Open crime and justice data in UK:
a case study of Police.uk and Data.police.uk

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Abstract

In this paper we describe the evolution and development of the police.uk and data.police.uk sites, which publish open data about crime and justice in the UK, and make it accessible and comprehensible to the public. Police.uk has received over 60 million visits (675 million hits) since launching in January 2011. Open crime and justice data represents a key sector in the UK open data market, and citizens are keen to engage with the criminal justice system to become more informed about local levels of crime and other policing information. We are presenting a paper that sets out the policing context in the UK and discusses the journey in providing such open data, the processes involved and challenges encountered and possible future developments.

Introduction and context

Crime, justice, and policing are emotive subjects that impact a wide range of stakeholders and often elicit calls for greater transparency. They are also resource intensive, placing significant demands on government and the public sector. These factors make crime, justice, and policing activities ideal candidates for an open data approach, to improve service delivery and increase public engagement. In this paper we describe the evolution and development of the `police.uk` and `data.police.uk` sites, which publish open data about crime and justice in the UK, and make it accessible and comprehensible to the public. We expect this case study to provide a valuable reference point for other practitioners, and a strong stimulus for discussion at the workshop.

Policing in the United Kingdom

Within the UK, 43 regional police forces provide policing services across England and Wales, with separate devolved arrangements in place for Northern Ireland [1](PSNI) and Scotland[2] (Police Scotland). Regional forces are complemented by various domain specialist forces covering, for example, the rail network, defence and nuclear sites.[3] Each police force is led by a Chief Constable, who is accountable by law to the Home Secretary.

At a local level, neighbourhoods (also referred to as wards or boroughs throughout different regions of the UK) have their own dedicated policing teams working in a defined locality, known as Neighbourhood Policing Teams (NPTs) or Safer Neighbourhood Teams (SNTs). These local policing teams are responsible for engaging with the public to identify their problems

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[1] http://www.psni.police.uk
[2] http://www.scotland.police.uk
[3] http://www.acpo.police.uk/documents/reports/2012/201210PolicingintheUKFinal.pdf

needs and tackle issues of concern in a neighbourhood and work collaboratively with the public and partners to resolve such issues. They are often seen as the visible 'face' of policing.

Policing data in the United Kingdom

Throughout 2008-9, individual police forces started to make crime information and maps available to the public, aimed at raising awareness and access of NPTs and informing citizens about local levels of crime. Across England and Wales, the provision of such crime information and data was disjointed and could be described as a 'mixed picture,' with datasets available in various formats, including (but not limited to) CSV files, PDF documents, MS Excel sheets and Word documents, and physical paper leaflets, newsletters and other printed material. With 43 different approaches being used and numerous costly IT contracts being set up, there was a need for collaboration in creating a national approach to providing and mapping such data. As a result, the National Policing Improvement Agency (NPIA)[4] were commissioned to develop a standardised crime map, which would provide the data in a more consistent approach on a timely basis, and allow for comparisons across forces. This led to the launch of the national early 'crimemapper' website (`maps.police.uk`) in 2009.

Crimemapper provided the public with details of their neighbourhood policing teams, local stations and events, and for the first time provided data on crime statistics for each police force in England and Wales, updated on a monthly basis. This data was made available at force and 'neighbourhood' level to facilitate closer engagement between the public and their NPT/SNT (see [5] for an indicative screenshot). The ultimate aim was to provide insight to citizens allowing them to gain a better understanding of local problems, and the police action being taken to address these. The then policing minister, Vernon Coaker, announced that: "By rolling out up to date crime maps communities are able to take an informed view about crime in their local area. Providing this information to the public helps to make the police even more accountable."[6]

The case for further investment

To understand the impact of providing the public with crime maps and policing information, the NPIA undertook a randomised control trial (RCT) throughout 2010 (Quinton, 2011). This RCT found that "the public's reaction to information about crime and policing was positive; a large majority thought it was informative and trustworthy.. [and the study challenged] the myth that sharing information with the public would increase the 'fear of crime.' [with] information found to improve people's perceptions of their neighbourhood and of the local police."

Change in government and the open data 'agenda'

A change of government in 2010 led to a number of significant open data initiatives across government departments and public sector bodies (see Heimstädt et al., 2014, for an overview). Within the crime and policing sector, open data and greater transparency of public sector information sought to achieve: 1) strengthened accountability, and greater engagement by local

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[4] http://www.npia.police.uk

[5] http://3.bp.blogspot.com/_Fbk8IlxNQXM/Stz4vum24hI/AAAAAAAADtg/KKsUF5pin5c/s1600-h/crime_maps_England_GUILFORD.bmp

[6] http://www.crimemaps.org.uk

communities; 2) support for public service improvement, by reducing bureaucracy and by improving trust and confidence levels in the Criminal Justice System (CJS); 3) support for SMEs and other third parties to reuse open data, and develop products and services based on this data.

Government officials were keen to build on the success of the first iteration of crime and policing data, and were keen to replicate the crimespotting.org[7] mapping service launched by the San Francisco police department, but nationally across England and Wales. With the evidence base provided by the NPIA RCT, the ambition was set to build upon the success of maps.police.uk to launch police.uk and provide more granular, 'street-level' crime mapping and data. This vision would allow the public to access data on which offences have been reported in their local streets, rather than at an aggregated neighbourhood level. Furthermore, with one central agency co-ordinating the publishing of this data, issues (such as data protection, anonymisation processes and formats and files for download) could be tackled once at a national level, rather than by each individual police force. In addition, one single website would provide a seamless, regularly updated, service to the public.

The development of police.uk

In January 2011, police.uk was launched to unexpected levels of public demand, with 300 million hits reported on launch date and significant periods of down time. The new crime mapping website provided a tailored, personal way of accessing data, with visitors required to input a postcode, street name or town to receive details of the number of crimes in their area. The website also made available details for local NPTs, crime prevention advice, local events and other ways to get involved. Additionally, police.uk was designed so that the website itself was built on top of the API (application programming interface), with all data on the website being available under the Open Government License v2.0[8]

Data management and publication workflow

Every month, each of the 43 police forces[9] generates a file in a set format that details the crime figures for their force. These are uploaded to a private server managed by the Home Office and Rock Kitchen Harris (RKH)[10], the company behind police.uk. From here, the file undergoes a validation process before being anonymised and published on the website. For the sharing and processing of this personal data, an agreed data processing agreement (DPA) is in place between police forces, Home Office and RKH.

In May 2012, police.uk was developed to include data on what happened after an individual crime was reported, whether this be a police action (such as a fine or caution) or if the suspect was charged in relation to that crime, and what outcome was reached from the subsequent court hearing. The monthly data processing was amended, with force files being sent to the Ministry of Justice (MOJ) for a matching process to any court results contained in

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[7] http://sanfrancisco.crimespotting.org
[8] http://www.nationalarchives.gov.uk/doc/open%2Dgovernment%2Dlicence/version/2/
[9] http://www.police.uk/contact/force-websites/
[10] http://www.rkh.co.uk

their own records held on the Police National Computer (PNC) with this data then returned to the Home Office to be integrated with existing data.

The [matching](#) [process](#)[11] (MOJ, 2012) for linking a crime to a justice outcome involves the use of an algorithm that matches various variables contained within the PNC (such as crime reference number, arrest summons number and Home Office offence code). It is important to understand here that due to the various different IT and crime recording systems of the different forces across England and Wales that not all of these variables are available for each force, and that there is no single identifier on a crime that is attached to a record or file throughout the entire CJS process. In the interests of transparency, each month the various match rates for each forces are available to [download.](#)

[Data.police.uk](#) and reuse of open crime and justice data

Although all data has always been available through previous police.uk/data page, a new hub was launched in July 2013. Following best practice and principles set out by the Open Data Institute (ODI), the data.police.uk portal makes it easier for users to customise and download large amounts of data in CSV format and provides improved documentation on the API, encouraging greater reuse of the datasets. Where developers and local communities have made use of the data, details of such apps and services are [published](#)[12] on the website.

Managing the challenges: anonymisation, privacy and accuracy of data.

Once formally tasked with the process of delivering street-level crime mapping, the NPIA set up a steering group which would work collaboratively on understanding and working through the issues and challenges, and designing a solution which would safeguard victims of crime whilst providing the public with more detailed, granular data. Amongst the tactical advisory members were the Information Commissioners Office (ICO), Home Office statisticians, and a number of experts from various police forces, including Chief Constables and [ACPO](#) [leads](#)[13] - the data controllers and with whom the legal liability for such data rests.

In providing personal data at such a granular level, one of the biggest challenges is ensuring that the process and its outcomes are able to strike a balance between transparency of data and privacy for victims, ensuring that individual addresses, victims and offenders aren't able to be identified. To ensure that victims are safeguarded, the design solution for crime mapping had to ensure that pin pointing of crimes could not be used as an approach. As an alternative, 'snap points' [14] were designed.

These snap points would be placed in the centre of the road where the crime had occurred, and would cover a minimum of 12 postal addresses. Where an incident has occurred on a street with less than 12 postal addresses, the snap point will be 'moved' to the nearest street with the required number of postal addresses. To make this clear to the public the wording 'on or near x road' was used throughout the map.

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[11]

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/217421/police-uk-statistics.pdf%20

[12] http://www.police.uk/apps/

[13] http://www.acpo.police.uk/acpobusinessareas/default.aspx

[14] http://www.cheshire.police.uk/about-us/statistics/crimemapping.aspx

This can, however, be seen to be making compromises on the accuracy of the mapping and data (particularly the location) and affect public confidence and trust in the data if they are aware that a crime didn't happen specifically there. To improve the location accuracy, the threshold for snap points was later reduced to 8 postal addresses and snap points were added to 'points of interest' (car parks, shopping centres, recreational areas) rather than just residential roads.
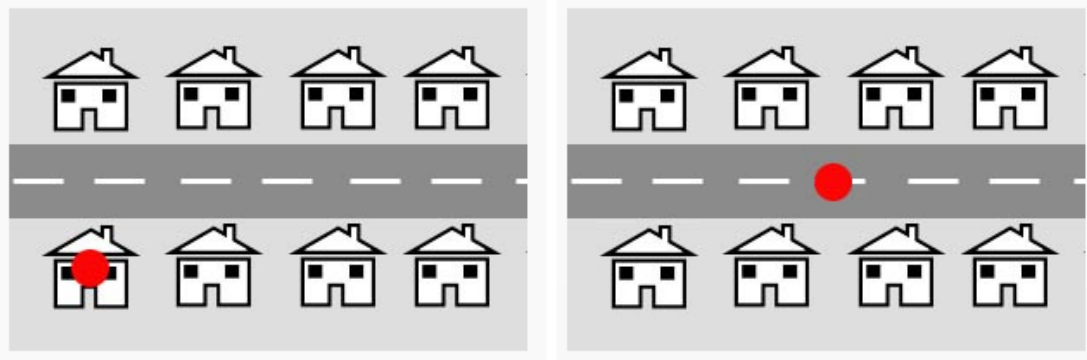

Figure 2(a). Location of crime occurrence   **Figure 2(b)**. Location of 'snap point' used

Ahead of launching police.uk, a detailed Privacy Impact Assessment (PIA) was completed which has been treated as a 'living' document, which continues to be maintained and is openly available. All correspondence and feedback (over 6,000 emails received) continues to be monitored daily to check for any issues raised pertaining to privacy, of which there have been none since launch.

In addition to the anonymisation process for such data, the accuracy of mapping also poses challenges. As mentioned in detailing the 'snap point' approach, crimes are mapped at approximate locations. However, in some instances there may simply not be a given location for a crime, for example, if the victim may not know or be able to recall where a crime took place. With such no-location crimes, the data cannot be mapped, as shown in the police.uk screen-shot below. Other geolocation issues can affect the accuracy of crime data and understanding its exact location. For example, force gazetteer systems may only be able to give the location of a crime as being on Brighton Road, but be unable to more accurately describe what section or which residence / point of interest more specifically, which can skew the perceived location of a crime.
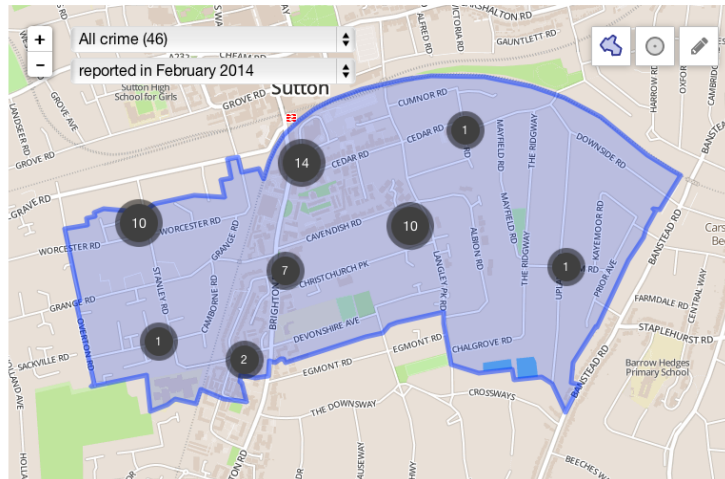
723 incidents of crime occurred in Metropolitan Police Service that could not be mapped to a specific location. Why?

Finally, in achieving reuse of public sector data, there is a challenge in understanding the 'role' of Government in the marketplace, and how best to support third party developers and other interested individuals and groups wishing to make use of this data. Should Government be providing both the mapping services and the data, or just the underlying data? Is there a need for the provided mapping system to make the data easy to interpret for those who aren't tech-confident in using APIs? Or if the mapping service that police.uk provides is removed, would it open up the market space for a developer to replicate / create their own crime maps? In February 2013, the ODI hosted an 'open data comes to market' roundtable where such issues were discussed. To document the discussion, a report[15] was drafted by the the Crime and Justice transparency sector panel for Crime and Criminal Justice (O'Hara, 2013)

Future developments for Police.uk

Police.uk continues to prove it is popular with the public, with 60 million visits to the site and 675 million hits since January 2011.[16] It is likely that the Government will continue to focus on improving the quality of the underlying data, whilst ensuring that there is no additional burden or bureaucracy on those involved in the process, against the challenge of working with IT systems that prove problematic for extracting such data.

With the merging of all eight regional forces into a single Police Scotland, it would be worth recommending that the new body works closely with Home Office and Government to release similar data for Scotland, or understand the challenges and lessons learnt in providing this data for England, Wales and Northern Ireland. The upcoming challenges continue to be providing accurate, high quality data, mapped in a way that protects victims but also gives the public confidence in the accuracy of the mapped location. Furthermore, increasing the frequency of data release (currently monthly) or splitting crimes into day/night would be more useful to the public, as well as providing real-time data such as the nearest open police station or counter, and easily accessible online crime reporting.

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[15] http://eprints.soton.ac.uk/350043/1/Open%20Data%20Comes%20to%20Market%20report%20final.pdf
[16] Figures dated January 2011 - February 2014. Throughout February 2014, the site received 502,301 visits.

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