How much hidden offending?

Top Point:

Simulation is used to estimate the total number of (non-motoring) offences committed in England & Wales over the period 1981 to 2017 and the results are compared with data published by the Crime Survey England & Wales. The comparison shows that over the period 2000 - 2017, the Crime Survey has been underestimating the total burden of crime, however the simulation results and latest figures from the CS, that take account of fraud and cyber crime, are consistent.

Whether an act is an offence is legally defined and judicially determined. Therefore, there are many steps from an offence taking place to the point of identification of the offender(s), conviction and sentence. Crucially the first step is for an offence to be brought to the attention of the law enforcement agencies. The initiative to do this rests almost entirely on the victim(s). And not all cases are reported. We therefore have a partial picture and it is hard to establish the total crime burden felt in the community. So this example is about estimating the total amount of offending.

The Crime Survey, England & Wales

The results from Crime Surveys (CS) in England and Wales - Figure 1 - have been used over the past 35 years to try to gauge the broader impact of offending behaviour and to try to understand the volume and potential impact of offending. These surveys show that only a fraction of the CS estimated volume of crime (typically 40-50% over the past decade) is reported to the police, or that the police record.

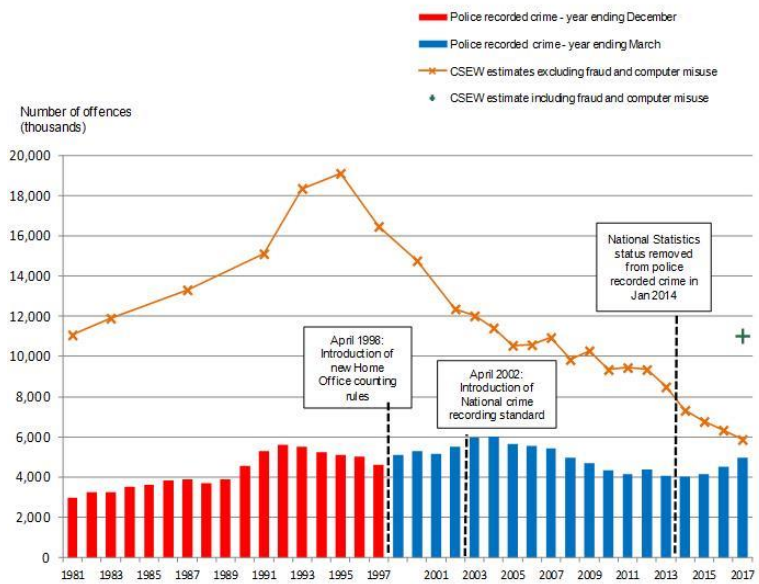

Figure 1: Recorded Crime and various Crime Survey estimates of the volume of offending in England & Wales (from ONS 2017)

This proportion has varied over time when compared to the estimated volume offending as measured by the CS. It is hard to disentangle the various trends, particularly since recording practices by police forces will likely be influenced by organisational factors and prioritisation. However, it does mean that, despite the large volume of offences recorded each year (4- 6 million per year in the last 15 years), a large number of offences are committed - and individuals victimised - which the justice system does not 'see'.

Taken at face value the results from the crime surveys show a rapid decline in the estimated volume in the number of offences over the past 20 years – see Figure 1. However a more detailed analysis of the CS data shows that this applies to crimes such as burglary, vehicle thefts, personal property thefts, while others such as theft from a person or bicycle thefts have stayed broadly the same.

The processes used to gather the survey data have changed over time and are not easy to interpret. If the CS measured the total volume of offending, a straightforward interpretation would suggest that almost all offences that are committed in 2016/17 are reported. Which is of course not credible!

This is a difficult problem in survey terms and recently efforts have been made by ONS to identify types of crime previously not adequately covered such as fraud and cybercrime. (see 2017 ONS data). This shows that the total volume of crime is closer to around 11 million. These latest CS results are more likely to capture the full range of offending and therefore give a better picture, of the shifting patterns of offending, such as cyber crime and fraud.

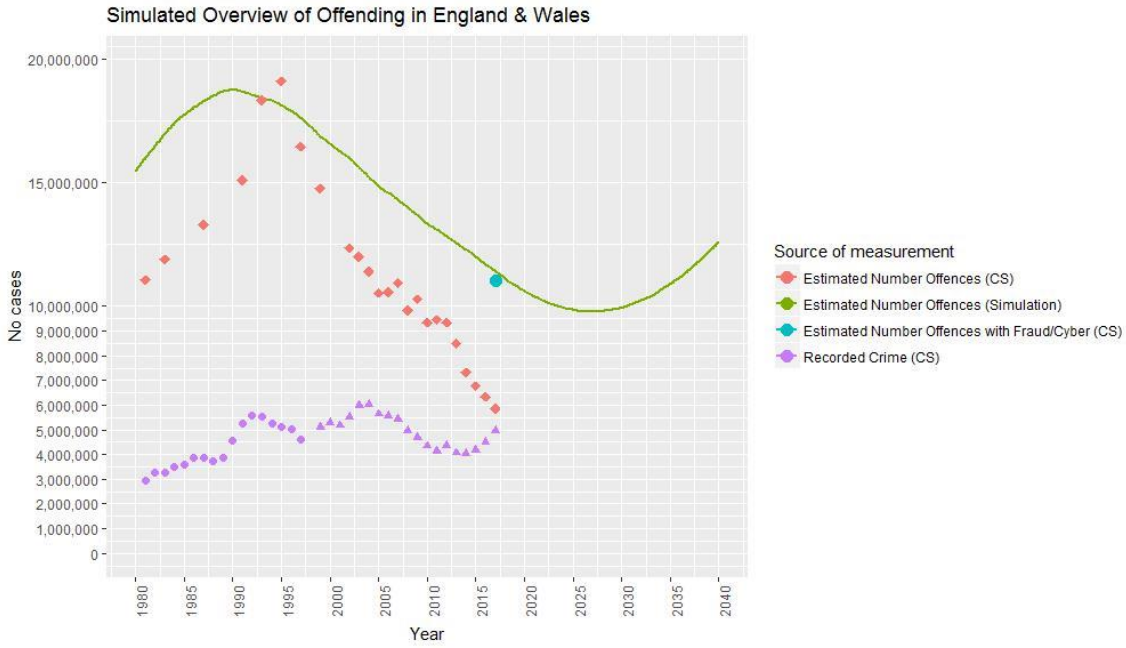

Figure 2. Overview of the annual rate of offending generated by the simulation, projected to 2040

Simulation

The simulation engine developed here also offers an opportunity to explore and gain an understanding of the burden of offending and to explore questions about the operation of the justice system as a whole, its deterrent effect, as well as the potential impact of increases or reduction of resources, or the efficiency of justice agencies.

The simulations rely on creating an *in-silico* virtual population with gender, age and offending risk profiles aimed at imitating the real population. Within this virtual environment, it is possible to identify those who have committed offences (as generated by the algorithms of the simulation), to track what happens over time, and also keeping track of the number of offences.

Among the many results of the simulation are estimates of the prison population, the number supervised in the community and many other outcomes reflecting the operation of the CJS. These aspects are being explored elsewhere in this website

The congruence between the results of the simulation and published figures in a large number of areas, such as the numbers in custody, probation supervision, etc., gives good confidence that the model provides a sufficiently accurate representation of the dynamics of offending and the operation of the criminal justice system. In particular we can gain an estimate of the total volume of offending – which can be compared and contrasted with the CS results. - see Figure 2.

The Results

From Figure 2 it is clear that the simulation results for the total number of offences follow the same overall pattern as the estimated number from the CS. The peak occurs between 1990 - 1995 and is of the same magnitude. However, from about 2000 the estimates start to diverge. The CS results show a more rapid decline, and by 2016 the differences become proportionately very wide. What is however interesting is that the simulation results (which are considered to be a general measure of all types of offences, except motoring offences, and which are also excluded from the CS), are in quite good agreement for the year 2017, i.e., the estimate by the CS that includes fraud and cyber crime.

The simulation continues to 2040 and so can provide projected estimates for the overall volume of offending for the future. The pattern of a shallow decline continues until the mid-2020s, before beginning to rise again through to 2040. There are many factors that influence such a picture; but demographic changes are partly responsible with changes, over time, in the underlying population profile of the age group most at risk of criminal behaviour - those, mostly male, between the ages 15 – 25.

Such simulations are of course a simplification of the real system. The results represent a projection of what might happen, given what has happened in the past, and what we know and can forecast about underlying demographic trends, and about criminal justice policy and practice.

Conclusion

Simulation provides a powerful tool to explore, test and help understand government statistics in criminal justice, particularly in areas which are difficult to measure and estimate.

In this example the comparison shows that over the period 2000 - 2017, the Crime Survey has been underestimating the total burden of crime, however the simulation results and the latest figures from the CS, that take account of fraud and cyber crime, are consistent.