



Estimating the nature and scale of response police demand



Key points

- Using police incident data, the project team analysed the nature and scale of response police demand across the Bradford District. Results show that police respond to diverse incidents daily, with the burden on their resources varying significantly.
- For just over half of all incidents attended, police respond under the assumption that a crime may have occurred. Responding to these incidents takes up almost 60% of the police's response time.
- Response demand varies significantly across the Bradford District, with demand from some areas over 100 times higher than others. This variability underscores the need for data-informed, placed-based resource allocation strategies.
- 1 in every 5 attended incidents was flagged as vulnerability-related. Responding to these incidents took just over a quarter of total estimated responding time over the five-year study period.

Summary

This study explored how routinely collected police data can provide insights into the types of incidents police respond to and demands those incidents place on available resources.

The team analysed data describing 'emergency', 'priority' and 'standard' graded incidents attended by West Yorkshire Police between 2017 and 2022 across the Bradford District. They explored several approaches to quantify the nature, scale and patterns of demand in the region.

The time response officers take to resolve an incident varies considerably depending on the type of incident and even across incidents of the same type. This indicates that measures of demand based on numbers of incidents alone are likely to hide more complex patterns of demand.

Analysis demonstrates that response demand is highly concentrated across the district with some areas experiencing disproportionately high levels of incidents which require considerable resources to resolve. These patterns, accompanied by high degrees of variability in the nature of demands observed, underscore the importance of data-informed, place-based resource allocation strategies.

Background

While we may often think of police as a public service primarily dealing with crime, officers are also often involved in a range of other activities.

Over the past decade, the diversity of these tasks has increased and cuts to a range of public services mean that the police are often seen as both a service of first and last resort. Academic research and policy- and practice-related analyses have suggested that a significant proportion of police resources are spent on non-crime related activities (e.g. responding to people in mental health crises) – with a recent study by the College of Policing suggesting that 83% of calls to police were non crime-related.

This idea of understanding what police do is often referred to as 'police demand'. There have been several studies that have sought to characterise the types of demands that are involved in policing and the methods that have been applied to measure those demands. At the same time, research consistently demonstrates that levels of crime and police activity can vary greatly in small areas.

In this study, the team analysed routinely collected police data to better understand the nature, scale, and patterns of police demand across the Bradford District. The goal is to support police and their partners by building an effective evidence base that can then be used to inform resource allocation, improve strategic decision-making, and support cross-agency communication.

What we did

Through the Connected Bradford research database, West Yorkshire Police provided anonymised data describing police incidents occurring across the Bradford District from 2017 to 2022.

An incident is recorded when a member of the public contacts police for assistance, or a police officer observes an event which requires police attention. Some incidents may result in the recording of a crime, while others may not. The data analysed contains information about each incident, including, the date and time when a call was received, the region in which it occurred, whether it was resolved through police officers' attendance, and when any initial response was considered resolved.

Information about the nature of the incident itself is recorded via a series of incident types, sub types and qualifiers that describe the incident and sometimes those involved. For example, an incident may relate to reports of a missing person, and that the missing individual is considered vulnerable. Incidents are also assigned 'emergency', 'priority', 'standard' gradings which form the basis of how responses are prioritised. This incident prioritisation process considers several factors, including whether the call relates to a crime, whether the individuals involved are vulnerable and whether there is a risk to public safety.

Using these data, the team identified two distinct but complementary measures of response demand; (1) the number of incidents that need to be responded to by physical police presence; and (2) the estimated time initial response officers spent attending those incidents. The team examined patterns of these demands by incident type, sub type and qualifier, over time and across locations within the Bradford District.

Key findings

There were almost 618,000 incidents in Bradford between April 2017 and March 2022 that were graded 'emergency', 'priority', or 'standard' priorities. This equates to an average of around 340 incidents per day or 10,000 incidents a month. Two-thirds were resolved with the physical attendance of response officers – this equates to almost 2.1 million hours of police responding time.

Of the 91 unique recorded incident types, the six most frequent responded to by police were 'Concern for safety', 'Missing Person', 'No Crime Recorded (e.g., victim not located)', 'Anti-Social Behaviour', 'Suspicious Circumstances' and 'Violence against person'. Collectively these incidents make up 52% of the total volume of attended incidents.

40% of incidents and 49% of responding time is associated with incidents that result in the recording of a notifiable crime. However, including incidents where police likely attend under the assumption that a crime may have occurred increases these estimates to 52% of incidents and 59% of responding time being crime-related.

Analyses of response demand at the Lower Super Output Area (LSOA) level (a census geography designed to have a population between 1,000–3,000 people) indicates that demand in terms of both incident volume and responding time is highly spatially concentrated, and that demand differs substantially across the Bradford District.

Some LSOAs have levels of police demand that are estimated to be over 100 times that of those experiencing the lowest levels of demand. On average, the 31 LSOAs in the top 10% for estimated demand experience 12 times the level of demand of those 31 LSOAs in the lowest 10%.

West Yorkshire Police recorded one or more qualifiers designed to indicate some form of vulnerability on 1 in 5 attended incidents. Responding to these incidents took just over a quarter of estimated responding time. In 2021–2022, 1 in 7 incidents had domestic abuse qualifier associated with them (over 1 in every 4 crime-related incidents), and response to those incidents equated to 20% of all recorded response time. In the same year, 1 in 25 of all attended incidents included the 'Mental Health Involved' qualifier, which was around four times as likely to be associated with a non-crime related incident than a crime-related incident.



Image from Billy Wilson via Flickr (CC BY-NC 2.0)

Next steps

Increasing understanding of the nature and scale of police demands is a key task that relates to a broad span of both research- and practice-related outcomes.

These range from better informing police and public service partners allocating resources, to increasing transparency in public discussion about the role of police. This initial exploratory study has highlighted a range of potential avenues for future research to support these efforts:

1. Developing more sophisticated demand measures that are capable of better capturing the diversity of situations police face is key to understanding demand and aligning resources to respond more effectively. Police routinely collect a diverse range of data for administrative purposes, including unstructured free text incident logs recorded by call handlers and routine GPS monitoring of police vehicles and officers. With appropriate analyses, such data may provide a clearer picture of the various demands beyond those associated with an initial response (i.e. investigation, transport etc.).
2. Police response officers in different areas often respond to substantively different types of problems. Better quantifying this diversity could inform better joined-up working, evidence-led, place-based engagement of relevant partners, and better specifications of roles (for training, resource allocation etc.). Further analysing area-level environmental and demographic associations with differing profiles of demand while paying special attention to identifying gaps in other public service provision could help to assess impacts on police demand.
3. The team's analyses indicate that police are routinely involved in situations where they interact with vulnerable individuals with the aim of reducing potential harm. To date, a range of challenges has meant there has been limited empirical research to better quantify the nature, scale, and distribution of these vulnerability-related demands. Further research to better capture these demands is key.

This study is based [in part] on data from Connected Bradford (REC 18/YH/0200 & 22/EM/0127). The data is provided by the citizens of Bradford and district, and collected by the NHS, DfE and other organisations as part of their care and support. The interpretation and conclusions contained in this study are those of the authors alone. The NHS, DfE and other organisations do not accept responsibility for inferences and conclusions derived from their data by third parties.



For further information

Read more about our Connected Data Analytics programme on our website:
vulnerabilitypolicing.org.uk/connected-data-analytics

Centre Deputy Director:

Professor Dan Birks
d.birks@leeds.ac.uk

The research team were:

Amanda Hass, University of Leeds;
Dan Birks, University of Leeds.



LEEDS *Institute for Data Analytics*

This project was conducted in collaboration with the Leeds Institute for Data Analytics and its Data Scientist Development Programme, which trains early-career data scientists to deliver real-world, data-driven impact.



Economic
and Social
Research Council



UNIVERSITY
of York



UNIVERSITY OF LEEDS

The support of the Economic and Social Research Council (ESRC) is gratefully acknowledged. Grant reference number: ES/W002248/1.