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MEASURES OF PROBLEM GAMBLING, GAMBLING BEHAVIOURS AND PERCEPTIONS OF GAMBLING IN IRELAND

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LIST OF ABBREVIATIONS

BRU	Behavioural Research Unit
CI	Confidence interval
CSO	Central Statistics Office
DSM-5	Diagnostic and Statistical Manual of Mental Disorders
ESPAD	European School Survey Project on Alcohol and Other Drugs
ESRI	Economic and Social Research Institute
GAA	Gaelic Athletic Association
GRAI	Gambling Regulatory Authority of Ireland
HSE	Health Service Executive
ICT	Information and communications technology
IPH	Institute of Public Health in Ireland
JNLR	Joint National Listenership Research
MHI-5	Mental Health Inventory-5
NDAS	National Drug and Alcohol Survey
NHS	National Health Service (UK)
NSUM	Network Scale-Up Method
OLS	Ordinary least square
PG	Problem gambling
PGSI	Problem Gambling Severity Index
TCD	Trinity College Dublin

EXECUTIVE SUMMARY

Problem gambling (PG) describes gambling behaviour that is disruptive or damaging to individuals, and includes behaviours (e.g., betting more than one can afford to lose) and experiences (e.g., feeling guilt and anxiety about gambling). This study set out to measure the prevalence of PG in Ireland. Previous measures of PG have been undertaken using in-person surveys, but international evidence suggests that gambling is a sensitive behaviour and that people may be reluctant to reveal honestly how much they gamble to an interviewer. For the present study, participants completed the questionnaire online to facilitate greater anonymity and promote more honest responding to sensitive questions.

The study was undertaken in August 2023 by quota sampling, using three different online panels, which generated a total usable sample of 2,850 adults aged 18 and over. The use of online panels and the sampling method more generally means the results may not generalise to people without internet access, those who are over 80 years of age or individuals without the capacity to complete surveys in English (e.g., those with cognitive impairments, some minority groups). To improve representativeness outside of these characteristics, we reweighted responses by age, gender and educational attainment based on Census 2022 figures. The main aim of the study is to measure the prevalence of PG but secondary aims include providing measures of gambling activity and perceptions of gambling among the general population. The focus of the report is on describing and measuring the problem; detailed causal analyses will feature in future reports.

To meet the threshold for PG, individuals must report multiple negative behaviours or experiences associated with their gambling (e.g., borrowing in order to fund their gambling). Based on our sample, we estimate that 3.3% of the adult population are people with PG (with a 95% confidence interval of 2.5–4.0%). This estimate is more than ten times higher than previous estimates of PG in Ireland, when measured in person in 2019 as part of the National Drug and Alcohol Survey (NDAS) (0.3%). The report discusses multiple possible reasons for this difference, including increased anonymity associated with online surveys and sample selection issues.

The figure of 3.3% equates to 1 in 30 adults, or 130,000 people, with PG in Ireland. In addition, we record a further 7.1% (95% confidence interval: 6.0–8.2%) of the adult population who report multiple problematic behaviours and experiences but fall short of the threshold for PG (i.e., they show moderate evidence of PG). This equates to 279,000 people with moderate evidence of PG. We record another 15%

(confidence interval: 13.4–16.5%) of adults (590,000) who report at least one negative experience or behaviour, leaving 75% who show no evidence of PG.

We undertook multiple checks to test the reliability of these estimates (e.g., re-weighting the data, asking about behaviour of friends and family; see Chapter 2). The estimates are robust to different weightings of the sample. They also closely match people's perceptions of the level of PG among their friends and family. Furthermore, having recorded expenditures on all types of gambling (sports betting, online and in-person casino games, lotteries, scratch cards, bingo, card games with monetary stakes and so on), we were able to aggregate expenditures for comparison with industry revenue figures. Based on our sample, we estimate annual expenditure of €5.5 billion, which compares to a (conservative) estimate of €6–8 billion for industry revenue. This spending calculation provides some confidence that our sampling method did not overestimate the amount of gambling taking place in Ireland today. This calculation, together with further tests of sample representativeness and an experimental method of testing for 'social desirability bias' (i.e., the tendency for survey respondents to answer questions in a way they believe will be interpreted by others favourably) in survey responses suggest that our study could still be underestimating PG.

In sum, while it is difficult to measure PG precisely – all methods have their drawbacks – the overall pattern of results that we report provides good evidence that the level of PG in Ireland is much higher than previously thought.

Descriptive statistics show that while PG is more common among adults aged under 50, men and those with lower educational attainment, it is also prevalent among women and those with higher educational attainment. Our sample suggests that 3.6% of men and 2.9% of women have PG. Over 4% of those whose highest educational attainment is the Leaving Certificate or tertiary education below degree level have PG, compared to 2.6% of people educated to degree level or above. PG is highest in the 30–39 years age group (6.7%). Although direction of causality is uncertain, people with PG have substantially worse mental health than people who do not have PG. Family members of people with PG also have worse mental health than average.

With respect to gambling activity in the general population, 74% reported engaging in any form of gambling over the previous four weeks and 35% reported gambling online. The most common forms of gambling are lotteries and scratch cards, followed by betting on horses, dogs and other sports. Casinos and spread betting are the least common forms. Those with PG reported engaging with slot machines and casino gambling more often than those without, particularly online.

People with PG reported spending, on average, more than €1,000 per month on gambling. This group accounted for 28% of total spending on gambling. When people who show moderate evidence of PG are included in the calculation, the implication is that nearly half of industry revenue arises from people experiencing multiple negative effects from gambling. Two-thirds of people with PG state that they would like to gamble less than they currently do, indicating that the current gambling landscape may induce widespread difficulties associated with self-control.

The public has a generally negative attitude to gambling and there is evidence that PG is the subject of stigma. Nevertheless, the public does not see people's character or upbringing as the main reason for PG; instead, people tend to see the availability of opportunities to gamble and exposure to gambling advertising as the main causes. Stressful individual circumstances and social circles also featured strongly as perceived reasons for PG by the public.

The evidence provided in this report has serious implications for understanding the role that gambling plays in Irish life. Although the gambling industry is a large employer, provides entertainment for many consumers and has strong links to sporting activity, the results presented here imply that a large minority of transactions undertaken by the industry involve customers who have PG or display moderate evidence of PG.

The findings provide an important context for debates surrounding the current Gambling Regulation Bill. Broadly, they indicate an alignment between proposals to restrict the marketing and advertising of gambling in the Bill and the public's views about what lies behind PG. The findings on expenditure among those with PG and prevalent desires to gamble less also provide evidence in support of pre-set limits on expenditure and restrictions on gambling paid for via credit. The greater prevalence of PG than previously thought supports prior research on treatment pathways that highlights a need for increased provision of support and services.

CHAPTER 1
Introduction

The extent of 'problem gambling' (hereafter PG) is difficult to measure because gambling behaviour is a sensitive issue. Some people who experience negative effects of gambling may be unwilling to engage in surveys of gambling behaviour, or may be inclined to under-report gambling behaviour to a stranger undertaking a survey (Goldstein et al., 2017; Hing et al., 2016; Kuentzel et al., 2008; van der Maas et al., 2021; Russell et al., 2022; Shnell et al., 2020). From a policy perspective, this is a problem. The gambling industry (i.e., casinos, bookmakers, lotteries, etc.) makes a substantive contribution to economic activity through employment and Exchequer revenue. It provides entertainment for many and has strong economic links to the funding and media coverage of sporting activity (e.g., Inter-Departmental Working Group on Future Licensing and Regulation of Gambling, 2019). However, in deciding on appropriate regulation for the industry, policy must balance economic and social benefits against potential harms, such as detriment to consumers (and their friends and family) who engage in problematic gambling behaviours. This task cannot be accomplished without measuring the prevalence of these behaviours.

The primary aim of the current report is to improve the available evidence on the prevalence of problematic gambling behaviours, general gambling activity and public perceptions of gambling. The focus is on measurement and on providing basic evidence of problematic behaviours in a timely fashion since, at the time of writing, the Gambling Regulation Bill (Houses of the Oireachtas, 2022) is making its way through the Oireachtas.[1] As well as establishing a new regulatory regime for gambling in Ireland, the Bill includes multiple restrictions on the marketing and advertising of gambling products. These include a ban on advertising via electronic means without explicit consent (i.e., where viewers have not opted-in to receive the advertisement), restrictions on the times of day when gambling advertisements are permitted, restrictions on sponsorship activity by gambling companies and a ban on inducements to gambling activities (e.g., offering free bets). These measures are designed to limit problematic gambling (see Langham et al., 2015). The present report aims to provide evidence of their direct relevance to policy and to give context for the appropriateness of these measures, given the constraints they may place upon industry activity.

Once this report has published up-to-date descriptive evidence of PG, gambling activity and perceptions of gambling, the data collected for this study will be

[1] See https://www.oireachtas.ie/en/bills/bill/2022/114/.

explored via a more detailed process of statistical modelling. These analyses will be the subject of one or more separate publications. The present report centres on descriptive analyses that aim to measure the prevalence of PG, the nature of general gambling activity and public perceptions of gambling.

The authors recently published an international literature review of evidence in relation to PG (Ó Ceallaigh et al., 2023). This review considered the international evidence on: matters of definition and measurement; factors associated with PG; attitudes to and perceptions of PG; the relationship to the marketing of gambling; interventions designed to reduce PG; and related issues specific to children and adolescents. Evidence particularly relevant for this report is summarised below but readers interested in greater detail are referred to that report.

The present research exercise is much narrower in focus, relating to one specific finding arising from the review. Specifically, Ó Ceallaigh et al. (2023) concluded, based on previous evidence, that it is likely that existing published estimates of PG in Ireland are too low. The sections that follow consider this conclusion in some detail and explain how it informed the design of the current study.

Our purpose in this study is straightforward: to provide better evidence on the true extent of PG among adults in Ireland. From the outset, it needs to be understood that to provide a single, accurate figure for the prevalence of PG is essentially impossible, due to methodological issues surrounding its measurement. Nevertheless, we set out to improve on existing measurements of PG, insofar as this was possible, in order to provide timely evidence to inform policy.

1.1 MEASURING PROBLEM GAMBLING

The term problem gambling (PG) is used to describe gambling behaviour that is disruptive or damaging to individuals but that may fall short of a clinical diagnosis of 'gambling disorder'.[2] The Problem Gambling Severity Index (PGSI) is a nine-item questionnaire that is widely used to provide population estimates of PG (Ferris and Wynne, 2001). It is the closest we have to an international standard for the measurement of PG. Respondents are asked how often, over the past year, they have had negative experiences from gambling (e.g., gambling causing financial problems for themselves or their family) or engaged in problematic behaviours (e.g., having borrowed or sold something to get money to gamble). The index

[2] Gambling disorder is defined as persistent and recurrent problematic gambling behaviour leading to clinically significant impairment or distress, as indicated by the individual exhibiting four (or more) symptoms from a nine-item checklist in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR; American Psychiatric Association, 2022).

contains a separate question for each of the nine experiences and behaviours.[3] Responses are scored as follows: a score of 0 if the item applied 'never' to the participant over the past year; a score of 1 if the item applied 'sometimes'; a score of 2 if it applied 'most of the time'; and a score of 3 if it applied 'almost always'. People with 'problem gambling' (hereafter 'people with PG') are defined as those with a score of 8 or more out of a maximum of 27 across the 9 items. Note that, although 8 out of 27 may seem low, the behaviours included in the index are quite extreme; experiencing many behaviours sometimes or a few behaviours regularly is likely indicative of a severe problem.

Other categories are used to identify those with a score of 1 or 2 and those with a score of 3 to 7; the academic literature has deployed the labels 'low risk' and 'moderate risk' respectively for these groups. However, these terms may be misleading in a policy context because the scoring system is not designed to predict future scores. In other words, it is not the case that those who are classified as 'low risk' are at low risk of *developing* PG. Furthermore, people who fall into these categories exhibit at least one gambling behaviour or experience that most people would consider problematic. Given this, in this report we instead label these groups as showing 'some evidence' and 'moderate evidence' of PG, respectively.

The PGSI was deployed in Ireland as part of the 2019–2020 Irish National Drug and Alcohol Survey (NDAS) (Mongan et al., 2022). The survey estimated the prevalence of PG in Ireland to be 0.3% (approximately 12,000 people), with a further 0.9% (35,000 people) showing moderate evidence and 2.3% (90,000 people) showing some evidence.

It is important to understand that the discussion that follows is not intended as a criticism of this previous research, which was conducted to a high standard using established practices. As stated at the outset, measuring PG is difficult. There are at least two reasons why the figures above may be underestimates. First, the survey was cut short by the onset of the COVID-19 pandemic, having achieved 88% of the target sample, and international evidence suggests an increase in PG since then (Brodeur et al., 2021). Second, and most importantly, the 0.3% estimate was elicited from a survey that was administered in person. It is plausible that people who have negative experiences of gambling might be reluctant to confess this to a stranger, particularly when face to face with them. This problem was understood by those designing and analysing the survey and is noted in the report on the survey's findings.

[3] Other experiences and behaviours asked about in the PGSI are: betting more than one can afford to lose; needing to gamble with larger amounts to get the same feeling of excitement; returning to try to win back lost money; feeling that one has a problem with gambling; being criticised by others for one's gambling behaviour; feeling guilty about the way one gambles; and experiencing gambling-caused health problems, including stress and anxiety.

Indeed, there is relevant international evidence showing that the mode of survey administration has implications for PG prevalence estimates (Nower et al., 2017). For example, in the UK, while surveys based on in-person and phone-based interviews have estimated PG rates at 0.3–0.7% of the adult population (Conolly et al., 2018; NHS, 2023; UK Gambling Commission, 2023), a survey administered online produced an estimate that was many times higher, at 2.7% (Gunstone et al., 2022).[4] We discuss reasons for these differences in detail in the following chapter, but intuitively, this difference may be due to the increased level of anonymity afforded in online surveys; participants may be more willing to answer questions about their gambling behaviour honestly if they do not need to respond in the presence of an interviewer (see also CSO, 2023a). Recent research with senior intercounty Gaelic Athletic Association (GAA) players, which involved administering the PGSI via an anonymous, online survey, recorded a PG prevalence rate of 4.7% (Turk et al., 2023). While there is international evidence to suggest that elite athletes experience PG at higher rates than the general population, a PG prevalence difference that is 15 times higher among senior GAA players than in the general population is implausibly high. One possible explanation is that the 0.3% rate is an underestimate.

Research undertaken by the Institute of Public Health in Ireland (IPH), based on 2019 data, found that 1.3% of 16 year olds (and 5.6% of those who gambled) met the criteria for PG (using a different definition to the PGSI described above; McAvoy et al., 2023).[5] The data for this IPH study were gathered using written questionnaires completed in the classroom. This may have afforded somewhat greater anonymity than a method requiring the participant to answer the PGSI in a one-on-one situation with an interviewer.

Of course, there are other candidate explanations for discrepancies between estimates. Online surveys typically rely on quota samples that set targets for sampling subgroups of the population, rather than on random probability samples. This means that they may be subject to different types of selection effects. For example, in principle, people with PG could be many times more willing to take part in an online survey to receive a small payment, or many times less willing to take part in unpaid, face-to-face ones, compared to the rest of the population. However, to explain the kinds of discrepancies in the figures above, the sample

4 The Gunstone et al. (2022) study was funded by GambleAware, which receives voluntary funding from the gambling industry.

5 The IPH report analysed Irish data collected as part of the European School Survey Project on Alcohol and Other Drugs (ESPAD) in 2019. PG classification depended on affirmative responses to questions about lying about how much money the respondent gambled and feeling the need to bet more and more money. In the 2019 ESPAD, 50 schools were selected at random to participate in the survey, stratified by geographic region, school type (e.g., vocational, secondary), religious affiliation, gender and disadvantage status. Survey data were collected from 3,565 pupils across the selected schools.

selection effects required would need to be very large. We discuss this issue in more detail in Chapter 2.

1.2 SOCIAL DESIRABILITY BIAS

The tendency for survey participants to alter their answers to questions about sensitive topics (e.g., about their gambling behaviour) in a way they believe will be viewed favourably by others is an established phenomenon known as 'social desirability bias' (Nederhof, 1985). It is understood that social desirability bias is likely to be exacerbated in situations where participants must verbalise responses to sensitive questions (Krumpal, 2013); for example, when talking to an interviewer on the telephone or face to face. Krumpal (2013) notes that mode of survey administration moderates socially desirable responding, with more honest answers to sensitive questions generated where the presence of the interviewer is minimised and respondents self-administer. This implies that online surveys should diminish social desirability to the greatest extent.

Identifying and estimating social desirability bias in survey responses typically relies on indirect questioning (Blair et al., 2020; Sagoe et al., 2021; Schnell and Thomas, 2021; Tourangeau and Yan, 2007). The basic idea is to ask a question in such a way that the proportion of positive answers can be inferred for the sample as a whole, but in a way that ensures the answer is ambiguous on an individual level, thereby preserving the participant's anonymity. In Ireland, experimental indirect questioning techniques have been employed to detect social desirability bias in survey responses to issues like attitudes towards minority groups and compliance with COVID-19 mitigative behaviours (McGinnity et al., 2020; Timmons et al., 2021, 2023).

In the current study, we employ two such techniques: the crosswise model and the list experiment. For the crosswise model (Sagoe et al., 2021; Schnell and Thomas, 2021; Yu et al., 2008), a sensitive target question (e.g., about PG) is paired with a non-sensitive question that has a known prevalence (e.g., mother's birth month is January or February). Respondents are asked to give a joint answer to both questions – i.e., that their response to both questions is the same or different. Because we know the aggregate-level probability of endorsing the non-sensitive item (i.e., people born in January and February), we can calculate the anonymously endorsed prevalence of the sensitive item. For the list experiment (Blair et al., 2020; Droitcour Miller, 1984), participants are presented with a list of items, including one sensitive target item, and asked how many apply to them. Crucially, they do not need to report which items, just how many. The average response rate is compared to a control group who see the same list but without the sensitive item, meaning any difference in the average response rate equates to the

anonymously endorsed prevalence of the sensitive item (assuming effective randomisation).

An alternative to using experimental techniques is to ask participants about the behaviour of those in their social network, as their responses about others are less likely to be affected by social desirability bias. The Network Scale-Up Method (NSUM) allows hard-to-count populations to be estimated by asking survey participants how many people there are in their social network who fit the description of interest (Bernard et al., 1991, 2010). By combining this information with information about the size of the participant's total social network, the population prevalence of individuals who fit the description of interest can be estimated. However, it can be difficult to measure people's total social network size accurately. Because of the concealability of PG and the motivation for concealing it that the stigma associated with PG provides (Wöhr and Wuketich, 2021), people's estimates of the number of people with PG in more distant parts of their social network (e.g., neighbours, extended family) are unlikely to be reliable. For these reasons, in the present study we ask only about close friends and immediate family. It should be acknowledged, however, that even when asking about friends and family, the stigma and concealability of PG is likely to downward bias these estimates. Estimates may also not be precise as they rely on subjective opinions from participants of what constitutes PG, though the direction in which this might bias estimates is not clear.

In light of the above factors, to reduce social desirability bias in this study we: estimated the prevalence of PG by administering the PGSI online; and then deployed the two indirect questioning techniques described, as well as the NSUM method, to give additional indications of the likely accuracy of our estimates. By updating prevalence estimates of PG, we can provide an updated analysis of the groups that are disproportionately affected by PG. Descriptive analysis of treatment reporting system data from Ireland suggests that being male, young and from a disadvantaged group are all factors associated with PG (Condron et al., 2022; Kelleher and Lynch, 2023), as does data from the NDAS (Mongan et al., 2022). People with PG are also disproportionately likely to be affected by other mental health issues, in Ireland and internationally (Abbott, 2020; Mongan et al., 2022). Thus, having estimated PG using the techniques described, we also provide a sociodemographic profile of people with PG in Ireland (by age, gender and educational attainment) and test whether there are differences in mental health between people with PG and the general population.

1.3 OTHER MEASURES OF POLICY INTEREST

Because our survey's focus was on gambling, rather than being a more general survey that *included* questions about gambling, it represented an opportunity to

collect much greater detail about gambling behaviours than had been done before. This is important, as there is currently no estimate of the level of gambling activity engaged in by individuals with PG in Ireland. We measure how frequently different groups of gamblers engage in different kinds of gambling activity and how much they spend in doing so. This latter measure is arguably particularly important, because while people with PG comprise a small proportion of those who gamble, they may account for a more substantial proportion of the transactions and revenue generated within the industry.

The measurement of gambling expenditure is also useful for gauging the potential accuracy of our estimates of gambling behaviour. Our study allows us to aggregate responses into an estimate of gambling expenditure for comparison with estimated revenues of the gambling industry. The Inter-Departmental Working Group on Future Licensing and Regulation of Gambling (2019) calculated gross industry revenue (i.e., before winnings are subtracted) to be at €6–8 billion. Almost €6 billion of this could be accurately assessed by combining figures for the total betting duty collected by Revenue with reported sales of lotteries and instant games published by the Regulator of the National Lottery. The uncertainty in the Working Group's €6–8 billion estimate arose from the lack of published figures for online gaming, bingo and gaming in arcades and private members' clubs. The data used by the Working Group came from 2017 (Revenue) and 2016 (Regulator of the National Lottery). The figure could be somewhat higher in 2023, especially given evidence of an increase in PG since the COVID-19 pandemic (Brodeur et al., 2021). However, in the absence of concrete evidence regarding post-pandemic spending, throughout the report we stick to a conservative estimate of €6–8 billion.

Ó Ceallaigh et al. (2023) highlighted other areas of relevance to policy on gambling where evidence is deficient or lacking in Ireland, particularly with respect to the types of gambling people engage in, how often they do so, and public perceptions of gambling. One reasonable policy intervention may be to encourage help seeking among people with PG, yet help-seeking behaviour may be hindered by how gambling is perceived (Clement et al., 2015). We therefore measured how positively or negatively people perceive gambling. To inform communication with the public about gambling, it is also useful to know about perceptions and preferences. Hence we also measured perceived causes of PG among the public, how much people think they gamble relative to others, and whether people would like to gamble less or more than they currently do.

1.4 SUMMARY AND AIMS

Our first aim is to measure the prevalence of PG in Ireland. We are interested not just in those who meet the criteria for PG, but also in those who show some evidence *and* those who show moderate evidence of PG. We do this by

triangulating estimation methods to overcome methodological limitations: administering the PGSI to an anonymous online sample; employing indirect questioning techniques; and relying on social networks using the NSUM. We also seek to provide a basic sociodemographic profile of people with PG in Ireland.

Our second aim is to provide descriptive evidence for other measures of policy interest, including gambling activity, attitudes towards and perceptions of gambling, and the relationship between mental health and gambling behaviour

CHAPTER 2

Data and methods

This study received approval from the ESRI Research Ethics Committee on 17 August 2023 and its design and analysis plan were pre-registered on the Open Science Framework.[6] The study was undertaken online and programmed in Gorilla Experiment Builder (Anwyl-Irvine et al., 2020). The survey was programmed so that the interface was laptop-, desktop- and smartphone-friendly. In this chapter, we first discuss the implications of survey mode administration (i.e., online, telephone) for measuring problem gambling (PG) with the PGSI in order to justify our approach. We then describe the panels we recruited participants from, the sample and the weighting approach before presenting the survey materials and design.

2.1 SURVEY SAMPLING AND MODE

Participants were recruited from online panels held by leading market research agencies in Ireland. There are pros and cons to using such panels in general. Those who subscribe may potentially differ in meaningful sociodemographic and psychological ways from the general population (Baker et al., 2010; Fan and Yan, 2010). However, traditional probability-based methods are subject to similar problems. Outside of the Census, survey respondents always have a choice regarding whether or not to take part. People who agree to take part when contacted by an interviewer, on the doorstep or on the other end of the phone, may differ in a meaningful way from those who decline (Bethlehem, 2016). Evidence suggests that willingness to participate in telephone surveys in Ireland can differ meaningfully based on rapidly formed impressions of survey staff calling from call centres versus private spaces (Lunn, 2017). International evidence suggests that widespread internet penetration, especially via smartphones, coupled with improved techniques of online panel construction (e.g., use of probability sampling to recruit panellists), mean that the quality of responses obtained from online panels can be more suitable than traditional methods when sensitive issues are the focus of interest (American Association for Public Opinion Research, 2020; Ansolabehere and Schaffner, 2014; Chang and Krosnick, 2009; Coppock and McClellan, 2019). In particular, online panels of participants recruited through random sampling methods produce the highest quality data (Pew Research Center, 2020).

Survey mode has been shown to produce variation in estimates of PG in other countries, leading to debate in the academic literature. For example, two surveys

[6] This can be viewed at: https://osf.io/us459/.

conducted in 2022 in Great Britain produced prevalence estimates with an almost ten-fold difference. A nationally representative telephone survey run by Yonder Consulting on 4,001 people aged 16 and over produced a PG prevalence estimate of 0.3%, whereas an online survey of over 18,000 adults (18+) drawn from YouGov's online panel produced a prevalence rate of 2.9% (Gambling Commission, 2023; Gosschalk et al., 2023).[7] There are multiple potential causes of this difference. Most straightforwardly, Newall et al. (2022) show that around 0.7 percentage points of the difference is attributable to a methodological artefact: the telephone survey used a shortened version of the Problem Gambling Severity Index (PGSI), which can produce lower estimates of PG. Newall et al. (2022) conclude that the 2.9% prevalence rate is likely to be more reliable, since it is based on use of the gold-standard scale.[8]

However, gambling-specific selection effects may also account for some of the difference. The two surveys differ not only in mode of survey administration but in whether respondents were recruited from an online panel or through probability sampling. Intuitively, online panels may be expected to overrepresent people who gamble online relative to telephone and in-person surveys. However, in a comparison of multiple nationally representative online (from panels and probability samples) and (probability-sampled) offline PG surveys in the UK, Sturgis and Kuha (2022) show that the only consistent difference between offline and online survey respondents is greater engagement of in-person horse and dog racing betting among offline respondents.[9,10] While there is variation across surveys, there is no consistent bias in online (or National Lottery participation) gambling among online respondents.

Sturgis and Kuha (2022) however find that offline respondents report engaging in gambling less frequently than online survey respondents, regardless of whether online respondents are recruited using quota methods or probability sampling. These authors infer that the offline survey estimates are more accurate, although this inference is difficult to test without data from a sample subject to no selection effects (i.e., a compulsory response survey such as the Census). One avenue for benchmarking survey responses is the revenue generated by the gambling industry. Lower prevalence of gambling in the population implies much higher spend per person among gamblers in order to achieve the scale of revenue

7 The Gosschalk et al. (2023) study that produced the 2.9% rate was funded by GambleAware, which receives voluntary funding from the gambling industry.

8 Of further note is that an in-person, computer assisted self-interview survey using the full PGSI in Northern Ireland in 2016 produced a PG prevalence rate of 2.3% (Dune et al., 2017).

9 The Sturgis and Kuha (2022) study was funded by GambleAware, which receives voluntary funding from the gambling industry.

10 Note that the PGSI has not been administered to panels of solely offline participants, meaning many comparisons are between probability-sampled offline studies and panel-sampled online ones. However, some of the studies included in Sturgis and Kuha (2022) contained probability-sampled online surveys.

observed (thereby implying greater prevalence of problematic gambling behaviours).

Moreover, the authors raise several sources of measurement error in the offline estimates that are likely to bias activity responses downwards. Firstly, they note that gambling activity questions in the offline surveys were preceded by questions on mental health and wellbeing, whereas the online surveys focused specifically on gambling. While the authors dismiss order effects on theoretical grounds, order effects in questionnaires are a well-established source of bias in survey responses, particularly with respect to wellbeing indicators (e.g., Strack et al., 1985). Secondly, they note that instructions provided in the offline survey modes for participants to skip questions may have signalled they could proceed more quickly through the survey by underreporting their gambling activity, thereby incentivising underreporting. Thirdly, sharing our concern, they note the potential for social desirability in downward biasing activity.

Russell et al. (2022) argue that there is no gold standard for collecting data relating to gambling behaviour and harms. Traditional probability sampling methods are subject to biases (including selection effects and social desirability) that lead to activity and harm underestimation. For example, with respect to PG, people with PG may be less likely to respond to invitations to take part in probability sampling studies than people without PG, which would lead to underestimates in these surveys. Russell et al. (2022) note that online panel surveys are also subject to selection effects, but allow for more efficient use of resources and permit longer surveys to be run over shorter fieldwork timelines. Importantly, online surveys also provide greater anonymity and allow more straightforward counterbalancing and randomisation of question ordering to reduce the kind of measurement error discussed by Sturgis and Kuha (2022).

These considerations led us to conclude that online sampling is a more appropriate method for measuring PG in Ireland. Both online and traditional probability sampling methods (e.g., random digit dialling) face important selection effects – people who agree to participate may be different from people who decline. However, online surveys mitigate social desirability in responses to stigmatised behaviours and panels allow for timely data collection to inform important policy changes (Russell et al., 2022).

While the argument for employing an online survey administration mode is straightforward, we are mindful to address issues that exist with recruiting from online panels. Our study was pre-registered, employed mid-survey attention checks and response quality was analysed post-data collection (Pickering and Blaszczynski, 2021). Due to the potential for panel selection effects, we opted for a large sample based on panels from three different agencies that each employ

probability sampling methods to populate their panels. We refer to these as panels A, B and C.[11] All three panels are managed by established firms in the Irish market and are used for regular opinion polling for national outlets, as well as multiple other forms of research (e.g., academic, market research). Importantly, the incentive structure for one of these panels differs from that of the other two. Much of the debate on the quality of data from online surveys derives from the use of paid panels (e.g., Pickering and Blaszczynski, 2021). However, panel C used in this study does not pay participants for participating in studies. Instead, respondents can direct payment to a charity of their choice. Of further note is that respondents from panels A and B complete, on average, only 1.5–2.5 surveys per month, meaning survey participation is neither a reliable nor a sizeable source of income, unlike online panels held in other countries (e.g., Peer et al., 2017). Panel C participants complete an average of 1–2 surveys per month. We expand on the incentive structures below and provide a test of differences in PG estimates across panels. Moreover, we weight the data collected by important sociodemographic variables to strengthen its representativeness and further test the influence of weighting by behavioural variables that may shed light on selection effects into online panels (e.g., online shopping behaviour). We discuss this weighting strategy in the next section.

2.2 SAMPLE AND WEIGHTING

One thousand adults were recruited from each panel, giving a target sample size of 3,000. Participants were incentivised according to their panel norms. Participants from panels A and B were paid €3 for taking part in the study, which lasted approximately 15 minutes.[12] Participants from panel C were not paid and hence completed a shortened version of the study (detailed in Table 2.1). Instead of payment, they recommended a charity to receive a portion of a €1,000 donation.

Data collection occurred from 21 August 2023 to 5 September 2023. Exclusion criteria were: being less than 18 years of age; not being resident in Ireland; and not having the ability to complete online surveys through English. Participants who failed a question designed to check they were paying attention to individual items were also excluded, giving a final sample of 2,850.[13] Differences in sociodemographic

[11] Due to commercial sensitivities, we do not identify the panels in this report. The panels range in size from 20,000 participants to over 40,000. All three panels use probability sampling (e.g., random digit dialling) and offline advertisements to recruit participants to their panel, while panel A also allows existing participants to recommend others to join the panel. Further details on the panels are available from the authors upon reasonable request.

[12] Mean completion time was 14 minutes, median was 12 minutes. The quickest completion time was 4 minutes, the slowest was 89 minutes. The mean (median) was 16 (14) minutes for panel A, 15 (13) minutes for panel B and 13 (11) minutes for panel C.

[13] We employed a forced-response attention check. One item was added to the PGSI requesting participants to select 'almost always' for that question. Participants who failed the attention check were given a second chance to complete the PGSI. Those who failed a second time (98 participants) were automatically removed from the survey and could not complete it. Those who passed the second time were allowed to complete the survey and could earn

composition of the final sample and survey attrition rates across panels are discussed in Chapter 3 (Results).

The sociodemographic characteristics of the full sample are shown in Tables 2.1–2.3. Analyses for the main findings are weighted by participant age, gender and educational attainment to improve representativeness, based on population estimates from Census 2022 (CSO, 2023b). Iterative proportional fitting, or raking, was the method used to generate the sample weights (Deming and Stephan, 1940; Deville and Särndal, 1992). This is a commonly-used calibration method for calculating sample weights (Valliant and Dever, 2018). The weights were trimmed at 0.5 and 2 following a commonly used rule of thumb, so that no participant was given a weight of less than 0.5 or more than 2. Fourteen per cent of participants had their weight trimmed at 0.5, and 8% had their weight trimmed at 2.

TABLE 2.1 SAMPLE SOCIODEMOGRAPHIC CHARACTERISTICS – GENDER

	Male	Female
Census 2022 (CSO, 2023b)	49.0	51.0
Full survey sample – Unweighted	49.2	50.8
Full survey sample – Weighted	49.0	51.0
Panel A sample – Unweighted	48.3	51.7
Panel A sample – Weighted	47.5	52.5
Panel B sample – Unweighted	48.7	51.3
Panel B sample – Weighted	47.8	52.2
Panel C sample – Unweighted	50.5	49.5
Panel C sample – Weighted	52.1	47.9

the payment of €3 for completing the survey (if in panels A or B). Of the 2,999 participants who completed the survey, 149 participants failed the attention check once, and so for quality control purposes we omitted them from our analysis, giving us a final sample for analysis of 2,850.

TABLE 2.2 SAMPLE SOCIODEMOGRAPHIC CHARACTERISTICS – AGE

	<30 yrs	30–39 yrs	40–49 yrs	50–59 yrs	60–69 yrs	70+ yrs
Census 2022 (CSO, 2023b)	18.7	18.2	20.0	16.5	13.0	13.7
Full survey sample – Unweighted	11.9	20.7	18.4	20.9	19.0	9.1
Full survey sample – Weighted	18.4	18.1	19.9	16.7	13.3	13.7
Panel A sample – Unweighted	12.4	21.3	20.9	16.4	18.2	10.9
Panel A sample – Weighted	18.8	19.2	22.0	13.0	11.0	16.0
Panel B sample – Unweighted	12.8	22.1	19.1	20.8	18.1	7.1
Panel B sample – Weighted	20.0	18.7	20.6	17.2	13.3	10.3
Panel C sample – Unweighted	10.4	18.8	15.3	25.6	20.6	9.3
Panel C sample – Weighted	16.4	16.1	16.8	20.3	15.7	14.8

TABLE 2.3 SAMPLE SOCIODEMOGRAPHIC CHARACTERISTICS – HIGHEST EDUCATIONAL ATTAINMENT

	< Leaving Certificate	Leaving Certificate	Tertiary not degree	Degree or higher
Census 2022 (CSO, 2023b)	24.5	19.4	28.6	27.5
Full survey sample – Unweighted	7.1	19.3	28.2	45.5
Full survey sample – Weighted	15.8	21.6	31.9	30.7
Panel A sample – Unweighted	7.3	24.6	29.9	38.2
Panel A sample – Weighted	15.3	26.6	33.5	24.6
Panel B sample – Unweighted	8.3	19.6	27.0	45.1
Panel B sample – Weighted	18.3	21.5	29.8	30.5
Panel C sample – Unweighted	5.7	13.8	27.6	52.9
Panel C sample – Weighted	13.8	16.1	32.3	37.8

Tables 2.1—2.3 show the impact of the weighting on the sample means of age, gender and education for the full sample and by panel. Weighting has no meaningful impact on the gender composition of the sample, owing to the effectiveness of the quota sampling method used in recruiting representative proportions of males and females. The full sample gender split was very close to

Census 2022 figures of 49% male and 51% female before weighting, and exactly matches Census 2022 after weighting. Within individual panels, the gender split does not differ from Census 2022 in any meaningful way either before or after weighting.

Weighting had more of an effect for age than it did for gender. This was because the quota sampling was carried out for three age bands, whereas we weighted on six age bands. Weighting brought our full sample almost exactly in line with Census 2022, in terms of proportions, across each of the six age bands, most notably regarding correcting the undersampling of 18–30 year olds and the oversampling of 60–69 year olds. Within each panel, weighting helped to increase representativeness, but there were still some small discrepancies with Census 2022 figures, which is to be expected given that the weights were calculated to optimise the representativeness of the full sample, rather than individual panels.

Weighting had the biggest effect on the educational attainment of the sample, which again is not surprising given that education was not a criterion used in the quota sampling. An occupational classification was used for the quota sampling, as is standard for the online panels we used, but Census 2022 data are not available for this classification. Weighting improved the match between the proportions across levels of education in our full sample and in Census 2022, particularly in terms of correcting the undersampling of those who did not complete the Leaving Certificate and the oversampling of those who had at least a third-level degree. There are still some discrepancies however, even after weighting, particularly for the proportion of those with less than the Leaving Certificate, which is 8.7 percentage points short of the Census 2022 figure of 24.5%. The patterns are largely the same within individual panels, though the oversampling of those with at least a third-level degree is notably more severe in panel C. The effect of this discrepancy might be a small underestimate of PG, based on research discussed in Ó Ceallaigh et al. (2023) that shows an inverse relationship between education and PG.

Overall, the sample weighting did a good job of adjusting our sample composition to match Census 2022 on age, gender and education. We comment further on the sociodemographic profiles and the relevance of the weighting as required in Chapter 3 (Results).

We also included three non-gambling behaviour measures (smoking, online shopping and radio listenership) to assess the representativeness of the sample against other surveys undertaken with probability samples (CSO, 2022; Department of Health, 2023; Ipsos MRBI, 2023). This was done to check the representativeness of our sample in terms of behavioural characteristics that might not be captured fully by weighting on sociodemographics. Details are provided in

Table A1 in the appendix. We ran robustness checks to check the sensitivity of our main results to additionally weighting the sample on these behavioural variables. More specifically, for this robustness check we calculated sample weights using the same method as described above, except that we used prevalence of smoking, online shopping and radio listenership, in addition to age, gender and education, to calculate the weights. Though less common than weighting only on sociodemographics, additionally weighting on behavioural variables that may be related to the outcome of interest can be more effective in eliminating bias due to non-representativeness in online surveys than weighting on sociodemographics alone (Pew Research Centre, 2018). Smoking is correlated with PG (Mongan et al., 2022), while online shopping is likely to be correlated with general online activity and thus with online gambling. To see the effect of this weighting exercise on sample composition, for the full sample and by panel, see Table A1. In Chapter 3, we note that additionally weighting by behavioural variables does not meaningfully change our estimate of PG.[14]

2.3 MATERIALS AND DESIGN

For convenience, the sequence of blocks of questions is displayed in Table 2.4. After providing informed consent, participants first completed the indirect question experiments (i.e., the crosswise and list experiments).[15] The experiments required randomisation into a treatment and control group. In a list experiment, endorsement of the sensitive item in the treatment group (who see the list containing the sensitive item) is calculated by comparing the average response to the average response of the control group (who see the same list without the sensitive item). Because the estimate is a result of combining responses from two groups, estimates of variation need to also be combined. As a result, point estimates from treatment groups are noisy, meaning these groups require a large number of observations to be sufficiently powered. Hence, because of the statistical power requirements of list experiments, we pre-registered an unbalanced randomisation ratio of 2:1 in favour of the treatment group.[16]

[14] Additionally weighting on these behavioural variables increases the PG prevalence estimate to 3.4% from our main estimate of 3.3%. In our data, smokers are more likely to have PG, while online shoppers are less likely to have PG. The relation between radio listening and PG is negative but statistically insignificant. Thus, it would appear that the increase in the prevalence estimate after weighting on these behavioural benchmark variables is driven by the correction of the oversampling of online shoppers, as the correction of the undersampling of smokers should logically reduce the prevalence estimate. Indeed, when we weight on the sociodemographic variables and smoking only, the prevalence estimate is 3.1%. Worth noting also that the finding that online shopping is negatively associated with PG is somewhat surprising. Further investigation shows that, while online shopping is positively associated with online gambling as we expected, it is negatively associated with in-person gambling.

[15] Participants first read an information sheet about the nature of the study, data protection procedures, anonymity and risks before consenting to taking part.

[16] Pre-registration involves committing the study's design and/or analysis plan to an open repository before data are analysed. It is considered best practice in scientific research for producing more reliable findings.

For the crosswise model, participants in the treatment group (assigned by randomisation) first completed a practice task to familiarise them with the type of questions asked in a crosswise experiment. For the practice task, they were shown two questions: (1) In the last 12 months, have you won money in a lottery?; and (2) Do you have a pet? It was explained that they had a choice of two responses: that the answers to the two questions were either the *same* (both 'yes' or both 'no') or that they were *different* (one 'yes' and one 'no'). As outlined above, participants are not asked whether their response is yes or no to either question, in order to retain anonymity. After completing this practice question,[17] they were then asked to perform the same task for the following two questions, one of which is taken from the PGSI:

(1) In the last 12 months, has your gambling caused any financial problems for you or your household?

(2) Was your mother born in either January or February?

Despite the practice task, participants may have found the question format confusing. For this reason, there was then a double-check question that asked the participant whether they had responded to the previous question by selecting a response at random or by providing an honest response (Schnapp, 2019), the wording of which made clear that the answer would not affect whether they could continue and complete the survey. A random response would limit inferences from the task. The percentage of participants in the treatment group who reported answering randomly (7%) is within the range of 2–19% of random responses found in previous studies, implying we did not observe excessive random responding (Sayed et al., 2022). These participants were excluded from the analysis of the crosswise model. We also note recent research that finds that random responding is unlikely to bias crosswise estimates in a meaningful way (Meisters et al., 2023), and so these participants were once again included in the sample for a robustness check. Participants in the control group only answered the PGSI question in its standard, direct form.

For the list experiment, those in the treatment group were asked to state how many of these four statements applied to them in the previous 12 months:

- 'I bought an investment product (e.g., shares, bonds or mutual funds)';
- 'I bought a lottery ticket or a scratch card';
- 'I felt that there has been too much gambling advertising';
- 'I felt that I might have a problem with gambling'.

[17] As some participants were likely to not have gambled in the previous 12 months, the first page noted that 'some of the following questions may feel like they don't apply to you for various reasons. However, it is important that you answer every question as honestly as you can, even those that you feel don't apply to you.'

The non-sensitive items were selected as follows: one was expected to apply to few participants (investment product purchasing); one was expected to apply to about half of participants (purchasing a lottery ticket); and one was expected to be endorsed by a majority (advertising). For our purposes, it was particularly important that we limited maximum responding (i.e., a response of four) as this would reveal those who endorsed the sensitive item. Just 21 (1%) of participants in the treatment group endorsed all four items. It was made clear that the answers to individual questions did not matter, they just had to say how many of the four applied. The final item in the list is taken from the PGSI. In the control group, participants only saw three statements (i.e., they did not see the PGSI item). They were also asked directly about the sensitive item, in order to provide a comparison between direct questioning and the list endorsement.

Next, as shown in Table 2.4, participants progressed through a more standard set of survey questions. They completed the PGSI and gambling activity questions in a counterbalanced order (i.e., some saw the PGSI first followed by the gambling activity questions, whereas others saw the questions in the reverse order), allowing us to test whether responses to the PGSI items might be affected by previously being asked to recall recent gambling behaviour. A lack of self-awareness about one's own PG, or self-denial, may downward bias PGSI estimates. Asking people to recall their recent gambling behaviour before answering the PGSI may help to mitigate this downward bias by making one's own behaviour more salient while responding to the PGSI.

The construction of the gambling expenditure questions required careful consideration, as previous research highlights that survey respondents often struggle to accurately estimate their gambling spend (Volberg et al., 2001). To combat this, we designed the gambling activity questions such that participants were first asked to recall which activities they engaged in, before then being asked about their estimated spend within a band for each activity they reported. By first prompting recall of the activity and then asking specifically about that activity, our aim was to guide respondents through individual episodes and place the burden of aggregation on our side. After selecting a band of expenditure, participants were presented with a slider, with end points bounded by the band they selected (for example, if they selected €10–€20, the slider ranged from €10 to €20). We employed a similar approach to measuring close contacts during the COVID-19 pandemic in the Social Activity Measure (Lunn, 2021), which provided evidence that participant-side aggregation is prone to biases not observed when researchers perform the aggregation based on more granular data. Similarly, Lucas et al. (2021) showed that researcher aggregation of diary-based data correlate much more strongly with experience-sampled data than with traditionally-used global measures of behaviour.

The next set of questions concerned gambling among their friends and family. We first asked participants to count, separately, their close family members and friends. We then asked them to state whether they felt any of them had PG and, if so, how many. Participants from panels A and B then completed additional questionnaires about their childhood experiences of gambling and their perceptions of and attitudes towards gambling. These were not asked of Panel C, in order to reduce the length of time taken to complete the survey, as these unpaid respondents were accustomed to shorter surveys. All participants answered the three questions that served as behavioural benchmarks to compare against other nationally representative surveys, as well as the five-item version of the Mental Health Inventory (MHI-5, Berwick et al., 1991; Veit and Ware, 1983), before lastly completing standard sociodemographic questions.[18] Participants had the opportunity to report any issues with the study at the end. None reported issues with their responses that required response removal. All participants were sent contact information for PG and mental health support services as part of a debrief message after exiting the survey.

Where possible, the survey questions were adapted from or relied on previously published research. The final column in Table 1 lists the relevant references. All materials are available in Appendix C and on the study's Open Science Framework page.

[18] Regarding mental health, participants were asked how much of the time over the previous four weeks they had: been a happy person; felt calm and peaceful; been a very nervous person; felt downhearted and blue; and felt so down in the dumps that nothing could cheer them up. Responses were elicited on a Likert scale (None, A little, Some, A good bit, Most, All).

TABLE 2.4 STUDY TASKS

Study task	Description	Panel	References
Crosswise experiment	A method of indirect questioning used to estimate social desirability in survey responses. Participants in the treatment group reported whether their response to two items (one sensitive and one non-sensitive) was the same or different. Participants first completed a practice question. Participants in the control group were only asked directly about the sensitive item.	A, B, C	Sagoe et al. (2021); Schnell and Thomas (2021); Yu et al. (2008)
List experiment	A method of indirect questioning used to estimate social desirability in survey responses. Participants reported how many of a list of items applied to them. The list included one sensitive item. Participants in the control group were asked how many of the list without the sensitive item applied to them. The control group was also asked directly about the sensitive item.	A, B, C	Blair and Imai (2012); Timmons et al. (2021)
Problem gambling	Participants completed the nine-item PGSI, which is used internationally to categorise levels of PG. An example item is, 'When you gambled, did you go back another day to try to win back the money you lost?' There reference period is the previous 12 months.	A, B, C	Ferris and Wynne (2001)
Gambling activity	Participants selected from a list the types of gambling they had engaged in over the previous four weeks (if any). Follow-up questions were tailored to the participant for details on their frequency and spend for each type of gambling they engaged in. Participants were also asked whether their recent behaviour was usual for them.	A, B, C	UK Gambling Commission (2023)
Family and friends	Participants reported how many close friends and immediate family members they have, and how many of them they think have a problem with gambling. Where relevant, participants reported the extent to which they worried about their child(ren)'s gambling. They also completed a six-item questionnaire on the impact of a close friend's/family member's gambling.	A, B, C	Dowling et al. (2014); Kang (2023); Svensson et al. 2013); UK Gambling Commission (2021)
Childhood experiences*	Participants were asked about their experiences of gambling before turning 18, their parent's/guardian's gambling activity and the extent to which their parent/guardian had approved of gambling.	A, B	UK Gambling Commission (2021)

TABLE 2.4 (CONTD.) STUDY TASKS

Study task	Description	Panel	References
Own gambling perceptions	Participants estimated their gambling spend relative to other adults in Ireland over the previous four weeks. They also reported whether they would like to gamble more, less or the same as they did at the time of completing the survey.	A, B	Robertson et al. (2023)
Attitudes and stigma	Participants completed the eight-item Attitudes Towards Gambling Scale (e.g., 'Gambling should be discouraged'), a six-item stigma towards gambling scale (e.g., 'Moving next door to a person who has a problem with gambling') and a ten-item causes of PG scale (e.g., 'The way they were raised', 'Widespread availability of opportunities to gamble').	A, B	Canale et al. (2016); Hing et al. (2016); Link et al. (1999); Martin et al. (2000); Orford et al. (2009); Robertson et al. (2023)
Behavioural benchmark questions	Participants completed three behavioural questions to test the representativeness of the sample against other national surveys. The questions assessed smoking behaviour, online shopping and radio listenership.	A, B, C	CSO (2022); Department of Health (2023); Ipsos MRBI (2023)
Mental health	Participants completed the five-item Mental Health Inventory as a measure of their mental health during the previous four weeks.	A, B, C	Berwick et al. (1991); Veit and Ware (1983)
Sociodemographic questions	Participants completed standard sociodemographic questions on their gender, age, birthplace, ethnicity, county they live in, rural/urban location, household size, children in household, marital status, employment status, education, social class and income.	A, B, C	

Note: *We do not report on childhood experiences here. These will feature in subsequent outputs. PGSI=Problem Gambling Severity Index.

CHAPTER 3
Results

3.1 PREVALENCE OF PROBLEM GAMBLING

Table 3.1 shows the proportions of people estimated within each category of the Problem Gambling Severity Index (PGSI). The percentage of people who have problem gambling (PG) is estimated at 3.3%. This is over ten times the percentage estimated previously in Ireland, of 0.3% (Mongan et al., 2022). The primary differences between Mongan et al. (2022) and our approach is the absence of interviewer presence when completing the PGSI and the use of an existing panel of online participants. A further 7.1% of people are estimated to be in the 'moderate evidence' category, and 15% are estimated to be in the 'some evidence' category. The corresponding figures in Mongan et al. (2022) were 0.9% and 2.3% respectively.

Our figures derived from this online sample are therefore much higher than previous estimates, which were based on in-person interviews. Similar variation is observed in other countries. Estimates from the UK vary between 0.3% in a telephone survey to 2.9% in an online survey (UK Gambling Commission, 2023; Gosschalk et al., 2023). A Northern Ireland survey using a computer-based questionnaire completed by the respondent in the presence of an interviewer produced a PG estimate of 2.3% (Dune et al., 2017). The average prevalence rate in recent studies carried out over the phone or face-to-face in several countries is 1% (Gabellini et al., 2023). Consequently, before considering other research questions, we check the robustness of our results with respect to sample weighting and the variation across the three online panels used to make up the full sample.

To check the sensitivity of our results to the method of calculating the sample weights, we ran robustness checks using different upper and lower thresholds for the sample weights. We also ran a robustness check using sample weights calculated with the behavioural benchmark variables described in the previous chapter (smoking, online shopping and radio listening), in addition to sociodemographic variables. Finally, we ran the analysis without sample weights. The estimates of the prevalence of PG were very similar across all of these checks, ranging from 3.1% in the unweighted sample to 3.4% when weighting on behavioural variables (Tables A2–A5).

TABLE 3.1 PROPORTION IN EACH PGSI CATEGORY (%)

	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	3.3	7.1	15.0	74.7
Lower CI	2.5	6.0	13.4	72.8
Upper CI	4.0	8.2	16.5	76.5

Notes: Weighted estimates. N=2,850. CI=Confidence interval. Problem gambling is defined as a score of 8 or above out of 27 on the PGSI, with moderate evidence defined as a score of 2–7 and some evidence a score of 0 or 1.

We also checked the sensitivity of our results to the online panels used. Table 3.2 shows the estimated percentage of individuals with PG for each panel. The estimates for panels A and B are largely similar to each other, at just over 4%. The estimate for panel C is lower, at 1.2%. A logit regression (Table A6) predicts PG status from participant panel and confirms that this difference is statistically significant, even when controlling for sociodemographic variables. The following analyses of the composition of the sample recruited from each panel and of attrition rates in our survey by panel shed some light on plausible explanations for this disparity.

One reason for the disparity may be differences in incentive structures across panels. Participants from panels A and B received small reimbursements for their time (€3) whereas participants from panel C were not personally reimbursed. Hence, if problem gamblers are more likely than the general population to take part in surveys for compensation, panels A and B may overestimate PG. While this selection effect is intuitively reasonable, it is worth noting that panellists from both panels A and B complete, on average, only 1.5 to 2.5 surveys per month. In other words, the earnings from such surveys are unlikely to contribute to much gambling activity and, for these panellists, completing surveys is not a reliable source of income. Alternatively, if problem gamblers are less likely to take part in unpaid opinion polls, panel C may underestimate PG as participants in panel C surveys are never paid.

The incentive structure and primary purpose of panel C as an opinion poll may have further implications for the sociodemographic breakdown of the panel. Relative to Census 2022 figures for the Irish population, and relative to panels A and B, panel C undersamples individuals under 50 years of age and oversamples those over 50 (see Table A8 in the appendix). Panel C also undersamples individuals who did not complete secondary education ('less than Leaving Certificate') and those for whom completing secondary education is their highest educational attainment ('Leaving Certificate'). It oversamples those who have at least a degree (Table A9). This is important, given that international research shows that PG tends to be more prevalent among younger age groups, and among those with lower educational attainment (Ó Ceallaigh et al., 2023). While panels A and B also undersample those with at most a secondary education, the undersampling is not as severe as it is for

panel C and crucially arises because of an undersampling of the 'less than Leaving Certificate' group, and not because of undersampling of the 'Leaving Certificate' group. Panel C's undersampling arises because of undersampling of both the 'less than Leaving Certificate' and 'Leaving Certificate' groups. This is important because over three-quarters of the group of people in Ireland in the 'less than Leaving Certificate' group are over 50 years of age (CSO, 2023b), due to intergenerational differences in educational attainment. We show later in this Results section that PG rates are lowest in this group among the four education groups we analyse, and are highest in the 'Leaving Certificate' group, for which panel C undersamples but panels A and B do not. Based on sample representativeness, therefore, the disparity between panels may reflect underestimation of PG in panel C.

A second factor requiring consideration is study dropout (i.e., attrition). The Behavioural Research Unit (BRU) team at the ESRI generally finds that a small proportion of people who begin an online study drop out part way through. This can happen for reasons connected to the survey, such as fatigue, or reasons unconnected to the survey; for example, the participant is interrupted and does not return to complete the questionnaire. Such participants are not included in final samples. In the present case, the number of people from panel C who dropped out during the study was unusually high (716 participants, or 41% of all eligible participants who started the survey). This proportion is over 4 times as high as the number from panel A dropping out (153, or 13%) and 12 times higher than the number from panel B dropping out (60, or 5%) (Table A10). This might be partly due to the incentive structure for panel C. Moreover, panel C is a relatively newer online panel, where subscribers primarily participate in opinion polling rather than research studies. Another plausible explanation for the higher dropout, therefore, is that participants from panel C were less comfortable answering questions about their own behaviour, perhaps especially about potentially sensitive behaviours. Further investigation revealed that 46% of panel C dropouts occurred at the start of the survey when participants were told that it was a survey about gambling. A further 14% dropped out at the first question about gambling. We conjecture that, if participants in panel C with PG were more likely to drop out at these points than those without PG, then people with PG would have been underrepresented in our final panel C sample.

It should be noted that a lower prevalence of people who gamble in panel C is unlikely to explain the lower prevalence of PG in this panel. While the prevalence of people who gambled in the previous four weeks is a little lower in panel C than in the other two panels, in the subsample of those that gambled, the prevalence of PG still remains much lower in panel C relative to the other two panels. See Table A12 for details.

Given the above, on balance, we view it as more likely that PG was underestimated in panel C. We provide further relevant evidence in our analysis of expenditure below. Nevertheless, in the absence of definitive evidence in this regard, we have taken a conservative approach and given panel C equal weight in calculating our main estimates of PG. It is also worth noting that the estimate of PG from panel C, though likely underestimated, is still four times the previous in-person estimate of 0.3%.

TABLE 3.2 PROPORTION WITH PROBLEM GAMBLING (%), BY PANEL

	All panels	Panel A	Panel B	Panel C
Prevalence	3.3	4.1	4.4	1.2
Lower CI	2.5	2.7	2.9	0.4
Upper CI	4.0	5.5	5.8	1.9

Notes: Weighted estimates. Full sample N=2,850. Panel A, N=940; Panel B, N=944; Panel C, N=966. CI=Confidence interval.

Further evidence to support the assertion that the prevalence of PG is likely to be substantially higher than previous estimates is provided by estimating the prevalence of PG from people's perceptions of the number of people with PG in their friendship networks and immediate family; estimates using the Network Scale-Up Method (NSUM). The NSUM estimates are shown in Table 3.3. The top row shows unadjusted estimates of the percentage of close friends and immediate family perceived to have a problem with their gambling, which are 2.6% and 2.1% respectively. However, the regression in Table 3.4 regresses number of friends and family onto PG status and shows that people with PG have significantly fewer friends and family members than those without PG. This means that these unadjusted figures are likely to be underestimates, simply because people with PG are less likely to be within friendship networks. To correct for this, we adjust the figures by multiplying them by the ratios of friend and family network sizes of those without PG to the network sizes of those with PG. The final row of Table 3.3 shows the adjusted estimates, which are 3.2% for friends and 2.4% for family members. Detailed calculations of these unadjusted and adjusted estimates are shown in Table A13 in the appendix. The final figure for friends is hence very close to our main estimate of PG among individual participants. The figure for family members is somewhat lower. However, the survey question asked participants how many people were in their immediate family, and how many of these had PG, and did not ask them to exclude family members under age 18. It is plausible that this would depress the immediate family PG figure and so the somewhat lower figure for immediate family is not surprising. In general, the numbers correspond well with our main estimates.

While considering these figures, there are several potential sources of imprecision in the estimates. Individuals may have incomplete awareness of PG among their friend and family groups, due to the high concealability of PG (Fulton, 2019; Wöhr

and Wuketich, 2021), which might lead them to underestimate the prevalence of PG among their friends and family. This underestimation may be greater for family than friends, given that stigma among family may be greater than stigma among friends, although behaviour of close family may be more easily observed. There is also no reason to presume that individuals' subjective estimates of when gambling is 'problematic' will accord exactly with the definition of PG derived from the PGSI; people might be more or less likely to view gambling behaviours as a problem. Nevertheless, the concordance between our main estimate of PG and these estimates from the alternative method of recording the perceptions of friends and family gives comfort regarding the validity of our main estimate.

We undertook further investigations of perceived PG among family and friends across the three survey panels (Tables A14–A16). Unlike our estimates of individual PG, we found no substantive differences between the panels in relation to perceived PG among friends and family.

TABLE 3.3 ESTIMATED PREVALENCE OF PROBLEM GAMBLING AMONG FRIENDS AND FAMILY

	Friends	Family	Friends and family
Prevalence estimate	2.6	2.1	2.3
Lower CI	2.3	1.8	2.1
Upper CI	2.9	2.3	2.5
Adjusted prevalence	3.2	2.4	2.7

Notes: Weighted estimates. N=2,850. CI=Confidence interval.

TABLE 3.4 OLS REGRESSION OF ASSOCIATION BETWEEN FRIENDS/FAMILY NETWORK SIZE & PG

	(1) Friends	(2) Family	(3) Friends and family
PG	-0.923*** [-1.432,-0.414]	-0.615** [-1.213,-0.016]	-1.538*** [-2.357,-0.719]
Dependent variable mean	4.079	5.746	9.825
N	2,850	2,850	2,850

Notes: 95% confidence intervals in brackets. Three separate regressions are shown, one per column. The dependent variable in each case is denoted in the column header. No controls are included in these regressions as, for the purpose of identifying if an adjustment is necessary to the NSUM estimate, we only need to identify if people with PG have fewer friends and family than those without PG, without conditioning on any other variables. The dependent variable mean shown is for the full sample included in the relevant regression. *p<0.10; **p<0.05; ***p<0.01. OLS=Ordinary least square.

We also counterbalanced the order in which participants received a block of questions about their gambling behaviour over the previous four weeks and the PGSI questions. Randomisation was done on a 1:1 basis between those who answered the gambling behaviour questions before the PGSI, and those who answered them after the PGSI. The two groups were well-balanced on sociodemographic characteristics (see Table A17). We hypothesised that the increased salience of one's own gambling behaviour, brought about by answering

such detailed gambling behaviour questions first, might lead to increased PGSI estimates of PG. However, Table 3.5 presents logistic regression models predicting PGSI status from whether the participant saw the PGSI before or after completing the gambling activity questions. The models show that the likelihood of being categorised as having PG, with moderate evidence of PG or with some evidence of PG did not significantly differ between those who answered the gambling behaviour questions before the PGSI and those who answered them after it.

TABLE 3.5 LOGIT REGRESSIONS TESTING THE EFFECT OF QUESTION ORDER ON PGSI CATEGORY

	(1) Four-level categorical variable	(2) Problem gambling	(3) Moderate evidence	(4) Some evidence
Gambling behaviour questions before PGSI	0.917 [0.770, 1.092]	0.819 [0.531, 1.262]	0.883 [0.655, 1.191]	1.004 [0.812, 1.242]
Dependent variable mean	0.367	0.033	0.071	0.150
N	2,850	2,850	2,850	2,850

Notes: Exponentiated coefficients (odds ratios); 95% confidence intervals in brackets. Dependent variable in column 1 is a four-level categorical variable: =0 if there is no evidence for PG, =1 if there is some evidence, =2 if there is moderate evidence, =3 if the participant is scored as having PG. Dependent variables in columns 2–4 are binary indicators for having PG, moderate evidence of PG, and some evidence of PG, respectively. The regression in column 1 is an ordered logit regression, while the regressions in columns 2–4 are binary logit. The reference category is those who saw the PGSI before the gambling behaviour questions. Controls: sociodemographic weighting variables. $^{*}p<0.10$; $^{**}p<0.05$; $^{***}p<0.01$.

3.2 INDIRECT TECHNIQUES

3.2.1 Crosswise model

The results from the crosswise model experiment are shown in Table 3.6. As noted in the methods section, randomisation was done on a 2:1 ratio of treatment to control, to maximise statistical power. Table A18 in the appendix shows that randomisation was well balanced. The results of this experiment show that, even in our anonymous online survey, our PGSI estimate of PG may be depressed by social desirability bias, and therefore may very well be an underestimate. As shown in Table 3.6, when estimating endorsement of a single item from the PGSI, our crosswise model estimate was over three times larger than the estimate from a direct question, suggesting that the direct estimate is likely to have been depressed by social desirability bias. If anything close to this level of social desirability bias plays a role in people's direct answers to all nine items in the PGSI, then our PG estimate of 3.3%, despite being much higher than previous estimates, may still be too low.

TABLE 3.6 CROSSWISE MODEL AND DIRECT ESTIMATES OF RESPONSE TO, 'IN THE LAST 12 MONTHS, HAS YOUR GAMBLING CAUSED ANY FINANCIAL PROBLEMS FOR YOU OR YOUR HOUSEHOLD?'

	Prevalence estimate	Lower CI	Upper CI	N
Crosswise model (Treatment group)	11.7	8.8	14.7	1,746
Direct question (Control group)	3.6	2.2	5.0	968

Notes: Weighted estimates. Crosswise model sample excludes those who reported randomly responding to the crosswise model question (n = 136). Sample sizes in both groups are different due to the imbalanced randomisation procedure described in Chapter 2. CI=Confidence interval.

It is noteworthy that the crosswise estimate of 11.7% endorsement of this PGSI item seems intuitively high, relative to an overall estimated PG rate of 3.3%. However, the crosswise experiment employed just a single item from the PGSI. Hence, endorsees could conceivably come from the group of individuals with any PGSI score above zero (i.e., all those with some evidence, moderate evidence or PG). This combined group makes up one-quarter of our sample, and so our crosswise estimate captures less than half of this group. This is an important point. The crosswise model is not intended to produce a point estimate, but to test the significance of any social desirability bias effect and its direction. The result implies a downward bias in responses to PGSI items.

A criticism of the crosswise model approach is that responding to the crosswise question with a random choice can bias the estimate towards 50% (Schnapp, 2019), which in the case of a low prevalence behaviour such as PG would bias the estimate upward. To mitigate this risk, following the method of Schnapp (2019), we excluded participants who reported answering randomly to the crosswise question, as detailed in the methods section. This excluded 7% (136 participants) from the sample.[19] The question wording was as follows: 'Did you respond on the previous page by just clicking one of the options at random? Please answer honestly – your response won't affect your payment or ability to proceed with the survey'. Not excluding these participants who reported randomly responding gives a higher estimate of 13.1%, compared to our estimate in Table 3.6 of 11.7%.

However, it is possible that not all participants who answered randomly admitted to doing so when asked. For this reason, we ran simulations to check how many additional participants would have had to give a random response to the crosswise question, without admitting it, for the confidence intervals for the crosswise estimate and the direct question estimate to overlap. These simulations show that an additional 17% (300 participants) of the remaining sample would have had to have answered randomly in order for the confidence intervals to overlap, which

[19] When these random respondents are excluded from our PGSI estimate of PG, it makes no meaningful difference to the estimate (falls by 0.1 percentage point to 3.2%).

would see the crosswise estimate decreasing to 8.1% (confidence interval:[5.0%,11.2%]). See results of the simulations in Table A19. Bearing in mind that the final sample excludes those who failed an attention check measure, it seems unlikely that the question asking respondents to self-report whether they answered randomly or not would detect less than one-third of all respondents who answered randomly, given the assurances in the question wording that admitting to answering randomly would not affect payment or survey progression. While there may be some undetected random responses, the simulation implies that the crosswise estimate would remain significantly higher than the direct estimate, giving evidence of social desirability bias in responses.

3.2.2 List experiment

Unfortunately, standard analysis techniques showed that the list experiment was not successful in mitigating bias from responses. One assumption of list experiments is that the presence of the sensitive item does not alter how participants respond to other items in the list, known as a 'design effect'. We tested for a design effect using the *kict* package in Stata (for a description of how this test is conducted, see Blair and Imai, 2012; see also Tsai, 2019). Results showed indication of a design effect, such that participants in the treatment group (who saw the sensitive item) were more likely to report that none or one of the items applied to them than participants in the control group (Z = -3.49, p =.002; Z = -2.28, p =.012). The test for design effects was statistically significant (λ = 13.81, p <.001), suggesting that the list responses were invalid. The result suggests that some participants who saw the sensitive item in the list may have sought to depress their true response in order to avoid the possibility of being associated with the sensitive item.

3.3 GAMBLING ENGAGEMENT AND SPEND IN IRELAND

In this section we report responses to questions about types of gambling activity and gambling expenditure. Our focus is not just on those with PG, but on all those who report engaging in gambling, in order to present a detailed picture of gambling activity in Ireland.

As can be seen in Table 3.7, we estimate that almost three-quarters of people have spent money on gambling in the past four weeks, with 35% of people doing so online, and 61% in person. The most popular forms of gambling were lotteries and scratch cards, followed by betting on horses, dogs and other sports. Table 3.8 shows the analysis for those with PG. The proportion of those with PG engaging in in-person gambling was approximately the same as for those with PG engaging in online gambling, at over 80%. In addition to lotteries, scratch cards and animal and sports betting, slot machines and casino gambling were additionally popular for

those with PG, more so in their online form than in person. This is consistent with findings from previous research that these forms of high frequency, fast payout gambling are strongly associated with PG (see Ó Ceallaigh et al., 2023). In fact, people with PG were more likely to spend money on online forms of gambling than on in-person forms.

Of those with PG, 96% had gambled in the previous four weeks, while the corresponding figures for those with moderate evidence, some evidence and no evidence of PG were 94%, 93% and 67%, respectively.

TABLE 3.7 PROPORTION THAT SPENT MONEY ON GAMBLING IN THE PREVIOUS 4 WEEKS

	All modes	Online	In person
All types	74.1	35.1	60.9
All except gambling between friends	73.6	35.1	59.6
Lotteries	55.9	16.8	43.6
Scratch cards	35.3	5.6	31.4
Horse and dog betting	17.1	11.1	8.8
Sports betting	16.0	12.7	5.4
Bingo	8.4	2.5	6.3
Gambling between friends	6.6	–	6.6
Slot machines	6.2	3.3	3.3
Casino gambling	3.7	3.1	0.9
Spread betting	1.7	1.7	–
Other	2.9	2.3	0.7

Notes: Weighted estimates. Full sample N=2,850 (including both those who did and did not gamble in the previous four weeks). Spread betting refers to betting on the value of an (unowned) asset.

TABLE 3.8 PROPORTION OF THOSE WITH PG THAT SPENT MONEY ON GAMBLING IN THE PREVIOUS 4 WEEKS

	All modes	Online	In person
All types	96.1	85.4	81.5
All except gambling between friends	96.1	85.4	78.1
Lotteries	73.2	26.2	54.8
Scratch cards	65.0	24.7	46.4
Sports betting	59.6	48.6	22.4
Horse and dog betting	50.1	33.3	32.4
Slot machines	42.0	32.0	11.8
Gambling between friends	27.0	–	27.0
Bingo	26.7	19.4	10.5
Casino gambling	21.9	18.5	6.0
Spread betting	7.9	7.9	–
Other	6.2	3.5	2.7

Notes: Weighted estimates. N=87.

We also found gender differences in activity, detailed in Table 3.9. Men are more likely to gamble online than women. Men are more likely to spend money on horse

and dog betting and sports betting, while women are more likely to play bingo and to play slot machines in person. We do not report a gender-based comparison of PG due to low sample sizes.

TABLE 3.9 PERCENTAGE THAT SPENT MONEY ON GAMBLING IN THE PREVIOUS 4 WEEKS BY GENDER

	All modes		Online		In person	
	Women	Men	Women	Men	Women	Men
All types	72.0%	76.4%	27.6%	43.3%	61.1%	60.8%
All except gambling between friends	71.7%	75.8%	27.6%	43.3%	60.2%	59.2%
Lotteries	54.6%	57.7%	15.1%	18.7%	43.2%	44.4%
Scratch cards	38.5%	31.9%	6.6%	4.4%	34.0%	28.8%
Horse and dog betting	10.3%	24.2%	5.7%	16.9%	5.6%	12.2%
Sports betting	6.6%	26%	5.5%	20.2%	1.7%	9.4%
Bingo	11.1%	5.6%	3.4%	1.5%	8.0%	4.5%
Gambling between friends	3.9%	9.3%	–	–	3.9%	9.3%
Slot machines	7.6%	4.8%	3.6%	2.9%	4.2%	2.3%
Casino gambling	2.2%	5.3%	2.0%	4.3%	0.4%	1.5%
Spread betting	0.7%	2.7%	0.7%	2.7%	–	–
Other	3.1%	2.7%	2.4%	2.2%	0.8%	0.7%

Notes: Weighted estimates. N=2,835.

Mean gambling spend per week per person was estimated at €27 (median = €7).[20] This implies a total annual spend on gambling by the adult Irish population of €5.5 billion.[21] This is slightly below the estimate of gross industry revenue (before winnings are subtracted) of €6–8 billion, as described in Section 1.3. This is an important finding for the current report, given that our measures of PG and gambling behaviour are higher than those previously reported. If, for some reason, our survey methods were oversampling people with high gambling expenditures, we might expect to see an overestimate of expenditures when we aggregate our survey responses like this to obtain an implied total expenditure. In fact, the number is still somewhat below estimated industry revenue.

On average, spending is evenly split between online and in-person gambling. What is striking, however, is that we estimate that 28.3% of the overall expenditure on

20 We exclude gambling between friends from this estimate because these wagers may not necessarily involve monetary exchanges, and do not constitute industry revenues. When spending on gambling between friends is included, mean spend per person per week is €28 and median spend is €7 per week. See Table A20. When we exclude individuals who reported responding randomly to the crosswise question, mean spend is €25 per week and median spend is €7 per week.

21 This was calculated as €27 per week x 52 weeks in a year x 3.9 million adults (18+) in Ireland = €5.5 billion gross annual revenue. We note that there may be some measurement error in this estimate due to some people interpreting the question about gambling spend as asking about net spend rather than gross spend, but it nonetheless provides a useful estimate, as outlined in the paragraphs to follow. The question about gambling spend was worded according to best practice in measuring gambling spend from previous literature (Wardle et al., 2011; Wood and Williams, 2007).

gambling is accounted for by the 3.3% of the population who have PG, while 47% of overall spend is accounted for by the 10.4% of adults who have either PG or show moderate evidence of PG. This pattern is largely repeated across online and in-person gambling, and across panels A, B and C (Tables A21–A23). Those with PG spent an average of €231 per week on gambling (median = €108), which equates to €12,000 a year (median = €5,800).[22] Over two-fifths (43%) of this was on in-person gambling (€99 per week) while 57% was on online gambling.[23] We have no reason to suspect that the relative contribution from each PG group (PG, moderate evidence, some evidence, no evidence) to total revenue in Ireland (estimated to be over €6 billion) differs from the proportions observed here.

These findings are worth considering in the context of the main measures of PG that we report. Suppose, for the sake of argument, that despite the efforts described above to check the validity of our results, the true level of PG is close to that estimated in the National Drug and Alcohol Survey (NDAS) and that PG in our sample is overestimated due to a very strong selection bias of people with PG into online panels. Given, firstly, that our calculation of aggregate expenditure is nevertheless below industry revenue and, secondly, that people with PG contribute a high proportion of reported spending, the implication would be that the gamblers without PG in our sample would need to be *greatly* under-reporting their expenditure. But the mean expenditure figure of €11 per week for those with no evidence of PG in Table 3.10 includes people who don't gamble at all, such that the figure for those who gamble but display no evidence of PG is €16 per week (€832 per year). To obtain spending equivalent to industry revenue, these individuals would have to be actually spending an average of €41 per week (over €2,000) per year. We think it is highly unlikely that non-problem gamblers would underestimate their spend to such an extent, or that the average gambler without PG is spending at this level. Yet the revenue has to come from somewhere.

22 When gambling with friends and family is included (Table A20), average spend per week is €260.

23 Of the in-person mean spend for those with PG of €99 per week, €29 per week (€1,500 per year) went on horse and dog betting, while €14 per week (€730 per year) went on sports betting.

TABLE 3.10 GAMBLING EXPENDITURE EXCLUDING GAMBLING BETWEEN FRIENDS – FULL SAMPLE INCLUDING THOSE WHO DIDN'T GAMBLE IN THE PREVIOUS 4 WEEKS

	Full sample	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	100.0	3.3	7.1	15.0	74.7
Mean spend – Total	27	231	70	42	11
Median spend – Total	7	108	35	21	4
% of overall spend – Total	100.0	28.3	18.4	23.3	30.0
Mean spend – In person	12	99	22	18	6
Median spend – In person	3	21	13	8	2
% of aggregate spend – In person	100.0	26.7	13.1	22.6	37.5
Mean spend – Online	15	132	47	23	5
Median spend – Online	0	65	17	6	0
% of aggregate spend – Online	100.0	29.6	22.8	23.8	23.8

Notes: Weighted estimates. Full sample N=2,850. Gambling between friends is excluded here as this does not constitute industry revenue and may not necessarily involve monetary exchanges.

TABLE 3.11 GAMBLING EXPENDITURE EXCLUDING GAMBLING BETWEEN FRIENDS – SAMPLE WHO GAMBLED IN THE PREVIOUS 4 WEEKS

	Full sample	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	100.0	4.3	9.0	18.9	67.9
Mean spend – Total	36	240	74	45	16
Median spend – Total	12	127	42	23	9
% of overall spend – Total	100.0	28.3	18.4	23.3	30.0
Mean spend – In person	16	103	24	20	9
Median spend – In person	6	21	15	9	5
% of aggregate spend – In person	100.0	26.7	13.1	22.6	37.5
Mean spend – Online	20	137	50	25	7
Median spend – Online	0	66	20	7	0
% of aggregate spend – Online	100.0	29.6	22.8	23.8	23.8

Notes: Weighted estimates. N=2,099 (all those who gambled in previous four weeks). Gambling between friends is excluded here as this does not constitute industry revenue and may not necessarily involve monetary exchanges.

Mean spend for men is €33 per week (median=€9), while for women it is lower at €21 per week (median=€6). Among those who have PG, mean spend is higher for women (€296, median=€130) than for men (€176, median=€106), though it is worth nothing that these estimates are likely to be quite imprecise due to the low sample size. It is also worth noting that the distribution of spending among those who gambled in the previous four weeks roughly follows the commonly observed Pareto rule, with 79% of total spend being accounted for by the top quartile of those who gambled (i.e., those at or above the 75th percentile), who have a mean weekly spend of €116.[24] A further 13% of total spend is accounted for by the third quartile (mean weekly spend of €20), while the bottom two quartiles account for only 8% of spending between them (mean for second quartile is €8 per week, for bottom quartile €3 per week).

[24] The Pareto rule is a common rule of thumb used in marketing and management that approximately 80% of outcomes can be attributed to approximately 20% of the population.

Table 3.12 repeats the analysis of Table 3.10, but focuses only on expenditure on lotteries and scratch cards. This is because the National Lottery is by far the biggest supplier in this part of the market and, in offering opportunities to gamble for good causes, represents a different business model to the gambling services offered by private for-profit gambling companies. People with PG do not account for such a large share of expenditure on lotteries and scratch cards as they do for gambling expenditure as a whole. Nevertheless, 17% of expenditure on lotteries and scratch cards comes from people with PG, a figure that rises to 29% when we add those showing moderate evidence of PG. Less than half of expenditure on lotteries and scratch cards is accounted for by people for whom there is no evidence of PG. Furthermore, lotteries and scratch cards account for one-fifth of the spending of those with PG.

TABLE 3.12 LOTTERY AND SCRATCH CARD EXPENDITURE

	Full sample	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	100.0	3.3	7.1	15.0	74.7
Mean spend – Total	9	46	15	13	6
Median spend – Total	4	16	10	10	3
% of overall spend – Total	100.0	17.1%	11.8%	22.6%	48.4%
Mean spend – In person	6	31	9	10	4
Median spend – In person	2	8	6	5	1
% of aggregate spend – In person	100.0	16.2%	10.6%	22.8%	50%
Mean spend – Online	2	15	5	4	1
Median spend – Online	0	0	0	0	0
% of aggregate spend – Online	100.0	19.5%	14.8%	22.4%	43.2%

Notes: Weighted estimates. Full sample N=2,850.

In terms of gambling frequency, as shown in Tables 3.13–3.16, the figures for online slot machines are striking. Almost one-quarter of people who spent money on online slot machines within the previous four weeks did so at least four to five times a week, and this proportion rose to almost one-half among those with PG. Among those with PG, horse and dog betting was the activity with the next highest frequency, with almost one-third of those spending money on this online doing so at least four to five times a week, with the corresponding figure for in-person betting being almost one-quarter. Scratch cards were also frequently played by those with PG who spend money on them, with one-quarter buying scratch cards in person at least four to five times a week, and the same proportion doing so online. It should be noted that the cell sizes for the analysis of gambling frequency among those with PG are small and thus the estimates carry a high degree of uncertainty. It should also be noted that seasonality may play a role in our gambling spend and frequency estimates in relation to sporting events, given that the data were collected between 21 August and 5 September 2023. For example, the

Galway Races Summer Festival at the beginning of August may have seen some people gamble more than usual on horse racing, while the lack of top-level competition in GAA and rugby may have seen some people bet less than usual on sports.

TABLE 3.13 FREQUENCY OF GAMBLING FOR THOSE WHO SPENT MONEY ON ONLINE GAMBLING IN THE PREVIOUS 4 WEEKS

	< Once a week	Once a week	2–3 times a week	4–5 times a week	Everyday/ almost everyday
Horse and dog betting	38.4	22.4	26.2	5.4	7.6
Sports betting	33.1	42.9	18.4	3.3	2.2
Lotteries	38.3	35.0	23.0	3.1	0.6
Scratch cards	50.7	31.9	12.2	1.2	3.9
Bingo	25.8	40.8	23.5	7.0	2.8
Slot machines	32.1	29.8	13.3	15.9	8.9
Casino gambling	43.8	24.8	21.1	2.6	7.7
Spread betting	65.7	16.5	12.0	3.4	2.5
Other	43.4	44.8	10.1	1.7	0.0

Notes: Weighted estimates. Percentages expressed as percentage of all those who spent money on a given activity in the previous 4 weeks.

TABLE 3.14 FREQUENCY OF GAMBLING FOR THOSE WHO SPENT MONEY ON IN-PERSON GAMBLING IN THE PREVIOUS 4 WEEKS

	< Once a week	Once a week	2–3 times a week	4–5 times a week	Everyday/ almost everyday
Horse and dog betting	51.1	31.3	11.0	4.3	2.3
Sports betting	47.7	39.8	10.2	0.7	1.6
Lotteries	40.5	40.1	17.0	2.0	0.4
Scratch cards	54.0	30.2	12.7	2.3	0.8
Bingo	40.5	38.3	18.4	2.8	0.0
Slot machines	72.4	19.0	8.5	0.0	0.0
Casino gambling	52.9	27.7	19.4	0.0	0.0
Friends	65.8	20.9	10.9	1.3	1.1
Other	40.1	30.6	29.3	0.0	0.0

Notes: Weighted estimates. Percentages expressed as percentage of all those who spent money on a given activity in the past four weeks.

TABLE 3.15 FREQUENCY OF GAMBLING FOR THOSE WITH PG WHO SPENT MONEY ON ONLINE GAMBLING IN THE PREVIOUS 4 WEEKS

	< Once a week	Once a week	2–3 times a week	4–5 times a week	Everyday/ almost everyday
Horse and dog betting	10.4	20.7	36.6	8.8	23.4
Sports betting	15.7	36.2	30.1	5.9	12.2
Lotteries	13.0	23.4	37.4	23.8	2.5
Scratch cards	11.2	32.2	31.7	5.7	19.2
Bingo	24.7	27.6	36.7	0.0	11.0
Slot machines	20.8	21.6	11.7	27.5	18.4
Casino gambling	36.0	20.0	40.5	0.0	3.5
Spread betting	43.2	7.3	34.9	14.6	0.0
Other	39.4	60.6	0.0	0.0	0.0

Notes: Weighted estimates. Percentages expressed as percentage of all those with PG who spent money on a given activity in the past four weeks. Most cell sizes are below 30, and so the estimates in this table carry a high degree of uncertainty.

TABLE 3.16 FREQUENCY OF GAMBLING FOR THOSE WITH PG WHO SPENT MONEY ON IN-PERSON GAMBLING IN THE PREVIOUS 4 WEEKS

	< Once a week	Once a week	2–3 times a week	4–5 times a week	Everyday/ almost everyday
Horse and dog betting	14.0	38.8	23.7	12.6	10.9
Sports betting	27.2	24.9	36.4	5.0	6.6
Lotteries	14.9	45.0	30.1	7.4	2.7
Scratch cards	4.3	36.1	32.3	19.5	7.7
Bingo	36.7	37.9	25.4	0.0	0.0
Slot machines	45.2	21.8	33.0	0.0	0.0
Casino gambling	9.6	45.0	45.3	0.0	0.0
Gambling between friends	21.4	38.7	27.1	4.9	7.9
Other	51.2	0.0	48.8	0.0	0.0

Notes: Weighted estimates. Percentages expressed as percentage of all those with PG who spent money on a given activity in the past four weeks. Most cell sizes are below 30, and so the estimates in this table carry a high degree of uncertainty.

3.4 SOCIODEMOGRAPHIC ANALYSIS OF PROBLEM GAMBLING

In this section we assess the sociodemographic composition of PG in Ireland, by age, gender and educational attainment. We first present a descriptive analysis, followed by a regression analysis where we test for statistically significant associations. We focus only on gender, age and education – comparisons by other characteristics (e.g., rural vs. urban) will feature in subsequent reports. Tables 3.17 and 3.18 show the prevalence of PG within sociodemographic subgroups, and the sociodemographic composition of each PGSI category, respectively. While more men than women had PG, the gender split of 55:45 is more even than that suggested by previous international research, which finds a strong association between being male and PG (Ó Ceallaigh et al., 2023). Indeed, the previous Irish

estimates of PG using 2019 data found that the vast majority of those with PG were male (Mongan et al., 2022), while Irish healthcare treatment reporting system data show the same pattern (Condron et al., 2022; Kelleher and Lynch, 2023). In the Mongan et al. (2022) study, PG prevalence among males was estimated to be 0.6%, compared to 3.6% in our study, while for females it was estimated at 0.03%, compared to 2.9% in our study. Therefore, while the PG estimate for men is six times higher in our study than in the Mongan et al. (2022) study, it is many more times higher for women.

Estimates of PG in the UK for the year to March 2023 mirror our findings on the gender split in PG, however, in that PG rates are higher among men, but not by much. Year-on-year UK data show that there has been a convergence in PG rates between men and women over the past few years (UK Gambling Commission, 2023). The difference between our findings and the Mongan et al. (2022) data from 2019 may be partly due to the time gap between the two data collection periods. The treatment report system data analysed by Condron et al. (2022) and Kelleher and Lynch (2023) are more recent, however, so the discrepancy between our findings and theirs cannot be explained by time. It is possible that PG among women remains more hidden, that women and men answer the PGSI differently, or that PG among men is more likely to lead to additional difficulties for families, and that these, or some other differences, mean that men are more likely to either self-refer or be sent for treatment. There is also the possibility that differences in selection into online panels between men and women may play a role, but as noted in Chapter 2, we took several measures to mitigate the risk of any such selection effects playing an important role in our sample.

TABLE 3.17 PREVALENCE OF PROBLEM GAMBLING AMONG SOCIODEMOGRAPHIC SUBGROUPS

	Problem gambling prevalence (%)
Male	3.6
Female	2.9
Under 30 years	4.3
30–39 years	6.7
40–49 years	4.1
50–59 years	1.8
60–69 years	0.7
70+ years	0.5
Less than Leaving Certificate	1.5
Leaving Certificate	4.4
Tertiary education but less than a degree	4.1
Degree or higher	2.6

Notes: Weighted estimates. N=2,850.

TABLE 3.18 SOCIODEMOGRAPHIC COMPOSITION OF EACH PGSI CATEGORY

	Full sample (%)	Problem gambling (%)	Moderate evidence (%)	Some evidence (%)	Any evidence (%)	No evidence (%)
Female	51.0	45.5	33.2	44.1	41.2	54.3
Male	49.0	54.5	66.8	55.9	58.8	45.7
Under 30 years	18.4	24.3	27.9	22.8	24.5	16.4
30–39 years	18.1	37.2	19.6	20.3	22.3	16.6
40–49 years	19.9	24.8	19.6	21.9	21.6	19.3
50–59 years	16.7	8.9	18.2	15.1	15.2	17.2
60–69 years	13.3	2.8	8.0	9.6	8.3	14.9
70+ years	13.7	2.1	6.7	10.3	8.2	15.6
Less than Leaving Certificate	15.8	7.2	16.6	18.3	16.4	15.6
Leaving Certificate	21.6	28.7	22.5	22.1	23.1	21.2
Tertiary less than a degree	31.9	40.0	33.7	28.8	31.6	32.0
Degree or higher	30.7	24.1	27.3	30.9	29.0	31.2

Note: Weighted estimates. Full sample N=2,850. The 'Any evidence' group includes all those in the PG, moderate evidence and some evidence groups.

The distribution of those with PG across age groups is uneven, with much higher prevalence in the under 50 age groups than in the over 50 groups. This tallies with previous research showing that PG is negatively associated with age (Ó Ceallaigh et al., 2023), and mirrors recent findings from the UK (UK Gambling Commission, 2023). The 30–39 age group has the highest estimated prevalence at 6.7%. An open question is whether the relationship between age and PG is driven by an age effect

or a cohort effect. If it is driven by an age effect (simply being older is protective against PG), then we would expect to see the same patterns across age groups in ten years' time, all other things being equal. If, however, it is driven by the increased susceptibility of current younger adults to PG (for example, due to increased exposure to online gambling during formative years), then we might be observing a cohort effect. If so, were we to repeat this study in ten years' time, we would see a higher prevalence of PG among 50–59 year olds, as the individuals with PG in the 40–49 bracket move into this older category and continue their gambling behaviours. This distinction between an age effect and a cohort effect is important, as a cohort effect would imply that the overall prevalence of PG is likely to rise in years to come.

When looking at educational attainment, the highest prevalence of PG is among those for whom the Leaving Certificate, or tertiary qualification below degree level, is their highest level. Higher prevalence among these groups than in the 'degree or higher' group is in line with previous research that records a negative relationship between educational attainment and PG. However, the lowest prevalence among all groups is found among those who did not obtain a Leaving Certificate. This is less out of step than it would initially appear, however, because those in this group in Ireland are primarily older – three-quarters of them are over 50 (CSO, 2023b) – due to intergenerational differences in educational attainment.

Table 3.19 shows the result of a regression of PG on gender, age and education. This regression largely confirms the findings from the descriptive analysis. We see that being female is negatively associated with having PG, but this association is only marginally significant. Relative to being aged 50–59 years, being under 50 is positively significantly associated with PG. Relative to having at least a degree, having only a Leaving Certificate, or having at most a tertiary education less than a degree, are positively associated with PG.

TABLE 3.19 LOGIT REGRESSION OF PG ON SOCIODEMOGRAPHIC VARIABLES – COEFFICIENTS REPORTED AS ODDS RATIOS

	Problem gambling
Female	0.655* [0.425,1.009]
Age ('50–59 years' as reference category)	
Under 30 years	2.259** [1.000,5.104]
30–39 years	3.366*** [1.689,6.709]
40–49 years	2.218** [1.089,4.518]
60–69 years	0.443 [0.154,1.280]
70+ years	0.187 [0.024,1.435]
Educational attainment ('degree or higher' as reference category)	
Less than Leaving Certificate	0.935 [0.274,3.186]
Leaving Certificate	2.445*** [1.410,4.239]
Tertiary education but less than a degree	1.873** [1.096,3.203]
Dependent variable mean	0.033
N	2,850

Notes: Exponentiated coefficients (odds ratios); 95% confidence intervals in brackets. *p<0.10; **p<0.05; ***p<0.01.

3.5 PERCEPTIONS AND ATTITUDES ABOUT GAMBLING

Participants were also asked to estimate their position in the gambling spend distribution for adults.[25] The expenditure data collected as part of the survey allowed us to compare each participant's actual position in the spend distribution to this perception. As can be seen in Table 3.20, on average, individuals in our sample underestimated their position in the gambling spend distribution for adults in Ireland by nine percentiles. In other words, participants underestimated by nine percentage points the percentage of adults in Ireland who spent the same as, or less than, themselves on gambling over the previous four weeks. However, there

[25] Adapting a technique developed by Robertson et al. (2023) and based on best practices for communicating statistics, participants were presented with a grid of 100 figures representing adults, and were asked to select the number of 100 adults they believed spent more money on gambling than they themselves had spent over the previous four weeks.

is considerable variation in this misperception between PGSI categories. Mean underestimation is 40 percentiles for those with PG, 26 percentiles for those in the 'moderate evidence' category, 21 percentiles for those in the 'some evidence' category, and just 2 percentiles for those in the 'no evidence' category. Those with PG perceive themselves, on average, to be in the middle of the distribution (50th percentile) when in fact they lie at the 90th percentile on average. In short, people perceive that the proportion of others who spend more than them on gambling is larger than it truly is, a misperception that worsens with the severity of a person's PG.

TABLE 3.20 DIFFERENCE BETWEEN ACTUAL AND PERCEIVED POSITION IN GAMBLING SPEND DISTRIBUTION

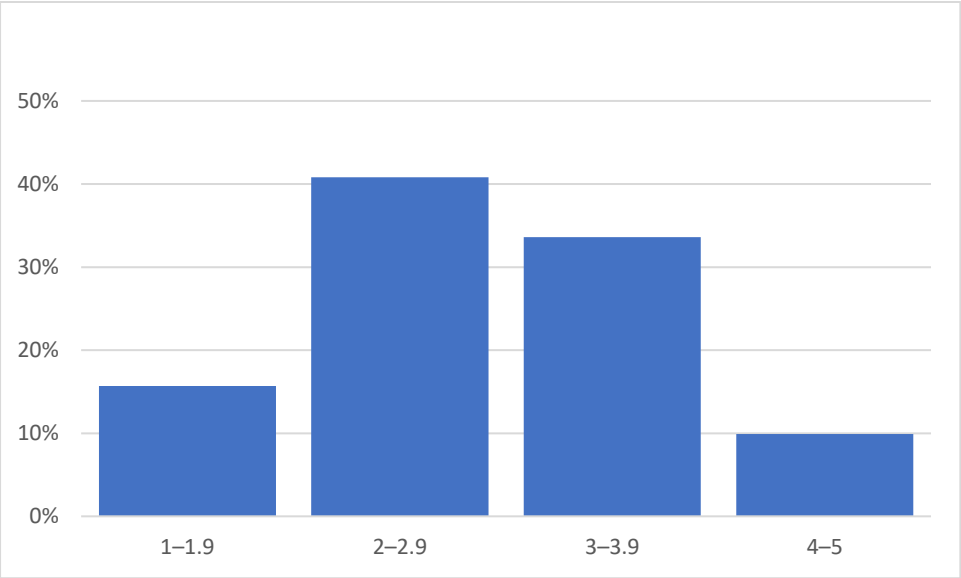
	Mean under-estimation (percentiles)	Lower CI (percentiles)	Upper CI (percentiles)
Full sample	8.8	7.3	10.3
Problem gambling	40.3	34.2	46.4
Moderate evidence	26.0	21.8	30.3
Some evidence	21.2	17.8	24.5
No evidence	2.1	0.4	3.8

Notes: Full sample N=1,884 (panel C did not complete this task). CI=Confidence interval.

Figure 3.1 depicts the distribution of our aggregate measure of stigma towards PG. Note that we measure stigma towards people with PG and not stigma or discrimination experienced by those with PG. When asked to rate on a scale of one (very uncomfortable) to five (very comfortable) how comfortable participants would be in a number of different social interactions with a person with PG,[26] the majority (57%) give an average rating of two to three, implying at least some discomfort, while more than one-quarter score above three. It is worth noting when interpreting these findings that how people represent a 'problem gambler' is likely to influence their response to these questions. Further research is required to investigate the public's conceptualisation of a problem gambler, but these findings at least point to it being broadly negative. See Figures A1–A3 for overall stigma among those with PG, those who gamble and don't have PG, and those who don't gamble. Stigma is highest among those with PG, and lowest among those who don't gamble.

[26] The situations were: (i) moving next door to; (ii) making friends with; (iii) spending an evening socialising with; (iv) starting working closely with a person who has a problem with gambling; (v) having a treatment centre for people with problems with gambling in their local area; and (vi) having a person who has a problem with gambling marry into the respondent's family.

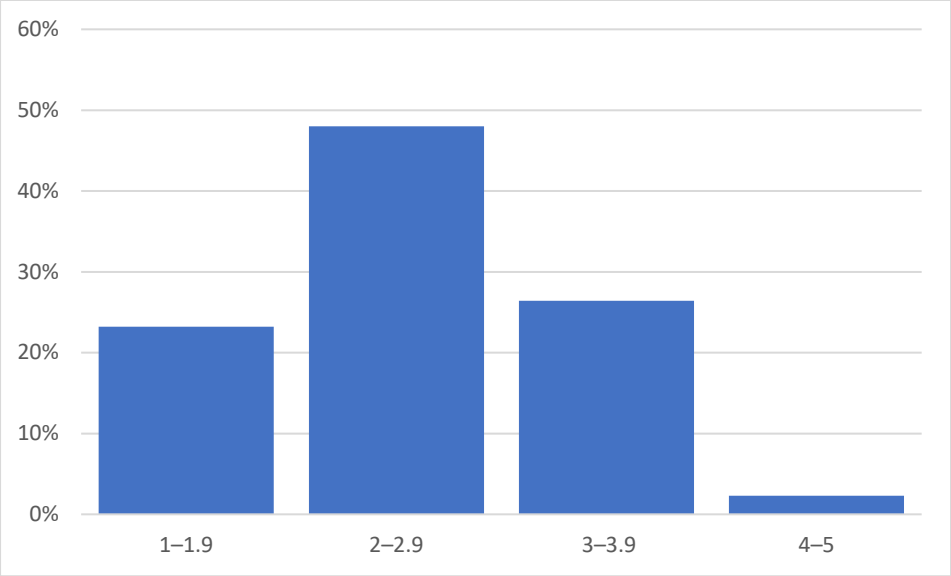
FIGURE 3.1 STIGMA SCALE SCORE



Notes: Weighted estimates. N=1,884. The higher the score on the five-point stigma scale, the higher the level of stigma.

Figure 3.2 shows that a strong majority (71%) of individuals expressed an overall negative attitude towards gambling (i.e., scored less than three overall on the Attitudes Towards Gambling Scale). This is in line with previous studies internationally using this scale, which mostly find a negative attitude towards gambling (Hellumbråten Kristensen et al., 2022). See Figures A4–A6 for overall attitudes among those with PG, those who gambled and don't have PG, and those who didn't gamble. The most negative attitudes are held by those who don't gamble. An examination of results for the individual items on this scale gives some additional insight (Figure 3.3). Almost four-fifths (79%) of participants agree that, 'there are too many opportunities for gambling nowadays'. Over half (51%) agree that, 'gambling should be discouraged', with only 14% disagreeing. Two-thirds (67%) agree that, 'gambling is dangerous for family life'. Only 7% agree that, 'on balance, gambling is good for society', and only 17% agree that, 'Gambling livens up life'. Finally, less than half disagree that, 'It would be better if gambling was banned altogether', which one might judge as a low proportion given the extremeness of such a proposal.

FIGURE 3.2 ATTITUDES TOWARDS GAMBLING SCALE – DISTRIBUTION OF OVERALL SCORES



Notes: Weighted estimates. N=1,884. A higher score on the five-point scale means a more positive attitude towards gambling.

FIGURE 3.3 ATTITUDES TOWARDS GAMBLING SCALE – DISTRIBUTIONS OF SCORES FOR INDIVIDUAL ITEMS

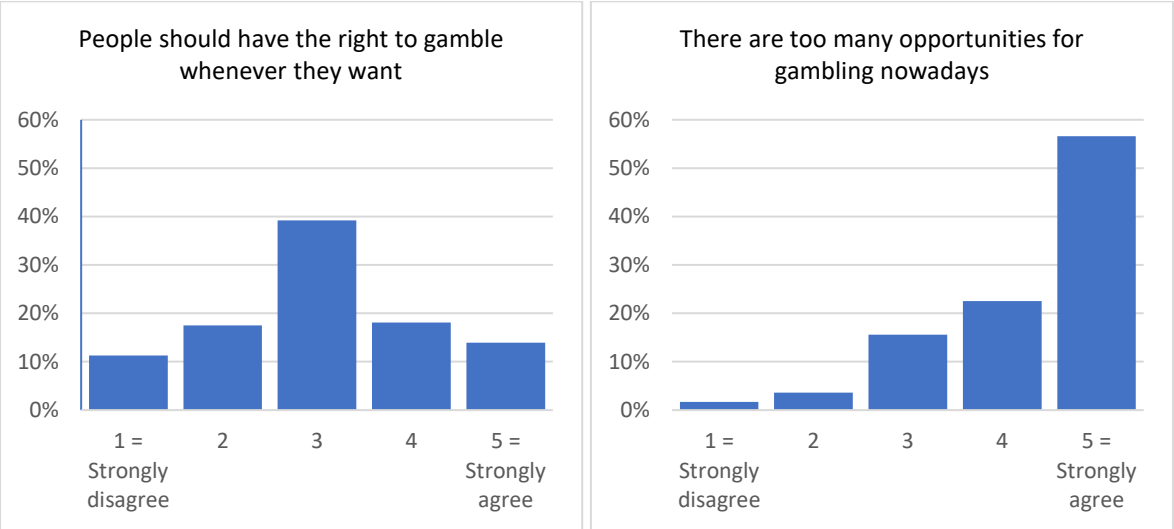
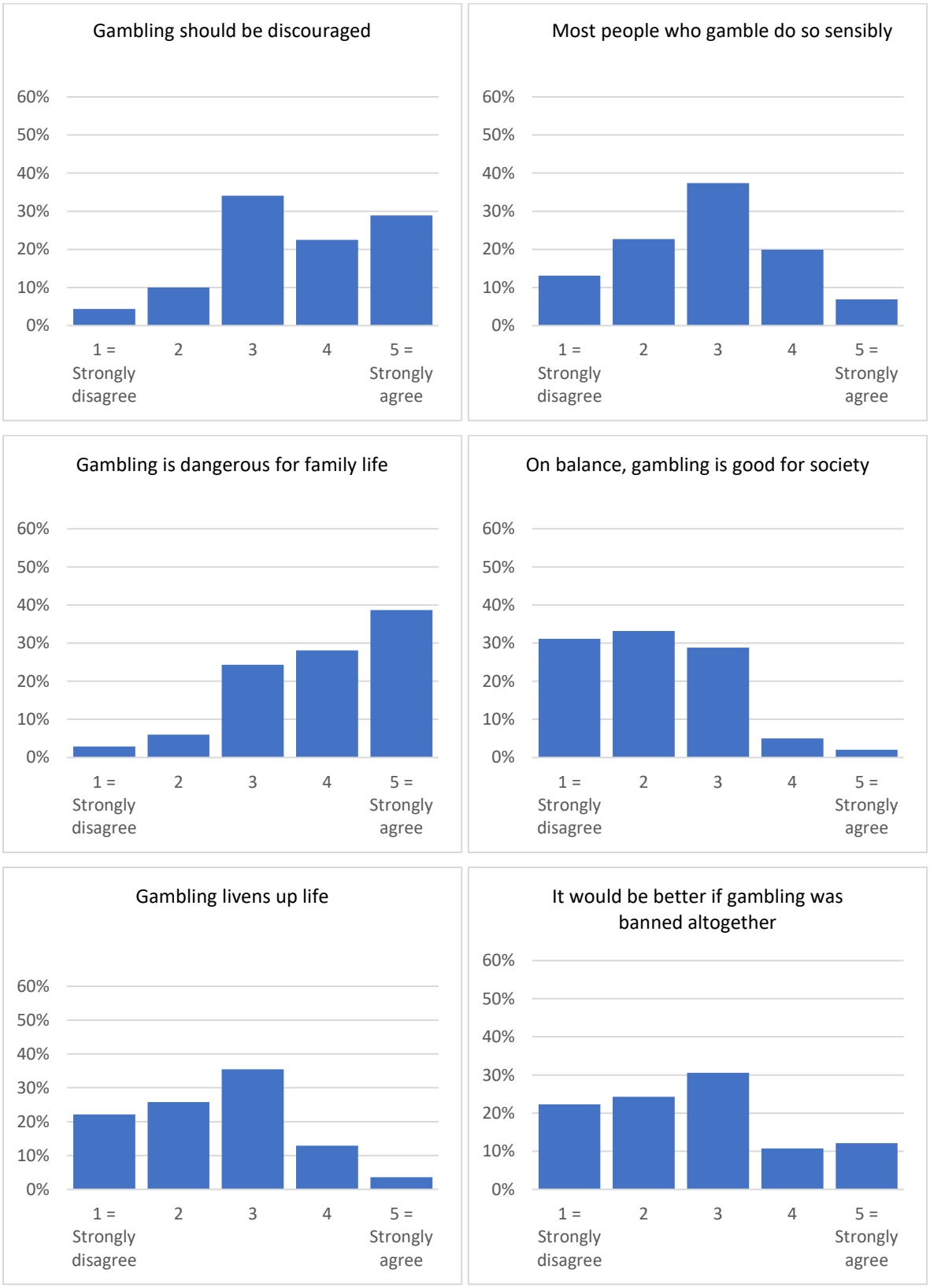


FIGURE 3.3 (CONTD.) ATTITUDES TOWARDS GAMBLING SCALE – DISTRIBUTIONS OF SCORES FOR INDIVIDUAL ITEMS



Notes: Weighted estimates. N=1,884.

When asked what they think about their current level of gambling, 9% of gamblers say they would like to gamble less, compared to 2% who say they would like to gamble more (see Table 3.21). Among those with moderate evidence of PG, the percentage who would like to gamble less rises to 28%, while 67% of those with PG say they would like to gamble less than they currently do. The implication of these numbers is that for most people with PG and many who show moderate evidence of PG, the current gambling landscape may be inducing self-control failures; they would like to pursue a longer-term goal of gambling less but on a day-to-day basis struggle to limit their gambling. Almost one-third of those with PG are happy with their current level of gambling, with very few (3%) who would like to gamble more. According to the stages of change in addiction model (Prochaska and DiClemente, 1983), such individuals are at the first stage of the change process (precontemplation) and are not currently considering a change to reduce their gambling behaviour. This heterogeneity in stage of change across those with PG needs to be taken account of when considering policies and interventions for PG.

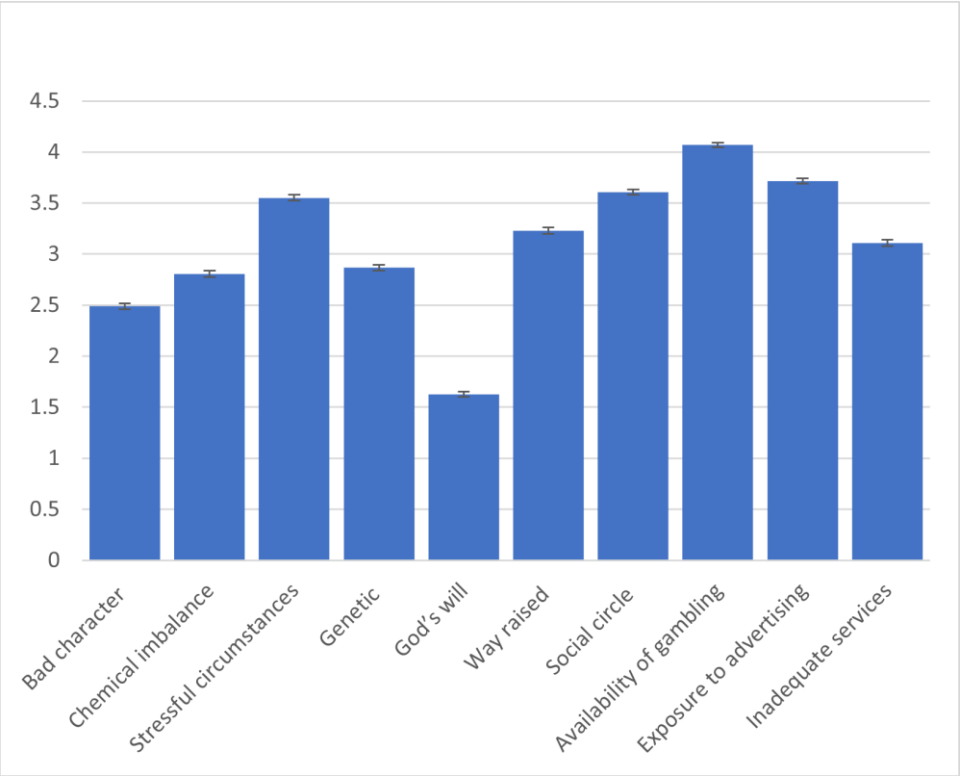
TABLE 3.21 RESPONSES TO THE QUESTION, 'WHAT DO YOU THINK ABOUT YOUR OWN CURRENT LEVEL OF GAMBLING?'

	Would like to gamble less (%)	Happy with current level of gambling (%)	Would like to gamble more (%)	p-value, difference between 'less' and 'more'
Full sample	7.5	90.2	2.3	0.000
Gambled in previous 4 weeks	8.7	88.9	2.4	0.000
Some evidence of PG	6.4	90.5	3.1	0.087
Moderate evidence of PG	28.1	65.5	6.4	0.000
Have problem gambling	67.0	29.9	3.1	0.000

Notes: Weighted estimates. Full sample N=1,884.

When participants were asked what they thought caused a person's gambling problems, out of ten different possible causes, 'the widespread availability of opportunities to gamble' was perceived as the most likely cause, followed by 'exposure to advertising and promotion of gambling' (Figure 3.4). Both were given statistically significantly higher likelihood ratings than all other possible causes listed. The patterns are largely similar for the subgroups of individuals with PG, those who gamble but don't have PG, and those who don't gamble (see Figures A7—Figure A9 in the appendix).

FIGURE 3.4 PERCEIVED LIKELIHOOD OF VARIOUS FACTORS CAUSING PG – MEAN SCORES



Notes: Weighted estimates. N= 1,884. A higher score on the five-point scale means a higher perceived likelihood that a given factor causes PG. 95% confidence intervals shown.

Looking at the distribution of scores for individual factors in Figure 3.5, only 7% and 13% of participants thought that the availability of gambling and advertising, respectively, were unlikely to be causes of PG (compared to 75% and 62% who believed they were *likely* causes). It is interesting to note that these two supply-side factors were perceived as more likely causes of PG than any of the other causes listed, which included individual, social and health system factors. Of these other causes, 'stressful circumstances in their life' and 'the people they socialise with' were rated as the most likely causes (rated as likely by 53% and 56%, respectively). This difference – between identification of structural causes of PG and individual-level ones – may be a signal of the kind of support the public would hold towards different types of policy response.

FIGURE 3.5 DISTRIBUTION OF LIKELIHOOD SCORES FOR EACH POSSIBLE CAUSE OF PG ANALYSED

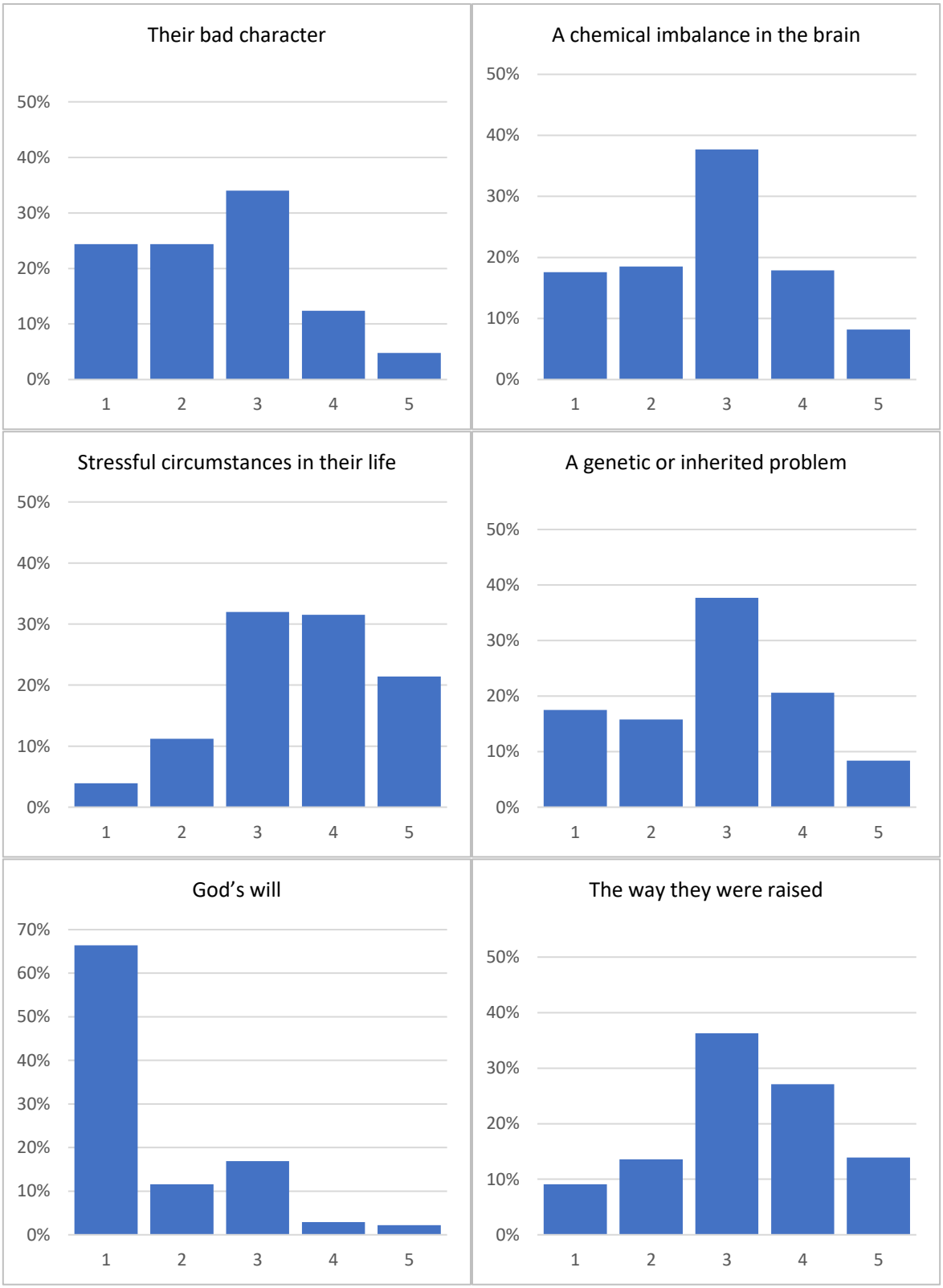
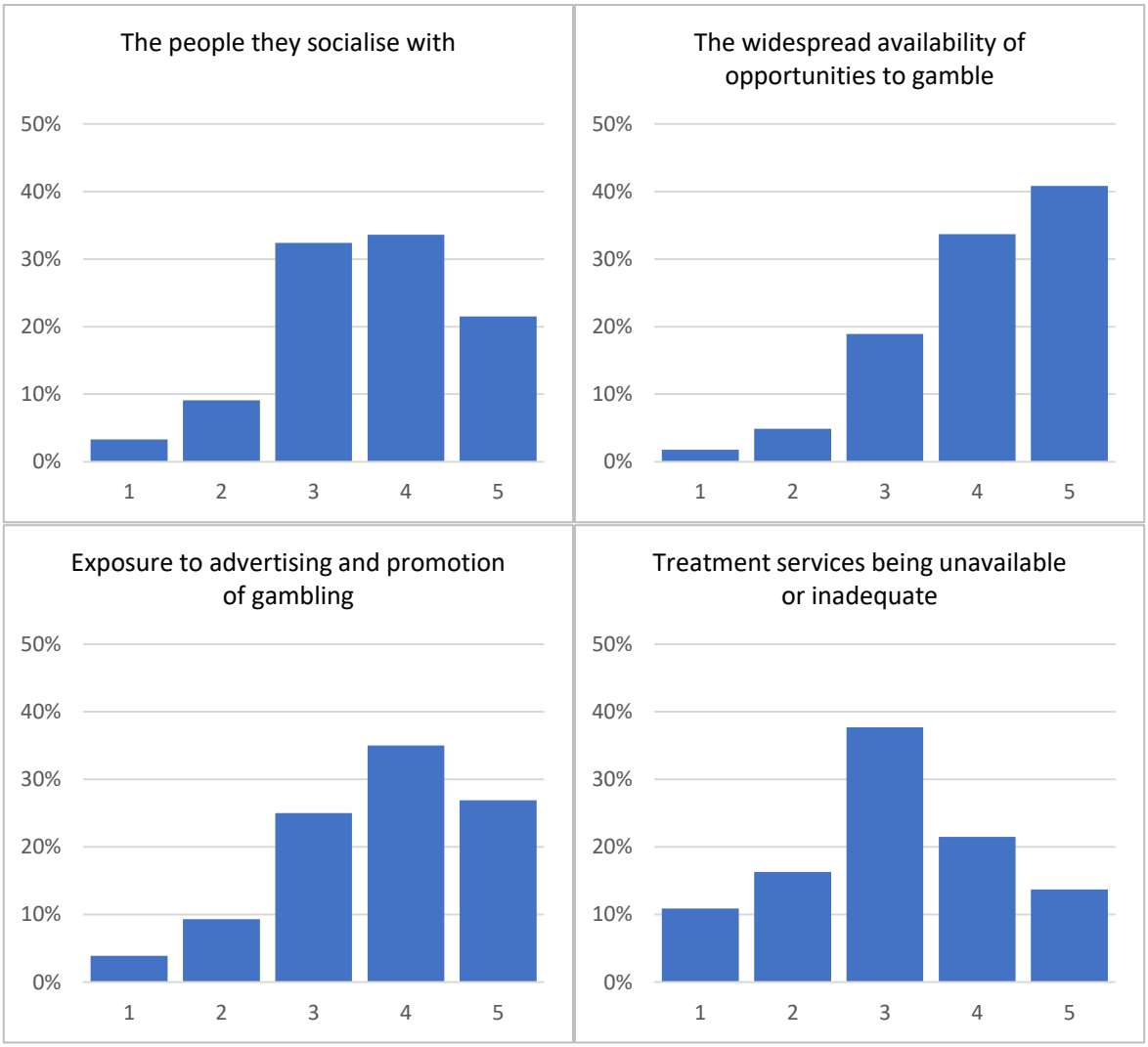


FIGURE 3.5 (CONTD.) DISTRIBUTION OF LIKELIHOOD SCORES FOR EACH POSSIBLE CAUSE OF PG ANALYSED



Notes: Weighted estimates. N=1,884. The y-axis presents the percentage of participants. The x-axis denotes the response, where one was labelled 'very unlikely' and five was labelled 'very likely'.

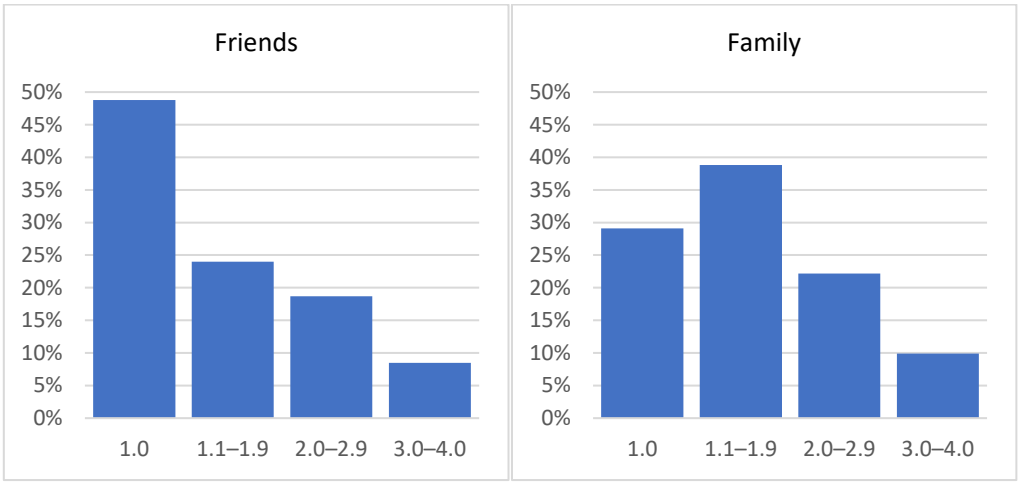
3.6 FAMILY EFFECTS AND MENTAL HEALTH

Participants with a friend or family member who gambles were asked how often they had experienced six different problems over the previous three months as a result of the gambling of a friend or family member.[27] Responses across the six problems were averaged, with a score above one indicating at least one problem was experienced in the previous three months. Approximately one-fifth of individuals who had a friend with PG scored between two (rarely) and three (sometimes) on average, while one-tenth scored between three (sometimes) and

[27] The problems were: financial hardship; feelings of sadness, anxiety, stress or anger; quality of relationship was affected; social life was affected; ability to work or study was affected; and physical health was affected.

four (often) (Figure 3.6). The patterns are almost identical for those who had a family member with PG.

FIGURE 3.6 PROBLEM GAMBLING SIGNIFICANT OTHER IMPACT SCALE SCORES FOR THOSE WHO HAVE A FRIEND WITH PG, AND FOR THOSE WHO HAVE A FAMILY MEMBER WITH PG



Notes: Weighted estimates. N=249 for friends, N=253 for family. Responses were scored such that '1' indicated a 'not at all' response, 2 indicated 'rarely', 3 indicated 'sometimes' and 4 indicated 'often'.

Having PG is significantly associated with poorer mental health (see Ó Ceallaigh et al., 2023). Ordinary least square (OLS) regressions with standardised mental health – measured with the Mental Health Inventory-5 (MHI-5) – as the dependent variable confirm this, showing that, when compared to the rest of the sample, having PG is associated with a score that is lower by 0.83 standard deviations (Table 3.22, column 1). When compared to those who show no evidence of PG (column 2), the score for those with PG is lower by 0.92 standard deviations, while the score for those with moderate and some evidence of PG is lower by 0.49 and 0.27 standard deviations, respectively. Having a family member with PG is also associated with poorer mental health of 0.39 standard deviations, close to exactly half the size of the coefficient estimate in the first regression. These effects are large and highly statistically significant, but it is important to bear in mind that this does not mean that the individual's mental health problems are caused by PG (although they could be), since it is possible that those with worse mental health are more inclined to engage in PG. The findings demonstrate an association between the two, not its cause. Having a friend with PG is not significantly associated with poorer mental health.

TABLE 3.22 OLS REGRESSION OF ASSOCIATION BETWEEN MENTAL HEALTH AND PG, HAVING A FRIEND WITH PG AND HAVING A FAMILY MEMBER WITH PG

	(1) Mental health	(2) Mental health	(4) Mental health	(3) Mental health
PG	-0.832*** [-1.036,-0.629]	-0.920*** [-1.123,-0.718]		
Moderate evidence of PG		-0.489*** [-0.630,-0.348]		
Some evidence of PG		-0.266*** [-0.366,-0.166]		
Friend PG			0.010 [-0.122,0.141]	
Family PG				-0.335*** [-0.462,-0.207]
N	2,850	2,850	2,763	2,763

Note: 95% confidence intervals in brackets. Dependent variable (MHI-5 mental health score) is standardised. All regressions control for gender, age and education. Regression in column 1 includes as independent variable an indicator for having PG. Regression in column 2 includes indicator for PG, as well as an indicator for having moderate evidence of PG and some evidence of PG. Regressions in columns 3 and 4 exclude people who themselves have PG, and include an indicator for having a friend with PG and having a family member with PG, respectively. *p<0.10, **p<0.05, ***p<0.01.

CHAPTER 4
Conclusions and policy implications

4.1 SUMMARY OF FINDINGS

4.1.1 Main measures of problem gambling

Our estimates imply that the level of problem gambling (PG) in Ireland is much higher than previously thought. Our primary point estimate is based on a pre-registered measurement method that used the internationally recognised Problem Gambling Severity Index (PGSI) scale with a sample of almost 3,000 Irish adults (aged 18 years and over). We record that 3.3% of the adult population have PG (with a 95% confidence interval of 2.5–4.0%). This main estimate equates to 1 in 30 adults, or to 130,000 people, with PG in Ireland (confidence interval: 98,000–157,000).

This is more than ten times the previous estimate arising from a face-to-face survey that used the PGSI, as part of the 2019–2020 Irish National Drug and Alcohol Survey (NDAS) (Mongan et al., 2022). To some extent, the disparity between the figures could indicate a genuine increase in gambling behaviour over a four-year period that spanned a global pandemic. International evidence indeed suggests that problematic gambling increased during the pandemic (Forsström et al., 2023; Hodgins and Stevens, 2021). However, consistent with similar results in other countries as described in earlier chapters, the bulk of the disparity is likely to be due to different research methods being used. Answering the survey questions privately, and online, affords greater anonymity and results in more individuals being willing to admit problematic gambling behaviour.

In addition to the 3.3% that meet the PG criteria, we record a further 7.1% (confidence interval: 6.0–8.2%) of the adult population who show moderate evidence of PG. To meet these criteria, someone must still have multiple negative behaviours or experiences associated with their gambling. This equates to 279,000 people. Lastly, we record another 15% (confidence interval: 13.4–16.5%), or 590,000, who report at least some problematic experiences or behaviours. The proportions measured in these two additional categories are also substantially higher than previous estimates based on face-to-face surveys. Three-quarters (75%) show no evidence of PG. Among the full sample, 74% had gambled in the previous four weeks.

We performed multiple robustness checks on our main estimates. Our results are not sensitive to how we apply sociodemographic weights. Neither are they

sensitive to reweighting based on behavioural variables benchmarked against probability samples (smoking, online shopping and radio listening).

We believe it is unlikely that our study is over-reporting gambling behaviour, because our estimate of total spending on gambling falls below estimates of total industry revenue. By aggregating the self-reported expenditure on gambling among our sample, we generate an estimate of total annual spending of €5.5 billion. This compares with a conservative estimate of industry revenue at €6–8 billion (see Section 1.3). Is it possible that we have overestimated PG and simultaneously underestimated expenditure? We see no reason why participants might generally over-report gambling behaviour while simultaneously under-reporting gambling expenditure on those same behaviours. An alternative logical possibility is that we observe a combination of people with PG disproportionately selecting into online panels, inflating the estimate of PG, while people without PG under-report their spending. However, because people with PG and people who show moderate evidence of PG account for almost half of total gambling expenditure in our sample, the gamblers without PG in our sample would have to have very greatly under-reported expenditure – their true expenditure would need to be well over double what they revealed (see Section 3.3). Overall, therefore, we view the relationship between our expenditure data and industry revenue figures as providing confidence in our main estimates.

It is notable also how close our main estimate of PG is to the figure derived by deploying the Network Scale-Up Method (NSUM) to a question about whether close friends have a problem with their gambling. The PGSI relies on scores of an index, while our NSUM question relied simply on perceptions of a friend's gambling behaviour. Yet this latter method produced a figure of 3.2%, while the estimate for close family members was 2.4%. The figure for family members could be expected to be somewhat lower, because we did not ask participants to limit their consideration to family members aged 18 and over. Overall, therefore, our estimates of the prevalence of PG are in line with perceptions among the public at large about the extent of PG in their social networks. This is another helpful sense check on the validity of the data. Note that to explain these results as the product of sample selection would require not only that people with PG are many times more likely than the rest of the population to join online panels, but also that people who have friends with PG are very much more likely to join online panels. While logically possible, we see no reason or evidence for why this might be the case.

There nevertheless remains some uncertainty about the precision of the main estimates. We obtained a lower main figure of 1.2% from one of the three online panels that we used to collect the data. While this estimate is still four times higher than the previous measure, it is significantly below the figures arising from the

other two panels (4.1% and 4.4%). The difference may be driven by differences in incentive structures, as the lowest estimate was derived from the unpaid panel. Further investigations, however, revealed that the sample from that panel had a stronger over-representation of participants with high educational attainment, which would be likely to bias the resulting estimate of PG downwards. The panel also consisted of subscribers who were more used to participating in opinion polls than in research studies. Participants from this panel were much more likely than those from the other panels to drop out during the survey. Almost half of dropouts occurred early in the study, during the information page, which explained that the survey was about gambling behaviours, or before the first question. The larger dropout may be due to the difference between this survey and the shorter opinion polls they are more used to completing. This, in particular, is likely to have deflated the main estimate, if problem gamblers were more likely to drop out than other participants. Higher dropout among people with PG would be expected, as people who gambled more would require longer to complete the survey and might, in some cases, have experienced discomfort when asked to describe their gambling behaviour.

It nevertheless remains logically possible that the lower estimate arising from this one panel is more accurate than the estimates arising from the other two. In theory, a difference could result from sample selection effects, if people with PG happened to be very much more likely to take part in online studies in return for small payments, rather than to contribute to charitable donations. However, we view this as an unlikely explanation for the lower estimate. One reason is that the earnings panellists make are very low; the average panellist completes between 1.5 and 2.5 surveys per month. Moreover, in addition to the disparity in educational attainment and dropout rates, which would be expected to bias measures for this panel downwards, the expenditure data suggest that the two panels with higher estimates were more accurate, at €6.6 billion. Since we cannot completely rule out sample selection effects, in reporting a headline prevalence of 3.3% for PG, based on treating all three panels equivalently, we are taking a cautious approach and following the pre-registered analysis plan.

Unfortunately, even though our estimates are much higher than previous ones, we may still be underestimating the true prevalence of PG. This is because of social desirability bias – participants' tendency to answer questions in ways they believe will be viewed favourably by others. We anticipated that the additional anonymity afforded by online data collection, compared to in-person interviewing, would lead more people to overcome social desirability bias and, therefore, to be more honest in reporting their gambling behaviour. However, when we used the crosswise model technique to give survey participants even greater anonymity when answering one of the nine questions from the PGSI scale, the proportion of positive responses increased significantly. This needs to be interpreted carefully, as it

relates to one specific PGSI question and the complexities of the question format mean that estimates derived from the crosswise model can be imprecise. However, the effect is highly statistically significant and suggests that online data collection does not entirely overcome social desirability bias. Moreover, our tests of social desirability bias are only appropriate for investigating whether participants conceal their behaviour from others, and not other related survey biases such as self-denial. As such, our estimates of PG based on online self-reports may still be too low.

Unsurprisingly, people with PG report spending much more on gambling products than other gamblers. The mean reported spend among people with PG was €231 per week, or €12,000 per year. Obviously, this is a very high expenditure relative to disposable income. Weekly spend was €70 among those with moderate evidence of PG, €42 among those with some evidence and €11 for other gamblers. The conclusion is that while we recorded only 3.3% of the adult population as having PG, this group accounts for an estimated 28% of spending on gambling, with 47% of total spending accounted for by a combination of people with PG and those with moderate evidence of PG. We estimate that gamblers who report no evidence of PG on the PGSI scale contribute 30% of spending. When the analysis is limited to lotteries and scratch cards, while the proportion of spending accounted for by people with PG reduces, it remains a substantive 17%, and 29% when those showing moderate evidence of PG are included.

Relative to other gamblers, people with PG are more inclined to undertake all types of gambling (in person and online; racing, sports, bingo, lotteries and scratch cards), but the difference is more pronounced for casinos and slot machines. What distinguishes people with PG more, however, is the much higher frequency of gambling and higher spending on gambling products, although people with PG are particularly frequent users of online slot machines.

This report began by highlighting how difficult it is to measure the prevalence of PG. However, overall, our main estimates of PG constitute an obvious cause for concern. Despite residual issues surrounding their precision, the primary implication of the main measures that we report is that the prevalence of problematic gambling behaviours is likely to be an order of magnitude greater than implied by previous estimates.

4.1.2 Secondary research questions

The associations that we observe between PG and sociodemographic background characteristics are broadly in line with previous research. We find that PG is associated with being under 50 years of age, and with lower educational attainment. However, although men have a higher rate of PG than women, the

gender gap is smaller than anticipated based on previous work, and is not significant. Our estimate of the proportion of women with PG is 2.9%.

The age breakdown is also interesting. We find a high proportion of people with PG (above 4%) among all age groups under 50 years, with the highest proportion among the 30–39 age group. There is a sharp drop-off in PG after age 50. Based on this cross-sectional data, we cannot know whether this is an age effect or a cohort effect; i.e., whether the current cohort of 30–49 year olds will gamble less in their fifties, or whether they belong to a cohort that will continue to gamble more than its predecessors as they age. This is an important issue for future research, because if we are observing a cohort effect, the overall level of PG is likely to rise in coming years unless something substantive changes in the pattern of gambling behaviour.

PG is more prevalent among those with lower levels of educational attainment. However, it is important to note that our main estimate of PG is as high as 2.6% among those who are educated to degree level or higher.

When we asked participants to estimate the proportion of adults who spend more on gambling than they themselves do, gamblers were, on average, inclined to overestimate the proportion spending more. This was particularly true of people with PG. One possible explanation for the difference is lack of financial literacy. However, there is a broader human tendency for people to have a positive bias in judgements of their own behaviour relative to others (Alicke and Govorun, 2005). The implication is that the norms of gamblers are distorted – they tend to believe that their level of gambling is more common that it is.

Gambling is viewed negatively by the public. A majority believe that it should be discouraged, and large majorities believe that there are now too many opportunities to gamble, and that gambling is dangerous for family life. Opinion is more divided regarding whether people should be allowed to gamble whenever they wish, with only a minority wanting to see a ban. However, less than 10% believe that, on balance, gambling is good for society. The conflict between these views and the evidence that a majority of people report having gambled over the previous four weeks presents a policy challenge. Opinions stated on this point may be subject to social desirability bias, or may reflect greater nuance in judgements of different types of gambling than is detectable in standard survey measures. For instance, people may hold different views about playing the lottery versus betting on sport or gambling in online casinos.

Among those who had gambled during the previous four weeks, 89% said that they were happy with the amount that they gamble. However, two-thirds of people with PG and more than one-quarter of those with moderate evidence of PG said that

they wish they gambled less than they currently do. This is consistent with the idea that the gambling landscape is inducing self-control failures among many people with PG, such that their short-term daily behaviours are inconsistent with their longer-term aims.

When asked about causes of PG, the two most common responses identified the availability of opportunities to gamble and exposure to gambling advertising. Stressful individual circumstances and social circles also featured strongly as reasons.

Finally, we found significant associations between PG and mental health. People with PG experience substantially worse mental health than others. The impact extends beyond the individual to family members. Future research is required to identify the causal pathway in this relationship.

4.2 POLICY IMPLICATIONS

The evidence provided in this report has serious implications for understanding the role that gambling plays in Irish life. A majority of adults in Ireland gamble regularly (we record 74% who gambled in a four-week period) and most are not people with PG. The industry generates economic value; businesses that offer gambling services support jobs and livelihoods. The industry provides entertainment for many and the supply of that entertainment represents an economic good. However, it has been understood for a long time that gambling causes harm to some individuals and families. Up to now, a tenable view has been that these harms were confined to a tiny minority who could be directed towards advice and support services. This perspective is difficult to maintain based on the statistical evidence provided here.

PG appears to be a much larger problem than previously thought; our estimates are fully an order of magnitude higher than previous ones. Moreover, our estimates imply that approaching half of the revenues collected by the industry may be derived from customers who are either people with PG or who display moderate evidence of PG. These data therefore fundamentally alter our understanding of the balance between the economic value that the industry generates and the harms associated with gambling. Indeed, Ireland may benefit from a review of the economic cost of gambling-related harms, as has been carried out in the UK (Office for Health Improvement and Disparities and Public Health England, 2023).

A substantive proportion of spending on lotteries and scratch cards also derives from people with PG or showing moderate evidence of PG. While many people enjoy playing the National Lottery and its associated instant games, and these

forms of gambling generate funding for good causes, we find that the small proportion of the population with PG accounts for 17% of spending on lotteries and scratch cards and that these activities make up 20% of the gambling spend of those with PG. Moreover, scratch cards in particular produce highly visible and frequent opportunities to gamble, with short time intervals between wagers and potential payouts. These properties are unlikely to be helpful for large numbers of people with PG, yet are being provided as part of a national funding mechanism for good causes. The National Lottery is the largest provider of these products, but lotteries or scratch cards are also provided by charities and sports clubs, as well as featuring in many other local fund raising efforts.

An assessment of the current level of provision of support and treatment services for people with PG and those with gambling addictive disorder was not addressed by the current research and is, in any case, beyond the expertise of the research team. However, it is clearly the case that, even if one were to deem the previous level of provision to be adequate, the very much greater extent of PG that we have identified implies an equivalently greater need for support and treatment services (Columb et al., 2021; Condron et al., 2022; O'Gara, 2018).

At the time of writing, the Gambling Regulation Bill (Houses of the Oireachtas, 2022) is making its way through the Oireachtas. This Bill proposes multiple restrictions on gambling marketing and advertising. These include: a ban on advertising via electronic communications without explicit consent (i.e., where the individual has not opted-in to seeing such advertisements); restrictions on the daily times when gambling advertisements are permitted; restrictions on sponsorship activity by gambling companies; and a ban on inducements to gambling activities (e.g., offering free bets). In addition to estimating the likely true extent of PG, our findings show that the general public views the modern availability of opportunities to gamble and the extent of advertising of these opportunities as the primary causes of PG. The findings therefore suggest an alignment between some of the restrictive measures proposed in the Bill and the public's views about what lies behind PG. Within our findings, people with PG themselves reveal difficulties associated with self-control, providing evidence in support of pre-set limits on expenditure and restrictions on gambling paid for via credit.

As well as showing that PG is much more prevalent than previously estimated, this report demonstrates that it occurs more widely across society. Although it is the case that men, younger adults and people in lower socioeconomic groups are more likely to be people with PG, the effect is perhaps not as large as previously believed based on studies that have recorded far fewer people with PG. Consequently, the argument for targeting preventative policy or service provision towards these specific groups is not strong. For instance, we find that more than half of people with PG have a post-secondary qualification, while almost one-quarter have at

least a primary degree. Among those who are people with PG or indicate moderate evidence of PG, more than one-third are women.

4.3 LIMITATIONS AND FUTURE RESEARCH

Chapter 2 described the pros and cons of online surveys and panel participants. On balance, we judged that such an approach was most appropriate for the current policy context in Ireland, while taking multiple precautions to address issues highlighted in other studies. We recruited participants from multiple panels with different incentive structures; employed attention checks in the survey, pre-registered the study; and weighted the data on sociodemographic characteristics (and checked the impact of weighting on behavioural ones). There remain, however, other limitations with online panel surveys of which readers should be mindful. First, the study relied on informed consent from participants; we cannot know the prevalence of PG among those who decline to take part (as with traditional probability sampling studies). If people with PG are less likely to engage with surveys for little-to-no compensation compared to the rest of the population, our estimate is downward biased. If they are more likely, it is upward biased.

Second, the study required participants to have not only the willingness to engage in an online survey but also the capacity. This has further implications for our estimate. The 7% of the population who have no internet access are not represented in the survey (CSO, 2021). As this group can only engage in offline forms of gambling, they may be less likely to exhibit PG behaviours (although we cannot be sure). Moreover, our sample contains few respondents over 80 years of age. Given the association between younger age and PG, this too may bias our estimate upwards. Despite efforts to ensure the survey was written in plain English, those with cognitive impairments are not represented; neither are minority groups with insufficient levels of English. There is some international evidence to suggest that minorities exhibit higher levels of PG (e.g., Alegría et al. 2009); hence our estimate may be downward biased by this exclusion, but again we cannot be certain if this is the case in Ireland without further research. In sum, our estimate of PG generalises to members of the population aged 18–80 years who have access to the internet and a degree of English that allows them to take part in plain-language research. Our view from the 2022 Census estimates is that this represents the vast majority of the public. In other words, the associated biases, while present, would be relatively small.

There are further limitations with prevalence surveys. Although the PGSI is considered the gold standard for measuring population prevalence of PG and using it allows for international comparison, there can be considerable variation between individuals classified as having PG. For example, an individual who spends little on gambling but nonetheless very often feels anxiety about their gambling,

who experiences gambling-caused health problems and feels they may have a problem with gambling, could achieve the same score as an individual who very often bets more than they can afford to lose, tries to win back losses and whose gambling has caused financial difficulty for their family, even if they do not recognise they have a problem or experience any anxiety. Hence, further research on the structure of PG among those who score highly is necessary to inform targeted policy interventions.

Moreover, while prevalence surveys are informative for policy, selection effects with opt-in surveys are impossible to overcome and may be particularly important for sensitive issues such as PG. It is therefore important to supplement prevalence surveys with analyses of other data sources. Assessments of medical data can provide important information on the sociodemographic characteristics of those seeking treatment and their outcomes. Relevant research exists for Ireland (Columb et al., 2021; Condron et al., 2022; Kelleher and Lynch, 2023). More effort is needed, however, to assess gambling-related harms from other perspectives. For example, Muggleton et al. (2021) analyse financial transaction data from a UK retail bank to test for associations between objectively measured gambling activity and other outcomes, such as financial difficulty (with the caveat that bank data are better suited to analysing online than offline gambling activity). Independent analyses of data held by industry and the financial sector are likely to provide important insights for policy.

4.4 CONCLUSION

The prevalence of PG is difficult to measure with precision, but estimates are nonetheless useful for policy. Our study is the first in Ireland to apply the gold standard measure of PG using a fully-anonymised administration mode. Our lowest estimate (from an unpaid online panel) puts the prevalence of PG at least four times higher than previously thought, with other sources – from other panels and perceptions of the public – placing it ten times higher. We further estimate that individuals who report multiple problematic behaviours or negative gambling outcomes account for almost half of gambling-related revenue, and most of these individuals wish to gamble less. The public holds negative views of people with problem gambling (as they perceive them) but believe that problem gambling is more likely to be caused by the widespread availability of gambling and prevalence of gambling advertisements. The findings of this report represent initial and primarily descriptive analyses of recently collected data, but they lend support to many of the measures proposed in the Gambling Regulations Bill (Houses of the Oireachtas, 2022). These data can be further exploited to inform policy, but additional research that combines multiple data sources is needed.

REFERENCES

Abbott, M.W. (2020). 'The changing epidemiology of gambling disorder and gambling-related harm: Public health implications', *Public Health*, Vol. 184, pp. 41–45, https://doi.org/10.1016/j.puhe.2020.04.003.

American Association for Public Opinion Research (2020). *Online panels*, https://www.aapor.org/Education-Resources/Election-%0APolling-Resources/Online-Panels.aspx.

American Psychiatric Association (2022). *Diagnostic and statistical manual of mental disorders: DSM-5-TR*, fifth edition.

Alegría, A.A., N.M. Petry, D.S. Hasin, S.M. Liu, B.F. Grant and C. Blanco (2009). 'Disordered gambling among racial and ethnic groups in the US: Results from the National Epidemiologic Survey on Alcohol and Related Conditions', *CNS Spectrums*, Vol. 14, No. 3, pp. 132–143.

Alicke, M.D. and O. Govorun (2005). 'The better-than-average effect', *The Self in Social Judgment*, Vol. 1, pp. 85–106.

Ansolabehere, S. and B.F. Schaffner (2014). 'Does survey mode still matter? Findings from a 2010 multi-mode comparison', *Political Analysis*, Vol. 22, No. 3, pp. 285–303.

Anwyl-Irvine, A.L., J. Massonnié, A. Flitton, N. Kirkham and J.K. Evershed (2020). 'Gorilla in our midst: An online behavioral experiment builder', *Behavior Research Methods*, Vol. 52, pp. 388–407.

Baker, R., S.J. Blumberg, J.M. Brick, M.P. Couper, M. Courtright, J.M. Dennis, D. Dillman, M.R. Frankel and P. Garland (2010). 'Research synthesis: AAPOR report on online panels', *Public Opinion Quarterly*, Vol. 74, No. 4, pp. 711–781.

Bernard, H.R., E.C. Johnsen, P.D. Killworth and S. Robinson (1991). 'Estimating the size of an average personal network and of an event subpopulation: Some empirical results', *Social Science Research*, Vol. 20, No. 2, pp. 109–121.

Bernard, H.R., T. Hallett, A. Lovita, E.C. Johnsen, R. Lyerla, C. McCarty, M. Mahy, M.J. Salganik, T. Saliuk and O. Scutelniciuc (2010). 'Counting hard-to-count populations: The network scale-up method for public health', *Sexually Transmitted Infections*, Vol. 86, Suppl 2, pp. 11–15.

Berwick, D.M., J.M. Murphy, P.A. Goldman, J.E. Ware Jr, A.J. Barsky and M.C. Weinstein (1991). 'Performance of a five-item mental health screening test', *Medical Care*, Vol. 29, No. 2, pp. 169–176.

Bethlehem, J. (2016). 'Solving the nonresponse problem with sample matching?', *Social Science Computer Review*', Vol. 34, No. 1, pp. 59–77.

Blair, G. and K. Imai (2012). 'Statistical analysis of list experiments', *Political Analysis*, Vol. 20, No. 1, pp. 47–77.

Blair, G., A. Coppock and M. Moor (2020). 'When to worry about sensitivity bias: A social reference theory and evidence from 30 years of list experiments', *American Political Science Review*, Vol. 114, No. 4, https://doi.org/10.1017/S0003055420000374.

Brodeur, M., S. Audette-Chapdelaine, A.-C. Savard and S. Kairouz (2021). 'Gambling and the COVID-19 pandemic: A scoping review', *Progress in Neuro-Psychopharmacology and Biological Psychiatry*, Vol. 111, https://doi.org/10.1016/j.pnpbp.2021.110389.

Canale, N., A. Vieno M. Pastore, M. Ghisi and M.D. Griffiths (2016). 'Validation of the 8-item attitudes towards gambling scale (ATGS-8) in a British population survey', *Addictive Behaviors*, Vol. 54, pp. 70–74.

Chang, L. and J.A. Krosnick (2009). 'National surveys via RDD telephone interviewing versus the Internet: Comparing sample representativeness and response quality', *Public Opinion Quarterly*, Vol. 73, No. 4, pp. 641–678.

Clement, S., O. Schauman, T. Graham, F. Maggioni, S. Evans-Lacko, N. Bezborodovs, C. Morgan, N. Rüsch, J.S.L Brown and G. Thornicroft (2015). 'What is the impact of mental health-related stigma on help-seeking? A systematic review of quantitative and qualitative studies', *Psychological Medicine*, Vol. 45, No. 1, pp. 11–27.

Columb, D., M.D. Griffiths and C. O'Gara (2021). 'Gambling disorder treatment referrals within the Irish mental health service: A national survey using freedom of information requests', *International Journal of Mental Health and Addiction*, Vol. 19, No. 3, pp. 598–605.

Condron, I., S. Lyons and A.M. Carew (2022). 'Gambling in Ireland: Profile of treatment episodes from a national treatment reporting system', *Irish Journal of Psychological Medicine*, pp. 1–8.

Conolly, A., B. Davies, E. Fuller, N. Heinze and H. Wardle (2018). *Gambling behaviour in Great Britain in 2016: Evidence from England, Scotland and Wales*, London: National Centre for Social Research.

Coppock, A. and O.A. McClellan (2019). 'Validating the demographic, political, psychological and experimental results obtained from a new source of online survey respondents', *Research & Politics*, Vol. 6, No. 1, https://doi.org/10.1177/20531680188221.

CSO (2021). 'Internet coverage and usage in Ireland 2021', https://www.cso.ie/en/releasesandpublications/ep/p-isshict/internetcoverageandusageinireland2021/householdinternetconnectivity/.

CSO (2022). *Household digital consumer behaviour 2022*, Dublin: Central Statistics Office, https://www.cso.ie/en/releasesandpublications/ep/p-isshdcb/householddigitalconsumerbehaviour2022/backgroundnotes/.

CSO (2023a). *Sexual violence survey 2022 – Main results*, https://www.cso.ie/en/releasesandpublications/ep/p-svsmr/sexualviolencesurvey2022mainresults/backgroundnotes/.

CSO (2023b). *Census of population 2022 – Summary results*, Dublin: Central Statistics Office, https://www.cso.ie/en/releasesandpublications/ep/p-cpsr/censusofpopulation2022-summaryresults/keyfindings/.

Delfabbro, P. and L. Thrupp (2003). 'The social determinants of youth gambling in South Australian adolescents', *Journal of Adolescence*, Vol. 26, No. 3, pp. 313–330. https://doi.org/10.1016/S0140-1971(03)00013-7.

Deming, W. E. and F.F. Stephan (1940). 'On a least squares adjustment of a sampled frequency table when the expected marginal totals are known', *The Annals of Mathematical Statistics*, Vol. 11, No. 4, pp. 427–444.

Department of Health (2023). *Healthy Ireland survey 2022*, https://www.gov.ie/en/collection/231c02-healthy-ireland-survey-wave/.

Deville, J.C. and C.E. Särndal (1992). 'Calibration estimators in survey sampling', *Journal of the American Statistical Association*, Vol. 87, No. 418, pp. 376–382.

Dowling, N.A., S.N. Rodda, D.I. Lubman and A.C. Jackson (2014). 'The impacts of problem gambling on concerned significant others accessing web-based counselling', *Addictive Behaviors*, Vol. 39, No. 8, pp. 1253–1257.

Droitcour Miller, J. (1984). *A new survey technique for studying deviant behavior*, The George Washington University.

Dune, S., C. Flynn and J. Sholdis (2017). *2016 Northern Ireland gambling prevalence survey*, Department for Communities, Northern Ireland.

Fan, W. and Z. Yan (2010). 'Factors affecting response rates of the web survey: A systematic review', *Computers in Human Behavior*, Vol. 26, No. 2, pp. 132–139.

Ferris, J. and H. Wynne (2001). *The Canadian Problem Gambling Index: Final report*, Canadian Consortium for Gambling Research, Canadian Centre on Substance Abuse.

Forsström, D., P. Lindner and T. Hayer (2023). 'Gambling during COVID-19: Changes, risks, challenges and opportunities in the wake of COVID-19', *Frontiers in Psychology*, Vol. 13, 1110963.

Fulton, C. (2019). 'Secrets and secretive behaviours: Exploring the hidden through harmful gambling' *Library & Information Science Research*, Vol. 41, No. 2, pp. 151–157.

Gabellini, E., F. Lucchini and M.E. Gattoni (2023). 'Prevalence of problem gambling: A meta-analysis of recent empirical research (2016–2022)', *Journal of Gambling Studies*, Vol. 39, No. 3, pp. 1027–1057.

Gambling Commission (2023). *Gambling behaviour in 2022: Findings from the quarterly telephone survey*, https://www.gamblingcommission.gov.uk/statistics-and-research/publication/gambling-behaviour-in-2022-findings-from-the-quarterly-telephone-survey.

Goldstein, A.L., N. Vilhena-Churchill, M. Munroe, S.H. Stewart, G.L. Flett and P.N. Hoaken (2017). 'Understanding the effects of social desirability on gambling self-reports', *International Journal of Mental Health and Addiction*, Vol. 15, pp. 1342–1359.

Gosschalk, K., S. Webb, C. Cotton, L. Harmer, D. Bonansinga and B. Gunstone (2023). *Annual GB treatment and support survey 2022*, https://www.begambleaware.org/sites/default/files/2023-07/GambleAware%20Treatment%20and%20Support%20Report%20July%202022.pdf.

Gunstone, B., K. Gosschalk, E. Zabicka and C. Sullivan-Drage (2022). *Annual GB treatment and support survey 2021*, YouGov, https://www.begambleaware.org/sites/default/files/2022-03/Annual GB Treatment and Support Survey Report 2021 %28FINAL%29_0.pdf.

Hellumbråten Kristensen, J., S. Trifunovic, J. Strand, K. Kraft Vistnes, A. Syvertsen, A. Zandi and S. Pallesen (2022). 'A systematic literature review of studies on attitudes towards gambling using the Attitudes Towards Gambling Scale (ATGS)', *International Gambling Studies*, pp. 1–34, https://doi.org/10.1080/14459795.2022.2143856.

Hing, N., A.M.T. Russell, S.M. Gainsbury and E. Nuske (2016). 'The public stigma of problem gambling: Its nature and relative intensity compared to other health conditions', *Journal of Gambling Studies*, Vol. 32, pp. 847–864.

Hodgins, D.C. and R. M. Stevens (2021). 'The impact of COVID-19 on gambling and gambling disorder: emerging data', *Current Opinion in Psychiatry*, Vol. 34, No. 4, p. 332.

Houses of the Oireachtas (2022). *Gambling Regulation Bill 2022 – No. 114 of 2022*, https://www.oireachtas.ie/en/bills/bill/2022/114/.

Inter-Departmental Working Group on Future Licensing and Regulation of Gambling (2019). *Report to Government*, http://www.justice.ie/en/JELR/Inter-Departmental_Working_Group_on_Future_Licensing_and_Regulation_of_Gambling.pdf/Files/Inter-Departmental_Working_Group_on_Future_Licensing_and_Regulation_of_Gambling.pdf.

Ipsos MRBI. (2023). 'JNLR press release 2023 – 2', https://www.ipsos.com/en-ie/jnlr-press-release-2023-2.

Kang, W. (2023). 'Understanding the associations between the number of close friends and life satisfaction: Considering age differences', *Frontiers in Psychology*, Vol. 14, https://doi.org/10.3389/fpsyg.2023.1105771.

Kelleher, C. and T. Lynch (2023). *Problem gambling in Ireland: Irish health data, 2008–2022*, Drugnet Ireland, https://www.drugsandalcohol.ie/39508/1/Drugnet_Ireland_86.pdf.

Krumpal, I. (2013). 'Determinants of social desirability bias in sensitive surveys: A literature review', *Quality and Quantity*, Vol. 47, Issue 4, https://doi.org/10.1007/s11135-011-9640-9.

Kuentzel, J.G., M.J. Henderson and C.L. Melville (2008). 'The impact of social desirability biases on self-report among college student and problem gamblers', *Journal of gambling studies*, Vol. 24, pp. 307–319.

Langham, E., H. Thorne, M. Browne, P. Donaldson, J. Rose and M. Rockloff (2015). 'Understanding gambling related harm: A proposed definition, conceptual framework, and taxonomy of harms', *BMC Public Health*, Vol. 16, pp. 1–23.

Link, B.G., J.C. Phelan, M. Bresnahan, A. Stueve and B.A. Pescosolido (1999). 'Public conceptions of mental illness: Labels, causes, dangerousness, and social distance', *American Journal of Public Health*, Vol. 89, No. 9, pp. 1328–1333.

Lucas, R.E., C. Wallsworth, I. Anusic, and M.B. Donnellan (2021). 'A direct comparison of the day reconstruction method (DRM) and the experience sampling method (ESM)', *Journal of Personality and Social Psychology,* Vol. 120, No. 3, pp. 816.

Lunn, P.D. (2017). 'Measuring participation or participating in measurement? The cautionary tale of an accidental experiment in survey accuracy', in V.M. Ateca-Amestoy, V. Ginsburgh, I. Mazza, J. O'Hagan and J. Prieto-Rodriguez (eds.), *Enhancing participation in the arts in the EU: Challenges and methods*, Springer, pp. 67–78.

Lunn, P.D. (2021) *Social activity measure*, Dublin: Economic and Social Research Institute, https://www.esri.ie/publications/social-activity-measure-wave-1.

Martin, J.K., B.A. Pescosolido and S.A. Tuch (2000). 'Of fear and loathing: The role of disturbing behavior, labels, and causal attributions in shaping public attitudes toward people with mental illness', *Journal of Health and Social Behavior*, Vol. 41, No. 2, pp. 208–223.

McAvoy, H., C.M.E. Reynolds, S. Sunday, J. Hanafin and L. Clancy (2023). *Children and gambling – Evidence to inform regulation and responses in Ireland. Based on a secondary analysis of the European School Survey Project on Alcohol and Other Drugs (ESPAD)*, Dublin: Institute of Public Health.

McGinnity, F., M. Creighton and É. Fahey (2020). *Hidden versus revealed attitudes: A list experiment on support for minorities in Ireland*, Dublin: Economic and Social Research Institute and Irish Human Rights and Equality Commission.

Meisters, J., A. Hoffmann and J. Musch (2023). 'More than random responding: Empirical evidence for the validity of the (Extended) Crosswise Model', *Behavior Research Methods*, Vol. 55, No. 2, pp. 716–729.

Mongan, D., S.R. Millar, A. Doyle, S. Chakraboty and B. Galvin (2022). *Gambling in the Republic of Ireland. Results from the 2019–20 National Drug and Alcohol Survey*, Dublin: Health Research Board.

Muggleton, N., P. Parpart, P. Newall, D. Leake, J. Gathergood and N. Stewart (2021). 'The association between gambling and financial, social and health outcomes in big financial data', *Nature Human Behaviour*, Vol. 5, No. 3, pp. 319–326.

Nederhof, A.J. (1985). 'Methods of coping with social desirability bias: A review', *European Journal of Social Psychology*, Vol. 15, No. 3, pp. 263–280.

Newall, P.W.S., L. Weiss-Cohen, V. Thoma and P. Ayton. (2022). 'Differences amongst estimates of the UK problem gambling prevalence rate are partly due to a methodological artefact', *International Journal of Mental Health and Addiction*, pp. 1–3.

NHS (2023) *Health survey for England 2021*, National Health Service, https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england.

Nower, L., R.A. Volberg and K.R. Caler (2017). *The prevalence of online and land-based gambling in New Jersey. Report to the New Jersey Division of Gaming Enforcement*, New Brunswick, NJ: Center for Gambling Studies, Rutgers University.

Ó Ceallaigh, D., S. Timmons, D. Robertson and P. Lunn (2023). *Problem gambling: A narrative review of important policy-relevant issues*, ESRI Survey and Statistical Report Series, Number 119, Dublin: Economic and Social Research Institute.

Office for Health Improvement and Disparities and Public Health England (2023). *Gambling-related harms: Evidence review,* https://www.gov.uk/government/publications/gambling-related-harms-evidence-review.

O'Gara, C. (2018). 'The Gambling Control Bill: Time for action', *Irish Journal of Psychological Medicine*, Vol. 35, No. 4, pp. 269–271.

Orford, J., M. Griffiths, H. Wardle, K. Sproston and B. Erens (2009). 'Negative public attitudes towards gambling: Findings from the 2007 British Gambling Prevalence Survey using a new attitude scale', *International Gambling Studies*, Vol. 9, No. 1, pp. 39–54.

Peer, E., L. Brandimarte, S. Samat and A. Acquisti (2017). 'Beyond the Turk: Alternative platforms for crowdsourcing behavioral research', *Journal of Experimental Social Psychology,* Vol. 70, pp. 153–163.

Pew Research Center (2018). 'For weighting online opt-in samples, what matters most?', https://www.pewresearch.org/methods/2018/01/26/for-weighting-online-opt-in-samples-what-matters-most/.

Pew Research Center (2020). *Assessing the risks to online polls from bogus respondents*, Pew Research Center.

Pickering, D. and A. Blaszczynski. (2021). 'Paid online convenience samples in gambling studies: Questionable data quality', *International Gambling Studies*, Vol. 21, No. 3, pp. 516–536.

Prochaska, J.O. and C.C. DiClemente (1983). 'Stages and processes of self-change of smoking: toward an integrative model of change', *Journal of Consulting and Clinical Psychology*, Vol. 51, No. 3, p. 390.

Robertson, D.A., Y. Andersson, C. Lavin and P. Lunn (2023). *Reducing blame on individuals by putting obesity in its historical context: A comparison of perceptions of obesity in 3 countries*, Unpublished work in progress.

Russell, A.M., M. Browne, N. Hing, M. Rockloff and P. Newall. (2022). 'Are any samples representative or unbiased? Reply to Pickering and Blaszczynski', *International Gambling Studies*, Vol. 22, No. 1, pp. 102–113.

Sagoe, D., M. Cruyff, O. Spendiff, R. Chegeni, O. de Hon, M. Saugy, P.G.M. van der Heijden and A. Petróczi (2021). 'Functionality of the crosswise model for assessing sensitive

or transgressive behavior: A systematic review and meta-analysis', *Frontiers in Psychology*, Vol. 12, https://doi.org/10.3389/fpsyg.2021.655592.

Sayed, K.H.A., M.J.L.F. Cruyff, P.G.M. van der Heijden and A. Petróczi (2022). 'Refinement of the extended crosswise model with a number sequence randomizer: Evidence from three different studies in the UK', *Plos One*, Vol. 17, No. 12, e0279741.

Schell, C., A. Godinho and J. A. Cunningham (2021). Examining change in self-reported gambling measures over time as related to socially desirable responding bias. *Journal of Gambling Studies*, Vol. 37, pp. 1043–1054.

Schnapp, P. (2019). 'Sensitive question techniques and careless responding: Adjusting the crosswise model for random answers', *Methods, Data, Analyses: A Journal for Quantitative Methods and Survey Methodology (Mda)*, Vol. 13, No. 2, pp. 307–320.

Schnell, R. and K. Thomas (2021). 'A meta-analysis of studies on the performance of the crosswise model', *Sociological Methods and Research*, Vol. 52. No. 3, https://doi.org/10.1177/0049124121995520.

Strack, F., N. Schwartz and E. Gschneidinger (1985). 'Happiness and reminiscing: The role of time perspective, affect, and mode of thinking', *Journal of Personality and Social Psychology*, Vol. 49, No. 6, pp. 1460–1469.

Sturgis, P. and J. Kuha (2022). 'How survey mode affects estimates of the prevalence of gambling harm: A multisurvey study', *Public Health*, Vol. 204, pp. 63–69.

Svensson, J., U. Romild and E. Shepherdson (2013). 'The concerned significant others of people with gambling problems in a national representative sample in Sweden – A 1 year follow-up study', *BMC Public Health*, Vol. 13, No. 1, pp. 1–11.

Timmons, S., E. Carroll and F. McGinnity (2023). 'Experimental tests of public support for disability policy', Dublin: Economic and Social Research Institute.

Timmons, S., F. McGinnity, C. Belton, M. Barjaková and P. Lunn (2021). 'It depends on how you ask: Measuring bias in population surveys of compliance with COVID-19 public health guidance', *Journal of Epidemiology and Community Health*, Vol. 75, No. 4, https://doi.org/10.1136/jech-2020-215256.

Tourangeau, R. and T. Yan (2007). 'Sensitive questions in surveys', *Psychological Bulletin*, Vol. 133, No. 5, https://doi.org/10.1037/0033-2909.133.5.859.

Tsai, C.L. (2019). 'Statistical analysis of the item-count technique using Stata', *The Stata Journal*, Vol. 19, No. 2, pp. 390–434.

Turk, M.A., C. Murphy, J. McCaffrey, and K. Murray (2023). 'Predictors of adverse gambling behaviours amongst elite athletes', *Scientific Reports*, Vol. 13, No. 823.

UK Gambling Commission (2021). *Exploring the gambling journeys of young people*, https://www.gamblingcommission.gov.uk/statistics-and-research/publication/exploring-the-gambling-journeys-of-young-people.

UK Gambling Commission (2023). *Statistics on participation and problem gambling for the year to March 2023*, https://www.gamblingcommission.gov.uk/statistics-and-research/publication/statistics-on-participation-and-problem-gambling-for-the-year-to-march-2023.

Valliant, R. and J.A. Dever (2018). *Survey weights: A step-by-step guide to calculation*, College Station, TX: Stata Press, p. 183.

van der Maas, M., L. Nower, F.I. Matheson, N.E. Turner and R.E. Mann (2021). 'Sources of bias in research on gambling among older adults: Considerations for a growing field', *Current Addiction Reports*, Vol. 8, pp. 208–213.

Veit, C.T. and J.E. Ware (1983). 'The structure of psychological distress and well-being in general populations', *Journal of Consulting and Clinical Psychology*, Vol. 51, No. 5, p. 730.

Volberg, R.A., D.R. Gerstein, E.M. Christiansen and J. Baldridge (2001). 'Assessing self-reported expenditures on gambling*', *Managerial and Decision Economics*, Vol. 22, pp. 1–3, https://doi.org/10.1002/mde.999.

Wardle, H., A. Moody, S. Spence, J. Orford, R. Volberg, D. Jotangia, M.D. Griffiths, D. Hussey and F. Dobbie (2011). *British Gambling Prevalence Survey 2010*, UK Gambling Commission, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/243515/9780108509636.pdf.

Wenzel, H.G., A. Øren and I.J. Bakken (2008). 'Gambling problems in the family – A stratified probability sample study of prevalence and reported consequences', *BMC Public Health*, Vol. 8, pp. 1–5.

Wöhr, A. and M. Wuketich (2021). 'Perception of gamblers: A systematic review', *Journal of Gambling Studies*, Vol. 37, pp. 795–816.

Wood, R.T. and R.J. Williams (2007). 'How much money do you spend on gambling?'The comparative validity of question wordings used to assess gambling expenditure', *International Journal of Social Research Methodology*, Vol. 10, No. 1, pp. 63–77.

Yu, J.W., G.L. Tian and M.L. Tang (2008). 'Two new models for survey sampling with sensitive characteristic: Design and analysis', *Metrika*, Vol. 67, No. 3, https://doi.org/10.1007/s00184-007-0131-x.

APPENDIX A

Additional tables

TABLE A1 COMPARISON OF SURVEY SAMPLE TO BENCHMARK PROBABILITY SAMPLE SURVEYS IN TERMS OF PREVALENCE OF THREE NON-GAMBLING BEHAVIOURS

	Smoker	Shopped online in previous 3 months	Listened to the radio the previous day
Benchmark estimate (%)	18.4	75.0	81.1
Benchmark estimate source	Healthy Ireland Survey 2022 (Department of Health, 2023)	Information and Communications Technology Household Survey 2022 (CSO, 2022)	JNLR radio listenership survey (Ipsos MRBI, 2023)
Full sample			
Estimate weighted on sociodemographics only (%)	24.2	82.3	75.0
Estimate weighted on sociodemographics and behavioural variables (%)	18.5	75.4	81.0
Panel A			
Estimate weighted on sociodemographics only (%)	23.9	82.0	74.1
Estimate weighted on sociodemographics and behavioural variables (%)	18.1	76.4	79.9
Panel B			
Estimate weighted on sociodemographics only (%)	25.0	82.1	69.4
Estimate weighted on sociodemographics and behavioural variables (%)	19.7	74.8	76.1
Panel C			
Estimate weighted on sociodemographics only (%)	23.8	82.9	82.0
Estimate weighted on sociodemographics and behavioural variables (%)	17.7	75.0	87.3

TABLE A2 PROPORTION IN EACH PGSI CATEGORY (%). WEIGHTS RESTRICTED TO THE INTERVAL [0.33,3]

	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	3.2	7.3	15.3	74.2
Lower CI	2.4	6.1	13.6	72.2
Upper CI	4.0	8.6	17.0	76.2

Notes: Weighted estimates N= 2,850. CI=Confidence interval.

TABLE A3 PROPORTION IN EACH PGSI CATEGORY (%). WEIGHTS RESTRICTED TO THE INTERVAL [0.25,4]

	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	3.2	7.3	15.5	74.0
Lower CI	2.4	6.0	13.8	71.9
Upper CI	4.0	8.5	17.3	76.1

Notes: Weighted estimates. N= 2,850. CI=Confidence interval.

TABLE A4 PROPORTION IN EACH PGSI CATEGORY (%). WEIGHTING BASED ON BOTH BEHAVIOURAL AND SOCIODEMOGRAPHIC VARIABLES

	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	3.4	7.2	14.6	74.8
Lower CI	2.5	6.1	13.0	72.8
Upper CI	4.2	8.4	16.2	76.7

Notes: Weighted estimates. Weights restricted to the interval [0.5, 2], which is the interval to which the weights are restricted in our primary analysis in the main text. N= 2,850. CI=Confidence interval.

TABLE A5 PROPORTION IN EACH PGSI CATEGORY (%). UNWEIGHTED

	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	3.1	6.6	14.4	76.0
Lower CI	2.4	5.7	13.1	74.4
Upper CI	3.7	7.5	15.7	77.5

Notes: Unweighted estimates. Weights restricted to the interval [0.5, 2]. N= 2,850. CI=Confidence interval.

TABLE A6 LOGIT REGRESSION OF INFLUENCE OF PANEL ON PG PREVALENCE

	(1) Problem gambling	(2) Moderate evidence	(3) Some evidence	(4) No evidence
Panel B	1.082 [0.675,1.735]	0.876 [0.628,1.222]	0.805* [0.630,1.029]	1.206* [0.984,1.480]
Panel C	0.319*** [0.159,0.637]	0.370*** [0.243,0.564]	0.450*** [0.340,0.594]	2.837*** [2.234,3.604]
N	2,850	2,850	2,850	2,850

Notes: Panel A is the reference category. Exponentiated coefficients (odds ratios); 95% confidence intervals in brackets. Controls: sociodemographic weighting variables. *p<0.10, **p<0.05, ***p<0.01.

TABLE A7 COMPARING PANEL GENDER COMPOSITION TO CENSUS 2022

	Male	Female
Target (Census 2022)	49.0	51.0
Full sample	49.2	50.8
Panel A	48.3	51.7
Panel B	48.7	51.3
Panel C	50.5	49.5

Notes: Unweighted estimates. Full sample N=2,850. Panel A – N=940; Panel B – N=944; Panel C –N=966.

TABLE A8 COMPARING PANEL AGE COMPOSITION TO CENSUS 2022

	<30 yrs	30–39 yrs	40–49 yrs	50–59 yrs	60–69 yrs	70+ yrs
Target (Census 2022)	18.7	18.2	20.0	16.5	13.0	13.7
Full sample	11.9	20.7	18.4	20.9	19.0	9.1
Panel A	12.4	21.3	20.9	16.4	18.2	10.9
Panel B	12.8	22.1	19.1	20.8	18.1	7.1
Panel C	10.4	18.8	15.3	25.6	20.6	9.3

Notes: Unweighted estimates. Full sample N=2,850. Panel A – N=940; Panel B – N=944; Panel C –N=966.

TABLE A9 COMPARING PANEL EDUCATION COMPOSITION TO CENSUS 2022

	<Leaving Certificate	Leaving Certificate	Tertiary not degree	Degree+
Target (Census 2022)	24.5	19.4	28.6	27.5
Full sample	7.1	19.3	28.2	45.5
Panel A	7.3	24.6	29.9	38.2
Panel B	8.3	19.6	27.0	45.1
Panel C	5.7	13.8	27.6	52.9

Notes: Unweighted estimates. Full sample N=2,850. Panel A – N=940; Panel B – N=944; Panel C –N=966.

TABLE A10 BREAKDOWN OF SURVEY ATTRITION - NUMBER

	Number of people		
	Panel A	**Panel B**	**Panel C**
Total who started survey	1,480	1,183	2,760
Rejected from survey as over quota	304	83	1,010
Total who started and eligible	1,176	1,100	1,750
Dropped out	153	60	716
Total remaining	1,023	1,040	1,034
Failed attention check twice	23	40	35
Total who completed the survey	1,000	1,000	999
Dropped from data as failed attention check once	60	56	33
Total usable sample	940	944	966

Notes: We employed a forced-response attention check. One item was added to the PGSI requesting participants to select 'Almost always' for that question. Participants who failed the attention check were given a second chance to complete the PGSI. Those who failed a second time (98 participants) were automatically removed from the survey and could not complete it. Those who passed the second time were allowed to complete the survey and could earn the payment of €3 for completing the survey (if in panels A or B). Of the 2,999 participants who completed the survey, 149 participants failed the attention check once, and so for quality control purposes we omitted them from our analysis, giving us a final sample for analysis of 2,850.

TABLE A11 NUMBER OF DROPOUTS OCCURRING AT EACH SECTION OF THE SURVEY, BY PANEL

Section	Number of dropouts		
	Panel A	Panel B	Panel C
Information sheet	32	10	160
Consent	20	5	107
Quota questions	6	2	48
Introduction (after quota)	8	3	13
Crosswise treatment question	16	6	109
List experiment question	8	2	27
Gambling activity	18	6	101
PGSI	9	6	60
Friends questions	5	2	14
Family questions	6	3	32
Childhood experiences	5	2	N/A
Introduction to perceptions	5	0	N/A
Perception task	3	1	N/A
Perceptions and attitudes	4	4	N/A
Benchmark and mental health	6	2	20
Sociodemographics	1	4	12
Charity donation question	N/A	N/A	2
Final comments	1	2	11
Total	153	60	716

TABLE A12 PROPORTION WITH PROBLEM GAMBLING (%) AMONG THOSE WHO GAMBLED IN THE PREVIOUS 4 WEEKS, BY PANEL

	All panels	Panel A	Panel B	Panel C
Proportion who gambled in previous four weeks	74.1	79.2	74.3	68.0
PG prevalence	4.3	4.7	5.9	1.7

Notes: Weighted estimates. Full sample N=2,850. Panel A, N=940; Panel B, N=944; Panel C, N=966. CI=Confidence interval.

TABLE A13 ESTIMATED PREVALENCE OF PROBLEM GAMBLING AMONG FRIENDS AND FAMILY – DETAILED CALCULATIONS

	Friends	Family	Friends and family
A. Mean network size	4.003	5.702	9.705
B. Mean number of people with PG in network	0.104	0.117	0.221
C. PG Prevalence estimate (B/A)	2.6	2.1	2.3
D. Mean network size for those with PG	3.287	4.863	8.150
E. Mean network size for those without PG	4.027	5.731	9.757
F. Adjustment factor (D/E)	1.223	1.178	1.197
G. Adjusted prevalence (C*F)	3.2	2.4	2.7

Notes: Weighted estimates. N=2,850. CI=Confidence interval.

TABLE A14 ESTIMATED PREVALENCE OF PROBLEM GAMBLING OF FRIENDS

	Panel A	Panel B	Panel C
Prevalence estimate	2.5	2.2	3.0
Lower CI	2.0	1.7	2.5
Upper CI	3.0	2.7	3.6

Notes: Weighted estimates. Panel A – N=940; Panel B – N=944; Panel C –N=966. CI=Confidence interval.

TABLE A15 ESTIMATED PREVALENCE OF PROBLEM GAMBLING OF FAMILY

	Panel A	Panel B	Panel C
Prevalence estimate	1.7	2.3	2.1
Lower CI	1.4	1.9	1.7
Upper CI	2.1	2.7	2.5

Notes: Weighted estimates. Full sample N=2,850. Panel A – N=940; Panel B – N=944; Panel C –N=966. CI=Confidence interval.

TABLE A16 ESTIMATED PREVALENCE OF PROBLEM GAMBLING – OF FRIENDS AND FAMILY

	Panel A	Panel B	Panel C
Prevalence estimate	2.0	2.3	2.5
Lower CI	1.8	2.0	2.2
Upper CI	2.3	2.6	2.8

Notes: Weighted estimates. Full sample N=2,850. Panel A – N=940; Panel B – N=944; Panel C N=966. CI=Confidence interval.

TABLE A17 QUESTION ORDER EXPERIMENT – SOCIODEMOGRAPHIC BALANCE CHECK

	Control	Treatment	P-value
Female	49.5%	53.1%	0.100
Age	47.2	46.9	0.711
< Leaving Certificate	16.5%	13.4%	0.116
Leaving Certificate	21.2%	22.2%	0.610
Tertiary not degree	30.5%	33.8%	0.109
Degree or higher	31.8%	30.7%	0.515

Notes: Weighted estimates. P-value obtained from t-test of equality of means between the control and treatment groups.

TABLE A18 CROSSWISE AND LIST EXPERIMENT – SOCIODEMOGRAPHIC BALANCE CHECK

	Control	Treatment	P-value
Female	49.9%	52.0%	0.362
Age	48.1	46.6	0.070
< Leaving Certificate	16.0%	14.4%	0.424
Leaving Certificate	21.5%	21.7%	0.919
Tertiary not degree	31.4%	32.6%	0.579
Degree or higher	31.1%	31.4%	0.882

Notes: Weighted estimates. P-value obtained from t-test of equality of means between the control and treatment groups.

TABLE A19 CROSSWISE MODEL – SIMULATIONS FOR DIFFERENT LEVELS OF UNDETECTED RANDOM RESPONSES

Undetected random responders (number)	Undetected random responders (%)	Prevalence estimate	Lower CI	Upper CI
0	0.0	11.7	8.8	14.7
50	2.9	11.2	8.2	14.2
100	5.7	10.7	7.7	13.6
150	8.6	10.1	7.1	13.1
200	11.5	9.4	6.4	12.5
250	14.3	8.8	5.7	11.9
300	17.2	8.1	5.0	11.2
350	20.0	7.3	4.2	10.4

Notes: Weighted estimates. Assumes that the proportion of undetected random responders who answer 'the same' to the crosswise question is the same as the proportion among the detected random responders.

TABLE A20 GAMBLING EXPENDITURE – INCLUDING GAMBLING WITH FRIENDS AND FAMILY

	Full sample	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	100.0	3.3	7.1	15.0	74.7
Mean spend – All	28	260	71	43	11
Median spend – All	7	111	40	22	4
% of overall spend – All	100.0	30.2	17.9	22.6	29.3
Mean spend – In person	14	128	24	19	6
Median spend – In person	4	21	15	8	2
% of aggregate spend – In person	100.0	30.9	12.7	21.3	35.2
Mean spend – Online	15	132	47	23	5
Median spend – Online	0	65	17	6	0
% of aggregate spend – Online	100.0	29.6	22.8	23.8	23.8

Note: Weighted estimates. N=2,850.

TABLE A21 GAMBLING EXPENDITURE INCLUDING GAMBLING WITH FRIENDS AND FAMILY – PANEL A

	Full sample	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	100.0	4.1	8.9	18.9	68.0
Mean spend – All	33	228	78	51	11
% of overall spend – All	100.0	28.3	20.9	29.2	21.6
Mean spend – In person	16	147	25	17	7
% of aggregate spend – In person	100.0	37.2	13.7	19.5	29.7
Mean spend – Online	17	81	53	34	3
% of aggregate spend – Online	100.0	19.7	27.8	38.6	13.9

Note: Weighted estimates. N=940.

TABLE A22 GAMBLING EXPENDITURE INCLUDING GAMBLING WITH FRIENDS AND FAMILY – PANEL B

	Full sample	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	100.0	4.4	8.7	16.7	70.2
Mean spend – All	31	210	71	38	13
% of overall spend – All	100.0	29.8	20.2	20.6	29.5
Mean spend – In person	14	76	24	26	6
% of aggregate spend – In person	100.0	23.6	15.0	30.8	30.6
Mean spend – Online	17	135	47	12	7
% of aggregate spend – Online	100.0	34.9	24.6	12.0	28.5

Note: Weighted estimates. N=944.

TABLE A23 GAMBLING EXPENDITURE INCLUDING GAMBLING WITH FRIENDS AND FAMILY – PANEL C

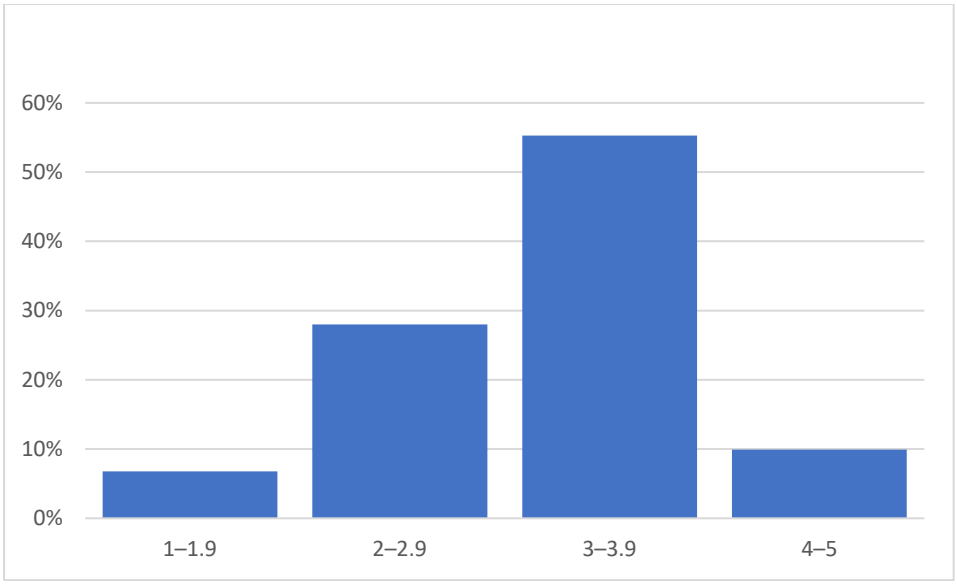
	Full sample	Problem gambling	Moderate evidence	Some evidence	No evidence
Prevalence	100.0	1.2	3.3	8.6	86.9
Mean spend – All	20	585	52	31	10
% of overall spend – All	100.0	34.5	8.5	13.6	43.4
Mean spend – In person	10	261	23	12	6
% of aggregate spend – In person	100.0	30.1	7.5	10.5	52.0
Mean spend – Online	10	325	29	19	4
% of aggregate spend – Online	100.0	39.2	9.7	16.8	34.3

Note: Weighted estimates. N=966.

APPENDIX B

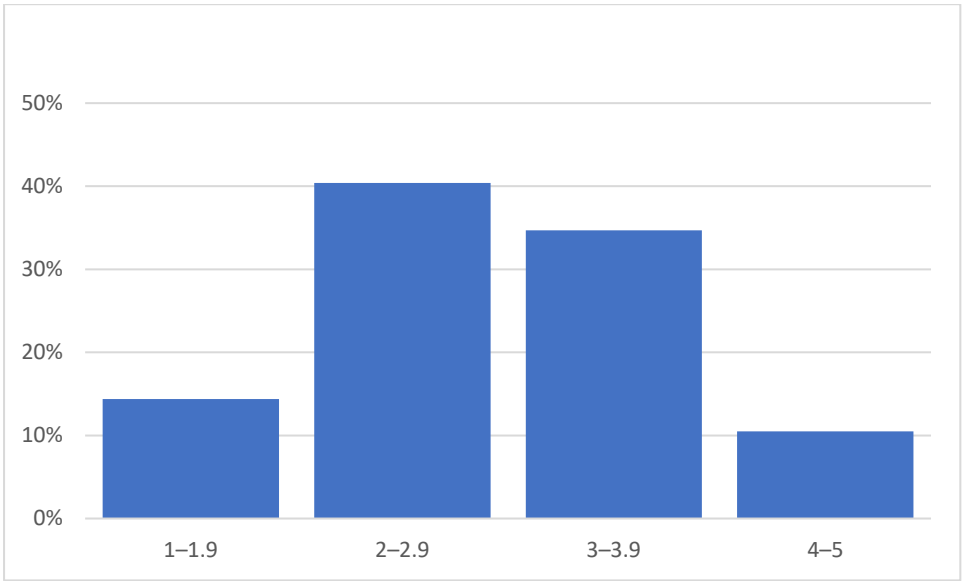
Additional figures

FIGURE A1 STIGMA SCALE SCORE – SUBSAMPLE WITH PG



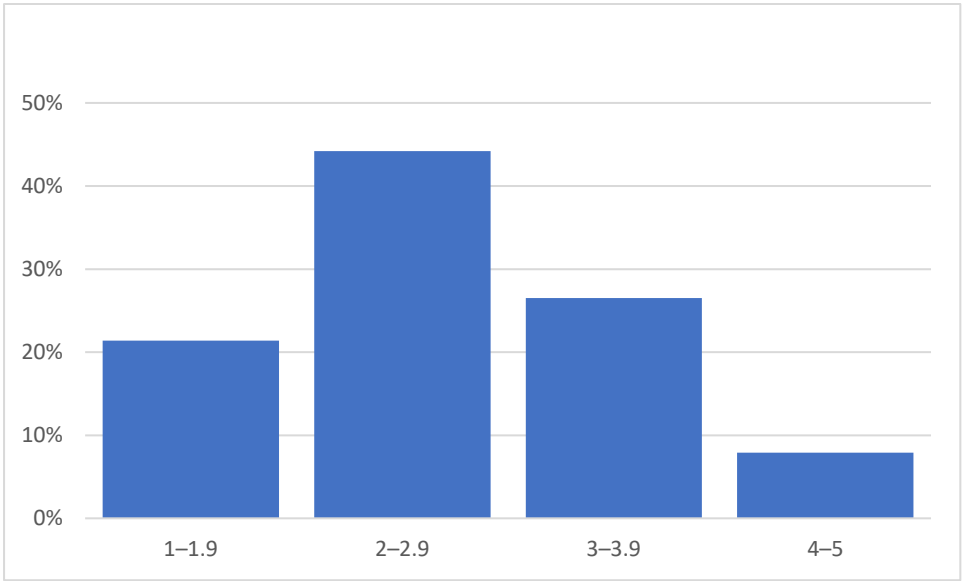
Notes: Weighted estimates. N=76. The higher the score on the five-point stigma scale, the higher the level of stigma.

FIGURE A2 STIGMA SCALE SCORE – SUBSAMPLE WHO GAMBLED IN PREVIOUS 4 WEEKS BUT DON'T HAVE PG



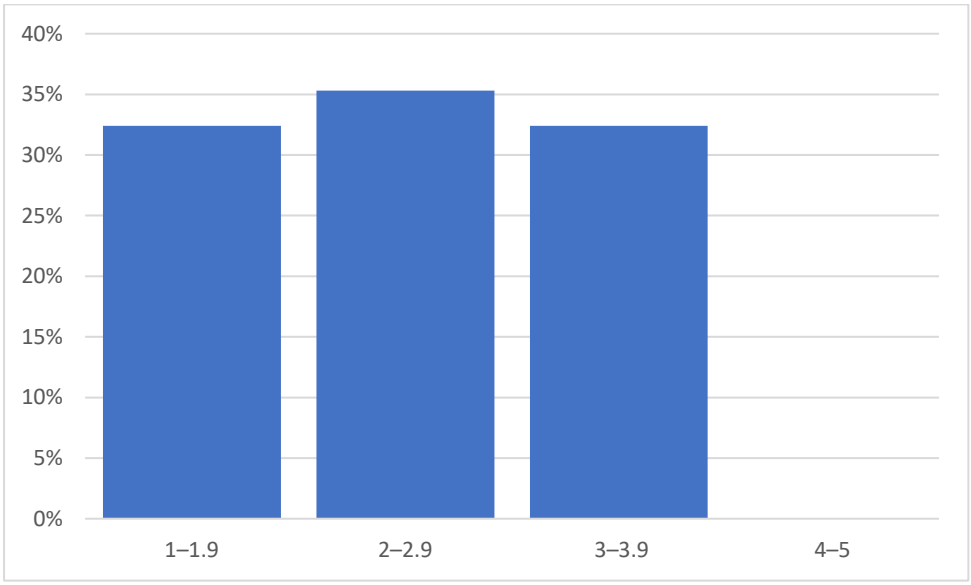
Notes: Weighted estimates. N=1,369. The higher the score on the five-point stigma scale, the higher the level of stigma.

FIGURE A3 STIGMA SCALE SCORE – SUBSAMPLE WHO DIDN'T GAMBLE IN THE PREVIOUS 4 WEEKS



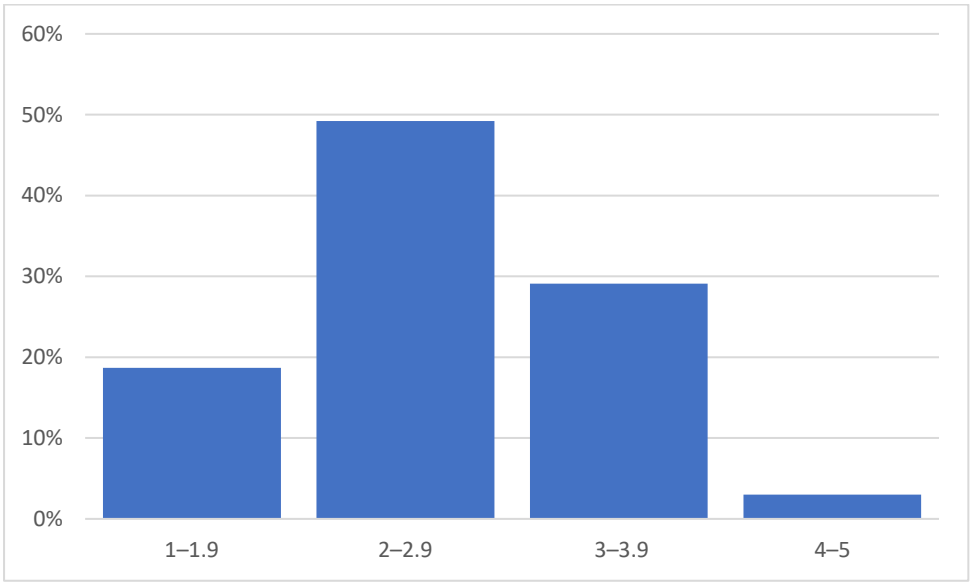
Notes: Weighted estimates. N=439. The higher the score on the five-point stigma scale, the higher the level of stigma.

FIGURE A4 ATTITUDES TOWARDS GAMBLING SCALE – DISTRIBUTION OF OVERALL SCORES FOR SUBSAMPLE WITH PG



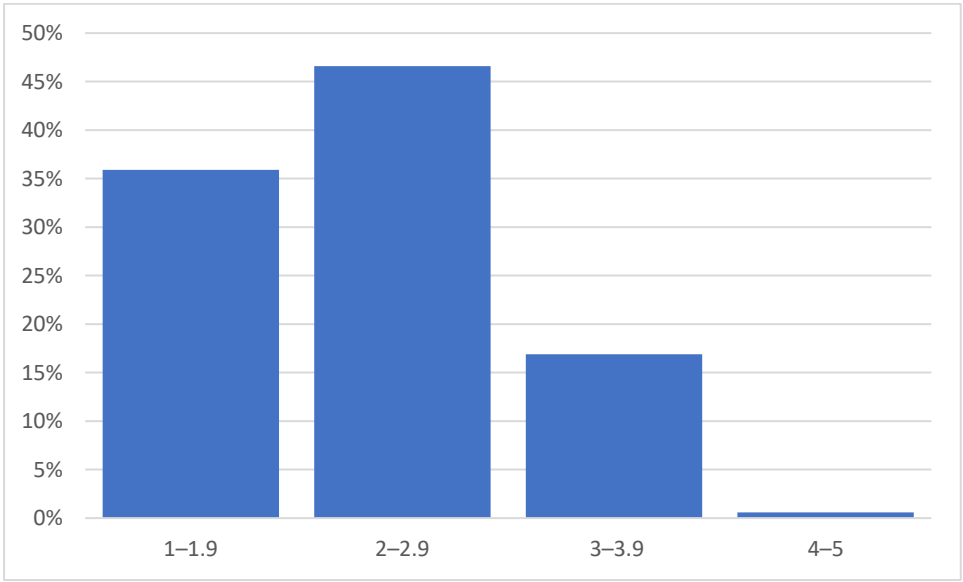
Notes: Weighted estimates. N=76. A higher score on the five-point scale means a more positive attitude towards gambling.

FIGURE A5 ATTITUDES TOWARDS GAMBLING SCALE – DISTRIBUTION OF OVERALL SCORES FOR SUBSAMPLE WITHOUT PG WHO GAMBLED IN THE PREVIOUS FOUR WEEKS



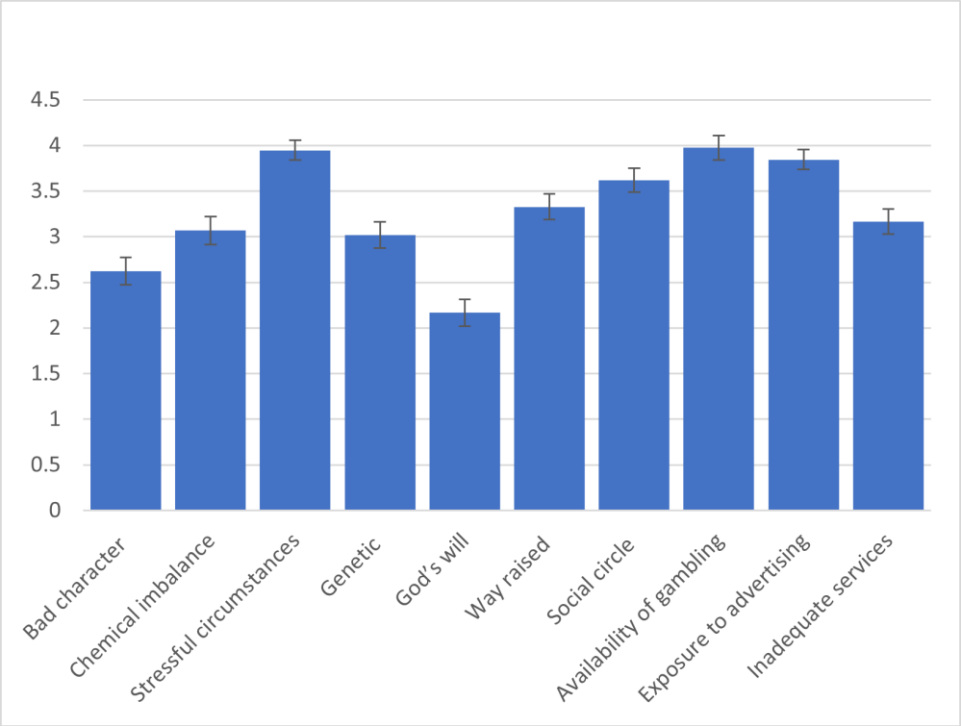
Notes: Weighted estimates. N=1,369. A higher score on the five-point scale means a more positive attitude towards gambling.

FIGURE A6 ATTITUDES TOWARDS GAMBLING SCALE – DISTRIBUTION OF OVERALL SCORES FOR SUBSAMPLE WHO DIDN'T GAMBLE IN THE PREVIOUS FOUR WEEKS



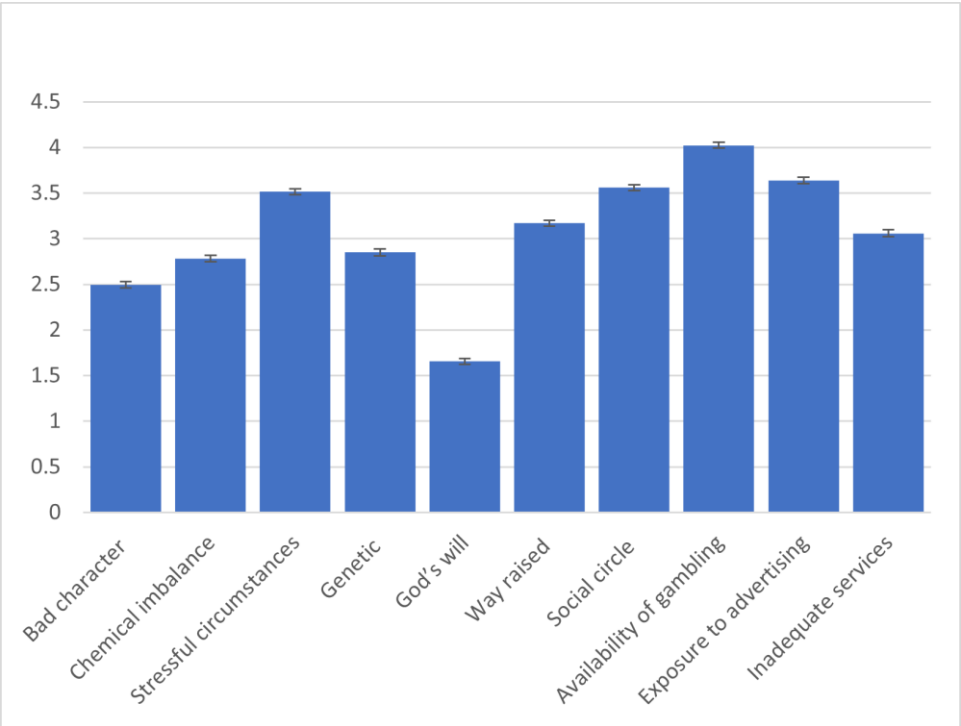
Notes: Weighted estimates. N=439. A higher score on the five-point scale means a more positive attitude towards gambling.

FIGURE A7 PERCEIVED LIKELIHOOD OF VARIOUS FACTORS CAUSING PG – MEAN SCORES FOR THE SUBSAMPLE WITH PG



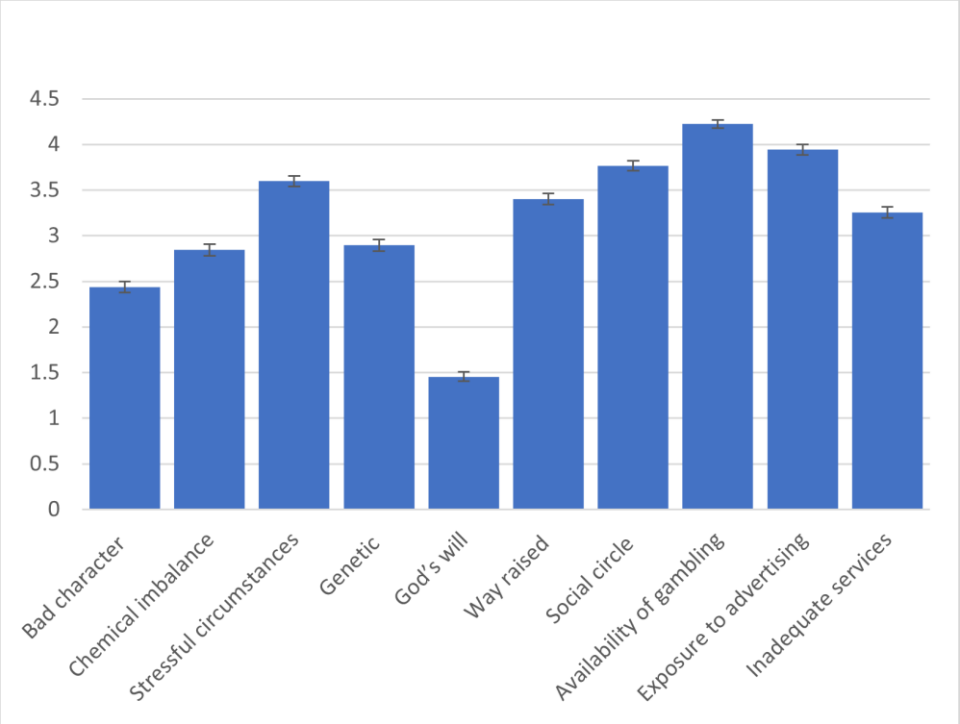
Notes: Weighted estimates. N= 76. A higher score on the five-point scale means a higher perceived likelihood that a given factor causes PG. 95% confidence intervals shown.

FIGURE A8 PERCEIVED LIKELIHOOD OF VARIOUS FACTORS CAUSING PG – MEAN SCORES FOR THE SUBSAMPLE WITHOUT PG WHO GAMBLED IN THE PREVIOUS FOUR WEEKS



Notes: Weighted estimates. N= 1,396. A higher score on the five-point scale means a higher perceived likelihood that a given factor causes PG. 95% confidence intervals shown.

FIGURE A9 PERCEIVED LIKELIHOOD OF VARIOUS FACTORS CAUSING PG – MEAN SCORES FOR THE SUBSAMPLE WHO DIDN'T GAMBLE IN THE PREVIOUS 4 WEEKS



Notes: Weighted estimates. N= 439. A higher score on the five-point scale means a higher perceived likelihood that a given factor causes PG. 95% confidence intervals shown.

APPENDIX C

Study materials

INFORMATION SHEET AND CONSENT FORM

PARTICIPANT INFORMATION SHEET

Thank you for your interest in this research. First we will explain what the study is about and what to expect during your participation. Please read this information carefully.

Who is conducting this research?
We are the Behavioural Research Unit at the Economic and Social Research Institute (ESRI). We are funded by public bodies interested in helping to understand how people make decisions.

What is the research about?
This survey is about gambling behaviours, perceptions and attitudes. You don't need to know anything about gambling before taking part – everything you need to know will be explained to you before you answer any questions.

The survey will take around 15 minutes. Please complete the survey in one sitting.

You can do the survey on your phone, computer or tablet. If using a computer or tablet please set the browser window to full screen (you can usually do this by pressing F11).

If you have difficulty loading any page, please refresh your browser – your progress will be saved as you complete the study.

How will my responses be recorded?
All of your answers will remain confidential. They will not be stored with your name. Instead, we store them against a number (your 'private ID'). We have a file that matches this private ID to your [online panel] account, so that we can pay you. As soon as everyone has taken part and been paid, we delete the file that links your private ID to your [online panel] account. So all responses are kept anonymous.

The responses will initially be held on the survey company's Microsoft servers in Dublin, then transferred to secure files on the ESRI server. Once all responses have been made anonymous they will be put up online for other researchers to study, in line with best scientific practice.

Data protection
This study is carried out in accordance with data protection legislation. You can find detailed information about privacy and data protection for research conducted by the ESRI by following this link: https://www.esri.ie/esri-privacy-notice-for-research.

If you have any further queries in relation to this, please contact DataProtection@esri.ie.

Are there any risks involved?
Some of the questions are about gambling and other topics, including mental health and childhood experiences, that may be uncomfortable for some people. Some people may find it uncomfortable to answer questions on gambling. You can choose to stop at any time if you feel too uncomfortable

answering the questions. Your data will not be saved if you do not complete the survey. If you wish to stop, you can just exit your browser.

- I have read and understand the information on the previous pages, which explains the nature of the study I am to undertake.
- I consent to taking part as a study participant.
- I confirm that I am aged 18 or over.
- I understand that the aim of the research is to analyse gambling behaviours, perceptions and attitudes in Ireland.

I agree with all of the above points ☐

- I understand that I will be presented with a series of questions through my browser and that my responses will initially be recorded and stored on the survey company's Microsoft servers in Dublin. I understand that, once all data has been collected, my responses will subsequently be deleted from those servers and stored on ESRI computers only.
- I understand that the study data will be stored against a private ID which is unique to this study and cannot be used to identify me.
- I understand that the data will be available to researchers and will only be used for research purposes. I understand that my anonymous responses may be made available in online data repositories for research purposes.

I agree with all of the above points. ☐

- I understand that I may withdraw participation at any point during the study by exiting the web browser, and that no data will be stored unless I complete the study in full.
- I understand that once the study ends I will not be able to withdraw my data (as these data will be completely anonymised and so cannot be linked to me).

I agree with all of the above points. ☐

I have read and understood the above and consent to taking part as a survey participant. ☐

QUOTA SCREENING QUESTIONS

What is your gender? Female, Male, Non-binary, Prefer not to say.

Which age group do you belong to? Under 40, 40-59, 60+.

What region do you live in? Leinster, Munster, Connacht/Ulster.

Please indicate to which occupational group the chief income earner in your household belongs, or which group fits best. If the chief income earner is retired, or is not in paid employment but has been out of work for less than six months, please answer for their most recent occupation.

Options: Higher managerial / professional / administrative (e.g., doctor, board director); Intermediate manager / professional / administrative (e.g., newly qualified solicitor, middle manager); Supervisory or clerical / junior managerial / professional / administrative (e.g., office worker, salesperson); Skilled manual worker (e.g., bricklayer, bus or ambulance driver, pub/bar worker); Semi-skilled or unskilled manual work (e.g., manual worker, apprentice, shop assistant); Casual worker – not in permanent employment OR unemployed for the last six months or more; Full-time carer; Farmer / agricultural worker; Student; Unsure.

INTRODUCTION

Thank you for agreeing to take part in this study. As mentioned before, this survey is mainly about gambling, but we also ask about some other topics as well.

Gambling refers to any instance in which someone bets something of value (e.g., money) on the outcome of an event. We are interested in all forms of gambling, such as sports betting, online and in-person casino games, lotteries, scratch cards, bingo, card games with monetary stakes and so on. You will be asked questions about your own gambling behaviour as well as that of people you know, and also about your thoughts on gambling more generally.

In the questions we ask, there are no right or wrong answers. Your responses are important and may be used to inform policy **– please try to answer as honestly as possible**.

Participants are randomised to one of two groups. Those in the treatment group receive the questions in blue font below. Those in the control group receive the questions in green font.

SECTION A. CROSSWISE MODEL

TREATMENT GROUP

Before beginning the main part of the survey, we first have a few questions that are slightly different to normal survey questions.

Practice question

In the dotted box below are two questions, which can be answered with 'yes' or 'no'. We do not need to know what your answer to each question is, but only if your answers to the two questions are ***the same*** or ***different***. In other words, please indicate whether:

(a) your answers are both 'yes' or both 'no' (the same) or

(b) one of your answers is 'yes' and the other is 'no' (different).

1. In the last 12 months, have you won money in a lottery?
2. Do you have a pet?

a) BOTH of my answers are 'yes' or BOTH of my answers are 'no' (i.e., my answers to both questions are THE SAME).

b) One of my answers is 'yes' and the other is 'no' (i.e., my answers to the questions are DIFFERENT).

If (a) is chosen, the following text appears:

You have responded that both of your answers are **the same**. This means that one of the following statements should be true for you:

(i) My answer to question 1 is 'yes' and my answer to question 2 is 'yes'.

(ii) My answer to question 1 is 'no' and my answer to question 2 is 'no'.

Is one of these statements true for you? If so, click the 'Next' button below to proceed. If not, please change your response above.

If (b) is chosen, the following text appears.

You have responded that your answers to the questions are **different.** This means that one of the following statements should be true for you:

(i) My answer to question 1 is 'yes' and my answer to question 2 is 'no'.

(ii) My answer to question 1 is 'no' and my answer to question 2 is 'yes'.

Is one of these statements true for you? If so, click the 'Next' button below to proceed. If not, please change your response above.

Main question

In the dotted box below are another two questions. As on the previous page, we only want to know if your answers to the two questions are ***the same*** or ***different***. In other words, please indicate whether:

(a) your answers are both 'yes' or both 'no' (your answers are the same) or

(b) one of your answers is 'yes' and the other is 'no'.

1. In the last 12 months, has your gambling caused any financial problems for you or your household?
2. Was your mother born in either January or February?

a) BOTH of my answers are 'yes' or BOTH of my answers are 'no' (i.e., **my answers to both questions are the same**).

b) One of my answers is 'yes' and the other is 'no' (i.e., **my answers to each question are different**).

If (a) is chosen, the following text appears:

You have responded that both of your answers are **the same**. This means that one of the following statements should be true for you:

(i) My answer to question 1 is 'yes' and my answer to question 2 is 'yes'.

(ii) My answer to question 1 is 'no' and my answer to question 2 is 'no'.

Is one of these statements true for you? If so, click the 'Next' button below to proceed. If not, please change your response above.

If (b) is chosen, the following text appears.

You have responded that your answers to the questions are **different.** This means that one of the following statements should be true for you:

(i) My answer to question 1 is 'yes' and my answer to question 2 is 'no'.

(ii) My answer to question 1 is 'no' and my answer to question 2 is 'yes'.

Is one of these statements true for you? If so, click the 'Next' button below to proceed. If not, please change your response above.

Correcting for random responses (Schnapp, 2019)

Did you respond on the previous page by just clicking one of the options at random?

Please answer honestly – your response won't affect your payment or ability to proceed with the survey.

- Yes
- No

CONTROL GROUP

IMPORTANT

Some of the following questions may feel like they don't apply to you for various reasons.

However, it is important that you answer every question as honestly as you can, even those that you feel don't apply to you.

Page 2

In the last 12 months, has your gambling caused any financial problems for you or your household?

- Yes
- No

In the last 12 months, have you felt that you might have a problem with gambling?

- Yes
- No

SECTION B. LIST EXPERIMENT

TREATMENT GROUP

Below is a list of four statements that may or may not apply to you **over the past 12 months**.

Please select **how many** apply to you – you don't need to select which ones, just how many.

In the last 12 months…

- I bought an investment product (e.g., shares, bonds or mutual funds)
- I bought a lottery ticket or a scratch card
- I felt that there has been too much gambling advertising
- I felt that I might have a problem with gambling.

Position in which the problem gambling item appears will be randomised.

Answer options:

0 1 2 3 4

CONTROL GROUP

This question is slightly different to normal survey questions.

Below is a list of three statements that may or may not apply to you **over the past 12 months**.

Please select **how many** apply to you – you don't need to select which ones, just how many.

In the last 12 months…

- I bought an investment product (e.g., shares, bonds or mutual funds)
- I bought a lottery ticket or a scratch card
- I felt that there has been too much gambling advertising.

Answer options:

0 1 2 3

SECTION C. GAMBLING BEHAVIOUR

ALL PARTICIPANTS (TREATMENT AND CONTROL) RECEIVE THE SAME SURVEY QUESTIONS FROM HERE ON.

HOWEVER, THE ORDER OF SECTIONS C AND D WILL BE RANDOMISED – HALF OF PARTICIPANTS WILL SEE C FIRST AND HALF WILL SEE D FIRST.

The next questions are about the gambling activities you spent money on in the last four weeks. Remember, your responses to the following questions are completely anonymous. Please answer as honestly as you can.

Activities spent money on – Adapted from UK Gambling Commission quarterly survey (UK Gambling Commission, 2023)

Q1. In the last **four weeks**, have you **spent money** on any of the following forms of gambling?

Please do not include any form of gambling that you did not spend money on (e.g., playing card games with friends with no wagers).

a) Betting on horse or dog races: Yes/No
b) Betting on other sports such as soccer, rugby, GAA, golf: Yes/No
c) Lottery tickets: Yes/No
d) Scratch cards or instant wins: Yes/No
e) Bingo: Yes/No
f) Fruit/slot machine style games online or in a physical location (e.g., an arcade, a casino): Yes/No
g) Roulette, poker, cards or dice online or in a casino: Yes/No
h) Spread betting (e.g., on shares or foreign currencies): Yes/No
i) Bets or gambling between friends: Yes/No
j) Any other form of gambling not described above: Yes/No
   If (j) is selected, an open text box appears: 'Please briefly describe in the box below the other form(s) of gambling you have spent money on in the last four weeks.'

Activities spent money on: Detail

Q2. Thinking about each of the activities below, **where** did you spend money on each activity in the last **four weeks**? For each activity, tick all that apply. Again, please only choose places you **spent money**.

[Of the activities listed below, participants will only be shown those activities that they said they spent money on in Q1.]

a) Fruit/slot machine style games:
   - ☐ Online
   - ☐ In a physical location (e.g., an arcade, a casino)

b) Roulette, poker, cards or dice:
   - ☐ Online
   - ☐ In a casino

c) Betting on horse or dog races:
   - ☐ Online
   - ☐ In person at a bookmaker's
   - ☐ In person at a race venue
   - ☐ Over the phone

d) Betting on other sports (apart from horse and dog racing) such as soccer, rugby, GAA, golf:
   - ☐ Online
   - ☐ In person at a bookmaker's
   - ☐ Over the phone

e) Lottery tickets:
   - ☐ Online
   - ☐ In person

f) Scratch cards or instant wins:
   - ☐ Online
   - ☐ In person

g) Bingo:
   - ☐ Online
   - ☐ In person

h) The other forms of gambling you have spent money on (Text respondent wrote in open textbox for Q1(j) shown here):
   - ☐ Online
   - ☐ In person

Gambling frequency – Adapted from UK Gambling Commission quarterly survey (UK Gambling Commission, 2023)

Q3. Thinking about each of the activities below, **how often**, on average, did you spend money on each activity in the last **four weeks**? If you're not sure give your best guess.

[Of the activities listed below, participants will be shown only those activities that they said they spent money on in Q1 and all modes that they said they used in Q2.]

a) Fruit/slot machine style games
   - Online
     - Everyday/almost every day
     - 4–5 days a week
     - 2–3 days a week
     - About once a week
     - Less than once a week

- In a physical location (e.g., an arcade, a casino)
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

b) Roulette, poker, cards or dice
- Online
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

- In a casino
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

c) Betting on horse or dog races
- Online
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

- In person at a bookmaker's or a race venue, or over the phone
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

d) Betting on sports other than horse and dog racing such as soccer, rugby, GAA, golf
- Online
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

- In person at a bookmaker's, or over the phone
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

e) Spread betting (e.g., on shares or foreign currencies)
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

f) Lottery tickets
    - Online
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

    - In person
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

g) Scratch cards or instant wins
    - Online
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

    - In person
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

h) Bingo
    - Online
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

    - In person
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

i) Bets or gambling between friends
    - Everyday/almost every day
    - 4–5 days a week
    - 2–3 days a week
    - About once a week
    - Less than once a week

j) The other forms of gambling you have spent money on:
[Text they wrote in open textbox for Q1(j) shown here]
    - Online
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

    - In person
        - Everyday/almost every day
        - 4–5 days a week
        - 2–3 days a week
        - About once a week
        - Less than once a week

Gambling spend

Q4. Thinking about the last four weeks, **how much** money, on average, did you spend on gambling each week? If you're not sure give your best guess.

Of the activities listed below, participants will be shown only those activities that they said they spent money on in Q1 and all modes that they said they used in Q2.

When a participant selects a category (e.g., €10–€20 a week), a slider will appear asking them to specify the exact amount (e.g., a slider that starts at €10 and ends at €20).

Specific wording: 'Please specify the exact amount by clicking and dragging on the slider scale below.'

a) Fruit/slot machine style games
    - Online
        - Less than €5 a week
        - €5–€9 a week
        - €10–€20 a week
        - €21–€50 a week
        - €51–€100 a week
        - €101–€200 a week
        - More than €200 a week

    - In a physical location (e.g., an arcade, a casino)
        - Less than €5 a week
        - €5–€9 a week

- €10–€20 a week
- €21–€50 a week
- €51–€100 a week
- €101–€200 a week
- More than €200 a week

b) Roulette, poker, cards or dice
   - Online
     - Less than €5 a week
     - €5–€9 a week
     - €10–€20 a week
     - €21–€50 a week
     - €51–€100 a week
     - €101–€200 a week
     - More than €200 a week

   - In a casino
     - Less than €5 a week
     - €5–€9 a week
     - €10–€20 a week
     - €21–€50 a week
     - €51–€100 a week
     - €101–€200 a week
     - More than €200 a week

c) Betting on horse or dog races
   - Online
     - Less than €5 a week
     - €5–€9 a week
     - €10–€20 a week
     - €21–€50 a week
     - €51–€100 a week
     - €101–€200 a week
     - More than €200 a week

   - In person at a bookmaker's or a race venue, or over the phone
     - Less than €5 a week
     - €5–€9 a week
     - €10–€20 a week
     - €21–€50 a week
     - €51–€100 a week
     - €101–€200 a week
     - More than €200 a week

d) Betting on sports other than horse and dog races such as soccer, rugby, GAA, golf
   - Online
     - Less than €5 a week
     - €5–€9 a week
     - €10–€20 a week
     - €21–€50 a week
     - €51–€100 a week

- €101–€200 a week
- More than €200 a week

– In person at a bookmaker's, or over the phone
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

b) Spread betting (e.g., on shares or foreign currencies)
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

e) Lottery tickets
– Online
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

– In person
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

f) Scratch cards or instant wins
– Online
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

- In person
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

g) Bingo
- Online
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

- In person
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

h) Bets or gambling between friends
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

k) The other forms of gambling you have spent money on:
[Text they wrote in open textbox for Q1(j) shown here]
- Online
  - Less than €5 a week
  - €5–€9 a week
  - €10–€20 a week
  - €21–€50 a week
  - €51–€100 a week
  - €101–€200 a week
  - More than €200 a week

- In person
  - Less than €5 a week
  - €5–€9 a week

- €10–€20 a week
- €21–€50 a week
- €51–€100 a week
- €101–€200 a week
- More than €200 a week

Gambling more/less than usual over the last four weeks

How does your gambling over the past four weeks compare to how much you usually gamble?

A lot less than usual; A bit less than usual; The same as usual; A bit more than usual; A lot more than usual.

If any option other than 'the same as usual' is selected:

Can you briefly explain why you have gambled less/more than usual over the past four weeks?

[Open text box]

SECTION D. PROBLEM GAMBLING SEVERITY INDEX

THE ORDER OF SECTIONS C AND D WILL BE RANDOMISED – HALF OF PARTICIPANTS WILL SEE C FIRST AND HALF WILL SEE D FIRST.

Problem Gambling Severity Index (Ferris and Wynne, 2001)

Some of the next questions may not apply to you, but please try to be as accurate as possible.

THINKING ABOUT THE LAST 12 MONTHS...

1. Have you bet more than you could really afford to lose?

Never	Sometimes	Most of the time	Almost always

2. Have you needed to gamble with larger amounts of money to get the same feeling of excitement?

Never	Sometimes	Most of the time	Almost always

3. When you gambled, did you go back another day to try to win back the money you lost?

Never	Sometimes	Most of the time	Almost always

4. Have you borrowed money or sold anything to get money to gamble?

Never	Sometimes	Most of the time	Almost always

5. Have you felt that you might have a problem with gambling?

Never	Sometimes	Most of the time	Almost always

6. Has gambling caused you any health problems, including stress or anxiety?

Never	Sometimes	Most of the time	Almost always

7. Have people criticised your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?

Never	Sometimes	Most of the time	Almost always

8. Has your gambling caused any financial problems for you or your household?

Never	Sometimes	Most of the time	Almost always

9. Have you felt guilty about the way you gamble or what happens when you gamble?

Never	Sometimes	Most of the time	Almost always

10. To show you are not a bot, please choose 'Sometimes' for this question.

Never	Sometimes	Most of the time	Almost always

If the participant selects an answer other than 'sometimes' for item 10, they are shown the following message: 'It looks like you failed a check for bots. Please read the following questions carefully' and then presented with the PGSI to redo it. If they fail the attention check again, they are eliminated from the survey.

SECTION E: FRIENDS AND FAMILY

In the next section, we would like to know about your close friends and family. Just to repeat, all of your responses are completely anonymous.

Page 2

Friends gambling (Kang, 2023)

How many close friends do you have?

- ○ 0
- ○ 1
- ○ 2
- ○ 3
- ○ 4
- ○ 5
- ○ 6
- ○ 7
- ○ 8
- ○ 9
- ○ 10
- ○ 11
- ○ 11+

If 1 is selected above

Does your close friend gamble? If you don't know, give your best guess.

Yes/No

If 2–10 is selected above:

Of your X close friends, how many of them gamble? If you don't know, give your best guess. (Self-composed)

- 0–X

If 11+ is selected above:

Please think about your 10 closest friends. Of your 10 closest friends, how many of them gamble? If you don't know, give your best guess. (Self-composed)

- 0–10

If one friend gambles. Adapted from Svensson et al. (2013), UK Gambling Commission (2021).

Do you feel that your close friend that gambles has a problem with gambling?

Yes/No

If more than one friend gambles. Adapted from Svensson et al. (2013), UK Gambling Commission (2021).

How many of these Y [10 closest] friends that gamble do you feel has a problem with gambling? 0–Y

Family gambling

How many people are in your immediate family? Your immediate family includes your parents, siblings, partner and children. (Self-composed)

- 0–11+

If 1 is selected above (Self-composed)

Does your immediate family member gamble? If you don't know, give your best guess.

Yes/No

If 2–10 is selected above (Self-composed)

Of your X immediate family members, how many of them gamble? If you don't know, give your best guess.

- 0–X

If 11+ is selected above (Self-composed)

Please think about your 10 **closest** immediate family members. Of your 10 closest immediate family members, how many of them gamble? If you don't know, give your best guess.

- 0–10

If 1 family member gambles. (Self-composed)

What relation to you is this immediate family member that gambles?

- Parent
- Sibling
- Partner
- Child

If more than one family member gambles. (Self-composed)

Of those Y family members who gamble, what relation are they to you? Tick all that apply. Self-composed.

- ☐ Parent
- ☐ Sibling
- ☐ Partner
- ☐ Child

Are you worried about your child(ren)'s gambling? *(Self-composed; Hidden unless states in previous question that they have a child who gambles.)*

1 Not at all	2	3	4	5	6	7 Extremely

If 1 family member gambles. Adapted from Wenzel et al. (2008), Svensson et al. (2013).

Do you feel that your immediate family member that gambles has a problem with gambling?

Yes/No

If more than one family member gambles. Adapted from Wenzel et al. (2008), Svensson et al. (2013).

How many of these Y immediate family members that gamble do you feel has a problem with gambling?

- 0–Y

If 1 family member has problem gambling. (Self-composed)

What relation to you is this immediate family member that you feel has a problem with gambling?

- Parent
- Sibling
- Partner
- Child

If more than one family has problem gambling. (Self-composed)

Of those Y family members that you think might have a problem with gambling, what relation are they to you? Tick all that apply. (Self-composed)

- ☐ Parent
- ☐ Sibling
- ☐ Partner
- ☐ Child

The Problem Gambling Significant Other Impact Scale (PG-SOIS) (Dowling et al., 2014)

In the past 3 months, how often have you experienced any of the following problems as a result of the gambling of a family member or friend?

1. You or your family have experienced financial hardship.

Not at all	Rarely	Sometimes	Often

2. You have experienced feelings of sadness, anxiety, stress or anger.

Not at all	Rarely	Sometimes	Often

3. The quality of your relationship with the other person has been affected.

Not at all	Rarely	Sometimes	Often

4. Your social life has been affected.

Not at all	Rarely	Sometimes	Often

5. Your ability to work or study has been affected.

Not at all	Rarely	Sometimes	Often

6. Your physical health has been affected.

Not at all	Rarely	Sometimes	Often

SECTION F: CHILDHOOD AND TEENAGE EXPERIENCES

This next section is about your childhood experience of gambling. Please think back to any gambling activity you might have engaged in **before you turned 18**. Remember, your responses are completely anonymous and can never be linked to you.

Which of these activities did you spend money on before the age of 18? Tick all that apply. Please do not include any form of gambling that you did not spend money on (e.g., playing card games with friends with no wagers). Adapted from UK Gambling Commission (2021)

- ☐ Betting on horse or dog races
- ☐ Betting on other sports such as soccer, rugby, GAA, golf
- ☐ Spread betting (e.g., on shares or foreign currencies)
- ☐ Lottery tickets
- ☐ Scratch cards or instant wins
- ☐ Bingo
- ☐ Fruit/slot machine style games online or in a physical location (e.g., an arcade, a casino)
- ☐ Roulette, poker, cards or dice online or in a casino
- ☐ Bets or gambling between friends
- ☐ Loot boxes in video games
- ☐ Esports betting (i.e., betting on competitive video game tournaments and matches)
- ☐ Any other form of gambling not described above

If 'Any other form' is selected, an open text box appears: 'Please briefly describe in the box below the other form(s) of gambling you have spent money on in the last four weeks.'

How many of your parents/guardians gambled while you were growing up?

Dropdown options: 0, 1, 2, don't know, not applicable to me

If answers 1

For your parent/guardian that gambled, how often did he/she gamble while you were growing up? Self-composed

1 Very rarely	2	3	4	5	6	7 Always

Did he/she gamble less or more than the average person while you were growing up, do you think? Adapted from UK Gambling Commission (2021)

1 A lot less	2	3	4	5	6	7 A lot more

If answers 2

Think of your parent/guardian who gambled the most while you were growing up.

How often did he/she gamble while you were growing up? (Self-composed)

1 Very rarely	2	3	4	5	6	7 Always

Did he/she gamble less or more than the average person while you were growing up, do you think? Adapted from UK Gambling Commission (2021)

1 A lot less	2	3	4	5	6	7 A lot more

To what extent do you agree or disagree with the following statement:

While I was growing up, my parents/guardians approved of gambling (Delfabbro and Thrupp, 2003)

1 Strongly disagree	2	3	4	5	6	7 Strongly agree

☐ Click here if you don't know or if this is not applicable to you

SECTION G. PERCEPTIONS AND ATTITUDES

The next section is about your thoughts about gambling more generally. There are no right or wrong answers.

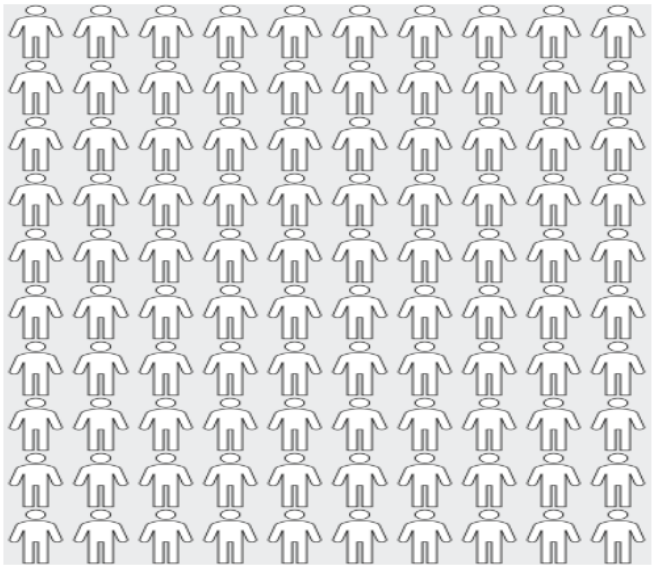
Perceived descriptive norm – Adapted from Robertson et al. (2023)

The picture below shows 100 figures. Imagine the figures represent all the adults in Ireland.

How many adults in every 100 do you think spent more money on gambling than you did in the last four weeks?

When you click on one figure, it and all of the ones before it will turn blue. The number of figures in blue represents your estimate of the number of adults in every 100 who spent more money on gambling than you did in the last four weeks.

You can click as many times as you want, when you are happy with your choice click the confirm button.



When confirm is clicked, the following message appears:

You said that 66 in every 100 adults in Ireland spent more money on gambling than you did in the last four weeks. Are you happy with your answer? No, go back / Yes, continue

Preference for own gambling level (self-composed)

What do you think about your current level of gambling?

I would like to gamble less than I currently do.	I am fine with my current level of gambling.	I would like to gamble more than I currently do.

General attitudes towards gambling – Attitudes Towards Gambling Scale (ATGS-8) (Canale et al., 2016; Orford et al., 2009)

Please state the extent to which you agree or disagree with each of the following statements:

1. People should have the right to gamble whenever they want.

1 Strongly disagree	2	3	4	5 Strongly agree

2. There are too many opportunities for gambling nowadays.

1 Strongly disagree	2	3	4	5 Strongly agree

3. Gambling should be discouraged.

1 Strongly disagree	2	3	4	5 Strongly agree

4. Most people who gamble do so sensibly.

1 Strongly disagree	2	3	4	5 Strongly agree

5. Gambling is dangerous for family life.

1 Strongly disagree	2	3	4	5 Strongly agree

6. On balance, gambling is good for society.

1 Strongly disagree	2	3	4	5 Strongly agree

7. Gambling livens up life.

1 Strongly disagree	2	3	4	5 Strongly agree

8. It would be better if gambling was banned altogether.

1 Strongly disagree	2	3	4	5 Strongly agree

Stigma scale – Adapted from Hing et al. (2016); Martin et al. (2000)

In general, how comfortable would you be with:

- Moving next door to a person who has a problem with gambling

1 Very uncomfortable	2	3	4	5 Very comfortable

- Making friends with a person who has a problem with gambling

1 Very uncomfortable	2	3	4 Very comfortable

- Spending an evening socialising with a person who has a problem with gambling

1 Very uncomfortable	2	3	4 Very comfortable

- Starting working closely on the job with a person who has a problem with gambling

1 Very uncomfortable	2	3	4 Very comfortable

- Having a treatment centre for people who have problems with gambling opened in your local area

1 Very uncomfortable	2	3	4 Very comfortable

- Having a person who has a problem with gambling marry into your family.

1 Very uncomfortable	2	3	4 Very comfortable

Perceived causes – Items 1–6 taken from Hing et al., 2016; Link et al., 1999, items 7–10 self-composed – Inspired by Robertson et al. (2023)

ORDER IN WHICH ITEMS ARE PRESENTED WILL BE RANDOMISED.

In general, how likely do you think it is that a person's gambling problems are caused by:

1. Their bad character

1 Very unlikely	2	3	4	5 Very likely

2. A chemical imbalance in the brain

1 Very unlikely	2	3	4	5 Very likely

3. Stressful circumstances in their life

1 Very unlikely	2	3	4	5 Very likely

4. A genetic or inherited problem

1 Very unlikely	2	3	4	5 Very likely

5. God's will

1 Very unlikely	2	3	4	5 Very likely

6. The way they were raised

1 Very unlikely	2	3	4	5 Very likely

7. The people they socialise with

1 Very unlikely	2	3	4	5 Very likely

8. The widespread availability of opportunities to gamble

1 Very unlikely	2	3	4	5 Very likely

9. Exposure to advertising and promotion of gambling

1 Very unlikely	2	3	4	5 Very likely

10. Treatment services being unavailable or inadequate

1 Very unlikely	2	3	4	5 Very likely

SECTION H: QUESTIONS TO BENCHMARK SAMPLE COMPOSITION AGAINST

We will compare prevalence estimates of smoking etc. in our sample to estimates from other nationally representative surveys to check the representativeness of our sample.

Thank you for your responses. We have now finished the questions about gambling. This final section is about other aspects of your day-to-day behaviour and your background. There are no right or wrong answers.

Smoking – From *Healthy Ireland Survey 2022* (Department of Health, 2023)
Do you smoke tobacco products?

- Yes, daily
- Yes, occasionally
- No

Online shopping – From *Information and Communications Technology Household Survey 2022* (CSO, 2022)

A. Do you use the internet every day or almost every day?

1. Yes
2. **No**

If No:

A1. On average how often do you use the internet?

1. At least once a week but not every day
2. Less than once a week but within the last 3 months
3. Last used it between 3 months and a year ago
4. Last used it more than a year ago
5. Never used it

If Yes to A.; or 1, 2 or 3 to A1:

When did you last buy or order goods or services for private use over the internet?

1. Within the last 3 months
2. Between 3 months and a year ago
3. More than 1 year ago
4. Never bought or ordered over the internet.

Radio listening – From JNLR Survey 2023 (Ipsos MRBI, 2023)

We are going to ask you now about listening to the radio. By listening we mean all types of listening:

- on a radio at home or in the car
- on a computer or laptop
- on a mobile phone or tablet
- on an app
- on a smart speaker (such as *Alexa, Amazon Echo, Google Home*)
- on a TV.

It also means listening anywhere –

- at home
- in the car
- at work or in some other place.

It also means listening to any part of any programme, no matter how long or short a time you listen.

Now tell us, when did you last listen to or hear anything on the radio? Remember, by listening or hearing, we mean ALL types of listening on any type of device.

1. Today
2. Yesterday
3. Longer ago
4. Can't recall.

If 1

(a) Apart from today, when did you last listen to or hear anything on the radio?

1. Yesterday
2. Longer ago
3. Can't recall.

Note that the following question will not be used to benchmark the sample composition, but is included in this section for convenience.

Mental health Inventory – 5 (Berwick et al., 1991; Veit and Ware, 1983)

During the past 4 weeks, how much of the time have you…

- Been a happy person
- Felt calm and peaceful
- Been a very nervous person
- Felt downhearted and blue
- Felt so down in the dumps that nothing could cheer you up

All of the time; Most of the time; A good bit of the time; Some of the time; A little of the time; None of the time.

SECTION I: SOCIODEMOGRAPHICS

Background questions

Thank you for your responses so far. Please answer the following questions about yourself.

Remember that all responses are anonymous – it will not be possible to identify you individually.

How old are you (in years)?

Dropdown 18–100.

Where were you born?

Ireland, Other (please specify).

What is your nationality?

Irish, Other (please specify).

What is your ethnicity?

White Irish; White Irish Traveller; Any other white background; Black or Black Irish – African, Black or Black Irish – any other black background; Asian or Asian Irish – Chinese, Asian or Asian Irish – Any other Asia background; Other including mixed background.

What county do you live in?

Dropdown menu

Which of the following best describes the area you live in?

Urban, Rural

How many people, including yourself, live in your household?

Are there any children under the age of 18 living in your household?

Yes/No

What is your marital status?

> Single, married, unmarried but cohabiting (i.e., living with your partner), separated, divorced, widowed.

What is your employment status?

> Full-time employed, part-time employed, self-employed, homemaker or carer, retired, student, seeking employment or unemployed, unable to work.

What is the highest level of educational attainment?

> Less than Junior Certificate, Junior Certificate or equivalent, Leaving Certificate, technical or vocational certificate, diploma, degree, masters, doctorate.

What is your current employment status?

> Employed full-time, employed part-time, self-employed, homemaker/carer, seeking employment/unemployed, retired, student, unable to work

Approximately, what is your household's gross income per year? (I.e., before paying any tax.) Consider all income sources including social welfare, pensions, etc. (Note: If you are living in a shared household, for example renting with others, or you are living with parents but are financially independent, do not include the income of these others in your answer.) Your answers are anonymous and cannot be linked to you.

> Up to €22,000; €22,001–€32,000; €32,001–€42 000; €42,001–€55,000; €55,001–€67,000; €67,001–€85,000; €85,001–€105,000; €105,001–€137 000; Above €137,000; Prefer not to say or don't know.

SECTION J: WRAP-UP QUESTIONS AND DEBRIEF

Before you finish the survey, it would be very helpful if you let us know whether you experienced any difficulty during your participation.

Please tell us if anything was unclear or any of the questions were difficult to answer.

[Open text box]

Is there any reason why your data may not be usable for analysis? Note that your response to this question will not affect your payment.

[Open text box]

Debrief

Thanks for completing our survey. If you think that you or someone you know suffers from problem gambling, support is available from GamblingCare.ie:

https://gamblingcare.ie/

Freephone: 1800 936 725

For general mental health, support services are listed on the HSE website at:

https://www2.hse.ie/mental-health/services-support/supports-services/.

You can also talk to a GP or call the HSE YourMentalHealth Information Line on (freephone) 1800 111 888.

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