

# Home office police funding consultation: An opaque sticking plaster?

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If you were given the task of distributing almost £8bn of public money to 43 police forces in England and Wales each year, how would you go about it? The last time this question was tackled was in 2006, when the current Police Allocation Formula<sup>1</sup> – also known as the *funding formula* – was implemented. This week the Home Office published a new funding formula for consultation<sup>2</sup>, partly in recognition that the world has changed in the last nine years. Both Her Majesty's Inspectorate of Constabulary (HMIC, in 2014<sup>3</sup>) and the subsequent National Debate Advisory Group hosted by HMIC (in 2015<sup>4</sup>) have called for police force funding arrangements to be revised, with the latter calling for 'more transparent funding arrangements which emphasise current policing priorities and are adaptable to future priorities and allow greater flexibility for local partnership working' (p.44).

The consultation document states that the new model 'will result in some significant changes to force level allocations compared to the current year' (p.33). This paper aims to summarise the current and proposed models in clear terms and then critiques the latter; two recommendations are made at the end.

## The current funding formula

The current formula is fiendishly complex (and detailed in Appendix B of the consultation document for readers with a strong constitution and an aptitude for advanced statistics). It uses 10 calculations (complex statistical regression models) to forecast 'crime and non-crime' workloads for individual forces, with additional allowances made for policing 'special events' and 'sparsely populated areas'. Workload estimates are adjusted (weighted) for each force to reflect local working conditions (the time and cost individual forces spend doing particular activities measured through the likes of activity-based costings) and then used to calculate each force's share of the total workload for England and Wales. This is then used as the basis for dividing up the total funding envelope. The existing formula is based mainly on data from 2003-04 and Census data from 2001.

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<sup>1</sup> <https://www.gov.uk/guide-to-the-police-allocation-formula>

<sup>2</sup> <https://www.gov.uk/government/consultations/reforming-police-funding-arrangements-in-england-and-wales>

<sup>3</sup> <http://www.justiceinspectorates.gov.uk/hmic/publications/state-of-policing/>

<sup>4</sup> <https://www.justiceinspectorates.gov.uk/hmic/about-us/working-with-others/national-debate-advisory-group/>

## The proposed new approach

The proposed model is intended to distribute funding on a *relative needs basis* (*absolute need* is an entirely different issue that would be related to the overall size of the funding envelope, which is beyond the remit of the model or scope of the consultation). Five guiding principles are proposed:

- Robust: the model should be analytically sound, and use objective indicators based on robust data to allocate funding on the basis of relative need.
- Stable: the model should not cause force level funding allocations to change significantly year on year.
- Transparent: the model should be clear and easy to understand, and supported by key partners; the process for allocating funding should be supported by appropriate governance and accountability.
- Incentivising government objectives, while minimising perverse incentives.
- Future proof: the model should enable delivery of policing structures that drive efficiency and best respond to current and future demands and challenges.

The consultation clarifies that any data used in the model 'should not be directly generated by police activity or easily influenced by it as this may skew the results', related to which it 'is not appropriate to directly base force level allocations on crime statistics' (p.22). This is an important principle that will be examined below in relation to whether the model is (in the Home Office's terms) *robust*.

The new model substantially simplifies the calculations required compared to the current version, boiling them down to only five 'indicators', each measured at police force level.

- Population
- Band D equivalent properties
- Households with no adults employed and dependent children
- Hard pressed population
- Bars per hectare

These are derived from complex statistical analyses that identify, from a much larger collection of variables, those most strongly correlated with crime (see the discussion on this below as to whether the model is robust). The rationale is essentially that demand is related to population (more people = more demand) but significantly mediated by other factors (such as the characteristics of the area), and additionally that there needs to be an allowance made for the different local tax bases in different force areas (hence the Band D figures). The mediating factors identified by the Home Office in the consultation document as being especially important are:

- Two socio-economic indicators: households with no working adults and dependent children, and the size of the 'hard pressed' population, the latter calculated using the Acorn population typology.
- One environmental indicator: the density of bars, pubs and licensed clubs.<sup>5</sup>

The five variables are each weighted by applying a further statistical process (Principal Component Analysis) that assesses their relative importance to each other. According to the consultation

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<sup>5</sup> Based on the 2007 Standard Industrial Classification 56.3, see <http://www.siccodesupport.co.uk/sic-division.php?division=56>

document, this gives them relative weights of 24 per cent, 16 per cent, 25 per cent, 25 per cent and 10 per cent (respectively, using the list above).

The weights are used to divide the total funding envelope (so the population variable accounts for 24 per cent of £7.8bn, or £1.87bn) and this in turn is then subdivided by the relative contribution of each force. So a force with 2 per cent of the total population of England and Wales would get 2 per cent of £1.87bn – that is £37.4m – for the population part of the model. This process is then repeated for each of the five indicators in the model and the totals for each are added together to calculate the overall funding level for each force.

## Consultation questions relating to demand

The consultation asks for two specific issues to be considered by respondents that relate to potentially refining how demand is understood, both of which are present to some degree in the current model, for example with its fear of crime, traffic and ‘sparsity’ top-ups.

- Whether other environmental indicators should be considered?
- How and what indicators of ‘non-crime demand’ might need to be factored in?

Table B7 in the consultation document provides a list of 25 ‘indicators considered for inclusion in the simplified population based model’, 20 of which have apparently been rejected when examining correlation with crime (again, see the discussion of whether the model is ‘robust’ below). One issue here, which will be considered in a little more detail below, is that **the Home Office has not provided full details of their own analysis**. This makes it impossible to assess whether appropriate decisions have been taken as to which variables and included in – and excluded from – the model.

## Is the proposed model consistent with the guiding principles?

A number of issues can be identified that the Home Office and their intended consultees may wish to consider, addressed below against the Home Office’s guiding principles, the first with the addition of an extra dimension (validity).

### Is the model robust *and valid*?

*The Home Office defines a robust model as one that is ‘analytically sound and uses objective indicators based on robust data to allocate funding on the basis of relative need’.*

In statistics, a test (for example, of IQ) is assessed on the basis of whether it is *valid* (it actually measures the thing it claims to measure) and *robust* (when it is repeated, for example by the same person, it produces the same result). The two are independent, so a test can be valid and robust, valid but not robust, or robust but not valid.

In the case of the proposed funding model, the indicators do seem to be objective and the data used to run the model should be sufficiently robust, which is to say that running the process repeatedly (at a given point in time) should produce the same results. That said, it is reasonable to expect that some forces will seek to argue that official measures significantly understate the size of local populations, and other variables may be subject to similar margins of error. Likewise, the ‘households with no adults employed and dependent children’ indicator is derived from the Census

and therefore only refreshed every 10 years, which implies it will become increasingly unreliable over time.

As to **validity** (in the Home Office's terms, 'analytically sound'), the consultation implies that this should equate to the model providing a good measure of *relative need*. Whether it meets this standard is at the very least debatable. **The model and the consultation imply that *relative need* should be understood in terms of *demand* and that this is principally related to *per capita levels of crime*.** In statistical terms, then, crime is the dependent variable in the analysis that underpins the model. Although **the consultation document is (glaringly) silent on how crime is measured** for the purposes of developing the model, correspondence with the Home Office (23 July) confirms that ***police recorded crime*** was used.

- For the main regression analysis, demographic and socio-economic indicators have been correlated with 'overall volume of police recorded crime... (excluding fraud, weapons and drug offences) as well as subsets of crime'. The subsets are not specified, either in the consultation document or in the correspondence, and knowing (and understanding) the detail may be important in reaching conclusions about *validity*. The timescales of the crime data are also not described anywhere.
- In respect of the claim in the consultation that '...a strong relationship between the density of bars within a force area and the drivers of crime and demands on the police has been identified' (p.23), the Home Office responded that '[g]iven the strong relationship between alcohol and violent crime and disorder, an indicator measuring the density of bars per hectare was tested and found to be highly correlated with police recorded crime'. The response did not clarify whether this was all police recorded crime or a subset (for example, violent crime), nor did it address the question of how 'demands on the police' has been measured in assessing its relationship to the density of bars.

Although not stated anywhere, it seems most likely that the analysis was conducted at a national level, which should help smooth out differences between forces in areas such as crime recording practice. The exclusion of fraud, weapons and drugs offences should mitigate any differences in operational proactivity.

At this point, it is worth reflecting on three things:

- The principle stated in the consultation, that it would not be 'appropriate to directly base force level allocations on crime statistics'.
- The evidence that police crime recording practices have varied at force level and over time<sup>6</sup>, in respect of which any non-random effects (for example, if crime recording was better in larger forces) could have important consequences for the analysis on which the proposed funding model is based and therefore resulting financial allocations.
- The existence of an alternative measure of crime, in the form of the Crime Survey for England and Wales, which goes almost entirely unremarked in the consultation document (it features as a rejected variable in Table B7). Multiple years of data may be required to ensure statistical significance at the force level.

There are four other potentially important points that relate to understanding *relative need*.

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<sup>6</sup> <http://www.justiceinspectorates.gov.uk/hmic/publications/crime-recording-making-the-victim-count/>

- It is well established that police forces face a wide range of demands that may not be directly related to crime levels<sup>7</sup>, including reactive, proactive and latent<sup>8</sup> demand. On average, 22 per cent of emergency and priority *incidents* recorded by police forces in 2013/14 resulted in *notifiable offences* (crimes) being recorded<sup>9</sup>, but this varied from 10 per cent in Dyfed-Powys to 40 per cent in the Metropolitan Police area, with the balance consisting of anti-social behaviour, public safety and wellbeing, and traffic-related incidents (many of which would have the potential to be crime-related<sup>10</sup>). It appears that **the analysis conducted to develop the proposed model has not incorporated non-crime demand or latent demand.**
- The proposed model makes **no allowance for the financial resilience of forces**, including their capacity to raise income, which varies considerably.<sup>11</sup> The consultation also lacks any analysis of the degree to which the provisions for raising funding through the precept (an element of local taxation) is fully reflected in the ‘Band D equivalent properties’ indicator, particularly given that current precept levels vary considerably and any annual increases above 2 per cent have to be agreed by a referendum (as was proposed in the case of Bedfordshire in 2015, which was rejected by the electorate). In 2014/15, the average Band D police precept was £172, but this ranged from £87 in Northumbria to £215 in the Metropolitan Police area (HMIC 2014 Value for Money profiles<sup>12</sup>).
- Unlike the existing model, the proposed funding model is **silent on the unit cost of responding to demand**, which will reflect amongst other things salary, business support and capital costs, which will be related to both location and scale (force size). As with the question of financial resilience, this may be intentional, seeking to incentivise efficiencies (including through collaborations and mergers), but it must also necessarily disadvantage smaller forces.
- The model also **ignores the way that demand may be increased or decreased by the capacity of other public services**, which may vary by area, for example to address mental health issues before they escalate to the point that the police are involved.

The proposed model, then, takes a very narrow view of ‘relative need’, which may result in outcomes that are far from equitable.

### Is the model stable?

*The Home Office defines stability as the model ‘not causing force level funding allocations to change significantly year on year’*

Although this is not formally assessed in the consultation document, the **indicators identified would themselves seem very likely to be stable**, although the theoretical possibility of a national council tax re-banding exercise could significantly alter the results of the model (on which, **the consultation does not include a risk register**). Whether the indicators’ relationship to crime (the dependent variable) will continue to hold over time is a different issue that might be re-assessed on a regular basis. Indeed, if we accept that the funding outcomes in the proposed model are, as

<sup>7</sup> <http://www.college.police.uk/About/Pages/Demand-Analysis-Report.aspx>

<sup>8</sup> <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/public-accounts-committee/financial-sustainability-of-police-forces-in-england-and-wales/oral/18711.html>

<sup>9</sup> <https://www.justiceinspectorates.gov.uk/hmic/media/value-for-money-profile-2014-adr-data.ods>

<sup>10</sup> <https://www.justiceinspectorates.gov.uk/hmic/media/taking-time-for-crime.pdf>

<sup>11</sup> <http://www.justiceinspectorates.gov.uk/hmic/publications/value-for-money-profiles-2014/>

<sup>12</sup> <http://www.justiceinspectorates.gov.uk/hmic/publications/value-for-money-profiles-2014/>

implied in the consultation, better related to need than the current arrangements, and if addressing need results in reduced demand/crime, then it may be reasonable to assume that the model will become weaker over time.

### **Is the model transparent?**

*The Home Office defines a transparent model as one that is 'clear and easy to understand, and... supported by key partners', where 'the process for allocating funding [is] supported by appropriate governance and accountability'.*

Actually applying the model and running the calculation should be relatively straightforward, but that is not the same thing as saying that the basis for the model is transparent. **It is questionable whether a model can be 'clear and easy to understand' while being based on advanced statistical techniques** and it is significant that **the Home Office has not shown their working in the consultation document** (they provide an overview of the process, but little detail, for example on the results of their statistical analysis).

In order to provide a meaningful response to the consultation, **consultees must be able to understand both the current funding model and the proposed model, and be able to deduce the implications of moving from one to another**, both for individual forces and for the police service as a whole. That may be beyond the capability of most, which must in turn raise questions about the validity and robustness of the consultation exercise.

### **Does the model 'incentivise government objectives' while minimising perverse incentives?**

*The Home Office principally defines this in terms of the model helping to promote improved efficiency.*

As discussed under the question of whether the proposed model is *robust*, the fact that the model is silent on unit costs would seem to suggest that it has the potential to drive improved efficiency, although this will depend on the strength and exact nature of the relationship between the model's indicators and demand (including crime) over time. What is less clear is whether the model sufficiently incentivises forces to address the likes of:

- Issues that are of national importance (for example, in the national policing requirement).
- Priorities where there are significant issues of latent demand (as in the likes of child sexual exploitation, domestic abuse and sexual offences).
- Priorities where there is a significant element of proactive demand (for example around public protection work and problem-solving/demand reduction).

### **Is the model 'future proof'?**

*The Home Office defines a 'future proof' model as one that will 'enable delivery of policing structures that drive efficiency and best respond to current and future demands and challenges'.*

**It is not clear whether the model is sufficiently forward-looking**, for example how significant changes to the profile of demand could be accommodated in the event that priorities change. Related to this, it is not clear how the current model would 'emphasise current and future policing priorities and allow greater flexibility for local partnership working' as recommended by the National Debate Advisory Group.

The consultation is also silent on what would be an appropriate timescale for the analysis underpinning the proposed model to be re-run, for example given the potential for crime patterns to change over time in ways that are not fully explained by the five indicators (the apparent shift to cyber-crime might be one example, being less geographically based).

## Transition arrangements

Acknowledging that the 'introduction of any new funding model will result in some significant changes to force level allocations' given that 'allocations have moved away from relative need' (p.33) the consultation sets out three 'broad approaches' to transitioning from current funding levels to revised future funding levels under the proposed model.

- **Gradual:** maximum and minimum annual percentage changes would be set, which would be steady and manageable, but might mean that 'many' forces would fail to reach their 'target allocation' by 2019/20.
- **Required:** a date for full implementation would be set, which might be difficult for some forces to implement.
- **Enabled:** a complex model in which a range of factors would be considered in setting bespoke change rates for individual forces, for example 'distance from target allocation, level of precept income, level of reserves and use of HMIC Value for Money profiles' (p.33).

The consultation makes clear that detailed arrangements will only be presented 'once the model is finalised', however the 'enabled option' is identified as the Government's preferred approach; this approach would, however, be complicated by the need for total allocations to remain within the overall funding envelope. It seems reasonable to think that the transitional arrangements should pass the same 'guiding principles' tests as the funding model itself, which will be a particular challenge in the case of forces required to find significant savings to meet their new allocation (on top of any savings required by the next Comprehensive Spending Review).

## Final thoughts

The funding formula is a highly technical device that can be difficult (perhaps impossible) for a non-specialist reader to understand in its current and proposed forms, and indeed when trying to think about potential alternatives. The proposed model has the ambition to be simple and transparent while also ensuring that funding is disbursed equitably according to relative need, and at this stage it is far from clear whether that is a trick the Home Office can pull off. While the proposed model is simple, the evidence on which it is based is not.

In particular, the consultation is remarkably light on detail in some key respects, which means the reader is necessarily disadvantaged. This is arguably most notable in the way that the Home Office has not 'shown all of their workings' in the analysis used to produce the proposed model, which is described in only high-level terms.

Furthermore, beyond noting that there would be some 'significant changes' for individual forces, the Home Office has not provided any information about what the proposed model would do to the current distribution of funding levels. This means that the consultation is an 'in principle' exercise in which consultees are again disadvantaged, unless they can assemble all of the data necessary to conduct the calculations themselves. The reader could assume that the proposed model has been

run and the results aren't so far from the current arrangements as to be unworkable, but that is left unsaid.

There must be a particular concern about the way that the statistical analysis used to develop the model appears to have used police recorded crime as the dependent variable and to have ignored other sources of data on demand including Crime Survey for England and Wales (CSEW) and recorded incidents. Given that police forces, with the support of the College of Policing and HMIC, are in the process of developing an increasingly sophisticated and consistent understanding of their demand (and given that at least ten have already developed a sophisticated understanding of demand), it is worth asking whether this proposed new model is in fact the wrong model at the wrong time – or perhaps at best an interim 'sticking plaster' that will soon be replaced.

**Gavin Hales**

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## **Recommendations**

Given the highly technical nature of the analysis used in the current funding model and to develop the proposed new model, and given the lack of detail provided in the consultation document, two recommendations are made.

1. The Home Office should publish full details of the analysis used to develop the proposed funding model.
2. Consultees, in particular the National Police Chiefs' Council and Association of Police and Crime Commissioners, should consider commissioning independent, authoritative assessments of the proposed approach to provide the basis for individual responses.