



Resource Allocation Processes in Policing in Great Britain

Anika Ludwig, Mike Norton & Iain McLean

Gwilym Gibbon Centre for Public Policy
Nuffield College
1 New Road
Oxford
OX1 1NF

“There is no tomorrow in policing, only yesterday and today”

Executive Summary: effectiveness and efficiency in police funding in Great Britain.

This report is the product of an 18-month research project funded by CIPFA (the Chartered Institute of Public Finance and Accountancy) looking at police resourcing in Great Britain. This report will also summarise several working papers produced which draw on important themes directly associated with aspects of this work.

The funding model (McLean, Norton & Ludwig 2016)

In total, the 43 Policing areas in England and Wales spend over £14 billion a year on policing functions. Some of this is raised locally, some is grant from central government. We consider the decision-making and resource-allocation processes used by Police and Crime Commissioners (PCCs) and Chief Constables, to decide how budgets are allocated to specific programmes and geographical areas across a number of all the UK's territorial police forces. The funding of policing in England and Wales has undergone a number of radical changes in recent years. The introduction of PCCs in November 2012 has resulted in the transfer of responsibility for police budgets from Police Authorities to individual PCCs.

We analysed the three funding models in Great Britain: those for England, Wales, and Scotland. The models for England and for Wales differ slightly; that for Scotland differs more radically. In England and Wales there are two main components: grant and precept. Both are problematic.

Most police grant comes from a formula operated by the Home Office which attempts to determine funds per head on a basis of need. It does so badly, because the formula has been frozen for 7 years, and for distributional and incentive reasons that we explain in this report. A proposed replacement formula died at birth when a PCC's office found that the data it was purportedly based on (which were not made freely available to PCCs) had been wrongly entered into the formula. This led to a scathing Commons Select Committee report and a promise to revise the formula in spring 2017.

The precept component derives from the right of police authorities, and now PCCs, to levy a charge on Council Tax bills. There are two problems with this: a) the charge is far from transparent, as almost no bill-payers understand precepting, nor whom to blame for which elements of their bill; b) as with any other service part-funded by Council Tax, the regressive structure of the tax means that it is far more difficult to precept in poor areas than in rich ones. Hence, perversely, PCCs in the parts of England and Wales that might most need to top up their grant have least ability to do so. Formulae try to compensate for variations in the tax base, but this introduces a new set of problems. The Council Tax base is often frozen on the orders of central government.

What are PCCs for and what have they achieved? (Ludwig & McLean 2016a)

Analysis was carried out into the motivations for and introduction of PCCs in 2012. The first elections, held in November and not in the cycle of any other elections, produced the lowest turnouts recorded in UK electoral history. On the evidence collected, it appears that PCCs have been a modest success. Citizen satisfaction with policing has risen slightly, although police expenditure has dropped, since they were instituted. Prior to 2012, very few members of the public will have known where or how to complain about their police force; the introduction of PCCs has changed this.

In the 2012 elections number of independent candidates won; the 2016 election was more party-dominated (although a number of independents won again). However, we found that the elections were barely party-political. Candidates of the main parties used very similar language to one another, rather than carve out distinctive policies. In the jargon of political science, these have been 'valence', not 'positional', elections. The level of crime reported by the public in the British Crime Surveys has declined somewhat over the period since PCCs were created, despite the reduction in police expenditure.

The evidence suggests that there has been some improvement in police performance, in value for money, and in public satisfaction since 2010, but there are several other steps that a reforming government could take. The introduction of the mayoral model in Manchester, following from London, means accountability and oversight will change again in the next few years; the impact of which will need to be assessed in due course.

Police Resource Allocation: what do the professionals think? (Ludwig & McLean 2016b)

A number of semi-structured interviews were carried out with PCCs and Chief Finance Officers in police forces in England and Wales, spanning parts of the country that varied by poverty, sparsity, and prevalence of crime. As our interviewees came from different parts of the UK and held different views on some points, we cannot claim that they our findings are statistically representative. However, a number of key themes were identified, which resonated across all forces interviewed.

These included:

- forces facing a prevalence of newer, more complex demands (e.g. fraud, cybercrime, vulnerability, domestic violence, modern day slavery);
- several forces are facing legacy issues and cold cases which are draining their resources from 'daily policing';
- officers spending less time dealing with crime related activities and the majority of their time on community safety aspects/in social service roles (e.g. dealing with vulnerable people and groups);

- austerity measures have meant severe cuts to staffing for all forces and keeping frontline resources, Police and Community Safety Officers and Neighbourhood Officers stable has proved tricky;
- PCCs are in control of the force budget but approximately 60-80% is spent on staffing, leaving little room for flexibility for spending; and
- collaboration and partnership working is working successfully for most forces, however it can provide a lot of extra work coming to effective agreements.

In summary, forces appear to be dealing best they can with the challenges they face; and these are varied from force to force. PCCs generally have good evidence of how resources must be allocated but there is almost no evidence of how specific decisions are made in terms of analysis of cost and (optimum) benefits.

Measuring Police Effectiveness (Ludwig, Norton & McLean 2017)

A review of the current literature on police effectiveness and efficiency, considering the measures that need to be considered and some of the difficulties encountered when determining inputs and outputs into econometric models was also carried out. We discussed the factors that affect the rate of recorded and reported crimes and the socio-demographic and measurement issues that influence their results, beginning to identify a number of measures that could be looked at to assess police performance. Difference in difference model regression analysis was utilised to determine the impact of the introduction of PCCs on fear of crime and victim satisfaction levels as a measure of police effectiveness.

Measuring police effectiveness, efficiency, and value for money is important, urgent, and difficult. It is important because as with any other public service, policy-makers want to know whether money is well spent when it could be spent on many other good things, or not spent at all and tax reduced instead. It is urgent in any context where spending on policing and/or crime are decreasing. It is difficult for multiple reasons:

- An important output of policing is crime and disorder which do not happen because of the police presence;
- Recorded crime statistics are unreliable because police officers and authorities have both the motive and the opportunity to manipulate the numbers;
- Carr-Hill and Stern's (1973, 1979) challenge is rarely dealt with: increasing police numbers may lead to an increase in reported crime, because more police record more crimes;
- Although sophisticated statistical techniques (notably DEA¹) have been applied to the problem, they produce very unstable results.

¹ Data Envelopment Analysis

Measuring efficiency of police forces is very difficult, despite the very substantial resources put into it by many research teams in many jurisdictions. Fundamental problems include: the non-measurability of crime prevented; the observation that more police lead to more reported crime, and the prevalent problem of showing direction of causation. Although satisfaction with police services is increasing, the imminence of PCC elections seems to have been associated with increased perception of local crime.

Measuring effectiveness, on the other hand, is more promising. As conventionally defined, effectiveness is a measure of outputs achieved per input. One relevant output is the degree of public belief in their security. This may be secured by unmeasurable efficiency improvements (for instance, increasing the number of crimes prevented), but is in itself measurable. Here, the picture looks relatively rosy for UK policing. Inputs have sharply declined, but the output measures of public satisfaction, and of HMIC ratings, have not. It is thus tentatively possible to conclude that the effectiveness of policing in England and Wales has improved since 2010.

Findings of the project

The main issues identified by this work regard capacity, capability and lack of data. Resource allocation is demand driven, reflecting local issues and priorities, but include limited amounts of horizon scanning and limited long-term planning. We found evidence of good work on prevention and future demand management but austerity has often overshadowed it by forcing attention on current day reactive work. Demand analysis has become widespread among Forces, however only some forces have been able to identify hidden demands effectively. The link between demand, costs, benefits and resource allocation is considered 'embryonic', and the assessment of demand and priorities may significantly differ between local, regional and national perspectives. However, demand analysis needs to be based on accurate data by which we mean that data that, as far as possible reflect the true underlying position of demand and are not subject to manipulation by interested parties.

Most PCCs and chief officers see resource allocation as an administrative or budgetary process, little is being done to try to factor in outcomes (the focus is on outputs). Very little Cost-Effectiveness or Cost-Benefit Analysis is being done within forces. Used in the right circumstances, CBA can be valuable in highlighting the difference between options in terms of their short/long term impact, and the balance between financial and non-financial benefits.

The change in crime mix affecting policing means that appropriate resource and funding mechanisms are needed in order to meet this. More crimes are being committed online than on the streets, and consequently differently skilled staff are required to investigate. Reassurance policing ('bobbies on the beat'), although vital for community perception of safety, is not the best use of resources. Introduction of multi-purpose officers who may be able to carry out a little bit of crime prevention (checking locks and windows), fire prevention (checking smoke alarms) as well as a bit of a social services role (looking for underlying

complex needs e.g. domestic abuse) can produce an integrated local community policing model. This is being trialled in some parts of the country, and it is important to highlight that these additional services need not come from the police. With the exception of London and prospectively Manchester, police, social services, and other relevant services tend to remain and work in their separate silos.

Forces need to understand the skill mix of their staff; austerity and staff cuts may have impacted the diversity of skills available (although no research was done on this). As demand changes and tasks become more complex, the skill set required to address these issues needs to evolve also. Funding sources, such as the Transformation fund may be able to guide a Service Led Transformation, introducing a resource manager role addresses the skills gap.

Officer activity data is not consistently recorded by forces, even though technology has enabled this to occur more efficiently and effectively. The interview data revealed mixed views by PCCs and forces to record activity data even though this will be able to provide detailed data on where demands are. Body worn video and GPS tracking of officers and cars produce lots of information, however the right resources need to be available to analyse new data coming in from technology, otherwise sensible answers regarding resource allocation cannot be produced. PCCs are "*frustrated*" about not knowing whether answers to questions are based on evidence not hunches. Lack of basic information and data means decisions are made on gut feel, professional judgement or previous experience "*with limited rigorous research*". That is partly because there are no resources available to carry out research and assess processes and changes to processes. Specialist research capabilities are not available, or have not been implemented effectively, e.g. Collaboration and Research Board.

Measures of demand have been shown to vary, "*there is nothing that defines policing like a difference*". However, this raises questions about how resources can be allocated effectively if there are 43 different measurements of demand. Some consideration is needed regarding data – what is good data, where does it come from, who else uses it? Forces have not fully utilised looking at other sectors for inspiration and guidance for allocating resources. More detailed investigation of the Cost-Effectiveness Analysis (CEA) model utilised in the health sector may provide some useful insights.

Most PCCs seem to have a board to help them make decisions on the allocation of resources. However, only a small proportion of the budget has flexibility for spending, most is pre-allocated to staffing. In most forces the Chief Constable has main autonomy for determining staff ratio (mix of staff and officers), PCC says "*there you go Chief, this is your budget, spend how you like as long as it meets the priorities in my Police and Crime Plan*". This means that zero-based budgeting, linking resources, demands and budgets is not generally being done. Priority based budgeting is being advocated as a well-structured resource allocation systems utilised by a few forces. However, the lack of evidence, data, and skills/processes mean the criteria used to help shape allocations are often operational or based on statutory duties rather than real policy outcomes.

Increasing decentralisation of police organisations means the manner in which resources are allocated between geographical areas for different services is of increasing importance. Previously, these allocations were negotiation or based on historical precedent. With increasing pressure for improved police accountability there is a need for police agencies to use justifiable methods to allocate resources (Schulenberg 2014), however limited amounts of information are available. As a result of the changing environment, forces need to evidence transparent decisions, be able to evaluate outputs and outcomes, and demonstrate that resources are being used to generate the best returns for communities and society (DenHeyer 2014).

Knowledge of the impacts of changes in resource allocation are not widely known. Police live in the moment to allocated resources – they are reactive not proactive. Marginal impact of spending not considered in any coherent and evidence based way. No evidence of how specific decisions are made in terms of analysis of cost and benefits and understanding the optimum benefits. Demand profiling can provide data to fully understand where the most impact can be made with limited resources. Using a range of quantitative performance measures, a demand profile can be developed which assesses the needs of the community and the demand for police services. Predictive analysis and a technology system which helps the force to monitor daily demand to identify variations in calls for service, crime types and to identify emerging trends. This enables the force to move resources in response to short-term fluctuations in demand.

Early joint intervention programmes designed to make the best use of resources, tackling the causes as well as the symptoms of crime. A “*whole system*” approach is needed with the most appropriate agency taking the lead. Forces need to share examples of effective partnership working which are particularly effective across the force area or local authority. Public service hubs, configured differently to reflect local requirements and community needs, include a variety of agencies including the police, social services, health, youth services etc., are better able to allocate the right resource with the right need. Crime prevention can be cheaper and more effective than investigating crime. The police cannot prevent crime on their own; other statutory and non-statutory bodies have a vital role to play. Police effectiveness in this matter is therefore dependent on their ability to work closely with other partner organisations to understand local problems and have access to a wide range of evidence-based interventions to resolve them.

Considerations needed whether bulk of funding money is going to wrong end of the criminal justice process – questions being raised whether an equal amount should go into the prevent world and the police world. Do we need more community partnerships to aid crime prevention strategies, to “*stop people coming into the system in the first place*”. Could this potentially reduce the 20% of time spent on crime related activities even more – needs assessment of the marginal impact.

Econometric modelling could begin to look at where variables for analysis could come from, paying attention to data variables from other sectors (e.g. health) which maybe providing

demand for policing. Previously police forces were assessed on their ability to respond to situations quickly (emergency response), patrolling the street (investigation and detection of events) and for their reassuring presence (prevention and deterrence). However, identifying data points that are able to measure these incentives is difficult to do. Measuring economic and financial data can determine the number of officers employed by forces but now what they are doing or how that is affecting policing priorities (e.g. outcomes).

Further work

It is intended that this work is only the first phase in a multi-stage, multi-partner analysis. Subsequent stages involve the development of an econometric model assessing costs and benefits, impact and effectiveness. More work needs to be drawn from other sectors (e.g. healthcare) in order to comprehensively assess variables for consideration. Input from stakeholders and partner organisations will be necessary in order to assess multiple needs and viewpoints.

It is vital to remember that the service isn't yet in a position to understand fully where and how it is having an impact on safety, assurance, law and order in society, etc. therefore, there is no way to be sure that the optimum use of resources is occurring. There is some benefit of looking at the healthcare sector for influence and police forces have the opportunity to lead the way. Further subsequent stages may consider the roll out of the model(s) developed in the second stage, testing for rigorousness, transparency and applicability; followed by reflection and analytical critique of outcomes and benefits to the sector. Concerns and input should be encouraged from local, regional and national level sectors/ organisations/ stakeholders.

We feel there are a number of questions which should be considered on a regular basis by forces when considering effective resource allocation, which include:

Demand

- What are current demands? What do new demands look like? What other things must be considered? What is demand analysis measuring?
- How do you know you're measuring the right variables? Financially this is easy to do but outcomes-based is more difficult

Staffing and demand

- There are new drivers for demand/new issues causing demand, is the staff mix adequate to deal with that?
- Should money continue to be spent on officers or should more be spent on specialist expertise?
- How can that be justified to public/police? This needs to consider the organisational and pay culture of the police, as well as changing public perception that 'bobbies on the beat' is not the best use of resources or money in policing.

- How can that be budgeted for? What assessment criteria ought to be considered to ensure this is done effectively?

Data

- What is the right data? What does it look like? Who collects it? What data is good data?
- What data is available to analyse the demand? Are we looking to the right measures?
- What other sources could be look at to provide measures? Cannot purely focus on crime, police spend more time and resources carrying out other tasks – change in focus away from crime reduction and move towards prevention?
- What can we learn from the New Economy model - how much does ‘policing’ cost on a bigger scale?
- Partnership working is expected by everyone, how do you deal with that financially to get optimum benefits?

Marginal impact

- Current practice of shuffling resources according to immediate demand, without foresight or consideration for future impact not optimum model. How is moving air around a balloon having an impact? How can you determine who benefits from this? How do you measure it?
- Budgets decreasing but expectations are increasing? Something has got to give; how can we be smarter with spending?
- Resource allocation is not about decision-making but about having the right information beforehand. It is important to keep asking the right questions. What do questions do forces consider important? How
- Can we put more money into prevention than in emergency response? Are we putting the bulk of the money in the wrong end of the CJS chain? Is partnership working the solution?
- Are any funding pots currently available to begin to address these issues?

Working papers produced as part of this research programme:

Ludwig & McLean (2016a) *Principles of Police Funding in the UK*. A GGCPP Working Paper.

Ludwig & McLean (2016b) *Police Resource Allocation: What Do the Professionals Think?* A GGCPP Working Paper.

McLean, Norton & Ludwig (2016) *What are PCCs for? The intended role of Police and Crime Commissioners and their performance since 2012*. A GGCPP Working Paper.

Ludwig, Norton & McLean (2017) *Measuring Police Effectiveness*. A GGCPP Working Paper.

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Abbreviations

ABC	Activity Based Costing
ALPS	Aligning Local Public Services
ASB	Antisocial Behaviour
CBA	Cost Benefit Analysis
CC	Chief Constable
CEA	Cost-Effectiveness Analysis
CFO	Chief Finance Officer
CIPFA	Chartered Institute of Public Finance & Accountancy
CJS	Criminal Justice System
CUA	Cost Utility Analysis
DCLG	Department for Communities & Local Government
DEA	Data Envelopment Analysis
DI	Detective Inspector
E&W	England & Wales
FTE	Full Time Equivalent
GMP	Greater Manchester Police
GRE	Gross Revenue Expenditure
HMIC	Her Majesty's Inspectorate of Constabulary
HoCHAC	House of Commons Home Affairs Committee
ICER	Incremental Cost Effectiveness Ratio
ISIS	Information System Improvement Strategy
MSG	Most Similar Group

NAO	National Audit Office
NCA	National Crime Agency
NDAG	National Debate Advisory Group
NHS	National Health Service
NICE	National Institute for Health & Clinical Excellence
NPIA	National Policing Improvement Agency
NRCN	National Rural Crime Network
ONS	Office of National Statistics
OPCC	Office of the Police & Crime Commissioner
PBB	Priority Based Budgeting
PCC	Police & Crime Commissioner
PCP	Police & Crime Plan
PCSO	Police & Community Support Officer
PEEL	Police Effectiveness, Efficiency & Legitimacy
PFA	Police Force Area
PM	Performance Management
POA	Police Objective Analysis
PSPP	Public Services Productivity Panel
QALY	Quality Adjusted Life Years
SCB	Strategic Commissioning Board
VFM	Value for Money

Introduction

Traditionally, police agencies have allocated resources in response to their operational demands or requirements, with the majority being allocated to political demands and public calls for service reactively, responding to whatever the current 'threat' may be (DenHeyer 2014). However, in recent years, there has been a greater emphasis to deliver services proactively, to direct resources to specific geographic areas or to specific crimes, and to apply targeted policing initiatives (Innes 2011; Wilson & Weiss 2014). Changing the operating environment to a public service led ethos of accountability and 'do more with less' means that historical processes for allocating resources are no longer suitable (DenHeyer 2014). This greater emphasis on proactive policing, including a shift from centralised control, underlines the need to analyse the utility of resources in dealing with modern pressures and demands. Where demand for police services is rising but expenditure on resources is constrained by budgetary restrictions, the process of managing and allocating resources becomes crucial (Stockdale *et al.* 1999).

As well as internal reforms and government budget cuts, socio-economic, demographic and technological changes also affect the police service. The globalisation of markets for goods and services, the rapid expansion of new forms of communication, information technology and social media, the increase in personal mobility and migration, the growing income inequality and the fragmentation of families and communities are changing the patterns of crime globally that police officers face (Karn 2013). New threats create new forms of harm, particularly for the most vulnerable groups (e.g. children, migrants, the elderly, the poor). Identity theft, people trafficking and exploitation, investment scams and internet fraud and other emerging crimes present new challenges, as police forces are required to work across local, regional and national boundaries to deal with criminal networks and changing modus operandi (Innes 2011; Karn 2013).

The challenge facing police agencies across the world is to balance resources and service delivery levels with a decreasing level of funding and increasing expectations (Wilson & Weiss 2014). Faced with these and other challenges, police forces cannot continue to indefinitely use reactive, response-oriented policing, with resources being deployed to respond to immediate demands rather than to more strategic, long-term pressures. The issue of police effectiveness has never been more important. Austerity means greater scrutiny of value for money, better evidence-based practice, and the reduction of long-term harm and demand through 'up-stream' intervention and prevention. The policing mission is also being impacted by significant changes. Police forces are dealing with new forms of governance and scrutiny, and there is a general shift away from volume crime reduction towards managing threat, risk, harm and vulnerability nationally (Higgins & Hales 2016).

A review in 2008 suggested that over the last decade public demand has resulted in "*the police service mission... becoming both broader and more complex*", requiring a response to issues

that might otherwise be addressed by other agencies (Flanagan 2008). This has also been accompanied by an unprecedented increase in police powers and resources. Yet the image of the police service as largely engaged in crime control continues to shape public and policy expectations of police work as well as rank and file understandings of their role (Reiner 2010). So despite this wider mandate and an expansion in its mission, the police service continues to be judged primarily on the basis of its effectiveness in tackling crime (Karn 2013).

Aims & Objectives

This report provides the results of an 18-month study into the resource allocation processes in the UK. In total, the 43 police forces areas in England and Wales spend over £14 billion a year. We will provide information regarding the decision making and resource allocation processes used by Police and Crime Commissioners (PCCs) and Chief Constables (CCs), to decide how budgets are allocated to specific programmes and geographical areas across a number of all the UK's territorial police forces. The research will also explore whether there are systematic differences between forces and whether decisions are made based on evidence or professional experience.

The work was carried out in four stages:

- A review of the resource allocation processes currently used within the Police and Community Safety sector.
- The identification of best practice.
- An evaluation of the processes which are used in other sectors, and a consideration of their applicability within Policing and Community Safety.
- The development of a set of principles for an enhanced arrangement, taking into account the specific challenges within the Police and Community Safety sector.
- The provision of advice on how guidance material may be developed about the techniques of resource allocation, and making recommendations as to how awareness and knowledge might best be shared across the Service.

Although we do not expect to be able to provide all of the answers originally anticipated to be provided via this project, this is very much a first step towards identifying and collecting data and information to aid police forces in enhancing their resource allocation processes.

Chapter 1: Police effectiveness/efficiency

The decline in in police numbers and budgets since 2010 has raised questions on how police forces can deliver core services more efficiently and effectively. Allocating police officers to ensure that an efficient and effective service is delivered requires an analysis of the variables that impact on organisational performance. However, there is little information available or agreement of the specific social or economic factors that affect how police officers should be allocated to specific geographical areas (DenHeyer 2014). Furthermore, as expectations and responsibilities of policing increases to include an array of social services roles, officers have less time and resources to spend on dealing with crime; the main variable against which their 'success' is measured.

Previous studies of police resource allocation have used a number of different approaches, the most common of which is to relate arrest rates with levels of crime (Tittle & Rowe 1974; Logan 1975; Loveday 2000). These studies all relied on official police statistics and found lower levels of recorded crime in areas where police arrest rates were high. However, Wilson and Boland (1978) attempted to overcome the known weaknesses of police statistics by examining the data obtained from victimisation surveys and by finding a significant negative correlation between arrest rates and levels of crime.

Estimating the demand for police can be treated in the economic literature in a simultaneous system of linear regression equations which are based on the premise that the demand for police services is partly determined by the crime rate which in turn is affected by the level of police resources (Carr-Hill & Stern 1973; 1979). This is a simultaneity issue in that the number of police officers can affect the level of crime and the level of crime can affect the number of police officers.

Current variables available for researching police efficacy have improved, due to increased desire to performance manage police force activities. Input variables are more diverse and more specific to policing than formerly, and variables relating to outcomes and outputs no longer rely on 'clear-up' rates (Paré *et al.* 2007). Crimes recorded and cleared have been used as indicators of protection and crime prevention, however both are subject to measurement errors and manipulation (e.g. not all crimes are recorded) (Cameron 1989). For example, Walker (1992) showed that some police departments manipulate their records to increase their clearance rate using tactics such as 'failure to record difficult cases', use of a broad definition of clearance and the encouragement of suspects to 'confess to a series of offenses' in exchange for a more lenient charge.

Studies that examine the impact of police on crime rates focus on the *aggregate* number of police officers only, as opposed to the *relative* allocation of police resources (Benson *et al.* 1994; 1995; Ross & Walker 2014). More specifically, the incentives of police and the discretion of officers in allocating their time cannot be measured when only the total number of officers

employed is available. Once the discretion of individual police officers is taken into account, it is no longer clear that increasing the number of police officers will necessarily increase the probability of arrest and reduce crime rates. However, data on how individual police officers allocate their time is not available, making it difficult to determine exactly how police allocate their limited resources among various tasks (Heyer *et al.* 2008).

Traditionally, police have used crime control approaches based on deterrence theory, largely performed through random patrols, emergency responses, stop and searches, etc., which still feature in contemporary policing activity. Research suggests however, that these strategies are relatively ineffectual in reducing crime and detecting offenders (Karn 2013). Increasingly police are focusing on identifying and managing risks, shifting resources towards particular individuals (prolific offenders, repeat victims, etc.) or specific places (e.g. high crime areas), instead of relying on arrests, convictions and punishment (Karn 2013). Targeting resources in this way (focusing on risky people and places), is thought to reduce crime more effectively (Karn 2013).

Crime rates, deterrence and resources

The role of the police is varied and complex, and fighting crime is just one of their functions. The government developed a set of overarching aims and objectives for the police in England and Wales, including: to promote safety and reduce disorder; to reduce crime and the fear of crime; and to contribute to delivering justice in a way that secures and maintains public confidence in the rule of law (PSPP 2000).

Traditional political and justice perspectives believed increasing police numbers were an effective means of crime prevention through deterrence and apprehension/incapacitation however evidence from the literature does not appear to support this assertion (Ogilvie *et al.* 2008). Deterrence theory assumes that *“increasing the number of police prevents crime as potential offenders will perceive that there is a greater chance of detection if they commit an offence”* (Ogilvie *et al.* 2008). Increasing police numbers is also thought to reduce crime through the apprehension and conviction of a greater proportion of offenders, resulting in the removal of more offenders from the community, thereby restricting their opportunities for offending while they are incarcerated (Ogilvie *et al.* 2008).

Benson *et al.* (1994) stated that the *“crime rate depends on police deterrence efforts, police deterrence efforts depend upon the level of police resources, and the level of police resources depends on the crime rate”*. Faced with a problem of simultaneous causation: a given factor or variable will simultaneously contribute to the determination of another and be determined by it (Carr-Hill & Stern 1979). It has been shown that more police resources do not necessarily lead to a lower crime rate, or to an increase in the probability of arrest (Milakovich & Weis 1975; DenHeyer 2014). Marvel and Moody (1996), identified 36 studies that provided little evidence *“that more police reduce crime”*, but on the contrary seemed to indicate that *“more*

crime leads to more police". "This assumption lies at the core of deterrence theory and is used to justify hiring more police officers" (Kovandzic & Sloan 2002).

Simple deterrence theory suggest that the level of offences will depend on the probability of being caught. It is also reasonable to suppose that the number of offences which are recorded depends on the number of police. In turn one can argue that the probability of being caught, or the proportion of offences solved, depends on the number of offences to be solved and the strength of the police force; and again, the allocation or recruitment of police officers would be determined in part by the recorded level of crime and the 'success rate' or proportion solved (Carr-Hill & Stern 1979).

Carr-Hill and Stern (1973) produced an econometric model of the supply and control of recorded offences in England and Wales, by developing, testing and interpreting a "*simultaneous equation model of process generating criminal statistics*". Focused on the middle-class, who were perceived to exert more pressure for the protection of their property, population density was factored. In this model, they found that the number of policemen per capita is inversely related to the proportion of the population that is middle class (Carr-Hill & Stern 1973).

The optimal ratio of the number of police officers to population is continually adjusted in order to make the smallest investment of resources to produce the greatest public satisfaction. The number of police officers in a geographical area is allocated by police managers according to formulas, institutional traditions, tacit understandings, and contract rules, all of which have little or nothing to do with the understanding or reduction of crime (DenHeyer *et al.* 2008).

Sherman and Eck (2002) did conclude that while there is consistent evidence that having *no* police (e.g. during strikes) significantly increases crime, the evidence of a marginal effect of increasing police numbers on crime is weak. Debate continues as to which social variables are associated with police staffing levels and which are associated with the level of crime (Den Heyer 2014).

The majority of studies which assess police performance have focussed on the impact of police activities on crime. Despite the multiple goals of policing and the complex nature of the relationships between police activities and crime rates, most of these efforts are postulated on a simple input-output relationship, which assumes a direct and simple relationship between policing and crime rates. In these studies, inputs typically include police budgets, number of personnel, and some type of-police strategy, e.g. patrol, criminal investigation or the use of technology. Typical output measures use official crime rates to measure the impact of police on crime (Murphy 1985).

Creative research designs have been used to break through the simultaneity between police and crime levels and to address omitted variable bias. DiTella and Schargrodsky (2004) and Klick and Tabarrok (2005) use shocks to police presence related to terrorist attacks and terrorist alerts to isolate causal direction. Corman and Mocan (2000) use high frequency data

to escape the (slow) adjustment in allocation of police resources to crime rates and show that increases in the number of police officers cause a reduction in one out of five crime categories (specifically, burglary). Levitt (2002) and Lin (2009) use instrumental variables and two-stage least squares (2SLS) techniques to identify changes in police levels that are not related to changes in crime rates. These recent studies consistently find a negative effect of police on crime, with DiTella and Schargrodsy (2004) and Klick and Tabarrok (2005) providing the clearest evidence that the estimated effects are the result of deterrence rather than incapacitation.

Most previous studies have examined the effects of police numbers on crime levels in isolation from other variables which affect policing and crime (e.g. organisational characteristics, community demographics and composition, deployment procedures and policies, demands of different types of crimes) (Ogilvie *et al.* 2008). It is not possible to fully comprehend the effect of police numbers on crime levels without considering many of these variables as well as the variety of activities police are involved in and engage in. Research has now moved away from this simple relationship and has begun to focus on *“how police resources may be used more effectively to reduce crime and how the effectiveness of officer behaviour varies according to policing activities”* as well as the social characteristics of specific areas (Ogilvie *et al.* 2008).

It has been suggested that due to the varying effects police have in different areas, characteristics of places (e.g. population demographics, socio-economic variables, and types of prevalent crimes) should be considered in models assessing police efficiency (Ogilvie *et al.* 2008). Variables such as the number of patrol cars, officers on the beat, the level of expenditure, etc. are not indicators of police effectiveness (Thanassoulis 1995), but indicators of budget priorities. Thanassoulis (1995) also states that *“merely spending more money on the police [...] does not [necessarily] translate into crime-control action”*, focus must be on what officers do in the field that ought to be measured. Ogilvie *et al.* (2008) suggest that efficient utility of police resources may have a significant impact on crime as some *“policing activities are more effective than others”*.

The number of arrests, response times, and reported levels of crime, are natural measures of effectiveness and tend to be the primary measures police utilise to appeal for expanded budgets (Carr-Hill and Stern 1973). Researchers almost always use either police expenditures or the number of police to measure police levels. The latter has a more direct relationship with the crime-reduction impact and because expenditures are sensitive to changes in budgeting classifications.

Ludwig *et al.* (2017) discussed the factors that affect the rate of recorded and reported crimes and the socio-demographic and measurement issues that influence their results, beginning to identify a number of measures that could be looked at to assess police performance. Difference in difference model regression analysis was utilised to determine the impact of the introduction of PCCs on fear of crime and victim satisfaction levels as a measure of police effectiveness.

Measuring police effectiveness, efficiency, and value for money is important, urgent, and difficult. It is important because as with any other public service, policy-makers want to know whether money is well spent when it could be spent on many other good things, or not spent at all and tax reduced instead. It is urgent in any context where spending on policing and/or crime are decreasing. Recorded crime statistics are unreliable because police officers and authorities have both the motive and the opportunity to manipulate the numbers; increasing police numbers may lead to an increase in reported crime, because more police record more crimes; and although sophisticated statistical techniques have been applied to the problem, they produce very unstable results.

Effectiveness and efficiency

The most common measure of police effectiveness have been to measure crime statistics and police clearance rates (the portion of crimes solved by the police). The clearance rate is almost always expressed as a percentage of the number of reported crimes, although 'victimization' data could be used to estimate the 'true' clearance rate (Decker 1981). Although clearance rates are often used to evaluate the effectiveness of police agencies and individual police detectives, they are susceptible to manipulation and measurement error. The denominator of the clearance rate statistic, the number of reported index crimes, has well known validity problems and may be of dubious reliability, given differences in police reporting practices. The numerator is even more readily manipulated. Although the reliability and validity of clearance rates are open to question, these rates are one of the few available indicators of investigative effectiveness (Cordner 1989).

However, it has become clear over recent years that recorded crime rates are better as a measure of police activity, than as an accurate reflection of levels of crime. Victimization surveys such as the British Crime Survey have indicated that a large number of crimes go unreported and undetected, and are consequently considered the 'dark figure' of crime. Crime figures and clearance rates can also be manipulated through the misclassification of offences. Utilised as a means of *"massaging' the crime figures to enable the police force to demonstrate greater efficiency than the real crime rate might suggest"* (Loveday 2000).

Crime rates are also influenced by factors other than police activity. The size of the community, demographics, economic conditions, population stability etc., have been shown to have significant impact on rates of crime (Carrington *et al.* 1997). Unless the impact of police activities can be separated from the effects of social and economic factors, and trends in reporting crime, than crime rates cannot be legitimate measures of police effectiveness or used as justifications by the police for increased resources (Murphy 1985).

HMIC recently concluded that crime is being under-recorded by approximately 19% on average, although it varies according to crime type (violence against the person 33%, sexual offences 26%). However, the recorded crime rate has become the proxy measure for police workloads because police forces lack reliable data from which to measure changes in demand

(NDAG 2015). Recorded crime only represents part of the daily workload of police forces, preventative and proactive policing that protects the public is harder to measure.

When crime clearance rates are high, they are attributed to police efficiency, however when clearance rates are low they are attributed to lack of investment and shortage of resources (rather than police inefficiency) (Loveday 2000). Analysis of efficiency must be considered with care, as often estimates of relative efficiency are calculated, where the raw results need interpretation and explanation. They are critically reliant on the quality of the data used.

The typical interpretation of efficiency considers the relationship between inputs and outputs. The widest concept of efficiency would consider the relationship between inputs and outcomes. The widest definition of efficiency would implicitly capture two concepts:

1. *efficiency*: ensuring that the highest level of outputs is delivered for a given level of inputs.
2. *effectiveness*: ensuring that the right outputs are delivered to meet the desired overall outcomes, and that the outputs are of good quality.

	Effectiveness	Efficiency
Skogan (1976)	Task performance. Effective organizations are those which meet challenges put to them, satisfy demands for service, or solve problems.	Processing costs. Efficient agencies are those which convert inputs into outputs with less organizational effort.
Murphy (1985)	Achieving defined results or outcomes without regard for money or manpower.	Achieving any given result with a minimum expenditure of effort.
Drucker (2007)	“Doing the right thing”. The extent and quality of the match between specifically defined objectives (actions, goal, procedure, service, etc) and their achievement.	“Doing things right”. The ability to achieve the desired outcome without wasting (or minimal expenditure of) resources, energy, time or money.
García-Sánchez (2007)	The extent to which the output of service providers meets the objectives set for them by governments. Police effectiveness will be defined as the capability of police to solve the criminal offences that have taken place in their district and that have led to the arrest of the guilty parties, thus preventing them from committing further offences.	The behaviour that for a set of given resources generates maximum production or, equivalently, when, in order to obtain a fixed volume of production, the minimum of resources is consumed. The estimation of efficiency must show whether the inputs (resources) become outputs (products) according to the optimum combination.
Vlăsceanu <i>et al.</i> (2007).	The extent and quality of the match between specifically defined objectives and achieving the expected outcome or requirements.	Measures the volume of inputs against outputs in terms of amount of resources, energy, time or money required to complete the task (results achieved versus resources used)

The systematic measurement of police efficiency – relating inputs to police outcomes – is complex, because a forces actions and activities are varied and involve accountable and non-accountable services (e.g. walking the beat) (Drake & Simper 2000). It is notoriously hard to do with traditional analysis methods because of the complex and often indirect relationship between inputs, outputs and outcomes (PSPP 2000). A major problem inherent in measuring the efficiency of the police service is how to quantify the role of the police in society.

Police work covers a wide range of activities including traditional police work (crime prevention/detection) (Wu *et al.* 2010); and non-traditional police work including a “*social service role*” (Redshaw *et al.* 1997). For example, a bobby on the beat could simultaneously be preventing crime, solving a crime, reducing the fear of crime, maintaining order and enforcing the law – activities which are difficult to enumerate and assess (Verma & Gavirneni 2006). Efficiency measurement also has to take into account that socio-economic and environmental factors influence the success of police work (PSPP 2000). Consequently, it is difficult to develop efficiency indicators, the main issue being how to quantify inputs and outputs of the police service, enabling Chief Constables to evaluate business decisions for resource allocation.

Furthermore, it is difficult to obtain data and to quantify the time spent by police on different activities (Cameron 1989). Traditional outputs related to police response (reactive policing) are often used in performance management studies due limited quantifiable data on non-accountable services. Many (Todd & Ramanathan 1994, Byrne *et al.* 1996, Drake & Simper 2002) have argued that even though much of the police’s work cannot be measured, output and outcome measures can still be estimated. Stockdale *et al.* (1999) identified the “*growing need for the police to make resource allocation decisions transparent, to evaluate outputs and outcomes, and to demonstrate that resources are being used to generate the best returns*”.

Chapter 2: Value for Money

The prominence of value for money for public and state services has increased since the Thatcher/Major Conservative governments of the 1990s (HMIC 1995). Undergoing a number of reviews and restructures during this time, police management was affected by the new business model for increasing efficiencies in policing. It went from a public to a business oriented organisation with the introduction of efficiency targets coordinated with local police authorities leading to a managerialism of the service (Sullivan 1998). This reform was in response to the steady increase in crime since the late 1970s, the disproportionate increase in the fear of crime and the increasing cost of the police service.

In line with other public services, the police have been put under pressure from the government to provide a more cost-effective, efficient and better-valued service to the public (Feilzer 2009). In order to achieve these goals, police activity is measured on a number of levels and assessed against ambitious targets for improvement. However, unlike other public sectors (e.g. education, health), the performance measures of the police are not subject to national 'league tables'. Instead, since the introduction of HMIC Peel inspections, police performance in England and Wales is measured by comparing individual police forces with others which are classified as being in their 'most similar group' (MSG²). This grouping is utilised in order to provide a more realistic assessment of different police forces performance against one another, and provides a measure of comparison (Feilzer 2009).

HMIC introduced 'Value for Money' profiles for each police force area, as a means of comparing a range of policing activities. These profiles highlight *what* is different, but does not explain *why* they exist. The value for money inspections have been published in collaboration with a number of other assessments of policing. The spending reviews announced in October 2010 have had significant impacts on police budgets and spending. The Valuing the Police Programme (and its various publications between 2011 and 2014) have tracked how the forces have planned to deal with the budget reductions and meet the saving requirements (HMIC 2013, HMIC 2014).

HMIC collected data and savings plans from the 43 Home Office-funded forces in England and Wales; surveyed the public to find out whether they had noticed changes to the service they receive from the police as a result of the cuts; and conducted in-force inspections in all 43 forces.

The first inspection was carried out in 2011, assessing the preparedness of forces and authorities across England and Wales to make savings over the four years of the comprehensive spending review (HMIC 2011). It identified that on average, a relatively

² The variables used to select the new MSGs are: % of overcrowded households; % of terraced households; % of workforce long-term unemployed; population density; population sparsity; % of single-parent households and % of 'hard pressed'.

modest improvement in *frontline efficiency* was required between March 2010 and March 2012 to meet the predicted loss in frontline numbers of 2%. The *non-frontline efficiency* requires transforming in most forces, and 22 forces may need to cut more than 30% of their non-frontline workforce in order to protect the frontline numbers. A wide range of means were being employed to improve efficiency, with a mix of national and locally led programmes to achieve economies of scale (see Figure 1) (HMIC 2011). Forces and police authorities need to make effective decisions on how to manage their resources and improve their efficiency.

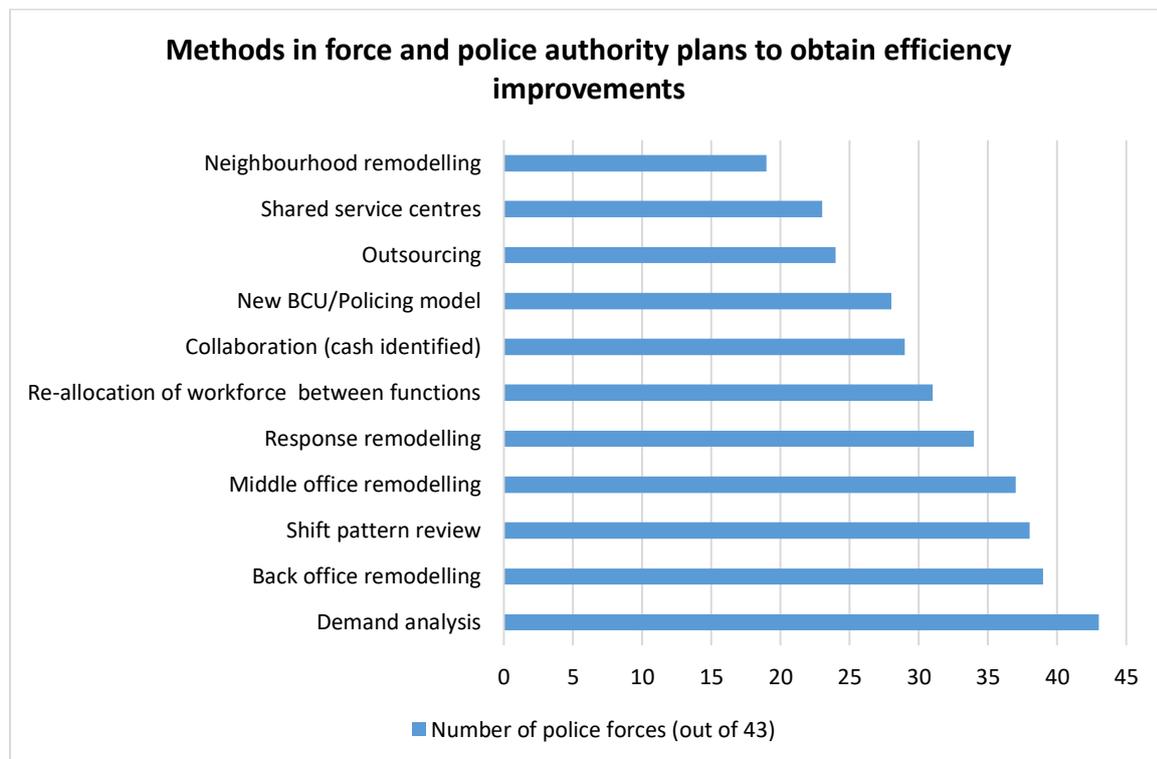


Figure 1: Methods used by force and police authorities to obtain efficiency improvements 2010-2012

Police forces are looking at a number of ways of improving their workforce efficiency, including:

- *Review of the workforce mix* – previously forces have made decisions about the optimum mix of officers and staff needed to deliver an efficient service.
- *Matching resources to priorities* – forces are now undertaking some demand analysis to direct their resources and more than half of forces were reviewing shift patterns to meet this demand.
- *Reviewing workforce efficiency* – the pay progression freeze, the abolition of competency-related threshold payments, the suspension various senior bonuses and abolition of special priority payments (HMIC 2011).

Police processes have also been improved in a number of ways, including: Reduction of bureaucracy, changing operational processes, streamlining command, standardising information systems and outsourcing and sharing procurement. For all forces, the majority of spending is on staff and pay costs. Considerably less (20% on average) is spent on non-pay costs (e.g. estates, IT, vehicles, utility bills, equipment, supplies). Forces were required to make savings of £2.53bn during the spending review; considerable reductions in staff numbers were inevitable. HMIC (2014) found significant variation between pay and non-pay savings between forces, where

- 66% of savings from pay costs included restructuring force operating models and cutting departmental budgets to reduce the size of the workforce; and
- 34% non-pay costs were achieved by reducing spend on goods and services.

The majority of non-pay savings has come from reconfiguration of estates where by forces identified estates for sale and disposal, to obtain one-off savings. Forces have also considered sharing premises (e.g. Met Police provides contact points in libraries and hospitals, as well as traditional police stations, for public drop-in sessions. Cleveland Police operate a hot-desk policy.). All forces have reviewed how often police buildings are actually used by the public, and most are then taking informed decisions on whether they need all their police stations, public access points such as front counters and custody suites (HMIC 2014). It is estimated that closure and disposal of surplus estate have reduced operating costs by £3m for GMP and the force expects to benefit from a further £1.2m year-on-year saving from a reduction in business rates, energy and maintenance costs. As a result, the force is on its way to reducing its office estate by 30% by 2015, and reducing estate costs.

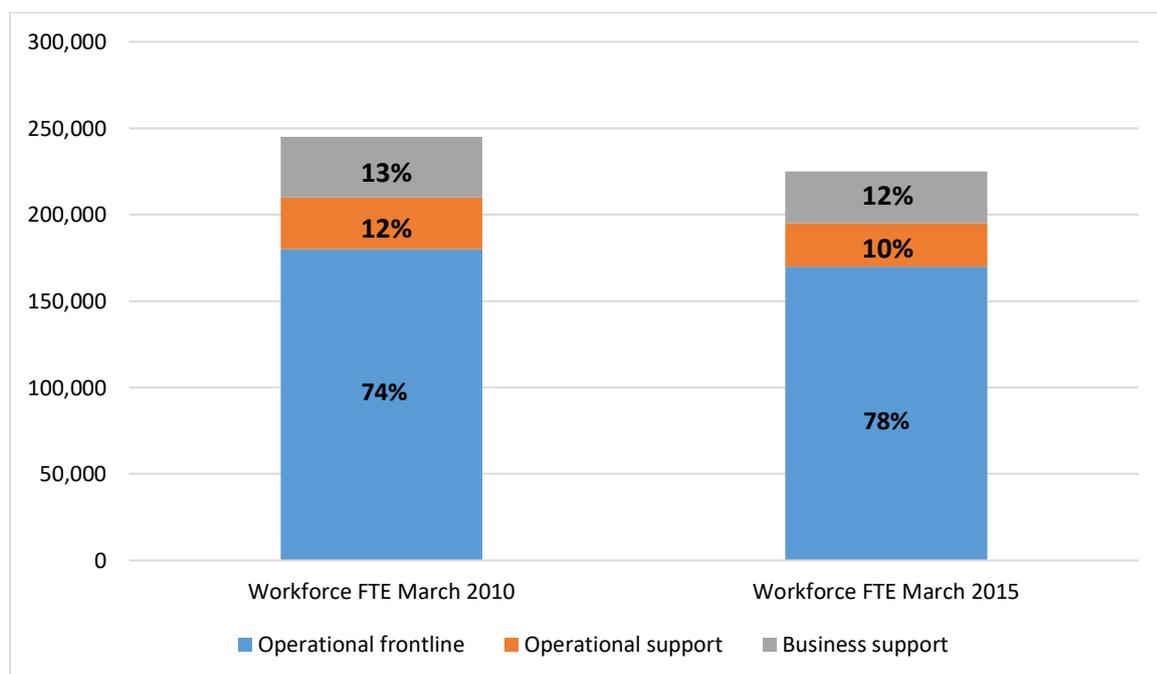


Figure 2: Planned workforce frontline profile for March 2010 and March 2015

Forces have also responded in different ways to the spending challenge. While overall crime has reduced, some forces achieved greater reductions than others. Some forces have radically reshaped their organisations, considered how demand can be reduced and managed, been imaginative about working with partners, and considered how IT solutions can support new ways of policing. Others have made fewer changes, which may limit their ability to provide sustainable savings (HMIC 2013).

In order to assess how far forces are collaborating, HMIC measured what proportion of the overall force budget (NRE)³ will be spent on areas of the business that are delivered collaboratively. The data collected this time show that this proportion is increasing over the spending review period, suggesting collaboration is becoming more extensive (HMIC 2013).

Assessing and analysing the costs and benefits of collaboration is complex as forces do not record information in a standardised way. As HMIC has focussed on this area of policing, the data quality has improved; but some care must still be taken in interpreting conclusions, due to issues in relation to the overall quality of the data (HMIC 2013).

HMIC has growing concerns, in particular, that neighbourhood policing risks being eroded in some places. Forces are restructuring and reconfiguring how they carry out their work in order to protect but not preserve the front line. However, reductions of this magnitude have an adverse effect on the amount of work that can be done to prevent crime and protect the public (HMIC 2014).

Collaboration between forces, public and private sector organisations remains patchy, fragmented, overly complex and too slow. Since 2013 there has been a slight increase in the amount of savings that forces plan to achieve by working collaboratively. With some notable exceptions, the pace, breadth and depth of collaboration remains disappointing. A less fragmented, more structured approach to effective working between forces or between forces and other organisations is required. In particular, there is now a pressing need for greater clarity as to which policing services are best provided by forces at the local, regional or national level (HMIC 2014).

Changes are required if forces are to be supported in achieving further substantial cost reductions in the future. There is no immediate end in sight to the era of austerity. Some forces are planning, sensibly, on the assumption that they will be required to save at least the same amount again in the next spending review period. As budgets continue to be constrained severely, it is inevitable that opportunities for further savings and efficiencies will be fewer, and achieving them will be more difficult. There is scope for further substantial savings to be achieved by the vast majority of forces. But consideration must now be given to how funding will be allocated in the future and how that funding supports more efficient arrangements for local, regional and national policing services. Continuing to administer

³ NRE is used to avoid the double counting caused by cross charging agreements between forces inherent in collaborative arrangements

substantial cost reductions in the next spending round in the same way as this one is likely to place the viability of some forces in jeopardy within the next three to five years (HMIC 2014).

Work on public attitudes illustrates the way the public think about notions of value for money when it comes to policing (HMIC 2010):

- To the public, value for money means that the police are effective (rather than that everything is done at the lowest cost);
- By effective, they mean police should cut crime and anti-social behaviour, through visibility and through intelligently dealing with criminals (currently hampered by bureaucracy and social obligations).
- Responses to questions posed to members of the public provide an indication of what value for money means, in terms of what the public value:
 - *“Visible policing presence”*,
 - *“When they are around, crime does not happen”*, and
 - *“It is not about cost but whether they are effective”* (Ipsos MORI 2010).

Police productivity has never had an agreed definition: some focus on activities and products. A more persuasive interpretation would be to focus on fewer victims and reduced crime. *“The absence of crime will be considered the best proof of the complete efficiency of the police”* (Peel 1829).

HMIC has made a number of judgments as to the extent to which each force provides value for money in the context of current spending constraints. This is judged by three questions 1) Is the force efficient? 2) Has the force got a sustainable and affordable operating model? and 3) does the force have a secure financial position in the short and long term? Forces are assigned in one of the following categories: outstanding, good, requires improvement or inadequate. The grade characteristics provide an indication of the expected levels of performance consistent with each grading. They are examples to help determine appropriate judgments.

There continues to be more that forces can do to learn from each other. With the mantra of ‘more for less’, the ethos of value-for-money was becoming an even more fundamental driver of policing policy and practices than it had been in the past. Almost in anticipation of this renewed focus of value-for money, and emblematic of it, was the introduction by HMIC in 2010 of ‘value-for money Profiles’, comparisons of police forces in terms of their performance on efficiency and effectiveness, that is the extent to which they are demonstrating that they are delivering value-for-money (Maillard & Savage 2012).

Most forces have a good understanding of their current capacity (the number, cost and rank of officers and staff) but have a much weaker understanding of their current capability (what skills the workforce has) and their future capability requirements (HMIC 2015). HMIC inspections are concerned with assessing the efficiency of police forces in keeping people safe and reducing crime. There has been discussion for some years on how best to define police efficiency. The usual definition of efficiency would be a measure of the volume and quality of

the thing produced (a product or a service provided) compared to the resources used in producing it. The problem in defining efficiency in policing is the range of activity forces undertake and the variety of outputs and outcomes they produce (HMIC 2015).

As far as reasonably practicable, forces need to manage the demand for their services if they are to be in control of their resources, while ensuring that victim satisfaction and public confidence are not reduced inadvertently (HMIC 2015). This is about managing demand appropriately rather than simply reducing it. Even though forces have carried out workforce transformation programmes, HMIC found that those programmes were still driven by the need to cut spending rather than an assessment of the service the force should provide. Future planning consists of working out the maximum size of the workforce that is affordable and creating an operating model to fit that, rather than designing the force to meet the likely future demand at a cost they could afford (HMIC 2015). Forces need to know what their workforce is able to do (its capability) rather than just its size and cost (its capacity). To do this, they need a clear way of assessing the performance and skills of their workforce (HMIC 2015).

Decision making and cost benefit analysis in other sectors - healthcare

Health care was identified as a suitable comparative sector to policing in regards to decision making and cost benefit analysis due to the predominantly reactive nature of both. Healthcare is a multi-million-pound business which has undergone a number of radical changes in recent years; and like the policing sector has faced great economic reductions. Economics is the discipline that analyses pressures to determine the greatest benefit from increasingly scarce resources.

An economic appraisal of a health care programme compares the resources consumed by a programme (the costs) with the health improvement created by the programme (the consequences) (Torrance 1986) as well as methods to assess benefits without using money as the measure of interest.

- Cost-effectiveness analysis (CEA) determines a cost/effectiveness ratio (Gold *et al.* 1996, Drummond *et al.* 2005).
- Cost-benefit analysis (CBA) determines the net social benefit of the Programme.
- Cost-utility analysis (CUA) is a special form of cost-effectiveness analysis in which the measure of effect is quality-adjusted life-years (QALY's) gained (Williams 1985).

CEA informs evidence-based policies by allocating resources to maximize QALYs. The basic idea consists in marginal analysis, that is, in deriving an incremental cost effectiveness ratio (ICER) for each intervention compared with the next best use of resources (Airoldi 2013). This number is the ratio between the additional costs and the additional benefits measured in QALYs attributable to the intervention; and the lower the ICER, the higher the cost-effectiveness of the intervention.

An imagined table with all possible health interventions ranked from most to least cost-effective would allow CEA to allocate resources according to this ranking, funding interventions from the top of the list and drawing a line when all available resources are spent (Airoldi 2013). QALYs and CEA are used in the National Health Service (NHS) in deciding whether new therapies ought or ought not to be funded from the NHS budget by the National Institute for Health and Clinical Excellence (NICE). However, because it is not feasible to draw a table with all possible health care interventions, NICE uses a threshold value of between £20,000 and £30,000; that is, interventions with an ICER below the threshold are generally considered cost-effective and funded (NICE 2008).

CEA can provide a framework to structure the collection of local information, to overcome the lack of information on effectiveness by helping participants to articulate local knowledge, preferences, and beliefs into a QALYs-like measure, and to define value for money as the ratio of effectiveness and costs. It can be a tool to support the organization in making sense of its current situation and using this understanding to prompt improvements (Weick 1995).

CEA is a method used to evaluate the outcomes and costs of interventions designed to improve health. It has been used to compare costs and years of life gained for such interventions as screening for breast cancer (Eddy 1989), bypass surgery for coronary artery disease (Weinstein & Stason 1982), and vaccination against pneumococcal pneumonia (Willems *et al.* 1980). The results of an analysis are usually summarized in a series of cost-effectiveness ratios that show the cost of achieving one unit of health outcome, for example, the cost per year of life gained for different kinds of patients and variations of the intervention.

Economists have a range of analytical techniques designed to help public sector organisations achieve efficient allocation of resources. CBA offers the most powerful aid to public sector decision-makers in that it attempts to replicate market processes and produces results in a form comparable with private sector appraisal techniques. CEA (cost-effectiveness analysis) and CUA (cost utility analysis) are other methods of evaluation more useful for practical applications (McGuire *et al.* 1998). These methods try to measure utility impacts directly, via quality of life indicators rather than in monetary terms in health economics (Torrance 1986).

Cost-utility analysis is appropriate in the following situations: when quality of life is the important outcome, when quality of life is unimportant outcome, when the programme under evaluation affects both morbidity and mortality and you wish to have a common unit of outcome that combines both effects, when the programmes being compared have a wide range of different kinds of outcomes, and when you wish to compare a programme to others that have already been evaluated using CUA. Cost-utility analysis is inappropriate or unnecessary when the effectiveness data for final health outcomes is not available, when the effectiveness data show that the programmes being compared are all equally effective, when quality of life is important but it can be captured by a single variable measured in easily understood natural units, or when it is clear that the extra cost of obtaining and using utility values cannot change the results. (Torrance 1986)

The use of CEA using life-years gained or CUA using quality-adjusted life-years gained' avoids placing monetary valuations on such benefits (Ludbrook 1981). CEA and CUA are comparative techniques which can be used when budgets are restricted and not all desired services can be funded. The increased acceptance of the role of economic evaluation in public decision making is reflected by new drugs and medical devices needing to have evidence of cost-effectiveness, safety and efficacy, to obtain a product licence in countries like Canada and Australia (Drummond 1992). CBA gives an answer to the question: 'is this project worth doing?' (rather than doing nothing) since the opportunity cost is allowed for in the discount rate for monetarised benefits. Therefore, there are advantages and disadvantages to policymakers in having the results of evaluations in the form of CBA, CUA or CEA individually (Hutton 1992).

Chapter 3: Financial sustainability and the funding model of UK policing

The policing system in England and Wales relies on policing by consent in ways that meet the differing needs and priorities of communities. Operational decisions are taken by Chief Constables who are held to account through democratic scrutiny. The changing forms of oversight are evidence of the difficult and continuing tensions in achieving democratic scrutiny that commands public trust and confidence in operational policing.

In England and Wales, each of the 43 police forces receives most of its funding in the form of central government grant. The Home Office and the Department for Communities and Local Government (DCLG) distributed the funding received using a specific formula, which took into account data on policing needs from crime levels, fear of crime, population and the policing of special events (HoCHAC 2011, NAO 2015). The formula took into consideration council tax rates in each police force but did not consider all demands on police time, the relative efficiency of individual police forces, the levels of funding reserves or the proportion of central government funding precept funding each force received (NAO 2015).

In Ludwig and McLean (2016a) we analysed police funding in Great Britain, and concluded that it was in urgent need of reform. In England and Wales, police funding comes from two sources: formula grant from central government, and a 'precept' on council taxes. In Wales, but not in England, the pooled receipts from business rates may also be drawn upon, albeit indirectly. Scottish policing is entirely funded out of what is called the 'Barnett consequential'. Under the Barnett Formula, the devolved administrations in the UK are given a block grant in respect of all the services for which they are responsible, not earmarked between services. The formula is complex, but it adds up the equivalent spending in England on the services which are devolved elsewhere, and gives the devolved administrations a sum based on their share of the UK population.

We found that all three components of this funding regime were defective:

- The formula used is over-complex, non-transparent, and offers perverse incentives (for instance, one of its drivers is the number of bars per hectare in urban areas, a number that policymakers can easily manipulate).
- Precepting has at least two drawbacks. It is non-transparent, because almost nobody knows which authority can precept, or even that there is a precepting power. And, as with all property-based taxation, the yield of a precept is higher in prosperous areas than in poor areas, with the consequence that funding for policing, which had dropped sharply since 2010 in Great Britain, has dropped fastest in some of the poorest parts of the country.
- The Barnett formula has the advantage that it gives the Scottish Government can choose its own spending priorities (which do not appear to include policing, judging

by the reported outturn figures). Against that, like the other components of police funding, it is far from transparent. Whereas the formula used in England and Wales tries, however badly, to relate funding to need, the Scottish formula is essentially driven only by relative population with no reference to need.

The role of the Police and Crime Commissioner

In 2012, the UK government introduced directly elected Police and Crime Commissioners (PCCs) (for every territorial police authority in England and Wales except the Metropolitan Police and the City of London Police), an independent Police and Crime Panel, and replaced the National Policing Improvement Agency (NPIA) with the National Crime Agency (NCA). Changes which have been described as the “*most radical reforms to policing for at least 50 years*” (Rogers & Gravelle 2012). PCCs were intended to improve local ‘democratic accountability’ and increase local autonomy in policing as well as greater transparency on how the police are policed (Ipsos MORI 2010). They replaced police authorities and as they are elected rather than appointed, they are directly accountable to the voters in their locality (see McLean *et al.* (2016) for a discussion on the intended role of PCCs and their performance since 2012).

In the first phase of our research we concluded that:

- The introduction of PCCs was botched because of the late change in the date of the first elections and the use of an unacceptable electoral system.
- The legitimacy of the role increased somewhat after the 2016 round of elections.
- There is no evidence that PCC candidates of different political persuasions, or of different professional backgrounds, made distinctive appeals. In political science terms, the PCC elections appear to have been *valence*, rather than *position*, elections.
- Some PCCs did use the powers promised by Ministers when introducing the system, e.g., in the dismissal of the Chief Constable of South Yorkshire in 2016.
- The level of crime reported by the public in the British Crime Surveys has declined somewhat over the period since PCCs were created, despite the reduction in police expenditure.
- The level of accountability that the authors of the 2010 White Paper hoped for has not been achieved, and cannot be achieved while the sources and routes of funding for police remain utterly obscure to the public. The omission of any mention of finance was a serious weakness of the White Paper.

This system means that the responsibility for the overall effectiveness and efficiency of policing in England and Wales is retained by the Home Secretary who is directly accountable to parliament (Rogers & Gravelle 2012). Chief Constables remain responsible for all operational policing decisions within their force; however, they must work with PCCs to set force budgets and priorities. PCCs are required to produce a ‘Police and Crime Plan’ and assess the overall performance of the force against targets and priorities set within these. The

introduction of PCCs by the coalition Government, was an attempt to re-engage with communities on issues surrounding policing.

The Home Office states that the role of a PCC is to ensure the policing needs of their communities are met as effectively as possible, bringing communities close to the police, building confidence in the system and restoring trust (Home Office 2011). Their objective is to cut crime and deliver an effective and efficient police service in their police force locality by:

- Holding the Chief Constable to account for the delivery of the force
- Setting and updating a police and crime plan
- Setting the force budget and precept
- Regularly engaging with the public and communities
- Appointing, and where necessary dismissing, the Chief Constable.

The Government intends PCCs to be responsible for the *“totality of policing within their force area”*, setting the strategic direction and objectives of the police force. The operational delivery, including the direction and control of police officers and staff and *“decisions taken with the purpose of balancing competing operational needs within the framework of priorities and objectives set by the PCC”*, is the responsibility of the Chief Constable (UK Parliament 2011). PCCs and Chief Constables are expected to have a working relationship which safeguards operational independence and boundaries must be agreed between their respective roles (UK Parliament 2011). The Chief Constable remains politically independent of their PCC and the PCC cannot impede the operational independence of the police force and Chief Constable (Committee on Standards in Public Life 2014).

According to the Home Office, *“the relationship between the PCC and Chief Constable is defined by the PCC’s democratic mandate to hold the Chief Constable to account, and by the law itself”* (Home Office 2013). The 2011 Act provides that PCCs must hold Chief Constables to account for, amongst other things, the overall performance of the force including against the priorities set out in the police and crime plan, the performance of officers and staff and the exercise by the Chief Constable of his functions. The Chief Constable is accountable to the law for the exercise of police powers and to the PCC for the delivery of efficient and effective policing, management of resources and expenditure by the police force (UK Parliament 2011). However, it is up to each PCC to decide how practically they will hold the police to account on behalf of the public (Committee on Standards in Public Life 2014).

PCCs are scrutinised locally by Police and Crime Panels which regularly review or scrutinise the performance of the PCC and the exercise by the PCC of their functions. Police and Crime Panels are made up of at least one elected representative from each local authority within the police force area and two independent co-optees, with a minimum of 10 representatives from the local authorities in the force area and a maximum total number of 20 panel members (Strickland 2013). The panel that shares the same political allegiance as the PCC may tend to *“support”* rather than *“scrutinise”* (Lister 2014).

PCCs ensure community needs are met as effectively as possible, and are improving local relationships through building confidence and restoring trust. They work in partnership across a range of agencies at local and national level to ensure there is a unified approach to preventing and reducing crime.

Until 2012, the responsibility for the delivery of all policing services in England and Wales was shared between three different bodies - the Home Secretary, Police Authority and the Chief Constable; an arrangement commonly referred to as the tri-partite system (Home Office 1964). Under this system, the Home Secretary was responsible for the overall efficiency and effectiveness of policing and was accountable directly to parliament. Operational policing decisions are the responsibility of chief constables. The Police Authority regulated and held the chief constable to account, as well as setting the strategic direction and budget (Rogers & Gravelle 2012). In 2012, the Authority was replaced by the PCC for each police force excluding London (Home Office 2010).

Maintaining 'frontline' policing services whilst achieving 'value for money' (VFM) may give rise to significant difficulties (Home Office 2010). Defining 'VFM' is likely to continue to present major difficulties as it will inevitably mean different things to different people and therefore likely to remain a site of considerable potential conflict and disagreement. Yet, as policing commentators observe, the concept of VFM has a relatively long history in the context of British policing. As a concept and organising principle, it has long been associated with ideas of 'economy', 'efficiency' and 'effectiveness' though it has been mobilised and appropriated by different stakeholders in different ways for different reasons. In the present police reform debate, it is possible to discern what may be termed as the contours of an emerging 'discourse of austerity policing' (Rogers & Gravelle 2012).

The funds provided through the Police Grant Report are general revenue funding and are paid un-ringfenced to PCCs (in London the Metropolitan Police funding is passed to the Mayor's Office for Policing and Crime and in the City of London the Court of Common Council acts as the police authority). PCCs set the budget and priorities for their police force area but Chief Constables in each area (and the Commissioner of Police in London) remain operationally independent and responsible for the activities of the force (Johnston 2015).

The PCC retains the responsibility for the police fund, and manages income, expenditure, reserves and capital borrowing. The Chief Constable has day-to-day responsibility for the financial management of the force. Both the Chief Constable and the PCC have a chief financial officer who is statutorily responsible for safeguarding the lawfulness and propriety of expenditure. Both chief finance officers are required to support the other in the execution of their duties (Johnston 2015).

Measuring demand

While reported crime rates have fallen, there is also evidence to suggest that the level of demand on police resources has grown in other ways. Crime has changed - taking place online and often with international aspects. The changing crime 'mix' – including new and emerging types of complex crime associated with supporting those who are vulnerable, protecting the public and keeping them safe – means that, over the last ten years, the costs of crime for the police have not fallen as much as the overall numbers of crimes. It is possible that time spent on more 'costly' crime has increased, particularly on complex crimes such as child sexual exploitation (NDAG 2015).

A more effective and efficient police performance management systems is needed (Barton 2013). *“However, in order to be able to improve the quality of service delivery and balance budgets, police authorities and forces will need to ensure that business processes are as efficient and effective as possible and they must ‘adopt business process improvement as part of their ongoing efforts to increase value for money’”* (Home Office 2011). To transform their operations effectively, it is important that forces understand and manage the demand for their services. Demands are diverse and include: crime, antisocial behaviour, protective and preventative work (e.g. child protection) and non-crime demand (e.g. supporting other public sector agencies) (NAO 2015).

While there have been a number of attempts to measure demand on the police service over the years, a lack of reliable national data has tended to result in a renewed focus on levels of recorded crime as the main measure of workload.

Police recorded crime (the main performance statistics) only represent part of the police workload, a reactive demand to which the police respond. However, there are many other types of police work, reactive and proactive, which are not measured as reported crime which don't appear in demand assessments of police work or resources. Counts of crime do not show the varying levels of resource or amount of work required to deal with different crimes (even crimes classified in the same category can require different responses); some crimes require much greater resource input than others. Understanding the overall level of demand and work required to deal with crime, necessitates an understanding of the different amount of work involved in dealing with different crimes (College of Policing 2015).

Even though official statistics indicate that crime has been falling since over the past 20 years, there is a widespread perception across forces that officers and staff are at least as busy as ever. This is not only linked to the changing crime mix with police forces having to deal with more complex crimes (e.g. child sexual exploitation) but also to the increasing percentage of time spent dealing with non-crime activities. Demand on police can be classed as public demand (calls for service) and protective demand (safeguarding of the public). Resources allocated to these types of demands will vary depending on local context and policies. Preventive work by local policing teams is unlikely to be captured by forces or national

datasets, but can reduce crime and public initiated demand on the police (College of Policing 2015).

Public demand (calls for service) depend on what is being reported (crime, no crime), whether the individual involved is vulnerable and whether there is a risk to public safety. National data are available for emergency response calls – number of calls received, cost per call, time taken to attend emergency etc. Falling police numbers (since 2010) also means that the number of crimes per officer is increasing (slowly as crime rates are also falling). However, the changing crime mix means that the number of crimes per officer vary depending on the crime with some more serious/complex crimes requiring more police resources.

Costs of crime data can be used to get a better understanding of the implications of crime reduction on levels of police activity. Using estimates of police activity cost for specific crime categories as a proxy for resource usage, analysis shows that costs of crime for the police have not fallen as much as overall crime over the last 10 years (College of Policing 2015). Crime types which are more complex to investigate, require more police time and are therefore more costly, are now a greater proportion of police recorded crime. While crime reduced by 43% between 2003/4 and 2013/4, the average cost per crime increased by 25%.

The Home Office consultation identified six key drivers of crime: alcohol; drugs; character; opportunity; the effectiveness of the CJS; and profit. No single factor was consequently considered to be the cause of the fall in crime nationally, and these six drivers were best used to explain the change in crime trends over time. It has been debated whether these six elements can also be considered drivers for new and emerging crimes (e.g. cyber-crime, domestic/sexual violence, child sexual exploitation) and non-crime activity (e.g. fear of crime), or whether they are more applicable to more traditional crimes (e.g. volume crimes) (HoCHAC 2015). It has previously been reported that the great majority of police time is spent on non-crime activities, and the proportion of demand related to this varied (ranging between 67-89%). Types of non-crime activities most frequently addressed general public safety and welfare (e.g. dealing with vulnerable people, individuals with mental health problems, missing persons, antisocial behaviour, road and transport related incidents) (HoCHAC 2015).

These factors all contribute towards the increasing demands on forces, despite the overall downward trend in crime. Consequently, determining the relative needs of forces means understanding the broader demands they face. HMIC's (2015) new 'Police Effectiveness, Efficiency and Legitimacy' (PEEL) reports provide an assessment of the progress each force is making in developing an understanding of demand in their area (College of Policing 2015).

There are a number of new and emerging crime types that are generally not captured effectively by the current data returns to the Home Office, mainly because they relate to the context in which the crime takes place rather than a specific offence code e.g. cyber-enabled crime, child sexual exploitation, modern slavery and female genital mutilation. The data that are available provide some support to this hypothesis and suggest that these 'new' crimes may be increasingly coming to the attention of the police, albeit in low numbers compared

with 'conventional crime'. There is limited data available on the resource required to respond with new categories of crime but it is likely that, as many are associated with vulnerability, public protection and safeguarding, they will require more policing resources as they are generally more complex to investigate (College of Policing 2015).

Chapter 4: Semi-structured interviews

In order to begin to understand the intricacies of decision making for resource allocations, semi structured interviews were carried out with PCCs, Force Chief Constables and Chief Finance Officers. Initial letters were sent out via email to official PCC email addresses informing PCCs from the 41 Police Force Areas⁴ in E&W about the project and inviting them to take part. Responses were received from 20 forces (48%) of which 12 were positive (29%) and 8 were negative (20%). The reasons for not participating in the project predominantly included being too busy with the upcoming new Electoral Cycle (May 2016).

Box 1: Responses by forces to project participation requests

- *“The PCC has decided not to stand for re-election at the forthcoming elections. However, there is still a great deal of work to be done before he steps down. As a consequence, I am sorry to say he is not able to respond to the many requests received for input into research such as yours”.*
- *“Due to the PCCs’ elections being in May and also the close proximity to purdah, I regret to inform you that I cannot contribute to your research on this occasion”.*
- *“Unfortunately, the PCC has indicated that given his recent involvement with lobbying Parliament in relation to the policing cuts, he would have little further to add to your project. Despite the project’s value and salience in the current policing climate, the PCC believes it best that he does not involve himself for the reason above and given his busy schedule”.*
- *“This has been forwarded to our Deputy Chief Finance Officer for his consideration. Should this be something he would wish to contact you further on he will be in touch”.*
- *“As the majority of the budget goes to the Chief Constable, it is more appropriate that you communicate with her”.*
- *“Although PCCs are responsible for the entirety of police force funding, the application of these funds for operational policing is, as I’m sure you are aware, the responsibility of Chief Constables. It would therefore be more appropriate for you to approach them”.*

Semi-structured interviews were utilised as it was felt that this would provide the most open form of data collection, in that it allowed the researcher to obtain answers to specific questions pertinent to the project, but also gave the participant the opportunity to raise any other issues which may not have been considered prior. An open dialogue was established and interviews lasted between 60-90 minutes. Interviews were carried out with a number of

⁴ The Metropolitan Police and the City of London Police do not have elected PCCs. Other representatives were approached for these forces.

individuals involved in the decision making and resource allocation process in 12 police forces in England and Wales. In total 20 people were interviewed, of which seven were Police and Crime Commissioners, 10 were Chief Finance Officers or Accountants. The remaining three individuals held a variety of roles in the Performance and Partnership teams. The following section will provide a brief summary of the main issues discussed, for a more detailed review of the information see Ludwig and McLean (2016).

Box 2: Summary of main themes identified from interview

Main demands and recent changes

Neighbourhood policing remains the main demand. Police figures show that crime has gone down but forces are now dealing with more complex and more IT savvy cybercrimes. This change has resulted in officers facing a different pattern of crime.

A number of new drivers of demand include terrorism, cybercrime, Child Sexual Exploitation and historic sexual abuse cases, and other complex crimes including: *“vulnerability, domestic violence, complex safeguarding, modern slavery, honour based abuse and violence”*.

More crime now occurs online and behind closed doors; with significant impact in terms of types of incidents, the complexity of those incidents, and the resources required to investigate them.

Balance needs to be achieved between frontline and specialist approaches and local needs. Low level issues (in policing terms) such as dog fouling, parking, fly tipping, speeding and ASB are often the community’s greatest concerns but low on the list of priorities on a more national scale.

Some of the problems in dealing with the demand and allocating costs are to do with the fact that the police are the service of first and last resort. These are demand sources the police have to continue to juggle, plan for and allocate resources to.

Staffing and Demand

The shrinking police budget means that forces are *“having to do different things with less resource”*. As almost 80% of budgets are allocated to staffing, this is where most savings have come from during times of austerity.

New crimes such as fraud and cybercrime require specialist staff with technical expertise to help tackle these issues. However, police pay grades would not entice professionals. *“There is no money in policing to pay for these expertise, and their services can be expensive”*. Currently, specialist services are only bought in for large cases as buying in expertise regularly would use up police resources very quickly.

Analysis has been carried out to identify where more expertise may be needed and what the uniform officer to staff mix should be in order to get the best use of the money that is available more effectively. *“Recruiting specialist civilian investigators into some of the serious crime teams, for example, is a far better way of using our money”*.

Forces are working hard to keep resources in frontline teams. However, questions need to be asked whether *“having people policing the street is the best use of resources”*. This proposes a traditional tension around why police numbers are so important.

<p><u>Process for allocating budgets</u></p> <p>All the funding is owned by the PCC but most forces utilise some form of board or executive group in order to allocate resources and budgets. The PCC may still have executive decision making power (within the constructs of the governance scheme) but practically decisions tend to be made collectively.</p> <p>A high proportion of money received by forces is pre-allocated to staff costs, leaving a relatively small sum where flexibility of spending is possible. This appears to suggest limited links between demands, response, results, appraisal, setting of targets, and priorities. It confirms that resource allocation takes place at different levels, and for different purposes such as geographical or programme allocations, but that the front-line decisions are possibly the most significant to the overall outcome. Yet these decisions are the ones which the least is known about.</p> <p>Decision making is influenced by the relationships. In some forces budgets are agreed in full consultation, in others the PCC tells the Chief Constable what his allocated amount is and what the priorities are which he has to meet (the outcome or outputs of the budget). How the Chief translates the budget into staffing and resources is an operational decision left to him in most forces. The PCC has ultimate say about the budget but the Chief tends to be the principle policing advisor on police capacity and requirement.</p>	<p><u>Information source</u></p> <p>The process of making decisions and allocating specific projects with money has been shown to be unclear. Forces admit that some decisions are based on <i>“professional judgement”</i> or <i>“gut feel”</i>. However, this could be used <i>“as an excuse for not having the right data and evidence”</i>. Demand analysis is becoming more widespread across forces. This is not just the volume and type of crime but everything else the police deal with which can be recorded and where changes in that demand can be mapped. Financially, it is relatively straight forward, it is the easy bit to map what the impact of the cost is. Balance and justification of these actions are often not based on sound evidence.</p> <p>PCCs spend a lot of time listening to people, <i>“because what people say doesn’t always mirror what the force is saying”</i>. PCCs look at satisfaction levels, about trends, about issues the public want to see, about whether they’d want to pay more for policing going forward which is done on a quarterly basis. Then there are also some surveys which are required by the Home Office that feed into the British Crime Survey. This means PCCs do a lot of surveying and they are out there in the public picking up day-to-day feedback. Some forces don’t look very much at financial data; others give it greater focus.</p>
<p><u>Emerging issues, horizon scanning/future proofing</u></p> <p>Policing is often reactive in nature, and therefore issues that arise are dealt with immediately and some <i>“months later someone would look at what the consequences of the finances were”</i>. Similarly, an analysis of the impact of the movement of resources from one focus to another is not carried out consistently. Dealing with unknown or new</p>	<p><u>Demand reduction and crime prevention</u></p> <p>Assessment of current police demand also involve crime reduction. Considerations need to be given to the differences between crime prevention and demand reduction. <i>“Crime prevention is a tactical response to try to prevent certain types of crime (e.g. locking your house to prevent a burglary), whereas demand reduction is far more strategic and long-term”</i>. Crime prevention is considered important by</p>

<p>issues which suddenly require resources needs careful consideration.</p> <p>One large urban police force received Home Office funding for a number of years to dismantle organised crime networks. The success of the program has meant that even though the funding has ceased, the it now becomes business as usual and it is fully funded through the force itself and other agencies. However, when it comes to determining where these resources to fund this operation came from within the force, it becomes complex. <i>“For what it does, it’s not actually a big cost and it wasn’t big deal to continue to fund it. It’s an incredibly fluid situation so it would be very difficult to say that that money came from a reduction elsewhere.”</i> It was also considered important not to see this initiative <i>“as a separate thing”</i>. Efficiencies from elsewhere (e.g. forensics, mobile working) free up resources which are used to cover costs.</p> <p>If unexpected costs occur, forces would use reserves in the short term, but these can only be used once. So there then has to be discussion about what to give up to deal with the new demand. There may be spending in the current year that weren’t expected or planned for, where to date the easy option has been to dip into reserves. Requirements and expectations of police forces continue to increase, <i>“things don’t drop off, they go up but it doesn’t lock back [down] again”</i>.</p>	<p>all forces but finding the resources to do it can be difficult. Forces will say reduce -> prevent, the OPCC says prevent -> reduce.</p> <p>The key aim is to prevent individuals entering the police system. <i>“If you are a victim or a perpetrator something has failed to bring you into the system. It’s pointless starting to count you when you come into our system, we’d rather prevent you coming in in the first place”</i>. Managing demand is about working in partnership and identifying agencies who might be better at prevention than the police; trying to show that by working together demand can be reduced.</p> <p>Crime prevention initiatives are now predominantly funded by the community safety grants which have become the responsibility of PCCs from local authorities. Some PCCs have subsumed that money into the police budget, but others have ring-fenced it for crime prevention activities. Previously there was <i>“no accountability around that money or any understanding of how effective it was being”</i>. PCCs now need to make sure they are receiving a return on investment and are making local agencies bid formally for funding, around priorities that have been jointly identified in the Police and Crime Plan.</p>
<p><u>Council tax precepts</u></p> <p>The cap on council tax precepts, the inability to raise it by more than 2% without requiring a referendum was also considered to be impeding local control and responsibility of PCCs. <i>“Local people should make local decisions, local services ought to be paid by local people”</i>. Up until now the government have been pushing hard on a freeze on the council tax. Now the situation has become increasingly difficult whereby forces feel if they don’t increase council</p>	<p><u>Partnerships and Commissioning</u></p> <p>Government has driven the notion that police forces must work more cohesively in partnership with other forces as well as local authorities, councils and public sector agencies. This has occurred in a number of different ways: from working with the health sector and triaging mental health issues, to regionalisation of specific functions and departments, to sharing of resources and specialist capabilities and many more. Demand reduction,</p>

<p>taxes they will be penalised in the funding as the government will be <i>“assuming that [the precept] will be raised to the maximum”</i>.</p> <p>Precept depend on the council tax bases in police force areas, where some forces have fewer properties falling within the higher bands. Consequently, in some forces a rise in the precept has minimal effect. Many police force areas are getting benefits from increase in the number of properties council tax can be collected from. Raises in council tax are now incorporated into the base figure and any <i>“future increases are increases on an increase”</i>.</p> <p>Forces also argued that, when funding is increases there is usually the expectation that more is delivered for it, so there are more outcomes or outputs that need to be delivered as a result of that. However, if the funding is reduced there isn't the same reduction in expectations. Over the past six years, approximately 20% of funding has been reduced in real terms, but there is no evidence of the impact of this. To this point, this has been achieved through improved efficiency, however at some point you get beyond being able to reconcile any more through efficiency.</p> <p>Understanding of PCC decision making and funding allocation seems unclear to forces. Evidence from one force identifies that <i>“when the PCC makes a decision involving expenditure/funding, there is an assumption within the force that the OPCC will be providing the funding; like its additional funding”</i>. The PCCs are the custodians of the public purse and therefore are expected to have questions about whether they are comfortable spending public money in a certain way.</p>	<p>cost savings and the provision of a better service are the main expected outcomes.</p> <p>Mergers and collaboration are predominantly driven by geography; neighbouring forces tend to be the starting place for things such as road, dogs, firearms, etc. Broadly it is thought there are four types of collaboration:</p> <ol style="list-style-type: none"> 1. Collaboration with neighbouring forces. This is likely to drive new savings in the short-term (e.g. around HR, around IT systems). 2. Regional collaboration (e.g. Dogs, Firearms and Roads Policing Unit) 3. National collaboration. The nationalisation of the IT company. 4. Blind collaboration/Outsourcing. The control room of the outsourced organisation may not be based in the police force area receiving the service. <p>However, the difficulty is about ownership and trust, understanding that other partners are equals. The relationship has to be mature enough for mutual cohesive collaboration.</p> <p>Forces are at different stages of developing strategic partnerships or working in collaboration. A lot of forces have quite a lot of money in the HMIC POA evaluations, returns that are in those partnership boxes because forces are delivering services in partnership, police to police and with external agencies. Other forces may collaborate with people but have no shared budgets. Often <i>“there is an awful lot of things that are done in collaboration”</i> but it's not quite that mixed or joint commissioning. Work is being carried out on police force budgets where individuals are volunteered as a collaborative resource.</p>
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Daily demand analysis

In order to begin to streamline processes, forces are looking at the balance between frontline activity, specialist work, back office and support activity for the organisation. Most forces have realigned their internal geographic boundaries in terms of neighbourhood hubs or wards so that forces can invest more in those (fewer) wards, look at specific issues in those wards, consider complex issues like vulnerability more directly and invest in partnerships and schools.

Most forces have now implemented mobile working processes making officers more productive and safe because they can get information quickly and are able to respond better to the victim. Some forces have equipped frontline patrols with personal radios with automatic resource location software, which allows the communications department to see where an officer is at any time. In this way, the force incident manager can see all available resources (e.g. officers trained and equipped with firearms and tasers), on a map so that they can locate and dispatch the nearest and most appropriate officer to an incident.

Some PCCs are giving considerations to the structure of their control rooms and whether all public services need their own control room. All emergency services could be controlled from a point of contact, without requiring a huge number of additional staff. This notion works towards the idea that there is *“one team of public servants who go to everybody’s door”*.

Other priorities of focus

A call was made for HMIC to focus on four or five issues specifically at any one time and not take on far too many tasks at once. It was calculated that in the time frame between December 2015 and April 2016 there had been eight HMIC reports on one police force in one form or another. Resources are so limited that hard choices have to be made and forces *“can’t be best in the class on everything”*.

The impacts of the decisions made by HMIC at a local level needs to be considered. HMIC are managing or inspecting against their own criteria. The local policing priorities which the PCCs have set and consulted on are not in line with that. There appears to be an imbalance between what is being looked at and being delivered locally and HMIC criteria. HMIC *“don’t start their inspections from the Police and Crime Plan, and so to an extent the measurements that are made are not relevant to PCCs”*.

HMIC inspections produce a lot of interesting, and logical outcomes, but don’t necessarily reflect the Police and Crime Plan. *“I think there is a fundamental misunderstanding of the role of the PCC in HMIC.”* There needs to be more thought going into what is happening at the national level in terms of how can bridges be built locally to pull these things together. It’s easy to say cut 10% of the budget, but can forces still deliver an effective service without that 10%. *“How much risk do you put into the system because you have cut back that particular service?”*

Police funding in a community context

Forces carry out constant reviews which look at how spending is carried out. However, the focus is less on money and more on the value to the community. It's about finding innovative ways to save money but still providing a high-quality service. This is linked back to that issue about what are the implications, the operational implications of proposals that are being put forward. *"You wouldn't expect the force to come forward with proposals that involve throwing good money after bad"*. This is linked to looking at police funding and contributions towards community safety schemes in a wider community context.

For example, Greater Manchester Police is mapping all the resources (not just policing) that are aligned to the Police and Crime Plan. This involves a process of interviews with all the Community Safety Partnerships, to ask how much money they are putting in. *"The force commits half a billion pounds but how much are the local authorities putting into delivering the Police and Crime Plan"*. Including the staffing for the Community Safety Partnerships, the drugs and alcohol services, domestic abuse centres, the youth offending teams, housing, health, other services, the criminal justice system, to determine what is the total spend for the Police and Crime Plan delivery is. This allows questions to be asked such as *"What are the risks associated in terms of funding cuts coming down the line for other people? What are the gaps in funding? What are the duplication areas in funding?"* It is easy to see how the half a billion from the police could easily turn into three quarters of a billion to deliver the plan. This then asks questions about where else savings can be made.

Greater Manchester Police is one of four national pilot areas for Whole Place Community Budgets. This initiative aims to improve outcomes and reduce public spending through joint working across the public, private, community and voluntary sectors. Early, joint intervention activities are being designed to make the best use of resources and meet local needs. This requires integrated working to tackle causes as well as symptoms and to ensure a *"whole system"* response, making sure that responsibilities are fulfilled with the most appropriate agency taking the lead.

Hertfordshire Constabulary has been doing work around adults with complex needs. Not everyone who has a complex need is part of a family grouping and the force worked out that as public sector they were spending between £80,000 and £150,000 around their health and criminal justice needs. The police budget in terms of the public-sector budget in county is tiny. The public sector spends £9b and the force about £200m, so that is only about 2%. If these individuals can be diverted from the system in the first place, that would provide significant savings in general.

Nottingham police have used outside advice around the theme of prevention. How much are the police and OPCC spending on prevention and how much are other partners spending? This required local authority partners and the police to work in collaboration to identify the sums of money being spent collectively. The striking result of that piece of work was although Nottingham Police were putting in about £3m through various community safety initiatives,

the NHS was spending £55m - because the demand was predominantly linked to alcohol and drugs. Developing strong partnerships with local authorities is not as difficult as *“building relationships with the NHS because of the changes they’ve gone through, the purchase of providers split has proved extremely difficult”*.

Gwent Police utilised a process called ‘contributory analysis’, looking at how much is contributed to a matter of concern, a public issue. *“What’s your contribution and how does that impact on the contribution of other organisations who might be looking at the same issue, perhaps from a different perspective?”* Looking at just *“the funding allocation [means] you’re missing eight tenths of the battle”*. However, this process is not being used sufficiently or robustly. Public sector organisations, other sectors as well, *“don’t actually look at the contribution that they put into something”*. One sector will go in and deal with something and pull back out, then the next sector will come in, pick something else up and pull back out, and so on. If everyone went in together, a better more effective impact might be achieved, and the pooling of resources might also be cheaper.

Forces also raise the question: *“what’s your outcome and how do you measure it?”* From a policing perspective, it is linked to victim satisfaction (because they receive a service) and community engagement (because that is the wide community perception of this force). This covers not only victims, but also the rest of the community who will have opinions on the police service also. Most of the questions asked are vague and subjective: *‘How confident are you in the police?’ ‘What’s your perception of the police?’* There could be a number of indicators around both of those two primary indicators, which mean nothing because predominantly they are about day-to-day management. But in terms of public facing, victim satisfaction, public engagement, or public confidence; the victim satisfaction survey gives one, and the Crime Survey England and Wales gives the other. They are national barometers. However, both of these surveys aren’t applicable at the force level or the sub-force level, so forces have to do a significant amount of work locally. This links back to the primary demands in an area.

The commissioning side of the PCC role requires some questions around how much do I get in return for every £1 I invest. The Commissioning Strategy implemented by Gwent Police works on three levels, where Tier 2 is the Partnership Fund, an annual fund which maxes out at £250,000 a year which is all about putting money back into community groups in Gwent. *“There is anecdotal evidence that for every £1 you put in, you get £8 return working in partnership”*.

North Yorkshire Police has been looking at the mental health issue to try to get a more accurate picture of that demand across the area. Significant funding was obtained from the University of York to develop an ‘Insight Hub’. This involves the big data aspect, getting all the information from all the sources and understanding how that feeds into a service that isn’t just police based. *“I had this sort of utopian vision of everybody providing all of their information and having analysts that could analyse it all and come up with something”*

sensible". This process has taken a long time but has required an outside body (e.g. academia) to monitor and manage this process.

Twenty percent of demand on policing is mental health related. Responding to people with needs is a shared responsibility across the police, ambulance service, local authorities, mental health trusts, primary and secondary care services, the fire service and housing providers. New joint mental health triage services reduce demand for crisis services and in-patient admission. Crime is not evenly spread across force areas: in one force 6% of the force area creates 25% demand. This 6% consists of 31 "*priority areas*" that generate high demand for policing and other public services. The areas are involved in longer term problem solving through multiagency partnership delivery plans.

However, even where there is a close liaison between the Police and Crime Community Safety partners and performance information is collated at a larger level with Local Authorities, there doesn't appear to be any feedback at strategic level which says "*If we did this and were more joined up then we might have a better impact*". The information does not seem to go anywhere.

Box 3: Strategic Commissioning Board (SCB)

The SCB has been implemented in Gwent which looks at the larger amount of money that the Commissioner has to commission services, "*the 'and Crime' bit of his portfolio*". It involves Chief Executive level representatives from the health service, the fire and rescue service, registered social landlords, Welsh Government observers, the voluntary sector, probation services, community rehabilitation companies, local charities, etc. The board gives recommendations to the Commissioner about where to spend these bigger chunks of commissioning money. Community services bid into the pot of money and the SCB recommend where the money goes.

Forces need to look beyond just crime figures, and overlay these with deprivation and other information available in areas. Then in areas where there are emerging issues it may be possible to assess what that profile looks like using this information which has come from a number of sources. Building this data set using public sector information and sharing that information is something that needs to be developed. This would create a picture of that particular locality through data, data which is sense-checked with local people and councils. This then allows smaller scale issues to be addressed more cohesively. The platforms are there to pull that together in quite quick form, but there needs to be a mutual desire to do something with this information.

Considerations around value for money could focus on costs, benefits or a mixture of the two. Many PCCs indicated they perceived value for money as looking beyond costs, "*it's not just about results, it's about quality as well*", outcomes for people. "*A load of accountants can sit together and do all the stats they want but it won't show value for money.*" Considering value

for money from this perspective focused more on victim satisfaction and the confidence in policing. The police have always historically been better at quantitative measures than qualitative measures. PCCs invest a lot of time talking and listening to people, setting up commissions to look at what needs to be done. Policing is about a service to the public and not about making money. *"Persuading the force that they are a public service and that they have got a set of customers has not always been the easiest of discussions"*. Consideration needed who the customers actually are; the offenders or the victims.

Looking at the HMIC Value for Money profiles, assessing effectiveness and efficiency, provides areas for benchmarking against other forces. This allows CFOs to make an assessment of whether the force is economic, whether the information and metrics are out there for them to make a judgement call. Efficiency is more difficult to assess, *"Have I got the resource in the right place doing the right things?"* There is little information on efficiency and how much waste there is. Some Lean Thinking type analysis is being used by some forces where everything has been process-mapped, all the waste has been reduced and everything has been re-engineered in every department.

Looking at value for money other than at a really macro level, using data from HMIC and league tables of what is spent, can be used to suggest *"who is getting the best value in the country for every policing pound"*. However, proving that is very difficult due to differing crime levels and different socio-demographic factors between different force areas. So although the units measured are often the same, there will be difference between forces simply because forces are different and have different problems. When you have one of the lowest crime rates in the country and one of the highest victim satisfaction rates, measuring value for money comes from a numerical/cost perspective.

Marginal Impact Analysis

Knowledge of the impacts of changes in resource allocation are not widely known. Areas of improvement are highlighted (by HMIC or elsewhere) and resources go in, however nobody asks the questions of what happens. *"You'd just give yourself a headache. You can't magic up money or human resources, you know it will have an impact but you don't really want to know too much"*.

Several forces have indicated that they're moving money around to meet current demands, today's issue is A so let's allocate some money over there and carry on, the next day issue B is important, let's move a bit of that over there and so on.

Forces have carried out significant reviews of areas, departments, work-streams, and often have led to significant reconfiguration of forces. However, the vast majority of the money allocated to the force is based primarily historic allocations. Zero-based budgeting, linking resources, demands and budgets is not being done; a lot of it is marginal and moving it around. What hasn't yet happened is a linking of the force delivery plan and the budget; a 'costed delivery plan'.

Forces are duty bound to play an active role in strategic national policing requirements, fighting for funding and being ready to provide support when national needs demand. This includes:

- More efficient and effective crime investigation through enhanced collaboration with neighbouring forces including major crime, organised crime, cross-border crime and intelligence sharing.
- A review of policies, procedures, data capture processes and administration support to streamline decision-making, reduce bureaucracy, ensure appropriate levels of risk are being reflected in working practices and free up police officers from administrative work.
- Co-located and shared premises, facilities and services with local partners.

Box 4: Priority based budgeting

Using a comprehensive strategic planning framework, based on demand analysis, Cheshire Police has developed a more sophisticated understanding of traditional demand (e.g. crime and incidents) as well as secondary demand (e.g. internal demand or third party demand). The force also proactively looks for demand that is less likely to be reported (e.g. incidents of modern slavery or child sexual exploitation) to protect the most vulnerable victims. The constabulary conducts an annual strategic assessment, which takes into consideration many sources of information such as environmental scanning, various national reports, local authority priorities and plans as well as changes in crime types and patterns.

Priority-based budgeting systematically reviews existing services and the value provided, to ensure financial resources are allocated to services which have the greatest impact. Through the annual PBB assessments, each budget holder has to assess current demand against resources, outputs and outcomes. During the PBB process, the constabulary identifies areas of high demand and looks not only for long-term solutions but also for short-term investments to deal with current demand. Using the STEEP analysis (social, technological, economic, environmental and political), medium term plans are developed which provide wide-ranging assessments covering such things as protests, major road infrastructure changes and demographic changes. The constabulary monitors partner agency plans and critically assesses their proposals and any impact they may have on the constabulary, making partners aware of any areas that need further consideration.

It is increasingly important that resources are aligned to priorities to provide value-for-money services that tackle priorities, manage demand and meet financial requirements. This not only involves a force using its own workforce as efficiently as possible; it also involves the police working in new ways with others to ensure the best possible service to the public, and using all available resources to improve efficiency.

Conclusions

Policing over recent years has undergone significant changes, the threats and tasks officers face have expanded and the range of issues have diversified considerably, just as the social context in which policing is conducted has changed. As public expectations have grown and policy priorities have multiplied, forces now have responsibility for traditional functions as well as newer jobs, which require different skills and different ways of working (Flanagan 2008). Modern policing includes investigating counter-terrorism, civil emergencies, child protection, the management of sex offenders in the community, ASB and community policing and much more. 'Response policing' [daily policing] is impacted by the increased volume of demands, contributing to the deeper complexity of policing in England and Wales.

Policing is a public service; at the local level, PCCs and forces are engaging with communities to understand their needs and respond to them. At the national level, forces face a range of challenges which means difficult questions need to be asked: Where should forces do less? Where might public expectations be unrealistic? What is the best use of resources? How do we continue to do more with less? Flanagan (2008) determined that given the range of tasks the police service are responsible for, opportunities need to be found to reduce unnecessary bureaucracy and free-up time so that forces can be as effective as possible. Understanding demand, effective workforce planning⁵ and horizon scanning⁶ are tools which can aid in this process. There is evidence of good work on prevention and future demand management but austerity has often overshadowed it by forcing attention on current day reactive work.

The debate about policing has often focused on inputs (e.g. growth of police officer and PCSO numbers) rather than looking at what staff activities and the outcomes achieved through their work. Similarly, assessments of police performance have not adequately considered all of the activities involved in police productivity. Achieving outcomes and the level of resources available to forces are inter-dependent issues and the conversation about productivity and performance needs to consider the overall objective of mitigating and managing threat, risk and harm, at a local, regional and national level. This is less about officer numbers and more about officer activity and their effectiveness.

Current thinking around resource allocation and budgeting focuses on finding the maximum number of FTE staff that can be employed, rather than looking for the optimum number and

⁵ Workforce planning is ensuring "*the right people, with the right skills, in the right places, at the right time*", effective resource allocation also contributes towards matching resources with demand. Useful comparisons can be made with the healthcare sector.

⁶ As well as workforce planning, forces need "*a systematic examination of information to identify potential threats, risks, emerging issues and opportunities, allowing for better preparedness and the incorporation of mitigation and exploitation into the policy making process*" or horizon scanning. This ensures that forces are more inclusive, analytical and systematic; have a greater understanding of choices and trade-offs; become better at strategic decision-making, risk identification and improve organisational performance.

mix of skills. This is partly because knowledge about police productivity is less developed than in other sectors, and until recently this was not an area of high priority. However, the development and use of new technology has the potential to change this rapidly. Most forces have now introduced body worn technology and vehicle tracking software which provides a huge amount of information. Crime reduction is complex as it involves many socio-economic variables which the police do not necessarily control. There must be sufficient flexibility and understanding at the local level to maximise how resources are used to address these challenges; and that best practice is identified and shared.

Matching resources to underlying drivers of police demand is in the early stages in many forces. Comparative statistical profiles produced by HMIC have started to provide a set of diagnostic tools, however detailed analysis of known and unknown (or hidden) demand requires more scrutiny. Some examples of good practice are detailed in this report which provide potential ideas for achieving outcomes. Training and development in financial and resources management would allow resources to be better aligned around priorities, demands and pressures.

Resource allocation is a process, not a set of results, it is about outcomes as well as budgets, and the evaluation that goes before it. It needs to be based on accurate data. However, mechanisms for data analysis and evaluation have been ignored for a number of years. About ten years ago, forces utilised Activity-Based Costing (ABC) processes. This was a costly exercise which relied on accurate recording of time spent by on specific activities by frontline staff. Although rich in errors, this data was a source of comparative information. ABC attempted to relate input costs to outputs and productivity information. There were several reasons why the ABC model didn't work: there were difficulties in establishing an effective denominator (e.g. crime, detections), the model was not user friendly and time consuming, and there was a high risk of spurious variations (data was collected on a snap shot basis). It was considered a bureaucratic burden as it collected lots of redundant information; collected the same level of detail everywhere. The principle of efficient data collection is to collect high level comprehensive information to highlight key variances and then collect additional information to investigate the reasons for difference (Flanagan 2008).

HMIC data currently provides very little information on the efficiency of resource allocation and police outcomes. Current measures provide information on the number of officers etc. but not on how priorities and demands are being met. As well as considering how best to deploy existing resources to protect the public in the best possible ways, the police service should also analyse where it can focus its efforts to reduce the demands it faces by solving the underlying problems that lead to individual offences.

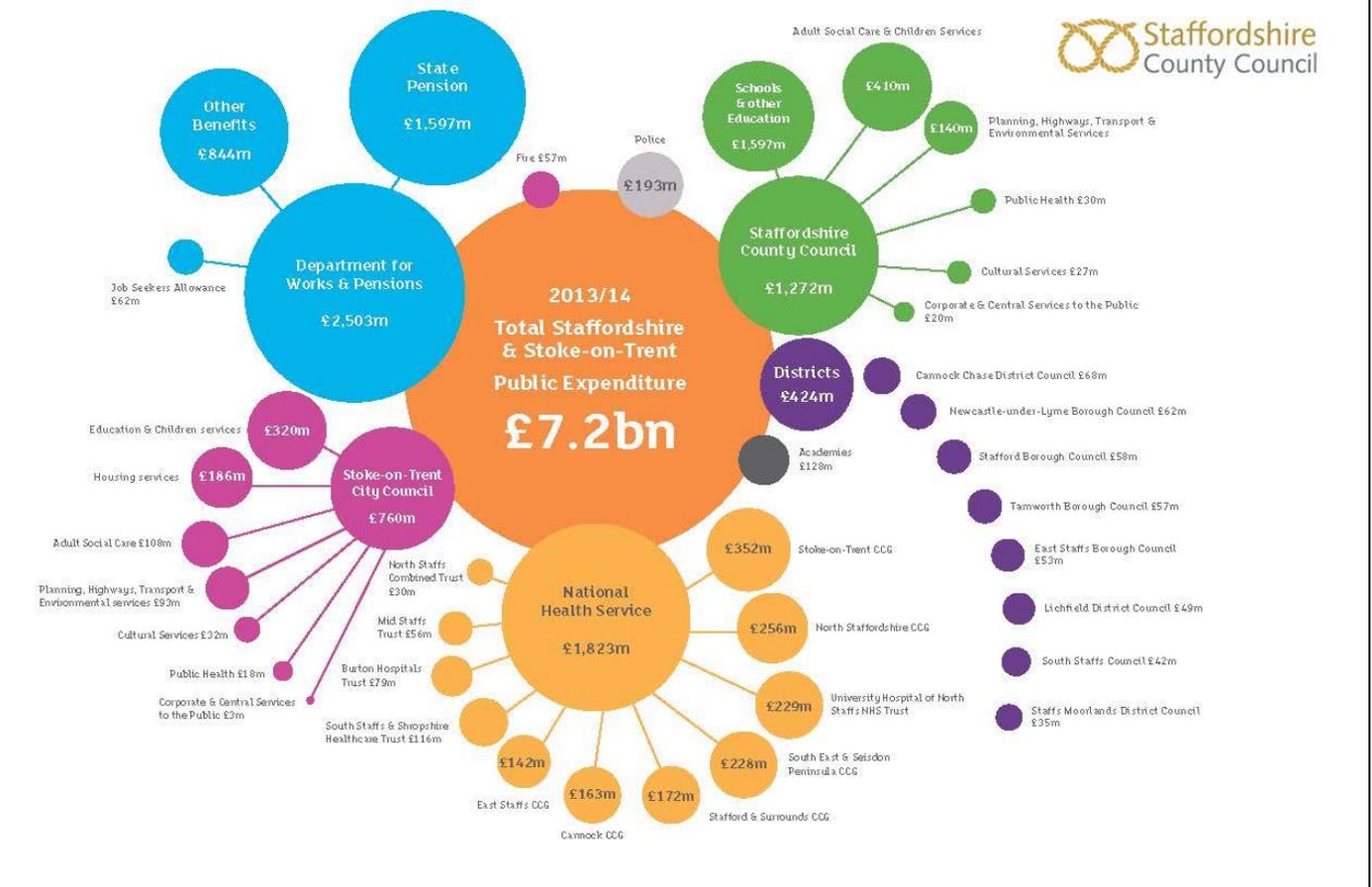
Financial austerity is likely to be part of the structuring context for policing in England and Wales for the foreseeable future. Police forces are going to have to prioritise demand and focus their resources more effectively. The police must be organised to achieve the optimal balance between effectiveness, cost-efficiency, accountability and responsiveness. There is no single or ideal template for determining how best to organise policing, however forces

must focus their thinking away from the maximum number of FTEs that can be employed on a given budget and instead consider the optimum mix of skills and staff. Understanding of the whole-place budget, the contribution of resources (time, money, people) from all parties and organisations involved in community safety, crime prevention, etc. could provide greater understanding of how demands affect all organisations involved (see box 5).

Box 5: Aligning Local Public Services (ALPS) Framework

ALPS was developed as a reference for good practice for all who work in delivering local public services. The programme aims to develop a suite of guidance and tools to help local bodies address the demands of ever tighter funding by working together to deliver public services as economically, efficiently and effectively as possible, based on common strategies and high-quality financial and operational data.

Place-based asset management is an effective way to get more value from the public estate, enhance public services and make a greater contribution to wider economic, environmental and social outcomes for local communities. If this model were widely adopted, it would be by aligning local public services, provide a viable alternative to the closure of service buildings that are no longer affordable as single use facilities. The result would also be joined-up customer focused services for decades to come.



In countries where crime control is a central government responsibility and there is one police organisation responsible for all policing issues at both the local and national levels, difficulties arise in efficiently allocating resources for the protection of persons and property. Organisational problems are encountered in allocating police staff at a local level, limited by the total number of police officers available to meet the social outcomes identified by government at a national level (DenHeyer *et al.* 2008). This model could be tested in the UK by analysing the recently aligned police forces into a single national police force in Scotland. Comparative assessments could be carried out to establish whether different models are required for dealing with a larger geographic scale.

The introduction of PCCs in the England and Wales appears to have had positive effects on victim satisfaction rates. This indicates that at a local level PCCs are addressing the issues communities consider important. However, forces called for a bit more national political ownership around what the priorities are. More “*air cover*” for individual PCCs to defend their decision making was called for. Issues that are important at a local level may not necessarily be reflective of national priorities, creating a degree of tension of how to best allocate resources between PCC and CC priorities. On a national basis, it may seem unhelpful to attend low level burglaries or housebreakings, however at a local level this is one of the most intrusive crime type and the reassurance of having the police attend is important to the public. So the refocussing of priorities according to the Threat, Risk, Harm mantra is not necessarily the most effective way of deploying and allocating resources.

Box 6: New Economy

New Economy delivers policy, strategy and research for Greater Manchester’s economic growth and prosperity. New Economy works on behalf of the Greater Manchester Combined Authority and the Greater Manchester Local Enterprise Partnership, with the core purpose to help Greater Manchester’s economy to grow. New Economy helps agencies to identify the costs and benefits of new ways of working. A Cost Benefit Analysis (CBA) model has been developed that can identify the fiscal, economic, and social value of project outcomes, and specify which public agency sees this benefit. The compilation of a cost database brings together more than 600 cost estimates in a single place, most of which are national costs derived from government reports and academic studies, covering crime, education & skills, employment & economy, fire, health, housing and social services. New Economy is “*a tool that is used across Greater Manchester, by whichever partner because they all understand it and it is a common evaluation tool everyone agrees on*”.

Recently a lot of focus has been placed on collaboration and partnership working between the police and local health and community services. Although not always easy to implement due to differing council boundaries, forces recognise the potential benefits which could be achieved here. Police may be able to start looking at cost benefit models utilised in other

sectors in order to begin to assess benefits and effectiveness. New Economy is an example of a practical model currently in place in England which are considered particularly successful (see Box 6). These organisations also have a wider arching framework and draw on partnership working, and begin to ask the question of 'how can mature relationships be developed between police and public sector when it comes to crime prevention and community safety?' It is recommended that a more detailed analysis of these schemes is considered in future work to determine how they may best be implemented on a more national scale.

Overall it was found that resources allocation and decision-making in policing is characterised by an absence of formalized, quantitative procedures for determining needs; instead placing a greater reliance on intuition ("gut feeling"), historic models and experience. This is currently compounded by issues regarding capacity, capabilities and limited data. Resource allocation is demand driven, reflecting local issues and priorities, but austerity has often overshadowed it by forcing attention on current day reactive work. The link between demand, costs, benefits and resource allocation is weak and the assessment of demand and priorities may significantly differ between local, regional and national perspectives. Zero-based budgeting and Priority-based budgeting is in the early stages. Priority based budgeting is a well-structured resource allocation systems which can be used as a tool to aid in the decision-making process for the effective allocation of resources. However, due to lack of evidence, data, and skills/processes, the criteria used to help shape allocations are often operational or based on statutory duties rather than real policy outcomes.

Box 7: Processes for decision making on the optimum allocation of resources

Why and where do we need the techniques?

- To achieve the best results from limited resources.
- To allocate national and local funding to competing priorities.
- To provide an initial benchmark against which to monitor performance.
- To encourage managers to think in terms of outcomes.
- To provide a framework to use in testing alternatives and marginal changes in absolute or relative allocation of resources.

Strengths

- Incorporates non-financial costs and benefits.
- Allows for different timescales on implementation.
- Allows for different incidence of costs and benefits.

Limitations

- Quantifying of non-financial benefits and aggregating financial and non-financial measures.
- Comparisons between options are only valid if the assessments are carried out using the same data sources/sets of assumptions.
- Absolute values are meaningless if used out of context.
- Absence or incompleteness of data. Lots of data on crimes and incidents, but limited information on activities and the relative impact on workload/ victim/ wider community etc.

Practical application in Policing

- Allocation of resources is usually addressed in financial terms (budgets, medium term financial strategies) or in terms of staffing deployments.
- Decision making processes make reference to a wide range of factors including: defined local priorities, government targets, public /partner consultation and engagement, performance (or more accurately instances of where perceived problems are not being resolved adequately)
- Some forces have drawn on external advice to help decide where to allocate resources e.g. for local grants or commissioning programmes.
- Information and evidence levels available at the point at which decisions are made varies.
- Most forces accept that professional and political judgement plays a significant role in decisions. This is partly recognition that in public services many of the benefits are intangible and unquantifiable. Judgemental decisions weigh up the full range of factors and effectively substitute for a more technically robust assessment process.
- The downside is that the process of political or professional judgement is rarely documented comprehensively, or where it is recorded there are no protocols or common standards; at some point in the process the decision is made that 'this is the right thing to do'.

Available techniques

- Processes such as balanced scorecards, which were used widely in Best Value, provide a simple mechanism for identifying and recording the factors which figure in the decisions. They allow for factors being quantifiable or not, and for the use of different valuation currencies.
- More formalised techniques such as Cost Consequence Analysis take it a step further.
- The most sophisticated technique is CBA, which does attempt to identify all the costs and benefits, however remote or difficult to quantify, and to attribute financial values in every case. Few organisations use CBA in its pure form. The leaders in this field currently are New Economy which has been working with Treasury and has used CBA techniques in Police and Community Safety contexts in Greater Manchester.

Looking ahead

- Many references to 'cost benefit approaches' are misleading, and simply mean that the organisation has looked at the wider impact of policies and decisions.
- Used in the right circumstances, full-blown CBA approaches can be valuable in highlighting the difference between options in terms of their short/long term impact, and the balance between financial and non-financial benefits.
- On the other hand, more informal processes building on the balanced scorecard type may be just as effective. The main requirement is that costs and benefits (both financial and non-financial) are identified and recorded, and before the final exercise of judgement takes place there is opportunity for an exchange of views or an assessment of the relative significance of the various factors.

Recommendations for future work

It is intended that this work is only the first phase in a multi-stage, multi-partner analysis. Subsequent stages involve the development of an econometric model assessing costs and benefits, impact and effectiveness. More work needs to be drawn from other sectors (e.g. healthcare) in order to comprehensively assess variables for consideration. Input from stakeholders and partner organisations will be necessary in order to assess multiple needs and viewpoints. Discussion with New Economy may result in some interesting points for further consideration.

Further subsequent stages may consider the roll out of the model(s) developed in the second stage, testing for rigorousness, transparency and applicability; followed by reflection and analytical critique of outcomes and benefits to the sector. Concerns and input should be encouraged from local, regional and national level sectors/organisations/stakeholders.

Questions that need to be asked in future work

The following is the beginning of a list of questions that ought to be considered by forces on a regular basis when considering effective resource allocation. These are questions that began to be asked a number of years ago but are ever more pressing now that money is tighter. As part of this work it quickly became apparent that the measures weren't available or collected consistently currently to begin to provide answers.

Demand

- What are current demands? What do new demands look like? What other things must be considered? What is demand analysis measuring?
- How do you know you're measuring the right variables? Financially this is easy to do but outcomes-based is more difficult

Staffing and demand

- There are new drivers for demand/new issues causing demand, is the staff mix adequate to deal with that?
- Should money continue to be spent on officers or should more be spent on specialist expertise?
- How can that be justified to public/police? This needs to consider the organisational and pay culture of the police, as well as changing public perception that 'bobbies on the beat' is not the best use of resources or money in policing.
- How can that be budgeted for? What assessment criteria ought to be considered to ensure this is done effectively?

Data

- What is the right data? What does it look like? Who collects it? What data is good data?
- What data is available to analyse the demand? Are we looking to the right measures?
- What other sources could be look at to provide measures? Cannot purely focus on crime, police spend more time and resources carrying out other tasks – change in focus away from crime reduction and move towards prevention?
- What can we learn from the New Economy model - how much does 'policing' cost on a bigger scale?
- Partnership working is expected by everyone, how do you deal with that financially to get optimum benefits?

Marginal impact

- Current practice of shuffling resources according to immediate demand, without foresight or consideration for future impact not optimum model. How is moving air around a balloon having an impact? How can you determine who benefits from this? How do you measure it?

- Budgets decreasing but expectations are increasing? Something has got to give; how can we be smarter with spending?
- Resource allocation is not about decision-making but about having the right information beforehand. It is important to keep asking the right questions. What do questions do forces consider important? How
- Can we put more money into prevention than in emergency response? Are we putting the bulk of the money in the wrong end of the CJS chain? Is partnership working the solution?
- Are any funding pots currently available to begin to address these issues?

There is often a lot of focus on themes like transformation, innovation, collaboration, transparency, accountability and so on. In a climate of change and difference, can we find models of best practice, share information effectively, stop working in silos and remember the social aspects of policing and crime. It's about finding the added value, looking beyond financial information and looking at the benefits of more effective and efficient processes.

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Appendix 1: Principles of Police Funding in the UK

Anika Ludwig & Iain McLean

Introduction

In England and Wales, each of the 43 police forces receives most of its funding in the form of a central government grant, and the rest from local taxation and from charging for events. The Home Office and the Department for Communities and Local Government (DCLG) distribute the funding received using a specific formula, which takes into account data on policing needs from crime levels, fear of crime, population and the policing of special events. However, the process of 'damping' smoothed out large variations in funding allocations which were calculated from the formula and ended up with all forces receiving an almost equal amount (HC 695, 2011; NAO, 2015).

The formula takes into consideration council tax rates in each police force but does not consider all demands on police time, the relative efficiency of individual police forces, or the levels of funding reserves forces may have (NAO, 2015). The formula calculations are based on the estimated workload of each police force area and cover: crime related activity, non-crime activity (e.g. providing public reassurance or road traffic accident assistance), policing special events, policing sparsely-populated areas, and workload weighting calculation for cost and time which include an area cost adjustment for variation in labour market costs in different areas.

The formula does not estimate how much each force area needs independently of all other force areas, instead it shares out the amount of money designated for police funding based on the relative needs (not absolute needs) (Home Office, 2013). It uses population data and a large range of socio-economic variables to estimate the expected workload of each force across a range of crime and non-crime activities. These estimates are created by ten complex statistical regression models. The formula relies largely on data from 2003/4 and Census data from 2001 (Home Office, 2015).

The current police allocation formula is presently under review. It is expected that consultation on what the formula should look like will occur between October 2016 and February 2017, and the Police Minister will not review proposals before March 2017. This timeline is outside of the scope of the current project, and consequently we can only discuss the formula in its current form, which has received a lot of criticism for being outdated, vague and unfair. However, this is the only formula we currently can consider to assess inputs and variables used to determine police funding. We then discuss principles for a replacement. We will also discuss the different situations in Wales and in Scotland. Wales differs slightly from England; Scotland differs radically.

The Police Allocation Formula

The first stage of the formula is to divide funds between the different activities that the police undertake (Home Office, 2014). A portion of total funding is also distributed according to population sparsity, to address the specific needs of rural forces. The second stage is to divide funding for each of these workloads between the 43 local policing bodies of England and Wales. In order to do this, 'workload indicators' are calculated to estimate how much work each police force is expected to have in each of the key areas compared to other forces.

Figure 1: Process of allocating Police Main Grant using the police funding formula

These estimates are calculated using socio-economic and demographic indicators that are correlated with each workload₁ (Home Office, 2014). The formula consists of a basic amount per resident and a basic amount for special events, and top-ups for the five key areas, sparsity and area costs (which takes account for regional differences in costs) (see figure 1).

The allocation formula cannot capture every variable that affects the relative need of a police force area, but the model is designed to provide a statistical prediction of the relative workload across the country. Although funding is based on police activity, forces do not need to spend the funding in-line with the way the total amount of money received has been calculated (e.g. a proportion of money has been allocated to a force due to high burglary rate, the force does not need to spend this proportion on fighting burglary crimes) (Home Office, 2013).

The National Debate Advisory Group (NDAG, 2015) called the existing formula "backward-looking, highly complex, opaque and, through its reliance on out of date data and regression, distant from current policing reality". It relies heavily on Activity Based Costing data which stopped being collected in 2008 and is linked to a local government funding model that no longer exists. Focused on the past, rather than current and future policing needs, it did not consider current policing priorities of crime prevention, more visible policing and increased partnership working. The NDAG proposed more police funding arrangements which address these shortcomings (NDAG, 2015).

Police forces and Police and Crime Commissioners (PCCs) receive funding from: the central government (£8.6bn); council tax precepts (£3bn); and income from activities such as policing at major sporting events (Home Office 2015). Most of the central government funding is provided un-ringfenced to PCCs (or their London equivalents) (£7.8bn) to spend on policing and crime (Johnston & Politowski, 2016). The remainder of the central government funding is used for counter-terrorism policing and to support other national policing priorities.

In addition to central funding, each force can also raise funds through council tax in the form of the police precept. Nationally almost a quarter of gross revenue expenditure (GRE) of police forces is expected to be raised by council tax in 2015/16, but the proportion varies considerably by police force area, largely due to "*historical decisions taken by police*

authorities and PCCs” (Home Office, 2015). For example, Surrey Police raised nearly half of its income from council tax precepts, while West Midlands Police raised only about 12% in this way, with most of the remaining 88% coming from central government grant (see Figure 2a). The Metropolitan Police Service and the City of London Police also receive National and International Capital City funding to reflect the additional costs of policing the capital (HC 476, 2015).

Figure 2a: Source gross revenue expenditure by police forces in England 2015/16

The real terms reductions in central grant to police forces as a whole has only varied between 12% and 23% (see Figure 3) since 2010/11 but the large differences between the proportions of funding raised through council tax means that the effect of the reduction in central government grant on individual forces has varied much more widely (HC 476, 2015). The National Audit Office (NAO) calculated that, once local taxation had been taken into account, the average reduction for forces as a whole was 18% (2015). However, the range for real terms reductions for individual forces was from 12% for Surrey to 23% for Northumbria and West Midlands, the two forces most reliant on government grant.

A difference between England and Wales is that in England police grant was delinked from local government grant in 2012/13, whereas in Wales it was not. In Wales, as formerly in England, ‘the amount paid to the four police forces is made up of revenue support grant and redistributed business rate income’ (Johnston & Politowski, 2016). Redistributed business rate income, as the name implies, transfers funds from areas where business rates are buoyant (generally, rich areas) to areas where they are weak (generally, poor areas). The loss of this redistributive component of police funding in England is discussed below. Another difference between England and Wales is that the proportion of police current expenditure funded from council tax is notably higher in Wales (Figure 2b).

Figure 2b: Gross revenue expenditure by police forces in Wales 2015-16.

This is counter-intuitive. Wales is poorer than England, and therefore has a weaker property tax base. How then is a higher proportion of police spending funded from council tax? There are likely to be two reasons, which require fuller investigation. First, council tax has a more robust base in Wales than in England. In England, council tax valuations are still pegged to 1991 house values. In Wales, there was a highly controversial revaluation of council tax bands in 2005, where values were updated and an additional band added at the top. Secondly, the UK government, in its capacity as the government of England, has put obstacles in the way of councils (including the former police authorities and the current PCCs) who wish to raise council tax bills by more than a certain proportion. The Welsh Assembly Government has not

followed suit. Thus, paradoxically, although England is richer than Wales, Wales has a more robust local tax base for these two reasons. The implications of a more robust local tax base are also discussed below.

Figure 3 shows the territorial impact of the reduction in revenue funding to police authorities since 2010/11. All forces have faced the same percentage reduction in central government funding, irrespective of their service performance, financial position, or level of financial reserves. The NAO (2015) states that the system does not incentivise value for money or strong financial management. Because the ability to offset drops in central funding by increases in precept is greater in rich areas than in poor ones, the drop in overall funding is least severe in a rich area (Surrey) and most severe in poor areas (Northumbria, Merseyside, Greater Manchester, and West Midlands). The drop in central funding does not seem to have been recouped from precept in the Metropolitan area although it, like Surrey, is a rich area. This may reflect differences in the machinery for levying the precept in London from the rest of England.

Figure 3: Real terms reduction in police funding – central government grant and council tax precept – 2010/2011 to 2015/2016

There will be close to a 22% real terms reduction in police revenue grants since 2011/12 (£9.3m), through year-on-year decreases (2015/16 - £8.5m) (Johnston & Politowski, 2016). In order to achieve this, most police forces have coped with the decrease in funding by drastic reductions in headcounts, and the implementation of streamlined back office procedures. Over 80% of total expenditure is linked to staff and workforce costs (Dhani, 2012). With the majority of police force budgets being spent on pay, financial cuts were likely to have an effect on the size of the workforce. At the beginning of the process of reductions HIMC inspected all forces to assess their plans for savings. Forces were expecting to reduce workforces by 34,100. Actual reductions in police workforce from March 2010 to March 2015 totalled 37,400. Table 1 shows the changes in workforce forces in England and Wales were planning for and those actually achieved (Johnston & Politowski, 2016).

On average, workforce costs account for 81% of force budgets (GRE) across England and Wales. It is therefore unsurprising that forces planned to achieve the bulk of their savings by cutting the number of officers, staff and PCSOs. However, because of the varying numbers of people in each category in absolute terms, the estimated overall ratio of staff and officers has remains broadly unchanged from March 2010 (see figure 4).

Figure 4: Estimated planned changes to the workforce profile between March 2010 and March 2015

A proposed new model

New proposals for funding arrangements were laid out by the government in early 2015 to replace the existing model with a much more simplified and transparent funding model which uses population levels, underlying characteristics of that population (indicated by data on households with no adults employed and dependent children, hard pressed population and Council Tax Band D equivalent properties) and specific environmental conditions (indicated by data on the density of licensed bars in an area) to determine budget allocation at force level (Home Office, 2015). The new funding formula (utilising 10 complex statistical regression models), aimed to distribute funding on the basis of 'relative need' by using population data and a range of socio-economic variables to estimate the 'expected workload' of each PFA across a range of crime and non-crime activities (see Figure 5) (Home Office, 2015).

In mathematical terms a simple equation would replace complex arrangements in the previous formula. Total police funding would be allocated to individual force areas as follows:

$$\text{Force allocation} = (S_1 \times FS_1) + (S_2 \times FS_2) + (S_3 \times FS_3) + (S_4 \times FS_4) + (S_5 \times FS_5)$$

Where:

- S = the share of total funding for each of the five indicators in the simplified model. These are expressed in cash terms.
- FS = the percentage share of S for each force area. These are calculated by dividing the volume of the indicator for each force area by the total volume of that indicator.

These variables were then assigned specific weightings (see table 2). The first two factors, population and the local council tax base, are the core elements of the model. The Government believes that ability to generate precept income should be factored into any new police funding model but that it would not be appropriate to take into account differences in actual precept levels based on local areas making different choices over time, as this is not consistent with local accountability (Home Office, 2015).

Figure 5: Process of determining funding allocations under proposed simplified model

The Government considered a broad range of 25 population characteristics. After its analysis, it identified two socio-economic factors that are closely correlated with the patterns of crime experienced between different areas over time. These were households with no working adult and dependent children and 'hard pressed' population. The 'hard pressed' population indicator is used in the current allocation formula and includes groups such as low income people and families, single parent families, old people and single parent families in high-rise flats, multi-ethnic people on housing estates or in crowded flats (Johnston & Politowski, 2016).

A single environmental factor was included, the density of bars within the police force area, because of the strong relationship between bar density and drivers of crime and demands on

police time. The total number of bars, including night clubs, social bars and public houses is divided by the police force area (Johnston & Politowski, 2016). There are no indicators of non-crime demands on police time. Non-crime demands on police forces are often linked to issues of vulnerability, public protection and safeguarding. There is also no consideration of the rural/urban nature of a police force. Rural forces point to the additional cost of policing sparsely populated rural area and the existing formula includes an element for sparsity of population (Johnston & Politowski, 2016).

Under the 2016 proposals the funding for an individual police force would be calculated in two stages.

1. The Home Office divides the total funding available for that year's settlement between the five indicators based on the weightings.
2. A share for each indicator would be allocated between police forces based on the proportion of each indicator within that police force area. The police force would then get allocations for each of the five indicators based on its proportion of the England and Wales total for that indicator. The police forces allocation would then be the sum of the five sub-totals for each indicator (see figure 6 for a worked example).

The Home Office considered three options for the future allocation of the central grant: continuing with the current practice; upgrading the existing allocation formula; and creating a new, simplified model, based on population size and characteristics and the physical environment of the police force area. As the first option would move force level funding allocations further away from relative need, and the second option suffered from a number of unresolvable issues, and did not accord with the Government's principles of a good funding model², it was decided that an entirely new model was required (HC 476, 2015).

The Home Office said "to determine allocations a new funding model needs to draw on information which can help explain why demands on the police differ between force areas so that relative levels of required resources can be determined" (HC 476, 2015). Therefore, the indicators supporting the model needed to meet several conditions in order to be analytically robust and relatively stable over time. The consultation proposed a "new simplified and transparent funding model" based on three broad elements that, while not themselves drivers of individual criminal activity, correlated highly and strongly with long term patterns of crime and overall police demand (HC 476, 2015).

The Minister for Policing has said that the consultation had received 1,700 responses, and that the proposed model was being refined in light of this feedback. These refinements would then be sent to PCCs and Chief Constables for comment, along with an assessment of the force-level impacts, based on the funding for 2015/16. It was intended that this would enable the model to be finalised in time for implementation in 2016/17, the first year of the next Spending Review period (HC 476, 2015).

Figure 6: Example of how funding would be allocated

The key refinements to the model were that:

- the licensed bar density measure needed to account better for the overall volume of bars in a force area as well as the impact of large clusters of bars;
- the council tax base indicator did not meet the intended purpose, and that there was likely to be no effective way of capturing the ability to raise precept through the inclusion of a specific indicator, so this indicator was removed;
- a new indicator would be used to measure the highest levels of deprivation across all force areas; and
- the model would reflect differences in regional costs through the application of an Area Cost Adjustment index (HC 476, 2015).

The proposed funding formula was halted in the summer of 2016 as an error in the mathematical formula was identified; the wrong data was being used as a baseline figure, and the formula reverted to its previous version in the meantime. This highlights the complexity of determining a model which allocates funding and the importance of accurate and appropriate data variables.

The Home Office's calculation error and its consequences

The Commons Home Affairs Committee's report into the aborted attempt to change the funding formula for England reveals a state of affairs that, according to the report, 'would be amusing if it were not so serious..... Mr White [chief executive of the PCC's office, Devon & Cornwall] was able to unravel the entire funding model in a way that made the Home Office look foolish' (HC 476, 2015). The data were derived from a commercial database which the Home Office had refused to make available free of charge to PCCs. When Devon and Cornwall bought a copy to see why the Home Office's calculations were so different to its own, they found that the Home Office had actually used a different formula. The Devon & Cornwall PCC supplied the Home Affairs Committee with a table of the effect on each force of differences between the two formulae, which were substantial (HC 476, 2015). The Home Office acknowledged the error but did not apologise for it. The apology came from the Minister for Policing in reply to an Urgent Notice Question (*Hansard, Commons*, 9 November 2015). The Home Affairs Committee states that the Home Office opposed the application to the Speaker for an Urgent Notice Question (HC 476, 2015). The Minister announced that the new formula would not be implemented until 2017-18. As of late October 2016, no Government response to the highly critical Home Affairs Committee report had been received.

Meanwhile, in preparation for the 2015 Spending Review, departments without special protection (such as the Home Office) were asked to prepare for real cuts of between 25% and 40% in the Spending Review period. However, a few days after the Policing Minister's statement delaying the implementation of the new formula came the Paris terrorist attack of November 13, 2015. The following day, Chancellor Osborne announced that there would be

no cuts to police expenditure during the five-year Spending Review period, to the reported astonishment of chief constables and PCCs (HC 476, 2015). The combination of the Paris attacks and the collapse of the new formula has meant that the old formula staggers on, but without the expected deep cuts.

Before turning to analysis and recommendations from this messy situation, we must explain the totally different regime for police funding in Scotland.

The Barnett Formula and the funding of Police Scotland

Some public services are devolved to the governments of Scotland, Wales and Northern Ireland. Policing is a devolved responsibility in Scotland (and in Northern Ireland, which is outside the scope of our study because the issues there are so different to those in Great Britain). It is not a devolved responsibility in Wales, although as we saw above the funding regime is somewhat different in Wales from England. So the only force in our study which is funded, albeit indirectly, by a territorial block grant from HM Treasury is Police Scotland.

In the period covered by our study, the devolved governments have had substantial responsibility for public spending but almost no responsibility for raising tax. The only locally raised taxes in Scotland were Council Tax and Business Rates. This will be changed somewhat by the Scotland Act 2012 and substantially by the Scotland Act 2016. The 2012 Act's provisions come into force in 2016, and the 2016 Act's provisions, in 2017. These measures will align the responsibility to tax and the responsibility to spend more closely. Were Scotland to become independent, the responsibility for taxing and for spending would of course wholly lie in the same place. Ruth Davidson MSP, leader of the Opposition in the Scottish Parliament, has recently said that as a consequence of the 2012 and 2016 Acts, the Scottish Parliament is no longer a 'pocket-money parliament' (speech at ECFR lunch, London, 12 September 2016).

The origin of formula funding for spending in Scotland and Ireland is the Goschen Proportion, introduced by the Chancellor of that name in the 1888 Budget. The proceeds of some taxes were to be assigned in the proportion 80:11:9 to England and Wales, Scotland and Ireland respectively. Scotland's assignment was therefore 11/80^{ths} of that to England and Wales. When the formula was introduced, it was not generous to Scotland, but it became so from the 1920s onwards as Scotland's population dropped below 11/80^{ths} of the population of England and Wales. However, there was always a Secretary for Scotland in the government. From 1926, that post was a Secretary of State, permanently in the Cabinet. Together with his civil servants in Edinburgh, the Secretary of State could always argue for the Goschen Proportion. Indeed, he could always argue for Goschen as a floor, not a ceiling. When he could make an extra case for Scotland, say on the grounds of remoteness, poverty, or special problems of Glasgow or the Highlands, he did so. The result was that, by the 1970s, public spending per head in Scotland was substantially higher than in the poorer regions of England (McLean, 2016), and also higher than in Wales, which did not get a separate Secretary of State until 1964. Given that Wales and the northern regions of England were all poorer than

Scotland, this situation was increasingly anomalous and the Treasury looked for a mechanism to curb what they saw as overspending on Scotland. The key Treasury minute states:

[T]he Scots and Welsh – and for that matter the Northern Irish – were indeed able to ‘have it both ways’ in the sense of automatically receiving extra according to the traditional formula [i.e., the Goschen Proportion] whenever English Departments got more and further additions for special problems peculiar to their own countries. The Scots, over a long period of time (and the Northern Irish in the early 1970s), played this game skilfully and effectively; the Welsh much less so. The result was to build up public expenditure per head on Scottish Office (and NIO) programmes to something of the order of 25% more than England; and in Wales to something like 5% more.... [W]e should at least stop the rot by preventing further increases in the differential (Levitt, 2014; McLean, 2015).

The formula was introduced shortly after this minute, and was adopted by the incumbent Labour government. The chief secretary to the Treasury was Joel (later Lord) Barnett, and since 1980 the formula has borne his name (conferred not by him but by the public finance academic David Heald).

The Barnett Formula was indeed designed to ‘prevent... further increases in the differential’ without the savage reductions in block grant to Scotland and Northern Ireland that would have occurred if the Treasury had switched to a formula that made grant a function of relative need. In fact, the evidence is that the Treasury planned to operate Barnett for just long enough to get spending in Scotland and Northern Ireland down to the level of their relative need, and then switch to funding based on a needs assessment. It did not work out like that.

A needs assessment was prepared, against the bitter opposition of civil servants in the Scottish and Northern Ireland Offices, but in effect it fell at the change of government in 1979. The incoming Conservatives were less interested in these issues, and only a meagre report was ever published, with no follow-up (HM Treasury, 1979). Meanwhile, over the almost 40 years of its operation, Barnett has only brought about modest convergence in public spending per head.

The formula works by taking baseline expenditure in Scotland, Wales, and Northern Ireland as a given. Because of inflation, public expenditure goes up in cash terms every year. Barnett affects not the baseline grant to the three territories, but this amount by which it goes up this year. For each devolved service, the grant goes up each year by the territory’s population share of the amount by which spending on that service has gone up in the reference territory (usually England, but sometimes, as with police, England and Wales – policing being a devolved function in Scotland but not in Wales). Because the baseline level was above the population share of each of the territories, in the long run this procedure should have led to spending being equal per head in all four territories of the UK, as successive increments came to swamp the original (1978) baseline. This would obviously

have been a step too far, as all three territories are poorer than England. Therefore the Treasury planned its switch to a needs assessment, no doubt intending to introduce it for each territory when the annual series of Barnett incremental grants had brought its public expenditure per head to a point at or below its relative needs. But, as noted, this plan was aborted at the change of government in 1979. And in fact, the convergence has been very slow. Table 3 shows the latest figures for real-terms spending per head in the 12 standard regions of the UK:

Table 3: Total identifiable expenditure on services by country and region per head⁽¹⁾ in real terms⁽²⁾, 2009-10 to 2013-14

Table 3 shows, as expected, that public expenditure per head in Scotland is significantly higher than in England, and also higher than in Wales, which is poorer than Scotland. If expenditure per head in England in the latest year for which data are available, viz., 2013-14, is indexed to 100, then expenditure per head in Scotland is 118, and in Wales 114.

The reasons why Barnett has led to only limited convergence are many, and are beyond the scope of this article (but see McLean 2005; Gallagher 2015). The two main reasons are probably: (i) that population figures are not kept constantly up to date, so that Scotland's slower population growth leads to an advantage in Barnett grants, which (ii) is then built into the baseline, so that it 'frozen' into the aggregate grant.

Does this then translate into more resources per head for Police Scotland than for police forces in England and Wales? The latest Treasury data provide a surprising answer, see Table 4. The rightmost column of table 4 confirms that expenditure on services in Scotland is some 18% ahead of that in England. But when that expenditure is broken down, service by service, the pattern is very variable. For some service areas such as transport, Scottish expenditure per head is very much higher than England. However, for 'public order and safety', the function that includes policing³, expenditure per head in Scotland is only 5 percentage points ahead of that in England.

How can this be? Because Barnett grant is *unearmarked*. Each year, HM Treasury transfers to Scotland the increment determined by Scotland's population share of the services which are devolved to the Scottish Government, together with the baseline from the previous year. The increment is derived from a detailed analysis of which services are devolved (see latest HM Treasury 2015b). But it is entirely up to the Scottish Government to decide how to allocate its funds. In proportion to its own baseline of about 18% per head above the English level of expenditure, it spends heavily on some services such as transport and economic development. It does not spend highly on the group of services of which policing comprises just over half (with the rest comprising fire, courts, and prisons).

This block grant procedure is quite different to that used to determine grant to police services in England and Wales, discussed above. In England and Wales, both the old and the (aborted)

new formulae attempt to determine relative needs for police service. They then transfer an *earmarked* sum to each force.

Under the 2012 and (especially) 2016 Scotland Acts, Scotland gets considerably more control over public expenditure, and for the first time this is to be matched by some responsibility for raising tax in Scotland. By the time the 2016 Act comes fully into effect, about half of the public expenditure in Scotland will be funded out of taxes raised in Scotland, with almost the whole responsibility for Income Tax being devolved, and the proceeds of VAT in Scotland also being assigned to the Scottish Government. The role of Barnett will be much reduced, but it will still exist. In a long-fought duel between the Scottish and UK governments, a deal was finally reached in February 2016⁴. This provides that when any tax power is transferred to the Scottish Parliament, the block grant is reduced by exactly the yield of that tax in the year before the transfer, so that the transfer is fiscally neutral on day 1. All the trouble between the governments lay with the indexation method thereafter: should the Scottish Government be insulated from the effects of slower population growth, and/or slower economic growth, in Scotland than in the rest of the UK. In the end, the deadlock was broken by the UK government accepting the indexation method that gave the Scottish government the most protection against these risks even though the Scottish Government negotiators were from the Scottish National Party, whose platform is Scottish independence, and thus 100% exposure to the risks of population growth or GDP growth).

Principles of a good funding formula.

The Home Affairs Committee discussed some principles for a good replacement funding formula. These should include transparency, fairness, and simplicity. One difficult area for fairness is the interaction between each force's grant and precept funding, especially where precepts had been capped, as they were in England though not in Wales). The Committee recommended trying to 'reset precepts at a common level' (HC 476, 2015). Unfortunately, this recommendation fails to clarify whether 'a common level' means 'a common rate in the pound' or 'a common yield per head'. These two interpretations have radically different implications for fairness. It is necessary to step back and draw on some first principles, and some experiences from elsewhere.

As well as transparency, fairness, and simplicity, there is a fourth principle for a good funding formula: incentive-compatibility. This means that the formula should give recipients and incentive both to do desirable things (e.g., make more tax effort) and not to do undesirable things (e.g., manipulate reported actions and outcomes in order to appear relatively 'needy').

Transparency, fairness, simplicity and incentive-compatibility add up to a quadrilemma. Each is desirable, but the four are not fully compatible. The abortive new English formula lacked transparency for at least two reasons: the underlying data were not provided to police authorities, and no list of exemplifications (implications of applying the formula to each force) was provided. The first of these is just a mistake and must not be repeated. The second is

more subtle. Whenever exemplifications are offered, it is easy, and almost inevitable, for each recipient to compare the exemplification that results from each suggested formula, and choose the formula under which that particular recipient does best. Transparency has then obstructed at least one of the other three desiderata.

The tension between fairness and simplicity arises because, the simpler a formula, the more a force will argue that it is not fair because of that force's special circumstances. In normal lobbying, this results in funding formulae becoming more and more complicated as the special needs of each client are lobbied for and eventually granted.

The tension between fairness and incentive-compatibility arises because of the very different tax bases of police authorities. Most academic experts agree that property in the UK is relatively undertaxed. Council Tax is very visible, unlike VAT (which is incorporated in retail prices) or National Insurance and Income tax (the bulk of both being deducted at source from pay packets). People believe, therefore, that their Council Tax represents a higher proportion of their total tax bill than it actually does, and they put pressure on politicians to do things like freeze increases and delay revaluations. The structure of Council Tax is uniquely regressive, both between rich and poor people and between rich and poor areas. House prices are lower in poorer areas. Therefore a higher proportion of properties are in the lower bands A, B, and C. Council Tax is calibrated to the rate charged on a house in Band D, and the rates on other bands are a fixed proportion of the Band D rate. It follows that, not only is the yield per head of a given tax rate higher in a rich area (like Surrey) than in a poor area (like Northumbria) but also that the tax rate on a given house in each band is higher in Northumbria than in Surrey. This is completely topsy-turvy. The police precept simply sits on top of an extremely regressive property tax.

So, a fair system of police funding will require a fair system of local taxation. This has been addressed by the Scottish and Welsh governments, but hardly at all by the UK government in its capacity as the government of England. The Scottish government appointed an all-party Commission on Local Tax Reform (Commission on Local Tax Reform 2015). Its report stated that Council Tax must be replaced, but ducked the question of what should replace it, to be addressed after the 2016 Scottish election. Nothing has come of this at the time of writing. But the fiscal squeeze on the Scottish Parliament brought about by the increase in its tax powers and the corresponding reduction in Barnett transfers, means that in the lifetime of the 2016-20 Parliament it will have to address property taxation with a view to making it fairer. Police Scotland is financed entirely out of central funds and, as Table 4 shows, at a lower level per head than in England and Wales. Its funding is probably fairer than in England and Wales (because it does not rely on regressive Council Tax), but is not transparent nor incentive-compatible.

What about Wales? As noted above, police funding in Wales is slightly fairer than in England, even though Wales is a poorer country, in which the median house is only in Council Tax band C. The base for Council Tax is more up-to-date and fairer than in England, with houses banded according to their value in 2003 (rather than 1991 as in England) and with an additional Band

I on high-value houses. However, the number of properties in Band I is tiny – fewer than 5000 out of more than 1.7 million houses in Wales. The fact that Council Tax funds a higher proportion of police costs in Wales than in England (Figures 2a and 2b) is probably due to the lack of any cap on local authority rate increases. That this does not lead to the sort of unfairness that seems to arise as between Northumbria and Surrey is probably down to two factors. One is that there is less spread between the poorest and the richest council in Wales than there is in England. The poorest authorities in Wales (Blaenau Gwent and Merthyr Tydfil) are as poor as any in England, but the richest (Cardiff and Vale of Glamorgan) have house prices which are far below the level of those in London and south-eastern England. The other is that Wales, unlike England, retains an element of pooled business rate distribution in its police funding package. Pooling business rates raises incentive issues, but it is fairer than not pooling them.

Aside from reforming land and property tax, the most important aspect for a new funding formula is one that can be implemented quite quickly. International experience shows that the best formulae are indeed simple and transparent. Added to that, they must not be manipulable by the bodies which they fund. The inclusion of bar density in the aborted 2015 formula was a bad idea for many reasons, but one of them is that it is a number which the councils and police authorities being funded could control. If allowing more bars on your patch brings more police funding with it, you have a textbook example of a perverse incentive.

The best model for a simple, transparent, yet incentive-compatible formula system of which we are aware is the Commonwealth Grants Commission of Australia, about which one of us (IM) has written (McLean 2004). The CGC regime has three relevant features. Firstly, its measure of the relative needs of the states and territories of Australia is based on demographic features that the states themselves cannot easily change (such as mortality, age structure, and morbidity). Secondly, its assessment of the tax capacity of the states is based on the value of their tax bases (property, incomes, wealth, transactions), and not on the actual tax effort they make. Third, their formulae are applied with a time lag, so that if a state increases its local tax take, the proceeds are not immediately equalised away from it. When the Home Office does offer a revised funding formula after the 2015 fiasco, it is to be hoped that its officials take a trip to Australia.

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Appendix 2: What are PCCs for? The intended role of Police and Crime Commissioners and their performance since 2012

Iain McLean, Mike Norton & Anika Ludwig

The problem

Policing in Great Britain has always been predominantly local. But, almost two centuries after the first UK Act authorising a police force, there is no agreed model of local democratic control. A number of forces have never been under the control of elected local authorities; others have moved in and out of local control. Ireland, and now Northern Ireland, faced unique public order issues when policing began, therefore its police have never been responsible to elected Local Authorities. Consequently, because the issues and the administration of policing in (Northern) Ireland are so different to those in Great Britain, they are not further considered in this paper.¹

The Metropolitan Police Act 1829 (10 Geo.4, C.44) created the force which set the model for policing in Great Britain, but did not set the governance model. Its territory was historic London and the neighbouring counties. Its officers were directly appointed by the Home Secretary: 'fit and able men shall from time to time, by the direction of His Majesty's Secretaries of State, be appointed as a Police Force'. Pay and conditions were to be regulated by the Secretary of State². The force was not to be locally funded.

A democratically accountable locally-controlled force was not envisaged in 1829 because Local Authorities were created later: for English cities by the Municipal Corporations Act 1835; for the counties of England, Scotland and Wales in 1889. Scottish burghs were nominally self-governing and were islands outside the jurisdiction of the counties, as were English cities and most large English towns ('county boroughs'). In both Scotland and England, therefore, this created doughnuts of boroughs/burghs surrounded by counties, with different administrative and electoral arrangements.

Local policing followed these jurisdictional boundaries. The 1835 Act required cities to create a police force. Outside the cities in England and Wales, the creation of a force was optional until the County and Borough Police Act of 1856, while the Police (Scotland) Act of 1857 created a force for each county. This occurred in both countries over 30 years before county councils became elected bodies.

There were extensive changes in local government in the 1970s in Scotland, England, and Wales. The doughnut pattern of self-governing boroughs/burghs surrounded by counties, each with its separate police force, was abolished in favour of a two-tier model of counties and districts. This led to more uniformity in policing. Counties, or groups of counties, became Police Authorities, of which there were 43 in England and Wales, and eight in Scotland. In

principle, local democratic control and partially-local funding became more tractable from this point forward.

Since devolution to Scotland and Wales in 1999, the Scottish Parliament and National Assembly for Wales have become responsible for their domestic functions including police. Wales has continued with four forces (North Wales, South Wales, Gwent and Dyfed-Powys), each covering an amalgamation of Local Authority areas. The Scottish Government merged its eight regional forces into a single national force in 2013 (Police Scotland).

Other anomalies exist. The City of London Corporation refused to let its territory be incorporated into the Metropolitan Police area in 1829. Therefore, the City of London Police remains as a highly specialized force serving a tiny resident population but with wide responsibilities for, inter alia, public order in the City and financial and commercial crime prevention.

The British Transport Police (BTP) is responsible for policing railways, but not other forms of transport, in Great Britain. This anomaly arises because railway companies were established by private Acts of Parliament. From the beginning, those Acts empowered the railways to police their premises. In early days the duties of railway policemen included ticket collecting and signalling.³ BTP became a single force in 1948 on the nationalization of British Railways. Its governing body reports to the UK Department of Transport, not to the Home Office. It is currently proposed that the BTP in Scotland will be merged with Police Scotland.

There are also two smaller, specialised forces which we do not discuss in detail: the Ministry of Defence (MoD) Police and the Civil Nuclear Constabulary (CNC). Each, like BTP, is responsible for protecting its parent body's installations; but, unlike the railways, those installations are not open to the public.

This history has created a patchwork of democratic control in most areas but not in all. The City, BTP, MoD, and CNC forces have no democratic control. The Metropolitan Police (Met) now comes under the jurisdiction of the Mayor of London, and Police Scotland under that of the Scottish Parliament. Since November 2012, the rest of Great Britain has Police & Crime Commissioners (PCCs). Why?

The best argument for instituting PCCs was that democratic control was very meagre. After the extensive local government reform of 1972-3, each single-force county in England and Wales had a police committee comprising elected councillors and magistrates. However, several forces covered amalgamations of counties. For instance, Thames Valley Police (TVP) covers the three counties of Oxfordshire, Berkshire and Buckinghamshire; Avon & Somerset Police (ASP) covers Somerset plus the now-abolished county of Avon (viz., greater Bristol and Bath). The creation of six metropolitan county councils in 1973 meant that five of the six had a one-to-one match with the force areas of West Yorkshire, South Yorkshire, Greater Manchester, West Midlands, and Merseyside. But the abolition of metropolitan county councils in 1986 left these five, which were the largest forces outside London, with ineffective democratic oversight. Even where there was a one-to-one mapping between a county and a

police authority, the presence of magistrates on the police authority meant that it was not wholly democratically controlled even by the indirect route of a committee of councillors.

Police finance was also deeply obscure. It came from two main sources. One was a 'precept' on council tax. Police authorities had the right to determine a local tax, which took the form of a surcharge on residents' council tax bills. This was far from transparent, and residents had, in effect, nobody to complain to if they thought the precept was too high, or indeed too low. Very few people read the annual statements that come out with Council Tax bills explaining how the proceeds are allocated.

The other source of police funding is from central government grant. This is by formula, again derived in ways that at most, a few insiders understand. Formula funding reinforces vested interests. Those forces that benefit from the weightings in the existing formula have a powerful incentive to lobby against change. Those who would do better under a rival formula are powerless, except perhaps at a change of government.

The planned solution

In June 2010, the newly elected Coalition government issued a White Paper containing its proposals for PCCs in England and Wales^{4,5}. The White Paper states:

The approach of the last decade has been for central government to intervene more and more in local policing in an attempt to make it more accountable.... Nowhere in this long list of reforms does the public appear as the natural democratic check and balance that Peel referred to in 1829 as the bedrock of police activity.... Targets and standards in policing were driven by Whitehall rather than the public.... A Cabinet Office review in 2007 highlighted that only 7% of the public would know to go to their Police Authority if they had a problem with policing in their local area....

In the Budget on 22 June 2010, the Chancellor announced that 'unprotected' Departments – including the Home Office – will face real cuts over the next four years. Police funding will have to take its fair share of this challenge... We will empower the public: introducing directly elected Police and Crime Commissioners who will give the public a voice and strengthen the bond between the public and the police through greater accountability and transparency...

The public at the ballot box will be the ultimate judge of the success or failure of each Commissioner and how well they are serving their community.... From January 2011, we will ensure that crime data is published at a level which allows the public to see what is happening on their streets and neighbourhoods. We will require police forces to release this data in an open and standardised format that would enable third parties to create crime maps and other applications that help communities to engage and interact with their local police in a meaningful way.....

The White Paper stated that the government did not plan to reduce the number of forces. Despite its mention of 40% cuts in the money available for policing, it was so silent about police financing that the word 'finance' does not appear in it at all.

The Police Reform and Social Responsibility (PRSR) Bill was introduced in the House of Commons on 30th of November 2010, which provided for the election of PCCs to replace Police Authorities in 41 police force areas in England and Wales from May 2012.⁶ However, during its passage through Parliament in September 2011, Government amendments resulted in a change of date of the first PCC elections from May 3rd 2012 to November 15th 2012. In most of England and Wales these were stand-alone elections. However, the PCC elections took place alongside parliament by-elections in Cardiff, Corby, Manchester, as well as the first Mayoral election in Bristol. Elected PCCs were expected to "swap the bureaucratic control of the police for democratic accountability" which would "benefit police and public alike".⁷

The Act provided for PCC elections to be conducted by the Supplementary Vote (SV) system. This system has no *a priori* justification in the theory of voting and elections, but it has a history and a purpose. Its original purpose, when introduced for elections to the Mayorality of London, was to stop Ken Livingstone from becoming Mayor. (It failed in this purpose). Each voter may express two preferences. If there are more than two candidates, the two top candidates in terms of first preferences go through to the second round of counting and all others are eliminated. If (and only if) supporters of eliminated candidates have expressed a second preference for one of the two candidates left, those votes are added to that candidate's total to determine the winner in the second round.

In the run-up to the first London mayoral election, Ken Livingstone had been suspended from the Labour Party (not for the last time). Politicians from the governing Labour Party thought that this would ensure that Livingstone, were he to run as an independent, would be eliminated in the first round; that most of his second preferences would go to Labour; and that Labour would therefore win the mayoralty. It did not work out like that. Livingstone did run as an independent, but the Labour candidate came third, and Livingstone was accordingly elected.

SV is not normatively defensible. It is a variant of Alternative Vote; it shares all the defects of that system and adds more of its own. Under Alternative Vote (AV), voters are invited to rank all the candidates. As with SV, first preferences are then counted, but candidates are successively eliminated, starting with the one receiving fewest first preferences, and any transferrable votes are transferred. The process is repeated until one candidate has more than half of the valid votes remaining, including transferred votes. In 2011, AV was resoundingly defeated in a referendum in favour of retaining plurality ('first past the post') for elections to the House of Commons. The fact that it can eliminate the candidate who would beat every other one if candidates were compared head-to-head in pairs did not feature in arguments in the referendum: appropriately, because the same is true of first past the post. For all its defects, however, it does give voters the option of ranking all the candidates, and does not arbitrarily disenfranchise those who fail to guess correctly who will

be the top two first preference-getters. To use an easily understandable mathematical term, SV is *strictly dominated* by AV, a system that had just been heavily defeated in a national referendum when it was laid down for use in the first PCC elections. SV was used again in the 2016 PCC elections, as it is prescribed in the Act. But it would be highly desirable to abandon it for future elections, to improve their credibility.

The 2012 election round

Partly due to the strange time of year elections took place, as well a lack of awareness of PCCs and their election, turnout rates were very low across England and Wales for the inaugural PCC elections. In most police force areas, turnout rates were somewhere between 10-20%, with an average of 15.1%; the lowest turnout ever recorded in a nationwide election.⁸ Of the PCC seats contests in England and Wales, 16 were won by the Conservatives (one in Wales), 12 by Labour (one in Wales) and 10 by Independent candidates (two in Wales). Candidates who previously held an elected position in local or regional councils tended to be more successfully elected than those outside of politics (see table 1).

There do not appear to be any obvious performance measures of PCCs; the Police and Crime Plans produced by PCCs as part of their mandate include rather generic aims and objectives (e.g. reducing crime, focusing on victims, deterring offending). Consequently, the positive impacts PCCs have had have been overshadowed by negative stories; there have been a number of controversial stories surrounding a number of PCCs during their first run in office. For example:

- Ann Barnes, the PCC for Kent, pledged to introduce Youth Commissioners in her police force area, aimed at reducing the gap between young people and the police. In April 2013, 17-year old Paris Brown was appointed, representing the views of young people in relation to policing in Kent. However, less than a week into the role, Miss Brown was forced to resign, following news reports of racist and homophobic tweets on her Twitter account, as well as boast of drinking and drug taking, that she had posted a year before.⁹
- Miss Brown was replaced a short while later by 20-year old Kerry Brown (no relation), however she was also suspended in June 2014 after it was disclosed she had a 'close friendship' with a married former Conservative councillor.¹⁰ Subsequently the role was scrapped, and was replaced by a Youth Advisory Group, which was made up of the local Kent County Youth Council, and the Medway Youth Parliament. In March 2016, Ann Barnes announced she was not standing for re-election for her role as PCC.
- Shaun Wright, the PCC of South Yorkshire, came under increasing pressure to resign from his post of PCC following the Rotherham child sexual exploitation scandal.¹¹ It emerged that he had held a senior role in child services in Rotherham between 2005 and 2010. After a number of votes of no confidence by the Police and Crime Panel and Sheffield City Council, as well as calls to resign from the Labour Party, the Prime

Minister and the Home Secretary, Mr Wright finally resigned in September 2014. Under current legislation, there is no power of recall for PCCs and the only way they can be removed is if they commit misconduct in public office, or are convicted of an offence with a custodial sentence of two or more years.

The new PCC of South Yorkshire, Dr Alan Billings, was elected in a November 2014 by-election. He who took the most conspicuous decision by a PCC to date, viz., to suspend the force's Chief Constable, David Crompton in April 2016 in the wake of the Hillsborough inquest, citing an "erosion of public trust and confidence".¹²

Allegations of cronyism have also tainted a number of PCCs¹³, with initial fears that as many as 16 PCCs had appointed friends, former colleagues and contacts as deputies on salaries up to £65,000. While the PCCs were elected by the public, the role of a deputy commissioner is not subject to a democratic vote and does not have to be advertised.

PCCs have only been elected in 41 out of 43 Police Force Areas in England and Wales; the Met and City of London are exempt. So what happens in areas where there are no PCCs? Who holds the police responsible?

In London the shooting of Jean Charles da Silva e de Menezes in 2005 caused much concern around police accountability in the UK. Menezes was a Brazilian man, shot by the Metropolitan Police, after a case of mistaken identity, during a period of high alert after the 7/7 bombings a few weeks earlier. No one has been held accountable for his shooting despite a number of investigations into the incident carried out by the Independent Police Complaints Commission (IPCC). The first investigation concluded that none of the officers would face disciplinary charges. The second investigation strongly criticised the police command structure and communications to the public. The Police Commissioner, on behalf of the Met Police, was charged by the Crown Prosecution Service with a failure of the duty of care due to Menezes; he was found guilty and his office was fined. The European Court of Human Rights ruled in 2016 that it was 'right not to charge' police over the 2005 shooting of Menezes: 'His family condemned the judgment for allowing police to avoid accountability.'¹⁴

The newly formed Police Scotland has also received grave criticism since its inception in April 2013. The deaths of Lamara Bell and her partner John Yuill in July 2015 have been linked to a lack of accountability, significant weaknesses in the rollout of a national call-handling system and inadequate oversight. Yuill and Bell lay undiscovered for three days after their car crashed on the M9 southbound near Bannockburn, Stirlingshire after officers failed to respond to reports of a crash.¹⁵ Police Scotland faced a barrage of criticism after it emerged that a call reporting the crash on the morning it happened was not entered into its systems. Chief Constable Sir Stephen House, who eventually stepped down after months of pressure, described the error as a result of 'individual failure'. An HMIC (Her Majesty's Inspectorate of Constabulary) review raised serious questions about whether the failure was the result of more systemic problems within Police Scotland.

Such incidents continue to raise concerns regarding oversight and accountability of policing in GB. All forces who previously elected PCCs have done so again in the second round of elections of PCCs in May 2016, apart from Greater Manchester Police (GMP). GMP have elected to move to the Mayoral model, currently in place in London, who will be supported by a deputy PCC from 2017. The election of a Mayor is seen:

“as a positive, it’s a huge opportunity. Particularly because we know we’ve got a lot of good work going on and the relationships have been established. It’s just the next step to a bigger and better Greater Manchester”. (GMP)

The 2016 election round

The PCC elections in 2016 took place alongside a number of other local council elections in May, and consequently it was anticipated that turnout rates would be higher. Overall a 10.9% increase in turnout was recorded, and 74% of PCCs standing for re-election did so successfully (20 out of 27). Political party denomination were relatively equal between Labour and Conservative, with 16 Labour (two in Wales) and 20 Conservative candidates successfully elected, however Independent candidates dropped from 11 to 3, and Plaid Cymru gained two posts (see Figure 1 and Table 1). Some of the highest voter turnouts were recorded in Wales, Dyfed Powys leading the way with 49% voter turnout. Durham demonstrated the lowest voter turnout with 17.4%.

Figure 1: Outcome of PCC elections 2012 and 2016, by political party (grey=independent, blue=conservative, red=labour, green=Plaid Cymru) (Source BBC).

The highest turnout rate was in Wales where there was also other important elections happening.

“It will be really interesting for me, just to see what the turn-out is like this time around. Slightly different in the Welsh thing because we’ve got assembly elections the same day, so that’s bound to increase the turn out. But in other places it will be really interesting, where it is the only election taking place whether it has got any traction and whether they’ve got people interested in voting for it. Last time round, when nobody really knew the role, well we didn’t understand the role.” (Gwent).

Table 1: The winning candidates of the 2016 PCC election and their party affiliations.

Most results were contested using second preference voting, with Merseyside and Northumbria being the two exceptions. Independent candidates did not appear as strong as

the other main political parties – Labour and Conservative, and in police force areas where independent candidate was up for re-election many did not make it to the second preference stage.

We have completed preliminary analyses of these results; more will follow in later papers. To date, we can report two findings. First, we undertook textual analysis of all the successful 2012 manifestoes. We wished to see whether Conservative and Labour candidates stressed different themes, and whether political-party winners stressed different themes to successful independent candidates. Our findings are null. Sometimes, as now, null findings are important. We were testing two hypotheses: (H1) that Labour candidates made specifically left-wing promises (e.g., more protection of the poor) while Conservative candidates made more right-wing promises (e.g., more protection for property); (H2) that political party campaigners would systematically stress different promises to non-party candidates. Figure 2 presents our word clouds for the three classes of candidate.

Figure 2: Frequency analysis (word clouds) for terms used by successful Labour, Conservative, and Independent PCC candidates in 2012

Statistical analysis will follow in later papers, but eyeballing is sufficient to disprove H1 and H2. Whatever may have differentiated members of the Class of 2012 PCCs, it was not party politics, nor was it a division between those who had risen through party politics and those who had not.

This finding is not inconsistent with the more party-oriented results in 2016 (Table 1 and Figure 1). Parties are continuing organisations, with permanent machinery in place for vetting and selecting candidates. Independents must finance their own campaigns. However, despite the more politically partisan composition of the Class of 2016 than of its predecessor, the evidence of Figure 2 leads us to predict that PCC elections will continue to be fought on, essentially, non-party political grounds.

Our second result to date concerns the performance of police forces as measured by the Crime Survey of England and Wales, which is large enough to have data for each force area. All those who work in this field know that *recorded* crime, as reported by forces, is so subject to measurement bias and discretion in recording that it is valueless as evidence for the efficiency or effectiveness of a force. Recorded crime figures, although still produced, no longer count as National Statistics, which is the badge of authority conferred by the UK Statistics authority for data that conform to the UK's Code of Practice for Official Statistics.¹⁸ This leaves the Crime Surveys (separately, of England & Wales, and of Scotland) administered by the Office for National Statistics as the sole reliable and valid evidence for the effectiveness of a force in reducing crime. The Crime Surveys record respondents' experience of crime – *reported* crime, but as reported by survey respondents, not by forces. These data are used by HM Inspectorate of Constabulary, where they are combined with administrative data about

unit costs to produce a scorecard for the efficiency and effectiveness of each force in England and Wales.¹⁹

Using the Metropolitan Police, which has no PCC (the mayor of London is the equivalent to the PCC but with more powers), as a benchmark, we compared the HMIC ratings of forces for the six years (2007-2012) before the introduction of PCCs and the three years (2013-15) since their introduction for which data are currently available. We found a statistically significant increase in police force rating, about 6 percentage points increase, from the PCC introduction ($R^2=0.65$). This is a within-force effect, controlling for correlation across years and police force areas, and using the Metropolitan Police as the control. As with most social science data, correlation does not prove causation, but this is preliminary evidence in favour of the PCC experiment.

Finance: the missing dimension of reform

As noted above, the 2011-12 reform proposals did not deal with finance at all; a glaring deficiency. One of the first principles of both democracy and public finance is that the responsibility to spend and the responsibility to tax should go together. In policing, they did not. If anything, the creation of PCCs made matters worse, because the old Police Authorities at least included local councillors who had a power to fix rates (local property taxes), and a duty to answer to their electorate for the level of local rates. Our interviews²⁰ with PCCs and finance officers uniformly show them to be frustrated at having duties to spend but no effective powers to tax. The local component of their funding comes from Council Tax.

But, for reasons not directly concerned with policing, Council Tax is a(n even) worse tax base than the rates which it replaced. Council Tax and Business Rates are the two taxes that emerged from the Poll Tax policy disaster of the late 1980s.²¹ The idea behind the poll tax, shorn of the accompanying ideology, was that local services were really a charge on citizens, who benefited from them equally; therefore, in principle, all should be charged the same. Therefore the tax base was shifted from property (rates payable on houses) to people (poll tax payable by individuals). It was also seen as a way of reducing local government expenditure and of reining in councils controlled by the opposition Labour Party.

The problems of confused objectives, lack of political support, failure to consult anybody who knew about local government finance, and general political chaos led to the downfall of both the Poll Tax and Prime Minister Margaret Thatcher in 1990. What emerged from the wreckage was Council Tax and Uniform Business Rate. Both are flawed tax bases for policing, for different reasons.

Council Tax is levied on the capital values of houses as they stood in 1991. There are eight bands labelled from A to H. It is severely regressive, both between individuals and between geographical areas. The council tax bill for a poor household represents a much higher proportion of household income than that for a rich household. This is (only) slightly softened by the existence of Council Tax Benefit, which is currently proposed to be wrapped up into

Universal Credit if and when that comes into full operation. The most obvious, and easiest, reforms to Council Tax would be to revalue the base, to reflect current house prices rather than those of 1991, and to add bands at the top, so that households in areas of high property values paid a slightly higher proportion of their income in Council Tax. The only place where these reforms have been attempted since 1990 was Wales, where houses were revalued to 2005 prices and an extra band I was added at the top.²² As might be expected from any corrective mechanism, four times as many households moved up a band as moved down. The resulting furore led the UK government to promise that there would be no revaluation in England.²³

The fact that Council Tax is regressive as between local authorities, such as police force areas, makes it an even worse tax base than if it were (merely) regressive as between people. Muellbauer (2004, p. 16) gives the following example. Another reason for regional inequality and cycles of deprivation lies in the regional and local regressiveness of property taxation. The distortions of the system can be highlighted by taking Kensington (London) and Kensington (Liverpool). A three bedroom terraced house costs around six times as much in Kensington South (KS) as in Kensington North (KN). The implied land price ratio must be around 12 to 1. KS has one of the lowest Council Tax rates; KN one of the highest in the country, 30 per cent higher than KS in 2004–5 for a band D house, though the differentials have narrowed sharply since the late 1990s. Such a terrace will be in band A in KN and in one of the higher bands in KS, say band D. Given the local regressiveness of the tax, the tax on the KN house will be almost as high as that on the KS house, despite it being far cheaper. Seen as a tax on the underlying scarce resource land, the tax rate would, on these assumptions, be around 10 times higher per £ of residential land value in KN.

As to business rates, part of the post-poll tax damage limitation was to nationalise them. Business rates are collected by local authorities, but the proceeds are pooled and then redistributed back through the local government finance formula in a way that recognises relative need. This resolves one of the anomalies of Council Tax but it creates another, namely that local authorities have no incentive to grow their business rates tax base, because the proceeds would be redistributed away from them. And police authorities, now PCCs, have no access to the business rates pool. Business Rates are being reformed and this issue must be revisited shortly when the reforms have settled down.²⁴

The practical implications of this came home in our interviews:

Q: Has the raise in precept eased the burden a little bit this year or is it just going to level it out and help you tick over?

A: ... That's now incorporated into the base, future increases are increases on an increase. So we are getting the extra benefits of that and the council tax base, in terms of the number of properties we can collect council tax from is increasing because the Local Authorities are recognising their having to become self-sufficient because the Revenue Support Grant is going to fall away to 0 over the

period of this spending review. So they are looking to build properties and to promote council tax, house growth, house building programmes within their areas and business rate growth as well, although we don't benefit from the business rate scheme. So we have got some additional income but because we have been so dependent on government grant, it's the government grant that constitutes the biggest proportion of our funding. [Treasurer of an urban PFA]

A senior officer in another urban force said:

So for me when I think about demand, there is three categories to them. One is what I think is the volume, the bulk, which has always been there, always will be there: response policing, some elements of neighbourhood policing. Second area, which is the really new stuff, in an increasingly technology driven world, there is the whole world of cyber, and some people who study these things, probably in the realm that there is more demand in the dark web than there is about what you can physically see and touch. And then the third thing, for me, is, controversially perhaps, political demand. And the one area of policing I would firmly put in that is neighbourhood policing. So if you take a professional policing model, in terms of resource allocation, you will sometimes find that the amount of resource that you put into neighbourhood policing would not be justified on the grounds of a cold, hard analytical view in terms of demand and return on investment and all of that. What there is, always has been, a strong political demand for visible reassurance policing. Where that bleeds into, particularly our world, is that, for example, in the more affluent areas, the argument about how much service you get is more vested in ability to pay than it is in services consumed. And those more affluent areas, the principal policing services that they consume are about visibility, reassurance policing. And really the argument about, so if Billy burglar comes and screws your house. Actually he doesn't live in your area, he probably comes from a more deprived area that is close to you. So the sensible policing response to protect you, to protect you, is actually to put more resources into that deprived area to stop Billy burglar ever coming anywhere near you. The demand though, consistently from more affluent areas is that I want the PCSO, the police officer walking past the end of my garden because the theory is that I then feel more reassured.

In summary: PCCs have no direct control over any tax base. Local authorities have some control over the Council Tax base, and may be beginning to make more tax effort than formerly by encouraging housing developments in their area. This seems to have a small knock-on effect for PCC budgets, according to our interviewees. Neither local authorities nor PCCs have any real control over business rates. Within a PFA area, there may be some taxpayer pressure to spend money in affluent parts of the county; but there is no mechanism for redistributing between poor areas and rich ones – from Kensington in London to Kensington in Liverpool for example. Any reform of the PCC regime must be accompanied by an appropriate reform of its tax base.

Conclusions and recommendations

Policing in any country does not exist in a social, political or economic vacuum and consequently police services have been undergoing a major transformation. Framed against the economic downturn, organisational changes and proposed reforms to pay and conditions, police services are attempting to align themselves to a more streamlined approach to delivering an effective, efficient and economical product to the community and others with whom the police interact.²⁵

Until 2012, the responsibility for the delivery of all policing services in England and Wales was shared between three different bodies - the Home Secretary, Police Authority and the Chief Constable; an arrangement commonly referred to as the tri-partite system.²⁶ Under this system, the Home Secretary was responsible for the overall efficiency and effectiveness of policing and was accountable directly to parliament.

The Ministerial Foreword to the 2010 White Paper which set out the justification for the PCC system was written by Theresa May, then Home Secretary. She wrote:

So to achieve Peel's mission of preventing crime and disorder (which we now call anti-social behaviour), we need to once again reform policing in the country; restoring once more the connection between the police and the people, putting the public back in the driving seat and enabling the police to meet the new crime and anti-social behaviour challenges....

[W]e will transfer power back to the people – by introducing directly elected Police and Crime Commissioners, representing their communities, understanding their crime and anti-social behaviour priorities and holding the Chief Constable to account for achieving them, and being able to fire her or him if they do not....

The large scale devolution in power to local forces will be matched by a stronger, more streamlined approach on those issues that do require national coordination. These changes will have to be made at a time of serious and difficult budget cuts. I have already been clear that the police will have to bear their fair share of the burden. That is why value for money will have to drive everything the police do.²⁷

This, plus the extracts from the White Paper quoted above, make it clear that the proposed police reform was multi-faceted, going far beyond the introduction of PCCs. Its promise/threat of 'serious and difficult budget cuts' has been carried out. UK public expenditure on police services has been reduced, at 2016 prices, from £18,239 million in 2011-12 to £16,645 million in 2015-16.²⁸ For a service most of whose costs are labour costs, this is a striking reduction.

Our review, interviews and data analysis to date lead us to some tentative conclusions:

- The introduction of PCCs was botched because of the late change in the date of the first elections and the use of an unacceptable electoral system.
- The legitimacy of the role increased somewhat after the 2016 round of elections.

- There is no evidence that PCC candidates of different political persuasions, or of different professional backgrounds, made distinctive appeals. In political science terms, the PCC elections appear to have been *valence*, rather than *position*, elections.
- Some PCCs did use the powers promised in the Ministerial Foreword, e.g., in the dismissal of the Chief Constable of South Yorkshire in 2016.
- The level of crime reported by the public in the British Crime Surveys has declined somewhat over the period since PCCs were created, despite the reduction in police expenditure.
- The level of accountability that the authors of the 2010 White Paper hoped for has not been achieved, and cannot be achieved while the sources and routes of funding for police remain utterly obscure to the public. The omission of any mention of finance was a serious weakness of the White Paper.

In sum, on the evidence we have seen, there has been some improvement in police performance, in value for money, and in public satisfaction since 2010, but there are several other steps that a reforming government could take.

Appendix 3: Police Resource Allocation: what do the professionals think?

Introduction

In total, the 43 Policing areas in England and Wales spend over £11 billion a year. This paper provides information regarding the decision making and resource allocation processes used by Police and Crime Commissioners (PCCs) and Chief Constables (CCs), to determine how to allocate budgets to specific programmes and geographical areas across a number of police forces. The introduction of PCCs in 2012 moved the responsibility for budgetary decisions from Police Authorities to PCCs. How PCCs and Chief Finance Officers (CFOs) divide the budgets across police priorities will be discussed.

Methodology

Semi-structured interviews were carried out with a number of individuals in 11 police forces in England and Wales. In total 20 people were interviewed, of which seven were PCCs, 10 were CFOs or Accountants. The remaining three individuals held a variety of roles in Performance and Partnership teams. Participation was voluntary and all responses will be kept anonymous. Although we have interviewed respondents in a wide variety of force areas, we cannot judge how representative the opinions expressed here are of all forces.

Main demands and recent changes

Most police forces agree that neighbourhood policing is still the main demand. “The public continue to want to see a high uniformed presence, not because they want to see more crime, but for the reassuring presence” and (apparent) deterrent effect. Police figures show that crime has gone down but forces are now dealing with more complex and IT savvy crimes. This change has resulted in officers facing a different pattern of crime. New drivers of demand include terrorism (although not a new concept it has changed in nature), cybercrime, Child Sexual Exploitation (CSE), the volume of historic sexual abuse which require investigation, and “other complex crimes including: vulnerability, issues around domestic violence and complex safeguarding which means new specific challenges such as modern slavery, honour-based abuse and violence”. More crime now occurs online and behind closed doors; with significant impact in terms of types of incidents, the complexity of those incidents, and the resources required to investigate them. Demand varies depending on the geography and demography of the forces, PCCs need to balance resources across the entire police force area. Forces are considering the issues around specific sites in terms of demand, for example most cities are growing which brings more challenges in itself; changes in their demographics (much younger and more diverse than ever before) and often growth is unevenly distributed. All these factors are important when considering ‘What does that mean for neighbourhood policing’?

As a result of demand analysis carried out by most forces, target operating models are changing as forces begin to assess what the best way is to deliver services effectively with fewer resources. Also as technology is improving, old investigations are re-opened because of more sensitive scientific techniques (e.g. DNA). This has resulted in a *“curious service model as there are [...] cost implications from current business which is happening today, and business from the past”*.

More strategically, at a round table discussion with five forces it was suggested that demand can be assessed in three strands:

- The volume or the bulk (which always has been and always will be there), including response policing and some elements of neighbourhood policing.
- The new issues emerging from an increasingly technology driven world, there is more demand in the dark web than there is that can be physically seen or touched.
- The political demand, which includes aspects of neighbourhood policing. *“The amount of resource that are put into neighbourhood policing would not be justified on the grounds of a cold, hard analytical view in terms of demand and return on investment. This has been driven by a strong political demand for visible reassurance policing”*.

Some focus has been on demand reduction; focusing on the frontline to reduce the demand of police time, working with neighbourhood officers to target Antisocial Behaviour (ASB), etc. Some forces are also merging the reactive response teams and neighbourhood policing teams together as well as working with the community to consider suggestions for improvements. For example, after consultation with the community in one rural force, the development of a play park reduced incidents of ASB by young people by over 60% and removed linked areas of demand.

PCCs have to balance frontline and specialist approaches with local needs to ensure *“there is sufficient funding in place to meet what local people have elected them”* to do. Low level (in policing terms) issues such as dog fouling, parking, speeding, fly tipping, and ASB are often the community’s greatest concerns in many suburbs, villages and towns but low on the list of priorities on a more national scale. Consequently, the Police and Crime Plans often reflect these issues considerably; this is something that has become much more visible since the introduction of PCCs.

Forces facing legacy issues are dealing with extra pressures and demands; a lot of resources are being eaten up by these cases and the perpetrators of these historic crimes may not even be alive anymore to create further risk. Public inquiries into past events require forces to divert resources from current crime and prevention. The uncertainty around the (financial) scale of these issues are having an effect on the amount of resources available for general Policing.

Neighbourhood policing means different things to different forces. Smaller, more rural forces are able to ensure that each of the boroughs and districts in their area *“have [their] own command, [their] own Chief Inspector based in a property within that area”*. Other areas have

had to abandon previous models of separate neighbourhood policing teams and response teams, and combining them, cutting out supervision costs and giving them a neighbourhood focus, while new technology such as tablets and handheld computers means officers can stay longer in the communities. In practice this *“means that as incidents come in and everybody goes to manage these incidents, the neighbourhood bit may be lost except for Police Community Support Officers (PCSOs)”*. Police forces have offered up suggestions for savings but it is important these correspond with the PCCs’ promises to the public. In one force stabilising PCSOs to ensure a strong neighbourhood presence has been one way of doing this.

Forces find it *“very difficult to measure or to estimate what [the] demand is going to be except that in the age of everybody else cutting costs the demand is probably increasing”*. There is some speculation that *“partners are actually mining that, they know that if they withdraw from the race, create a vacuum, the police have to flood into that”*. As other services, especially county council services, are being pulled back, social services, mental health service and even health services from about 5pm on a Friday to about 9am on Monday are the Police. *“It isn’t new [...] that if you have noisy neighbours, the first people that get phoned are the police. Environmental health, who actually have the responsibility for it, normally work 9-5. If you find fly tipping, they [the public] will dial 101”*. The area of public welfare is a growing area of demand; significant amount of overspill was experienced on Friday afternoons from social services by some forces. *“Talking to the people who call, who know how to work the system to get what they need, to understand the pressures they face can begin to alleviate that”*. In dealing with mental health issues, most forces have implemented a triage scheme and can provide data on how many young people and adults with mental health difficulties they’ve had in custody over a period of time (in most forces this number is dropping because of improved partnership working).

Staffing and demand

The shrinking police budget means forces are having to do *“different things with less resource”*. As almost 80% of budgets are allocated to staffing, this is where most savings have come from during times of austerity. All forces have reduced their numbers, of both officers and staff. There is evidence that the number of uniformed officers in cities has increased (despite reducing resources) and the number in county divisions has reduced. Forces offered voluntary redundancy schemes to make savings and reduce numbers very quickly. There wasn’t *“any science behind it; redundancies fell where they fell”*, although there may have been mechanisms in place to ensure whole units of people weren’t wiped out, but *“it was pretty crude stuff”*. In one force this resulted in the majority of the redundancies falling in the call centre (which employed 20% of the workforce), consequently affecting the 101 call system. PCSOs were temporarily drafted in to *“plug the gaps”*. Other areas of policing were also affected. New crimes such as fraud and cybercrime require specialist staff with technical expertise to help tackle these issues. However, police culture means pay grades would not entice

professionals. *“There is no money in policing to pay for these expertise, and their services can be expensive”*. Currently, specialist services are only bought in for large cases (e.g. analysis of sim cards and mobile devices for major cases) as buying in expertise regularly would use up police resources very quickly. Development of collaboration with local IT companies and universities with aid from Home Office funding may provide incentive to consider this seriously. Analysis has been carried out to identify where more expertise may be needed and what the uniform officer to staff mix should be in order to get the best use of the money that is available more effectively. *“Recruiting specialist civilian investigators into some of the serious crime teams, for example, is a far better way of using our money”*.

Some forces have been able to prioritise certain areas by significantly increasing the capacity of serious crime teams, establishing new cybercrime teams and training police officers about online grooming, and evidence and intelligence gathering for day-to-day work. Further changes include reorganisation of teams into smaller neighbourhood based hubs, i.e., individuals (police, local authorities, health, etc.) within an area allowing flexibility for solutions that are neighbourhood based and directly impact on the local community.

These hubs are often used to deal largely with volume crime, freeing up more specialist resources to deal with the complex issues (e.g. vulnerability and domestic abuse), allowing uniformed response officers to go out and respond to *“day job policing”*. Specialised neighbourhood teams can include uniformed Police officers, detectives, PCSOs and volunteers such as Special Constables. They are responsible for patrolling, investigating local crime, gathering local intelligence, working with – and responding to – the concerns of local communities. Neighbourhood teams are complemented and supported by specialist teams with expertise in areas such as serious crime, counter-terrorism, forensic investigation, communications and public order.

National demands introduced by government and Home Office also impact forces. Requirements to implement more trained firearms officers have been negatively received, as the Home Office do not pay their wages, just the training and equipment. The investment in individuals is also extensive as the training takes a long time and there is high failure rate (approximately 10% of people that apply actually qualify).

Other more comprehensive restructuring has looked at the RAND business model, reducing the number of higher ranking grades to levels that are feasible, as well as forming strategic alliances and therefore saving money by aligning staff with demand (e.g. only one Chief Constable and one Assistant Chief Constable per police force area). Analysis of the workplace mix determines whether certain forces are over-provided against other forces for certain ranks of officer (e.g. sergeants, inspectors). In one force this has resulted in a saving of nearly half a million pounds in a single financial year through a promotion freeze.

However, the demand for neighbourhood officers continues to be important. The example given by one respondent states that, in *“more affluent areas, the argument about how much service you get is more vested in ability to pay than it is in services consumed”*. If a house is

burgled in an affluent area, it is likely that the perpetrator comes from a more deprived neighbouring area. The sensible policing response to protect this from happening is to put more resources into the deprived area. However, the demand, consistently from more affluent areas, is for a PCSO or a uniformed police officer to carry out foot patrols to reassure owners and deter offending. This continues to support the notion that the public want to see 'Bobbies on the Beat', even if they are not considered as effective as other preventative measures.

Forces are working hard to keep resources in frontline teams. Most forces have undergone considerable staff losses, and have ensured that the number of officers in frontline teams has remained stable. However, questions need to be asked whether "*having people policing the street is the best use of resources*". This proposes a traditional tension around why police numbers are so important; one suggestion is "*because they read well in the press*".

In order to begin to streamline processes, forces are looking at the balance between frontline activity, specialist work, back office and support activity for the organisation. Most forces have realigned their internal geographic boundaries in terms of Basic Command Units (BCUs) and neighbourhood hubs or wards so that forces can invest more in those (fewer) wards, look at specific issues in those wards, consider complex issues like vulnerability more directly and invest in partnerships and schools.

Many forces have also implemented mobile working processes (body worn cameras and tablets) making officer more productive and safe because they can get information quickly and are able to respond better to the victim. In one force the improvement in productivity was estimated to be "*somewhere between 15-22%, just by being able to be out there and responding to incidents*". Tasking is done remotely and officers can go into a situation with the data that they need (e.g. mental health issue, domestic violence flag).

Most forces are interested in collecting data on how frontline officers and others spend their time. Hand-held devices and on-board computers for vehicles make gathering this information much easier. Most officers can be tracked in real time individually, or via GPS locations of their vehicles. Previous use of diary sheets, which officers filled out after each incident, were time consuming and unpopular with officers. Handheld devices allow officers better freedom of movement and reduce the amount of time required filling out paper work, with rough figures indicated that mobile working frees up at least one hour of an officer's time a day. However, in order to utilise this information, people who can actually do the analytical work on the data being collected are necessary. PCCs have questioned how they can sensibly allocated resources without reliable and accurate demand data; decisions should be based on data, "*not on hunches*".

Many forces are working in collaboration around specialist units (e.g. Dog Units). Analysis of the demand for dogs was carried out in three neighbouring forces in the south of England and it was identified that not each force needed its own dog team. However, forces didn't really know what the police officers were actually doing, many of these 'dog officers' wore a double

hat (e.g. they do response work as well as specialist dog work). The unintended consequences of sharing dog units could result in the loss of a vital, community based police services. However, the activity data didn't exist, so forces were not able to look at it and understand what these officers were doing on a day-to-day basis.

PCCs in some areas are not interested in collecting and analysing officer activity data. In one force the PCC looked at how officers are deployed but no other data is collected. This force works on a level of trust that the officers will spend their time productively, but there is no record of what they spend their time doing. The focus areas for officers are determined by community feedback, force priorities and the Police and Crime Plan and officers make their own decisions and are simply overseen by their peers on a very basic level. The PCC is not interested in setting targets, officers get on with their jobs. Hourly activity based costing per staff did not provide useful information so is no longer carried out. This suggests that forces are living on anecdotes about what is happening.

Some forces have equipped frontline patrols with personal radios with ARLS (automatic resource location software), which allows the communications department and supervisors to see where an officer is at any time. In this way, the force incident manager in the communications department can see all available resources (e.g. officers trained and equipped with firearms or tasers), on a map so that they can locate and dispatch the nearest and most appropriate officer to an incident.

Four forces nationwide have implemented the Mobile Assets Utilisation Deployment System (MAUDS) which is a real time system that tracks where all of the resources are. Combined with the mobile working solution, this system will result in police officers being tasked more efficiently than is currently possible. Details of the job will be sent directly to the officer's mobile device, they will attend, note the outcome of the incident and the information will go straight back into police systems and the officer moves onto the next job. *"That is transformational"*.

However, a certain aspect of generational resistance and police culture also needs to be considered. The younger officers born into the world of modern technology are *"delighted with the machine he takes in his hand"* and wonder why this wasn't done years ago. An older beat officer, who may be less technologically capable, is less enthralled with it as it requires a real cultural shift for him. Other officers miss the security of going back to the station, as they are uncomfortable with sitting in a café in public and having lunch.

Similar to views on collecting daily activity data, respondents' views on performance management and target setting were mixed. Some PCCs did not look at targets, which was linked to the victim centred service delivery change. Forces use performance management frameworks which include *"quantitative measurements, indicators that explain what's happening followed by the qualitative approach which asks 'Why is it happening? What are the cause and effect?'"* The CSE issues in Rotherham have been suggested to be linked to the force being *"so busy chasing targets, that other crimes took a back seat"*. Other PCCs believe

targets are important, as long as you agree local targets. *“One of the things the government has historically been good at is setting national targets. Less so on a more local basis. You need to sit down with groups of people and say what are the issues before us and how are we going to solve them?”* Examples include work around alcohol, drugs, domestic violence which involves a lot of co-commissioning with other bodies.

Process for allocating budgets

All the funding is owned by the Commissioner but most PCCs tend to utilise some form of board or executive group in order to allocate resources and budgets. The board, executive group or ‘select committee’ approach allows transparency and public review of any proposals put forward. Membership of the board varies but often includes the PCC, the Chief Constable and the Assistant Chief Constable, which allows the team to drill down on issues as well as gain public consultation. The high level of communication supported by this means the PCC can be informed in much more detail of changes that need to be addressed. The chief executive makes decisions on the major strategic issues facing the organisation which shapes how different challenges are approached. The PCC may still have executive decision making power (within the constructs of the governance scheme) but practically decisions tend to be made collectively.

Money that is available to the forces comes from a number of different budgets and a high proportion (approximately 80%) is pre-allocated to staffing, leaving a relatively small sum where flexibility of spending is possible. This appears to suggest limited links running between demands, response, results, appraisal, setting of targets, and priorities, from the PCC side. It confirms that resource allocation takes place at different levels, and for different purposes such as geographical or programme allocations, but that the front line decisions are possibly the most significant to the overall outcome. Yet these decisions are the ones which the least is known about.

Decision making is influenced by the relationship between PCC and the Chief Constable. In some forces budgets are agreed by the PCC and Chief Constable in full consultation, in others the PCC tells the Chief Constable what his allocated amount is and what the priorities are which he has to meet (the outcome or outputs of the budget). How the Chief Constable translates the budget into staffing and resources is an operational decision left to him in most forces. The Chief Constable is told *“what the funding is, what is available to them and he has to go and work out”* what can be done with it to meet the priorities and work-streams in the Police and Crime Plan. And emerging crime types may influence how staff are split. In one force the Chief Constable is allowed to employ a specific number of police officers and he must not depart from that figure unless specific approval is obtained from the PCC. In this force *“the Commissioner controls the actual number of officers, PCSOs and staff and it’s not the devolved responsibility for the Chief Constable simply to move the numbers around as he or she sees fit”*. However, this does not appear to be the norm.

Arriving at a budget usually starts in the middle of the year when there is a forecast of what the next financial year and the years beyond will look like. This focuses on the funding gap, and how best to achieve a balanced position. Proposals are sought from the force *“as to how that budget can be balanced in the medium term, given the fact that the bulk of the budget goes on employees”*. Consequently, a lot of the focus has been on how to achieve or to cope with reductions in the number of officers or PCSOs. Guidance to that is set by the PCC, the objectives are set out in the policing plan which also lays down the red lines (e.g. no reduction in PCSOs).

Most PCCs have removed the commissioning process that the police used to do themselves from the police service because they weren't considered to be very effective and have brought in specialist teams to deal with that. This has *“professionalised the way in which support services are commissioned and ensure that it is integrated with the police service so that they go hand in glove with each other”*.

Other pots of money are used to develop Victims Commissions to research and resource at neighbourhood level to deal with victims. Victims commissioners are locally based people who have the geographical knowledge of the areas and have identified a number of local themes for Commission meetings. They can now carry out an objective assessment of needs and provide the PCC with a degree of delegation in a team that works in a non-bureaucratic manner.

One force has implemented a Strategic Commissioning Board (SCB) which looks at the larger amount of money that the Commissioner has to commission services, *“the ‘and Crime’ bit of the portfolio”*. It involves Chief Executive level representatives from the health service, the fire and rescue service, registered social landlords, Government observers, the voluntary sector, probation services, community rehabilitation companies, local charities, etc. The board gives recommendations to the Commissioner about where to spend these bigger chunks of commissioning money. Community services bid into the pot of money and the SCB recommend where the money goes.

There is political pressure for OPCCs *“to be cheaper than Police Authorities, but deliver significantly greater responsibilities and work”*. Most forces have undergone a change delivery programme. These look at where designs should be in terms of servicing the priorities against demands. This includes designing IT systems to make processes as efficient as possible, with as few hand-offs as possible; ensuring that the designs are centred on the customer experience, making them straightforward and individual.

Forces have carried out significant reviews of areas, departments, work-streams, and often have led to significant reconfiguration of forces. However, the vast majority of the money allocated to the force is based primarily on historic allocations. Zero-based budgeting, linking resources, demands and budgets is not being done; a lot of it is marginal and moving it around. What hasn't yet happened is a linking of the force delivery plan and the budget; a 'costed delivery plan'.

The Police and Crime Plan

The Police and Crime Plan is the main statutory document which the Chief Constable has to deliver and whose delivery the PCC has to oversee. Some forces have complained of the lack of robust, analytical work that went into its development. In order to address this, one force carried out a detailed analysis of a victim's needs assessment, pulling in external research partners in order to help shape all of the different victim services required. This *"identified a load of issue around vulnerability and a comprehensive process to consult and formally research the requirements of specific user groups and communities"*. Data from the police service around victims and incidents was combined with data from the community safety partnerships in local authorities and fed into the Police and Crime Plan. So the Police and Crime Plan reflects not only the sort of strategic force wide priorities but also the needs of communities, both physical communities such as towns as cities but also specific cohorts of people (e.g. people with mental health problems or domestic abuse victims). It is the Chief Constable's job to allocate the resources and to deliver the plan.

Police and Crime Plans are quite clear about what the big issues are to the community, and *"that should be what drives spending"*. The Police and Crime Plan has outputs, outcomes and objectives and the budget is aligned with that. Sometimes however, delivering the Police and Crime Plan objectives against the reductions necessary and the savings proposals is difficult.

This starts to pick up on getting a balance between the budget for policing and budget for 'and crime'. More is being pushed onto PCCs through victims, community safety and various other elements of the Criminal Justice System (CJS), however there are no more resources available to deal with it. *"Victim services have become the responsibilities of PCCs, however funding is reducing whilst the demand is going up, and now PCCs are in the process of actually employing people because other services are pulling out"*. PCCs provide crime and reduction grants, for instance and are increasingly seeing significantly more national charities looking to the OPCC to provide support. Forces are *"dealing with the whole cornucopia of penny pocket organisations, all of which have their own little bureaucracy"*.

"So there is this really complex dependency that starts to happen, [organisations] end up living hand to mouth and the OPCC ends up having to give them three or four years funding because otherwise they just go under straight away. But what it ends up as is a completely finance driven process about moving a decreasing amount of funding around the place so that you can't actually see that the amounts decreased very much. So you just end up shifting air around the balloon all the time."

Knowledge of the impacts of changes in resource allocation are not widely known. Areas of improvement are highlighted (by Her Majesty's Inspectorate of Constabulary or elsewhere) and resources go in, however nobody asks the questions of what happens. *"You'd just give*

yourself a headache. You can't magic up money or human resources, you know it will have an impact but you don't really want to know too much".

Information sources available on which to base decision and review processes

The process of making decisions and allocating specific projects with money has been shown to be unclear. Forces admit that some decisions are based on "*professional judgement*" or "*gut feel*". However, this could be used "*as an excuse for not having the right data and evidence*". Demand information – analysing and understanding what the demand is – is becoming more widespread across forces. This is not just the volume and type of crime but everything else the police deal with, which is recorded and changes in demand can be mapped. Financially, it is relatively straight forward, it is easy to map what the impact of the cost is. However, the social value and the community impact is trickier to measure; "*you've taken resources away from one particular area and demand is going back up again*". Balance and justification of these actions are often not based on sound evidence.

Officers are trained from the moment they join the academy to live in the moment. It is hard for officers to default to planning over a time horizon, as they are trained to be reactive. "*There is a problem here now and I'll sort it now. And then when tomorrow becomes today, I'll sort that as well. It's rare to find a police officer that actually looks forward*". This could partly explain why policing hasn't, until very recently, understood what the demand is, even though it is a public sector commercial business.

Some PCCs have explained that they don't readily have information available, they need to ask the force for information. The OPCC needs to "*dig information out of the cops*" because the information is contained in their systems. PCCs are able to get what they need, sometimes with a bit of resistance but the information is shared. Part of the 'political' problem is that PCCs have to demonstrate low costs, which affects the level of staffing in the PCC office. "*In an ideal world, I'd employ more staff and I'd be able to quiz the force*". Most forces and OPCCs don't have the capacity to do their own research but commission work as they see fit, for example with the local universities and organisations. Most of the research is done externally, a mix of academia and specialist organisations.

Tensions exist between the needs of rural and urban areas. Anecdotal evidence suggests that the public found the service in rural areas unsatisfactory. However, until the development of the National Rural Crime Network (NRC) there wasn't any concrete evidence available. The Threat Risk and Harm mantra allocates resources on an incident basis rather than a strategic one. The NRC is a collaboration of 31 PCCs who have large rural constituencies. The self-selecting sample provided 17,000 responses and identified considerable variances between what people said they got in the rural areas versus the urban areas. This was used to launch the Rural Crime Taskforce. Forces need to look at the broader needs of the different communities within their Police Force Area.

PCCs spend a lot of time listening to people, *“because what people say doesn’t always mirror what the force is saying”*. This involves meetings with different groups and communities, online surveys, focus group work carried out by professionals, council’s resident surveys, etc. Performance can also be measured using victim satisfaction and police satisfaction rates and looking at how these can be improved. PCCs look at satisfaction levels, about trends, about issues the public want to see, about whether they’d want to pay more for policing going forward which is done on a quarterly basis. Then there are also some surveys which are required by the Home Office that feed into the British Crime Survey. This means PCCs do a lot of surveying and they are out there in the public picking up day-to-day feedback. Some forces don’t look very much at financial data; others give it greater focus.

Budget cuts in other public sectors

Forces are not used to looking to other sectors for inspiration and guidance for allocating resources. Information from other police forces is often shared, but influence is not usually taken from third or private sector organisations. One force has gone to John Lewis for customer satisfaction guidance (the company is often rated high) as well as the local county cricket club for tips on improving teamwork. This has been a reciprocal relationship whereby these companies have also had the opportunity to find out how things are done within the force. The PCC considers this to be an important means of educating and learning.

However, the continued budget cuts in other sectors are very much having an effect on policing. Close connection with the local health boards, the probation services and others in the area are needed to provide good services. However, overall it appears partnerships are pretty difficult to achieve, *“people are their own legal entities with their own funding, they’re making decisions in isolation; there isn’t proper joining up of decisions”*. Often the OPCC contributes a relatively small amount towards community safety partnerships and other local authority groups; *“it’s an interesting thing where you end up talking about £2-3m, out of a budget [of approximately £200m] being vitally important but we’re only a small contributor to all the other partners who are supporting these things”*.

The dysfunctionality of demand and resources, funding and cuts is more apparent now because it is easier to concentrate on the interface between one service and another. When policing was part of local government in the form of Police Authorities, there wasn’t a single individual who could be held accountable. *“Members of the Police Authority board were able to hide behind each other, strength in numbers and weather situations better”*. Now PCCs must answer to the public and the Home Office.

Partnership working is easier when boundaries are coterminous with other agencies including health, fire, county council. Complexities arise when project receive disproportionate funding from one sector agency and other agencies are getting the majority of the benefits. Relationships have to be mature enough to look beyond simple ‘number of pounds in’. The real issue when working in a diverse public sector is about how organisations and agencies

are held to account for the spending of third party money and where the benefit might be. This requires a mature focus on the best way to deliver a public service.

Combining policing and fire is currently being reviewed, and PCCs may be given greater oversight of the fire service. Most fire stations are within one mile of a police station, and working closely together could see police and fire based in the same buildings and sharing the same assets, perhaps selling both estates and buying one, or moving onto one site. Similarly, from an economic perspective, it has made sense for forces to co-locate with local council offices, which has also liberated some town centre sites.

Forces already working well in partnership will need to look further at pooling and sharing resources. If for example it turns out that an area needs fewer PCSOs but more mental health workers, the position needs to be mature enough that those resources can be transferred without a major debate.

The changing crime mix and 'non-crime' demand

The College of Policing's demand analysis finds that only 20% of police time is spent on crime related activities (College of Policing 2015¹). However, the public face of target is the reduction in crime – *"that's what everybody's obsessed with"*, although the police spend more of their time on community safety aspects, which is actually what people want to pay their money for. "Most people want to avoid criminality and want to avoid someone getting hurt, so actually getting the police out in that preventative area or in that public safety area is far more the realm of where the public want the police to be".

Demand analysis has changed the working practices of policing, "a lot of the conversation is around place-based working where money is invested by the police and who benefits from various investments are linked to patterns of crime and demand for police services". Most forces have been through reviews and changes of their operating model, which involve "stopping doing things and doing other things instead", the basis for which has basically been around the volume demand. In most areas when the public see the police (patrol car, helicopter etc.) they assume the incident is about criminality, which it normally isn't. "Forces break down more doors because there is a call for care, someone hasn't been seen for a few weeks and there is concern from neighbours, than because there is suspected drug [or criminal] activity".

Due to the generic categorisation of crime types it is difficult to determine resources needed for each incident until the investigation begins. *"We all know that one burglary could take three hours to investigate or a week and a half"*. Also, with certain other incidents such as extremist marches, the police are not there to stop the marching, but to protect free speech and safety. But this still requires police resources because the council or the local authorities don't have the powers to move marches away from city centres to open rural areas.

Data on police activities is often used to explain to the public why fewer police officers are patrolling the street than they used to. However as elected officials PCCs are taking what the public say and feeding that back into what the constabulary are doing, or those other agencies they have influence over. The PCC is *“holding the constabulary to account by saying ‘the public are saying they want us to do this but this is what we’re actually doing, why is there a difference?’”* It is not about what the police are doing but *‘what do we require the police to do’*. Most forces use the data around demand and police time spent dealing with crime activities to say *“look you’re not seeing a bobby on the beat because we’re actually dealing with x/y/z instead. This area is quite safe and these aren’t the current demands and we can prove our officers are doing other things”*, demand is more about the complex crimes.

“You’ve got the fire services with spare capacity caused by less fires and less road accidents because people have safer vehicles. You’ve got PCSOs who are in the community, the council have got neighbourhood wardens in the community but they are not always in a common neighbourhood structure. What is needed are multi-task people”. For example, the fire service are moving to a more retained fire model, these other community safety people could be retained as fire officers which could be used to alleviate the capacity issue. But currently each service is in a separate box, all incurring costs about staff and resources. Neighbourhood policing is still the most important thing for the public, so a sensible suggestion would be to train multi-purpose officers. Individuals who can do a little bit of crime prevention, fire prevention (go and check smoke alarms) as well as intelligence gathering for other complex issues (e.g. domestic abuse, child neglect).

Some PCCs are giving considerations to the structure of their control rooms and whether all public services need their own control room. All emergency services could be controlled from a point of contact, without requiring a huge number of additional staff. This notion works towards the idea that there is *“one team of public servants who go to everybody’s door”*.

New and emerging issues, horizon scanning and future proofing

Policing is often reactive in nature, and therefore issues that arise are dealt with immediately and some *“months later someone would look at what the consequences of the finances were”*. Similarly, an analysis of the impact of the movement of resources from one focus to another is not carried out consistently. Forces are aware of the need for change so that when the latest issue arises, the latest public inquiry, etc., it can be filtered to a management board who go through the conversation around how to react, how to meet the outcomes, how to deploy different types of staff, whether to resource internally or externally and what the risks are. Dealing with unknown or new issues which suddenly require resources needs careful consideration. Previous sections have outlined how moving resources to deal with competing demands has involved little impact analysis.

For example, in one large metropolitan police force the Home Office sponsored an initiative for a number of years to dismantle organised crime networks. The success of the programme

has meant that even though the Home Office funding has now ceased, this initiative has now become business as usual and it is fully funded by the force itself and other agencies. However, when it comes to determining where these resources to fund this program came from, it becomes complex. *“For what it does, it’s not actually a big cost and it wasn’t big deal to continue to fund it. It’s an incredibly fluid situation so it would be very difficult to say that that money came from a reduction elsewhere.”* It was also considered important not to see this initiative *“as a separate thing”*. Efficiencies from elsewhere (e.g. forensics, mobile working) free up resources which are used to cover the costs of this scheme.

If unexpected costs occur, forces would use reserves in the short term, but these can only be used once. So there then has to be discussion about what to give up to deal with the new demand. There may be spending in the current year that weren’t expected or planned for, where to date the easy option has been to dip into reserves. Forces will always need some sort of contingency for unexpected issues. Requirements and expectations of police forces continue to increase, *“things don’t drop off, they go up but it doesn’t lock back [down] again”*.

Other more rural forces state that a well-crafted budget should be able to cope with a new demand; it should be able to continue *“business as usual”*. When things occur which aren’t business as usual forces are able to call on the Bellwin Scheme centrally (Sandford, 2015₂). *“When you’ve been policing for 175 years what sort of demand you are going to have”*. There will be certain changes over time, there wasn’t any *“cybercrime 50 years ago but that’s because there was no cyber to be criminal about [...] but people were still fraudulently taking money off others”*.

Where demand analysis is done it’s projected to varying levels of sophistication. It is often based on what has happened in the past *“but the past is no forecaster of the future”*. So forces have to start to do some environmental scanning looking for what’s going on around to try and work out what the impact might be.

Considering the marginal impact of allocating resources to one project as opposed to another was not consistently addressed. *“I am not certain that very low level of project A versus project B makes a great deal of difference”*. Forces consider the list of financial pressures which they can do *“nothing about”* (e.g. changes to national insurance and pensions), then they consider the new investment where both the force and the OPCC will put together a list of new investment opportunities and the conversation is had around *“what is affordable”* and the impact is assessed in terms of benefits for victim satisfaction, workload reduction for officers and so on. Comparisons at a very low level can sometimes have unintended consequences. Sometimes very small differences have a disproportionate impact and those need to be recognised. However, that isn’t done in a *“forensic way”*. *“Part of the problem is that it is difficult to demonstrate what effective policing really is; what best practice policing is”*.

Many forces state that the budget decision in November 2015 very much affected their ability to make decisions regarding spending. Money which was allocated to particular projects (e.g. vulnerability) has an impact on the amount of money and resources available, and has a

“serious knock-on effect in other areas of the business”. Work was being carried out to look at how that impact could be minimised and a number of changes were considered that would’ve freed up some resources. Now there is exponential demand growth in rape, child sexual assault, neglect, grooming which require prioritising over other issues (e.g. keeping police stations open because the public want them open). Most forces have carried out comprehensive analysis of demand in police stations– *“why people go in there, how many people go in there, what time of day do they go in there”*.

Assessment of current police demand also involves managing and reducing demand. Considerations need to be given to the differences between crime prevention and demand reduction. *“Crime prevention is a tactical response to try to prevent certain types of crime (e.g. locking your house to prevent a burglary), whereas demand reduction is far more strategic and long-term”*. Crime prevention is considered important by all forces but finding the resources to do it can be difficult. Forces will say reduce -> prevent, the OPCC says prevent -> reduce. Community safety and prevention are key priorities for most forces and often involve a multi-agency approach. The key aim is to prevent individuals entering the police system. *“If you are a victim or a perpetrator something has failed to bring you into the system. It’s pointless starting to count you when you come into our system, we’d rather prevent you coming in in the first place”*. So managing demand is about working in partnership and identifying agencies who might be better at prevention than the police; trying to show that if you work together you can tackle and reduce crime.

This is also about *“supporting grass roots organisations for active citizenship and neighbourhood funds”*; youth aspiration is linked to prevention. It involves diverting people from higher models of delivery which provides savings. Keeping people in the community rather than in institutional care produces big savings. Youth Offending Teams (YOTs) are the critical link to troubled families, and reducing demand. However, at the same time as PCCs are supporting YOTs, the Ministry of Justice is asking for 30-40% cuts which is considered a fragmented approach to a critical group. *“It just looks to be a little bit of a false economy really to try and pump money away from something which is going to try and support the people who are just about to get in on the brink of criminality”*.

One large urban force is part of a large European fund working with locally based major corporations (e.g. National Express), to take people on who have had difficulties in life (most have been offenders of some sort). National Express has taken on a number of individuals on apprenticeship schemes (half are ex-offenders and half are victims) in order to provide them with opportunities to get out of the crime circle. This is linked to an economic strategy which runs through the Police and Crime Plan. This force has also taken on 25 young apprentices in various roles for a year. It’s about developing the area and providing opportunities for young people.

Crime prevention is part of most Police and Crime steering groups or part of Community Safety Partnerships (CSPs). A large urban force is in the process of awarding £900,000 to third sector organisations working in partnership, with organisations that support prevention as

well as encouraging community cohesion, community interest and neighbourliness. These are the intangible benefits that would be really hard to demonstrate using a simple cost-benefit analysis. This includes more measure of social value: *“what is the benefit of neighbours speaking to each other?”* etc.

Crime prevention initiatives are now predominantly funded by the community safety grants which have become the responsibility of PCCs from local authorities. Some PCCs have subsumed that money into the police budget, but others have ring-fenced it for crime prevention activities. Previously there was *“no accountability around that money or any understanding of how effective it was being”*, because it was syphoned through the Police Authority and granted out. PCCs now need to make sure they are receiving a return on investment and are making local agencies bid formally for funding, around priorities that have been jointly identified in the Police and Crime Plan. The commissioning team contract manages that spend and works with the CSPs and local delivery groups to ensure that that money is delivering on what it said it was going to deliver in their bid.

Funding

The budget process starts with an analysis of the known pressures that the force is facing including what new investments must be made. This provides *“the gap”* (between income and expenditure), which outlines what needs to be saved so forces can live within the money received from grants and the precepts. *“That leaves a number of choices to be made about where those savings come from”*.

The overall consensus was that the police allocation formula^{3, 4, 5, 6} was not representative of demands and drivers being faced by forces, it wasn't fit for purpose. Part of the consideration given to moving funding away from local authorities was to get away from all the specific grants and make the funding more fluid so that forces don't have to manage lots of little pots of money. Overall the formula was considered to be too complex and didn't consider the right factors. A degree of it should be based on levels of crime, on levels of deprivation, on population etc. but it was felt there needed to be some flexibility in the formula which allows each force to address its biggest demand and actually reflects the needs of an area. It is considered *“archaic and old”*, however the main issue is that it isn't based on robust evidence. Data on demand and needs wasn't being collected anymore, and therefore proxy measures and indicators were developed to try to indicate what demand is. Further questions were raised whether the statistical model that they used was the most effective model.

However, getting a funding formula that would *“make everybody happy”* is also not realistic. The funding formula needs to be simpler but have more clarity by containing a high level of detail, have permanence and actually be implemented *“correctly”* (without damping down⁷). Furthermore, the lack of consultation with forces was also considered negatively. If greater cooperation is the ultimate aim the funding formula has to work for them, it needs to consider the socio-economic mix of the population and the demands of local areas.

Consideration should be giving to metropolitan areas that also face similar demands to London, e.g. party political conferences, football matches, international airports and visitors as well as localised issues such as EDL marches, the policing for which constitutes a further, additional drain on the police budget which may not be completely budgeted for or the costs fully anticipated. These risks are currently being met by the force's reserves.

The cap on council tax precepts, the inability to raise it by more than 2% without requiring a referendum, was also considered to be impeding local control and responsibility of PCCs. *"Local people should make local decisions, local services ought to be paid by local people"*. Up until now the government have been pushing hard on a freeze on the council tax. Now the situation has become increasingly difficult whereby forces feel if they don't increase council taxes they will be penalised in the funding as the government will be assuming that the precept will be raised to the maximum. Precepts depend on the council tax bases in police force areas, where some forces have fewer properties falling within the higher bands. Consequently, in some forces a rise in the precept has minimal effect. Many police force areas are getting benefits from increase in the number of properties council tax can be collected from. *"Even with the precept increase, it doesn't make up for the grant reduction"*. PCCs should be able to increase the council tax by whatever is appropriate on the basis that as an elected individual, if the communities object they will *"get rid of me"*.

One force argues that the ability to raise local taxation has resulted in the force becoming a more expensive force. *"The more money available means the more money that can be spent"*. This is reflected in costings per head of population, which may be high in some forces due to the fixed costs within forces (e.g. the OPCC has a chief of staff, a chief finance officer, the PCC, the deputy PCC, etc. which is spread over a relatively low population). However, raises in council tax are now incorporated into the base figure and any *"future increases are increases on an increase"*.

The funding formula needs to be looked at in the context of wider police reform in England and Wales; there needs to be a more *"strategic approach to funding the police service"* which doesn't consider the funding formula in isolation. Too many forces are currently reliant on the government grants. *"A more radical solution would be to distinguish what local policing really was, so that ultimately it is paid through the local precept"*. So *"instead of looking at the amount of money that is allocated to police forces and divvying it up, a look is needed at how policing is organised and then divvy it up in a different way"*.

Forces also argued that, when funding is increased there is usually the expectation that more is delivered for it, so there are more outcomes or outputs that need to be delivered as a result of that. However, if the funding is reduced there isn't the same reduction in expectations. Over the past six years, approximately 20% of funding has been reduced in real terms, but there is no evidence of the impact of this. To this point, this has been achieved through improved efficiency, however at some point you get beyond being able to reconcile any more through efficiency.

As the overall size of the public sector goes down and the funding with it, organisations are trying to deliver services in collaboration in an overall environment that is increasingly unhelpfully competitive. *“Everyone goes into the meeting thinking they’re going to make savings at the expense of someone else, the other lot. So they are all coming in with the same mind-set and people have got to get past that”*. The relationship needs to be mature enough to understand that in one instance group A may have to carry a bit of the financial burden in order that group B can help, but that is a very difficult conversation to have.

Forces are also able to earn money by raising precepts and often have some reserves (3-5% of the total revenue budget) available to them to deal with specific risks. Reserves can be achieved through income, through capital sales, or through taking savings more swiftly than anticipated. Finding the right people can be slow, and the vetting process, and the difference between what the capacity is and what current FTE numbers are will translate as a difference between income and expenditure which can then be rolled up into reserves. Knowing the position in terms of establishment/capacity and setting the budget for that level means that rather than saying *‘this is theoretically where we are going to be’* but then having senior officers and the resources director saying *‘yes that is theoretically where we’re meant to be but this is the level we are [actually] working to’*.

Where forces have reserves they can be earmarked for specific functions. Some forces earmark reserves to support some of the collaborative work which they are involved in with neighbouring forces and to support short-term fluctuations. Some of the reserves are being used to support the capital programme, because collaboration might not happen quite as quickly as anticipated to minimise the risk. Forces that are less reliant on central government funding haven’t been affected in the same way as other forces. A higher proportion of local taxation funding the force in comparison to government funding means some forces are in a relatively good financial state.

Understanding of PCC decision making and funding allocation seems unclear to forces. Evidence from one force identifies that *“when the PCC makes a decision involving expenditure or funding, there is an assumption within the force that the OPCC will be providing the funding; like its additional funding”*. The PCCs are the custodians of the public purse and therefore they are expected to have a few questions about whether they are comfortable spending public money in a certain way (e.g. priority based budgeting model). *“PCCs might agree to lots of things but it doesn’t mean they’re providing additional money for it”*.

Specific investment opportunities have been realised. One PCC has committed to investing more money into the systems thinking approach to support the place based working in each burgh, *“a broader approach which is moving into the public service reform world”*. It involves a one-off investment in terms of educating and training people in that approach and then as public service organisations, their leadership role is to co-locate or encourage and empower their staff to work with other organisations.

Constabularies are harnessing opportunities for additional funding and income generation which are contributing to financial viability and improving how demand is managed. *“Strong financial controls, a good understanding of current and future risks and taking action mitigate and reduce these risks”*. Forces have a good track record of robust financial management, accurate budgeting and achieving planned savings. The forces regularly review costs and spending, and invests in areas that will lead to reductions in demand, increase problem solving and improve workforce skills.

Forces have started to map all the resources (not just policing) that are aligned to the Police and Crime Plan. This involves a process of interviews with all the Community Safety Partnerships, to ask how much money they are putting in. Including the staffing for the community safety partnerships, the drugs and alcohol services, domestic abuse centres, the youth offending teams, housing, health, other services, the CJS to determine what the total spend for the Police and Crime Plan delivery is. This allows questions to be asked such as *“What are the risks associated in terms of funding cuts coming down the line for other people? What are the gaps in funding? What are the duplication areas in funding?”* It is easy to see how the half a billion from the police could easily turn into three quarters of a billion.

Others are using outside advice around the theme of prevention. *How much are the police and OPCC spending on prevention and how much are other partners spending?* This required local authority partners and the police to work in collaboration to identify the sums of money being spent collectively. The striking result of that piece of work was although a force was putting in about £3m through various community safety initiatives, the NHS was spending £55m because the demand was predominantly linked to alcohol and drugs. Developing strong partnerships with local authorities is not as difficult as building relationships with the NHS because of the changes they’ve gone through, the purchase of providers split has proved extremely difficult.

Contributory analysis looks at how much is contributed to a matter of concern, a public issue. *“What’s your contribution and how does that impact on the contribution of other organisations who might be looking at the same issue, perhaps from a different perspective?”* Looking at just *“the funding allocation [means] you’re missing eight tenths of the battle”*. However, this process is not being used sufficiently or robustly. Public sector organisations, other sectors as well, don’t actually look at the contribution that they put into something. One sector will go in and deal with something and pull back out, then the next sector will come in, pick something else up and pull back out, and so on. If everyone went in together, a better more effective impact might be achieved, and the pooling of resources might also be cheaper.

Forces also raise the question: what’s your outcome and how do you measure it? From a policing perspective it is linked to victim satisfaction (because they receive a service) and community engagement (because that is the wide community perception of this force). This covers not only victims, but also the rest of the community who will have opinions on the police service also. Most of the questions asked are vague and subjective: *‘How confident are*

you in the police? *'What's your perception of the police?'* There could be a number of indicators around both of those two primary indicators, which mean nothing because predominantly they are about day-to-day management. But in terms of public facing, victim satisfaction, public engagement, or public confidence; the victim satisfaction survey gives one, and Crime Survey England & Wales gives the other. They are national barometers. However, both of these surveys aren't applicable at the force level or the sub-force level, so forces have to do a significant amount of work locally. This links back to the primary demands in an area.

Mental health is being looked at closely to try to get a more accurate picture of that demand across the area. Significant funding was obtained from a local University to develop an 'Insight Hub'. This involves the big data aspect, getting all the information from all the sources and understanding how that feeds into a service that isn't just police based. *"I had this sort of utopian vision of everybody providing all of their information and having analysts that could analyse it all and come up with something sensible"*. This process has taken a long time but has required an outside body (e.g. academia) to monitor and manage this process.

Twenty percent of demand on policing is mental health related. Responding to people with needs is a shared responsibility across the police, ambulance service, local authorities, mental health trusts, primary and secondary care services, the fire service and housing providers. New joint mental health triage services reduce demand for crisis services and in-patient admission. Crime is not evenly spread across force areas: in one force 6% of the force area creates 25% demand. This 6% consists of 31 *"priority areas"* that generate high demand for policing and other public services. The areas are involved in longer term problem solving through multiagency partnership delivery plans.

However, even where there is a close liaison between the Police and Crime Community Safety partners and performance information is collated at a larger level with Local Authorities, there doesn't appear to be any feedback at strategic level which says *'If we did this and were more joined up then we might have a better impact'*. The information does not seem to go anywhere.

Forces need to look beyond just crime figures, and overlay these with deprivation and other information available in areas. Then in areas where there are emerging issues it may be possible to assess what that profile looks like using this information which has come from a number of sources. Building this data set using public sector information and sharing that information is something that needs to be developed. This would create a picture of that particular locality through data, data which is sense-checked with local people and councils. This then allows smaller scale issues to be addressed more cohesively. The platforms are there to pull that together in quite quick form, but there needs to be a mutual desire to do something with this information.

Value for Money

Considerations around value for money could focus on costs, benefits or a mixture of the two. Many PCCs indicated they perceived value for money as looking beyond costs, *“it’s not just about results, it’s about quality as well”*; outcomes for people. *“A load of accountants can sit together and do all the stats they want but it won’t show value for money.”* Considering value for money from this perspective focused more on victim satisfaction and the confidence in policing. The police have always historically been better at quantitative measures than qualitative measures. PCCs invest a lot of time talking and listening to people, setting up commissions to look at what needs to be done. Policing is about a service to the public and not about making money. *“Persuading the force that they are a public service and that they have got a set of customers has not always been the easiest of discussions”*. Consideration is needed who the customers actually are; the offenders or the victims.

Looking at the HMIC Value for Money profiles, assessing effectiveness and efficiency, provides areas for benchmarking against other forces. This allows Chief Finance Officers to make an assessment of whether the force is economic, whether the information and metrics are out there for them to make a judgement call. Efficiency is more difficult to assess, *“Have I got the resource in the right place doing the right things?”* There is little information on efficiency and how much waste there is. Some Lean Thinking type analysis is being used by some forces where everything has been process-mapped, all the waste has been reduced and everything has been re-engineered in every department.

Looking at value for money *“other than at a really macro level”*, using data from HMIC and league tables of what is spent, can be used to indicate *“who is getting the best value in the country for every policing pound”*. However, proving that is very difficult due to differing crime levels and different socio-demographic factors between different force areas. So although the units measured are often the same, there will be difference between forces simply because forces are different and have different problems. A rural force, which has one of the lowest crime rates in the country and one of the highest victim satisfaction rates measures value for money from a numerical/cost perspective.

Tensions arise when the perspective of value for money differs between PCCs and Chief Constable. Analysis would be carried out whether forces were buying resources at the cheapest price after a quality requirement was met. The most economically advantageous evaluation criteria would differ between a set of pens and a more strategic asset. However, where the resource or product is a service, the concept could be completely flipped around and say, *‘well actually I can afford £1m, what I am looking for is the best quality service that you can give me for £1m’*. At this extreme the whole of the competition is based on the quality.

Partnerships and commissioning

Government has driven the notion that police forces must work more cohesively in partnership with other forces as well as local authorities, councils and public sector agencies. This has occurred in a number of different ways: from working with the health sector and triaging mental health issues, to regionalisation of specific functions and departments, to sharing of resources and specialist capabilities and many more. Demand reduction, cost savings and the provision of a better service are the main expected outcomes. *“We’ve got to a point where people are saying we can’t go on like this. We’ve got to change, and we’ve got to change radically and fundamentally”*. One example includes building stronger regional alliances in areas such as procurement and back office work which reduces costs by cooperation. The formation of these alliances could lead to *“ultimately doing one thing instead of three things and save money using best practice”* (e.g. £62m over three years in one force). Although there is currently no political will to merge forces, some PCCs are open to the idea of Regional Police Forces.

Mergers and collaboration are predominantly driven by geography and government geography; neighbouring forces tend to be the starting place for things such as road, dogs, firearms, etc. Broadly it is thought there are four types of collaboration:

- 1) Collaboration with neighbouring forces. This is still likely to drive new savings in the short-term (e.g. savings around HR, around IT systems, around contact and control rooms).
- 2) Regional collaboration (e.g. Dogs, Firearms and Roads Policing Unit).
- 3) National collaboration. The nationalisation of the IT company and so on which provides another area for savings.
- 4) Blind collaboration/Outsourcing. The control room of the organisation you have outsourced to may not be based in the police force area receiving the service.

Collaboration is easy when no one loses anything and everyone gains a little bit of savings. For example, if back offices and HR become aligned or merged, where previously nine individuals were required to run payroll for three forces, a third of expenditure can be saved if the numbers are cut to six people across the area and *“no one notices the difference in services”*. However, if the collaboration and merging involves more specialised services such as dog units, this may change the service that is provided (e.g. when a dog unit is deployed).

PCCs work with forces to ask questions around *‘clearly this is an issue, how do we work together and get properly funded’* rather than *‘let’s now move that across to the other agencies’*. It’s about showing leadership across the whole public sector. Issues which are about whole public sector need to be looked at collectively to identify how demand can be reduced across the public sector rather than specifically in police and then work out the funding implications afterwards.

However, the difficulty is about ownership and trust, understanding that other partners are equals. The relationship has to be mature enough for mutual cohesive collaboration.

Understanding the different level of budgets between forces and county councils and sharing information is more fruitful than *“coming in and saying I want to work in a partnership and this is what you’ve got to do”*. The idea that everyone can do their own things in different ways has got to change. Working in isolation, in silos is not always the best use of resources.

“The police have a natural arrogance where the officers think it’s them to take the decisions and sort out whatever the problem may be”. This doesn’t help in conversations around collaboration and partnership. The onus appears to be one the police to cooperate with everybody else, they are told ‘you the police need to work with the partners’.

The commissioning side of the PCC role requires some questions around ‘how much do I get in return for every £1 I invest’. The Commissioning Strategy implemented by one force works on three levels, where Tier 2 is the Partnership Fund, an annual fund of £250,000 a year which puts money back into community groups. *“There is anecdotal evidence that for every £1 put in, an £8 return was received working in partnership”*.

Effective partnerships have to be enabled and established at a very senior level. Some forces have implemented Multi Agency Problem Solving teams (MAPS), neighbourhood-based teams which are co-located with other sectors (e.g. charities, social services, fire and rescue, ambulance services). Evidence is available that indicates forces can save significant money by co-locating with other sectors (one force states they have saved £120,000 a year by moving out of the police station and joining up with the district council). The implementation of MAPS is hoped to address the significant proportion of police demand that is related to health.

The knowledge base across policing indicates that forces are generally well-sighted on what’s happening in other forces. The idea to look at outside of policing, particularly for specialised and ground-breaking use of technology, big data, analytics etc. is not happening anywhere in the public sector. There is always a tension between the service, looking at what the service does and therefore joining up services, police force to police force; against the issue *‘is it more coherent to actually collaborate for an area with all of the partners that operate in that area’*. There is a greater understanding now of the interconnectedness; the interconnectedness of policing is on a much bigger scale with local partners than it is professionally with a force that is geographically proximate.

A semi-urban force also looks at the other sources of ‘earning’ money. The Proceeds of Crime Act earns the force approximately £100-£150,000 per annum, the Police Property Act (bikes and cameras in police stores which are never claimed and auctioned off by the force) raises about £50,000 a year, and the OPCC tops up this fund with £100,000. All of this Partnership Fund money is put back into the community. Community sector organisations apply for funding; tell us in 300 words how the project will benefit the community or divert youths away from crime (depending on what the theme is). On average the bid is between £250 and £10,000, a maximum of £250,000. The force hosts a multi-partnership day where all the partners are called – the Youth Forum, the BME community, a representative from the Police and Crime Panel, etc. – and all the bids are sifted through. All the ones through to the second

round are assessed in quite a rigorous approach. The money is allocated and project is evaluated at the end of it to assess the outcomes (site visits and financial audits).

Forces are at different stages of developing strategic partnerships or working in collaboration. Therefore, the amount of money involved in our partnerships varies. A lot of forces have quite a lot of money in the HMIC POA evaluations, returns that are in those partnership boxes because forces are delivering services in partnership, police to police and with external agencies. Other forces may collaborate with people but have no shared budgets. Often *“there is an awful lot of things that are done in collaboration”* but it’s not quite that mixed or joint commissioning. Work is being carried out on police force budgets where individuals are volunteered as a collaborative resource.

Other priorities the government/Home Office/HMIC should be focusing on

A number of other issues were identified which were deemed important for consideration at a more national or strategic level. HMIC inspections were generally positively received by forces, however their focus was considered too wide. A call was made for HMIC to focus on four or five issues specifically at any one time and not take on far too many tasks at once. It was calculated that in the time frame between December 2015 and April 2016 there had been eight HMIC reports about one police force in one form or another. Resources are so limited that hard choices have to be made and forces *“can’t be best in the class on everything”*.

HMIC also look at forces on a *“very two-dimensional landscape”*. If HMIC utilised contributory analysis, an informative methodology which can determine that *“when you put 5p, this is how much you are going to get back”*. Contributory analysis would be a good model for HMIC to consider because it looks at the wider contribution. However, this is very much dependent on their capability to look at other partners, not just police.

Police reform can’t happen in isolation. An understanding is needed of how all the complex constituent parts work with each other in a far more coherent way. There is money to be saved but also more streamlined, more efficient processes can be put in place to improve these services. Consideration has to be given to the diverse views, demographics and make-up of different police force areas. Previously, this type of strategic reform has been largely focused around the large metropolitan police forces. The issue around streamlining roads policing needs to be considered from a more rural police force where *“those sort of policing teams do not just deal with the type of crime that they might deal with”* in another force area. It’s a different model in different forces and it needs to be able to consider the impact that it has. There is concern that these resources will be taken away and will need to be replicated locally because the diversity of what those teams actually do is not understood. The data on this is incomplete and the development and utility of an evidence base is vital in this. *“You cannot make these decisions without understanding the knock-on effects and consequences of what it is that is being proposed”*.

The inspection regime was deemed inappropriate and unhelpful. The money that is top sliced from police funding for the inspections was thought to be better pumped into the police services. When money is tight, government and forces need to make the amount of oversight much smarter, to maximise service delivery. A high percentage of spending (up to 85% in some forces) is to be focused on the frontline but the system as a whole needs to be analysed to push that money down to the frontline.

Most local authorities are told their funding amounts for a three-year period, however policing is restricted to year on year information. In order to provide more stability in terms of longer term planning, more clarity is needed about what precisely forces are going to get for the next three years. The current financial situation has even resulted in individual forces and PCCs being able to increase the council tax by more than would normally trigger a referendum, so the council tax could increase by £5 or 3.3% for 2016-17. But forces don't know if that going to apply in future financial years and there is no certainty or clarity about that. The difficulty is that having put up the council tax one year by 3.3%, how many years can this continue without the electorate complaining. *"After years of being told by central government you've got to keep it down and we'll penalise you if you don't, now suddenly all, not quite all restraints off, but now we want you to put it up because we will assume you do. And if you don't then don't come to us for additional funding."*

Comparisons occurred between education and policing. "If a force really gets into the area of, in education terms, 'special measures', if it really gets a bad Ofsted report, it's very hard to get out from under that." It was suggested that HMIC utilised a more informal inspection service, similar to "school inspectors who didn't do an Ofsted on you" but instead identified where the strengths and weakness were and provided guidance for improvement and provided the help to do that. Once forces get labelled 'inadequate' all resources rush to addressing that issue and that can be "very destructive".

This was also picked up on by another police force who suggested that an organisation like the former Audit Commission, focused on highlighting problems and suggesting solutions, was more helpful than HMIC. HMIC is an agency that is pure inspection, without providing much scope for help. *"There is a school of thought that says, pure inspection is either too late because you've found that it's an absolute disaster or it's valueless because you haven't found anything wrong."* There needs to be a good relationship ('a marriage') between the operational entity which is a police force and the multi-million pound multi-faceted business which is a police force, and there is currently no institution that has an overarching view or remit.

The impacts of the decisions made by HMIC at a local level needs to be considered. HMIC are managing or inspecting against their own criteria. The local policing priorities which the PCCs have set and consulted on are not in line with that. There appears to be an imbalance between what is being looked at and being delivered locally and HMIC criteria. HMIC *"don't start their inspections from the Police and Crime Plan, and so to an extent the measurements that are made are not relevant to PCCs"*. HMIC inspections produce a lot of interesting, and logical

outcomes, but don't necessarily reflect the Police and Crime Plan. *"I think there is a fundamental misunderstanding of the role of the PCC in HMIC."* There needs to be more thought going into what is happening at the national level in terms of how can bridges be built locally to pull these things together. It's easy to say cut 10% of the budget, but can forces still deliver an effective service without that 10%. *"How much risk do you put into the system because you have cut back that particular service?"*

Forces have got to get much better at multi-dimensional decision making; choices have consequences.

"It is often celebrated that policing is really good at decision making and the frustration of working with partners is that they don't make decisions. What we don't often spend enough time reflecting on is that of the 20 decisions that we took, 19 were to sort out the mess we made in that first decision that we rushed. But we take loads of decisions."

Summary & Conclusion

Overall police are coping best they can with the challenges they face. The main consideration is that they have to continue to adapt as new demands and issues are thrown at them. Forces are moving to a culture of supporting some of the safeguarding issues, to a more victim focused perspective. The challenge is in responding to all of those challenges with the correct level of expertise and multi-agency approach.

PCC generally have good evidence of how resources must be allocated and use this information effectively to determine where money goes but there is no evidence of how specific decisions are made in terms of analysis of cost and benefits and understanding the optimum benefits.

Despite attempts to nationalise certain processes and systems across all 43 police forces, many differences continue to exist. *"There's nothing that defines policing like a difference"*. What forces actually do in terms of pure resource allocation and analysis of the impact is very different. Forces seems to be getting better at understanding the balance between service standards, business risks, and costs or savings. What is still difficult is assessing this all in context; *"putting the whole picture on the lid of the box on the table and actually making judgements"*, actively moving resource from one area into another.

For most PCCs their starting point for determining demand and allocating resources is their Police and Crime Plan. The balance must be reached between *'this is what resources are needed to deliver the plan'* compared to *'this is what people are willing to pay for policing'*. Budget allocation processes depend on the relationship between the PCC and the CC in terms of the level of control and influence. Where the relationship is relatively close, the PCC has more leverage in terms of shuffling money around to meet strategic demands. Financial analysis and performance measures are not universally applied or utilised. Some PCCs have

no interest in setting targets and measuring performance of police officers on the frontline, even though this is where some of the demand can be determined and assessed. New technological advancements can improve data collection; however analytical staff must be available to assess this information. Daily demand is difficult to assess unless specifically considered and the hidden demand or dark figure remains unknown (e.g. internal phone calls to reception).

PCCs need to balance reactive and proactive aspects of policing. Police culture determines they are predominantly reactive and therefore not very good at forward planning or thinking beyond the current and this is reflected in resource allocation – jump from crisis to crisis. *“Down the ages as the funding is cut significantly for policing experienced professional police officers could hear the mantra coming round and round ‘We just need a crisis’”*. After a crisis, resources are immediately available. However, PCCs need to plan over a four-year period and deal with the longer term issues – which may not be crisis material for the force but are important to the public who elect PCCs. PCCs can plan over a longer period of time but need to have a collegiate relationship with their Chief Constable.

Forces called for a bit more national political ownership around what the priorities are. There isn't enough *“air cover”* for individual PCCs or Commissioners to defend their decision making and people are vilified for not going out to every burglary or whatever may be considered a priority. There is a failure of accountability if the rhetoric continues to be at a national level, where nationally this is the funding that is being put against a service that is growing. *“Either the money has got to go up or the aspiration and the expectation comes down”*. Nationally there is £12b put into policing, and a certain expectation of what you get from that. HMIC measures need to more realistically reflect PCC objectives and priorities. Measurements of effectiveness and efficiency begin at a different base level than Police and Crime Plan. PCC priorities may not be what HMIC is interested in but some assessment of PCC impact may be beneficial.

This summary has reported the results of interviews with a number of PCCs and senior police staff. Any conclusions drawn are tentative, as the survey was designed to cover a number of forces of different characteristics but is not representative of all forces. Nevertheless, we have found that:

- The needs of a force (as seen by the professionals) differ widely from its needs as seen by other players (such as voters or journalists)
- The institution of PCCs has focused thought on value for money in some areas (such as how to maximise output given human and technical inputs) ...
- ... but less so in others (such as moving from crime detection to crime prevention; the opportunity costs of investigating crimes committed by deceased individuals; adaptation to cybercrime).

Further research is needed to put numbers on these impressions, and to pursue value for money into the domains where it is more difficult to pursue.

Appendix 4: Measuring Police Effectiveness

Anika Ludwig, Mike Norton & Iain McLean

Abstract

There are 43 territorial Policing areas in England and Wales, one in Northern Ireland, and one in Scotland. There is no serious political movement in favour of a single force to cover England and Wales. The multiplicity of forces makes it, in principle, possible to compare their performance. The UK government introduced elected Police & Crime Commissioners (PCCs) in 2012 with a view to improving the cost-effectiveness and accountability of local policing. It should be possible to compare performance figures from before and since this change to see whether the change itself is likely to have made a difference. As the PCC regime does not cover London or Scotland, it may be possible to make comparisons between forces that have a PCC and forces that do not. However, policing in Northern Ireland is so different in character from that in Great Britain that it cannot meaningfully be compared on the same criteria.

We examine previous attempts to measure police efficiency, which are beset by methodological difficulties. Inputs and outputs to measure police efficiency are difficult to measure because of the variety of work police are responsible for and carry out, and because crimes prevented are not measurable. As we can only measure the measurable, we present data on whether the introduction of PCCs have had any impact on public perception, feelings of safety and trust in the police forces.

The Labour government (1997-2010) had focused on community safety, and in its later years used levels of public confidence to measure police effectiveness. Effectiveness is, in principle, easier to assess than efficiency. There are two widely used sources: recorded crime statistics produced by the police, and the British Crime Survey. The former are subject to manipulation because of the degree of discretion in deciding what counts as a crime, and what counts as a clear-up. Recorded crime data are no longer certified as National Statistics by the UK Statistics Authority. Our results therefore use the British Crime Survey, but are subject to that survey's limitations.

We conclude that the introduction of PCCs has coincided with both a real-terms cut in police spending and an improvement in public satisfaction. But we are unable to show that the introduction of PCCs had any causal effect.

Introduction: policy context

Traditional policing occurs reactively, a response to whatever the current 'threat' may be. This means that resources are allocated in response to operational and political demands and public calls for service (DenHeyer 2014). In recent years, there have been efforts to direct resources to specific geographic areas of high crime or to specific crimes, and to apply intelligence-led targeted policing initiatives proactively (Innes 2011; Wilson & Weiss 2014). Demand for police services is rising but increased expenditure on resources is not feasible due to budgetary constraints, managing and allocating resources is crucial (Stockdale *et al.* 1999).

Researchers have traditionally found that the police utilised deterrence measures as their approach to crime control; via random foot patrols, emergency response, random stop-and-search processes, investigation and detection, etc., all of which are part of contemporary policing activity (Karn 2013). Increasingly, police forces are moving towards identifying and managing risk; shifting resources towards specific individuals (e.g. prolific offenders, repeat victims) or specific places (e.g. high crime areas or hot-spots) (Karn 2013).

As well as internal reforms and government budget cuts, socio-economic, demographic and technological changes also affect current patterns of crime which demand new responses from policing. The globalisation of markets for goods and services, the rapid expansion of new forms of communication, information technology and social media, the increase in personal mobility and migration, the growing income inequality and the fragmentation of families and communities are changing the patterns of crime globally that police officers face (Karn 2013). New threats create new forms of harm, particularly for the most vulnerable groups (e.g. children, migrants, the elderly, the poor). Identity theft, people trafficking and exploitation, investment scams and internet fraud and other emerging crimes present new challenges for the police, who are now required to work across local, regional and national boundaries to deal with criminal networks and changing modus operandi (Innes 2011; Karn 2013). The challenge facing police forces is to balance resources and service delivery levels with a decreasing level of funding and increasing expectations (Wilson & Weiss 2014).

In England & Wales, central government revenue grant to police authorities dropped by 22% between 2010 and 2015 (Ludwig & McLean 2016). At the same time, the UK (Coalition) government introduced wide-ranging reforms to police accountability, in particular the introduction of elected Police and Crime Commissioners (PCCs), and re-emphasised the police role as being first and foremost to fight crime. The previous (Labour) government had focused on community safety, and in its later years used levels of public confidence to measure police effectiveness.

Austerity means greater scrutiny of value for money, better evidence-based practice, and the reduction of long-term harm and demand through 'up-stream' intervention and prevention. The introduction of the College of Policing, which includes the assessment of police improvement through better use of research evidence and formal scrutiny of the effectiveness of police forces has resulted since 2014 in Her Majesty's Inspectorate of

Constabulary (HMIC)'s PEEL (police effectiveness, efficiency and legitimacy) inspection regime for all police forces in England and Wales. (Higgins & Hales 2016).

The policing mission is also being impacted by significant changes. As well as funding cuts police forces are dealing with new forms of governance and scrutiny, and there is a general shift away from volume crime reduction towards managing threat, risk, harm and vulnerability (Higgins & Hales 2016). Statistics show that many forms of recorded crime are falling (Farrell *et al.* 2010) but police workload is becoming more complex (College of Policing 2015); the internet has created new forms of crime and transformed old ones (McGuire & Dowling 2013) while growing international mobility, migration and more globalised markets have created new opportunities for criminals that manifest as harm in local communities. In some neighbourhoods global socio-economic factors have resulted in a number of factors which may lead to sectors of the population that are "*less visible to the police, more isolated, more difficult to engage and less capable of dealing with problems as a community*" (Higgins & Hales 2016).

Increasing decentralisation of police organisations means the manner in which resources are allocated between geographical areas for different services is of increasing importance. Previously, these allocations were negotiation or based on historical precedent. With increasing pressure for improved police accountability there is a need for police agencies to use justifiable methods to allocate resources (Schulenberg 2014), however limited amounts of information is available. How resources are allocated differs between jurisdictions (e.g. US forces allocate resources based on the number of calls for service, whereas in the UK it is based on the funding regime), making comparisons difficult (Loveday 2000; DenHeyer 2014). As a result of the changing environment, forces need to evidence transparent decisions, be able to evaluate outputs and outcomes, and demonstrate that resources are being used to generate the best returns for communities and society (DenHeyer 2009; 2014).

Previous attempts to measure efficiency

There have been numerous attempts to analyse crime using economic and econometric techniques. Dilulio (1996) argues that economists have not focused adequate attention on modelling crime or resource allocation through the use of sophisticated quantitative and modelling skills that are part of the economist's toolkit; instead remaining the domain of sociologists and criminologists who tend to use less sophisticated empirical analyses.

In a landmark, pioneer, contribution, Carr-Hill & Stern (1973; 1979) created a simultaneous equation model based on the premise that the demand for police services is partly determined by the crime rate, which in turn is affected by the level of police resources. This is a simultaneity issue in that the number of police officers can affect the level of crime and the level of crime can affect the number of police officers. Research which ignores this simultaneity problem falls foul of what we call the Carr-Hill-Stern test, and is therefore unreliable.

Benson and Rasmussen (1998) recommended the use of either time series or panel data as the foundation for a regression analysis model to develop a police resource allocation policy using an econometric approach. Official crime statistics (those reported and recorded by police) do not accurately reflect the actual number of crimes committed, but both cross sectional and time series analytical studies use this information as their basis. Inaccuracy can stem from the definition of crime, its interpretation and the administrative processes devised to record it (Weisburd & Eck 2004; DenHeyer 2014).

Proposed econometric models have been based on one dependent variable: the number of police officers, as a function of a number of different socio-economic and socio-demographic variables believed to be relevant to allocating resources. Developing an explanatory model through the construction of a regression equation will facilitate a better understanding of the situation under study and will allow experimentation with different combinations of inputs to examine and analyse their effects on the dependent variable (DenHeyer 2014).

The economic analysis of crime is concerned with the effect of incentives on criminal behaviour and the evaluation of alternative theoretical and operational strategies to reduce crime. Becker (1986) proposed that welfare maximising behaviour optimally allocates resources according to perceived returns, and links socio-economic conditions to an individual's expected return from legal and illegal activity. The economic literature focuses on the theoretical supply of offences in which crimes are related to the probability and the severity of punishment for the type of crime, the expected income from criminal activity, and perceived returns from alternative legal activities (DenHeyer 2014).

Stockdale *et al.* (1999) used criminological theory and economic techniques to assess the relative efficiency of police services. They concluded that as police services expand above a specific size, they typically encounter either diseconomies of scale, reduced technical efficiency, or a combination of the two. This was an extremely significant finding in terms of police organisational structure and resource allocation, and suggests that there is an optimum size of a police organisation, and this occurs at a relatively low minimum efficient scale or at a low number of police officers.

The use of the crime rate, for example, as a measure of the outcome of police activity, can be criticised on the grounds that it reflects only a small proportion of crime which actually takes place in a community (Mosher *et al.* 2002). Many studies (Coleman & Bottomley 1976; McCabe & Sutcliffe 1978; Weisburd & Eck 2004; Braga & Weisburd 2010) have indicated that recorded crime statistics are influenced by police discretion and their recording practices. The principal weakness in using aggregate data to analyse police effectiveness arises from the need to rely on gross data that is supplied by police (DenHeyer 2014). Difficulties in interpreting the research and the inconsistencies between the studies make it difficult to evaluate the aggregate approach in studying police effectiveness (DenHeyer 2014).

Current variables available for researching police efficacy have improved, due to increased desire to performance manage police force activities. Input variables are more diverse and

more specific to policing than formerly, and variables relating to outcomes and outputs no longer rely on 'clear-up' rates. Crimes recorded and cleared have been used as indicators of protection and crime prevention, however both are subject to measurement errors and manipulation (e.g. not all crimes are recorded) (Cameron 1989).

Official crime statistics are commonly used to judge police performance. However, crime is a social phenomenon and recording of criminal incidents is a cooperative venture between the police and the citizens. The level of cooperation varies from one area to the next and hence crime rates cannot be used to compare performance of police agencies in detecting and controlling crime (Verma & Gavirneni 2006). Criminal statistics are a function of the choices made by police (Carr-Hill & Stern 1979).

Police numbers and the level of crime

The relationship between police numbers and levels of crime have been debated for a number of years (see table 1). In 2008, an Australian study by Ogilvie and colleagues aimed to provide a comprehensive review of the literature on this topic. They focused on the impact of levels of police resources (mainly staff FTE) on crime activities (via recorded crime rates, rates of clearance, apprehension and arrest rates, and number of prosecutions) (Ogilvie *et al.* 2008). Their main conclusions were: police levels and crime rates are reciprocally related/ mutually interactive (a change in one may affect the other); an increase in the level of crime is correlated to an increase in police numbers; and there is no evidence which suggests that increasing police number effectively reduced crime (Ogilvie *et al.* 2008).

Many of these studies fail the Carr-Hill-Stern test. To avoid it, studies must assess policing before and after some exogenous shock, as in, for example, the introduction of a government initiative. Demonstrating an effect of police numbers on crime is also affected by the issue of causality – there are many issues that might affect both police numbers and crime including economic cycles or social change. Sherman and Eck (2002) did conclude that while there is consistent evidence that having *no* police (e.g. during strikes) significantly increases crime, the evidence of a marginal effect of increasing police numbers on crime is weak. Debate continues as to which social variables are associated with police staffing levels and which are associated with the level of crime (Den Heyer 2014).

The majority of studies which assess police performance have focussed on the impact of police activities on crime. Despite the multiple goals of policing and the complex nature of the relationships between police activities and crime rates, most of these efforts are postulated on a simple input-output relationship, which assumes a direct and simple relationship between policing and crime rates. In these studies, inputs typically include police budgets, number of personnel, and some type of-police strategy, e.g. patrol, criminal investigation or the use of technology. Typical output measures use official crime rates to measure the impact of police on crime (Murphy 1985).

Table 1: Previous research assessing the link between the number of police officers and levels of crime.

Author	Country	Study results
Cordner (1989)	USA	Investigated the relationship between police agency size and investigative effectiveness. Survey found no consistent variations in clearance rates by police agency size, it was reported that clearance rates decreased with increased investigative workloads.
Marvel & Moody (1996)	USA	Used police numbers per capita and crime rate to assess relationship. Found that causality worked in both directions, with a stronger effect of police numbers on crime. Also assessed relationship at city and state level and for a number of crime types. Statistical effects for homicide, robbery, burglary, auto crime and all crime were found to be significant.
Klinger (1997)	USA	Designed a police workload model to explain variations in police behaviour, used to explore the effects of increasing police numbers on crime levels. The level of police resources is a major determinant of how police respond to crime; as the workload increases there will be less time and resources available to respond to particular cases (and certain crimes may be prioritised). Main implications: workload effects could be reduced and more crimes could be cleared if police numbers are expanded.
Levitt (1998)	USA	The data used are a panel of 59 U.S. cities, with observations running from 1970-1992. Size of a police force systematically affects the willingness of crime victims to report crimes, and/or affects a police department's abilities to record crimes. It is assumed that an increase in police numbers increases the capacities of police to record crime, resulting in higher crime rates. This notion was not consistently supported. The size of variation is much more extreme in the USA.
Corman & Mocan (2000)	USA	Used two criminal-justice sanction variables: arrests for the specific crime (monthly data), and the number of police officers, from January 1970-December 1996 in New York City to provide new evidence on the relationship among crime, deterrence, and drug use. Used a regression analysis with lagged time effects and found significant deterrent effects of police numbers of robberies and burglaries, but not motor vehicle crime and homicide.
Kovandzic & Sloan (2002)	USA	Assessed impact of police numbers on crime - strength of association was small. Findings indicated that increased police levels led to lower rates of total crime - 10% increase in police levels reduced crime rates by 1.4% over time. Significant and substantial impacts of police levels of robbery, burglary and total crime. No effect on aggregate assault or murder.
Levitt (2002)	USA	Follow up to 1997 study which addresses criticisms by McRary (2002) over miscalculations. Used a two stage least square regression and found that original findings were still significant – there is a negative effect of police numbers on violent and property crimes. The impact of police on crime is estimated using two-stage least squares (2SLS) treating the police variables as endogenous and the other right-hand-side variables as exogenous

Zhao et al. (2003)	USA	Used police data from 4,482 cities and grant data was used to assess money spent on community schemes (including hiring – proxy measure of police numbers). Results suggest increasing police numbers was an effective method of increasing police arrests (particular offences), caution is advised (increased police numbers occurred within a framework of community oriented policing). Difficult to separate out the effects of increased police numbers from community policing activities.
DiTella & Schargrotsky (2004)	Argentina	The focus was to estimate the deterrent effect of police on car theft and to explore the internal validity of estimates. Utilised data on the location of car thefts before and after terror attacks. Found a large local deterrent effect of observable police on crime. No appreciable impact outside the narrow area in which the police were deployed was found.
Jackson & Boyd (2005)	USA	Examined the role of workload levels on police-recorded crime rates. Found that workload had an impact on police behaviour, police were more lenient when crime rates/workload increased. As workloads increases, crime prioritisation is likely to occur, therefore more police officers may produce increase crime clearance rates. Need to take into account that effectiveness of policing may vary between locations and crime types.
Klick & Tabarrok (2005)	USA	Looked at effect on crime of police mobilisation on 'high alert' days. The large declines in crime involving theft of and from cars support the idea that increased police presence reduces 'street crimes' during high-alert periods. Temporary increases in street police and CCTV are had less effect on homicide. An increase in police presence of 50% leads to a statistically and economically significant decrease in the level of crime on the order of 15%. Provide analyses that suggest this decrease is not due to changing tourism patterns induced by changes in the terror alert level.
Machin & Marie (2005)	UK	Used the introduction of the Street Crime Initiative in 2002 to assess the increased police presence and expenditure on robberies. Found it significantly reduced the number of robbers in the areas introduced.
Vollaard (2005)	Netherlands	Dutch study examining the effects of police numbers on crime reduction (via police and victimisation data between 1994 and 2003). In this time frame police personnel per capita grew by 20%, coinciding with the concurrent decline in crime rates. Increased police levels were associated with reductions in victimisation levels for violent crime, most types of property crime and nuisance (10%).
Chappell et al. (2006)	USA	Examined police organisational effects on officers' arrests rates in the US. Utilised multivariate analysis to show that number of officers (per 100,000 residents) was negatively associated with arrest rates. Areas with fewer officers per population results in greater workload.
Paré et al. (2007)	Canada	Examined how crime clearance rates varied across communities in Canada. Found that crime workload had no effect on crime clearance rates. Found most criminal incidents remained unsolved (77.3%) and a significant degree of variation in the workloads of officers (17.5-85.1 crimes per officer). Community socio-economics found to influence workloads (poorer areas resulted in heavier workload). Police effectiveness varies according to the characteristics of places.

Draca et al. (2008)	UK	Used increased police presence post 7/7 in London to assess impact on crime rates. 'Susceptible' crimes (violence, sexual offences, theft and handling, robbery) fell significantly in the treatment areas.
Holmes et al. (2008)	USA	Examined the effects of demography in police resource allocations in the US. Results indicated that population/pop density were significantly/positively associated with the number of police officers and expenditure. Results highlight that demographic characteristics of communities must be considered to obtain a clear understanding of the effects of police numbers on crime.
Lin (2009)	USA	Used a two stage least squares (2SLS) and two-stage quantile (2SLAD) regression model and found significant effects between numbers of police and number of property crimes, murder, robbery, burglary and auto theft.
Vollaard & Koning (2009)	Netherlands	Found significant negative effects of higher police levels on property and violent crimes. Combined victimisation survey data and 'precaution taking' methods with data on police expenditure and numbers.

Cordner (1989) investigated the relationship between police agency size and investigative effectiveness (measure of police success). Looking at various sizes of police departments in the US, he assessed whether the consolidation of small departments into larger ones was beneficial to investigative effectiveness. Small agencies were presumed to lack expertise in special aspects of policing, have inadequate equipment, employ low quality personnel, and suffer from wasteful administrative duplication. Larger departments were thought to devote a smaller portion of their personnel to general patrol duties and employ more specialized operational strategies. Although the survey found no consistent variations in clearance rates by police agency size, it was reported that clearance rates decreased with increased investigative workloads. In addition, greater resources devoted to investigations was associated with more clearances per officer, while clearance rates decreased with increased investigative specialization (Cordner 1989).

Neither police agency size nor police officer workload was significantly related to investigative effectiveness in the state-wide multivariate analysis. Both variables had inverse bivariate relationships with clearance rates, but the relationships washed out in the multiple regression analysis. When separate analyses were conducted, agency size and officer workload were positively related to clearance rates for metropolitan area police agencies, but negatively associated with investigative effectiveness for nonmetropolitan agencies (Cordner 1989).

Corman and Mocan (2000) used monthly arrest data over a 25-year period from New York City to provide new evidence on the relationship between crime, deterrence and drug use. They consider that current arrests may be influenced by current criminal activity, creating a simultaneity bias "*if contemporaneous values of arrests are included in the crime equation*" (Corman & Mocan 2000). Overall, they found that murders, robberies, burglaries, and motor-vehicle thefts decline in response to increases in arrests; an increase in the size of the police force generates a decrease in robberies and burglaries (Corman & Mocan 2000). They noted

that between 1970 and 1980, the police force of NYC decreased by about one third, but felony arrests increased (approximately 5%). Simultaneously, arrests for misdemeanours decreased 40% and for violations also decreased over 80%. Police were able to relocate resources to combat the most serious crimes (Corman & Mocan 2000).

Vollaard and Koning (2009) argue that given the current reliance on police statistics as a source of crime data, evidence on the deterrent effect of police is limited mainly to crimes that are relatively well reported and well recorded (e.g. domestic burglary and theft of motor vehicles). To address endogeneity between police and crime in non-experimental data, they use the fact that the distribution of police resources across municipalities in the Netherlands is based on a specific funding formula which includes predictors of local police workload such as housing density and length of roadways (Vollaard & Koning 2009). Given the time needed to hire and train police personnel and the practice of smoothing year-to-year changes in local police resources, actual police levels differ from police levels prescribed by the funding formula. The difference between actual and prescribed police levels are used as a source of exogenous variation in police levels. They find significantly negative effects of higher police levels on property and violent crime, public disorder, and victim precaution (Vollaard & Koning 2009).

As noted, there is an endogeneity problem with many of these studies, which arises from the simultaneous determination of crime and police presence. Another problem with most previous studies is that they have examined the effects of police numbers on crime levels in isolation from other variables which affect policing and crime (e.g. organisational characteristics, community demographics and composition, deployment procedures and policies, demands of different types of crimes) (Ogilvie *et al.* 2008). It is not possible to fully comprehend the effect of police numbers on crime levels without considering many of these variables as well as the variety of activities police are involved in and engage in. Research has now moved away from this simple relationship and has begun to focus on *“how police resources may be used more effectively to reduce crime and how the effectiveness of officer behaviour varies according to policing activities”* as well as the social characteristics of specific areas (Ogilvie *et al.* 2008).

It has been suggested that due to the varying effects police have in different areas, characteristics of places (e.g. population demographics, socio-economic variables, and types of prevalent crimes) should be considered in models assessing police efficiency (Ogilvie *et al.* 2008). Variables such as the number of patrol cars, officers on the beat, the level of expenditure, etc. are not indicators of police effectiveness (Thanassoulis 1995), but indicators of budget priorities. Thanassoulis (1995) also states that *“merely spending more money on the police [...] does not [necessarily] translate into crime-control action”*, focus must be on what officers do in the field that ought to be measured. Ogilvie *et al.* (2008) suggest that efficient utility of police resources may have a significant impact on crime as some *“policing activities are more effective than others”*.

Some studies have also focused on the impact of one-off, large-scale changes in police deployment under unique circumstances (e.g. terror offences or police strikes) resulting in short, sharp increases or reductions in visible numbers. Evidence suggests that the large-scale deployment of (temporary) additional officers following the bombings in London was associated with a reduction in crime (Draca *et al.* 2008). Given that such deployment patterns are short-term – and often related to other events – they provide limited evidence about the potential impact of smaller, marginal increases or decreases in police numbers (Braga & Weisburd 2010). There is little consensus amongst academics as to which social factors are related to criminal activity, how to model criminal activity or police resources appropriately, and which public policies serve to lessen criminal activity (Carr-Hill & Stern 1973; 1979; Benson *et al.* 1992; Weisburd & Eck 2004; Higgins & Hales 2016).

The number of arrests, response times, and reported levels of crime, are natural measures of effectiveness and tend to be the primary measures police utilise to appeal for expanded budgets (Carr-Hill and Stern 1973). Researchers almost always use either police expenditures or the number of police to measure police levels. The latter has a more direct relationship with the crime-reduction impact and because expenditures are sensitive to changes in budgeting classifications.

Data Envelopment Analysis (DEA) and attempts to measure Value for Money

The role of police in any given society is not defined clearly and police work covers a wide range of activities. Efficiency measurement also has to take into account that socio-economic and environmental factors influence the success of police work (PSPP 2000). Consequently, it is difficult to develop efficiency indicators, the main issue being how to quantify inputs and outputs of the police service, enabling Chief Constables to evaluate business decisions for resource allocation.

Furthermore, it is difficult to obtain data and to quantify the time spent by police on different activities (Cameron 1989). Traditional outputs related to police response (reactive policing) are often used in performance management studies due limited quantifiable data on non-accountable services. Many (Todd & Ramanathan 1994, Byrne *et al.* 1996, Drake & Simper 2002) have argued that even though much of the police's work cannot be measured, output and outcome measures can still be estimated. Stockdale *et al.* (1999) identified the "*growing need for the police to make resource allocation decisions transparent, to evaluate outputs and outcomes, and to demonstrate that resources are being used to generate the best returns*".

In order to begin to assess efficiency, effectiveness and value for money in policing, academics have sought to utilise a number of analytical techniques previously used in other industries. Data envelopment analysis (DEA) can be used to measure the relative efficiency of decision making units (DMUs) within an organisation or industry utilising a range of inputs and outputs. DEA has been used since the late 1970s as a relative performance measure in public sector services such as education and health. Coined by Charnes *et al.* (1978), DEA is a linear

programming non-parametric technique for constructing extremal piecewise frontiers as originally developed by Farrell (1957). DEA can be utilised in order to undertake a complete analysis of cost efficiency and its constituent components, allocative and technical efficiency (Drake & Simper 2004). In traditional DEA models, these DMUs usually set their input and output targets in recognition of their autonomy separately (PSPP 2000, Fang 2013).

The research about resource allocation by DEA may be classified into two categories. One category assumes the efficiency of DMUs is constant (Yan *et al.* 2002, Korhonen & Syrjänen 2004, Amirteimoori & Shafiei 2006, Hadi-Vencheh *et al.* 2008) while the other assumes the efficiency of DMUs is changeable (Beasley 2003, Korhonen & Syrjänen 2004, Wu *et al.* 2008, Lozano *et al.* 2009).

When utilised in police efficiency studies it has also allowed variations to be applied to the weights on outcomes in a manner that was able to show police performance from its most favourable position. DEA is similar to ratio analysis, it uses paired data elements (input and output) and ranks the results in order of their relative performance (Nyhan & Martin 1999). DEA provides a single measure of efficiency based on the inclusion of a number of inputs and performance variables (or outputs) (Carrington *et al.* 1997). Output variables can be broadly defined to include measures of efficiency (output), quality and effectiveness (outcome).

DEA assigns optimal weights to all input and output variables, based on the analysis of the “*maximum weights [...] for which an individual DMU compares most favourably*” and minimum weights for those variables for which it compares least favourably (Nyhan & Martin 1999). This produces a single DEA score (or efficiency score), a scalar measure of performance for DMU included in the analysis between 0 and 1.00. A low score, close to 0 means that the DMU is inefficient compared to all the other DMUs in the analysis, and the opposite is true for a score close to 1.00. Frequently these variables are turned into percentages, where a score of 1.00 is 100% efficient (Nyhan & Martin 1999, Verma & Gavirneni 2006).

Estimates of efficiency have previously been divided into two major analytical groups: frontier (measures of absolute efficiency) and non-frontier models (measures of relative efficiency) (Aristovnik *et al.* 2013). Absolute efficiency is a measure of the maximum theoretically possible performance of a police force (e.g. resources are utilised in the best possible manner). Unfortunately, this is not measurable (PSPP 2000). Relative efficiency compares performance levels whilst recognising “*that even the best relative performers should not be standing still, but improving their performance over time*” (PSPP 2000). Despite limitations on evaluating police efficiency, a number of studies evaluating the efficiency of police performance employing non-parametric (non-frontier) methods such as DEA have been carried out.

Thanassoulis (1995) analysed 41 police forces in England and Wales, and was the first to apply DEA to measure performance of police efficiency at a regional level. Adopting an output-oriented model, he analysed three outputs (the number of clear-ups of violent crimes, burglaries, and other crimes) against four inputs (the police officers employed at each force,

and the numbers of violent crimes, burglaries, and other crimes recorded). The research identified weaknesses in the accountability of performance due to omitted external factors, which may have led to dissimilarities in the identification of efficient performance units and their comparison with other peers (Aristovnik *et al.* 2014). Sun (2002), using the same inputs and outputs, measured the relative efficiencies of 14 police precincts in Taipei City, Taiwan. Utilising DEA and a number of other analyses (window analysis, slack variable analysis), this study found no significant influence of the resident population and the location factor on police efficiency levels (Wu *et al.* 2010).

In Australia, Carrington *et al.* (1997) measured the technical efficiency of the New South Wales Police Service using a two-stage procedure: DEA to calculate the efficiency for all police precincts and regression analysis to analyse the external environment and operating factors. They found that on average better management could reduce input usage by 13.5%.

García-Sánchez (2007) evaluated the effectiveness of Spanish police forces using DEA, and divided overall effectiveness into two categories, according to the classification of police actions. These were investigative effectiveness (the actions the officers perform in order to determine those guilty of the offence committed or the disturbance organized) and coercive effectiveness (the capability of police organization to control the delinquents operating in their district, as well as the quality, accuracy and reserve of the investigative actions). Overall they found that the *“economic works on the functions of police production can mainly be found in the empirical area and can be classified into two categories: those that attempt to test the postulates of the economics of crime through non-frontier methods; and those that concentrate on evaluating efficiency by means of frontier techniques”* (García-Sánchez 2007).

In the UK, Drake and Simper have published a number of related articles covering a 10-year period (2000, 2001, 2002, 2003, 2004). Building on Thanassoulis' work, they mitigated the limitation bias on relative efficiency scores by including *“environmental, socioeconomic, and demographic variables in their comparative analysis”* (Drake & Simper 2005). With a two-stage procedure the authors verified that the exclusion of external factors may lead to inaccurate efficiency scores with respect to some police units of analysis. To quantify the role of a given police force in its society, Drake and Simper (2004) identified outputs covering a wide range of policing functions, which they divided into three groups: *managerial* efficiency outcomes, *response/reactive* outcomes, and *proactive/preventative* outcomes.

In their first study, Drake and Simper found an interesting dichotomy – the levels of *pure technical efficiency (PTE)* appear to decline with police force size, however there was evidence of an inverted U-shaped relationship with respect to *scale efficiency (SE)* (Drake & Simper 2000). This was particularly noticeable for the Metropolitan police force which had an SE score of 57.5, the lowest of all forces; but a PTE score of 100 in each of the years they studied suggesting that it is a highly efficient police force with no obvious inefficiencies in resource utilisation. They concluded that *“given that the Met is the largest force in the country, this result strongly suggests that there are significant diseconomies of scale at work with respect to large police force operations. As in other large organizations, this is probably attributable*

to the extra bureaucracy and layers of management structure that tend to accompany large scale operations” (Drake & Simper 2000). Similar findings in their study the following year appear to confirm this finding. They suggest that “in terms of police force structure and resource allocation there is an optimal scale for police forces and that this occurs at a relatively low minimum efficient scale. It also suggests that attempts to utilise resources and improve efficiency by merging police forces is likely to be counter-productive for all but the smallest police forces” (Drake & Simper 2001).

The 2001 study identified the West Midlands as the least efficient police force; it is 79% less efficient than *“its efficient reference set forces in terms of translating its available resources into the specified outputs”* (Drake & Simper 2001). They further identified that the bulk of the inefficiency is caused by a failure to operate under constant returns to scale (PTE = 64.3 and SE = 33.3). Comparing their DEA scores and the Audit Commission scores of efficiency, they conclude that indicators in which performance is measured by single, non-joint, survey data which exclude the economic transformation of inputs into outputs, can produce misleading results (Drake & Simper 2001).

The difficulty in utilising DEA in policing efficiency studies has been in determining accurate input and output variables. Distinct categories of inputs outlined by the Chartered Institute of Public Finance and Accountancy (CIPFA) Police Force Statistics include: employment costs, premises-related expenses, transport-related expenses and capital and other costs. The output variable sets that have been utilised also show that the modelling of police force efficiency is far from straightforward (see Table 2). Due to the large range of services police forces provide, it is difficult to identify an appropriate output variable.

DEA has not appeared since 2005 as a technique to measure police efficiency, and the main UK authors (Drake & Simper) have moved on to use this technique in other sectors. After thorough consideration, we have determined not to use DEA due to the high fluctuations of results on a yearly basis between different force data.

There is a plethora of indicators and information about police outputs and outcomes. But, to date, it has not been possible to draw this information together to build a comprehensive or systematic measure of relative police *efficiency* in meeting their ultimate objectives of promoting safety and reducing crime, disorder and the fear of crime (PSPP 2000).

Table 2: Inputs and Outputs in Policing Studies.

Study	Inputs	Outputs	Country
Law Enforcement Agencies as Multiproduct Firms (Darrough & Heineke 1979)	1. Weighted average of all police wages.	1. Burglary clearances. 2. Robbery clearances. 3. Motor vehicle theft clearances. 4. Larceny clearances. 5. Total number of crimes against the person. 6. Population.	USA
Assessing police forces in England and Wales using DEA (Thanassoulis 1995)	1. Number of violent crimes. 2. Number of burglaries. 3. Number of other crimes. 4. Number of officers.	1. Violent crime clear up rate. 2. Burglary clear up rate. 3. Other crime clear up rate.	England
Performance Measurement in Government Service Provision (Carrington et al. 1997)	1. Number of police officers. 2. Number of civilian employees. 3. Number of police cars.	1. km travelled by police cars. 2. Responding to offences recorded. 3. Number of summons served. 4. Number of major car accidents attended.	Australia
Assessing the Performance of Municipal Police Services Using DEA (Nyhan & Martin 1999)	1. Total department costs. 2. Total FTE.	1. Number of crime report clearances. 2. Response time to call out. 3. Crime rate.	USA
Productivity estimation and the size-efficiency relationship in English and Welsh police forces (Drake & Simper 2000)	1. Total employment costs. 2. Premises related costs. 3. Transport related costs. 4. Capital and other costs.	1. Total crime clear up rate. 2. Total number of traffic offences. 3. Total number of breathalyser tests.	England
The Economic Evaluation of Policing Activity (Drake & Simper 2001)	1. Total employment costs. 2. Premises related costs. 3. Transport related costs. 4. Capital and other costs.	1. % of time officers spend patrolling beat. 2. Violent crime clear up rate. 3. Burglary clear up rate. 4. % success rate in answering 999 call. 5. % of officers arriving at a scene within a specified response time.	England

X-efficiency and scale economies in policing (Drake & Simper 2002)	<ol style="list-style-type: none"> 1. Total employment costs. 2. Premises related costs. 3. Transport related costs. 4. Capital and other costs. 	<ol style="list-style-type: none"> 1. Clear up rate. 2. Total number of traffic offences. 	England
Measuring the relative efficiency of police precincts using data envelopment analysis (Sun 2002)	<ol style="list-style-type: none"> 1. Number of crimes recorded. 2. Number of FTE police officers. 3. Number of civilian employees. 4. Level of expenditure. 5. Capital equipment used. 6. Other inputs. 	<ol style="list-style-type: none"> 1. Number of crime clear ups. 2. Number of non-crime activities recorded. 3. Number of police activities to prevent crime and investigate criminal cases. 4. Other outputs. 	Taiwan
The efficiency of the Spanish police service (Diez-Ticio & Mancebon 2002)	<ol style="list-style-type: none"> 1. Capital (number of vehicles). 2. Labour (number of officers). 	<ol style="list-style-type: none"> 1. Property clear-up rate. 2. Violent clear-up rate. 	Spain
The measurement of English & Welsh police force efficiency (Drake & Simper 2003)	<ol style="list-style-type: none"> 1. Total employment costs. 2. Transport related costs. 3. Capital and other costs. 	<ol style="list-style-type: none"> 1. Total number of cleared up crimes. 2. Number of cleared up violent crimes. 3. Number of cleared up burglaries. 4. Total breathalyser tests. 	England
The Economics of Managerialism and the Drive for Efficiency in Policing (Drake & Simper 2004)	<ol style="list-style-type: none"> 1. Total employment costs. 2. Premises related costs. 3. Transport related costs. 4. Capital and other costs. 	<ol style="list-style-type: none"> 1. Number of complaints per officer. 2. Average number of days lost per officer. 3. Number of crimes solved. 4. No. of emergency calls answered in target time. 5. Number of breathalyser tests. 	England
The measurement of police force efficiency (Drake & Simper 2005)	<ol style="list-style-type: none"> 1. Number of offences. 2. Net budget revenue. 	<ol style="list-style-type: none"> 1. Total offences cleared. 	England
Police Efficiency in Offences Cleared (Drake & Simper 2005)	<ol style="list-style-type: none"> 1. Number of offences. 	<ol style="list-style-type: none"> 1. Total offences cleared. 	England
Measuring police efficiency in India (Verma & Gavirneni 2006)	<ol style="list-style-type: none"> 1. Total expenditure. 2. Number of police officers. 3. Number of cases investigated. 4. Total reported crime. 	<ol style="list-style-type: none"> 1. Number of persons arrested. 2. Number of persons charged. 3. Number of persons convicted. 4. Number of trials completed. 	India

Evaluating the effectiveness of the Spanish police force through DEA (García-Sánchez 2007)	1. Number of offences	1. Number of offences solved. 2. Number of individuals arrested and taken to court	Spain
Evaluating US state police performance using DEA (Gorman & Ruggiero 2008)	1. Number of sworn officers 2. Number of other employees 3. Number of vehicles.	1. Murder rate 2. Other violent crime rate. 3. Total property crime rate.	USA
Measuring the efficiency of local police force (García-Sánchez 2009)	1. Total number of police officers. 2. Capital assets (total number of vehicles.	1. Km travelled by police vehicles 2. No. of arrested taken before the court 3. Number of accusations formulated. 4. Number of breathalyser tests carried out. 5. Number of vehicles removed from roads. 6. Number of accident reports drawn up.	Spain
Measuring the performance of police forces in Taiwan using DEA (Wu <i>et al.</i> 2010)	1. Labour cost. 2. General operating costs. 3. Equipment purchasing costs.	1. Number of crimes cleared up. 2. No. of RTAs resulting in death or serious injury. 3. No. of emergency calls. 4. Satisfaction levels with public security.	Taiwan
Evaluation of the efficacy and effectiveness of the Spanish security forces (García-Sánchez <i>et al.</i> 2013)	1. Number of crimes committed. 2. The operational efficacy in the previous years. 3. The variation in the no. of crimes.	1. Number of arrests. 2. The inverse of the variation of crimes committed 3. Changes in the population, economic activity rates and tourism index over 3 years.	Spain
Yearly evolution of police efficiency in Spain & explanatory factors (García-Sánchez <i>et al.</i> 2013)	1. Total no. of police officers. 2. Total number of vehicles.	1. Percentage of solved crimes.	Spain
Relative efficiency of police directorates in Slovenia (Aristovnik <i>et al.</i> 2013)	1. Number of criminal offenses. 2. Population. 3. Violations of public order regulations. 4. Violations detected during road traffic controls.	1. Investigative and other measures taken while investigating criminal offenses. 2. Police measures against offenders. 3. Police measures applied during road traffic controls.	Slovenia

Regression results

Our review has shown that measuring police effectiveness, efficiency, and value for money is important, urgent, and difficult. It is important because as with any other public service, policy-makers want to know whether money is well spent when it could be spent on many other good things, or not spent at all and tax reduced instead. It is urgent in any context where spending on policing and/or crime are decreasing. It is difficult for multiple reasons:

- An important output of policing is crime and disorder which do not happen because of the police presence. How can we ever know what would have happened absent the police presence?
- Recorded crime statistics are unreliable because police officers and authorities have both the motive and the opportunity to manipulate the numbers;
- Carr-Hill and Stern's (1973, 1979; hereafter CHS) challenge is rarely dealt with: increasing police numbers may lead to an increase in reported crime, because more police record more crimes. A weaker version of the CHS critique is that police numbers and crime numbers may co-vary, both relating to some common underlying factor;
- Although sophisticated statistical techniques (notably DEA) have been applied to the problem, they produce very unstable results.

Therefore, we have restricted ourselves to some plain vanilla tests using standard techniques and exploiting the natural experiment resulting from 41 police force areas (PFAs) introducing PCC elections in 2012 while the Metropolitan and City of London police forces did not.

We employ difference-in-differences, fixed-effects, panel regressions using the Metropolitan and City of London police forces as the control groups. Fixed-effects regressions control for differences across geography and time. For example, Bedfordshire and Surrey in 2013 have different ratings, while Surrey in 2012 would differ from Surrey in 2013. We isolate any change in rating metrics to the introduction of PCC elections. We cluster the standard errors on the police force area level, given that treatment occurs by PFA. Moreover, controlling for geography encompasses additional place-based factors affecting crime such as poverty level, educational attainment, and ethnic/religious diversity. Time trends account for factors that affect the nation as a whole, such as the recession beginning in 2007.

Expanded models include the covariate most likely to predict police force ratings: police spending. We utilize net revenue expenditures per head of population within the police

force area, which take into account formula spending, specific funding, council tax, and reserves.⁷

Table 3. Police Force Rating Descriptive Statistics⁸

Rating	Mean	Median	Standard Deviation	Source	Years
Net Revenue Per Head of Population	196.1	185.2	39.2	HMIC	2010-2016
Percent of Victims Satisfied	86.1	85.6	4.03	HMIC	2010-2016
Percent Agree Police Doing Excellent/Good Job	57.6	57.6	6.6	CSEW	2007-2015
Percent Agree with Police Dealing with Local Concerns	58.1	58.3	5.8	CSEW	2008-2015
Percent Agree Police Can Be Relied Upon When Needed	54.6	55.2	6.5	CSEW	2009-2015
Percent Agree Police Treat You with Respect	86.1	86.2	2.0	CSEW	2009-2015
Percent Agree Police Treat Everyone Fair	66.1	66.2	4.0	CSEW	2009-2015
Percent Agree Police Understand Issues Affecting Community	70.3	70.4	4.4	CSEW	2009-2015
Percent Agree Taking Everything Into Account Have Confidence in Police	73.0	73.4	5.2	CSEW	2009-2015
Percent Perceive Local Crime Has Not Gone Up	65.0	65.0	7.2	CSEW	2009-2015
Percent Confident Police Effective at Catching Criminals	65.3	65.6	4.8	CSEW	2009-2015

⁷ We used models with both nominal and real values, adjusting for inflation using the OECD consumer price index for the United Kingdom. The spending coefficient was slightly muted with inflation-adjusted figures, but was largely insignificant in most models as well. Ultimately, we settled on nominal values, considering the time fixed-effects account for inflation over time and affect the nation as a whole.

⁸ The observation count ranges from 294 to 378, depending on the metric and its years available, covering 42 police force areas (Metropolitan and City of London are combined in all but one metric).

We first list the summary statistics for police spending and all ten separate dependent variables for reference in Table 3. A cursory view of the standard deviations provides evidence of fairly heterogeneous distributions of the data, minus “Percent Agree Police Treat You with Respect.” Its high mean and median combined with unusually small standard deviation suggest a very narrow distribution, providing less variation and therefore weaker models for differences-in-differences regressions.

For the regression results, it is worth noting the ratings were coded on a 100-point scale. That is, 62% of a police force area agreeing with said metric is coded as 62 in the dataset. Thus, a PCC coefficient of say +2.0 refers to a 2-percentage point increase of that metric with the introduction of PCC elections, or an increased rating of 64%. This makes the results easily interpretable.

Largely, the results, shown in Table 4, are insignificant, and the few statistically significant results provide a more negative narrative. We list a limited number of the metrics, but the remainder can be found in the data appendix. Victim satisfaction, overall confidence in the police force, and those agreeing their police force is good or excellent all appear to be unchanged by the introduction of PCC elections. The percentage agreeing that police treat everyone fairly experienced a slight uptick of 1%, yet this result dissipates once we control for police force spending.

Interestingly, we find statistically significant decreases in the percent of the population perceiving local crime has *not* gone up and percent agreeing that police are dealing with local concerns, which are robust to models with spending controls. That is, after controlling for spending, the introduction of PCC elections resulted in about a 6% decrease in those perceiving local crime has gone down or remained stable and a 3% decrease in those agreeing that police are dealing with local concerns. In other words, PCC elections may in fact be making crime a more salient topic among public discourse, resulting in higher perceptions of crime and more discontent with addressing said crime.

Additionally, the coefficients for police spending has an insignificant effect on all ten metrics, suggesting from the data that increased spending does not lead to increased citizen satisfaction in each police force area.

Table 4: Effect of PCC Reforms on Police Force Ratings

Rating	Percent of Victims Satisfied	Percent of Victims Satisfied	Percent Perceive Local Crime Has Not Gone Up	Percent Perceive Local Crime Has Not Gone Up	Percent Agree with Police Dealing with Local Concerns	Percent Agree with Police Dealing with Local Concerns
PCC Reform	0.672 (2.666)	0.762 (2.356)	-3.106*** (0.459)	-5.699** (1.995)	-0.791* (0.346)	-3.074* (1.444)
Net Revenue Per Head of Population	—	-0.00228 (0.0341)	—	0.0480 (0.0348)	—	0.0442 (0.0272)
Constant	84.59*** (0.298)	85.08*** (7.223)	55.35*** (0.493)	50.09*** (7.276)	51.22*** (0.380)	46.14*** (5.816)
Time/Place Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Rating Source	HMIC	HMIC	CSEW	CSEW	CSEW	CSEW
Years	2010-2016	2010-2016	2009-2015	2010-2015	2008-2015	2010-2015
R ²	0.75	0.75	0.87	0.84	0.83	0.78
N	299	299	294	252	336	252

Table 4 (continued): Effect of PCC Reforms on Police Force Ratings

Rating	Percent Agree Police Doing Excellent/Good Job	Percent Agree Police Doing Excellent/Good Job	Percent Agree Police Treat Everyone Fair	Percent Agree Police Treat Everyone Fair	Percent Agree Taking Everything Into Account Have Confidence in Police	Percent Agree Taking Everything Into Account Have Confidence in Police
PCC Reform	0.742 (0.372)	-1.741 (2.058)	1.041* (0.398)	-0.407 (1.582)	0.633 (0.313)	-0.861 (1.395)
Net Revenue Per Head of Population	—	0.0420 (0.0388)	—	0.0335 (0.0287)	—	0.0232 (0.0276)
Constant	51.41*** (0.287)	46.81*** (8.225)	65.92*** (0.272)	58.71*** (6.159)	67.43*** (0.344)	64.31*** (5.886)
Time/Place Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Rating Source	CSEW	CSEW	CSEW	CSEW	CSEW	CSEW
Years	2007-2015	2010-2015	2009-2015	2010-2015	2009-2015	2010-2015
R ²	0.89	0.85	0.71	0.72	0.88	0.87
N	378	252	294	252	294	252

Taken altogether, the mixed results in Table 4 provide no statistical claim for PCC elections resulting in higher citizen satisfaction of their police forces, and in fact per the data currently available suggests PCC elections have made crime rise to the forefront of public consciousness. Larger claims may be made as PCC elections become a more regular pattern for voters.

The final two models investigate the democratic mechanisms of PCC reforms, asking if ratings affect turnout or vice versa.

It would be an interesting democratic argument if for instance higher (lower) ratings preceding an election led to lower (higher) turnout, or if higher (lower) turnout led to higher (lower) ratings after an election. Recent literature suggests the former, that higher citizen satisfaction results in lower turnout (Ezrow & Xezonakis 2016). Because PCC elections have only occurred twice, the observations are limited of course.

For observing how ratings affected turnout, we averaged a PFA’s ratings for all years before and including 2012 and also for 2013 to the most recent year available for the rating. Since Greater Manchester Police are phasing out the PCC role in 2017 and did not have 2016 elections, they were excluded, bringing the observation count to 40 for each election (80 total). The summary statistics are shown in Table 5 for reference.

Table 5: PCC Election Turnout Descriptive Statistics by Year

Year	Mean	Median	Standard Deviation
2012	15.1	14.8	1.8
2016	26.4	24.1	6.7

The models, listed in Table 6, had high R² values (all about 0.78), but the coefficients for ratings showed that they had a statistically insignificant effect on turnout. That is, using multiple metrics for how constituents viewed their police force, higher or lower ratings did not appear to affect their likelihood of actually voting. The strongest coefficient for all models was the dummy variable for 2016 observations, meaning the largest factor for increased turnout was simply the second iteration of PCC elections.

Table 6: Effect of Pre-2012/Pre-2016 PFA Ratings on 2012/2016 PCC Election Turnout

	Turnout Percentage	Turnout Percentage	Turnout Percentage	Turnout Percentage	Turnout Percentage
Rating	0.271 (0.502)	0.0216 (0.334)	0.0457 (0.387)	-0.0375 (0.288)	-0.333 (0.833)
Constant	-7.972 (42.64)	13.87 (18.63)	12.50 (21.78)	17.00 (14.82)	43.61 (71.60)
Time/Place Fixed Effects	Yes	Yes	Yes	Yes	Yes
Rating Source	HMIC Percent of Victims Satisfied	CSEW Percent Agree Police Doing Excellent/Good Job	CSEW Percent Agree with Police Dealing with Local Concerns	CSEW Percent Agree Police Can Be Relied Upon When Needed	CSEW Percent Agree Police Treat You with Respect
Years	2010-2016	2007-2015	2008-2015	2009-2015	2009-2015
R ²	0.78	0.78	0.78	0.78	0.78
N	80	80	80	80	80

Table 6 (continued): Effect of Pre-2012/Pre-2016 PFA Ratings on 2012/2016 PCC Election Turnout

	Turnout Percentage	Turnout Percentage	Turnout Percentage	Turnout Percentage	Turnout Percentage
Rating	-0.315 (0.380)	-0.0274 (0.475)	0.0758 (0.477)	-0.446 (0.336)	0.499 (0.510)
Constant	36.04 (25.32)	16.97 (33.01)	9.675 (33.89)	42.32* (20.38)	-16.63 (32.55)
Time/Place Fixed Effects	Yes	Yes	Yes	Yes	Yes
Rating Source	CSEW Percent Agree Police Treat Everyone Fair	CSEW Percent Agree Police Understand Issues Affecting Community	CSEW Percent Agree Taking Everything Into Account Have Confidence in Police	CSEW Percent Perceive Local Crime Has Not Gone Up	CSEW Percent Confident Police Effective at Catching Criminals
Years	2010-2016	2007-2015	2008-2015	2009-2015	2009-2015
R ²	0.78	0.78	0.78	0.79	0.78
N	80	80	80	80	80

The second model reverses the causal direction, asking if turnout affects how citizens rate their police force (e.g. higher involvement in PCC elections begets greater community buy-in and therefore higher ratings). It is shown in Table 7.

Because we only have one election with post-election ratings (2012, and average PFA ratings for years 2013 to the most recent year available), that limits the observations to 40. Without a time component, these models are basic, run of the mill OLS regressions with limited statistical power, which can be observed in their extremely small R^2 values.

The coefficients are again statistically insignificant, meaning that higher turnout in 2012 did not lead to higher PFA ratings in the years following.

Overall, both of these results, PFA's pre-election ratings' effect on election turnout or election turnout on PFA's post-election ratings, suggest a nearly non-existent link between how voters view their police force and the process of voting. Given we have only observed two cycles of PCC elections, this democratic mechanism may improve as voters acclimate themselves to electing police crime commissioners in charge of their local police forces and as more data becomes available.

Conclusion: Observable implications and further work.

In an earlier paper, written before we had full access to the CSEW data, we reported two relevant findings:

- we undertook textual analysis of all the successful 2012 manifestoes. We wished to see whether Conservative and Labour candidates stressed different themes, and whether political-party winners stressed different themes to successful independent candidates. The results were null. There was no measurable difference among the three classes of successful candidates. In political science jargon, the initial PCC elections were 'valence' not 'position' elections.
- Using the Metropolitan Police, which has no PCC, as a benchmark, we compared the HMIC ratings of forces for the six years (2007-2012) before the introduction of PCCs and the three years (2013-15) since their introduction for which data are currently available. We found a statistically significant increase in police force rating, about 6 percentage points increase, from the PCC introduction ($R^2=0.65$). (McLean *et al.* 2016, pp. 12-13).

Table 7: Effect of 2012 PCC Election Turnout on 2013-2016 PFA Ratings

	Percent of Victims Satisfied	Percent Agree Police Doing Excellent/Good Job	Percent Agree with Police Dealing with Local Concerns	Percent Agree Police Can Be Relied Upon When Needed	Percent Agree Police Treat You with Respect
Turnout	-0.302 (0.219)	-0.191 (0.434)	-0.201 (0.356)	-0.550 (0.346)	0.193 (0.138)
Constant	91.85*** (3.326)	64.71*** (6.586)	64.40*** (5.398)	66.98*** (5.247)	83.90*** (2.100)
Time/Place Fixed Effects	Yes	Yes	Yes	Yes	Yes
Rating Source	HMIC	CSEW	CSEW	CSEW	CSEW
Years	2012-2016	2012-2015	2012-2015	2012-2015	2012-2015
R ²	0.05	0.01	0.01	0.06	0.05
N	40	40	40	40	40

Table 7 (continued): Effect of 2012 PCC Election Turnout on 2013-2016 PFA Ratings

	Percent Agree Police Treat Everyone Fair	Percent Agree Police Understand Issues Affecting Community	Percent Agree Taking Everything Into Account Have Confidence in Police	Percent Perceive Local Crime Has Not Gone Up	Percent Confident Police Effective at Catching Criminals
Turnout	0.297 (0.319)	-0.0465 (0.294)	-0.154 (0.344)	0.442 (0.400)	0.0431 (0.267)
Constant	61.24*** (4.832)	72.71*** (4.458)	77.97*** (5.215)	64.12*** (6.067)	67.24*** (4.054)
Time/Place Fixed Effects	Yes	Yes	Yes	Yes	Yes
Rating Source	CSEW	CSEW	CSEW	CSEW	CSEW
Years	2012-2016	2012-2015	2012-2015	2012-2015	2012-2015
R ²	0.02	0.001	0.01	0.03	0.001
N	40	40	40	40	40

Some of the questions in CSEW potentially reveal sensitive information about individuals (although none of the ones that we wanted to use did). Therefore, although our only interest in more detailed data was to get reliable disaggregation to the level of each PFA, we had to undergo screening for access to sensitive data. This process took some months (and will do for follow-up researchers). The results we now present therefore complete the work we have been able to do in the lifetime of our project. Readers may be disappointed that most of our results are null. But statistical insignificance is not policy insignificance. We therefore conclude by underlining the policy significance of our work, and offering some pointers for future research.

1. The introduction of PCCs in 2012 had very modest results. Although HMIC ratings of forces with PCCs have been improving, compared to the ratings of the PCC-less Metropolitan Police, this result could just as easily be read as the relative deterioration of one force, rather than the relative improvement of 41. PCC candidates did not differ in their policy approaches – the election is a ‘valence’ one (who will do the best job?) rather than a position one (what is your policing priority?). We found no effect, however, from the performance of forces between 2012 and 2016, and the political outcome of the 2016 PCC election.
2. Measuring efficiency of police forces is very difficult, and may be a blind alley despite the very substantial resources put into it by many research teams in many jurisdictions. Fundamental problems include: the non-measurability of crime prevented; the Carr-Hill-Stern observation that more police leads to more reported crime, and the prevalent problem of showing direction of causation. Our own results tend to confirm this. Although satisfaction with police services is increasing, the imminence of PCC elections seems to have been associated with increased perception of local crime – as if, plausibly, the very fact of the election leads more people to talk about crimes.
3. Measuring effectiveness, on the other hand, is more promising. As conventionally defined, effectiveness is a measure of outputs achieved per input. One relevant output is the degree of public belief in their security. This may be secured by unmeasurable efficiency improvements (for instance, increasing the number of crimes prevented), but is in itself measurable. Here, the picture looks relatively rosy for UK policing. Inputs have sharply declined, see e.g., Ludwig and McLean 2016b, Table 1. But the output measures of public satisfaction, and of HMIC ratings, have not declined. It is thus tentatively possible to conclude that the effectiveness of policing in England & Wales has improved since 2010.

Further research is needed. It always is. Our attempt to extend the analysis to Scotland was defeated by data limitations. This is unfortunate for at least three reasons. Scotland has no PCC. It has a single force, recently, and controversially, amalgamated from eight. And the Scottish Government has put relatively less resources into policing than has the UK

Government. That is an obvious direction for further research, as are broader international comparisons. We do not pretend to have exhausted the subject.

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