

This is a pre-print of a journal article accepted for publication by Policing: A Journal of Policy and Practice in 2012. It is a post-peer-review, pre-copy-edit version of the paper that is found at <http://policing.oxfordjournals.org/content/6/3/228.abstract>

Engagement, empowerment and transparency: publishing crime statistics using online crime mapping

Spencer Chainey and Lisa Tompson

Department of Security and Crime Science, University College London, 35 Tavistock Square, London. WC1H 9EZ.

Acknowledgment: This work was supported by the Economic and Social Research Council (grant number RES-193-25-0011).

Introduction

The communication of information by public bodies such as the police is fundamental to the relationship they have with the public. The quality of such a relationship is important to both parties and requires mutual respect, trust, open lines of communication, and the provision of information that is relevant. Since December 2008, all police forces in England and Wales have published crime statistics using an online crime mapping tool (www.police.uk). The desire to publish this information stems from the need to improve the credibility of crime data that are recorded by the police, and to support public reassurance. This paper offers a critical commentary of this contemporary policy. It draws from a number of reports on the different iterations of online crime maps since 2005, three reviews on crime data published on police websites (conducted in 2006, 2010, and 2011) and from a series of practitioner-focused workshops with UK police forces and Community Safety Partnerships (CSPs).

The paper begins by developing the rationale for publishing crime statistics. This considers the government reviews that formed the backbone of the reassurance agenda, the policy statements championing the need to improve community engagement, and the political push to release government data into the public domain. We then provide a brief history on publishing crime statistics. We finish with a critical commentary on these developments and suggest ways in which this initiative can be developed further.

The rationale for publishing crime statistics

In spite of substantial, and largely sustained falls in UK crime levels from the mid-1990s onwards, there was not a corresponding fall in the public's fear of crime. This led to the conception of a modern phenomenon, dubbed the 'reassurance gap', which relates to the counterintuitive relationship between fear of crime and the reality of crime (ACPO, 2001; Quinton and Tuffin, 2007; Duffy et al., 2008). It has been argued that this gap was, at least in part, a by-product of the performance regime which had focused on reducing crime and increasing detections, rather than addressing low-level antisocial behaviour incidents, which were far more common and impactful on feelings of safety (Innes and Fielding 2002; Flanagan, 2010; Myhill, 2011).

As fear of crime is considered to directly impact on the quality of people's lives, public reassurance thus became a prominent and enduring policy objective at the beginning of the twenty-first century in British politics and policing. The reassurance agenda spawned enormous debate over the next decade, as it became clear that the concept was complex and multi-faceted. The original definitions

of 'reassurance' were intertwined with issues of confidence in the criminal justice system (Dalglish and Myhill, 2004), and objectives ranged from reducing crime, antisocial behaviour and the fear of crime, through to increasing community efficacy (Millie and Herrington, 2005). Underpinning the whole debate was the challenge of how policy-makers and practitioners would translate these aims into practice.

The kernel of public confidence in a public service, from a theoretical perspective, is that it reflects satisfaction with that service; the corollary being that it equally reflects public satisfaction with central government. For this reason public confidence in the police is a pervasive political agenda, regardless of which party is in government (Bradford et. al., 2009; Hohl et al. 2010). Its manifestation as a major performance indicator has meant that confidence has come to be the "supra-ordinate aim" of public bodies like the police (Sampson and Kinnear, 2009: 18). Confidence in the police is also important for practical reasons. It influences the public's willingness to cooperate with the police; from reporting crime and disorder through to complying with commands (Bradford, 2008; 2011). Public confidence is though a rather nebulous policy objective, and attention has been needed to deconstruct and interpret its many dimensions so that it may be operationalised.

Research by the Home Office (Chapman et al. 2002; Salisbury 2004), and later by the Ministry of Justice (Singer and Cooper 2008), explored the relationship between confidence in the criminal justice system and the level to which a person felt informed about crime and justice issues. In general, knowledge about crime was poor amongst participants (the public typically thought levels were increasing, rather than decreasing), but when this knowledge improved after being given focused information on crime and sentencing, so too did confidence. This research served to reinforce the conventional wisdom of the day that the public were not effectively informed about crime issues (or in most cases, the lack of any issues) and the everyday realities of policing and criminal justice (Sampson and Kinnear, 2009). Hence, barriers to accurate information were one of the main reasons why the reassurance gap, and lack of confidence in the police, was believed to exist. The provision of information, and how it was communicated, was therefore seen by policy-makers as being a key remedy to both the knowledge gap and the reassurance gap.

Confidence is frequently seen as indivisibly linked to public trust in the police and the figures which symbolically represent the police's effectiveness. Between 2005 and 2011 research was commissioned across multiple organisations into the public perception of crime statistics (which included the British Crime Survey and police recorded crime). The first of these was the Statistics Commission's review (2006) that consulted with a wide range of experts who produce and/or use crime statistics in various capacities. This review highlighted issues with the (then) current communication of crime statistics, and the need for "better, more consistent, crime data for small areas" (Statistics Commission, 2006: 5). In parallel to this work was the formation of the cross-party working group that was set up to review and provide advice to Ministers on how crime statistics should be compiled and published. The work of this group resulted in the influential Smith review (2006) that helped to set a course of improvement. A key point emanating from this report was that the national picture was at odds with people's local experience of crime and therefore served to weaken the credibility of the statistics for much of the public.

Crime statistics also featured in a government-commissioned review into community involvement in crime and criminal justice - the Casey Review (2008). Here the key point was that the public's

distrust often resulted from the way statistics were used and quoted e.g. journalists and politicians often cherry-picked the figure that best supported their argument, which in turn undermined the overall presentation of the statistics. Casey stressed that the commentary provided alongside the publication of statistics was inadequate for the public (and media) to interpret the statistics in a meaningful way.

Together, these reviews revealed that the UK publics' trust in crime statistics was low. A report by the UK Statistics Authority (2010) found that people were found to formulate their opinions on crime levels based on a variety of factors, and these were heavily influenced by media depictions, demographic qualities and personal experience. The countervailing source of information – nationally reported crime statistics – was not being heard. Simply put, the message that crime levels were falling was not getting through to the populace over the cacophony of competing information.

It has long been inferred that publically disseminating crime information engages the public and empowers them to get involved in their communities (Lavrakas et al., 1983; Sherman, 1986; Harries, 1999; Ratcliffe, 2002). This has been a key principle in the adoption of community policing, where the public are considered just as much a part of community safety as the police themselves (Goldstein 1987; Garland, 2001). Increasing public access to crime information is seen as integral to this whole agenda, helping “to open up a two-way dialogue ... foster greater relations ... to encourage a flow of information from the public to the public agencies” Sampson and Kinnear (2009: 5).

Accumulatively, this suite of reviews and research explicitly illustrated the relationship between information provision, effective public engagement and confidence in the police. Collectively they created a clear and consistent message that emphasised the importance of communicating information to the public about crime in their communities. This pervaded the political consciousness, and thus the rationale for publishing crime statistics to the public was originally born out of a desire to improve the credibility of crime statistics, address often over-inflated perceptions about local levels of crime, provide crime information that engages the public on local crime issues and empowers them to make decisions that improves their personal safety and contributes to local community safety.

Publishing crime information to the public was also reflective of the growing political move in the twenty-first century towards democratic ‘transparency’ (Hohl et al., 2010, Home Office, 2010). Crime data are collected by public bodies and paid for by the public purse. For this reason, many believe that these data should be available in the public domain (BBC, 2010). The Home Office have promulgated this policy objective in the past decade, increasing both the quantity and quality of information provision about crime and policing (NPIA, 2011).

This spirit of transparency is also imbued in the Coalition Government’s approach to public service delivery, with the aim of serving two key purposes. First, it is considered to increase public knowledge about crime and policing. Second, it is seen as a “key mechanism for encouraging the public to take greater responsibility for holding the local police to account for their performance” (NPIA, 2011: 6). In other words, it is believed that publishing information on crime at a local level facilitates greater public scrutiny of how well the police are doing at suppressing local crime and serves as a basis for dialogue between the public and their local police (UK Statistics Authority, 2010).

The impetus of publishing online crime maps was elevated further in 2008 by the two main (and competing) UK political parties adopting the idea as a policy objective (or in the case of the 2008 London Mayoral campaign, as a manifesto pledge by Boris Johnson). This culminated in the (then) Home Secretary, releasing the Policing Green Paper (Home Office, 2008) which mandated that all police forces had to publish crime maps to the public by the end of 2008. At its heart, this green paper aimed to empower citizens by improving the connection between the public and their local police service.

Given the preceding background, the ascension of public crime information provision into a modern day reality has certainly come from noble origins:

- It is seen to be a vehicle to improve the presentation and credibility of crime statistics (Statistics Commission, 2006; Smith, 2006)
- It stems from a desire to provide the public with a police service that is truly community focused (Casey Review, 2008)
- It is intended to support a more informed public, which in turn, is expected to foster a greater sense of engagement and confidence in policing agencies (Home Office, 2010; UK Statistics Authority, 2010).

Following this line of reasoning, engagement and empowerment should lead to the mobilisation of the public as promoters of community safety. By understanding the issues happening in their communities, it permits them to get involved, and by being aware of the risks to their own safety (and that of their neighbours) it encourages them to take measures to reduce that risk and report suspicious activity to the police (UK Statistics Authority, 2010). This, as is argued by the UK Coalition Government in their 'Policing in the 21st Century' paper, allows the public to challenge their local police teams and hold them to account for their performance (Home Office, 2010). Within this document is a requirement for crime data to be published at a local level (defined as streets and neighbourhoods) by January 2011.

This whole policy rationale appears to be perfectly reasonable on the surface. However, we present an argument that it lacks theoretical substance, insofar that the mechanisms by which information provision works to inform, reassure and empower the public have not been explicitly articulated in to the current practice of publishing crime statistics using crime mapping. Furthermore, these mechanisms have rarely been subjected to academic rigour; the upshot being that there is little established knowledge underpinning this prominent policy move. We further argue that the crime statistics that are currently published using crime maps offer little in a way that sustains public engagement and empowerment.

A brief history of crime mapping in the UK

For over 15 years police forces in the UK have actively used computer-generated crime maps internally to inform decision making (for a longer history see Chainey and Ratcliffe, 2005). In its simplest form it has involved the production of crime maps with symbols representing where crimes of different types have occurred (Weisburd and McEwen, 1998), or displayed as a heat surface density map showing hotspots of crime (Eck et al, 2005); in its more advanced form it has led to developments in predictive mapping (Bowers et al, 2004), identifying serial offenders through the use of geographic profiling (Rossmo, 2000), and simulating crime environments (Groff, 2007). In the last 10 years internet mapping technology has become ubiquitous with the development of

StreetMap, MapQuest and Multimap, and more recently Google Maps and Bing Maps. This has provided the opportunity to simply integrate information from public services to these web mapping applications without the need for internet-based geographical information systems (Longley et al, 2011).

As the public has become increasingly familiar with browsing for information using online mapping, this has created the opportunity for data that are spatially referenced to be published and presented in a more readable, visual and interpretative form. Since 2004, police forces such as West Midlands, West Yorkshire, Surrey, Sussex, Devon and Cornwall and the Metropolitan Police have published crime statistics using online crime mapping technology (Harley and Dewar, 2004; Davies and Smith, 2004; Home Office, 2005; Chainey and Smith, 2005; Crosby and Rangecroft, 2006, Adams, 2010). In its most basic form this involved publishing maps as images with limited zoom, pan and other interactive capabilities, but in some areas included the ability for users to select and group different crime types, extract crime statistics for user defined areas, identify members of the local neighbourhood policing team and be informed about crime prevention initiatives that were operating in the area (Home Office, 2005).

In December 2008, all police forces in the UK began to adopt a standardised approach for publishing crime statistics using crime mapping. This was facilitated by the National Policing Improvement Agency (NPIA) through the national crime mapping site (www.police.uk) and involved the presentation of crime statistics at the middle Super Output Area (SOA) level. Since February 2011, the precision of the crime statistics has been improved through the publishing of information at the street level. Even though all police forces in England and Wales provide data to this national crime mapping site, the Metropolitan Police, West Yorkshire Police, Hampshire Constabulary, and Thames Valley Police via the CSPs in Buckinghamshire County and Milton Keynes still maintain their own online crime mapping sites. Alongside the publishing of crime statistics on the national and police force sites, additional information is presented to help support interpretation of these data (e.g. trend graphs and statistics), to provide local context (e.g. initiatives operating in the area), and support local engagement (e.g. details on the neighbourhood policing team). The national crime mapping site currently publishes crime statistics on maps utilising point symbology, whilst several of the police force sites use thematic mapping or density surface mapping to help ease pattern and trend interpretation.

Evidence to date

Given that there has been a high-profile political debate over recent years into the virtues of communicating information about crime with the UK public, and the developments in publishing this information using online mapping technology, it is somewhat surprising that there is such a lack of research evidence that substantiates the thinking behind it. For example, a rapid evidence assessment carried out on behalf of the NPIA found “limited and diverse evidence on the impact of information provision about crime and policing, and pointed to some significant knowledge gaps in the literature” (NPIA, 2011: 8).

A body of literature has begun to emerge though on the relationship between information provision and public confidence. This shows that people who are well informed tend to hold more positive opinions about the police and their activities (Bradford et al, 2009; Wunsch and Hohl, 2009; Hohl et al., 2010;). However, this research also highlights that not all information is of equal value to the public. Wunsch and Hohl (2009) stress that the style and content of newsletters needs to convey

local people's concerns and experiences for it to be of greatest impact. Echoing this, Hohl et. al. (2010) argue that to be truly effective, police communication and information provision needs to emphasise responsiveness to local issues. This serves to underscore the importance of the quality and presentation of information, and its precision on sub-neighbourhood issues to ensure the information is of interest to the public and has direct relevance to personal circumstance.

There are only two known studies which have specifically looked at information provision via crime maps. Groff et al (2005) were the first to systematically examine how the fear of crime that people exhibit relates to their interpretation of crime statistics in Redlands, California (USA). In their randomised control trial (RCT), one group received a graduated symbol map, the second group received a crime density surface hotspot map, and the last group acted as a control by receiving crime statistics in a table, with a corresponding (plain) map for cross-reference. Overall, their findings showed that the participants who viewed crime maps reported less fear than their counterparts who viewed the tabular statistics.

The second piece of research which explicitly tested how members of the public interpret crime maps was conducted by researchers at the NPJA soon after the launch of the national crime mapping website in 2008. This consisted of focus groups and a RCT to test the impact of crime maps and policing information on public perception. The focus group results showed there was wide support for the availability of crime maps; however most respondents said that they were unlikely to regularly use them unless they had to make an active decision (for example moving to a new area). It became clear from the focus groups that the contextual information that was provided alongside the maps (for example neighbourhood policing information and crime prevention advice) was critical for assisting interpretation of the figures. The RCT experiment indicated that overall, participants rated the information about their neighbourhood policing team (NPT) and the crime maps highly and thought them trustworthy and informative, but offered slightly more favourable opinions of the NPT information than the crime maps. In sum, the results suggested that information was found to improve people's perceptions of their neighbourhood and of the local police, but that "while crime maps did not add value to policing information, policing information added value to crime maps" (NPJA, 2011, 20).

Another recent study relating to online crime maps was conducted by Chainey and Tompson (2011) that involved conducting a series of workshops with practitioners from police forces and CSPs, to explore their experiences since the launch of the new street-level national crime mapping website. This study found that, to date, no police force had conducted a survey (robust or anecdotal) that had measured the impact that publishing crime statistics had on improving the credibility of these data or the way in which the information was being used to inform, reassure and engage with the public. Another key finding from the workshops was that most practitioners had concerns with the geocoding accuracy for some crime data and how this would be represented on the national crime mapping site (i.e. many crime records cannot be geographically referenced to the exact location where the crime took place). They expressed there had been limited opportunity to feed into a consultation exercise, and problems with the 'block point' approach that was being used to geographically locate crime incidents on the national crime mapping site could make the interpretation of 'street-level data' misleading and confusing to the public.

Everything considered, the evidence base that should form the foundations of the policy to publish crime statistics using crime maps is distinctly absent. The only research-derived knowledge available

on the impact of crime maps on public perceptions of crime was generated in the USA, on a small and conveniently selected sample. The timing of the UK research on crime maps precluded it being able to test the impact that the new presentation of crime statistics (i.e. as graduated symbols at street level) would have on public opinion. While the NPIA research was robustly designed, it was based on the previous form of information provision (i.e. thematic maps to middle SOA) and found no real net effect of providing the public with crime maps. Tellingly, respondents in the focus groups held by the NPIA did not mention using the information gleaned from crime maps to hold their local police to account, which is one of the putative policy aims. This indicates that the mechanism through which the publishing of crime maps works to encourage people to use them to scrutinise police performance may as not yet manifested nor matured. The general opinion amongst police practitioners is that while the current national crime mapping site offers some transparency on police performance and crime levels, there are questions relating to the geographical presentation of the crime statistics and how the information effectively supports community engagement and empowerment.

The impact of publishing crime statistics using crime mapping: a critical commentary

In this section we offer a critical commentary on how the policy rhetoric has been translated to the reality of the street-level national crime mapping website. We begin by assessing how well the website achieves the original policy objectives of increasing the credibility of crime statistics; reassuring the public; facilitating engagement between the police and public; and supporting democratic transparency. Where relevant, we propose opportunities for improvement, and conclude by assessing the prospects for future development.

The government reviews that have been conducted since 2005 have provided some clear guidelines about what information the public need to feel informed, reassured and empowered. The Smith review expressly noted that statistics need to be presented clearly, and in an unambiguous manner, to generate feelings of trust in the data. We wholeheartedly agree with this, but argue that the method that is used on the national mapping website does not fulfil this specification. To start with, we question the sensibility of using a 'block point' approach to display crime statistics on maps. This uses only two sizes of symbols (less than ten or greater than or equal to ten crimes), and attempts to aggregate offences that have occurred in the surrounding area to a street-level representation of crime levels. The current threshold is a minimum of twelve properties to determine each block point, albeit plans are to improve this to eight properties. Even though we welcome this improvement, crimes mapped as points make it difficult to interpret geographic patterns and at worse can mislead (MacEachren, 1995). The main problem with using any point approach is that crimes can be easily misinterpreted as having taken place at this specific location. A 'radar' symbol is used on the national mapping site to attempt to overcome this, but this then creates the difficulty of determining the areal coverage that the symbol is meant to represent. If basic cartographic principles had been applied, as the aggregating unit for the crime statistics was the street, this should also have been used for visualising the crime statistics (e.g. using different colours or line thickness to represent levels of crime volume, and even normalised by street length e.g. crimes per 100m). However, a large proportion of the crimes published on the national mapping site are not related to street crime, so an areal visualisation method such as kernel density estimation that is commonly used in police forces for visualising the geographic distribution of crime would have been more appropriate (Eck et al, 2005; Chainey and Ratcliffe, 2005). Good cartographic discipline would have ensured the data were represented effectively, using a geographic visualisation that matched

the aggregating unit, and the communication of reality would have been more accurate. The block point used on the national crime mapping site is inherently an erroneous method, increasing the risk of crime statistics being misinterpreted.

Further to this, we maintain that there is a weakness in the assumption that all police recorded crime data are fit for purpose for mapping at street level. Crime data are characterised by several fundamental geographic anomalies, and pose many geocoding difficulties which are well known to practitioners who routinely work with these data (for examples see Ratcliffe, 2001; Chainey and Ratcliffe, 2005). Consultation with these practitioners would have highlighted these issues and directed the design towards a method that would be more sensitive to these inherent spatial inaccuracies. If issues with geographic representation and geocoding inaccuracies had been more carefully thought through this may have circumvented the negative media headlines in February 2011, describing inaccuracies and confusion about crime levels in many locations (see Daily Mail, 2011; Independent, 2011).

At the February launch the Home Secretary spoke about how the national crime mapping site was a means of helping to improve the credibility and confidence the public attribute to crime statistics. However, we believe that the negative media messages on the site's inaccuracies may have done long-term damage to the reputation of crime statistics. Whilst these inaccuracies are few in number, they have been high profile, and risk undermining the legitimacy and confidence in the accuracy of all the crime statistics published on the site. Indeed, these concerns were highlighted further in October 2011 when the crime statistics for the month of August appeared to show no resemblance to the riots (and the associated large volume of criminal behaviour and disorder) that occurred in several English cities (e.g. Manchester Evening News, 2011; Daily Mail, 2011). In short, we do not believe that the way in which crime statistics are presented has helped to improve the public credibility of crime statistics.

Contemporary research has stressed that information provision needs to be relevant to the recipients, and should emphasise police responsiveness to local issues to chime with the public's priorities (Hohl et. al., 2010; and Wunsch and Hohl, 2009). If these criteria are met, the prospects for changing perceptions of crime and improving personal safety are greater. At present, we believe that opportunities are being missed by police forces to tailor sub-neighbourhood reassurance messages alongside the publishing of the crime statistics (e.g. saying how little crime there is your neighbourhood). General messages of reassurance and crime prevention often fail to resonate. This also underscores the need for tailored information that is actively passed on to local communities at times of heightened crime risk, which local residents can then use to minimise their own immediate risk of victimisation and improve local public safety. In our review of the use of the national mapping site by each police force, few, if any, have been using the national crime mapping site in this active, reassurance way.

We also believe that the current presentation of the crime statistics on the national website is very passive, offering little that will draw people back and keep them interested on crime trends and policing in their area. To elaborate, a mistake we believe the NPIA made at launch was not requiring users to register their email and home postcode so that this interested audience could be informed with information of local relevance by their neighbourhood policing team. This could include specific, and tailored crime prevention advice regarding a known local crime issue (e.g. a spate of burglaries), directly promoting messages of reassurance, and used as a means to publicise police

activity. Evidence does suggest that publically disseminating crime information engages the public and empowers them to get involved in their communities. However, the crime information needs to be easy to interpret, relevant to personal circumstance, timely, and hold content that prompts the public to react in some way (e.g. be made aware of a recent spate in burglaries, reassure that their chances of being burgled are very small, be given practical advice on things to they can do to minimise their burglary risk, and provide a direct contact if they witness any suspicious activity). Potential exists for the national website to be an important local engagement tool, but the present content does not realise this potential.

Interest in and use of the site is we believe to be reflective of the number of hits it has received. When the street-level crime statistics went live in February 2011 there was significant interest, with up to 18 million hits per hour on the first day of its launch, and a highly commendable 400 million hits in its first month. Most of these were on the first day of its high-profiled launch, as the majority of UK residents were interested to see what the site showed for their own street. Between July-September 2011 it received on average 3.3 million hits per month, less than 1% of the traffic it experienced in its first month (Home Office, 2011). This hints at the site offering little that has sustained public interest, and which motivates individuals by enriching their knowledge on crime issues and police activity, improving engagement with the police, and empowering them to be part of local community safety improvements.

We believe that many of these initial purposes of publishing crime statistics has begun to be lost, with there being more of a focus towards it being an exercise in promoting transparency, rather than publishing data that can be used to support reassurance and improve community engagement. This would be fine if there were evidence that this transparency prompted community action, but as of yet there is little to suggest that this is taking place.

Looking to the future, we believe that it would be useful for the publishing of crime statistics using crime mapping in the UK to fit with the Police's current Management of Police Information guidance (NCPE, 2006). This defines that information must fulfil a necessary purpose for it to be recorded and retained by the police. Although there are differences between internal police recorded crime data and what is publically published, there are several principles from MOPI that would help to qualify what should, and what should not, be published, and the mechanism by which it is published. Principally, we believe that if there was a clearer definition relating to the purpose of publishing crime statistics - that stressed its purpose for supporting community empowerment and engagement - this would help to determine the type, content and precision of data to be included on the website. At present, the policy appears to be that everything and anything should be published. Yet, as Sampson and Kinnear have observed "it is not yet safe to assume that greater candour will always produce greater confidence" (2009: 8). Instead, providing better quality information, that the public can actually do something with to minimise their risk of victimisation or use as a basis for dialogue with their local policing teams, appears a more fruitful route to take in our opinion. To help this, we recognise the potential of social networking functionality, currently being trialled in Hampshire, as a means of enhancing the publics' consumption of published crime statistics (Postlethwaite, 2011). The integration of Facebook and Twitter type technologies into the national crime mapping site stimulates prospects for improving community engagement by developing dialogues that are more relevant to personal circumstance and interest.

Conclusion

There continues to be a lack of evidence that publishing crime statistics using crime mapping actually supports improvements in community engagement and empowerment. That is not to say that this initiative has nothing to offer, but rather there has been a lack of research that has qualified the contemporary policy to publish crime statistics using crime mapping. Research on the provision of crime information does provide encouragement that informing the public can be beneficial. The purpose of publishing the crime statistics must not lose sight of the important potential it can contribute to improving the dialog and involvement of local communities in improving community safety, but must avoid becoming an exercise in promoting political transparency when the data it offers provides little that encourages the public to react. We believe that promoting improvements in quality, content and utilising new social networking technology to support better engagement and empowerment would contribute to improvements in the credibility of what is currently published as well as helping to further improve the dialogue on crime between the police and the public.

References

ACPO (2001) Reassurance – Civility First: A Proposal for Police Reform, London: Association of Chief Police Officers of England, Wales and N. Ireland.

BBC (2010). Tim Berners-Lee unveils government data project. Available at: <http://news.bbc.co.uk/1/hi/technology/8470797.stm> [Accessed 31 October 2011].

Bowers, K.J., Johnson, S. and Pease, K. (2004) Prospective Hotspotting: The Future of Crime Mapping? *British Journal of Criminology* 44 (5), 641-658.

Bradford, B., Jackson, J. and Stanko, E. (2009) 'Contact and Confidence: Revisiting the Impact of Public Encounters with the Police'. *Policing and Society* 19 (1): 20-46.

Bradford, B. (2011). Convergence, Not Divergence?: Trends and Trajectories in Public Contact and Confidence in the Police. *The British Journal of Criminology*. 51(1). Pp. 179-200.

Casey, L. (2008) Crime and Communities Review: Engaging Communities in Fighting Crime. London: Cabinet Office.

Chainey, S.P. And Ratcliffe, J.H. (2005). GIS and Crime Mapping. Wiley: Chichester.

Chainey, S.P. and Tompson, L. (2011). Need to add details once updated website.

Crosby, F. and Rangecroft, M. (2006) Mapping for the masses: www.beatcrime.info Presentation at the UK 4th National Crime Mapping Conference. Available at: <http://www.ucl.ac.uk/jdi/events/mapping-conf/conf-2006> [Accessed 31 October 2011]

Dagleish, D. and Myhill, A. (2004). Reassuring the public – a review of international policing interventions. Home Office Research Study 284. Home Office: London, UK.

Daily Mail (2011). It's Crimebotch UK: Outcry as leafy streets labelled crime hotspots on new Home Office website (which crashed as soon as it went live). Available at: <http://www.dailymail.co.uk/news/article-1352354/Police-crime-map-Home-Office-website-crashed-2-centres-hotspots.html>. [Accessed 31 October 2011].

Daily Mail (2011). Police deny crime figures were 'airbrushed' following Manchester riots in the summer. Available at: <http://www.dailymail.co.uk/news/article-2045547/UK-riots-Police-accused-fiddling-crime-figures-counting-Manchester-riots-single-offence.html#ixzz1cMej9S> [Accessed 6 October 2011].

Davies, P. and Smith, E. (2004). Data sharing, crime analysis and the crime audit in Cornwall. Presentation at the UK 2nd National Crime Mapping Conference. Available at: <http://www.ucl.ac.uk/jdi/events/mapping-conf/conf-2004> [Accessed 31 October 2011]

Duffy, B., Wake, R., Burrows, T. and Bremner, P. (2008), Closing the gaps: Crime and Public Perceptions. London: IPSOS Mori.

Groff, E. (2007). 'Situating' simulation to model human spatio-temporal interactions: An example using crime events. *Transactions in GIS* 11(4):507-530

Groff, E., Kearley, B., Fogg, H., Beatty, P., Couture, H. and Wartell, J. (2005) 'A Randomised Experimental Study of Sharing Crime Data with Citizens: Do Maps Produce More Fear?'. *Journal of Experimental Criminology* 1: 87-115.

Harley, S. and Dewar, I (2004). Using web-based GIS in Surrey to deliver reassurance and the Integrated Risk Management Planning. Presentation at the UK 2nd National Crime Mapping Conference. Available at: <http://www.ucl.ac.uk/jdi/events/mapping-conf/conf-2004> [Accessed 31 October 2011]

Hohl, K., Bradford, B. and Stanko, E. (2010) Influencing Trust and Confidence in the London Metropolitan Police: Results from an Experiment Testing the Effect of Leaflet Drops on Public Opinion. *British Journal of Criminology* 50 (3): 491-513.

Home Office (2008) *From the Neighbourhood to the National: Policing our Communities Together*. London: Home Office.

Home Office, National Policing Improvement Agency, Association of Chief Police Offices and Association of Police Authorities (2008) *Code of Good Practice for Public Access to Local Crime Information for Police Forces and Authorities in England and Wales*. London: Home Office.

Home Office (2010) *Policing in the 21st Century: Reconnecting Police and the People*. Cm 7925. London: Home Office.

Independent (2011). The meanest streets – not ours say the people of Bury. Available at: <http://www.independent.co.uk/news/uk/crime/the-meanest-streets-not-ours-say-the-people-of-bury-2201457.html> [Accessed 29 August 2011].

Innes, M. and N. Fielding (2002) From community to communicative policing: 'signal crimes' and the problem of public reassurance. *Sociological Research Online* (7/2)

Lavrakas, P., Rosenbaum, D. and Kaminski, F. (1983) 'Transmitting Information about Crime and Crime Prevention to Citizens'. *Journal of Police Science and Administration* 11 (4).

Manchester Evening News (2011). Revealed: How the Manchester riots were airbrushed from official crime statistics for August. Available at: http://menmedia.co.uk/manchestereveningnews/news/s/1460744_revealed-how-the-manchester-riots-were-airbrushed-from-official-crime-statistics-for-august [Accessed 5 October 2011].

Millie, A. and Herrington, V. (2005). Bridging the Gap: Understanding Reassurance Policing. *The Howard Journal*. 44(1). Pp. 41-56.

NCPE (National Centre for Policing Excellence) (2006). *Guidance on the Management of Police Information*. Bramshill: ACPO Centrex.

Rossmo (2000). *Geographic Profiling*. Florida, US: CRC Press LLC.

Sampson F. Kinnear F. Plotting Crimes: Too True to Be Good? The Rationale and Risks behind Crime Mapping in the UK. *Policing*. 2010 . 4(1): 15-27. doi: 10.1093/policing/pap015

Smith, A. (2006) *Crime Statistics: An Independent View*. Carried out for the Secretary of State for the Home Department. London: Home Office.

Quinton, P. and Tuffin, R. (2007), 'Neighbourhood Change: The Impact of the National Reassurance Policing Programme', *Policing: A Journal of Policy and Practice* 1(2): 149-159.

Weisburd, D. and McEwen, T. (1998). *Crime Mapping and Crime Prevention*. New York: Criminal Justice Press.

Wünsch, D. and Hohl, K. (2009) 'Evidencing a "Good Practice Model" of Police Communication: The Impact of Local Policing Newsletters on Public Confidence'. *Policing: A Journal of Policy and Practice* 3 (4).