Article

Mining Police-Recorded Offence and Incident Data to Inform a Definition of Repeat Domestic Abuse Victimization for Statistical Reporting

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Abstract Following inspections in 2013 of all police forces, Her Majesty's Inspectorate of Constabulary found that one-third of forces could not provide data on repeat victims of domestic abuse (DA) and concluded that in general there were ambiguities around the term 'repeat victim' and that there was a need for consistent and comparable statistics on DA. Using an analysis of police-recorded DA data from two forces, an argument is made for including both offences and non-crime incidents when identifying repeat victims of DA. Furthermore, for statistical purposes the counting period for repeat victimizations should be taken as a rolling 12 months from first recorded victimization. Examples are given of summary statistics that can be derived from these data down to Community Safety Partnership level. To reinforce the need to include both offences and incidents in analyses, repeat victim chronologies from police-recorded data are also used to briefly examine cases of escalation to homicide as an example of how they can offer new insights and greater scope for evaluating risk and effectiveness of interventions.

Introduction

In September 2013 the Home Secretary commissioned Her Majesty's Inspectorate of Constabulary (HMIC) to carry out an inspection into how police forces respond to domestic abuse (DA). The HMIC report—Everyone's business: Improving the police response to DA—was published in March 2014 and made 11 recommendations. The first paragraph of Recommendation 4 states:

> Data collected on domestic abuse needs to be consistent, comparable, accessible and accurate so that it can be used to monitor progress. This requires the Home Office to develop national data standards in relation to domestic abuse data. The data should be collected by police forces and provided to the Home Office, for example as part of the

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> annual data return. These should include data standards for both crimes and incidents, and clear and unambiguous definitions of important terms such as 'repeat victim', to ensure like-for-like comparisons can be made. (HMIC, 2014a, p. 21)

This recommendation raises some interesting issues. Despite there having been UK research since the 1990s into repeat victimization *per se* (e.g. Farrell and Pease, 1993; Farrell *et al.*, 2000) and domestic repeat victimization (e.g. Hanmer *et al.*, 1999; Mirlees-Black, 1999), there continues to be a lack of standardization across forces as to how to define a repeat victim of DA. Part of this may be due to significant problems in operationalizing the consistent identification of repeat victims from police data systems and therefore at its root is an analytical problem. The recommendation also holds out the tantalizing prospect for nationally published statistics on police-recorded domestic violence and abuse (DVA) which thus far has been lacking, and even more interestingly, for statistics on police-recorded repeat victimization which has the potential to be an important performance measure.

The HMIC inspection (HMIC, 2014a) looked at how each police force identifies repeat victims and how the data are recorded. Nearly one-third of police forces could not provide any data on repeat victims.[1] For those forces that could, not all have systematic procedures for identifying calls for assistance from repeat victims, and where systems are in place there are a range of practices. Many check only the address and/or telephone number of the caller, some use additional descriptors such as address, surname, and date of birth. Problems easily arise because victims of DVA do move address, can be victimized at their own home, at the perpetrator's home (if different) or in some public location (not all DVA happens at home). Similarly, a repeat victim may not always use the same phone (land line, mobile, changed mobile number) and it may be a relative or other third party that telephones. As already observed, relevant data may be kept on different systems. While using only a small number of descriptors may be quick, it is inaccurate and incomplete. This is illustrated in Table 1 which gives the recorded DVA history of a 20-year old female leading up to her murder. The entire history is less than a year. In the records are two forenames, four addresses, four telephone numbers, and plenty of missing data. Conventional approaches by police forces, as documented by HMIC, of identifying whether or not a call for assistance concerns a repeat victim, are unlikely to work in such circumstances. A more robust approach is required. The fact that this repeat victim was found in large datasets in two separate systems without a common key to join them testifies that it can be done routinely. HMIC (2015) continues to put the blame on limitations of force computer systems and while legacy systems may well cause difficulties, the thrust of this paper is that operational definition and identification of repeat victims rests predominantly on the analytical approach.

The then Crime Statistics Advisory Committee (CSAC)[2] welcomed HMIC Recommendation 4 and in acknowledging that the issue of repeat victimization was both challenging and important not just for statistical purposes but also for operational purposes, tasked the author to formulate proposals from available data resources that would assist the Home Office, HMIC, and Police Forces. This paper provides a fuller presentation of those proposals

[1] In a follow-up survey, HMIC found that 'over half of forces (24) were unable to provide HMIC with the number of calls received from repeat victims of domestic abuse which is unacceptable' (HMIC, 2015, p. 14).

[2] A non-statutory body established in 2011 as an independent advisory body on crime statistics; re-established in 2015 as the National Statistician's Crime Statistics Advisory Committee (NSCSAC): https://www.statisticsauthority.gov.uk/national-statistician/ns-reports-reviews-guidance-and-advisory-committees/national-statisticians-advisory-committees/crime-statistics-advisory-committee/.

which consider how to operationalize the identification and profiling of repeat victims of DA from a victim safeguarding perspective and thereby go on to propose a definition of repeat DA victimization. Such an approach forms the basis for generating consistent and comparable statistics on both repeat victim incidence rates and prevalence rates so as to inform within Force strategic and operational decisions, and for comparison between Forces.

Terminology

The terms domestic violence (DV) and DA have been used almost interchangeably in the literature[3] and have shared the same definition. Although DA is now seen as preferable given that the term 'abuse' more readily encompasses a wider range of behaviours and not just restricted to violence (see for example HMIC, 2014b, p. 10), the term used in this paper to refer to this activity is DVA to help keep the link with the literature and terms still widely used in practice. DVA is currently defined as:

> any incident or pattern of incidents of controlling, coercive, threatening behaviour, violence or abuse between those aged 16 or over who are, or have been, intimate partners or family members regardless of gender or sexuality. (Home Office, 2013)

The age of inclusion was lowered operationally from 18 to 16 years with effect from April 2014.[4] This definition is not a legal one as DVA is not a statutory offence.[5] Where a report of DVA is made to the police it is recorded as an incident according to the National Standards for Incident Recording. Where on investigation a crime is deemed to have been committed, it is then logged as an offence category according to National Crime Recording Standards (NCRS) and Home Office Counting Rules (HOCR). The majority of these offences are notifiable and are included in aggregate monthly returns to the Home Office. However, until recently, forces have not had to indicate the proportion of notifiable offences that are DVA[6] and hence has not featured in the published police-recorded crime statistics for UK. Experimental statistics for the period April to September 2015 on DA-related notifiable offences, published for the first time (ONS, 2016a) based on new Home Office reporting requirements, show that for UK 11% of crimes were DVA related and that 33% of violent crimes were DVA related.[7] Not all DVA incidents get subsequently logged as offences and it can be expected that the number of incidents recorded far exceeds the number of offences (Table 2). Thus when referring to police-recorded DVA it is useful to differentiate between domestic offences and non-crime domestic incidents. A sub-category of domestic offence is domestic homicide. A full picture of DVA victimization and repeat victimization should thus include data on both offences and non-crime incidents in line with Recommendation 4 above.

The Crime Survey for England and Wales (CSEW) has definitions for multiple victimization and repeat victimization (ONS, 2014). Multiple victimization is where a victim has experienced more than one crime in the previous 12 months whether it be the same or different crime type. Repeat victimization is where a victim has experienced more than one crime of the same type in the last 12 months. Where the repeat victimizations are 'the same thing, done under the same circumstances and probably by the same people' (ONS, 2014, p. 15), then they are considered to be a series. Only the first five instances of a series are

[3] Other terms used in the literature are intimate partner violence, partner violence, and family violence.
[4] This will have introduced a discontinuity into any data series that straddles this date.
[5] The Serious Crime Act 2015 created a new offence of controlling or coercive behaviour in intimate or familial relationships to underscore the severity of this aspect of DVA.
[6] The Home Office Data Hub will include DVA markers against notifiable offences when fully operational.
[7] There are as yet no equivalent statistics on police-recorded repeat victims of DVA.

included in the crime count, though this is currently under review. Walby *et al.* (2016) have argued that removing the cap would increase the estimate of violence against women and the amount of violent crime that is DVA. CSEW provides national-level data on the number and type of DVA incidents, the proportion of repeat victims, and calculated prevalence rates.[8] Thus, for the year ending March 2015 (ONS, 2016b), DVA was experienced in the previous 12 months by 8.2% of women and 4.0% of men equivalent to 1.6 million victims and has not statistically significantly changed since 2009. Thirty percent of DVA victims reported having been victimized more than once in the previous 12 months and these victims accounted for 60% of the DVA events.

Research on trajectories to DVA victimization, such as by Swartout *et al.* (2012), suggest that victims can have suffered repeat victimization in adolescence and early adulthood before they report to the police. The trajectory of victimization can start in childhood with sexual abuse, parental physical abuse, and witnessing of DVA. While this has important implications for prevention strategies, the police necessarily rely on reporting of DVA by a victim, relative, or concerned member of the public in order to record and respond to events. This paper focuses on the HMIC recommendation for better data on repeat victims on the basis of what the police are able to record.

A number of police forces have their repeat victim policy statements online. These draw on a much earlier definition: 'repeat victimisation occurs when the same person or place suffers more than one criminal incident over a specified period of time' (NBCP, 1994, p. 6). There are slight variations between individual force definitions. The majority refer to offences (only one seen explicitly states crime or non-crime incidents) with a specified time period of 12 months that is either explicit or implied to be a rolling 12 months from the reporting of the first victimization. However, in terms of practice, HMIC in Recommendation 4 has called for a clearer, unambiguous definition of repeat victim in relation to DVA that ensures like-for-like comparison of statistics.

Further considerations

Repeat victims have an enhanced probability of future victimization. This rests on two aspects: event dependence where the nature of the crime event boosts the probability of revictimization and heterogeneity where being the victim of a crime event flags a more enduring risk making revictimization more likely (Tseloni and Pease, 2003). Revictimization can happen quickly. Reviews by Barnish (2004) and Sampson (2007) indicate that although the risk of revictimization decreases over time, there is nevertheless a high risk of repeat victimization within 12 months of the first recorded event. The analysis by Lloyd *et al.* (1994) shows that for 35% of households a second domestic victimization occurs within five weeks and that for 45% of households a third domestic victimization occurs within the subsequent five weeks. However, Hanmer *et al.* (1999) identify that the nature of intervention can considerably affect the risk of a police re-attendance. For example, if the perpetrator is arrested there is a 51% increase in risk of re-attendance (the arrest is not the risk factor *per se* but that those arrested were more likely to be repeat offenders) while if the victim relocated from a high to a low crime area, there is a 51% decrease in the risk of re-attendance.

Repeat victims shoulder a disproportionate number of crimes and incidents with considerable geographical variation in local prevalence rates. Evidence that DVA is both a high volume crime and has a relatively high proportion of repeat victimization from police-recorded data is given in Table 3 which compares different crime types for the London Borough of Newham 2011/12. Focusing on repeat victims to reduce the risk of subsequent victimizations has crime prevention

[8] Prevalence rate is the proportion of the at-risk population who are victims of an offence once or more.

Table 1: An example of a repeat victim profile extracted from police-recorded offence and incident data

Ref	Forename	Surname	Date of birth	Age	Gender	Ethnicity	DVA type	Date	Postcode	Phone No	Risk	Injury	Repeats	Days between	Days cumulative
28119	Forename1	Surname1	(missing)	(missing)	(missing)	(missing)	Incident	XX/07/2011	Postcode1	(missing)	(missing)	(missing)	0	0	0
28119	Forename2	Surname1	(missing)	(missing)	(missing)	(missing)	Incident	XX/01/2012	Postcode2	07973XXXXXX	(missing)	(missing)	1	187	187
28119	Forename1	Surname1	XX/XX/1991	20	Female	W1 British	Actual bodily harm	XX/04/2012	Postcode3	(missing)	High	Slight	2	77	264
28119	Forename2	Surname1	(missing)	(missing)	(missing)	(missing)	Incident	XX/05/2012	Postcode4	07956XXXXXX	(missing)	(missing)	3	24	288
28119	Forename2	Surname1	(missing)	(missing)	(missing)	(missing)	Incident	XX/05/2012	Postcode2	07508XXXXXX	(missing)	(missing)	4	24	312
28119	Forename2	Surname1	(missing)	(missing)	(missing)	(missing)	Incident	XX/06/2012	Postcode2	07713XXXXXX	(missing)	(missing)	5	23	335
28119	Forename1	Surname1	XX/XX/1991	20	Female	W1 British	Murder	XX/06/2012	Postcode3	(missing)	High	Fatal	6	7	342

Notes: These data have been altered using X for deleted numbers to prevent disclosure of individuals. Fields Ref, Repeats, Days Between, and Days Cumulative are not from the original police-recorded data but are products of the process used to identify repeat victims.

benefits—'victimisation is the best single predictor of victimisation' (Pease, 1998, p. 3; also see summary of crime prevention benefits in Pease and Tseloni, 2014). However, much of the literature on what works in reducing repeat victimization has focused predominantly on residential burglary. Thus, Grove *et al.* (2012) in their systematic review of prevention of repeat victimization found only one study of DVA that qualified for inclusion. Even so, only 15% of the studies (and not including the DVA one) showed a statistically significant decline in repeat victimization as a consequence of some intervention. Farrell (2005, p. 159) puts measuring repeat victimization foremost in the list of issues that are 'tricky' in evaluating the impact of prevention efforts. Better and consistent identification of repeat DVA victims would assist forces in targeting resources for crime prevention and have greater scope for experimental and quasi-experimental evaluation of what works.

Working with police-recorded data is not without its difficulties. Police forces have independently developed their IT systems and designed their own database schemas for recording events reported to them. There are at least 88 data centres (PASC, 2011) and some 2,000 IT systems (CPA, 2012) across the 43 police forces in UK. There is thus no standardized approach to recording DVA events in crime databases. There can be separate databases for call and dispatch (999 calls), incidents and offences, details of victims and details of perpetrators/accused, and so on. There may not be unique keys that connect these databases because of the many-to-many relationships that occur in crime events and keys meant to achieve greater integration may not be assiduously copied across due to time and effort. DVA offences may be identified by a flag (or several different flags) in crime databases, marked in a separate register, or all DVA offences may be mirrored in a separate database.

Despite earlier work to repair the trust in crime statistics in UK (UKSA, 2010), the quality and reliability of police-recorded crime came in for heavy criticism at Parliamentary Committee (PASC,

Table 2: Example comparison of the number of domestic incidents and domestic offences

	Police-recorded DVA				
	2008/09	2009/10	2010/11	2011/12	2012/13
Metropolitan Police (incidents)[a]	111,738	119,884	121,314	118,079	118,391
Metropolitan Police (offences)[b]	52,912	51,682	48,416	46,398	48,815

[a]From Table 4.07, Focus on: Violent Crime and Sexual Offences, 2012/13—Appendix Tables.
[b]From http://data.london.gov.uk/datastore/package/metropolitan-police-service-recorded-crime-figures-and-associated-data.

Table 3: Comparison of repeat victimization of DVA offences with other crime types for the London Borough of Newham 2010/11 (author's analysis)

	Burglary dwelling	Burglary other[a]	Vehicle crime	Street crime[b]	DVA	Violence (non-DVA)	Hate crime[c]
Victims	3,700	1,273	4,323	3,004	6,818	4,220	285
Repeat victims	56	186	152	41	656	135	13
% Repeat victims	1.5%	14.6%	3.5%	1.4%	9.6%	3.2%	4.6%
Total events	3,767	1,644	4,527	3,058	7,789	4,426	302
Repeat victim events	123	557	356	95	1,627	341	30
% Repeat victim events	3.3%	33.9%	7.9%	3.1%	20.9%	7.7%	9.9%

[a]This category relates in large part to commercial premises.
[b]Robbery, theft, and snatch.
[c]Homophobic and religiously motivated crime.

2014) and the UK Statistics Authority subsequently withdrew its National Statistics designation (UKSA, 2014). At the same time a divergence was noted between CSEW and comparable police-recorded crime (ONS, 2013). While the Audit Commission had carried out regular checks of police data quality from 2003/04, following the introduction of the NCRS, they were discontinued after 2006/07. By 2011, quality concerns lead HMIC to carry out a series of reviews of police crime and incident reports in UK, including the one on DVA featured in this paper. As might be expected, the inspections result in changes in police-recorded crime which can introduce marked discontinuities in the data series. By way of illustration, Fig. 1 shows for London how monthly counts (indexed to 100 at the start of the series) for all victim-based crimes and domestic offences track each other for 5 years and then markedly diverge with a steep increase in recorded domestic offences with HMIC inspections focusing on the integrity of dealing with reports of crime by members of the public and then on DVA specifically. The 50% increase in recorded domestic offences between April 2013 and mid-2014 is more likely to be the result of better recording than an actual increase in the amount of DVA in London. The National Statistics designation is unlikely to be restored until changes in police-recorded crime consistently reflect real changes in the amount of crime.

While much of the quality debate has focused on adherence to the NCRS and HOCR in determining if an event is an offence or incident and the correct classification of offences by crime type, quality problems also concern the accuracy, consistency and completeness with which fields in the databases are populated with data. While it needs to be recognized that there is no such thing as the perfectly correct database, the recording of names, addresses, and other particulars of DVA events, often in difficult, tense situations, are subject to inadvertent errors, gaps, and lack of consistency. Victims do not always give accurate responses. Identifying and tracking repeat victims from crime databases can therefore be a complex task. Extensive data

cleaning is required to maximize the analytical use of the data (Brimicombe *et al.*, 2007). Furthermore, it is well understood from CSEW that 50–60% of DVA is not reported to the police and that police-recorded DVA is an undercount (though Fig. 1 might imply that the gap is closing). The implications of this are that the repeat victimization profile of individual victims is unlikely to be a complete picture though it is unclear whether or not victims who have already reported to the police continue to do so for a higher proportion of the events. While CSEW is accepted as giving a consistently reliable trend of personal and household victimization at a national scale, and notwithstanding the issues of data quality discussed above, police-recorded DVA holds out the only promise for identifying, monitoring, and preventing repeat victimization and providing appropriate services for repeat victims at police command unit and Community Safety Partnership (CSP)[9] level and as a means to compare the performance of command units and CSP and what works in tackling repeat victimization.

Methods

As stated in the 'Introduction' section, the author was tasked with formulating proposals from available data resources. These were data comprising individual-level records of crimes and incidents that had been made available from two Police Forces (one metropolitan, one county-wide) for a range of projects over a number of years mostly concerned with data mining of repeat victimization with particular emphasis on patterns of DVA to strategically and operationally inform each Force. The data were exports (dumps) of a series of flat files of event records (unedited, unprocessed) from one or more databases giving details of location, victims, perpetrators, and modus operandi. The flat files were loaded in a database so that the many-to-many relationships between victims and perpetrators where they occur could be made explicit. These data have afforded an insight into what is feasible and what is currently not feasible in analysing police-recorded data and has informed the tractability of the proposals. Three years of data (2010/11 to 2012/13) for a command unit within the metropolitan area corresponding to a CSP are used to illustrate the production of summary statistics for single and repeat victims of DVA. The CSP is a suburban area of 43 km^2 with a population of nearly 200,000 (30% being minority ethnic) and with below average levels of deprivation. A small number of case study examples from 5 years of data (2007–2012) for an entire county Police Force are used to illustrate how both crimes and incidents need to be taken into account when considering escalation of DVA. The county covers some 3,700 km^2 with a population of nearly 2 million of which only 3% are minority ethnic; the settlement pattern is predominantly dormitory towns and metropolitan green belt. Some of the towns have high levels of deprivation.

The success of finding DVA victims in police-recorded data relies on the correct classification of incidents as domestic and, where an offence has occurred, the correct and consistent use of DVA flag or qualifier against the crime type(s). Some forces have more than one DVA flag in operation—for example, one police force specifically flags DVA events affecting families of police officers. The main unique identifier in crime databases is the crime reference which uniquely identifies each event. Victims do not have unique identifiers (as might a patient being recorded against their NHS number). So it is not straightforward to identify victims who occur a number of times on different occasions in the database. For the victim record to adopt the crime reference is not so simple

[9] CSPs are statutory partnerships of organizations under Sections 5–7 of the Crime and Disorder Act 1998. They are made up of representatives from the police and police authority, the local council, and the fire, health, and probation services for a local area, most often at Local Authority level. There are 322 CSP in the UK.

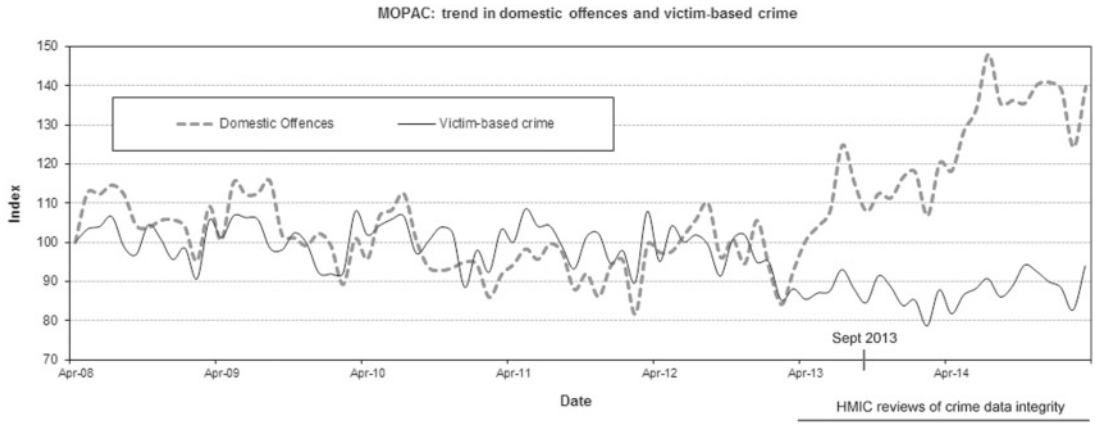

Figure 1: Marked divergence in indexed monthly counts of all victim-based crime and domestic offences from April 2013 coterminous with HMIC inspection of the integrity of dealing with reports of crime by members of the public and then more specifically in response to DVA from September 2013 (source data available from: http://data.london.gov.uk/dataset/metropolitan-police-service-recorded-crime-figures-and-associated-data).

because there may be more than one victim of a crime (e.g. a child aged 16 years or over assaulting both parents), but nevertheless the victim should carry the crime reference as that is key to finding other information on location, suspect, accused, and so on. When analysing victims' data, the author creates a unique key for each victim in the form: reference_vn where reference is the crime reference or incident reference number and *n* is the *n*th victim for that crime or incident. While this maintains the link and guards against duplication of entries, it does not overcome the fundamental problem of finding the DVA series as in Table 1.

In order to unambiguously identify victims as being the same person it requires name (forename and surname), date of birth, gender, and home postcode. Ethnicity can help but since this often relies of the perceived visual appearance to the officer rather than self-declared ethnicity, it can be unreliable. For home postcode, victims do move and is therefore not a fixed attribute in the way date of birth is expected to be. To use these fields requires a lot of data cleaning. For example, date of birth can quite often have the day and month transposed, postcodes often have to be looked up from an address. Correcting misspellings of names is intractable and often forenames can take both full and shortened form (e.g. Jeannine, Jean) for the same person on different occasions, complicated by use of both maiden and married names and in some cultures putting the surname first. One device that is quite successful with names is to create a code by concatenating the first three characters of the surname and first two of the forename such that 'Female CITIZEN' becomes 'CITfe' which is then matched instead of using separate forename and surname[10] In effect, once the data have been cleaned as much as they can, iterative matching proceeds using four variables across all DVA offences and incidents to produce an event chronology of all repeat victims as illustrated in Table 1 as well as a list of all DVA victims who only appear in the database once. This is not the conventional data linkage problem for which there is a growing literature in the health sector (see for example Harron *et al.*, 2015) where individuals are matched across two or more databases by deterministic or probabilistic means. Because the victim data are

[10] An alternative is to use the Soundex homophone algorithm, but while this works well for English names is likely to be less successful in culturally diverse areas.

Table 4: Summary statistics for single and repeat victims of DVA

		Female			Male		
		2010/11	2011/12	2012/13	2010/11	2011/12	2012/13
Single		835	816	886	456	381	663
Repeat victimizations in rolling 12 months	1	170	147	202	74	46	89
	2	250	217	168	69	55	101
	3	109	90	53	20	13	17
	4	44	33	17	4	3	5
	5	29	12	2	2	5	6
	6	11	7	7	1	1	3
	7	8	5	1	2		1
	8	2	3			1	
	9	6		1			
	10	1	1			1	
	11	1	2				
	12	1	1				
	13						
	14						
	15	1					
	16		1				
	17						
	18						
	19						
	20						
	21						
	22	1					
Repeat victims		464	372	249	98	79	133
Total victims		1,469	1,335	1,337	628	506	885
Repeat prevalence[a]		316	279	186	156	156	150
Total DVA events		2,067	2,063	2,014	733	621	1,138
Population at risk[b]		76,223	77,069	78,065	70,115	70,833	71,607
Incidence rate (I)[c]		27.12	26.77	25.80	10.45	8.77	15.89
Prevalence rate (P)[d]		19.27	17.32	17.13	8.96	7.14	12.36
Ratio P:I		1.41	1.55	1.51	1.17	1.23	1.29

Note: See text for explanation (third year figures in grey are incomplete, see text for explanation).
[a]Number of repeat victims per thousand DVA victims.
[b]Populations 18 and over from ONS population estimates, reflecting the definition of DVA in operation at the time.
[c]Total number of DVA events per thousand population at risk.
[d]Total DVA victims per thousand population at risk.

more often than not in a single database, the problem is akin to deduplication except that it is the duplicated individuals that are of specific interest for retention and further analysis. Examples of open tools for deduplication and record linkage are: LinkPlus (http://ftp.cdc.gov/pub/Software/RegistryPlus/Link_Plus/), the RecordLinkage package in R (https://cran.r-project.org/).

The resulting event chronology for all single event and repeat victims acts as quick look-up tables when responding to calls for assistance which, for reasons discussed above, will provide a fuller picture than searches conducted on-the-fly. The tables can also be used to quality assure DVA flags and repeat flags (where used) in the main database. As will be discussed below (and already illustrated in Table 1), this fuller picture of including both offences and incidents is critical in identifying escalation towards violence and homicide. If only offences were used to define a repeat victim of

DVA, then the victim in Table 1 would not have been classified as a repeat victim because before the murder only one offence had been recorded. Such look-up tables however do need to be regularly updated as new event data are added to the relevant database(s), but the historic data have already been cleaned. From a data quality perspective only a small number of fields need to have accurate and consistent data in order to maximize the chance of identifying repeat victims and, if substantially correct, would facilitate on-the-fly analysis in call centres.

These event chronologies for all victims for all offences and incidents form the basis for deriving aggregate summary statistics. The time period for generating the annual statistics is a rolling 12 months. When a victim of DVA reports a second victimization within 12 months of a previously reported victimization, then the series begins with the first recorded victimization and runs for 12 months whereupon, if victimization continues, a new series is started. This rolling 12 months is less arbitrary than, say, the start of a calendar or financial year, but is nevertheless necessary to avoid the 'time-window effect' (Farrell *et al.*, 2002, p. 16) in which the number of repeat victims increases proportionally with the duration of the data time series. Furthermore, some kind of 'annual statistic' is desirable for monitoring trends in single and repeat victimization. For each repeat victim, the series of victimizations occurring in a rolling 12 months is attributed to the financial year in which the series begins. Therefore, in order to complete the statistics for a financial year it is necessary to have a 'run-out' year to cater for a series that may have started in the final month of the financial year and for which the rolling 12 months will not have finished until towards the end of the next financial year. There is a tension here. While from the perspective of an individual victim's event chronology there may have been two victimizations separated by, say, several years and in that sense is a repeat victim (and many would argue that most DVA victims reporting to the police for the first time are already repeat victims), for statistical accounting purposes a repeat victim is someone who has been victimized two or more times in a rolling 12 month period.

Results

Repeat victimization statistics

The aggregate data from 3 years of victim chronologies for the CSP are given in Table 4. These have been split by gender as there is a gender imbalance in DVA victimization. As discussed in the previous section, the first two financial years are taken as having complete data and the third financial year's data, though not complete, are necessary for all the repeat victim series started in the second financial year to have run the full rolling 12 months. The third year of data on repeat victims in Table 4 is therefore greyed to signify they are incomplete—the number of repeat victims is likely to be an undercount—but which nevertheless give an early indication of the broad trend. It is inevitable then that repeat victimization statistics will always be published 1 year in arrears.

The first row in Table 4 gives the number of DVA victims who appear only once in the entire data series (denoted as 'single'). While the third year shows a substantial increase on the previous 2 years, more so for male victims, the number may reduce slightly as some of them are victimized a second time within their rolling 12 months. The second row is the count of 'single repeat victims', that is, victims who have only been victimized once in a rolling 12 months but have also been victimized at some point in the database. They should operationally be treated as repeat victims in any subsequent call for assistance, but have only been victimized once in the year for statistical purposes. The subsequent rows labelled 2–22 give the count of repeat victims who have been victimized this number of times in their rolling 12 months. Clearly some of these victims suffer chronic victimization. Having an operationally effective and

consistent approach to repeat DVA victim data facilitates further statistical analysis. Identifying a chronic repeat victim of DVA as a subset of interest can thus be done statistically as a repeat victim whose number of victimizations during a rolling 12 months is due to non-random events, that is, can be considered as a series. This requires a truncated Poisson distribution and using the 2 years' of data in Table 4 (female and male combined), $=1.316$ and the 95% confidence interval is exceeded for 4 or more victimizations in the rolling 12 month period. This could, for example, be taken as the upper limit for signalling a multi-agency intervention is necessary.

In the lower part of Table 4 are summary statistics including the incidence and prevalence rates for each reporting year. While these two are based on the population at risk within the CSP area, the 'repeat prevalence' rate uses the total number of DVA victims as the at-risk population and represents the rate per thousand at which victims with a single victimization become a repeat victim within the rolling 12 months. This should preferably reduce to zero. Perhaps the most import indicator is the prevalence to incident ratio which, if greater than one, indicates the degree to which there is repeat victimization. Thus, in 2010/11 and 2011/12 for female victims, despite the count of repeat victims and total victims falling, the P:I ratio is increasing thus indicating that the share of victimizations suffered by repeat victims is increasing. The average number of victimizations per female repeat victim increases from 2.88 to 2.96 in the 2 years. Crime prevention measures should be aimed at reducing all DVA and importantly repeat victims of DVA such that the P:I ratio reduces to one.

Escalation in DVA

Another aspect of repeat victimization of DVA which can be analysed using the type of event chronology illustrated in Table 1 is escalation, and as will be shown here it requires data on both offences and incidents. 'There is a very real need to identify repeat victimisation and escalation. Victims [of DVA] are more likely to become repeat victims than any other type of crime: as violence is repeated it is also likely to become more serious' (www.domesticviolencelondon.nhs.uk). Escalation is usually framed as worsening severity of violence with the possibility that it will become fatal. However, Bland and Ariel (2015) found no escalation in the majority of cases (based on 36,000 callouts) as 76% of victims had no repeat calls (consistent with Table 4). Nevertheless a limited number of case study victim chronologies from police-recorded data are discussed here to reinforce the need to include both offences and incident data when analysing repeat victims of DVA. As part of a previous study carried out for the county-wide Police Force, a severity scale was created for the DVA offences and incidents in the dataset ($1=$ 999 call no-crime incident, $12=$ homicide) in discussion with an experienced police Inspector[11] and then graphing event severity and cumulative average severity for a victim over time (Fig. 2). Figure 2 comes from a 5-year dataset for the entire Police Force area with 37 long-term chronic cases and a further seven cases of fatalities of repeat victims (there were also 15 other DVA fatalities with no previous DVA report). Figure 2(a) is a typical long-term chronic case which continues over 4.5 years (until the end of the dataset) with 42 recorded DVA offences and incidents. While in the first 30 months there is increasing frequency and average severity of events denoting DVA escalation as conventionally understood, in the subsequent 26 months, the average severity starts to decline as the pattern becomes one of numerous 999 calls resulting in recording of non-crime incidents punctuated by violent events. The violent events become presaged by an escalation in the number of calls for assistance that are deemed non-crime but

[11] This took into consideration primarily the perceived level of distress/trauma to be experienced by the victim rather than the social and economic cost or strictly adhering to sentencing guidelines.

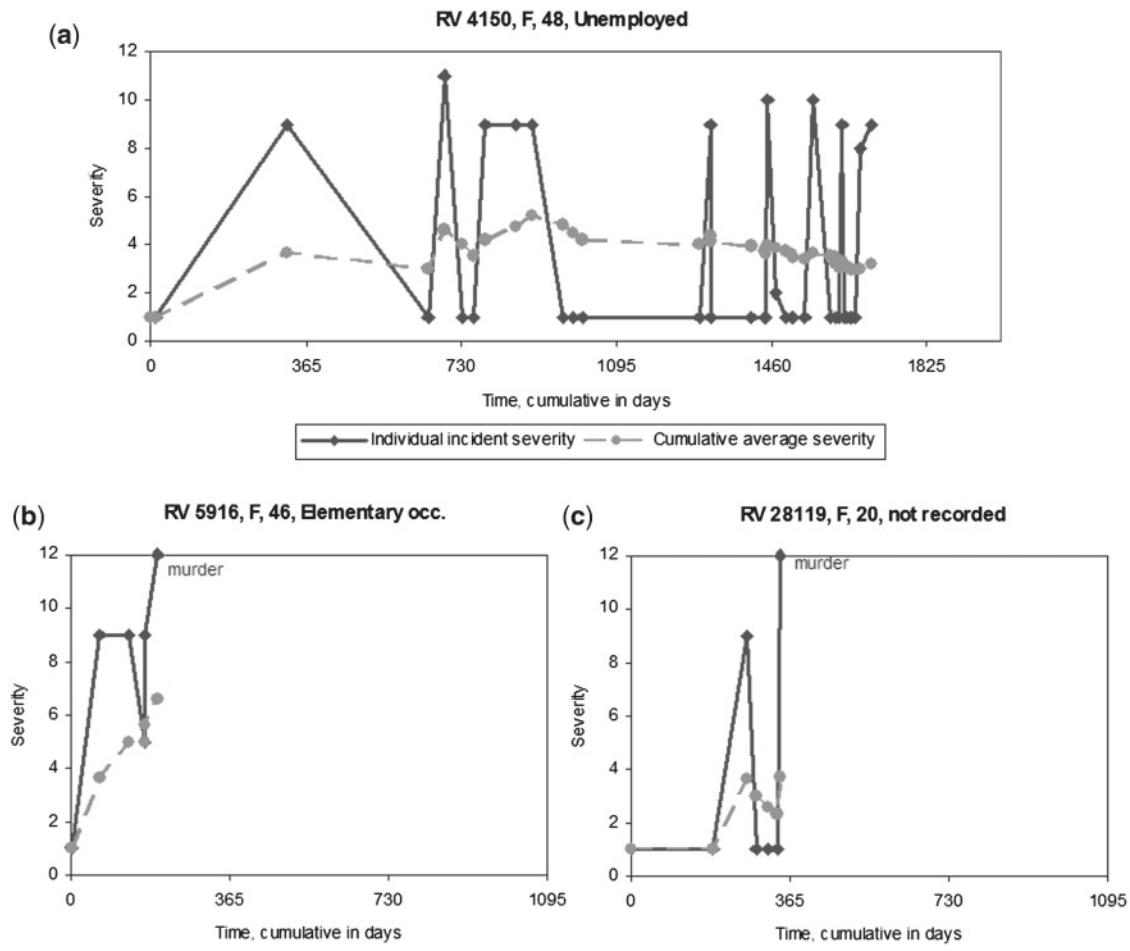

Figure 2: Modelling DVA escalation, a) long-term chronic victim, b) and c) homicide victims (titles include: repeat victim number, gender, age, employment status of perpetrator).

nevertheless should be recognized as an important diagnostic when determining police response. This is concurred by the Independent Police Complaints Commission (e.g. IPCC, 2012) where in the case of a double DVA fatality the police failed to identify and act upon an escalation in calls for assistance deemed as non-crime incidents in the lead up to the double murder.

In contrast to the chronic case in Fig. 2(a) are two cases of repeat DVA resulting in fatalities in Fig. 2(b) and (c). The first thing to notice is how quickly they escalate to homicide from first report to the police in comparison to the years of abuse in Fig. 2(a) which does not result in homicide. Figure 2(b) shows conventionally understood escalation in severity towards homicide, whereas Fig. 2(c) does not. This latter example is the same case as given in Table 1 and mirrors the IPCC investigated case with an increased frequency of calls for assistance in the run up to the murder and could have been taken as evidence of escalation in conjunction with other known risk factors in this case. While this is a small number of cases from which to generalize, it nevertheless illustrates how combining police-recorded

DVA offences and incidents to profile victim chronologies offers data for identifying new insights and greater scope for evaluating risk and the effectiveness of interventions.

Conclusions

This paper has explored elements of police-recorded DVA pertinent to providing more consistent identification of repeat DVA victims that would assist Police Forces when responding to calls for assistance and in targeting resources for crime prevention around repeat victims, the production of local and national statistics, and greater scope for experimental and quasi-experimental evaluation of what works. Key elements have been a) the inclusion of both offences and incidents as they provide a fuller view of the level of DVA and have important diagnostic value in understanding, for example, escalation towards violence, rape, and homicide; and b) for the counting period to be a rolling 12 months so that consistent and comparable statistics can be derived; and c) for the minimum age to conform with the current operational definition of DA. The definition thus arrived at for statistical purposes and proposed to CSAC was:

> A repeat victim of domestic abuse is any individual aged 16 or over who is the aggrieved person of more than one reported crime, attempted crime or non-crime incident of domestic abuse within a rolling 12 month period.

The annual summary statistics that can be derived from records appropriately flagged according to this definition have been illustrated in Table 4. This paper has demonstrated how such data can be used to further identify the threshold for chronic victims and the need for multi-agency intervention. Consistent repeat victim data including offences and incidents also hold promise for better identification of escalation to violence and homicide. The summary statistics should be published annually down to CSP level for both operational and strategic purposes. In fact these types of summary statistics need not just be for DVA but for all crime types and would be of public interest to do so. The data specification for the Home Office Data Hub may need to be modified to include markers for repeat victims. It is recognized that police-recorded DVA are an incomplete record as not all events are reported to the police, data quality can be a problem in identifying repeat victims and that changes in the DVA count can reflect changes in recording practices. However, it is in the public interest and as a measure of Police Force and partnership effectiveness that summary statistics on repeat victims of DVA be published. Finally, in order to check the consistency and completeness of police-recorded repeat DVA at a national level, the publication of CSEW should include data tables on chronic victimization without a cap at five events while recognizing that the cap may need to remain in the calculation of the national prevalence rates.

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