

ESRC SDAI Application

1 Intro

Domestic abuse is a complex phenomenon affecting people from all walks of life. It is increasingly recognised as a major public policy concern in many countries, including the UK (?). While anyone can become a victim of domestic abuse, women are disproportionately affected, with more than 25% of women, and 15% of men in England and Wales reported to have experienced some form of domestic abuse since the age of 16 (?). The current legal definition in the UK (?) aims to capture the multifaceted nature of domestic abuse, by recognising that domestic abuse encompasses a wide range of behaviours, including emotional, sexual, and physical abuse, threatening, intimidating, coercive and controlling behaviour.

Domestic abuse has substantial mental health implications, with an estimated three-quarter of survivors experiencing posttraumatic stress disorder symptoms, and a significantly higher likelihood of reporting symptoms of anxiety and depression, compared to the general population (?). The long lasting impacts of domestic abuse are not limited to the direct target of abuse. Witnessing domestic abuse at home can have severe developmental impacts on children, including an increased risk of experiencing mental and physical health problems and encountering difficulties in interpersonal relationships in later life, worse educational attainment, and increased likelihood of engaging in criminal behaviours (?).

As the legal definition reflects, one characteristic of domestic abuse that differentiates it from other violent crimes is its repeated nature. Estimates show that on average, survivors live in the abusive relationship for 2.7 years, experiencing an estimated 50 cases of abuse before getting effective help (?). The most reliable statistics on domestic abuse in the UK is the Crime Survey for England and Wales (CSEW; ?), a victimisation survey including a self-completion module on domestic abuse. According to the CSEW, of those respondents who experienced domestic abuse between April 2017 and March 2018, only 17% reported it to the police (?). This extremely high level of underreporting is another characteristic that is specific to domestic abuse.

In the most extreme cases, domestic abuse can culminate in domestic homicide. In the period between April, 2017 and March, 2018, 70 people in England and Wales were killed by their current or former partner, 90% of these victims were women (?), demonstrating that domestic abuse is a fundamentally gendered phenomenon. While the pervasive problem of underreporting poses a significant obstacle to deriving reliable estimates of the true extent of the problem, the economic cost of domestic abuse in England and Wales between April, 2016 and March, 2017 was estimated to be £66 billion (?). The largest component of this cost is represented by the physical and emotional consequences of abuse, reflected in a reduced expected quality of life for survivors. In addition, lost economic output resulting from missed workdays and reduced productivity, as well as costs to the health care system also significantly contribute to the overall figure.

2 Data

The first dataset is provided by the West Midlands Police, and includes all recorded crimes and incidents from the period between January, 2010 and October, 2018. The West Midlands Police is the third largest police force in England, serving a population of 2.9 million (*ref*). Crimes that have a domestic abuse marker indicate cases of domestic abuse that meet the criteria for notifiable offences in the UK, whereas domestic abuse incidents refer to cases that do not qualify as a crime. About 31% of all crimes and incidents have a domestic abuse marker. For each record in this dataset, we have information about the exact location and time of the incident or crime, the gender, age and ethnicity of the offender and victim, and the severity of the injury sustained by the victim, if any. The first and last occurrence of the offence, as well as the exact time of reporting is also recorded. Each person in this dataset has a unique person identifier, allowing us to follow people over time. *Sentence about access to this dataset.*

The second dataset is the Crime Survey for England and Wales (CSEW), which is an annual, cross-sectional representative survey collecting information on victims of crime across England and Wales, including 30,000–40,000 households every year (*ref*). The survey has a self-completion module containing questions about the respondent's experiences of domestic abuse throughout their life (since the age of 16), and in the past 12 months in particular (*ref*). Given the serious problem of underreporting uniquely characteristic to domestic abuse, the CSEW is the most reliable source of information on the prevalence of domestic abuse in England and Wales. since when?

The two datasets have different merits, and combining them allows us to gain a deeper understanding the characteristics and dynamics of domestic abuse, and deliver policy-relevant insights. The CSEW is more likely to give a better estimate of the true prevalence of domestic abuse, and contains rich demographic, socio-economic and geographic (LSOA level) information on the respondent (survivor). However, owing to the fact that it is a victimisation survey, it does not contain any information on the perpetrators and has limited longitudinal information. In contrast, the crime dataset has information (age, gender, ethnicity) on both the victim and the offender, and records all reported incidents for the same victim-offender pair, allowing us to conduct a quantitative analysis of the dynamics of abusive relationships and identify the predictors of escalation. Information on the exact timing of the abuse and the time of reporting will help us identify high-risk times of the year and understand the factors influencing the decision to report. Information on alcohol involvement is more likely to be accurate in the crime dataset than in the self-completion survey. Furthermore, the crime dataset provides us with information on other criminal behaviours of the offender and victim. We do not intend to link the two datasets.

Research Programme

In outlining the research program we specify X core regression analyses, which we will preregister ahead of beginning research on the OSF. These will be complemented with the robustness checks and further exploratory regressions (see, Trendl Football, for an example of this approach).

1. Understanding domestic abuse: survivor characteristics, extent of domestic abuse and police mis-recording

Short intro about aims, highlighting added value. In our first research project, we will be investigating three main research questions. First, we will use the CSEW dataset to identify the demographic and socio-economic predictors of domestic abuse victimisation, and validate the CSEW estimates using the WMP data. Exploring the risk factors in domestic abuse victimisation is key in designing effectively targeted policy measures.

Second, we will estimate the true extent of domestic abuse victimisation. Given the multifaceted nature of domestic abuse, and the pervasive problem of underreporting, it is very hard to reliably estimate the prevalence of domestic abuse. We wish to do so by combining the strengths of the two datasets (that is, the CSEW provides a more reliable measure of the true rate of victimisation across different offence types, while the WMP provides unique information on whether various types of offences were domestic abuse-related). Estimating the true prevalence of domestic abuse across various types of criminal offences will help us to obtain a better estimate of the societal cost associated with domestic abuse.

Finally, we will estimate the extent of police mis-recording of domestic abuse. Increasing victim's trust in the police through improving law enforcement response to reported incidents is key in encouraging victims to report domestic abuse and prevent further harm. By contrasting estimated levels from reported incidents within the West Midlands from the two datasets, we can identify any reporting gaps between the two sources of data that might arise from police mis-recording.

What we know so far

Aim 1. CSEW : 7.9% women and 4.2% men reported to have experienced domestic abuse in the past year; women between 20-24 are most likely to have experienced domestic abuse; for men, age doesn't represent a significant risk factor; divorced or separated status are significant risk factors across both sexes; long-term illness or disability is a significant predictor across both sexes; single parent households are the most vulnerable; women in the lowest household income bracket are the most likely to have experienced domestic abuse, the same is true for men but the pattern is less pronounced; only 17% of people who have experienced domestic abuse in the past year have reported to the police, there is no significant difference in this proportion across genders. single mothers and mothers with young children are more at risk

Aim 2. The prevalence of DA is usually based on the CSEW, so I think the second analysis can add value.

Aim 3. HMICFRS about West Midlands mis-recording

Detailed plan

Aim 1. First, using the CSEW data, we will conduct a series of statistical analyses to provide a deeper understanding of the demographic and socio-economic factors predicting domestic abuse victimisation. Using a logistic regression approach, we will explore the factors predicting individual-level domestic abuse victimisation, depending on the type of abuse ever suffered (physical abuse, threats, sexual abuse). The CSEW provides a wealth of information on the characteristics of the respondent, including age, sex, marital status, number of children, ethnicity, education, employment, income, benefit history, physical and mental health, frequency of going out, house and car ownership, self-reported well-being, and frequency of drug and alcohol use. Using this wide range of individual-level information, we will evaluate the importance of each of these variables in predicting the likelihood of domestic abuse victimisation. *Could we also use a e.g. a random forest classification algorithm and look at variable importance? this way we could also look at interactions? does clustering make sense here to explore structure?* These analyses will represent the first extensive quantitative investigation of the individual-level predictors of domestic abuse victimisation in England, using a national-level, large representative sample like the CSEW. We are particularly interested in the association between experiences of domestic abuse, number of children, and financial resilience, as

previous research has suggested that access to resources is an important factor in escaping the cycle of abuse, especially for women with children.

Second, we can validate some of these findings using the WMP data, since the CSEW contains information on whether the survivor reported the domestic abuse to the police. The WMP contains information about the sex and age of victims. We can contrast the sex-age victimisation numbers from the WMP with corresponding population estimates to validate the findings of the CSEW (*we were initially talking about using victims of burglary, but maybe this is better?*). We can also complement this analysis with data on the offender's sex and age, to estimate the prevalence of different forms of reported domestic abuse (child to parent violence, parent to child violence, intimate partner violence) and contrast it with estimates based on self-reported data from the CSEW, which distinguishes between family and intimate partner violence.

Aim 2. The CSEW is used to estimate the costs of domestic abuse in the UK. While a unique strength of the CSEW is that it provides reliable estimates of the proportion of the population who have been a survivor of a certain crime, it cannot capture the true extent of domestic abuse victimisation for several reasons. First, because it does not collect detailed information on various aspects of repeat domestic abuse victimisation (an inherent characteristic of domestic abuse cases), as it only records the number of incidents involving physical violence perpetrated by household members (and ignores repeated cases of non-physical violence). In addition, survivors who suffer frequent, ongoing abuse are less likely to accurately remember the exact number of incidents. Second, because it only focuses on certain sub-categories of domestic abuse (physical violence, sexual assault, stalking), while ignores others (criminal damage, verbal abuse, financial abuse, burglary). In addition, it does not collect information on whether different offences against the same survivor were perpetrated by the same offender. In contrast, the WMP data allows us to tell if a reported case was domestic abuse related (as the police is required to record this information), regardless of the actual offence committed. In addition, it allows us to identify various incidents with the same victim-offender pair, providing us with reliable data on reported cases of repeat victimisation. We can estimate the co-morbidity of domestic abuse victimisation with other types of criminal victimisation using the CSEW. We can combine this with the estimated likelihood of domestic abuse victimisation by offence type to get a better estimate of the overall extent of domestic abuse victimisation (reported and unreported). *is this silly? then we can maybe estimate what percentage of true victimisation is domestic-abuse related? the £66 billion cost estimate is based on the CSEW*

Aim 3. Police forces in England, and particularly the West Midlands Police, have previously been criticised for mis-recording violent cases of violent crime, including domestic abuse. Mis-recording these already heavily underreported crimes decrease victim's trust in the Criminal Justice System and their willingness to report subsequent incidents. By contrasting extrapolated estimates from the CSEW (which is a representative sample) with WMP data on the recorded number of reported cases, we can estimate the true extent of the mis-recording of domestic abuse cases by the WMP. Given the repeated cross-sectional nature of the CSEW, and the longitudinal nature of the WMP, we can quantify the proportion of mis-recorded incidents over time. We can complement this investigation with analysing the self-reported outcome of incidents that have been reported to the police from the CSEW, and the survivor's perception of the CJS.

Core outcomes A deeper understanding of the socio-economic predictors of domestic abuse victimisation. The first estimation of the true extent of domestic abuse-related victimisation across all offence types. An estimation of the extent of police (WMP) mis-recording of domestic abuse over time.

2. Predicting serious harm and understanding the decision to report

Short intro about aims, highlighting added value. In this project, we are interested in exploring the risk factors of serious harm and the factors determining the decision to report the abuse. First,... Second,... does the level of harm depend on the length of time spent in the relationship, separation,

Understanding what affects the decision to report is particularly important since underreporting represents the biggest obstacle to effectively tackling domestic abuse. Insights from these analyses can inform decisions about the optimal timing and target audience for domestic abuse awareness campaigns.

What we know so far

Escalation often happens when the abuser feels like they are losing control (e.g., because the survivor threatens to leave); separation is an important risk factors of serious harm; contact over children

Reporting

decision to report: serious violence; friends, family, neighbours notice; happens in public, in front of people

Detailed plan

Aim 1. First, we will use the CSEW, and a multinomial logistic approach to understand how the level of harm suffered (threats, minor or serious injury) depends on the individual-level characteristics of the survivor. We are especially focusing on the issue of separation and divorce, as evidence suggests it is a significant risk factor predicting serious harm. We will also explore whether non domestic abuse-related victimisation is predictive of serious harm. We will know the level of harm suffered, because the CSEW asks whether the respondent needed to see a doctor, nurse or other health worker, or needed to take time off work because of the abuse.

Second, using the WMP data, we can analyse the temporal patterns of reported domestic abuse incidents by following 23% of the 182,646 victim-offender pairs over an eight-year-long period.

We can predict incidents with serious harm, using the type of offence occurred previously, criminal history of the offender. number of days elapsed. This will allow us to identify and commonalities in the pattern of domestic abuse cases that lead to escalation in the form of serious harm. We can also identify and characterise high-risk perpetrators who breach court orders designed to protect the victims from further harms.

Serious harm can be the cause or the consequence of the decision to report.

Aim 2. First, we will use the CSEW, and a logistic regression approach to understand how the decision to report to the police (or the decision to seek any form of external help) depends on the individual-level characteristics of the survivor (especially focusing on mental and physical health, financial independence and whether the survivor has children), and the severity and type of the abuse suffered. We are also interested in the link between the decision to report and survivor's general trust in the CJS.

Second, we can use the WMP data to investigate drivers of the decision to report. For this analysis, we will focus on the subset of incidents (6% of all incidents), where the victim reported a long history of abuse (at least 3 days between first and last reported occurrence). We are interested in whether these reports are more likely to occur after certain days of the year (e.g., birthday of the victim or perpetrator, Christmas, Halloween, Easter, etc.), potentially reflecting cases where the abuse has suddenly escalated, or became known to outsiders.

Core outcomes

3. The long-lasting effects of domestic abuse

it's impossible to establish causality

Short intro about aims, highlighting added value. Domestic abuse has long-lasting adverse effects on victims and those close to them. In this research project, our aim is to explore some of these consequences on the direct victims of domestic abuse and the children who live in the same household. Gaining a deeper understanding of the tangible, far-reaching consequences of domestic abuse will help to design survivor support programmes and quantify the societal harm caused by it.

What we know so far Women's aid, effect on victims increased likelihood of mental health problems (isolation, low self-esteem), alcohol and drug dependency, financial consequences due to financial abuse or losing a job as a result of the abuse, fighting back?

Effect on children I witnessing violence is major predictor for PTSD and depressive symptoms in children; behavioural problems, bullying (either victims or perpetrators)

Effect on children II cognitive development is affected, learning difficulties are more common, difficulties in social relationships, withdrawal, antisocial behaviours, they are more likely to become both perpetrators and victims of domestic abuse; protective factors: literacy, intelligence, social competence, supportive relationship with at least one influential adult

Detailed plan

Aim 1. First, using the CSEW, we will explore the long-lasting effects of experiencing domestic abuse. In the CSEW, in two separate questions, respondents are asked whether they have experienced any form of domestic abuse (use of violence, sexual abuse, threatening behaviour, stalking) since the age of 16 or in the last 12 months. This way we can identify respondents who have suffered specific forms of abuse in the past, but not in the last 12 months. Using propensity score matching, we can then compare their physical and mental health-related outcomes, and alcohol and drug consumption with those, who have never experienced any form of abuse, but otherwise have similar socio-economic characteristics. This will allow us to estimate the effect of past abuse on present outcomes whilst controlling for individual- and macro-level characteristics.

Aim 2. Using data from the 10-15 year old questionnaire of the CSEW, which can be linked to the adult questionnaire, we can examine the effect of domestic abuse on children living in such households. The questionnaire records information on whether the child had been physically or verbally abused by someone (and if that person lives in the household), as well as their experiences with bullying, carrying knives and information on gang membership, school truancy and health. We can explore the effect of domestic and child abuse on these outcomes through propensity score matching.

Domestic abuse often co-occurs with child abuse. We can use the WMP data to estimate this co-morbidity, and identify under 18s who had been a survivor of a domestic abuse offender. No control group.

Core outcomes

Environmental factors

Short intro about aims, highlighting added value. In this research project, we will be using the CSEW and WMP datasets, as well as external sources of data to investigate some of the environmental predictors of domestic abuse. First, using data from the CSEW and drawing on previous research on the topic, we will be looking at the association between neighbourhood-level characteristics, and the prevalence of domestic abuse as well the decision to report. We will complement this with an additional analysis on WMP and census data. We will be able to account for the dynamic nature of these neighbourhood characteristics, by using longitudinal and repeated cross-sectional datasets. Understanding how neighbourhood-level characteristics affect the prevalence of domestic abuse and reporting behaviour is crucial for the most effective distribution of resources to help victims and targeted awareness campaigns.

Second, we will be looking at how time-varying, exogenous factors affect domestic abuse. We will first explore the effect of local events that increase alcohol-consumption, since our previous study have found a significant relationship between alcohol-related domestic abuse and football. Second, we will conduct two studies to understand the relationship between financial stress and the prevalence of domestic abuse. First, we will explore the association between gambling accessibility in the local area, and reported numbers of domestic abuse. Second, we will examine how the roll-out of the Universal Credit system affected levels of domestic abuse across the West Midlands. Apart from delivering important policy-relevant insights, these investigations will also aim to inform the local police about the optimal allocation of police resources.

What we know so far interestingly, there are no studies about this using UK data; neighbourhood-level predictors of domestic abuse: social disorganization theory (socio-economic disadvantage and residential instability disrupt social bonds a limit collective ability to maintain control and recognise IPV); cultural norms through social learning process (high IPV neighbourhoods where people observe influential others being rewarded for engaging in IPV, whereas in low IPV neighbourhoods perpetrators get socially ostracized); women's empowerment reduces IPV, especially financial independence; abuser's lack of employment and alcohol consumption can be a risk factor; alcohol outlet density; churches, playgrounds, community networks might foster community cohesion and reduces IPV; however, in deprived neighbourhoods, where IPV is accepted social interactions can increase IPV

The relationship between electronic gaming machine accessibility and police-recorded domestic violence: A spatio-temporal analysis of 654 postcodes in Victoria, Australia, 2005–2014

Economic Stress and Domestic Violence: Examining the Impact of Mortgage Foreclosures on Incidents Reported to the Police

The Impact of Neighborhoods on Intimate Partner Violence and Victimization

the type of social tie matters: friendship ties reduce the risk of IPV, family ties have no effect

Neighborhood Environment and Intimate Partner Violence: A Systematic Review

Detailed plan

Aim 1. First, we will use the CSEW to investigate if there are significant associations between the prevalence of domestic abuse, the willingness to report, and the environmental characteristics of the neighbourhood they live in. Previous literature has suggested various pathways of how neighbourhood characteristics affect domestic abuse, but the question has not been explored in a UK context yet. Our rich data allows us to determine the relative explanatory power of these. For example, social disorganization theory posits that neighbourhood disadvantage is associated with an increased risk of domestic abuse through reduced collective efficacy. Another potential pathway is social norms, suggesting that acceptance and normalisation of violence within a community can encourage domestic abuse. Using a logistic regression, we will explore how the interviewer's perception of the street (signs of rubbish, vandalism, and the general condition of houses, *member of Neighbourhood Watch?*) as well as the respondent's connection and attitude towards the neighbourhood (length of time living in the local area, noisy neighbours, rubbish lying around, teenagers hanging around, vandalism, drunken and anti-social behaviour, drug trafficking, abandoned cars, speeding traffic, police presence in the area, worries about crime levels) predict domestic abuse victimisation and trust in CJS, reflected in the propensity to report abuse. Second, using the WMP and the census, we can complement this with an LSOA-level spatial regression, where we use the socio-economic characteristics (average income, education levels and benefit dependency) of the area to predict the number of reported abuse cases. Using a spatial regression will account for the spatial

dependency between our observations and improve the reliability of our estimates. *Not sure whether we can do the same with the CSEW, probably not on the LSOA level, but maybe on the MSOA level?* This analysis, contrasted with that outlined in project 1 about the individual-level predictors of domestic abuse, will provide us with the most comprehensive understanding on the risk factors of domestic abuse within the context of the UK.

Aim 2. In this section, we will be looking at time-varying environmental factors that may influence domestic abuse. This part of the project will benefit from a dataset containing credit card and current account spending of x customers across the UK, to which we will have access as part of a data sharing agreement with a very large UK bank. *I'm not sure about the specifics of this, would we combine this with the WMP or CSEW? I guess we won't know the card owner's address?* First, by using the WMP and credit card data, we will identify time-specific changes in alcohol consumption in parts of the West Midlands by identifying external events that may affect it (e.g., local festivals, weather, bank holidays, sport tournaments), and investigate their effect on alcohol-related domestic abuse. Previously, we have found a 60% increase in alcohol-related domestic abuse when the England national football team won, highlighting the profound effect exogenous events can have on the propensity for violence.

The recent reforms of the UK benefit system, in the form of the introduction of the Universal Credit (UC) had been criticised widely, due to the temporal financial strain it imposes on the least financially resilient people in society. Drawing on previous findings about the link between financial stress and domestic abuse, we will explore what effect the roll-out of the UC across the West Midlands had on the reported number of domestic abuse cases. The fact that the exact date of the roll-out varied across the seven metropolitan boroughs within the county allows for a more precise estimation of the effect of UC on the reported number of domestic abuse incidents in the West Midlands. For this estimation, we will use data on the proportion of benefits claimants in each LSOA. *I know we were talking about using the credit card data for this one, but I am not sure what was the exact plan.* Gambling is increasingly recognised as a serious health concern across the UK, and can have an adverse impact on family finances. To assess the link between gambling accessibility and the prevalence of domestic abuse, we will use data on the number of licensed betting shops in the West Midlands within a spatial regression approach.

List of licensed gambling businesses We can also contact the local authorities, as they should have an up-to-date list

Core outcomes The first extensive analysis of the complex individual– and neighbourhood level predictors of domestic abuse within the UK. An exploration of the exogenous, time-varying factors affecting levels of reported domestic abuse (mostly through alcohol). An examination of how gambling accessibility and temporal financial stress affect the reported number of domestic abuse cases in the West Midlands.