Response to ONS "Consultation on methodology for addressing high frequency repeat victimisation in Crime Survey for England and Wales estimates"

http://www.ons.gov.uk/aboutus/whatwedo/statistics/consultationsandsurveys/allconsultationsandsurveys/reviewofmethodologyforaddressinghighfrequencyrepeatvictimisationincrimesurveyforenglandandwalesestimates

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Response to "Consultation on methodology for addressing high frequency repeat victimisation in Crime Survey for England and Wales estimates"

The current methodology for handling repeat victimisation in the Crime Survey for England and Wales (CSEW) is capping. Repeat victimisations for any series of crimes are capped at maximum of 5 crimes before the data is used to produce crime rate estimates for England and Wales. The new proposals merely shift the level of this cap. Capping produces inaccurate estimates of crime which are systematically biased in specific ways, no matter what level the cap is set at.

It is possible to increase the accuracy of crime estimates from the CSEW by deriving them from all reported crimes, and without increasing volatility by utilising three-year rolling averages. A move away from capping to deriving crime estimates based on all reported crimes would increase: relevance, accuracy, clarity, coherence and comparability of crime statistics and would better conform to ONS quality principles. A capping methodology does not conform to these ONS quality principles.

Do you agree that the current methodology of capping counts of repeat incidents at 5 should be changed?

We agree that the current methodology of capping counts of repeat incidents at 5 should be changed. We explain our response below.

Currently, the Office for National Statistics (ONS) derives its estimates for crime from the number of crimes reported to the CSEW by the respondent where these are either a single crime, or a series of crimes up to and including five (crimes in the series). If a respondent reports more than five crimes in a series (of crimes), the current statistical procedure employed by the ONS 'caps' or limits the number of these to five[1].

This statistical procedure has a significant impact on the estimated scale of crime derived from the CSEW. In addition, as repeat victimisation occurs more frequently for specific types of crimes and/or specific groups of crime victims, the use of capping produces even greater bias for these crimes compared to those types of crimes which occur less frequently or groups of victims less frequently victimised. Thus capping systematically skews the distribution of crime across crime types, gender and other variables, as well as systematically underestimating its scale.

Capping is used to address the issue of volatility when yearly estimates are used to assess trends over time. Volatility in annual estimates can adversely affect the reliability of estimates of change over time. This is a general issue for victimization

[1]We analysed 17 sweeps of the CSEW (1994 to 2013/14) and during this period, on average, just over 5% of victim forms for violent crime recorded more than five crimes in a series. Walby, Towers and Francis (2016: 13)

surveys (UNODC and UNECE 2009). The justification for the current capping methodology has been premised on the issue of volatility. The Home Office, and then the ONS, argue that since the number of victims who experience a high number of crimes in a series is relatively small, including these would increase the year-to-year fluctuations in crime estimates to an unacceptable degree. The ONS suggest that the priority use of these statistics is for changes over time, rather than for yearly estimates of the scale of crime, thus the focus is on comparability over time rather than magnitude: '[T]he restriction to the first five incidents in a series has been applied since the CSEW began in order to ensure that estimates are not affected by a very small number of respondents who report an extremely high number of incidents and which are highly variable between survey years' (ONS, 2013: 15). However, there are also priority needs for accuracy of estimates of the level and distribution of crime in addition to that of comparison over time.

Capping lowers volatility when estimates are used to assess trends over time, but, in so doing, fails to consider accuracy of magnitude, and thus violates the other quality principles of the ONS: relevance; accuracy; clarity; coherence; and comparability (ONS, 2015 and 2016).

Relevance

ONS statistics should be relevant. In relation to crime, it is important to know the total amount of crime and its distribution among various sub-populations relevant to the provision of services and interventions. In relation to high frequency repeat victimisation, key sub-populations for policy purposes include whether the perpetrator is a domestic relative, acquaintance or stranger and whether the victim is male or female. Thus the accuracy of estimates concerning these sub-populations is highly relevant.

Accuracy

ONS statistics should be accurate. Accuracy means 'the closeness between an estimated result and the (unknown) true value', according to the ONS definition. There is a requirement for the estimate of the total number of crimes and their distribution across sub-populations to be accurate.

Capping introduces inaccuracy. Capping introduces inaccuracy in the estimate of the total amount of crime: it systematically under-estimates crime. Capping introduces inaccuracy in the estimate of the number of repeat victimisations suffered by high frequency victims: it systematically under-estimates these. Capping introduces inaccuracy in the estimate of the extent to which crime is perpetrated by domestic relations, acquaintances or strangers: it biases estimates towards strangers and away from known perpetrators (domestic relations and acquaintances). Capping introduces inaccuracy in the estimate of the extent to which women or men are the victims of crime: it biases estimates towards men as

victims and away from women as victims, of violent crime in particular including but not only domestic violent crime.

Clarity

Capping reduces clarity and transparency. Capping reduces clarity and transparency by introducing an extra procedure between data collection and production of estimates that is hard to explain or justify.

Coherence

Capping reduces coherence. Capping produces a different way of measuring repeated crimes than that of the police and other parts of the criminal justice system. Police record individual crimes and do not have an upper threshold. The principle of coherence requires crime surveys to count all crimes in the same way as the police and others.

Comparability

Capping reduces comparability. Capping reduces comparability in particular between sub-populations that are of policy relevance, including women and men.

Using all reported crimes compared to capping

Walby, Towers and Francis (2014) identified capping as a potential issue which would cause significant bias in the estimation of violent crime using data from the CSEW. They developed an alternative methodology, initially on cross-sectional data[2] which derived estimates of different types of violent crime based on all reported crimes to the Survey[3], and compared the results to estimates using data capped at 5 crimes. They found a 60% increase in the estimated number of violent crimes (violence against the person) in 2011/12: from 1,966,000 (based on capped data) to 3,171,000 violent crimes (based on all reported crimes) (Walby, Towers and Francis, 2014: 203).

More importantly, Walby, Towers and Francis (2014) also found that the ratio for crime estimates between the two methodologies was not consistent for different types of violent crime. The estimate of violent crime perpetrated by domestic relations increased by 70% and the estimate of violent crime by acquaintances doubled (100% increase), whereas the estimate of violent crime by strangers only increased by 20%. Thus the impact of the capping methodology on domestic violent

[2] CSEW sweep 2011/12

[3] Respondents to the CSEW report the number of crimes in a series up to 96. After this, the number of crimes in a series is coded as '97'. This code is labelled 'more than 96/too many to count'. In order to include crime series coded 97 in the estimates, a numeric value needs to be given to this code. Walby, Towers and Francis (2014) use the numeric value '60'. This method was used in the ONS-endorsed Home Office Study (Walby and Allen, 2004) on domestic violence in the CSEW and has subsequently also been used in studies using CSEW data by Farrell and Pease (2010; 2007)

crime and violent crime by acquaintances (violence by known perpetrators) is much greater than on violent crime by strangers.

The current bias in estimates of crime for an individual year can easily be dealt with by deriving estimates of violent crime based on all crimes reported to the Survey not on capped data.

However, when trends over time are needed the additional concern of volatility must also be addressed. It is generally assumed that there is a trade-off between bias and volatility. The current ONS methodology trades increased bias for a reduction in volatility in order to prioritise the analysis of trends over time. However, Walby, Towers and Francis (2016) demonstrate that it is possible to reduce volatility without capping. They reduce volatility to the same order as that produced by capping (see table 1), whilst retaining the accuracy of estimates derived from all reported crimes by using three-year rolling averages. Smoothing methods, like rolling averages, have been in use for many years, for example they are used by ONS and Eurostat for calculating (and reducing volatility in) unemployment rates (see for example Bishop, 2004).

In the case of violent crime, Walby, Towers and Francis argue that the disadvantage of losing estimates from the start and end of the series is balanced by the ability to more accurately estimate long-term trends with volatility which is of the same order as that produced by the current ONS method of capping yearly data.

Table 1: Volatility for different estimation methods[4]

	Year-by-Year			**Three Year Average**
	Victims	Capped crimes (official ONS method)	All reported crimes	All reported crimes
All violent crime	9601.2	21648.5	81353.9	10731.9
Violent crime against women	5792.8	18504.4	122408.6	15860.0
Violent crime against men	7956.9	16986.9	63362.8	5363.6
All domestic violent crime	3077.0	8267.2	80854.1	9890.1
Al acquaintance violent crime	6800.8	15162.2	37133.1	4725.4
All stranger violent crime	6255.1	13306.1	33630.6	3737.5
Domestic violent crime against women	1836.6	11746.9	106297.7	13088.4
Domestic violent crime against men	3893.1	5421.2	10470.6	2198.3
Acquaintance violent crime against women	6994.2	12510.8	68856.0	7813.8
Acquaintance violent crime against	4201.5	12541.3	49199.7	5354.9

[4] Table reproduced from Walby, Towers and Francis (2016).

men				
Stranger violent crime against women	3212.8	8107.3	28853.1	4659.4
Stranger violent crime against men	5112.4	9969.6	23399.8	2185.1

Source: CSEW 1994 to 2013/14. Volatility is measured by the dispersion parameter κ from a quasi Poisson model.

Walby, Towers and Francis (2016) used the alternative methodology of deriving estimates for different types of violent crime[5] based on all reported crimes averaged over three years to analyse trends over time. They found that the capping methodology skews the trends in violent crime[6]. Estimates based on capped data find: all violent crime; violent crime against women; violent crime against men; and violent crime by acquaintances and by strangers (including disaggregated against women and against men) falls significantly over the whole analysis period, from 1994 to 2012/13. Domestic violent crime (including that disaggregated against women and men) falls until around 2008 and then the fall ceases.

By contrast, when trends are based on estimates derived from all reported crimes: all violent crime; violent crime against women; domestic violent crime (including against women); and acquaintance violent crime against women not only ceases to fall during the analysis period, but from around 2008/9 the rate of these violent crimes increases significantly. Thus the capping method finds a falling rate of violent crime, but when high frequency repeat victimisation is included, violent crime, domestic violent crime and violent crime against women has actually been increasing significantly since 2008/9.

The capping methodology thus not only systematically under-estimates the scale of violent crime, but also significantly skews the trend in specific crime types and against certain groups of victims. Capping disproportionately biases estimates of violent crime against women and domestic violent crime.

There is additionally an on-going debate about measurement error, especially the ability of victims subject to repeat crimes to accurately report these to a victimisation survey. There is no convincing evidence that respondents' systematically over or under report. Rather, the latest evidence from a study on the US National Crime and Victimisation Survey (Planty and Strom, 2009; Planty and Langton, 2013) finds no evidence that respondents who are subject to repeat victimisation systematically over- or under-report the number of crimes they have experienced. Planty and Strom (2009) conclude '[I]t seems more logical to trust what a respondent reports and to err in reporting this information than to dismiss it all and exclude these victimisations. Exclusion creates a larger and more serious error than inclusion'.

[5] The category of violent crime was expanded slightly in this later paper to include some sexual offences (rape, attempted rape and sexual assault as defined in the CSEW) as well as violence against the person.

[6] Trends were analysed using segmented regression analysis to identify a significant change-point in the trend between 1994 and 2013/14 where a significant change-point was identified by the Davies Test. For details see Walby, Towers and Francis (2016), including the technical appendix.

The capping methodology produces inaccurate estimates of crime that are systematically biased in specific ways, thus we agree that the current methodology of capping counts of repeat incidents at 5 should be changed. It is possible to increase the accuracy of crime estimates by deriving them from all reported crimes to the CSEW without increasing volatility over time by utilising three-year rolling averages. This method increases: relevance, accuracy, clarity, coherence and comparability and thus better conforms to ONS quality principles than the capping methodology.

2. Is the proposed methodology of capping at the crime-specific 98th or 99th percentile a suitable alternative?

The proposed methodology of capping at the crime-specific 98th or 99th percentile is not a suitable alternative to capping at 5 crimes, and we instead support the abolition of capping. All of the problems described under question 1 above of systematic under-estimation of the scale of crime and systematic bias in the distribution of different crime types and for particular groups of victims apply equally to capping at 5 counts, the 98th percentile or the 99th percentile.

Indeed, for some crime types which are not often repeated, capping at the 98th or 99th percentile would result in capping at a lower number of crimes in a series than the current 5 crimes. For example, capping personal theft at the 99th percentile would mean a cap of around 2 crimes per series – much lower than the current 5 crimes.

The capping methodology produces inaccurate estimates of crime that systematically under-represent crime and systematically bias in specific ways, whatever level the cap is set at. Although the 99th percentile might be thought to be "close" to the 100th percentile (representing all reported data), a considerable number of crimes are still excluded. The evidence provided in the consultation document is that by using data capped at the 99th percentile, violent crime is underestimated by between 20% and 40% (Williams, 2016; Charts 4 and 5). It is possible to increase the accuracy of crime estimates derived from all reported crimes without increasing volatility over time, by utilising three-year rolling averages. Thus we reject this alternative method as it would not increase: relevance, accuracy, clarity, coherence and comparability of crime statistics and would still not conform to ONS quality principles.

We are sceptical about the use of confidence intervals for showing variability around the estimates. Such confidence intervals would focus only on sampling variability and would ignore the processing bias introduced by capping.

3. What are your views on the use of annualised multiple year aggregations of data to report some crime type, and the use of different time periods for different crime types?

We consider the use of annualised multiple year aggregations of data to be a well-established statistical technique to deal with the issue of volatility in data over time, where the sample size of the data is not large enough to deliver acceptable levels of volatility on an annual basis.

The use of different time periods for different crime types is likely to reduce clarity, coherence and comparability.

4. The use of annualised multiple year aggregations of data would affect the timeliness of the data. Do you think that the effect on timeliness would be an acceptable compromise to reflect high frequency repeat victimisation in the estimates?

The use of annualised multiple year aggregations of data would have a minor effect on the timeliness of the data. After an initial transition period new estimates would be generated on an annual basis with a small time lag. The minor effect on the timeliness of the data would be an acceptable compromise in order to increase the relevance, accuracy, clarity, coherence and comparability of the crime statistics for England and Wales.

5. Revising previous CSEW figures based on any new methodology to create a comparable time series would be a substantial task. Do you consider this to be a priority in relation to your use of crime statistics?

We use the raw data from the CSEW and have already produced estimates of violent crime from 1994 to 2013/14 using an alternative methodology to capping.

However, for those who rely on ONS published statistics on crime in England and Wales, including policy-makers, civil society, and the public, the creation of a comparable time series based on a new methodology is a priority.

6. Would you be prepared to accept a discontinuity between survey years prior to 2001/2 and 2001/2 onwards?

Given that the impact of capping on trends in crime has been demonstrated to be so significant (Walby, Towers and Francis, 2016) it is important to be able to re-assess crime trends in England and Wales produced using an alternative methodology as far back as possible, preferable to the beginning of the data series in 1982, but at least as far back as the 1990s where crime rates in England and Wales currently appear to reach a peak.

7. What are your views on giving greater prominence to prevalence rates and developing new questions to better capture the experience of repeat victims?

The ONS already publishes estimates of crime prevalence; this should be maintained. However, the primary purpose of the CSEW is to produce estimates of crime which are also comparable with police recorded crime and with other European and international measures of crime. The primary unit of the measurement of crime in the CSEW must continue to be the number of crimes. We therefore reject the idea of not producing estimates of crime.

We would welcome some further investigation of the experiences of repeat victims. The Victim Form Module of the CSEW current has one of the best data capture mechanisms on repeat victimisation because it allows respondents to report the actual number of crimes they have experienced in any particular series. The assessment of the information given by the respondent by an expert as to whether or not a particular incident passes the criminal threshold is world leading and should be developed in other parts of the CSEW, in particular in the Intimate Violence self-completion module, replacing the Conflict Tactic Scale currently in use in this module. However, the question which captures the number of crimes in a series should be developed in order to remove the subjective final category 'more than 96/too many to count' which cannot be accurately quantified.

8. Any other comments

The capping methodology produces inaccurate estimates of crime that are systematically biased in specific ways, whatever level the cap is set at. It is possible to increase the accuracy of crime estimates by deriving them from all reported crimes without increasing volatility over time by utilising three-year rolling averages. A move away from capping to deriving crime estimates based on all reported crimes would increase: relevance, accuracy, clarity, coherence and comparability of crime statistics and thus would better conform to ONS quality principles.

References

Bishop, K. (2004) 'International comparisons of labour market data sources' *Labour Market Trends*, 112: 485‑92.

Farrell, G. and Pease, K. (2010) (2010) 'The sting in the tail of the British Crime Survey' in Hough. M. and Maxfield, M. (eds), *Crime in the Twenty-First Century*. Lynne Rienner Publishers: 33‑53.

Farrell, G. and Pease, K. (2007) 'Crime in England and Wales: more violence and more chronic victims', *Civitas Review,* 4 (2): 1–6.

Office for National Statistics *Guidelines for Measuring Statistical Output Quality* (2015; 2016)*:* https://gss.civilservice.gov.uk/statistics/quality/quality-guidelines/

Office for National Statistics (2013) *User Guide to Crime Statistics for England and Wales*. ONS.

Planty, M. and Langton, L. (2013) 'Impact of influential observations on enumeration and variance estimation in the National Crime Victimization Survey', presented at *The Federal Committee on Statistical Methodology Conference*, Washington, DC, November 2013. Available online at https://fcsm.sites.usa.gov/files/2014/05/F1_Planty_2013FCSM.pdf.

Planty, M. and Strom, K. (2007) 'Understanding the role of repeat victims in the production of annual US victimization rates', *Journal of Quantitative Criminology*, 23:179‑200.

United Nations Office on Drugs and Crime and United Nations Economic Commission for Europe (2010), *Manual on Victimization Surveys.* UNODC.

Walby, S., Towers, J. and Francis, B. (2016) 'Is violent crime increasing or decreasing? A new methodology to measure repeat attacks making visible the significance of gender and domestic relations', *British Journal of Criminology.* Advance access available here: http://bjc.oxfordjournals.org/content/early/2016/01/31/bjc.azv131.full.pdf+html

Walby, S., Towers, J. and Francis, B. (2014) 'Mainstreaming domestic and gender-based violence into sociology and the criminology of violence', *The Sociological Review* 62(S2): 187-214. Available at: http://onlinelibrary.wiley.com/doi/10.1111/1467-954X.12198/pdf

Walby, S. and Allen, J. (2004) *Domestic Violence, Sexual Assault and Stalking*. Home Office Research Study 276. Home Office.

Williams, J. (2016) *Reporting Victimisation in the Crime Survey for England and Wales*. BMRB. Available at: http://www.ons.gov.uk/aboutus/whatwedo/statistics/consultationsandsurveys/allconsultationsandsurveys/reviewofmethodologyforaddressinghighfrequencyrepeatvictimisationincrimesurveyforenglandandwalesestimates

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We are happy for our names to be published and for ONS to contact us about future ONS consultations and surveys.