At present, the policing field lacks a comprehensive measure that encompasses the multidimensional role of the police in the community while giving suitable weight to the serious crimes that are of greatest public concern. Existing costs of crime and harm indices rated through sentencing structures potentially ignore inadvertent harms perceived to affect communities such as the consequences of certain police activities. This article introduces an index of harm based on sentencing guidelines that covers a wider array of offences than costs of crime estimates or many previous sentencing guidelines, and demonstrates its applicability with a case study from the city of Philadelphia, PA, USA. The article then examines the more polemic merits of including a measure of police investigative activity (pedestrian and traffic stops) as a potential harm experienced by a community. The article demonstrates, by examining police districts within Philadelphia, that significant variations of harm profile exist at the police district level.

Introduction

Although the media and police commanders in urbanized areas are often preoccupied with violent crime, quality of life and general community safety are frequently significant public concerns. Opinion polls often rank violence as the greatest public priority, but it is not the only source of anxiety. Greene (2014) argues that the crime-fighting ethos of many police departments is not always mirrored by the concerns of the neighbourhood. Even in neighbourhoods perceived as violent, officers attending community meetings are frequently inundated with complaints about speeding traffic, trash, graffiti, noise, and other forms of disorderly behaviour.

This realization was manifest during the community policing era where the police function was extended beyond crime fighting to include order maintenance, problem solving, and conflict resolution (Kelling and Moore, 1988). As a result, there have been sporadic discussions over the last decade or two on the relationship between policing as enforcement of the law, and policing as risk and harm minimization, sometimes through language such as 'harm reduction oriented enforcement' [especially in regard to drugs; for example, Newburn and Elliott (1998); Maher and Dixon (1999)]. Even in the realm of organized crime and 'high policing' (Brodeur, 1983) it has become clear that

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'perceptions of organized crime have changed and it is now viewed in terms of preventing harm caused, rather than criminality automatically to be prosecuted' (Harfield, 2008, p. 72).

While in a broad sense harm can be defined as the 'negative consequence from an adverse event' (Tusikov and Fahlman, 2009, p. 157), on the front line of policing notions of harm and harm reduction are poorly defined, leading to different interpretations and competing methods of measurement (Sproat, 2014). Sparrow argues that less specificity is beneficial, preferring 'the word "harm" for its freshness and for its generality, and for the fact that scholars have not so far prescribed narrow ways to interpret it' (Sparrow, 2008, p. 11). In the UK, the new public management movement (Loveday, 1999; Ashby *et al.*, 2007) sought to measure, assess, and minimize risk[1] but in the absence of clear mechanisms to quantify the harm associated with many risks, it has been difficult to articulate a clear measurable role for the police beyond traditional crime reduction.

Few would argue with the legitimacy of a police contribution to traffic accident reduction, the investigation of minor misdemeanors, or in the amelioration of community nuisances such as rowdy youths or public drunkenness. If these are acceptable areas for police involvement and one goal is a reduction in these harms, in the current zeitgeist for data-driven accountability, how are these events to be appropriately counted and weighted?

At present, many police forces and departments either examine less serious misdemeanors independent of serious crime, retaining the serious crime category as the primary culpability statistic for mid-level police commanders; or they ignore these events completely. Thus, although there is a realization of a need for a broad police role in society, accountability mechanisms have not kept pace with this functional expansion. And in the modern data-driven era, the absence of reliable harm measures has meant that any organization 'set up to implement "harm reduction" is left with a credible excuse for procrastination rather than action' (Sproat, 2014, p. 263). Police organizational managerial practice has often narrowed the criteria on which officers are measured, thus limiting the sense of what is considered important. This has sometimes been met with resistance from officers who do not feel it reflects the broad scope of their activity (Cockcroft and Beattie, 2009).

The current landscape is therefore a confusing one for police executives. At one end of the spectrum lies the easy but unrealistic world of simplistic measures of crime, the 'fungibility fallacy' (Sherman, 2013, p. 46) where all crimes are counted equally and each occurrence is not weighted in any manner (such as with the FBI's annual count of violent crime). At the other is a call to embrace harm reduction but it is an exhortation largely absent appropriate metrics to assess and demonstrate the value of activities and interventions.

This article reviews the challenges of measuring and comparing harms across types of crime and other incidents. It then demonstrates one method that could bring third-party objectivity to crime weighting, before discussing a particular type of unintended harm that could also be included in a holistic measure of police performance—pedestrian and traffic stops. The application of these processes is demonstrated with a case study of police districts in the US city of Philadelphia, Pennsylvania. The article concludes with a discussion of the limitations of this approach, but also a consideration for the avenues along which it could be developed.

Estimating the harm of crime

The difficulty with measuring the overall harm of criminal activity stems from the seemingly

[1] Defined by Tusikov and Fahlman (2009, p. 148) as the 'probability that an adverse event may occur and the impact of that event in terms of extent and severity'.

intractable task of trying to compare the qualitative impact of one event with another. Some crimes are so inconsequential to the victim that they rarely bother to report the offence to the police, often because the incidents are 'too trivial to be "worth the bother" of reporting' (Biderman and Reiss, 1967, p. 5). For example, even though identity theft in the USA was estimated at costing nearly $25 billion in 2012, fewer than 10% of victims contacted the police (Harrell and Langton, 2013), and nearly 20% of violent victimizations in the USA have gone unreported to the police because the victim did not believe that the crime was important enough (Langton et al., 2012).

Equally, there are types of crime that do not come to the attention of the police because the perpetrators are disinclined towards police intervention and wish to avoid prosecution, as in the case of drug traffickers, prostitutes, and organized crime groups (Ratcliffe and Sheptycki, 2009). This leaves the police with the unenviable task of taking the lead in unmasking these offences, with the concomitant and paradoxical issue of often being held responsible for any perceived crime increase; what could be called a 'discovery penalty'. If indeed rebuked for an increase in reported drug crime, a Machiavellian police commander's response could be to simply give his or her narcotics team the month off.

Estimations of harm across different crime types have sought a common metric. Surveys of both criminal justice professionals as well as college students were used to construct the first crime seriousness index (Sellin and Wolfgang, 1964). The Sellin–Wolfgang index assigned murder a weight of 26, more serious than an assault requiring hospitalization (7) and far more serious than an assault with the victim receiving minor injuries (1, the equivalent of a theft of less than $10). Although briefly popular, problems with surveys as a mechanism to determine a weighting soon became apparent, not just because of issues with survey methodology (Maltz, 1975), but also because of the difficulty

distinguishing generic harms from individual victimizations (Cohen et al., 1994).

Costs of crime estimates have emerged as another method of allowing policy makers the opportunity to not only appreciate which crimes have a greater cost to society, but to also examine prevention program effectiveness from an economic perspective (see Cohen and Bowles, 2010 for an extensive review). The theft of a mobile phone should not rank as equivalent to theft of an art work by a French Impressionist master (unless it is your phone), but at least the difference can be monetized. Heaton (2010) averaged costs of crime across three published studies to determine an average cost per incident to society (including both tangible and intangible costs) of various crimes. He determined that the 'average' homicide had a societal cost of ~ $8.6 million (US), while a rape was estimated at $217,866 and a robbery at $67,277 (not corrected for inflation here).

There are four main challenges with operationalizing these measures. First, monetary values require readjustment each year leaving a determination of harm vulnerable to inflationary adjustments. Second, monetary costs to society mean little to the police as they do not recoup the costs of any crime reduction directly (though sometimes indirectly through asset forfeiture programmes). Third, many significant harm crimes are low volume and do not have easily calculable costs (such as sexual offences against children). These high harm/low volume crimes are offences that are of far greater importance in a harm-focused policing model, being 'signal crimes' that 'breach either the criminal law or situated conventions of social order and in the process function as warning signals about the presence of a risk to security to people' (Innes, 2005, p. 192). Finally, costs of crime are generally calculated for sweeping categories (such as robbery or homicide) and are limited by not being able to distinguish between types of crime within these large categories. This constraint becomes rapidly apparent at the sub-jurisdictional level within large police forces (where it arguably

really matters). Not all thefts are equivalent, but counting them as such opens the door to police focusing on the most easily ameliorated, irrespective of the level of harm. Why focus on thefts from the elderly and vulnerable if equivalent gains can be made preventing thefts from corporate car parks?

Sherman (2011, 2013) has proposed a crime harm index that could account for differences across all crimes in various combinations. He proposes that a simple and 'pure' metric would be sentencing guidelines for the number of days in prison for a first offender convicted of that offence. Summing the weighted crime counts and dividing by population estimates would create a standardized metric that, by being grounded in sentencing guidelines, 'can be justified on good democratic grounds as reflecting the will of the people' (Sherman, 2013, p. 47). Sherman goes on to argue that, though not perfect, most sentencing guidelines have reflected opinion polls, public debate, and substantial community scrutiny, and as such are 'far closer to the will of the people than any theoretical or even empirical system of weighting that academics might develop'. Although not based on sentencing guidelines the new Canadian Crime Severity Index[2] retains some of this intent, being based on crime weights that are grounded in actual sentences handed down by courts across Canada. The exact methodology is not yet available, but sample tables show the weights range from 7 for possession of cannabis to 7,042 for first degree murder.[3] The Canadian index reflects a considerable range of sentencing outcomes, though without access to greater information regarding the methodology it is unclear if the range of offences covered includes sufficient level of detail to differentiate various levels of crime within broad categories. Although it is interesting to estimate a cost to society of an average robbery (for example), at the local

level police officers are acutely aware that robberies differ in their impact on the victim, and this is often reflected in different charges or initial crime classifications. Cost of crime estimates are also largely silent on minor theft or assaults, and do not usually include traffic offences or fatal accidents.

What is therefore required is a metric that does not originate with the police (for purposes of transparency) and is specific enough regarding individual crime classifications (differentiating within broad groups such as 'robbery' or 'burglary') that it provides a more realistic measure of harm experienced by a local community at the neighbourhood level. This metric would also need to address harms not commonly associated with a custodian sentence on first conviction. As an example of how a thorough set of sentencing guidelines might be employed, guidelines that address every offence on the statute books, the next section demonstrates the application of the sentencing guidelines that exist in the US state of Pennsylvania.

Case study: Philadelphia and the PA offense gravity score

In the state of Pennsylvania, each offence has been assigned a point value pursuant to the offence gravity score, with general guidelines laid down in 204 Pa.Code §303.3 and a specific list of scores for each offence in 204 Pa.Code §303.15. The gravity score is a non-mandatory guideline determined by the Pennsylvania Commission on Sentencing and available to trial judges to assist with their determination of the appropriate penalty for a guilty individual. After some early revisions, the gravity score system was adopted in 1997. Score adjustments can be made downwards for criminal attempts or conspiracies, and upwards for crime involving ethnic intimidation or prior convictions.

[2] See 'Section 1: The Crime Severity Index', dated December 2012, http://www.statcan.gc.ca/pub/85-004-x/2009001/part-partie1-eng.htm (accessed 20 August 2014).
[3] See 'Table 1: Examples of weights for the Crime Severity Index', dated December 2012, http://www.statcan.gc.ca/pub/85-004-x/2009001/t001-eng.htm (accessed 20 August 2014).

In general, felonies range from scores of 5–8, whereas misdemeanors range from 1 to 3. The largest score, 15, is reserved for first and second degree murder when committed by an offender below the age of 18 years. Trial judges are permitted to deviate from the sentencing guidelines, but must inform the Pennsylvania Commission on Sentencing as to their reasons. Some example offence gravity scores from Pennsylvania's basic sentencing matrix are shown in Table 1.

The City of Philadelphia is the largest city in the state of Pennsylvania, and the fifth largest in the USA. The city's police department is the fourth largest in the country, and the patrol policing function is distributed across 21 geographical police districts and one special district at the international airport.[4] A single police database, known as the INCT, contains all reported crimes and incidents evaluated by a police officer as having sufficient evidence and merit to justify a written report. It therefore sits conceptually and volumetrically between the calls-for-service database and a crime-only record set. In addition to crime reports and traffic accidents to which police are called, the INCT records every investigative traffic and pedestrian stop conducted by the Philadelphia Police Department (PPD). Of ~ 10 million calls for service each year, the INCT contains a list of between 1.6 and 1.8 million incidents on any given year.

This database was scoured for all part 1 and part 2 crimes for the 10-year period, 2004 to the end of 2013. Part 1 crimes are defined by the FBI's Uniform Crime Reporting (UCR) Program as criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny-theft, vehicle theft, and arson. Part 2 crimes cover 21 other crime categories, including weapon offences, prostitution, drug crime, gambling, drunkenness, and other assaults (FBI, 2004). Figure 1 shows that of the part 1 crimes, theft dominates in terms of frequency, followed by assaults. Initially, vehicle theft is the third

Table 1: Offence gravity scores for certain crimes

Offence gravity score	Crime
14	Murder Rape of a child under 13 years of age
13	Possession with intent to distribute cocaine of more than 1 kg
12	Rape Robbery involving serious bodily injury
11	Aggravated assault involving serious bodily injury Voluntary manslaughter Sexual assault Possession with intent to distribute cocaine of 100 g to 1 kg
10	Kidnapping Aggravated indecent assault Homicide by vehicle involving driving under the influence
9	Sexual exploitation of children Robbery Burglary
8	Aggravated assault Identity theft Theft of property worth more than $100,000 Homicide by vehicle (work zone and other conditions)
7	Robbery (threatening bodily injury) Burglary (with nobody home) Theft between $50,000 and $100,000
6	Homicide by vehicle Arson Possession with intent to distribute cocaine of less than 2.5 gms
5	Burglary (not of a home or person) Driving under the influence Possession with intent to distribute marijuana of 1–10 lbs
4	Indecent assault Trespass Forgery
3	Simple assault Drug possession
2	Passing bad checks Theft of between $50 and $200
1	Most misdemeanors Possession of small amount of marijuana

most prevent category, but as vehicle security increases over time (Farrell *et al.*, 2011) it declines significantly. In 2004, vehicle thefts dwarfed

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[4] Over the last 10 years, three additional districts were disbanded and folded into other areas, and the analysis in this article takes this into account. The international airport special police district is not considered further within this article.
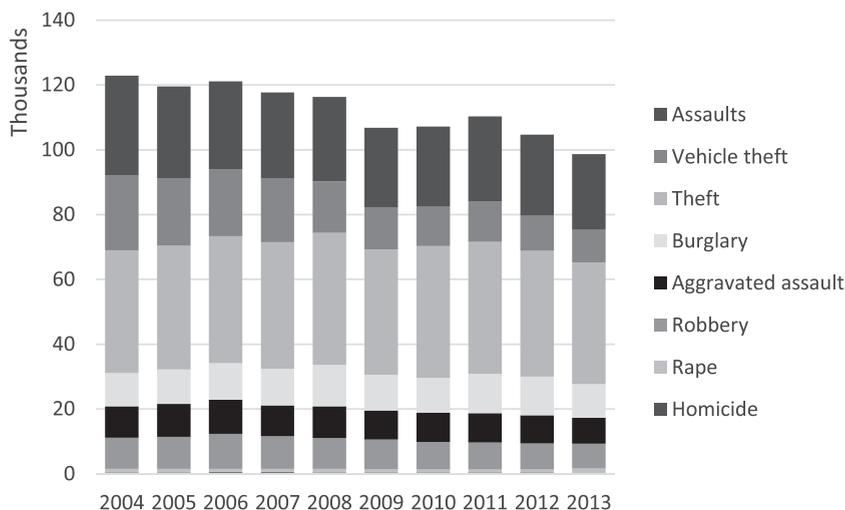
Figure 1: Part 1 crime frequencies, Philadelphia, 2004–13.

burglaries (23,201 to 10,228) but a decade later were slightly below burglaries in 2013 frequency (10,085 to 10,307). Homicides and rapes are so infrequent, they are barely visible at the bottom of the chart.

The PA offense gravity score was employed as a simple multiplicative weighting for each offence. As can be seen in Figure 2, overall harm declines from 2006 to 2013, following the general trend from Figure 1 as would be expected. This time, however, the weighting redistributes the emphasis. Due to their high harm component, homicide and rape are now visible on the chart, and the lower harm weightings for thefts (as interpreted from the offence gravity score) mean that this crime has less prominence. In general, while there is a mimicking of the overall trend of the simple frequency counts, the harm metric gives greater emphasis to high impact offences with greater offence gravity.

Comparing harm with the homicide count

One challenge that faces police executives in countries with high levels of lethal violence is the predilection for the media and politicians to examine year-on-year statistics or compare cities based on simplistic and myopic measures such as the annual homicide count. This is a particular trait in the USA where the easy availability of handguns links to a higher homicide rate (Hepburn and Hemenway, 2004). It is argued that homicides are the only reasonable comparative measure because there is less opportunity for police manipulation of the figures by undercounting or reclassifying homicides as other crimes. Police chiefs counter that homicides are a tiny part of their overall remit, are often committed indoors away from any viable police intervention, and are frequently distinguishable from an aggravated assault only by the time it takes to get the victim to hospital and the skill of the medical assistance—factors over which police have no control.[5] Notwithstanding the merit of these arguments, the use of homicide rates as an apparent measure of policing (in some fashion) is likely to continue, at least on a citywide level. The question therefore arises as to whether the harm index tracks with the homicide count.

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[5] Though beyond one study showing the benefit of paramedics arriving on scene within 4 mins (Pons et al., 2005), evidence to support the increased survivability value of rapid transmission of a patient to hospital appears relatively weak (Petri et al., 1995; Lerner et al., 2003; Newgard et al., 2010).
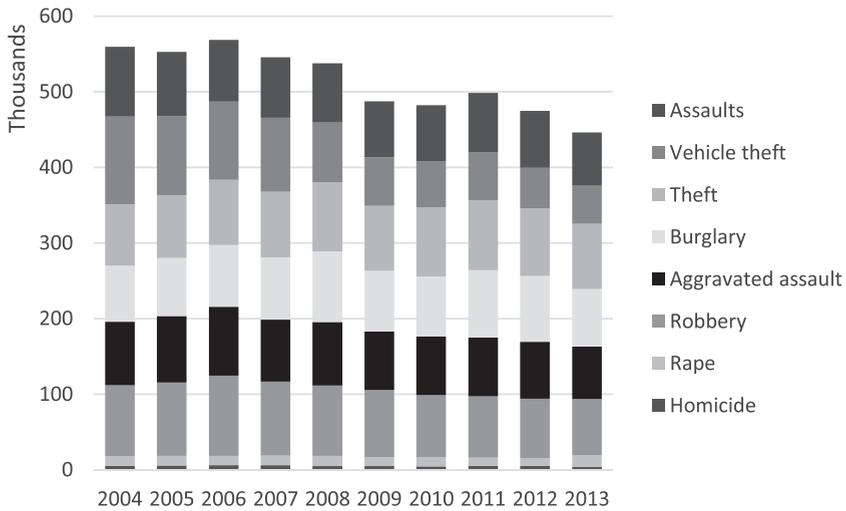
Figure 2: Harm, as estimated with offence gravity scores for Philadelphia part 1 crimes, 2004–13.

Figure 3 compares the annual homicide count in the city of Philadelphia for 2004–13 as reported by the Philadelphia Police Department, with the part 1 crime harm index for the same years. As can be seen, the harm index correlates well with the city homicide rate ($r = 0.916$), though it does go in a different direction in some years. The limitation of homicide as a reflection of local crime patterns becomes evident in Figure 4, where individual police districts are represented by their 2013 homicide count and their part 1 crime count. There is one noticeable outlier with a low homicide count but the highest part 1 crime frequency, indicated in the figure with (a). This large police district some distance from the city centre has a significant non-violent crime problem. The linear trend (dashed) line shows the limited power of part 1 crime frequency to predict the homicide count, with the part 1 crime frequency only accounting for a little over 40% of the homicide variance ($R^2 = 0.43$).[6]

The harm index also struggles to predict the homicide rate in police districts (Figure 5), but

with a R^2 of 0.60 it is at least predicting about 60 percent of the variance in the homicide totals. Two outliers appear to drag the linear trend (identified by the dotted line) away from an optimal line.[7] These two districts particularly suffer from property crime and non-lethal violence.

The harm index outperforms the part 1 crime frequency, but with most districts having annual homicide counts below 20 (mean = 9.19, standard deviation = 7.04) the ability of homicide to be representative of the wider picture of harm is limited at the police district level. It would therefore appear that the harm index correlates closely with the homicide count at the aggregate level of the city, but demonstrates more variance when examined at the sub-jurisdictional level.

Extending the harm concept beyond crime

One limitation with the index of harm centred on violent crime, as demonstrated in the previous

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[6] Removal of this single outlier did increase the R^2 to 0.59.
[7] Though removal of both outliers increased the R^2 to 0.90, it should be borne in mind that two districts represents nearly 10% of the districts in the study.
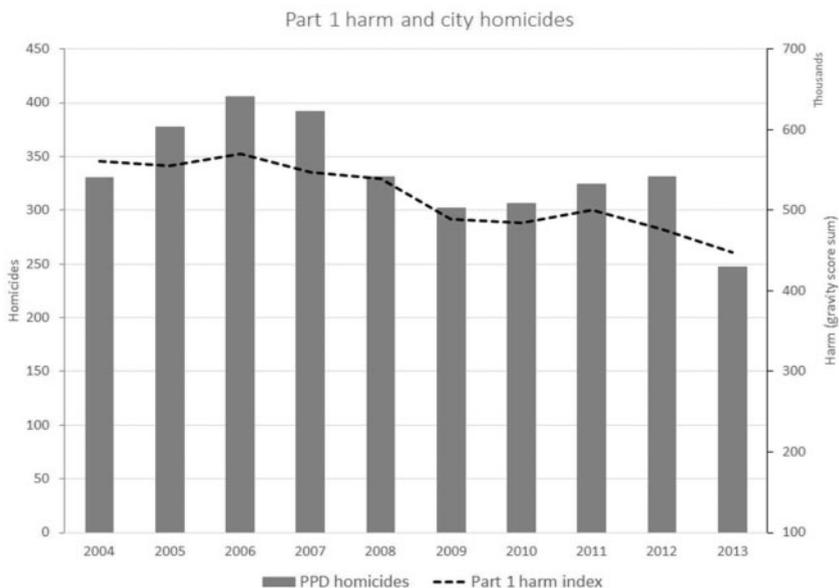
Part 1 harm and city homicides

Figure 3: Part 1 harm index compared with Philadelphia homicides, 2004–13.
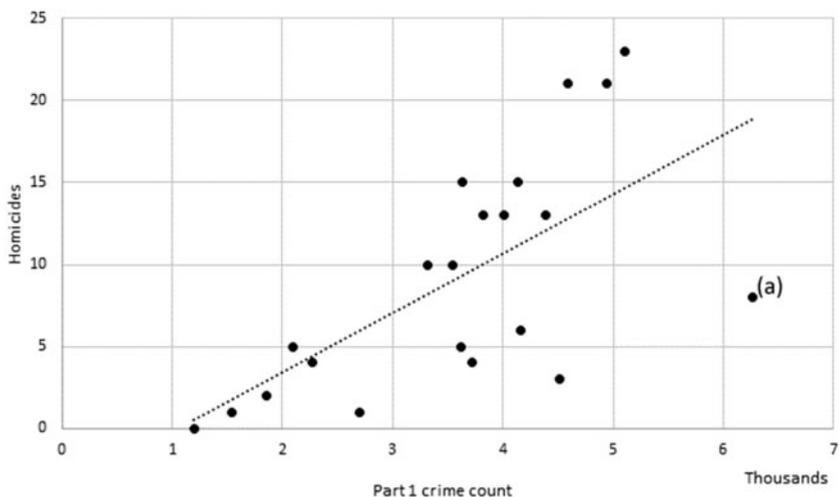

Figure 4: Homicide counts and part 1 crime frequency for PPD police districts, 2013.

section, is that it does not necessarily encompass all of the harms suffered by a community. One group of (mainly British) researchers has taken up a 'social harm perspective' that extends concepts of harm beyond those traditionally defined by criminal law (Hillyard *et al.*, 2008). Their perspective is a distinctly left realist approach that is 'progressive politically' and has a description of social harm that includes the 'detrimental activities of local and national states and of corporations upon the welfare of individuals' (Hillyard and Tombs, 2008, p. 14). Although I take a much more limited viewpoint in this article, it is still recognized that some of their harm categories have value in drawing
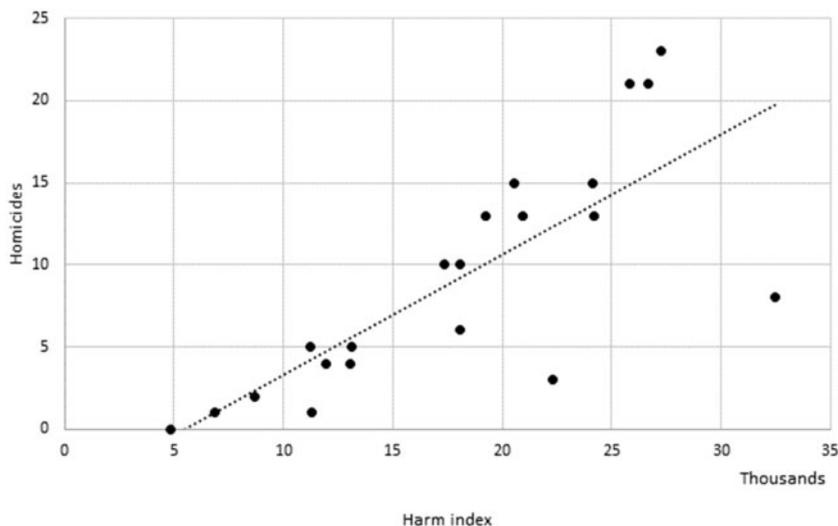
Figure 5: Homicide counts and harm index values for PPD police districts, 2013.

attention to oft forgotten impacts of the crime/ criminal justice nexus on communities (Pemberton, 2007). For example, 'financial/economic harm' includes poverty and forms of harm related to property and cash loss, and fraud. Hillyard and Tombs (2007) also include a category for 'emotional and psychological harm', and 'sexual harm', and a reference to 'cultural safety' and the idea of 'autonomy, development and growth, and access to cultural, intellectual and information resources' (Hillyard *et al.*, 2008, p. 15). Their example of the potentially negative outcomes of disproportionate use of stop and search on young Black men—while not recognizing the potential violence reduction outcomes that could benefit that same group—does speak to the widely-held view that police activities can have unintended consequences on particular communities, a point explored in the next section.

Hillyard and Tombs' (2007) final category is 'physical harms' which includes domestic violence,

child abuse, and traffic accidents. The first two are often included within key performance indicators for police. In the USA, traffic accidents are the third leading cause of death behind cancer and heart disease, and the leading cause of death for young people aged between 5 and 34 years (Cambridge Systematics, 2011). However, whereas traffic accidents are a significant harm to the community, police agencies vary in their expressed commitment to reducing traffic injuries. For example, the New York City Police Department's mission statement makes a sweeping comment about a 'safe environment'[8] but it is unclear how much emphasis is focused on traffic accident reduction. In comparison, the New Zealand Police mission specifically includes the aim of preventing road trauma.[9] Given the commitment many agencies make to road safety, it would appear prudent to include a measure of traffic accidents within a harm matrix for most police agencies with responsibility for a geographic area.

[8] 'The MISSION of the New York City Police Department is to enhance the quality of life in our City by working in partnership with the community and in accordance with constitutional rights to enforce the laws, preserve the peace, reduce fear, and provide for a safe environment' http://www.nyc.gov/html/nypd/html/administration/mission.shtml (accessed 20 August 2014).

[9] The mission of the New Zealand Police is 'To work in partnership with communities to prevent crime and road trauma, enhance public safety and maintain public order', http://www.police.govt.nz/about-us/nz-police/overview (accessed 20 August 2014).

A 2008 US Department of Transportation memorandum[10] estimated the value of a human life prevented in a traffic accident at $5.8 million. The US Highway Safety Manual estimate is close to this at $5.1 m, a combination of human fatal costs of $1,514,294 and non-human costs of $3,500,180.[11] Accidents involving disabling injuries were estimated (again adjusted to 2008 rates for comparison) at a cost of $267,924, evident injuries at $97,932, possible injury accidents at $55,426, and damage-only accidents at $55,426. Comparing with Heaton's (2010) estimated crime costs for 2007, a fatal traffic accident has a societal cost at about 60% of a homicide; a disabling traffic injury is estimated about 25% more serious than a rape; and a burglary is about 45% more significant than a damage-only traffic incident.

Police departments have different regulations regarding the reporting of traffic accidents; however, for the purposes of this demonstration it is expected that police are more likely to be notified and to record incidents involving personal injury and significant property damage. In Philadelphia, homicide by vehicle is recorded as a part 1 crime, with homicide by vehicle having an offence gravity of 6, rising to 8 if the accused is driving while under the influence of alcohol (DUI) or in an active work zone, and 10 for a conviction with a DUI and in an active work zone. The PPD UCR reporting system does not distinguish these nuances, and 7 was selected as the value for homicide by vehicles generally.

In the analysis that follows later in this article, the Philadelphia Police INCT recording system merely distinguishes between accidents involving only damage and not requiring towing, and accidents that involve injury and/or requiring a vehicle to be towed. They also identify cases involving a driver driving while intoxicated (DUI). Injury traffic accidents and those involving a DUI are ranked on the PA Offense Gravity Score at 5, whereas damage-only accidents have a score of 2.

Is there a role for police-driven activity within a harm index?

To this point, the proposed harm index has included crimes and activities that police are called upon to deal with as part of their crime-fighting or social service role, activities that are hardly contentious and almost uniformly originate with a call from the public. Depending on the manner in which they are conducted, there are some enforcement outputs and police-initiated activities that are controversial in some communities. There can be little point denying a segment of the public and academic community view, the police as 'an occupying army unaccountable to the local citizens' (Gottschalk, 2011, p. 131). Tonry (2011) surmises that there is little evidence that focused policing can be conducted in a manner that respects civil liberties and does not disproportionately burden people in minority communities, a view shared by numerous commentators (Baumer, 2011; Goldkamp, 2011).

The police counter with evidence that 'hot-spots policing is effective in reducing crime and disorder and can achieve these reductions without significant displacement of crime control benefits' (National Research Council, 2004, p. 250).[12] For example, in Philadelphia, a randomized controlled trial demonstrated that intense foot patrol activity reduced violent crime by 23% and it is likely that this was at least partially achieved by a 64% increase in pedestrian stops in the target areas (Ratcliffe et al., 2011).

Questions can arise over two activities that are usually initiated by the police: drug market enforcement, and suspicious pedestrian or vehicle

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[10] Duvall, Tyler D. (2008) Treatment of the Economic Value of a Statistical Life in Departmental Analyses, dated 5th February 2008.

[11] Adjusted for comparison purposes to 2008 rates using a ratio determined by the Consumer Price Index for human costs and non-human comprehensive costs adjusted with a ratio from the Employment Cost Index.

[12] See also Braga, 2005; Braga et al., 2012; Weisburd and Telep, 2014.

investigations (depending on geography sometimes also referred to as stop, question, and frisk, or stop and search). Given significant racial disparities in the application of drug sanctions (Mitchell and Caudy, 2013), increasing the overall number of drug arrests without any concomitant increase in public safety is likely to exacerbate civic tensions in minority neighbourhoods to the detriment of community harm reduction, and even inadvertently increase violence problems (Sherman, 1992). There is definitely a need for more research into the connectivity between tactics and public perception of police (and unintended consequences), but even Braga and Weisburd, two of the strongest advocates of hot spots policing accept that 'It seems likely that overly aggressive and indiscriminate police crackdowns would produce some undesirable effects' (Braga and Weisburd, 2010, p. 188). Therefore, one potential community harm barometer could be a measure of the number of traffic and pedestrian investigative stops as a potential offset to any community crime harm reductions.

The inclusion of an output measure is both debatable and certainly exploratory within the confines of this speculative article. At this stage I am not aware of any agency that measures and records the quality of a pedestrian or traffic stop with regard to its procedural justice. Recent experimental research in Queensland suggests that the nature of the police interaction and its perceived procedural justness has a demonstrable effect on public perception of the police (Mazerolle et al., 2013), a factor likely to influence public sensitivity to the harm of police intervention. Furthermore, strategies that target specific offenders, rather than more generalized deterrence, appear to have greater efficacy (McGarrell et al., 2001); however, in this study I am unable to determine whether officers were stopping the 'right' people. But for the initial purpose of the current exploration, it may be worth framing police investigative stops in general as a less desirable activity undertaken to achieve a beneficial outcome. As such, pedestrian stops could be a targeted inconvenience that is focused to reduce a more harmful outcome associated with a greater offence gravity.

Mapping Philadelphia harm including investigative stops and traffic accidents

The Philadelphia INCT database was interrogated for all pedestrian and traffic investigation stops, and these were coded with 0.25. This is an arbitrary score, and it is recognized that others may wish to experiment with this value or more likely reduce it significantly. As a reviewer of an earlier draft of this article pointed out, such a score would equate 60 traffic stops as equivalent harm to a homicide— hardly a realistic proposition; but for the purposes of this demonstration of concept, this value was chosen so that the investigative stops category did not swamp the analysis, yet the category was given sufficient value so that changes were detectable and had a measurable impact on the overall harm rating.

District-level differences

Table 2 shows the mean monthly percentage contribution of each of the four measures to the total harm index for each district in the city, ordered by the part 1 crime contribution. As weighted in this study, the contributions of each generally follow the order: part 1 crime, part 2 crime, accidents, investigative stops, though it should be noted that traffic accidents in the last district (numbered 21 in Table 2) makes a greater contribution to the harm index than any other measure. Furthermore, in two other districts the traffic accident contribution is greater than the part 2 crime influence.

From Table 2, the distinct distribution for each district (the district's 'harm profile') becomes even clearer with the correlation matrix shown in Table 3, which shows the correlations between the mean monthly harm scores for each of the four measures compared across 21 police districts. As would be expected, the mean monthly harm scores for part 1 and part 2 crimes are very strongly correlated, and

Table 2: Relative contributions of four measures to district-level harm index, Philadelphia, PA, 2004–13

District	Part 1 crime	Part 2 crime	Accidents	Investigative stops
1	49.2	26.5	16.9	7.4
2	48.8	25.8	13.4	12.0
3	48.2	27.3	13.2	11.4
4	47.3	24.4	18.1	10.2
5	46.9	28.8	15.9	8.3
6	46.8	29.4	15.5	8.4
7	46.4	31.5	9.2	12.9
8	46.2	23.5	21.2	9.2
9	45.9	33.5	11.1	9.4
10	45.6	27.5	17.4	9.4
11	45.5	26.5	15.1	12.9
12	45.2	28.3	12.3	14.2
13	44.2	28.9	14.1	12.8
14	43.6	21.4	21.9	13.1
15	43.6	33.7	12.6	10.1
16	43.6	25.4	19.0	12.0
17	43.0	23.0	23.1	10.9
18	39.8	26.9	20.2	13.1
19	39.7	27.3	25.5	7.5
20	35.9	26.4	26.4	11.3
21	33.5	21.1	33.6	11.8

District numbers in the table do not refer to PPD district number assignments. Table is ordered by part 1 crime percentage contribution to overall district harm index.

both crime types are very strongly correlated with investigative stops: high crime areas are very active for police in many ways. But though they are still positively correlated, the high crime areas have a weaker relationship with traffic accidents.

Changes over time

When the district-level data are examined on a monthly basis over 10 years, many of the factors identified earlier in this study are reiterated; harm declines over time, and districts have distinct harm index profiles with separate categories of incident contributing differentially to the harm index. By way of demonstration, consider the profiles of two PPD districts, here called districts A and B.

The profile for district A is shown in Figure 6, where the annual seasonality of the part 1 crime harm measure drives most of the seasonality in

Table 3: Correlation matrix for four harm index totals across 21 PPD districts, 2004–13

	Part 1 crime	Part 2 crime	Accidents	Investigative stops
Part 1 crime	1			
Part 2 crime	0.939	1		
Accidents	0.582	0.436	1	
Investigative stops	0.807	0.817	0.250	1

total harm. Over time there is a decline in harm experienced by the community, as evidenced by the solid linear trend line in the graphic. It is interesting to note that the decline in the part 1 crime contribution to the harm score (dashed white line) is less acute than the total harm decline. This suggests that although the harm from part 1 crime did reduce over the decade, the police district was able to reduce community harm even further by making inroads into part 2 crime and traffic accidents, without significantly increasing the number of traffic stops and pedestrian investigations conducted. It may be that a reduction in part 1 crime had a diffusion of benefits effect (Clarke and Weisburd, 1994; Weisburd and Green, 1995; Bowers and Johnson, 2003) on traffic accidents and/or part 2 crime.

In comparison, district B also demonstrated a linear reduction in part 1 crime harm (white dashed line in Figure 7) over the decade, but this was not mirrored in the total harm trend, which actually increases as the decade unfolds. The harm from part 2 crime does increase a little, but much of the increase is due to a significant leap in traffic and pedestrian stops from about 2008 onwards. Even though these stops may have contributed to the reduction in part 1 crime, it does not appear that the decline in crime offsets the increased contributions to the harm index of the additional police activity.

Discussion

This article has argued and demonstrated that:

- Homicide (a popular metric for large cities) correlates strongly with the part 1 crime

harm index; however, this relationship breaks down at the district level where the predictability of homicide decreases based on the part 1 crime harm index and is weak based on part 1 crime frequencies.

- With the addition of more holistic measures such as traffic accidents and investigative stops, district-level differences in the harm index become apparent.

- Harm is most strongly influenced by serious crime; however, other crime types, accidents and police patrol investigative activity can all adjust the harm index profile of districts substantially.

- The inclusion of these supplementary metrics is more reflective of the multidimensional responsibilities of the police in the community, as well as cognizant of the possible negative consequences of enforcement activities.

This first attempt to articulate a measure of harm at a neighbourhood level is decidedly exploratory, probably not yet ready for operationalization and not without some notable limitations. The scale articulated in this article does not address the concerns of Cohen *et al.* (1994) that a generic measure is unable to differentiate between how a crime affects different segments of the population. It is of course true that the harm from the theft of a car is far greater to someone below the poverty line than to a wealthy stockbroker. Although the different crime type distinctions used herein are more specific and flexible to particular crime classifications than the overly broad categories used in cost of crime research, the impact on particular victims is an unknown quality. It is also the case that insurance companies will possess more extensive and complete records of traffic accidents in a jurisdiction; however, one purpose of this article is to demonstrate a metric that is not only viable but also realistic and within the purview of police data systems that are easily accessible. Additionally, it should be noted that while the PA Offense

Gravity Score is a numeric scale from 1 to 15 that assigns different punishments to each level, the penalties associated with each level do not increase in severity uniformly. Lower level misdemeanors do not attract custodial sentences as felonies do, and therefore there are uneven jumps in punishment as the offence gravity increases.

The metrics examined in this article all differ considerably. For example, when examining the ratio between severity or gravity between robberies and homicides, there is little agreement among the scales. The Pennsylvania Offense Gravity Score rates a homicide as twice the gravity of a robbery, the Canadian Crime Severity Index rates a homicide as 12 robberies, whereas the costs of crime estimate from Heaton (2010) rates a homicide comparable with 128 robberies.

All this being said, the argument in this article is that the current costs-of-crime literature lacks the definition at the individual crime classification point to be useful as a litmus test of local community harm. Following from the proposal by Sherman (2013), the demonstrated case of sentencing guidelines drawn from the state of Pennsylvania and examined through the Philadelphia case study suggests some potential for an index that is grounded in a common metric of harm (based on offence gravity). As UK researchers have pointed out, it is important to expand on the data holdings used to determine 'success' in policing, especially given a recent trend in quantitative managerialism whereby many performance measures neglect to account for the needs of the community (Cockcroft and Beattie, 2009). The modern performance management framework for local policing includes measures of not just crime, but also public engagement and the resolution of signal crimes (Neyroud, 2008). A more holistic measure of harm has numerous advantages for the police. First, as we have seen, some police districts experience significant harm that is not in proportion to other districts. Traffic accidents, and especially those involving serious injury, are a real community problem in areas
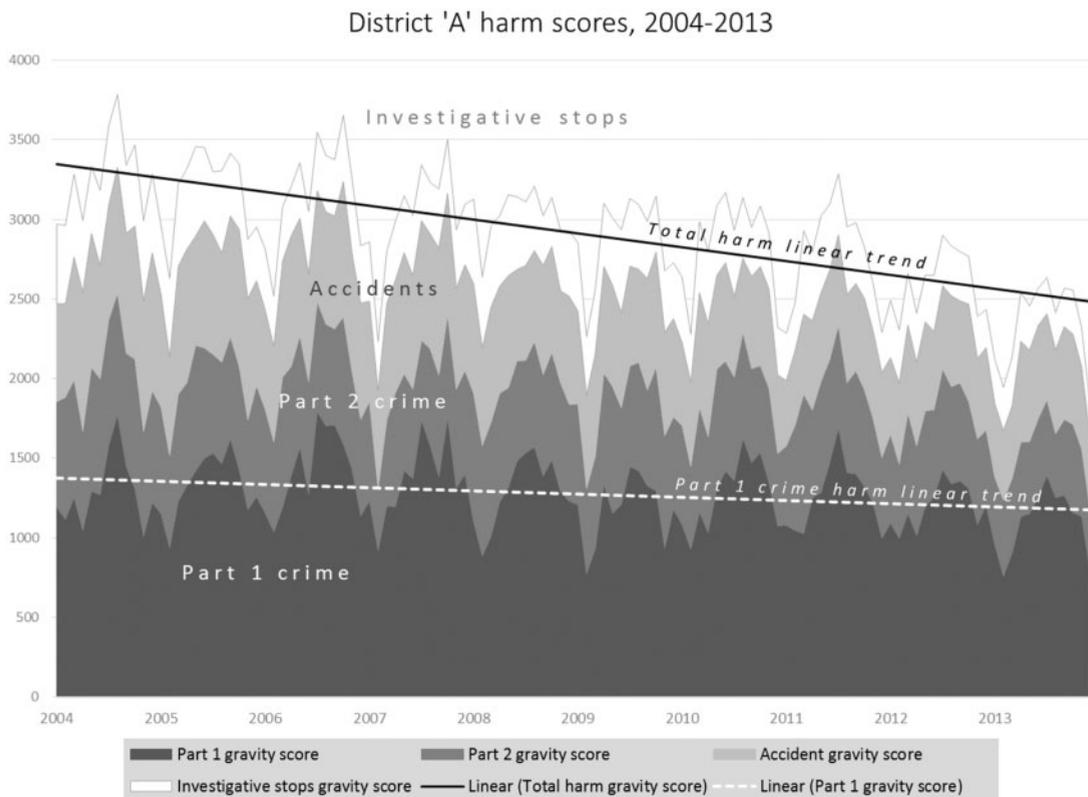
Figure 6: Harm scores across four measures for district A, PPD, 2004–13.

that do not necessarily experience equivalent levels of violent crime. The weak correlation in Philadelphia is some evidence of this. This provides executive leadership with an opportunity to set harm-focused district goals and assign support resources that are more reflective of district problems.

A second benefit is the possibility to measure a diffusion of benefits from crime prevention operations (Weisburd and Telep, 2012). For example, if a district initiative is designed to reduce violent crime through the arrest and incarceration of violent offenders, a potential consequence could be the reduction in non-violent crime associated with both the incarceration of the specific offenders as well as the general deterrence benefits of other offenders who may deem that the police district is too 'hot' for criminal activity. A broader metric

provides an opportunity for knock-on benefits to be reflected in other aspects of the harm index.

A third benefit stems from the source of the weighting. Separating the police from definition of the metric that is used to determine their effectiveness absolves them of any suspicion that they have fixed the parameters in order to portray themselves in a favourable light. That being said, this does not prevent manipulation of the recorded crime statistics that are then analysed with the weighting, but at least the weighting mechanism has the validity of originating with an external third party.

Fourth, this sends a signal to the public that the police are cognizant of a range of harms inflicted on the community, and that they are responsive to the many dimensions of community safety. In future, it may be useful to consider other metrics relevant to
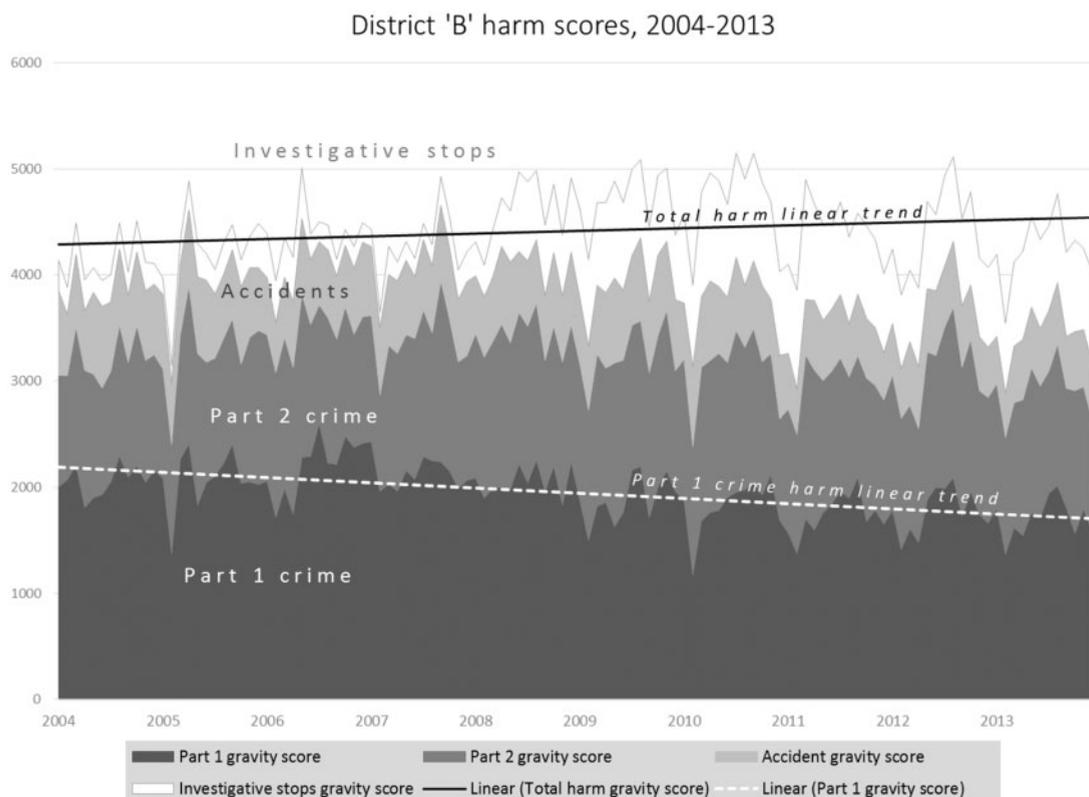
District 'B' harm scores, 2004-2013

Figure 7: Harm scores across four measures for district B, PPD, 2004–13.

a holistic picture of community harm, including quality of life measures and public health criteria such as drug overdoses. It should therefore be stressed that this article is a first step in the direction of more strategic harm indices for the police, and not the end of the road by any measure.

Related to this is a fifth strength, a recognition that a wider definition of harm demands an inter-disciplinary response at the policy level (McMahon and Roberts, 2008), a response that goes beyond policing. For example, while some police tactics can reduce traffic accidents, so can improved light-ing, smart street engineering, and the use of traffic calming measures. All of these require a coordi-nated response between the police who are aware of the problem, and street engineers who possess the long-term solution. Similarly, with the intro-duction of drug overdoses and other social ills to

the index, there will inevitably be the need to in-clude public health officials and social workers into a comprehensive solution, making reduction of harm a public health issue rather than just a poli-cing problem.

One likely contention in this article is the inclu-sion of pedestrian and traffic stops in a measure of community harm. Especially given the high weight-ing for demonstration purposes in this article (and an arbitrary weighting at that), there is no doubt that some police practitioners may take issue with this inclusion and argue that there is a net gain as a result of more active police involvement in seeking out serious, repeat offenders. Indeed there is con-sistent and reliable evidence that stop, question, and frisk (and its variations) results in a reduction in weapon-related violence and homicide (Koper and Mayo-Wilson, 2006). The harm index, as

described here, takes that into account with the inclusion of serious crime in the index; however, pedestrian and traffic stops are a direct intervention of the police in people's lives and it would be unwise not to at least consider some potential negative consequences of police attempts to reduce crime (see, for example, Bradford *et al.*, 2014). One future research avenue could be to better articulate and examine appropriate weightings based on some as-yet-unmeasured quality of traffic and pedestrian investigations. In the meantime, without an appreciation for the marginal or iatrogenic costs of excessive interventions, a police operation could dramatically increase the number of pedestrian stops and frisks to the detriment of the harm index. The inclusion in the index of investigative stops as a harm may encourage police commanders to take a more focused and intelligence-led approach to the use of investigative stops to reduce crime.

Of greater concern is the possibility that police would be able to influence or manipulate some of the harm index components. As stated earlier, two such areas are the number of drug arrests and the frequency of suspicious investigations. Given drug incidents find their way into the recorded crime statistics overwhelmingly through police-initiated investigation and arrest, this metric is vulnerable to manipulation. Reduction in police drug enforcement activity could reduce the reported harm within the index, but paradoxically leave the community with greater actual harm suffered due to unfettered drug markets.

Just as plausible is the possibility that the number of pedestrian or traffic investigative stops could be manipulated by a police commander under pressure. However, the value of including investigative stops as a harm is as a constraint on excessive policing. It could provide a potential mechanism to curtail widespread pedestrian investigations being excessively employed as a crude way to reduce crime, without any appreciation for any concomitant negative community impact. This is obviously

a step on the road to consideration of these issues, and not a destination.

Conclusion

When police say that crime has gone up or down, the public interpret that as a change in the level of harm to which they might be a victim. The perception of harms, especially ones founded in significant events, act as signals that 'shape how people think, feel, or act in relation to their security' (Innes, 2005, p. 192). Simply calculating the crime rate (i.e. the number of crimes in a jurisdiction controlling for population) and comparing one site to another is to some degree a fruitless exercise, unless some mechanism can place the disparate nature of the offences into some context. Absent context, this can lead to comparisons of cities based on the violent crime count, even though the violent crime count in the USA is usually calculated as a simplistic aggregation of the number of homicides, rapes, robberies, and aggravated assaults, with the assumption that all homicides and robberies have qualitative parity. Rather than to ask how much crime exists, a more appropriate question should be to ask how much harm is caused by crime. Harm has the distinct advantage of being a broader and more realistic measure than a narrowly confined measure based on the criminal law. As yet unresolved is the mechanism to include metrics which could be easily manipulated by police agencies within a harm index that would be externally respected.

Moving to a harm-focused approach would complement a number of existing movements in policing; the data and information thrust of intelligence-led policing (Ratcliffe, 2008a, 2008b; Carter and Carter, 2009), the focused and long-term perspective of problem-oriented policing (Goldstein, 1979; Townsley *et al.*, 2003; Tilley, 2010; Weisburd *et al.*, 2010), and the movement towards evidence-based policing (Sherman, 1998, 2002; Welsh, 2006). An emphasis on harm would provide a welcome focus for intelligence-led policing, and

provide a more expansive response variable on which to test examples of evidence-based policing. This triumvirate has significant potential to move policing to the next level, and this transition has already begun in a few locations. It is to be hoped that we will continue to see an expansion of harm-focused, intelligence-led, evidence-based policing.

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