

# PROJECT MINERVA - A DATA-DRIVEN SOLUTION TO REDUCING VAWG

Reducing violence against women and girls (VAWG), and improving the police response to it, is an operational priority for forces across the country. To understand how science and technology is part of the solution, we spoke to Amanda Johnson and Detective Chief Superintendent Andy Waldie - two leading figures in UK policing and public safety.

They are working together to tackle VAWG in public spaces across partnerships and communities.



Project Minerva is a collaborative research initiative between Essex Police and the Quantitative and Spatial Criminology Research Group at Nottingham Trent University which has developed a statistical mapping tool to identify high-risk public place areas for violence against women and girls (VAWG) in Essex, known as 'Minerva Zones'. This map breaks down instances of VAWG into 'neighbourhoods' at the Output Area Level — areas with populations of up to 625 people – showing where VAWG has occurred, filtering incidents by day and timeframe. It has then used a wide range of open-source data to analyse and identify statistically significant factors influencing victimisation at the neighbourhood and street segment level - and predicting where it could potentially occur across Essex.

The project also seeks to illustrate the connection between the public's fears of crimes in certain areas and demonstrate that, based on data, these fears do not always correlate with high-VAWG incident areas. The goal is to improve public confidence and create a true sense of safety – a fine example of the integration of science and technology in policing.

Using the Commonplace platform, women and girls across Essex were asked to anonymously identify public spaces where and when they felt a heightened fear of VAWG. The website allows users to mark specific locations on an online map of the Essex Police Force Area and answer questions about their experiences and feelings of safety in these areas – and to offer up potential solutions to reducing fear

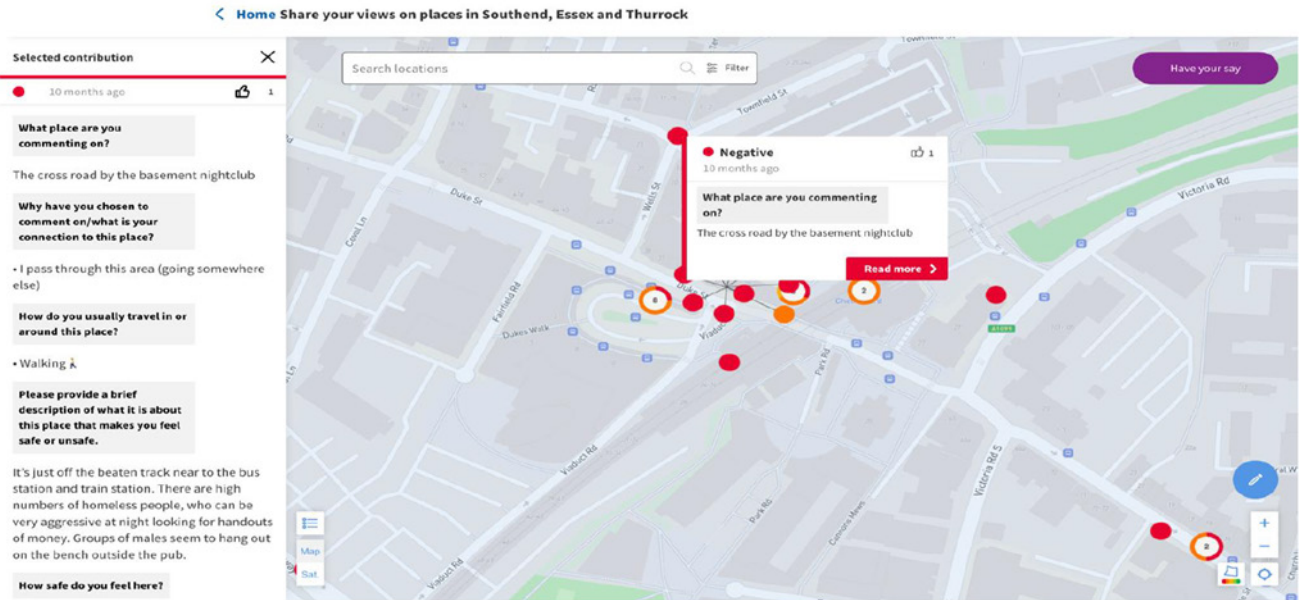


Figure 1 - Commonplace Essex Fear of VAWG map identifying a participant's reflections on a specific public space

of VAWG in these locations.

The team at NTU used this data to statistically model spatial variations in fear of VAWG ratings across 389 public spaces in Essex. They explored differences in overall safety ratings given by women and girls and specific types of feelings that these locations evoked among participants, such as feeling threatened. This is illustrated in Figure 1.

The team then integrated feelings of safety across Essex with VAWG incident data (notifiable crimes and survey data) on the map. This 'Minerva Approach' allows users to identify public spaces with high and low fear of VAWG and assess how these fears correlate with VAWG incident hotspots. This is the first online policy tool in England and Wales that enables police officers to understand the inter-relationship between factors driving both VAWG incidents and fear of VAWG within specific neighbourhoods. This new way of analysing crime data has challenged existing assumptions about the location and scale of VAWG. It has also supported better decision-making. The project has created a valuable evidence base for community safety partners (CSPs) and introduced a new approach to multi-agency collaboration to reduce violence against

women and girls. Minerva equips CSPs with data-rich maps, enabling them to accurately target resources to high-risk areas.

### Uncovering VAWG hotspots

In their quest to understand the underlying factors driving instances of VAWG, the team used the 'Minerva Approach' to identify the location of crime attractors and generators in public spaces. Contrary to the belief that VAWG incidents predominantly occur during the nighttime economy, they discovered numerous other hotspots across Essex, some previously unknown to Essex Police. Surprisingly, nightclubs were not significant drivers of VAWG at the street level. Instead, factors such as restaurants, fast food outlets, transport hubs (train and bus stations), and educational institutions (FE Colleges, secondary and primary schools) emerged as the biggest drivers. The map also revealed that the hour before and after school is particularly significant for VAWG incidents.

Additionally, the analysis has found that some rural communities experience disproportionately high levels of VAWG compared to overall crime, highlighting the need for support in these areas as much as traditional "VAWG areas" such as city centres. This new data has improved policy understanding showing where and how to target interventions. It enables CSPs to develop innovative problem-solving methods to shape their thinking to tackle VAWG.

## Identifying which factors explain the presence of public spaces with the highest fear of VAWG scores across Essex

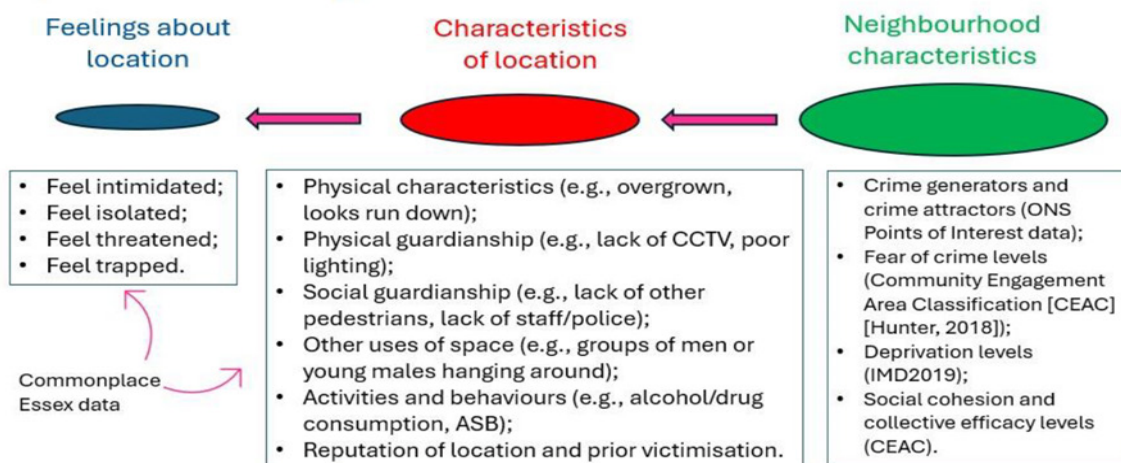


Figure 2 - Potential drivers of fear of VAWG in public spaces

### Tackling fear of VAWG

Academic literature identifies several key drivers of crime hotspots, including the absence of physical guardianship[1] (e.g., lack of CCTV), a neglected physical environment[2], the presence of risky facilities[3], high population turnover, and a lack of neighbourhood connection[4]. By integrating these perspectives with the specific emotions that certain locations evoked among women, the project has revealed potential drivers of fear of VAWG, as illustrated in the below figure.

A common approach to addressing fear of VAWG, and fear of crime more generally, within public spaces is the installation of CCTV and improving lighting. However, the results indicate that improving lighting or installing CCTV alone is insufficient to address fear of VAWG. Police forces and crime reduction agencies therefore need to look beyond this 'go to' approach and consider a wider range of factors and potential solutions to effectively tackle this issue.

The most significant risk factor for public spaces being perceived as highly unsafe is when women and girls have previously been followed to that location, making it 6.24 times more likely to be seen as problematic. Other factors causing feelings of intimidation, isolation, or threat include groups of men loitering and the presence of restaurants and fast-food outlets.

These findings suggest that greater consideration in the design of public spaces and the function of facilities within specific neighbourhoods (i.e., place-making) can positively impact how women and girls feel about certain locations. Therefore, addressing these factors can enhance perceptions of safety and reduce the highest levels of fear in public spaces.

### Building partnerships to deliver results

The success of the Minerva project is built on its ability to build partnerships that are data-driven, evidence-based, and intelligence-led. Addressing a complex issue like VAWG requires a holistic approach that involves the education sector, transport providers, and other public sector partners. The insights have enabled partnerships to be built with Essex University Freshers Week, British Transport Police, Transport for London, Greater Anglia, C2C and First Bus to develop solutions targeting these newly identified hotspots. This approach is rooted in accountability to public funds and gives policing justification for what they are doing.

**Professor Rowena Hill from the NTU team said:**

**“VAWG is a society problem not a law enforcement problem on its own. The Minerva evidence ... has had a powerful convening effect, bringing together stakeholders. It has clarified the issues and facilitated a societal approach to addressing VAWG. We know that more cohesive communities have less crime. The ‘Minerva Approach’ highlights a wider range of potential drivers of VAWG incidents and fear of VAWG, which, if addressed could also yield public health and social wellbeing benefits.”**

However, there are challenges. One significant barrier to further development is the transfer of Minerva generated data to CSPs. This is not a police-led operation, and the CSPs are not used to receiving such a directive without more concrete guidance. Local Authorities run and convene the CSPs, and they must work together with local health bodies, local councillors, and other public sector partners to agree a plan of action. This disconnect can slow implementation of key findings. Nevertheless, the Minerva project provides a promising model for addressing VAWG and improving public safety through science and technology integration in policing. Plans are underway to build on the partner support to policing through the development of a decision-making toolkit which will help partners become more data literate and support

critical thinking on VAWG across Essex. In the future, the team plans to roll out Minerva as a blueprint for police forces across England and Wales. Bedfordshire, Norfolk, and Suffolk police forces have already shown interest in adopting Minerva.

**Detective Chief Superintendent Andy Waldie said:**

**“Tackling VAWG needs a society wide approach. From what we’ve already seen, Project Minerva can make a difference, with a data-driven focus. Now we need to bring partners and other forces on the journey with us. We can then ensure we have the best information and data to target our joint activity to make our communities safe for women and girls.”**

References:

- [1] Routine activities theory – Cohen, L. and Felson, M. (1979) Social change and crime rate trends: a routine activities approach. *American Sociological Review*, 44, pp. 588-608
- [2] Wilson, JQ and Kelling, GL (1982) ‘Broken Windows’ *The Atlantic Monthly* (March), pp 29–38
- [3] Crime generators and crime attractors – Brantingham, P, and Brantingham, P. (1981) Notes on the geometry of crime. In P. Brantingham and P. Brantingham (eds) *Environmental Criminology*: Prospect Heights, IL: Waveland Press.
- [4] Social Disorganisation Theory - Shaw, Clifford R. and Henry D. McKay (1942) *Juvenile Delinquency and Urban Areas*. Chicago : University of Chicago Press.

