Understanding the crime drop in Scotland

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Understanding the crime drop in Scotland

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Key points

- Overall trends in crimes and offences for Scotland from 1985 to 2012/13 show two distinct peaks, around 1992 and 2004; however, trends in four specific crime and offence groups vary widely.
- Three potential explanatory factors correlated consistently with all or most of the four specific crime and offence groups, but otherwise there was no uniformity in the pattern of associations.
- Factors which had emerged as correlates for several crime and offence groups were alcohol consumption, certainty of sanction and number of offenders in custody.
- Looking at change over two shorter time periods we found that associations between potential explanatory factors and crime or offence groups were not stable and differed during different time periods.
- Care needs to be taken when carrying out regression analyses on crime data because the potential drivers of crime may change very slowly and long term change is likely to be accompanied by short term volatility.

Applied Quantitative Methods Network

AQMeN is a Research Centre developing a dynamic and pioneering set of inter-disciplinary projects to improve understanding of current social issues in the UK.

There is a general consensus from research into crime rates in western nations that, since the 1990s, crime has been on the decrease. Evidence for this claim is based on analyses of various official sources of data including national and international victimisation surveys and police recorded crime. Superficial examination of crime data in Scotland would suggest that Scotland is following the global trend, but no published research has so far focused on trends in official crime data in Scotland.

This study aimed to address this gap by exploring the crime drop in Scotland in two main ways. First, we aimed to examine trends in four specific types of crime, rather than crime at the aggregate level, to produce a more nuanced picture of change over time. Second, by developing complex models of crime, we aimed to examine potential drivers of change in these four types of crime by exploring their relationship with a range of factors known to be associated with crime.

Crime rates in Scotland peaked in 1992 and 2004. © Ellie Bates.

What methods did we use?

Developing explanations for the decline in crime is of strong policy and academic interest (Conklin 2003, van Dijk et al 2002). Existing research has mainly used regression analysis to examine factors which may be correlated with the decline in crime. Some have gone further and attempted to infer causality from such relationships. However, little published work has discussed the methodological problems associated with this type of analysis.

Box 1: Scottish crime and offence groups

Crimes of Violence: murder, attempted murder, serious assault, robbery and assault, and threats.

Sexual Crimes: rape, assault with intent to rape; indecent assault and sexual offences against children.

Crimes of Dishonesty: thefts including housebreaking or opening lockfast places, vehicle thefts and fraud.

Fire-raising, vandalism, etc.: vandalism, malicious mischief, fire-raising and reckless conduct.

Other Crimes: handling offensive weapons, drug-relates crimes and crimes against public justice.

Offences (Miscellaneous): like breach of the peace, common assault and alcohol-related offences .

Offences (Road Traffic): speeding, seat belt offences and motor vehicle defects.

Our study focuses on four types of crime in Scotland (violent crime, dishonest crime, motor vehicle offences, and miscellaneous offences) and uses regression models fitted to crime rates for each crime type using Poisson log-linear models, which are known to be appropriate for count data (Osgood, 2000). As part of this paper, we consider the methodological issues that arise as a result of conducting this type of analysis.

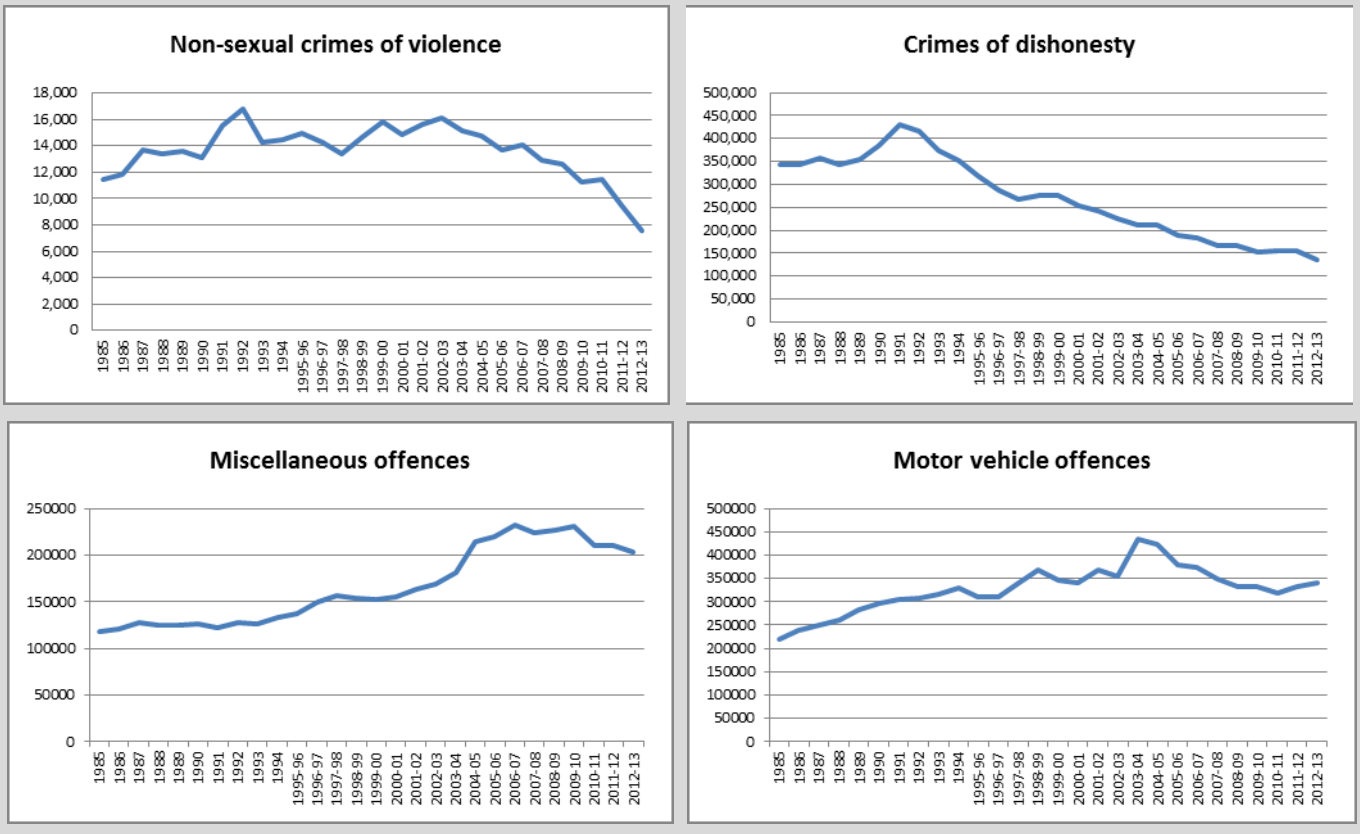
What data did we use?

Data on police recorded crime for the period 1985 to 2012/13 were used. In Scotland, recorded crime is separated (mainly for statistical purposes) into "crimes" – which tend to be more serious criminal acts – and "offences" – which are generally less serious incidents. There are five 'crime' groups: non-sexual crimes of violence, sexual crimes, crimes of dishonesty, fire-raising and vandalism, and other crimes; and two 'offence' groups: motor vehicle offences and miscellaneous offences (see Box 1).

Our analysis focuses on four of the seven groups as these account for around 80-85% of all crimes and offences over time, and could be argued to have driven the trend in total crime. These are: non-sexual crimes of violence, crimes of dishonesty, motor vehicle offences and miscellaneous offences.

Research has suggested various factors which may have been instrumental in driving the reduction in crime, although there is not a strong consensus as to what the main drivers are or how they have impacted on crime rates. Themes that consistently occur include criminal justice related factors, economic factors and demographic factors. Recent theories have also focused on a possible 'civilisation' effect. Data do not exist to test all of the potential drivers that have been identified;

Figure 1: Trends in four types of crimes and offences in Scotland, 1985 to 2012/13



however, we have focused on a set of factors that have been demonstrated to have both theoretical and policy importance.

Factors taken into account in the analysis were:

- criminal justice factors (prison population, certainty of sanction, number of offenders in custody, average sentence length and police officer numbers)
- economic factors (number of benefit claimants, change in GDP and number of sequestrations)
- drinking behaviour (number of alcohol related deaths and average alcohol consumption)
- civic participation (measured by voter turnout).

Table 1: Factors associated with change in crime and offence groups, 1985 to 2012/13

	Crimes of violence	Crimes of dis-honesty	Motor vehicle offences	Miscella-neous offences
Mean daily prison population			5% ↓	
Certainty of sanction*	3% ↓	8% ↓	4% ↓	
Number of offenders in custody*	8% ↑	1% ↑		1% ↑
Average sentence length*		6% ↓		3% ↓
Police headcount	2% ↓			
Change in GDP				4% ↓
No. of sequestrations		0.1% ↓		
Average alcohol consumption	12% ↑	4% ↓	11% ↑	14% ↑
Voter turnout		5% ↑		

Only significant variables shown; * refers to within crime/offence type.

Demographic factors were not included in the model as covariates; instead, population change was accounted for by modelling crime rates using the adult male population (age 16-50) as the denominator.

Trends differed by crime and offence group

Looking at the broad trends in all crimes and offences, over the period from 1985 to 2012/13, there were two large peaks in the data which suggested that crime increased steadily to around 1992, then declined until 1996 before steadily increasing again to peak in 2004, thereafter showing a steady decline. However, this overall pattern concealed large differences in the pattern of the underlying crime and offence groups, as illustrated in Figure 1.

Non-sexual crimes of violence and crimes of dishonesty both peaked in 1992 (largely explaining the overall trend), but they showed very different trajectories after that year. Violent crime remained relatively stable until 2003, before it declined rapidly and consistently. On the other hand, crimes of dishonesty showed a very steady and constant decline over time after peaking in 1992.

The number of recorded motor vehicle and miscellaneous offences peaked far later, although not at the same time. Motor vehicle offences rose steadily from 1985 before peaking in 2004 and then declined fairly steadily until recent years; whereas, miscellaneous offences peaked slightly later in 2009 and have only recently shown a very slight decline in the last 2-3 years.

The trends for these four broad crime and offence groups are very different, and raise important questions about whether there could be a 'global' explanation for the crime drop or whether crime (and possibly also context) specific factors need to be identified.

No uniformity in potential explanations

Table 1 shows the direction and strength of the association between each of the significant factors and the four crime and offence groups between 1985 and 2012. We can see that some factors had a strong association with three or four of the groups: for instance, increasing alcohol assumption was associated with an increase in crimes of violence, motor vehicle offences and miscellaneous offences, although a decrease in crimes of dishonesty.

Increasing certainty of sanction, as measured by clear up rates, was associated with a fall in crimes of violence, dishonesty and motor vehicle offences, while a rise in the number of offenders sentenced to custody was associated with an increase in crimes of violence, crimes of dishonesty and miscellaneous offences.

Other factors were found to be significant correlates, although change over time in individual factors tended to be associated with different crime and offence groups in different ways, which does not lead to uniformity in terms of potential explanation.

Looking at two shorter time periods (1985-1998 and 1999-2012) we found that the associations shown in Table 1 did not hold for all factors and that the relationship between some factors and crime or offence types varied at different time periods. These findings indicate a high degree of volatility in the association between crime change and other aspects of criminal justice, economic and social change over time.

Conclusions

There was a significant change between 1985 and 2012/13 in trends for all recorded crimes and offences in Scotland. This aggregate pattern conceals important differences between crime types, both in terms of the timing of rising and falling trends and in terms of the extent of any rise and fall. Overall, there has been a sustained decline in serious crimes, while less serious offences have risen and remained relatively high.

Our analysis, does not indicate causality, but it suggests that any explanation for crime trends is going to require different explanatory models for different types of crime. There was a strong correlation between increasing alcohol consumption and most (but not all) crime and offence groups. This supports current Scottish Government policies aimed at cutting alcohol consumption to reduce offending.

There was also a strong association between increased certainty of sanction and reducing crime for 3 of the 4 crime and offence groups. This suggests that improved police clear up rates may have a deterrent effect on offending, although the mechanisms would have to be explored more thoroughly. However, there was a negative association between custodial sentencing and crime rates for some crime types, particularly crimes of violence. This fits with international evidence that certainty rather than severity of punishment has a greater deterrent effect (Durlauf and Nagin 2011).

It is also important to note that the explanatory factors included in the models measure conditions in the same year as the outcome – recorded crime. It is likely that some of these variables have a lagged effect e.g. economic deprivation in one year may impact on crime in later years. Further analyses that study the effect of lagged variables on crime may be fruitful.

This study suggests that researchers need to replicate crime change models, both across different jurisdictions and across different time periods to be sure that the relationships found are robust. Additionally, researchers need to be critical about many of the models developed and search for data that enables other potential explanations to be tested.

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