

WMP Briefing Paper

Analysis of School Catchment Areas and Violence

Ethics Committee (14 Dec 2020)

This project is at the proposal stage and is presented to the Committee 'in principle' so that any immediate concerns can be raised.

The finer details of the methodology, exact data to be used and mode of communicating the results will not be determined until after the exploratory data analysis (EDA) phase has been undertaken.

Once the analysis has been completed the project will be presented to the Committee again so that the data used, methodology, findings, intention for deployment and communication strategy can be examined in more detail.

Tasking

This project was requested by the Senior Responsible Officer (SRO) for Project Guardian (Superintendent Gareth Morris) and the Director of the West Midlands Violence Reduction Unit (VRU) (Clare Gollop).

The VRU is a collaboration of specialists from local government, health, education, police, and criminal justice who work alongside partner organisations and communities and whose remit is to reduce serious violence.

Project Guardian is the West Midlands Police (WMP) team aligned to the VRU. Both receive funding from the Home Office and the Office of the Police and Crime Commissioner (OPCC).

Purpose

The purpose of this project is to undertake exploratory analysis of data held within WMP systems relating to school aged violent offenders and the offences they commit in order to inform the geographical focus of the VRU's prevention activity in schools.

The analysis has been requested to provide an evidence base to aid strategic decisions about the prioritisation of investment from the Home Office and the OPCC in order to reduce violence in the West Midlands.

This project is complemented by the Serious Violence and Knife Crime long-term forecasting projects also being submitted to the Committee in December 2020.

Context

The VRU Strategic Needs Assessment¹ states that in the West Midlands:

Violence of all types is high compared to other parts of the country and some kinds, such as knife crime, are showing worryingly steep increases in recent years. In 2019, the West Midlands experienced the biggest annual increase in knife crime of any area in England – up 17% on 2018.

Reducing violence is a Force priority and therefore WMP is a committed partner in the VRU which promotes an evidence-based, public health approach to violence reduction². Project Guardian also supports the Force's ambition to *Act with Precision (Figure 1)*, which means responding to identified threat and risk by deploying the right people, in the right place, at the right time.

Given the youthful demographic of the West Midlands and the prevalence of violence involving or affecting children, a key strand of the prevention activity undertaken by the VRU is situated within schools. Whilst violent hotspots may occur in the locations where children live, socialise or travel to and from school, the intervention activity needs to be located in the place where they attend school. Therefore this analysis aims to complement the projects forecasting long-term violence and knife crime by helping the VRU to identify the schools which educate more children who are known to come from locations which suffer from higher than average levels of violence.

Currently, the VRU uses open source and some education data to prioritise which schools to focus its activities in. This exploratory analysis of police data is intended to complement this work by identifying the key locations for violent offending involving school aged children and to understand where violent young offenders live and attend school.

By sharing this data with the VRU the aim is to add value to strategic resourcing decisions by:

1. Identifying any schools appropriate for prevention activity which have not been captured in the current VRU list.
2. To assist in the prioritisation of which schools to focus on in order to maximise the benefits of the preventative activity.

This will contribute to providing a sound evidence base for long-term investment of resources by the VRU. It supports WMP's Violence Strategy to be an active partner within a whole system approach to preventing violence and collaborating to understand a problem from a range of perspectives (*Figure 1*).

It is recognised that policing often responds to symptoms of complex social issues. This often mirrors the inequality within society. This can manifest as certain communities and areas subject to higher rates of representation within the criminal justice system or within proactive policing methods like stop and search. In order to direct intervention work where it is most needed, we need to develop data sets to help identify where partners, the Violence Reduction Unit and educational establishments can best assist. By addressing issues through early intervention and support at the earliest stage we hope to reduce the chance of people becoming perpetrators or victims of violence and in turn reduce the risk of certain communities becoming focal points for responsive police tactics.

¹ West Midlands Violence Reduction Unit Strategic Needs Assessment April 2020 <https://westmidlands-vru.org/data-insights/strategic-needs-assessment/>

² West Midlands Violence Reduction Unit <https://westmidlands-vru.org/about/>



Figure 1: WMP Violence Strategy 2020/21

Intended activity resulting from the project

The results of this analysis will feed into the strategic decision making processes of the VRU Education Team. Examples of the types of initiatives that would be commissioned to support schools as a result of this analysis include³:

- Working in schools to deliver training which promotes resilience and reduces risks to vulnerable children and young people who experience violence in their lives.
- Supporting the training and development of education staff to promote a whole school approach to children and young people's emotional health and wellbeing.
- Helping schools adopt tried and tested methods to prevent young people being drawn into activities that may lead to violence. Examples include, virtual reality experiences which generate discussion about the real life situations faced by some groups of children who can be reluctant to engage; and the use of an educational package supported by families of knife crime victims and offenders in prison.
- Linking the support offered by schools, partners and communities to ensure all children get the support and opportunity they need to fulfil their potential and stay in mainstream education.
- Bringing together experts within education so they can share, develop and influence educational approaches that support social, emotional and mental health of young people at risk or affected by violence, for example by adopting trauma informed approaches.
- Using our Cadet and Youth Engagement Officers to enhance the youth voice within our Independent Advisory Groups (IAG) which provide community scrutiny of our activity.
- Expanding the provision of Mentors in Violence Prevention from secondary schools to further education; primary schools; faith settings and sports clubs.
- Leading nationally on targeted sports impact activity.

The impact of VRU initiatives are subject to academic evaluation.⁴ The University of Wolverhampton's Institute of Community Research and Development (ICRD) has been appointed as the lead evaluator of the West Midlands Violence Reduction Unit, in partnership with the University of Wolverhampton, Birmingham Voluntary Service Council, and the University of Birmingham.

³ <https://westmidlands-vru.org/education/>

⁴ <https://westmidlands-vru.org/evidence-evaluation/evaluation/>

Data

Level of analysis:
<input type="checkbox"/> Individual Individuals aggregated? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Specific Area: <input type="checkbox"/> Output Areas <input type="checkbox"/> Super Output Areas - Lower <input type="checkbox"/> Super Output Areas - Mid <input checked="" type="checkbox"/> Wards <input type="checkbox"/> Districts <input type="checkbox"/> West Midlands <input type="checkbox"/> Other (type of crime)
Reliability of data:
An extensive exploratory data analysis (EDA) phase will be undertaken to examine the extent of any data quality issues.
Sample or entirety:
If sample: N/A Method of sampling: N/A Method of choosing sample size: N/A Sample size: N/A
Type of analysis:
<input checked="" type="checkbox"/> Exploratory <input type="checkbox"/> Explanatory <input type="checkbox"/> Predictive <input type="checkbox"/> Optimisation
Proposed methodology:
Not currently known
Will the project eventually be automated:
<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Means of evaluation:
Findings from the project would be provided to the VRU / Project Guardian and would be subject to their expert assessment.

ALGO-CARE considerations

Advisory	
If applicable, are the outputs from the algorithm to be used in an advisory capacity?	Findings from the initial EDA would be fed into the VRU to complement the data they currently hold about schools where violence reduction initiatives would be beneficial.
Does a human officer retain decision-making discretion?	Any decisions arising from the provision of any information resulting from this project would be subject to decision making by partners in the VRU.
Lawful	
What is the policing purpose justifying the use of the algorithm (means and ends)?	Preventing violence affecting young people is a key aim of WMP and the VRU. This analysis will enable the VRU to complement education data to understand which schools would benefit most from prevention activities.
Is the potential interference with the privacy of individuals necessary and proportionate for legitimate policing purposes?	The reduction in violence is a legitimate policing purpose and the analysis of individuals' crime related data would, following non-punitive interventions, on balance be appropriate for the wider good of society.
In what way will the tool improve the current system and is this demonstrable?	The VRU currently uses open source data and data made available by individual schools to understand which schools are more likely to have responsibility for children who commit violence. The addition of police data to their assessment will improve their current system of prioritisation for allocating violence reduction initiatives.
Are the data processed by the algorithm lawfully obtained, processed and retained, according to a genuine necessity with a rational connection to a policing aim?	The data that would likely be analysed are collected as part of WMP's duty to collect, assess and investigate crimes and as such have been collected in the appropriate manner for the appropriate operational purposes.
Is the operation of the tool compliant with	The analyses proposed would accord with the DCMS Data Ethics Framework 2018. ⁵

⁵ <https://www.gov.uk/government/publications/data-ethics-framework/data-ethics-framework>

national guidance?	
Granularity	
Does the algorithm make suggestions at a sufficient level of detail given its purpose and the nature of the data processed?	It would be the aim of any model that is developed the analysis to provide data at a level which could be used by the VRU in its decision making.
Are data categorised to avoid broad-brush grouping and results and therefore issues of potential bias?	Any categorisation that is required will be undertaken so as to better enable analysis and any decisions to be made therefrom. This would include processes to identify the presence of any bias and to ensure that no bias is built into the analyses.
Do the potential benefits outweigh any data quality uncertainties or gaps?	To be ascertained during the project; however, given the costs to society of violent crime it is likely that the potential benefits outweigh potential uncertainties / data gaps (which would be analysed and assessed as part of the project).
Is the provenance and quality of the data sufficiently sound?	The data have been gathered during the day-to-day policing work of WMP and should enable analyses of the type envisioned for this project.
If applicable, how often are the data to be refreshed?	The underlying data are refreshed a number of times per day. As this is an exploratory project it is likely that it would only be undertaken once.
If the tool takes a precautionary approach in setting trade-offs, what are the justifications for the approach taken?	Not applicable.
Ownership	
Who owns the algorithm and the data analysed?	WMP once developed.
Does WMP need rights to access, use and amend the source code and data?	No
Are there any contractual or other restrictions which might limit accountability	No

or evaluation?	
How is the operation of the algorithm kept secure?	Not applicable.
Challenge	
What are the post-implementation oversight and audit mechanisms, e.g. to identify any bias?	Not applicable.
If the algorithm is to inform criminal justice disposals, how are individuals notified of its use?	Not applicable
Does the specification of the algorithm match the policing aim and decision policy?	Not applicable.
Can the accuracy of the algorithm be validated periodically?	Not applicable.
Can the percentage of false positives / negatives be justified?	Not applicable.
How was the method chosen as opposed to other available methods?	Not applicable.
What are the (potential) consequences of inaccurate forecasts?	Not applicable.
Does this represent an acceptable risk?	Not applicable.
How are the results checked for accuracy and how is historic accuracy fed back into the algorithm for the future?	Not applicable.

How would inaccurate or out-of-date data affect the result?	Generally inaccurate or out-of-date data could detrimentally impact on the findings from the project, however currently the potential for any such issues is unknown.
Responsible	
Would the operation of the algorithm be considered fair?	Not applicable.
Is the use of the algorithm transparent (taking account of the context of its use), accountable and placed under review?	Not applicable.
Would it be considered to be used in the public interest and to be ethical?	The reduction of violence would be the aim of the project and given the cost to society of violence, enabling more effective means of its reduction would likely be seen as positive.
Explainable	
Is information available about the algorithm / decision-making rules and the impact of each feature?	Not applicable. The findings of the project would be presented to the Ethics Committee at a future date.

Appendix: Glossary of Terms

WMP / Law Enforcement Terminology	
AEP	Alternative Education Provider
DAL	Data Analytics Lab
IAG	Independent Advisory Group
OPCC	Office of the Police and Crime Commissioner
SRO	Senior Responsible Officer
VRU	Violence Reduction Unit
WMP	West Midlands Police

Data Science Terminology	
ALGO-CARE	All projects have used the ALGO-CARE to consider ethical implications: Advisory, Lawful, Granularity, Ownership, Challenge, Accuracy, Responsible, Explainable
DCMS	Department for Digital, Culture, Media and Sport – developed the Data Science Ethical Framework.
EDA	Exploratory Data Analysis
Productionise	To 'productionise' means that once we are satisfied that the model works well, we would automate the process of providing predictions at regular intervals.