

Developing a routine surveillance
and analysis system for early intervention
and prevention of violence:

A multi-agency perspective

South Wales Model



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Acronyms used in the report

ABMUHB	Abertawe Bro Morgannwg University Health Board	MH	Morrison Hospital
ATC	Alcohol Treatment Centre	MUP	Minimum Unit Price
BCU	Basic Command Unit	NBCU	Northern Basic Command Unit
BH	Barry Hospital	NCD	National Commissioning Dataset
BHC	Bala Health Centre	NPTH	Neath Port Talbot Hospital
C&VUHB	Cardiff and Vale University Health Board	ONS	Office for National Statistics
CBCU	Central Basic Command Unit	PCH	Prince Charles Hospital
CCH	Cefn Coed Hospital, Swansea	PEDW	Patient Episode Database for Wales
CM	Case Manager	PFA	Police Force Area
CSEW	Crime Survey for England and Wales	PHW	Public Health Wales
CTUHB	Cwm Taf University Health Board	PID	Person Identifiable Data
CVPP	Cardiff Violence Prevention Programme	PoWH	Princess of Wales Hospital
DV	Domestic Violence	PTSD	Post Traumatic Stress Disorder
EBCU	Eastern Basic Command Unit	RCT	Randomised Control Trial
ED	Emergency Department	RGH	Royal Glamorgan Hospital
EHAV	Emergency Hospital Admissions for Violence	SWP	South Wales Police
EHP	Environmental Health Practitioner	SWPCC	South Wales Police and Crime Commissioner
HB	Health Board	UHW	University Hospital of Wales
IPV	Intimate Partner Violence	VWI	Violence with Injury
LH	Llandough Hospital	WAST	Welsh Ambulance Service Trust
LSOA	Lower Super Output Area	WBCU	Western Basic Command Unit
		WHO	World Health Organisation

Executive Summary

Violent crime covers a wide range of offences from common assault to injury and murder. Violence with injury represent 10% of all crime recorded by the Crime Survey for England and Wales (CSEW) 2015¹ and estimates from the CSEW suggest that around two out of every 100 adults in England and Wales have been victims of violence.

UKCrimeStats² reported that in 2015 19% of all crime across Wales was recorded as violent crime and suggests that approximately one in every 55 people living in Wales were victims of violent crime. An independent analysis by the London School of Economics estimated the total cost of violence for 2008/09 in England and Wales to be £29.9 billion⁵, on a crude per capita basis this figure may be as high as £1.5 billion for Wales. The Home Office estimated the cost to society, including public services of alcohol related violence in 2011/2012 across the UK to be £21 billion annually⁸. This figure includes an estimated cost to the UK government of £4 billion, a cost to employers of £2 billion, and human suffering costs of £10 billion. Violence is not just an issue for the police and the individual but can have wide reaching effects for family, communities and society. Consequently, violence is a high priority for public services, including local authorities, health and the police.

Research has found the rate of violent crime across the UK is 60% higher than official statistics suggest.

A large number of violent incidents go unreported to the police; it has been found that only 25%-50% of assaults recorded among health board data are also recorded by police¹². As some of the more serious violent incidents result in emergency department attendances or hospital admissions, there has been

growing consideration to the value that health data can add to police intelligence to further understand and examine trends in violence and contribute to violence prevention at a community level.

Developing an innovative approach to addressing violence in the community

The project outlined in this report is part of an ongoing collaboration established in April 2014 between Public Health Wales (PHW), South Wales Police (SWP), South Wales Health Boards and the Welsh Ambulance Service Trust (WAST) and informs part of the South Wales Police and Crime Commissioners (SWPCC) Crime Reduction Plan (2013-2017).

To date, efforts for local violence prevention have used mainly emergency department (ED) data to inform police operations however, research has shown the effectiveness of health data sharing in violence prevention¹⁵. This project builds on this evidence and utilises data from Police, the Ambulance Service and EDs from three health boards to provide a holistic representation of violence at a local level so that contributing factors can be identified and used to inform preventative action.

Data sharing agreements between partners were established and a data sharing system, using a secure data transfer system was developed in South Wales in partnership with Abertawe Bro Morgannwg University Health Board (ABMUHB), Cardiff and Vale University Health Board (C&VUHB), Cwm Taf University Health Board (CTUHB), SWP and WAST.

This approach allows for:

- The prevalence, characteristics and impact of violence in Wales to be highlighted;
- The understanding of the risk factors for violence (perpetration and victimisation) to inform intervention and prevention at a local level;
- The burden of violence on police, emergency departments and ambulance services to be gauged;
- The differences in the demographics of individuals that present to each service to be investigated;
- The number of individuals presenting to one, two or three services, and importantly the number of people affected by violence who either do not seek medical treatment or those who do not report instances to the police to be estimated.

This project aimed to support prevention of violence at the source by identifying and mapping communities, specifically police beats, which had the highest numbers of presentations to health care as a result of violence. This allows for targeted intervention to prevent violence in communities that are most at-risk. This project developed a monitoring system whereby regular routine reports were produced for Local Violence Prevention Groups^a. This reporting system is used to:

- Examine risk factors for violence including age, gender and community;
- Create an understanding of areas across South Wales at-risk of violence. This is the first time in the South Wales area that the residence of victims of assault has been mapped to a local geography to allow for targeting intervention;
- Enable localised solutions to violence in Wales;
- Provide a multi-agency platform to pilot the use of routinely collected data in measuring the impact of policy and other interventions;

- Inform operational and tactical practice among partners, including health, schools, housing and criminal justice;
- Provide evidence-based advice for intervention and prevention.

Improvements in data quality and development of a minimum dataset

Notably, the consistency and quality of data varied between the EDs and other services in this project. This project assessed the quality, consistency and relevance of routinely collected data^b, and provided recommendations to data providers on how the data quality could be improved. PHW worked with the Health Boards (HBs) in South Wales to develop a minimum dataset for use in recording presentations for violence. This dataset has been incorporated into Symphony, the health board's data collection system, and is currently being piloted in ABMUHB.

Since the inception of the project, in response to the three data audits, quality of data has improved across all data received.

For example, CTUHB now collects and provides data on mode of arrival at ED in line with the other Health Boards. Although improvements could still be made across all services, considerable progress has been made during the project.

a These groups sit within each health board in South Wales and include multi-agency representation from health, the police, and other criminal justice partners (e.g. probation).

b Data already being collected by frontline staff such as paramedics, ED reception staff and police.

Information tailored for local action

The project recognises that policing is essentially a locally delivered service; therefore a system of bi-monthly local violence surveillance reports^c was developed and presented at Local Violence Prevention Groups. The reports provided a current picture of violence across each South Wales Basic Command Unit (BCU) in terms of the prevalence of violence, type of assaults, and location of violence alongside assault victim demography. This enabled police and local partnerships to target intervention and prevention strategies for violence within their communities more specifically.

BOX 1:



Examples of the Local Violence Surveillance Reports informing action:

- Reports identified peaks in violence in areas previously unknown to the police. This resulted in the implementation of a taxi marshal scheme to reduce the amount of individuals on the streets in Aberdare, potentially at risk of violence at the end of the night.
- Reports provided evidence to secure an increase in St John Ambulance provision throughout the CTUHB area at peak times in the night-time economy, in order to reduce the burden of violence on emergency departments.
- Reports evidenced high levels of violence occurring in the night-time economy. As a result, an online responsible alcohol retail course was offered to bar staff in Cardiff and Swansea, which targeted problematic venues but was available to all bar staff across the two cities.
- The reports demonstrated the effectiveness of interventions like the Help Point in Swansea that helped to reduce the number of ambulance call-outs being diverted to Swansea city centre during peak night time economy hours.

Potential future developments

Expanding the current datasets to integrate information on drug or alcohol use among victims and perpetrators of violence could help to provide a more complete understanding of communities most at-risk of violence, and including licensing data from all responsible authorities could further support targeted approaches to violence prevention.



The mapping systems developed for this project could be utilised further to map different types of violence to levels of deprivation and to different types of crime such as vandalism and property violence. Further, mapping could be used to allow for an increased understanding of how health issues impact populations and the trends by which these populations are affected.

Therefore, there is a potential for geolocation mapping to explore other health and public health issues such as adverse childhood experiences (ACEs) and health-harming behaviours, and other social and environmental issues resulting in crime and disorder such as playground and youth drinking.

1. Background

The World Health Organisation (WHO) defines interpersonal violence as “the intentional use of physical force or power, threatened or actual, against another person that either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation”³.

1.1 The health, social and financial costs of violence

The WHO examined violence data from 133 countries worldwide and estimated that 1.3 million deaths annually are a direct result of violence⁴. Death from violence occurs only in a minority of cases; however, the effects of violence are widespread and can be long-lasting, causing poor health and well-being. Individuals exposed to violence can suffer a range of adverse short and long-term physical, social and mental health outcomes.

The full costs of violence are difficult to quantify, but there are known short-term as well as long-term impacts on health, social, educational, employment and judicial systems.

Violence against the person also inflicts major economic costs on the individual, the family, communities, public services (police, ambulance services, healthcare, social care, criminal justice and housing), employers, businesses and the wider economy⁴ and can be broadly grouped into two categories, direct and indirect costs⁵.

Direct costs are those resulting directly from acts of violence or attempts to prevent them such as emergency care, the provision of health treatment and criminal justice involvement, and indirect costs, those resulting after acts of violence, such as reduced earnings and lost productivity from paid or unpaid work. A review by the WHO on the economic dimensions of interpersonal violence⁶ found that the most commonly cited direct costs were to the medical, judicial and penal systems including policing and incarceration.

Indirect costs include the long-term effects of violence on perpetrators and victims, such as lost wages, costs associated with long-term disability, psychological costs, social care costs attributable to women’s refuges and shelters, costs on housing values and lack of investment in high violence areas.

An analysis by the London School of Economics updated previous Home Office figures which estimated the total economic and social cost of violent crime in England and Wales in 2004 to be £26.9 billion⁷, to show the total cost of violence in 2009 to be £29.9 billion⁵; on a crude per capita basis this figure may be as high as £1.5 billion for Wales. Most of the costs were attributed to the victims of violent crime; however a considerable cost to the public sector including the NHS was also evident as around £2.9 billion was estimated to have been spent on dealing with the physical and mental consequences of violent crime, and a further £4.3 billion was spent within the criminal justice system.

The Home Office estimated the cost to society, including public services of alcohol related violence in 2011/2012 across the UK to be £21 billion annually⁸, with approximately two million ED attendances believed to be alcohol related, placing considerable burden on the NHS⁹.

A 2008 study focusing on the cost to the UK of domestic violence estimated the costs to be around £16 billion¹⁰. This figure includes an estimated cost to the state of £4 billion, a cost to employers of £2 billion, and human suffering costs of £10 billion. However, this figure is probably under-estimated due to the under-reporting of domestic violence.

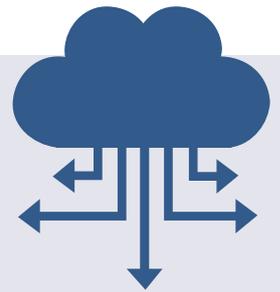
The costs and consequences of violence, both to the individual and wider society are significant, but are likely to be underestimated as many cases of violence go unreported, and as such, the costs are difficult to estimate precisely.

1.2 Data sharing for prevention

Under-reporting of violent crime across the UK and other countries is significant. Mechanisms for recording violence have traditionally relied on police recorded crime data, notably, a large number of violent incidents go unreported to the police; it has been found that only 25%-50% of assaults recorded among health board data are also recorded by police¹². As some of the more serious violent incidents result in ED attendances or hospital admissions there has been growing consideration to the value that health data can add to police intelligence in examining trends and furthering the understanding of violence locally, driving national and local action to violence prevention at a community level^{11,12,14}.

Anonymised health data can be used to inform interventions to prevent violence. Data on demographics of assault attendances to EDs and types of violence could be analysed to inform broader violence prevention work at individual, relationship and community levels^{13, 14}.

Data sharing has helped identify communities most at risk; fill service gaps; improve monitoring systems where necessary and better demonstrate the effectiveness of these interventions by looking at how the data provided changes over time.



An analysis of alcohol-related ED assault attendances in Bristol¹⁵, alongside police data, identified high risk venues for assaults based on frequency of ED attendances. Following an unspecified intervention, the study showed a reduction in ED attendances due to alcohol related assaults and self-harm. A systematic review of the effectiveness of community level interventions to reduce alcohol related violence, based on ED data sharing, suggested substantial reductions of assaults and ED attendances post-interventions¹⁷.



Considering ED data alongside the intelligence already collected by criminal justice systems has been recognised as an important tool to help inform the development, implementation and evaluation of violence prevention initiatives^{16, 18}.

An experimental study and time series analysis of a health led, multi-agency violence prevention partnership showed a substantial reduction in risk for violence across Cardiff compared to other cities after the introduction of the Cardiff Violence Prevention Programme (CVPP). In turn, this resulted in a significant reduction in hospital admissions related to violence¹⁹. The CVPP informed targeted policing and other community strategies by combining data collected in EDs as well as

police intelligence to provide data on violence “hotspots” including specific premises, types of violence (such as stranger, acquaintance and domestic) and weapons used. Strategies deployed in response to joined up data intelligence included fluid adjustments to the routes of police patrols to intervene at specific locations and times as identified by the data, targeting problematic licensed premises and the deployment of close circuit television (CCTV) within vulnerable public spaces¹⁸. In North England the Trauma and Injury Intelligence Group (TIIG) was established in 2002 as a long-term initiative to improve the availability and use of injury data across the area; with the particular focus of sharing data on alcohol and violence related ED attendances. This information was shared with local partners to inform prevention activity and targeted policing; over a six-year period a decrease in ED assault related attendances of 35.6% was seen¹¹.

The continued sharing of routinely collected ED data provides partners with information to develop and target violence prevention activities by providing additional information on patient demographics and types of violence to inform broader violence prevention work.



1.3 Overview of the effectiveness of interventions for violence prevention

This section provides evidence from a rapid review carried out by PHW on the effectiveness of interventions for preventing or reducing violence.

The review aimed to examine the scientific evidence from studies across the general population of existing evidence of randomised controlled- or controlled designed trials, or specific effective policy level interventions for violence.

The results of this review can be used to inform local solutions in response to the analysis of violence data for South Wales. Table 1 provides an overview of studies, including the study type, the sample, the intervention and control, and whether or not there was a significant impact. For details on the methodology and selection criteria see Appendix 1.

A total of 15 studies were identified, and after selecting those appropriate and of robust design, 12 were included in the review. Three studies focused on alcohol-related and night-time economy violence and found a significant or modest intervention effect for lowering violence and aggression. Interventions included audits of risk factors for violence such as visibility and lighting, health and safety, surveillance, door management, glassware policy and how premise policy reaches frontline staff. Assessments of these factors identified ways of reducing environmental risks of violence alongside staff and manager awareness training.

Tailored action plans were made for high risk premises with follow up visits to examine if implementation was associated with a reduction in violence. Web-based training and instructional materials alongside educational films were also provided to inform premise staff about harm reduction and to provide guidance on how staff can help reduce excessive alcohol consumption and violence.

Three systematic reviews completed in the United Kingdom (UK), Australia and South Africa, examined the evidence on the impact of alcohol interventions and policies on intimate partners violence (IPV)^{22,23,25}. The reviews showed that only one study, conducted in the United States of America (USA), found a significant relationship between the price of alcohol and IPV²⁵.

The remaining studies found population-level pricing and taxation was associated with weak or no evidence for alcohol price changes influencing incidents of IPV²². Restrictions on hours of sale were found to be effective in reducing excessive alcohol consumption; there was however limited evidence to suggest this positively influenced IPV incidents.

However, results showed that a higher density of alcohol outlets was associated with higher rates of violence²⁵; therefore controlling the number of licensed venues in a given area may be an effective component in an approach to reduce violence. IPV interventions that included a curriculum on personal safety, sexuality, problem-solving, communication skills, gender power inequalities and a community component for training service providers to support IPV victims found a reduction in reported victimisation and perpetration of physical and sexual IPV post-intervention, particularly among young people²⁴.

The most successful interventions were based in multiple settings (school and community) and focused on key adults in the adolescents' environment (teachers, parents and other community members); with the key component of addressing relationship skills.

The more successful interventions were also those of longer duration.

Four interventions specifically targeted youth violence²⁶⁻²⁹ (three in USA) and looked at assigning a case manager or mentor to injured youth attending an emergency department. The mentors assessed the youth and made referrals to a range of support services (including education, mental health and anger management programmes) with regular weekly meetings to support the young person. One review showed that mentor assigned youths showed significant reduction in self-reported incidents of violence over a 12-month period, with a significantly lower risk of criminal justice involvement²⁶.

Sugimoto-Matsuda et al's (2014)²⁸ literature review found that of the eight collaborations focused on violence prevention that changed organisational policy, seven were aimed at youth in high school. The review suggests that educational settings are ideal locations for developing youth violence prevention programmes/activities due to the 'open access' nature of the environment to youth, and the existing infrastructure to support new programmes.

Taken together this evidence suggests a number of interventions can be implemented to prevent and reduce violence. There is, however, an essential requirement to select interventions depending on need to ensure programmes respond to the needs of specific communities.

Table 1: Studies investigating the effectiveness of interventions for violence prevention and reduction

Author/ Year/ Country	Study design	Selection criteria/ sample	Intervention	Control	Significant impact (Yes(Y)/No(N)) and outcomes
Alcohol related/night time economy violence					
Graham et al ²¹ 2004 Canada	RCT		Assessment of premises to identify ways of reducing environmental risks and staff and manager training (three hour session) on preventing escalation of aggression and resolving problem situations safely.	Left to operate as normal	Y: Pre vs. post aggression for intervention vs. control bars indicated a significant effect of the intervention in reducing severe and moderate aggression.
Moore et al ²⁰ 2012 UK	Two armed parallel RCT	Premises associated with ≥ one police-recorded or ED-recorded violent incident within a 12-month period.	An audit of risk factors and a tailored action plan for high risk premises, with three-month follow up audit and feedback.	Licensed premises subject to normal police and local authority practices in the management of licensed premises.	N: A modest and sustained difference between control and intervention premises observed post-intervention.
Moore et al ⁹ 2015 UK	RCT	Premises categorised as a public house, night club or hotel with public bar with ≥ one identifiable violent incidents on premises in a 12-month period using police-recorded violence data. 600 licensed premises.	The SMILE intervention involved an initial visit and risk audit by EHPs to identify known risks of violence and a follow-up audit scheduled to enforce changes in premises where serious risks had been identified. Structured advice was administered by EHPs on how risks could be addressed in premises and supported by online materials that provided educational videos and related material to premises staff.	Licensed premises subject to normal police and local authority practices in the management of licensed premises.	Primary and secondary sensitivity analyses yielded a consistent intervention effect whereby police-recorded violence increased following the intervention and showed no change in this effect over time. Those premises receiving a second follow-up visit as a result of initial audit recommendations made changes suggested by EHPs. Premises staff, in particular those in premises that are exhibiting greater risk of alcohol-related harm, are unlikely to be reliable, particularly if changes are voluntary, which without a follow-up visit, might have been the case. Further secondary analyses, comparing premises in which written or verbal advice had been given with premises in which no advice had been given, appear to support this. Those that received advice showed lower levels of violence.

RCT=Randomised Control Trial; EHP=Environmental Health Practitioner; IPV=Intimate Partner Violence ED=Emergency Department; CM=Case Manager; VAWG=Violence Against Women and Girls; GTP= Group Training Programmes; CBT=Cognitive Behavioural Therapy

Author/ Year/ Country	Study design	Selection criteria/ sample	Intervention	Control	Significant impact (Yes(Y)/No(N)) and outcomes
Domestic/Intimate partner violence					
Wilson et al ²² 2014	Systematic review	Reviews investigating whether alcohol interventions/ policies were associated with IPV reduction; 21 studies identified			Population-level pricing and taxation studies found weak or no evidence for alcohol price changes influencing IPV. Community-level policies or interventions (such as hours of sale, alcohol outlet density) showed weak evidence of an association with IPV. RCTs of combined alcohol and violence treatment programmes for perpetrators of IPV found positive effects on reductions of IPV for alcohol related IPV.
De Koker et al ²⁴ 2014	Systematic review	RCT that evaluated interventions for preventing perpetrator and victimisation of any type of IPV among adolescents; interventions were based in school, community or clinic settings; eight articles reporting on six RCTs.	All interventions included a curriculum covering personal safety, sexuality, related health problem solving or communication skills and included a focus on gender power inequalities. Program deliverers included teachers, attorneys, school staff and sports coaches. Additional components to some of the interventions included a community component of training for social service providers and the police for the delivery of support to IPV victims.		Trials looking at interventions which included community components reported less perpetration of physical and sexual IPV post-intervention. The combined class and school based intervention trial also reported less perpetration and victimisation among intervention groups. The class-room only intervention was not effective in reducing IPV. The review suggests comprehensive IPV interventions based in both school and community are effective in preventing IPV perpetration and victimisation. The most successful interventions were based in multiple settings (school and community) and focused on key adults in the adolescents' environment (teachers, parents and other community members); with the key component of addressing relationship skills. The more successful interventions were also those of longer duration (specific time frames were not discussed within the review).

Author/ Year/ Country	Study design	Selection criteria/ sample	Intervention	Control	Significant impact (Yes(Y)/No(N)) and outcomes
Rivas et al ²³ 2015	Systematic review	RCT or Quasi-RCT comparing advocacy interventions for women who have experienced IPV; 13 trials identified	Advocacy provided was based on the concept of empowerment, including education, advice on safety and accessing resources and support services.	No intervention or usual care	N: the review found equivocal evidence that advocacy reduces or leads to cessation of IPV immediately after intervention. However studies showed no effect on physical abuse or quality of life after 12-month follow up for brief (<12 hours) advocacy interventions. However advocacy did reduce depression in women experiencing IPV after the intervention unless they had moved into a shelter/women's refuge: 12/24 month follow-up
Kearns et al ²⁵ 2015	Review	Alcohol policies that aim to impact IPV; 18 studies reviewed.	Interventions included alcohol policies that looked at 1) outlet density (through zoning and licensing rules); 2) hours and days of sale; and 3) pricing/taxation		A higher density of alcohol outlets appears to be associated with greater rates of IPV and other forms of violence. However, while evidence shows that changes in restrictions on hours of sale appear to be effective in reducing excessive alcohol consumption, there is limited evidence suggesting that pricing policies and restrictions on hours and days of sale are associated with improved IPV outcomes.
Other (children/youth/elder) violence					
Snider et al ²⁶ 2009 Canada/ USA	Systematic review	Evaluations of hospital-based intervention programmes; health-care based; targeting youth (10-24 yrs); seven articles reporting four interventions.	All interventions used ED case management of violently injured patients and broadly assigned a CM/mentor who assessed and referred individuals to a range of support services (such as education, mental health, anger management etc). Linked for six-months meeting weekly then bi-weekly.	Study 1 – Received a list of available social services in the area.	Y: Intervention caused significant effect on self-reported incidents of violence over 12-months compared to control but not in return to EDs or repeat injury. The only other statistical difference was found in a lower risk of criminal justice involvement.

Author/ Year/ Country	Study design	Selection criteria/ sample	Intervention	Control	Significant impact (Yes(Y)/No(N)) and outcomes
Fellmeth et al ²⁹ 2013	Systematic review	Only interventions that actively provide the participants with knowledge and skills aimed at preventing initial or further relationship violence (participants aged 12-25 years; 38 studies reviewed; 18 were RCTs, 18 were cluster-RCTs and two were quasi-RCTs.)	Educational and skills-based interventions designed to prevent relationship and dating violence in adolescents and young adults; five studies included a self-defence element.	Control group received no intervention or standard care; placebo groups received first aid training.	N: The effectiveness of interventions to prevent relationship and dating violence can be quantified by a number of different outcomes. The effectiveness of these interventions as measured by changes in the number of episodes of relationship violence, changes in behaviours, attitudes and knowledge, and protective skills attained were assessed. For all outcomes apart from knowledge change, meta-analyses showed no evidence of a statistically significant effect. In the meta-analysis for knowledge of relationship violence, interventions appeared to have a beneficial effect. However, there was substantial heterogeneity (I ² = 57%) between these studies.
Sugimoto-Matsuda JJ et al ²⁸ 2014 USA	Systematic review	Existing youth violence collaborations focused on prevention; 23 collaborations reviewed	Collaborations 1) Internal (momentum began within the community); 2) External (sparked by an external agency); or policy (mandated by law)		Internally catalysed collaborations were most successful at changing laws to address youth violence, while both internally and externally collaborations successfully attained policy change at the organisational level. Of the eight collaborations that changed organisational policy, seven were aimed at youth in high school. Educational settings are ideal locations for developing and testing youth violence prevention programmes because of the open access to youth and the existing infrastructure to support new programmes.

Author/ Year/ Country	Study design	Selection criteria/ sample	Intervention	Control	Significant impact (Yes(Y)/No(N)) and outcomes
Arango et al ³⁰ 2014	Systematic review	Reviews had to synthesise evidence on the impacts of interventions that aimed to reduce the victimisation or perpetration of selected forms of VAWG; 58 included reviews.	<p>Advocacy activities that improve general awareness among communities on issues related to VAWG; GTP to improve awareness, knowledge, and/or skills related to VAWG among a group of individuals (for example students, women, men, adolescents); Psychosocial Support Group/ individual counselling providing survivors of violence with emotional, psychological, and social support; Batterer Intervention Programs focusing on reducing recidivism among perpetrators of violence by using techniques, such as CBT and anger management sessions; Home Visitations by nurses, community health workers, advocates, including training components in addition to monitoring of progress on desirable behavioural outcomes; Community Mobilization Programs that work with communities through educational activities that focus on broader issues, such as health, literacy, and human rights, allowing community members to identify key actions that can be taken to shift norms and behaviour.</p>		<p>IPV outcomes: The reviews generally find batterer interventions to lack positive effects on VAWG repeat perpetration. Women-centered survivor services have achieved more mixed results, but some models, especially those including intensive advocacy services and psychosocial support, have shown positive effects in reducing revictimisation. Community-based interventions with male and female at-risk youth, found significant reductions in perpetration of dating violence in the intervention arm compared to the control groups. Home visitation showed limited evidence supporting the use of this type of intervention to prevent or reduce IPV. One home visitation intervention with positive findings is Hawaii's Healthy Start Program (HSP), primarily designed to prevent child abuse and neglect among families considered at risk, which found that mothers in the intervention group reported significantly lower rates of IPV victimisation compared with mothers in the control group. Advocacy outcomes showed women who worked with advocates over the course of two years experienced significantly less violence over time ($p=0.03$), reported higher quality of life and social support, and had less difficulty obtaining community resources.</p>

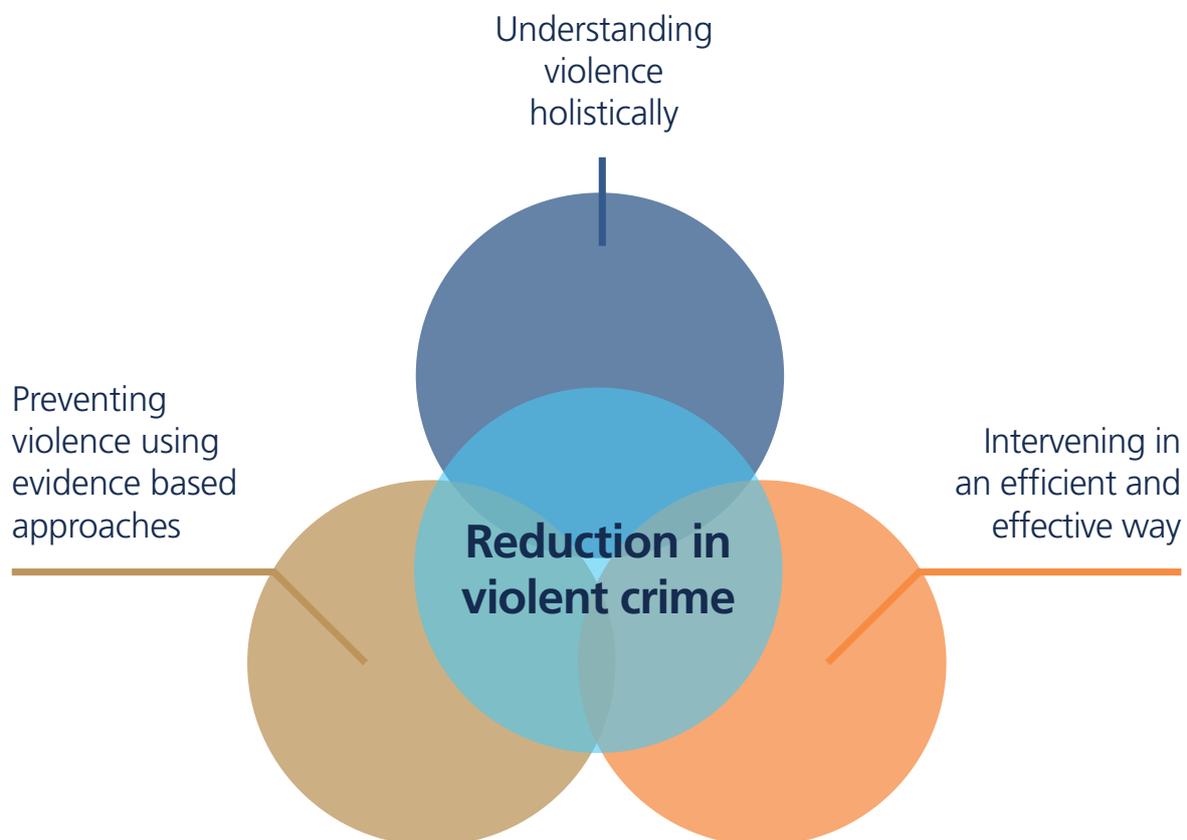
Author/ Year/ Country	Study design	Selection criteria/ sample	Intervention	Control	Significant impact (Yes(Y)/No(N)) and outcomes
Heinze et al ²⁷ 2015 USA	RCT	Designation of control or intervention group was assigned based on participants' self-reported home address. Areas had similar demographic characteristics and were not adjacent to each other. All participants were surveyed at baseline and two-month follow up.	To measure changes in police and ED assault data before and after intervention. Intervention included six programmes to address parenting behaviours and relationships, culture and history, risky behaviours; individual youth counselling for those ending up in EDs looking at individual choice and risky behaviours focusing on refusal skills for conflict resolution and anger management; mentoring relationships; convening community discussions with police to build relationships and share crime prevention approaches; improving community environment by maintaining community areas and vacant lots. The intervention was community based, multi-level in its focus and designed to empower residents within their neighbourhoods.	Participants living in the control area received a resource pamphlet of service in their area.	Police incidents and ED assault injury data provided converging evidence that relative to the control area, youth in the intervention area experienced lower rates of violence in the 32-month post-intervention follow up period.

2. Developing a routine surveillance and analysis system for early intervention and prevention of violence

The project is part of an ongoing collaboration established in April 2014 between Public Health Wales (PHW), South Wales Police (SWP), South Wales Health Boards and the Welsh Ambulance Service Trust (WAST) and informs part of the South Wales Police and Crime Commissioners (SWPCC) Crime Reduction Plan (2013-2017)³⁸.

The approach taken within the plan to tackle violence in South Wales is based on three strategic themes (Figure 1).

Figure 1: SWPCC three strategic themes to tackling violence in South Wales



Developing the 'understanding' element of the South Wales Model was undertaken by PHW in partnership with Abertawe Bro Morgannwg University Health Board (ABMUHB), Cardiff and Vale University Health Board (C&VUHB), Cwm Taf University Health Board (CTUHB), SWP and WAST.

This project aimed to:

- Develop a routine surveillance and analysis system for early intervention and prevention of violence across partners in health and policing;
- Outline the prevalence, characteristics and impacts of violence in Wales using data from a variety of sources;
- Understand the risk factors for violence (perpetration and victimisation) to inform intervention and prevention at a local level; and
- Provide local violence prevention groups with detailed information on violence at a local level; enabling data on demographics of patient and types of violence to inform broader violence prevention work at individual, relationship and community levels.

2.1 Project development and implementation

For policing purposes South Wales is divided into four distinct operational geographies: Central, Eastern, Northern and Western basic command units (BCUs).

Figure 2: South Wales Police Force area³⁸



While each BCU has certain common features, they vary in size; some serving densely populated ethnically diverse city areas such as Cardiff (Eastern BCU) and Swansea (Western BCU), while others cover sparsely-populated countryside areas, such as the Rhondda Valley (Northern BCU).

For this reason, and recognising that policing is essentially a locally delivered service, data was presented in the four BCU areas using both assault location data and victim residence data; enabling police and local partnerships to target intervention and prevention strategies for violence within their communities more specifically.

The Violence Reduction Relationship Coordinators employed by the SWPCC were instrumental in engaging with health partners to deliver the project. Data audits performed by PHW on a quarterly basis between September 2014 to August 2015 showed inconsistencies in data items and variability in the quality of data collected across the HBs. The relationship coordinators through regular meetings with ED staff were able to demonstrate the improvement required and make recommendations on how the data quality could be improved. The improvement in data was essential in order to provide the quality of data required to ensure accuracies in reporting and maximise the messages coming out. Following the initial improvements, audits are now carried out on a six-monthly basis and relationship coordinators continue to meet with ED reception staff to encourage further improvements. The audits are also discussed at the local violence prevention group where health staff can see the benefits of their improvements and where data needs to be improved further.

Figure 3: Developing the South Wales Model

Established data sharing agreements between PHW and ABMUHB, C&VUHB and CTUHB; WAST SWP. PHW receive monthly extracts of violent assault data, reviewed and amended part-way through the project to enable person identifiable data (PID) to be shared to allow the cross-referencing of individuals across services.

Agreement of a minimum dataset for use in EDs to record violent incidents. This dataset was incorporated into Symphony, a new HB data collection system rolled out across ABMUHB from November 2016, before being rolled out across Wales. Although there are further improvements to be made to data quality across all services, this project has resulted in considerable progress and developed momentum for influencing HB data collection systems.

Established a robust routine system of data sharing across health and policing. In response to regular data audits, PHW made recommendations on how data quality could be improved. An improvement in the data provided by HBs was evident in the final data audit in Sept 2015 (Appendix 2).

Process for secure data transfer and secure file systems established to allow all partners to provide PID on assault victims for the purpose of cross-referencing.

Data cleaning and linkage systems established to allow for cross-referencing. This allowed ED data to be cross-referenced by patient name, age and date of ED arrival or date of incident against patient data from WAST and victim data from SWP. This has enabled researchers to:

- Estimate the number of people presenting to one, two or all three services as a result of violence.
- Establish the number of people affected by violence who are not detected by the police. The data can tell us at what locations and times an individual is likely to have engaged services and inform police of areas where the under-reporting of violent assaults is more likely to occur.

Processes established to allow assault location and victim residence to be mapped using location postcodes and easting and northing geographical coordinates for a point on a map. Mapping software used: QGIS (version 2.6.1) a free open source geographic information system.

Production of bi-monthly reports to inform Local Violence Prevention Groups. Reports outline key characteristics of violence across BCUs in terms of assault victim demography, type of assaults and specific locations.

The bi-monthly violence surveillance reports presented to the local violence prevention groups assist the police and health services in developing and monitoring violence intervention and prevention activities.

Figure 4: Bi-monthly report process



2.2 Informing practice

One of the main aims of the project was to establish a robust, routine system of data sharing across health and policing that would allow the incorporation of violence data from multiple sources to provide Local Violence Prevention Groups with information

that would help to target violence prevention activities (see Box 1). The project provided additional information on patient demographics and types of violence to inform broader violence prevention work at individual, relationship and community levels.

BOX 1:



Examples of the local violence surveillance reports and data informing action:

- Reports identified peaks in violence in certain areas previously unknown to the police. This resulted in the implementation of a taxi marshal scheme to reduce the amount of individuals on the streets potentially at risk of violence at the end of the night.
- Reports provided evidence to secure an increase in St John Ambulance provision throughout the CTUHB area at peak times in the night-time economy, in order to reduce the burden of violence on emergency departments.
- Reports evidenced high levels of violence occurring in the night-time economy. As a result, an online responsible alcohol retail course was offered to bar staff in Cardiff and Swansea, which targeted problematic venues but was available to all bar staff across the two cities.
- Reports demonstrated the effectiveness of interventions like the Help Point in Swansea that have helped to reduce the number of ambulance call-outs being diverted to Swansea city centre during peak night time economy hours.
- Geolocation data mapping has supported the police in managing at-risk areas and been used to support licensing reviews for a number of high risk premises. Reports have contributed to police success in making changes to individual licences, certain premises have had opening hours reduced, capacity reviews, licenses suspended or revoked. As a result, a number of premises have brought in new management and re-visited staff training.

The project set up processes that allow assault location to be mapped. The mapped data can identify specific street and premise level incidents which can be used to inform operational activity (see Box 2).



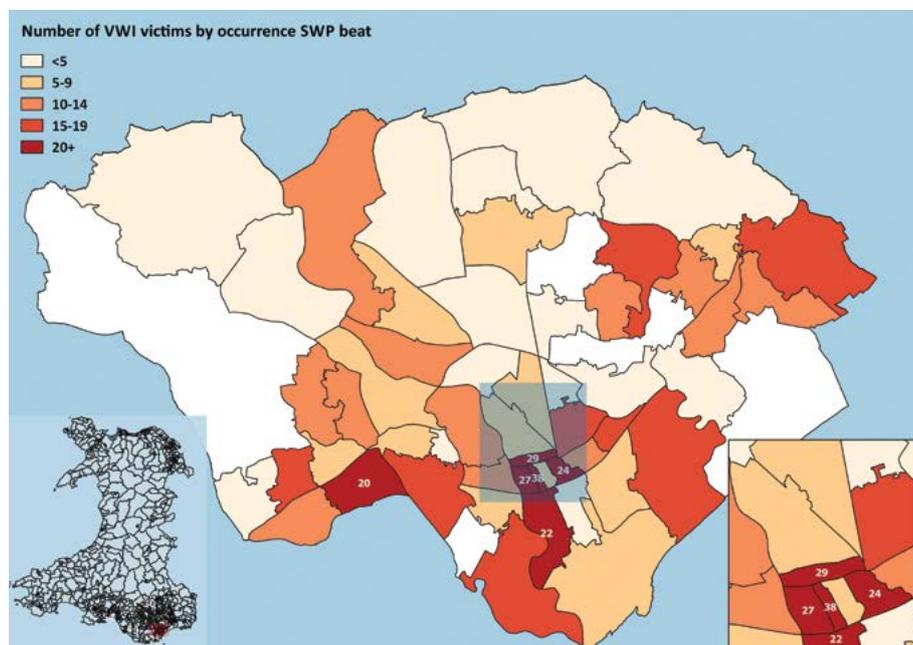
This is the first time in South Wales that the assault location alongside the residence of assault victim has been mapped to allow partners involved in the prevention of violence, at both operational and strategic levels, to target resources at areas most at-risk (see Box 1). This allows interventions to be evidence based and tailored to suit the demographics of those presenting to services in that area.

BOX 2

Examples of Geolocation mapping of assault data taken from a violence surveillance report³¹

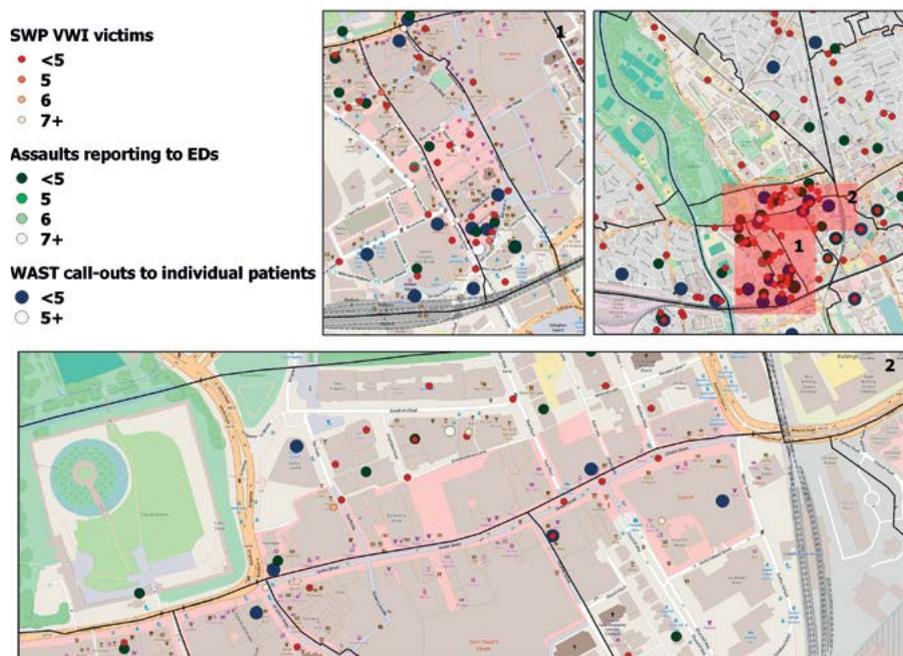
Map 1:

Number of violence with injury (VWI) victims by South Wales Police beat occurrence in Eastern BCU (Mar-Apr 16)



Map 2:

Cardiff City Centre beat location of assaults (Mar-Apr 16)



BOX 3

Help Point Case Study – multi-agency partnership working to reduce violence

The Swansea Help Point is a specialist mobile first aid treatment facility manned by St John Cymru volunteers, Police Officers, NHS nursing staff and student volunteers from University of Wales Trinity St David's within the city of Swansea. The Swansea Help Point began in September 2014 and operates in the Swansea City area Wednesday and Saturday nights between 10pm and 6am. The service responds to diverted 999 calls to Wind Street, Kingsway, Castle Square and Castle Gardens all located in the city centre area of Swansea.

The aim of the project is to reduce the burden on EDs and WAST by providing first aid treatment close to the source of the incident. Table 2 shows a decrease in WAST violence related call-outs of almost two thirds (62%) between Jan-Sept 2015 compared to the same period in 2014 (before the Help Point was operational). Table 2 also shows a significant reduction (73%) in WAST call-outs to assault related incidents in Swansea City centre during the operating hours of the Swansea Help Point.

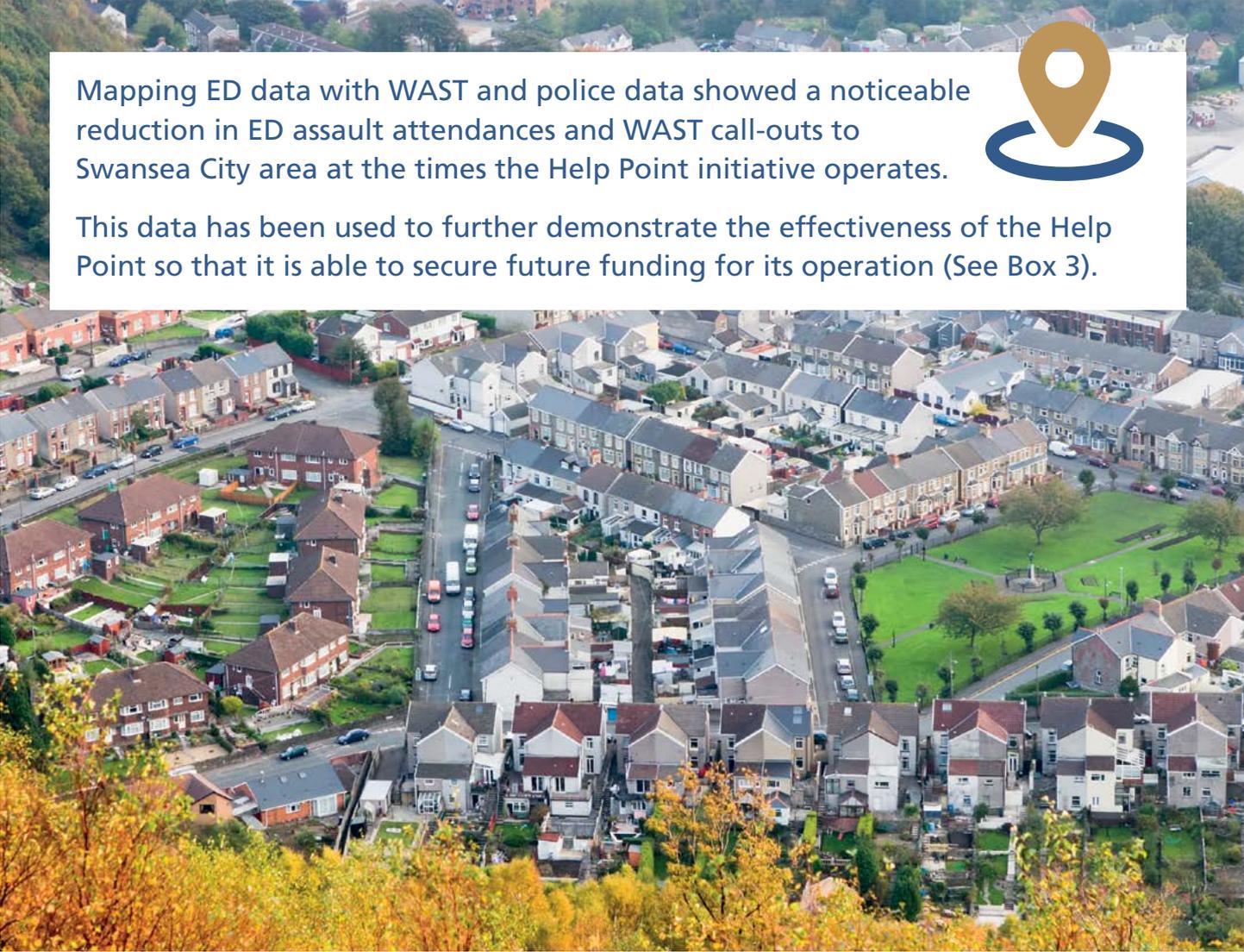
Table 2: WAST call-outs to Help Point operational areas in Swansea city centre (Jan -Sept 2014 and Jan-Sept 2015)

WAST incident description	All WAST call-outs			WAST call-outs occurring between Wed 10pm-Thur 6am & Sat 10pm to Sun 6am		
	Jan-Sept 2014	Jan-Sept 2015	% change	Jan-Sept 2014	Jan-Sept 2015	% change
Assault/sexual assault*	63	24	-62	33	9	-73
Stab/gunshot/penetrating trauma*	<5	0	-100	0	0	0
Falls	84	32	-62	34	0	-100
Overdose/poisoning (ingestion)	35	24	-31	19	<5	-95
Traumatic injuries, specific	29	<5	-86	17	<5	-88
Traffic/transportation accidents	11	8	-27	0	0	0
Total	230	99	-57	104	14	-87

* Violence related call-outs

The introduction of the Help Point initiative within Swansea city centre appears to have also reduced assault attendances to EDs. WAST data highlights during the specific operational hours of the Help

Point *all* WAST call-outs to Wind Street, Kingsway, Castle Square and Castle Gardens have fallen by 87% (Table 2) between Jan-Sept 15 when compared to the same period last year.



Mapping ED data with WAST and police data showed a noticeable reduction in ED assault attendances and WAST call-outs to Swansea City area at the times the Help Point initiative operates.

This data has been used to further demonstrate the effectiveness of the Help Point so that it is able to secure future funding for its operation (See Box 3).

2.3 Utilisation of South Wales data

Mapping residential areas enables communities at-risk of domestic violence to be identified. The reporting system flags up beats that may see a sudden increase in assault call-outs to residential areas or ED assault attendances from those locations for further investigation. This information can be used to drive closer partnership working with local health boards to deliver training to frontline healthcare staff, and help to identify those suffering from violence.

Thus, leading to improvement in systems for referral to relevant support agencies (and ongoing monitoring), as well as systems that would trigger protection services as appropriate to reduce further incidents of violence.

It has also been possible to produce temporal maps to show at what times problem and high-risk areas are likely to experience violence. This has allowed police resources to be more fluid and responsive to the needs of the local area providing a greater police presence in areas of most need and in turn preventing further need.

3. Violence with injury in South Wales

3.1 South Wales Police force area overview

The following section provides a summary of key points for victims of violence with injury (VWI) offences and ED assault attendances using assault and location type related data from ABMUHB, C&VUHB and CTUHB; SWP VWI victim and offender data; and WAST violence related call-out data.

Data was collected from April 2014 to March 2016. For each BCU the location of assault was mapped using ED recorded premise name data as location of assault, WAST dispatch/pick-up location data and police-recorded assault location data from victims over a two year period from April 2014 to March 2016.

South Wales Police Force Area summary (April 2014 - March 2016)

- Across SWP Force Area, a total of 20,626 VWI victims were recorded. This equates to approximately 859 victims per month (range 716 to 959); 31% occurring in Eastern BCU; 27% in Western BCU; 24% in Northern BCU and 18% in Central BCU (Table A1^d).
- 10,260 ED assault attendances were recorded (Table A2). Over a third (36%) of all ED assault attendances to SWP area EDs were to an Eastern BCU ED; 27%, Northern BCU; 28%, Western BCU; and 9%, Central BCU.
- WAST recorded 5,388 violence related call-outs to individual patients (Table A3). Violence related call-outs were proportionally higher in Western BCU; 33% of call-outs were to Western BCU, 28% to Eastern BCU, 23% to Northern BCU and 16% to Central BCU.
- The highest percentage of both VWI victims and assault related ED attendances across South Wales occurred within Eastern BCU. The assault locations of these incidents are primarily focused in and around the city centre of Cardiff, with a higher prevalence between 22:00-03:59, indicating a pattern of higher need in this area and suggesting the night-time economy potentially plays a significant part in contributing to the likelihood of violence. This is further supported when looking at VWI victim's residence. Across SWP area, over a fifth (23%, Table A4) of victims reside in Eastern BCU, however 31% of assaults occurred within the BCU (Table A1), suggesting a greater concentration of individuals and a migration of potential victims towards the city centre 'entertainment' venues of Cardiff.
- Across all three services, Central BCU experienced the lowest percentage demand.

Changes over time: April 2014-March 2015 and April 2015-March 2016

Violent incidents were compared over two 12-month time periods, April 2014-March 2015 and April 2015-March 2016. Table 3 shows the percentage change across the four BCUs and South Wales as a whole.

- SWP recorded victims of VWI offences increased across all BCUs over the 12-months. Assault related ED attendances and WAST violence related call-outs decreased across all BCUs over the same time period

- Eastern BCU saw the smallest percentage increase of VWI victims and the greatest percentage reductions in the number of assault related ED attendances and WAST violence related call-outs across South Wales. This reflects the continued implementation of current violence prevention programmes operating within Cardiff, such as the Cardiff Model^e.
- The greatest percentage increase in VWIs was observed in Central BCU; also reflected in the area having the lowest percentage reduction in numbers of assault related ED attendances.

Table 3: Percentage change in Police, Ambulance and Emergency Department recorded violence across South Wales April 2015-March 2016 compared to April 2014-March 2015

BCU	Police recorded VWI victims (% change)	Assault related ED attendances (% change)	WAST violence related call-outs (% change)
Central	+11	-6	-11
Eastern	+4	-17	-23
Northern	+8	-11	<-1
Western	+9	-10	-18
SWP Total	+8	-13	-15

Key demographics of violence across South Wales

- Across all three services there was a higher prevalence of male victims of recorded violence; EDs reported 68% of assault attendances were male; SWP reported 52% of VWI victims were male and WAST reported 60% of violence related call-outs were to males.

- Among ED assault attendances the most prevalent age category was 18-24 (30%); 28% were 25-34. The most prevalent age category for SWP VWIs and WAST call-outs was 25-34 (both at 18%). However, there should be

some caution in interpreting the data as 34% of SWP VWI victims' ages were unknown and 40% of WAST call-outs had missing age data.

- Street location remains the most prevalent reported location type for those reporting to EDs as a result of being assaulted (Figure A5).
- Considering all South Wales ED assault attendances, the most prevalent arrival time categories to EDs were 00:00-01:59 and 02:00-03:59, both with 12% (Table A6).

^e In 2001, the Violence and Society Research Group developed the Cardiff Model whereby anonymised information collected from individuals presenting to A&E settings, who had been injured through violence, was shared with the police and local authorities to inform violence prevention programmes. Crime and Disorder Reduction Partnerships were created between ED staff and police to share information about the location and time of violent acts, weapons used and other relevant demographic information. This information has helped police target violence prevention efforts on where they should be patrolling and also which bars and nightclubs are hotbeds for assault injuries.

3.2 Cross-referencing

ED assault attendance person identifiable data (PID) from ABMUHB, CTUHB and C&VUHB was cross-referenced against SWP VWI victim PID by patient name, age and either date of ED arrival or VWI crimed date^f. As a result of an investigation into the most appropriate method for cross-referencing that would yield the greatest return on matches (see Appendix 4), the most appropriate strategy adopted was to cross-reference on the first two letters of the first name + surname initial + age + data of ED visit/ reported crimed date (+/-1 day).

While data completion rate for the above mentioned categories are high across all agencies at >99%, the following limitations should be considered when interpreting the findings:

- Stated ED arrival date may not be the same date as the VWI incident 'crimed date' recorded by police. It may be possible that potential VWI victims will report to an ED for treatment at a later date, or vice versa, and therefore not recognised as reporting to more than one service at time of initial contact.

- Although ED assault attendances have been recorded by hospital staff as an assault at arrival at ED, it should be considered that not all incidents would necessarily expect to have police involvement.

- A number of SWP VWI victims may have sought hospital treatment at an ED outside of the SWP area; or those assaulted within a neighbouring police force area may have attended an ED within SWP force area. However, the number is likely to be very small at around 1%.

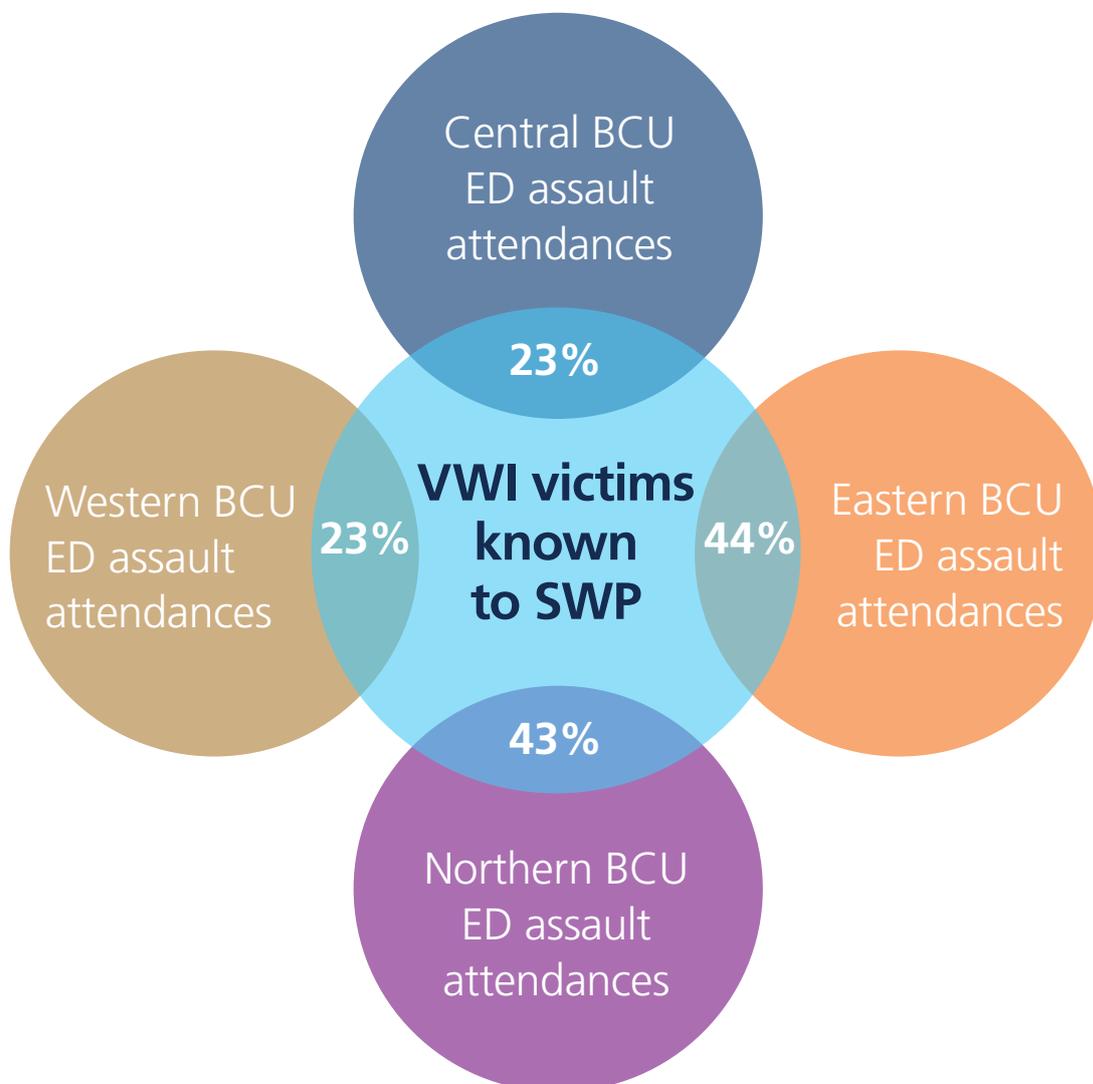
For the 24-month period of April 2014-March 2016, over a third (36%; Table 4) of all assault attendances to South Wales EDs were known to SWP as a VWI victim at either date of arrival to ED or one day either side of the police reported crimed date; a potential 6,509 victims attended an ED for an assault which was not known to the police.

Table 4: Number of assault attendees reporting to one or two services (April 2014-March 2016)

ED BCU	Number of ED assault attendances	Number of ED assault attendances known to SWP	% of ED assault attendances known to SWP
Central	927	215	23
Eastern	3744	1653	44
Northern	2756	1186	43
Western	2839	662	23
Total	10263	3716	36

^f Police crimed date is created within 72 hours of the day of occurrence of the incident.

Figure 5: Emergency department assault attendances known to South Wales Police at date of arrival (April 2014-March 2016)



It is widely known that violent crime, particularly domestic violence is under-reported. Future project direction should look to provide further analysis of the cross-referencing data to establish specific assault locations and types of violence experienced by those not reporting to the police, which in turn will help to provide a more complete picture of violent crime across South Wales.

3.3 South Wales basic command unit violence characteristics

Central basic command Unit summary (April 2014-March 2016)

- Central BCU saw no pattern in the number of ED assault attendances when compared to the same month in the previous year with the exceptions of May and Dec-Feb (all other BCUs showed a decline, Figure A7).
- A higher proportion of ED assault attendees and WAST violence related call-outs were male (male, 65%; female, 61%). There was no difference in gender for SWP AWI recorded victims.
- Across all three services there was a higher prevalence of victims aged 25-34 (Figure A8). Victims within this age category were more likely to be female across all three services.
- ED assault attendances on Saturday and Sunday accounted for almost half of all ED attendances (38%; Table A6).
- Overall, 17% of ED assault attendances arrived during peak weekend night-time economy hours^g.
- ED assault attendance peaked between 10:00-13:59 (14%). This may not relate to the time of the assault as WAST call-out times peaked between 22:00-23:59, suggesting individuals may be waiting until the following morning before attending the ED (Figure A9).
- ED assault attendance varied by age and time; 24% of those aged <18 arrived between 12:00-13:59. Almost a third (30%) of assault victims aged 18-24 and 27% aged 25-34 attended EDs between 22:00-03:59, while 15% of under-18s attended within this time (Table A5).
- Almost a third (30%) of ED assault attendees reported the assault to have occurred on the street (Table A7). The proportion of street assaults has steadily decreased over the 24-month period.
- The overall trend of Central BCU assault location for male attendees shows assault on the street as the most prevalent (Figure A10). For female ED assault attendees, own home assault remains the most prevalent (Figure A11).
- Gender variations in assault locations exist, 36% of male and 17% of female ED assault attendees reported the assault to have occurred on the street, while 31% of female and 17% of male attendees reported being assaulted in their own home (Table A7).
- A higher proportion of male ED assault attendees report having been assaulted by an acquaintance or friend, for female attendees this was their partner (Figure A12 & Figure A13). Caution needs to be given when interpreting the assailant relationship data for Central BCU due to the amount of missing/unknown data for male and female ED assault attendees (72% and 42% respectively).
- Premises reported to have the highest occurrence of assaults by ED assault attendees are presented in Table A8.
- Police beats with the highest number of VWI victims included Morfa (348), Cadoc (221), Buttrills (181), Careu (136) and Cornelly (130).
- Beats with the highest number of WAST violence related call-outs to an individual patient were Morfa (78), Cadoc (44), Illtyd (43), Court (42) and Castleland (37).
- Beats with the highest number of ED assault attendances were Morfa (32), Brackla (23), Coity (14) and Pyle (13).
- Across all three services Morfa beat remains the area experiencing the greatest numbers of violence. However, other beats presenting with high prevalence of ED assault attendances did not show up as beats with high prevalence of violence among SWP and WAST.

^g Peak weekend night time economy hours are counted as Friday 22:00-Saturday 03:59 and Saturday 22:00-Sunday 03:59

Eastern basic command unit summary (April 2014-March 2016)

- Eastern BCU saw a reduction across most months in the numbers of assault attendees reporting to EDs when compared to the same month in the previous year (Figure A14).
- Across all three services, assault victims were more likely to be male (range 72% for EDs to 54% for SWP VWI victims).
- Across all three services victims were more likely to be aged 15-24 (Figure A15).
- ED assault attendances on Saturday and Sunday accounted for almost half of ED attendances (45%; Table A6).
- ED attendances peaked between 02:00-03:59 (15%); while WAST incident time peaked between 00:00-01:59 (Figure A16).
- ED assault attendances on Saturday and Sunday accounted for almost half of all ED attendances (45%; Table A6).
- Overall, 22% of ED assault attendances within Eastern BCU arrived during peak weekend night-time economy hours (Table A6).
- ED assault attendance varied by age and time; almost half (48%) aged 18-24 attended ED between 22:00-03:59, while 25% of <18 yrs attended ED for assault related injuries during the same time period (Table A5).
- Over a third (36%) of ED assault attendees reported the incident to have occurred on the street. 15% of assaults were reported to have occurred on a licensed premises (Table A7). Unlike other areas that have seen a decrease or remained the same in street occurrence as the assault location, the proportion of street assaults increased from 35% to 38% when comparing Apr 14-Mar 15 to Apr 15-Mar 16 (Table A9).
- Gender variations in assault location types exist, 42% of male and 23% of female ED attendees report the assault to have occurred on the street; while 23% of female and 6% of male attendees reported being assaulted in their own home (Figures A17 and A18). However, there has been a sharp rise in the proportion of female ED attendees reporting on the street assaults, now making street location the most common assault location for female victims (Figure A18).
- A higher proportion of male and female ED assault attendees reported being assaulted by a stranger (58% and 35% respectively). Since Jan 15 stranger assault has been steadily increasing for female assault attendees, with a slight dip during Oct-Dec 15 (Figure A19 and Figure A20).
- Police beats with the highest number of VWI victims included City Centre (1,714), Plasnewydd (212), North Ely (185), St Mellons (185) and Tremorfa (177).
- Beats with the highest number of WAST violence related call-outs to an individual patient were City Centre (382), Plasnewydd (71), Butetown (70), Adamsdown (59) and Riverside (57).
- Beats with the highest number of ED assault attendances were City Centre (878), Plasnewydd (70), Cathays (55), St Mellons (35) and Buttrills (32).
- Premises reported to have the highest number of assault occurrences by ED assault attendees are presented in Table A10.

Northern basic command unit summary (April 2014-March 2016)

- Northern BCU saw a decrease in the number of ED assault attendances when compared to the same month in the previous year (Oct 15 being the exception with a sharp spike in ED assault attendances recorded and a minimal increase in Aug 15) (Figure A21).
- ED assault attendees and WAST call-outs were more likely to be male; SWP recorded VWI victims were more likely to be female.
- ED assault attendances were more likely to be aged 18-35; while SWP VWI victims and WAST call-outs were more likely to be aged 25-34 (Figure A22). Across all services those aged 35-44 were more likely to be female; those <18 and 18-24 were more likely to be male.
- ED assault attendances on Saturday and Sunday accounted for 43% of ED attendances (Table A6).
- ED assault attendances and WAST call-outs peaked between 00:00-01:59 (12% and 19% respectively; Figure A23).
- Overall, 19% of ED assault attendances arrived during peak weekend night-time economy hours (Table A6).
- ED assault attendance varied by age and time; almost two fifths (38%) aged 18-24, 32% of those aged 25-34, 26% aged <18 and 22% 65+ attended ED between 22:00-03:59. The most prevalent time period for <18 ED assault attendees to arrive at ED was 14-15:59 and 20:00-21:59, for those aged 35-44 14:00-15:59 was the most prevalent time for ED arrival and for over 65s it was 20:00-21:59 (Table A5).
- Over a third (36%) of ED assault attendances reported the incident to have occurred on the street (Table A7).
- There are large gender variations in assault location with 44% of male and 23% of female ED assault attendances reporting the assault to have occurred on the street; while 28% of female and 11% of male attendees reported the assault to have occurred in their own home (Figures A24 and A25).
- Male ED assault attendees are consistently more likely to be assaulted by a stranger (Figure A26), while female ED assault attendees over the 24-month period were more likely to be assaulted by an acquaintance/friend. However, over the latest 12-month time period considered, stranger assault has increased for female ED attendees to become the most prevalent assault relationship for in the final three-months considered (Figure A27).
- Police beats with the highest number of VWI victims included Town (402), Aberdare East (304), Cymmer (171), Cyfartha (162) and Beddau (158).
- Beats with the highest number of WAST violence related call-outs to an individual patient were Town (107); Aberdare East (83); Cymmer (52), Porth (40) and Cyfartha (39).
- Beats with the highest number of ED assault attendances were Town/Park [Merthyr] (182), City Centre [Cardiff] (42), Pentre (19) and Treherbert (15).
- Premises reported to have the highest number of assault occurrences by ED assault attendees are presented in Table A11. Streets reported as specific assault locations on multiple occasions, where either the venue name was unknown by ED attendee or the assault occurred on the street included High Street, Merthyr (9); Taff Street, Pontypridd (7).

Western basic command unit summary (April 2014-March 2016)

- Western BCU has seen a general reduction in the number of assault attendees reporting to EDs when compared to the same month the previous year. However the latest monthly comparison shows an increase in ED assault attendees (Figure A28).
- Across all three services, assault victims were more likely to be male.
- Across all three services there was a higher prevalence of individuals aged 25-34 closely followed by those aged 18-24. (Figure A29).
- ED assault attendances on Saturday and Sunday accounted for 47% (Table A6) of ED attendances.
- Unlike the other three SWP BCUs, Western BCU ED attendances for assaults do not appear to have peak times but remain fairly consistent at 9-10% across all time points with a dip in attendances between 06:00-07:59 at 3%. WAST incident time has a peak between 02:-00-03:59 (18%; Figure A30).
- Overall, 16% of ED assault attendances within Western BCU arrived during peak weekend night-time economy hours (Table A6).
- Western BCU has the lowest percentage of all ED assault attendances arriving between 22:00-03:59 over the weekend (during the 'peak' night time economy) compared to other BCUs; this may be due in part to the Help Point (Box 2, page 20), a multi-agency partnership initiative.
- ED assault attendance varied by age and time; almost a third (31%) aged 18-24 attended ED between 22:00-03:59, while 18% of <18 attended ED for assault related injuries during the same time period (Table A5).
- Almost a fifth (18%) of ED assault attendees reported the assault to have occurred in their own home (Table A7).
- Gender variations in assault location types exist, 30% of female and 12% of male ED assault attendances reported the assault to have occurred in their own home. Male ED assault attendees report consistently the most prevalent assault location as being on the street; while female attendees report assault in their own home as the most common (Figures A31 and A32).
- Male assault attendances were more likely to be assaulted by a stranger (Figure A33). For the most part female ED assault attendances also reported stranger violence as the most prevalent; however Jan-Mar 15 and Jan-Mar 16 saw partner violence spike, overtaking stranger violence as the most prevalent (Figure A34).
- Police beats with the highest number of VWI victims include Marina (685); City Area (247); Penlan (213); Neath North (193) and Townhill/Mayhil (195).
- Beats with the highest number of WAST violence related call-outs related to an individual patient are Marina (175); Mount Pleasant (104); City Area [Swansea] (100); Townhill/Mayhill (71) and Neath North (71).
- Beats with the highest number of ED assault attendances were Mount Pleasant (209); Marina (147); Neath North (57); City Area [Swansea] (48) and Port Talbot (42).
- Premises reported to have the highest number of assault occurrences by ED assault attendees are presented in Table A12. Streets reported as specific assault locations on multiple occasions, where either the venue name was unknown by ED attendee or the assault occurred on the street included Wind Street (124), Kingsway (30) and Castles Gardens (24) all located in Swansea and Station Road, Port Talbot (23).

4. Summary and recommendations

A number of policies and initiatives exist in Wales that aim to address violence, including the recent Framework for Managing the Night-Time Economy in Wales³², and the Violence Against Women, Domestic Abuse and Sexual Violence (Wales) Act (2015)³³.

Research has shown that violence is associated with deprivation and other social determinants such as unemployment, income, education, and cultural, social and gender norms.

Violence intervention and prevention programmes are more likely to be successful in the long term if they are evidence based and embedded in a violence prevention strategy that recognises these factors, and looks to address these inequalities and protect against risks.

This rationale sits firmly behind the 'South Wales Model' of developing a routine surveillance and analysis system for early intervention and prevention of violence.

Violence within the night time economy was highlighted as a major contributing factor to ED assault attendances during the night time period and a number of hotspots for violence have been highlighted as a result of data sharing.

A joint approach among agencies to act on high risk premises is essential.



Police and EDs need to continue to work closely with planning and licensing authorities to provide crucial information on violence hotspots to allow for appropriate controls on the number of licensed venues in a given area or on specific premises that are regularly being reported as assault locations or 'last drink venue' for assault victims. Working alongside environmental health practitioners and licensing review officers, data can be used to provide tailored action plans to help reduce environmental risks that encourage violence and be considered within licensing renewals.

In addition, staff working in licensed premises should continue to be provided with the necessary training to help recognise either those individuals who are vulnerable due to intoxication or to deal with potential customers who are displaying risky or threatening behaviour.



Within the larger inner city areas stranger and acquaintance violence reported by ED assault attendees was the most prevalent.

Therefore, ensuring staff working in licensed premises have had the necessary training to help address issues around legal requirements of serving alcohol, recognising either those individuals who are vulnerable due to intoxication or how to appropriately deal with potential customers who are displaying risky behaviour will help to ensure appropriate safeguarding procedures are in place.

Assaults occurring in the home remain the most prevalent for female ED assault attendees across all four South Wales police BCUs.

It is recognised that data for assaults in the home can be considered a proxy for the proportion of women experiencing domestic violence. Work is therefore needed to ensure that potential cases of domestic violence are referred to the appropriate agencies. Working in partnership with local health boards to deliver training to frontline healthcare staff to help identify those suffering from domestic violence, improving systems for referral to relevant support agencies and ongoing monitoring, as well as triggering protection services to reduce further incidents would help to ensure appropriate interventions are available for at risk groups at a local level.

In a number of specific areas it was highlighted that WAST saw a higher proportion of ambulance call-outs occurring between 16:00-19:59, mostly to young males aged 15-24.

A high number of these are recognised to be around school locations, suggesting problems occurring once school has finished. A more visible police patrol presence at this time should be considered around these areas alongside working with school safety partnerships to engage young people at risk of violence in activities that promote positive lifestyles and enhance well-being, including programmes to address risky behaviour and conflict resolution.

Unlike the other three BCUs, Western BCU ED attendances for assaults do not appear to have peak times but remain fairly consistent at 9-10% across all time points, with a dip in attendances between 06:00-07:59. As previously mentioned this could be in part due to the Help Point initiative that operates during the 'busiest' times; such evidence suggests that initiatives such as this help to alleviate the burden of violence on local services. Working in collaboration with local partners across South Wales to implement such initiatives should be a priority.

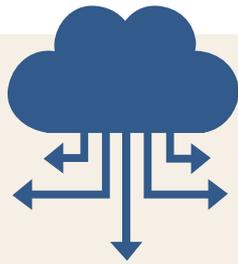
Consideration should be given to expanding the current datasets to integrate information on drug or alcohol use among victims and perpetrators of violence to provide a more complete understanding of communities most at-risk of violence, and further support targeted approaches to violence prevention. Subsequent evaluations of the effectiveness of real time interventions on violence would further inform intervention and prevention strategies.

5. Conclusions

Evidence has shown the importance of partnership working in violence prevention. This project was the first in South Wales to combine violence data from ambulance services, health boards and police sources to build up a picture of local patterns of violence.

This data has been used to inform local action to prevent violence in South Wales to the benefit of individuals and local communities. Success of the project was made possible through strong collaborations across Public Health Wales, the South Wales Police Crime Commissioner and police, Health Boards and Welsh Ambulance Service Trust, and has demonstrated that linking data is possible and useful in real time.

The current project has provided an opportunity to inform and develop a data sharing system between the police, HBs and WAST that has assisted in developing an understanding of violence at a local level across South Wales.



This has helped to establish a system of bi-monthly reports on violence based on local police geography. This information has been used to support the development of intervention and prevention strategies aimed at operational, tactical and strategic levels and informed Local Violence Reduction Action Groups. This allows police and local partnerships to target intervention and prevention strategies for violence within their communities at areas which are most at-risk of violence.

The systems set up during this project provide a valuable foundation to continue to feed in to the understanding of violence across South Wales and, more importantly, how best to target resources to tackle the issues of violence. This project has made progress in establishing processes for data sharing

across multiple agencies with work done to improve data quality, however there is still potential to improve data quality across all partners. Automated systems for the regular release of data from HBs, police and WAST to PHW will ensure future reports can continue to be produced in a timely manner to inform practice on the ground.

To ensure the continued success of this project it is essential that all partners remain engaged with the processes established to enable the timely delivery of data. This allows the messages coming out of the data to be meaningful and relevant, thus giving the police and health partners an increased ability to act swiftly to intervene and prevent violence. With new data collection systems being introduced across HBs during 2016 that automatically capture key data items, variations in data and delays in data capture should be minimised.

Interventions should be evidence based and tailored to the specific needs of an area, a campaign to prevent violence in high risk communities should be tailored to suit the demographics of those presenting to services in that area. The mapping systems developed for this project could be utilised further to map different types of violence to levels of deprivation and to different types of crime such as vandalism and property violence. Further, mapping could be used to allow for an increased understanding of how health issues impact populations and the trends by which these populations are affected. Therefore, there is a potential for geolocation mapping to explore other health and public health issues such as adverse childhood experiences (ACEs) and health-harming behaviours, and other social and environmental issues resulting in crime and disorder such as playground and youth drinking.

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Finally, we are grateful to colleagues from Public Health Wales who supported the development of the final report (Benjamin Gray, Alisha Davies and Kat Ford).

Appendix 1:

Review methodology for the effectiveness of interventions for violence prevention

Appendix 1 sets out the methodology and inclusion and exclusion criteria for the review of effectiveness of interventions for violence prevention and reduction.

Methodology

A review was conducted of existing evidence of randomised controlled- or controlled designed trials, or specific effective policy level interventions for violence, including:

- general violence and assault
- alcohol and night time economy related violence

- domestic/intimate partner violence
- youth violence
- children and elder abuse related violence.

The following broad sector interventions were included: police and criminal justice, health, education, social sector. Policy level interventions were also explored.

Search strategy:

Existing systematic and rapid reviews were identified using PubMed, The Cochrane Library, the Campbell Collaboration and Google Scholar using the following search terms: 'interventions for violence'; 'assault'; 'violence'; 'violent behaviour'; 'night time economy violence'; 'alcohol related violence'; 'review'; 'systematic review'; 'rapid review' 'evaluation'; 'randomised control trials'; 'policy level interventions'.

A number of systematic reviews were identified that incorporated evidence reviews on a specific area of violence, such as the effectiveness of inter-agency data sharing of ED recorded assault interventions²¹; alcohol interventions/alcohol policy and intimate partner violence²⁷, youth violence³¹; preventing relationship violence³⁴; policy change in preventing youth violence³³; and interventions on violence against women and girls³⁵. For the purpose of the current rapid evidence review, the original reviews were used as a basis on which to draw on the scientific evidence and were updated with trials published up until December 2015.

Inclusion and exclusion criteria:

Studies were included if they focused on the effectiveness of interventions that were intended to prevent violence before it occurs (primary violence prevention) or reduce further or ongoing violence (secondary violence prevention), or reduce the risk factors for violence in responding to assault victims needs. English language studies from Western World and Europe were included if they had a randomised controlled- or controlled design or were looking specifically at policy level interventions.

Studies were excluded if they concentrated on clinical groups or specific populations such as refugees, the prison population, and those with a disability or mental health issues as the current study focused on the general population. Studies looking at child maltreatment and sexual violence were also excluded.

Data synthesis:

Reviews and any additional studies were grouped into three categories:

- alcohol related/night-time economy violence
- domestic/intimate partner violence
- other (children/youth/elder) violence.

Appendix 2:

Data audit – changes/improvements in data collection

Data audits were conducted on a quarterly basis between September 2014 – August 2015 by a PHW researcher.

Key

-  Data not available but would be desirable
-  Completion rate above 90%
-  Completion rate between 80% to 90% - potential for improving this could be explored
-  Completion rate below 80% - potential for improving this to be explored

Health Board data audit

Data Item	CTUHB			C&VUHB			ABMUHB		
	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion
Record Identifier	100%	100%	100%	-	-	-	-	-	-
A&E department	100%	100%	100%	100%	100%	100%	-	-	100%
Date of attendance	100%	100%	100%	100%	100%	100%	100%	100%	100%
Time of attendance	100%	100%	100%	100%	100%	100%	100%	100%	100%
Patient residence	100%	100%	100%	-	-	-	-	-	-
Gender	100%	100%	100%	100%	100%	100%	100%	100%	100%
Age	100%	100%	100%	100%	99.8%	99.7%	100%	100%	100%
Day of attendance	-	-	-	100%	100%	100%	-	-	-
Month of attendance	-	-	-	100%	100%	100%	-	-	-
Year of attendance	-	-	-	100%	100%	100%	-	-	-
Alcohol/drug use	99.6%	100%	100%	-	-	-	100%	100%	100%
Assault site (code)	100%	100%	100%	81.9%	85.6%	88.9%	100%	100%	100%
Assault location (text)	67.0%	71.4%	69.9%	93.1%	96.0%	96.9%	92.7%	94.7%	92%
Assault type	99.6%	100%	100%	81.9%	85.6%	88.9%	100%	100%	100%
Time of assault	-	-	-	52.0%	53.1%	54.1%	Approx 69%	Approx 56%	Approx 60%
Date of assault	-	-	-	81.9%	85.6%	88.9%	100%	100%	100%
Number of assailants	99.8%	100%	100%	81.9%	85.6%	88.9%	99.8%	99.8%	99.8%
Assailant relationship	99.6%	99.7%	100%	80.8%	85.3%	88.5%	80.4%	75.3%	74.5%
Assailant gender	99.6%	100%	100%	-	-	-	89.7%	86.9%	89.2%

Data Item	CTUHB			C&VUHB			ABMUHB		
	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion
Police notification	99.6%	99.7%	100%	-	-	-	86.1%	87.6%	86.3%
Previous assailant	99.6%	100%	100%	-	-	-	76.8%	81.8%	80.2%
Attendance group code	-	-	-	81.9%	85.6%	88.9%	98.9%	99.4%	98.4%
Incident type (code)	-	-	-	99.9%	100%	99.8%	-	-	-
Incident type (description)	-	-	-	99.9%	100%	100%	-	-	-
Source of referral	-	-	-	99.3%	99.7%	99.7%	-	-	-
Arrival mode	-	-	100%	99.9%	100%	100%	100%	100%	100%
Outcome	-	-	-	100%	99.8%	99.8%	100%	100%	100%
Diagnosis code	-	-	-	87.9%	76.1%	74.7%	-	-	-
Diagnosis description	-	-	-	87.9%	76.1%	74.7%	-	-	-
Initial complaint	-	-	-	99.9%	99.8%	100%	100%	100%	100%
Additional incident detail	-	-	-	0.0%	0.0%	0%	100%	100%	100%
Alcohol indicator	-	-	-	-	-	-	100%	100%	64.4%
Activity at time of injury	-	-	-	-	-	-	100%	100%	48.8%
Incident location type	-	-	-	-	-	-	100%	100%	98.8%
Premises name	-	-	-	-	-	-	57.7%	46.9%	55.7%

Police data audit – Victim file

South Wales Police Victim file			
Data item	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion
			Codes
Occ front	100.0%	100.0%	10 or 11 digit number
Crimed	100.0%	100.0%	dd/mm/yyyy
Committed from	Data field not provided	Data field not provided	dd/mm/yyyy
Committed to	Data field not provided	Data field not provided	dd/mm/yyyy
Category	100.0%	100.0%	ROB; SEX; VAP
Occ Easting	99.9%	99.9%	6 or 7 digit co-ordinate
Occ Northing	99.9%	99.9%	6 or 7 digit co-ordinate
Occurance street name	99.7%	99.7%	Name of street or road of incident
Occurance town	99.9%	99.9%	Town of incident
Occurance postcode	99.9%	99.8%	6 or 7 digit postcode of incident
Vic back ID	Data field not provided	Data field not provided	24 digit number
Vic age	89.9%	91.0%	Single year of age
Vic sex	91.9%	92.6%	M; F; I; U
Vic Easting	92.9%	93.2%	3, 4, 5 or 7 digit co-ordinate
Vic Northing	92.9%	93.2%	3, 4, 5 or 7 digit co-ordinate
Victim street Name	94.7%	94.6%	Residential street or road name of victim
Victim town	95.2%	95.1%	Town name of victim
Victim postcode	94.3%	94.6%	6 or 7 digit victim residential postcode
Occ_Home Office_Code	100.0%	100.0%	Codes containing digits and numbers

Data item	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion	Codes
ONS offence group	100.0%	100.0%	Data field no longer provided	Homicide Rape Other serious sexual offences Robbery Violence with injury Violence without injury Possession of weapon offences Public order offences Miscellaneous crimes against society
CRIMESEC line 2012	100.0%	100.0%	Data field no longer provided	Codes containing digits and numbers
Home Office description	100.0%	100.0%	24.1%	Qualitative description of offence
Alcohol related	100.0%	100.0%	99.7%	0; 1
CRIMESEC description	100.0%	100.0%	100.0%	Assault with Injury; Public Fear, Alarm or Distress; Assault without Injury; Harassment; Assault With Intent to Cause Serious Harm; Robbery of Personal Property; Racially or Religiously Aggravated Public Fear, Alarm or Distress; Actual Bodily Harm and other Injury; Sexual Assault on a Female aged 13 or over (WEF May 2004); Assault without Injury on a Constable; Possession of Other Weapons; Possession of Article with Blade or Point; Rape of a Female aged 16 and over (WEF May 2004); Threats to Kill; Exposure and Voyeurism; Sexual Assault on a Female Child under 13 (WEF May 2004); Cruelty to Children/Young Persons; Sexual Activity involving a Child under 16; Rape of a Female Child under 13 (WEF May 2004); Racially or Religiously Aggravated Assault with injury; RMay 2004); Possession of Firearms with Intent; Incest or Familial Sexual Offences; Racially or Religiously Aggravated Harassment; Kidnapping; Rape of a Male Child under 13 (WEF May 2004); Other Miscellaneous Sexual Offences; Stalking; Endangering Life; Murder; Attempted Murder; Child Abduction; Rape of a Male Child under 16 (WEF May 2004); Cause death or serious injury by dangerous driving; Rape of a Male aged 16 and over (WEF May 2004); Sexual Grooming; Abuse of Children through Prostitution & pornography; Soliciting for the Purpose of Prostitution; Racially or Religiously Aggravated Actual Bodily Harm and other Injury; Causing Sexual Activity without Consent (WEF May 2004); Sexual Activity etc with a Person with a Mental Disorder; Abuse of Position of Trust of a Sexual Nature; Causing Death by Careless or Inconsiderate Driving; Manslaughter; Exploitation of Prostitution; Conspiracy to Murder; Causing Death by Careless Driving under Influence of Drink or Drugs; Trafficking for Sexual Exploitation; Indecent Assault on a Female (Pre-May 2004); Rape of a Female (Pre-May 2004); Causing Death by Driving; Unlicensed, Disqualified or Uninsured Drivers; Causing or Allowing Death of Child or Vulnerable Person; Cruelty to and Neglect of Children; Indecent Assault on a Male (Pre-May 2004 Classification); Unnatural Sexual Offences

Police data audit – Offender file

South Wales Police Offender file			
Data item	Audit 1 (Sep to Dec 2014) Completion	Audit 2 (Jan to Apr 2015) Completion	Audit 3 (May to Aug 2015) Completion
Occ front	100%	100%	100%
Committed from	Data field not provided	Data field not provided	Data field not provided
Committed to	Data field not provided	Data field not provided	Data field not provided
Off_Easting	35.3%	29.10%	98.1%
Off_Northing	35.3%	29.10%	98.1%
OffN_Age	38.2%	31.70%	27.8%
OffN_Sex	38.2%	31.70%	27.8%
Category	100%	100%	100%
Occurrence_StreetName	99.7%	99.70%	27.7%
Occurrence_Town	99.9%	99.90%	27.8%
Occurrence_PostCode	99.8%	99.80%	27.6%
Offender_Street	36.7%	30.40%	26.4%
Offender_Town	37.3%	31%	26.4%
Offender_PostCode	36.3%	29.80%	26.1%
AlcoholRelated	100%	100%	82.4%

Codes

10 or 11 digit number

dd/mm/yyyy

dd/mm/yyyy

3,4,5,6 or 7 digit co-ordinate

3,4,5,6 or 7 digit co-ordinate

Single year of age

F; M; I; U

ROB; SEX; VAP

Name of street or road of incident

Town of incident

6 or 7 digit postcode of incident

Residential street or road name of offender

Town name of offender

6 or 7 digit offender residential postcode

0; 1

Appendix 3: Tables and figures

Appendix three contains data tables, figures and maps not included in the main report.

Map A1:

Comparison of occurrence of South Wales police violence with injury victims by beat (Apr 14-Mar 15 and Apr 15-Mar 16)

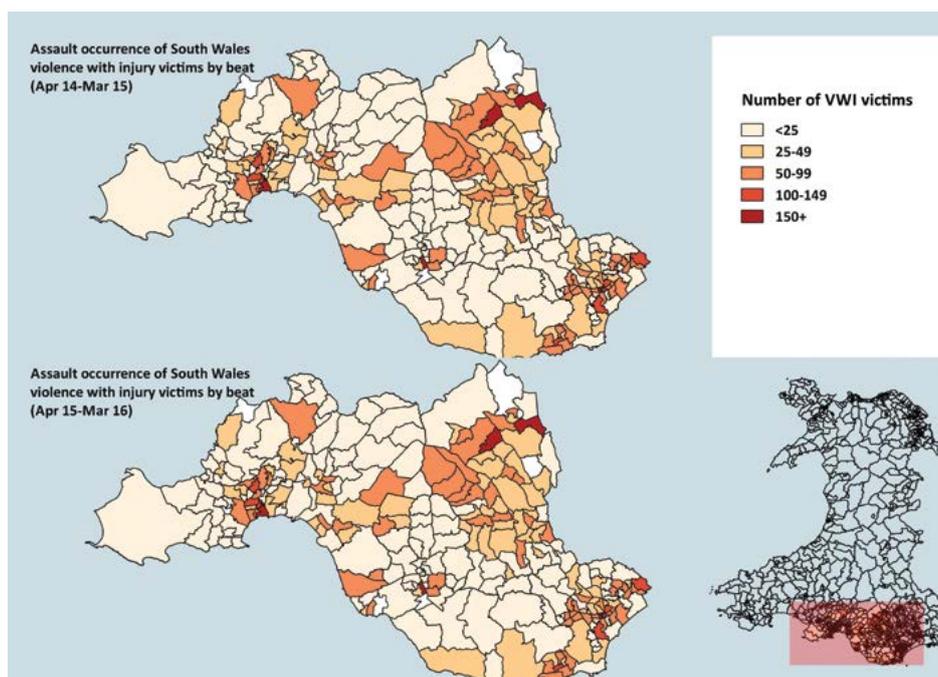


Figure A1: Police recorded victims of violence with injury offences by month trend chart (Apr 14- Mar 16)

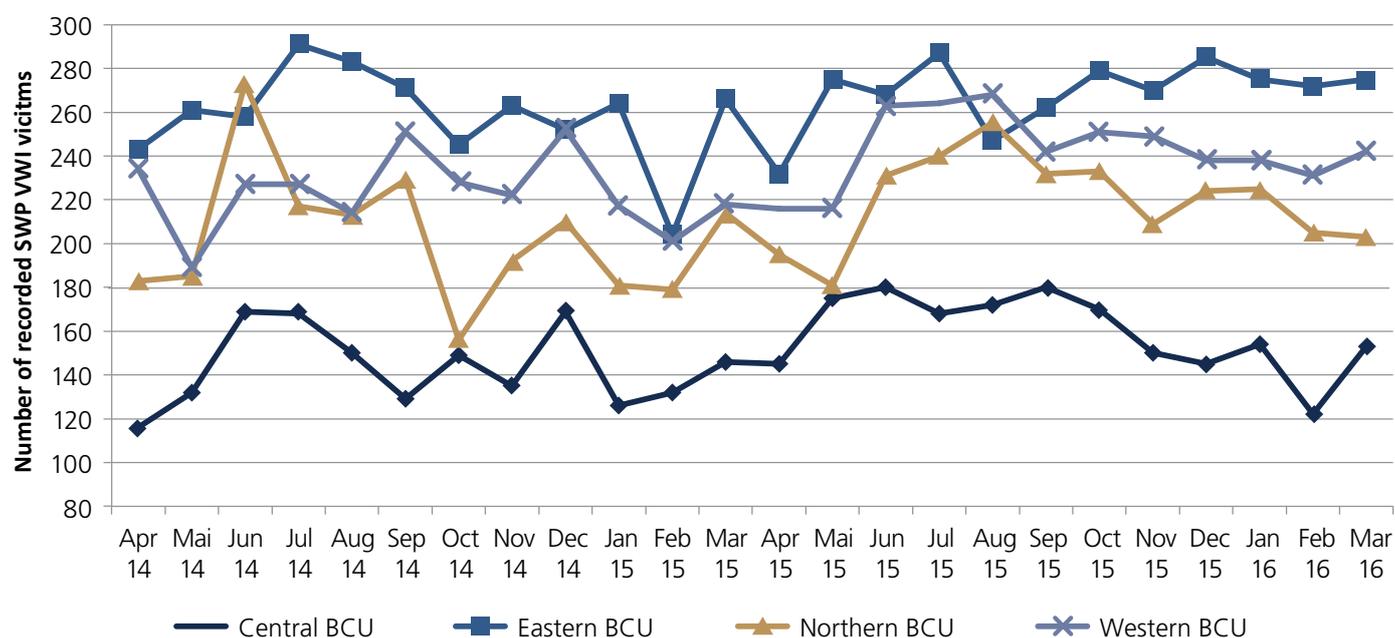


Table A1: Police recorded assault with injury (VWI) victims by month (Apr 14-Mar 16)

	Central BCU VWI victims	Central BCU % of SWP total for month	Eastern BCU VWI victims	Eastern BCU % of SWP total for month	Northern BCU VWI victims	Northern BCU % of SWP total for month	Western BCU VWI victims	Western BCU % of SWP total for month	SWP Total
Apr 14	116	15	243	31	183	24	234	30	776
May 14	132	17	261	34	185	24	189	25	767
Jun 14	169	18	258	28	273	29	227	24	927
Jul 14	168	19	291	32	217	24	227	25	903
Aug 14	150	17	283	33	213	25	214	25	860
Sep 14	129	15	271	31	229	26	251	29	880
Oct 14	149	19	245	31	156	20	228	29	778
Nov 14	135	17	263	32	192	24	222	27	812
Dec 14	169	19	252	29	210	24	252	29	883
Jan 15	126	16	264	34	181	23	217	28	788
Feb 15	132	18	204	28	179	25	201	28	716
Mar 15	146	17	266	32	214	25	218	26	844
Apr 15	145	18	232	29	195	25	216	27	788
May 15	175	21	275	32	181	21	216	26	847
Jun 15	180	19	268	28	231	25	263	28	942
Jul 15	168	18	287	30	240	25	264	28	959
Aug 15	172	18	247	26	255	27	268	28	942
Sep 15	180	20	262	29	232	25	242	26	916
Oct 15	170	18	279	30	233	25	251	27	933
Nov 15	150	17	270	31	209	24	249	28	878
Dec 15	145	16	285	32	224	25	238	27	892
Jan 16	154	17	275	31	225	25	238	27	892
Feb 16	122	15	272	33	205	25	231	28	830
Mar 16	153	18	275	32	203	23	242	28	873
Total	3635	18	6328	31	5065	24	5598	27	20626

*Offences included in the VWI figure: assault with injury; assault with intent to cause serious harm; attempted murder; murder; manslaughter and racially or religiously aggravated assault with injury.

Table A2: Emergency department assault attendances by month (April 2014-March 2016)

	Central BCU ED assault attendances	Central BCU % of SWP total for month	Eastern BCU ED assault attendances	Eastern BCU % of SWP total for month	Northern BCU ED assault attendances	Northern BCU % of SWP total for month	Western BCU ED assault attendances	Western BCU % of SWP total for month	SWP Total
Apr-14	36	8	178	39	111	24	133	29	458
May-14	35	7	182	37	135	27	146	29	498
Jun-14	39	8	198	39	121	24	153	30	511
Jul-14	33	7	166	34	138	28	148	31	485
Aug-14	50	10	176	37	119	25	136	28	481
Sep-14	36	7	184	37	138	28	134	27	492
Oct-14	32	7	178	41	90	21	129	30	429
Nov-14	31	6	193	40	150	31	104	22	478
Dec-14	47	10	155	34	121	26	138	30	461
Jan-15	39	10	130	34	115	30	94	25	378
Feb-15	46	12	131	35	99	26	99	26	375
Mar-15	41	10	178	42	123	29	83	20	425
Apr-15	32	10	127	38	90	27	86	26	335
May-15	40	9	165	38	118	28	106	25	429
Jun-15	31	8	145	37	112	29	102	26	390
Jul-15	41	10	153	35	110	26	127	29	431
Aug-15	47	11	144	33	122	28	130	29	443
Sep-15	40	10	148	36	111	27	109	27	408
Oct-15	44	10	140	33	121	28	120	28	425
Nov-15	34	8	143	35	107	26	122	30	406
Dec-15	38	9	139	33	121	28	129	30	427
Jan-16	41	11	131	34	108	28	105	27	385
Feb-16	36	10	138	38	91	25	98	27	363
Mar-16	35	10	119	34	85	24	108	31	347
Total	924	9	3741	36	2756	27	2839	28	10260

Figure A2: Emergency department assault attendances by month trend chart (April 2014-March 2016)

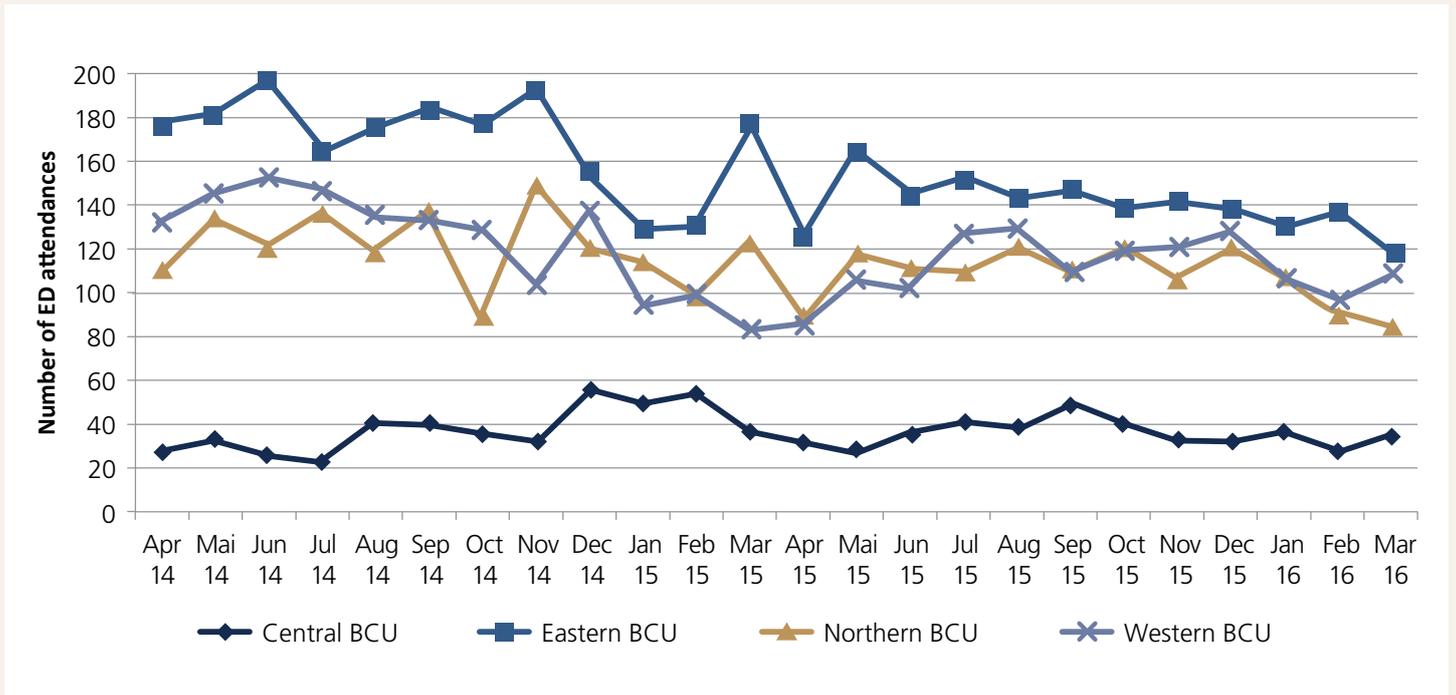


Figure A3: Welsh Ambulance Service Trust violence related call-outs to individual patients by month trend chart (Apr 14-Mar 16)

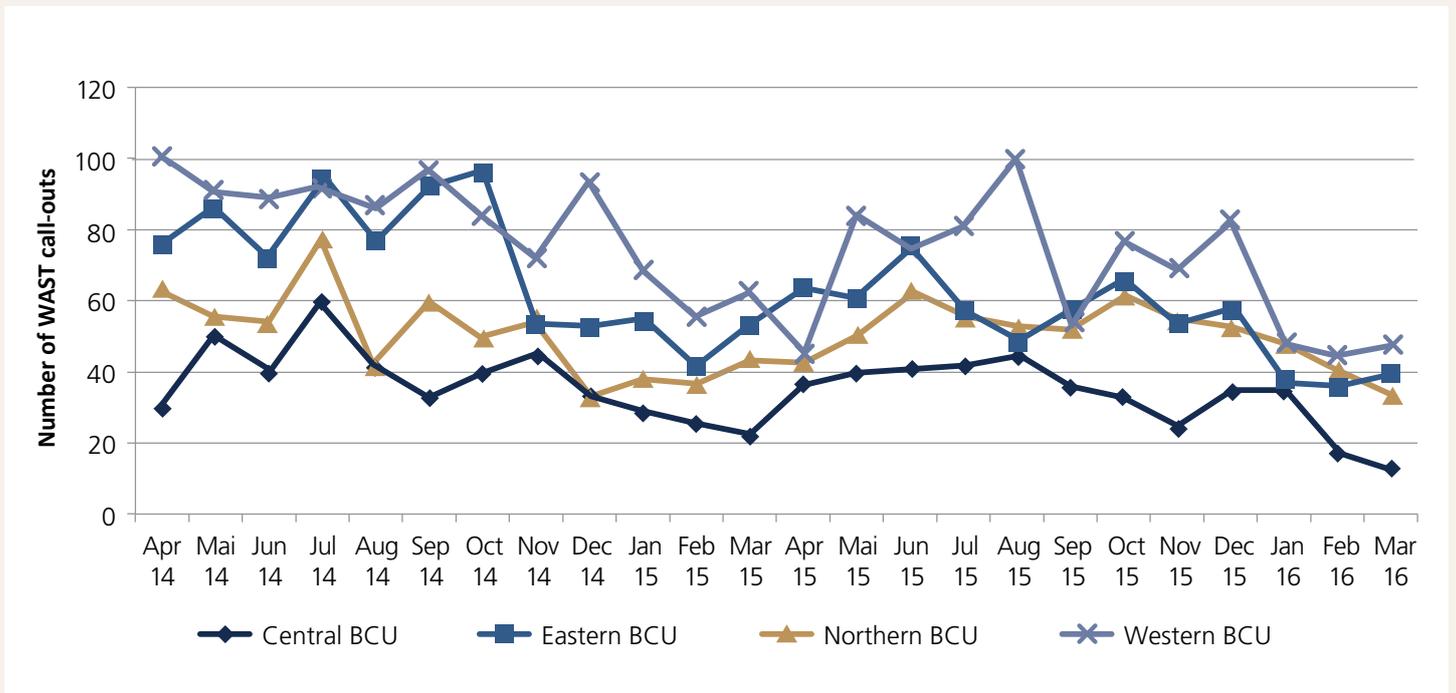


Table A3: WAST violence related call-outs by month (Apr 14-Mar 16)

	CBCU		EBCU		NBCU		WBCU		SWP		
	ED	Null									
Apr-14	15	15	38	38	34	30	52	49	139	132	271
May-14	33	18	44	43	34	22	65	26	176	109	285
Jun-14	18	22	44	28	29	25	47	42	138	117	255
Jul-14	26	34	51	44	45	33	57	35	179	146	325
Aug-14	17	24	43	35	21	21	43	43	124	123	247
Sep-14	19	14	54	39	29	31	54	43	156	127	283
Oct-14	21	19	49	48	23	27	40	44	133	138	271
Nov-14	25	20	26	28	32	24	38	34	121	106	227
Dec-14	13	20	20	33	12	21	48	45	93	119	212
Jan-15	17	12	28	27	18	20	35	34	98	93	191
Feb-15	17	9	23	19	18	19	33	23	91	70	161
Mar-15	17	5	30	24	24	20	33	30	104	79	183
Apr-15	18	19	31	33	24	19	27	19	100	90	190
May-15	19	21	32	29	24	27	45	39	120	116	236
Jun-15	19	22	42	34	41	22	44	31	146	109	255
Jul-15	18	24	33	25	27	29	36	45	114	123	237
Aug-15	22	23	24	25	30	23	56	44	132	115	247
Sep-15	24	12	36	22	31	21	31	23	122	78	200
Oct-15	13	20	31	35	30	32	36	41	110	128	238
Nov-15	13	11	23	31	28	27	35	34	99	103	202
Dec-15	19	16	28	30	25	28	47	35	119	109	228
Jan-16	17	18	20	18	28	20	32	17	97	73	170
Feb-16	5	13	20	16	22	19	28	17	75	65	140
Mar-16	4	9	19	21	14	20	27	20	64	70	135
Total	429	420	789	725	643	580	989	813	2850	2538	5388
%	51	49	52	48	53	47	55	45	53	47	100
% SWP Total											

Table A4: Violence with injury victims occurring in South Wales by victim's residence (Apr 14-Mar 16)

Victim residence BCU	Male	Male (%)	Female	Female (%)	Unknown	Total	%
Out of area	568	5	320	3	4	892	4
Central	1649	16	1695	17	31	3375	16
Eastern	2418	23	2362	24	14	4794	23
Northern	2241	21	2443	25	35	4719	23
Western	2534	24	2337	24	25	4896	24
Unknown	1146	11	755	8	49	1950	9
Total	10556	100	9912	100	158	20626	100

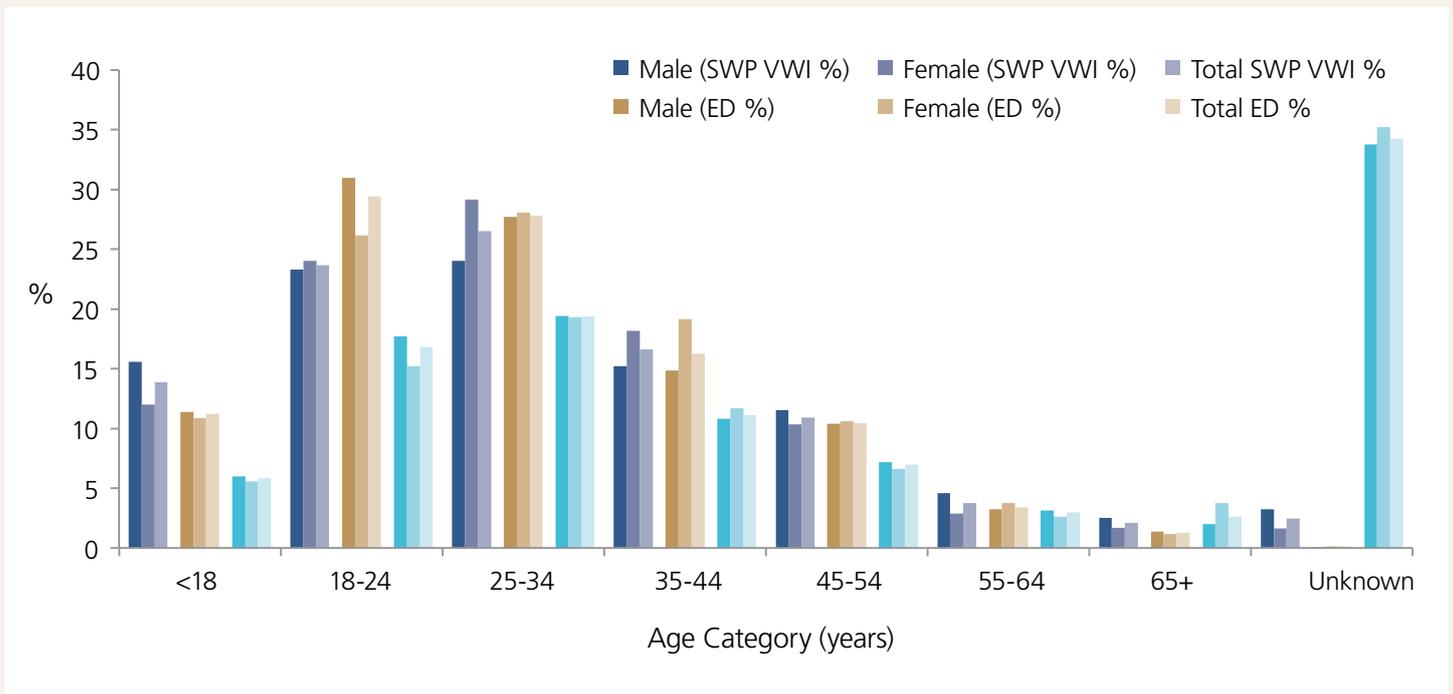
Figure A4: South Wales emergency department assault attendances, South Wales police violence with injury victims and Welsh Ambulance Service Trust violence related call-outs to individual patients by gender and age (%; April 2014-March 2016)

Table A5: Number of emergency department assault attendances by time and patient age (April 2014-March 2016)

Age Categories (years)	<18	18-24	25-34	35-44	45-54	55-64	65+	unk	Total	%
00:00 - 1.59	8	28	26	12	13	0	3	0	90	10
02 - 3.59	2	29	24	16	5	0	0	0	76	8
04 - 5.59	0	17	17	9	6	0	0	0	49	5
06 - 7.59	0	4	4	0	0	1	0	0	10	1
08 - 9.59	12	7	16	25	14	4	1	0	79	8
10 - 11.59	14	33	36	19	15	7	1	0	125	13
12 - 13.59	30	33	40	21	10	3	0	0	137	15
14 - 15.59	19	38	33	19	9	5	4	0	117	13
16 - 17.59	12	14	18	10	8	0	0	0	62	7
18 - 19.59	9	8	10	8	5	2	2	0	44	5
20 - 21.59	12	17	12	6	7	6	1	0	61	7
22 - 23.59	9	17	19	18	15	3	2	0	83	9
Central BCU Total	127	245	255	163	107	31	14	0	933	100
Central %	14	26	27	17	11	3	2	0	100	
00:00 - 1.59	24	195	146	81	60	17	1	1	525	14
02 - 3.59	22	292	148	62	40	8	4	1	577	15
04 - 5.59	7	158	116	35	20	6	4	0	346	9
06 - 7.59	6	30	30	17	6	8	0	0	97	3
08 - 9.59	10	39	42	33	15	6	0	1	146	4
10 - 11.59	38	64	75	51	33	14	5	1	281	8
12 - 13.59	47	83	98	51	35	4	2	0	320	9
14 - 15.59	40	77	86	47	34	11	3	0	298	8
16 - 17.59	54	69	74	37	31	8	3	0	276	7
18 - 19.59	44	60	73	40	31	6	5	0	259	7
20 - 21.59	39	52	75	50	26	16	2	1	261	7
22 - 23.59	49	96	83	73	36	14	4	3	358	10
Eastern BCU Total	380	1215	1046	577	367	118	33	8	3744	100
Eastern %	10	32	28	15	10	3	1	0	100	

Age Categories (years)	<18	18-24	25-34	35-44	45-54	55-64	65+	unk	Total	%
00:00 - 1.59	31	102	103	55	39	10	4	0	344	12
02 - 3.59	18	95	75	52	27	6	1	0	274	10
04 - 5.59	1	41	39	25	13	2	1	0	122	4
06 - 7.59	1	16	16	14	5	4	1	0	56	2
08 - 9.59	14	33	39	31	21	5	1	0	144	5
10 - 11.59	41	68	90	41	32	18	2	0	292	11
12 - 13.59	32	84	78	47	28	11	6	0	286	10
14 - 15.59	47	63	64	60	23	9	1	0	267	10
16 - 17.59	43	54	67	38	26	5	4	0	237	9
18 - 19.59	35	51	55	38	28	11	5	0	223	8
20 - 21.59	47	48	57	43	19	8	9	0	231	8
22 - 23.59	41	81	62	48	34	11	3	0	280	10
Northern BCU Total	351	736	745	492	295	100	37	0	2756	100
Northern %	13	27	27	18	11	4	1	0	100	
00:00 - 1.59	18	81	80	42	42	11	4	0	278	10
02 - 3.59	6	118	98	34	31	2	1	0	290	10
04 - 5.59	9	106	72	19	11	5	2	1	225	8
06 - 7.59	2	25	27	10	4	1	1	1	71	3
08 - 9.59	9	29	44	25	15	5	2	0	129	5
10 - 11.59	23	71	69	44	24	10	7	0	248	9
12 - 13.59	25	74	85	61	31	11	1	0	288	10
14 - 15.59	41	78	81	43	29	9	5	1	287	10
16 - 17.59	47	75	57	38	34	6	9	0	266	9
18 - 19.59	45	56	76	46	23	15	6	0	267	9
20 - 21.59	41	64	64	38	31	11	3	1	253	9
22 - 23.59	29	59	57	35	29	14	8	1	232	8
Unknown	0	0	2	1	0	2	0	0	5	0
Western BCU Total	295	836	812	436	304	102	49	5	2839	100
Western %	10	29	29	15	11	4	2	0	100	
Total	1153	3032	2858	1668	1073	351	133	13	10272	
Wales %	11	30	28	16	10	3	1	0	100	

Table A6: Number of emergency department assault attendances by day and time (Apr 14-Mar 16)

Time	00-1.59	02-3.59	04-5.59	06-7.59	08-9.59	10-11.59	12-13.59	14-15.59	16-17.59	18-19.59	20-21.59	22-23.59	Total	%
Mon	8	1	3	2	17	22	29	26	15	6	7	4	140	16
Tue	2	1	0	0	13	21	19	15	8	3	8	6	96	11
Wed	5	2	2	0	9	19	14	16	6	11	6	13	103	12
Thu	8	5	5	2	10	19	18	11	4	4	2	21	109	12
Fri	5	4	5	0	7	15	18	14	8	6	7	11	100	11
Sat	19	22	11	3	7	7	9	14	10	5	15	18	140	16
Sun	43	41	23	3	7	11	15	9	11	9	16	10	198	22
Total	90	76	49	10	70	114	122	105	62	44	61	83	886	100
%	13	11	7	1	10	16	17	15	9	6	9	12	100	
Mon	44	39	25	11	28	51	60	57	56	39	36	38	484	13
Tue	40	35	28	11	17	40	37	45	25	25	33	35	378	10
Wed	40	31	25	7	15	28	35	32	35	27	38	46	365	10
Thu	55	55	32	9	15	33	35	36	46	36	25	46	424	11
Fri	42	42	33	6	16	30	34	38	33	39	30	49	393	11
Sat	115	170	78	22	25	40	54	41	41	48	62	91	790	21
Sun	181	205	118	35	26	58	63	48	43	42	36	51	907	24
Total	517	577	339	101	142	280	318	297	279	256	260	356	3741	100
%	14	15	9	3	4	7	9	8	7	7	7	10	100	
Mon	44	29	10	9	37	56	63	70	44	38	26	21	447	16
Tue	15	9	4	3	16	37	36	40	35	32	34	33	294	11
Wed	18	14	6	4	6	44	30	28	29	36	29	23	267	10
Thu	27	18	11	7	10	30	35	35	18	18	32	31	272	10
Fri	28	13	8	4	15	28	35	28	23	27	37	51	297	11
Sat	90	79	34	13	29	38	34	29	35	42	32	78	533	19
Sun	122	112	49	16	31	59	53	37	53	30	41	43	646	23
Total	344	274	122	56	144	292	286	267	237	223	231	280	2756	100
%	12	10	4	2	5	11	10	10	9	8	8	10	100	

Northern
BCU

Time	00-1.59	02-3.59	04-5.59	06-7.59	08-9.59	10-11.59	12-13.59	14-15.59	16-17.59	18-19.59	20-21.59	22-23.59	Total	%
Mon	34	23	27	11	26	44	54	53	47	44	41	22	426	15
Tue	16	10	4	4	15	28	29	38	22	38	27	22	254	9
Wed	12	17	4	2	9	26	18	27	27	23	26	29	223	8
Thu	38	24	20	2	6	20	21	23	38	36	35	38	301	11
Fri	21	20	19	4	14	22	32	27	27	40	37	46	309	11
Sat	60	65	50	14	24	39	50	40	45	39	36	44	506	18
Sun	97	131	101	34	35	69	84	79	60	47	51	31	820	29
Total	278	290	225	71	129	248	288	287	266	267	253	232	2839	100
%	10	10	8	3	5	9	10	10	9	9	9	8	100	
Total	1229	1217	735	238	485	934	1014	956	844	790	805	951	10042	
SW %	12	12	7	2	5	9	10	10	8	8	8	9	100	

Western
BCU

* Eastern BCU had 19 unknown times; Western BCU had 5 unknown times

Table A7: Location of assaults resulting in emergency department attendances (April 2014-March 2016)

	Assault location type	Male	Male %	Female	Female %	Total	Apr 14 – Mar 16 (%)
Central BCU	Street	220	36	55	17	275	30
	Own home	105	17	101	31	206	22
	Licensed premises	64	11	26	8	90	10
	Someone else's home	20	3	31	9	51	5
	Workplace	28	5	23	7	51	5
	Educational establishment	18	3	4	1	22	2
	Other	67	11	20	6	87	9
	Unspecified	82	14	67	20	149	16
	Total	604	100	327	100	931	100
Eastern BCU	Street	1125	42	241	23	1366	36
	Licensed premises	450	17	113	11	563	15
	Other	366	14	152	14	518	14
	Own home	163	6	240	23	403	11
	Someone else's home	112	4	107	10	219	6
	Workplace	87	3	68	6	155	4
	Unspecified	385	14	135	13	520	14
	Total	2688	100	1056	100	3744	100
Northern BCU	Street	756	44	243	23	999	36
	Own home	193	11	297	28	490	18
	Licensed premises	273	16	129	12	402	15
	Someone else's home	103	6	110	11	213	8
	Workplace	88	5	103	10	191	7
	Other	299	17	162	16	461	17
	Total	1712	100	1044	100	2756	100
Western BCU	Own home	243	12	261	30	504	18
	Street	362	19	115	13	477	17
	Licensed premises	170	9	58	7	228	8
	Workplace	88	5	71	8	159	6
	Someone else's home	67	3	59	7	126	4
	Educational establishment	41	2	10	1	51	2
	Other	897	46	254	29	1151	41
	Unspecified	86	4	55	6	141	5
Total	1954	100	883	100	2837	100	
South Wales Police area total	Own home	704	10	899	27	1603	16
	Street	2463	35	654	20	3117	30
	Licensed premises	957	14	326	10	1283	12
	Workplace	291	4	265	8	556	5
	Someone else's home	302	4	307	9	609	6
	Educational establishment	59	1	14	0	73	1
	Other	1629	23	588	18	2217	22
	Unspecified	553	8	257	8	810	8
Total	6958	100	3310	100	10268	100	

Figure A5 Location of assaults resulting in emergency department attendances across South Wales (April 2014-March 2016)

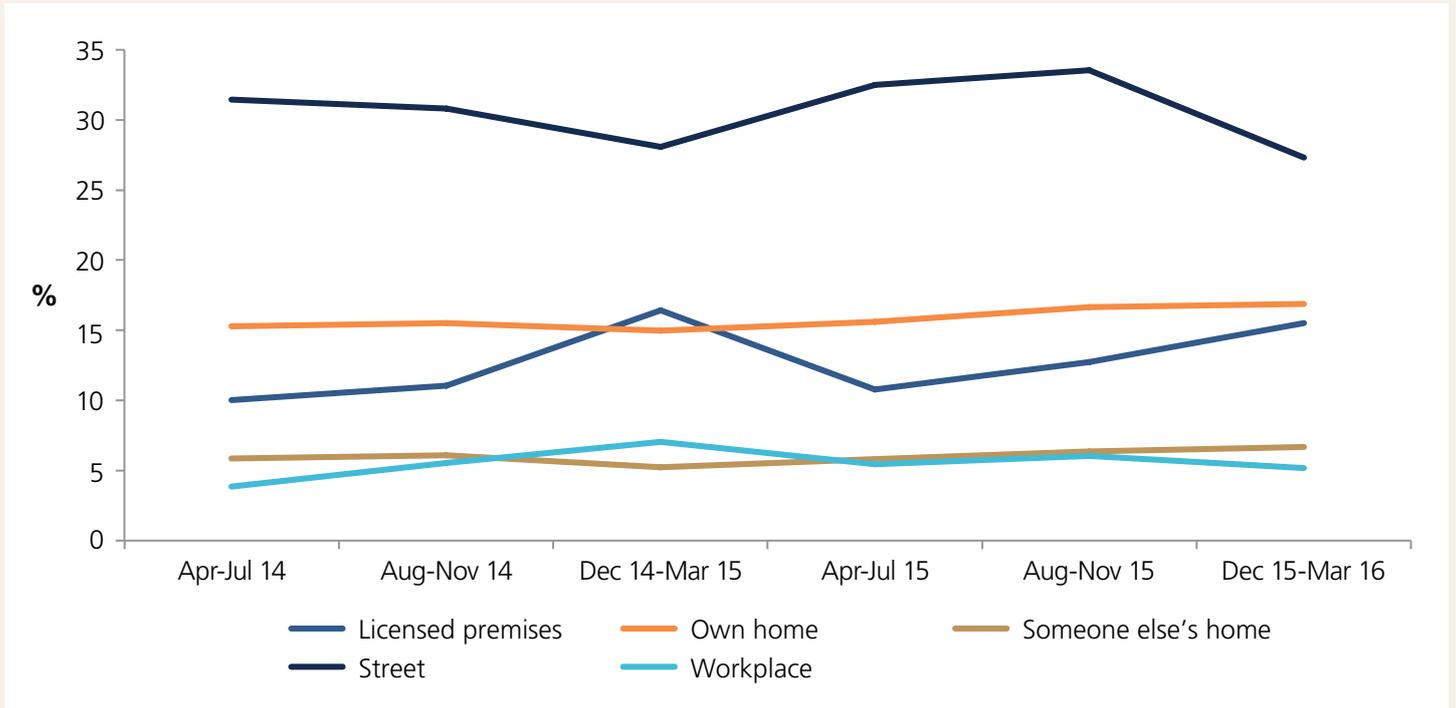
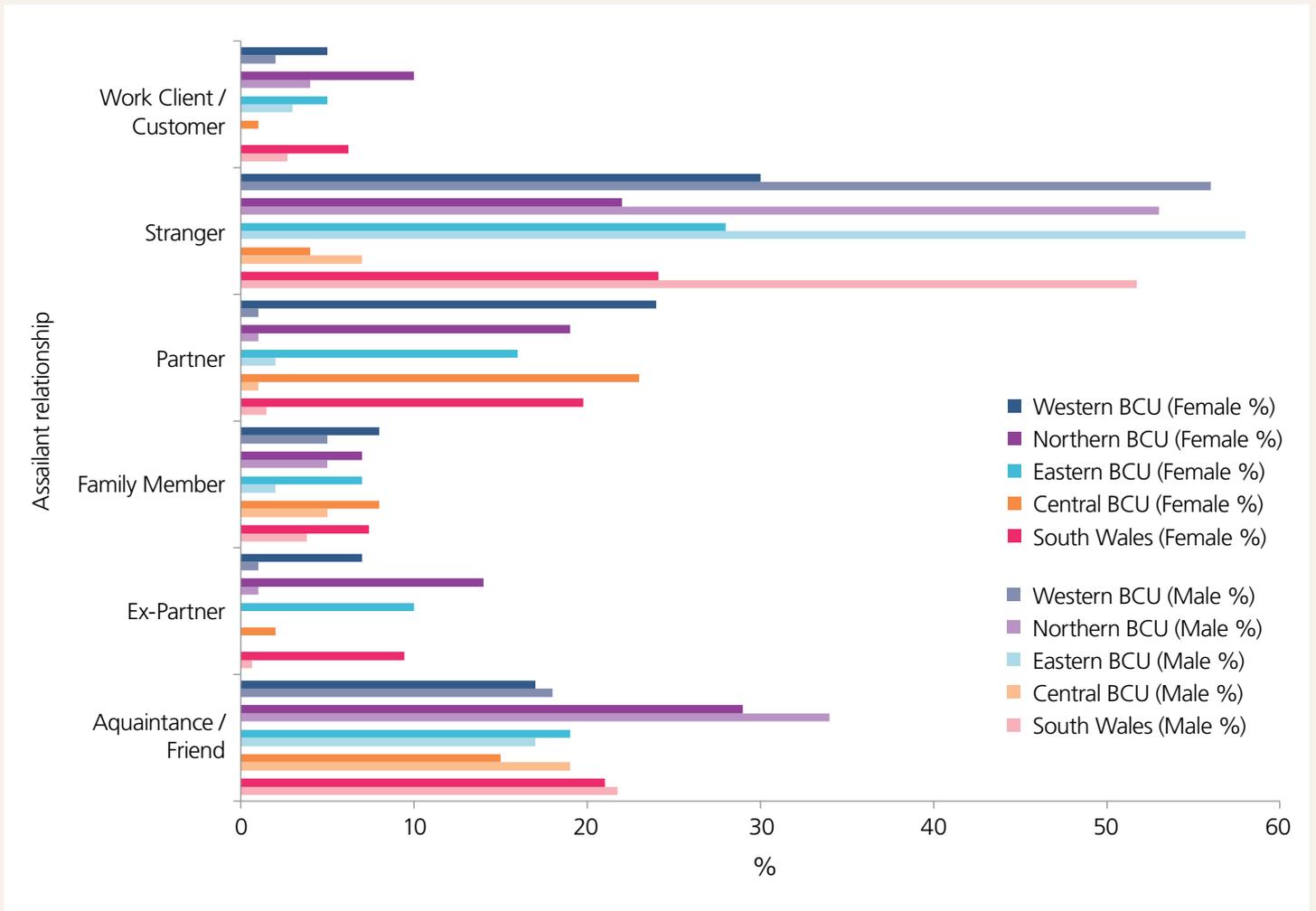


Figure A6: Emergency department assault attendances reported assailant relationship (April 2014-March 2016)



Central basic command unit

Figure A7: Number of assault attendances to Central basic command unit emergency departments (Apr 14-Mar 16)

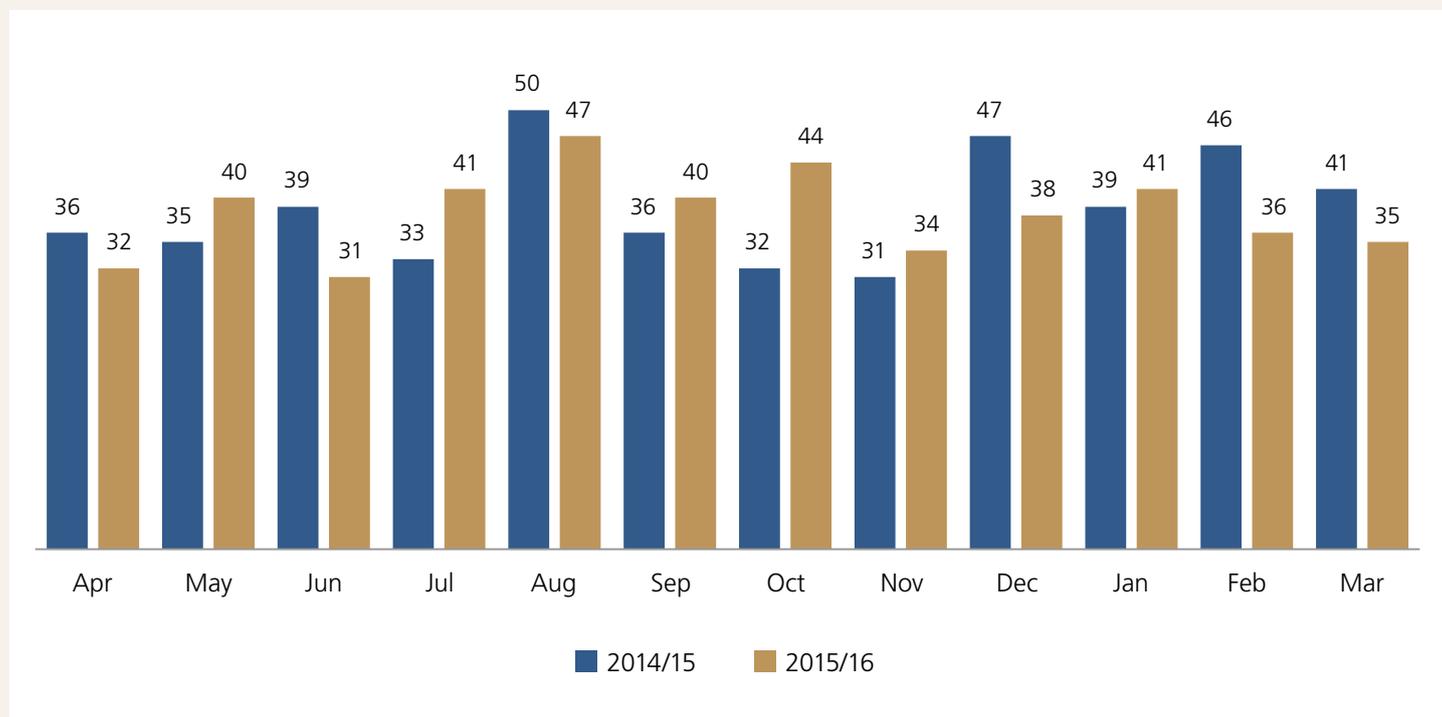


Figure A8: Central basic command unit emergency department assault attendances, South Wales police violence with injury victims and Welsh Ambulance Service Trust patients by gender and age (%: Apr 14-Mar 16)

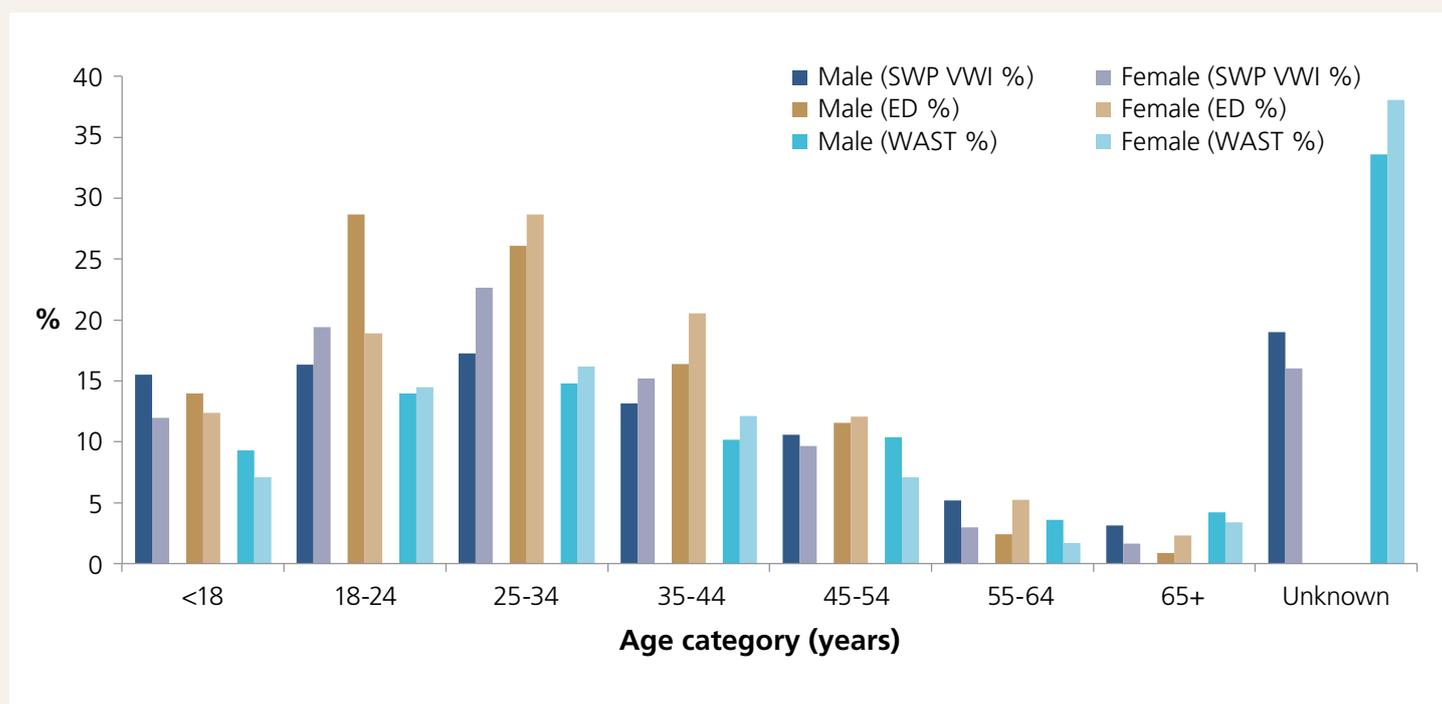


Figure A9: Central basic command unit emergency department arrival time and Welsh Ambulance Service Trust incident time trend chart (Apr 14-Mar 16)

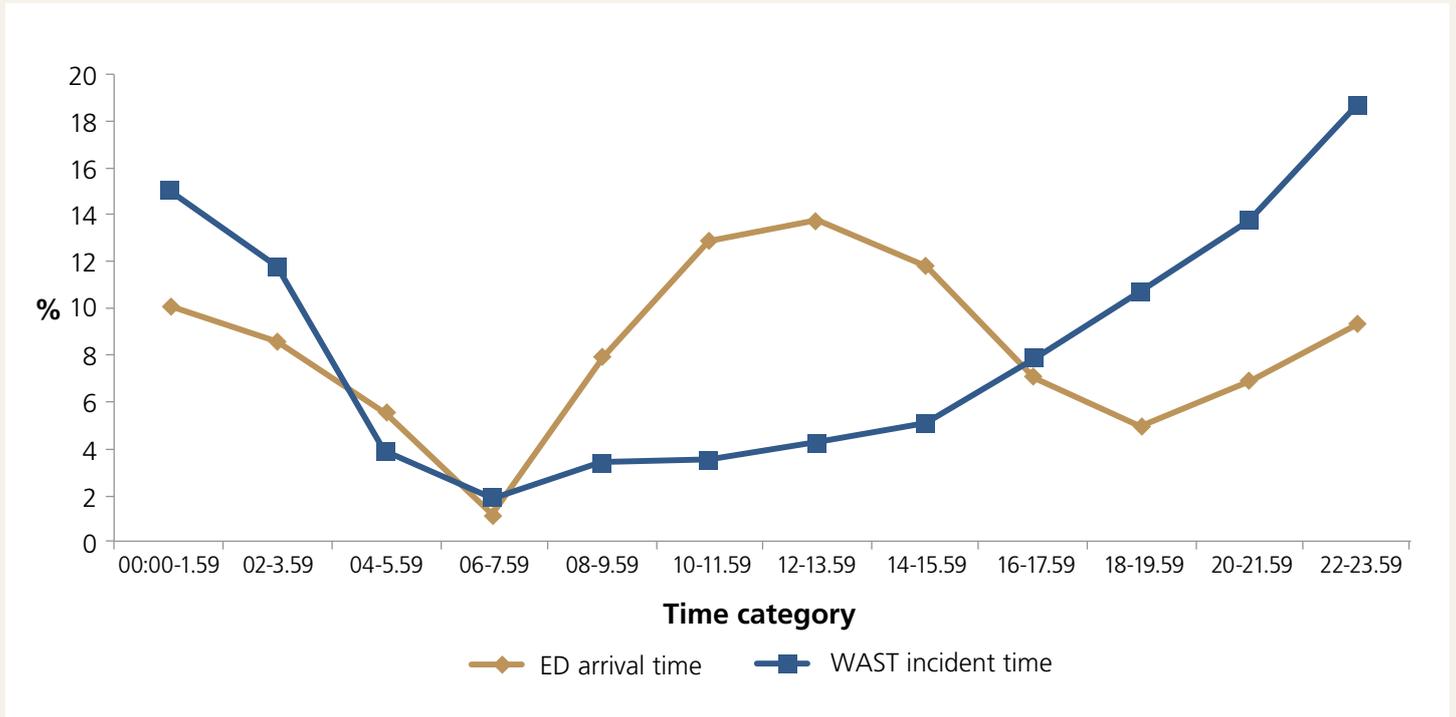


Figure A10: Assault location Central BCU EDs male assault attendees (Apr 14-Mar 16)

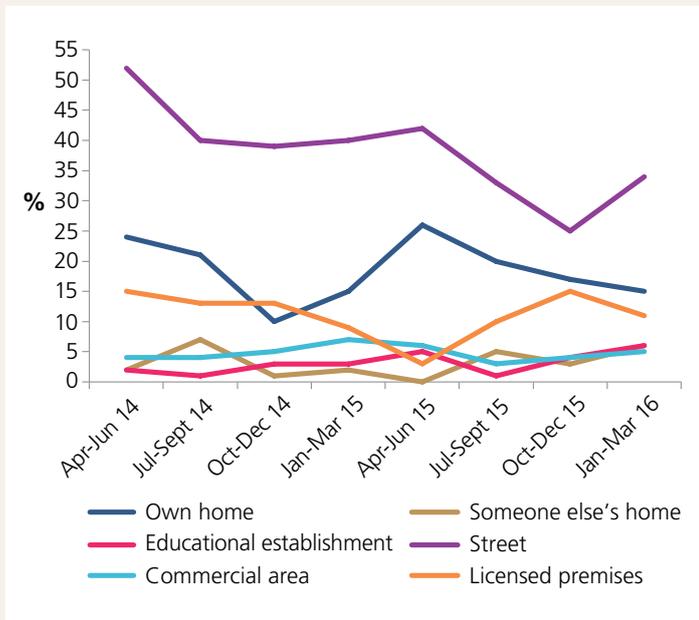


Figure A11: Assault location Central BCU EDs female assault attendees (Apr 14-Mar 16)

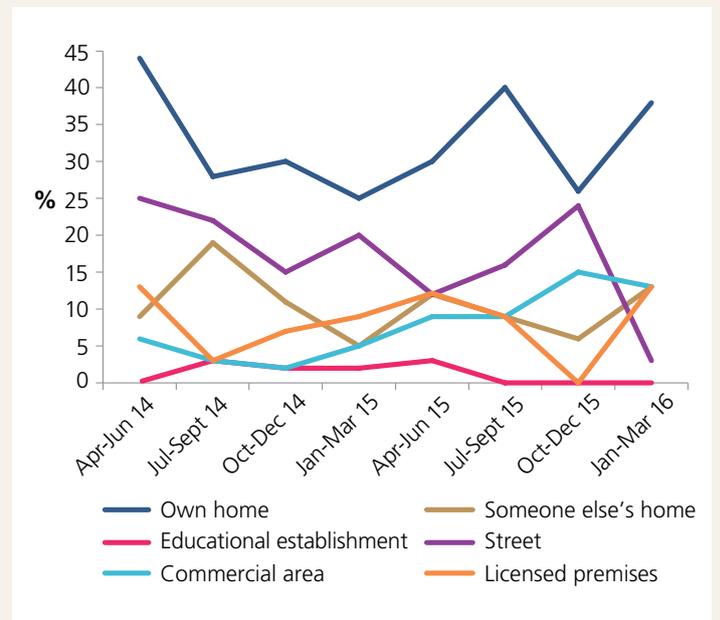


Figure A12: Assailant relationship Central BCU EDs male assault attendances trend chart (Apr 14-Mar 16)

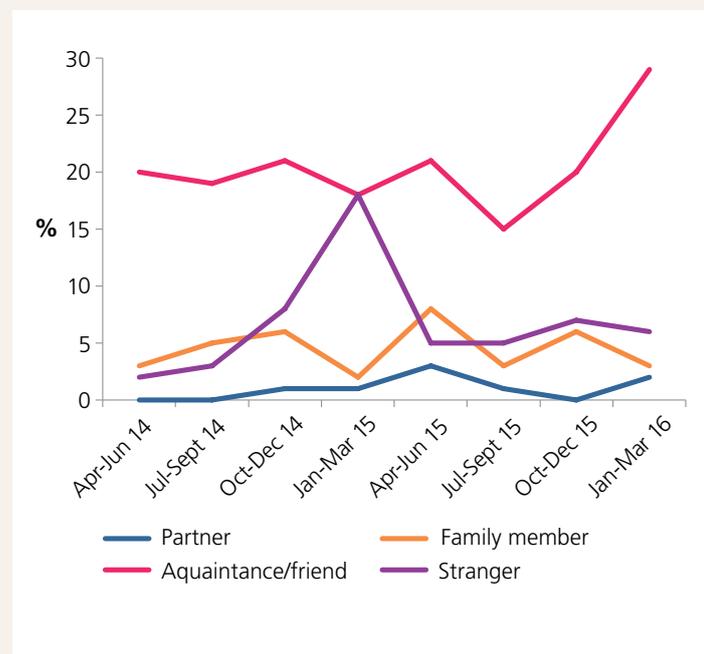


Figure A13: Assailant relationship Central BCU EDs female assault attendees trend chart (Apr 14-Mar 16)

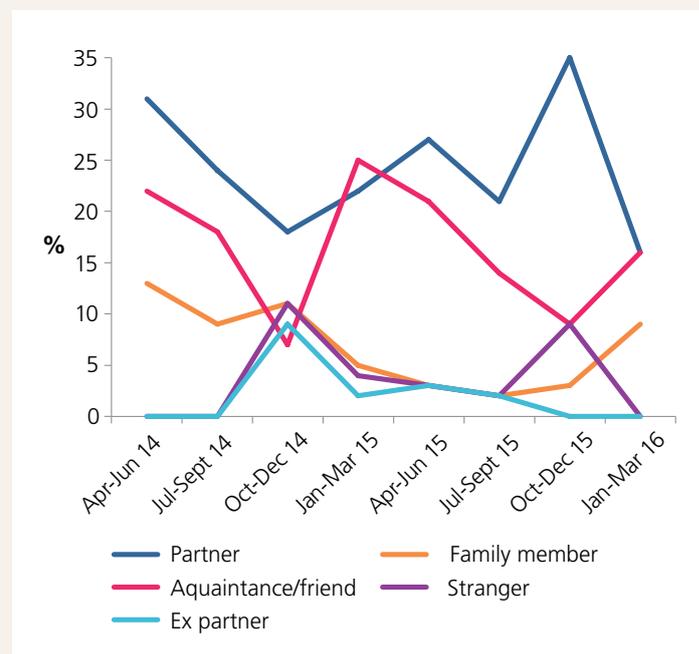


Table A8: Emergency department recorded assault location premise name data with multiple assault reports in Central basic command unit (Apr 14-Mar 16)

Premise name	Number of attendances
HMP Parc, Bridgend	10
Beechwood College, Penarth	9
Princess of Wales Hospital, Bridgend	6
SAX, Bridgend	7
The Roof Pub, Bridgend	6

*Accurate completion rate of assault site text box was 34%

Eastern basic command unit

Figure A14: Number of assault attendances to Eastern basic command unit emergency departments (Apr 14-Mar 16)

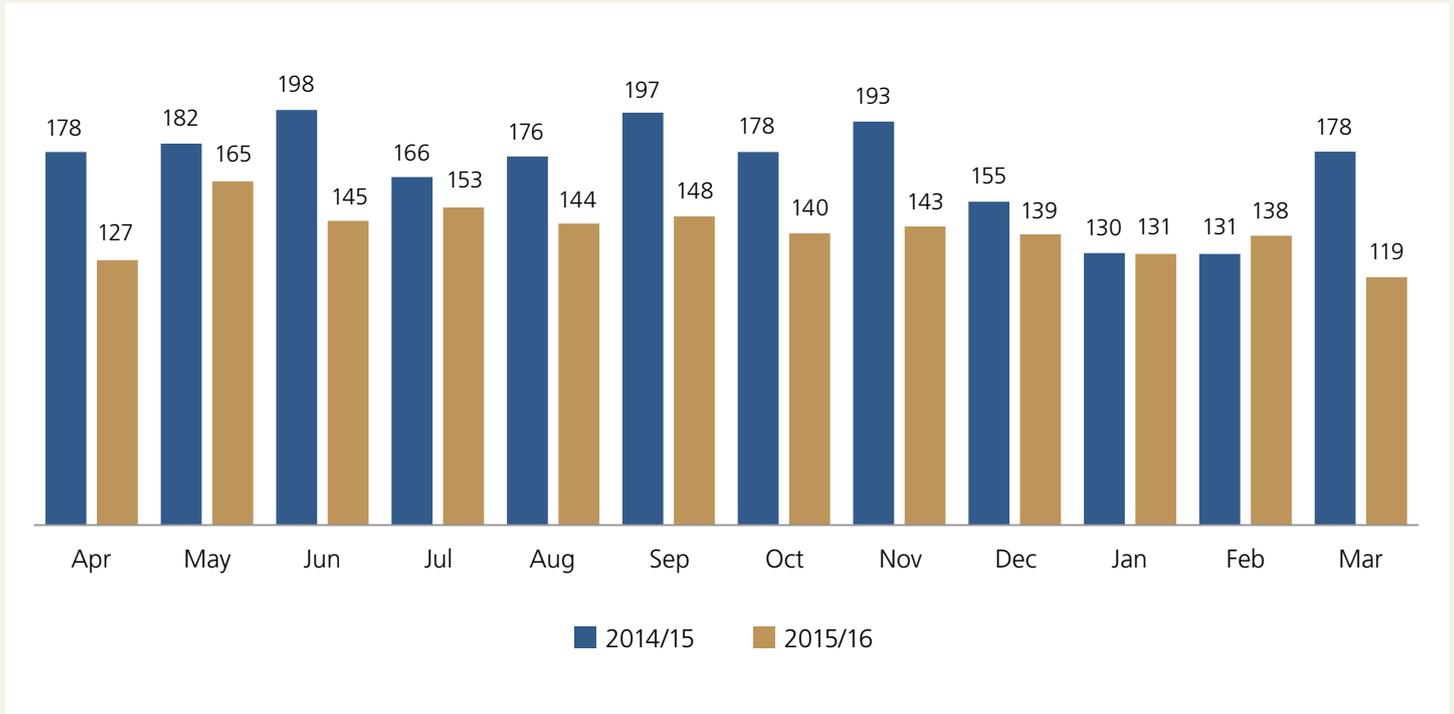


Figure A15: Eastern basic command unit emergency department assault attendances, South Wales police violence with injury victims and Welsh Ambulance Service Trust patients by gender and age (%: Apr 14-Mar 16)

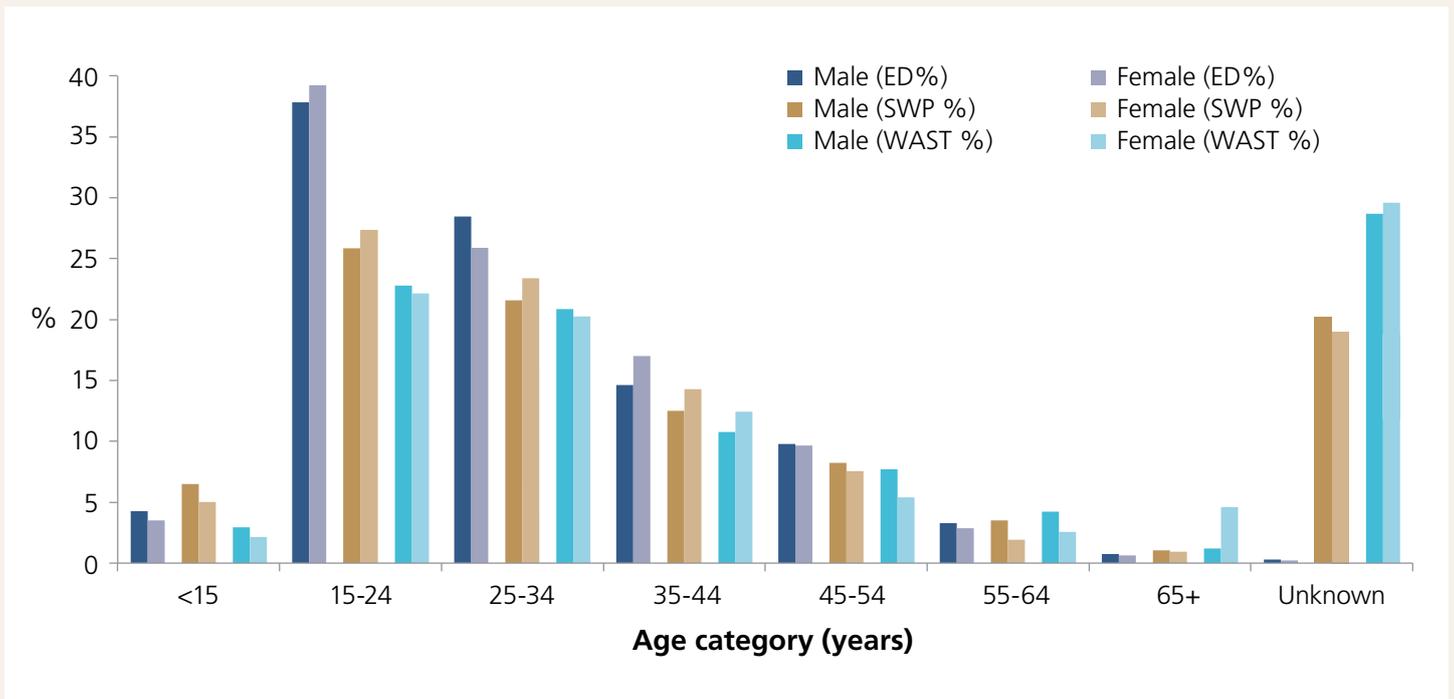


Figure A16: Eastern basic command unit emergency department arrival time and Welsh Ambulance Service Trust incident call-out time trend chart (%; Apr 14-Mar 16)

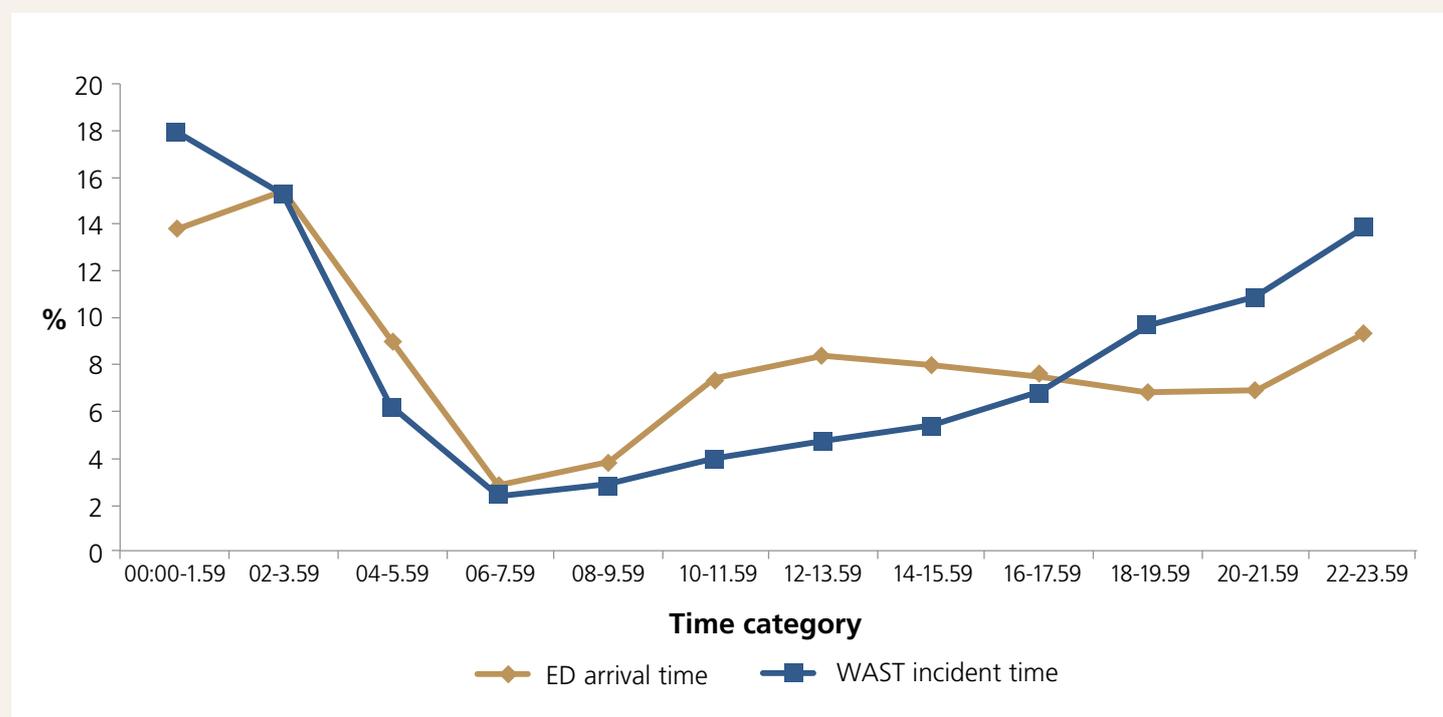


Table A9: Location of assaults resulting in emergency department attendances in Eastern basic command unit (Apr 14-Mar 16)

	Male	Male (%)	Female	Female (%)	Total	Apr 14-Mar 16 (%)	Apr 14-Mar 15 (%)	Apr 15-Mar 16 (%)
Street	1124	42	241	23	1365	36	35	38
Own Home	163	6	240	23	403	11	11	11
Club	236	9	65	6	301	8	8	8
Bar/Pub	213	8	48	5	261	7	6	8
Someone else's home	112	4	107	10	219	6	5	7
Workplace	87	3	68	6	155	4	4	4
Other	365	14	152	14	517	14	13	15
Unknown	385	14	135	13	520	14	18	9
Total	2685	100	1056	100	3741	100	100	100

Figure A17: Assault location Eastern BCU emergency department male attendees trend chart (%: Apr 14-Mar 16)

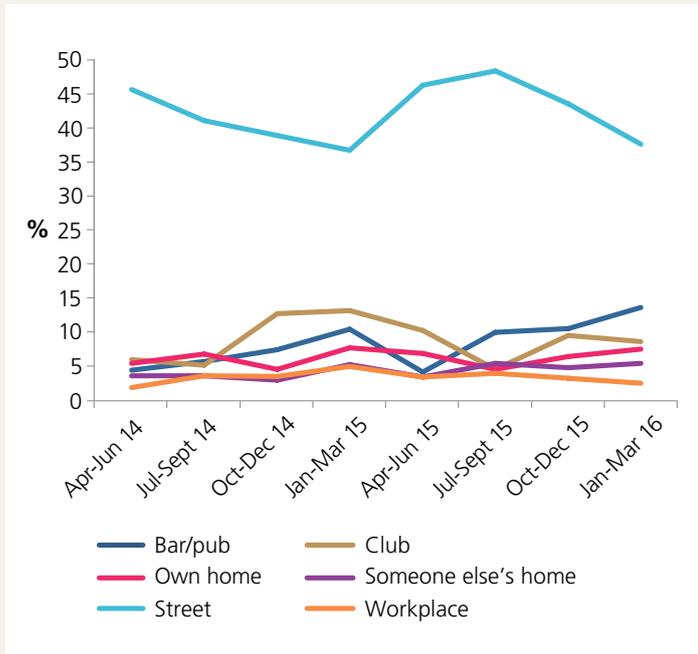


Figure A18: Assault location Eastern BCU emergency department femae attendees trend chart (%: Apr 14-Mar 16)

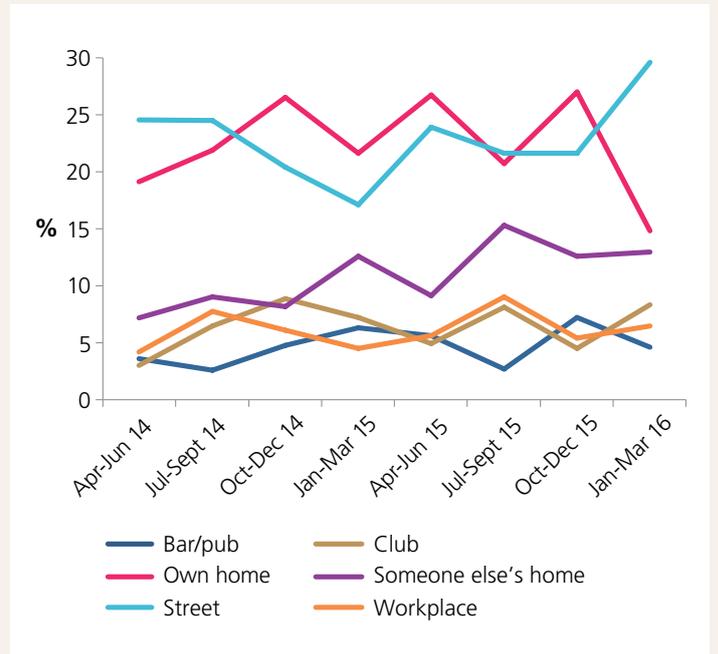


Figure A19: Assaultant relationship Eastern BCU emergency department male assault attendees trend chart (%: Apr 14-Mar 16)

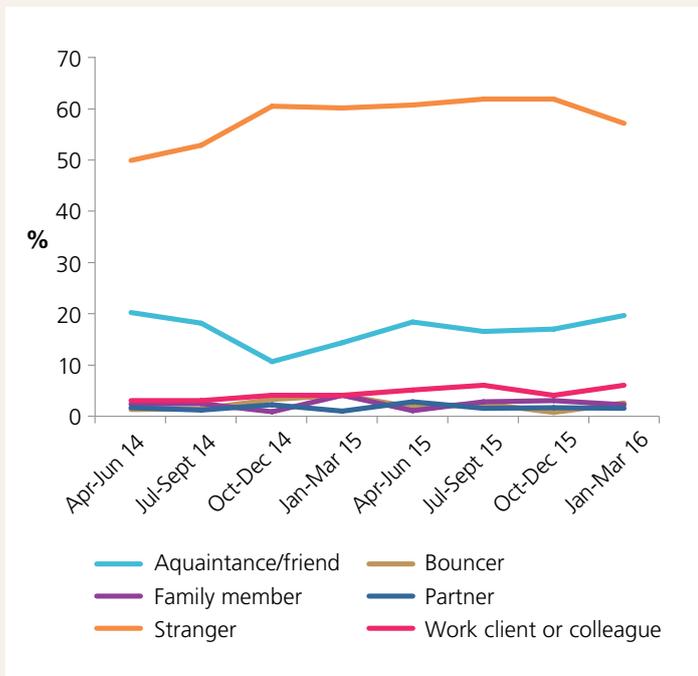


Figure A20: Assaultant relationship Eastern BCU emergency department female assault attendees trend chart (%; Apr 14-Mar 16)

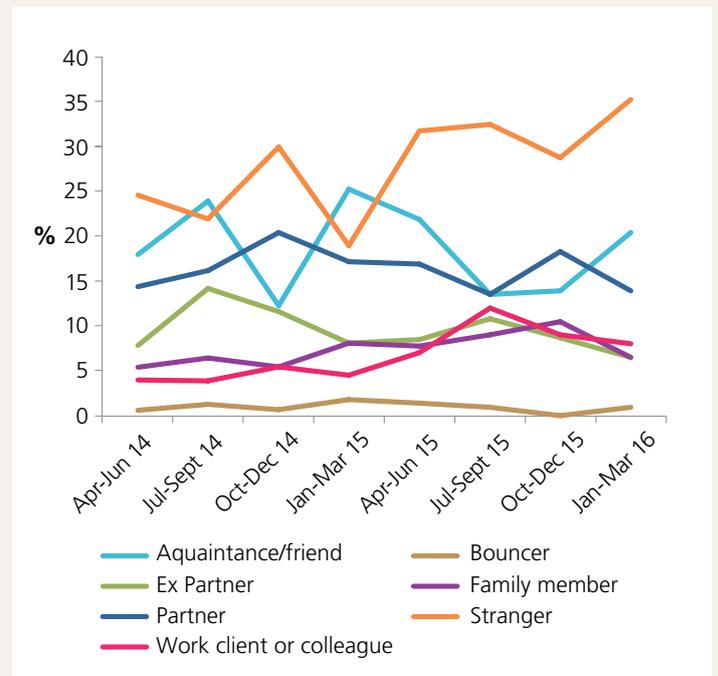


Table A10: Emergency department recorded assault location premise name data with multiple assault reports in Eastern Basic command unit (Apr 14-Mar 16)

Premise name ⁸	Number of attendances Apr 14-Mar 15	Number of attendances Apr 15-Mar 16	Total Apr 14-Mar 16
Pryzm nightclub	20	33	53
Walkabout Inn	22	16	38
GLAM Nightclub	22	10	32
Soda Bar	10	18	28
DC Nightclub	18	7	25
The Live Lounge	11	10	21
Cardiff University Students' Union	11	9	20
Tiger Tiger	10	7	17
Revolution	6	8	14
Oceana	12	1	13
Varsity	10	3	13
Maddisons Night Club	6	6	12
Retro	6	6	12
Eastern High School	7	4	11
Revolucion De Cuba	7	4	11
Gordon Bennetts	7	1	8
Hilton Hotel O/S	6	2	8

*Accurate completion rate of assault site text box was 53%

Northern basic command unit

Figure A21: Number of assault attendances to Northern basic command unit emergency departments (Apr 14-Mar 16)

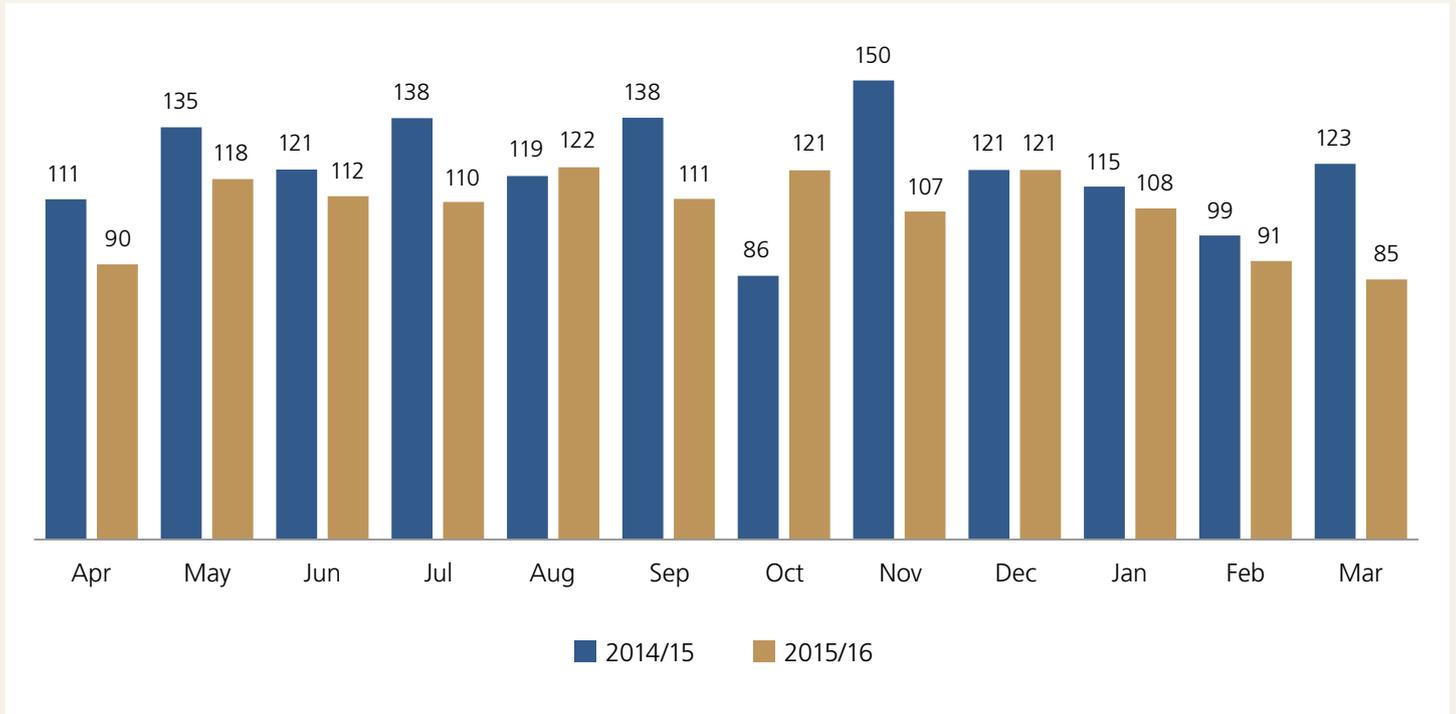


Figure A22: Northern basic command unit emergency department assault attendances, South Wales police assault with injury victims and Welsh Ambulance Service Trust patients by gender and age (%: Apr 14- Mar 16)

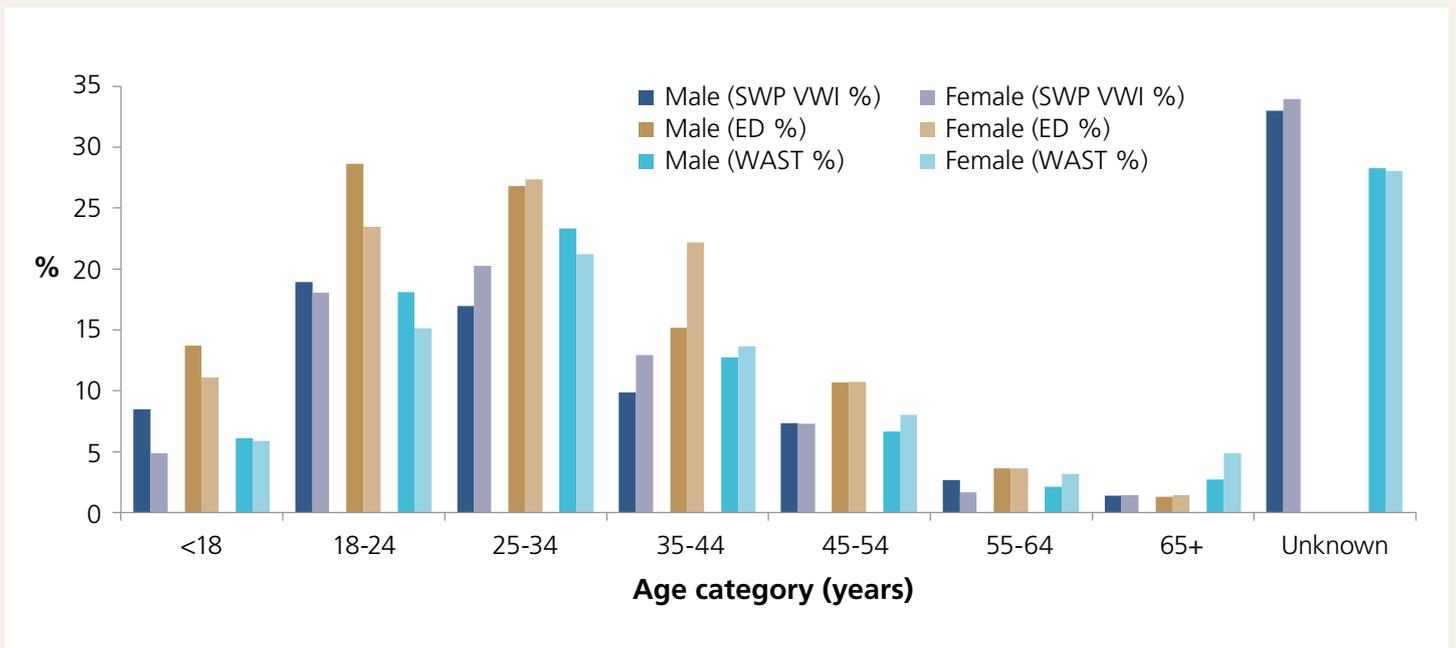


Figure A23: Northern basic command unit emergency department arrival time and Welsh Ambulance Service Trust incident time trend chart (%; Apr 14-Mar 16)

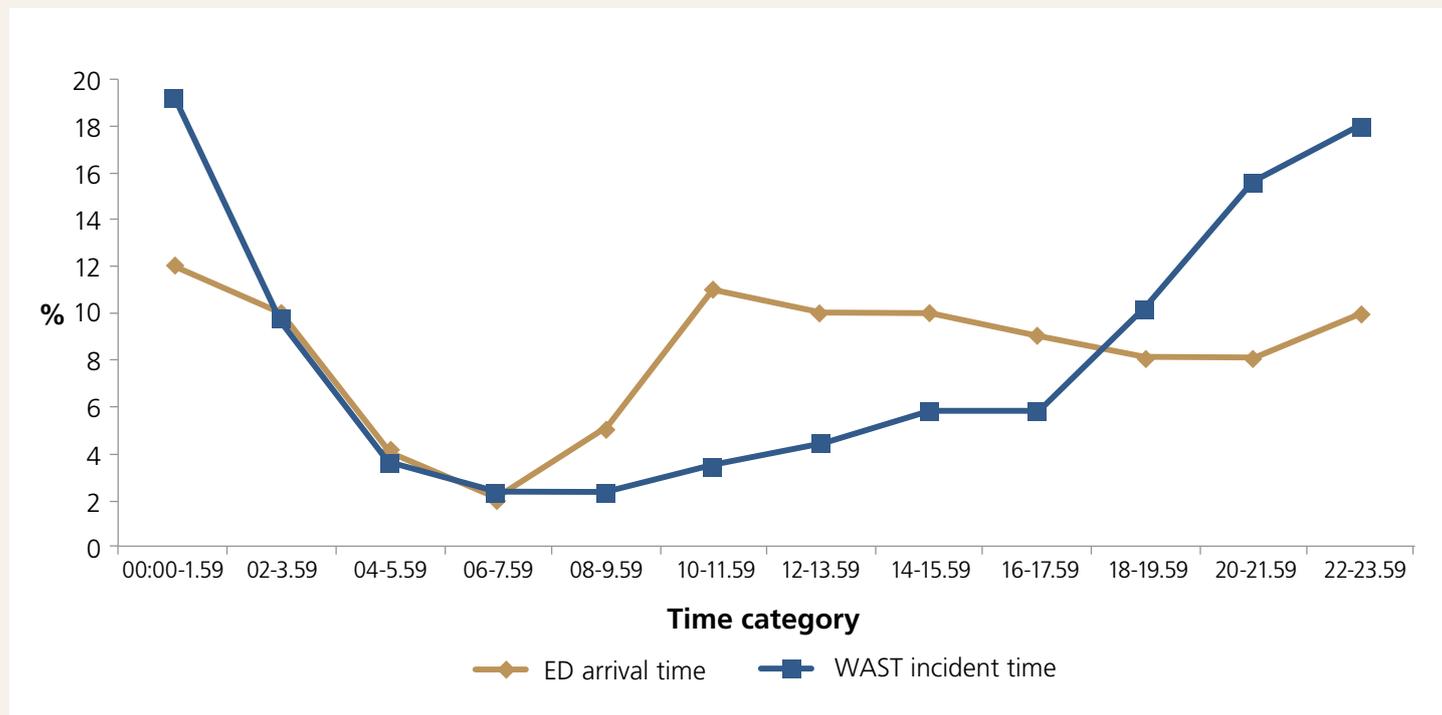


Figure A24: Assault location Northern BCU EDs male assault attendance trend chart (Apr 14-Mar 16)

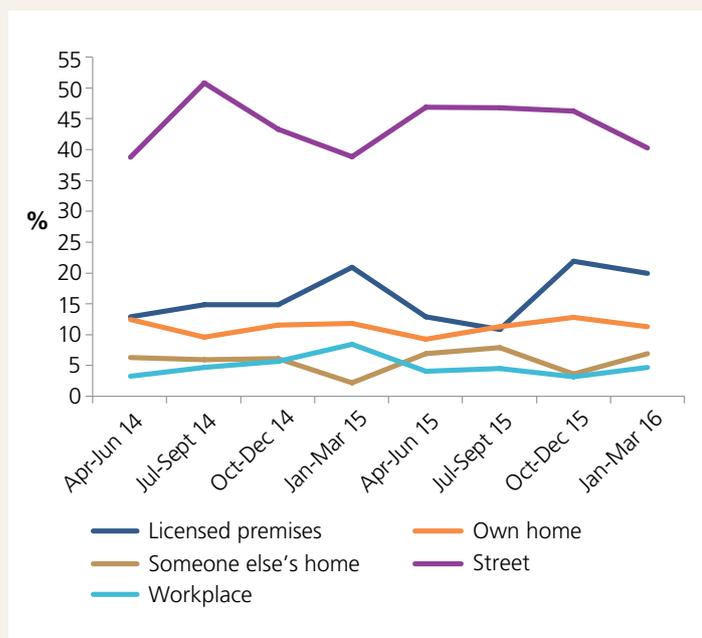


Figure A25: Assault location Northern BCU EDs female assault attendees trend chart (Apr 14-Mar 16)

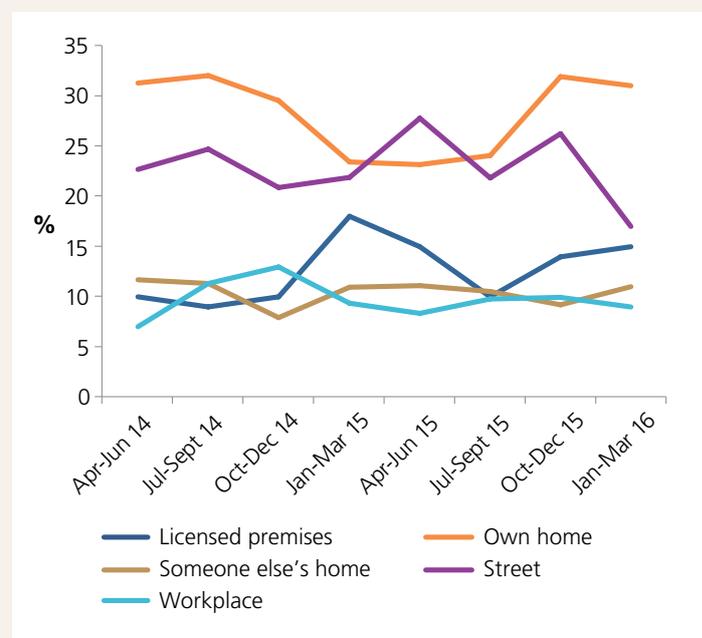


Figure A26: Assailant relationship Northern BCU EDs male assault attendees (Apr 14-Mar 16)

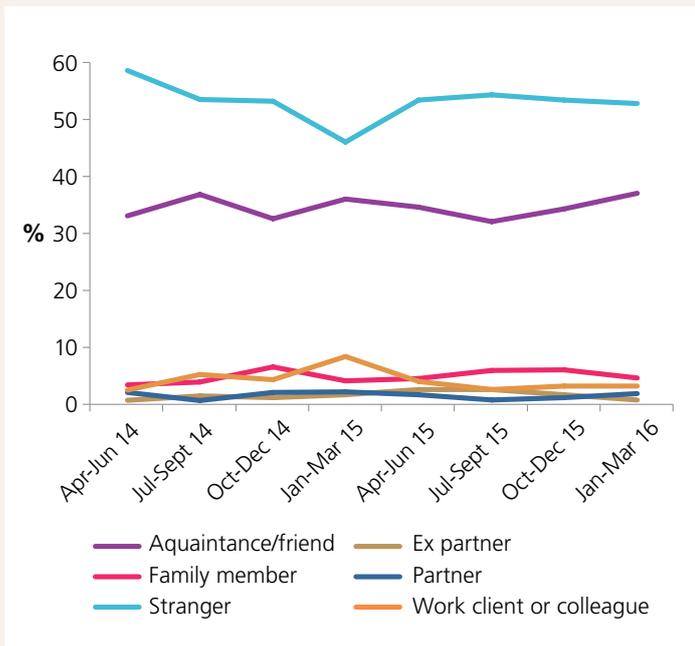


Figure A27: Assault relationship Northern BCU EDs female assault attendees (Apr14-Mar 16)

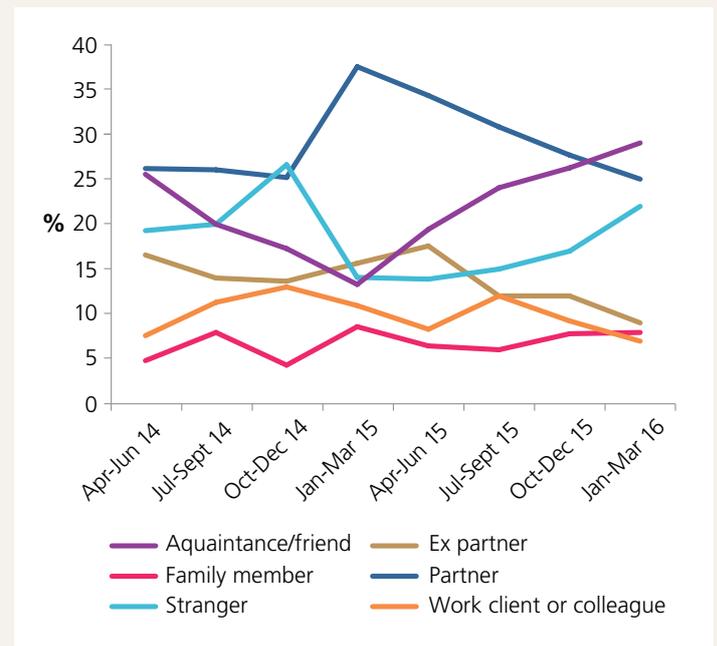


Table A11: Emergency department recorded assault location premise name data with multiple assault reports in Northern basic command unit (Apr 14-Mar 16)

Premise name	Number of attendances
The Kooler Nightclub, Merthyr (within premises or directly outside)	25
Royal Glamorgan Hospital	21
Prince Charles Hospital	16
Soul Suite Nightclub, Pontypridd	12
Judges Nightclub, Aberdare	9
Heatherwood Court Hospital, Pontypridd	8
The New Inn, Pontypridd	8

*Accurate completion rate of assault site text box is 37%.

Western basic command unit

Figure A28: Number of assault attendances to Western basic command unit emergency departments (Apr 14-Mar 16)

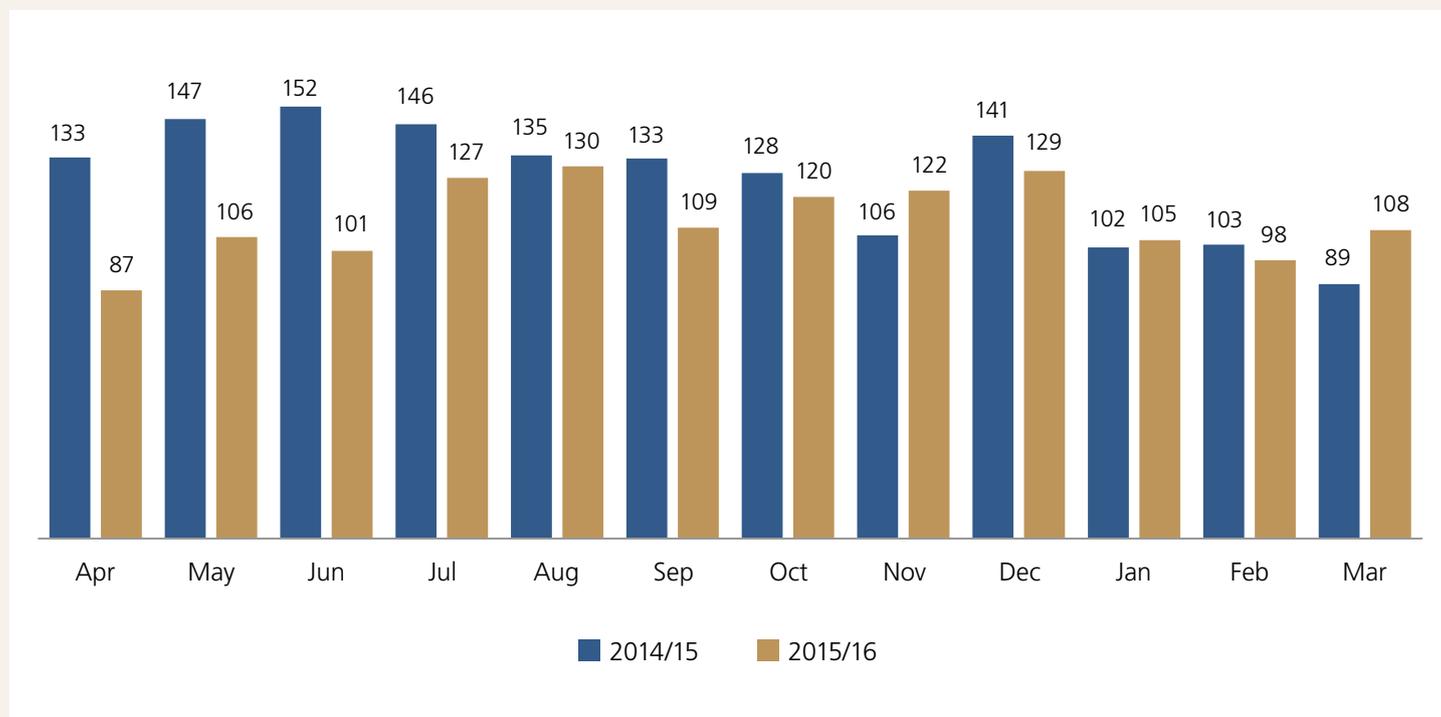


Figure A29: Western basic command unit emergency department assault attendances, South Wales police assault with injury victims and Welsh Ambulance Service Trust patients by gender and age (%: Apr 14- Mar 16)

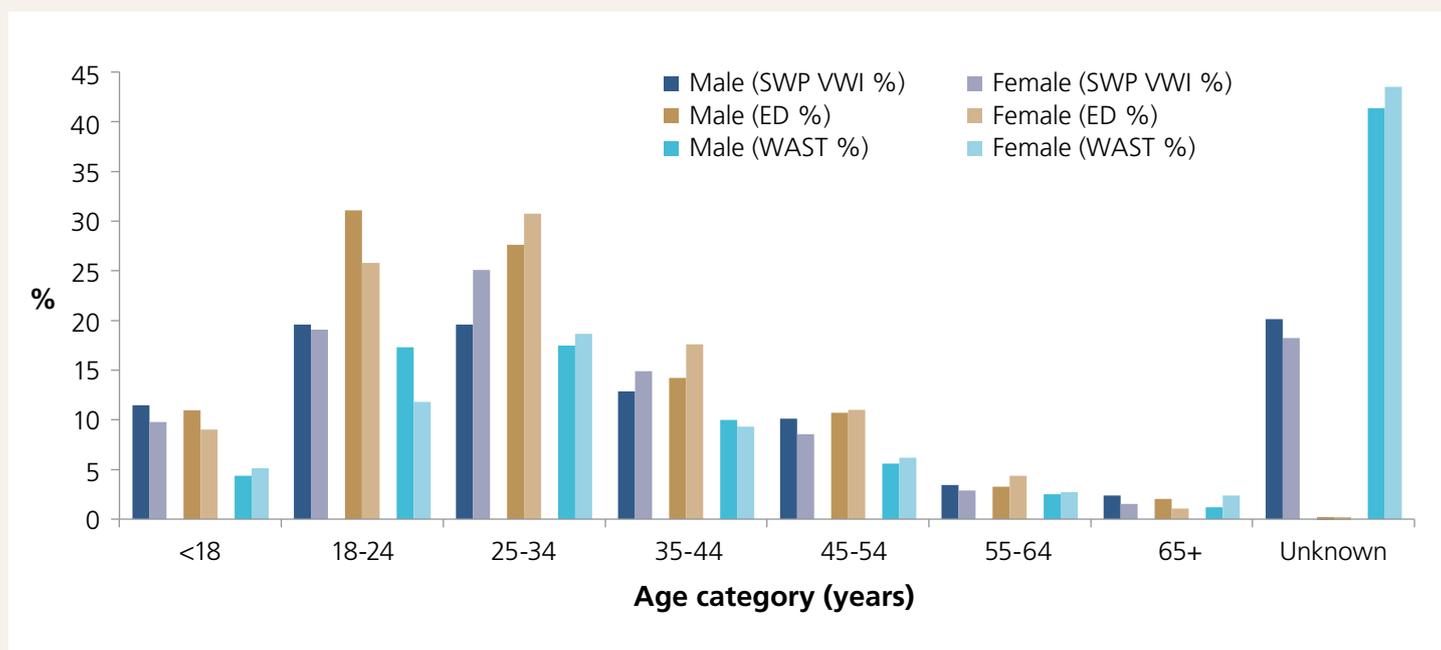


Figure A30: Western basic command unit emergency department arrival time and Welsh Ambulance Service Trust incident time trend chart (%; Apr 14-Mar 16)

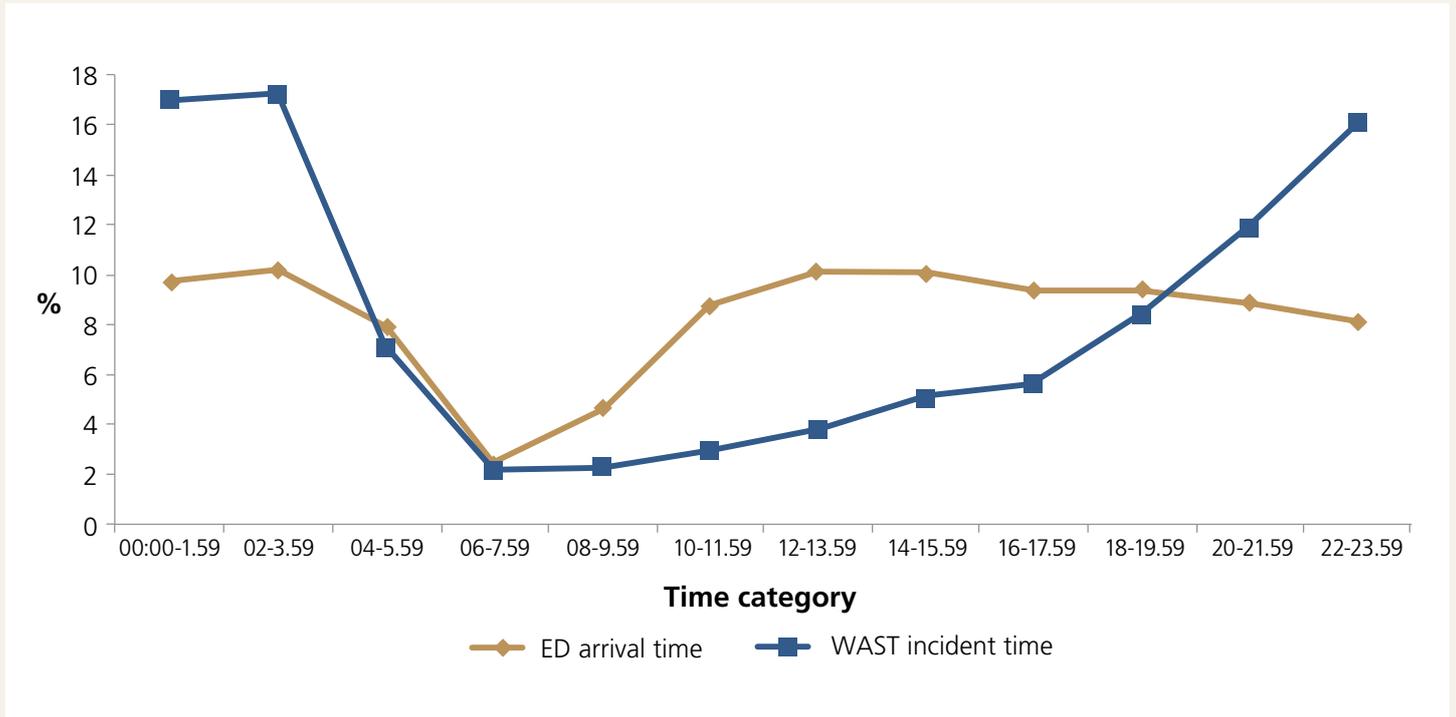


Figure A31: Assault location Western BCU EDs male assault attendances (Apr 14-Mar 16)

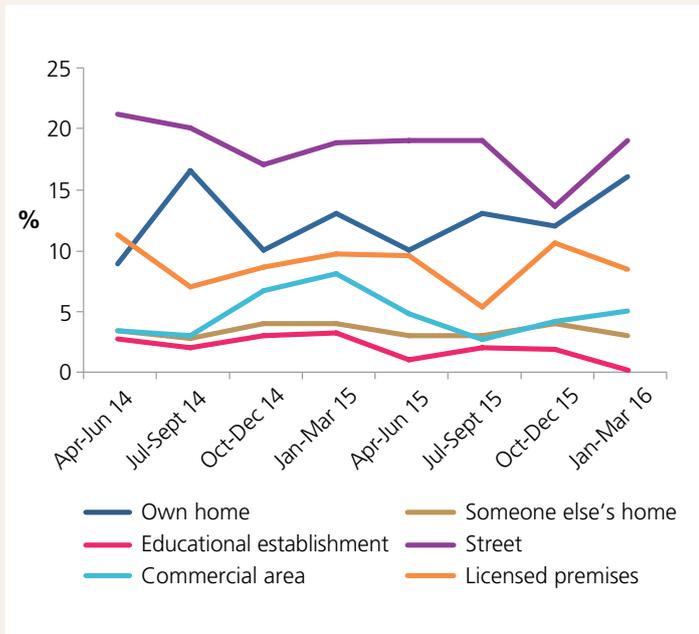


Figure A32: Assault location Western BCU EDs female assault attendances (Apr 14-Mar 16)

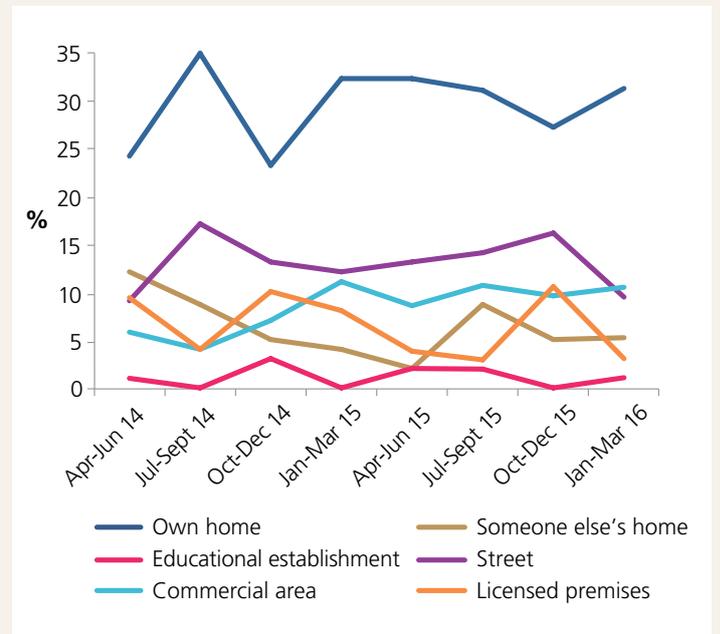


Figure A33: Assailant relationship Western BCU EDs male assault attendees (Apr 14-Mar 16)

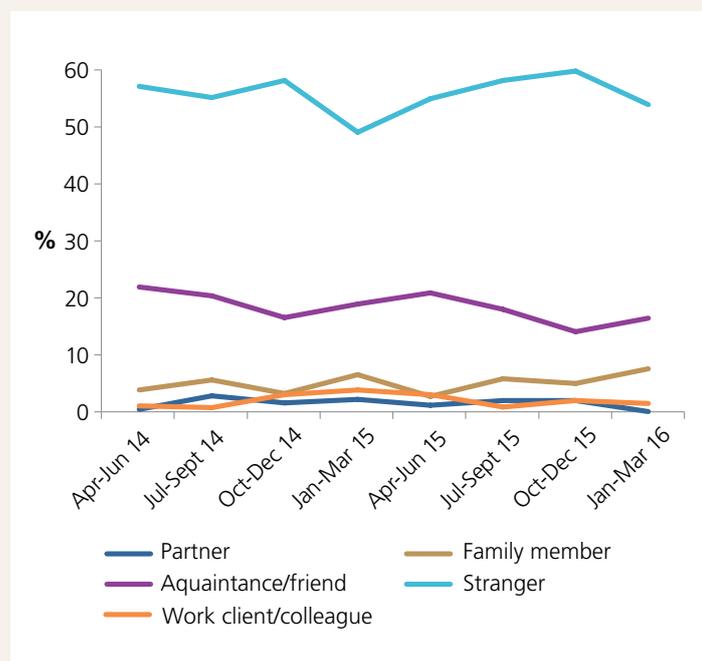


Figure A34: Assailant relationship Western BCU EDs female assault attendees (Apr 14-Mar 16)

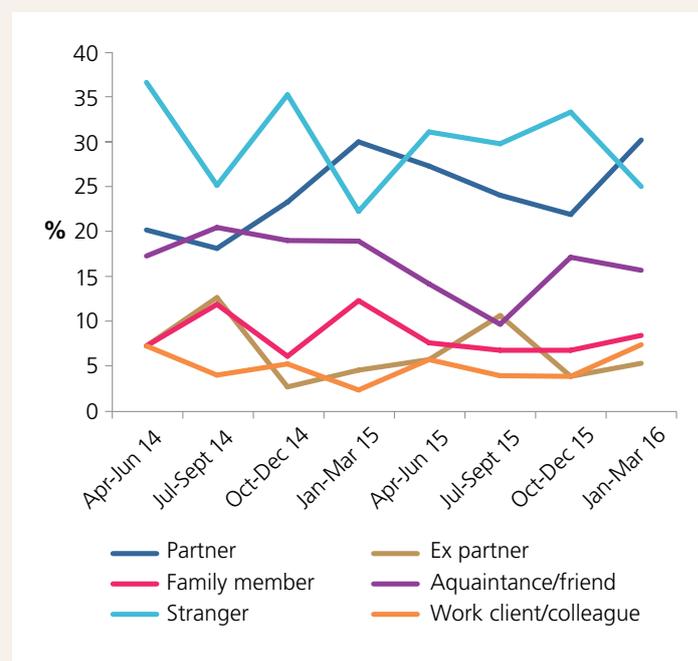


Table A12: Emergency department recorded assault location premise name data with multiple assault reports in Western basic command unit (Apr 14-Mar 16)

Premise name	Number of attendances
Morrison Hospital, Swansea	30
Fiction nightclub, Swansea	19
Kiwis nightclub, Neath	13
Club Oxygen, Swansea	10
Mama's Paradise, Pontardawe	8

*Accurate completion rate of assault site text box is 46%.

Appendix 4:

Investigation of matching criteria for cross-referencing ED and SWP data

Matching Emergency Department and Police Violence Cases

Aims

To investigate whether using alternate 'matching criteria' improved the number of matches between the police and health board datasets.

Methods

A six month sample (1 January 2015 - 30 June 2015) of the two year dataset was used in this examination. The first process was to audit the potential matching criteria data from the four datasets (police and three health boards) in the six month period to ensure that there were no missing criteria that could impact any potential matches (Table A13).

Jan 15-Jun 15	Police (n=14457)	ABMU (n=773)	Cwm Taf (n=662)	Cardiff and Vale (n=935)
Missing/Inaccurate				
First Name	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.1%)
Surname Initial	22 (0.2%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Age	0 (0.0%)	0 (0.0%)	0 (0.0%)	1 (0.1%)
Reported/Visit Date	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Postcode	2224 (15.4%)	3 (0.4%)	3 (0.5%)	58 (6.2%)

ABMU – Abertawe Bro Morgannwg University Health Board

The audit revealed that the four requested criteria (First name, Surname initial, Age and Reported/Visit Dates) all had almost 100% completion. Unfortunately, the option of including the victim postcode as potential search criteria was not possible given the high proportion of missing data in the police database. The full surnames of the individuals were not requested in the databases and no refinement on this variable was possible. However, the first name of the individual was provided and this was refined to first initial (CRITERIA C) and first two characters (CRITERIA D).

The following criteria were used as an INDEX/MATCH function in Microsoft Excel.

CRITERIA A (ORIGINAL)

Full first name + surname initial + age + date of ED visit/reported crime date

CRITERIA B (ORIGINAL +/-1 DAY)

Full first name + surname initial + age + date of ED visit/reported crime date (+/- 1 day)

CRITERIA C (+/- 1 DAY)

First name initial + surname initial + age + date of ED visit/reported crime date (+/- 1 day)

CRITERIA D (+/-1 DAY)

First two letters first name + surname initial + age + date of ED visit/reported crime date (+/- 1 day)

Results

Table 14. Number of matched individuals using the various search criteria

	Health Board			Total (n=2370)
	ABMU (n=773)	Cwm Taf (n=662)	Cardiff and Vale (n=935)	
Matching Criteria				
CRITERIA A (Original)	115 (15%)	206 (31%)	288 (31%)	609 (26%)
Original (-1 day)	11	12	18	41
Original (+1 day)	25	67	70	162
CRITERIA B (+/-1 DAY)	151 (20%)	285 (43%)	376 (40%)	812 (34%)
Criteria C	143	221	335	699
Criteria C (-1 day)	17	19	23	59
Criteria C (+1 day)	33	75	85	193
CRITERIA C (+/-1 DAY)	193 (25%)	315 (48%)	443 (47%)	951 (40%)
Criteria D	134	218	327	679
Criteria D (-1 day)	11	16	22	49
Criteria D (+1 day)	30	71	82	183
CRITERIA D (+/- 1 DAY)	175 (23%)	305 (46%)	431 (46%)	911 (38%)

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Implications

It is clear from all of the results, that extending the date searched (+/- 1 day) yields a greater number of matches (at least 34%), this is especially apparent when searching plus one day to the reported date in the police database. Applying even the most conservative additional criteria (CRITERIA B) resulted in extra matches with all of these found to be 'true matches' when manually checking 10% of the ABMU new total. It appears that there is a likely delay in some individuals reporting the crime to the police and then attending emergency departments (EDs). The allowance of one day either side to the reported crime date also enables those individuals who attend EDs on more than one occasion for the same crime to be captured. Therefore, the initially reported number of matches (26%, Table A14) is incorrect and an alternate strategy should be adopted.

Although the use of initials for both first name and surname (CRITERIA C) resulted in the greatest number of matches, the search criteria was less specific and resulted in a number of incorrect matches. The applied criteria also resulted in individuals being matched in duplicate health board datasets, which would overestimate the total. Manually checking 10% of the new ABMU cases when compared to CRITERIA B resulted in 33%

of new matches being incorrect; with these cases either an individual was duplicated over health board datasets or the incorrect individual was matched.

The most appropriate strategy appears to be the use of CRITERIA D, this resulted in more matches than the original criteria (CRITERIA A and B) and also improved the accuracy of matches when compared to using initials alone (CRITERIA C). Manually checking the new ABMU cases (new when compared to CRITERIA B) resulted in a '100% true match', there were some discrepancies between postcodes of the victim, although the individual's details looked correct.

The first three letters/characters may improve the accuracy of matching even further. Whilst another important factor is that the police have a 72 hour window to record the crime; it may be worthwhile in the future to apply (+/- 2 day) to CRITERIA D to further refine the algorithm to improve accuracy of matching.

It should be acknowledged that the police database was not filtered for violence with injury (VWI) crimes in the 6 month time period. However, it was the ED databases that the individuals were matched against and it would be reasonable to assume that any individual who visits an ED would be the victim of a VWI crime.

