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# How dangerous is your life? Personalising Government Open Crime Data

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**Abstract**

In this paper, we present *Fearsquare*, an application that allows people to engage with Government Open Data in a way that is contextualised to their own, individual, everyday life. The application mashes geo-located crime statistics with personal check-ins registered with the social media service FourSquare to give users a realistic representation of the levels of crime that occur in the places that they frequent or visit. The application is presented as an example of how Open Data can be given individual context and tailored for use in the field of personal informatics, as well as an example of how social media can be used to stimulate engagement with, as well as facilitate access and add value to, such data.

**Keywords**

Social media, personalisation, Open Data, foursquare, crime, public engagement

**ACM Classification Keywords**

H5.2 Information Interfaces and Presentation: User Interfaces

## **Introduction**

A growing number of governments are committed to releasing large amounts of public records (for example see [1], [2]). This form of freely available data, most commonly referred to as Open Data, promises not only to improve the transparency of government services but also to provide useful knowledge to inform citizens' everyday choices and behaviour [3]. However, a foreseeable issue of concern with providing such data to the general public is that the volume of data is not easily interpreted nor intuitively of interest. Put simply, this means that the full potential of open data may not be realised due to a lack of meaningful public engagement.

As an example, this paper focusses on the Police.UK website which was launched, by the UK Government, in January 2010 with the intention of helping people better understand crime data in their local area [4]. The website presents a mapped visualization of crime data gathered by the UK police as well as an open REST API [5] to allow third party developers to create their own applications using the data. The visualisations on the website drew huge initial public interest [6] as, due to the granularity of the data presented, citizens were able to quickly and easily discover crime statistics for any given UK address (e.g. the postcode of their own home).

Interest in the site however quickly waned, we argue that site focusses on providing data for places rather than for people and for instance does not allow for the fact that people commonly travel through a number of different areas on a daily basis. Hence, while a significant and commendable step forward, the UK crime data is not presented in a way that allows for an

intuitive understanding of the real – and personal – levels of crime that *people* are exposed to as they move about from place to place on a daily basis.

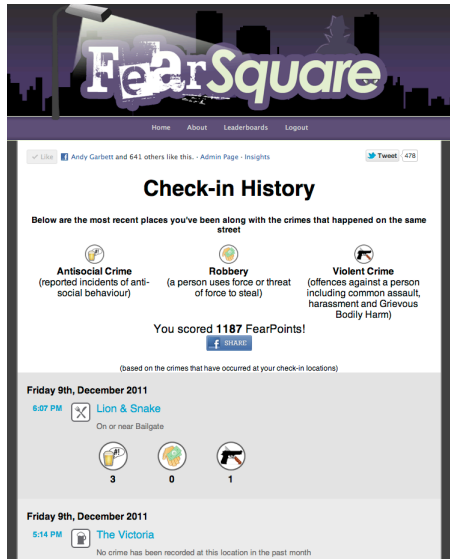
### *Personalising Open Crime Data*

We believe that in order to utilise Open Data at a more personal level, services must be coupled with additional data sets or life logging services in a manner that allows for data personalisation. With this in mind, we created a service to provide a more personalised set of crime statistics to better reflect the mobility of day to day lifestyles. In order to provide more location specific crime statistics we used users' location history from the well-known Foursquare social media application [7]. Foursquare provides a service whereby users are able to 'check-in' to places of interest via a mobile device. Check-ins are then recorded as a history and over time the service awards badges for recurring system use.

Lindqvist *et al* [8] found that users of the Foursquare network were likely to check-in to places which were representative of every day life such as restaurants, bars and work. Given this useful representation of a user's location habits we believe it is possible to provide a more personal crime statistic report. Related previous work within the CHI community include [9][10].

### **The FearSquare application**

We designed and implemented the FearSquare application as a web service that uses Police.UK crime data REST API. Users are able to sign into FearSquare using their Foursquare account details. At initial sign-up, users are given an optional questionnaire which explores their own perceptions of crime as well as their own personal estimate the levels of crime for their FourSquare checkin locations.



**Figure 1.** FearSquare application displaying last 10 check-ins with crime stats



**Figure 2.** FearSquare application displaying anti-social, robbery and violent crime stats for a Foursquare check-in

The application then retrieves the 10 most recent check-in locations (figure 1) for that individual user and used the longitude and latitude of each check-in location to locate the relating street level crime statistics. The crime statistics that are presented to the user are that of crimes against a person and therefore the crime categories of; Anti-social behaviour, theft and violent crime were used (figure 2).

Following this the user is presented with each of the 10 check-in locations along with the number of crimes that have occurred on that street within a given month for each crime category. If the user had filled out the initial optional questionnaire they were also then prompted with additional questions relating to their perception of crime after they had gained the new knowledge of the levels of crime in their check-in locations.

Users are finally presented with a *FearPoint* score that is determined by the type of crimes and the number of those crimes that occurred within the previous 10 check-in locations. This FearPoint score is available within a leader board with the top 50 highest scoring users as well as the top 25 highest scoring streets.

### Usage and media

The FearSquare application has received 24,290 visits (11<sup>th</sup> April '11 – 9<sup>th</sup> Jan '12); 2,108 Foursquare users have logged into the application with their Foursquare details. Of those initial 24,290 visitors, 2070 returned more than once. This suggests that 10% of users returned to the site at least once. Moreover, there is also a small group of power users [11] who engaged with the application a large number of times.

It was found that 77.4% of users were male participants with 20.35% female, 2.23% undisclosed. Interestingly, this ratio is notably different to that of Foursquare's estimate of 60% (male) - 40% (female) [8]. The proportion of females using FearSquare is almost half that of females using Foursquare, which could suggest that females have less interest in crime rates, or it could be a case of females being less engaged in technology.

**Table 1.** Visitor statistics by country (13th April '11 – 8th Jan '12)

Position	Country	Visits
1 <sup>st</sup>	France	6,560
2 <sup>nd</sup>	United Kingdom	4,420
3 <sup>rd</sup>	United States	4,163
4 <sup>th</sup>	Brazil	2,340
5 <sup>th</sup>	Candada	1,098

FearSquare quickly gained attention across both online and traditional media with articles from sources such as Time Magazine, Discovery Channel (Canada) and New Scientist [12]. The keyword [www.fearsquare.com](http://www.fearsquare.com) was also found to be trending on twitter receiving 3523 tweets (containing the word FearSquare) within the first 2 weeks of its release (13<sup>th</sup> April – 27<sup>th</sup> April 2011). It quickly became apparent that Foursquare users from other countries, including those in the EU and Americas, were taking a very keen interest in the FearSquare application as seen in table 1, despite the fact that, due to reliance on UK crime statistics, it could only return useful information for UK users.

## Discussion and Further Work

The UK Government Open Data stresses that data should be released in such a manner that protects personal data from being distributed [3]. The FearSquare application however demonstrates that Open Government Crime Data can be used to deliver crime statistics at a personalised level. Therefore it is still possible to retrospectively personalise Open Data through using, for instance, additional social media services such as Foursquare.

Based on the high levels of interest in the FearSquare application and number of returning users it appears that people are extremely interested in the ability to obtain personalised information. The fact that users were able to obtain the same crime data from other sources [1],[4] but still chose to use the FearSquare application is evidence that personalisation of Open Data holds some form of 'added value'. We therefore suggest that Open Data is suitable for use in personal informatics provided that it is delivered in a similarly personalised manner.

The full impacts of releasing datasets such as the crime dataset is yet unknown. As previously mentioned, we have surveyed ~350 users of their perception of crime before and after viewing their Foursquare check-in and crime results. The analysis of this data is on going. Results of this analysis will give an increased understanding of whether Open Crime Data impacts people's perspective on their personal exposure to crime.

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