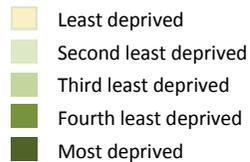


# Violence profile: Bolton

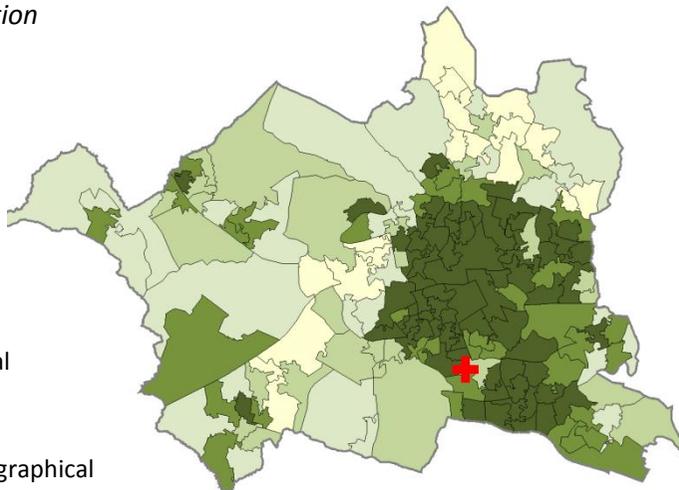
## Use of NHS data in local violence prevention

This profile utilises five sources of NHS data to present a picture of violence in Bolton local authority (LA). The profile aims to provide health and other professionals involved in violence prevention with an understanding of NHS data sources and their potential for informing local violence prevention initiatives. The profiles examine the extent of violence, trends, at-risk groups and communities, and circumstances of assault. The profile focuses on NHS data and does not therefore provide a full picture of violence within Bolton.

Figure 1: Bolton LA by Lower Super Output Area (LSOA\*) showing variation in deprivation.



✚ Royal Bolton Hospital



\* LSOAs are a set of geographical areas across England and Wales that are defined by population size (average population is 1,500).

### Box 1: Key findings

- Levels of violence, as measured by NHS data sources, have been decreasing in recent years in Bolton LA. However, levels of police-recorded violent crime are increasing and were higher than the England average.
- Violence was most likely to occur on Saturdays and Sundays and between the hours of 8pm and 4am, largely reflecting injuries occurring on Friday and Saturday nights (ambulance and A&E data).
- Severe assaults were most likely to occur at home (52%) or in a public place (37%; TARN data, n=27).
- The majority of injuries from severe assaults were caused by a fall (39%) or a blow to the body (35%, TARN data, n=31). Around 12% of ambulance call-outs for assault reported use of a sharp object/gun in the incident notes.
- The majority of people treated for assault-related injuries were male (~70%) and aged 10-39 (~35% were aged 20-29, ~20% aged 10-19 and ~20% aged 30-39) (ambulance, A&E, hospital admissions and TARN data).
- There was a concentration of assaults occurring within Bolton town centre (ambulance data).
- Areas of Bolton with higher deprivation levels also had significantly higher rates of A&E presentations for assault and hospital admissions for assault.

The NHS data sources used are: 1) ambulance service call-outs; 2) attendances to Royal Bolton Hospital Accident and Emergency Department (A&E); 3) Hospital Episode Statistics (HES) experimental A&E data; 4) HES hospital admissions; and 5) reports from the Trauma Audit and Research Network (TARN; clinical reports of severe trauma). For more information about the data sources used, see Table 2.

## Summary of violence

A summary of violence is presented in Table 1. Mortality data and police data have been presented alongside the NHS data sources to provide a rounded picture of violence. TARN data is not included in the summary table since there are known problems with the level of reporting (see page 8 for more information). “Hospital-based” A&E data refers to attendances to Royal Bolton Hospital (regardless of a patient’s area of residence). “Residence-based” A&E data refers to attendances reported to the HES experimental A&E database and covers all attendances to an A&E for residents of Bolton LA (regardless of which hospital they attended). For more information about the data sources see page 8.

Table 1: Indicators of violence for Bolton local authority.

	Number	Rate per 1,000 pop	England rate per 1,000 pop	% Change from previous 2 years	Direction of change
<b>Ambulance call-outs for assault-related incidents (2012/13)<sup>1</sup></b>	498	1.79	na	nc	nc
<b>A&amp;E attendances for assault (hospital-based) (2012/13)<sup>2</sup></b>	1120	na	na	-14.11	↓
<b>A&amp;E attendances for assault (residence-based) (2010/11)<sup>3</sup></b>	665	<b>2.49</b>	3.60	na	na
<b>Emergency hospital admissions for assault (2011/12)<sup>4</sup></b>	161	0.61	0.64	-3.01	↓
<b>Deaths from assault (2011)<sup>5</sup></b>	<5*	nc	0.01	nc	nc
<b>Police-recorded violent crime (2011/12)<sup>6</sup></b>	4201	<b>15.76</b>	13.60	12.57	↑
<b>Police-recorded sexual crime (2011/12)<sup>6</sup></b>	255	0.96	0.96	-32.18	↓

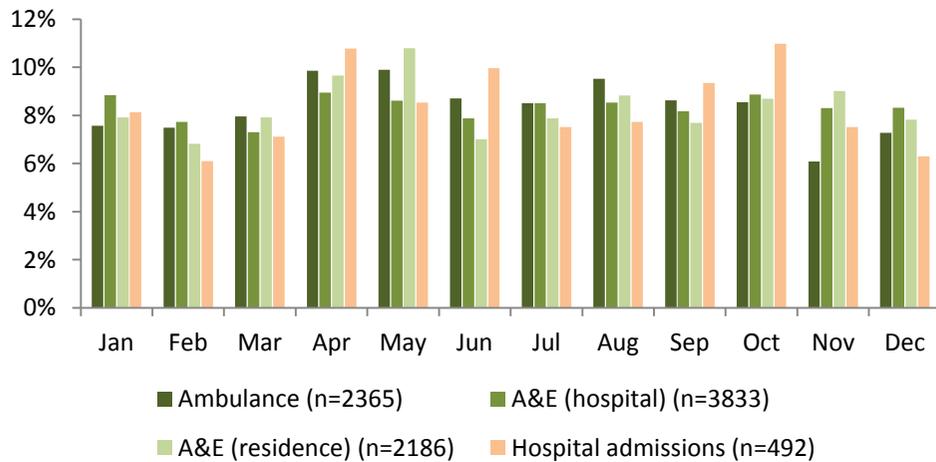
1. Data from the North West Ambulance Service (NWAS). Crude rate per 1,000 population (mid 2012 estimates, ONS), 2012/13. Percent change has not been calculated for this indicator due to data uncertainties in 2010/11.
2. Data from Royal Bolton Hospital A&E. Attendances for assault (regardless of patient residence), 2012/13.
3. Data based on Hospital Episode Statistics (HES) A&E experimental dataset; experimental data created by the former North West Public Health Observatory ([www.eviper.org](http://www.eviper.org)). First attendances for assault by residents of Bolton local authority, 2010/11. Crude rate per 1,000 population (mid 2010 estimates, ONS). Percent change has not been calculated since the adjusted data is only available for the one year.
4. Data from HES admitted patient care. Emergency hospital admissions for assault (ICD-10 codes X85-Y09) by residents of Bolton local authority, 2011/12. Directly Standardised Rate per 1,000 population (mid 2011 estimates, ONS).
5. Data from ONS mortality database. Deaths from assault, 2011. Percent change has not been calculated due to very low numbers.
6. Data from police-recorded crimes, crude rate per 1,000 population (mid 2011 estimates, ONS), 2011/12.

Data in **red text** indicate that the value is significantly higher (statistically) than the England average; data in **green text** indicate that the value is significantly lower (statistically) than the England average; \* low numbers have been suppressed; na = not available; nc = not calculable.

## When is violence most likely to occur?

Figure 2 shows the percentage of assault-related incidents that fall within each month by data source. TARN data is not included due to problems with the level of reporting (see page 8). Whilst the data sources show different trends, in general there appeared to be a slight rise in assaults in April and May for most sources.

Figure 2: Percentage of assault-related incidents by data source, by month (three years combined data [see Table 2]).



Information on assault timings can be generated from calls to ambulance services. However, the time of presentation to the A&E can also be a proxy for assault time. The College of Emergency Medicine (CEM) recommend collecting information on actual assault time and date at A&E presentation (see Box 2), which would allow a more accurate understanding of the timings of assault. However, at the time of analysis this information was not collected by the Royal Bolton Hospital. The available data sources show that assaults took place most frequently between the hours of 8pm and 4am (Figure 3). Assaults occurred most frequently on Saturdays and Sundays (Figure 4), which reflects Friday and Saturday nights.

Figure 3: Percentage of assault-related call-outs/attendances by data source, by hour (three years combined data [see Table 2]).

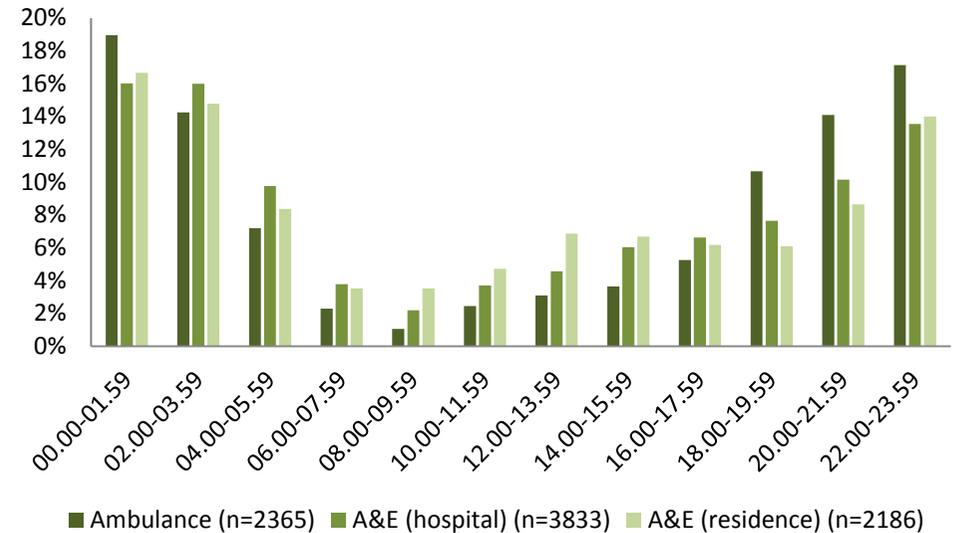
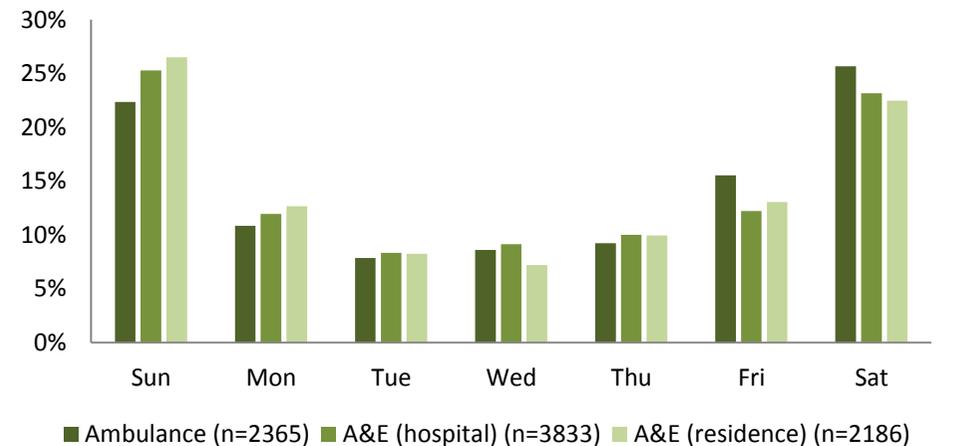


Figure 4: Percentage of assault-related call-outs/attendances by data source, by day (three years combined data [see Table 2]).



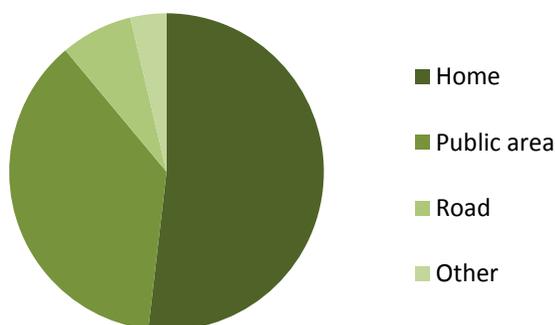
## Circumstances around violence

Information on the circumstances of violence can currently be obtained through data from the ambulance service and TARN. However, only 31 cases of severe assault were recorded through TARN at the Royal Bolton Hospital between 2010 and 2012. More detailed information on location and weapons could be obtained from Royal Bolton Hospital A&E via the collection of CEM-recommended data (Box 2).

### Location of assaults

Figure 5 shows the location of assaults as reported by TARN. Amongst those cases where location was known (87%), around half (52%) took place at home and a further 37% in a public area.

Figure 5: Location of severe assaults reported through TARN at Royal Bolton Hospital (three years combined data; n=27 [see Table 2]).

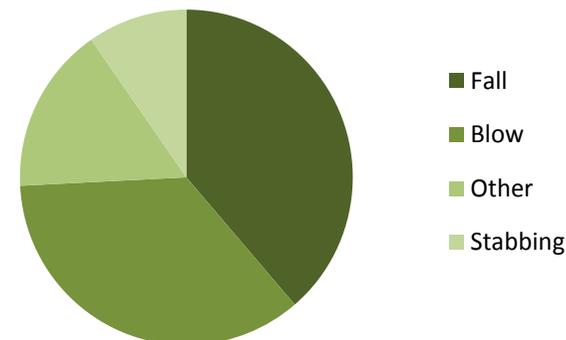


### Weapons used in assaults

Basic information on the weapon used in the assault can be extracted from the ambulance service and TARN data. For instance, around 12% of ambulance call-out incidents reported involvement of a sharp object or gun within the incident

notes. TARN data suggested that two fifths of severe assault cases (39%) were caused by a fall and a third (35%) by a blow to the body (Figure 6).

Figure 6: Mechanism of severe assaults reported through TARN at Royal Bolton Hospital (three years combined data; n=31 [see Table 2]).



### Box 2: CEM-recommendations for data collection

In 2009, the College of Emergency Medicine (CEM) published guidance for information sharing to reduce violence. This document recommends that:

1. A&Es should routinely collect data on assault victims at patient registration (by A&E receptionists), including: the **date and time** of assault, the assault **location** (e.g. name of pub, school), and the **weapon used** (e.g. fist).
  2. There is no need for a formal information sharing agreement between the A&E and the Community Safety Partnership (CSP).
  3. The data should be shared with the CSP and crime analysts in an anonymous and aggregate form.
  4. Senior emergency physicians should be supported to participate in CSP meetings.
- In September 2014, the Health and Social Care Information Centre developed an information standard on A&E information sharing to tackle violence<sup>1</sup>, including the CEM-recommended questions, along with the time and date of the A&E attendance. Due to difficulties with the IT system used at Royal Bolton Hospital A&E, at the time of analysis these fields were not collected. These data fields would help identify hotspot locations for violence and inform the type of intervention needed.

<sup>1</sup>Available from: <http://www.isb.nhs.uk/documents/isb-1594/amd-31-2012/1594312012spec.pdf>

## At-risk groups

Health data can be used alongside police data on victims and offenders (Box 3) to better understand which groups of the community are most affected by violence. Figures 7 and 8 show that the majority of people treated for assault-related injuries are male. The majority of assault victims are aged between 10 and 39 years of age, with the highest frequency of cases seen in the 20-29 age group. TARN data has not been included in Figure 8 since overall numbers across the three year period were very low (n=31).

In terms of ethnicity, the majority of assault victims (~90% of those where ethnicity is known) were White British (hospital admissions data and Royal Bolton Hospital A&E data; completion rates 86% and 76% respectively). This compared to around 80% White British within Bolton LA population<sup>2</sup>.

Figure 7: Percentage of assault-related incidents by data source, by sex (three years combined data [see Table 2]).

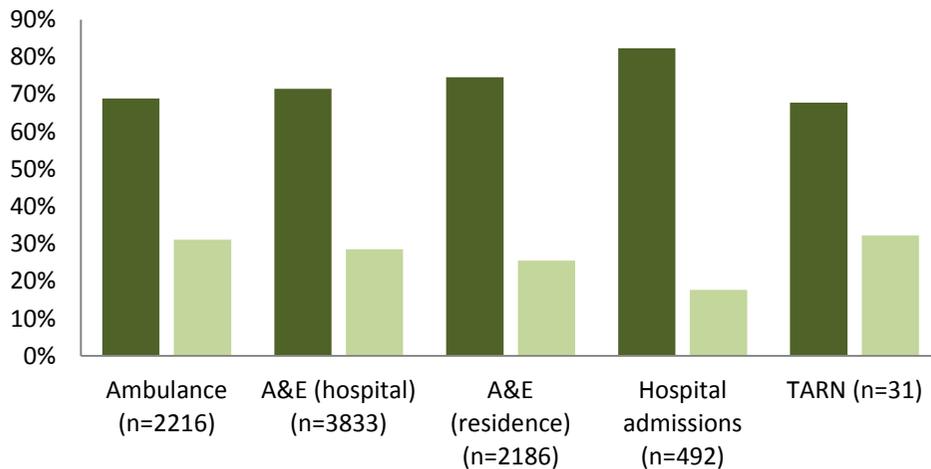
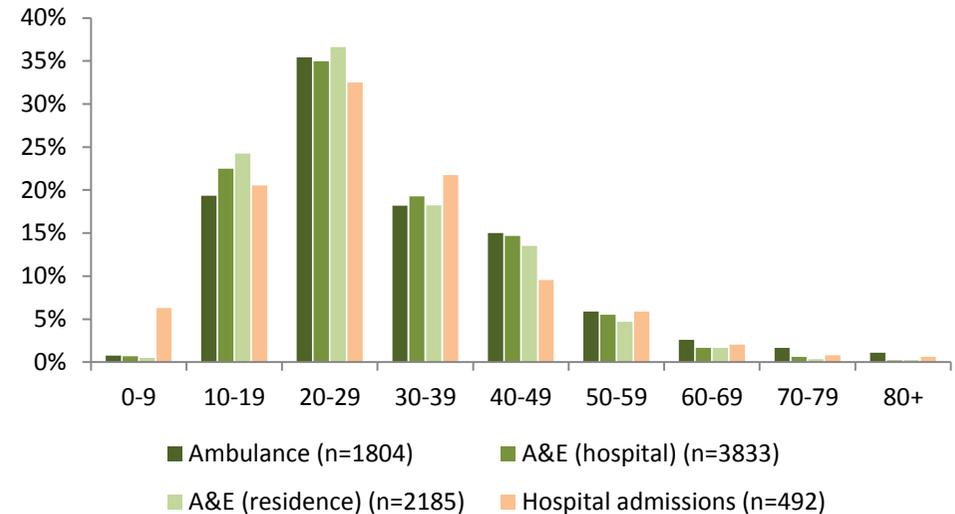


Figure 8: Percentage of assault-related incidents by data source, by age-group (three years combined data [see Table 2]).



### Box 3: Police data for perpetrators and victims

Data from Greater Manchester police show that 52% of assault victims were female. This was a higher percentage than that reported in health sources but reflects the wider range of violence reported to the police that includes less severe forms of violence. For instance, nationally, only around 50% of police-recorded violent crime resulted in injury. For both perpetrators and victims, violent incidents were most frequent among the 20-29 age group (38% and 31% of cases respectively). Among those with a completed ethnicity field (96% of victims, 85% of perpetrators), around 97% of assault victims and 89% of assault offenders were White British.

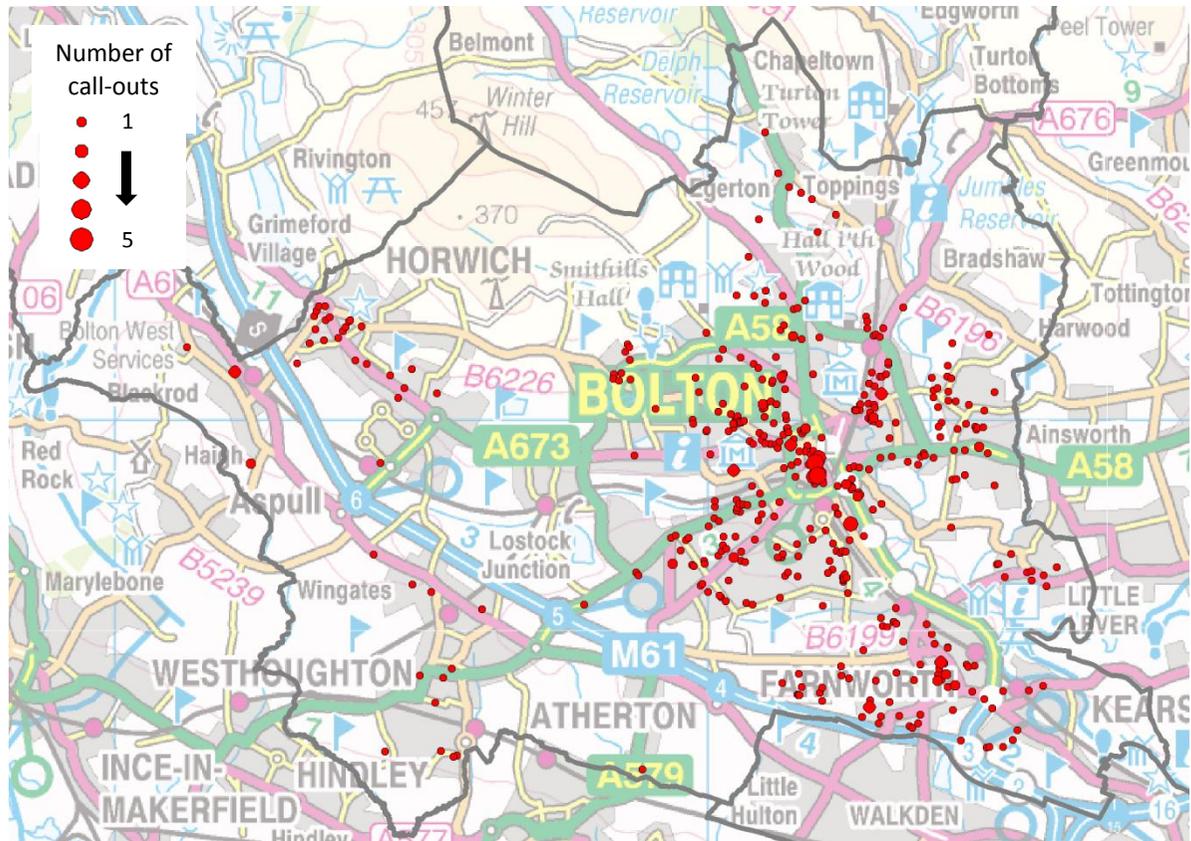
<sup>2</sup>2011 Census for England and Wales. Available from <http://www.ons.gov.uk/ons/guide-method/census/2011/index.html>

## At-risk locations and communities

Health data can be used to identify where assaults take place and which communities are most at risk. Data from the ambulance service (Figure 9) records the location of call-outs for assault-related incidents, and show a concentration of assaults within Bolton town centre.

Figures 10 and 11 show the rate of A&E presentations for assault and the rate of hospital admissions for assault by Lower Super Output Area (LSOA) of residence. These maps can help identify geographical areas to target violence prevention initiatives. Areas of Bolton with higher deprivation levels (Figure 1) also had significantly higher\* rates of A&E presentations for assault and hospital admissions for assault.

Figure 9: Location of ambulance call-outs for assault-related incidents within Bolton LA, 2012/13.



\* Using Analysis of Variance (ANOVA).  $F=31.20$  ( $p<0.01$ ) for A&E presentations and  $F=19.40$  ( $p<0.01$ ) for hospital admissions.

Figure 10: Crude rate of A&E attendances for assault by LSOA of patient residence within Bolton LA, 2009/10-2011/12.

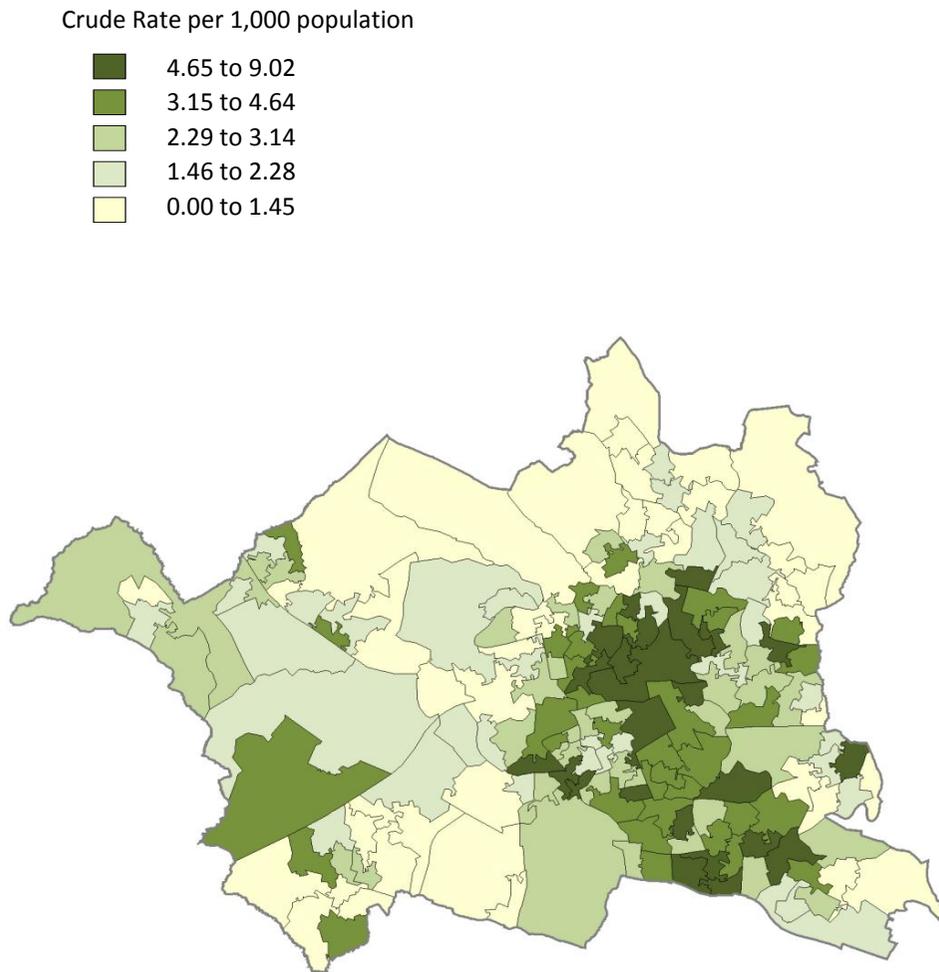
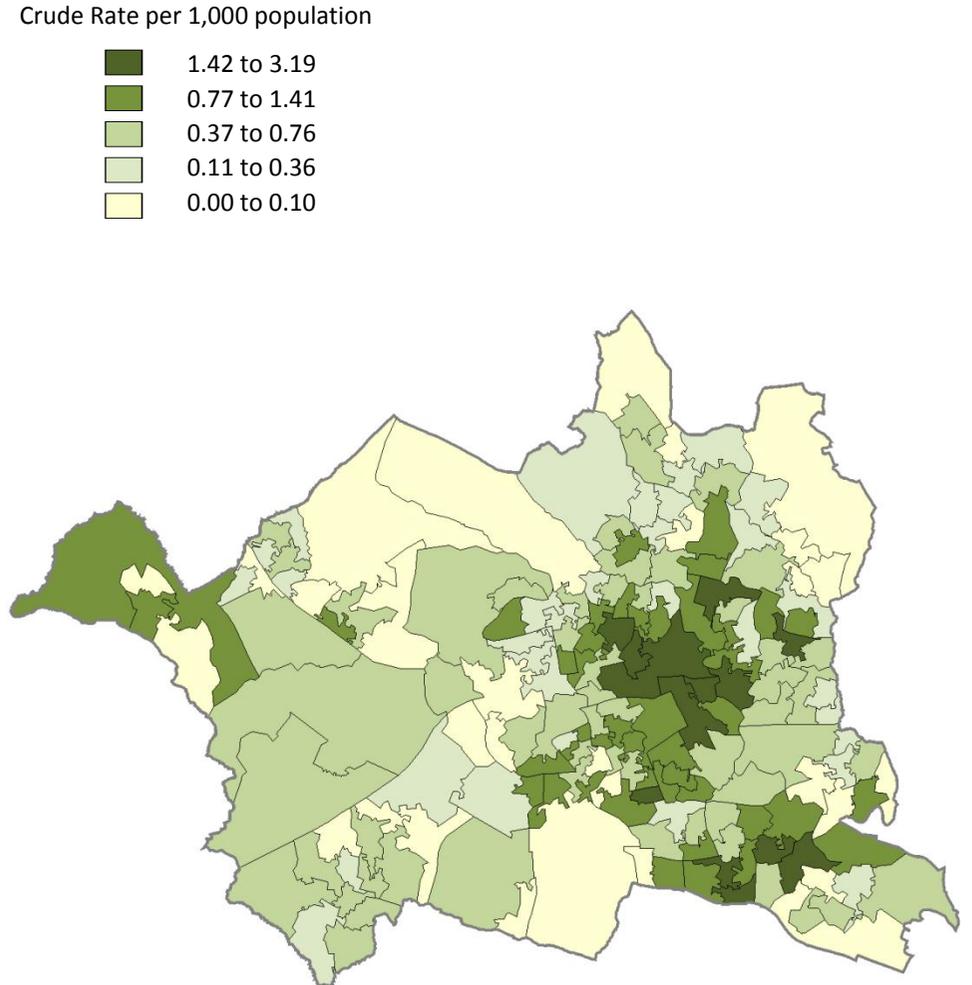


Figure 11: Crude rate of hospital admissions for assault by LSOA of patient residence within Bolton LA, 2009/10-2011/12.



## NHS data sources

A summary of the data sources used in this report is shown in Table 2, based on information from: Quigg et al. *Health data for violence prevention manual: A manual for community safety partnerships and other violence prevention partners, 2013.*

Table 2: Summary of NHS data sources.

Data source	Availability and access	Data fields available	Notes
1. Ambulance call-outs	Data available via the North West Ambulance Service.	Variables include patient demographics, reason for the call-out, call-out time and date, and call-out location.	Years 2010/11 to 2012/13. Analysis was restricted to all ambulance call-outs within Bolton local authority for “assault” or “stab/gunshot”.
2. Royal Bolton Hospital A&E data (A&E hospital-based)	Data can be accessed via the Trauma and Injury Intelligence Group (TIIG). <a href="http://www.tiig.info/default.aspx">www.tiig.info/default.aspx</a>	Variables include patient demographics, date and time of presentation, incident location and LSOA of residence.	Years 2010/11 to 2012/13. This dataset includes all patients presenting to Royal Bolton Hospital A&E regardless of their area of residence. Analysis was restricted to all patients presenting with an injury caused by “assault”.
3. HES experimental A&E data (A&E residence-based)	Local authority level data are available via the Violence Indicator Profiles for England Resource (VIPER) <a href="http://www.eviper.org.uk">www.eviper.org.uk</a> . Bespoke data extracts/analyses are available via the Health & Social Care Information Centre (HSCIC) <a href="http://www.hscic.gov.uk/hes">www.hscic.gov.uk/hes</a> .	Variables include patient demographics, incident type, date and time of presentation and LSOA of residence.	Years 2009/10 to 2011/12. This dataset is published as experimental since although coverage was improving year on year, some data quality and coverage issues still remained. The data includes all Bolton Local Authority residents presenting to an A&E in England regardless of which hospital they attended. Analysis was restricted to all patients presenting with an injury caused by “assault”.
4. HES Hospital admissions	Local Authority level data are available via the Violence Indicator Profiles for England Resource (VIPER) <a href="http://www.eviper.org.uk">www.eviper.org.uk</a> . Bespoke data extracts/analyses are available via the Health & Social Care Information Centre (HSCIC). <a href="http://www.hscic.gov.uk/hes">www.hscic.gov.uk/hes</a> .	Variables include patient demographics, admission date and method, cause of hospital admission and LSOA of residence.	Years 2009/10 to 2011/12. This dataset includes information on all hospital admissions to NHS hospitals including private patients and admissions of NHS patients who are treated elsewhere. The data includes all Bolton residents presenting to a hospital in England regardless of which hospital they attended. Analysis was restricted to ICD-10 codes X85-Y09 and emergency admissions.
5. Trauma Audit and Research Network (TARN)	Bespoke data extracts are available from TARN <a href="http://www.tarn.ac.uk">www.tarn.ac.uk</a> .	Variables include patient demographics, type of injury (blunt or penetrating), injury mechanism (e.g. stabbing, shooting) and injury location (e.g. home, office).	Years 2010 to 2012. This dataset records clinical records of severe trauma (e.g. a length of stay in hospital of 72 hours or more). Analysis was restricted to patients where the cause of injury is assault or intent inconclusive. There were issues with data coverage: the number of cases recorded for Royal Bolton Hospital was lower than expected (48% of expected cases).

## About the profiles

Recognising the valuable role that NHS data can play in addressing the growing problem of gang and youth violence in some English cities, the Coalition Government has prioritised work to improve data sharing on violence within hospitals, and particularly A&Es. The Department of Health is currently running a programme to support A&Es with collecting a minimum data set (see Box 2) and sharing this with Community Safety Partnerships.

This violence profile forms part of a wider, three-year project funded by the Department of Health that aims to identify and support the optimum use of NHS data in local violence prevention, and to identify the impacts of local NHS data sharing on levels of violence. Nine local authorities in the North West and London are participating in the project. For more information visit: <http://www.cph.org.uk/optimising-the-use-of-nhs-intelligence-in-local-violence-prevention-and-measuring-its-impact-on-violence/>

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