Gambling participation and the prevalence of problem gambling survey: Pilot stage

Methodology review report

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# Executive Summary

In December 2020, the Commission launched a consultation to gather views on proposals to develop a single, high-quality methodology to measure gambling participation and prevalence of problem gambling.[[1]](#footnote-2) The aim was to have a more efficient, cost effective data source providing robust and timely insight and the flexibility to swiftly provide information on emerging trends relating to a range of gambling behaviours. The results of the consultation were published in June 2021. The Commission launched a competitive tendering process for a contract to pilot a new data collection methodology in 2021/2022. The contract was awarded to NatCen Social Research (NatCen), working with the University of Glasgow and Brydon Purdon Social Research to conduct initial piloting to assess a new methodology for this study.

This pilot involved testing a new push-to-web methodology, using random probability sampling, to measure gambling participation, gambling harms, experience of problem gambling and a range of other related topics among adults aged 16 and over living in Great Britain. The pilot is the first stage in a range of ongoing development work. The next stage is to roll out a further period of data collection commencing in summer 2022, badged as experimental statistics to allow further testing and development. Subject to the success of the experimental phase the survey will move, in July 2023, to continuous official statistics data collection.

This report outlines the pilot survey push-to-web methodology and provides detail on the response rates achieved. The report also evaluates the pilot survey data collection phase and makes recommendations for the next phases.

## New methodology tested

In order to generate generalisable estimates of gambling participation and experience of gambling problems among the British population, it is important to use random probability sampling methods. Non-probability methods, such as online panels, tend to have elevated rates of problematic gambling compared with probability methods, with estimates of problem gambling ranging between 2 to 3% for the population, compared with around 1% from probability methods. Many national surveys, especially in response to the COVID-19 pandemic, are moving to a push-to-web approach which uses offline contact methods to encourage people to go online and complete a questionnaire. To minimise non-coverage and selection bias, online surveys are often paired with an alternative completion mode (for example, as for this study, a shorter, more focused, postal questionnaire which enables less technologically literate people and/or those without internet access to take part).

Push-to-web is a cost-effective method of collecting data from a wide number of people. It also allows increased numbers of people to be interviewed at relatively lower cost, something that is important for the analysis of gambling harms. However, this is a different approach to how previous studies of gambling have collected data; the Health Survey for England (HSE) and British Gambling Prevalence Surveys have relied on interviewers personally visiting addresses to conduct interviews and the Commission’s quarterly survey collects information via telephone survey using Random Digit Dialling (RDD). The focus of this pilot was to a) assess if a push-to-web approach is a viable methodology to measure gambling participation and prevalence of problem gambling and b) to assess the likely impact of this methodology upon estimates of gambling behaviour.

## Response

In total, 3,755 addresses were sent an invitation to take part in the survey and up to two adults aged 16 and older from each were invited to take part. The adjusted address-level response rate, i.e. the proportion of eligible addresses where a questionnaire was completed by at least one adult aged 16 or older in eligible addresses, was 21%. Results in the report are based on 1,078 adults who fully completed the questionnaire. In total, 44% of the responding unweighted sample were men and 56% were women. Overall, 57% (619) completed the survey online and 43% (459) completed a postal questionnaire.

## Assessment of pilot survey results

The evaluation of the methodology change focused primarily on gambling participation, prevalence of problem gambling and at-risk Problem Gambling Severity Index (PGSI), scores.

The initial stage to evaluating the pilot survey approach was to test the suitability of the push-to-web methodology for collecting gambling participation and the prevalence of problem gambling data in the future and to assess how the results compared to the estimates generated from the self-completion element of HSE 2018 and trend-adjusted HSE figures.

The pilot survey produced higher prevalence estimates - both for gambling activities in the previous 12 months and for low or moderate risk or problem gambling - in comparison with both HSE 2018 and the trend-adjusted HSE figures. For example, 54% of HSE 2018 participants reported having gambled in the previous 12 months compared with 63% of those from the pilot survey. The greatest differences related to the at-risk and problem gambling prevalence. Within the pilot survey, 1.3% of participants had a Problem Gambling Severity Index (PGSI) score of 8+ (problem gambling) compared with 0.4% in HSE 2018. The respective figures for moderate risk gambling was 2.3% and 0.8% and for low risk gambling 7.8% and 2.7%. There was little difference between the surveys in relation to the prevalence estimates produced for older people. However, the pilot survey produced higher estimates for younger people, particularly women, notably in relation to online gambling rates and at risk and problem gambling prevalence. The results from the pilot survey should not be used as new estimates of gambling participation or the prevalence of problem gambling.

The higher prevalence estimates produced by the pilot survey were not unexpected. The recent review by Sturgis and Kuha[[2]](#footnote-3) concluded that online surveys tend to over-estimate gambling participation and it is also possible that health surveys may under-estimate prevalence.

Our analysis highlighted two potential causes of differences. Firstly, it is possible that response rates were higher among gamblers than non-gamblers, which in turn may lead to somewhat higher estimates of problematic gambling. Secondly, it appears that there were differences between the two surveys in the way that survey participants completed the PGSI, with the differences greatest for women. Comparing participants from the two surveys with similar gambling activity profiles, pilot survey participants were more likely to score one or more on the PGSI than their counterparts in HSE 2018. This needs further investigation but may be because people provide more honest answers when reporting behaviours online than when filling in self-completion questionnaires when an interviewer or other family members are present.

## Recommendations

The pilot was successful in attracting participants and exceeded response rate expectations. Estimates of gambling participation and problem gambling were somewhat higher than those based on HSE but were lower than those typically generated by online panel surveys and thus broadly commensurate with expectations at this stage. We have also identified two potential explanations for this, outlined in the above paragraph, which lend themselves to further development work.

Based on these findings, we recommend that the push-to-web methodology is suitable for roll out to the experimental statistics stage, subject to the recommendations detailed in chapter 7. The key recommendations are as follows:

* Retain the postal follow-up to the online survey
* Retain the mailing strategy
* Undertake further work to further understand non-response bias towards non-gamblers and make changes to reduce it
* Increase the age of eligibility from 16 to 18 years
* Consider increasing the sample size, to allow for more split-sample experiments and sub-sample analysis to be conducted during the experimental phase
* Further refine and test questionnaire content whilst considering how the average completion time can be reduced

# Introduction

##  Background

The Gambling Commission exists to safeguard consumers and the wider public by ensuring that gambling is fair and safe. The Commission’s work is underpinned by two main pieces of legislation: the Gambling Act 2005 which sets the framework for the regulation of gambling in Britain; and the National Lottery etc. Act 1993 which sets out the framework within which the Commission regulates the National Lottery.

Under section 26 of the Gambling Act 2005, the Commission has responsibility for collecting and disseminating information relating to the extent and impact of gambling in Great Britain. In order to do this, the Commission collects gambling participation and problem gambling prevalence data via surveys of adults in Great Britain. The data is published as official statistics, that is produced in accordance with the standards set out by the Government Statistical Service in the Code of Practice for Statistics. To date, a variety of data collection approaches have been used to meet this requirement: as a section of separate Health Surveys for England, Scotland and Wales[[3]](#footnote-4) and a quarterly telephone survey which supplements the Health Surveys by providing a more regular measure of participation and problem gambling prevalence.

In December 2020, the Commission launched a consultation to gather views on proposals to develop a single, high quality methodology to measure gambling participation and prevalence of problem gambling. The aim was to have a more efficient, cost effective data source providing robust and timely insight and the flexibility to swiftly provide information on emerging trends. The results of the consultation were published in June 2021.[[4]](#footnote-5)

Given the level of support for the proposals outlined in the Commission’s consultation, the Commission launched a competitive tendering process for a contract to pilot a new data collection methodology in 2021/2022. The contract was awarded to NatCen Social Research (NatCen), working with the University of Glasgow and Brydon Purdon Social Research. Subject to its successful evaluation, the methodology will be rolled out in summer 2022 for data collection under experimental statistics.[[5]](#footnote-6) Subject to the success of the experimental phase the survey will move, in July 2023, to continuous official statistics data collection.

##  Project aims and overview

Critical to this revised approach is the need to ensure that the new survey continues to meet the highest levels of methodological rigour and is in accordance with the official statistics requirements. To do this, the Commission set out a programme of piloting, testing and evaluation before any change is made, to ensure that all stakeholders who rely on this data have confidence in and trust this new approach.

A push-to-web approach, based on a high-quality random probability sample was selected as the optimal, future proof, approach for measuring gambling participation and the prevalence of problem gambling. Push-to-web surveys use offline contact methods to encourage people to go online and complete a questionnaire.[[6]](#footnote-7) To minimise non-coverage and selection bias, the online survey was paired with a shorter, more focused, postal questionnaire.[[7]](#footnote-8)

A comprehensive development stage consisting of the following was carried out between October 2021 – March 2022:

* Group discussions with key stakeholders as well as a survey of a wider group of stakeholders, to ensure that a wide range of views have been heard and support built for the survey and its results in the future. Three key stakeholder groups were convened for the consultation representing: Lived experience; Policy and academic users; and Industry representatives (see separate report [here](https://www.gamblingcommission.gov.uk/about-us/guide/participation-and-prevalence-stakeholder-engagement-report))
* Design of a push-to-web approach, including content of the new online and postal questionnaires (following formal review), sample design, mailing strategy and weighting approach (covered in this report)
* Cognitive testing of new gambling participation question(s) to be used in the experimental phase, harms associated with gambling questions and the invitation/reminder letters to the survey

##  Content of report

This report outlines the pilot survey methodology and provides detail on the response rates achieved. The report also evaluates the pilot survey data collection phase and makes recommendations for the next phases. The key components of this evaluation are:

* Benchmarking key estimates against estimates from the Health Survey for England (HSE) 2018 and the quarterly telephone survey and assessing whether the push-to-web approach gives good/reasonable prevalence estimates (see chapter 3)
* A propensity score matching exercise to establish whether differences in HSE 2018 and pilot survey estimates are due to differences in the profile of participants (see chapter 4)
* Assessing the effect of the inclusion of participants who completed the survey on paper to see whether the additional mode is bringing in different participants compared with the online mode (see chapter 5)
* Consideration of the time needed to complete the online questionnaire, break offs from the online questionnaire, level of missing data from the postal questionnaire and other measures of data quality (chapter 6)

# Methodology and Response

##  Pilot survey design

### Sampling

A high-quality sample is essential for meeting the Commission’s aim of creating a robust and nationally representative new survey. To achieve this, a stratified random probability sample of Great Britain was used. The target population of the pilot survey was adults aged 16 and over, living in private households within Great Britain, and the aim was to achieve a sample size of 1,000 individuals.

There is no publicly available list of adults that could be used for sampling individuals. However, the Postcode Address File (PAF), compiled by the Post Office, provides a list of postal addresses (or postcode delivery points) which can be used as a sampling frame. The sampling process had two stages:

* *Selection of addresses from the PAF*. Prior to selection, the sample frame was stratified (ordered): this can help to reduce sampling error and thus increase the precision of estimates, as well as ensuring representativeness with respect to the measures used. The following measures for stratification (in order) were: Country and English region; Population density at Local Authority level and overall Index of Multiple Deprivation (IMD) score[[8]](#footnote-9)
* *Selection of adults within addresses.* Up to two adults (aged 16 and over) were selected from each address – by a householder - to complete the survey[[9]](#footnote-10)

At each sampled address, there may have been more than one dwelling and/or household. However, a random selection of households is very difficult to operationalise without an interviewer and there was no control over which household opened the invitation letter. As a result, in multi-occupied addresses no formal household selection took place and the selection of which household took part was left to chance (i.e. whichever household opened the letter). The overall proportion of multi-occupied addresses for PAF samples is very small (around 1%), and it is therefore unlikely to lead to any systematic bias in the responding sample.

### Questionnaire content and design

The online mode was supplemented by a postal questionnaire follow-up to enable less technologically literate people and/or those without internet access to respond. This step is essential for the new gambling survey as some gambling behaviours, notably the propensity to gamble online, is correlated to the probability to take part in an online survey and would therefore lead to biased results.[[10]](#footnote-11)

The following considerations were followed when designing the content of the questionnaires:

* The main aim of the pilot survey was to test methodological change and hence the problem gambling and gambling participation questions from HSE 2018 were retained in their original format
* Other pre-existing questions needed for methodological review were also included (e.g. key non-gambling metrics and socio-demographics)
* The content needed to attract/be relevant to non-gamblers as well as gamblers
* It was important to include questions on gambling harms – experience of impact of their own gambling and their experience of the impact of someone else’s gambling[[11]](#footnote-12)

The gambling participation questions from HSE 2018 included in this pilot were:

* A gambling participation question asking about money spent on any of the listed 19 activities in the last 12 months. Key gambling estimates such as the percentage of the population that partake in any gambling activity, any gambling other than the National Lottery and any online gambling and number of gambling activities partaken in are derived from this question
* Frequency of gambling in the last 12 months
* Problem gambling screens, specifically the Diagnostic and Statistical Manual of Disorders (DSM-IV) and the Problem Gambling Severity Index (PGSI). The latter was used to derive prevalence of problem, moderate risk, low risk and no risk gambling figures. More information regarding the classification of individuals can be found [here](https://www.gamblingcommission.gov.uk/statistics-and-research/publication/problem-gambling-screens)

It was not possible to include all questions from the online questionnaire in the postal version. The postal questionnaire needed to appear reasonably short so it did not create an impression that it would be time-consuming to complete and thus put off potential participants. Hence, the length of the postal questionnaire was shortened by collecting key information only. Further, the routing in the postal questionnaire was simplified so it was easier for participants to follow; this meant the number of follow-up questions was reduced. The questionnaires are provided in Appendices A and B.

### Mailing strategy

The following overall participant engagement strategy was employed, each item was sent to selected addresses in the post:

* Invitation letter with the URL and two sets of login details needed to access the survey online (a Welsh version of the letter was also sent to addresses in Wales)
* First reminder letter
* Second reminder letter with two postal questionnaires and return envelopes
* Third reminder letter

The invitation letter and reminders - provided in [Appendix C](https://www.gamblingcommission.gov.uk/about-us/guide/participation-and-prevalence-pilot-methodology-review-report) - were the main levers to convince people to take part. These were carefully designed following the latest best practice and following the participant engagement guidance for push-to-web surveys published by the Office for National Statistics (ONS), drawing on their extensive testing in this area.[[12]](#footnote-13)

Experience shows that most people complete a survey within few days of receiving the request. The time between each mailing was therefore kept as short as possible, to ensure that the request was fresh in people’s mind. A gap of around 10 days between mailings was introduced, to allow removal of responding participants from the sample for the reminders. The day of the week of the mailing was varied to allow for the fact that different people may have time for survey participation on different days of the week.

A study website, freephone number and dedicated email address were set up for participants to contact with issues or queries. A £10 completion incentive per individual questionnaire was offered. All online responders were emailed a Love2Shop voucher code and postal responders were posted a voucher.[[13]](#footnote-14)

### Data preparation and checks

As described in earlier sections, data was collected from two sources: an online questionnaire and a postal questionnaire. The online questionnaire included some built-in routing and checks, whereas the postal questionnaire relied on correct navigation by participants and there was no constraint on the answers they could give. The online questionnaire data in its raw form were available immediately to the research team. However, the postal questionnaire data had to be manually recorded as part of a separate process.

Rigorous quality assurance processes were utilised when preparing the pilot survey data. These included:

* Checks that variables from the two data collection modes had mapped together correctly
* Harmonising household responses. As up to two adults per household could answer demographic questions relating to the whole household (for example, household size and information about income), there was potential for differing responses between individuals. The following rules were followed, in priority order:
	+ Taking the most common valid answer (i.e. excluding don’t know, refusal)
	+ Taking the valid answer from the oldest household member: or where this was not clear, the response of the first household member to complete a questionnaire (online completions first then paper completions)
* Identifying and removing duplicate responses. Questionnaires were checked to see if responses to two questionnaires were very likely to be from the same individual in a household (based on exact matches for the age, sex and name provided). Suspected duplicates were removed so that only one completed questionnaire from that individual was retained
* Ensuring a maximum of two participants per household. Where a household had more than two records (e.g. two completed online questionnaires and one completed postal questionnaire), two records were selected (and any extra cases removed) according to the following rules:
	+ Fully completed online questionnaires took priority over postal questionnaires
	+ Fully completed postal questionnaires took priority over partially completed online questionnaires
	+ Partially completed online questionnaires took priority over partially completed postal questionnaires
* Identifying and removing ‘speeders’ (individuals who completed the online questionnaire in an unrealistic amount of time for them to have properly engaged with the questions)[[14]](#footnote-15)

The pilot data were then weighted to allow for comparisons with other data sources. The weighting strategy is outlined in [Appendix D](https://www.gamblingcommission.gov.uk/about-us/guide/participation-and-prevalence-pilot-methodology-review-report).

##  Response to the survey

### Address-level response rates

Table 2A summarises the address-level response rates. In total, 3,755 addresses were issued. In remote surveys, no information is known about the reason for non-response in individual addresses. However, it was assumed that around 9% of addresses in the sample (340) were not residential and were therefore ineligible to complete the survey.[[15]](#footnote-16) The adjusted address-level response rate, i.e. the proportion of eligible addresses where a questionnaire was completed by at least one adult in eligible addresses, was 21% (very close to the target of 22%).

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| Table 2A: Address-level response |
| *Issued addresses* |
| **Response of issued addresses** | **Number** **n** | **Issued** **%** | **Eligible %** |
| Issued addresses | 3,755 | 100 |  |
| Assumed ineligible1 | 340 | 9 |  |
| Assumed eligible (residential addresses) | 3,415 | 91 | 100 |
| Productive addresses | 728 |  | 21 |
|  2 fully productive individual participants | 350 |  | 10 |
|  1 fully productive individual participant | 378 |  | 11 |
|  *in single-adult addresses* | 185 |  | 5 |
| *in multi-adult addresses* | 191 |  | 6 |
|  *number of adults at address unknown* | 2 |  | 0 |
| Refusal or unable to take part2 | 19 |  | 1 |
| No response | 2,668 |  | 78 |
| 1 It was assumed that 9% of addresses in the sample (340) were not residential and were therefore ineligible to take part in the survey.2 Refusal or unable to take part includes refusal by telephone or email, return of blank questionnaire (implicit refusal) or unable to respond due to illness, hospital stay, physical/mental incompetence, language barrier or other reason.  |

Of the 728 addresses that took part in the survey, 350 yielded two fully productive participants and 378 yielded one fully productive participant. Of the 378 households with one participant, 185 contained one adult only (i.e. the only eligible adult took part) and 191 contained two or more adults (i.e. a second potential adult was resident but did not take part). The household size of the remaining two households was unknown. There was no response from 2,668 of the addresses assumed to be eligible and an individual from a further 19 addresses contacted the office to say they did not wish or were unable to take part (Table 2A).

Table 2B shows the breakdown of the issued sample in England, Scotland and Wales and the household response rate in each country. In total, 86% of the issued addresses were in England, 9% in Scotland and 5% in Wales. Household responding rates were very similar across all three countries: 21% in England, 21% in Scotland and 23% in Wales (Table 2B).

In terms of the English regions, the highest response rates were achieved in Yorkshire and The Humber (25%), the West Midlands (24%), South West (24%) and North East (24%) and the lowest in London (17%) and the North West (18%) (Table 2B).

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| Table 2B: Address-level response by country and region |  |
| *Issued addresses* |
| **Country and region** | **Issued addresses** **n** | **Assumed eligible addresses** **n** | **Productive addresses** **n** | **Household response rate1** **%** |
| **Country**  |
| England | 3,214 | 2,923 | 623 | 21 |
| Scotland | 352 | 320 | 66 | 21 |
| Wales | 189 | 172 | 39 | 23 |
|  |  |  |  |  |
| **Government Office Region (GOR)** |
| North East | 165 | 150 | 36 | 24 |
| North West | 438 | 398 | 70 | 18 |
| Yorkshire and the Humber | 322 | 293 | 72 | 25 |
| East midlands | 281 | 255 | 51 | 19 |
| West midlands | 333 | 303 | 74 | 24 |
| East of England | 361 | 328 | 73 | 22 |
| London | 454 | 413 | 72 | 17 |
| South East | 521 | 474 | 100 | 21 |
| South West | 339 | 308 | 75 | 24 |
| Scotland | 352 | 320 | 66 | 21 |
| Wales | 189 | 172 | 39 | 23 |
|  |  |  |  |  |
| *All* | *3,755* | *3,415* | *728* | *21* |
| 1 Household response rate is the proportion of productive addresses of assumed eligible addresses2 These figures are based on unweighted data. Differences in country and regional response was accounted for in the weighting (see [Appendix D](https://www.gamblingcommission.gov.uk/about-us/guide/participation-and-prevalence-pilot-methodology-review-report)). |

### Individual-level response rates

In total, 1,126 completed questionnaires were received: 644 online questionnaires and 482 postal questionnaires. As stated, each household was provided with two log-in codes for completing the online survey and up to two postal questionnaires were included with the second reminder mailing. This could cause duplicate responses, where either a single participant completed the survey a second time, or where more than two people in a household completed the survey (for example, two completing the survey online and two different people completing the postal questionnaires). Checks undertaken to identify any potential duplicate cases led to 45 cases being removed. A further three online cases were removed from the analysis dataset due to concerns that the participant had completed the online questionnaire too quickly to have properly engaged with the questions.

Following this process, it was assumed that all responses in the dataset were from 1,078 unique individuals who had fully completed the questionnaire (above the target of 1,000). A further eight individuals partially completed the questionnaire, stopping prior to the demographic questions. Unless explicitly stated these cases were not included in the analysis presented in this report.

Table 2C shows the age and sex profile of the 1,078 responding adults (477 men, 600 women and one participant who did not respond to the question) who fully completed the questionnaire. In total, 44% of the responding unweighted sample were men and 56% were women. This underrepresentation of men is similar to that seen in the latest published results for HSE (45% of the HSE 2019 unweighted sample were men and 55% women). Those in the younger age groups were less likely to take part than their older counterparts: 6% of responding adults were aged 16 to 24 (this age group makes up 13% of the population of Great Britain) and 31% were aged 65 and over (this age groups makes up 23% of the population of Great Britain).[[16]](#footnote-17) This difference was particularly pronounced for men: 4% of the male sample were aged 16 to 24 (this age-sex group makes up 14% of the male population of Great Britain). The equivalent proportions for women aged 16 to 24 were 8% and 12%.

|  |  |
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| Table 2C: Individual response by age and sex |  |
| *Productive Individuals* |
|  | **Men** | **Women** | **Total** |
| **Age group (years)** | **% participants** | **% of Great Britain population3** | **% participants** | **% of Great Britain population3** | **% participants** | **% Great Britain population3** |
| 16-241 | 4 | 14 | 8 | 12 | 6 | 13 |
| 25-34 | 15 | 17 | 14 | 16 | 15 | 17 |
| 35-44 | 13 | 16 | 16 | 15 | 14 | 16 |
| 45-54 | 15 | 17 | 16 | 16 | 16 | 16 |
| 55-64 | 18 | 15 | 18 | 15 | 18 | 15 |
| 65+ | 35 | 22 | 27 | 25 | 31 | 23 |
| *Unweighted bases* | *477* |  | *600* |  | *1,077* |  |
| 1 Eight participants were aged 16 or 17.2 One participant was excluded from the table as they did not select male or female.3 Based on 2020 mid-year population estimates for Great Britain: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland |

Table 2D shows response rates by mode of completion. Overall, 57% (619) completed the survey online and 43% (459) completed a postal questionnaire. These results are broadly in line with expectations, based on experience of previous surveys.

There was no overall difference between men and women in the mode of completion. However, there was a marked difference according to age with the percentage of those completing the survey online decreasing with age (and hence the percentage completing the postal questionnaire increasing with age). In all age groups, except the oldest two (aged 55 to 64 and aged 65 and over), a higher proportion completed the survey online rather than filling in the postal questionnaire. In total, 32% of those aged 65 and over and 49% of those aged 55 to 64 completed the survey online compared with between 67% and 85% of those in the younger age groups.

|  |
| --- |
| Table 2D: Individual response by mode of completion, age and sex |
| *Productive individuals* |
| **Demographic** | **Online completions** | **Postal completions** | **All completions** |
|  | **n** | **% of all completions** | **n** | **% of all completions** | **n** |
| **Sex** |
| Male | 275 | 58 | 202 | 42 | 477 |
| Female | 344 | 57 | 256 | 43 | 600 |
|  |  |  |  |  |  |
| **Age group (years)** |
| 16-24 | 57 | 85 | 10 | 15 | 67 |
| 25-34 | 127 | 80 | 31 | 20 | 158 |
| 35-44 | 120 | 77 | 35 | 23 | 155 |
| 45-54 | 114 | 67 | 56 | 33 | 170 |
| 55-64 | 97 | 49 | 100 | 51 | 197 |
| 65+ | 104 | 32 | 226 | 68 | 330 |
| *Unweighted bases*  | *619* |  | *458* |  | *1077* |
| 1One participant who completed a postal questionnaire was excluded from the table as they did not select male or female |

##  Review methodology

The statistical comparison of the pilot survey results to other data sources (the HSE 2018 and the Gambling Commission’s quarterly telephone survey) is an essential part of the pilot survey evaluation. The evaluation of the methodology change focused primarily on gambling participation, prevalence of problem gambling and at risk PGSI scores. The prevalence of particular types of gambling and frequency of gambling were also included in the assessment.

The three main areas to be addressed were:

1. Whether the push-to-web survey gives good, or at least ‘reasonable’, estimates of the key measures of gambling behaviour, both overall and within key sub-groups compared with other sources of data; and if the estimates are reasonable but still seem to be biased
2. Whether the push-to-web survey is likely to give a robust time series that can be used to track change over time
3. The extent to which the postal element changed the gambling prevalence estimates compared with those produced from the online element

Further detail is provided in chapters 3, 4 and 5.

### Assessing other aspects of the pilot survey

As well as the statistical comparison of the pilot survey results to other data sources, several other areas were reviewed:

* + The effectiveness of the mailing strategy
	+ Any participant feedback received through the survey email or freephone number
	+ Questionnaire completion times for the whole questionnaire and individual modules
	+ Break-off rates and locations
	+ Item non-response to all questions
	+ Routing errors made by participants completing the postal questionnaire
	+ Evidence of satisficing (for example, straight lining or always selecting the first answer category)
	+ Proportion of participants choosing ‘other’ response to questions where it is available
	+ Evidence of any questions where everybody chooses the same answer category and that therefore do not differentiate participants

These elements are covered in more detail in chapter 6.

# Assessing whether the push-to-web approach is suitable for estimating gambling participation and prevalence of problem gambling

##  Introduction

The initial stage to evaluating the pilot survey approach has been to assess how closely the prevalence estimates produced from the pilot survey align with the estimates generated from the self-completion element of the HSE. With the latest HSE estimates collected in 2018, the trends in gambling participation rates and problem gambling prevalence over the past four years observed in the Commission’s quarterly telephone survey have been used to produce updated estimates on gambling participation rates and problem gambling prevalence.

In order to use the same geography across the three surveys, the pilot survey and quarterly telephone survey samples have, for the analysis presented in chapters 3, 4 and 5, been restricted to participants in England.

The sections below present and discuss the prevalence estimates produced from:

* HSE 2018
* HSE 2018, trend-adjusted using the quarterly telephone survey (where available)
* This pilot survey

In addition to presenting overall prevalence estimates, separate estimates on key measures have been produced for men and women within three age bands (16 to 34, 35 to 64, 65 and over).

##  Methodology

### Measures

The key measures used to assess the prevalence estimates of the pilot survey compared with HSE 2018 are as follows (see section 2.1.2 for a full description of the measures). Those highlighted in **bold** have trend-adjusted estimates.

* **Prevalence in the previous 12 months of:**
	+ **Any gambling activity**
	+ **Any gambling (other than the National Lottery)**
	+ **Any online gambling (other than the National Lottery)**
	+ Particular gambling activities
* Number of gambling activities in previous 12 months
* Frequency of gambling in previous 12 months
* Prevalence of problem, moderate risk, low risk and no risk gambling/no participation as defined by the PGSI (an ordinal variable)[[17]](#footnote-18)
* **Prevalence of low or moderate risk or problem gambling as defined by a score of one or more on the PGSI (a binary variable)**
* Binary measures of problem gambling:
	+ As defined by the PGSI
	+ As defined by the DSM-IV measure of problem gambling
	+ Identified as such either via the PGSI or the DSM-IV
	+ Identified as such in both the PGSI and the DSM-IV

### Methods

The main analysis described below is based on a comparison of prevalence estimates from the pilot survey and HSE 2018. However, given that HSE 2018 is now four years out of date, the quarterly telephone survey has been used to update, as far as possible, the estimates from HSE 2018 to 2021/22 (these being described as ‘trend-adjusted HSE’ estimates in the text).

The quarterly telephone survey has collected data using a consistent methodology since 2016 and is used by the Commission to monitor trends over time. However, differences to the HSE in the precise measures collected and the availability of the most recent data mean that this trend-adjustment is necessarily a crude exercise. The quarterly telephone survey data only covers the period to December 2021, before all COVID-19 restrictions were removed, so any trend in the first quarter of 2022 is not accounted for. Furthermore, the quarterly telephone survey primarily asks about gambling in the past four weeks, whereas the pilot survey and HSE 2018 both ask about the previous 12 months. Finally, the quarterly telephone survey uses the short-form PGSI rather than the full version.

To estimate the trend, gambling participation rates for the whole[[18]](#footnote-19) of 2021 from the quarterly telephone survey are compared with the rates for the whole of 2018. The odds ratio between the two is then calculated. For example, the percentage saying they had gambled in the past four weeks was 45.9% in 2018 (an odds of 0.85) and reduced to 41.8% in 2021 (an odds of 0.72). The odds ratio is 0.72/0.85=0.85. This ratio is then applied to the HSE 2018 estimate to give a trend-adjusted figure. Given that the percentage having gambled in the last year in HSE 2018 was 54.0% (an odds of 1.17), this is trend-adjusted by 1.17\*0.85=0.99 to give (after converting back from odds to percentages) a 2021 estimate of 49.9%.

As noted above, any trend between 2021 and spring 2022 is not trend-adjusted for. A bespoke analysis of the quarterly telephone survey data does suggest that gambling participation rates are now increasing again, based on a comparison of the individual quarters of 2018 and 2021, so the trend-adjusted figures presented in this report may be a slight underestimate of where the HSE estimates would be expected to be if that survey was to be repeated now.

The trends have been applied to the HSE for the main estimates of gambling only and within age and sex. No trend adjustments have been made for individual activities because the low prevalence of many of these leads to odds ratios that are too unreliable.

Trends in the PGSI ‘low/moderate risk or problem gambling’ category have been adjusted for in the same way, using trends in the short-form PGSI statistics between 2018 and 2021. The quarterly telephone survey suggests that the problem gambling percentage reduced from 0.5% to 0.3% over the period, an odds ratio of 0.62. Given the low prevalence, the uncertainties around the exact scale of this decline, and the fact that it is calculated from the short-form PGSI rather than the full scale, trend-adjusted HSE figures have not been produced for the PGSI problem gambling measure.

The Figures (and tables in separate excel file) show for each measure the p-value significance level of the difference between the pilot survey and HSE 2018. The p-value is the probability of an observed difference being due to chance alone, rather than being a real underlying difference. A p-value of less than 5% is conventionally taken to indicate a statistically significant difference (p<0.05). The p-values have been calculated in the complex samples module of SPSS and take into account the weighting of the data.

There is no simple way to test for statistical significance between the pilot survey and the trend-adjusted HSE estimates, so p-values for differences are not shown.

The unweighted sample sizes are cited at the end of each Figure.

##  Comparison of gambling participation and prevalence of problem gambling across surveys

In general, the pilot survey produced higher estimates of gambling activity and low/moderate risk and problem gambling than either HSE 2018 or the trend-adjusted HSE figures. Using the PGSI, the pilot survey estimated that 1.3% (95% confidence intervals, 0.6% to 2.9%) of the population was engaged in problem gambling compared with 0.4% in HSE 2018 (95% confidence interval, 0.2% to 0.6%).

### Gambling activity

Figure 1 show the percentage of the types of gambling activities that participants in HSE 2018 and the pilot survey reported having spent any money on within the last 12 months. Figure 2 shows the percentage of participants in HSE 2018 and the pilot survey who reported having spent any money on each gambling activity within the previous 12 months; any money on gambling other than the National Lottery; any money on online gambling other than the Lottery; and on particular gambling activities. On each of the first three measures, the gambling participation rates from the pilot survey were statistically significantly higher than the estimates produced from HSE 2018 (p-values of <0.001 for each measure). For example, 54% of HSE 2018 participants reported having gambled in the previous 12 months compared with 63% of those from the pilot survey.

The trend-adjusted HSE figures for any gambling activity and gambling activity other than the National Lottery are somewhat lower than the 2018 figures, in line with the trends in gambling participation rates over the past four years. Conversely, the trend-adjusted figures for online gambling are somewhat higher than in HSE 2018, reflecting increases in online gambling. However, even adjusting the HSE figures based on recent trends, the pilot survey still produced higher prevalence estimates than the HSE on each of the three measures.

Looking across the individual gambling activities, the prevalence rates in the pilot survey were statistically significantly higher than in HSE 2018 in relation to two broad types of gambling: lotteries and online gambling. Pilot survey participants were more likely than HSE 2018 participants to have spent money on the National Lottery (43% compared with 36%, p-value: <0.001); scratch cards (24% compared with 18%, p-value 0.001); and on other lottery tickets (19% compared with 14%, p-value: <0.001). They were also more likely to have done online gambling (8% compared with 3%, p-value: <0.001); online betting (12% compared with 8%, p-value: <0.001) and spent money on betting exchange (3% compared with 1%, p-value: <0.001). Prevalence rates for other forms of gambling were not statistically significantly different between the two surveys.

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| Figure 1: Prevalence of types of gambling activities among population |
| First figure Pilot survey, second HSE trend-adjusted, third 2018 HSE:  Any online gambling other than Lottery 17% 12% 9% Any gambling other than Lottery 48% 35% 40% Any gambling 63% 50% 54%  *Unweighted bases: HSE 2018: 7382. Pilot survey (England only): 916. Table 1(see data tables).* |

|  |
| --- |
| Figure 2: Prevalence of individual gambling activities among population |
| First figure Pilot survey, Second figure HSE 2018  National Lottery 43% 36% Scratchcards 24% 18% Any other lottery 19% 14% Football pools 3% 3% Bingo 5% 4% Fruit or slot machines 7% 6% Virtual gaming machines 3% 2% Table games 3% 3% Poker in a tournament 1% 1% Online gambling 8% 3% Online betting 12% 8% Betting exchange 3% 1% Betting on horse races 7% 8% Betting on dog races 1% 2% Betting on sports events 6% 4% Betting on other events 2% 2% Spread betting 1% 1% Private betting 5% 4% Other 3% 1%*Unweighted bases: HSE 2018: 7382. Pilot survey (England only): 916. Table 1 (see data tables).* |

Figure 3 compares HSE 2018 and pilot survey estimates on the number of gambling activities in which survey participants engaged, and their frequency of doing so. Trend-adjusted figures are not available for these measures. The pilot survey participants were statistically significantly more likely than HSE 2018 participants to be engaging in more activities (the percentages of those engaging in none or one were lower among pilot participants, while the percentages of those engaging in three or more activities were higher among these participants) (p-value: <0.001). Similarly, pilot survey participants were gambling more often than HSE 2018 participants, with the percentages higher than the HSE participants for each frequency category below ‘once or twice a year’ (p-value: <0.001).

Figure 4 presents the same estimates focusing solely on survey participants who had spent money on gambling in the past year. Pilot survey participants who gambled were statistically significantly more likely than the HSE 2018 participants who gambled to have been engaged in more activities (p-value: 0.002). However, there were no statistically significant differences between the surveys in relation to how often gamblers were gambling (p-value: 0.106).

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| Figure 3: Number of gambling activities and frequency of gambling among population |
| First figure Pilot survey, second 2018 HSE   Number of activities: Eight or more 2% 1% Seven 1% 0% Six 2% 1% Five 4% 2% Four 4% 3% Three 9% 7% Two 14% 14% One 28% 25% None 37% 46%  Frequency: Two or more times a week 8% 5% Once a week 14% 13% Less than once a week, more than once a month 7% 6% Once a month 10% 7% Every two to three months 9% 8% Once or twice a year 14% 15% Not gambled 38% 47%  *Unweighted bases: HSE 2018: 7382. Pilot survey (England only): 916. Table 1(see data tables).* |

|  |
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| Figure 4: Number of gambling activities and frequency of gambling among gamblers |
| First figure Pilot survey, second 2018 HSE  Number of activities:  Eight or more 3% 3% Seven 2% 1% Six 4% 2% Five 6% 3% Four 7% 6% Three 14% 13% Two 21% 26% One 44% 45%  Frequency:  Two or more times a week 13% 10% Once a week 22% 24% Less than once a week, more than once a month 12% 11% Once a month 16% 13% Every two to three months 15% 14% Once or twice a year 23% 28%  *Unweighted bases: All gambling in previous 12 months: HSE 2018: 3935. Pilot survey (England only): 560. Table 1 (see data tables).* |

### Problem Gambling Severity Index

In line with the higher participation rates for gambling activity and greater levels of gambling involvement, the pilot survey also produced higher prevalence of problem gambling than HSE 2018. It also identified greater percentages of participants who were at low or moderate risk in relation to their gambling. This is true looking both among the whole population and within those who had gambled within the previous 12 months.

Figure 5 shows the percentages of HSE 2018 and pilot survey participants who had a PGSI score of 0 (non-problem gambling); a PGSI score of 1-2 (low risk gambling); a PGSI score of 3-7 (moderate risk gambling) or a PGSI score of 8 or more (problem gambling). Because of the need for more accurate point differences given low prevalence, percentages in Figure 5 are shown to one decimal place.

Figure 6 focuses on survey participants who had spent money on gambling in the previous 12 months. It highlights that, among those who had gambled, the pilot survey was more likely than the HSE 2018 to identify participants with a PGSI score of 1+ (p-value: <0.001) with the increased prevalence again present across the scale distribution (p-value: <0.001).

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| Figure 5: Problem Gambling Severity Index (PGSI) among population |
| First figure Pilot survey, second figure 2018 HSE:  Problem (8-27) 1.3%  0.4% Moderate risk (3-7) 2.3%  0.8% Low risk (1-2) 7.8%  2.7% Non-problem (0)/non-gambler 88.5%  96.1%*Unweighted bases: HSE 2018: 7382. Pilot survey (England only): 916. Table 1(see data tables)* |

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| Figure 6: Problem Gambling Severity Index (PGSI) among gamblers |
| *First figure Pilot survey, second figure 2018 HSE: Problem (8-27) 2.1%  0.7% Moderate risk (3-7) 3.8%  1.6% Low risk (1-2) 12.5%  5.2% Non-problem (0)/non-gambler 81.6%  92.5%* *Unweighted bases: All gambling in previous 12 months: HSE 2018: 3935. Pilot survey (England only): 560. Table 1 (see data tables)* |

This pattern is replicated across all the measures of problem gambling presented in Figure 7 (where, because of the need for more accurate point differences given low prevalence, the x axis runs from 0 to 5% and percentages are shown to one decimal place). The prevalence figures for the pilot survey were statistically significantly higher than those in HSE 2018 for problem gambling measures by the PGSI (1.3% compared with 0.4%, p-value: 0.002); the DSM-IV (1.2% compared with 0.5%, p-value: 0.028); scoring as involved in problem gambling on either measure (1.7% compared with 0.5%, p-value: 0.002) or on both measures (0.9% compared with 0.3%, p-value: 0.048).

Within those who had gambled in the past year (Figure 8), while the difference in the problem gambling prevalence rate as measured by the PGSI was statistically significant (2.1% compared with 0.7%, p-value: 0.010), it was not significantly different when measured by the DSM-IV (2.0% compared with 1.0%, p-value: 0.081). The prevalence rate of problem gambling according to at least one measure was significant (p-value: 0.021) but not when measured by both measures (p-value: 0.109).

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| Figure 7: Prevalence of problem gambling among population |
| First figure Pilot survey, second figure 2018 HSE  Problem gambler on both measures 0.9% 0.3% Problem gambler on at least one measure 1.7% 0.5% DSM-IV problem gambler 1.2% 0.5% PGSI problem gambler 1.3% 0.4% *Unweighted bases: HSE 2018: 7382. Pilot survey (England only): 916. Table 1(see data tables)* |

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| Figure 8: Prevalence of problem gambling among gamblers |
| *First figure Pilot survey, second figure 2018 HSE:  Problem gambler on both measures 1.4% 0.6% Problem gambler on at least one measure 2.7% 1.0% DSM-IV problem gambler 2.0% 1.0% PGSI problem gambler 2.1% 0.7%**Unweighted bases: All gambling in previous 12 months: HSE 2018: 3935. Pilot survey (England only): 560. Table 1 (data tables)* |

##  Looking across age and sex

A subset of key measures has been used to assess whether the higher prevalence rates observed in the pilot survey were being driven differentially by men or women, and by particular age groups, or whether the pattern was consistent across sex and age. Survey participants have been split by sex into three age groups: 16 to 34, 35 to 64, and 65 and over.

The greatest differences between the surveys relate to men and women aged 16 to 34, notably in relation to online gambling activities and problem gambling prevalence among women, where the pilot survey produced notably higher prevalence estimates. There were far fewer differences in relation to men and women aged 65 and over.

### Gambling activity

Figures 9 and 10 show the pilot survey, HSE 2018 and trend-adjusted HSE prevalence rates in the previous 12 months for the three age groups within sex for:

* Any gambling activity (Figure 9)
* Any online gambling (other than the National Lottery) (Figure 10)

As with the overall estimates presented in Figure 1, the trend-adjusted HSE estimates for any gambling activity (Figure 9) are lower than HSE 2018 (with the exception of among women aged 35 to 64). However, there is a much greater variation in the percentages among men than among women.

Across both sexes and the three age groups, the pilot survey produced higher gambling participation rates than either HSE 2018 or the trend-adjusted HSE. However, the differences were greatest and statistically significant - between the pilot survey and HSE 2018 - for the youngest age group, both men (p-value: 0.018) and women (p-value: <0.001), and for the middle age group for men (p-value: 0.046). For example, the trend-adjusted HSE figures estimate that 44% of men aged 16 to 34 had spent any money on gambling in the previous 12 months, compared with 71% in the pilot survey. The comparable figures for women aged 16 to 34 are 41% and 62%.[[19]](#footnote-20)

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| Figure 9: Prevalence of any gambling activity, by age and sex |
| First figure Pilot survey, second figure HSE trend-adjusted, third 2018 HSE:  Women, 65+ 52% 46% 47% Women, 35 to 64 62% 58% 57% Women, 16 to 34 62% 41% 42%     Men, 65+ 56% 47% 51% Men, 35 to 64 70% 54% 61% Men, 16 to 34 71% 44% 56% *Unweighted bases: HSE 2018: men, 16-34: 714, men, 35-64: 1596, men 65+: 950; women, 16-34: 965, women, 35-64: 2083, women, 65+: 1074. Pilot survey (England only): men, 16-34: 73, men, 35-64: 185, men 65+: 143; women, 16-34: 121, women, 35-64: 250, women, 65+: 144. Tables 2 and 3 (data tables)* |

However, the differences between the surveys were greater when the gambling participation rates focus on online gambling activity in the previous 12 months (Figure 10). Here, the quarterly telephone survey suggests that online gambling has increased among women and older people since 2018. However, the pilot survey had higher gambling participation rates of online gambling than both the 2018 and the trend-adjusted HSE for all groups except women aged 65 and over. For these groups, the differences between the pilot survey and HSE 2018 were statistically significant (p-values: men aged 16 to 34: 0.035; men aged 35 to 64: 0.002; men aged 65 and over: 0.022; women aged 16 to 34: <0.001, women aged 35 to 64: 0.027).

The greatest difference between the surveys related to women aged 16 to 34, where the prevalence of online gambling in the pilot survey was 22% compared with 8% in the trend-adjusted HSE figures.

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| Figure 10: Prevalence of online gambling activity excluding National Lottery, by age and sex |
| First figure Pilot survey, second figure HSE trend-adjusted, third 2018 HSE:   Women, 65+ 0% 3% 1% Women, 35 to 64 9% 8% 5% Women, 16 to 34 22% 8% 6%     Men, 65+ 7% 6% 3% Men, 35 to 64 24% 13% 13% Men, 16 to 34 38% 23% 25%*Unweighted bases: HSE 2018: men, 16-34: 714, men, 35-64: 1596, men 65+: 950; women, 16-34: 965, women, 35-64: 2083, women, 65+: 1074. Pilot survey (England only): men, 16-34: 73, men, 35-64: 185, men 65+: 143; women, 16-34: 121, women, 35-64: 250, women, 65+: 144. Tables 2 and 3 (data tables)* |

### Problem Gambling Severity Index

The differences between the prevalence rates estimated by the pilot survey and HSE 2018, or trend-adjusted HSE figures, were much greater in relation to PGSI scores than they were for gambling activities for those under the age of 65. The differences were particularly stark for women aged 16 to 34.

There is little difference between HSE 2018 and trend-adjusted HSE prevalence rates, with the exception of young men, suggesting little change in recent years. However, the differences between the pilot survey estimates and HSE 2018 estimates were stark for men aged 16 to 34, men aged 35 to 64, women aged 16 to 34, and women aged 35 to 64. In contrast, the estimates from the two surveys were more in line for men and women aged 65 and over. Further work would be required to fully understand these PGSI score differences.

##  Summary

The pilot survey produced higher prevalence estimates - both for gambling activities in the previous 12 months and for low or moderate risk or problem gambling - in comparison with both HSE 2018 and the trend-adjusted HSE figures. The greatest differences related to the low and moderate risk and problem gambling prevalence. Looking across age groups, there was little difference between the surveys in relation to the prevalence estimates produced for older people. However, the pilot survey produced higher estimates for younger people, particularly women, notably in relation to online gambling rates and low and moderate risk and problem gambling prevalence.

Chapter 4 attempts to unpick the potential causes of the observed differences between the surveys, focusing on differences in:

* 1. The profile of participants completing the two surveys (that is, differential non-response bias), and
	2. How participants answer the questions given the different contexts and modes between the two surveys.

# Reasons behind differences

##  Introduction

There are three potential explanations for the differences observed in chapter 3. The first is that there has been a large, sudden, increase in gambling in early 2022 (beyond the current quarterly telephone survey series used in this analysis), and that this accounts for the higher gambling prevalence seen in the pilot survey. Statistics from the quarterly telephone series for the year to March 2022 were published on 26th April 2022 and did not show a sudden increase in gambling participation (participation was 43% Year to March 22, compared to 40% Year to March 21).[[20]](#footnote-21) This can therefore be ruled out as a plausible explanation.

If a genuine large increase in prevalence is ruled out, then the other explanations have to relate to how, and by whom, the pilot survey and HSE 2018 was completed. The first of these alternative possible explanations is that there may be different patterns of non-response between the pilot survey and HSE 2018, with the consequence that the pilot survey had a different profile of participants to HSE 2018. The second is that participants may have answered the questions differently in the two surveys. Both of these theories have been explored – and presented in sections 4.2 and 4.3 - with the conclusions reached being that

1. The most likely explanation for the higher prevalence of gambling in the pilot survey relative to HSE 2018 is that response rate differences between gamblers and non-gamblers are not the same in the two surveys. Possibly the pilot survey had a higher response rate amongst gamblers than non-gamblers (so that the pilot survey overestimates gambling). Further, HSE 2018 may have achieved a lower response rate amongst gamblers than non-gamblers (and hence underestimated gambling). HSE 2018 participants may have also been reluctant to report gambling. It is very difficult to distinguish between these competing hypotheses, and all may be true to an extent. Certainly, controlling for observable differences in the demographic profile of HSE 2018 and pilot survey participants does not explain the higher prevalence of gambling or problem gambling in the pilot survey.
2. There is evidence that participants in the pilot survey were more likely to report low or moderate risk or problem gambling behaviour (a PGSI score of 1+) irrespective of their gambling behaviour. This higher level of reporting of problems was especially true for women. So, something in the nature of the pilot survey means that pilot survey participants with the same gambling behaviour as those in HSE 2018 responded to the PGSI items in a way that resulted in their gambling scoring as low or moderate risk or problematic.[[21]](#footnote-22)

##  Evidence of non-response effects

To test whether differences in the profile of HSE 2018 and pilot survey participants could explain the higher prevalence of gambling in the latter, the pilot survey participants were re-weighted[[22]](#footnote-23) to give a very similar profile to HSE 2018 on a wide range of characteristics:

* Sex
* Age group
* Region
* Employment status
* Level of qualifications
* Number of adults in the household
* Number of children in the household
* Tenure
* Ethnic group
* Religion
* Whether a smoker
* Frequency of drinking

However, after re-weighting the data in this way, the pilot survey gambling estimates change very little. Figure 11 compares the percentages before and after the re-weighting.

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| Figure 11: Prevalence of gambling before and after matching to HSE 2018 profile |
| First figure Pilot survey, second figure Pilot survey matched to HSE profile, third  figure 2018 HSE adjusted, fourth figure 2018 HSE  PGSI+1 11% 12% 2% 4% Any online gambling other than Lottery 17% 17% 12% 9% Any gambling other than Lottery 48% 49% 35% 40% Any gambling 63% 65% 50% 54%  *Unweighted bases: HSE 2018: 7382. Pilot survey (England only): 916. Table 4 (data tables).* |

Based on this analysis it seems clear that the higher rate of gambling activity in the pilot survey cannot be accounted for by observable profile differences. As noted above, there are a number of reasons why the HSE may under-estimate gambling behaviour, including under-representing gamblers and non-disclosure of gambling activities (see chapter 5). Alternatively, it is plausible that the pilot survey has a higher response rate amongst those who gamble, so that gamblers are over-represented. If either or both explanations are true, all else being equal, gamblers were more likely to complete the pilot survey than non-gamblers. Furthermore, given that the largest differences in the prevalence rates were seen for men and women aged 16 to 34, this would suggest that non-gamblers in these groups were particularly underrepresented in the pilot survey.

##  Evidence of a differential in how participants answer the questions

There is good evidence that the differences between the problem gambling prevalence estimates is in part explained by differences in the way that pilot survey participants and HSE 2018 participants completed the PGSI. Comparing participants from the two surveys with similar gambling activity profiles, pilot survey participants were more likely to score one or more on the PGSI than their counterparts in HSE 2018.

These findings are illustrated in Figures 12 and 13 using two measures which are known to strongly predict problem gambling: the number of gambling activities that a participant has spent money doing in the previous 12 months; and the frequency with which they gamble.

Figure 12 shows the percentage of participants engaged in different numbers of activities who scored as involved in non-problem gambling/a non-gambler (a score of 0 on the PGSI) or who scored one or more on the PGSI. For any given number of gambling activities, significantly more pilot survey participants have a PGSI score of 1+ than their HSE 2018 counterparts. For example, even among HSE 2018 participants who had taken part in only one gambling activity in the past year, 2% had a PGSI score of one or more. In the pilot survey, the comparable figure was 8%. Looking at those involved in a greater number of activities, the difference between the two surveys widened. For example, among those who had spent money on four or more activities, 28% of HSE 2018 participants scored as PGSI 1+ compared with 50% of pilot survey participants.

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| Figure 12: PGSI 1+ by number of gambling activities |
| *HSE 2018  Four or more 28% Three 8% Two 4% One 2% None 0%   Pilot Survey  Four or more 50% Three 20% Two 5% One 8% None 0%**Unweighted bases: HSE 2018: None: 3191; One: 1696; Two: 1021; Three: 491; Four or more: 524. Pilot Survey (England only): None: 344; One: 236; Two: 129; Three: 80; Four or more: 95. Table 5 (data tables).* |

The pattern was very similar in relation to the frequency in which participants gambled. Across the distribution, pilot survey participants were more likely than their HSE 2018 counterparts who gambled at the same frequency to score as involved in low or moderate risk or problem gambling (Figure 13). For example, 1% of survey participants who reported gambling once or twice a year scored as being involved in low or moderate risk or problem gambling, compared with 10% of pilot survey participants. Among those who gambled once a week, 8% of HSE 2018 participants scored as being involved in low or moderate risk or problem gambling, compared with 25% of those in the pilot survey.

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| --- |
| Figure 13: PGSI 1+ by gambling frequency |
| HSE 2018 2 or more times a week 21% Once a week 8% Less than once a week, more than once a month 13% Once a month 7% Every 2-3 months 6% Once or twice a year 1% Not at all 0%  Pilot survey 2 or more times a week 26% Once a week 25% Less than once a week, more than once a month 23% Once a month 19% Every 2-3 months 12% Once or twice a year 10% Not at all 0%  *Unweighted bases: HSE 2018 Not gambled: 3191; Once or twice a year: 996; Every 2/3 months: 503; Once a month: 494; Less than once a week, more than once a month: 379; Once a week: 913; 2 or more times a week: 4094. Pilot survey (England only): Not gambled: 344; Once or twice a year: 124; Every 2/3 months: 77; Once a month: 84; Less than once a week, more than once a month: 65; Once a week: 107; 2 or more times a week: 74. Table 5 (data tables).* |

These findings have been confirmed more formally in a regression analysis. A logistic regression was run with a binary dependent variable where a PGSI score of one or more was given a value of one and those with the PGSI of zero given a value of zero. The model included sex, age and all the gambling behaviour questions (frequency, number of activities, and individual activities) as control variables, as well as a binary for ‘survey’. The estimated odds of having a PGSI score of 1+ was found to be 2.9 times higher for the pilot survey than for HSE 2018. That is, pilot survey participants with the same demographic and gambling profile as their HSE 2018 counterparts were more likely to score as being involved in low or moderate risk or problem gambling.

The regression also identified that the differential in PGSI scoring was particularly large for women. For men, the odds of having a PGSI score of at least one (after controlling for age and gambling behaviour) was estimated to be two times higher for the pilot survey than for HSE 2018, whereas for women the odds were five times higher.

The analysis in chapter 5, which compares online and postal participants in the pilot survey, suggests that the differential in PGSI scoring was much starker for those responding online (see section 5.4).

##  Summary

The analysis presented in chapter 4 highlights two potential causes of the differences between the prevalence estimates produced by HSE 2018 (including the trend-adjusted figures) and the pilot survey. Firstly, it appears likely that the pilot survey participants were more likely to be gamblers. This will have led to higher prevalence rates than HSE 2018 where there is no reason to expect that gamblers would have been more likely to take part. Secondly, it appears that there were differences between the two surveys in the way that survey participants completed the PGSI, with the differences greatest for women. Pilot survey participants were more likely than their HSE 2018 counterparts to have their gambling behaviour rated as low or moderate risk or problematic. It is hard to know which of the estimates are most accurate. However, the issue is further explored in chapter 5 which looks within the pilot survey at the prevalence estimates derived from the online and the postal survey participants.

# Impact of the postal stage

##  Introduction

A postal self-completion option was included in the pilot survey with the aim of reducing potential biases towards higher internet users (which, in turn, will be correlated with age and higher rates of online gambling activities). However, the inclusion of a postal self-completion option adds cost and complication to the survey process and limits the survey length. Therefore, one aim of the pilot survey was to explore the extent to which the postal element changed the gambling prevalence estimates compared with those produced from the online element, and whether it brought prevalence estimates closer to those in HSE 2018.

The sections below address the questions:

* Is there a difference in the demographic profile of pilot survey participants who responded online versus by post? (section 5.2)
* How do the estimates of gambling activity and problem gambling compare across the two modes? (section 5.3)
* Is there evidence that participants answered the questions differently dependent on the mode of completion? (section 5.4)

The overall conclusion is that there is value in including the postal self-completion. It brought participants who would otherwise have been excluded from the survey because they did not have access to or did not use the internet. It brought more non-gamblers into the survey, and it rebalanced the estimates for online gambling activity, reducing the difference between the pilot survey and HSE 2018. Moreover, it reduced the differences between the two surveys in relation to the way in which participants answer the PGSI.

##  Comparing the profile of the online and postal participants

Figure 14 shows the sex, age profile, internet usage and gambling activity of the pilot survey participants who responded online and by post. The modes were balanced in relation to sex (43% of the online participants and 44% of the postal participants were men), but those who completed the survey online were, on average, younger than those who completed a postal questionnaire. For example, 9% of the online participants were aged 16 to 24 compared with 2% of the postal participants.[[23]](#footnote-24)

Those who completed the survey online were also more likely than the postal survey participants to use the internet (99% compared with 88%) and to have a smart phone (95% compared with 80%). Among internet users, online survey participants used the internet more often than postal survey participants (for example, 44% of online participants used the internet almost all the time compared with 25% of postal survey participants).

Online participants were more likely than postal participants to have spent money on gambling in the previous year (65% compared with 58%). In particular, they were far more likely to have gambled online (19% compared with 6%).

|  |
| --- |
| Figure 14: Profile of participants by mode of completion |
| First figure paper, second figure online  Sex Female 56% 57% Male 44% 43%  Age:  65 and over 50% 17% 55 to 64 21% 16% 45 to 54 13% 18% 35 to 44 8% 18% 25 to 34 7% 21% 16 to 24 2% 9%  Has smart phone 80% 95% Uses internet 88% 99% Has internet access 93% 98%  Among internet users: how often uses internet Less often 5% 0% Several times a week 7% 2% About once a day 11% 4% Many times a day 50% 51% Almost all the time 25% 44% Gambling activity in previous 12 months  Any online gambling other than Lottery 6% 19% Any gambling other than Lottery 42% 50% Any gambling 58% 65% *Unweighted bases: Pilot survey online participants: 518; Pilot survey postal participants: 398 (England only). Table 6 (data tables).* |

##  Comparing the gambling prevalence estimates from the online and postal survey responses

The observed differences between the online and postal elements in terms of gambling behaviour are in part attributable to the age difference in the two sets of participants.

Having corrected by weighting for differences in the sex and age profile of participants who completed the survey online or by post, the prevalence estimates of any gambling in the previous 12 months and any gambling other than the National Lottery were similar, with no statistically significant differences between the two modes (Figure 15).

In total, 65% of online participants reported having spent money on gambling in the previous 12 months, compared with 62% of postal survey participants (p-value: 0.547), with the figures even closer when the National Lottery is excluded (50% compared with 49%, p-value: 0.802).

However, online participants were significantly more likely than postal survey participants to report having gambled online in the previous 12 months (19% compared with 12%, p-value: 0.044).

|  |
| --- |
| Figure 15: Prevalence of gambling by mode of completion |
| First figure paper, second figure online  Any online gambling other than Lottery 12% 19% Any gambling other than Lottery 49% 50% Any gambling 62% 65% *Unweighted bases: Pilot survey online participants: 518; Pilot survey postal participants: 398 (England only). Table 7(data tables).* |

There were no statistically significant differences between participants completing the survey online or by post in relation to the number of gambling activities they had done in the previous 12 months (p-value: 0.788), the frequency with which they gambled (p-value: 0.492) or the percentage with a PGSI score of 1+ (p-value: 0.70) (Figure 16). Across the whole of the PGSI distribution however, the difference reached significance (p=0.012).

|  |
| --- |
| Figure 16: Number of gambling activities, frequency of gambling and a PGSI score of 1+ by mode of completion |
| First figure paper, second figure online Number of activities Eight or more 1% 2% Seven 2% 1% Six 3% 2% Five 4% 4% Four 5% 5% Three 7% 10% Two 15% 13% One 26% 28% None 38% 35%  Frequency  Two or more times a week 7% 9% Once a week 13% 12% Less than once a week, more than once a month 6% 8% Once a month 10% 10% Every two to three months 12% 9% Once or twice a year 12% 17% Not gambled 40% 36%  PGSI 1+ 6% 12%   *Unweighted bases: Pilot survey online participants: 518; Pilot survey postal participants: 398 (England only). Table 7 (data tables).* |

##  Comparing how the PGSI is answered online and on paper

Section 4.3 presented evidence that the difference between the problem gambling prevalence estimates was in part explained by differences in the way that pilot survey participants and HSE 2018 participants completed the PGSI. Comparing participants from the two surveys with similar gambling activity profiles, pilot survey participants were more likely to score on the PGSI as being involved in low or moderate risk or problem gambling than their HSE 2018 counterparts.

This appears to be related only to the pilot survey participants who completed the survey online, with the postal survey participants completing the PGSI in a similar way to HSE 2018 participants. That is, the relationship between their PGSI scores and the number of gambling activities and frequency of gambling mirrors that of HSE 2018.

Figure 17 shows the percentage of participants engaged in different numbers of activities[[24]](#footnote-25) who had a PGSI score of 1+. As a general pattern, for any given number of gambling activities, more online participants scored as being involved in low or moderate risk or problem gambling than their counterparts completing the postal questionnaire.

More formally, a logistic regression that compares the odds of having a PGSI of 1+ for three groups: HSE 2018, pilot survey online, and pilot survey postal, and controlling for sex, age and gambling behaviour, found odds of 3.5 times higher than HSE 2018 for pilot online completion (a significant difference), but odds just 1.6 times higher for pilot postal completion (not statistically significant).

A possibility is that online completion allows for more privacy. There is evidence of a similar effect within HSE 2018. The odds of having a PGSI of 1+, after controlling for sex, age and gambling behaviour, were 1.5 times higher for those who were interviewed alone compared with those who were interviewed in the presence of another family member.

|  |
| --- |
| Figure 17: PGSI 1+ by number of gambling activities by survey mode |
| First figure online, second figure postal PGSI1+ by number of gambling activities by survey mode  None 0% 0% One 9% 2% Two 6% 0% Three 17% 15% Four 39% 22% Five or more 59% 34%*Unweighted bases: Pilot survey online participants: None: 178; One: 139; Two: 69; Three: 55; Four: 24; Five or more: 45; Pilot survey postal participants: None: 166; One: 97; Two: 60; Three: 25; Four: 11; Five or more: 15 (England only). Table 8 (data tables)* |

##  Summary

The postal element of the pilot survey was valuable in terms of improving the representativeness of the overall sample in relation to age and internet usage. It was also successful in bringing in more non-gamblers than the online element.

# Assessing other aspects of the pilot survey

This chapter includes data from participants in all three countries (preceding chapters 3 to 5 focused on those in England only due to the comparison with HSE 2018).

##  Effectiveness of the mailing strategy

One of the aims of the pilot was to review the effectiveness of the mailing strategy. The strategy is outlined in section 2.1.3 but in summary and in Figure 18 below, all issued addresses were sent an initial invite letter, followed 12 days later by a first reminder letter. Second and third reminders were sent to addresses with fewer than two online completions by the date the reminder sample file was prepared. Where required, the second reminder was sent out nine days after the first reminder and, again, if required, the third and final reminder was sent out 13 days after the second. Two postal questionnaires were included in the second reminder letter.

**Figure 18: Mailing strategy**

Of the 619 online questionnaires included in the final data, 42% were submitted after receipt of the initial invite (i.e. in the 12 days before the first reminder was sent out). This includes 1% who completed the online survey within one day of the invite letter being sent out, 13% within two days and 21% within three days. A further 26% of online questionnaires were completed after the first reminder (between 18th and 26th January) was sent out and a further 19% after the second reminder (between 27th January and 8th February). The final 12% of online questionnaires were completed after the third and final reminder had been mailed (9th to 21st February). Hence, 31% of online completions occurred after the household had the option of completing the questionnaire on paper (Table 9 in data tables).

It is not known when households received the second reminder letters containing the postal questionnaires nor when the postal questionnaires were completed but of the 459 postal questionnaires included in the final data, 75% were processed by NatCen before the third and final reminder was sent out. The remaining 25% were received and processed at NatCen after the third reminder was sent out. It is possible that some of these later questionnaires had been completed before the third reminder was received and receipt of this merely prompted the participant to return their completed postal questionnaire (Table 10 in data tables).

Reminders were sent out if fewer than two completed questionnaires had been received from the address by the time the sample files for the next reminder was prepared. At the time the files were being prepared for the second reminder, there were 129 households where one person only had completed an online questionnaire. Reminders generated a second participant in 49 of these households (37 completed the survey online, 12 on paper). Of the 37 completing the survey online, 27 did so before the second reminder would have arrived and 10 did so after it could have arrived (Table 11 in data tables).

##  Participant feedback

Those completing the survey online were asked for feedback on the invite letter and specifically, what they thought the survey was about.[[25]](#footnote-26) Responses were given as free text rather than the participant choosing from pre-set answer codes. Of the 91% who provided a response, 76% mentioned gambling, 14% betting, 10% lotteries, 10% gaming and 6% mentioned something else. A further 5% gave a response that did not answer the question. It should be noted that this feedback question was asked at the end of the questionnaire, after participants had been asked questions about gambling, betting, lotteries and gaming, therefore likely influencing their response (Table 12 in data tables).

Participants completing the survey online were also asked why they decided to take part and 89% provided a response. Of those who provided a response, the most common reason given was the £10 voucher, mentioned by 54%. Just over a third (34%) mentioned the importance of the topic area or of taking part in surveys and research. A further 11% reported that they wished to provide their view towards gambling and the importance of this view being heard and 4% mentioned the mailings (invite letter and/or reminder letters) as a reason for taking part (Table 13 in data tables).

##  Questionnaire completion times

The aim was for the online questionnaire to take an average of 20 minutes to complete. The mean time taken was longer than this at 29 minutes: 33 minutes for gamblers and 23 minutes for non-gamblers.[[26]](#footnote-27) The median time taken was slightly lower than the mean: 28 minutes for all participants: 31 minutes for gamblers and 22 minutes for non-gamblers.[[27]](#footnote-28)

Mean and median completion for sets of questions/topic areas are shown in Table 6A.

|  |
| --- |
| Table 6A: Online questionnaire completion times |
| *Fully productive online participants* |
| **Questionnaire section and gambling status** | **Mean** **(minutes)** | **Median** **(minutes)** |
| **Whole questionnaire** |
| All participants | 29 | 28 |
| Gamblers | 33 | 31 |
| Non-gamblers | 22 | 22 |
|  |  |  |
| **Modules** |
| Admin | 7 | 5 |
| Demographics | 5 | 4 |
| Core gambling questions | 7 | 6 |
| Gambling harms | 3 | 2 |
| Gambling participation questions | 2 | 2 |
| Web only gambling questions | 5 | 4 |
| Health questions | 3 | 2 |
| Internet and leisure questions | 4 | 3 |
|  |  |  |
| *Unweighted bases* | *619* | *619* |

##  Break-off rates and locations

In total, 675 individuals started the online questionnaire and the majority (644) went on to fully complete it and as such were included in the final data (post de-duplication and the removal of speeders - see section 2.1.4 for more detail). Of the 31 who did not fully complete the online questionnaire, eight stopped during the demographics block and were classed as partially productive and 23 stopped at an earlier point and were classed as unproductive. Table 6B details the points in the questionnaire at which these 31 individuals stopped.

|  |
| --- |
| Table 6B: Online questionnaire break-off points |
| *Participants who started the online questionnaire but did not finish it* |
| **Question screen when ended questionnaire** | **Number of cases**  |
|  |  |
| **Unproductive participants1** |
| Create password | 8 |
| First Leisure activities question | 3 |
| Internet access | 1 |
| Gambling typologies/binge questions | 4 |
| Own gambling harms | 3 |
| Gambling advertisement and marketing | 3 |
| Health and wellbeing | 1 |
|  |  |
| **Partially productive participants2** |
| Date of birth | 3 |
| Educational or school qualifications question | 1 |
| Household size question | 1 |
| Household income question | 3 |
|  |  |
| *Unweighted base* | *31* |
| 1 Participants stopping the questionnaire prior to the demographics block were classed as unproductive.2 Participants stopping the questionnaire during the demographics block were classed as partially productive. |

##  Item non-response

The level of item non-response was considered for key questions. Item non-response is where a participant fails to answer a question, either in full or in part (i.e. skipping questions or answering don’t know/prefer not to say). Item non-response introduces problems such as non-response bias; this is where there are considerable differences in those who participated and those who did not.

For the purposes of the pilot, the online and postal questionnaires were designed to match the gambling participation questions in the HSE 2018 self-completion booklet[[28]](#footnote-29) and for consistency, this format was followed for other questions. This meant that most multi-code questions had a Yes/No answer option for each listed activity rather than a “tick/select all that apply” instruction. This was a more burdensome exercise for participants as it required the selection of a response at each answer option rather than only selecting those that applied to them. It was therefore expected that participants might leave Yes/No answer options blank if they did not personally apply or if they lost interest in/were tired of going through the list. Further, non-response to these types of questions is likely to be higher on the postal questionnaires as those participants could see the whole list of answer options on the page in front of them, while for online participants, the Yes/No answer options to each activity are only displayed once the previous one has been answered.

Item non-response was first considered for the key survey questions and then for the questions with highest non-response for the two modes. The first substantive question in both modes asked: “In a typical month, which of the following activities, if any, do you usually do?” Yes/No answer options were offered for each activity. The first activity (spend time with friends/family) had a 1% non-response rate (1% for online and 2% for postal completions).

The gambling participation question followed the above structure and the non-response rate for the first activity (tickets for the National Lottery Draw) was 1% (less than 1% for online and 1% for postal completions). The same non-response rate (1%) was observed for the final gambling participation activity (another form of gambling) but it was lower for online than postal completions (1% and 3% respectively).

The non-response rate for the first and also the last question of the PGSI was 2% (less than 1% for online and 5% for postal completions). The higher non-response rate for the latter is likely due to postal participants not following the routing instruction at the end of the gambling participation question.

The highest non-response rates for individual questions in the online and postal questionnaire are shown in Table 14 (see data tables).

##  Routing errors (postal questionnaire)

Whilst the online questionnaire has embedded checks and edits, data from the postal questionnaires was subject to errors introduced by participants when they did not follow routing instructions set out in the postal questionnaire. This is to be expected and many of these errors were dealt with through standard editing rules.

It was sometimes possible to infer what a participant’s answers were meant to be (e.g. someone says they have never smoked but go on to say that they smoke five cigarettes a day) and the correct response inputted. The exception to this was the gambling participation question where if there was a no or missing response to all of the gambling participation activities but then answers to the subsequent questions suggest the participant had gambled, then responses to the subsequent routed questions were deleted. This was to match the approach taken on HSE 2018.

Examples of where participants did not follow the routing in the postal questionnaire (and their responses to the subsequent routed questions were deleted) included:

* Some participants who, based on their responses to earlier questions, should not have answered the detailed gambling questions. However, 13 reported spending money on gambling items in the past year at the gambling frequency question. Similarly, 26 responded to the first PGSI question (selecting the ‘Never’ answer option)
* 54 participants who, based on their response that no one close to them gambles, still answered the first question on ’gambling harms affected other’. Of these, 47 reported never having experienced such behaviour in the last 12 months and 7 reported experiencing it at least occasionally during this period. It is not possible to ascertain whether these latter participants misread the routing instruction, answered the initial question incorrectly or they experienced harms associated with someone’s gambling in the past 12 months even though no one close to them currently gambles. It is worth considering whether this seeming discrepancy (between being close to someone who *currently* gambles and experiencing gambling harms *over the last 12 months*) can be removed for the next phase

##  Evidence of satisficing by online participants

There are various indicators of satisficing by online participants; questionnaire completion time, use of don’t know or prefer not to say answer options, skipping questions and straight lining.

Three online cases were removed from the analysis dataset due to concerns that the participant had completed the online questionnaire too quickly.

The questionnaires were designed to be as similar as possible to the HSE 2018 self-completion booklet and hence many questions in the online questionnaire did not include prompts if a participant tried to skip a question; instead such questions could be left blank if the participant did not wish to answer. A small number of questions included a prompt by which ‘hidden’ don’t know or prefer not to say answer options would appear on screen if the participant tried to skip the question. Some participants may have deliberately skipped questions or chose the don’t know/prefer not to say answer option in order to complete the questionnaire quickly. The proportion of questions that participants skipped or used don’t know/prefer not to say answer options was analysed: 96% of online participants did this at less than 2% of questions they were asked to answer and almost all (99%) did this at less than 5% of questions (Table 15 in data tables).

Another indicator of satisficing is straight lining, where participants always select the first or last answer category, indicating they did engage with the question. It was not possible to analyse this in the pilot survey as the questionnaire included a large number of questions where participants would be expected to consistently select the same answer option (e.g. non-gamblers always selecting no to each gambling activity).

##  Proportion of participants choosing ‘other’ response options

Both questionnaire modes contained the same four questions with an “other, please specify” answer option. The online questionnaire included additional questions with this option: two about National Lottery advertising and a follow-up question for each gambling activity participated in.

The percentage of participants selecting the “other, please specify” answer options are shown in Table 16 in the accompanying data tables.[[29]](#footnote-30) Where appropriate, responses were back-coded into a pre-existing answer option.

For the question regarding which device(s) participants had used to spend money on tickets for any other lottery, six of the seven participants selecting “other, please specify” mentioned direct debit, standing order or making monthly payments. This suggests that participants making automated payments struggled cognitively to answer this question.

##  Evidence of questions where participants cannot be differentiated

Analysis was conducted to see if there was evidence of questions where (almost) all participants chose the same answer category and hence the question did not differentiate participants.

Questions where the same answer option was selected by at least 95% of participants included: PGSI and DSM-IV scoring questions, gambling harms, whether the participant had a gambling binge in the last 12 months and questions about internet access. These responses are to be expected as they refer to events or situations that are either relatively rare or very common (Table 17 in the data tables).

# Summary of review and recommendations

##  Summary of HSE comparison/review

The pilot survey produced higher prevalence estimates – both for gambling activities in the previous 12 months and for low or moderate risk or problem gambling – than HSE 2018 and the trend-adjusted HSE figures. The greatest differences related to the at risk and problem gambling prevalence. Looking across age groups, there was little difference between the surveys in relation to the prevalence estimates produced for older people. However, the pilot survey produced higher estimates for younger people, particularly women, notably in relation to online gambling participation rates and at risk and problem gambling prevalence. Problem gambling estimates produced by the pilot survey were more in line with other online surveys such the NatCen, Kantar and Ipsos-MORI online probability panel surveys[[30]](#footnote-31) but lower than non-probability panels such as that carried out by YouGov.[[31]](#footnote-32)

In chapter 4 attempts were made to unpick the potential causes of the observed differences between the pilot survey and HSE 2018, focusing on differences in:

1. the profile of participants completing the pilot and HSE 2018 (that is,

differential non-response bias) and

1. how participants answer the questions given the different contexts and modes of the two surveys

The analysis highlighted two potential causes of differences between the prevalence estimates produced by HSE (the 2018 survey and the trend-adjusted figures) and the pilot survey. Firstly, it appears likely that the pilot survey had a higher response rate amongst gamblers than non-gamblers, producing higher participation and prevalence rates than HSE 2018. Secondly, it appears that there were differences between the two surveys in the way that survey participants completed the PGSI, particularly for women. Among those with a similar range of gambling behaviours (in terms of range and type of activities undertaken and frequency of engagement), pilot survey participants were more likely than their HSE 2018 counterparts to have a PGSI score of 1+. Here, it is hard to know which of the estimates is most accurate.

It is worth considering whether the HSE 2018 figures under-estimate gambling prevalence. Those experiencing gambling harms report feeling shame and stigma and are often adept at hiding behaviours from others. Although the HSE 2018 asked gambling questions using a paper self-completion booklet, participants may have been concerned about privacy given the presence of an interviewer and potentially, other household members doing their self-completions at the same time and in the same room. This may have led to a reluctance to answer questions honestly. Preliminary analysis of the pilot findings supports this, with those completing the gambling questions without the presence of other household members having elevated odds of a PGSI score of 1+. Further work is needed to understand more about privacy/confidentiality concerns for different modes in order to explain differences seen across surveys as well as any possible ordering effects (the impact of questions that preceded the gambling questions have on response).

##  Summary of postal stage and other aspects of survey

The postal element of the pilot survey was valuable in terms of improving the representativeness of the overall sample in relation to age and internet usage. It also brought the prevalence estimates closer to those of HSE 2018 and the trend-adjusted HSE.

Other aspects of the survey analysed in chapter 6 indicated that response to the survey was good and there were no serious issues with the online nor the postal questionnaires. Small tweaks to the phrasing of certain questions should be taken into consideration where indicated in chapter 6.

Response to the survey was in line with expectations for a push-to-web methodology and the incentive was cited as a major factor in promoting response and the mailing strategy to maximise response appeared to work well. We are confident that the push-to-web survey methodology will be able to deliver a robust time series that can be used to track changes in gambling behaviours over time. That said, as noted above, there does appear to be a response bias with the pilot study being more attractive to gamblers.

##  Recommendations

The postal follow-up to the online survey should be retained as it improved response and the representativeness of the sample. The fully remote data collection also removes – or at least alleviates – concerns about privacy and confidentiality that would come with a telephone follow-up.

It is clear that there was non-response bias towards non-gamblers in the pilot survey but the extent of this cannot be fully understood from the pilot data alone. We recommend that further work is undertaken during the experimental statistics phase to further understand this bias and make changes to reduce it. Two areas that should be considered for further work are:

* Changing the invite and reminder letters to make them more appealing to non-gamblers (e.g. more focus on health or attitudes)
* Conducting split-sample experiments to look at different incentive strategies, content of mailings and the household selection procedures. For example, investigating whether asking all (not just two) adults in a household to take part in the survey reduces non-response bias towards non-gamblers as potential self-selection by gamblers is reduced.

We recommend a two-step process of experimentation during phase two with an initial focus on experiments to understand and reduce non-response bias (outlined above). This would be followed by testing of the refined questionnaire content (for example, testing different ways of capturing information about gambling participation and harms). This cannot be run at the same time as experiments focusing on non-response as it would influence results. Thus, only once that work is complete should attention focus on the questionnaire content.

Other recommendations based on findings from the pilot are to:

* Increase the age of eligibility from 16 to 18 years (only eight individuals aged 16 or 17 took part in the pilot)
* Consider increasing the sample size to allow for more split-sample experiments and sub-sample analysis to be conducted (e.g. having an achieved sample size of up to 20,000 instead of 10,000 per year)
* Retain the mailing strategy as employed in the pilot (i.e. the same number of mailings and gaps between them)
* In terms of the questionnaires:
	+ Content should be carefully considered in order to reduce the average completion time to nearer the optimum 20 minutes
	+ There should be more use of multi-code “select all that apply” answer options to reduce participant burden and item non-response
	+ Routing in the postal questionnaires should be reviewed to ensure it is clear
	+ Hidden ‘don’t know and refusal’ options should be utilised more widely in the online questionnaire. This should reduce the number of questions skipped and hence should help reduce item non-response
1. Consultation on gambling participation and problem gambling prevalence research - The Gambling Commission - Citizen Space: <https://consult.gamblingcommission.gov.uk/author/participation-and-prevalence/consult_view/> [↑](#footnote-ref-2)
2. Sturgis, P., & Kuha, J. (2022). How survey mode affects estimates of the prevalence of gambling harm: a multisurvey study. *Public Health*, *204*, 63-69. [↑](#footnote-ref-3)
3. These are large scale face-to-face population surveys conducted approximately every two years. [↑](#footnote-ref-4)
4. Consultation on gambling participation and problem gambling prevalence research - The Gambling Commission - Citizen Space: <https://consult.gamblingcommission.gov.uk/author/participation-and-prevalence/consult_view/> [↑](#footnote-ref-5)
5. Experimental statistics are a subset of newly developed or innovative official statistics undergoing evaluation. For more information see Experimental Statistics – Office for Statistics Regulation ([Experimental Statistics – Office for Statistics Regulation (statisticsauthority.gov.uk)](https://osr.statisticsauthority.gov.uk/policies/official-and-national-statistics-policies/experimental-statistics/)) [↑](#footnote-ref-6)
6. Push-to-web surveys are generally more cost effective when compared with face-to-face surveys, and thus allow larger samples. Fieldwork periods for push-to-web surveys can also be shorter, particularly when compared with telephone or face-to-face surveys, allowing for data to be available much sooner. A push-to-web methodology has been successfully used on other high-profile surveys such as the Financial Lives Survey, the National Oral Health Survey and a feasibility study for the Health Survey for England (HSE). [↑](#footnote-ref-7)
7. This approach is supported by GambleAware’s commissioned research, published in May 2021, which aimed to determine best practices for estimating the level of gambling participation and prevalence of gambling harms in Great Britain. https://www.begambleaware.org/news/new-gambling-prevalence-methodology-review-published [↑](#footnote-ref-8)
8. Indices of multiple deprivation (IMD) is a measure of relative deprivation for small, fixed geographic areas of the UK. Separate indices are produced for each UK country. IMD classifies these areas into five quintiles based on relative disadvantage, with quintile one being the most deprived and quintile five being the least deprived. [↑](#footnote-ref-9)
9. Asking a set number of adults (in the case of the pilot survey, two) rather than all adults from each address to complete the survey is a well-established approach for push-to-web surveys in the UK. Most residential addresses (85%) contain either one or two adults, meaning that exclusion of additional adults should not introduce any notable bias. Under this approach, it is estimated that 93% of the sample are the ones that would have been selected using a random approach. While this approach leads to a degree of within-household clustering, the effect of this is expected to be low, as most gambling related behaviour (except lottery playing) is not highly correlated between household members. Moreover, the slight inefficiency at this stage is outweighed by the higher number of productive cases achieved from asking up to two adults from each address to complete the survey instead of only one. [↑](#footnote-ref-10)
10. Sturgis, P., & Kuha, J. (2022). How survey mode affects estimates of the prevalence of gambling harm: a multisurvey study. *Public Health*, *204*, 63-69. [↑](#footnote-ref-11)
11. [Update: Pilot of survey questions to understand gambling-related harm - Gambling Commission](https://www.gamblingcommission.gov.uk/about-us/guide/update-pilot-of-survey-questions-to-understand-gambling-related-harm). Further work on gambling related harms will be published by the Commission in Summer 2022. [↑](#footnote-ref-12)
12. [Respondent engagement for push-to-web social surveys – GSS (civilservice.gov.uk)](https://gss.civilservice.gov.uk/policy-store/respondent-engagement-for-push-to-web-social-surveys/). [↑](#footnote-ref-13)
13. Love2Shop vouchers cannot be exchanged for cash and cannot be used for gambling, so does not pose ethical problems for this pilot survey. [↑](#footnote-ref-14)
14. Speeders were identified by calculating the median time it took to answer each question among all those who answered. From this an expected time was calculated for each participant dependent on the questions that they answered. A ratio of actual time compared with expected time was produced and any statistical outliers on this ratio measure were removed. [↑](#footnote-ref-15)
15. When estimating the proportion of ineligible addresses on a push-to-web survey, it is best practice to assume the same ineligibility rate as a recent face-to-face survey which uses the same sample frame and sampling approach and for which detailed outcomes are known for the entire issued sample. Ineligibility rates in PAF face-to-face surveys tend to fall between 8% and 10% and 9% is the rate recorded in the most recent face-to-face British Social Attitudes Survey (2019) and has been used as an appropriate default for this pilot survey. [↑](#footnote-ref-16)
16. Based on 2020 mid-year population estimates for Great Britain: <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland> [↑](#footnote-ref-17)
17. The rationale for not including trend-adjusted PGSI figures is given in section 3.2.2. [↑](#footnote-ref-18)
18. An estimated trend based on a comparison between the final quarter of 2021 with the final quarter of 2018 was considered, given that the final quarter of 2021 is closer to the lifting of COVID-19 restrictions than the earlier quarters. However, this gives a fairly small sample size and the trends within sex and age groups become unreliable. [↑](#footnote-ref-19)
19. The findings are very similar if the National Lottery is excluded from the gambling participation rates (see Table 5 in the data tables). [↑](#footnote-ref-20)
20. https://www.gamblingcommission.gov.uk/statistics-and-research/publication/statistics-on-participation-and-problem-gambling-for-the-year-to-march-2022 [↑](#footnote-ref-21)
21. Section 7.1 suggests possible reasons for these differences. [↑](#footnote-ref-22)
22. This was achieved using propensity score matching methods. [↑](#footnote-ref-23)
23. Note that these percentages are based on participants in England only and hence do not necessarily match those shown in chapter 2 which include participants in Scotland and Wales. [↑](#footnote-ref-24)
24. Because of small sample sizes, the number of activities has been capped at five or more. [↑](#footnote-ref-25)
25. It was not possible to ask participants completing the postal questionnaire for feedback due to limitations on the length of the questionnaire. [↑](#footnote-ref-26)
26. Gamblers are defined as having spent money on any gambling activity in the last 12 months. [↑](#footnote-ref-27)
27. Participant’s completion times were calculated by summing the time taken to answer each question that they answered, but with the time for each question capped at the high outlier value for that question. [↑](#footnote-ref-28)
28. <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2018> [↑](#footnote-ref-29)
29. Only two of the listed gambling activities – the National Lottery and any other lottery - generated an “other, please specify” response. [↑](#footnote-ref-30)
30. Sturgis, P., & Kuha, J. (2022). How survey mode affects estimates of the prevalence of gambling harm: a multisurvey study. *Public Health*, *204*, 63-69. [↑](#footnote-ref-31)
31. https://www.begambleaware.org/sites/default/files/2021-03/Annual\_GB\_Treatment\_and\_Support\_Survey\_2020\_report\_%28FINAL%29\_26.03.21.pdf [↑](#footnote-ref-32)