

**Response rates, reissuing
and survey quality: Does
reissuing reduce non-
response bias in the
Scottish Crime and Justice
Survey (SCJS)**

**RESPONSE RATES, REISSUING AND SURVEY
QUALITY: DOES REISSUING REDUCE NON-
RESPONSE BIAS IN THE SCOTTISH CRIME AND
JUSTICE SURVEY**

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EXECUTIVE SUMMARY

The response rate target under the current Scottish Crime and Justice Survey (SCJS) contract has been set at 68%. Despite considerable effort, this has not been met. In 2016/17 the response rate achieved was 62% and in 2017/18 it was 63%. As a consequence, there has been a shortfall in the number of interviews achieved¹. This has impacted the underlying data quality by reducing precision around the survey estimates and also, potentially, by increasing non-response bias.

It was in this context that a methods workshop² for the SCJS was held in September 2018 to review the design and execution of the survey. One option discussed was a reduction in the response rate target (by increasing the number of address in the sample). Such a move has the potential to have both positive and negative effects on the quality of survey estimates. On the one-hand, reducing the response rate target would reduce the risk of an interview shortfall, thus giving a larger achieved sample size, leading to an improvement in the precision of survey estimates. On the other-hand, a lower response rate has the potential to increase non-response bias.

Any decision to reduce the response rate target requires an assessment of this trade-off. The impact of more interviews on precision is straightforward to calculate. However, quantifying the likely impact of a lower response rate on non-response bias is not so straightforward.

This report does so by analysing previous sweeps of the SCJS to assess what impact a lower response rate would have had on non-response bias. It does so **by examining the impact that reissues have had on survey estimates**. Major random probability surveys commonly reissue a proportion of non-responding sample³ to other interviewers in order to improve response rates. On the SCJS, reissues increase the response rate by around 8-9 percentage points. The analysis explores how the published results of the survey would differ if reissuing had not been used – that is, it examines the potential impact on estimates of reducing the response rate target by around 8 to 9 percentage points.

The impact of a reduced response rate target on a range of key measures is estimated by comparing the **published estimates** from the weighted full survey sample (after reissuing) with **estimates from first issue interviews** only, weighted as if they were the final achieved sample. The analysis examines the impact both at the **national level** and among **key sub-groups** across two sweeps of SCJS data, 2012/13 and 2016/17. The scale of the impact on each estimate is reported in terms of the absolute difference and also standardised to control for the effect of different base sizes and prevalence levels.

¹ In 2016/2017, 5,475 were achieved against the target of 6,000. In 2017/2018, 5,567 interviews were achieved.

² Papers associated with the workshop can be found at: <https://www.gov.scot/publications/scottish-crime-and-justice-survey-methodological-papers-on-response-rate-and-survey-bias>

³ This could be because the respondent was unable/would prefer not to complete the interview at that time, or because the interviewer failed to contact the respondent. The initial interviewer is required to make 6+ calls on different days and at different times to try and establish contact.

How do those that respond at first issue differ from those who respond at reissue (before weighting)?

Compared to the first issue sample, the **reissue sample was younger** and contained **more men** (two key characteristics that are included in the weighting strategy). However, on **other key characteristics the two profiles were very similar**, including whether they have been a victim of crime. Given the similarity of the people interviewed at reissue stage with those interviewed at first issue, the potential impact of reissuing on final SCJS findings estimates is small.

How much impact does reissuing have on (weighted) national estimates?

Twelve measures, covering a range of key estimates across a range of areas covered by the SCJS were analysed. **Overall, the impact of reissuing to increase the response rate on national estimates was small.** Most estimates resulted in an absolute change of less than half of one percentage point. Only one estimate saw a change of greater than one percentage point (3.4%). This estimate was based on a very small sample size (N = 160) and therefore had wider confidence intervals.

After standardising differences to take into account different base sizes and prevalence levels, most estimates saw a change that was less than half of a standard error of the published estimates. The maximum impact found was equivalent to less than 1.5 standard errors.

How much impact does reissuing have on (weighted) sub-group estimates?

The impact of reissuing on five key estimates at sub-group-level was examined, looking specifically at age band, sex, whether a victim of crime, Police Force area/Police Division, rurality, and deprivation.

The absolute impact of reissuing on sub-group estimates was larger than for national estimates. However, this was because these estimates themselves are less precise as they are based on smaller sample sizes. In terms of the standardised difference, again most estimates changed by a level less than half of the standard error associated with the main estimate. For only 6 out of 217 sub-group estimates was the impact was greater than one standard error, with the maximum being 1.37.

The scale of the relative impact based on standardised differences was similar across the two sweeps analysed. While the absolute impact was greater in 2016/17 than in 2012/13 this was only because the overall sample size was smaller. Moreover, there did not appear to be any particular sub-groups, nor any particular measures, that are considerably more prone to being affected by a reduction in the response rate than others.

Overall, reissue interviews have had little impact on survey estimates. The differences found were small in magnitude and unlikely to have any meaningful impact. These findings are in line with previous research. The likely impact of a lower response rate on non-response bias is therefore small. This supports the case for accepting a lower response rate target to ensure that the target number of interviews is achievable.

1 INTRODUCTION

Background

- 1.1 The Scottish Crime and Justice Survey (SCJS) is central to the Scottish Government's evidence based approach to policy making. It provides key information on areas such as victimisation rates, the impact of victimisation and perceptions of crime and the justice system. The data is used extensively by the Scottish Government and a range of other stakeholders and the accuracy of the survey's estimates is therefore of central importance.
- 1.2 Under the current SCJS contract, the response rate target was set at 68%. However, this has not been met. In 2016/17 the response rate achieved was 62% and in 2017/18 it was 63%. As a consequence, there has been a shortfall in the number of interviews achieved⁴. This has raised concerns about the potential impact on data quality by reducing precision around the survey estimates and potentially increased non-response bias.
- 1.3 A Methods Workshop was convened in September 2018 to discuss the challenges faced by the SCJS and to consider options for amending the design and delivery of it. During this workshop there was support for the proposal to undertake research to examine the potential impact on key estimates of a lower response rate. This report provides that research. A briefing paper from the [Methods Workshop and note of the event](#) are also available alongside this paper.

Overview of the project

- 1.4 The primary focus of this analysis was to assess the impact of accepting a lower response rate target on non-response bias by examining what impact reissuing has had on survey estimates. This was to help inform decision making on future response rate assumptions. Reissuing is a widespread practice in surveys, whereby people who have not responded to the first interviewer⁵ are revisited by another interviewer in an effort to get them to take part. It is a common technique for maintaining a high response rate and reducing the risk of nonresponse bias.
- 1.5 The analysis in this paper explores how the published results of the survey would differ if reissuing had not been used. It does this by comparing the published estimates from the weighted full survey sample with estimates from first issue interviews only, weighted as if they were the final achieved sample. This is done across a range of key measures at the national level, on estimates for key sub-groups, and for two sweeps of SCJS data, 2012/13 and 2016/17.

⁴ In 2016/17, 5,475 were achieved against the target of 6,000. In 2017/18, 5,567 interviews were achieved.

⁵ This could be because the respondent was unable/would prefer not to complete the interview at that time, or because the interviewer failed to contact the respondent. The initial interviewer is required to make 6+ calls on different days and at different times to try and establish contact.

- 1.6 In 2012/13, reissues increased the response rate from 59% to 68%. In 2016/17, they increased the response rate from 55% to 63%. Therefore, the analysis presented shows the effect of reducing the response rate by around 8 to 9 percentage points within these ranges.
- 1.7 The scale of the impact on each estimate is reported in two main ways. Firstly, in terms of the absolute difference. This has been calculated as the published estimate minus the revised lower response rate estimate. Secondly, because the absolute differences are not a good indicator of significance, we also standardise these differences. This has been done by comparing them to the standard error of the published full sample estimate.

Acknowledgements

- 1.8 The author takes full responsibility for the content of this report and the views expressed do not necessarily represent those of Scottish Ministers. However, the author gratefully acknowledges the contribution of a wide range of people who have provided support and guidance throughout.
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2 SUMMARY OF PREVIOUS LITERATURE ON NON-RESPONSE BIAS

- 2.1 Traditionally, response rates have been used as a key proxy measure of survey quality - with a high response rate indicating good quality. However, empirical studies suggest that response rates are not a good measure of survey error or bias and their use as such (although widespread) is problematic (Biemer et 2017).
- 2.2 Overall, research concerning non-response bias generally agrees on the demographics of those who respond less frequently to surveys. They tend to be young, single, and in employment (Luiten, 2013; Foster, 1998; Lynn and Clark, 2002; Hall et al, 2011). This is mainly because these types of people are harder to contact as they spend less time at home.
- 2.3 However, much of the literature finds a very weak link between response rates and non-response bias (Sturgis et al, 2016; Teitler, Reichman and Sprachman, 2003; Keeter, Miller, Groves and Presser, 2000; Merkle and Edelman, 2002; Curtin, Presser and Singer, 2000; Groves, 2006; Lynn papers as cited in D'Souza et al 2016). This is partly because weighting strategies help to correct for patterns of differential response.
- 2.4 Empirical studies of non-response fall into two types, Absolute Non-Response studies and Relative Non-Response studies. Absolute Non-Response studies compare survey estimates to good estimates of a "true" value of a variable, normally from the Census to look at total non-response bias. Relative non-response bias studies assess how survey estimates change with increasing fieldwork effort (e.g. number of contact attempts, extent of reissuing) and therefore changes in target response rates. There are two key academic meta-analysis studies:
 - Groves and Peytcheva (2008) conducted a meta-analysis of Absolute Non-Response in 59 studies (covering 959 estimates). While they found examples of large non-response bias existing, they also found that there was a very low correlation between non-response bias and response rates, and greater variation within studies than between them. They argue for the importance of finding theories that link unit non-response to non-response bias and make a distinction between missing respondents that don't introduce bias and those that do.
 - Sturgis et al (2016) examined relative non-response bias and fieldwork effort in 541 non-demographic variables in six surveys. They conclude that "response rate appears to have only a weak association with non-response bias".
- 2.5 As well as these major meta-analysis studies, there are a number of individual studies that provide useful contextual information:
 - In 2015, ONS undertook analysis of the impact of a lower response rate on the Crime Survey of England and Wales. They concluded "This analysis suggests that the impact of a lower response rate on the key CSEW

estimates will be tiny and may be zero for some sub-groups. If the response rate is lowered by eight percentage points [...] the largest impact on any point estimate would be expected to be approximately 0.3 percentage points. Some sub-group impacts might be larger than this but that would be due to the larger level of random sampling error that affects these estimates rather than any additional systematic impact." (Williams, J & Holcekova, 2015

- The technical reports for SCJS 2014/15 and 2016/17 included analyses to consider the impact of a significant drop in response rate on key survey estimates. The analysis considered the average absolute difference (AAD) in response estimates for selected variables (including the prevalence of being a victim of vandalism, assault crime and of personal crime) between the overall final sample compared with the first issue sample. The 2016/17 report concluded that a lower response rate "has a relatively marginal impact on key survey estimates"⁶.
- A similar study to the current study examining [Scottish Household Survey estimates](#) has been published at the same time as this study. It builds on two Q-step summar placement projects that were undertaken with input from both Ipsos MORI and the Scottish Government⁷. The findings of the SHS study are similar to be one found in this report, namely that while there are some differences between households and people who respond at the first issue and at the reissue stage, after weighting, only a very small number of measures were changed by reissuing and that the scale of the change was small.

2.6 Relative non-response bias studies have suggested that, while on average the impact is relatively small, that some types of variable appear more susceptible to bias than others, such as attitudes and behaviours linked to civic engagement. D'Souza et al (2017) found that reissuing unproductive cases did reduce non-response bias for estimates for rates of volunteering and community oriented activities although they questioned how far reissuing was a cost-effective way of reducing non-response bias.

2.7 However, it should be clearly emphasised that bias occurs at an estimate level rather than at a survey level, and that non-response bias can affect some estimates within a survey but not others. Therefore, analysis of previous sweeps of the SCJS is the best way of determining the likely impact of response rates on the impact of non-response bias on the key survey estimates in future sweeps of the SCJS.

⁶ Page 26, Scottish Government 2018

⁷ The Q-step projects preceded this current analysis and did not use the same method for the standardised measures. Scullin, S. & Martin, C. (unpublished), What impact does reissuing have on reducing non-response bias in the Scottish Household Survey? Ipsos MORI Scotland. & Millar, C. (unpublished). Non-Response bias and reissuing in the Scottish Household Survey, Ipsos MORI Scotland.

3 APPROACH TO ANALYSIS

- 3.1 At the core of the analysis is the question, ‘What impact does reissuing have on the survey estimates?’ It should be emphasised it does not assess the overall level of non-response bias⁸ but rather the relative change in non-response associated with a change in the response rate.
- 3.2 Major face-to-face random probability surveys commonly reissue a proportion of non-responding sample to other interviewers in order to improve response rates. In the 2012/13 sweep of the SCJS, reissuing increased the achieved sample size from 10,500 to 12,045, and the response rate from 59% to 68%. A similar proportion of interviews was achieved at the reissue stage in the 2016/17 sweep, increasing the sample size from 4,849 to 5,567 and the response rate from 55% to 63%.
- 3.3 This analysis compares estimates from the weighted full survey sample with estimates from first issue interviews only. It is important to note that the estimates from the first issue interviews were weighted as if they were the final achieved sample⁹. This analysis is, in effect, showing how the published results of the survey would differ if reissuing had not been used, and the fieldwork had been completed with lower response rates.

Figure 2.1: Overview of the two types of estimate and how they correspond to the reissuing strategies and response rate.

Data estimate based on	Reissuing Strategy	Response rate 2012/13	Response rate 2016/17
Fully achieved sample (same as current published estimates)	Reissue almost all of what can be (current approach)	67.7%	63.2%
First issue respondents only (Issue 1 estimates)	No reissues	59.0%	55.0%

- 3.4 **Overall, 12 key survey measures were selected for analysis at the national level.** These are detailed in Table 2.1 along with the sample sizes. These include some of the headline measures as well as measures included in the self-completion section and a measure asked to a quarter of respondents¹⁰.

⁸ Such as Freeth & Sparks, 2004. This would be impossible to do as there are no population measures to compare the survey results with.

⁹ Details of the approach to weighting can be found in the 2016/17 technical report.

<https://www2.gov.scot/Topics/Statistics/Browse/Crime-Justice/crime-and-justice-survey/publications>

¹⁰ “Percentage agreeing strongly or slightly that ‘Community sentences do not discourage people from offending’”.

3.5 Additionally, **estimates for five of these measures were analysed by key sub-group breakdowns:** gender, age, police division, rurality, deprivation and victim/non-victim split for the perception measures.

Table 2.1: Key survey measures included in the analysis

	2012-13 base ¹¹	2016-17 base	Notes
National level estimates			
Estimate of the total number of crimes experienced.	2,293	859	Incidents
Whether violent crime was reported to police	343	156	Incidents
Whether offender under influence of alcohol for violent crime ¹²	330	140	Incidents
Whether experienced crime in last 12 months	12,045	5,567	Full sample
Whether experienced more than one crime in last 12 months	12,045	5,567	Full sample
Whether experienced violent crime in last 12 months	12,045	5,567	Full sample
Percentage saying police were doing a good or excellent job.	12,045	5,567	Full sample
Percentage saying very/fairly confident that 'Everyone has access to the justice system if they need it?'	12,045	5,567	Full sample
Percentage agreeing strongly or slightly that 'Community sentences do not discourage people from offending'	3,011	1,364	Asked of ¼ sample
Percentage saying that local crime rate has increased, a lot or a little, in local area in last two years	10,639	4,834	N =Those living in same area for last 2 years
Whether have experienced serious sexual assault since the age of 16 ¹³ .	10,235	3,940	Self-completion section
Whether have ever experienced partner abuse	9,648	3,637	Self-completion section
Sub-group analysis – by gender, age, police division, rurality, SIMD, & victim/non-victim for perceptions questions			
Whether experienced crime	Varies	Varies	
Whether experienced violent crime	Varies	Varies	
%age saying police were doing a good or excellent job.	Varies	Varies	
%age saying that local crime rate has increased (a lot or a little) in local area in last two years.	Varies	Varies	
%age agreeing strongly or slightly that 'Community sentences do not discourage people from offending'	Varies	Varies	

¹¹ These are base sizes before any adjustment for the Design Effect.

¹² The analysis approach used for the SCJS Main Report was amended for 2016/17 to only include cases where respondent could say something about the offender (qwho = 1). We have used this approach for both sweeps. As such, the estimates for 2012/2013 may differ slightly to be published estimate.

¹³ For 2016/17 data this is based on Q2 to Q4 due to issue with routing in Q1.

- 3.6 Impact was measured in two ways. **Firstly, through the absolute percentage point difference between the final sample estimate and the first issue only sample estimate. Secondly, through a standardised measure.**
- 3.7 The absolute difference gives a good indicator of overall impact on each estimate. However, using the absolute difference alone does not give a fair test of the impact of re-issuing as (everything else being equal) we would expect the size of the difference to be largest for estimates around 50% and to decrease as the estimate moves away from 50%. The absolute difference also takes no account of the sample size. Additionally, traditional tests for significance such as a chi squared test or formal hypothesis testing were not appropriate, since the samples are not independent (subsamples of the full sample are compared to the full sample). Alternative tests could be used, but the impact of re-issuing would have to be extreme for a difference to be significant; so they are not very discriminating.
- 3.8 In order to compare the magnitude of differences across estimates, it was necessary to standardise these in some way. This has been done in different ways in the past. For example, for their assessment of the impact of a lower response rate on the Crime Survey of England and Wales, Williams and Hocekova (2015) converted 'effect sizes' into t-scores.
- 3.9 Impacts were standardised by calculating **the ratio of the absolute difference between the estimate to the standard error of the main estimate**. This method of standardising is equivalent to the Bias Ratio method described in Sarndal et al (1993).
- 3.10 We favour standardising impacts in this way as the size can be intuitively compared to sampling error. A value of one for this measure means that the difference between the estimates is equal to one standard error of the main estimate.
- 3.11 Standard errors and confidence intervals were adjusted to take account of the published guidance on assumptions around the expected survey design factors in the SCJS. The analysis used a design factor assumption of 1.34 for the 2016/17 data and 1.30 for the 2012/13 data¹⁴. The standard errors given throughout this report are after adjustment for the design factor and therefore based on the net effective sample size of the estimates¹⁵ and do not need further adjustment to calculate the confidence intervals.
- 3.12 Standard errors and confidence intervals for the Issue 1 sample assume that the overall achieved sample size and design effects would be the same as for the final estimates – in other words, what we would expect the final data to look like had no reissuing been carried out but the response rate targets had been adjusted down by around 8-9 percentage points.

¹⁴ With the exception of the analysis by Police Division where the Design Factors tend to be smaller. Here, the values detailed in Table A12.2 in the 2012/13 technical report and Table A11.2 of the 2016/17 technical report were employed.

¹⁵ Sample size divided by the square of the Design Factor.

4 RESULTS

4.1 This section briefly summarises the difference in the profile of people who respond at first issue to those who respond at reissue before examining the impact of excluding reissues on survey estimates. The larger the difference in the profile of these two groups, the more potential there is for reissues to impact survey findings.

How do those that respond at first issue differ from those who do so at reissue?

4.2 In both 2012/13 and 2016/17, reissues accounted for around 13% of all interviews.

4.3 The profile of people who responded at reissue is broadly in line with those who did so at first issue in both years and the differences are not stark. Table 4.1 shows the unweighted distributions across key sub-groups by when interviewed.

Table 4.1: Profile of first issue respondents compared with reissue respondents. SCJS 2012/13 and 2016/17 unweighted.

	2012/13				2016/17			
	First issue	Reissue	Final	N	First issue	Reissue	Final	N
Male	43%	45%	43%	5,207	45%	51%	46%	2,561
Female	57%	55%	57%	6,838	55%	49%	54%	3,006
Total	100%	100%	100%	12,045	100%	100%	100%	5,567
16 - 24	8%	10%	8%	970	7%	12%	8%	418
25 - 44	29%	34%	30%	3,587	27%	33%	27%	1,527
45 - 59	26%	26%	26%	3,111	28%	28%	28%	1,539
60+	37%	30%	36%	4,377	39%	28%	37%	2,083
Total	100%	100%	100%	12,045	100%	100%	100%	5,567
Urban	80%	79%	80%	9,582	80%	85%	81%	4,500
Rural	20%	21%	20%	2,463	20%	15%	19%	1,067
Total	100%	100%	100%	12,045	100%	100%	100%	5,567
15% most	15%	14%	15%	1,753	14%	17%	14%	803
Rest	85%	86%	85%	10,292	86%	83%	86%	4,764
Total	100%	100%	100%	12,045	100%	100%	100%	5,567
N	10,500	1,545	12,045		4,849	718	5,567	

4.4 In both sweeps, men and those who were in the younger age bands comprised a higher proportion of reissue interviews than first issue interviews. This echoes findings from previous research reported in Chapter 2.

4.5 In relation to rurality and deprivation, there was no difference in 2012/13. In 2016/17, reissue interviews were more likely to occur in urban areas and in the 15% most deprived areas than first issue interviews were.

4.6 However, there was no significant differences¹⁶ between the unweighted profile of first issue respondents and reissue respondents in relation to whether they had been a victim of crime and on views on how well the police in local area were doing in either sweep (Table 4.2). This suggests that there is limited potential for reissuing to make a material difference on these estimates and related measures.

Table 4.2: Unweighted profile of first issue respondents compared with reissue respondents for whether had been a victim of crime and whether saying police in local area doing an excellent or good job. SCJS 2012/13 and 2016/17.

	2012/13			2016/17		
	First issue	Reissue	Final	First issue	Reissue	Final
Whether experience crime?	15.2%	14.0%	15.0%	12.5%	13.1%	12.5%
%age saying police in local area doing an excellent or good job	62.1%	60.9%	61.9%	59.6%	57.2%	59.3%
N	10,500	1,545	12,045	4,849	718	5,567

What is the impact of reissuing on national estimates?

4.7 Table 4.3 shows the impact of reissuing on 12 estimates at the Scotland-wide level for the 2016/17 sweep. The difference between the final sample estimates and the Issue 1 survey estimates was small in absolute terms.

4.8 **For the estimate of total number of crimes experienced in the last twelve months, excluding reissues would change the estimate from 712,000 to 758,000, a change of 46,000. This is considerably less than the width of the confidence intervals (+/- 85,000) of the published estimate.**

4.9 The other 11 measures are reported as percentages. The average absolute difference between the final sample and the first issue estimates was 0.56 percentage points, and the maximum difference was 3.4 percentage points. Differences tended to be larger for estimates that are based on smaller sample size and this average includes two measures that are based on sample sizes of less than 160 cases. Excluding these two estimates, **the average absolute difference for the remaining nine measures was 0.24 percentage points and the maximum difference among them was 0.4 percentage points.**

4.10 Table 4.3 also shows the standardised differences, the ratio of the absolute difference between estimates to the standard error of the main estimate. Overall, the average value of this ratio was 0.45 across all 12 estimates. **In other words, the average impact of not including reissues equates to half the size of one standard error of the published estimates.** The maximum value of this ratio among the 12 measures was 1.06, for the measure of total crimes experienced.

¹⁶ The SG SCJS a has published a tool to help aid statistical testing of differences. It can be found at www2.gov.scot/Topics/Statistics/Browse/Crime-Justice/Datasets/SCJS/SCJS201617StatsTestingTool

Table 4.3: Impact of reissues on twelve key national estimates. SCJS 2016/17.

	Final estimate (63% RR)	N ¹⁷	SE	CI (+/-)	Issue 1 estimate (55% RR)	Difference (percentage points)	Diff/SE
Estimate of the total number of crimes experienced.	712,000	5,567	43,400	85,000 ¹⁸	758,000	46,000	1.06
Whether violent crime was reported to police?	42.6%	156*	5.3%	10.4%	46.0%	3.4	0.64
Offender under influence of alcohol for violent crime	41.6%	140*	5.6%	10.9%	40.9%	0.7	0.13
Whether experienced crime?	13.4%	5,567	0.6%	1.2%	13.8%	0.4	0.67
Whether experienced more than one crime?	4.3%	5,567	0.4%	0.7%	4.5%	0.2	0.52
Whether experienced violent crime?	2.9%	5,567	0.3%	0.6%	3.1%	0.3	0.87
Percentage saying police in local area doing an excellent or good job	58.4%	5,567	0.9%	1.7%	58.8%	0.3	0.37
Percentage Very/fairly confident that Criminal Justice System makes sure that 'Everyone has access to the justice system if they need it'	75.5%	5,567	0.8%	1.5%	75.4%	0.1	0.06
Percentage Strongly or slightly agreeing that 'Community sentences do not discourage people from offending'	56.4%	1,364	1.8%	3.5%	56.6%	0.2	0.13
Percentage saying local crime rate has increased (a lot or a little) in local area in last two years.	18.7%	4,834	0.8%	1.5%	19.0%	0.4	0.47
Whether experienced serious sexual assault since age 16	3.2%	3,940	0.4%	0.7%	3.1%	0.1	0.21
Whether had ever experienced partner abuse? ¹⁹	14.7%	3,637	0.8%	1.5%	14.9%	0.2	0.29
Average of measures						0.56²⁰	0.45

4.11 The results of the same analysis conducted on the 2012/13 sweep of the data present a similar picture (Table 4.4). In terms of the absolute differences:

- There was a difference of 25,000 between the estimate of total crime experienced from the final sample estimate (815,000) and the Issue 1 estimate (840,000).

¹⁷ Sample size before adjustment for the Design Effect. *Reported N for these is number of incidents.

¹⁸ The CIs for this measure are reported as referenced in the 2016/17 SCJS Main Report and standard errors then calculated from these.

¹⁹ Published estimates for serious sexual assault and whether experienced partner abuse use data from 2016/17 and 2017/18 combined and can be found at www.gov.scot/publications/scottish-crime-justice-survey-2017-18-main-findings/pages/13/. Figures here are produced only for this analysis.

²⁰ Average of 11 measures expressed as a percentage.

- Among the 11 measures reported as percentages, the average absolute difference between estimates was 0.18 percentage points²¹ and the maximum difference was 0.3 percentage points.

4.12 With regard to the standardised measure, the average value of the ratio of the difference to the standard error of the main estimate was 0.46 across the 12 estimates, with a maximum of 1.16 for the measure, 'Whether had experienced violent crime'. Again, **this means that the impact of not including reissues in the survey (and reducing the effective response rate by around 8-9 percentage points) would equate to less than one standard error for most measures.**

Table 4.4: Impact of reissues on twelve key national estimates. SCJS 2012/13.

	Final estimate (68% RR)	N	SE	CIs (+/-)	Issue 1 estimate (59% RR)	Difference (percentage points)	Diff/SE
Estimate of the total number of crimes experienced.	815,000	12,045	26,500	52,000	840,000	25,000	0.94
Whether violent crime was reported to police?	47.8%	343	3.5%	6.9%	47.5%	0.3	0.09
Offender under influence of alcohol for violent crime	61.5%	330	3.5%	6.8%	61.4%	0.1	0.03
Whether experienced crime?	16.9%	12,045	0.4%	0.9%	17.3%	0.3	0.72
Whether experienced more than one crime?	5.5%	12,045	0.3%	0.5%	5.7%	0.1	0.55
Whether experienced violent crime?	3.1%	12,045	0.2%	0.4%	3.4%	0.2	1.16
Percentage saying police in local area doing an excellent or good job	61.0%	12,045	0.6%	1.1%	61.0%	0.0	0.05
Percentage Very/fairly confident that Criminal Justice Systems makes sure that 'Everyone has access to the justice system if they need it'	75.9%	12,045	0.5%	1.0%	76.2%	0.3	0.65
Percentage Agreeing strongly or slightly that 'Community sentences do not discourage people from offending'	59.9%	3,011	1.2%	2.3%	59.8%	0.1	0.05
Percentage saying local crime rate has increased (a lot or a little) in local area in last two years.	19.5%	10,639	0.5%	1.0%	19.5%	0.0	0.02
Whether experienced serious sexual assault since age 16	2.5%	10,235	0.2%	0.4%	2.7%	0.2	0.79
Whether had ever experienced partner abuse?	13.8%	9,648	0.5%	0.9%	14.0%	0.2	0.46
Average of measures						0.18²²	0.46

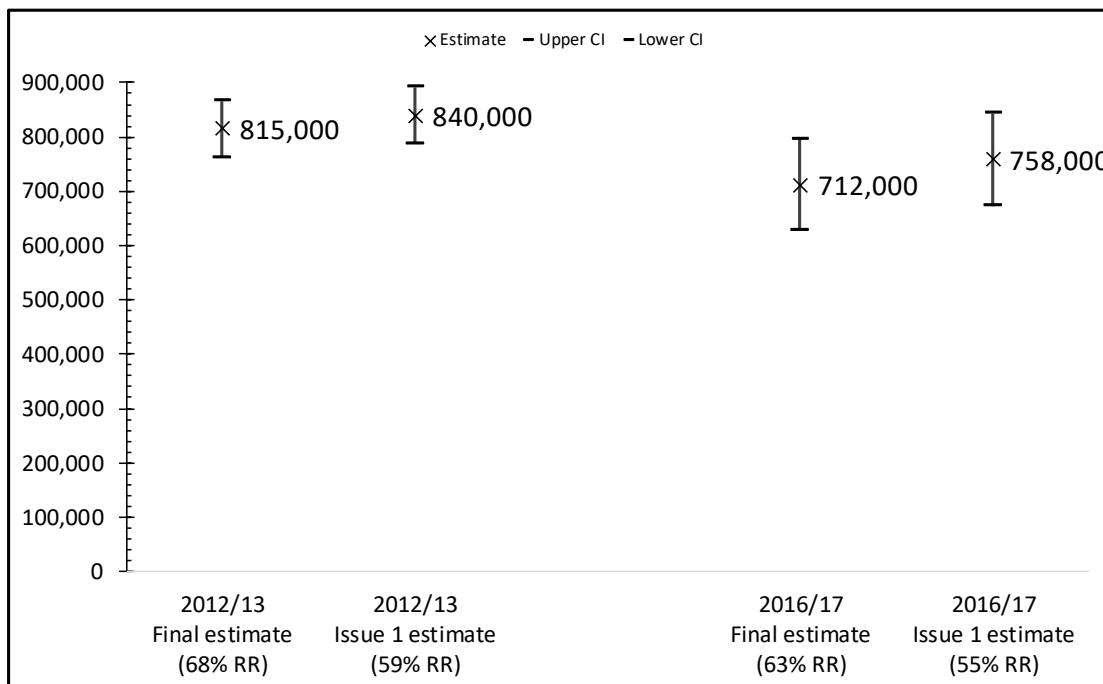
²¹ Given that the sample size of the 2012/13 sweep was more than twice the size of the 2016/17 sweep, it is not surprising that the average absolute difference between estimates is smaller in the early data.

²² Average of 11 measures expressed as a percentage

4.13 The scale of the impact of not including reissues, our proxy for examining the effect of setting a lower response rate target, is easier to visualise as estimates plotted with confidence intervals. Figures 4.1 to 4.4 show estimates of four of the measures plotted with confidence intervals²³.

- Estimate of total crimes experienced in last 12 months
- Whether experienced crime
- Whether experienced violent crime
- Percentage saying police in local area doing an excellent or good job

Figure 4.1: Estimates of total crimes experienced in last 12 months by year and by whether reissues included in data. SCJS 2012/13 and SCJS 2016/17²⁴.

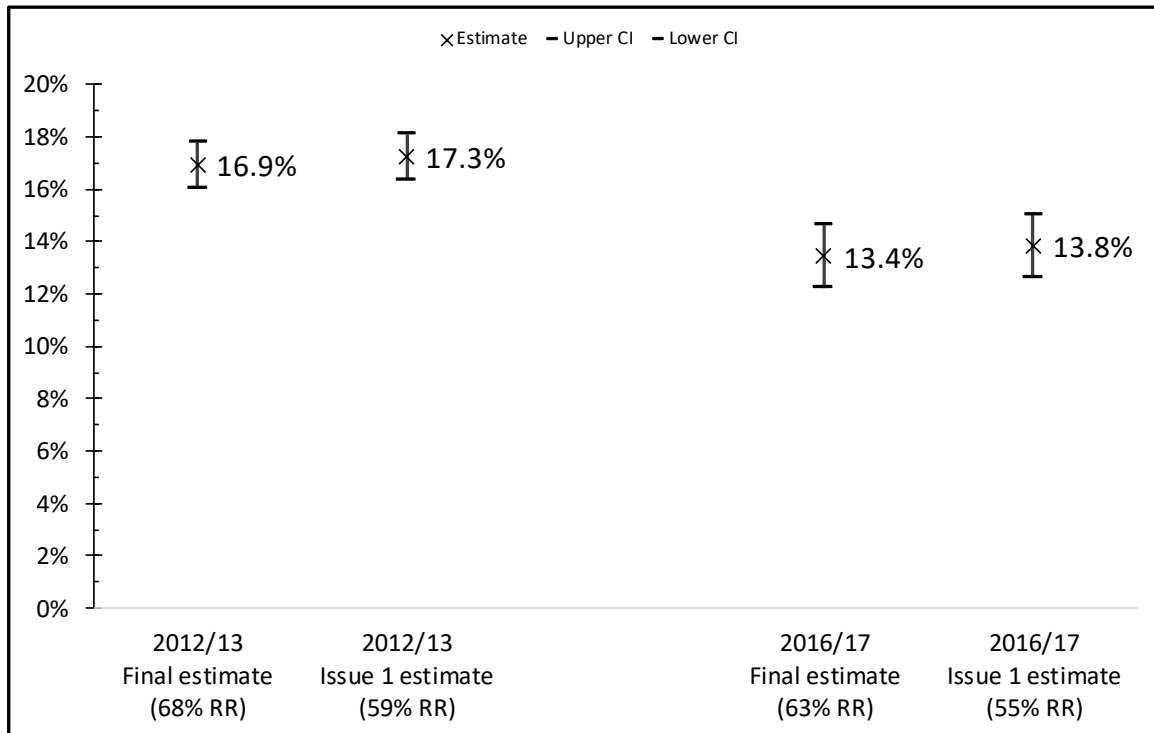


Sample sizes: 2012/13 final estimate 12,045, 2012/13 I1 estimate 10,500, 2016/17 final estimate 5,567, 2016/17 I1 estimate 4,849.

²³ Estimates and confidence intervals for the Issue 1 sample assume that the overall achieved sample size and design effects would be the same – in other words, what we would expect the final data to look like had no reissuing been carried out but the response rate targets had been adjusted down by around 8%-9%.

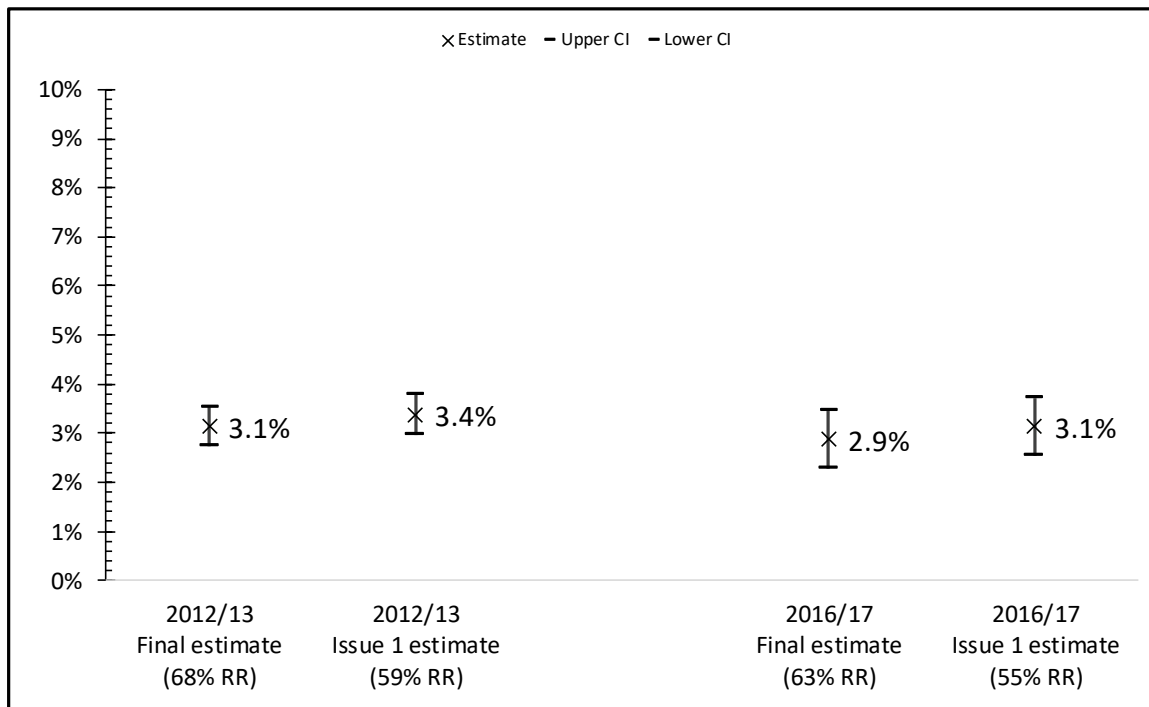
²⁴ Sample sizes for Figures 4.1 to 4.4 are as provided in Table 4.1

Figure 4.2: Estimates of whether experienced any crime in last 12 months by year and by whether reissues included in data. SCJS 2012/13 and SCJS 2016/17.



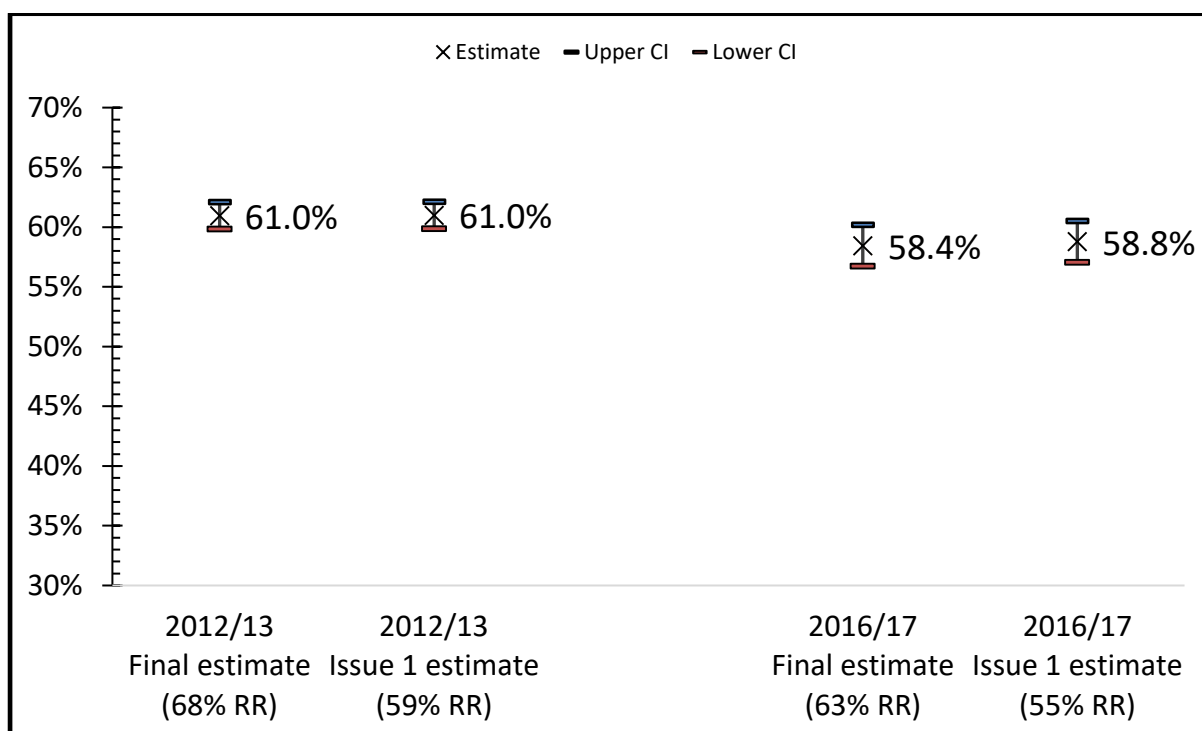
Sample sizes: 2012/13 final estimate 12,045, 2012/13 I1 estimate 10,500, 2016/17 final estimate 5,567, 2016/17 I1 estimate 4,849.

Figure 4.3: Whether experienced violent crime in last 12 months by year and by whether reissues included in data. SCJS 2012/13 and SCJS 2016/17



Sample sizes: 2012/13 final estimate 12,045, 2012/13 I1 estimate 10,500, 2016/17 final estimate 5,567, 2016/17 I1 estimate 4,849.

Figure 4.4: Percentage saying that police in local area are doing and excellent/good job. SCJS 2012/13 and SCJS 2016/17



Sample sizes: 2012/13 final estimate 12,045, 2012/13 I1 estimate 10,500, 2016/17 final estimate 5,567, 2016/17 I1 estimate 4,849.

4.14 Table 4.5 presents the summary of the absolute impact of reissuing on the 11 national level estimates expressed as a percentage. Among these, **the average impact was 0.37 percentage points**. The impact was larger on 2016/17 estimates than in 2012/13 ones (0.56 percentage points compared to 0.18 percentage points), primarily because of the change in the overall sample sizes. Almost all estimates, 21 of 22, changed by less than 1 percentage points.

Table 4.5: Summary of absolute impact on the 11 national estimates expressed as a percentage. SCJS 2012/13 and SCJS 2016/17

	Mean (percentage points)	Max (percentage points)	Count	Final minus Issue 1 estimate 0-1% points	Final minus Issue 1 estimate >1% points	Final minus Issue 1 estimate >3% points	Final minus Issue 1 estimate >5% points
2012/13	0.18	0.3	11	11	0	0	0
2016/17	0.56	3.4	11	10	1	1	0
Combined	0.37	3.4	22	21	1	1	0

Sample sizes: See Table 2.1.

4.15 Table 4.6 shows a summary of the impact on these estimates after standardisation. Overall, the average standardised impact on estimates was 0.46. This means that the impact of reducing the response rate by around 8-9

percentage points is of a similar magnitude to one half of the standard error associated with the estimates.

Table 4.6: Summary of average standardised impact of reissuing on national estimates. SCJS 2012/13 and SCJS 2016/17

	Mean	Max	Count	Diff/SE 0 to <0.5	Diff/SE =>0.5	Diff/SE =>1	Diff/SE =>1.5
2012/13	0.46	1.16	12	6	6	1	0
2016/17	0.45	1.06	12	7	5	1	0
Combined	0.46	1.16	24	13	11	2	0

Sample sizes: See Table 2.1.

Analysis of impact of reissuing on estimates among key subgroups.

4.16 While the impact of reissuing on estimates at the national level was small, it does not follow that this would also be the case for sub-group estimates. The final part of the analysis was to examine how reissuing effects estimates within sub-groups. This is important as SCJS is routinely used for sub-group analysis. Estimates for five measures were analysed:

- Whether experienced crime in the last twelve months
- Whether experienced violent crime in the last twelve months
- Percentage saying police were doing a good or excellent job
- Percentage saying that local crime rate has increased (a lot or a little) in local area in last year.
- Percentage agreeing strongly or slightly that 'Community sentences do not discourage people from offending'

4.17 The impact on these estimates was calculated on a number of key sub-groups.

- Sex
- Age (x4 bands),
- Area (8 Police Force Areas in 2012/13, 13 Divisions in 2016/17)
- Rurality (x2)
- Deprivation (x2, 15% most deprived areas and rest of Scotland).
- Additionally, the three attitudinal measures were analysed by whether the respondent had been a victim of crime.

4.18 Overall, this meant that the impact was calculated for 217 estimates, 96 estimates in the 2012/13 sweep and 121 estimates in the 2016/17 sweep²⁵.

²⁵ Full details of each of these are provided in Tables A1.1 to A1.10 in Appendix 1 including sample sizes.

4.19 Table 4.7 below summarises the impact on the absolute difference of estimates among key subgroups.

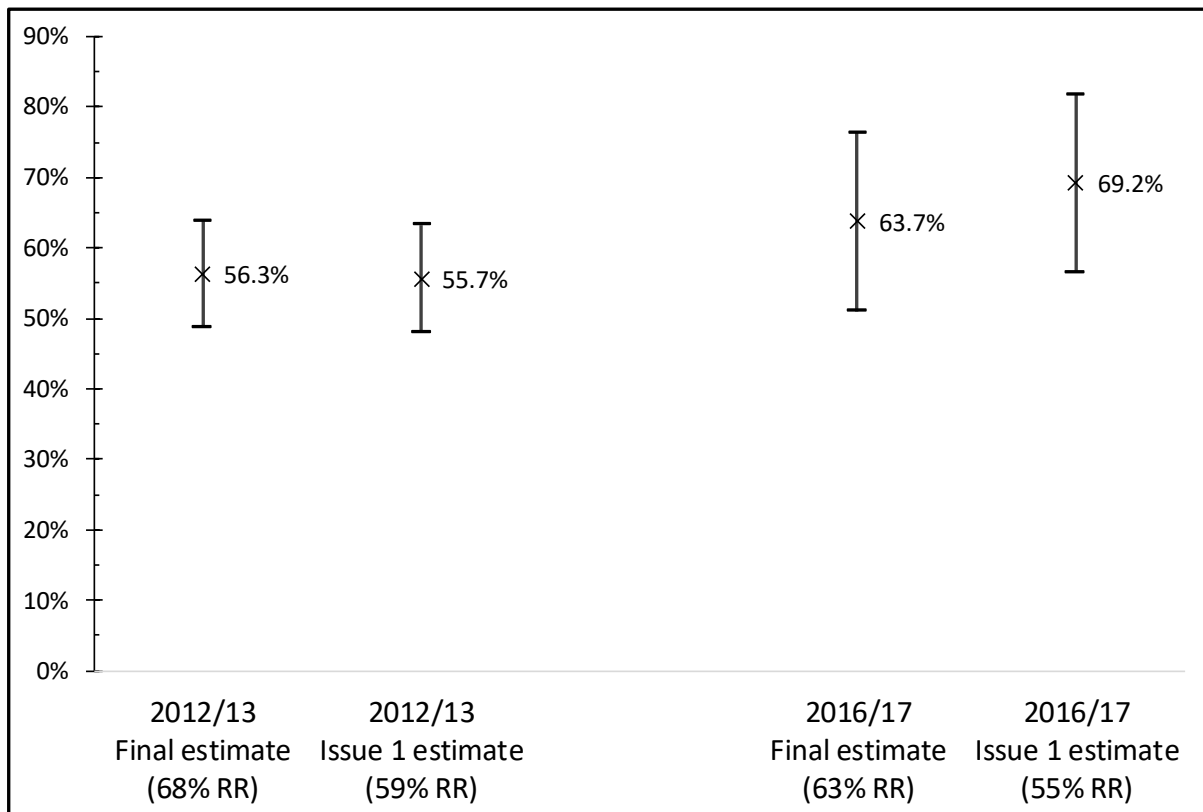
Table 4.7: Summary of absolute impact on estimates among key subgroups. SCJS 2012/13 and SCJS 2016/17

	Mean (percentage points)	Max (percentage points)	Count	Final minus Issue 1 estimate 0-1% points	Final minus Issue 1 estimate >1% points	Final minus Issue 1 estimate >3% points	Final minus Issue 1 estimate >5% points
2012/13	0.39	2.63	96	90	6	0	0
2016/17	0.75	5.47	121	96	25	3	1
Combined	0.59	5.47	217	186	31	3	1

4.20 Overall, reissuing had a slightly larger impact at the sub-group level than the national level. However most of the differences were still relatively modest. **Overall, the average impact on estimates was 0.59 percentage points.** The average impact was larger on 2016/17 estimates than in 2012/13 ones (0.75 percentage points compared to 0.39 percentage points), primarily because of the change in the overall sample sizes.

4.21 **Most estimates, 186 of 217, changed by less than 1 percentage points.**

Figure 4.5: Percentage agreeing strongly or slightly that Community sentences do not discourage people from offending by year and by whether reissues included in data in Fife. SCJS 2012/13 and SCJS 2016/17



Sample sizes: 2012/13 final estimate 218, 2012/13 I1 estimate 183, 2016/17 final estimate 76, 2016/17 I1 estimate 62.

4.22 Only 3 of the 217 estimates changed by more than 3 percentage points, and only one estimate change by more than 5 percentage points. These all related to estimates for different Police Divisions for the percentage of agreeing that 'Community sentences do not discourage people from offending' in the 2016/17 sweep. This question is only asked of a quarter of the main sample and these estimates are based on very small sample sizes²⁶.

- In Fife, the estimate changed by 5.5 percentage points from 63.7% to 69.2%. The sample size for the main estimate was 76 cases and the sample size for the issue 1 only estimate was 62 cases. This means that, as shown in Figure 4.5, the confidence intervals around this estimate was relatively wide at +/- 12.6%, and therefore that the standardised change equated to 0.85 of the standard error of the main estimate.
- In Lothians and Scottish Borders, the estimate changed by 4.1 percentage points from 60.1% to 55.9%, a standardised change of 0.75 of the standard error of the main estimate, with the main estimate based on 102 cases.

²⁶ Note that the SCJS outputs from 2016/17 onwards only provide police division level results biennially to increase sample sizes and therefore precision. Single year results are shown for demonstration purposes only. See tables in Appendix 1 for details of sample sizes.

- In Lanarkshire, the estimate changed by 3.6 percentage points from 48.9% to 52.5%, a standardised change of 0.77 of the standard error of the main estimate, with the main estimate based on 138

4.23 Finally, Table 4.8 shows a summary of the impact on these 217 estimates after standardisation.

Table 4.8: Summary of average standardised impact of reissuing on estimates among key subgroups. SCJS 2012/13 and SCJS 2016/17

	Mean	Max	Count	Diff/SE 0 to <0.5	Diff/SE =>0.5	Diff/SE =>1	Diff/SE =>1.5
2012/13	0.35	1.37	96	71	25	4	0
2016/17	0.36	1.35	121	88	33	2	0
Combined	0.35	1.37	217	159	58	6	0

4.24 Overall, the average standardised impact on estimates was 0.35. This means that the impact of reducing the response rate target by around 8-9 percentage points is of a similar magnitude to one third of the standard error associated with the estimates.

4.25 **The impact was less than 0.5 for around three quarters of estimates (159 of 217).**

4.26 The impact was greater than 1 for 6 out of 217 estimates. The maximum value was 1.37 for all sub-group estimates included in this analysis.

4.27 It is also worth noting that there is little difference by sweep with regard to the size of the impact. This confirms that the differences in the absolute impact by year, shown in Table 4.7, is likely to be mainly due to the different sample sizes²⁷.

4.28 Moreover, **there was no discernible pattern to suggest that reducing the response rate would impact some sub-groups more than others.** The maximum of the average standardised impact, across the different measures but within subgroups, was 0.79 in 2016/17 sweep and 0.58 for the 2012/13 sweep²⁸.

4.29 As noted previously, the scale of the impact can be difficult to visualise. Figures 4.6 to 4.9 show estimates for 4 of the 217 sub-group estimates plotted with confidence intervals

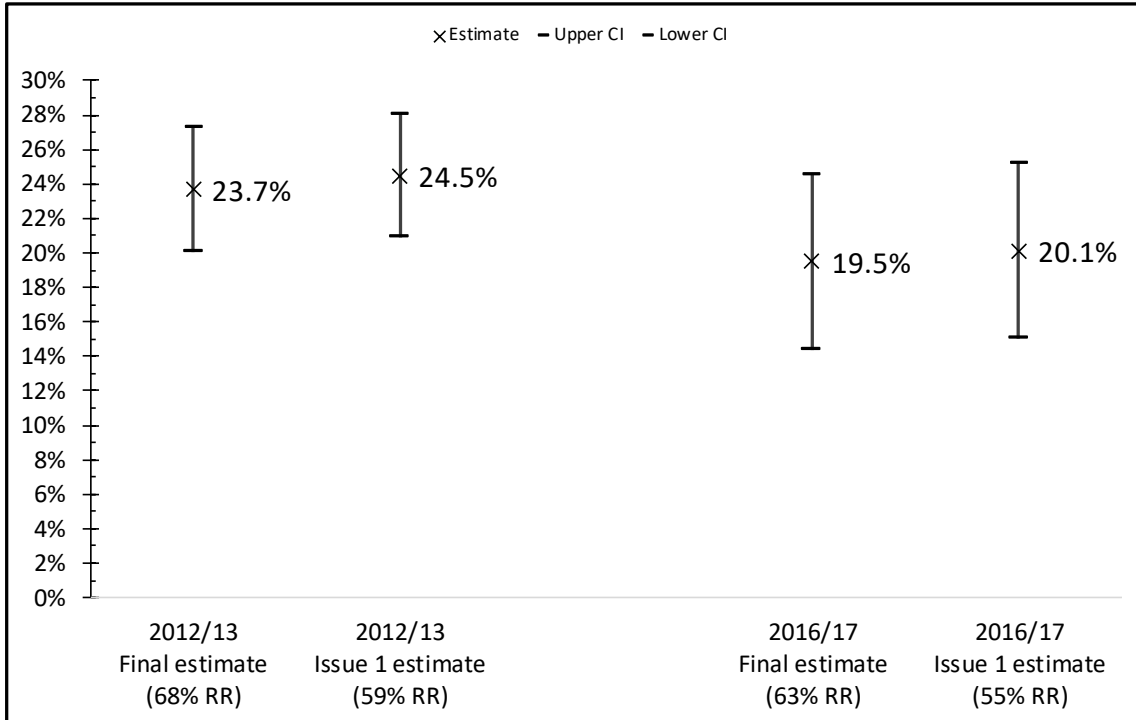
- Whether have experienced crime, among 16-24 year olds.
- Whether have experienced violent crime, among men
- Whether think police in local area are doing an excellent or good job, among victims of crime

²⁷ As noted previously, the SCJS normally combines two years of data to provide police division level results to increase precision and single year results are shown for demonstration purposes only.

²⁸ Tayside and Central Scotland respectively. Details provided in Table A1.11

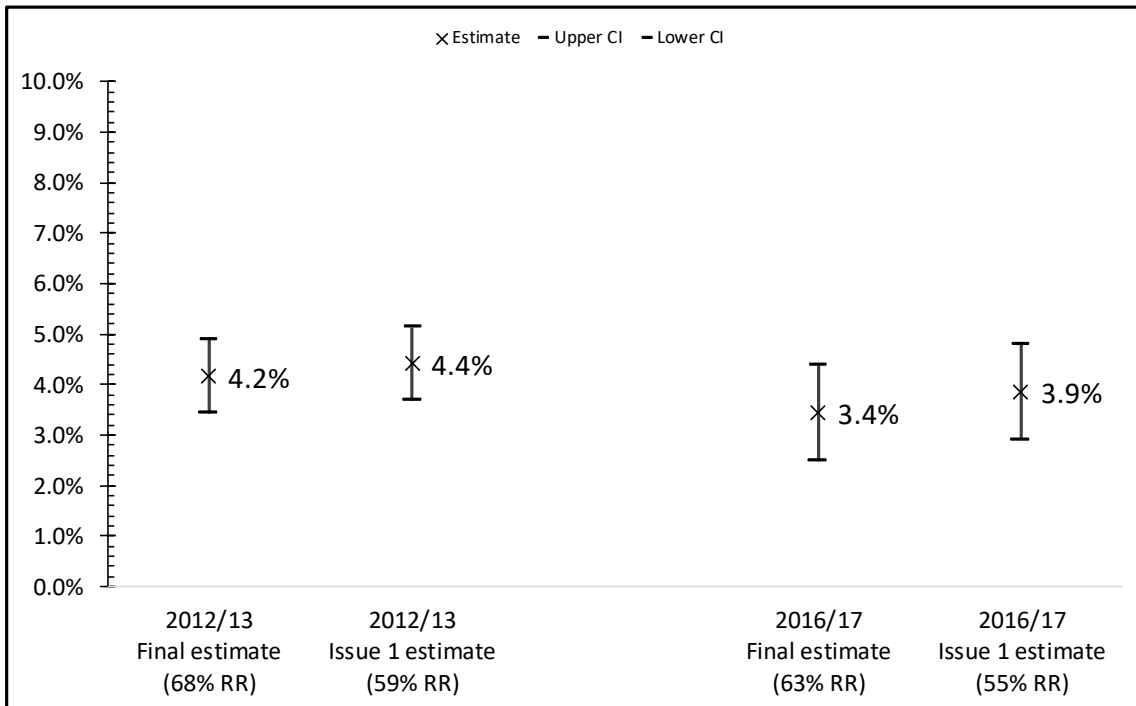
- Whether crime rate in local area has increased, among those living in the 15% most deprived areas.

Figure 4.6: Percentage of 16 to 24 year olds who have experienced any crime in last 12 months by year and by whether reissues included in data. SCJS 2012/13 and SCJS 2016/17.



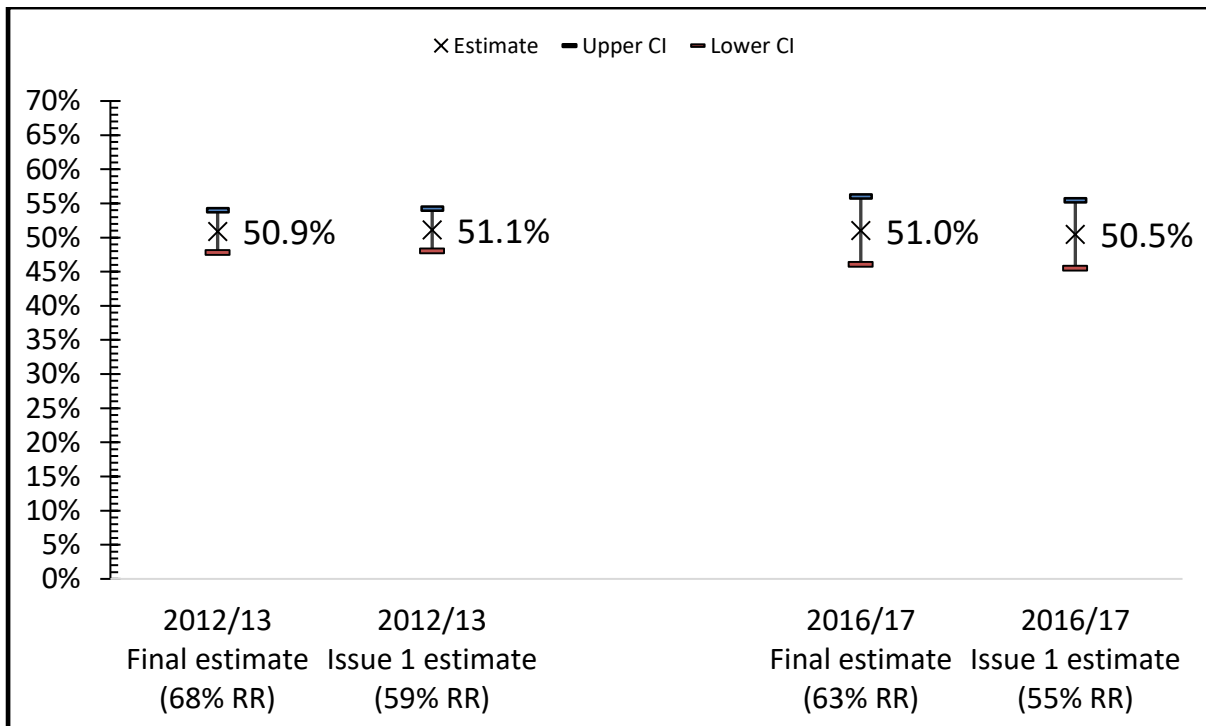
Sample sizes: 2012/13 final estimate 970, 2012/13 I1 estimate 820, 2016/17 final estimate 418, 2016/17 I1 estimate 334.

Figure 4.7: Percentage of men who have experienced violent crime in last 12 months by year and by whether reissues included in data. SCJS 2012/13 and SCJS 2016/17



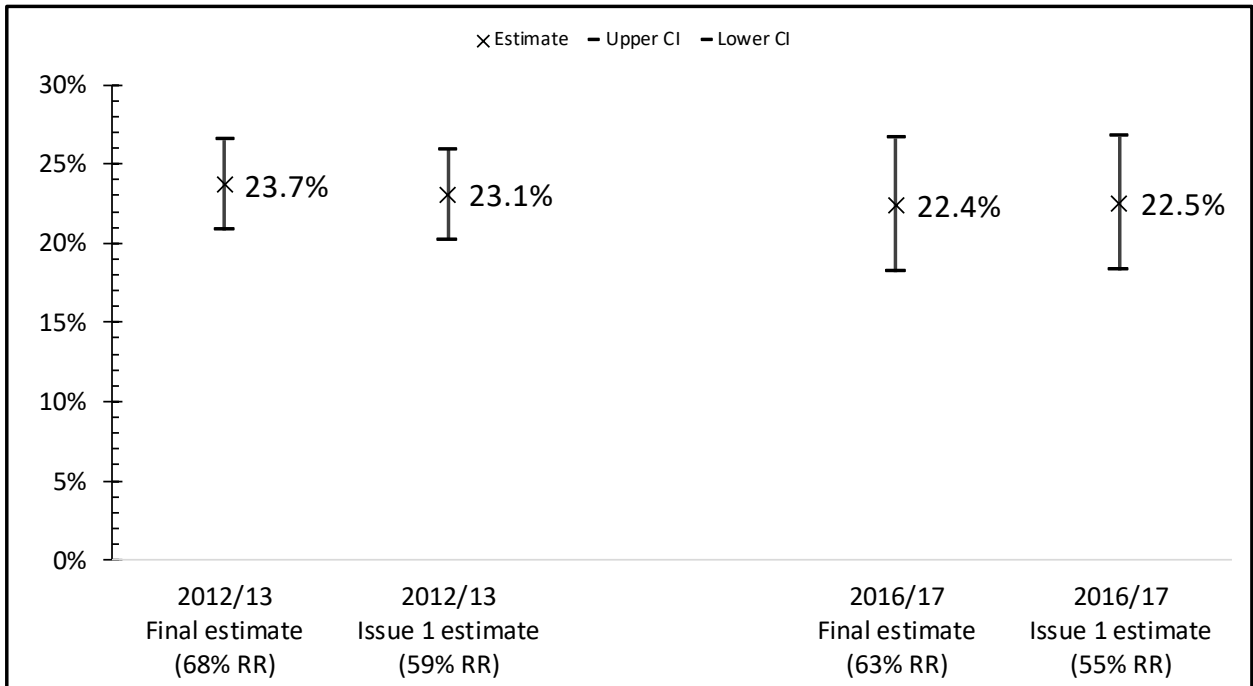
Sample sizes: 2012/13 final estimate 5,207, 2012/13 I1 estimate 4,518, 2016/17 final estimate 2561, 2016/17 I1 estimate 2,198.

Figure 4.8: Percentage of victims of crime saying that police in local area are doing an excellent/good job. SCJS 2012/13 and SCJS 2016/17



Sample sizes: 2012/13 final estimate 1,809, 2012/13 I1 estimate 1,593, 2016/17 final estimate 698, 2016/17 I1 estimate 604.

Figure 4.9: Percentage of those in the most deprived 15% of areas saying that the crime rate in the local area has increased. SCJS 2012/13 and SCJS 2016/17



Sample sizes: 2012/13 final estimate 1,526, 2012/13 I1 estimate 1,351, 2016/17 final estimate 677, 2016/17 I1 estimate 584.

5 CONCLUSIONS

- 5.1 The primary purpose of the analysis was to help inform decision making on future response rate assumptions by assess the potential marginal impact of achieving a lower response rate. It was not to estimate the overall effect of non-response bias per se. This was done by examining the impact on key survey estimates of reissues interviews across two sweeps of the SCJS. In both sweeps, reissue interviews increased the response rate by around 8-9 percentage points. Five broad conclusions can be drawn from the results.
- 5.2 **First, those who respond at first issue are broadly similar to those who respond at the reissue stage.** In terms of victimisation, there was very little difference between the two samples before any weighting has been applied. Moreover, the characteristics where there are notable differences between the unweighted samples, age and sex (those who respond at the reissue stage tend to be younger and more likely to be male) are characteristics that form part of the approach to the weighting. This means that the impact of these differences on weighted estimates may be less marked.
- 5.3 **Second, after weighting, the impact of increasing the response rate through reissuing on national estimates is small.** A decrease in the response rate of around 8-9 percentage points, through excluding reissue interviews, resulted in an absolute change of less than half of one percentage point for almost all of the key national estimates examined. The two estimates that saw considerably larger changes to the absolute levels were for victims of crime and based on a small sample of incidents. Adjusted to take into account sample sizes and prevalence levels, the average change in estimates was equivalent to around half of a standard error. The maximum impact found was less than 1.5 standard errors. The small magnitude of the differences found means that they are unlikely to have a meaningful impact in practice.
- 5.4 **Third, for estimates among key sub-groups, the impact is also small in relative terms.** (The impact in absolute terms is larger than for national estimates. However, this is primarily because these estimates themselves are less precise because they are based on smaller sample sizes.) The impact of excluding reissue interviews was less than half the size of the standard error of published estimate for around three quarters of the 217 sub-group estimates examined across the two sweeps. The impact was greater than one standard error for only 6 out of 217 estimates, and no estimates had an impact of greater than 1.5 standard errors. Again, this means that these differences are unlikely to have a meaningful impact in practice.
- 5.5 **Fourth, the scale of the relative impact was similar across the two sweeps.** While the absolute impact was greater in 2016/17 than in 2012/13 this was only because the overall sample size was smaller.
- 5.6 **Fifth, in terms of relative impact, there do not appear to be any particular sub-groups, nor any particular measures, that are considerably more prone to being affected by a reduction in the response rate than others.** Overall, these findings suggest that increasing the response rate through reissuing has had a marginal impact on national and sub-group estimates.

- 5.7 Overall, these findings echo previous findings that the link between response rate and non-response bias is weak. As such, response rates are not a good indicator of the quality of survey estimates and should not be used as a singular proxy for survey quality. Further consideration should be given to whether a reduction to the response rate target by an increase in the issued sample and reducing the amount of reissue interviews would improve the quality of the survey estimates. A lowered response rate target will reduce the risk of shortfall against the interview target. Any improvement in precision from an increased number of achieved surveys is likely to outweigh any increase in non-response bias. The impact on survey quality, and therefore the public value of the survey, is therefore likely to be positive.

6 APPENDIX 1: ADDITIONAL TABLES

Table A1.1: Whether experienced crime in last 12 months among selected sub-groups. 2012/13 SCJS

	Final estimate (68% RR)	I1 estimate (59% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	18.2%	18.5%	0.29	0.42
Female	15.8%	16.1%	0.34	0.59
16 - 24	23.7%	24.5%	0.82	0.46
25 - 44	21.6%	21.7%	0.12	0.13
45 - 59	16.3%	16.7%	0.48	0.56
60+	8.8%	8.9%	0.15	0.27
Central Scotland	10.0%	10.8%	0.79	0.79
Dumfries & Galloway	7.9%	7.9%	0.06	0.06
Fife	12.0%	12.4%	0.45	0.36
Grampian	14.4%	15.0%	0.58	0.46
Lothian & Borders	19.2%	19.2%	0.03	0.03
Northern	13.6%	13.8%	0.23	0.19
Strathclyde	19.6%	19.9%	0.25	0.37
Tayside	15.4%	16.3%	0.92	0.68
Urban	18.6%	18.9%	0.31	0.60
Rural	9.5%	9.8%	0.33	0.43
15% most deprived	21.3%	21.2%	0.13	0.10
Rest	16.1%	16.5%	0.40	0.85
All	16.9%	17.3%	0.32	0.72

Table A1.2: Whether experienced violent crime in last 12 months among selected sub-groups. 2012/13 SCJS

	Final estimate (68% RR)	N	SE	CI (+/-)	I1 estimate (59% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	4.2%	5,207	0.4%	0.7%	4.4%	0.25	0.69
Female	2.2%	6,838	0.2%	0.5%	2.4%	0.22	0.95
16 - 24	8.2%	970	1.2%	2.2%	9.0%	0.79	0.69
25 - 44	4.3%	3,587	0.4%	0.9%	4.6%	0.29	0.66
45 - 59	1.9%	3,111	0.3%	0.6%	1.9%	0.09	0.29
60+	0.4%	4,377	0.1%	0.2%	0.5%	0.03	0.24
Central Scotland	2.5%	1,084	0.5%	1.0%	2.8%	0.27	0.51
Dumfries & Galloway	1.5%	922	0.5%	0.9%	1.5%	0.02	0.04
Fife	1.5%	879	0.5%	0.9%	1.7%	0.14	0.29
Grampian	2.7%	1,042	0.6%	1.1%	2.9%	0.21	0.36
Lothian & Borders	3.1%	1,978	0.4%	0.8%	3.3%	0.22	0.52
Northern	2.8%	971	0.6%	1.1%	2.9%	0.07	0.12
Strathclyde	3.8%	4,221	0.3%	0.6%	4.2%	0.45	1.37
Tayside	3.1%	948	0.6%	1.3%	2.5%	0.58	0.90
Urban	3.5%	9,582	0.2%	0.5%	3.7%	0.24	0.99
Rural	1.7%	2,463	0.3%	0.7%	1.9%	0.22	0.65
15% most deprived	5.0%	1,753	0.7%	1.3%	5.2%	0.23	0.34
Rest	2.8%	10,292	0.2%	0.4%	3.1%	0.24	1.13
All	3.1%	12,045	0.2%	0.4%	3.4%	0.24	1.16

Table A1.3: Percentage saying police in local area are doing an excellent or good job among selected sub-groups. 2012/13 SCJS

	Final estimate (68% RR)	N	SE	CI (+/-)	I1 estimate (59% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	59.4%	5,207	0.9%	1.7%	59.4%	0.07	0.08
Female	62.3%	6,838	0.8%	1.5%	62.5%	0.13	0.17
16 - 24	63.3%	970	2.0%	3.9%	62.7%	0.57	0.28
25 - 44	60.2%	3,587	1.1%	2.1%	60.1%	0.08	0.08
45 - 59	57.5%	3,111	1.2%	2.3%	57.4%	0.16	0.14
60+	63.7%	4,377	0.9%	1.9%	64.3%	0.63	0.67
Central Scotland	64.0%	1,084	1.6%	3.1%	62.1%	1.84	1.15
Dumfries & Galloway	65.6%	922	1.8%	3.6%	65.8%	0.17	0.09
Fife	62.3%	879	1.9%	3.7%	62.4%	0.17	0.09
Grampian	61.8%	1,042	1.8%	3.5%	62.1%	0.23	0.13
Lothian & Borders	65.8%	1,978	1.2%	2.3%	66.6%	0.81	0.70
Northern	68.7%	971	1.6%	3.2%	67.7%	0.99	0.61
Strathclyde	55.6%	4,221	0.9%	1.7%	55.6%	0.03	0.04
Tayside	67.1%	948	1.8%	3.4%	66.9%	0.20	0.11
Urban	60.5%	9,582	0.6%	1.3%	60.7%	0.16	0.25
Rural	62.9%	2,463	1.3%	2.5%	62.3%	0.58	0.46
15% most deprived	54.2%	1,753	1.5%	3.0%	54.8%	0.58	0.37
Rest	62.2%	10,292	0.6%	1.2%	62.1%	0.06	0.10
Victim	50.9%	1,809	1.5%	3.0%	51.1%	0.22	0.14
Non-victim	63.0%	10,236	0.6%	1.2%	63.0%	0.04	0.06
All	61.0%	12,045	0.6%	1.1%	61.0%	0.03	0.05

Table A1.4: Percentage saying local crime rate has increased (a lot or a little) in local area in last two years among selected sub-groups. 2012/13 SCJS

	Final estimate (68% RR)	N	SE	CI (+/-)	I1 estimate (59% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	17.2%	4,560	0.7%	1.4%	17.2%	0.00	0.00
Female	21.6%	6,079	0.7%	1.3%	21.6%	0.02	0.03
16 - 24	17.3%	633	2.0%	3.8%	17.0%	0.30	0.15
25 - 44	20.0%	2,903	1.0%	1.9%	19.9%	0.07	0.07
45 - 59	20.7%	2,878	1.0%	1.9%	20.8%	0.16	0.16
60+	18.9%	4,225	0.8%	1.5%	18.9%	0.03	0.04
Central Scotland	15.9%	949	1.3%	2.6%	16.1%	0.23	0.18
Dumfries & Galloway	18.8%	821	1.6%	3.1%	18.5%	0.33	0.21
Fife	14.3%	795	1.4%	2.8%	14.9%	0.61	0.43
Grampian	19.3%	885	1.6%	3.0%	19.5%	0.15	0.10
Lothian & Borders	18.8%	1,679	1.0%	2.0%	18.8%	0.01	0.01
Northern	18.0%	890	1.4%	2.8%	17.8%	0.19	0.14
Strathclyde	21.5%	3,779	0.7%	1.5%	21.4%	0.12	0.16
Tayside	19.4%	841	1.6%	3.1%	19.2%	0.20	0.13
Urban	20.2%	8,438	0.6%	1.1%	20.0%	0.18	0.32
Rural	16.5%	2,201	1.0%	2.0%	17.2%	0.67	0.65
15% most deprived	23.7%	1,526	1.4%	2.8%	23.1%	0.57	0.40
Rest	18.8%	9,113	0.5%	1.0%	18.9%	0.07	0.13
Victim	30.4%	1,555	1.5%	3.0%	29.7%	0.69	0.45
Non-victim	17.4%	9,084	0.5%	1.0%	17.5%	0.08	0.15
All	19.5%	10,639	0.5%	1.0%	19.5%	0.02	0.04

Table A1.5: Percentage agreeing that ‘Community sentences do not discourage people from offending’ among selected sub-groups. SCJS 2012/13

	Final estimate (68% RR)	N	SE	CI (+/-)	I1 estimate (59% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	60.5%	1,300	1.8%	3.5%	59.8%	0.73	0.41
Female	59.3%	1,711	1.5%	3.0%	59.9%	0.55	0.36
16 - 24	56.5%	251	4.1%	8.0%	56.5%	0.02	0.00
25 - 44	57.3%	896	2.1%	4.2%	56.1%	1.19	0.55
45 - 59	62.6%	773	2.3%	4.4%	63.3%	0.68	0.30
60+	62.2%	1,091	1.9%	3.7%	62.7%	0.44	0.23
Central Scotland	69.1%	258	3.2%	6.2%	68.2%	0.91	0.29
Dumfries & Galloway	62.2%	234	3.7%	7.2%	61.0%	1.17	0.32
Fife	56.3%	218	3.9%	7.6%	55.7%	0.66	0.17
Grampian	56.4%	241	3.7%	7.3%	57.6%	1.15	0.31
Lothian & Borders	53.2%	502	2.4%	4.8%	50.6%	2.63	1.08
Northern	55.0%	250	3.4%	6.7%	54.4%	0.54	0.16
Strathclyde	63.3%	1,069	1.7%	3.2%	64.5%	1.20	0.73
Tayside	61.4%	239	3.6%	7.1%	60.7%	0.71	0.20
Urban	59.3%	2,385	1.3%	2.6%	59.2%	0.07	0.05
Rural	62.5%	626	2.5%	4.9%	62.5%	0.02	0.01
15% most deprived	61.6%	423	3.1%	6.0%	61.9%	0.23	0.07
Rest	59.6%	2,588	1.3%	2.5%	59.5%	0.13	0.10
Victim	61.2%	484	2.9%	5.6%	61.0%	0.17	0.06
Non-victim	59.6%	2,527	1.3%	2.5%	59.6%	0.05	0.04
All	59.9%	3,011	1.2%	2.3%	59.8%	0.06	0.05

Table A1.6: Whether experienced crime in last 12 months among selected sub-groups. 2016/17 SCJS

	Final estimate (63% RR)	N	SE	CIs (+/-)	I1 estimate (55% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	13.9%	2,561	0.9%	1.8%	14.4%	0.41	0.45
Female	13.0%	3,006	0.8%	1.6%	13.4%	0.42	0.51
16 - 24	19.5%	418	2.6%	5.1%	20.1%	0.64	0.25
25 - 44	17.3%	1,527	1.3%	2.5%	17.9%	0.56	0.43
45 - 59	12.7%	1,539	1.1%	2.2%	13.3%	0.57	0.50
60+	7.2%	2,083	0.8%	1.5%	7.2%	0.03	0.04
Argyll and West Dun'	9.3%	295	1.9%	3.7%	10.2%	0.83	0.44
Ayrshire	14.7%	368	2.2%	4.3%	15.1%	0.38	0.17
Dumfries and Galloway	5.7%	335	1.4%	2.7%	6.2%	0.55	0.40
Edinburgh	17.1%	462	1.8%	3.6%	17.2%	0.03	0.02
Fife	13.1%	322	2.2%	4.3%	12.1%	0.95	0.43
Forth Valley	7.9%	285	1.8%	3.6%	8.2%	0.33	0.18
Greater Glasgow	19.4%	718	1.7%	3.2%	19.4%	0.03	0.02
Highlands and Islands	8.0%	362	1.7%	3.2%	8.4%	0.32	0.19
Lanarkshire	11.8%	564	1.5%	3.0%	12.7%	0.89	0.59
North East	13.0%	742	1.5%	2.9%	13.4%	0.35	0.24
Renfrew' and Inverclyde	14.2%	283	2.5%	4.9%	13.3%	0.98	0.39
Tayside	12.1%	415	1.8%	3.6%	14.5%	2.46	1.35
Lothians and Borders	13.0%	416	1.9%	3.7%	13.9%	0.99	0.53
Urban	14.9%	4,500	0.7%	1.4%	15.3%	0.42	0.59
Rural	6.8%	1,067	1.0%	2.0%	7.2%	0.46	0.45
15% most deprived	19.4%	803	1.9%	3.7%	19.8%	0.31	0.17
Rest	12.4%	4,764	0.6%	1.3%	12.8%	0.44	0.69
Total	13.4%	5,567	0.6%	1.2%	13.8%	0.41	0.67

Table A1.7: Whether experienced violent crime in last 12 months among selected sub-groups. 2016/17 SCJS

	Final estimate (63% RR)	N	SE	CIs (+/-)	l1 estimate (55% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	3.4%	2,561	0.5%	0.9%	3.9%	0.42	0.87
Female	2.4%	3,006	0.4%	0.7%	2.5%	0.10	0.27
16 - 24	5.3%	418	1.5%	2.9%	6.3%	0.99	0.67
25 - 44	4.4%	1,527	0.7%	1.4%	4.4%	0.03	0.04
45 - 59	2.5%	1,539	0.5%	1.0%	2.9%	0.43	0.80
60+	0.4%	2,083	0.2%	0.4%	0.5%	0.06	0.31
Argyll and West Dun'	1.6%	295	0.8%	1.6%	1.4%	0.19	0.23
Ayrshire	2.3%	368	0.9%	1.8%	3.0%	0.70	0.75
Dumfries and Galloway	1.6%	335	0.8%	1.5%	1.8%	0.16	0.21
Edinburgh	3.5%	462	0.9%	1.8%	3.8%	0.29	0.32
Fife	3.1%	322	1.1%	2.2%	4.0%	0.83	0.73
Forth Valley	2.3%	285	1.0%	2.0%	2.5%	0.18	0.18
Greater Glasgow	4.4%	718	0.9%	1.7%	4.3%	0.09	0.11
Highlands and Islands	2.0%	362	0.9%	1.7%	2.2%	0.17	0.20
Lanarkshire	2.0%	564	0.7%	1.3%	2.4%	0.43	0.66
North East	2.4%	742	0.7%	1.3%	2.5%	0.12	0.18
Renfrew' and Inverclyde	1.6%	283	0.9%	1.8%	1.8%	0.21	0.23
Tayside	4.1%	415	1.1%	2.2%	5.2%	1.04	0.94
Lothians and Borders	3.0%	416	1.0%	1.9%	2.5%	0.44	0.46
Urban	3.2%	4,500	0.4%	0.7%	3.5%	0.35	1.00
Rural	1.4%	1,067	0.5%	1.0%	1.3%	0.18	0.37
15% most deprived	4.8%	803	1.0%	2.0%	5.8%	0.96	0.95
Rest	2.5%	4,764	0.3%	0.6%	2.7%	0.13	0.43
Total	2.9%	5,567	0.3%	0.6%	3.1%	0.26	0.87

Table A1.8: Percentage saying police in local area are doing an excellent or good job among selected sub-groups. 2016/17 SCJS

	Final estimate (63% RR)	N	SE	CI (+/-)	I1 estimate (55% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	55.6%	2,561	1.3%	2.6%	55.7%	0.07	0.05
Female	61.0%	3,006	1.2%	2.3%	61.6%	0.57	0.48
16 - 24	66.3%	418	3.1%	6.1%	68.2%	1.87	0.60
25 - 44	61.4%	1,527	1.7%	3.3%	61.8%	0.45	0.27
45 - 59	53.4%	1,539	1.7%	3.3%	53.2%	0.25	0.15
60+	56.2%	2,083	1.5%	2.9%	56.2%	0.01	0.01
Argyll and West Dun'	59.7%	295	3.2%	6.3%	57.3%	2.41	0.75
Ayrshire	54.0%	368	3.1%	6.1%	54.8%	0.77	0.25
Dumfries and Galloway	56.5%	335	3.0%	5.8%	57.9%	1.43	0.48
Edinburgh	60.1%	462	2.4%	4.7%	60.6%	0.51	0.21
Fife	60.0%	322	3.2%	6.3%	60.2%	0.17	0.05
Forth Valley	62.5%	285	3.3%	6.4%	63.7%	1.23	0.38
Greater Glasgow	60.8%	718	2.0%	4.0%	62.3%	1.46	0.72
Highlands and Islands	61.7%	362	3.0%	5.8%	60.5%	1.16	0.39
Lanarkshire	54.5%	564	2.3%	4.6%	54.7%	0.20	0.09
North East	58.3%	742	2.2%	4.3%	58.7%	0.39	0.18
Renfrew' and Inverclyde	57.6%	283	3.5%	6.9%	58.4%	0.83	0.24
Tayside	60.5%	415	2.7%	5.4%	59.0%	1.50	0.55
Lothians and Borders	54.4%	416	2.8%	5.5%	54.8%	0.45	0.16
Urban	58.7%	4,500	1.0%	1.9%	59.1%	0.39	0.40
Rural	57.3%	1,067	2.0%	4.0%	57.4%	0.05	0.02
15% most deprived	52.5%	803	2.4%	4.6%	52.9%	0.42	0.18
Rest	59.5%	4,764	1.0%	1.9%	59.8%	0.30	0.31
Non-victim	59.6%	4,869	0.9%	1.8%	60.1%	0.50	0.53
Victim	51.0%	698	2.5%	5.0%	50.5%	0.54	0.21
Total	58.4%	5,567	0.9%	1.7%	58.8%	0.33	0.37

Table A1.9: Percentage saying local crime rate has increased (a lot or a little) in local area in last two years among selected sub-groups. 2016/17 SCJS

	Final estimate (63% RR)	N	SE	CIs (+/-)	I1 estimate (55% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	16.1%	2,212	1.0%	2.1%	16.3%	0.15	0.14
Female	21.0%	2,622	1.1%	2.1%	21.6%	0.55	0.52
16 - 24	14.0%	266	2.8%	5.6%	15.0%	0.98	0.34
25 - 44	19.9%	1,133	1.6%	3.1%	19.8%	0.14	0.09
45 - 59	21.0%	1,428	1.4%	2.8%	20.9%	0.09	0.06
60+	17.2%	2,007	1.1%	2.2%	18.1%	0.90	0.80
Argyll and West Dun'	17.4%	265	2.6%	5.1%	15.9%	1.59	0.61
Ayrshire	15.9%	326	2.4%	4.7%	16.3%	0.37	0.15
Dumfries and Galloway	18.6%	306	2.4%	4.8%	19.3%	0.75	0.31
Edinburgh	22.2%	372	2.3%	4.4%	24.1%	1.97	0.87
Fife	19.9%	288	2.8%	5.4%	19.7%	0.26	0.09
Forth Valley	18.6%	256	2.8%	5.4%	19.8%	1.27	0.46
Greater Glasgow	15.6%	584	1.7%	3.3%	15.5%	0.05	0.03
Highlands and Islands	15.0%	336	2.3%	4.4%	14.5%	0.51	0.23
Lanarkshire	19.5%	510	1.9%	3.8%	19.8%	0.33	0.17
North East	20.0%	614	1.9%	3.8%	19.6%	0.36	0.19
Renfrew' and Inverclyde	21.9%	256	3.1%	6.1%	22.3%	0.42	0.14
Tayside	17.8%	350	2.3%	4.6%	20.2%	2.40	1.03
Lothians and Borders	20.6%	371	2.4%	4.7%	20.2%	0.37	0.15
Urban	19.4%	3,871	0.9%	1.7%	19.7%	0.37	0.43
Rural	15.5%	963	1.6%	3.1%	15.9%	0.37	0.24
15% most deprived	22.4%	677	2.1%	4.2%	22.5%	0.12	0.06
Rest	18.0%	4,157	0.8%	1.6%	18.4%	0.39	0.49
Non-victim	17.4%	4,262	0.8%	1.5%	17.6%	0.19	0.24
Victim	27.3%	572	2.5%	4.9%	28.6%	1.29	0.52
Total	18.7%	4,834	0.8%	1.5%	19.0%	0.35	0.47

Table A1.10: Percentage agreeing that ‘Community sentences do not discourage people from offending’ among selected sub-groups. SCJS 2016/17

	Final estimate (63% RR)	N	SE	CIs (+/-)	I1 estimate (55% RR)	Difference (percentage points)	Standardised Ratio: Diff/SE
Male	56.7%	644	2.6%	5.1%	55.2%	1.48	0.57
Female	56.0%	720	2.5%	4.9%	57.8%	1.79	0.72
16 - 24	56.0%	94	6.9%	13.4%	56.1%	0.08	0.01
25 - 44	56.4%	358	3.5%	6.9%	56.0%	0.33	0.09
45 - 59	54.3%	379	3.4%	6.7%	54.9%	0.55	0.16
60+	58.2%	533	2.9%	5.6%	58.8%	0.53	0.19
Argyll and West Dun’	57.7%	81	6.1%	12.1%	58.8%	1.14	0.19
Ayrshire	56.7%	90	6.2%	12.2%	56.0%	0.69	0.11
Dumfries and Galloway	63.4%	79	6.0%	11.7%	63.3%	0.10	0.02
Edinburgh	51.3%	109	5.0%	9.9%	52.9%	1.65	0.33
Fife	63.7%	76	6.5%	12.6%	69.2%	5.47	0.85
Forth Valley	58.9%	79	6.3%	12.4%	56.1%	2.83	0.45
Greater Glasgow	51.5%	173	4.3%	8.3%	50.8%	0.77	0.18
Highlands and Islands	50.9%	84	6.3%	12.4%	48.8%	2.12	0.34
Lanarkshire	48.9%	138	4.7%	9.3%	52.5%	3.63	0.77
North East	60.5%	164	4.6%	9.0%	60.5%	0.01	0.00
Renfrew’ and Inverclyde	60.6%	84	6.4%	12.5%	62.7%	2.15	0.34
Tayside	61.1%	105	5.4%	10.6%	60.6%	0.51	0.09
Lothians and Borders	60.1%	102	5.5%	10.8%	55.9%	4.15	0.75
Urban	56.0%	1,104	2.0%	3.9%	56.1%	0.12	0.06
Rural	58.1%	260	4.1%	8.0%	58.7%	0.61	0.15
15% most deprived	52.7%	198	4.8%	9.3%	53.3%	0.54	0.11
Rest	57.0%	1,166	1.9%	3.8%	57.2%	0.16	0.08
Non-victim	56.2%	1,190	1.9%	3.8%	56.0%	0.14	0.07
Victim	57.6%	174	5.0%	9.8%	60.2%	2.63	0.52
Total	56.4%	1,364	1.8%	3.5%	56.6%	0.23	0.13

Table A1.11: Average standardised ratio by sub-group and year. SCJS 2012/13 and 2016/17

	2012/13		2016/17		Overall	
	Mean of Diff/SE	N of measures	Mean of Diff/SE	N of measures	Mean of Diff/SE	N of measures
Male	0.32	5	0.42	5	0.37	10
Female	0.42	5	0.50	5	0.46	10
16 - 24	0.32	5	0.37	5	0.35	10
25 - 44	0.30	5	0.18	5	0.24	10
45 - 59	0.29	5	0.33	5	0.31	10
60+	0.29	5	0.27	5	0.28	10
Non-victim	0.08	3	0.28	3	0.18	6
Victim	0.22	3	0.42	3	0.32	6
Urban	0.44	5	0.50	5	0.47	10
Rural	0.44	5	0.25	5	0.34	10
15% most	0.26	5	0.29	5	0.28	10
Rest	0.46	5	0.40	5	0.43	10
<i>Dumfries and Galloway</i>	0.14	5	0.28	5	0.21	10
<i>Fife</i>	0.27	5	0.43	5	0.35	10
<i>Tayside</i>	0.40	5	0.79	5	0.60	10
<i>Lothians and Scottish Borders</i>			0.41	5	0.41	5
<i>Argyll and West Dunbartonshire</i>			0.44	5	0.44	5
<i>Ayrshire</i>			0.29	5	0.29	5
<i>Edinburgh</i>			0.35	5	0.35	5
<i>Forth Valley</i>			0.33	5	0.33	5
<i>Greater Glasgow</i>			0.21	5	0.21	5
<i>Highlands and Islands</i>			0.27	5	0.27	5
<i>Lanarkshire</i>			0.46	5	0.46	5
<i>North East</i>			0.16	5	0.16	5
<i>Renfrewshire and Inverclyde</i>			0.27	5	0.27	5
<i>Central Scotland</i>	0.58	5			0.58	5
<i>Grampian</i>	0.27	5			0.27	5
<i>Northern</i>	0.24	5			0.24	5
<i>Strathclyde</i>	0.53	5			0.53	5
<i>Lothian & Borders</i>	0.47	5			0.47	5
Total	0.40	5	0.50	5	0.45	10

7 APPENDIX 2: BIBLIOGRAPHY

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