Policing in a networked world

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Foreword

Policing is at a critical juncture. While the police are viewed largely positively by the public, an emerging set of challenges threatens to undermine both the capability of police organisations to stay ahead of crime and, crucially, the public perception that they are doing so.

A complex interplay of demographic and societal changes, allied with technological innovations (particularly in digitisation), has created new and varied types of crime. Criminal networks are exploiting these developments in an increasingly borderless fashion. Meanwhile, budgetary constraints are limiting the ability of the police to respond strategically to these challenges.

This has increased the risk of a gap not only between police capabilities and the crimes they must tackle, but also between the police and the public as people see that this new era of crime is not being adequately addressed. All of this needs urgently to be tackled if policing is to stay connected with and fulfil its mission in democratic society.

For this report, we have analysed six countries – Australia, Canada, the Netherlands, Norway, Sweden and the United Kingdom (UK) – to identify the key challenges that the police are facing in this context, as well as to show how police organisations are responding to those challenges.

Specifically, we used insights from 25 interviews in the final months of 2017 with the most senior policing leaders in the six countries and blended them with our own decade's worth of experience supporting police and law enforcement organisations operating at local, national and international levels. We would like to express our sincere thanks to those who participated, both by giving their insights in interviews and by allowing us to include some of their comments in this report.

Our report concludes that the challenges and opportunities facing policing require an ambitious, sophisticated and unified response to ensure that the police meet the public's expectations of law enforcement. Furthermore, this needs to be tackled with urgency.

We recognise that countries not included in our study may well have different insights, given differing cultural norms and societal and political contexts. We also aim to offer solutions that are globally applicable with local adjustments. We therefore hope to expand our work to involve a wider range of countries, including those with developing economies, using PwC's global network, by tapping into the expertise and experience of police leaders worldwide – thus broadening the scope and applicability of our insights.

Policing in a Networked World has been produced by PwC's Global Government Security Network (GGSN). The GGSN is active in more than 50 countries and brings together our leading practitioners in public safety, justice and security.

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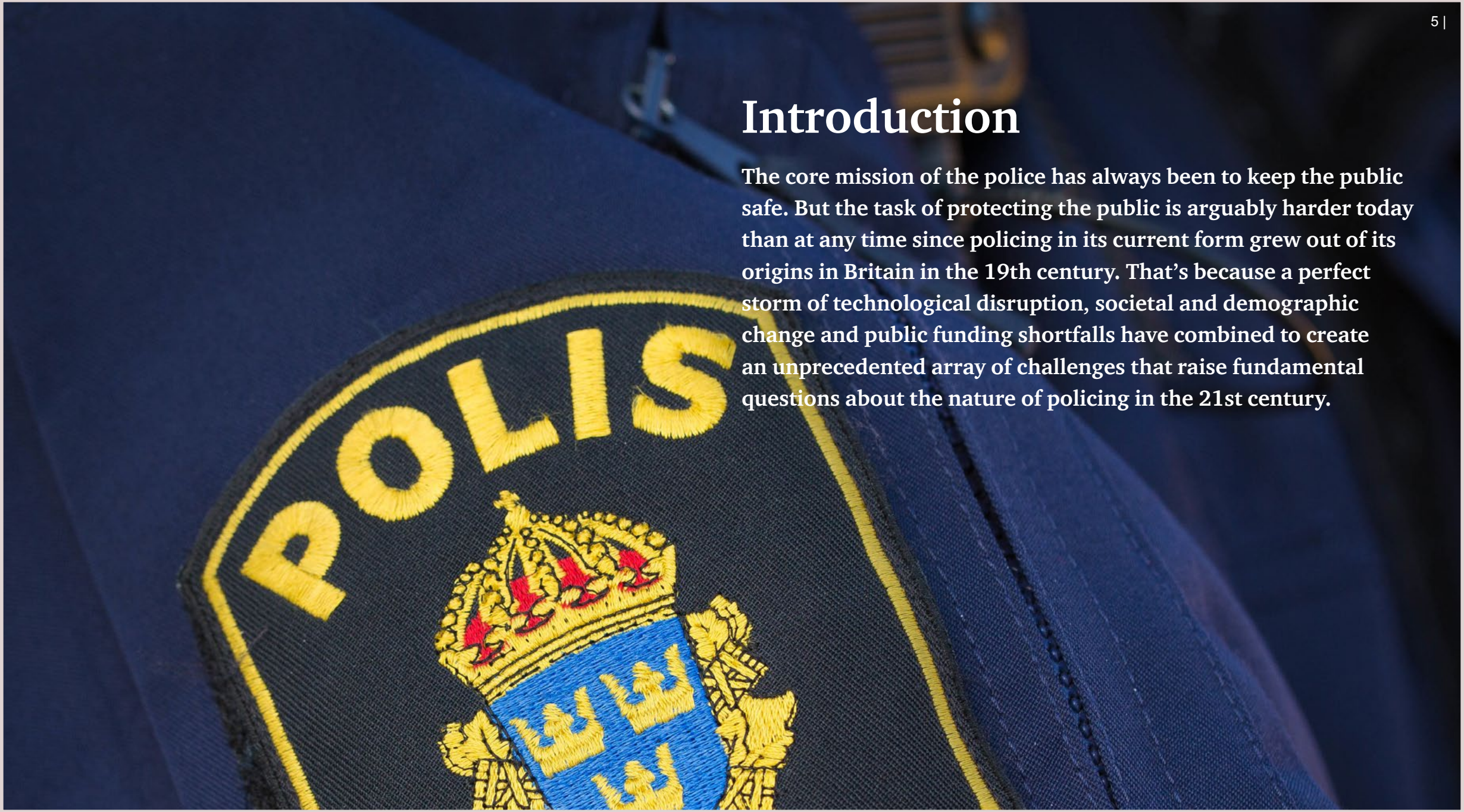


Introduction

The core mission of the police has always been to keep the public safe. But the task of protecting the public is arguably harder today than at any time since policing in its current form grew out of its origins in Britain in the 19th century. That's because a perfect storm of technological disruption, societal and demographic change and public funding shortfalls have combined to create an unprecedented array of challenges that raise fundamental questions about the nature of policing in the 21st century.

“The police are the public and the public are the police.”

Sir Robert Peel (1788-1850), founder of professional policing

Crime is moving indoors and online, and away from the streets where the police have always been – and have seen themselves as being – on the front line. Domestic violence, child and elder abuse and sexual servitude are taking place behind closed doors while digitisation – and the cybercrime that it has enabled – has brought with it a type of criminal activity that is hidden and borderless. Communities have moved online and require online policing, posing a fresh challenge for law enforcement in dealing with what we might call ‘complex crime’ (see Exhibit 1).

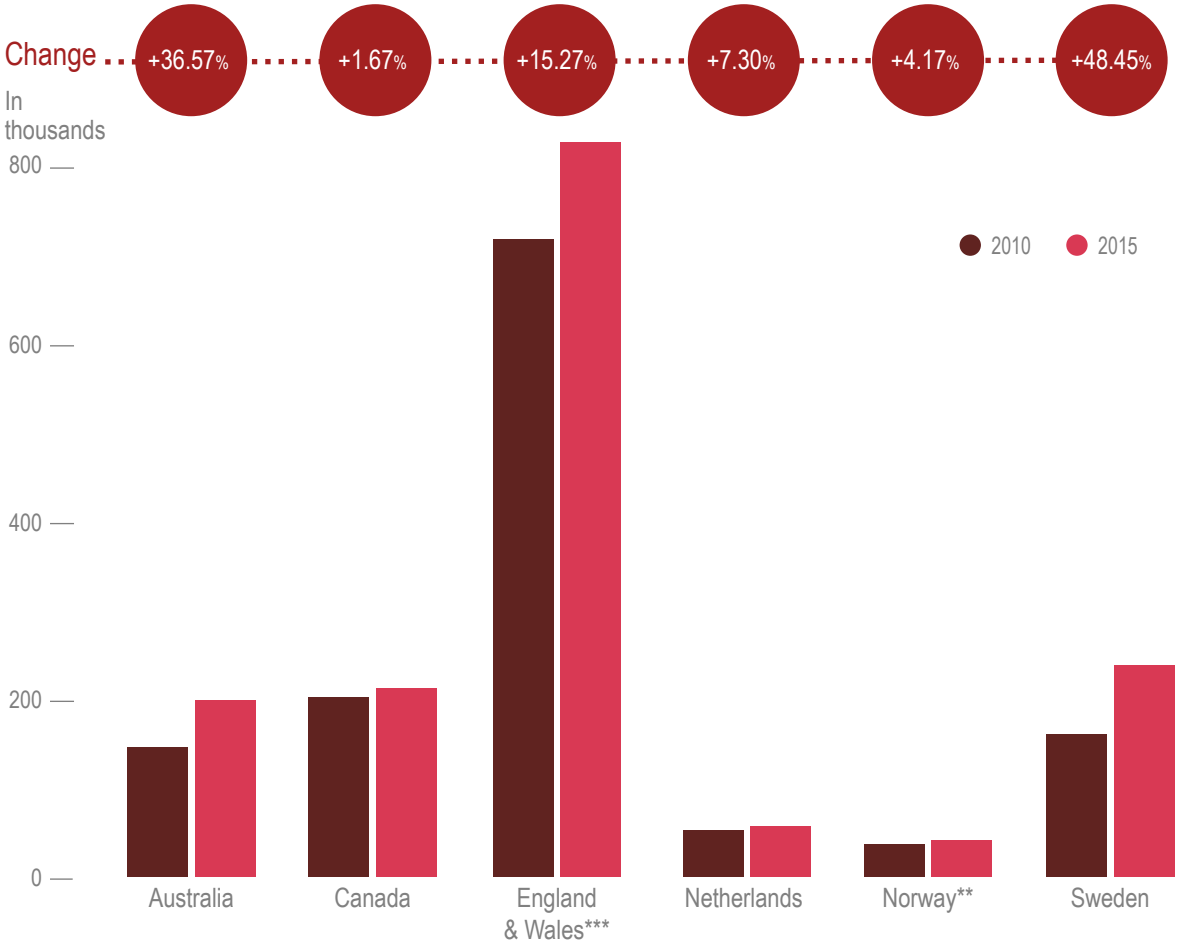
The proliferation of data – even such basic data as mobile phone texts – has brought with it the twin challenges of how the police should analyse that data to help them reconnect with communities and how they can best exploit data to help shift policing to a more proactive, less reactive, model (see ‘Algorithms in Canada’ case study).

In short, the traditional model of frontline policing – what we might call the ‘police station and patrol model’ – is no longer suited to tackling new emerging crime types and the societal behaviours that data and technology are enabling.

Exhibit 1

Complex crime is on the rise

Number of complex crimes* committed



Note: Data has been updated from a previous version of the report on 14 June 2018.
*Complex crime types: We define complex crime to include sexual offences, fraud and drug offences (both trafficking and possession).
**The data for Norway is for 2014
*** Please note we have used 2011 crime data for E&W as the fraud figure for 2010 is not comprehensive

Source: All numbers have been calculated using publicly available data. See Endnotes for source material.

Case Study #1: **Algorithms in Canada**

Being able to predict where crime is likely to take place has long been in the realm of the impossible – until now.

In the Canadian city of Vancouver, the police have made remarkable progress in cracking the challenge of predictive policing by combining two things: geography and algorithms. Together, they are able to help the police predict with remarkable accuracy where certain types of crime are likely to be committed, and when, in blocks of two hours, within a 100-metre diameter.

The origin of this capability was that a police employee in charge of the organisation's analytics programme also happened to be an adjunct professor who taught analytics on the side, giving the police a link to key academic institutions. The police tapped into the geography expertise of the University of Victoria and mathematics expertise at Simon Fraser University to develop a comprehensive algorithm that looked at historical crime patterns, property values, traffic flows, the weather, and even the rate at which graffiti is painted on walls to assess where the next crime might be committed.

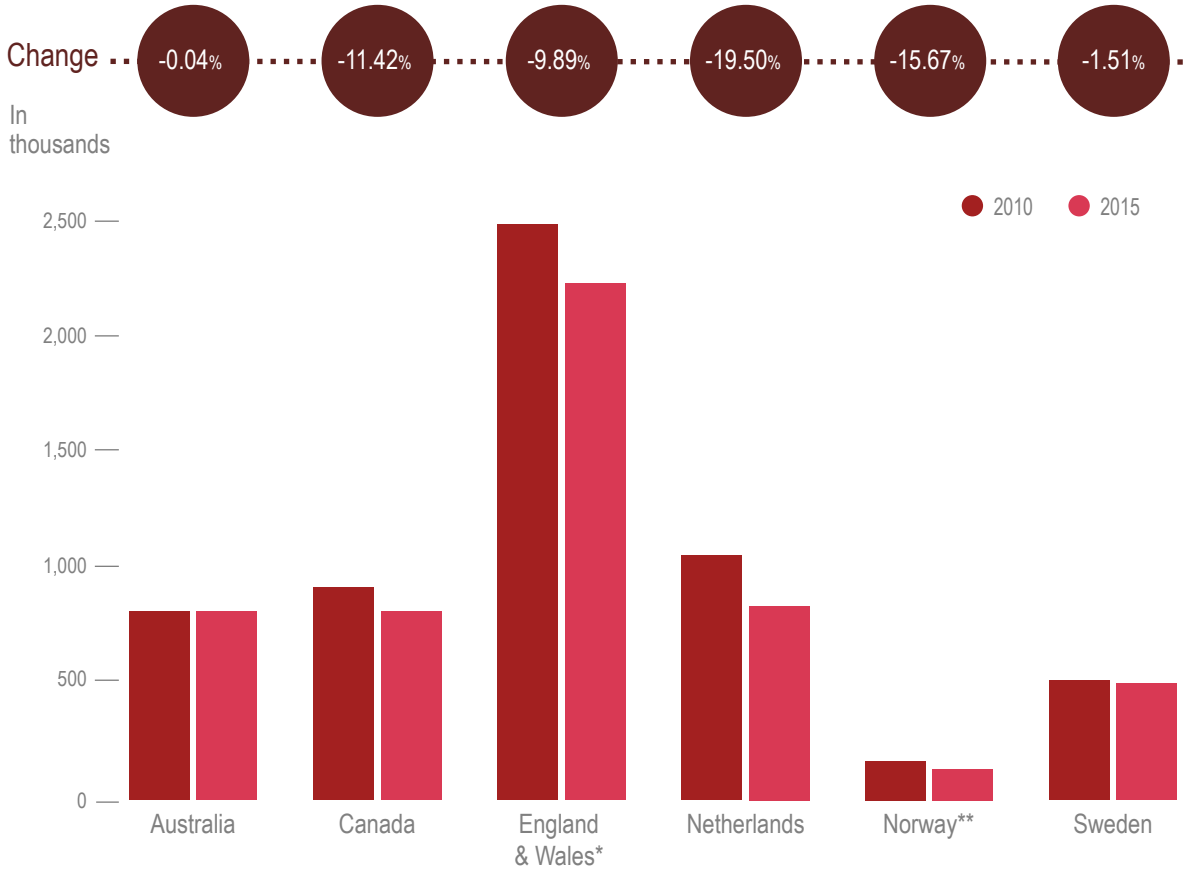
That information is then provided to police officers on the move in patrol vehicles, who can access the function via laptops on board. Simply by clicking an onscreen button, officers can see not only where 'break-and-enters' have been committed in the past two hours, but also where they are most likely to occur next. In the areas where this system has been applied, crime has dropped by double digits.

"We brought 'hot spot' policing as far as we could, and now we've moved into the realm of predictive policing," said Adam Palmer, Chief Constable of the Vancouver Police.

Exhibit 2

Traditional crimes are in decline

Number of traditional crimes* committed



*Traditional crime types: We define traditional crime to include theft, motor theft, burglary, robbery and serious assault.
**Please note we have used 2011 crime data for E&W as the fraud figure for 2010 is not comprehensive
***The most recent data for Norway is from 2014

Source: All numbers have been calculated using publicly available data. See Endnotes for source material.

In addition, the incidence of what we might call traditional crimes, such as theft, burglary and assault, have declined across the six countries that are the focus of this report (see Exhibit 2).

Yet while traditional crimes have broadly declined, some police organisations are also grappling with a worrying rise in what we might call 'real world' crimes like terrorism, gang violence and organised crime. In the UK, for example, such crimes are on the rise and are becoming more difficult to manage because each of these three phenomena are linked to the online world, separate from the trends of cybercrime and online fraud. A recent spike in knife attacks in London – reportedly fuelled by gang rivalry stirred up by social media activity – has intensified the spotlight on the relationship between police funding, presence on the streets and policing strategy.

All this is occurring as societal norms and expectations of policing are changing, with migration and immigration in many Western countries changing the demographic makeup of communities and requiring more agile and community-sensitive policing. Migrants often have very different perceptions of police from native citizens based on past norms and interactions with law enforcement in their countries of origin.

Criminals have access to new markets and alternative supply chains, and trends such as mass migration enable them to more readily conceal human trafficking. Urbanisation has reduced population size in rural and farming communities, leaving those communities feeling more vulnerable. Finally, many police organisations face budget cuts or other funding constraints that make it hard to effectively face these challenges (see Exhibit 3).

These factors have combined to create the most significant disruption to law enforcement for generations and, arguably, ever. This makes the police's core job of upholding law and order, fighting crime and keeping the public safe increasingly difficult. The direct impact on police organisations is that there is a potentially widening gap between the locus of crime and the practical ability of the police to tackle it.

In some cases, this is eroding public confidence and trust in the police, in turn raising the risk of a legitimacy gap between law enforcement and society.

In short: the police may no longer be the public, and the public may no longer be the police.

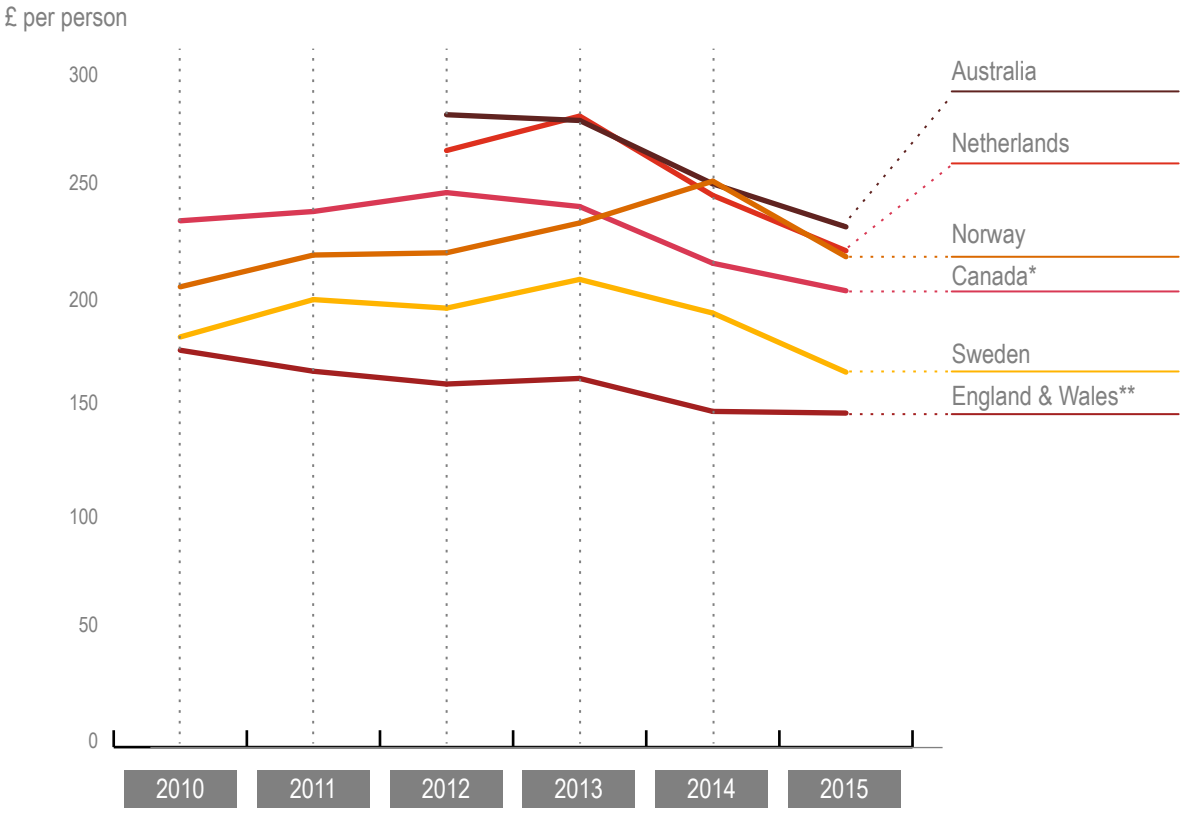
A look at some data is helpful. In the Netherlands, a steady rise in public satisfaction with the police that began in 2010 started to reverse in 2016, according to the latest data available.

In the UK, public satisfaction with the police has remained fairly steady in recent years. In the latest Ipsos MORI survey of public attitudes to the police, published in December 2017, confidence in the police's ability to provide protection during a terrorist incident had increased markedly since 2016. Over half (55%) of respondents said that they

Exhibit 3

The funding squeeze

Police funding per capita



*Funding for Canada is policing expenditure.
**Funding for England and Wales includes (i) Home Office Police Core Settlement; (ii) Department for Communities and Local Government (DCLG)/Welsh government formula funding; and (iii) special and specific grants. England and Wales population figures are mid-year estimates from the Office of National Statistics (ONS).

Source: All numbers have been calculated using publicly available data. See Endnotes for source material.

would be 'very' or 'fairly' confident in the police dealing with such an incident, compared with under half (46%) in 2016.

However, two other data points in the same survey tell a different story. The first is that the proportion of people saying that the service provided by local police had worsened increased to 25%, up from 20% in 2016 and 18% in 2015, indicating some perception of decline in the performance of local police. The second is that although 83% of respondents felt it important to have a regular, uniformed police presence in an area local to them, only 17% felt they had such a presence currently.

And while the US policing system was not part of this report, recent surveys by the Pew Research Center of US public attitudes about the police and vice versa also illustrate the risk of a legitimacy gap. Of US adults surveyed, 83% felt that they understood the risks and challenges that police officers face, yet only 14% of police officers felt the public understood these risks 'very' or 'somewhat' well. The remainder (86%) felt the public didn't understand them too well, or at all.

Without exception, the police leaders we spoke with were urgently focused on how to tackle the capabilities gap and prevent any emerging legitimacy gap. Two responses sum this up:

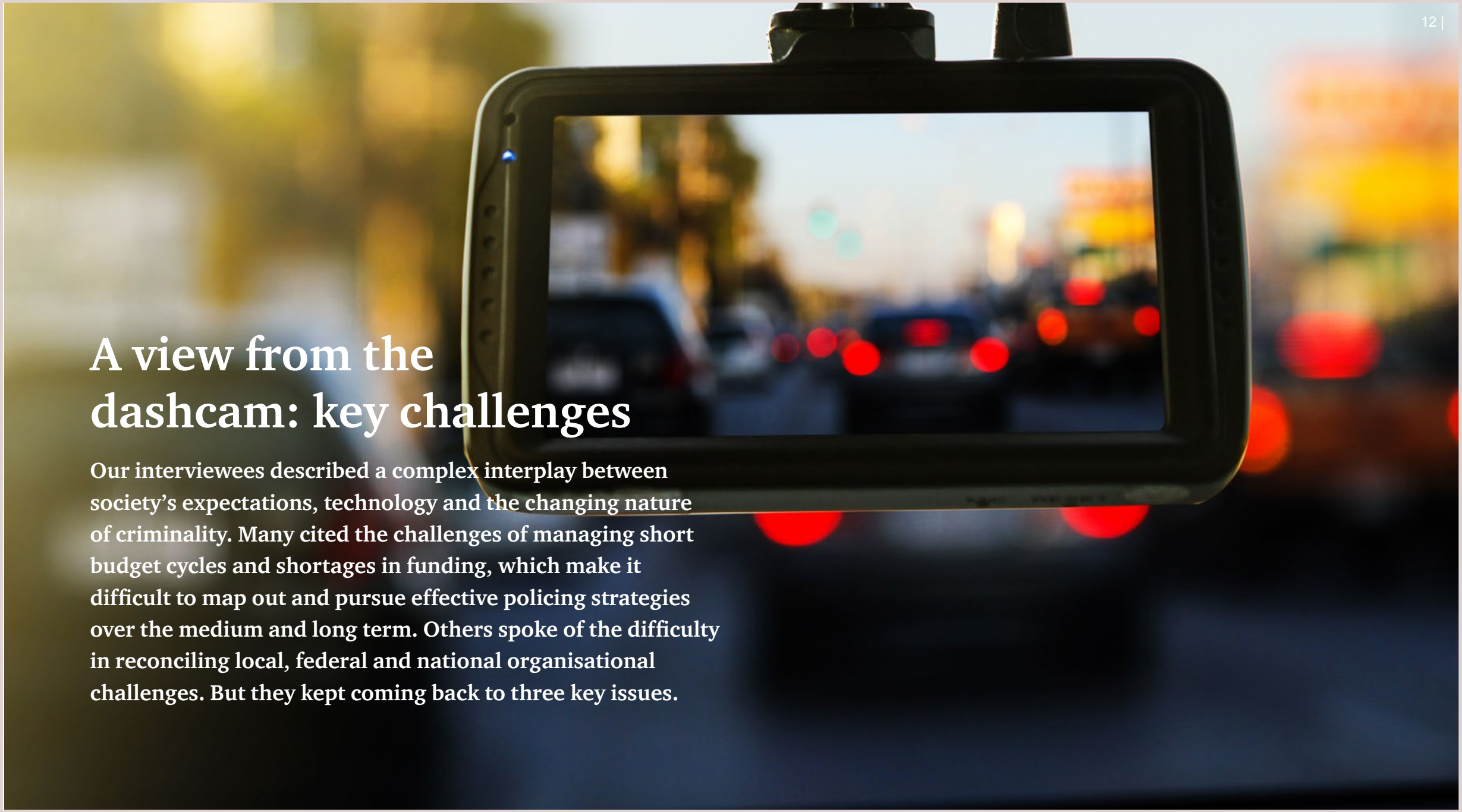
> *"If we want to be relevant in the future, we have to change. We're at a significant tipping point in policing right now."*
>
> Rod Knecht, Chief of Police, Edmonton Police Service, Canada

> *"We need to be similar to the society that we serve."*
>
> Jack Blayney, Assistant Commissioner, Victoria Police, Australia

At stake is not only the future of policing in organisational and effectiveness terms, but the functioning of a key pillar of the institutions underpinning a society based on democratic principles and the rule of law, at a time when such forms of government are coming under increasing challenge.

Based on this, we recommend that law enforcement consider applying six responses that we believe will improve policing now and for the longer term:

1. **Align strategy and funding**
2. **Create agile operating networks**
3. **Balance local, national and international capabilities**
4. **Exploit technology and data**
5. **Build the future workforce**
6. **Embed legal and societal responsibilities**



A view from the dashcam: key challenges

Our interviewees described a complex interplay between society's expectations, technology and the changing nature of criminality. Many cited the challenges of managing short budget cycles and shortages in funding, which make it difficult to map out and pursue effective policing strategies over the medium and long term. Others spoke of the difficulty in reconciling local, federal and national organisational challenges. But they kept coming back to three key issues.

1. The **speed of data** and new technological developments allow organised criminal enterprises and terrorists to stretch boundaries to gain competitive advantage over each other and law enforcement. “The challenge is that digitisation brings with it new ways of conducting crime that are more hidden and know no borders,” said Håkon Skulstad, Assistant National Commissioner in the Norwegian National Police Directorate.

2. At the same time, **society’s expectations** are demanding policing of both public and private space. More than one interviewee cited a growing expectation that police services be available around the clock, “such as in the banking sector,” as one put it. “We need to come back to focus on our core [policing] business, but we are also expected to be social engineers,” explained Catherine Burn, Deputy Commissioner in the New South Wales Police Force, Australia.

3. There is an urgent need for nimbler changes in law, budget processes and culture, as well as better coordination between police and other government agencies, to allow more proactive policing (using data) to tackle new types of crime and **get ahead of criminal networks.** “We focus too much on reaction to crime rather than proactively trying to prevent crime,” said Brett Baddock, Detective Inspector, Special Crime Division, Western Australia Police Force.

Exhibit 4

A complex challenge

New technology is changing how the police operate

- Data is both a challenge and opportunity for policing
- Analytics is not yet exploited as a crime-fighting tool
- Technology is enabling new types of crime

Societies’ expectations and cultural norms are changing

- The lines that traditionally defined communities are blurring
- There are new norms and tolerances in communities
- There is a role for new actors in society as partners for the police

Crime and criminals are changing

- Criminals now operate at scale across international boundaries
- The speed of innovation is critical in a highly competitive business
- Crime networks are professionalising

1. Speed of data: new technology is changing how the police operate

The explosion of digital data and its proliferation into almost every aspect of peoples' daily lives, together with the connective power of increasingly agile technology, has created both a threat and an opportunity for law enforcement. "We need to be able to use data, big data and analytics so that we can strategically deploy our resources much better. Everybody's trying to address that to some extent," said James Ramer, Deputy Chief of the Toronto Police Service in Canada.

Many of those we interviewed described the sheer volume of data collected from body-worn video cameras, CCTV, phones and social media as a major challenge. Storing, analysing and developing evidential packages from this data, while meeting the requirements of the legal systems – unique to each jurisdiction – is a challenge that will not recede.

In New South Wales, Australia, much of the manipulation of data is manual, but people recognise the benefit of building 'citizen portals' to allow volunteering of information so that metadata can be captured and machine learning can be applied as an analytical tool.

Interviewees also highlighted the huge potential of data analytics to drive fresh insight, be that identifying areas and individuals most at risk from criminality and harm or optimising how limited policing resources can be targeted most efficiently to meet changing demand.

This in turn is leading to a new recognition of the need for more data analysts, which for many police organisations introduces a significant set of challenges around recruiting the right skill sets (see the 'Police Now' case study). We are seeing increasingly mature work in the UK and elsewhere developing this thinking and helping policing leaders make informed choices, with leaders initiating innovative developments to tackle the digitalisation challenge.

However, these advances don't resolve the challenge of making decisions about investing in technology-enabled change, particularly when advances are so rapid. Leaders spoke about an increasing need for more effective processes to determine and balance short- and long-term investments, especially in an environment of constrained budgets.

> *"We need a strategy to bring information together. It's got to be about hyperconnectivity."*
>
> **Catherine Burn, Deputy Commissioner, New South Wales Police, Australia**

> *"The more that we can automate and exploit new technology, the better. The problem is it comes with a cost, and you are always trying to keep up. There are too many priorities competing for limited funding."*
>
> **Rod Knecht, Chief of Police, Edmonton Police Service, Canada**

Case Study #2: **Police Now**

Hedgehogs are good at one thing – rolling up defensively – while foxes are multiskilled generalists. Putting this adage in a policing context means police can't just be great crime fighters. They need to be able to connect with communities and be part of a solution for broader societal issues. They need to possess a broader, more diversified skill set than the operational skills required of police officers today. In short, they need to be foxes.

Jack Gallagher is one such officer. Highly skilled in Arabic, the Oxford University graduate was recently recruited into the UK police in Birmingham through a scheme set up in 2014, known as Police Now. It is a groundbreaking move to give university graduates with leadership potential a route to becoming police officers.

The initiative resulted from a recognised need to develop a police organisation that is, in the words of the Home Secretary (interior minister), "flexible, capable and professional: agile enough to adapt as crime and society changes." Police Now was also driven by a need to make policing careers more attractive to millennials.

Drawing inspiration from the success of a separate programme in education which aimed to inspire young graduates to engage with a career in teaching, PwC assisted in establishing the Police Now programme to perform a similar function in policing. Its mission is to transform communities, reduce crime and increase the public's confidence in policing by recruiting and developing an outstanding and diverse group of individuals to be leaders in society and on the policing front line.

Graduates become fully warranted police officers with responsibility for an area that could be home to as many as 20,000 people. They get to know their communities – the problems, prominent offenders and crime hotspots within them.

Police Now has since recruited over 400 police officers across the country. Together, they are helping to create safer, more confident communities within which young people can thrive. Gallagher said, "Being able to communicate in Arabic has surprised many, but has led to some positive, effective relationships being formed. I was recently invited to a fast-breaking celebration in the community, which was held to thank the emergency services for all their hard work. The community has a desire for the police to reach out to them, so being able to communicate in Arabic has had a very positive impact in supporting and increasing public confidence."

2. Society's expectations: cultural norms are changing

Citizens increasingly expect the police to keep them safe in public, private and online spaces. This has increased workloads for officers, and it requires new capabilities to be developed. Old norms are being challenged across jurisdictions, as the law enforcement role in safeguarding has grown. Officers increasingly operate across a complex range of familial, societal and mental health issues, as well as look backwards into historic cases.

Meanwhile, new norms are being established as societies begin to define what is acceptable online and in virtual communities. "I'm a strong believer that police need to have a good relationship with communities they police in order to enforce the law. The challenge then is to work out how this translates to policing online," said Mark Rowley, retired Assistant Commissioner for Specialist Operations and former national lead for Counter Terrorism Policing (2014-18).

Yet while people are, statistically speaking, physically safer than ever, many of our interviewees indicated that the public are still nervous about their safety. Leaders feel pressured to provide more 'Bobbies on the beat.' In Canada, one police organisation considering use of body-worn cameras to improve data gathering asked the public in a study if people preferred either body-worn cameras or more officers on the beat. The answer: more police on the street.

Yet that is not as simple a proposition as it sounds. In the UK, while it's acknowledged that the public says it wants more boots on the streets, "we know from our research that it's boots on the street [only] for a certain period of time in a hotspot for crime – i.e., 9 to 15 minutes – that reassures the public," said one senior UK police figure. "Any longer than that and it can send a signal that the area is unsafe."

This desire for more visible policing comes at a time when there is an increasingly challenging funding environment and amid a lower risk appetite for multiple areas of specialist policing, such as human trafficking.

Finally, leaders identify an increase in reporting of a wider array of crimes. The recent sexual harassment and assault scandals in some countries are evidence of this trend, and they drive a need for a response. At the same time, UK police leaders have noticed a rising tolerance and acceptance among communities of certain types of crime, evidenced by gun discharges not being reported.

> *"The demand issue is our fault. We've created an idea that police can do everything, deal with all societal woes. The problem is that we can't just arrest everyone all the time. For instance, we might find that with viewing indecent images of children, there might be 500,000 men engaged in this activity. There just isn't space in the prisons for them all. This isn't going to help the community."*
>
> **Mike Barton, Chief Constable, Durham Constabulary, UK**

3. Proactive policing: crime and criminals are changing

Criminals are using more advanced techniques to target vulnerable groups. A ransomware attack can target thousands of victims, while the perpetrator resides thousands of miles away. This presents a profound break from the traditional concept that a crime is linked to a location, a victim and an offender. It adds a further layer of complexity to crime prevention and the pursuit of criminals.

The 'dark web' and exchange of data and money by criminals is another area where the police need to keep up. As new methods of communication and currency exchange emerge, police organisations are finding it harder to keep pace with methods of disguising or hiding criminal activities.

And as crime is becoming more complex, many governments have chosen to reduce spending on law enforcement. The need to become a technology-driven police organisation has in most cases not been translated in budgetary terms.

Interviewees said emerging crime types, including cybercrime, do not translate well into the traditional model of frontline policing. Equally, people's perceptions of the threats they face as a result of these new crime types pose a fresh challenge for policing in terms of a response. More research is needed, many police said, into the 'unknown unknowns' of available data on these other types of crime.

> *"We're working in a massively disruptive environment. It's important to think critically about what change we fund and which priorities we have."*
>
> **Sara Thornton, Chief Constable, Chair of the National Police Chiefs' Council, UK**

> *"There is rapid change in the environment affecting the work of the police, making it difficult to stay ahead of the criminals. This is also causing a challenge of finding a balance between the operative and strategic work. We are also affected by our short-term (one-year) budgets, which makes it more difficult to work proactively."*
>
> **Stefan Sintéus, Police Area Commissioner, Malmö, Sweden**

Insights and responses

Our interviews revealed some successful responses to the challenges highlighted in this report. Taking these together with findings from our extensive experience, we have set out a framework of design choices that we think are critical to accelerate the transformation of law enforcement. This framework is not jurisdiction-dependent and does not create a standard structural response. Rather, it reflects a combination of responses available to policing leaders to use.

1. Aligning strategy and funding

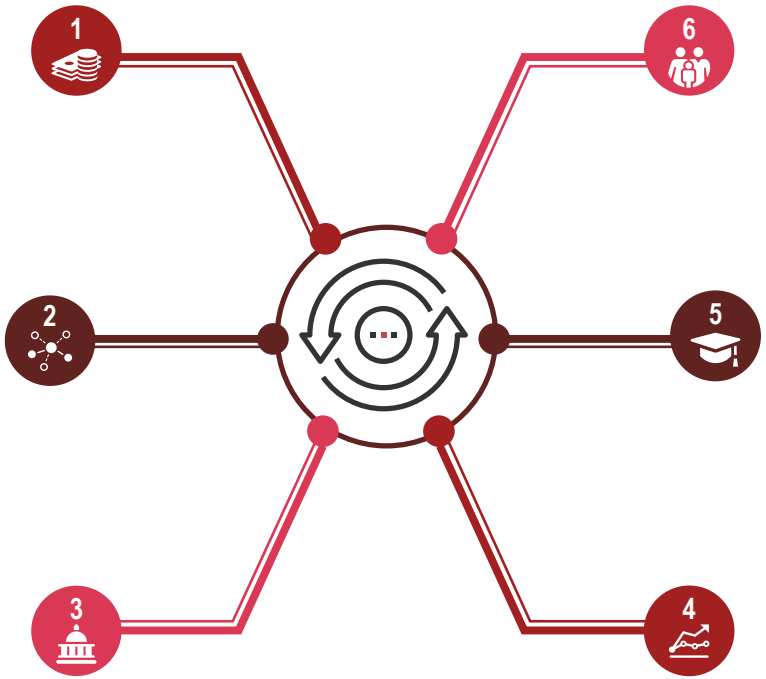
It is one thing to know that police organisations need to be able to tackle a new set of challenges, but in the real world there is always a limit to funding. How do police leaders make the case to government for appropriate and sustainable funding, and how can they prioritise where to apply the funds received in a way that best aligns to their strategy?

In the **United Kingdom,** the Home Office (interior ministry) allocates over £8 billion funding across 43 police organisations in England and Wales, according to a formula that aims to be fair, transparent and efficient. However the existing formula is widely regarded as unfit for purpose and the overall level of police funding has fallen by about 20% in real terms since 2010.

Exhibit 5

Six responses enabling effective action

We recommend that law enforcement consider applying these responses to improve policing now and in the longer term



Aligning strategy and funding
Align strategic direction with government to secure appropriate and sustainable funding

Creating agile operating models
Future-proof the police with networked-based and innovative operating models, that prioritise resources to demand at appropriate scale

Balancing local, national and international capability
Prioritise and position resources to fight crime at the local, national and international levels with clarity on which gives the best results

Embedding legal and societal responsibility
Collaborate with government, communities, businesses and partner agencies to shape and enforce legislation with transparency to maintain legitimacy as a service

Building the future workforce
Design, recruit, train and empower a committed and agile workforce equipping them to protect the public with the full range of skills to disrupt criminality

Exploiting technology and data
Exploit the innovative opportunities presented by technology and data to create both productivity gains and amplify the effectiveness of policing in fighting crime

As the government has been exploring alternative formulas, PwC has helped police organisations understand the implications of potential new models. In the meantime, PwC has also supported the police in making budget submissions during spending reviews. Our economics and policy specialists have explored how new and increasingly complex crime types are affecting demand for police services which, when coupled with new ways of working and staffing, could make the case for very different approaches to allocating police budgets nationally and locally.

In **Canada,** work has been underway between police and academic experts to bring greater credibility to police organisations' efforts to secure greater funding from government and municipal authorities. In Vancouver, the police operate under an annual budgeting process, a five-year budgeting plan with the city of Vancouver (their primary funder) and their own five-year strategic plan. In 2017, they completed an operational review of the full range of their capabilities and what they will need to become more proactive and less reactive as a police organisation. To make that assessment, leadership brought in policing experts from local academic institutions (Simon Fraser University and Douglas College) to help produce a wide-ranging operational review and provide an 'outside lens' on its operational and funding needs.

> *"Partnering with academic institutions gives more credibility to our operational and funding assessments, as opposed to us simply saying 'we need more.'"*
>
> **Adam Palmer, Chief Constable, Vancouver Police Department, Canada**

2. Creating agile operating models

Police organisations increasingly recognise that they work in a broader ecosystem that includes other authorities, such as border control and counter-terrorism. This requires lateral thinking and agile models. A key goal should be future-proofing the police with network-based and innovative operating models that appropriately prioritise demand and resources, boosting efficiency at the same time.

In the **United Kingdom,** PwC provided a strategic assessment for the UK's Counter-Terrorism Police, as well as for local agencies and authorities, of the threats facing the country's borders and advised on a process of business transformation to allow more flexibility in the deployment of the organisation's assets to the highest areas of threat. The context was the fact that while counter-terrorism border policing was already

being delivered at airports, seaports and rail ports, the threat, and demand, was evolving. The picture was complicated by the sharing of responsibilities between the various parties involved in borders work – such as the separate border, crime and tax authorities – resulting in overlaps and inefficiencies.

PwC developed a prioritisation process for the counter-terrorism police, helping them think about how to develop budgets and assign headcounts and enabling the police to identify areas of the business where inefficient processes could be improved. PwC navigated challenges of gaining agreement across the police to develop a model that agreed how resources should be distributed at national, regional and local levels. The new model has now been implemented and uses an intelligence-led view of demand that allows for effective business planning and deployment of resources to mitigate threat and risk and deliver continuous improvement.

3. Balancing local, national and international capabilities

Hyperconnectivity is what policing increasingly will need to be about. With criminals looking to exploit gaps between regional, national and international policing, gone are the days when it was enough to police a locality, or even just police within national borders. Now it is essential to prioritise and position resources to fight crime at the local, national and international levels for the best results.

In 2008, **Sweden** initiated a country-wide program to fight organised crime, centred on a 'collaboration council' consisting of 12 authorities, operating both on a national and regional level, and led by the national police authority. The effort enhances communication, exchange of information, knowledge-sharing and decision-making to reach one common goal. It has also sent an important signal of national crime-fighting intent to criminals and citizens. The collaborative effort is also helping to prevent and fight new types of crime, such as fraud and cybercrime, that demand specialist skills in various areas.

In **Australia,** efforts are underway to better coordinate between states, territories and the federal government, because authorities recognised the need for one particular portal for reporting online crime. Moves to consolidate and automate national systems have centred on a 2016 move to combine the activities of an organisation called CrimTrac into those of the Australian Criminal Intelligence Commission, bringing national criminal intelligence and information capabilities under one banner for the first time. Being joined up like this has allowed police, justice agencies and policymakers at all levels of government to adopt a more effective, efficient and evidence-based response to crime to stop criminals from exploiting emerging opportunities and perceived gaps in law enforcement information.

4. Exploiting technology and data

Criminals may misuse data, but data itself is also the police's friend. Data has enormous potential as a crime-fighting tool. Successful police organisations will be the ones that best exploit the innovation offered by technology and data to change the way policing is done, disrupt criminality and improve productivity.

In the **Netherlands,** the police are using big data analysis for better crime prevention. By the end of this year, the national police aim to have adopted a system initially developed as a pilot by the Amsterdam police using big data to better anticipate and more quickly respond to crime. The system, known as the Crime Anticipation System (CAS), is based on data mining work that the Amsterdam police have been conducting for over a decade. At the start of the pilot, cities in the Netherlands were divided into squares measuring 125 metres by 125 metres, in which crime data was gathered over a two-year period.

Calculations were then done with the aim of working out the frequency and patterns of bicycle crime, burglary, pickpocketing and car burglary. That data was then used to recalibrate the daily schedules of police, allowing them to be allocated to certain areas where crime was likely to be taking place.

Norway has made significant progress in digitisation by having all the various elements of the police – officers on the ground, technicians and so forth – working in parallel on a case rather than sequentially. What this means in practice is that where a crime has been committed, police will make audio recordings on site and upload these directly into police systems so that experts can conduct any analysis that's needed in real time, even as the frontline officers continue their work. The process – known as 'police work on site' – aims to solve, or complete, 40% to 50% of cases within a single day from the moment a suspected crime has been identified.

5. Building the future workforce

Sworn police officers are still the backbone of a police organisation, but given the range of threats and types of criminality, especially in digitally driven crime, there is an urgent need to design, recruit, train and empower a committed, agile workforce for 21st-century policing. Younger, tech-savvy millennials are part of that frontline effort. Police organisations must reflect the demographic and ethnic makeup of the society in which they serve.

In a technology-driven and cyber world, "you don't necessarily need a badge and a gun to get the job done," as Edmonton Police Chief Rod Knecht put it.

In some jurisdictions this is already happening. **Norway** aims to have recruited 7,000 new police officers into the workforce in the decade up to 2020. This will mean that two-thirds of the country's police will have less than ten years' experience as police officers. But it also means that Norway will have

made huge strides toward building a police organisation of the future, taking advantage of a generation that is digitally savvy and can help drive the police's digitisation efforts nationally.

> *"My father-in-law was a police officer and was hired just out of high school. That has evolved. We're now looking for people with post-secondary education who have broader life experience and who bring different perspectives."*
>
> **Charles Bordeleau, Chief of Police, Ottawa Police Service, Canada**

In Western **Australia,** the talent pool includes officers pursuing MBAs (Masters in Business Administration) and qualifications in politics and criminology. "We are attempting to provide greater opportunities to study elsewhere nationally and internationally," said Stephen Brown, Deputy Commissioner, Western Australia.

Strategic workforce planning will be needed due to the rapidly changing nature of policing and the challenge for human resources functions to respond. Police organisations will need to keep in mind that the traditional key performance indicators (KPIs) around numbers of arrests will need to be broadened out to include metrics on elements like quality of service and crime prevention.

Diversity is crucial. Embracing a shift in perspective and making sure police organisations reflect the same diversity as the communities they serve can help strengthen police legitimacy. "Whether it's gender difference, cultural background or historical difference, a more diverse workforce is able to get different views and better communicate with different communities on a more human level," said Paul Martin, Chief of Police of the Durham Regional Police Service in **Canada.** Police in Canada are learning useful lessons through collaboration with different cultural groups, such as First Nations police services, allowing them to draw from different viewpoints relevant to their communities.

In one small suburb in Perth, **Australia,** 42 African nations are represented in the community, while 41% of people living in the community were born outside Australia — a proportion that is among the highest in the world. "Our community is incredibly (and increasingly) diverse, and our workforce needs to respond to this…clearly, more needs to be done to shift towards accurately reflecting the diversity of the community we serve," said Stephen Brown, Deputy Commissioner, Western Australia.

6. Embedding legal and societal responsibilities

If the police are to remain the public – to echo the words of Sir Robert Peel– police organisations will need to collaborate with government, communities, businesses and partner agencies to shape and enforce legislation with transparency to maintain legitimacy as a service.

In the **Netherlands,** progress has been made in binding the police closer to society in key ways. It is not uncommon for some towns to operate local 'citizen's patrols' to help tackle crime. This is the most high-profile example of a broader trend in policing and society: the increasing participation by private citizens, organisations and others in various activities that fall within the range of police work and criminal justice. Another example in the Netherlands is the use of security services by harbour authorities.

The Dutch national police and the prosecution service launched an initiative in 2017 that aimed to develop guiding principles for how they should respond to and participate in such quasi-policing activities carried out by citizens and private organisations, with the aim of achieving sustainable inclusion in the criminal justice system. These disruptive changes in society have often unknown impacts on policing and the prosecution of crime, so it is important for police organisations to be engaged constructively with them.

This initiative involved PwC in helping the Dutch authorities assess the legal and other frameworks needed and analyse the extent to which citizens and private organisations can and should carry out such activities – and when government should step in.

One work stream is the establishment of a series of 'professional dialogues' with representatives of the police, prosecution service, academia, legal organisations, citizens groups and private organisations. These dialogues explore a wide range of ethical and legal issues, including unjustified citizen interventions (vigilantism), overburdening of police with data and disproportionate suspicion of individuals from certain social and/or ethnic groups. Another is the development of mobile apps for citizens to participate in the search process for missing people, stolen cars or burglars.

In **Canada,** the police are taking an innovative approach to the issue of societal mental health, which is increasingly in focus as a community issue, including in relation to crime. Some police organisations are starting to tackle this in a joined-up, cross-functional way to be proactive. "Different social services need to speak to each other. The concept of collaboration is to look at what's happening instead of the usual 'send a police officer,'" said James Ramer, Deputy Chief of the Toronto Police Service.

In Vancouver, the police have had in place for some decades a partnership with mental health authorities under a programme called 'Car 87.' Staffed by about a dozen full-time officers and a mental health analyst, the unit responds to 911 emergency calls. On top of this, an extensive information-sharing system exists between the police and local health authorities to help immediately identify whether there may be a mental health component to an emergency call.

A final word

Today's policing ecosystem has moved far beyond the traditional confines of the police station and patrol model and is being defined – in real time – by sociopolitical challenges, emerging technologies and demographic changes that would stun Sir Robert Peel if he were alive today. Business as usual is not an option. Fortunately, there are encouraging signs of innovative thinking among some police organisations, which we hope will offer inspiration to others looking to tackle these challenges. Equally, PwC stands ready to assist the police as they embark on this journey, in keeping with our core mission: to build trust in society and solve important problems.

Endnotes

Crime Data Sources (Exhibits 1 and 2)

Data has been collected for traditional crime types from the UNODC crime and criminal justice statistics, available here: https://www.unodc.org/unodc/en/data-and-analysis/crimedata.html

In addition, we have collected crime data from the following sources for more complex crime types, which are not uniformly collected by the UNODC surveys, from the following sources:

Australia: Australian Bureau of Statistics (ABS): http://www.abs.gov.au/Crime-and-Justice

Canada: Statistics Canada (StatCan): https://www.statcan.gc.ca/eng/subjects/crime_and_justice

England & Wales: Office of National Statistics (2017), "Crime in England and Wales year ending March 2017": https://www.ons.gov.uk/releases/crimeinenglandandwalesyearendingmarch2017

ONS (February 2017), "Focus on violent crime and sexual offences, England and Wales: year ending March 2016": https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/compendium/focusonviolentcrimeandsexualoffences/yearendingmarch2016

Netherlands:
https://www.cbs.nl/nl-nl/achtergrond/2017/12/fraude-met-online-handel

https://opendata.cbs.nl/statline/#/CBS/nl/dataset/83648NED/table?ts=1525865716774

Norway: Statistics Norway: Offences reported to the police: https://www.ssb.no/en/sosiale-forhold-og-kriminalitet/statistikker/lovbrudda

Sweden: Swedish National Council for Crime Prevention: https://www.bra.se/download/18.3c6dfe1e15691e1603ec36fc/1475217105668/2016_17_It-inslag_i_brottsligheten.pdf

Endnotes

Funding Data Sources (Exhibit 3)

Australia: Productivity commission, report on government services: https://www.pc.gov.au/research/ongoing/report-on-government-services/2018/justice/police-services

Canada: Statistics Canada (StatCan): http://www.statcan.gc.ca/pub/85-002-x/2017001/article/14777/tbl/tbl06-eng.htm

England & Wales: Police Grant Allocations (Gov.uk): https://www.gov.uk/government/collections/police-finance

Netherlands: "Rijksbegroting" figures from 2011 to 2018: http://www.rijksbegroting.nl/

Norway: The Norwegian Ministry of Finance – Statistics Norway: https://www.ssb.no/en/offentlig-sektor

Sweden: The Swedish National Financial Management Authority: http://www.government.se/government-agencies/swedish-national-financial-management-authority/

To calculate per capita funding, we used the following sources for population data:

Australia: (2010-2017) Australian Bureau of Statistics, http://www.abs.gov.au/ ; (pre-2010): OECD stats, https://data.oecd.org/pop/population.htm

Canada: Statistics Canada, http://www.statcan.gc.ca/pub/91-215-x/91-215-x2013002-eng.pdf

England & Wales: ONS, https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections

Netherlands: Statline, https://opendata.cbs.nl/statline/#/CBS/en/dataset/37296eng/table?ts=1522231839596

Norway: Statistics Norway, https://www.ssb.no/en/

Sweden: Statistics Sweden, https://www.scb.se/en/

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