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Scottish Crime and Justice Survey

Methods Workshop:

Briefing Paper

Ipsos MORI & ScotCen

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1. Introduction

This is an advance briefing paper for the Scottish Crime and Justice Survey (SCJS) Methods Workshop to be held on 12th September 2018.

- This section provides background context and details the remit of the workshop.
- Chapter 2 covers the history of the SCJS to date. It details the response rate of the survey over time compared to other surveys, performance on the current contract and action already taken to improve this, as well as summarising wider evidence on response rates, survey design and ensuring survey quality.
- Chapter 3 presents five options for changes to the design or delivery of the SCJS in future, for discussion. It also points to several additional areas where options could be developed.
- Chapter 4 provides the workshop programme and outlines next steps.

Background

The Scottish Government has an evidence based approach to policy making¹. The SCJS is central to this, providing key information on areas such as victimisation rates, the impact of victimisation and fear of crime. This data is used to evaluate measures in place to reduce crime, assess the performance of policing and criminal justice organisations, and to provide evidence for use in targeting resources. As well as being used extensively by the Scottish Government, it is relied on by a range of other stakeholders.

The accuracy of the survey's estimates is therefore of central importance. The SCJS is a National Statistics product, which means it is produced to the standards set out in the Code of Practice for Official Statistics², with compliance monitored by the UK Statistics Authority³.

It is one of three flagship Scottish Government-run population surveys. The vision for these, laid out in the Scottish Government's Long-term Survey Strategy 2018-2021⁴, emphasises the importance of analytical potential, survey quality and value for money. It starts:

“We aim to ensure that the Scottish Government’s population surveys continue to meet key information needs while maximising the analytical potential of the data they generate, the precision of estimates and value for money.”

¹ Scottish Government. (2013).

² UK Statistics Authority. (2018).

³ See <https://www.statisticsauthority.gov.uk>

⁴ Scottish Government. (2017). *Scottish Government Long-term Survey Strategy 2018-2022*.

The Long-term Survey Strategy also notes the challenge of falling response rates:

“The people in Scotland who participate in population surveys do so voluntarily – sacrificing a sometimes significant amount of their time [...]. Unfortunately, our face-to-face collections have been experiencing a gradual, downward trend in response rates. A central risk is that this will result in an increasing impact of non-response bias in the results we report.”

Under the current SCJS contract, failure to meet the response rate assumptions used in the sampling has resulted in a shortfall in the number of interviews achieved. This runs the risk of impacting on the underlying data quality by reducing precision around the survey estimates, which in turn would risk jeopardising the public value of the survey. It should be noted, however, that analysis conducted for the 2016/17 SCJS Technical Report found that the lower response rate had only a very marginal impact on two survey quality metrics at a national level: the average absolute difference and confidence intervals, although it did note higher differences among some subgroups.

Remit of methods workshop

The methods workshop has been convened within this context to review the pressures and opportunities that the SCJS has faced recently, to consider what can be learned from recent developments in survey methods, and to examine potential options for changes to the survey in future, both short- and long-term. It is intended to be open and exploratory in nature.

The focus of the workshop will be on answering the following question:

Can the quality of the estimates from the SCJS, and therefore the public value of the survey, be improved by implementing any changes to the design and/or the delivery of the survey?

The European Statistical System (ESS) identifies five aspects of quality: 'relevance', 'accuracy and reliability', 'timeliness and punctuality', 'coherence and comparability' and 'accessibility and clarity'⁵. For the purpose of the methods workshop, we suggest that the focus should be on the accuracy and reliability of estimates. This includes consideration of all types of survey error, both those that lead to biased estimates, such as non-response bias, and survey errors that impact on variability, such as sampling error.

The question suggested above is somewhat similar to the questions posed in I1.2c from the Long-term Survey Strategy to "...seek independent advice on fieldwork outcomes, focussing on two questions: What is stopping us getting desired response rates? What should we do to tackle these issues?". However, it is broader in that it covers all potential sources of survey error rather than focusing solely on error from non-response bias.

It must be kept in mind that different types of error can impact on different types of survey estimate in different ways. The following are some of the key estimates that come from the SCJS. They show the range of indicators and are useful in considering the impact of any potential changes.

- National estimates for different types of crime (experienced by few people in the sample);

⁵ European Statistical System. (2015).

- Monitoring change over time in the extent and nature of different types of crime;
- Sub-population estimates for different types of crime (to identify and reduce inequalities between groups and regions in Scotland);
- Estimates for repeat and multiple victimisation.

We note that many elements of the design of the survey, such as the length and mode of the interview, are fixed and are outwith the scope of the methods workshop. The options included for consideration are focused on sampling and fieldwork strategies and closely relate to the current challenge of achieving the required number of interviews while delivering data that is as unbiased and error free as possible.

Workshop parameters

The methods workshop is not about decision-making, but about the possibilities for investigation. Some of these possibilities may lead to options for experiments in the 2019/20 SCJS, testing the feasibility of the change and the impact on survey response and trend data. Others may lead to longer-term strategic goals. The 2018/19 survey will continue to run as planned, with no significant changes from the previous two sweeps.

2. SCJS to the present day

This section outlines the SCJS's history up to the present day, summarising response rate patterns over time, performance under the current contract and actions taken, and the latest thinking on response rates, survey design and survey quality.

SCJS survey methodology

The SCJS is a survey of adults living in private residential households. It covers all areas of Scotland including smaller Island communities.

The sample is completely unclustered. The sampling frame is the small user file of the Royal Mail Postcode Address File (PAF). It is allocated in batches to interviewers.

Interviews are completed face-to-face in home by interviewers using Computer-Assisted Personal Interviewing (CAPI). One adult is interviewed per household.

The questionnaire consists of a modular design and the average interview length is 40 minutes. A self-completion section covers sensitive crimes using Computer-Assisted Self Interviewing (CASI).

Fieldwork has been conducted by Ipsos MORI and ScotCen since April 2016.

Three main weights are calculated: incident weights, individual weights and household weights.

The SCJS is one of three surveys that contributes to the Scottish Surveys Core Questions (SSCQ).

2.1 Survey design and response rates over time

While the development of push-to-web approaches is currently being followed with interest by the Scottish Government, **none of the major surveys in Scotland has seriously considered a change of mode of interview away from face-to-face interviewing for some time.** The last *fundamental* change to any of the three major surveys followed the Fundamental Review of the Scottish Crime Survey⁶ undertaken in 2003. This suggested "that the revised SCS should contain a significant telephone survey element if the necessary scale of survey is to be acquired in a practicable way at an acceptable cost". This model was tested by running parallel face-to-face and telephone fieldwork. However, the calibration exercise⁷ concluded that, "we have not found sufficient evidence to conclude that the telephone survey is likely to be accurately measuring victimisation. We have been unable to devise a weighting approach that satisfactorily corrects the many demographic biases that are observable in the data". Following this, all three surveys have used a traditional face-to-face random pre-selected approach.

⁶ MacCaig, E, and Leven, T. (2003).

⁷ Scottish Government. (2005).

The methodological underpinnings of traditional face-to-face random pre-selected surveys have changed little in the past decade and the three major household surveys in Scotland have seen relatively limited changes to their design. **The most notable change has been the move to a completely unclustered sample design in 2012 for all three surveys to help facilitate the introduction of the Scottish Surveys Core Questions.** This year also saw the Scottish House Condition Survey become a component of the Scottish Household Survey, significantly increasing the length, changing the coverage of the SHS and leading to the increased use of streaming in the social survey and changes to the administration of the surveyor-led follow-up physical survey.

Also in 2012, the Scottish Government added the requirement to provide detailed para-data⁸ on survey outcomes at each address. This is critical in terms of analysing fieldwork effort and changing patterns of response⁹.

The changing picture of design and response on SCJS

SCJS can trace its origins as far back as 1982 to the first sweep of the British Crime Survey. Since then the survey has undergone a number of design and name changes. As it is delivered currently, SCJS retains much of the basic design introduced when the survey was re-imagined and re-titled in 2008/09 (having previously been the Scottish Crime and Victimization Survey). A summary of the core design elements and key fieldwork outcomes of the survey since then is provided in Table 1.

When first introduced in 2008/09, SCJS was conducted as a continuous CAPI survey with a target sample size of 16,000 over 12 months. The sample was stratified and clustered in rural areas. The target sample was then reduced to 13,000 for the 2010/11 survey. At the same time the survey moved to biennial data collection; fieldwork was conducted every two years over a 12-month period with a fallow year in between. Subsequent sweeps in 2012/13 and 2014/15 had further reduced target sample sizes of 12,000. More change was introduced in 2016/17 when the survey returned to a continuous fieldwork cycle but with a decreased target sample of 6000 in each survey year, following advice that the biennial approach to fieldwork was no longer working well.

Over the same period, the survey has seen a notable decrease in response rates which have dropped from 70.9% to 62.3%. These have occurred at two main junctures: between 2009/10 and 2010/11 (70% to 67%); and between 2012/13 and 2014/15 (67.7% to 63.8%). There has been a corresponding rise in refusal rates which have increased from 16.2% to 27.8%. On the other hand, non-contact rates have remained broadly stable, typically between 4-6%. There was a slight rise in non-contact rates from 2014-15 to 2016-17 that may be a result of a change in contractor and variations in how non-contact cases and deadwood addresses are coded.

⁸ Data about the process by which the data were collected

⁹ Lynn, P. and Nicolaas, G. (2010).

Table 2.1: Summary of key SCJS design elements and fieldwork outcomes – 2008/09 to 2017-18

	2008/09	2009/10	2010/11	2012/13	2014/15	2016/17	2017/18
Survey company	TNS-BMRB	TNS-BMRB	TNS-BMRB	TNS-BMRB	TNS-BMRB	Ipsos MORI/ ScotCen	Ipsos MORI/ ScotCen
Fieldwork cycle	Continuous	Continuous	Continuous	Biennial	Biennial	Continuous	Continuous
Core sample	16,003	16,036	13,010	12,045	11,493	5,567	5,475
Sample type	Stratified sample design, rural areas were clustered			Single stage, unclustered stratified sample design			
Response rate	70.9%	70%	67%	67.7%	63.8%	63.2%	62.3%
No contact rate	7.8%	5.4%	4.5%	4.4%	4.0%	5.9%	5.7%
Refusal rate	16.2%	18.5%	19.6%	23.3%	26.7%	27.1%	27.8%

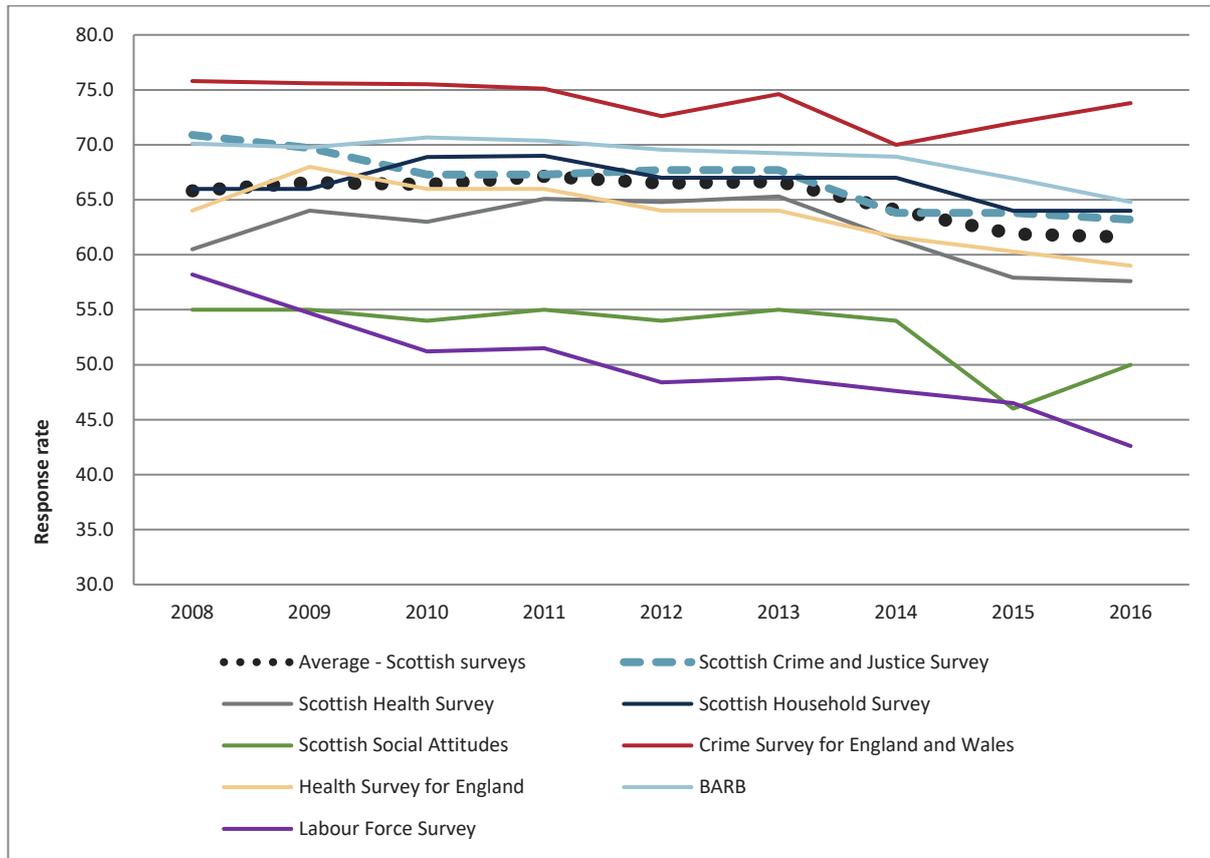
It is too early in 2018-19 fieldwork to say definitively how the response rate and refusal rate is likely to look for the current survey year. However, if current trends in fieldwork performance for this year were to continue, the response rate would lie somewhere between the 2016/17 and 2017/18 response rates. As this underlines, we do not yet know whether the downward trend in response rate on the SCJS (and on other social surveys) will continue, fluctuate or stabilise in the coming years.

Comparing trends in response rates

SCJS is not alone in experiencing a decline in response over the past decade. Such declines have been witnessed across all social surveys in Scotland, the UK and beyond, albeit to differing extents.

Figure 2.1 displays trends in response rates across a range of Scottish and UK surveys between 2008 and 2016. It is notable that all surveys show a lower response rate in 2016 than in 2008. The dark dotted line depicts the average response rates among the three main Scottish Government household surveys – SCJS, the Scottish Health Survey and the Scottish Household Survey. Between 2008 and 2016, the average response on these surveys declined from 65.8% to 61.6%, a drop of 4.2 percentage points. The size of the decrease varies a little from survey to survey: from 2 percentage points on the Scottish Household survey (66% to 64%) to 7.7 percentage points on SCJS (70.9% to 63.2%). Throughout this period, the Crime Survey for England and Wales (CSEW) has maintained a higher response than the other surveys and has specifically tracked an average of 7 percentage points higher than SCJS. However, even CSEW has had a lower response in recent years than was previously the case.

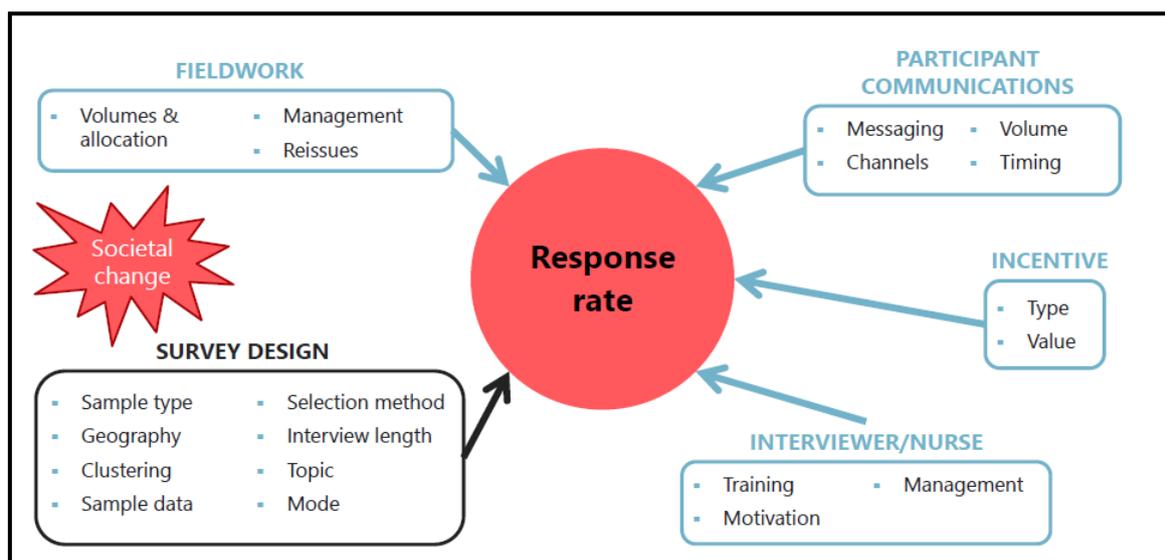
Figure 2.1 Survey response rates over time



Drivers of response

A myriad of factors impact on survey response rates. These range from elements which can be 'controlled' to a degree by the survey commissioner and fieldwork contractor – including survey design and participant communications – to elements beyond that control such as wider societal changes. The complex combination of contributing factors is summarised in Figure 2.

Figure 2.2 Major factors affecting response



Source: Bolling, K. and Smith, P. (2017) Declining response rates and their impact, Presentation given at the SRA Summer Event 2017¹⁰

As noted earlier, response rates have declined largely because of increasing refusal rates rather than non-contact. This indicates a growing reluctance amongst members of the public to give up their time to participate in surveys. A number of simultaneous trends may have contributed to this:

- People increasingly have less spare time, either real or perceived.
- Greater survey fatigue and wariness of cold calling.
- Decreasing trust in official statistics
- Rising concerns over data security

Current employment rates are some of the highest on record and have been increasing, in particular, since 2012. Those who are working not only have less free time but may be less likely to give this up to participate in surveys, not least when they have ready access to a wide range of other pursuits on which to spend their time.

A number of trends have contributed to an increased 'survey fatigue' amongst the public, making them wary of cold callers and which have made encouraging participation in surveys increasingly challenging. The last ten years have seen surges in nuisance telemarketing calls (particularly regarding PPI claims), requests for online and email feedback from businesses, and street-based or doorstep charity 'chuggers'. Together these trends mean members of the public can be inundated by requests for their time. Not all recipients will distinguish such requests from those made by social surveys.

¹⁰ Bolling, K. and Smith, P. (2017).

Alongside increasing survey fatigue, **some high profile incidents and changes in public attitudes may also have contributed to an increasing reluctance to participate in social surveys and particularly government surveys.** Concerns about data collection, security and access have been fuelled by a number of high profile data disclosure breaches from a considerable Child Benefit data loss by DWP in 2007 to the more recent Cambridge Analytica scandal involving the harvesting of personal data from Facebook profiles without permission. At the same time, public confidence in Scottish Government official statistics has been decreasing, according to findings from the Scottish Social Attitudes survey (SSA). When asked to rate how confident they are that Scottish Government official statistics are accurate on a scale of zero (not confident) to 10 (very confident), 46% of people gave a score of between zero and five in 2007. By 2013, this had risen to 55%. Such views may make people less likely to agree to participate in a Scottish Government survey.

As indicated in Figure 2.2 above, **fieldwork organisation, effort and personnel also affect response rates. With rising refusal rates, the level of field effort required to maintain response rates has significantly increased.** For example, on the CSEW the average number of calls at each address increased from 4.1 in 2008/09 to 5.2 in 2015/16 equating to approximately an additional 55,000 calls per year. At the same time this increased fieldwork effort has been required, data collection agencies have faced challenges maintaining interviewer panels. Interviewer turnover (leavers as a % of total panel size) across agencies increased from an average of 32% in 2012 to 53% in 2016 and panel size has reduced by around 29%. This creates issues of capacity – having enough interviewers to cover all addresses in the required timescale – and quality – having enough interviewers with the necessary level of skill and experience to achieve good fieldwork outcomes. In 2006, 17% of interviewers had less than one year's experience compared with 27% in 2016.

The principal challenges with maintaining a satisfactory field panel are recruitment and retention. In a buoyant labour market with high levels of employment and an increase in flexible and/or part-time working as well as self-employment, survey interviewing vacancies face greater competition for candidates from a wide range of alternative employers offering less challenging work with guaranteed income. Only a small proportion of initial applications translate to new panel members. On being introduced to face-to-face surveying, new recruits can find it challenging to maintain motivation and build doorstep skills and experience – especially in a climate of declining response. Anti-social hours and performance-based pay – again, linked to lower response rates - are cited by interviewers as major reasons why people choose to stop interviewing.

The drivers of response are complex and many are difficult to influence. Macro-level societal issues such as labour market trends, survey fatigue and public concerns over data security are likely to persist at least in the short term and possibly beyond. Demonstrating survey relevance, legitimacy and impact through improved, engaging participant documentation – a tactic deployed by most surveys in recent years - can help to counter but not reverse such trends. Being tied up with these same issues, reversing trends in field panels is also difficult. **Considerable additional investment continues to be made to further understand and mitigate these operational challenges.**

2.2 Performance under the current contract and action taken

Overview of performance

Meeting the 68% response rate target that has been set for the SCJS has not been achieved under the current contract. In 2016/17 our consortium achieved an overall response rate of 63.2%, and in 2017/18, 62.3%. This has led to a shortfall in the total number of interviews achieved. Against a target of 6,000, our consortium achieved 5,567 in 2016/17 and 5,476 in 2017/18 (Table 2.2).

Table 2.2: Summary comparison of fieldwork performance under the current contract

	2016/17		2017/18		2018/19 to date	
	Total	%	Total	%	Total	%
Addresses issued/worked	9,665	-	9,665	-	2,654	-
Deadwood, Issue 1	776	8%	720	7.5%	196	7.4%
Refusals, Issue 1	2,616	29.4%	2,674	29.9%	701	28.5%
Non-contact, Issue 1	1,016	11.4%	1,111	12.4%	270	11%
Interviews, Issue 1	4,852	-	4,778	-	1,367	-
Response Rate, Issue 1	-	54.6%	-	53.4%	-	55.6%
Deadwood, All Issues	857	8.9%	879	9.1%		
Refusals, All Issues	2,389	27.1%	2,442	27.8%		
Non-contact, All Issues	519	5.9%	504	5.7%		
Interviews, All Issues	5,567	-	5,476	-		
Response Rate, All Issues	-	63.2%	-	62.3%		

Main driver of non-response - refusals

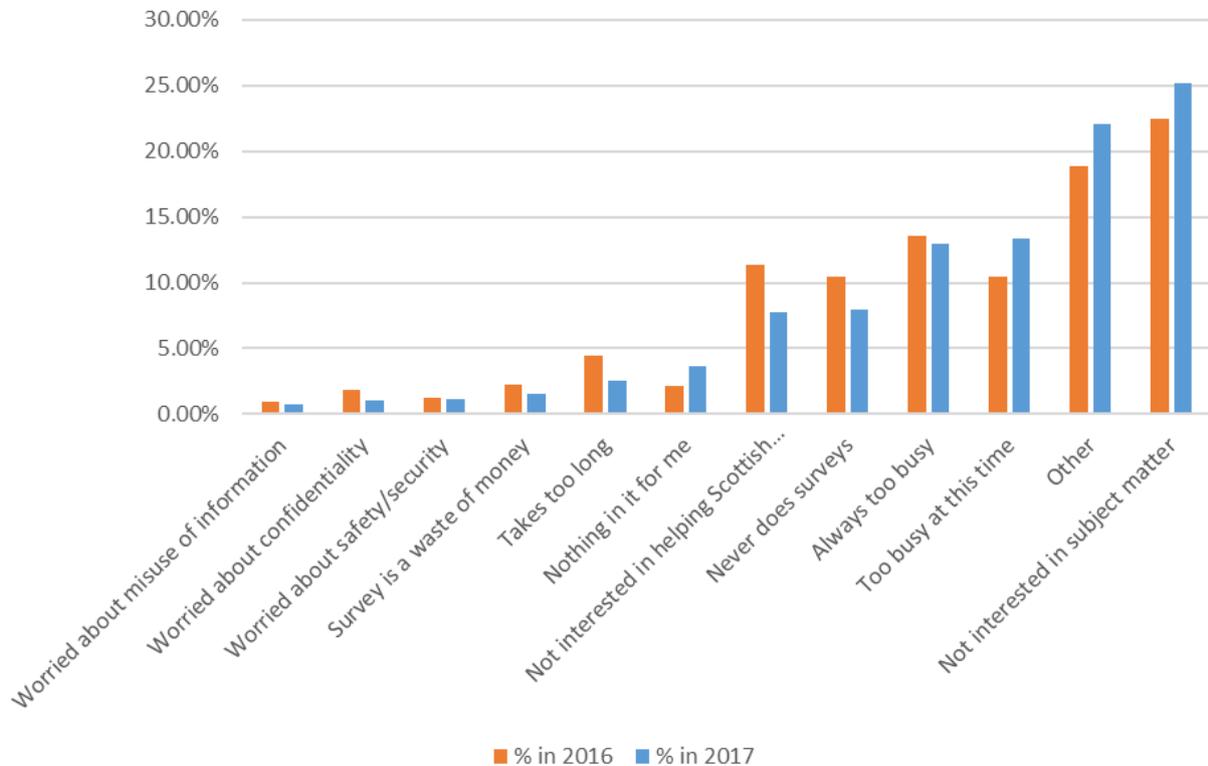
Refusal is the most common reason for non-response. The SCJS refusal rates have continued to increase, from 20% in 2011, up to 28% by the end of the 2017/18 sweep. In contrast, non-contact rates have remained broadly the same at – 4.5% in 2012/13 and 5.7% in 2017/18. This means that the challenge of increasing response rates is more about trying to persuade people to take part, rather than making repeat visits to catch people when they are at home. Advice and support on how to overcome refusals is shared regularly among SCJS interviewers¹¹.

The same drivers of rising refusal rates that have already been noted for major surveys overall also apply to the SCJS. In addition, interviewers have noted two further factors based on their experiences on the doorstep: a perceived decrease in police presence following the creation of Police Scotland, which has contributed to a view that taking part in the SCJS will make no difference (to police visibility), and a lack of trust in the criminal justice system, e.g. because it is seen as too lenient on certain types of offences.

¹¹ For example, at yearly interviewer briefings and a recent Ipsos MORI workshop allowing interviewers to share their experiences of working on the SCJS and best practice, tips and advice in terms of securing participation.

Figure 2.3 shows the reason given to interviewers by respondents for not wanting to take part in the survey. Being 'not interested in the subject matter' was the most common reason recorded in both 2016/17 and 2017/18.

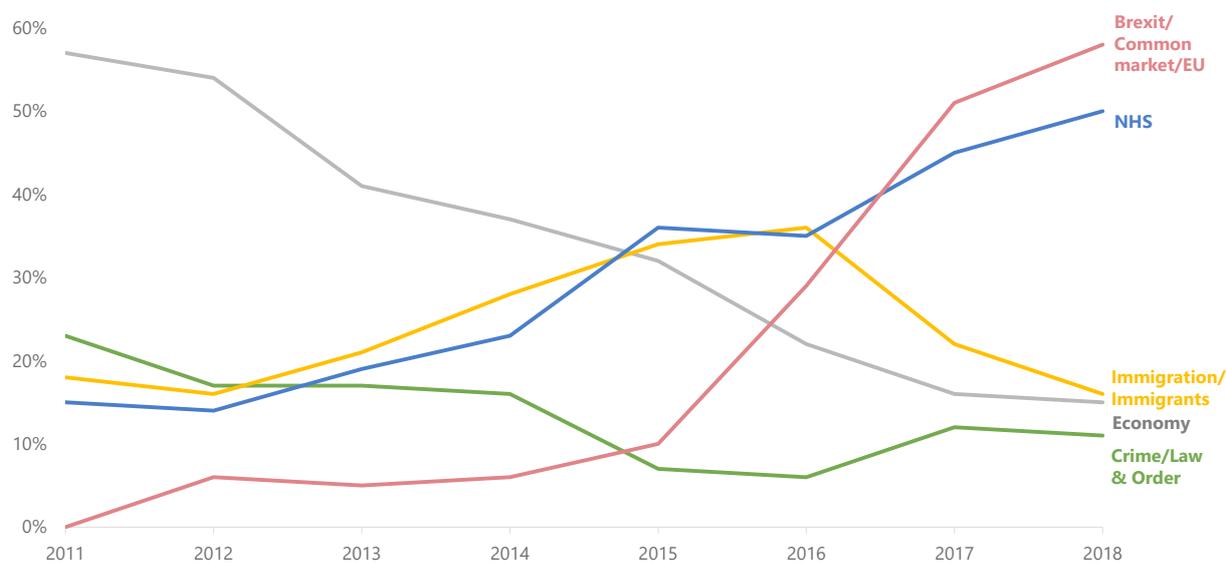
Figure 2.3: Reasons for refusals by year¹²



One hypothesis is that this fall in interest in the subject matter may relate to a decline in public concern about crime. Ipsos MORI's Issues Index data shows how public concern about different issues facing Britain has changed over time. In Scotland, the proportion of the public mentioning crime as an important issue facing the country has fallen in recent years, as shown in Figure 2.4 below.

¹² 'Other' includes reasons such as bereavements, new babies in the family, claims of having already opted out, or no reason given.

Figure 2.4: Ipsos MORI Issues Index – most/other important issues facing Britain today since 2011



Base: c1,000 adults 18+ living in Scotland, 2011 - 2018

* Chart displays the key issues mentioned by Scottish participants on the Ipsos MORI Issues Index since 2011, in comparison to crime/law and order.

Extent and efficiency of reissuing

Reissuing addresses is the main lever available to maximise response rates and a great deal of effort and resource is focused on reissuing. Most addresses that initially resulted in an unproductive outcome are reissued to be worked by another interviewer. In each of 2016/17 and 2017/18, more than 1,600 addresses were reissued. This equates to 84% of the eligible reissue sample (i.e. of all unproductive cases other than 'hard' refusals) in 2016/17 and 86% in 2017/18. This means that we are close to the limit of what we can reissue without overstepping ethical guidelines around informed consent and what is considered to be a hard refusal.

Table 2.3: Volume of reissues by year

	2016/17	2017/18
1 st reissue addresses	1,665	1,735
1 st reissue interviews	283	312
1st reissue conversion	17%	17.9%
2 nd reissue addresses	421	397
2 nd reissue interviews	59	35
2nd reissue conversion	14%	8.8%
Total reissue interviews	342	347
Overall reissue conversion	20.5%	20%
% of overall interviews achieved through reissuing	6.1%	6.3%

It should be noted that, since the SCJS sample is unclustered (unlike the CSEW), batches of reissue addresses are spread over a wider geographic area than if the initial sample had been clustered. This makes them more time-consuming for interviewers to work.

Reissued addresses are less productive than first issue addresses. Around one in five reissued addresses results in an interview being achieved¹³, around three times less productive than first issue addresses.

Interviewer panels

The Scottish Government's Long Term Survey Strategy notes that "field work performance [is] driven by capacity and interviewer skills." Maintaining a strong panel of interviewers is at the heart of fieldwork operations. Face-to-face interviewing is a difficult job, with high levels of drop-out once new interviewers experience how challenging it is, in-field, persuading people to take part in a survey. Social survey companies continuously recruit and train new interviewers and evaluate how to reduce interviewer turnover. The structure of training and the ongoing support to interviewers is crucial to maintaining an experienced and skilled fieldforce.

Interviewers chosen to work on the SCJS are mainly experienced interviewers, skilled at working on random probability type surveys. All SCJS interviewers attend day long briefing sessions, providing background on the survey, details of how the data is used, and an overview of the questionnaire, before covering in detail areas of the survey unique to the SCJS – such as the victim form and self-completion sections. They are then assigned a supervisor, who accompanies them on their first day and continues to work with them to provide ongoing support and help develop their skills.

Ipsos MORI currently have a core SCJS team of 33 interviewers, with up to 39 who can work on the survey if required, which we believe works well in terms of individual experience and utilisation rates. Since the start of the contract, 73 interviewers have worked on SCJS – an overall interviewer 'turnover' of 47%. This is in line with average turnover rates for interviewers.

ScotCen currently have a core SCJS team of 63 interviewers and feel this number is optimal for their field operations in terms of individual experience and ability to cover the sample issued. Since the start of the contract, 112 interviewers have worked on SCJS – an overall interviewer 'turnover' of 56%. This reflects the organisation's average interviewer turnover rates.

There is variation in performance within both organisations' interviewer panels, as is the case for all social survey companies. Both organisations' field teams continually monitor the performance of SCJS interviewers, in order to:

- identify top and middling performers and tailor challenges and support to them accordingly;
- provide additional support and mentoring to interviewers whose performance is lower, to help them improve wherever possible;
- remove poorer-performing interviewers where despite support we have not seen improvement in their performance.

Over the past two years, close performance monitoring has allowed us to identify and take actions to help maintain, support and motivate our interviewers (outlined in Table 2.4 overleaf).

¹³ These reissue conversion rates are comparable to the SHS (18% in 2016 and 20% in 2017).

Actions taken to date to help increase survey response

Since the start of the contract, our consortium has taken a number of actions aimed at increasing survey response by improving fieldwork performance (Table 2.4). Linking these back to the major factors that affect survey response (Figure 2.1 above), these actions have been related both to maximising fieldwork efficiency (volumes and allocation, management and reissues) and to interviewers (training, management and motivation). These are aspects of the survey within our control. However, we are limited in what we can do to influence householder refusals, which as already noted earlier in this paper represent the main driver affecting response rates on the SCJS.

Table 2.4: Summary of actions taken to date

Action	When
<i>Fieldwork-related actions</i>	
Changes to sample assignments – releasing sample points earlier from within each quarter to make use of the most prolific interviewers more efficiently.	2016/17 onwards
Use of mobile interviewers from England and Wales to help during particularly busy periods – e.g. reissuing at the end of the survey year.	2016/17 onwards
Improved support to Field Performance Managers (ScotCen) – training sessions to improve performance data analysis and interviewer supervision.	2017/18 onwards
Reissuing allocations – change from an 8-week period to a 6-week period to reduce the need for a fieldwork extension (ScotCen).	2018/19
Improved batching process to ensure addresses are batched as efficiently as possible to reduce interviewer travel time.	2018/19
<i>Interviewer-related actions</i>	
Enhanced recruitment and training processes, to increase and improve the quality of interviewer panels. Targeted recruitment to areas where panel is more thinly spread.	2016/17 onwards
Interviewer briefings/workshops - at the start of each fieldwork year all interviewers are briefed on the new survey, either by phone or in-person. These outline changes to the survey, along with sharing advice on how to secure participation/overcome refusals.	2016/17 onwards
Quarterly interviewer tele-conferences to share good practice and advice on carrying out the survey (ScotCen).	2016/17 onwards
Interviewer feedback workshop (Ipsos MORI) - a bespoke SCJS workshop with interviewers, to gather feedback on the challenges faced working on the survey and to share best practice in terms of planning, call patterns, overcoming refusals etc. – the findings from the workshop were shared among all interviewers.	2017/18
Improved interviewer support – including training SCJS interviewer mentors to support new and established interviewers, and employing new recruitment and training managers.	2017/18 onwards
Improved interviewer pay and bonus structures.	2017/18 onwards
Increased number of contract interviewers to work on non-RPS surveys, allowing RPS interviewers to maximise time on SCJS (Ipsos MORI).	2017/18 onwards

This suite of actions is consistent with the Scottish Government's Improvement Framework, which sets out six questions to be asked of every change programme to test whether the right conditions exist to support true improvement. It is based on our consortium's identification of what changes could potentially be made to improve survey response, based on our methodological knowledge, experience of other large-scale surveys and full knowledge of the SCJS (Question 2, Correct changes - Are we using our full knowledge to identify the right changes and prioritising those that are likely to have the biggest impact on our aim?) It is also based on a clear understanding of the change method being used (Question 3, Clear change method); as the Improvement Framework notes, improvement often requires a combination of approaches when working to address system level challenges.

Many of these actions have been taken in parallel, and in our consortium's experience take time to bed in and for impacts to be seen. This complex picture makes it very difficult to assess the level of impact that each individual measure has had. Moreover, it is challenging to unpick the impact of internal and external factors on achieved response rate, particularly given that each of the actions individually is likely to have a marginal effect. We have nonetheless taken the view that it is important to do as much as possible to help increase survey response. It is worth noting that with all the actions taken above, the achieved response rate was 63% in 2016/17 and 62% in 2017/18; we might well expect the outcomes to have been worse in the absence of the actions summarised above.

Questions for consideration in advance of the workshop

Which of the major factors affecting response (Figure 2.2) appear to be having the most effect? Which represent the biggest risk into the future?

Other than the actions taken to date (Table 2.4), what else can be done to address survey non-response?

What more, if anything, can be done to further support interviews and build up the SCJS fieldforce?

2.3 Relevant literature on survey quality, survey design and response rates

While the design of the three main surveys in Scotland has remained relatively stable, the literature around survey quality has developed and evolved. In particular, there has been a considerable body of work around response rates and their relationship with non-response bias, and the Total Survey Error framework has seen considerable development. The rest of the chapter summarises these in turn.

Response rates and non-response bias

Traditionally, response rates have been used as a key proxy measure of survey quality – with a high response rate indicating good quality. (The often quoted Babbie response rate rule suggests that '50% is adequate', 60% is 'good' and 70% is 'very good'.)¹⁴ However, response rates are not a good measure of survey error or bias and their use as such (although widespread) is problematic.

¹⁴ Babbie, E. (1992).

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 2016¹⁵). It suggests that instead of focusing on the basic response rate metric, the focus of investigation should instead be on the potential reasons for non-response and how different groups and estimates may be impacted by these.

Academic 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). There are two key academic meta-analysis studies:

- Groves and Peycheva (2008)¹⁶ 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. An example would be young men, living on their own, and whether they play sport. These type of households tend to be underrepresented in household surveys. Weighting can help account for this, but only if those who are interviewed are similar to those who are not. If, for example, not enough fieldwork effort is made and those who are out playing sport several time a week are not contacted, it could be assumed that bias would remain after weighting. 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, 2013¹⁷; Foster, 1998¹⁸; Lynn and Clark, 2002¹⁹; Hall et al, 2011²⁰). This is mainly because these types of people are harder to contact.
- 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".**

However, relative non-response bias studies have suggested 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)²¹ 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.

As well as these major meta-analysis studies, there are four particularly relevant individual studies that are worth mentioning:

¹⁵ D'Souza, J, Smith, P, and Pickering, K, Gallop, K. and Thompson, A. (2017).

¹⁶ Groves, Robert M., and Peytcheva, E. (2008).

¹⁷ Luiten, A. (2013).

¹⁸ Foster, K. (1998).

¹⁹ Lynn, P, and Clarke, P. (2002).

²⁰ Hall, J., Brown, V., Nicolaas, G., and Lynn, P. (2013).

²¹ D'Souza, J, Smith, P, and Pickering, K, Gallop, K. and Thompson, A. (2017).

- There has been one study of Absolute Non-Response carried out on a major Scottish survey. This was carried out by ONS on the SHS in 2004 as part of their Census-Linked Response²². It linked records from the 2001 Census to unproductive cases in the SHS. It found that non-contacted households were more likely to be single adults, private renters, living in flats, and young. Non-cooperating households (those who had refused) were more likely to be older, widowed, not academically qualified and retired. It concluded that “household characteristics that were significantly associated with total non-response were also related to a number of key SHS measures. This indicates that **“non-response bias may also affect key SHS estimates and it may be desirable to re-weight the data to adjust for these effects”**.”
- Two studies examining Relative Non-Response in the SHS have been undertaken as Q-step²³ summer placement projects, with input from both Ipsos MORI and the Scottish Government. These were based on the 2014²⁴ and 2016²⁵ waves of the SHS. They have looked at the impact of reissues by comparing published estimates to those that would have been produced had there been no reissuing or if only particular first issue outcomes had been reissued. They found that, after weighting, only a very small number of measures were changed by reissuing and that the scale of the change was generally small. They have concluded that reissuing has minimal impact on reducing relative non-response bias in the Scottish Household Survey. While they found that there are differences between households and people who respond at the first issue and at the reissue stage, these differences do not make a substantial impact on the results of the survey. The most recent study questioned the benefit of reissuing refusals. It found that **“If we had not reissued any of the 3,500+ first issue refusals and only reissued the first issue non-contacts, the response rate would have been 57% rather than 64%. But there would have been no significant difference in any of the 174 estimates we examined.”**
- In 2015, ONS undertook analysis of the impact of a lower response rate on the Crime Survey of England and Wales²⁶. 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.”**
- The technical reports for SCJS 2014/15²⁷ and 2016/17²⁸ 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, estimating the impact of a response rate deficit of 8.6pp. The 16/17 report found that the AAD on survey estimates between final sample and first issue sample was 0.14pp and that no single variable had an AAD of >0.4pp concluding that a lower response rate **“has a relatively marginal impact on key survey estimates”**.

²² Freeth, S, and Sparks, J. (2004).

²³ [Q-Step](#) is a programme designed to promote a step-change in quantitative social science education and training in the UK.

²⁴ Scullin, S. & Martin, C. (unpublished) – see bibliography for more information.

²⁵ Millar, C. (unpublished) – see bibliography for more information.

²⁶ Williams, J & Holcekova. (2015).

²⁷ Scottish Government. (2017). *Scottish Crime and Justice Survey 2014/2015: Technical Report*.

²⁸ Scottish Government. (2018). *Scottish Crime and Justice Survey 2016/2017: Technical Report*.

Given this evidence, it is likely that the scale of non-response bias on the SCJS estimates is small although further research would be needed to confirm this and examine any difference in scale of impact across different types of estimate. We present further details of the shape of such research at the end of Chapter 3.

An approach to assessing the benefits and risks of lowering the response rate target would be to compare the scale of any increase in the risk of non-response bias against the likely decrease in precision of estimates from failing to achieve the target number of interviews. Failure to achieve the target number of interviews will increase the confidence intervals (and decrease the precision) around sub-group estimates more than national estimates, in absolute terms, because these estimates are based on smaller sample sizes. Further discussion of this is presented in Chapter 3, Option 2.

A number of approaches to reducing the impact of non-response bias have been developed. (These are all predicated on there being evidence of significant bias²⁹.) These include:

- The PEDAKSI (Pre-Emptive Doorstep Administration of Key Survey Items) method, detailed by Lynn (2002). This involves attempting to get non-respondents who have been reached to answer a few key survey items. The aim is to compare survey estimates from non-respondents to those with respondents. PEDAKSI can be useful in helping to derive a non-response weighting strategy for the survey and also for comparison with non-response bias observed on other surveys. This method relies on the assumption that those non-respondents who answer these key items are representative of all non-respondents and that they will give accurate responses.
- Using para-data to target reissues that are most likely to minimise non-response bias. This is similar to the PEDAKSI method but instead of using the para-data to model the effect of non-response, the para-data is used to determine which addresses would be reissued. This method relies on reissuing only a proportion of the unsuccessful addresses. The para-data could be key survey items that are asked of by interviewers to non-responders, other information about households that are collected by interviewers (dwelling type, views on the neighbourhood) or address level information such as SIMD quintile or OAC classification.

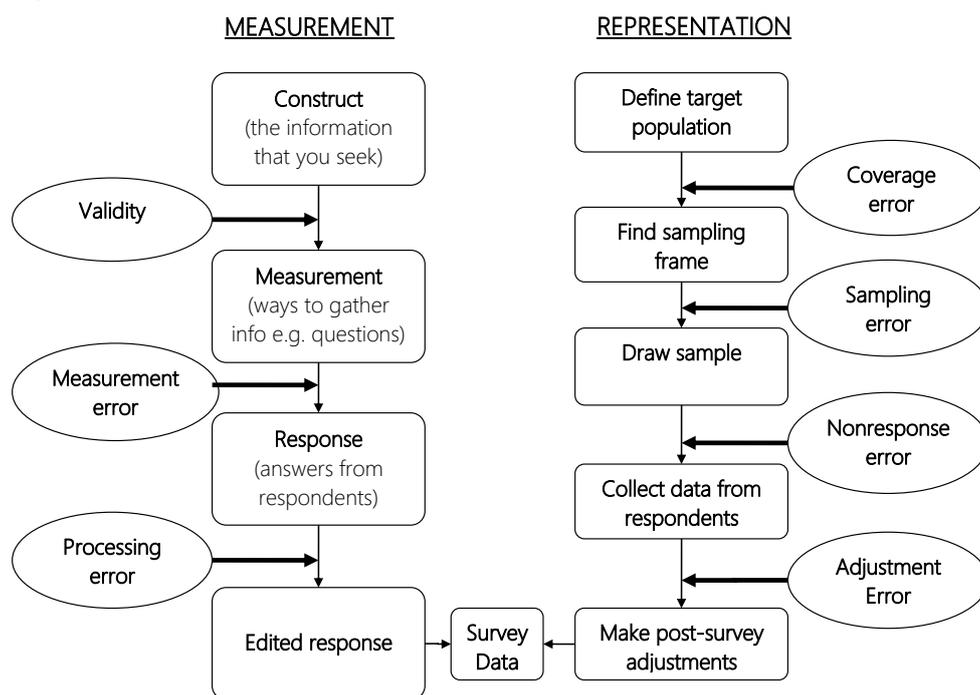
Total Survey Error Framework

The Total Survey Error (TSE) Framework is now the generally accepted approach for assessing survey quality used by respected survey methodologists³⁰. It focuses not only on the effects of sampling error and non-response bias, but also on areas such as the validity of questions and on minimising measurement error (errors in the responses that respondents give to questions). The TSE approach methodically identifies all possible errors which can arise at each stage of the survey process. In so doing the survey process is divided into two main strands: a representation strand and a measurement strand. The relationship between survey process and error type is shown in Figure 2.4.

²⁹ Fallows, A. (2017).

³⁰ Biemer, P.B., de Leeuw, E., Eckman, S., Edwards, B., Kreuter, F., Lyberg, L.E., Tucker, N.C., & West, B.T. (2017).

Figure 2.4: The lifecycle of a survey from a quality perspective³¹



There has been a tendency for some sources of error to be overlooked more than other types. (This is illustrated in the extracts from various SCJS technical reports given in the appendix that show how commentary on survey error has developed over time). The less quantifiable the type of error, the more likely it is to be overlooked. This has been described as "the tyranny of the easily measurable"³².

This can lead to an over-emphasis on errors around representation in Figure 1, and in particular sampling error and non-response error, at the expense of the consideration of validity and measurement error. If all sources of error are not recognized, measures of margin of error can be understated (and based only on sampling error). It also means that any efforts to improve the quality of survey estimates may only be focused on a limited range of types of error.

Total Survey Error is, however, unlikely to provide a single metric of survey quality that would be understood by an educated, but not necessary technically informed, stakeholder. It is unlikely to provide an answer to the question, posed at the end of the SRA Scotland event on the Future of Random Probability Surveys in 2017³³, "If response rate is not a good indicator of survey quality, what is?"³⁴

One of the main challenges is that a number of components of TSE are not straightforward to measure. For example, estimating the likely level of bias on victimisation rate estimates from measurement and classification error – how people answer the questions and how their responses are coded – is difficult to quantify.³⁵

³¹Reproduced from Groves et al (2004).

³² By Groves, one of the authors of the Total Survey Error framework.

³³ <http://the-sra.org.uk/events/archive>

³⁴ While there are a number of indicators of fieldwork effort – number of reissues undertaken, number of visits to households, proportion of unproductive outcomes that are non-contact rather than refusals – there is no consensus as yet on alternative indicators of overall survey quality.

³⁵ An attempt at estimating the scale of reporting errors in crime victimisation surveys is given in Berzofsky and Biemer (2017) Classification Error in Crime Victimization Surveys: A Markov Latent Class Analysis. In *ibid*.

Response rates have perhaps been used so extensively as a quality indicator as they are the simplest metric for fieldwork quality that is widely accessible. (One simple change would be to separate this into fieldwork effort and fieldwork quality - a better indicator of fieldwork quality would be the first issue response rate. A better indicator of fieldwork effort would be the number of attempted contacts and the amount of unproductive sample reissued and fully worked.)

Even so, using the TSE framework to focus discussions on quality implicitly raises questions about the level of resource put into minimizing each component of error and provides a systematic basis for structuring any regular review of survey quality. There is precedent of a government statistical office, Statistics Sweden, using the TSE framework to conduct a quality review and improvement system for many important statistical products³⁶. It suggests an approach where the most important risks to accuracy are identified and then each type of risk is assessed, including:

- Whether documentation exists that acknowledges this error source.
- Whether any evaluation of the effects of the error source on key estimates has been carried out.
- Whether product staff, or those areas servicing the product, include at least one person who is quite knowledgeable about methods for controlling or reducing the effects of the error source.
- Whether quality improvement strategies that have been implemented have been successful at minimising the risk to data quality from this error source.

In conclusion, response rates are not unimportant. The target response rate is a key part of the SCJS contract and we recognise that it will still be seen as a key metric for quality. As well as mitigating the risk of non-response bias (in theory at least), a high response rate imparts authority and credibility to the research, and a single number metric has the appeal of being widely accessible.

However, discussion of survey quality should be wider and more nuanced than considering the response rate alone, and decisions about survey design should be based on consideration of all forms of survey error. It means that that the question, "What is an acceptable response rate?" has no simple answer and may not be the best, or only, question to guide discussions of quality and public value.

Questions for consideration by the workshop

What are the largest risks to the accuracy of the SCJS estimates?

Should the TSE framework be used as a framework for considering survey quality? If so, how would this work in practice? What might we expect to do differently or change on the SCJS if we adopted the TSE framework?

How important a part of the TSE framework are response rates?

Should we conduct a non-response study of past SCJS data? If so, what should we be looking to assess and understand, and how should it be conducted?

³⁶ The system is called ASPIRE (A System for Product Improvement, Review and Evaluation) and was developed with Paul Biemer (RTI) and Dennis Trewin (Former Australian Statistician). For further information, see Biemer, P.B., Trewin, D. Bergdhal, H. & Xie, Y. (2017).

Are first issue response rate, attempted contacts and the number of reissued addresses better measures of survey quality than final response rate?

3. Looking forward: options to consider

This section outlines a number of potential options for changes to the design or the delivery of the SCJS. There are a number of the elements of the design of the SCJS that we have agreed are out of scope for this workshop. These include: the length of the interview, the mode, the basic (unclustered) sample design, questionnaire coverage, and definition of the target population. Most of the options focus on achieving the required number of interviews, and most could be undertaken in parallel. We have tried to highlight where one would impact on another.

The purpose of the workshop is not to agree which options to pursue. Rather, it is to consider which merit further exploration, which should be simply discounted, and whether there are other options that we have missed. It is also to discuss what further evidence and experimentation would be helpful in the development and evaluation of the options worth pursuing.

Option 1: No change

Option 1	No change
Background information	This option is based on the continuation of the current approach, using the existing SCJS methodology.
Potential change	This option would maintain the current design and targets. The current fieldwork methodology has now been used on two full survey sweeps (2016/17 and 2017/18) and is also currently being used for sweep three of this contract (2018/19).
Likely impact on cost, survey quality and public value.	<p>Cost: This is the current contracted approach. There would be no additional financial cost to Scottish Government from continuing with this option.</p> <p>Survey quality: Fieldwork outcomes in 16/17, 17/18 and so far for 18/19 suggest that with no change response rates would at best be maintained at the levels seen in recent years or decline further. Analysis carried out for the 16/17 SCJS technical report found that a significant drop in response rate (63.2% compared with 54.6%, - 8.6pp) had a relatively marginal impact on two survey quality metrics. These were a) the average absolute difference in response estimates for 22 key 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, and b) confidence intervals. This suggests that no change would have very little impact on the quality of the survey estimates.</p> <p>Public value: With no change the target response rate would stay at 68%. For reasons discussed elsewhere, there is no expectation that the achieved response will return to that level, instead remaining at levels seen in the previous two sweeps. As such, the perception that public value is not being achieved will remain as the survey is highly likely to continue to under-deliver against the target, despite the considerable fieldwork efforts being made to achieve as many interviews as possible.</p>
How to evaluate/measure of success.	Maintaining the current approach would mean measuring success against the current targets of 6000 interviews and 68% response rate as well as against previous years' performance. We can also use data/survey quality as a measure of success. Maintaining the current low levels of non-response bias and the high level of self-completion conversion and respondent administered self-completion would ensure maximisation of data quality, and hence would be a mark of success for the survey.

Potential risks	<ul style="list-style-type: none"> Continuing under-delivery in fieldwork performance metrics. Loss of motivation and enthusiasm among contractor teams from pursuit of targets perceived to be unrealistic, which risks impacting on fieldwork attainment. The additional contractor efforts required to monitor, discuss and address the fieldwork shortfall may make the project financially unviable. Financial penalties invoked due to missing fieldwork targets may also make the project increasingly financially unviable for contractors.
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Option 2: Revision of response rate targets

Option	Revising the SCJS response rate target – decreasing the response rate target and increasing the overall number of completed surveys.
Background information	Chapter 2 provides background information on trends in response rates, measures we have taken to maximise the response rate including reissuing and the literature around non-response bias.
Potential change	Reduce the response rate target in the sampling assumptions to a level where the risk of failing to achieve the required number of interviews is low. We would suggest that this equates to setting a response rate target of around 63%. This would mean increasing the initial sample of addresses from around 9,700 to around 10,400. Addresses would be added to existing sample points, rather than further sample points being added.
Likely impact on cost, survey quality and public value.	<p>The cost of working the additional addresses could be covered within the existing survey contract, based on the assumptions above.</p> <p>The impact on survey quality is likely to be positive. It would be equal to the improvement in precision from an increased number of achieved surveys minus any increase in non-response bias resulting from a lowered response rate.</p> <p>The impact on public value is therefore likely to be positive.</p> <p>This is likely to be similar across all types of estimate (national estimates, estimates for sub-groups, comparisons across time, and repeat and multiple victimisation). Further research that covers variables in addition to the 22 already included in the analysis for 2016/17 technical report would help to confirm differing impacts across different types of estimate. The absolute effect of both types of factors - non-response bias and variation related to sample sizes – is likely to be larger for estimates based on smaller sample sizes. This may mean that the impact is more positive on sub-group estimates than national estimates.</p>
How to evaluate/measure of success.	<p>Evaluation of the overall impact involves examining the trade-off between increased precision and increased non-response bias.</p> <p>The impact on precision on the various forms of estimate would be simple to calculate and would be driven by the number of interviews achieved.</p>

	<p>Measuring the impact of any non-response bias would be less straightforward, but possible. Analysis similar to the SHS studies and the CSEW study on relative non-response could be undertaken to assess the likely impact of reducing the response rate target. Secondly, the difference between the unweighted profile and the population profile on selected variables (such as age band) could be compared before and after any change to see if the sample has become less representative on these variables.</p>
Potential risks	<p>Setting the response rate target too low risks introducing non-response bias. Setting the response rate too high risks decreasing precision through failure to achieve the target number of interviews. The optimal strategy involves balancing these risks.</p> <p>Rather than adding risk, we posit that this change would improve the risk profile of the SCJS.</p> <p>However, we do note that the literature on non-response bias gives somewhat mixed messages. While the literature suggests that the effect of reductions in response rates are unlikely to be perceptible on estimates, the literature on absolute non-response bias suggests that, while response rates are a bad predictor of non-response bias, some estimates are prone to considerable non-response bias (although good weighting strategies can mitigate much of this). One concern would be that a long-term, slow continuous drop in response rate assumptions may lead to the introduction of biases that are imperceptible year on year but that amount to something substantial over time.</p>
Anything else	<p>We are not convinced of the case for introducing additional response rate targets for particular groups. (These groups would have to be defined by geographical factors.) We do not believe that there is strong evidence that this would reduce non-response bias. Additionally, given that we are at the limit of what can be reissued, if such targets were introduced, unless the overall response rate was reduced, it may lead to a further shortfall in achieved interviews.</p> <p>We do think that it may be worth reviewing how response rate and deadwood assumptions are set in the sampling. (This is discussed further in the final section of this chapter).</p>

Option 3: Introduction of a targeted reissuing strategy

Option	<p>Targeted reissuing strategy (reissuing addresses depending on whether they are most likely to impact on non-response bias)</p>
Background information	<p>Underpinning the utility of reissuing is the assumption that the profile of those who respond at any reissue stage is different from those who respond at first issue. The potential impact of reissuing is driven by two factors. Firstly, by the proportion of total cases that are made up from reissuing (in 2017/18, 13% of interviews were achieved at reissue, increasing the final response rate from 54% to 62%). Secondly, by how different the profile of people who are interviewed at reissue stage are from those who respond at first issue.</p> <p>Currently, almost all non-responding first issue addresses are reissued (at least once) in the SCJS. This option would involve only reissuing a proportion of addresses, with addresses selected based on the likelihood that a reissue interview would reduce non-response bias.</p>

	<p>This option would require accepting a lower overall target response rate. It is based on the assumption that the impact of a smaller but targeted reissuing strategy is at least as good as minimising non-response bias as the more extensive but less efficient 'reissue all' strategy.</p> <p>It is worth noting that Ipsos MORI and ScotCen's tender for the SCJS 2016/17 to 2019/20 included a proposal to focus re-issued fieldwork to target respondents who would make the sample more representative. In practice, the shortfall in interview numbers meant that we reissued the vast majority of eligible sample, rather than following a targeted reissuing strategy.</p>
Potential change	<p>This strategy would involve the following steps.</p> <ul style="list-style-type: none"> • Decide on the key survey variable(s) to structure the strategy around. (Non-response differs across different survey estimates). • Review literature/ conduct initial analysis of these variables to understand what factors relate to the likelihood of responding and to the key survey variables. • Potentially, develop observationa / basic question supplementary measures which correlate with the key survey variables that could be collected by interviews at the first issue stage. • Conduct analysis to determine the relationship between variables that might be prone to non-response bias and supplementary variables that could be used to model whether basing a reissuing strategy on these variables would help reduce bias. This analysis would then inform the design of the reissue strategy. <p>The supplementary variables used to determine what addresses might yield the most useful interviews in terms of reducing non-response bias would, by definition, need to exist before an interview is carried out. This would include information that could be attached to the address³⁷ and para-data that are collected by interviewers at first issue. Interviewer collected para-data may include information about the dwelling (household or flat, whether has a door-entry system etc.), about the neighbourhood or about the occupants (estimated age & gender) Additionally, it could be some key survey question that interviewers attempt to ask people who refuse to participate at first issue³⁸.</p>
Likely impact on cost, survey quality and public value.	<p>This option is likely to lead to a cost saving associated with fieldwork costs, with a higher proportion of interviews achieved being first issue interviews than reissue interviews. First issue interviews are more economic than reissue interviews. (This would be slightly offset by an increased cost per interview for reissues as reissues may be less clustered overall and potentially prove less productive).</p>

³⁷ Such as deprivation level, OAC classification, rurality etc.

³⁸ In the SHS, we are currently running a trial asking people who do not wish to take part at first issue to answer a single question (satisfaction with local services) to examine the potential of using this as a potential factor. However, we have found a very low proportion of people willing to answer, only 28% of non-co-operators, and is unlikely to be of any use modelling non-response bias. Note also, that this questions is only asked where interviewers make contact with a householder. This is only a proportion of non-productive cases at first issue.

	<p>If an explanatory model could be developed to drive the reissuing strategy, we would expect that such a strategy would have no greater level of non-response bias³⁹ than a 'reissue all' strategy.</p> <p>This means that overall, this option may maintain survey quality at a reduced cost, and therefore increase public value.</p>
How to evaluate/measure of success.	<p>As option 2, at the heart of this would be to assess likely change to non-response bias, plus consideration of any reduction in fieldwork costs.</p> <p>Given that previous research on relative non-response bias suggests that the role of reissues is small, it is likely that the impact of any targeted reissues will also be small (although likely to be correlated to levels of non-response bias).</p>
Potential risks	<p>Using a targeted reissuing strategy requires a lower overall response rate than the current 'reissue all' approach. If the strategy was unsuccessful, it is possible that it would increase rather than decrease non-response bias. Given that response rates are used (inaccurately) as a proxy for survey quality, there is also a risk that perceptions of the quality of the SCJS would be affected. We consider both to be low risk.</p>
Anything else	<p>Another method which tries to overcome the non-response bias in random sampling is called PEDAKSI (Pre-Emptive Doorstep Administration of Key Survey Items), touched upon in Chapter 2. This is detailed in Lynn (2002). It is similar in nature to a targeted reissuing strategy, but focuses on calibrating the result post-fieldwork rather than driving the design of the fieldwork approach.</p> <p>It does, however, involve attempting to get non-respondents, who have been reached, to respond to a small number of key survey items. We are unsure whether a large enough proportion of non-respondents would proffer an answer to be usefully used. Any non-response adjustment adds variability to the weights and will increase survey variability, so adding such an adjustment must be made on solid evidence that it will increase the precision of estimates overall⁴⁰.</p>

Option 4: Moving to a biennial sampling approach

Option 4	Biennial Sampling Approach
Background information	<p>This amend to the sample design follows a similar approach on the SHES, and would allow for more efficient batching of addresses in the field and thus an increase in fieldwork efficiency (less travel time between addresses in a point). This could have a positive impact on interviewer strike rate, as they could spend more time trying to make contact with respondents and securing interviews.</p>

³⁹ We are confident that it could be. The recent work on the SHS, Miillar, C, (forthcoming/2018) suggested that a reissue non-contacts but not refusals would have had no discernible impact on the precision of any estimates. While non-response bias differs by survey and within surveys, we see no barrier for developing such a model.

⁴⁰ Fallows, A (2017).

Potential change	Instead of an annual sample being drawn, the sample could be drawn for two years of the survey at once. The sample would then be batched and assigned to either Year X or Y of the survey. This would be done in such a manner that the spread of the sample across each survey year is very similar, allowing the continuation of annual reporting. Communicating this change to interviewers could help with increasing motivation.
Likely impact on cost, survey quality and public value.	Cost: neutral: any efficiency would be put into securing additional interviews. Survey quality: the design effect would increase slightly because of this change, and could be estimated if this were considered an option. Public value: little or no change.
How to evaluate/measure of success.	Monitoring of interviewer travel time compared to previous sweeps. Strike rate Interviewer feedback for satisfaction
Potential risks	<ul style="list-style-type: none"> • Increase in design effect as a result.
Anything else	Further options for amending the sample design could include: <ul style="list-style-type: none"> • Over-sampling high crime areas could increase the utility of the data, by increasing the number of low-prevalence crimes available for analysis. • Moving to a clustered sample design in rural areas (as has been done in the past) would increase fieldwork efficiency. • Introducing a longitudinal element to the sample design would allow a more detailed exploration of repeat victimisation over time.

Option 5: Introducing respondent incentives

Option 5	Introducing respondent incentives (to increase response rate and reduce non-response bias)
Background information	<p>The research evidence on the impact of incentives on response rates is consistent:</p> <ul style="list-style-type: none"> • Incentives increase response rates by reducing refusals; • Response rates tend to increase with the value of the incentive, though not necessarily linearly; • Cash incentives have the greatest impact on response; if you can't use cash, 'cash-like' incentives such as vouchers have greater impact than the alternatives (and many favoured incentive types such as lotteries, gifts and charity donations are generally largely ineffectual); • For a fixed sum incentive, advance (unconditional) incentives are more effective than incentives that are conditional on participation. However, the value-for-money picture is less clear because for a fixed budget one can offer larger monetary amounts with conditional than with unconditional incentives. <p>At first issue, incentives could either be targeted:</p> <p>(a) by interviewer discretion, where interviewers get discretionary incentives to use with reluctant households; or</p>

	<p>(b) based on data modelling of Year 1-3 of the current contract data to identify which households are less likely to respond and issue them with an incentive (the value of which could potentially be increased in line with the risk of non-response).</p> <p>Targeted incentives at first issue will encourage reluctant households to take part earlier on, thus reducing the total number of calls being made to these households (including calls that would otherwise have been made at reissue). Depending on how effective the targeting is, the reissued sample will contain fewer cases with a higher proportion of hard-to-get and hard-to-persuade households, resulting in a lower conversion rate and increased cost per productive at reissue.</p> <p>In addition to interviewer discretion and modelling of Year 1-3 data, targeting at reissue could utilise information collected at first issue such as:</p> <p>(c) the outcome of first issue (e.g. all refusals); and</p> <p>(d) interviewer observations and comments.</p> <p>The advantage of using targeted incentives at reissue is that more information will be available to improve the effectiveness of targeting, thus increasing the potential for reducing non-response bias.</p> <p>The design of a cost-effective strategy for targeted incentives on the SCJS would take considerable further investigation before developing a firm proposal. We would therefore like to discuss it more with you when we meet.</p>
Potential change	<p>The likely impact in practice of using an incentive on the SCJS is difficult to pin down, since most surveys that have carried out experiments have started from a lower base response rate. Moreover, it is difficult to find recent published evidence that informs this. Most of the relevant published evidence is ten years or older (e.g. British Social Attitudes 2006, Community Life Survey 2008). More recent incentive experiments tend to focus on web surveys and push-to-web surveys which are very different in nature.</p> <p>We would therefore recommend that an experiment would need to be carried out to test the impact of a selected incentive on the SCJS. We would also note that it is unlikely that use of an incentive would result in the five to six percentage point increase that would be required to move the response rate from the levels seen in the two most recent SCJS fieldwork years to the 68% target.</p>
Likely impact on cost, survey quality and public value.	<p>Cost:</p> <ul style="list-style-type: none"> • Very few published studies have examined the cost-effectiveness of incentives. Those that have done so generally find that they reduce other costs, though not necessarily totally offsetting the cost of the incentives. • The actual cost will depend on the type and chosen method of administering incentives on SCJS. <p>Survey quality:</p> <ul style="list-style-type: none"> • The use of targeted incentives can be an effective method for recruiting under-represented groups, such as those on low incomes, with low education, single parents, and ethnic minority groups. Improving the sample composition will reduce the risk of non-response bias.

	<p>Public value:</p> <ul style="list-style-type: none"> • A high response rate may help to increase public confidence in the survey results. • Targeted incentives can reduce the risk of non-response bias by drawing into the sample those population groups that are normally under-represented, thus increasing the usefulness of the data. • Targeting of incentives will ensure that taxpayers' money is directed where it is most needed. The majority of those who take part in surveys will do so without being offered an incentive so providing an incentive to all could be regarded as wasting taxpayers' money.
How to evaluate/measure of success.	A targeted incentive strategy would require modelling and an experiment before use on the SCJS.
Potential risks	<ul style="list-style-type: none"> • Incentives may have the unintended consequence of reducing response quality (e.g. more item non-response) by persuading reluctant sample members to respond who are less willing to provide full and accurate answers. However, studies that have evaluated the effect of incentives on quality of response in cross-sectional surveys have found no such effects. • In the longer term, the use of incentives may increase the public's expectation of an incentive when being invited to take part in a survey. The few studies that have explored this have found no effect but these studies have looked at change over relatively short periods with panel respondents. Nonetheless, this risk is less likely to occur when using targeted incentives compared to blanket incentives. • Similarly, there is a risk that the use of incentives could change interviewer expectations, increasing their reliance on incentives to gain cooperation. Again, this risk is less likely to occur when using targeted incentives compared to blanket incentives. • Incentives could be viewed as improper use of taxpayers' money which could damage the reputation of the Scottish Government. However, incentives are being used on another survey funded by the Scottish Government without detrimental effect (Growing Up in Scotland). • The public may perceive the use of targeted incentives as being unfair. However, as discussed above, targeted incentives can be used to draw into the sample deprived and vulnerable groups that are typically under-represented in surveys. Including these groups will improve the usefulness of the data, including the value of the data provided by those who readily took part without incentives.

Questions for the workshop

Is there a set of consistent criteria we can use to assess each of these options against - e.g. impact on cost, impact on public value, impact on survey quality/precision (including on the four key types of survey estimate noted on p2/3 of this paper), maintaining time series, sustainability/certainty of delivery, anything else?

Which of these options should be taken forward for further exploration? And which should be discounted?

What further evidence and experimentation would help in their development and evaluation?

What can be done to assess a) whether the impacts of each option on quality will be positive? b) the relative levels of savings/additional cost involved for each?

What do we know about targeted reissuing from other Scottish and/or UK surveys?

Other areas for wider consideration

Additional research. There are several additional pieces of research that could be undertaken to examine the impact of non-response bias in the SCJS. Such research may be useful to further understand the level of non-response bias in the SCJS specifically in order to assess the likely public value of measures to reduce it and to provide stakeholders with a fuller assessment of the survey quality.

- Non-response bias differs by survey and within survey for different estimates. **Research similar to the recent relative non-response studies carried out on the SHS and the CSEW examining the impact of different reissuing strategies on reducing non-response bias could be undertaken on the key estimates in the SCJS⁴¹.** It would examine whether reissuing unproductive cases in the SCJS affects the estimates and whether we can predict what types of unproductive first issue addresses are most likely to reduce non-response bias. This could include analysis of the impact on national estimates for different types of crime, repeat and multiple victimisation, and sub-population estimates of these.
- **This analysis could be extended by repeating this analysis over a number of different years.** This would give indication of the impact of relative non-response on estimates of change over time. It may also give an indication of whether the impact of non-response after weighting differs across a range of different final response rates achieved: whether the impact of reissuing differs by the final response rate – at least between the 67.7% response rate achieved in 2012-2013 and the 63.2% response rate in 2016-2017.
- **Additional analysis of non-responding households could be carried out using the para-data that is currently collected to examine the likelihood of conversion at reissue and the profile of respondent at reissue.** (Currently information is collected on type of property, various neighbourhood indicators such as presence of graffiti, presence of entry systems, whether property is in a better or worse condition than neighbouring properties). This would also help evaluate whether a targeted reissue strategy could be developed (see option 3 earlier in this section).

⁴¹ This assumes that the meta-data for the SCJS is similar to the SHS and includes details of reissues and first issue outcomes.

- In the longer-term, following the collection of the Census in 2021, **it may be possible to undertake a study to link the SCJS (and the other core household surveys) to the Census to examine the extent and impact of absolute non-response**, similar to the set of studies undertaken by ONS in 2001. If this was done for all three major Scottish Surveys, it would be possible to examine how each compare, as well as examining the impact of non-response bias on the harmonised core questions⁴². However, data confidentiality concerns may mean that such studies are no longer viable.

Additional measures. A number of measures might be considered in an attempt to increase the response rate. We would suggest that these should only be considered if evidence shows that non-response bias is a major source of error.

One option suggested has been **the introduction of a reissue advance letter**. Ipsos MORI currently uses a tailored reissue advance letter on the Millennium Cohort Study (MCS7) with one version for addresses who refused at first issue and one version for non-contact addresses. Overall, the conversion rate of reissues has been around 25%. NatCen are increasingly phasing out the use of reissue letters as there is no evidence that they increase conversion rates, they add to cost and complicate operational processes. Given the widespread use of reissue letters, an experiment could be useful, and a split sample design where half of all reissues get an advance letter would help evaluate the impact. However, a possible disadvantage is that it introduces another opportunity for potential respondents to opt out of the survey.

A more extensive change would be introducing **some form of Adaptive and Responsive survey design**. This is where various methods for managing data collecting are used to different strata to equalise the likelihood of responding across strata. These include front loading potentially difficult cases, tailoring data collection strategies to different subgroups, prioritising particular addresses, different contact procedures, introducing considerable incentives at later stage or switching mode (normally to a face-to-face method in later stages). These have not proved universally successful - Tourangeau et al (2015)⁴³ conclude their review of Adaptive and Responsive Survey Designs pessimistically. They conclude that while “major changes in survey protocol (e.g. shorter questionnaires, much larger incentives or switching to face-to-face data collection) are more likely to reduce non-response bias than simply continuing with the original data collection protocol” that “the gains in response rates or reductions in variation in response propensities have typically been very modest”. They go on to question the public value of equalising response propensities through fieldwork effects compared with after-the-fact weighting adjustments.

Nevertheless, **there may be merit in considering whether tailoring the data collection protocols in the SCJS to different subgroups may increase sample representativeness**. Ipsos MORI have trialled a post-survey push to web methodology on the BARB Establishment Survey⁴⁴. This is the survey used in estimating television viewing audiences. Following the end of the face-to-face fieldwork (which achieves a 65% response rate), non-responders were sent an invitation to an online version of the questionnaire that was device agnostic⁴⁵. This was followed up by a reminder. One half received no incentive and the other a £15 conditional incentive. The response rate was 3.1% among the non-incentivised group, and 7.3% among the incentivised group. Moreover, the profile of these additional respondents was different from the face-to-face sample. Introducing such an adaptation for the SCJS would involve significant development work, such as producing a cut down version of the questionnaire that could be completed on a mobile phone.

⁴² As far as we are aware, a similar exercise that links census results to cases where a survey was achieved may be possible. This would provide estimates of measurement error.

⁴³ Tourangeau, R, Brick, J. M., Lohr, S., and Li J. (2015).

⁴⁴ <https://www.barb.co.uk/resources/establishment-survey/>

⁴⁵ It could be completed on mobile phones.

Another more radical option would be to **change the sampling approach**. The unclustered sampling approach for the SCJS is driven primarily by the requirements of the Scottish Surveys Core Questions. Returning to a clustered sampling approach in rural areas would bring in fieldwork efficiencies for the SCJS. It may help with the practicalities of any targeted reissue strategy. **A further option which has not been used on the SCJS in the past would be to over-sample high crime areas**. This could increase the utility of the data, by increasing the number of low-prevalence crimes available for analysis, though such a change would impact the minimum effective sample size for Police Divisions. We expect the requirements of the Core Questions are likely to preclude such changes.

Regardless of the sampling approach taken, **there may be value in reviewing how the sampling assumptions are set with regard to the deadwood assumptions and differential response rate by area** across the three Scottish Surveys. Currently, assumptions around ineligible addresses in the SCJS are based on data from all three Scottish Surveys on 2007 to 2009/2010 data. We would suggest giving consideration to whether this should be based on more recent data⁴⁶.

The SCJS currently uses previous data from the SCJS, and not all three Scottish Surveys, to determine response rate assumptions. (While deadwood levels should be consistent across surveys, final response rates are likely to differ by survey). For the 2016/17 wave, the response rate assumptions were based on response rates for each local authority from the 2008/09 and 2009/10 sweeps of the SCJS. We would suggest that two amendments around how the response rate assumptions by geography are set are considered.

- Using first issue response rates rather than final response rate by local authority to determine differential non-response assumptions by local authority. (The overall response rates are driven by first issue response rate, the proportion addresses reissued, and the conversion rate of reissues). This change may mean that the sampling assumptions better reflect external factors that shape likelihood of response rather than effort by contractor. It may also mean that the scope for reaching interview targets through reissuing is equalised across areas.
- Estimates of response rate, like survey estimates, are subject to sampling error. Using all three Scottish Surveys to determine differences by local authority would give more precision. While there may be differences across the different surveys in the overall response rate because of different designs (level of interest, length etc.) we would expect the variation by local authority to be relatively consistent across surveys⁴⁷. Similarly, using more sweeps of the SCJS to set differential response rate assumptions would also reduce sampling error. The optimal strategy would depend on size of expected change over time of response rates compared to expected variation from sampling error.

Finally, as suggested in Chapter 2, we suggest that **the Total Survey Error framework should be used to focus discussions on survey quality and as a framework for reviewing quality and prioritising areas for improvement**. However, developing how this is used in practice is likely to require considerable input.

⁴⁶ This does raise the question of whether how well deadwood is recorded changes over time. If the rise of Air BnB or other changes in tenure have meant that it is harder for interviewers to determine non-productive outcome codes, it might depress recoded deadwood levels and have a detrimental (if small) knock-on effect on reported response rates. This is not easy to examine as accurate baseline data would be required.

⁴⁷ If analysis showed that this is not the case, understanding the drivers of this variation would help inform fieldwork practice.

Questions for consideration in the workshop

Would there be benefit in conducting additional research into the potential impact of non-response bias in the SCJS?

Are there any other options for changes to the design or delivery of the survey that should be considered?

4. Workshop agenda and next steps

The workshop has been scheduled for 12th September 2018 in Edinburgh.

Workshop remit: Can the quality of the estimates from the SCJS, and therefore the public value of the survey, be improved by implementing any changes to the design and/or the delivery of the survey?

Workshop agenda

- | | |
|---------------|---|
| 12:00 – 12:30 | Arrivals, tea, coffee & sandwich lunch |
| 12:30 – 12:45 | Scottish Government introduction (Neil Grant) – including objectives and parameters of the discussion |
| 12:45 – 13:15 | The SCJS to date – including performance on the current contract and actions taken to address shortfalls (Ipsos MORI & Scotcen)
<i>Short presentation followed by Q&A</i> |
| 13:15 – 14:15 | The wider context: Summary of latest literature on response rates, survey design and survey quality (Ipsos MORI)
<i>Presentation followed by roundtable discussion</i> |
| 14:15 – 14:25 | Tea/coffee break |
| 14:25 – 16:50 | Options appraisal and discussion (All):
<i>Short presentation of options followed by breakout group discussions</i>

<ol style="list-style-type: none">1) Revision of response rate2) Targeted reissuing
<i>Tea/Coffee/comfort break</i>

<ol style="list-style-type: none">3) Biennial sampling4) Respondent incentives5) Other areas for consideration |
| 16:50 – 17:00 | Wrap-up and summarise agreed actions/next steps (All) |

Following the workshop, action points and next steps will be agreed between the Scottish Government and the contractors.

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⁴⁸ June 2020 update: This is superseded by Hutcheson, L., Martin, C., and Millar, C. (2020) *Response rates, reissuing and survey quality: Does reissuing reduce non-response bias in the Scottish Household Survey?*

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Appendix – How the SCJS and its precursors have characterised survey quality and error

Extract from Anderson and Leitch (1994) *The Scottish Crime Survey 1993: First Results*⁵⁰

“Limitations of the data

Valuable though surveys such as this are, it is important to be aware of their limitations. As a household-based survey of the adult population, the SCS does not collect information about crimes committed against public or corporate bodies, those not resident in households and those aged less than 16. Moreover; for those crimes covered, survey results are affected by the ability and willingness of respondents to remember incidents and report them accurately. The SCS results - like those of any sample survey - are also subject to sampling error and should therefore be seen not as exact measures but as broad indicators set within margins of error. Finally, although the survey has been carried out in essentially the same way over the three sweeps, it is possible that, since 1981, public perceptions of crime and victimisation have changed, with the result that fewer 'trivial' offences are now reported to survey interviewers.”

Extract from Hope, S. (2007) *Research Findings from the Scottish Crime and Victimisation Survey 2004*⁵¹.

“As is the case with all sample surveys (including previous Scottish Crime Surveys), levels of victimisation and other data recorded by the survey are best estimates of the likely levels that would be found in the population as a whole. The estimates are subject to margins of error, which are mainly a function of the sample size. They might also be affected by bias caused by differences in the likelihood of different groups in the population agreeing to participate in the survey and differences in whether people perceive incidents to be a crime and whether they report them in the survey.

The smaller sample size in 2004 means that the data from the survey are less precise than those from previous surveys and this has been taken into account in reporting differences between surveys”.

Extract from Scottish Government (2017) *Scottish Crime and Justice Survey 2014/2015: Main Findings*⁵²

“Survey error.

There may be errors in the recall of participants as to when certain incidents took place, resulting in some crimes being wrongly included in, or excluded from, the reference period. A number of steps in the design of the questionnaire are taken to ensure, as far as possible, that this does not happen, for example repeating key date questions in more detail.

⁵⁰ <https://www.gov.scot/Publications/1999/01/66575548-b5a9-441f-834a-da44182da2af>

⁵¹ <https://www.gov.scot/Publications/2007/01/16115536/0>

⁵² <https://www.gov.scot/Resource/0049/00496532.pdf>

The SCJS gathers information from a sample rather than from the whole population and, although the sample is designed carefully, survey results are always estimates, not precise figures. If the experiences of those who cannot be contacted, or who refuse to take part, are different from those who are interviewed, and this cannot be corrected by weighting, then the survey will not reflect the experiences of the adults of Scotland as a whole. This means that the results are subject to a margin of error which can have an impact on how changes in the numbers should be interpreted, especially in the short-term.

To indicate the extent of this uncertainty, confidence intervals for the key statistics presented in this report are provided in Annex Data Tables and in Chapter 11 of the SCJS Technical Report. These confidence intervals are bands within which the 'true' value lies (i.e. that value which would be obtained if a census of the entire population was undertaken). These confidence intervals are calculated to the 95% level, meaning that we would expect the survey data to lie within this range 95 times if the survey were to be repeated 100 times, each with a different randomly selected sample of adults.

Because of sampling variation, changes in reported estimates between survey years or between population subgroups may occur by chance. In other words, the change may simply be due to which respondents were randomly selected for interview. Whether this is likely to be the case has been assessed using standard statistical tests to examine whether differences are likely to be due to chance or represent a real difference. Only differences that are statistically significant at the 95% significance level are described as differences within this report.

Where no statistically significant change has been found between two estimates, this has been described as showing 'no change'. The presentation of uncertainty and change in this report reflect best practice guidance produced by the Government Statistical Service (GSS)⁵³

Extract from Scottish Government (2018) Scottish Crime and Justice Survey 2016/2017: Main findings⁵³

"How reliable are SCJS results?"

2016/17 was the first year that the survey interviews were administered by new contractors and interviewers. However, the approach to delivering the survey and analysing the results has remained consistent and the vast majority of the questionnaire is also very consistent to previous years. We also worked closely with the contractor to code survey crimes consistently with previous years to ensure that the results from the survey remain comparable with those from previous years.

There may be errors in the recall of participants as to when certain incidents took place, resulting in some crimes being wrongly included in, or excluded from, the reference period. A number of steps in the design of the questionnaire are taken to ensure that this does not happen, for example repeating key date questions in more detail.

⁵³ <https://www.gov.scot/Resource/0053/00533870.pdf>

The SCJS gathers information from a sample rather than from the whole population and, although the sample is designed carefully, survey results are always estimates, not precise figures. If the experiences of those who cannot be contacted, or who refuse to take part, are different from those who are interviewed, and this cannot be corrected by weighting, then the survey will not reflect the experiences of the adults of Scotland as a whole. This means that the results are subject to a margin of error which can have an impact on how changes in the numbers should be interpreted, especially in the short-term.

To indicate the extent of uncertainty, this report presents a range of results with best estimates and also lower and upper estimates. The best estimate is the mean figure drawn from the sample. The lower and upper estimates are for the 95% confidence interval. The difference between these lower and upper estimates, the confidence intervals, are bands within which the 'true' value lies (i.e. that value which would be obtained if a census of the entire population was undertaken). These confidence intervals are calculated to the 95% level, meaning that we would expect the survey data to lie within this range 95 times if the survey were to be repeated 100 times, each with a different randomly selected sample of adults. For example, when we examine incidence and prevalence of all crime, there is 95% certainty that the underlying incidence and prevalence figures lie between the lower and upper estimates.

Because of sampling variation, changes in reported estimates between survey years or between population subgroups may occur by chance. In other words, the change may simply be due to which respondents were randomly selected for interview. Whether this is likely to be the case has been assessed using standard statistical tests to examine whether differences are likely to be due to chance or represent a real difference. Only differences that are statistically significant at the 95% significance level are described as differences within this report.

In addition, it is often challenging to identify significant differences and changes for particularly rare events, for instance violent crime. For example, the prevalence of high frequency violent crime (reported in Chapter 3) would have to have fallen to below around 0.15% in 2016/17 (from 0.3% in 2008/09) for it to have been identified as a significant change. Where no statistically significant change has been found between two estimates, this has been described as showing 'no change'. The presentation of uncertainty and change in this report reflect best practice guidance produced by the Government Statistical Service (GSS).

Uncertainty can be particularly high around some estimates, often where experiences are rare. We assessed this for crime incidence figures in this report by computing the relative standard error around the results (RSE), which is equal to the standard error of a survey estimate divided by the survey estimate multiplied by 100. We have flagged results which have RSE values > 20% are due to the higher levels of uncertainty around the figures we recommend that such results are used with caution."

Chris Martin

Research Director, Ipsos MORI Scotland
chris.martin@ipsos.com

Paul Bradshaw

Head of ScotCen
Paul.Bradshaw@scotcen.org.uk