

# Mapping public space violence against women and girls

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Long read: Research into the nature of open space violence against woman and girls, by mapping crime incidents and severity against location, time and victim characteristics

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## Introduction

A number of high-profile murders and offences against women, some of which have been committed by serving officers, caused a tipping point in policing. These incidents, which have contributed to the decline in public confidence in policing, were instrumental in the establishment of violence against women and girls (VAWG) as a national policing priority by the UK government.

The impact of VAWG and the associated microaggressions that women and girls face in society is staggering. A study into the fear experienced by women in public showed 62% [496 of 800] of respondents feared using public spaces and constantly evaluated their surroundings. Almost 10% of respondents said that they had gone as far as changing their job because of their perceptions of public spaces (Kearl, 2010). The apparent normalisation of these behaviours also created an environment of underreporting and consequentially a reduced understanding of the true extent of the problem.

This article, stemming from an aspiration to make a positive difference to improving VAWG responses, provides an insight into my research, completed in 2022 for the University of Cambridge Master of Studies (MSt) programme.

The study was designed to better understand the nature of open space, stranger-committed VAWG by mapping crime incidents and severity against spatial, temporal and victim characteristics. My research was based on four years of Metropolitan Police (Met) crime data in three South London boroughs, from 2016 to 2020. Its findings suggested VAWG was concentrated significantly in public spaces, but these concentrations moved when more detail was considered.

## Literature review

The concept of crime concentration in geographic areas, commonly called 'hot spots', is well covered both academically and professionally. It is among the most studied concepts of criminology in recent history. A study of 911 (999) calls in Minneapolis, USA established 3.5% of addresses accounted for almost 50% of all reports of crime (Sherman and others, 1989). This crime concentration has also been shown to be constant and stable, with 50% of crime incidents occurring in just 4.5% of street segments in Seattle, USA over a 14-year period (Weisburd and others, 2004).

This concentration extends to both reported incidents and the harm caused by those incidents. The use of the harm indexes and associated hot spots is an established tool for informing police and partner responses to maximise the benefits of resource allocation.

The Cambridge Crime Harm Index (CCHI) is used to map high-harm locations and contextualise crime in spaces, according to how society views those crimes (Sherman and others, 2016). It uses the number of days in prison a guilty offender of that crime would serve for that offence as a measure of severity of crime. The CCHI accumulates the harm caused by those crimes in locations. The CCHI does not account for victim perception of severity, particularly for lower-level offences that have a high impact on personal perceptions of safety to the victim and/or public.

The value in targeting concentrations of harm and incidents in policing can be evidenced by a systematic review of 68 studies of hot spots policing. This found a small but statistically significant decrease in criminality when police resources were deployed into these locations, without displacement of crime into nearby areas (Braga and others, 2019).

(See also [Focused deterrence strategies](#) in the crime reduction toolkit.)

The need to measure and understand both crime incident and crime harm in police responses is supported by a study of the geographic distribution of nine crime types in Washington DC, USA. This showed concentrations of crime harm, like that of crime volume, across all crime types examined, and suggested that harm may have different spatial concentrations to that of crime incidents (Fenimore, 2019).

Specific research of VAWG in public spaces (defined in this study as any place where people interact freely, pass by, socialise or meet (Ceccato, 2020), excluding private spaces, such as dwellings and independently controlled spaces, such as licensed premises and sports venues) is, in comparison to hot spots, very limited. Often hot spots research relates to specific crime types or is culturally specific. For example, mapping female genital mutilation in Kenya (Achia, 2014) or incidents of braid chopping in India (Wani and others, 2020).

A study in the Ottawa-Gatineau area of Canada, while not specific to public spaces, used mapping of address postcodes to interpret spatial concentrations of sexual assaults. Findings suggested an association between increased levels of assaults in entertainment districts and lower income neighbourhoods, as well as less prevalent patterns of assaults in higher income, suburban districts (Muldoon and others, 2019). Gender specific research of crime in Ukraine has also been used to support decision making of planners, to improve urban security in public architecture and town planning (Fesenko and others, 2017).

Researchers have mapped sexual assault data against street populations and types of urban spaces in Rotterdam (Miranda and van Nes, 2020). This demonstrated a correlation between the types and numbers of people in streets, the spatial or structural features of environments and the prevalence of sexual offending against women.

## Data and methodology

This research used GIS mapping software to create 27,370 one-hectare-sized hexagons as geographic units of analysis. These hexagons were overlaid onto three London boroughs. It was not feasible to only represent public spaces within these hexagons visually.

Figure 1 shows an example of this mapping, identifying those spaces where VAWG incidents occurred over the four years of the study.

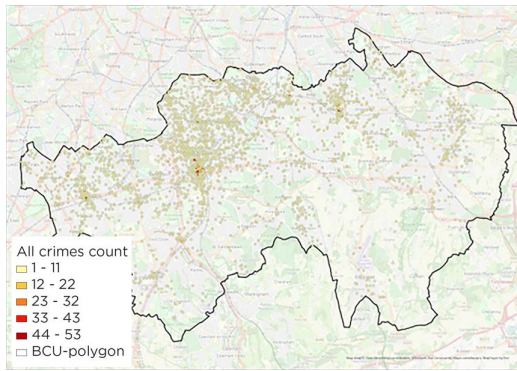


Figure 1: Example of VAWG incident mapping (2016-2020) in three South London boroughs

Crime occurrences were drawn from the Met’s historic crime reporting system (CRIS) from January 2016 to January 2020, removing the impact of COVID restrictions on research. The limitations of using reported crimes include the obvious omission of any non-reported incidents, as well as a reliance on the data quality of crimes recorded, although incidents were subjected to some quality assurance processes. Table 1 identifies the offences included/excluded in the study.

Table 1: Defining public space VAWG – Home Office crime classifications

Included	Excluded
Theft (person)	Burglary (commercial and residential)
Public order offences	Shoplifting
Assault (common assault to grievous bodily harm with intent)	Theft of or from motor vehicle
Homicide	Vehicle interference
Manslaughter	Blackmail
All sexual offences (excluding online or social media)	Other theft

Included	Excluded
Robbery	Criminal damage
Kidnap	Death by dangerous driving
Aggravated vehicle taking	Aggravated burglary
Rape	Robbery
Public decency offences	Forgery and counterfeit offences
Exposure	Possession of pornographic images
Violence (with or without injury)	Online or cyber offending
Threats to cause criminal damage	Malicious communications
Assault emergency worker	Bicycle theft
-	Arson
Attempts of above	Attempts of above

This study included the volume, density and harm of 5,435 reported crime occurrences over a four-year period, in public spaces, as defined above, where:

- the victim was female and over 12 years of age. Selecting girls over the age of 12 removed incidents where there was a high likelihood of parent or guardian presence
- the offender was male in all cases and unknown to the victim
- the victim suffered harm or perceived harm at the point of reporting

The study included any offence reported, including those later non-crimes or withdrawn for any reason. Analysis was then conducted against these concentrations of crime and harm using the independent variables of victim age, ethnicity, crime type, alcohol consumption and other characteristics.

## Findings

Findings suggested that while stranger-based VAWG is highly concentrated in certain public spaces, both for crime incidents and measured harm to victims, these spaces may change when different victim and temporal characteristics are applied.

50% of all harm (as measured by the CCHI) caused by crime against women and girls was concentrated within just 0.48% of public space. This is just 134 one-hectare hexagons from the 27,370 mapped. 91% of public space in the three boroughs was devoid of any reported incidents at all, although the expectation had been towards concentrations of incidents in the respective urban centres of these boroughs.

Mapping harm suggested a noticeable movement away from geographic centres to outlying areas. These concentrations moved again when temporal and victim characteristics were mapped independently.

When comparing the included offences against maps of all violent crime (including non-VAWG), only 20% of mapped VAWG harm concentrations overlapped with all violent crime hot spots.

When the two VAWG maps of count and harm are compared, 70% of the crime incident hot spots do not feature at all in the top 20 ranked concentrations of harm.

An individual's risk of being a victim varies by time of day and day of the week, and this risk is also seasonal in nature (Hind and Ruperel, 2007; Sherman, 1992). Unsurprisingly, the study shows the concentrations of VAWG are particularly focused at night in urban centres. However, when harm is mapped, the concentrations can move away from these urban centres at night to outlying areas of the boroughs. The harm to girls aged between 12 and 18 peaked between 15:00 and 18:00, suggesting the prevalence of harm and risk in public spaces to girls after school.

The relative risk of becoming a victim increases with age to 30, even when accounting for estimated population sizes in those age groups. While the risk of victimisation continues to rise to 30, the harm caused by crimes disproportionately affects children (those under 18). 23.3% of all harm suffered by victims of public-place VAWG was caused to those aged 12 to 18. Girls aged 14 suffered the same proportion of harm to 18-year-old women, despite a victimisation rate 33% less

than that of an adult. Less than 14% of all harm occurred when alcohol was a contributory factor on the crime report. Children aged 15, 16 and 17 also suffered, on average, more harm per incident than adults aged 18. So, girls suffer more harm per incidents than their adult counterparts.

Harm also disproportionately affected women of Asian and African-Caribbean ethnic backgrounds in the study. Findings show that while white women are 3.6 times more likely than African-Caribbean women, and 6.9 times more likely than Asian women to be a victim of crime, the harm likely to be caused to minority victims is greater by proportion. Women of diverse heritage suffer more harm per crime than white European women. Asian women suffered 67% more harm than white women and African-Caribbean women suffered 32% more harm per incident compared to white women.

## Limitations

As with any academic research, these findings come with several warnings. Firstly, this is a single study and further research of a similar nature is needed to provide external validity to the work. I have already mentioned the CCHI fails to include perceptions of harm to individual victims or factors such as the fear of crime caused to those subjects to multiple lesser offences in weighting harm.

It is also impossible to map the unknown or unreported, and the incidence of underreporting of VAWG cannot be overlooked. As with all analysis of reported crime, the researcher may be restricted by the quality of the data and its accuracy. Elements of the incident may differ from the truth when human factors and data inputting errors are considered. Because the data used for this study example is pre-COVID, it may fail to account for variances in street-based populations or human behaviour changes since that time. Importantly with regards interpretation, definitions used in VAWG vary in research and application. The definitions of VAWG in current government and National Police Chiefs' Council strategic plans differ slightly, for example. The term microaggressions includes cat-calling and other incidents which may not historically or currently constitute an offence.

## How this might help

While police have moved quickly to better understand VAWG, the findings suggest that policing should consider not simply the crime incident and harm maps, but the context of those maps and the nature of the victims, suspects and places within them.

The research suggests the following may be useful for local policing teams.

- Hot spots for public space VAWG change over time. For example, they might become more pronounced in some areas after school.
- Violence hot spots don't always include public space VAWG incidents and vice versa.
- Focusing on different victim characteristics, such as age, can change hot spot locations.
- As public space VAWG can be frequent in multiple locations, visible patrols may not provide a long-term solution and problem-solving techniques should be applied.
- The concentration of harm towards younger women in public spaces, evident in ages 12 to 18, suggests that interventions may involve safeguarding and schools' policies.
- Harm also disproportionality affects black women and women of Asian origin, although white women are more likely to be victims. This may impact policing approaches depending on the type of hot spot and public space.

There is a risk in policing of assuming knowledge about patterns of crime and victimisation when allocating resources or responses. Whatever your role in policing, building in space and time to better understand the nature and risk in hot and harm spot locations builds understanding for problem solving, improves deployments and increases opportunities to minimise risk to those we seek to protect.

- This article was peer reviewed by Sergeant Amanda Hanusch-Moore, North Yorkshire Police.

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