

Economic & social costs of violence on Merseyside

A report for the Merseyside VRP

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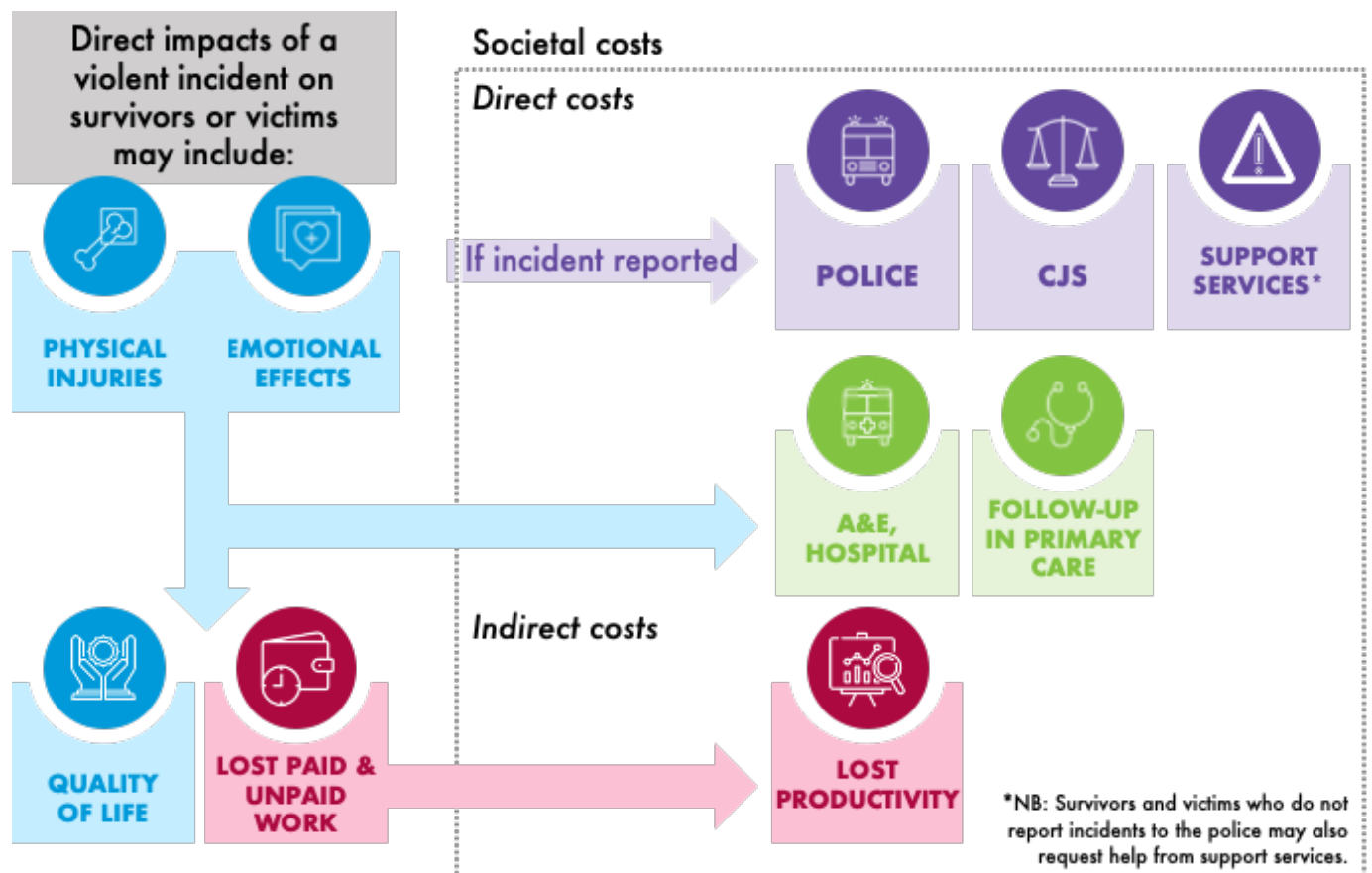
We would like to thank the Merseyside VRP for funding this project on the costs of violence to Merseyside. In particular, we would like to thank those members of the Merseyside VRP team who supported the completion of the project: Kimberley Suart Done, Geraldine O'Driscoll and Ian Noble. We are also grateful for the assistance of Janet Fraser from the Merseyside Office of the Police & Crime Commissioner.

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The costs of violence to Merseyside

EXECUTIVE SUMMARY

Over 48,000 incidents of violence against the person were recorded by Merseyside police in 2019/20 with almost 15,000 incidents recorded as violence with injury. However, not all incidents of violence are known to or reported to the police, so these figures are likely to be an underestimate of the true extent of violence on Merseyside. Although it is difficult to quantify the true costs of violence to Merseyside, we used cost-of-illness methods to estimate its economic burden on public services and social and health resources. As shown in the Figure, the direct impacts of a violent incident may include: (i) physical injuries, which may range from minor to severe and vary in their impacts over time; and (ii) emotional and psychological effects, including fear, anxiety and depression. Emotional responses to a violent incident may be short-term or may evolve into longer-term depressive symptoms or trauma. The physical and emotional impacts may in turn affect the victim or survivor's quality of life and their ability to work and carry out day-to-day activities. Victims and survivors may need to take time off work or find that their performance at work is affected for a period after the incident. This has an indirect societal cost, termed lost productivity. Direct societal costs also fall on the police and criminal justice system when an incident is reported and on the healthcare system if the victim or survivor experiences significant physical or emotional effects that require treatment.



Overall, in 2019/20, violence cost an estimated **£185.4 million** on Merseyside, through costs to the healthcare system, police and criminal justice system, and in lost productivity.

Police & Criminal Justice System

£130.2 million

Violent incidents that are reported to the police may require an investigation but only a small proportion of incidents will result in a suspect being charged or summonsed. Cases are then passed to magistrates' courts, with serious criminal cases sent to the Crown Court.

Support services for survivors/victims

Commissioned at a local level for survivors and victims of violence by the Merseyside Office of the Police and Crime Commissioner and other local third sector organisations. Survivors and victims who do not report incidents to the police may also request help from support services.

£1.6 million

Police

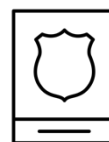
£48.2 million



£0.25 million
Homicide



£18.1 million
Violence with injury



£29.9 million
Violence without injury / Stalking and harassment

Criminal Justice System

£80.3 million

Courts



£4.0 million
Homicide

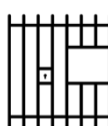


£17.5 million
Violence with injury



£32.7 million
Violence without injury / Stalking and harassment

Custody and offender management



£8.4 million
Homicide



£4.8 million
Violence with injury



£12.9 million
Violence without injury / Stalking and harassment

Healthcare System

£25.3 million

Incidents of violence that result in physical injuries may require medical attention, or the need for treatment for the emotional impacts and follow-up in primary care. In 2019/20, over 4,500 A&E attendances for assault were recorded across Merseyside.

Interpersonal violence

£17.8 million



£0.78 million

Ambulance
call outs



£0.77 million

A&E
attendances



£2.6 million

Emergency hospital
admissions



£1.8 million

Treatment for
physical injuries



£10.5 million

Counselling for anxiety &
depression



£1.2 million

Follow-up in primary
care

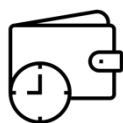
Self-directed violence (including A&E attendances, hospital treatment, and hospital ward/critical care unit stays)

£7.6 million

Lost productivity

£29.9 million

The physical and emotional impacts on victims of violence may mean that they are not able to carry out their usual day-to-day activities to their full potential. They may need to take time off work and their participation in unpaid activities such as household work, caring and volunteering may be affected. We estimated that almost 13,000 people in employment (2% of people in employment in Merseyside) were survivors/victims of violence in 2019/20.



£15.1 million

Lost paid work



£7.9 million

Lost unpaid work



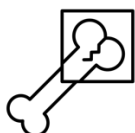
£7.0 million

Premature mortality

Physical & Emotional Harms

£196.8 million

In addition to the cost burden on the health service, we estimated the so-called 'intangible' or human costs of the violent incident. These costs represent the burden of the physical injuries and emotional impacts directly to the survivor/victim and on their quality of life.



£2.9 million

Physical injuries



£191.9 million

Emotional harms

INTRODUCTION

Violence in Merseyside is characterised by knife attacks, robberies, firearms and drug disputes and data shows that, across Merseyside, there is a direct correlation between deprivation and serious violence (Merseyside VRP Annual report 2020). Over 48,000 incidents of violence against the person were recorded by Merseyside police in 2019/20 with almost 15,000 incidents recorded as violence with injury. However, not all incidents of violence are known to or reported to the police, so these figures are likely to be an underestimate of the true impacts of violence.

Violence places a heavy burden on health and social prospects across the life course (WHO 2014) and affects families, communities and wider society. Public services, including healthcare, the criminal justice system, social services and other sectors (such as education) bear the burden of much of this impact. Violence also has an economic impact more directly on the victims of violence, through its emotional and physical impacts and the costs associated with lost time at work (termed *lost productivity*). Fear of violence may also affect an individual's quality of life and may impact on the economic and social choices that they make.

There is a clear public health argument for investing in violence prevention and a strong economic case can also be made. Although it is difficult to quantify the true costs of violence, in 2008/2009, a cost-of-illness (COI) study by the London School of Economics estimated the total economic and social costs of violence in England and Wales to be in the region of £30 billion. COI studies, also known as social cost or burden-of-illness studies, investigate both the direct and indirect costs incurred due to an illness or condition from a societal perspective. They include both the private costs that accrue to individuals and the external costs that fall on 'third parties' (for example, on public services). COI studies can therefore be a useful starting point for demonstrating the 'size of a problem' to policy makers. We have used COI methods to estimate the economic burden of violence on public services, and social and health resources on Merseyside.

METHODS

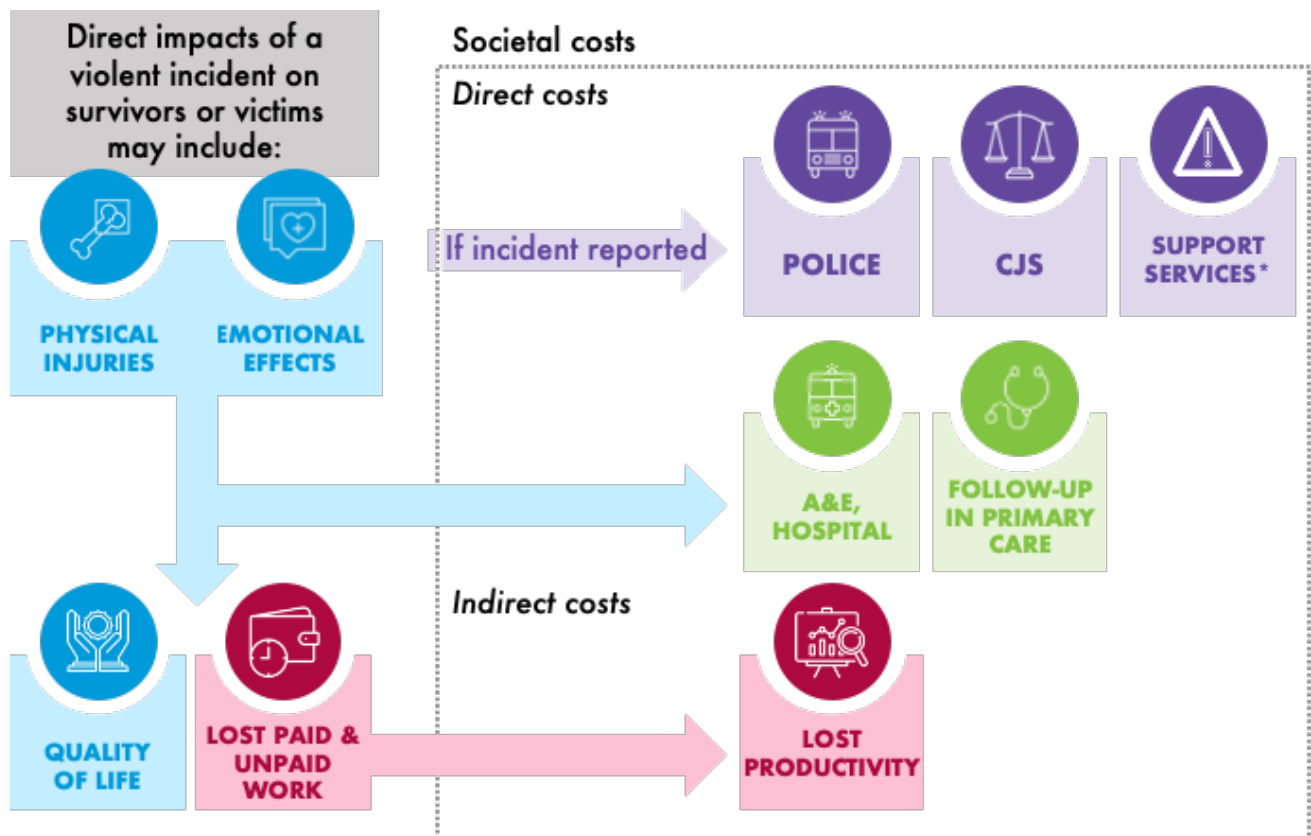
COI approach

We have previously developed a framework and analytical approach for examining the costs of violence to the healthcare system based on COI methods (Jones et al., 2020). This project extended this work to look at a broader range of costs associated with violence on Merseyside. The COI approach is not a form of economic evaluation, so it is not possible to determine the cost savings that would accrue from the prevention or reduction of violence. However, the approach does provide a means of presenting and understanding the economic burden of violence.

Scope of impacts

Each incidence of violence is unique and each person who is a survivor or victim of violence will experience different impacts on their life; physically, emotionally, financially and socially. However, for the purposes of applying COI methods we have used estimates of the harms that the average person would suffer following a violent incident.

As shown in Figure 1, these harms include the direct impacts of a violent incident in terms of: (i) the physical injuries sustained, which may range from minor to severe and vary in their impacts over time; and (ii) the emotional and psychological effects, which may include fear, anxiety and depression. Emotional responses to a violent incident may be short-term or may evolve into longer-term depressive symptoms. These physical injuries and emotional effects in turn may have an impact on a survivor or victim's quality of life and affect their ability to work and carry out day-to-day activities. As well as the burden placed on individuals and their families, there is a societal burden. Survivors and victims may seek help from support services and report the incident to the police, with direct societal costs associated with the police work required to investigate the violence incident, courts, offender management and custody. Survivors or victims who sustain injuries may require treatment in A&E or they may need a longer stay in hospital as an inpatient. Survivors and victims may also seek treatment for the emotional impacts of violence and make use of primary care services following a violent incident. The impact of the incident may also mean that survivors and victims need to take time off work or they may find that their performance at work is affected. This also has a societal cost, termed lost productivity.



*NB: Survivors and victims who do not report incidents to the police may also receive help from support services.

Figure 1. Impacts of a violent incident and scope of societal costs

Data and valuation estimates

The final step in applying the COI approach involved identifying the cost-generating components and attributing a monetary value to them. Table 1 summarises the sources of data and valuation estimates for the project.

Table 1. Sources of data and valuation estimates

Resource use	Data source	Valuation source
Healthcare		
Ambulance call outs	Merseyside VRP data hub/ Trauma and Injury Intelligence Group	2019/20 NHS Reference Costs
A&E attendances	Merseyside VRP data hub/ Trauma and Injury Intelligence Group	2019/20 NHS Reference Costs
Hospital admissions	Hospital Episode Statistics via PHE Fingertips; Heeks et al., 2018	2019/20 NHS Reference Costs
Medical treatment	Crime Survey for England & Wales; Heeks et al., 2018	2019/20 NHS Reference Costs
Counselling for emotional impacts	Crime Survey for England & Wales; Heeks et al., 2018	Curtis & Burns, 2019
Follow-up in primary care	Walby, 2004	Curtis & Burns, 2019
Intangible costs		
Physical & emotional impacts	Crime Survey for England & Wales; Heeks et al., 2018	Heeks et al., 2018
Police & criminal justice system		
Support services for survivors and victims of crime	Merseyside PCC's Office	
Police activity	Merseyside police force	Ministry of Justice; Heeks et al., 2018
Crown Prosecution Service	Ministry of Justice; Heeks et al., 2018	Ministry of Justice; Heeks et al., 2018
Magistrates court		
Crown court		
Legal aid		
Probation service		
Prison service		
NOMS		
Youth Justice Board		
Jury service		
Non-legal aid defence		
Lost productivity		
Premature mortality	Crime Survey for England & Wales; Heeks et al., 2018	Annual Survey of Hours & Earnings
Absenteeism		
Presenteeism		
Lost unpaid work		

FINDINGS

The costs of violence to the healthcare system

Our analyses of costs to the healthcare system are retrospective and based on data that has already been recorded, using a top-down approach (i.e., aggregate figures from hospital admissions and data from other statistical databases/registers). The steps in determining the costs of violence to the healthcare system involved identifying the cost-generating components and attributing a monetary value to them. Unit costs were based on a range of sources, including NHS Reference costs for 2019/20, Curtis & Burns (2019) and other national estimates.

The costs of the consequences of interpersonal violence were estimated by examining treatment for the physical injuries from assault, treatment for the emotional impacts of violence and the use of primary care services following a violent incident. Costs for Merseyside are calculated for the year ending March 2020 and represent costs accumulated over a single year.

The following data were sourced (Table 2):

1. Incidents of police-recorded violent crime with and without injury were provided by Merseyside Police Force.
2. A&E assault attendance data and ambulance call outs from the Merseyside VRP data hub/Trauma and Injury Intelligence Group.
3. Emergency admissions for violence (ICD codes X85-Y09) extracted from Hospital Episode Statistics and provided by the Public Health England on their Fingertips site.

Table 2. Summary of interpersonal violence on Merseyside, 2019/20

Measure	Numbers
Police recorded violent crime with injury	14,693
Police recorded violent crime without injury	20,344
Ambulance call outs for assault	2,938
A&E attendances for assault	4,602
Emergency hospital admissions for assault or maltreatment*	1,543
*Estimated from 3-year aggregated data.	

Interpersonal violence

An estimate of the average costs of the types of medical procedures required to treat the physical harms of violence with injury were taken from the Home Office report on the economic and social costs of crime (Heeks et al., 2018). Costs were based on assumptions about the types of treatment needed and the prevalence of injury among survivors and victims of violent crime based on interviews from the Crime Survey for England and Wales (CSEW; Table 3).

The average cost of these medical requirements was estimated at £1,290 per patient who required medical treatment. Costs for a non-elective inpatient stay (£1,603) were extracted from the 2019/20 NHS Reference Costs. In the calculations, the medical procedures costs are offset against those calculated for ambulance call outs, A&E attendance and emergency admissions.

Table 3. Prevalence of harms and medical requirements following injury

Type of injury	Prevalence of harm	Medical requirement following injury	Unit cost ¹
Minor bruising	59%	-	£0
Severe bruising	28%	29%	£1,298
Scratches	21%	-	£0
Cuts	27%	36%	£956
Stabbed	4%	68%	£1,301
Broken bones	6%	85%	£3,185 ²
Nosebleed	7%	-	£0
Broken nose	2%	100%	£1,232
Lost teeth	2%	84%	£308
Chipped teeth	2%	100%	£161
Dislocation	2%	39%	£956
Concussion	2%	86%	£753
Internal injury	1%	-	£0
Facial injury	1%	36%	£956
Eye injury	-	-	£0
Other	8%	45%	£956

¹Extracted from Heeks et al., 2018 and inflated to 2019/20 prices. ²Includes costs for physiotherapy (average. 10 hours).

Adapted from Heeks et al., 2018 (Tables 16, 17 & AP1)

Drawing on the findings from CSEW interviews, Heeks et al (2018) estimated the emotional impact on the survivors and victims of violent crime with and without injury. We applied these estimates to our dataset (Table 4). The resulting hours of counselling (2 hours for fear, 20 hours for depression and 25 hours for anxiety/panic attacks) were multiplied by the cost per hour of face-to-face contact (£44; Curtis & Burns, 2019).

Table 4. Emotional impacts of violent crime: hours of counselling

	Fear (2 h counselling ¹)	Depression (20 hours counselling ¹)	Anxiety/Panic attacks (25 hours counselling ¹)
Violence with injury (n=14,693)			
Proportion of survivors/victims seeking counselling ¹	25%	15%	22%
Total hours of counselling	7,347	44,079	80,812
Violence without injury (n=20,344)			
Proportion of survivors/victims seeking counselling ¹	21%	8%	13%
Total hours of counselling	8,544	32,550	66,118
¹ Extracted from Heeks et al., 2018			

Costs associated with the use of primary care services following an assault injury have not routinely been included in studies of the costs of violence. However, in an early costing study of the impact of domestic abuse, Walby (2004) included costs for GP consultation based on the assumption that victims would make an average of three additional visits to their GP following physical harm. The estimates therefore include the costs associated with three additional GP consultations per victim of violence with injury (£84; based on unit costs of £28 per surgery consultation; Curtis & Burns, 2019).

Self-directed violence

An English study (Cooper et al., 2013) found that 54% of intentional self-harm episodes presenting to A&E result in hospital admission. Data on the number of emergency admissions for intentional self-harm can therefore be uplifted to approximate the number of self-harm episodes presenting to A&E. To determine the costs of self-directed violence, we used a retrospective analysis of hospital resource use and care that estimated an overall mean hospital cost per episode of self-harm was £809 in 2013/14 (Tsiachristas et al., 2017). The cost per episode calculated by Tsiachristas et al. included A&E attendances, treatments received in A&E and hospital wards, and hospital ward and critical care unit stays. Costs were inflated to 2019/20 prices and multiplied by the estimated number of self-harm episodes (n=4,515).

Annual costs of violence to the healthcare system

The annual burden of violence to the healthcare system in Merseyside in 2019/20 was estimated at **£25.3 million** for the short-term health-related costs (Table 5). It is likely that this figure underestimates the full costs associated with acute violence-related injuries.

Table 5. Annual costs of violence to the healthcare system, Merseyside 2019/20: short-term costs

Cost categories	Costs
Interpersonal violence	£17,824,274
Physical harms	£5,936,580
Ambulance	£775,970
A&E	£771,719
Inpatient	£2,592,340
Medical treatment	£1,796,552
Emotional harms	£10,535,795
Primary care services	£1,234,212
Self-directed violence	£7,555,755
Total costs 2019/20:	£25,262,342

The costs of violence to the police and criminal justice system

Unit costs included under police and criminal justice system costs included police work related to investigation of incidents of violence against the person, courts, offender management and custody.

Police recorded crime

A total of 48,393 incidents of violence against the person were recorded by Merseyside police in 2019/20. Based on an analysis of all offences recorded in England and Wales, 14.1% of violence against the person offences closed with no suspect identified (Home Office, 2020). The proportion of violence against the person offences resulting in a charge/summons was 7.9% and 64.0% of cases closed because of evidential difficulties (46.1% because victims did not support police action). The Home Office (2020) reports that outcomes varied by the type of offence within the violence against the person category and that more serious offences received a higher charged/summoned rate (for example, 53.6% of homicide offences resulted in a charge/summons). The median number of days for an outcome to be assigned to violence against the person offences was 18 days. For offences that resulted in a charge/summons, the median number of days was 34 days.

Support services for survivor/victims

We included costs for providing support to survivors and victims of crime by examining the total expenditure on support services in Merseyside in 2019/20. Victims and survivors of violence who do not report incidents to the police can still request help from support services. At a local level, the Merseyside Office of the Police and Crime Commissioner (OPCC) is responsible for commissioning the majority of support services. We also attempted to identify expenditure on support services for victims/survivors that fall outside of the Merseyside OPCC commissioning model by contacting third sector organisations across Merseyside. However, the response rate to our enquires was poor and we have focused only on funding allocated to the Merseyside OPCC in our analyses.

In 2019/20, the Merseyside OPCC was allocated £1.64 million for services to support survivors and victims of crime. Services that were commissioned were: (i) a vulnerable victims' champion service; (ii) services for those subject to, or at risk of, child exploitation; (iii) an aftercare service for survivors of rape and sexual assault; (iv) restorative justice support services; (v) hate crime service(s); (vi) a third-party hate crime reporting service; (vii) services for those subject to harmful practice; (viii) a homicide victims' advice centre; and (ix) services for those subject to domestic abuse. In total, there were 9,391 new referrals through to the support services in 2019/20 and 8,891 victims and survivors of crime received support. Just under half of the victims and survivors who engaged with support services in 2019/20 had reported the crime to the police.

Police

'Activity-based costing' (ABC) data was used by Heeks et al. in the Home Office report to estimate the total amount of police time allocated to crime and non-crime related activities. In the absence of police force specific unit cost data for Merseyside, unit costs from Heeks et al. were uprated (from 2015/16 to 2019/20). The total cost figures in Heeks et al. included direct costs for staff, operational support and business support as well as a proportion of the expenditure from costing associated with the domains of 'investigating crime' and 'providing assistance'.

Unit costs were estimated for homicide, violence with injury and violence without injury. In the absence of specific unit costs for 'death or serious injury by unlawful driving' and 'stalking and harassment', we applied the unit costs for homicide to incidents of death by unlawful driving, unit costs for violence with injury to incidents of serious injury by unlawful driving, and unit costs for violence without injury for incidents of stalking and harassment (Table 6). The annual burden of violence on the police in Merseyside in 2019/20 was estimated at £48.2 million (Table 5).

Table 6. Annual costs to the police

Crime category	Incidents of crime 19/20	Upated unit costs	Costs
Homicide*	19	£13,071	£248,355
Violence With Injury**	14,705	£1,235	£18,145,850
Violence Without Injury	20,344	£885	£18,009,836
Stalking and harassment	13,325	£885	£11,796,159
Total			£48,215,021
*Includes incidents of Death by Unlawful Driving (n=6); **Includes incidents of Serious Injury by Unlawful Driving (n=12)			

Criminal justice system

CJS costs include those relating to the courts, custody and offender management. Heeks et al. (2018) used Ministry of Justice (MoJ) unit cost data for 2013/14 as the basis for estimating CJS costs as these were the best estimates available at the time. More recent estimates than those used by Heeks et al. (2018) were not available for this analysis and uprated unit costs from Heeks et al. (2018) are therefore used in our analyses as the best available estimate.

Courts

Following Heeks et al. (2018), we included costs relating to the following areas:

- Crown Prosecution Service
- Magistrates court
- Crown court
- Jury service
- Legal aid
- Non-legal aid defence (private legal assistance)

It is important to acknowledge that the number of cases arriving at the criminal courts has fallen substantially since 2010/11 (Atkins et al., 2019). The demand for criminal courts is determined by the activities and decisions of the police, and since 2014/15, the proportion of crimes resulting in a charge/summons has fallen from 15.5% to 7.0% (Home Office, 2020). The number of cases received in the magistrates' courts has fallen by 6.6% since 2012/13, resulting in fewer cases being passed to the Crown Court (falling 32.4% between 2010/11 and 2018/19) (Atkins et al., 2019). The decrease in cases has also impacted on jury service (which fell to a low of 784,087 days in 2019) and criminal legal aid spending (falling by 35% in real terms between 2010/11 and 2015/16).

Table 7. Costs of violence to the criminal justice system: courts

Cost category	Homicide	Violence with Injury	Violence without Injury	Stalking and harassment
Prosecution	£470,130	£642,856	£1,111,718	£728,158
Magistrates court	£9,344	£160,714	£667,031	£436,895
Crown court	£276,389	£964,283	£222,344	£145,632
Jury service	£135,183	£482,142	£0	£0
Legal Aid	£3,099,456	£482,142	£3,779,842	£2,475,737
Non-legal aid defence	£1,454	£14,785,678	£14,007,650	£9,174,791
Total	£3,991,956	£17,517,815	£19,788,585	£12,961,213

Custody and offender management

Following Heeks et al., we included costs relating to the following areas:

- Probation service
- Prison service
- National Offender Management Service
- Youth Justice Board

Table 8. Costs of violence to the criminal justice system: custody and offender management

Cost category	Homicide	Violence with Injury	Violence without Injury	Stalking and harassment
Probation services	£746,104	£964,283	£5,113,904	£3,349,527
Prison service	£6,608,407	£3,053,564	£667,031	£436,895
NOMS HQ	£944,206	£482,142	£667,031	£436,895
Youth Justice Board	£64,165	£321,428	£1,334,062	£873,790
Total	£8,362,882	£4,821,417	£7,782,028	£5,097,107

Lost productivity

Following a violent incident, the physical and emotional impacts on the victim may mean that they are not able to carry on with their usual day-to-day activities, including paid employment, household work, unpaid caring activities and time spent doing volunteer work. Days lost from these types of activities may be temporary or permanent depending on the nature of the incident. A recent survey by Vodafone and KPMG (2019) on the workplace impacts of intimate partner violence (IPV) found that among UK employees who had experienced IPV, 21% reported that they were less productive in the workplace, and 23% said they could not fulfil their potential. Further, around 50% of UK employees who had experienced IPV reported that it had affected their career progression.

In our analysis of lost productivity, we examined the impacts of: (i) absenteeism (time off from work (absenteeism)); (ii) returning to paid work but being less productive than before (presenteeism); (iii) being able to carry out unpaid work (e.g. unpaid caring roles and volunteering); and (iv) premature mortality. Our analysis was based on the human capital approach, which is based on a measure of lost time from paid work valued according to the wage rate. To better reflect a societal perspective, as noted, our analyses considered unpaid productivity losses through unpaid caring roles and volunteering.

Modelled population of working-age victims of violence

We modelled the Merseyside working age population using data from Nomis¹, as shown in Table 9. Using the information on respondent's employment status on the CSEW, we estimated that 907 unemployed people and 2,281 economically inactive people had been victims of violence.

Table 9. Modelled working-age population on Merseyside

	Total	Violence with injury	Violence without injury
All people aged 16-64	888,000	8,758	9,783
<i>In employment</i>	648,700	6,158	6,742
<i>Unemployed</i>	25,900	305	361
<i>Economically inactive</i>	213,400	2,228	2,623
Males aged 16-64	437,600	5,184	5,787
<i>In employment</i>	337,000	3,814	4,083
<i>Unemployed</i>	13,300	191	234
<i>Economically inactive</i>	87,300	1,174	1,461
Females aged 16-64	450,400	3,557	3,980
<i>In employment</i>	311,700	2,389	2,691
<i>Unemployed</i>	12,600	115	126
<i>Economically inactive</i>	126,100	1,053	1,162

Lost paid work (presenteeism and absenteeism)

As shown in the Table 10, our modelled Merseyside working age population included an estimated 648,700 people in employment. Based on the 2019/20 CSEW, we estimated that 12,977 people in employment had been victims or survivors of violence in 2019/20.

The CSEW last asked respondents about the amount of time taken off work as a result of the crime they had suffered in 2008/09. Heeks et al. (2018) used the CSEW data to inform their estimates of time taken off work as a result of being a victim or survivor of a crime. In the absence of more recent estimates, the data reported by Heeks et al. was used as the best available estimate in our analyses (Table 11). Victims and survivors of violence with

¹ Nomis (nomisweb.co.uk) provides access to UK labour market statistics and is provided by the Office for National Statistics

injury lost were estimated to have lost an average of 112 hours of productivity due to taking short-term sick leave (short-term absenteeism) and through having reduced performance at work (presenteeism). The equivalent loss in productivity for victims of violence without injury was 37 hours.

Table 10. Lost productive hours among victims of violence

	Lost hours to time taken off work	Lost hours after return to work
Violence with injury	4.9	107
Violence without injury	0.8	36

Adapted from Heeks et al., 2018 (Table 12)

Applying the mean gross hourly pay rate for Merseyside residents in 2019 (£15.79) showed that the costs for lost productivity were an estimated £1,767 for each victim of violence with injury and estimated £581 for each victim of violence without injury. In total in 2019/20, it was estimated that lost productivity due to violence cost **£15.1 million** (violence with injury = £11.1 million; violence without injury = £4.0 million).

Lost unpaid work

According to the UK Time use survey (2014/15), men spend an average of 10% of their total time on unpaid work² and women, 17% of their total time. Based on a comparison of the hours spent on paid compared to unpaid work, for women, we assumed that they lost the same hours of productivity for paid and unpaid work and for men, we assumed that they experienced 50% of the productivity loss for unpaid work. These calculations were applied to the modelled working age population for Merseyside (n=888,000). We followed the opportunity cost approach by valuing unpaid work according to the value of the foregone time in paid labour; applying two-thirds of the median gross hourly pay rate for Merseyside residents in 2019 (£8.36). Productivity losses for unpaid work were **£7.9 million**.

Premature mortality

The years of potential working life lost were calculated by assuming that the average working years of life lost for victim of homicide before retirement was 29.1 years (based on the average age of a homicide victim in England and Wales in 2019/20; 30.2 years for men and 25.7 years for women). The value of this loss of potential working life was estimated by multiplying the hours of employed life lost by the average hourly earnings for Merseyside employees in 2019/20, adjusted for the proportion of the workforce in employment (80.1%). Future earnings were discounted at 3.5% and a productivity growth rate of 3.1% was assumed. There were 13 cases of homicide recorded in Merseyside in

² The following activities have been distinguished in the time use survey as being part of unpaid work: cooking/washing up, housework, non-routine domestic work, shopping, childcare, domestic-related travel, and education/study activities.

2019/20 associated with an estimated 347 years of working life lost (equivalent to 442,562 hours). The estimated costs in Merseyside in 2019/20 associated with this productivity loss was **£7.0 million**.

Physical and emotional harms

In addition to the direct costs that fall on the healthcare system, the costs of the physical and emotional harms to the victim or survivor of a violent incident may also be estimated. These are the so-called ‘intangible’ or human costs, costs associated with pain and suffering and a reduced quality of life. Heeks et al. (2018) used a Quality Adjusted Life Year (QALY) approach to estimate the costs arising from the impact of physical and emotional harms on a person’s quality of life. The estimated Value of a Statistical Life Year (VOLY; £60,000 in 2012 prices) was used to estimate the monetary value of the loss in quality of life.

The unit costs from Heeks et al. (2018) were inflated to 2019/20 costs and applied to the police recorded violent crime figures for Merseyside to provide an estimate of the costs of physical and emotional harms to the victims and survivors of recorded incidents of violence (Table 12). This approach may overlap with (and possibly double count) the costs associated with lost productivity, and therefore the intangible costs are not included in the final total of the costs of violence. The annual burden of the physical and emotional harms of violence to Merseyside in 2019/20 was estimated at **£194.8 million** (Table 12).

Table 12. Annual costs of physical and emotional harms to the individual

	Unit cost (Heeks et al.)	Total
Violence with injury	£9,006	£132,320,254
Physical harms	£197	£2,890,491
Emotional harms	£8,809	£129,429,763
Violence without injury	£3,071	£62,478,602
Physical harms	N/A	N/A
Emotional harms	£3,071	£62,478,602
Total		£194,798,856

DISCUSSION

Summary of the findings

We have attempted to estimate the burden of violence on Merseyside using COI methods. This involved the estimation of the economic costs of violence to the healthcare system and the police and criminal justice system (direct costs), the costs of lost productivity from work-related absences, impaired performance at work and lost unpaid work (indirect costs) and the costs associated with the physical and emotional impacts on a victim's quality of life (intangible costs). The COI approach is not a form of economic evaluation and so it is not possible to determine the cost savings that would accrue from the prevention or reduction of violence. However, the approach does provide a means of presenting and understanding the economic burden of violence.

The annual burden of violence on Merseyside was estimated at **£185.4 million** in 2019/20, comprising:

£25.3 million for the direct costs to the healthcare system

£130.2 million for the direct costs to the police and criminal justice system

£29.9 million for the indirect costs of lost productivity

In addition, the intangible costs of the **physical and emotional impacts** on victim's quality of life were estimated at **£194.8 million**. These costs are not included in the total to avoid double counting.

Limitations

The costs of violence to Merseyside appear to be substantial. However, there are limitations to the estimates derived as the costs calculated were based on a range of assumptions. It is therefore not known whether our estimates under- or over-estimate the true costs of violence to Merseyside. Importantly, Merseyside specific data were not available to inform the direct costs of violence to the police and criminal justice system. These costs were based on uprated unit costs from Heeks et al. (2018) and they are unlikely to be a true reflection of the resource spent by the police and criminal justice in dealing with crime in 2019/20. Future updates of this work would be improved by working with Merseyside Police Force to carry out a form of activity-based costing exercise to generate more accurate data.

Conclusions

Violence and the burden it imposes on individuals, families, communities, and wider society is preventable. There is therefore a clear public health argument for investing in violence prevention. Identifying the societal costs of violence, as we have done here, is a useful starting point for demonstrating the 'size of the problem' to policy makers and for helping to make the case for increased spending on evidence-based prevention interventions. Over the longer term these actions would help to prevent the realisation of the costs of violence and reduce the future economic burden to Merseyside.

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