Stop and search, the use of intelligence and geographic targeting
Findings from case study research

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Executive summary

This report presents findings from research carried out in the mid-2000s to examine the role played by intelligence in police stop and search practices. As earlier research has suggested that the effective use of intelligence in stop and search can help improve the effectiveness and the fairness of the power (Quinton et al 2000), the study focused on three main questions:

1. To what extent was intelligence used by police in their routine use of stop and search?
2. To what extent were statistical and geographical patterns of searches consistent with the application of intelligence to search practices?
3. What were the potential implications of the application of intelligence for race disproportionality in stop and search?

To address these questions, the study relied on in-depth interviews with operational officers from two case study police forces, and statistical and geographical analysis of search records from a further five case study sites.

It should be noted that, since the work was conducted, police practices may have changed in the case study sites and across the wider service. Nevertheless, the research remains of relevance to policy-makers and practitioners because of the high profile nature of stop and search, and the continuing absence of robust empirical research on its effectiveness. More importantly, there is scope for forces to build on the analysis presented here due to: new statistical techniques becoming available; and the expanded use of mobile devices allowing search records to be geocoded automatically.

Stop and search decision-making and intelligence

Qualitative interviews with police officers, and intelligence officers and analysts in two case study forces showed the following:

- Intelligence was highly valued by officers. They learned about it in regular shift briefings, and some also self-briefed using force intelligence system.
- Intelligence was reported to be important in guiding their search activities. In particular, hotspot analyses helped guide officers geographically, and
information on active offenders was also said to direct their attention towards particular people. However, there was some evidence to suggest officers tended to focus more on the intelligence that supported their prior knowledge, and exclude new information that was not in line with their experience.

- A number of obstacles were identified during the research to the effective application of intelligence to stop and search:
  - The need to respond to calls for service meant that officers often felt they had limited time to carry out proactive intelligence-led stop and search.
  - Officers often felt judged by supervisors on the quantity of searches they carried out. At times, this may have prevented them from adopting an intelligence-based approach.
  - Because officers had a relatively broad understanding of what constituted intelligence, there was a view that they may often act on low grade information without regard to its quality.
  - Officers sometimes faced difficulties recalling the detailed intelligence provided in briefings because of a perceived overload of intelligence information.

**Stop and search patterns and intelligence**

Statistical and geographical analysis showed that the patterns of recorded searches in the five case study forces were not always consistent with what might have been expected from a fully intelligence-led approach:

- Consistent with previous research (e.g. Miller et al. 2000), search rates showed substantial variation across the five sites that could not simply be explained by underlying crime rates.

- Overall, there was little relationship between the volumes of crime and searches over time, suggesting searches did not track crime levels in a way that might have been expected with an intelligence-led approach.

- Searches were geographically clustered in hotspots in the study sites. This clustering could not always be explained by the volume of crime in those hotspots. Search hotspots often seemed to be 'hotter' than would have been predicted from the level of crime in the area, and did not necessarily result in a high arrest rate – a possible deviation from an intelligence-led approach.
• While search hotspots often coincided with crime hotspots, the match was less than perfect. Importantly, search hotspots sometimes appeared in places where recorded crime problems were not evident. At other times, crime hotspots emerged and persisted without the police concentrating their stop and search activity in the hotspots in response to the problem.

• In the case study sites, the search hotspots tended to have a higher than average proportion of residents from minority ethnic groups. This concentration often translated into higher rates of stop and search for people from minority ethnic groups in those search hotspots. The focused geographic use of stop and search might, therefore, have contributed towards race disproportionality. It was unclear, however, whether better targeting of stop and search towards crime hotspots would have produced a different outcome.

• There were no consistent relationships in the study sites between the ethnic profile of the suspect descriptions reported by victims and witnesses, and the profile of those searched by the police.

Conclusions and implications

Overall, the research presented a mixed picture in terms of the application of intelligence to stop and search. Evidence from across the sites suggested that the flow of intelligence to stop and search decision-making could have been better, and police activity was not always well targeted as an operational tactic. While being important in terms of effectiveness, a targeted and intelligence-led approach to stop and search also has important implications for the legitimacy of the police practices. First, while officers have the power to search people outside crime hotspots, they may have to ‘work harder’ to be able to justify their actions and give a good reason to the person being searched – a factor crucial to that person perceiving the encounter as satisfactory.

Second, at a more strategic level, it is harder for the police to explain to the public that stop and search is effective and well targeted if its overall pattern of use does not seem to correspond to crime. Given that the public’s in-principle support for stop and search is contingent on it being used in targeted, fair and respectful way (Stone and Pettigrew 2000), the moves towards greater transparency could lead to the police being asked some difficult questions about how stop and search is directed overall.
Finally, by not focusing stop and search activity on crime hotspots, the police may not be getting the best out of its resources and could potentially be missing opportunities to reduce crime. Systematic review evidence, for example, has shown that targeted policing activity in crime hotspots can be effective at reducing crime and disorder (Braga 2005).

There was some evidence to suggest that stop and search activity was concentrated in areas that had a higher than average proportion of residents from black and minority ethnic groups, which could make a contribution to race disproportionality. It was not clear whether this pattern would have changed if searches were more closely targeted at crime problems. Nevertheless, the concentrated geographic use of stop and search has the potential to increase race disproportionality. With this issue in mind, and the evidence that perceptions of unfair policing can undermine the public’s willingness to cooperate with the police and not break the law (see: Myhill and Quinton 2011; Hough et al 2010), practitioners should consider whether any short term benefits are outweighed by the long term costs. An alternative approach might be for the police force to concentrate more on the legitimacy of their activities, and to engage more with local communities to develop a shared understanding about how best to tackle crime problems in an area, and what the implications might be for local people.

The research also raised important questions for the police service in terms of how to ensure police activity is informed by the most up-to-date intelligence picture. Given the evidence on the effectiveness of place-based policing (Weisburd et al. 2010; Braga 2005), the attention given by officers to intelligence about known offenders and the concentrated use of searches outside crime hotspots, suggest there is scope for improvement. As these issues are likely to relate to how officers are briefed, and the type and volume of information with which they are provided, there may be potential for police intelligence and briefing processes to be used to shift focus of officers away from people towards places.
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1. Introduction

Background

This report presents the findings from two related pieces of research carried out in the mid-2000s that sought to:

- examine the operational role of intelligence in contemporary stop and search practices; and
- explore the geographic targeting of police searches, and its relationship to crime.

Previous research (Miller et al. 2000 and Quinton 2000) and legal guidance (PACE Code of Practice A) have both underlined the importance of intelligence to police officers’ decisions to carry out searches. The evidence suggests that the use of good quality and up-to-date intelligence about active offenders can help to maximize the effectiveness of stop and search through improved targeting, and also enhance its fairness by providing a good reason for the encounter and minimising contact with law-abiding members of the public (Quinton et al. 2000). There is growing evidence that perceptions of fairness are crucial to policing because, by fostering a sense of shared social values, they can encourage people to not commit crime and to cooperate with the police (see: Hough et al. 2010; Myhill and Quinton 2011).

This report provides insights into the ways in which intelligence have previously been incorporated into routine police practice, along with statistical and geographical analysis of searches to assess how intelligence has shaped search patterns. It should be noted, however, that the study does not make any assessment of current police practices, which may have changed since the work was originally conducted. Nonetheless, the research remains of direct relevance to policy-makers and practitioners.

Stop and search, and its targeting

Contemporary powers to carry out searches are embodied within a range of legislation, and regulated by the Police and Criminal Evidence Act 1984 (PACE).
The most common type of searches are those requiring reasonable grounds for suspicion, including the powers granted under:

- s1 Police and Criminal Evidence Act 1984 (PACE) – used to search for stolen property, items for going equipped to steal, and offensive weapons;
- s23 Misuse of Drugs Act 1971; and
- s47 Firearms Act 1968.

When authorised, officers also have powers to carry out searches where reasonable grounds for suspicion are not required, which became a relatively common feature of routine police practice. These include:

- s60 Criminal Justice and Public Order Act 1994; and (until recently)
- ss44(1) and (2) Terrorism Act 2000.

While less a focus of this research, the term ‘stop and search’ has also previously been used to refer to the power to stop vehicles without suspicion (s163 Road Traffic Act 1988) and a wide range of non-statutory encounters in which members of the public are held to account by the police but are not detained under a power (sometimes referred to as ‘stop and account’).

Police stop and search has a controversial history. While the practice is highly valued by the police (Miller et al. 2000a), it has attracted significant criticism and provoked community resentment, in particular because of its disproportionate impact on black and ethnic minority communities. This ethnic disparity in stop and search is evidenced by surveys going back decades (e.g. Willis 1983; Smith and Gray 1985; Young 1994; Bucke 1997; Clancy et al. 2001), and, since 1997, by the official statistics which are routinely recorded by the police and collated centrally by the government. Recent official statistics on recorded searches showed that black people were seven times more likely to be searched than white people, and Asian people more than twice as likely (Ministry of Justice 2011). This disproportionality in police stop and search practice was
identified as a key example of institutionalised racism by the Stephen Lawrence Inquiry (Macpherson 1999).¹

Despite the controversy, research has shown that there is public support for stop and search in principle (MORI 2004), even among those most often on its receiving end (Stone and Pettigrew 2000). However, this support is conditional on stop and search being well targeted, and used in a fair and respectful way. With a view to carrying out stop and search in a more effective and legitimate fashion, growing attention has been paid to the issue of intelligence in the exercise of the power in recent years. ‘Intelligence’ has previously been defined as being information that has been subject to evaluation, risk assessment and analysis, and which is used to inform operational decision-making and the deployment of police resources (Centrex 2005).

A programme of research carried out in the wake of the Stephen Lawrence Inquiry identified four advantages to the application of intelligence to stop and search practice (see Miller et al. 2000):

- Stop and search is most effective when based on up-to-date and accurate intelligence, and is targeted towards active offenders and more serious crime.
- Searches based on good quality information (including intelligence) are more likely to have strong grounds for suspicion and fulfil the legal requirements of PACE.
- Having strong grounds can enable an officer to provide the person searched with a good reason for the encounter. In turn, being given a good reason can encourage public satisfaction with the encounter, and wider public trust in the use of searches.

¹ Research following the inquiry suggested that the reasons for disproportionality were more complex than direct racism alone. While there was some evidence of police stereotyping (Quinton et al. 2000), structural factors – such as socio-demographics, social exclusion, and strategic targeting decisions by the police – were also thought to play a significant role (Hallsworth et al. 2006; Waddington et al. 2004; MVA and Miller 2000).
Effectiveness can also contribute more directly to public satisfaction by demonstrating that searches are being targeted appropriately, and by minimising unnecessary contact with law-abiding members of the public which have the potential to cause embarrassment and resentment (Stone and Pettigrew 2000).

A number of developments in policy and practice have demonstrated a growing commitment to intelligence within stop and search. In general, the role of intelligence in policing across England and Wales has been strengthened through the mainstreaming of the National Intelligence Model (John and Maguire 2004). Specifically in terms of stop and search, changes to the PACE Code of Practice since 2003 have placed much greater emphasis on the role of intelligence in the formation of reasonable grounds for suspicion. More recently, the National Policing Improvement Agency has been providing practical support to forces. This support has consisted of collaborative work that has sought to increase community confidence in stop and search by helping to ensure its use is effective and directly linked to intelligence-based tasking.

The aims of the research

The research used a qualitative and quantitative case study approach to examine the use of intelligence in police stop and search practices. While the research was not designed to provide a definitive national picture, it was hoped that the examples from the study sites would shed light on issues that were relevant to the broader police service, and provide practitioners with a better understanding of some of the emerging issues about the targeting of stop and search. While the fieldwork and analysis was carried out in the mid-2000s, the findings are likely to remain relevant to police practitioners and policy-makers.

The study sought to address the following research questions:

1. To what extent was intelligence used by police in their routine use of stop and search?
2. To what extent were statistical and geographical patterns of searches consistent with the application of intelligence to search practices?
3. What were the potential implications of the application of intelligence for race
disproportionality in stop and search?

**Study design**

The study consisted of two related pieces of research.

**1. In-depth interviews with police officers and staff (carried out by Ian Macdonald and Anne-Merete Tonsager)**

A total of 67 semi-structured interviews were conducted in 2007 to examine whether and how intelligence was routinely used by officers to inform decisions to conduct stop and search, and to identify obstacles to the effective application of intelligence.

Respondents were drawn from two case study Basic Command Units (BCUs). The BCUs were selected from two forces that had demonstrated good progress in implementing intelligence systems.

- Hertfordshire had been a pilot for the National Briefing Model
- West Yorkshire had been graded ‘excellent’ in the delivery of the National Intelligence Model just prior to the interviews being conducted.

The interviews were, therefore, likely to provide a broad picture of forces that were leading developments with the integration of intelligence within operational policing. Other forces might have reasonably been expected to have lagged behind the case study BCUs at the time of the study. It should also be noted that practices in the case study BCUs are likely to have changed since the fieldwork was conducted.

Interviews were carried out with a sample of officers and staff who were on-duty and available during the fieldwork visits:

- Police constables who carried out searches as part of their general operational duties (n=54). The achieved sample of constables was relatively mixed (see Table 1, page 12).
• Shift sergeants who were responsible for delivering the daily intelligence briefings to teams of operational officers, and for supervising their stop and search activity (n=5).

• Intelligence officers and analysts who were responsible for intelligence processes and preparing the daily briefings delivered to the frontline officers (n=8).

Table 1. The profile of the constables interviewed

<table>
<thead>
<tr>
<th>Length of service</th>
<th>Women</th>
<th>Men</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 2 years</td>
<td>6</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>&gt;2 to 5 Years</td>
<td>11</td>
<td>17</td>
<td>28</td>
</tr>
<tr>
<td>&gt;5 to 10 years</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>1</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>22</td>
<td>32</td>
<td>54</td>
</tr>
</tbody>
</table>

2. Statistical and geographical analysis of police data (carried out by Spencer Chainey)

The second piece of research consisted of quantitative analysis of police data on searches and crime. The data, which was routinely recorded by the police, was obtained from a purposive sample of five forces in England and Wales:

• Cheshire Constabulary.
• Hertfordshire Constabulary.
• Merseyside Police.
• Three boroughs in the Metropolitan Police Service (MPS) – Brent, Lambeth, and Westminster.
• West Midlands Police.

The sample was deliberately selected to obtain a broad spread of forces in terms of policing environment and population profile. The forces were chosen from a range of Most Similar Groupings, an official method of clustering forces together which share similar characteristics. Crucially, the forces were included in the research because they were able to make available data of sufficient quality to support the analysis. It should be noted that these forces were not selected because of their reported progress in using intelligence.
In order to carry out the analysis, the police data had to be formatted, cleaned, geocoded, and validated by researchers. This process helped to ensure the data were fit for purpose, and included each record being assessed in terms of its geocoding precision (i.e. the level at which it could be geographically referenced – property, postcode, street, or town). While crime records typically contained a specific address or location where the event occurred, search records often only referred to the street name where they carried out. Only data that could be geocoded to a sufficient standard, and within force or borough boundaries, were included in the analysis. Table 2 (page 14) shows the number of searches and crimes recorded in the sample forces, and the level of precision achieved in geocoding. Crime data for Hertfordshire were unavailable.

In the analysis, comparisons were made between searches and crimes recorded by the police, with a focus on those crime types that were most likely to be affected by police searches (see Table 3 below).

Table 3. The crimes susceptible to police searches (used in the analysis)

<table>
<thead>
<tr>
<th>Object of the search</th>
<th>Susceptible crimes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drugs</td>
<td>Drug offences (possession and supply)</td>
</tr>
<tr>
<td>Weapons</td>
<td>Wounding with, or possession of, a weapon</td>
</tr>
<tr>
<td>Items for going equipped to steal</td>
<td>Robbery</td>
</tr>
<tr>
<td></td>
<td>Theft from the person</td>
</tr>
<tr>
<td></td>
<td>Going equipped to steal</td>
</tr>
<tr>
<td>Stolen property</td>
<td>Robbery</td>
</tr>
<tr>
<td></td>
<td>Theft from the person</td>
</tr>
<tr>
<td></td>
<td>Theft from vehicle</td>
</tr>
<tr>
<td></td>
<td>Theft from shops</td>
</tr>
</tbody>
</table>

As before, the study sites should be viewed as case studies. The analysis was intended to highlight emerging issues in the targeting of stop and search, rather than to provide a definitive national picture. The ability of forces to replicate and build on this analysis has increased considerably since the research was conducted because of recent technological developments and the expanded use of mobile devices that allow search records to be geocoded automatically.
Table 2. Geocoded search and crime records (to at least street level) in the sample forces

<table>
<thead>
<tr>
<th></th>
<th>Time period</th>
<th>Total number recorded</th>
<th>Percentage geocoded within force / borough boundary</th>
<th>Percentage geocoded to at least street level</th>
<th>Percentage unable to be geocoded*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recorded searches</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheshire</td>
<td>Jan 00 – Dec 04</td>
<td>42,221</td>
<td>90.5</td>
<td>82.0</td>
<td>7.4</td>
</tr>
<tr>
<td>Hertfordshire</td>
<td>Apr 02 – Dec 04</td>
<td>26,862</td>
<td>97.9</td>
<td>93.5</td>
<td>1.2</td>
</tr>
<tr>
<td>Merseyside</td>
<td>Apr 03 – Dec 04</td>
<td>59,521</td>
<td>69.0</td>
<td>63.1</td>
<td>31.0</td>
</tr>
<tr>
<td>MPS Brent</td>
<td>Apr 00 – Mar 03</td>
<td>31,249</td>
<td>86.3</td>
<td>83.4</td>
<td>6.7</td>
</tr>
<tr>
<td>MPS Lambeth</td>
<td>Apr 00 – Mar 03</td>
<td>72,230</td>
<td>92.3</td>
<td>87.5</td>
<td>5.0</td>
</tr>
<tr>
<td>MPS Westminster</td>
<td>Apr 00 – Mar 03</td>
<td>136,167</td>
<td>91.3</td>
<td>86.6</td>
<td>5.1</td>
</tr>
<tr>
<td>West Midlands</td>
<td>Jan 00 – Dec 04</td>
<td>536,666</td>
<td>93.5</td>
<td>88.0</td>
<td>6.2</td>
</tr>
<tr>
<td><strong>Recorded crimes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cheshire</td>
<td>Jan 00 – Dec 04</td>
<td>411,781</td>
<td>99.4</td>
<td>96.3</td>
<td>0.6</td>
</tr>
<tr>
<td>Hertfordshire</td>
<td>Apr 00 – Dec 04</td>
<td>56,622</td>
<td>99.9</td>
<td>95.6</td>
<td>0.0</td>
</tr>
<tr>
<td>Merseyside</td>
<td>Jan 00 – Dec 04</td>
<td>762,150</td>
<td>94.8</td>
<td>92.8</td>
<td>1.9</td>
</tr>
<tr>
<td>MPS Brent</td>
<td>Jan 00 – Dec 04</td>
<td>158,282</td>
<td>94.3</td>
<td>91.6</td>
<td>3.9</td>
</tr>
<tr>
<td>MPS Lambeth</td>
<td>Jan 00 – Dec 04</td>
<td>250,335</td>
<td>94.4</td>
<td>90.9</td>
<td>3.8</td>
</tr>
<tr>
<td>MPS Westminster</td>
<td>Jan 00 – Dec 04</td>
<td>398,456</td>
<td>92.2</td>
<td>84.9</td>
<td>5.0</td>
</tr>
<tr>
<td>West Midlands</td>
<td>Jan 00 – Dec 04</td>
<td>1,907,098</td>
<td>93.5</td>
<td>97.0</td>
<td>0.1</td>
</tr>
</tbody>
</table>

*Because of incomplete, vague or non-existent location details
Structure of the report

Drawing on the semi-structured interviews, Chapter 2 looks at how officers and staff perceived intelligence to have been used in stop and search decision-making in the two case study BCUs. Chapter 3 looks at the statistical and geographic patterns in searches and crime in five case study forces in order to draw a tentative understanding of the role played by intelligence in the targeting of police search activity. Finally, Chapter 4 summaries the main findings from the two pieces of research, and draws out the implications for the police service.
2. Stop and search decision-making and intelligence

This chapter examines the role that intelligence was reported to have played in routine police decision-making about stop and search. As the findings are based on the accounts given by the officers and staff interviewed in the two case study BCUs, they tell us about the perceived use of intelligence. The research sites were chosen because they had demonstrated progress in implementing intelligence systems. As such, the views reported in this chapter might be a better reflection of those in more advanced forces at the time of the study, and may not be representative of wider police service.

Access to intelligence

A positive finding from the interviews was that a large majority of officers in the two BCUs considered intelligence to be fundamental to operational police work: “It’s the cornerstone of what we do” (Constable). Also, the opinion of officers about the intelligence they received was very positive: “At the moment it is spot on – I like what we’re getting” (Shift sergeant).

The shift officers received intelligence through the daily briefings prepared by the intelligence unit. These briefings formed part of a structured team meeting at the start of every shift in a dedicated briefing room and were usually led by one of the team sergeants. The types of intelligence and information provided on the daily briefings typically consisted of:

- crime hotspots;
- descriptions and photographs of wanted offenders and those thought to be involved in crime;
- details of stolen vehicles and those thought to be used by criminals;
- premises that might be targeted by offenders;
- prison releases; and
- details and photographs of missing persons.
In addition to the daily briefing, there was also the opportunity for officers to look up intelligence themselves on intelligence databases. Some response officers said they routinely self-briefed at the start of every shift, often coming in to work early to ensure they had sufficient time to do so. Officers based in specialist units (such as dedicated robbery or vehicle teams) tended not to receive shift briefings and relied much more on self-briefing via the computerized intelligence system. The types of information that were regularly accessed by response officers during self-briefings included:

- reports of crimes that had occurred in the last 24 hours (or longer if they had been off-duty);
- intelligence reports put on the system in the last 24 hours (or longer if off-duty);
- updates about Prolific and other Priority Offenders (PPOs) and nominals – known offenders or people suspected of being involved in crime;
- the Chief Constable’s log regarding any major incidents;
- logs from previous shifts about incidents that had taken place in the area; and
- intelligence from neighbouring BCUs of relevance to their own area (e.g. the details of nominals from elsewhere who might come to the BCU).

The practice of self-briefing at the start of a shift was in line with the vision of at least one intelligence analyst: “The [daily shift] briefing will give a start, but [the officers] will need to fill in the detail themselves”. However, some barriers were reported. Officers who did not self-brief tended to say it was often because of a lack of time or a lack of encouragement from senior officers. Less common reasons included a lack of available computers and the pressure on officers to spend as much time as possible out of the streets.

**Applying intelligence in stop and search**

**Using intelligence**

The majority of the operational officers interviewed for the study felt that the intelligence they received through their daily briefing activities affected their stop and search practices:
You go to areas looking for people and cars and addresses. Using intelligence to put yourself in the right place, otherwise you’re driving around looking for people to do things in front of you.

(Constable)

Many of those officers, however, also made it clear that they would not base their decisions to carry out a search on intelligence alone. The officers tended to highlight the importance of broader contextual factors and their own observations, alongside the intelligence picture:

I only stop people when I think something isn’t right, intelligence isn’t enough, even if they are a known PPO…. You have to have reasonable grounds, it isn’t enough to just know they are a nominal.

(Constable)

**Targeting places**

One of the key ways in which intelligence was thought to influence stop and search practice was through the use of hotspot maps in intelligence briefing. The maps were reported to provide a geographical focus to officers’ stop and search activity. Many of the operational officers said they valued hotspot information and visited these locations when they had time to do so:

[Hotspot information is] very useful. You can go to that area and you know what you’re looking for, for example if it’s a robbery hotspot. Helps you plan your strategy. (Constable)

From the interviews with officers, it was possible to identify two general ways in which information about crime hotspot was thought to affect stop and search activity. First, knowing an area to a hotspot seemed to raise officers’ suspicions in a general sense, and made them aware that police action might be required:

[Hotspot information] directs you into a particular area because that’s where the action is. Patrolling area of hotspots... they focus you down. (Constable)
You might stop someone but it’s not because they’re in a burglary hotspot, sometimes you spot something when you’re in a hotspot for another crime. (Constable)

Second, knowledge about hotspots appeared to have specific value to officers by providing them with important contextual information that might help them to develop reasonable grounds for a search. In these situations, the awareness of the hotspot added to the information that the officer had from a range of other sources, to a build a more complete picture:

If you know someone is an active criminal and is in a hotspot area, I think it’s grounds for stopping them. Also depends on time of day, clothing, how they behave. (Constable)

Sometimes the [hotspot] information from briefings can be the final deciding factor on whether to search or not. But it has to be from the briefings, and correct and current. (Constable)

**Targeting people**

The intelligence briefings normally included information about target nominals, such as a physical description, a photograph, and details of their offending behaviour. Many of the police officers said that such information had an effect on their use of stop and search activity by, for example, directing them towards specific locations where the offender was thought to live or spend time:

If I have downtime, I’ll try and hang around areas where we know target nominals hang around... It’s nice to know which nominals are in which area. (Constable)

Like intelligence about hotspots, information about target nominal was reportedly often combined with other sources of intelligence when grounds for suspicion were formed:

If you see one of the top ten nominals and they are in a hotspot area, my suspicions become aroused. (Constable)
If they are known then I would be more inclined to stop and search them although it also depends on the time of day. (Constable)

While intelligence about known offenders generally seemed to alert officers to be on the look out for them, it seemed to have a more direct effect on a few officers who said they used the information to target their stop and search activity more proactively:

I feel I’m picking off the target people, so what’s driving the locations [stop and search] is nominal information. (Constable)

We tend to target specific nominals, rather than hotspot areas. It’s more person-driven than area-driven. (Constable)

It was possible that intelligence about nominals was highly valued by some officers because of the more general way in which officers tended to like information that was specific and actionable. The interviews suggested that such information was preferred by officers because they felt it gave them greater certainty. In this respect, vehicle registrations and (to a lesser extent) suspect descriptions were often seen as good sources of information – and upon which action could be based – because they enabled a suspect to be easily identified.

**Obstacles to the application of intelligence**

Despite the perceived importance of intelligence in briefings and routine stop and search activity, the interviews revealed some obstacles to the generation and use of intelligence in stop and search.

**The competing demands of reactive policing**

Despite the value placed by response officers on intelligence, they felt they had many fewer opportunities to use intelligence compared to officers in specialist teams. It was perceived that response officers spent most of them time dealing with calls for service and had little time for proactive policing work: “Call handling takes all their time, there’s no time to be proactive” (Constable). Ironically, the times when officers felt they had more latitude to engage in proactive work were also the times when there were fewer people available to be
searched: “You get a bit of time at nights, after 3am, but not that many people about then” (Constable).

Because response officers were generally perceived as performing the bulk of the stop and search activity, but had the least latitude over where they were, the extent to which stop and search, overall, was informed by intelligence could be questioned.

**The quantity (not quality) of stop and search**

Officers often reported feeling judged by supervisors on their stop and search activity. According to some officers, there was also a strong management pressure on them to carry out a particular volume of searches:

> We’re assessed on a yearly target. If you are low on numbers then your sergeant will mention it – it’s an incentive to get out and do some more. It motivates you more. (Constable)

There was some suggestion that this pressure interfered with officers conducting intelligence-led searches, and prevented them from initiating fewer, but higher quality, encounters:

> There’s massive pressure on officers to do stop and searches. It leads to unlawful searches, complaints and a loss of public confidence with the police service. (Constable)

**Confusion between information and intelligence**

A clear distinction is made in the National Intelligence Model between information and intelligence (Centrex 2005). This definition was well recognized by the analysts and intelligence officers who were interviewed:

> We receive information from officers. The process of looking at that, drawing the links, turns that into intelligence. (Intelligence analyst)

Nonetheless, response officers seemed to have a much looser understanding. They tended to view intelligence as any piece of information that might have some sort of operational benefit. This was clear, for example, when officers and
analysts discussed the grading of items on the intelligence database – namely the process by which each item was assessed in terms of its reliability, its importance, and how it should be disseminated:

When a police officer reads something about somebody on [the intelligence management system] this may encourage them to stop, and possibly search, that person. However, I don’t know if the officers are paying enough attention to the grading of the intelligence. I think they pay more attention to the text than the grading... because they don’t really understand the grading. They think if it’s on [the system] it must be true. (Intelligence officer)

And as one officer remarked:

I personally pay little attention to the grading, I just look for what it is and whether I can do something with it. I look for whether there is a vehicle mentioned and, if there is, I will look for it and stop it, if it says X will be at Y at a particular time of day. I can go out and look for that. (Constable)

The interviews, therefore, highlighted the potential for officers to conduct searches based on comparatively weak information as they often did not think about the reliability of the intelligence products they received.

**Intelligence overload and recall**

Due to the amount of information officers were required to manage, there were doubts over their ability to digest and apply it in practice. When they talked about their shift briefings, some officers said they were overwhelmed by the sheer volume of intelligence with which they were presented and found it difficult to concentrate.

It can be death by PowerPoint. So much information that you just glaze over and it starts to seem irrelevant. (Constable)

Intelligence officers and analysts appeared to be aware of this issue and said they had taken practical steps to reduce the amount of information in the briefings and to make them more memorable (e.g. by using visuals and different
colour schemes). One analyst did not believe officers were able to remember much from briefings, observing that officers rarely appeared to write anything down. Certainly, many officers admitted writing down little from the briefings other than vehicle registration numbers that they thought were of note.

Prior experience seemed to be an important factor in terms of whether officers prioritised and retained specific pieces of intelligence about known offenders. Officers indicated that the briefings acted as a useful reminder about the nominals about whom they were already aware. The briefings were, therefore, likely to have a reinforcing effect on officers’ pre-existing knowledge: “If I know them, then I tend to remember them” (Constable). Only very few officers said they made a conscious effort to remember the faces and details of new nominals presented on briefings: “Nominals come up all the time and are remembered by repetition, but I don’t really remember new nominals” (Constable).

This focus on the intelligence that supported officers’ prior knowledge potentially had important implications in terms of the extent to which police practice was intelligence-led:

...when I looked at when [our top five or top ten target offenders] were being stopped, I found that whether they were a target or not didn’t seem to matter at all for how many times they were stopped. What seemed to matter was how well known they were anyway. So we weren’t using stops intelligently. (Intelligence analyst)

**Out-of-date intelligence**

Criticisms of intelligence briefings tended to focus on those occasions when the intelligence that was presented was noticeably out-of-date. It appeared that, in these instances, the intelligence process suffered a loss of credibility amongst officers, and may have contributed to some officers not wanting to use intelligence:

An example would be of the latest piece of intelligence that came out a few months ago on a vehicle that had been stolen. Four people were linked to that vehicle. Two of them were in prison and the vehicle had actually been recovered the day after by the owner.
But the intelligence remained as the number one piece of intelligence for nearly a month. (Constable)

A few officers also felt that the crime hotspots identified by the intelligence unit were often old or not updated frequently enough:

By the time we get directed to a particular area, the crimes have already started to move. (Constable)

Officers admitted that one reason why intelligence sometimes was slow or out-of-date was because they were late submitting the intelligence. They also felt that there often was a long delay between intelligence being submitted, and it being processed and disseminated. The intelligence officers and analysts interviewed acknowledged this issue too, noting there could be backlogs due to a lack of resources to input and review the intelligence submissions.

**Summary**

In the two case study BCUs, which were potentially more advanced in their use of intelligence at the time of the research, there was evidence to suggest that intelligence was perceived by officers to play an important role in stop and search practice. However, there were also obstacles to the effective application of intelligence. Key findings were as follows:

- Intelligence was highly valued by police officers within police work.
- Intelligence was presented to officers in regular briefings at the beginning of shifts. Some officers also self-briefed via the force intelligence system.
- Intelligence was reported to be important in guiding officers’ stop and search activities and was often said to be combined with other, more situational, information when officers developed grounds for suspicion.
- In particular, details about hotspots helped guide officers geographically, and information on known offenders also directed their attention to certain individuals. However, there was some evidence to suggest that officers tended to focus on the intelligence that supported their prior knowledge, and exclude newer information that was not in line with their experience.
A number of obstacles were identified during the research to the effective application of intelligence to stop and search:

- The need to respond to calls for service meant that officers often felt they had limited time to carry out proactive intelligence-led stop and search.
- Officers often felt judged by supervisors on the quantity of searches they carried out. At times, this may have prevented them from adopting an intelligence-based approach.
- As officers had a relatively broad understanding of what constituted intelligence, it was possible that activity might sometimes be based on comparatively weak information.
- Officers sometimes faced difficulties recalling the details of briefings because of a perceived overload of information.
- Out-of-date intelligence products were reported to have caused some police officers to lose faith in the intelligence they received.
3. Stop and search patterns and intelligence

This chapter examines the patterns of police searches in five case study forces to see whether they were broadly consistent with an intelligence-led approach. If intelligence was to be the sole factor informing stop and search practices, the following might be reasonable expectations:

- Trends in the levels of searches would reflect, over time, trends in those crimes most likely to be affected by police searches (see Table 3, page 13).
- Searches would be targeted geographically at susceptible crime problems.
- The demographic profile of the people searched by the police would broadly correspond to the demographic profile of suspect descriptions.

Statistical and geographical analyses of search records were used to assess the extent to which these principles were met in the study sites.

Variations in searches over time

The first way in which the targeting of searches was examined was in terms of whether search activity tracked crime rates over time. If searches were correlated with crime, there would be evidence to suggest that search activity was used in line with the ebb and flow of crime problems within the study sites.

The line graphs in Figure 1 (pages 26-34) show the long term trends in the number of recorded searches in each of the five study forces. In all sites, there were some month-on-month variations in the level of search activity. The trends in searches on their own, however, do not take account of the underlying crime level. The scatter plots presented alongside the line graphs display the number of searches and crimes per month in the sites where data were available.

Overall, there was no evidence of a correlation between crime and searches over time. While the scatter plots might possibly suggest a weak negative relationship in the MPS boroughs and a weak positive relationship in West Midlands, the number of data points, the presence of outliers, and fit of the regression line (represented by the $R^2$ value) mean that strong conclusions about the nature of the relationship cannot be reached. In short, there was little suggestion that intelligence about crime problems had guided temporal variations in the level of police search activity.
Figure 1. Variations in search levels over time

Cheshire – line graph showing the trend in recorded searches
Cheshire – scatter plot showing the temporal relationship between recorded searches and crime (monthly)

\[ R^2 = 0.03 \]
Merseyside – line graph showing the trend in recorded searches
Merseyside – scatter plot showing the temporal relationship between recorded searches and crime (monthly)

R² <0.00
MPS boroughs – line graph showing the trend in recorded searches
MPS boroughs—scatter plot showing the temporal relationship between recorded searches and crime (monthly)

Recorded searches

Recorded crimes susceptible to searches

$R^2 = 0.5$
West Midlands – line graph showing the trend in recorded searches
West Midlands – scatter plot showing the temporal relationship between recorded searches and (monthly)

$R^2 = 0.16$
**Geographic variations in searches**

The targeting of searches was examined in a second way, in terms of the extent to which recorded searches geographically followed crime. If searches were well targeted overall, they might be expected to have been mostly carried out in crime hotspots. Comparisons were made between, and within, the study sites.

**Geographic variations between the case study sites**

There were large variations in the use of searches across the five sites. Taking account of the size of the resident population, there was almost a nine-fold difference between the forces in the level of recorded searches. In 2004, there were 98 recorded searches per 1,000 residents in the three MPS boroughs, compared to only 11 searches per 1,000 in Cheshire (see Table 4 below).

While the rates for the MPS sites may have been partly inflated by its relatively high daytime population (e.g. commuters, shoppers and tourists), large differences between the sites were also found when crime and incident levels were controlled for instead of resident population (see Table 4 below). This finding is consistent with previous research that identified large variations in search rates across the police service which could not be easily explained by the underlying crime rates (Miller et al. 2000; FitzGerald and Sibbitt 1997). It is notable that, in this respect, there is no accepted standard on what constitutes an optimal or appropriate level of search activity in a force, taking into account its characteristics or underlying crime rate.

<table>
<thead>
<tr>
<th>Study site</th>
<th>Number of recorded searches per 1,000...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>residents</td>
</tr>
<tr>
<td>Cheshire</td>
<td>11</td>
</tr>
<tr>
<td>Hertfordshire</td>
<td>16</td>
</tr>
<tr>
<td>Merseyside</td>
<td>11</td>
</tr>
<tr>
<td>MPS boroughs</td>
<td>98</td>
</tr>
<tr>
<td>West Midlands</td>
<td>24</td>
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</table>
Geographic variations within the case study sites

Within the five case study forces, a fully intelligence-led approach might be expected to have generated patterns of searches that closely tracked the geographic distribution of crime problems. To shine light on this issue, detailed analysis was carried out that looked at the geographic concentrations of recorded searches and crime in each of the sites.

The maps presented in Figure 2 (page 37) provide an example of how different types of search were distributed geographically within one of the study sites. Maps for all the case study sites are presented in Appendix A (page 66).\(^2\) Kernel Density Estimation (KDE) maps were used to identify hotspots or geographic clustering in recorded searches. The strength of the clustering was then tested using a Nearest Neighbour Index (NNI) (see Chainey and Ratcliffe 2005). While the KDE maps show the overall distribution of searches, they do not highlight areas of significant spatial concentration. For this reason, a series of Gi* maps were also created. These analytical techniques are discussed in more detail in Appendix B (page 91).

Taken together, the analysis revealed that all search activity in the sites was significantly clustered, though there were some variations by force and search type. For example:

- The strongest clustering was found in Cheshire, possibly reflecting its more rural environment and the relatively greater concentration of searches in its few urban areas (see Figure 2, page 37).

- Searches for drugs displayed the strong level of clustering across the study sites. The exception was Merseyside where going equipped searches were most strongly clustered.

- All search types were significantly clustered, but the lowest strength of clustering was for: weapon searches in Cheshire and Merseyside; and going equipped searches in Hertfordshire, the MPS boroughs, and West Midlands.

\(^2\) The thematic classes used to represent ‘high’ and ‘low’ density on the maps follow the methodology set out in Chainey and Ratcliffe (2005).
Figure 2. The geographic distribution of recorded searches for drugs in Cheshire

**KDE map – search hotspots**

High density threshold $\geq$ 36 searches per km$^2$
NNI = 0.16 ($p < 0.00$)

**Gi* map – areas of significant spatial concentrations**
While it is useful to examine how searches were clustered, a more detailed understanding can be developed by looking at the extent to which search hotspots corresponded to crime hotspots. The maps in Figure 3 (pages 39-40) provide an illustration of the clustering of searches in relation to the distribution of crime for three of the study sites.

- First, a KDE map is shown for two of the sites highlighting the geographic distribution of search activity with no reference to the level of crime (Maps 1 and 4).
- A second map is then shown which displays the distribution of recorded searches compared to distributions of crime using a dual KDE technique (Maps 2 and 5). As these maps take the crime rate in account, they effectively show where searches were disproportionately concentrated relative to crime. Overall, there appeared to be many search hotspots that were ‘hotter’ than might have been predicted from the crime rate.

At first glance, this result might suggest that searches were not always targeted at crime problems – an apparent deviation from intelligence-led practice. However, the picture was likely to be more complicated. For instance, it is feasible that the search hotspots which were disproportionately concentrated relative to crime could also have been examples of the successful application of intelligence, which could have resulted in the suppression of criminal activity.

It is, therefore, useful to map the productivity of searches in terms of their arrest rate. Under a fully intelligence-led approach, hotspots of search activity might be expected to have a higher than average arrest rate because they are better targeted (regardless of the crime rate in that area).

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3 Since the research was carried out, new statistical techniques have become available that would enable these differences to be quantified (e.g. spatial regression).

4 A visual judgement based on where the hotspots – identified by the red areas – appeared to be located.
Figure 3. The geographic distribution of searches, searches relative to crime, and search arrests in two case study sites

**Map 1. Merseyside**
KDE map – geographic distribution of all searches

**Map 2. Merseyside**
Dual KDE map – geographic distribution of all searches relative to crime

**Map 3. Merseyside**
KDE map – geographic distribution of all search arrests

High density threshold \( \geq 183 \) searches per \( \text{km}^2 \)

High search activity threshold \( \geq 246 \) searches per 1,000 crimes

High productivity threshold \( \geq 500 \) arrests per 1,000 searches
<table>
<thead>
<tr>
<th>Map 4. MPS boroughs</th>
<th>Map 5. MPS boroughs</th>
<th>Map 6. MPS boroughs</th>
</tr>
</thead>
<tbody>
<tr>
<td>KDE map – geographic distribution of drugs searches</td>
<td>Dual KDE map – geographic distribution of drugs searches relative to drug crime</td>
<td>KDE map – geographic distribution of all search arrests for drugs</td>
</tr>
<tr>
<td>High density threshold &gt;= 6,960 searches per km²</td>
<td>High search activity threshold &gt;= 8,000 searches per 1,000 crimes</td>
<td>High productivity threshold &gt;= 380 arrests per 1,000 searches</td>
</tr>
</tbody>
</table>
• To examine this issue, a third map is presented that shows the geographic distribution of searches which resulted in an arrest (Maps 3 and 6). Overall, these maps suggest that the search hotspots were not necessarily in the places where the arrest rate was highest. They also show that the hotspots where arrests were made tended to be in more peripheral areas where search activity was not necessarily concentrated. This pattern raises important questions about whether searches were being targeted in the most effective way, or in the most productive areas. Previous research, for example, has highlighted that when searches are carried out more often, they tend to be less productive in terms of arrest (Miller et al. 2000).

Overall, the emerging picture from across the case study sites confirmed that police search activity was geographically concentrated in the study sites. While search hotspots sometimes coincided with crime hotspots, there was not the consistent relationship that might have been expected had searches been used in intelligence-led way. In some cases, the search hotspots appeared to ‘hotter’ than the underlying crime rate would have predicted, even though these hotspots were not necessarily more effective in terms of arrests.

**Geographic variations over time within a case study site**

It was also possible to examine the extent to which searches tracked crime problems (or potential crime problems) by exploring how geographic patterns of searches and crime changed over time. Such analysis can, for example, show whether police searches were targeted at pre-existing crime hotspots, or were carried out in locations where crime problems started to emerge. Figure 4 (pages 42-45) set out series of 12 maps for the MPS boroughs. Together, the maps display the search and crime hotspots for 2002/03 (one month per map).

The patterns evident on the maps echo the findings presented earlier. The search hotspots often coincided with crime hotspots, both geographically and temporally. However, the match was not perfect. Sometimes search hotspots appeared and persisted in places where crime problems were not evident. At other times, crime hotspots emerged and continued, but were not matched by search hotspots. Taken together, the maps suggest that, while search activity was often well targeted, there were some deviations from what might be expected from a fully intelligence-led approach.
Figure 4. Changes in search activity in relation to susceptible crime hotspots (MPS boroughs)

**April 2002**
Persisting crime hotspots where search activity was not concentrated

**May 2002**
A persisting search hotspot that appears to coincide with a long running crime problem

**June 2002**
An emerging search hotspot where a crime problem was not apparent
July 2002
An persisting search hotspot where a crime problem was not apparent

August 2002

September 2002
An emerging search hotspot where a crime problem was not apparent
October 2002

November 2002
A re-emerging search hotspot where a crime problem was not apparent

December 2002
An emerging search hotspot where a crime problem was not apparent
January 2003
An emerging search hotspot where a crime problem was not apparent

February 2003
An persisting search hotspot where a crime problem was not apparent

March 2003
An emerging search hotspot where a crime problem was not apparent
The characteristics of search hotspots

The geographic concentration of searches might have important implications for race disproportionality if the people living in the search hotspots have a different socio-demographic profile to those living elsewhere.

To examine this issue, the socio-demographic characteristics of the search hotspots were compared with the wider force/borough area. Specific comparisons were made in terms of the ethnic composition of the resident population (based on the 2001 census) and deprivation (using the 2004 Index of Multiple Deprivation).

Figures 10-14 (pages 48-52) show the comparisons between hotspots for different types of search and the wider study sites (where data were available). The comparisons relied on indexed variables:

- An index value of 100 indicates parity between the search hotspots and wider force/borough area.
- An index value of greater than 100 indicates a greater concentration in the search hotspot than in the wider force/borough area.
- An index value of less than 100 indicates a greater concentration in the wider force/borough area than in the search hotspot.

The results show some consistencies across the five case study sites. In line with the findings of the earlier geographic analysis, the indexed comparisons showed that the volume of searches carried out in the search hotspots was often disproportionate to the level of susceptible crime in those locations. In the four forces where comparisons were possible, the number of searches per crime was higher for all search types in search hotspots than for the wider force/borough area. As before, the analysis also suggested that the search hotspots were not more productive in terms of arrests. For all search types across all study sites, the arrest rates in the search hotspots were, at best, around the average for the wider area and sometimes lower. It was, therefore, possible that searches may have been overused in these hotspot locations.
In terms of their socio-demographic characteristics, the proportion of residents from black and minority ethnic groups tended to be higher in the search hotspots than in the wider case study area. Similarly, the search hotspots tended to be more deprived.

With the exception of the MPS boroughs, these concentrations often translated into higher rates of stop and search for people from minority ethnic groups in search hotspots (see Figure 14, page 52). Therefore, the way searches were geographically targeted appeared to make a contribution towards race disproportionality. It should be noted, however, that it was not clear from the analysis whether race disproportionality would have been made better or worse had the search hotspots been better targeted towards crime hotspots or were in more productive areas.
Figure 10. Indexed comparisons between search hotspots for drugs and the wider force/borough area.
Figure 11. Indexed comparisons between search hotspots for weapons and the wider force/borough area

- **Rate per 1,000 crimes**
- **Arrest rate**
- **Aged 10 or over**
- **White**
- **Black**
- **Asian**
- **Other ethnic group**
- **Multiplication deprivation**
- **Employment deprivation**
- **Housing deprivation**

Legend:
- Cheshire
- Hertfordshire
- Merseyside
- MPS boroughs
- West Midlands
Figure 12. Indexed comparisons between search hotspots for going equipped and the wider force/borough area

- Rate per 1,000 crimes
- Arrest rate
- Aged 10 or over
- White
- Black
- Asian
- Other ethnic group
- Multiple deprivation
- Employment deprivation
- Housing deprivation

Cheshire  ▪ Hertfordshire  ▪ Merseyside  ▪ MPS boroughs  ▪ West Midlands
Figure 13. Indexed comparisons between search hotspots for stolen property and the wider force/borough area

[Graph showing comparisons between search hotspots for stolen property and the wider force/borough area. The graph includes categories such as Rate per 1,000 crimes, Arrest rate, Aged 10 or over, White, Black, Asian, Other ethnic group, Multiple deprivation, Employment deprivation, Housing deprivation, Resident population, and Index of Multiple Deprivation.]
Figure 14. Indexed comparisons in the ethnic profile of those searched by the police between search hotspots and the wider force/borough area.
**Searches and suspect descriptions**

The third and final way in which the targeting of searches was examined was in terms of whether searches matched the profile of suspect descriptions. Under a completely intelligence-led approach, it might be expected that the profile of the people searched by the police would broadly follow the make-up of those people suspected of having committed a crime based on information from the public.

Comparisons were made between the characteristics of the people searched by the police and the reported suspect population (based on information from victims or witnesses of crime susceptible to stop and search). It should be noted that, in practice, not all searches will be reactive in nature and some types of crime are more likely to produce suspect descriptions than others (i.e. contact crime). Moreover, suspect descriptions have previously found to be often lacking in detail (Quinton et al. 2000) and may be biased in their profile (Young 1994).

Table 5 (page 54) shows the comparisons in the case study sites between those searched and the suspect population in terms of sex and age. The results suggest that a higher proportion of men and young people were searched than would have been expected from the suspect population (in the sites where data were available). This finding is consistent with earlier research on police decision-making which has suggested that officers sometimes base their decisions to stop and search on generalisations and stereotypes about particular groups of people in terms of their likely involvement in crime or whether likely to be ‘up to no good’ (Quinton et al. 2000; Quinton 2011). The apparent over-concentration by the police on particular groups, however, may also be affected by the profile of the people who use public spaces (although this profile will be influenced by how and where searches are targeted). The population available to be stopped and searched has previously been shown to include a higher proportion of young people and men (MVA and Miller 2000).

Comparisons were also carried out between the ethnic profile of the people searched by the police and the suspect population (see Figure 15, page 55). The three case study sites where data were available showed quite different patterns:
• The MPS boroughs showed the closest correspondence between searches and suspect descriptions.

• In Cheshire, people from black and minority ethnic groups were less likely to be searched than might have been expected from the suspect population.

• In the West Midlands, people from black and minority ethnic groups were over-represented in searches compared to the profile of the suspect population.

Once again, these patterns may have reflected biases in officer decision-making and/or local variations in the street population (which would affect the pool of people with whom the police could initiate contact).

Table 5. The profile of the suspect population and of those searched by the police

<table>
<thead>
<tr>
<th></th>
<th>Sex (% men)</th>
<th>Age (mean)</th>
<th>Age (% aged 15-20)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Suspect pop</td>
<td>Searches</td>
<td>Suspect pop</td>
</tr>
<tr>
<td>Cheshire</td>
<td>77</td>
<td>92</td>
<td>25</td>
</tr>
<tr>
<td>Hertfordshire</td>
<td>-</td>
<td>90</td>
<td>-</td>
</tr>
<tr>
<td>Merseyside</td>
<td>-</td>
<td>100</td>
<td>-</td>
</tr>
<tr>
<td>MPS boroughs</td>
<td>83</td>
<td>94</td>
<td>28</td>
</tr>
<tr>
<td>West Midlands</td>
<td>80</td>
<td>-</td>
<td>26</td>
</tr>
</tbody>
</table>
Figure 15. Comparisons between the ethnic profile of those searched by the police and of the suspect population.
Summary

This chapter has examined the statistical and geographical patterns of searches to see if they followed an intelligence-led pattern. Specifically, the research looked at whether: search rates tracked crime rates over time; searches were geographically targeted at crimes; crime problems; and the demographic characteristics of those who had been searched were in line with suspect descriptions. If searches were systematically intelligence-led, these criteria should ordinarily be met. In practice, the results from the case study sites were mixed. Key findings were as follows:

- Consistent with previous research, the overall search rates showed variation across the sites that could not be explained by underlying crime rates.

- Overall, there was little relationship between the volumes of crime and searches over time, suggesting searches did not track increases or reductions in crime levels in a way that might be expected with an intelligence-led approach.

- Within the sites, searches showed signs of significant clustering which meant their use varied across the forces areas. However, these variations could not be reduced consistently to underlying crime rates. In particular, searches often seemed disproportionate to the underlying rate of crime – a possible deviation from an intelligence-led approach. The geographical clustering of searches also could not be explained in terms of their productivity in terms of arrests.

- Overall, while search hotspots often coincided with crime hotspots – both geographically and over time – the match was less than perfect. Importantly, search hotspots sometimes occurred in places where crime problems were not evident. At other times, crime hotspots emerged and persisted without search hotspots developing in response.

- In the case study sites, the hotspots where searches were concentrated tended to have higher than average proportions of residents from minority ethnic groups. With the exception of the MPS boroughs, these concentrations often translated into higher rates of stop and search for people from minority ethnic groups in search hotspots. The focused geographic use of stop and
search might, therefore, have contributed towards race disproportionality. It was unclear, however, whether better targeting of searches toward crime hotspots would have produced a different outcome.

- In terms of ethnicity, there was no consistent relationship between the profile of the suspect population and the people searched by the police across the study sites.
4. Conclusions

This study has examined the role played by intelligence in stop and search practice using data from a selection of case study sites from the mid-2000s. It has explored the accounts of police officers, intelligence officers and analysts about the ways in which intelligence was incorporated into stop and search decision-making. The research has also investigated the extent to which geographical and statistical patterns of searches reflected the routine application of intelligence. Overall, the picture that emerged was a mixed one.

Importantly, there was evidence that intelligence was highly valued in two study sites where intelligence systems were regarded as being well developed at the time. Intelligence featured in regular shift briefings, with some police officers additionally taking it upon themselves to check intelligence systems proactively for more information. Notably, hotspot analyses and information on active offenders was thought to play a particularly strong role in guiding police officers’ decisions to stop and search. This finding was broadly in line with the geographic analysis which showed that searches were geographically clustered and often in crime hotspots. However, there was some evidence that officers were selective in what they took to be relevant from intelligence briefings. With some officers indicating they largely focused on the intelligence that supported their pre-existing knowledge and experience, there may have been potential for stop and search to be targeted towards a subgroup of offenders who had a longstanding relationship with the police, and for that targeting possibly to be self-perpetuating (see Quinton 2011).

The findings from the research have also highlighted important challenges with the effective application of intelligence to stop and search. Evidence from across the sites suggested that the flow of intelligence to stop and search decision-making was less than perfect. The geographical analysis showed that search hotspots often emerged in places where crime problems were not evident and, conversely, that crime hotspots emerged and persisted without searches clustering in those areas in response. Clusters of searches were often not very productive in terms of arrest (which is regarded by many as the best measure of
effectiveness). In other words, stop and search did not always seem to be well targeted as an operational tactic.

This emerging picture is significant for three reasons.

First, previous research has suggested that up-to-date intelligence about current crime problems can help strengthen an officer’s grounds for a search – even though such intelligence would not, on its own, legally justify a search (Miller et al. 2000). If officers are conducting searches in places where crime is low, it is possible that their grounds for search may be less robust or may have to be shored up with other sources of information than would be the case in higher crime areas. Of course, officers have the power to carry out a search in public places regardless of the underlying crime rate, so long as they have grounds. Nevertheless, by conducting searches outside crime hotspots, officers may have to ‘work harder’ to be able to justify their actions and give a good reason to the person being searched – a crucial factor in determining whether that person perceives the encounter to be legitimate (Stone and Pettigrew 2000).

Second, even if an individual search is legal and justifiable terms of its grounds for suspicion, it becomes much harder – at a strategic level – for the police to explain to the public that stop and search is effective and well targeted if its general pattern of use does not seem to correspond with crime. Given that the public’s in-principle support for stop and search is contingent on it being well targeted, and used in a fair and respectful way (Stone and Pettigrew 2000), the police may be posed difficult questions about how stop and search is directed overall, particularly with the move towards greater transparency in policing,

Third, if stop and search activity is not broadly in line with where crime is occurring, the police could potentially be missing opportunities to reduce crime through improved targeting, and may not getting the best out of its resources. There is certainly strong systematic review evidence that targeted policing in hotspots, in general, can be effective at reducing crime and disorder (Weisburd et al. 2010; Braga 2005). Moreover, a recent randomised controlled trial carried out in the US has shown that a combination of tactics in hotspots might be effective (Taylor et al. 2010). The experiment found that intensive patrol activities (including street interventions like stop and search) reduced violence in
the short term, and that problem-solving delivered larger and more sustained reductions in the longer term.

It was also notable that the research presented in this report found, in keeping with other studies (MVA and Miller 2000), that the areas where searches clustered were also areas that tended to have a higher proportion of residents from ethnic minority groups. The targeting of these areas was, thus, likely to contribute towards race disproportionality, although it was unclear whether this pattern would have changed if searches were more closely targeted at crime problems.

This emerging finding raises important issues about the impact of police practices on local communities, and what the likely effect might be of improved targeting. Nevertheless, it is crucial for practitioners to understand that the concentrated use of stop and search has the potential to increase race disproportionality and, thus, may have an adverse effect on the local community (see: Miller et al. 2000; Stone and Pettigrew 2000). Given that perceptions of unfair policing are likely to undermine the public’s willingness to cooperate with the police and to not break the law see: Myhill and Quinton 2011; Hough et al 2010), practitioners should question whether any short term benefits outweigh the longer term costs. With these issues in mind, it might be useful for the police to engage more with local communities to develop a shared understanding about how best to tackle crime problems in an area, and what the implications might be for local people, in order to safeguard the legitimacy of the police approach.

The research also raises important questions for the police service in terms of how to ensure police activity is informed by the most up-to-date intelligence picture. Given the evidence that place-based policing can be effective in reducing crime (Weisburd et al. 2010; Braga 2005), the findings that officers paid greater attention to intelligence about offenders they already knew and that searches occurred outside crime hotspots strongly suggested there was scope for improvement. It seems likely these issues are related to how officers are briefed, the type and volume of the information with which they are provided, and what officers subsequently understand about how they should focus their activity. Practitioners should therefore think about how the intelligence and briefing processes might be used to shift the focus of officers away offenders and
towards places (although the effect of this approach on disproportionality is unknown).

Some of the shortcomings identified in this report are likely to flow from a number of challenges to the application of intelligence:

- **Operational pressures** – Despite the enthusiasm police officers had for applying intelligence to their stop and search practice, there were other pressures that seemed to stand in their way. For one, the constant operational pressure on officers to respond to calls for service often meant they were not always able to follow intelligence (e.g. by proactively patrolling in crime hotspots). Instead, stop and search activity reportedly took place incidentally as part of their reactive policing duties. A second problem was that response officers often felt their supervisors judged them on the quantity of searches they carried out. As a result, officers were often anxious to be ‘seen’ to be doing stop and search, whether or not the searches were all intelligence-led and of good quality.

- **Limitations to the intelligence literacy of police officers** – While police officers were typically enthusiastic about intelligence, they often failed to appreciate the difference between intelligence and more general types of information. As such, they sometimes made greater use of lower grade forms of intelligence in carrying out their stop and searches. Moreover, officers were found to pay more attention to intelligence about target nominals if they already knew the person to be an offender. Similarly, when passing information to the intelligence unit, they often sent information of limited value to analysts. This lack of understanding was likely to have a negative impact on the quality of stop and search decision-making.

- **Shortcomings in the management and analysis of intelligence** – A number of practices within intelligence units, at times, seemed to undermine the effective use of intelligence in stop and search practice. Out-of-date briefings appeared particularly damaging to the overall credibility of intelligence among response officers. Moreover, the large volume of intelligence presented in briefing could leave officers overwhelmed, and
unable to focus on the more relevant actionable intelligence that could benefit stop and search activity.

- **A lack of good practice standards for appropriate levels of stop and search** – A significant problem in assessing whether the use of stop and search was intelligence-led was the lack of any standard for appropriate levels or ‘dose’ of stop and search for a given crime problem or neighbourhood. As such, it was difficult to distinguish better or worse stop and search practices across forces or through time. Further work is required to help establish an optimum or appropriate levels of search activity in an area to address particular crime problems in terms of both effectiveness and perceived fairness.
References


Appendix A. Case study site maps

Figure A1. Cheshire – recorded searches (total)

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 80 searches per km²
NNI = 0.118 (p<0.000)
Figure A2. Cheshire – recorded searches for drugs

KDE map – search hotspots

High density threshold >= 36 searches per km²
NNI = 0.1553 (p<0.000)

Gi* map – areas of significant spatial concentrations

The KDE map shows hotspots of search activity, with a high density threshold of 36 searches per km². The Gi* map indicates areas of significant spatial concentration, with an NNI of 0.1553, statistically significant at p<0.000.
Figure A3. Cheshire – recorded searches for stolen property

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 39 searches per km²
NNI = 0.1633 (p<0.000)
Figure A4. Cheshire – recorded searches for weapons

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 11 searches per km²
NNI = 0.1927 (p<0.000)
Figure A5. Cheshire – recorded searches for going equipped

KDE map – search hotspots

High density threshold >= 19 searches per km²
NNI = 0.1740 (p<0.000)

Gi* map – areas of significant spatial concentrations

Area of significant spatial concentration
Figure A6. Hertfordshire – recorded searches (total)

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 108 searches per km²
NNI = 0.1586 (p<0.000)
Figure A7. Hertfordshire – recorded searches for drugs

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold $\geq 50$ searches per km$^2$

NNI = 0.1567 ($p<0.000$)
Figure A8. Hertfordshire – recorded searches for stolen property

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 24 searches per km²
NNI = 0.2231 (p<0.000)
Figure A9. Hertfordshire – recorded searches for weapons

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 26 searches per km²
NNI = 0.1752 (p<0.000)
Figure A10. Hertfordshire – recorded searches for going equipped

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 14 searches per km²
NNI = 0.2514 (p<0.000)
Figure A11. Merseyside – recorded searches (total)

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 183 searches per km²
NNI = 0.25 (p<0.000)
Figure A12. Merseyside – recorded searches for drugs

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold ≥ 84 searches per km²

NNI = 0.26 (p<0.000)
Figure A13. Merseyside – recorded searches for stolen property

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold $\geq 29$ searches per km$^2$

NNI = 0.37 ($p<0.000$)
Figure A14. Merseyside – recorded searches for weapons

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 20 searches per km²
NNI = 0.37 (p<0.000)
Figure A15. Merseyside – recorded searches for going equipped

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 21 searches per km²
NNI = 0.21 (p<0.000)
Figure A16. MPS boroughs – recorded searches (total)

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold $\geq 10,700$ searches per km$^2$

$\text{NNI} = 0.1491$ (p<0.000)
Figure A17. MPS boroughs – recorded searches for drugs

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 6,960 searches per km²
NNI = 0.2152 (p<0.000)
Figure A18. MPS boroughs – recorded searches for stolen property

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 1,990 searches per km²
NNI = 0.3621 (p<0.000)
Figure A19. MPS boroughs – recorded searches for weapons

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 763 searches per km²
NNI = 0.4304 (p<0.000)
Figure A20. MPS boroughs – recorded searches for going equipped

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 194 searches per km²
NNI = 0.5631 (p<0.000)
Figure A21. West Midlands – recorded searches (total)

KDE map – search hotspots

High density threshold >= 707 searches per km²
NNI = 0.2139 (p<0.000)

Gi* map – areas of significant spatial concentrations
Figure A22. West Midlands – recorded searches for drugs

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 129 searches per km²
NNI = 0.3068 (p<0.000)
Figure A23. West Midlands – recorded searches for stolen property

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold $\geq 141$ searches per km$^2$
NNI = 0.3578 (p<0.000)
Figure A24. West Midlands – recorded searches for weapons

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 613 searches per km²
NNI = 0.2043 (p<0.000)
Figure A25. West Midlands – recorded searches for going equipped

KDE map – search hotspots

Gi* map – areas of significant spatial concentrations

High density threshold >= 18 searches per km²
NNI = 0.489 (p<0.000)
Appendix B. Mapping analysis techniques

The purpose of this technical appendix is to describe in greater details the analytical techniques used in Chapter 3. The appendix outlines the use of the Nearest Neighbour Index (NNI), Kernel Density Estimation (KDE), Dual KDE, and the Gi* statistic.

Nearest Neighbour Index

The NNI is a test for determining the degree of clustering in a point dataset. It compares the proximity characteristics of an observed set of points in terms of the distances between pairs of closest points with distances that would be expected if the points were randomly placed. Index values can range from 0 (where all points are positioned at the same location) through 1 (indicating a random distribution of points), to a maximum value of 2.15 (Chainey and Ratcliffe 2005). Values less than 1 indicate a clustered pattern in the observed data. An index of less than 1 and the p-value (either one or two tailed) of less than 0.001 indicates that the distribution of nearest neighbours is significantly smaller (i.e. more clustered) than would be expected by chance (i.e. the chances that the points are clustered as a result of random variation is less than 0.1 per cent). Index values close to 0 display stronger clustering qualities than those that approach 1.

Kernel Density Estimation

A suitable method for visualising point data (e.g. searches and crime) as a continuous density surface is KDE (see: Chainey and Ratcliffe 2005; Eck et al. 2005; Chainey et al. 2002; Williamson et al. 1999). Eck and colleagues (2005) describe the method as follows: “The quartic kernel density method creates a smooth surface of the variation in the density of point events across an area. The method is explained in the following steps:

- A fine grid is generated over the point distribution.
- A moving three-dimensional function of a specified radius [referred to as the bandwidth or search radius] visits each cell and calculates weights for each
point within the kernel’s radius. Points closer to the centre will receive a higher weight, and therefore contribute more to the cell’s total density value.

- Final grid cell values are calculated by summing the values of all kernel estimates for each location.”

The cell values that are generated typically refer to the number of events within the area’s unit of measurement (e.g. crimes per square kilometre).

The KDE method is a useful visual map-based technique for identifying hotspots. KDE hotspot maps in this report were generated in MapInfo Professional GIS using Hotspot Detective (Ratcliffe 2004). This technique requires two parameters to be entered by the user – the cell size and the bandwidth. Hotspot Detective determines default settings for these parameters after performing an analysis of the input data. Following the default settings is an approach that most analysts take, and indeed are encouraged to take if they are not experts in spatial analysis. To allow for the replication of any future research the default settings were chosen.

Two other parameters that users of KDE may be required to enter are the kernel type and (if applied) the weighting attribute. The common kernel type is the quartic measure (Chainey and Ratcliffe 2005, Eck et al. 2005, Chainey et al. 2002, and Williamson et al. 1999). As each retrospective event was applied with equal weight, no weighting scheme was applied to the data in this research.

The final parameters to consider with KDE hotspot map generation are the thematic range and classes to apply. KDE produces areal values across a continuous range (e.g. each cell has a value representing the density of points located within the bandwidth). The same thematic range approach was applied to each KDE map for the purpose of simplicity and consistency in methodology. Six thematic classes were used and default values generated by using the quantile method in MapInfo were applied to the calculations that KDE generates.

This approach was used as the number of classes falls within the upper and lower settings specified by Dent (1999) and Harries (1999), and the quantile method was chosen because it distributes the data in an approximately equal

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5 For more details on thematic mapping ranges applied to crime data see: Chainey and Ratcliffe 2005; Harries 1999.
balance between the classes, resulting in a visually balanced map pattern (Monmonier 1996).

**Dual Kernel Density Estimation**

Dual KDE is a method that considers a primary variable of interest against some underlying population or a variable that can be used for other forms of normalisation. It works in the following way:

- A KDE surface is generated for the primary variable of interest.
- A KDE surface is generated for the second variable of interest.
- The surfaces can then either be subtracted, divided or added to each other to produce a single Dual KDE surface.

For example, a KDE surface for search activity is generated, representing the primary variable. A crime KDE surface is then generated, representing the secondary variable. These KDE surface variables can then be adjusted so that each cell value on each surface represents a proportional density measure for the variable (i.e. the cells values across a single surface will sum to 1. Each cell value is therefore represented as a value of the proportion it contributes to the total, determined by its density value). When the same process is applied to the KDE surface of the secondary variable it allows for the two surfaces to be directly compared.

Dual KDE, therefore, makes it possible to identify those areas where there are disproportionately high numbers of searches in relation to the crime, or areas where the relative activity of searches is low compared to the concentration of crime that has been committed in the area.

However, similar to KDE, dual KDE does not determine if the areas identified as ‘hot’ are statistically significant.

Dual KDE was performed using CrimeStat (Levine 2004). Dual KDE requires the cell size, bandwidth and ratio method to be entered.

Experimentation and experience are again the best advice for selecting appropriate parameters. The most suitable ratio method to apply was the ratio of differences. This method calculates absolute densities for each of the two
variables, and then divides one by the other. For example, if a study area had 1,000 police searches, the absolute densities method produces an absolute value that, in effect, would be the number of points (the z value) per cell, where the sum of the z values calculated for each cell across the study area would equal 1,000 (within rounding off error). If the same study area had 10,000 crimes, the same approach would calculate grid cell z values that would sum to 10,000. The ratio of differences dual KDE method would be a division between these two absolute single KDE surfaces. The cell size that was chosen was the default cell size determined by Hotspot Detective for the search data that was being analysed, and the bandwidth was the five times the cell size.

Gi*

Maps generated using KDE are useful for showing where searches concentrate, but lack the ability to determine where the concentration of searches is statistically significant. For this to be determined, a LISA technique referred to as Gi* is required (Ord and Getis 1995; Getis and Ord 1996; Chainey and Ratcliffe 2005).

Gi* is a measure that compares local averages to global averages, in order to identify those areas which are significantly different (i.e. places where there is a concentration) in comparison to what is generally observed across the whole study area. The main distinction and qualities Gi* offers over KDE are as follows:

- Gi* shows only those areas that are ‘hot’ (i.e. where spatial concentration occurs) rather than displaying the surface in a graduated form.

- It can be used to determine the significance in spatial concentration (Ord and Getis 1995). That is, it is possible to apply a 95, 99 or 99.9 per cent confidence threshold and produce outputs that only show those areas where the concentration of events is statistically significant to these thresholds. In doing so it can also be precise in determining areas of local concentration.

- By determining only those areas where there is statistical evidence of clustering, it overcomes certain weakness in the smoothing that is applied by KDE (Chainey and Ratcliffe 2005) and allows for an easier comparison between those geographic attributes that are within, or at least intersect, the
areas determined as significant locations of spatial concentration. For example, it is possible to select those Census Output Areas that fall within the Gi* determined areas and provide comparisons between any geographic variable (e.g. population, deprivation, crime rates) to see whether there is an association.

The Gi* maps were produced using the University of Ottawa’s RooksCase Microsoft Excel tool (http://www.lpc.uottawa.ca/data/scripts/index.html). This technique requires the user to enter parameters for the cell size, lag distance (also referred to as the search radius), the number of spatial lags, and the type of spatial contiguity. Little advice exists on appropriate cell size and lag distances to use, instead users are encouraged to apply some experimentation and draw from experience when choosing these parameters. The methodology for parameter selection for this research also needed to be consistent. After experimentation, the following parameters were selected:

- Cell size was chosen to be the length of the shorter side of the study area’s minimum bounding rectangle, divided by 700.
- A Queens Case spatial contiguity was to be applied (i.e. allowing for all surrounding cells in vertical, horizontal and diagonal directions to be considered in the Gi* calculation).
- As only those cells that were the immediate neighbours were to be considered, the lag distance was calculated by applying Pythagoras’ equation to the cell size (so that all neighbours, including diagonal neighbours were included in the calculation).
- A spatial lag of 1 was applied so only immediate neighbours were considered.

A 95 per cent significance threshold was applied, following the Bonferroni simulation approach described by Ord and Getis (1995). RooksCase output was then imported to MapInfo and mapped, displaying only those cells with values above the 95 per cent significance threshold.

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6 For more details on each of these parameters see: Chainey and Ratcliffe 2005; O’Sullivan and Unwin 2003.