

# Secondary Data Analysis of the Data Reporting Framework and the Health Survey for England

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# Funding Statement

GambleAware is a wholly independent charity and has a framework agreement with the Gambling Commission to deliver the National Strategy to Reduce Gambling Harms within the context of arrangements based on voluntary donations from the gambling industry. GambleAware commissions research and evaluation to build knowledge of what works in prevention and reduction of gambling harms that is independent of industry, government and the regulator.

The authors alone are responsible for the views expressed in this article, which do not necessarily represent the views, decisions or policies of the institutions with which they are affiliated.

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# Executive summary

## Background

Gambling is a legitimate leisure activity enjoyed by many. The majority of those who gamble appear to do so without exhibiting any signs of problematic behaviour. However, there are individuals who do experience harm as a result of their gambling. The National Strategy to Reduce Gambling Harms sets out as one of its strategic priorities the need to make significant progress towards truly national treatment and support options that meet the needs of current and future service users. This is also identified as a priority within this Research Programme<sup>1</sup> and is a strategic priority for GambleAware, as the main funder of treatment for gambling harm in Great Britain.<sup>2</sup>

It is recognised that there is a large discrepancy between the numbers currently receiving treatment and the number of people estimated to be in need of treatment. This suggests that there may be challenges with either individuals recognising that their gambling may have become problematic (and seeking treatment) and/or the availability and accessibility of treatment services.<sup>3</sup> While some people will recover without help, this discrepancy between the numbers of people in treatment compared to the potential need raises concerns about underdeveloped referral routes into treatment and support, a potential lack of awareness of the services available, and a lack of national availability. There is also a knowledge gap in terms of where the unmet need is, what types of treatment and support are most effective, for whom and in what circumstances.

This study is part of a larger programme of studies in collaboration between NatCen and ACT Recovery. This research will help enable better targeting of support to bring people who need it forward for treatment, identify current capacity issues, and support the strategic development of future treatment services to ultimately help reduce gambling-related harm. The primary division involved:

- 1) NatCen focus on three work packages to determine unmet need for gambling treatment at a population level (i.e. among those who have never previously accessed treatment but may be high risk).
- 2) ACT Recovery focus on four work packages on indicated populations who have either attempted to or who have previously engaged with services.

This report is part of NatCen's work on this programme of studies. The overarching study led by NatCen comprises a multi-method approach with three work streams (WS): A Rapid Evidence Assessment (REA) (WS1, available as a separate report); a secondary analysis comparing gamblers in the general population with those in treatment (WS2); and, qualitative narrative interviews with stakeholders and problem gamblers (WS3). A range of research questions have been explored, encompassing unmet need, demand for service support, as well as those barriers and facilitators to treatment for problem gamblers.

This report covers the second part of the project, Work Stream 2; secondary analysis comparing gamblers in the general population with those in treatment. The analysis

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<sup>1</sup> <https://www.reducinggamblingharms.org/asset-library/Gap-Analysis-brief.pdf>

<sup>2</sup> For more details see pages 15-17 in the National Strategy to Reduce Gambling Harms <https://www.reducinggamblingharms.org/about-the-strategy>

<sup>3</sup> For more details see: <https://www.reducinggamblingharms.org/treatment-and-support>

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used combined survey data from the Health Survey for England and the Scottish Health Survey and treatment data from the Data Reporting Framework.

## Objectives

The overall objective of the analysis of this work stream was to quantify what is known about the general population of problem gamblers and the population of those in treatment. This workstream also drew on findings from the Rapid Evidence Review (REA, WS1). In particular, the aims of this analysis were formed to address, where possible, gaps identified in the REA. A main finding from the REA was a lack of knowledge about gamblers in the general population, specifically those experiencing harms, compared to those in treatment. This WP2 sets out to address this gap.

'Problem gambling' was defined using scores from the Problem Gambling Severity Index (PGSI). Participants were classified as non-problem gamblers (PGSI 0), low risk (PGSI 1-2) (experiencing a low level of gambling problems with few or no negative consequences identified), moderate risk (PGSI 3-7) (experiencing a moderate level of gambling problems leading to some negative consequences) and problem gamblers (PGSI 8+) (gambling with negative consequences and a possible lack of control).

Where feasible, this report provides insight into the population of problem gamblers (PGSI 8+) not in treatment. The analysis aimed to:

- Describe the characteristics of those classified as low, moderate and problem gamblers within the general population;
- Describe the characteristics of gamblers accessing treatment for problem gambling;
- Compare the characteristics of these two groups to identify characteristics associated with whether (or not) problem gamblers access treatment.

## Findings

Survey data was used to investigate the characteristics of **gamblers in the general population of England and Scotland**.<sup>4</sup> Overall, the prevalence of problem gambling was low. Less than five per cent of the population were either classified as problem gamblers or experiencing low or moderate levels of gambling-related problems. The proportion classed as problem gamblers was less than one per cent. Furthermore:

- The survey data showed that problem gamblers and moderate risk gamblers were more likely to be male compared to non-gamblers, and that as gambling severity increased, the proportion of men increased.
- Gamblers were most likely to be individuals in their mid-twenties and thirties, with the highest rates of problem gambling occurring amongst these age groups.
- Problem gamblers and moderate risk gamblers were more likely to be in employment than other groups. The problem gambling group contained a low proportion of retired people. Problem gamblers were also more likely to be in routine and manual occupations with their highest qualification to be at GCSE level or equivalent.
- There were strong differences in the mental wellbeing by gambling behaviour; wellbeing decreased as gambling severity increased. Problem gamblers had poorer wellbeing than other gambling groups (i.e. lower risk groups). The relationship between physical health and gambling severity was less clear, with problem gamblers having worse self-reported general health than all other groups, but less

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<sup>4</sup> Comparable data for Wales were unavailable



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likely to have a large number of health conditions than non-gamblers. This was likely due to the underlying age differences of the groups.

- In England there were differences by ethnicity, with problem gamblers less likely to be white than the wider population. Data on ethnicity was not available for Scottish respondents.
- Whilst overall, the most common gambling activity was the national lottery, there were a number of differences in the type of activity by gambling severity. Virtual gambling was found to be more common amongst problem gamblers, whereas various online activities became more common as risk increased.

Characteristics of the population accessing treatment are based on the Data Reporting Framework (DRF) collected by treatment services funded by GambleAware and provided by GamCare, the National Problem Gambling Clinic and the Gordon Moody Association. These data were used to explore the characteristics and gambling behaviour of **gamblers in treatment in England and Scotland**. As would be expected, the bulk of the gamblers in treatment were classed as problem gamblers, with a smaller proportion classed as moderate risk gamblers.

- The treatment data showed a marked gender and age skew, with the vast majority of gamblers in treatment being male and aged between 25-34 years.
- The majority of gamblers in treatment were in employment.
- Problem gamblers were less likely to be in a relationship than moderate risk gamblers and, also more likely to be from a non-white ethnic background.
- A relatively low proportion of gamblers in treatment were Scottish residents.
- Problem gamblers were more likely to have additional diagnoses and poorer mental health than moderate risk gamblers. The problem gamblers were far more likely to have clinical mental health issues.
- The treatment data also showed that problem gamblers in treatment gambled with a higher frequency and spent more money on gambling than moderate risk gamblers in treatment.
- All gamblers in treatment participated in very similar types of gambling activities; the three most common activities listed by each group were identical, each listing online gambling, virtual gaming, and online betting with a bookmaker at the top three.
- Problem gamblers were more likely to have started gambling at a younger age and were more likely to have experienced a 'big win' early on.
- Problem gamblers were also more likely than moderate risk gamblers to have experienced negative consequences of gambling in the form of relationship loss, job loss and debt.

**Differences between the treatment data and population data** were used to investigate areas where there is a potential treatment gap as identified in the REA. In particular:

- A comparison of the two data sources showed that gamblers in treatment had a greater severity of gambling behaviour as measured by the PGSI.
- In both data sources, problem gamblers and moderate risk gamblers were more likely to be male. In the population data the proportion of men increased with gambling severity. However, in the treatment there was a higher proportion of men within the moderate risk group. This implies male gamblers in the moderate risk

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category were more likely to seek treatment than female gamblers in the same group.

- Problem gamblers and moderate risk gamblers were more likely to be aged 25-34 years in both the treatment data and population data. However, the proportions within these age bands were higher in the treatment data, suggesting problem gamblers and those in the moderate risk category outside these age ranges were less likely to be in treatment.
- The proportion of problem gamblers in employment was higher in the treatment data than the population data, suggesting employed people were more likely to be in treatment than those not in employment.
- Whilst the health measures in the data were not directly comparable, both data sources showed that the problem gamblers exhibited a far higher incidence of poor mental health than moderate risk gamblers. The high proportion of problem gamblers in treatment with poor mental health suggests that poor mental health may not be a barrier to treatment. However, since the two measures are not directly comparable it was not possible to conclusively rule out a treatment gap.
- The relationship between physical health and access to treatment was not clear since the DRF did not collect information on physical health. The survey data contained information about the number of physical health conditions an individual has, which suggested problem gamblers were less likely to have a large number of health conditions than non-gamblers, although this was likely due to underlying differences in the age profile. The DRF data showed that problem gamblers were more likely to have other diagnoses in addition to gambling, whether pharmacological, psychological, or a combination.
- In England, there was a higher proportion of white problem gamblers in the population data than the treatment data, which may suggest that individuals from a non-white ethnic background were more likely to be in treatment.
- The problem gamblers and moderate risk gamblers in the treatment data reported gambling with higher frequency.
- There was a predominance of online gambling activities amongst both those in treatment and the general population. Virtual gaming features highly for all gamblers in treatment and for problem gamblers in the general population, as does betting on horse racing. The moderate risk gamblers who are in treatment appear to report activities that are more similar to those reported by problem gamblers than those reported by moderate risk gamblers in the general population. This suggests that the moderate risk gamblers who end up accessing treatment have more gambling behaviour in common with the problem gamblers (in terms of frequency and activities) than with the rest of the moderate risk population.

The differences between gamblers in treatment and gamblers in the general population were further investigated using multivariate analysis methods. The models were used to investigate whether there were significant differences between socio-demographic characteristics of those accessing treatment and those in the wider population when looked at in combination with each other, and when controlling for the PGSI score and frequency of gambling. The results from this analysis suggested that problem gamblers not in treatment had less severe gambling behaviour (as measured by the PGSI), gambled less frequently, were under the age of 25 years or over the age of 45, not in employment, or resident in Scotland. On the other hand, moderate risk gamblers were less likely to access treatment if their gambling was less severe and they gambled less frequently, but also if they were female or were resident in Scotland.

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## Conclusions

It is not possible to directly comment on the general population of individuals gambling with negative consequences and a possible lack of control, who can be classified as problem gamblers and who are not accessing treatment; this is not recorded in the survey data. However, it is possible to use the analysis presented in this report to outline the 'profile' of this population and provide further insights about the gamblers in the general population that the REA identified as an area where evidence is limited.

The analysis confirms that problem gamblers were more likely to access treatment if they exhibited more severe gambling behaviour (measured by the PGSI) and gambled more frequently. Taking into account the differences in gambling severity and frequency, the analysis also suggested that problem gamblers who were under the age of 25 years, over the age of 45, not in employment, or resident in Scotland, were less likely to be in treatment. Similarly, even after controlling for differences in severity and frequency, moderate risk gamblers who were female or resident in Scotland were less likely to access treatment.

In addition, this report demonstrates that, amongst English residents, individuals from a non-white ethnic background were less likely to be in treatment. It also shows that problem gamblers have a far higher incidence of poor mental health than moderate risk gamblers, both in the treatment data and the survey data. The high proportion of problem gamblers in treatment with poor mental health suggests that poor mental health may not be a barrier to treatment, although it is not possible to completely rule out the possibility of a treatment gap since the two measures are not directly comparable.

Finally, a comparison of gambling activities suggests moderate risk gamblers who access treatment they participate in a similar type of gambling activities and to the same extent as problem gamblers, compared to the rest of the moderate risk population. This suggests that gamblers in treatment who are in the moderate risk category have more in common with problem gamblers (in terms of frequency and activities) than with the rest of the moderate risk population.

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# 1 Introduction

This study is part of a larger project with an extensive range of research questions ranging from unmet need, demand, service-mix, barriers and facilitators to treatment and the overarching care pathway. The project was a collaboration between NatCen and ACT Recovery, with regular dialogue and participation in joint updates and meetings to ensure synergy and synthesis of the work. While there was shared learning, the primary division involved:

- 1) NatCen focus on unmet need for gambling treatment at a population level (i.e. among those who have never previously accessed treatment but may be high risk).
- 2) ACT Recovery focus on indicated populations who have either attempted to or who have previously engaged with treatment services.

The overall research seeks to provide:

- Rigorous and relevant evidence on unmet need, demand, treatment types, barriers and facilitators to treatment (and any population inequalities in access)
- Understanding of what individuals perceive as an effective care pathway;
- Exploration of those populations that face further inequalities regarding service provision and/ or longer-term treatment;
- A set of implications and recommendations for GambleAware and other key policymakers and practitioners designing, commissioning and delivering treatment services for people experiencing harm from their gambling in the UK; and
- A set of priorities to inform the Advisory Board for Safer Gambling and GambleAware's strategic grant-making and fund-raising decisions over the next three to five years.

In both parts (NatCen and ACT) of the overall project, there were a number of work packages. The present study is part of NatCen's focus on unmet need, demand, service-mix, barriers and facilitators to treatment and the overarching care pathway. This overarching research programme led by NatCen involves a multi-method design with three work streams (WS): a rapid evidence assessment (WS1), secondary analysis of existing administrative treatment data and survey data (WS2), and qualitative interviews with stakeholders and those problem gamblers who have yet to come into contact with treatment provision (WS3). This report covers findings from the secondary data analysis that forms Work Stream 2. The findings build upon those presented in the Rapid Evidence Assessment (REA) in Work Stream 1. Findings from each work stream will be synthesised to provide robust and appropriate recommendations to support future developmental and funding strategies.

## 1.1 Objectives and research questions

There is a body of evidence about the prevalence of problem gambling within the British population, dating back to the British Gambling Prevalence Survey of 1999. Survey estimates indicate that in 2016 between 250,000 and 460,000 adults could be classified as problem gamblers, with more than 1 million adults additionally experiencing gambling-related harm.<sup>5</sup> Only a fraction of these numbers is known to seek help for a gambling-related problem. In the year 2016/17, GamCare received

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<sup>5</sup> Conolly A et al (2018) *Gambling behaviour in Great Britain in 2016: evidence from England, Scotland and Wales*. Gambling Commission, London.

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around 20,000 calls to their help lines from gamblers and provided treatment to more than 8,000 individuals.<sup>6</sup>

While information is collected about those who seek treatment for gambling problems, there is little evidence about those experiencing gambling-related harms who have not sought treatment. This extends to knowledge about the size of this group, their socio-demographic characteristics, or their gambling behaviours, and how this group may differ from the population of problem gamblers who do seek treatment.<sup>7</sup>

There are two main causes of this evidence gap. The first is the absence of any direct measures of gambling harm within the population, so that the identification of gambling problems within population-based surveys is based on the Problem Gambling Severity Index (PGSI) and the DSM-IV screening instrument, based on criteria from the fourth edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-IV). Second, there is a lack of data on the population of problem gamblers that do not seek treatment. These two types of data are collected separately, for different purposes and using different criteria and protocols, so it is not straightforward to combine them in order to make inferences about the individuals experiencing gambling-related harm but not seeking treatment for whatever reason.<sup>8</sup>

Without available data, the alternative is to gather evidence indirectly. This analysis therefore used the Data Reporting Framework (DRF) and Health Surveys for England and Scotland to identify how the social demographic characteristics and gambling behaviours of the population in treatment differ to those of the general population of problem gamblers (and moderate risk gamblers) and used that information to make inferences about the characteristics of the population not in treatment.

The overall objective of the analysis was to quantify what is known about the population of problem gamblers (using epidemiological definitions) and the population of those in treatment. Where possible, the data were used to provide indirect evidence about the population of problem gamblers not in treatment. The analysis therefore aimed to:

- Describe the characteristics of gamblers experiencing harm within the general population;
- Explore the characteristics of gamblers accessing treatment for problem gambling; and
- Compare the characteristics of these two groups to identify characteristics associated with whether (or not) problem gamblers access treatment.

### 1.1.1 About this report

The data and methods used in the analysis are outlined in Section 2. In Section 3 we describe the characteristics of low risk, moderate risk and problem gamblers within the general population. The characteristics of gamblers accessing treatment for problem gambling are explored in Section 4. In Section 5, a comparison is drawn between the general population and those in treatment to identify characteristics associated with accessing treatment. Discussion and conclusions are presented in Section 6.

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<sup>6</sup> Source: GamCare Annual Statistics 2017/2018.

<sup>7</sup> Throughout this report the phrases 'problem gamblers', 'medium risk gamblers' and 'low risk gamblers' are used to indicate individuals experiencing different degrees of gambling related harm according to the PGSI. These descriptions refer to people and their situations at a point in time, and are not intended to imply a long-lasting or progressive status.

<sup>8</sup> Data on gamblers who have sought treatment for problem gambling from services other than those provided by GamCare and the National Problem Gambling Clinic are also unavailable.

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## 2 Methodology and data

### 2.1 Data sources

The analysis presented in this report uses data from two sources:

- Population characteristics are taken from data collected on behalf of the Gambling Commission by the Health Survey for England (HSE) and the Scottish Health Survey (SHeS) in 2015 and 2016. These are the most recent data available for the general population.<sup>9</sup>
- Characteristics of the population accessing treatment are based on the DRF collected by treatment services funded by GambleAware and collected by GamCare the Gordon Moody Association and the National Problem Gambling Clinic between 2015 and 2017.

#### Health survey data

HSE and SHeS are large-scale nationally representative surveys of people living in private households in England and Scotland, respectively.<sup>10</sup> Both surveys use probability sampling methods and collect data from individuals by face-to-face interviews in respondents' own homes. Because the two surveys use similar sampling methods and the same approach to data collection, they are directly comparable.<sup>11</sup>

The combined data set included 25,366 cases. The data include information on the frequency and type of gambling behaviour of individuals aged 16 years and over. The questionnaires include two scales used to identify problem gambling, the Problem Gambling Severity Index and DSM-IV screening instrument, based on criteria from the fourth edition of the Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-IV). The Problem Gambling Severity Index is used in this analysis, as the same scale is used by the DRF. Gambling questions are asked using self-completion methods to encourage honest reporting of gambling behaviour. Whilst the data includes items that indicate individuals' self-diagnosis that they are problem gamblers, no information was collected about whether help or treatment had been sought for gambling problems. The combined survey data are weighted to take into account any selection bias or non-response bias.<sup>12</sup>

#### The Data Reporting Framework (DRF)

The DRF is used by providers of gambling treatment services funded by the GambleAware. The providers are asked to collect information from individuals seeking

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<sup>9</sup> Comparable data for Wales were unavailable.

<sup>10</sup> The HSE and SHeS samples exclude the homeless and people living in communal settings such as halls of residence, hostels, nursing homes and prisons.

<sup>11</sup> For further information about the HSE methodology in 2015 and 2016, see the relevant HSE Methods reports, available at <https://files.digital.nhs.uk/publicationimport/pub22xxx/pub22610/hse2015-methods.pdf> and <https://files.digital.nhs.uk/publication/m/3/hse2016-methods-text.pdf>. Technical information about SHeS is available from <https://www.gov.scot/publications/scottish-health-survey-2015-volume-2-technical-report/> and <https://www.gov.scot/publications/scottish-health-survey-2016-volume-2-technical-report/>.

<sup>12</sup> The weights match the profile of the sample to that of the population by age, sex and region of residence. For further details of the weighting methodology see the technical reports referenced above.

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and accessing treatment services. The DRF is primarily intended to collect information from adults aged 18 years or over, however, individuals aged 16-18 were added to the DRF when they received care from a GambleAware funded treatment provider.

The DRF comprises four main data files which have been matched together using a unique identifier for each person common to all datasets:

- Client characteristics;
- Gambling history
- Referral details; and
- The client 'appointment' which provides some information on the nature of the intervention including scores from the PGSI and CORE10 (Clinical Outcomes in Routine Evaluation, a 10-item measure of mental health).

The combined data set included 12123 cases.

In this analysis the PGSI score from first referral has been used. The data from each source was cleaned and combined to create a single data file.

### **Creating a combined data set**

The DRF and survey data were cleaned and combined to form a single dataset for analysis.<sup>13</sup> To improve the comparability of the two data sources, the following steps were taken:

- The DRF data were aggregated to create an individual-level file. The DRF data contained information from a number of providers and it was not possible to reliably identify where an individual had received treatment from more than one provider. This means it was possible to have duplicate treatment episodes for an individual. (The survey data were also at individual level.)
- Only DRF data collected in 2015/16 and 2016/17 was used for the analysis to ensure overlap with the fieldwork dates of the survey data.
- The analysis covers England and Scotland only.
- The survey data were weighted back to match the age and sex profile of the general population. The DRF data were unweighted. Given the source and coverage of the data, these were assumed to be representative of the population seeking treatment.

The comparison was by necessity limited to variables that were available in both datasets. The two datasets lack comparable information on health characteristics and indicators of poor mental well-being,<sup>14</sup> hence these important measures are reported on but not directly compared. Direct comparisons were restricted to problem gambling status, based on the PGSI), a limited set of socio-demographic characteristics (age, gender, socio economic/activity status, and ethnicity), information on frequency of

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<sup>13</sup> It should be noted that these steps mean the DRF data presented in this report does not exactly match the DRF dataset used by ACT. The aim for this analysis was to improve comparability of DRF with the survey data, whereas for ACT the aim was to maximise the sample size and incorporate the most recent information available.

<sup>14</sup> The HSE and SHeS contain WEMWBS and GHQ questions on mental well-being. The DFR questionnaire contain questions from the CORE-10 psychological well-being scale. The different scales measure different aspects of well-being and are not comparable or interchangeable.

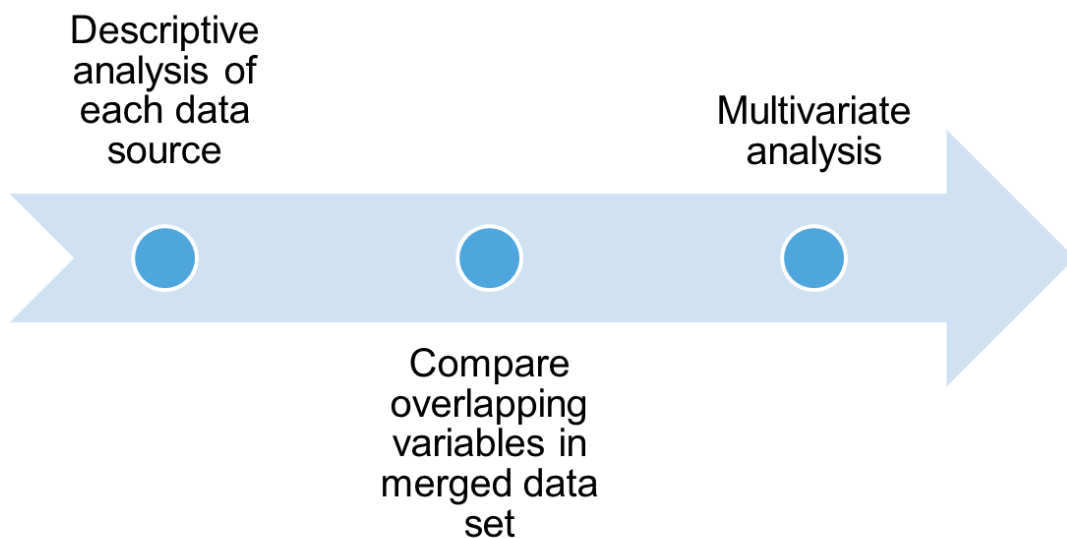
gambling, and country of residence. These demographic variables were reviewed and recoded to ensure consistency between the two datasets. A set of derived variables were created for age, ethnicity and socio-economic activity status that had the same response categories.

## 2.2 Analytical approaches

The analysis was run in three stages:

- The first step was to look at each data source separately, using descriptive statistics to explore the characteristics of problem gamblers and those classified as low risk and moderate risk gamblers.
- The second step was to make a formal comparison of overlapping variables. A comparison was made using all information that was present in both data sources and measured in a consistent way. Differences in proportions were tested using a chi-square test, and differences in means were tested using t-tests.
- The final step was to run a logistic regression model in order to explore the impact of each characteristic while controlling for the others. The outcome was the data source, used as a proxy for gamblers in treatment versus the general population.<sup>15</sup> The three steps are summarised in Figure 2.1 below.
- 

Figure 2:1 Analysis Steps



<sup>15</sup> Logistic regression models enable the investigation the effect of one or more independent or predictor variables on a two-category (binary) outcome variable. The independent variables can be continuous or categorical (grouped) variables. The odds for each independent variable give an estimate of the effect of that variable on the outcome variable, adjusted for all other independent variables in the model.



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## 2.3 The Problem Gambling Severity Index

The gambling behaviour of respondents was classified using the Problem Gambling Severity Index (PGSI). This scale was available in both data sources. The PGSI was designed for use among the general population, rather than a clinical context. It was developed, tested and validated within a general population survey of over 3,000 Canadian residents.<sup>16</sup> The instrument itself has been subject to critical evaluation and was revised in 2003<sup>17</sup>.

The PGSI consists of nine items ranging from 'chasing losses' to 'gambling causing health problems' to 'feeling guilty about gambling'. Each item is assessed on a four-point scale: never, sometimes, most of the time, almost always. Responses to each item are given the following scores: never = 0; sometimes = 1; most of the time = 2; almost always = 3. The scores for each item are summed to give a total score, which ranges from zero to a maximum of 27.

The score can be used to group respondents into four categories<sup>18</sup>:

- Non-problem gamblers (a PGSI score of zero);
- Low risk (a PGSI score of 1 or 2, defined as experiencing a low level of problems with few or no identified negative consequences);
- Moderate risk (a PGSI score of 3 to 7, defined as experiencing a moderate level of problems leading to some negative consequences);
- Problem gamblers (a PGSI score of 8 or over, those who gamble with negative consequences and a possible loss of control).

## 2.4 Report and table conventions

The following conventions are used in this report.

- Unless otherwise stated, the tables are based on the responding sample for each individual question (i.e., item non-response is excluded). Therefore, bases may differ slightly between tables.
- The group to whom each table refers is shown below each table.
- The following conventions have been used in the tables:
  - No observations (zero values)
  - 0** Non-zero values of less than 0.5% and thus rounded to zero.
  - [ ]** An estimate presented in square brackets warns of small sample base sizes. If a group's unweighted base is less than 30, data for that group are

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<sup>16</sup> Ferris, J., Wynne, H. (2001). *The Canadian Problem Gambling Index: Final Report*. Canada: The Canadian Centre on Substance Abuse.

<sup>17</sup> Wynn, H. (2003). *Introducing the Canadian Problem Gambling Index*. Wynne Resources: Canada.

<sup>18</sup> Throughout this report data will be analysed by these categories. E.g. 'Problem gambler' is attributed to an individual who scores PGSI 8+ and non-problem gambler is attributed to an individual who gambles but scores 0 on the PGSI.

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not shown. If the unweighted base is between 30-49, the estimate is presented in square brackets.

\* Estimates not shown because base sizes are less than 30.

- Owing to rounding, row or column percentages may not exactly add to 100%.
- A percentage may be presented in the text for a single category that aggregates two or more percentages shown in the table. Owing to rounding, the aggregated estimate may differ by one percentage point from the sum of the percentages in the table.
- The term 'significant' refers to statistical significance (at the 95% confidence interval level) and is not intended to imply substantive importance.<sup>19</sup>
- Where comparisons are made, only results that are significant at the 95% confidence interval level are presented in the report commentary.
- Using this method of statistical testing, differences which are significant at the 95% confidence interval level indicate that there is sufficient evidence in the data to suggest that the differences in the sample reflect a true difference in the populations represented.

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<sup>19</sup> It is worth noting that the significance test (a Wald test) does not establish whether there is a statistically significant difference between any particular pair of subgroups (e.g. the highest and lowest subgroups). Rather, it seeks to establish whether the variation in the outcome between groups that is observed could have happened by chance or whether it is likely to reflect some 'real' differences in the population. The test calculates the statistical significance of parameters in a logistic regression model of problem gambling prevalence (for example) to establish whether age (for example) is significantly associated with gambling prevalence.

# 3 Low/moderate risk gamblers and problem gamblers in the general population

## 3.1 Background

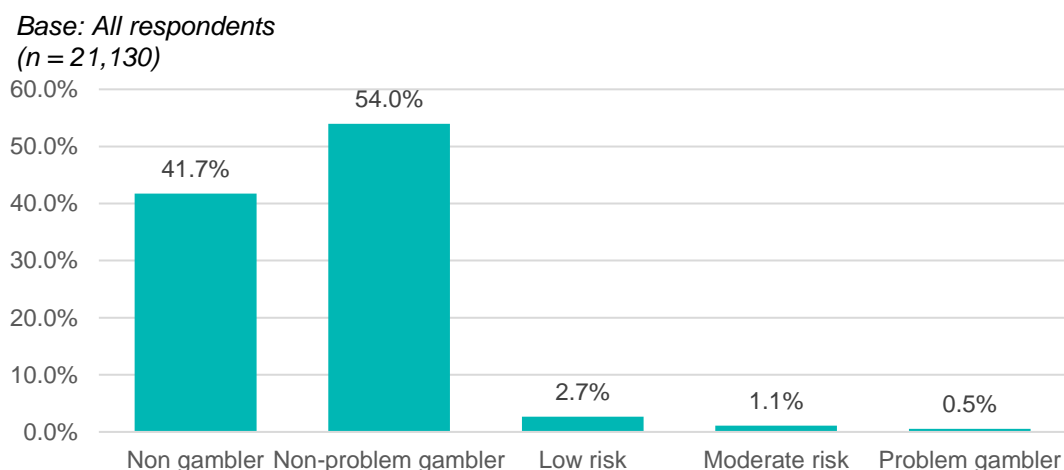
The aim of this section is to:

- Outline the proportion of gamblers in the general population who are problem gamblers or low risk and moderate risk gamblers;
- Describe the characteristics of those classified as low risk, moderate risk and problem gamblers;
- Explore differences in the gambling behaviour of problem gamblers, low and moderate risk gamblers and non-problem gamblers; and
- Highlight where there are differences between problem gamblers, low risk and moderate risk gamblers, and the wider population.

This section applied the combined data from the Health Survey for England (HSE) and Scottish Health Survey (SHeS) to describe the characteristics of low risk, moderate risk and problem gamblers. The survey data were weighted to ensure the sample is representative of the general population living in private households in these countries.

The gambling behaviour of respondents was classified using the Problem Gambling Severity Index (PGSI) as outlined in Section 2.3. The PGSI score was used to group respondents into five categories; non-gamblers (individuals who did not complete the PGSI because they did not gamble), non-problem gamblers (a PGSI score of zero), low risk (a PGSI score of 1 or 2), moderate risk (a PGSI score of 3 to 7) and problem gamblers (a PGSI score of 8 or higher). The distribution of the general population across these groups is shown in Figure 3.1.

Figure 3:1 Gambling behaviour in the general population



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These data indicate that 41.7% of the adult<sup>20</sup> population of England and Scotland did not gamble and a further 54.0% gambled but were classed as 'non-problem' gamblers (those scoring PGSI 0 and therefore not experiencing gambling harms). Of the remaining sample, 4.3% of the population were either problem gamblers or low risk/moderate risk gamblers. In particular, 2.7% of the population were classified as low risk gamblers, 1.1% were categorised as moderate risk gamblers and 0.5% were categorised as problem gamblers.<sup>21</sup>

## 3.2 Socio-demographic characteristics by gambling behaviour in the general population

The differences in the socio-demographic characteristics of non-gamblers, non-problem gamblers, those classified as moderate/low risk gamblers, and problem gamblers are outlined in this section.

### 3.2.1 Gender and gambling behaviour

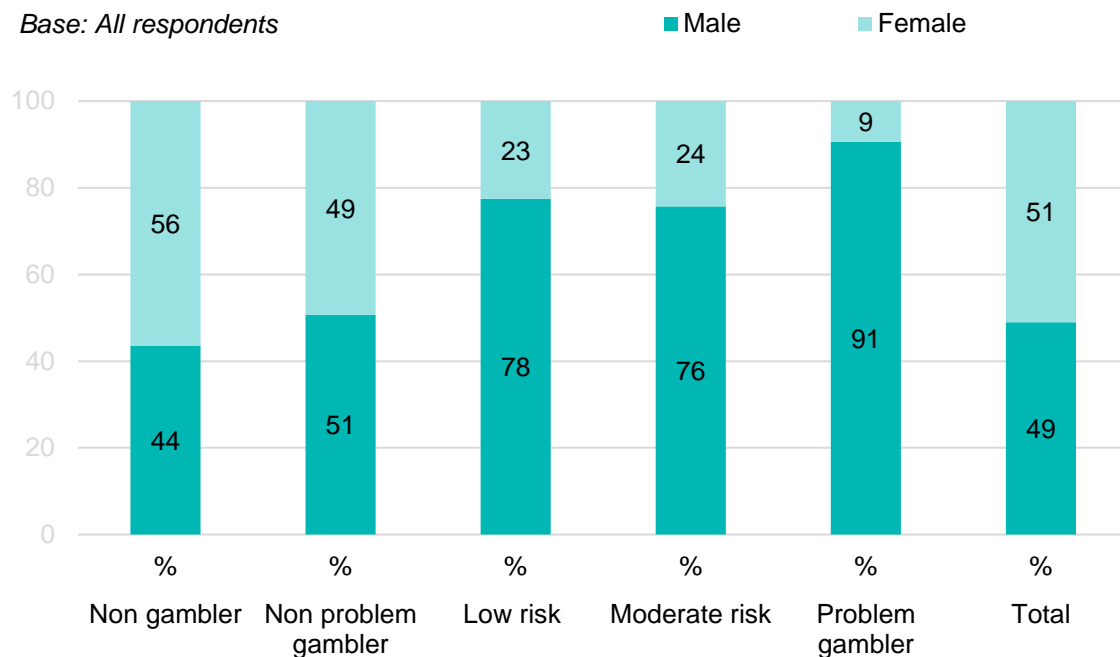
The proportion of men in each PGSI group increased as the severity of gambling increased. Problem gamblers and those classified as low and moderate risk gamblers were significantly more likely to be male; 91% of problem gamblers were men, along with 76% of moderate risk gamblers and 78% of low risk gamblers. Conversely, just over half (51%) of non-problem gamblers were men and 43% of non-gamblers, both closer to the overall population proportion of 49%. This is shown in Figure 3.2.

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<sup>20</sup> Aged 16 years and over in private households.

<sup>21</sup> Within the survey sample, 8,451 individuals were non-gamblers, 11,935 were non-problem gamblers, 466 low-risk gamblers, 187 medium-risk gamblers and 90 were identified as problem gamblers.

Figure 3:2 Gender distribution by gambling behaviour



### 3.2.2 Age and gambling behaviour

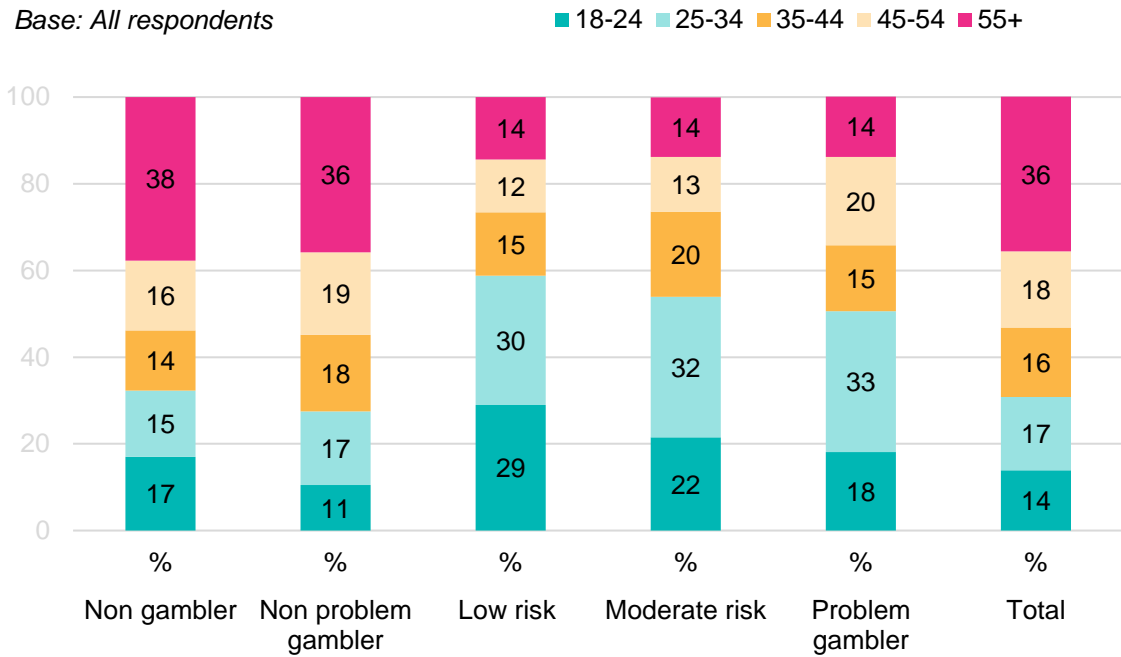
There were large differences by age. Problem gamblers and low risk and moderate risk gamblers were significantly more likely to be in their twenties and early thirties. Around a third of the problem gamblers (33%) and those classified as moderate risk gamblers (32%) were aged 25-34 years, compared with 16% in the overall population, 15% of non-gamblers and 17% of non-problem gamblers.

The age profiles of the non-gamblers and non-problem gamblers were similar to the overall population, in particular, non-gamblers and non-problem gamblers were significantly more likely to be aged 55 and over (38% and 36% respectively, compared with 14% of low risk, medium risk and problem gamblers). The non-gambler group contained the highest proportion of 16- and 17-year olds (5%), probably due to legal reasons around access and credit. There was no one aged under 18 years in the problem and moderate risk gambler groups, suggesting the prevalence of problem gambling in this age bracket is so low that no one was sampled in either the HSE or SHeS.<sup>22</sup>

A comparison of the age profiles of each group is shown in Figure 3.3.

<sup>22</sup> The Gambling Commission's survey of *Young People and Gambling 2019* estimated that 1.7% of 11 to 16 year olds were problem gamblers, with a further 2.7% moderate and low risk gamblers in this age group. <https://www.gamblingcommission.gov.uk/PDF/Young-People-Gambling-Report-2019.pdf>

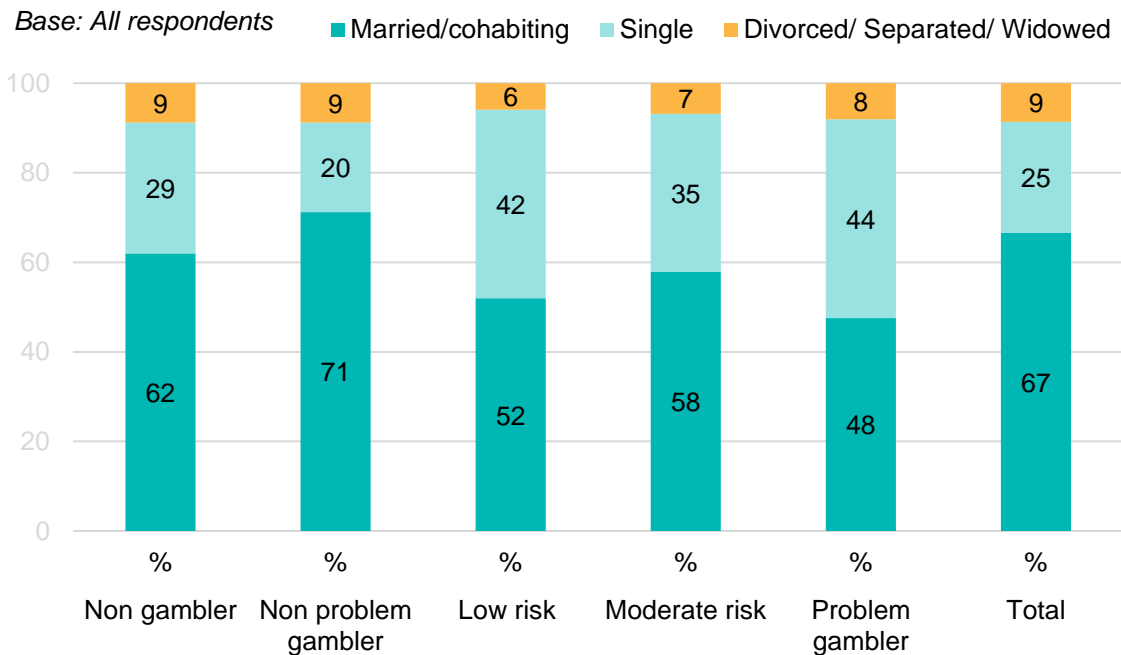
Figure 3:3 Age distribution by gambling behaviour



### 3.2.3 Marital status and gambling behaviour

Problem gamblers, moderate risk and low risk gamblers were all significantly more likely to be single than non-gamblers and non-problem gamblers, who were more likely to be married. This is shown in Figure 3.4 below.

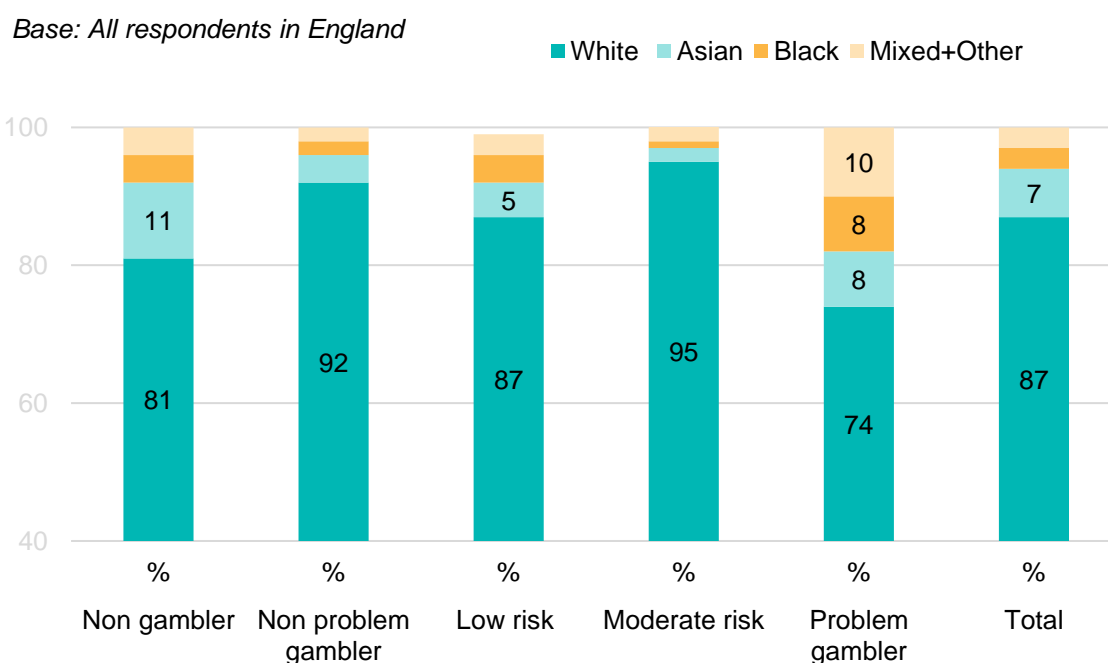
Figure 3:4 Marital status by gambling behaviour



### 3.2.4 Ethnicity and gambling behaviour

There were significant differences in gambling status by ethnicity. It should be noted that ethnicity data were only available for HSE participants and not those in SHeS, hence there is no information on the ethnicity of Scottish respondents. The data suggest an over-representation of people from a non-white background amongst the problem gamblers (where 26% were non-white, compared with 13% in the overall population), but that the moderate risk group have an under-representation with 5% of this group from a non-white background. The proportion in the low risk group was close to the overall population proportion. Within the non-gambling group 11% were from Asian backgrounds, compared with 7% in the overall population. This is shown in Figure 3.5.

Figure 3:5 Ethnicity by gambling behaviour



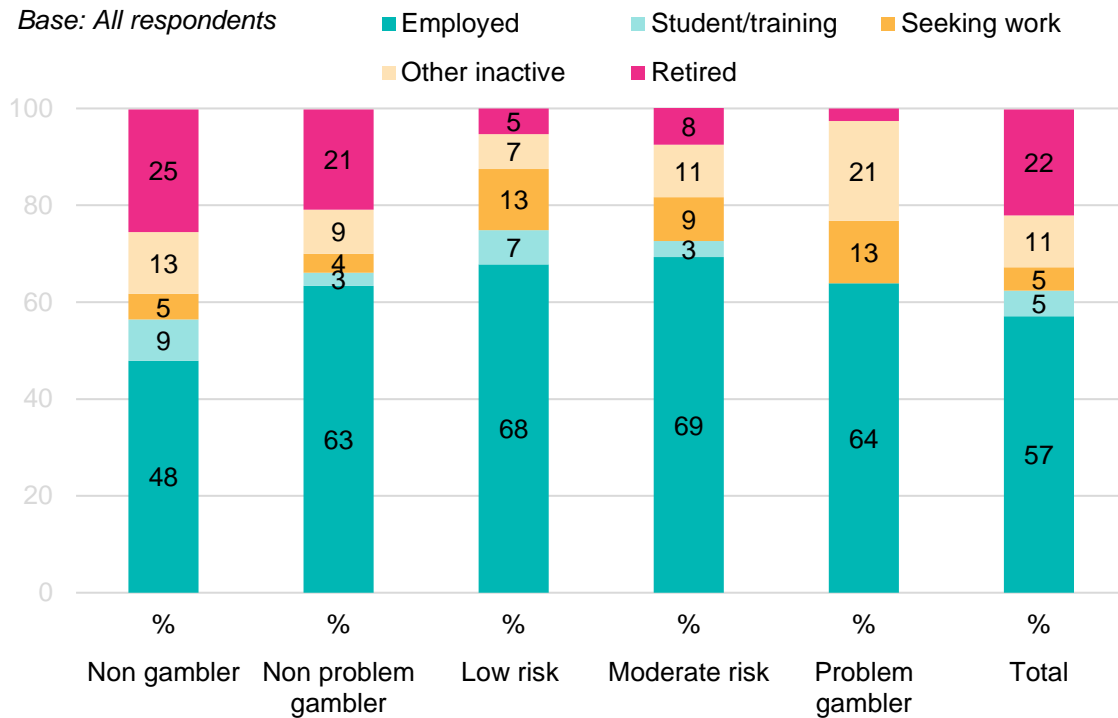
### 3.2.5 Economic status and gambling behaviour

The gambling groups contained a significantly higher proportion of individuals in employment than the non-gambling group, with 64% of problem gamblers, 69% of moderate risk gamblers, 68% of low risk gamblers and 63% of non-problem gamblers in employment, compared with 48% of non-gamblers.

Despite similarities in the proportion of employed individuals, there were some differences in the economic status among those who did gamble. Problem gamblers were more likely to be seeking work, more likely to be 'other inactive', and less likely to be either retired or students compared to those classified as low and moderate risk gambler groups. The proportion of retired people was highest in the non-gambling group, where a quarter (25%) of the group were retired, compared to 22% in the overall population. Only 3% of the problem gamblers were retired, and less than 10% in either

the low or moderate risk groups. It is likely that these differences in economic status reflect underlying age differences between groups. This is shown in Figure 3.6.

Figure 3:6 Economic status by gambling behaviour

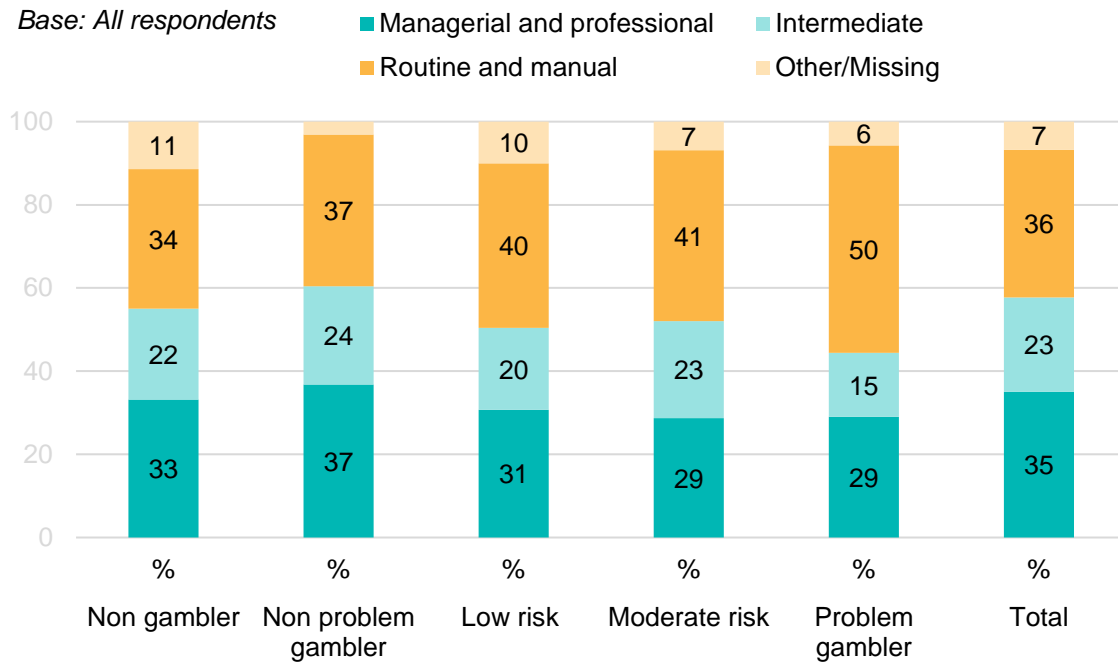


### 3.2.6 Socio-economic classification and gambling behaviour

There are also significant differences by socio-economic classification. Half (50%) of problem gamblers belonged to routine and manual occupations, compared with 41% of moderate risk gamblers, 40% of low risk gamblers and 37% of non-problem gamblers. This is shown in Figure 3.7.



Figure 3:7 Socio-economic classification by gambling behaviour

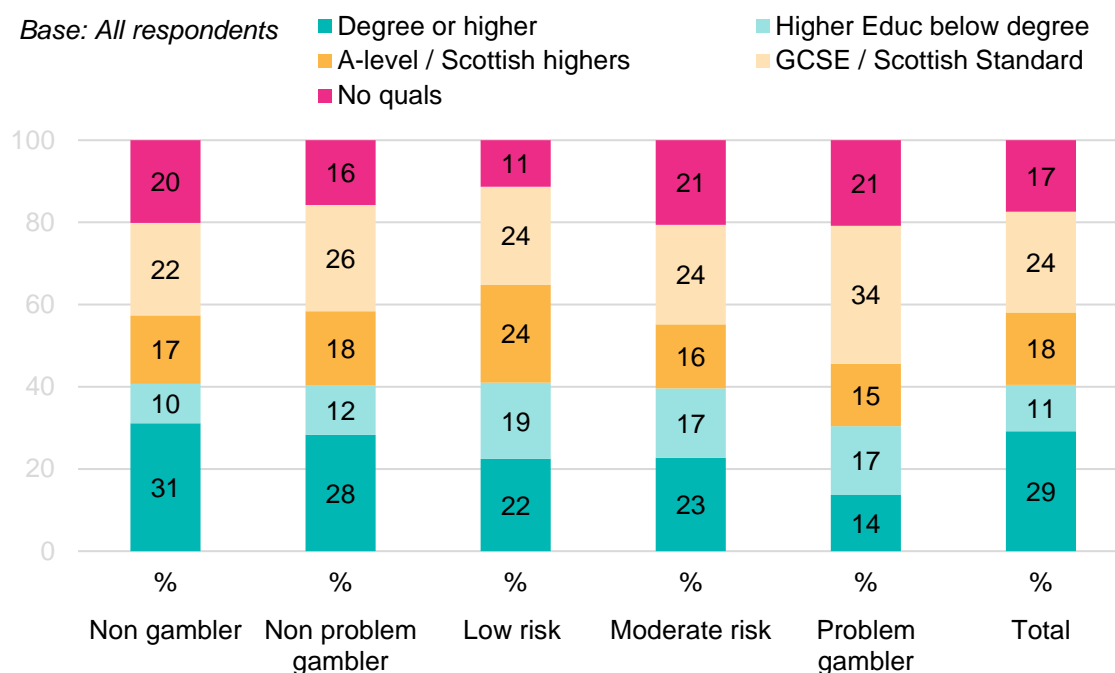


In addition, there was a lower proportion of professional and managerial occupations amongst problem gamblers (29%) and amongst moderate risk gamblers (29%) compared to either the low risk group (31%), the non-problem gambling group (37%) or the non-gambling group (33%).

### 3.2.7 Educational background and gambling behaviour

Problem gamblers were significantly less likely to have a degree-level qualification than individuals in other groups (14% of problem gamblers, compared with 22-23% of low and moderate risk gamblers and 29% in the overall population). The proportion of people with a higher education below degree level was higher amongst the low and moderate risk groups and amongst problem gamblers (19-17%, compared with 11% amongst the overall population). Problem gamblers were more likely to have GCSEs than the overall population (34% versus 24%) and slightly more likely to have no qualifications (21% versus 17%). This is shown in Figure 3.8.

Figure 3:8 Qualifications by gambling behaviour



### 3.2.8 Health and gambling behaviour

The survey data contains measures of mental and physical health. The Warwick-Edinburgh Mental Wellbeing Scale<sup>23</sup> (WEMWBS) was included in the self-completion module of both surveys. The scale consists of 14 items that measure different facets of wellbeing. Each item has five response options. The responses for all 14 items are summed to give each survey participant a single score that is designed to measure wellbeing in the general population.

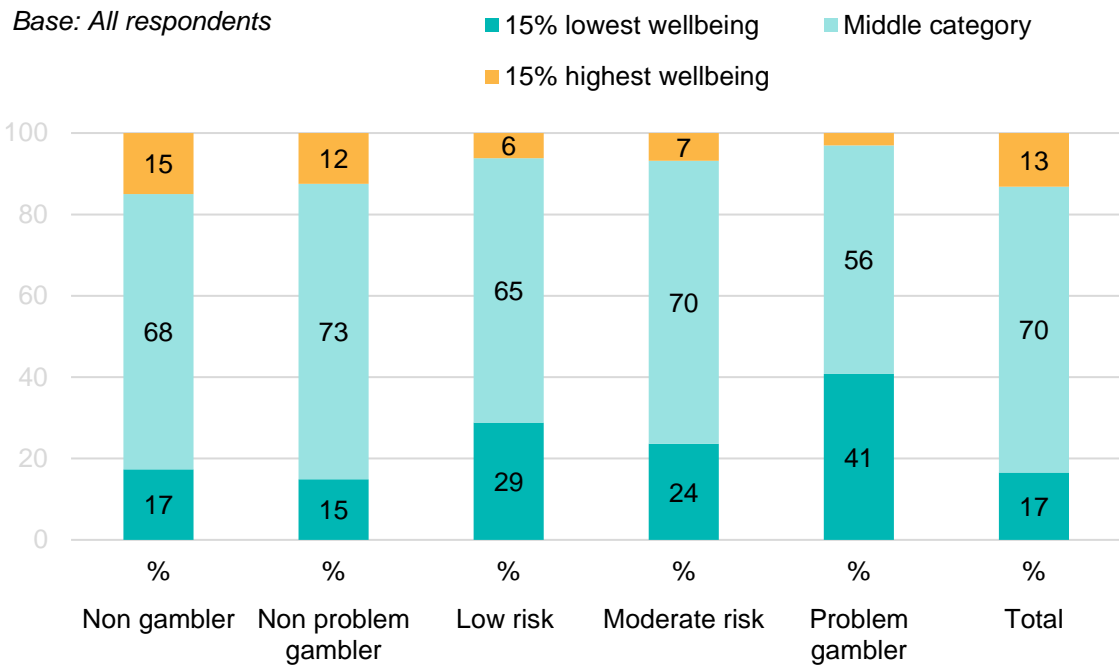
The scores were categorised, following guidance from the WEMWBS website,<sup>24</sup> to create three groups; a group containing individuals with scores relating to the 15% of the general adult population with the lowest wellbeing, a middle category, and a group containing individuals with scores relating to the 15% of the general adult population with the highest well-being. Note that the groups have been split according to population cut-offs, rather than simply taking the 15% of the sample with the highest and lowest wellbeing scores, although the distribution of the weighted sample is close to that of the population.

A comparison of WEMWBS by gambling behaviour shows that there were significant differences in wellbeing by gambling severity, with wellbeing scores decreasing as gambling becomes more problematic. Problem gamblers were more likely to be in the low wellbeing category, with 41% of problem gamblers in this category, compared to 24% of moderate risk gamblers, 29% of low risk gamblers, and 17% of the general population covered by the survey. This is shown in Figure 3.9 below.

<sup>23</sup> Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS) © NHS Health Scotland. The University of Warwick and University of Edinburgh, 2006, all rights reserved.

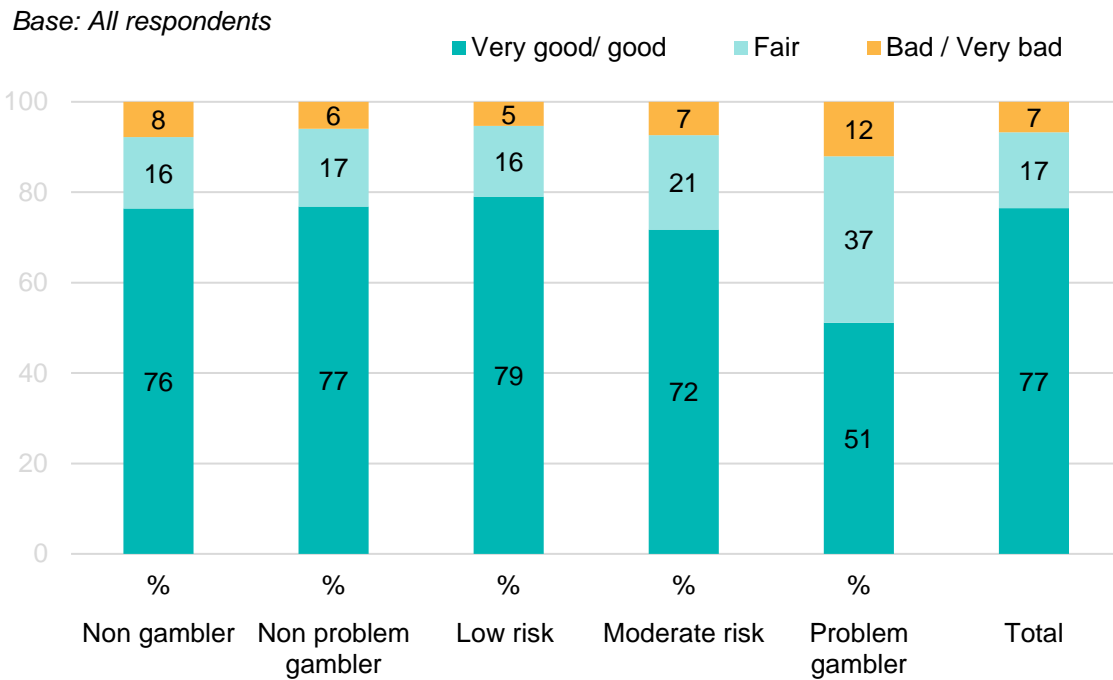
<sup>24</sup> <https://warwick.ac.uk/fac/sci/med/research/platform/wemwbs/using/howto/>

Figure 3:9 Mental wellbeing by gambling behaviour



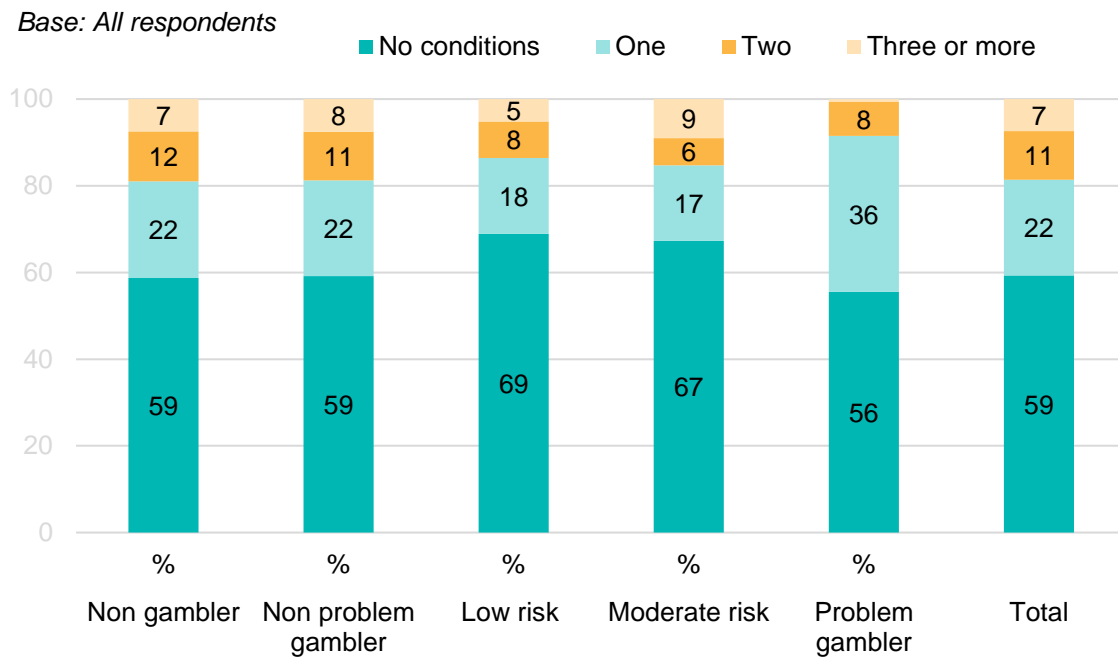
A less clear-cut pattern was seen for physical health. When looking at self-assessed general health, problem gamblers were less likely to report good or very good health, with only 51% doing so, compared to 77% in the overall population. The proportion of low risk gamblers reporting good or very good health was very close to that of the general population (79%), as was the proportion for moderate risk gamblers (72%). This can be seen in Figure 3.10.

Figure 3:10 Self-assessed health by gambling behaviour



It was also possible to look at the number of long-term health conditions an individual had. The relationship between number of health conditions and gambling behaviour is mixed. Problem gamblers were more likely to have a single condition, with 36% of problem gamblers reporting a single long-term health condition compared to 22% of the general population. However, this group was also least likely to report three or more conditions, with less than one per cent of problem gamblers doing so, compared to 7% of the general population. This is shown in Figure 3.11 below.

Figure 3:11 Number of long-term health conditions by gambling behaviour

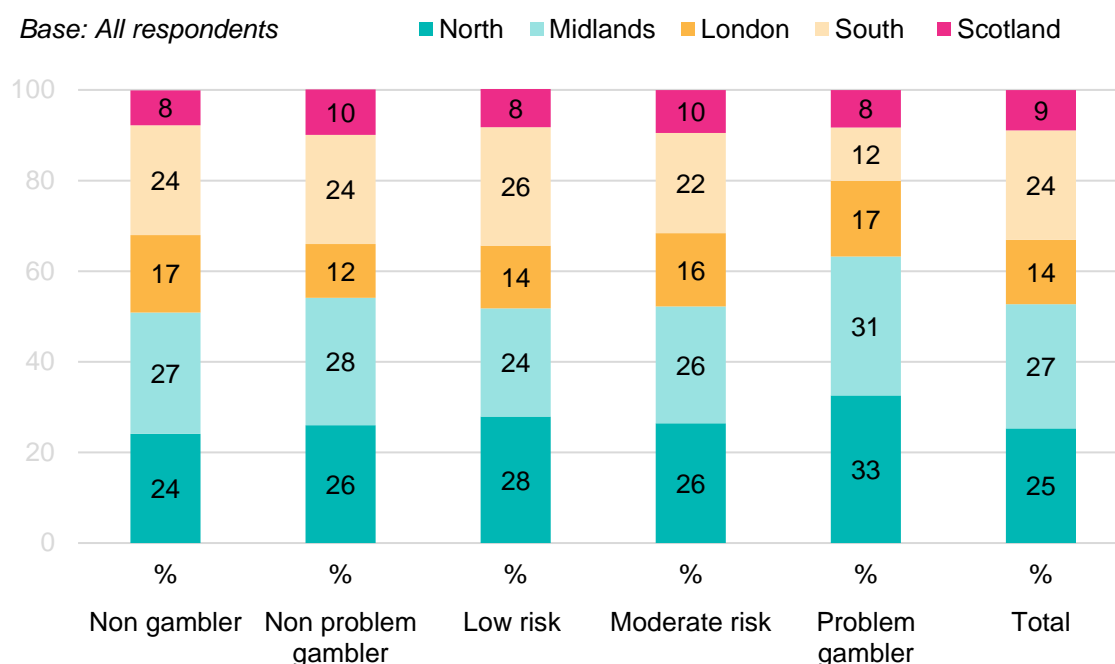


It is likely that underlying differences in age distribution contributed to this pattern, since the non-gambling group contained a larger proportion of older people who were more likely to have long term health conditions. However, the small size of the gambling population meant it was not possible to look at the relationship between number of health conditions and gambling behaviour within different age groups.

### 3.2.9 Region and gambling behaviour

There were significant differences by region. Problem gamblers were more likely to live in the north of England (North East, North West or Yorkshire and Humber), with 33% of problem gamblers being located in these areas, compared to 25% of the overall population. There was also a smaller proportion of problem gamblers living in the south (South East or South West) compared to the overall population (12% versus 24%). Other differences are smaller; with no discernible pattern evident between these groups. Similarly, the proportion of Scottish respondents in each group did not differ greatly with gambling status. This is shown in Figure 3.12 below.

Figure 3:12 Regional differences by gambling behaviour



### 3.3 Gambling behaviour amongst the general population

The PGSI score is based on nine items that ask about patterns of gambling behaviour, how individuals feel about their gambling, and some perceived consequences of gambling. Table 3.1 shows the proportion of respondents saying ‘almost always’ or ‘most of the time’ in response to each PGSI item. Whilst the nature of the index means problem gamblers are more likely to experience each item, there are differences in the distribution of responses between groups:

- For the low risk gamblers, the most common responses were going back another day to try (2.6%), followed by feeling they bet more than they could afford (0.7%).
- For moderate risk gamblers, going back another day to try again was also the most common response. The next most common response was feelings of guilt. It was also relatively common for moderate risk gamblers to feel they had bet more than they could afford, although a low proportion felt their gambling was causing financial problems and very few reported regularly borrowing money or selling items to get money to gamble. Around 3% of moderate risk gamblers felt they might have a problem with gambling almost always or most of the time.
- For problem gamblers, the most common response was feelings of guilt, followed by going back another day to try again, and feeling they have bet more than they could afford. A high proportion (38%) felt that their gambling was causing financial difficulties almost always or most of the time, whilst 48% felt they might have a problem.

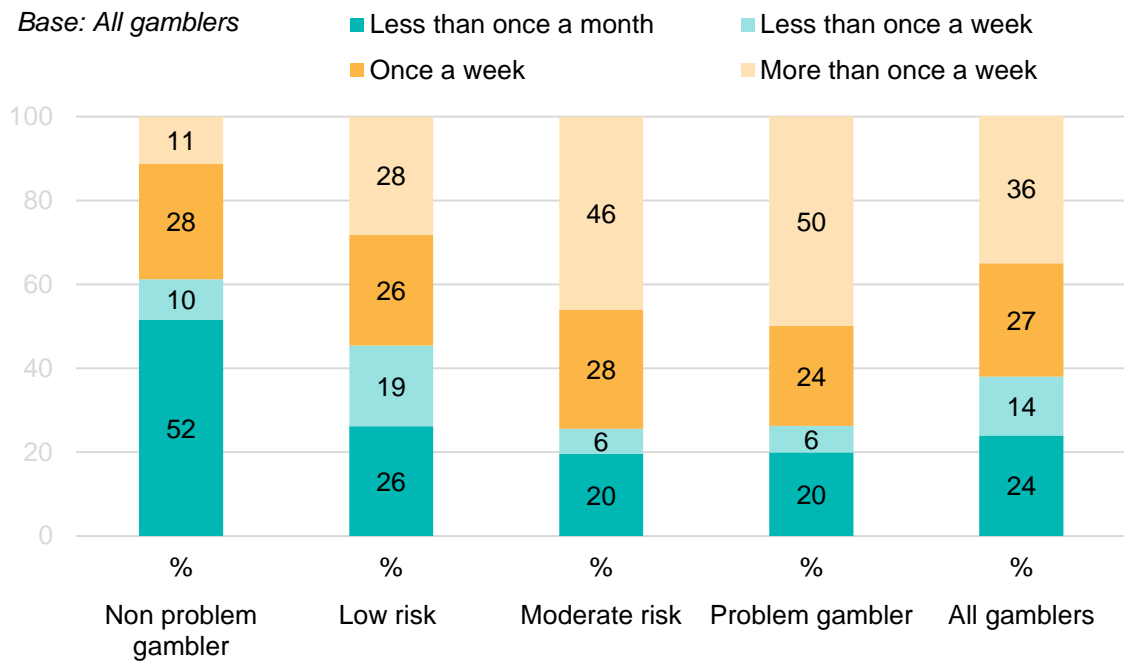
Table 3:1 Common responses to PGSI items by gambling severity			
<i>Base: all gamblers with a PGSI score</i>	<i>Survey data</i>		
	Individuals responding 'almost always' or 'most of the time'		
PGSI items	Low risk	Moderate risk	Problem gamblers
	%	%	%
How often have you bet more than could afford	0.7	3.2	49.6
How often needed to gamble with larger amounts	0.0	2.8	35.6
How often gone back another day to try	2.6	6.8	53.0
Borrowed money or sold anything to get money to gamble	0.0	0.2	24.2
Felt might have a problem with gambling	0.0	2.6	47.9
Felt gambling caused health problems (incl stress/anxiety)	0.0	1.1	35.5
Been criticised for betting, told have a gambling problem	0.2	2.4	45.8
Felt gambling caused financial problems self/household	0.0	0.2	37.9
Felt guilty about way gamble/ what happens when gamble	0.0	4.4	57.3
<i>Bases</i>	<i>466</i>	<i>188</i>	<i>90</i>

### 3.3.1 Gambling frequency

As expected, there were significant differences between groups in the frequency of gambling, the number of gambling activities, and the specific gambling activities that are chosen.

Problem gamblers and those classified as low and moderate gamblers, tended to gamble more frequently, with frequency increasing as gambling behaviour becomes more problematic. Half (50%) of the problem gamblers gambled at least once a week, compared with 46% of the moderate risk group, 28% of the low risk group, and 11% of non-problem gamblers. This is shown in Figure 3.13.

Figure 3:13 Frequency of gambling by gambling severity



### 3.3.2 Gambling activities amongst gamblers

A greater number of activities were reported by problem, moderate risk and low risk gambler groups. Non-problem gamblers reported spending money on an average of 1.2 activities over the past 12 months. This rose to an average of 4.0 for low risk gamblers, 4.9 for moderate risk gamblers and 5.7 for problem gamblers. There were also some differences in the types of activity. The five most common gambling activities reported are shown in Table 3.2. Whilst there are some differences by gambling severity, for all gamblers the most reported activity is the national lottery.



**Table 3:2 Five most commonly reported activities by gambling severity**

<i>Base: all gamblers</i>		<i>Survey data</i>	
Individuals reporting each activity (percentage in brackets)			
<b>Non-problem gamblers</b>	<b>Low risk</b>	<b>Moderate risk</b>	<b>Problem gamblers</b>
National lottery (82%)	National lottery (74%)	National lottery (69%)	National lottery (70%)
Scratch cards (34%)	Scratch cards (58%)	Scratch cards (59%)	Virtual gaming (61%)
Betting on horse races (16%)	Online betting for sports events (46%)	Online betting (51%),	Fruit and slot machines (61%)
Fruit or slot machines (10%)	Betting on horse races (34%)	Betting on horse races (40%)	Scratch cards (57%)
Online betting on sports events (10%)	Betting on sports events (34%).	Fruit and slot machines (39%)	Betting on horse races (49%).
<i>Base = 11,935</i>	<i>Base = 466</i>	<i>Base = 188</i>	<i>Base = 90</i>

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## 4 Characteristics of gamblers accessing treatment

### 4.1 Background

This section used data from the GambleAware Data Reporting Framework (DRF) to explore the characteristics of individuals who are problem gamblers, or moderate risk and low risk gamblers, and are accessing treatment. In particular, the aim of this section was to:

- Outline the proportion of gamblers in treatment who are problem gamblers or low and moderate risk gamblers;
- Describe the characteristics of low risk, moderate risk and problem gamblers in treatment;
- Explore differences in the gambling behaviour of low risk, moderate risk and problem gamblers in treatment; and
- Highlight where there are differences in treatment between low risk, moderate risk and problem gamblers.

The individuals accessing treatment are a specific sub-sample of the general population of gamblers. The fact that these individuals have sought treatment, often voluntarily,<sup>25</sup> makes it more likely that they are different in some ways to the general population. It is expected that a higher proportion of those accessing treatment are problem gamblers, since it can be argued that the gambling behaviour of those accessing treatment is likely to be more severe and to be impacting more heavily on their lives. This is based on the DRF data, where the majority of individuals are classified as problem gamblers by their PGSI scores (8+)<sup>26</sup>; 97% of individuals in the DRF data were problem gamblers and 3% were moderate risk gamblers. This is shown in Figure 4.1.

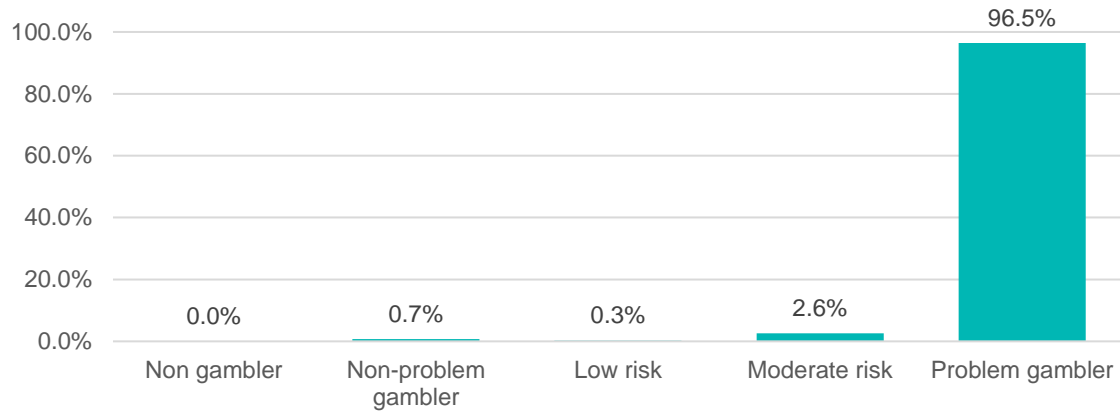
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<sup>25</sup> The bulk of individuals are self-referrals; 91% of problem gamblers and 92% of moderate risk gamblers. Less than 1% in each group have been referred by the police/courts/probation service.

<sup>26</sup> Not all cases in DRF had a PGSI score. Gaining a score was dependent on the individual being referred onwards for treatment and subsequently attending their first session, just over a third (34%) of cases in the DRF were either not referred onwards or had been referred but did not attend their session. These cases have been removed from the data. For the remaining cases, the PGSI score from their initial visit is used.

Figure 4:1 Gambling behaviour of those accessing treatment

Base: All respondents  
(n = 7952)



By its nature, the DRF data contained very few individuals at low risk and very few non-problem gamblers. This section therefore focuses only on those who were problem gamblers or in the moderate risk category.

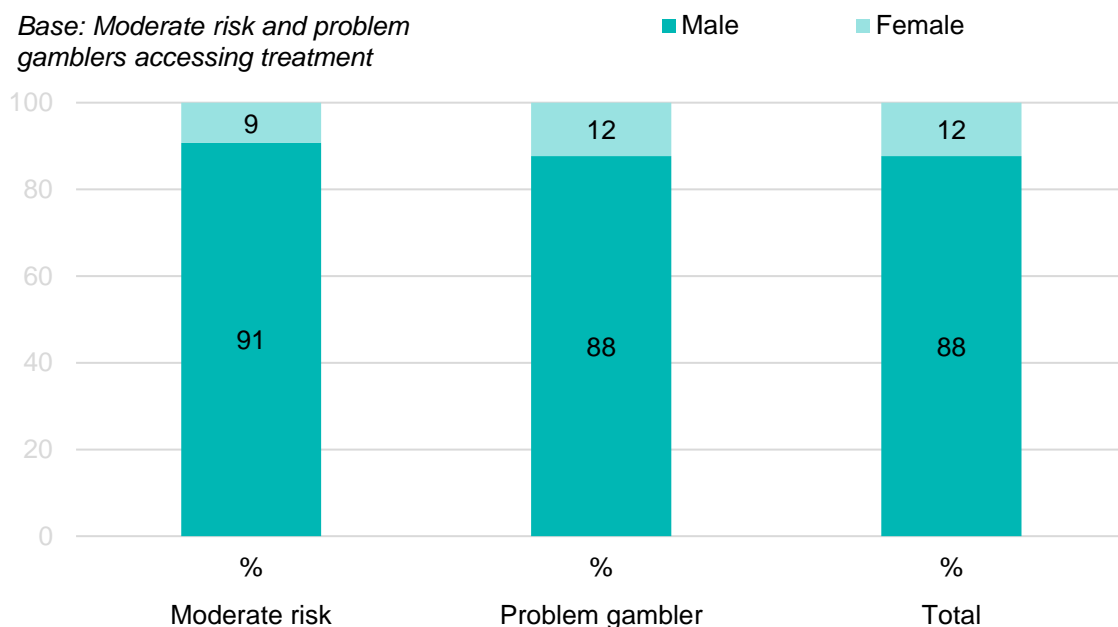
## 4.2 Socio-demographic characteristics of those accessing treatment

There were some differences in the socio-demographic characteristics of individuals accessing treatment who are problem gamblers and moderate risk gamblers.

### 4.2.1 Gender of gamblers in treatment

The DRF data contains a higher proportion of men; 88% of problem gamblers and 91% moderate risk gamblers were male. This is shown in Figure 4.2.

Figure 4:2 Gender distribution of those accessing treatment

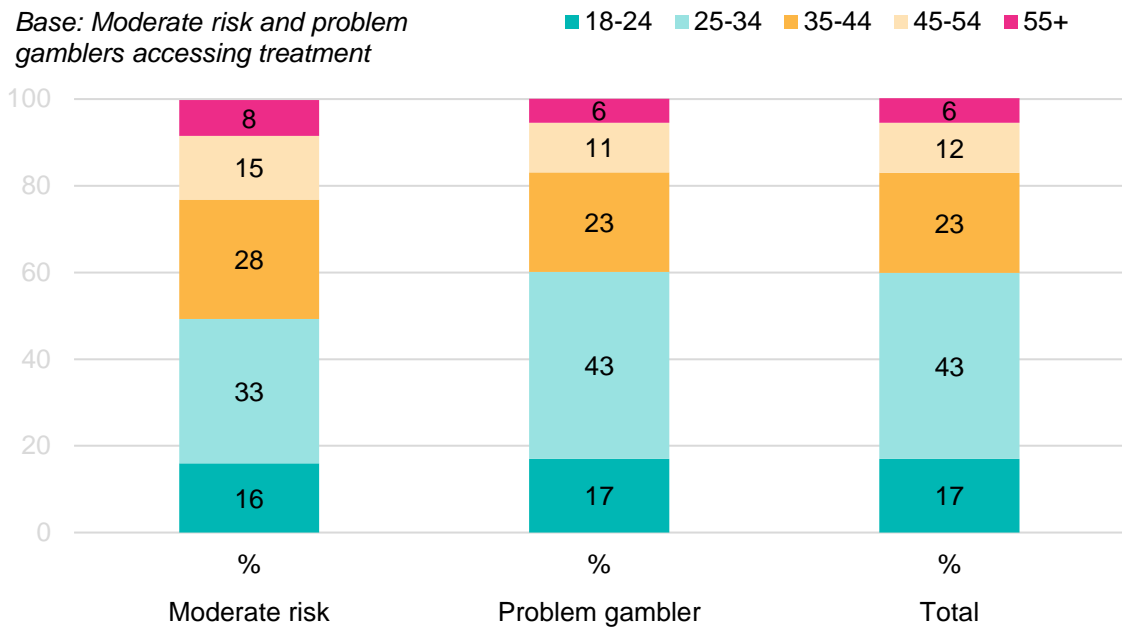


### 4.2.2 Age of gamblers in treatment

The most common age range for problem gamblers and moderate risk gamblers in treatment was mid-twenties and early thirties.<sup>27</sup> There were some significant differences between the age profiles of problem gamblers and moderate risk gamblers; 43% of problem gamblers were aged 25-34 years, compared with a third (33%) of moderate risk gamblers. In both gambling groups there were very few individuals aged 55 years or over, with a smaller proportion of problem gamblers aged 55 or over (6%) than moderate risk gamblers (8%). This is shown in Figure 4.3.

<sup>27</sup> Based on age at first treatment

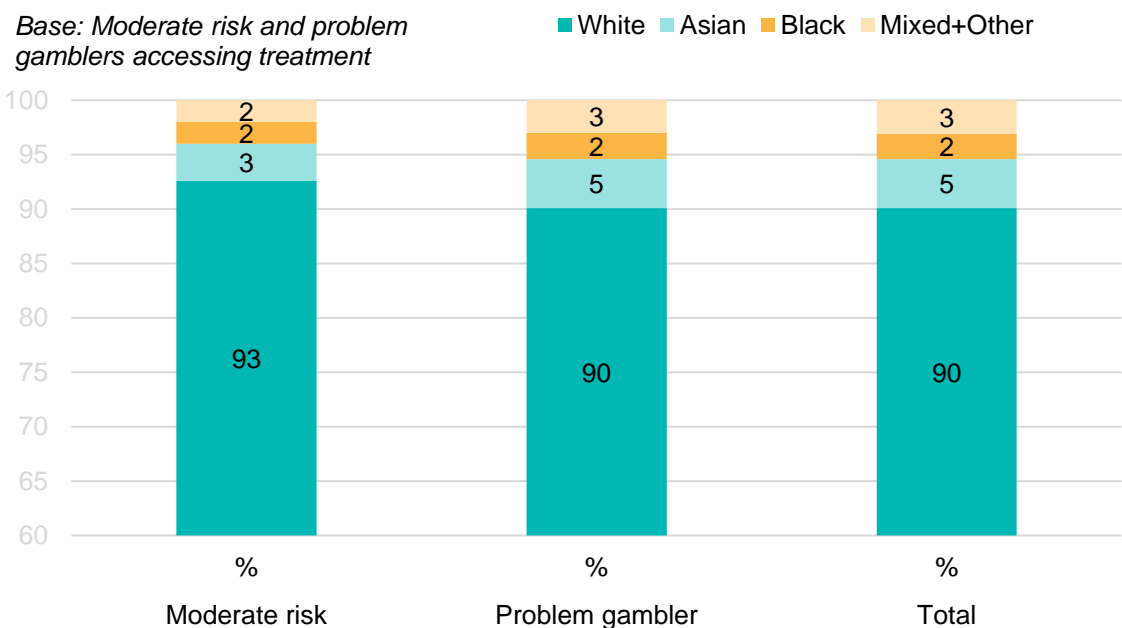
**Figure 4:3** Age distribution of those accessing treatment



### 4.2.3 Ethnicity of gamblers in treatment

Most of the individuals accessing treatment were from white ethnic backgrounds; 90% of problem gamblers and 93% of moderate risk gamblers. The proportion of individuals from a non-white ethnic background was significantly higher for problem gamblers than those in the moderate risk category. This is shown in Figure 4.4.

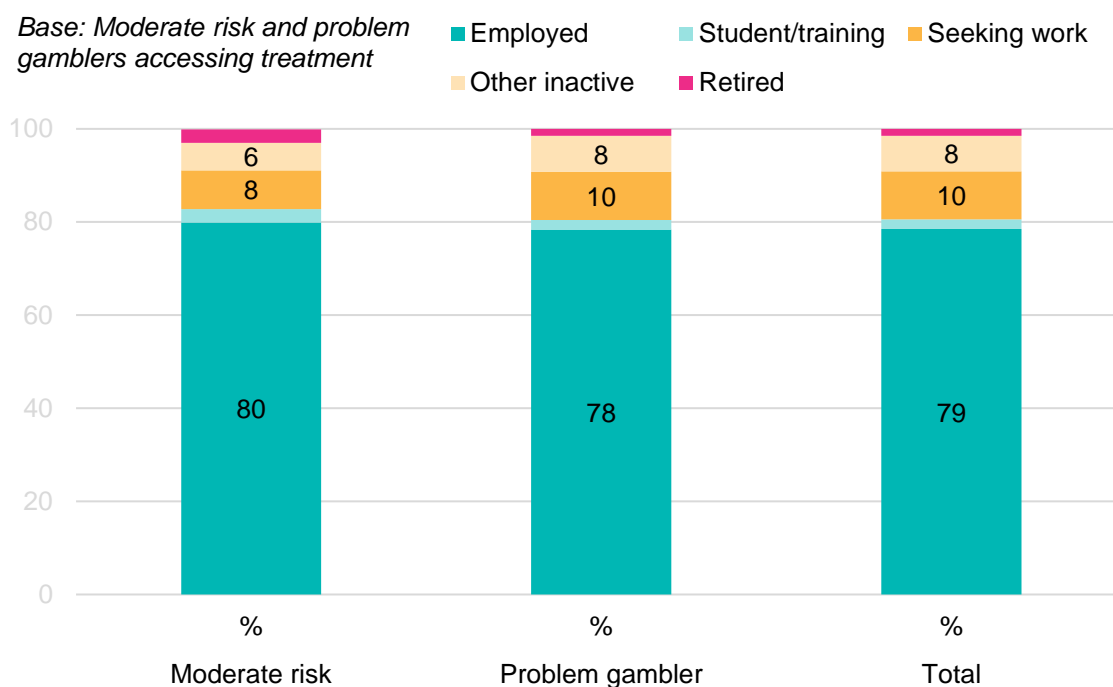
**Figure 4:4** Ethnicity of those accessing treatment



## 4.2.4 Economic status of gamblers in treatment

The majority of individuals who accessed treatment were in employment. There were very few retired people accessing treatment, reflecting the age structure of the treatment group. The proportion of problem gamblers in employment was slightly lower than the proportion of moderate risk gamblers in employment (78% versus 80%). This group also contained more people who were economically inactive but seeking work or classed as 'other inactive'; 10% of problem gamblers were seeking work, compared to 8% of moderate risk gamblers, similarly 8% of problem gamblers were classed as 'other inactive', compared with 6% of moderate risk gamblers. This is shown in Figure 4.5.

Figure 4:5 Economic status of those accessing treatment

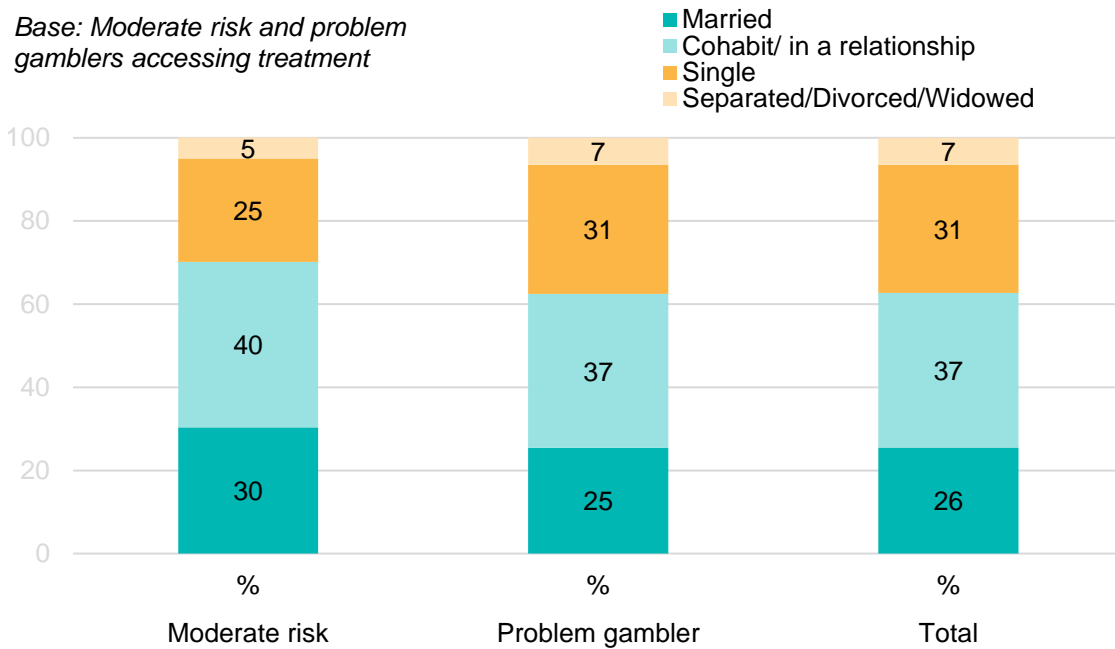


## 4.2.5 Relationship status of gamblers in treatment

There were some differences in relationship status by PGSI category in the DRF data. Problem gamblers were less likely to be in a relationship. A quarter of problem gamblers were married, compared with 30% of moderate risk gamblers, similarly, 37% of problem gamblers were cohabiting or in a relationship<sup>28</sup>, compared with 40% of moderate risk gamblers. Nearly a third (31%) of problem gamblers were single, compared with a quarter (25%) of moderate risk gamblers. This is shown in Figure 4.6 below.

<sup>28</sup> The DRF data collects the individual is in a relationship. It does not separate out those in a relationship and cohabiting from those who are in a relationship but living separately.

Figure 4:6 Relationship status of those accessing treatment



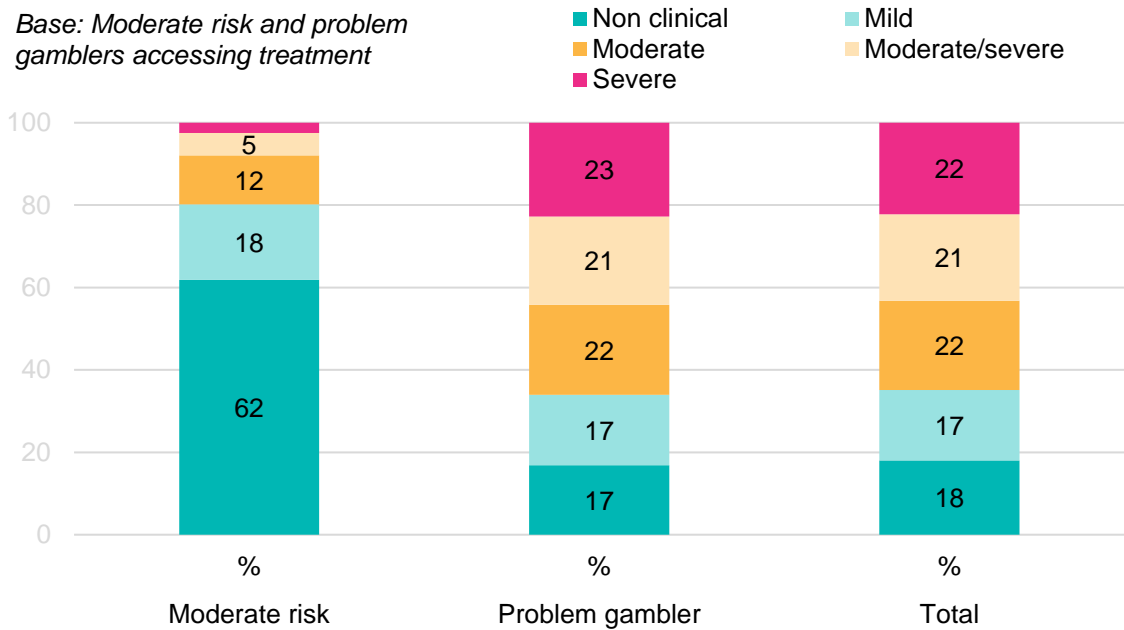
#### 4.2.6 Health of gamblers in treatment

The DRF includes the ten item Clinical Outcomes in Routine Evaluation (CORE10) measure of mental health.<sup>29</sup> CORE10 is a set of ten items that cover different aspects of mental distress. Each item is scored from zero (not at all) to four (most or all of the time), then summed to give a single score ranging from zero to 40. These scores are categorised so that a score of 10 or below is within the non-clinical range. Within the clinical range, the scores of 11-15=mild; 16-20=moderate; 21-25=moderate/severe; and 25 or over=severe.

Problem gamblers in treatment were significantly more likely to have mental health issues than moderate risk gamblers in treatment; with 23% categorised as having 'severe' problems, compared to 2% of moderate risk gamblers. A further 21% of problem gamblers were classed as moderate/severe, compared to 5% of moderate risk gamblers. This suggests that, even within the treatment group, there is a large difference in the mental health of problem gamblers and moderate risk gamblers. This is shown in Figure 4.7 below.

<sup>29</sup> <https://www.coresystemtrust.org.uk/>

Figure 4:7 Mental health of those accessing treatment

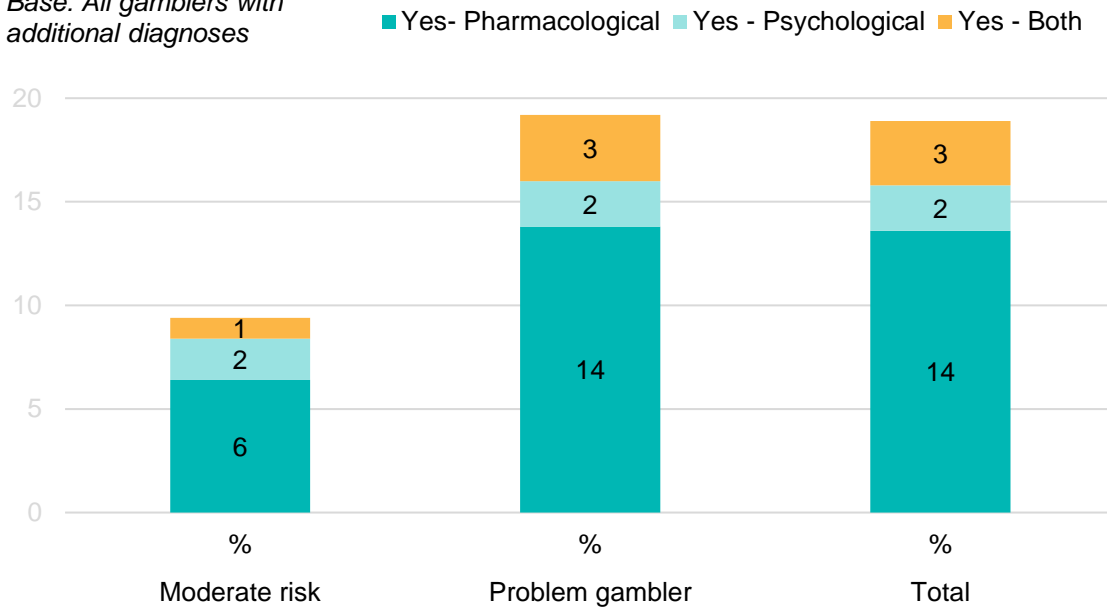


The DRF data did not contain any information about physical health. However, it contained information about other, co-occurring problems the individual may have, specifically whether they have additional diagnoses, and whether these additional diagnoses are pharmacological or psychological in nature. Problem gamblers were significantly more likely to have additional co-morbidities; 14% of problem gamblers had an additional pharmacological issue, 2% had an additional psychological issue, and 3% had both. The corresponding figures for moderate risk gamblers were 6%, 2% and 1%. This is shown in Figure 4.8.



Figure 4:8 Additional diagnoses of those accessing treatment

Base: All gamblers with additional diagnoses



#### 4.2.7 Country of residence of gamblers in treatment

The DRF data covers both Scotland and England, however, only 4% of problem gamblers and 2% of moderate risk gamblers in this sample are Scottish residents.

### 4.3 Gambling behaviour of those accessing treatment

The DRF contains information about gambling activities, frequency of gambling, past gambling behaviour and consequences of gambling. These areas will be explored in this section. However, the data available for this report did not include a breakdown of the items used to generate the PGSI score, hence it is not possible here to investigate which items are contributing most to the overall PGSI score in the DRF data.

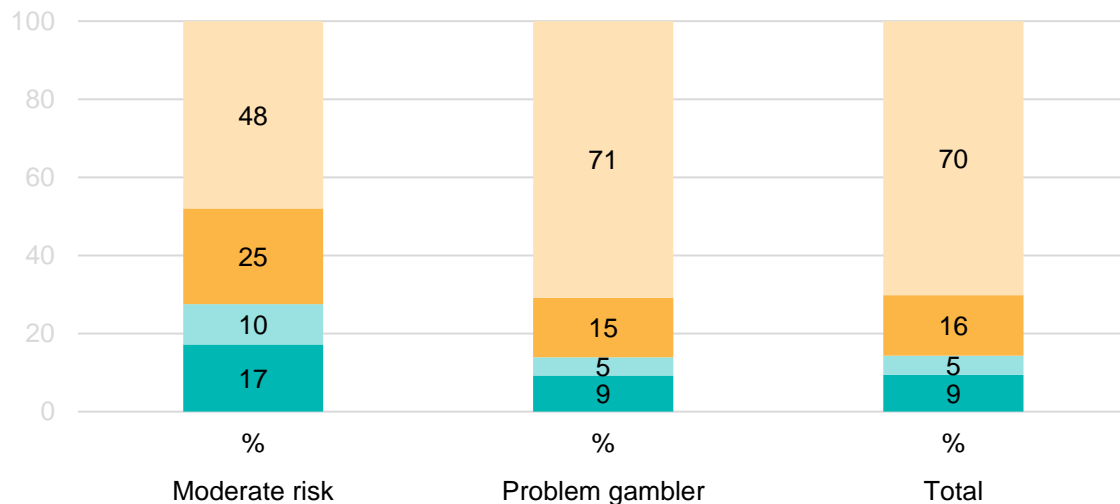
### 4.3.1 Gambling frequency and gambling activities of the in-treatment population

As expected, problem gamblers report a significantly higher frequency of gambling than moderate risk gamblers. Nearly three quarters (71%) of problem gamblers reported gambling more than once a week, compared with around half (48%) of moderate risk gamblers, a further 15% of problem gamblers reported gambling at least once a week, compared to a quarter (25%) of moderate risk gamblers. This is shown in Figure 4.9.

Figure 4:9 Gambling frequency in the last month for those accessing treatment

Base: Moderate risk and problem gamblers accessing treatment

■ Don't know      ■ Less than once a month  
■ Once a week      ■ More than once a week



As well as gambling more frequently, problem gamblers spend greater amounts of money gambling. Problem gamblers have an average monthly spend of £2,095, compared with £1,178 for moderate risk gamblers.

### Gambling activities

There were few differences in types of gambling activities being carried out. For moderate risk gamblers, the top three reported activities were identical to those reported by the problem gamblers. These are shown in Table 4.1.

Table 4:1 Five most commonly reported activities by gambling severity	
Base: all gamblers	Survey data
Individuals reporting each activity (percentage in brackets)	
Moderate risk gamblers	Problem gamblers
Online gambling (29%)	Online gambling (33%)
Virtual gaming machines in a bookmaker (25%)	Virtual gaming machines in a bookmaker (29%)
Online betting with a bookmaker on any event or sport (24%)	Online betting with a bookmaker on any event or sport (25%)
Betting on horse races (13%)	Betting on other events (18%)
Table games, such as roulette (12%)	Betting on horse races (12%)
<i>Base = 204</i>	<i>Base = 7,672</i>

Most individuals only reported one activity, presumably the main activity rather than an exhaustive list of all gambling activities carried out. This means it is not possible to investigate co-occurring gambling activities using the DRF data.

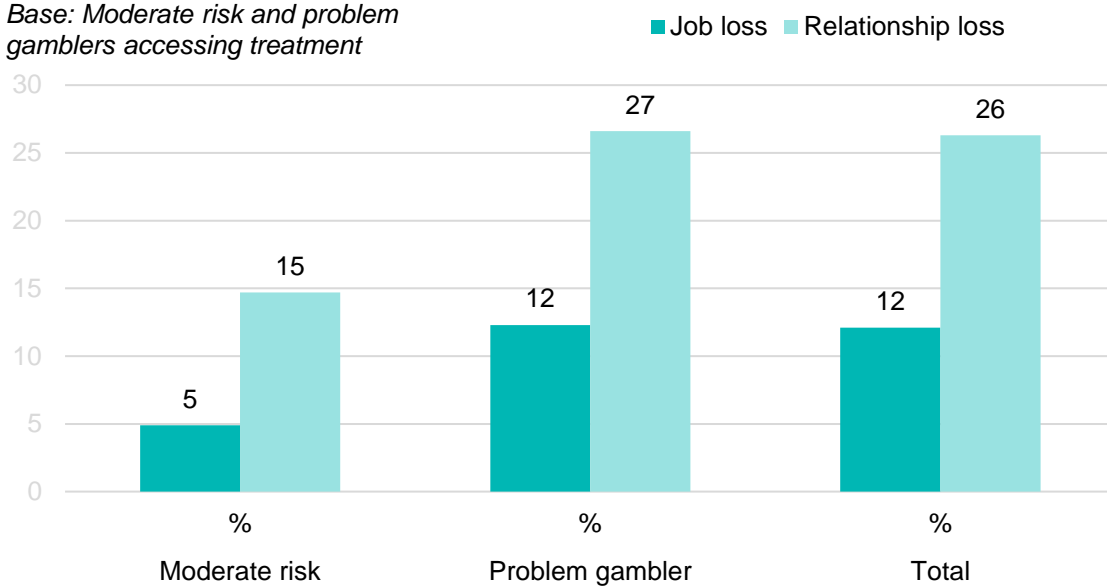
The DRF includes information about early gambling behaviour reported by each gambling group. Problem gamblers report a lower average age of gambling onset at 26 years, compared to 29 years for moderate risk gamblers. Problem gamblers were also more likely to report a big early win, with 61% saying this, compared to 51% of moderate risk gamblers. There were some differences in the average length of time that individuals had spent gambling, with problem gamblers reporting a shorter time period. On average, problem gamblers had been gambling for 148 months compared with 153 months for moderate risk gamblers.

### 4.3.2 Impact of gambling for those in treatment

Those accessing treatment were asked about the impact their gambling has had on relationships and jobs. Problem gamblers were significantly more likely to report relationship or job loss due to their gambling behaviour, with 12% reporting job loss compared to 5% of moderate risk gamblers and, 27% reporting relationship breakdown, compared to 15% of moderate risk gamblers. This is shown in Figure 4.10.

Figure 4:10 Relationship and job loss of those accessing treatment

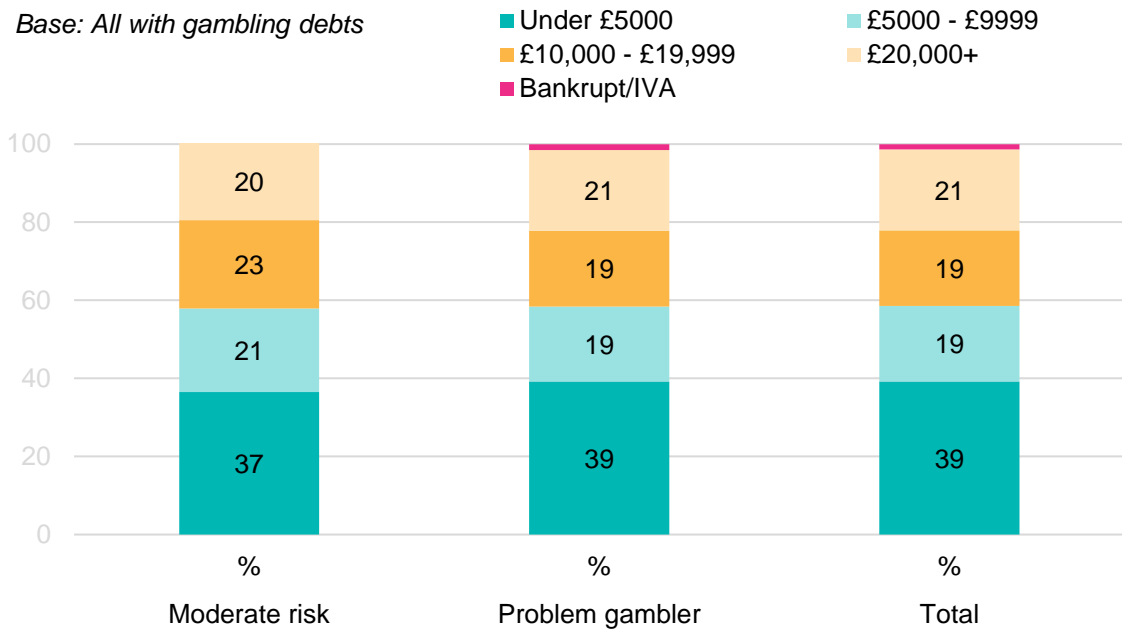
Base: Moderate risk and problem gamblers accessing treatment



In addition to relationship and job loss, problem gamblers were also significantly more likely to be in debt due to gambling. Over two thirds (68%) of problem gamblers reported being in some form of debt, compared to just under a third (32%) of moderate risk gamblers. Problem gamblers were more likely to have had to declare bankruptcy or an IVA, although this was less than 1% of the total of problem gamblers in debt.

However, when looking at problem gamblers and moderate risk gamblers who had gambling debts, the general distribution of debt for the two groups was not significantly different, with 21% of problem gamblers owing more than £20,000, compared to 20% of moderate risk gamblers and, 58% of both groups owing less than £10,000. This is shown in Figure 4.11.

Figure 4:11 Debts of those accessing treatment



In this chapter we summarised the characteristics of gamblers in treatment. There were some similarities and differences between the profiles of gamblers in the general population and the profiles of the gamblers accessing treatment. This is explored further in Section 5.

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## 5 Comparison of gamblers in treatment and in the general population

This section compares problem gamblers accessing treatment to the wider population of problem gamblers to identify how their characteristics differ. The overall aim was to identify any distinctive characteristics of problem gamblers who do not access treatment and provide further evidence of knowledge or treatment gaps identified by the REA. Therefore, this section aimed to:

- Compare the distribution of the PGSI scores of those in treatment and the general population to identify whether there are differences in the gambling severity of the two groups;
- Compare the socio-demographic characteristics of those in treatment to the general population to identify whether there are differences in the types of people accessing treatment;
- Compare differences in the gambling behaviour of those in treatment to the general population and flag whether there are differences in the nature of gambling; and
- Use a logistic regression model to improve understanding of the relationship between socio-demographic characteristics and gambling behaviour, and to understand how these relate to accessing treatment.

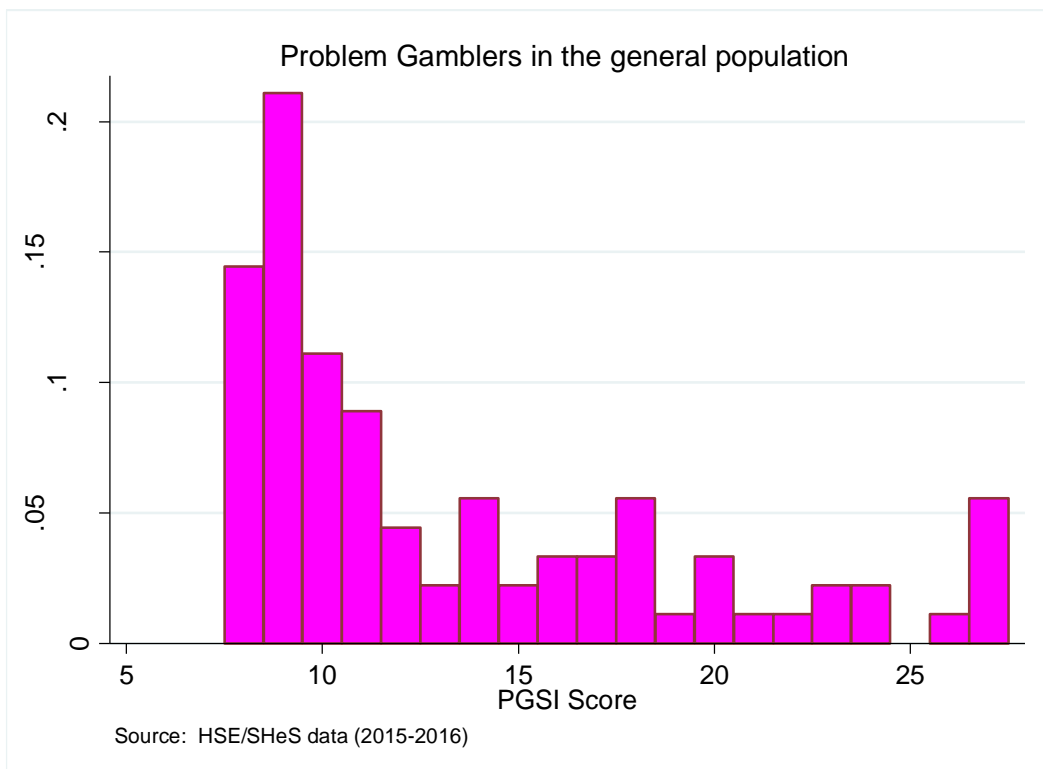
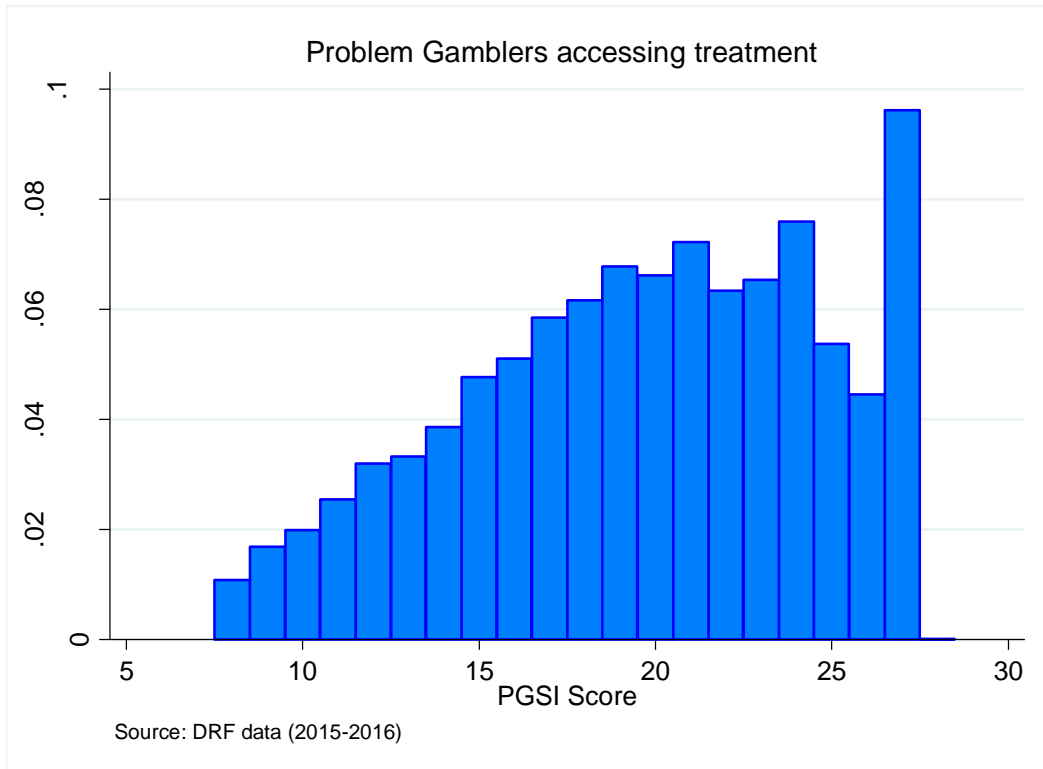
This analysis was necessarily constrained by what comparable information is available in both data sources. The comparison was also restricted to those classed by their PGSI scores as either a problem gambler or a moderate risk gambler. Any low risk cases, non-problem gamblers or non-gamblers are excluded, since there were too few of these cases in the DRF data to analyse.

### 5.1 PGSI scores of gamblers in treatment and in the general population

The first step was to compare the PGSI scores of those accessing treatment (DRF) and the general population (combined health surveys). The comparison was made for problem gamblers and repeated for moderate risk gamblers. The aim was to ascertain whether individuals accessing treatment had a different distribution of scores to the individuals in the general population.

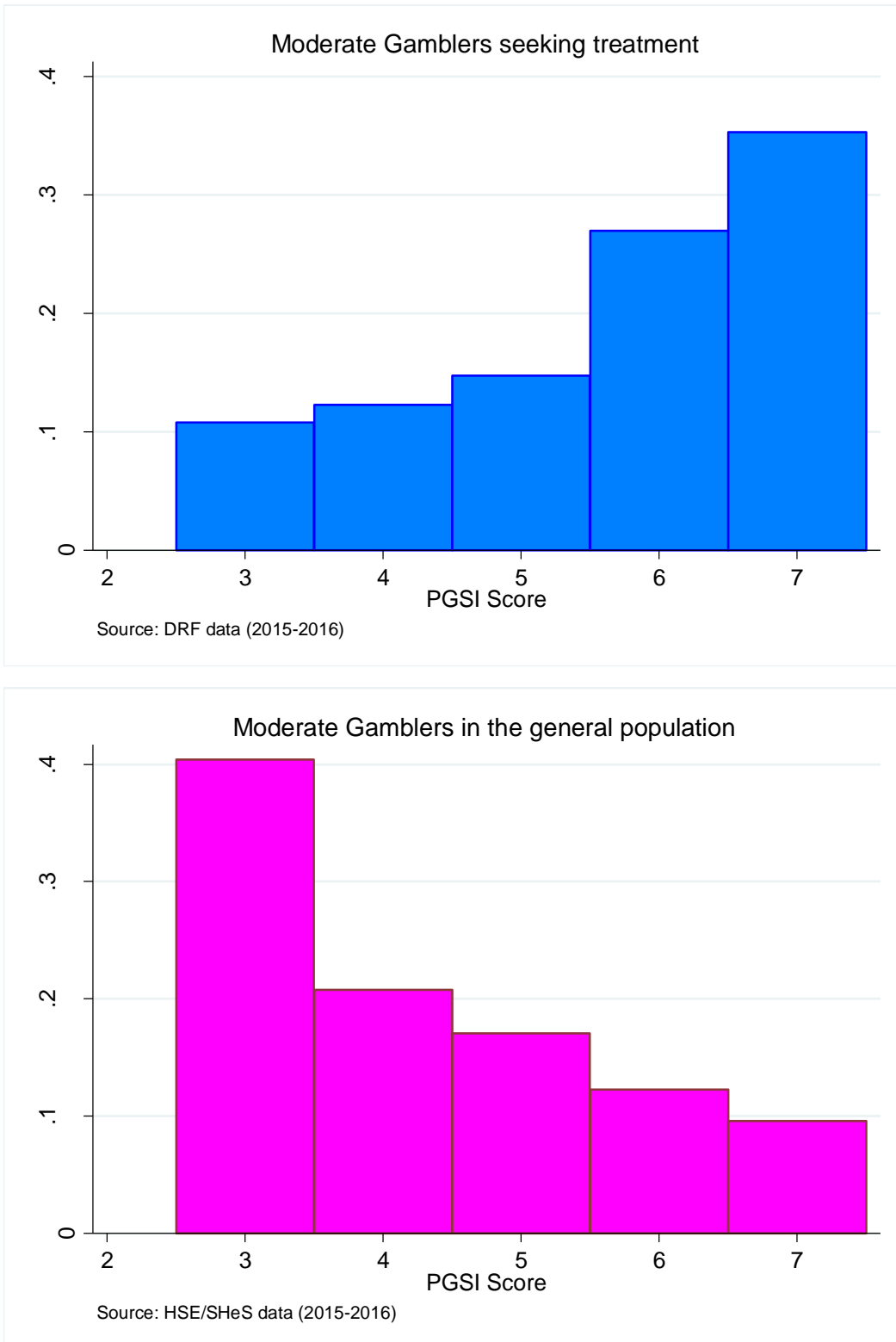
The different distributions of the scores for the problem gamblers and moderate risk gamblers can be seen in the histograms in Figure 5.1 and 5.2 below. In both instances, the individuals accessing treatment had scores at the higher end of the distribution.

Figure 5:1 Distributions of PGSI score<sup>1</sup> for problem gamblers by data source



<sup>1</sup>Problem gamblers have a PGSI score in the range 8-27.

Figure 5:2 Distributions of PGSI score<sup>1</sup> by data source for moderate risk gamblers



<sup>1</sup> Moderate risk gamblers have a PGSI core in the range 3-7



The average PGSI scores for individuals accessing treatment were significantly<sup>30</sup> higher than the individuals in the general population, even when looking *within* the moderate risk and problem gambling groups. This suggests that individuals accessing treatment tend to have higher scores, (e.g. higher severity), even within the moderate risk group. This is shown in Table 5.1 below.

	<i>Bases</i>	<i>Mean</i>	<i>Std Error</i>	<i>95% CI</i>	
				Lower	Upper
Problem gamblers					
DRF	7,689	19.6	0.1	19.5	19.7
Survey data	90	13.4	0.8	11.8	15.0
Moderate risk gamblers					
DRF	205	5.6	0.1	5.4	5.8
Survey data	187	4.4	0.1	4.1	4.6

## 5.2 Socio-demographic characteristics of gamblers in treatment and the general population

A comparison was made between the socio-demographic characteristics of problem gamblers and moderate risk gamblers in each data source. The comparison is restricted to age, gender, economic status, ethnicity, and country, since these characteristics were available in both data sources and had been recorded in a consistent way. Chi-square tests were used to identify where there were significant differences in the characteristics of the moderate and problem gamblers in each data source.

### 5.2.1 Comparison of age and gender differences of gamblers in treatment and the general population

As shown in Chapters 3 and 4, both problem gamblers and moderate risk gamblers were more likely to be male and more likely to be in their mid-twenties to early thirties. There were no significant differences in the gender distribution of the problem gamblers in each data source. The clear majority of problem gamblers in each data source were men, with 91% in the survey data and 88% in the DRF.

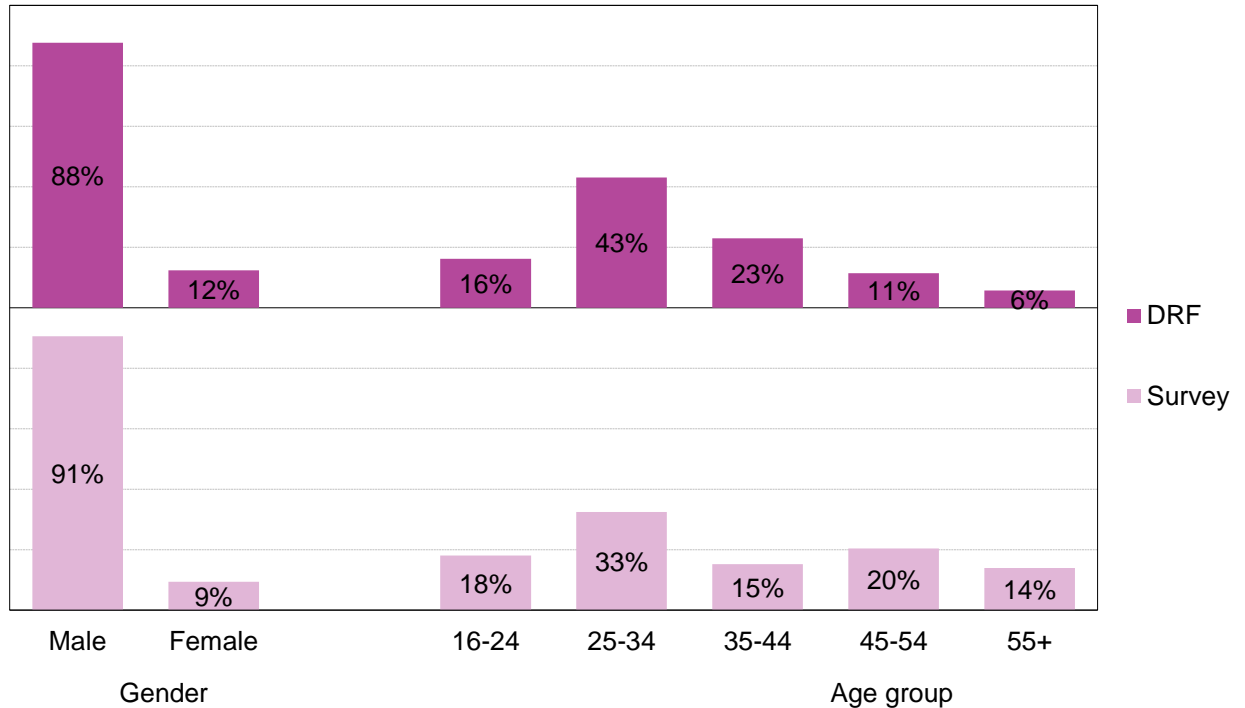
There were significant differences in the age distribution of problem gamblers in each data source, with a higher proportion of problem gamblers aged 25-34 years in the DRF; 43%, compared with 33% in the survey data. The survey data contained more

<sup>30</sup> With p-values of <0.001 for both the moderate risk and problem gambler groups

problem gamblers aged under 25 years and aged 55 years or over. The age and gender distributions of problem gamblers by data source are shown in Figure 5.3.

Figure 5:3 Age and gender of problem gamblers by data source

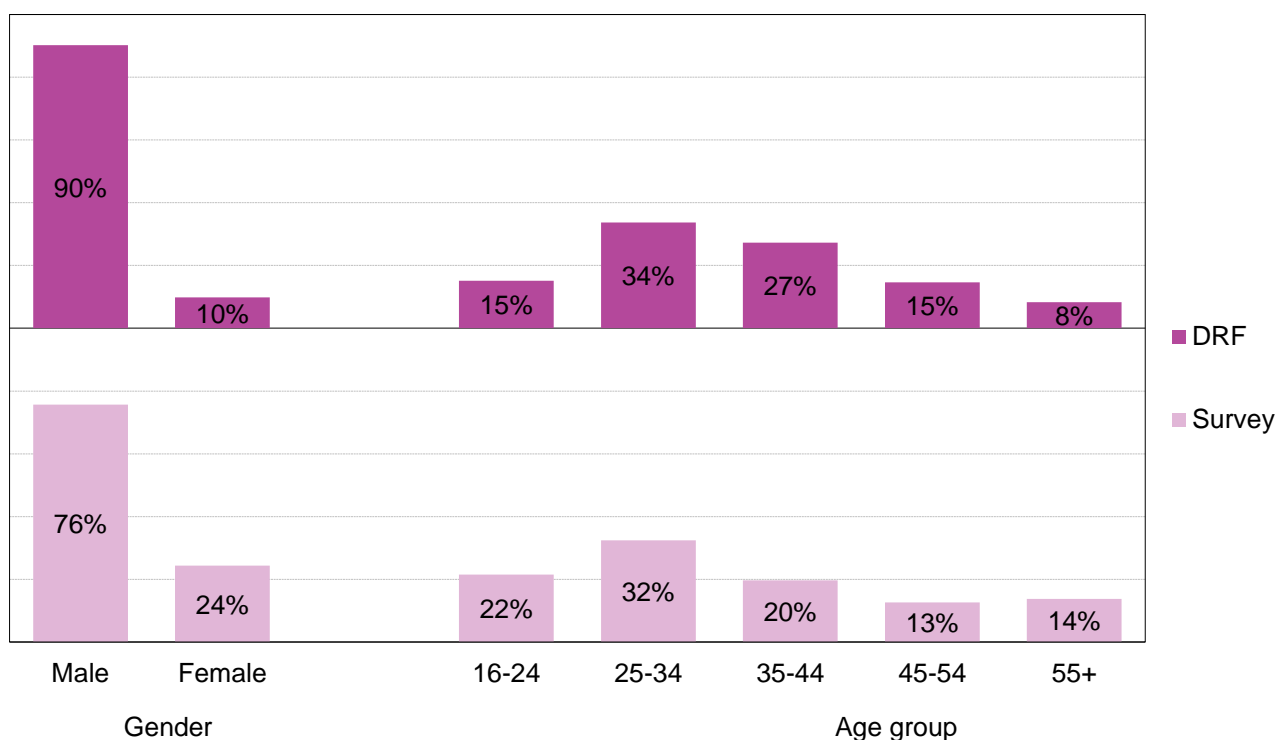
Base: All problem gamblers in the matched data



A similar comparison was made for moderate risk gamblers. For this group there was a significant difference in the gender distribution, where the survey data contained a lower proportion of men (76%) than the DRF (90%). However, there were no significant differences in the age distribution of moderate risk gamblers. The age and gender distributions of moderate risk gamblers by data source are shown in Figure 5.4.

Figure 5:4 Age and gender of moderate risk gamblers by data source

Base: Moderate risk gamblers in the matched data



## 5.2.2 Comparison of economic status of gamblers in treatment and the general population

A comparison was made of economic status. In both data sources, the most common economic activity was employment. The DRF contained a higher proportion of problem gamblers in employment than the survey data with 78% of the problem gamblers in the DRF recording their activity as employment, compared with 64% in the survey data; a statistically significant difference. Similarly, the DRF contained fewer problem gamblers classed as 'other inactive' or 'seeking work'.

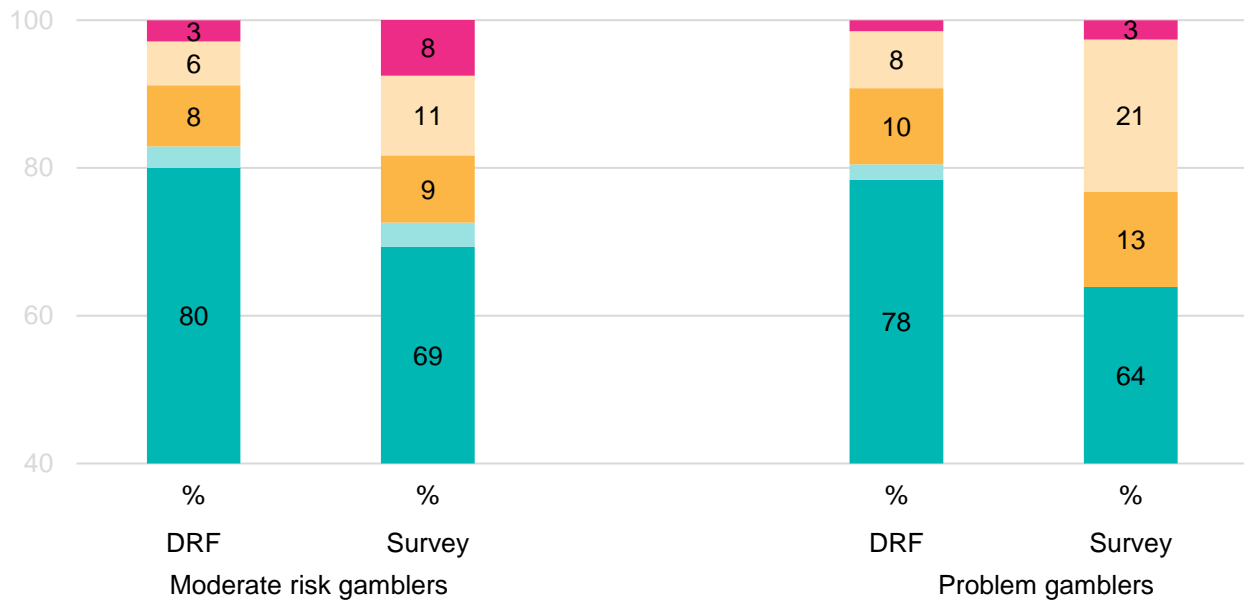
The same comparison was made for moderate risk gamblers. Again, the DRF contained a higher proportion of individuals in employment (80% of moderate risk gamblers, compared to 69% in the survey data), but this difference was not statistically significant.

The economic status of problem gamblers and moderate risk gamblers by data source are shown in Figure 5.5.

Figure 5:5 Economic status of gamblers by data source

Base: Moderate risk and problem gamblers in the matched data

Employed Student Seeking work  
Other inactive Retired



### 5.2.3 Comparison of country of residence of gamblers in treatment and the general population

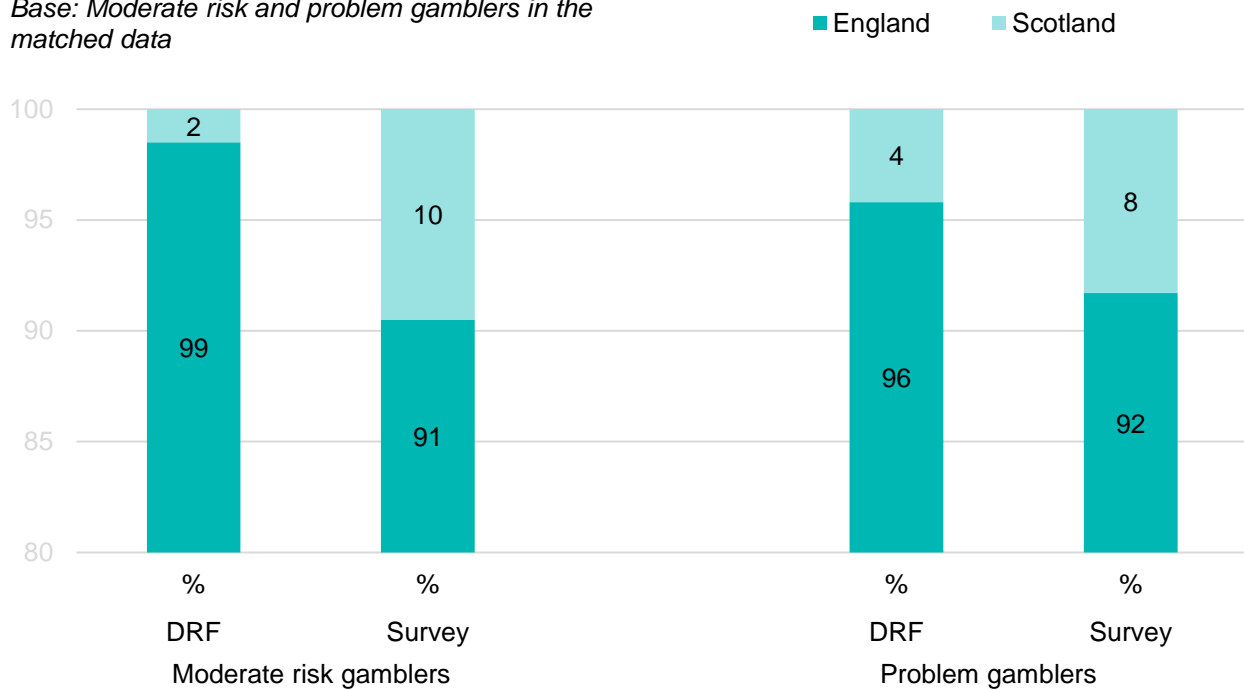
There are also significant differences in the country of residence, with a smaller proportion of cases in the DRF that were resident in Scotland (4% of the problem gamblers in DRF, compared to 8% in the survey data). The distribution by country in the survey data is closer to that of the wider population. It is likely that this is caused by the distribution of treatment centres, rather than because people in Scotland are less likely to seek treatment.

The difference between data sources in country profile was also significant for moderate risk gamblers. The DRF contained a significantly lower proportion of Scottish residents than the survey data.

The country profiles of problem gamblers and moderate risk gamblers by data source are shown in Figure 5.6.

Figure 5:6 Country of residence of gamblers by data source

Base: Moderate risk and problem gamblers in the matched data

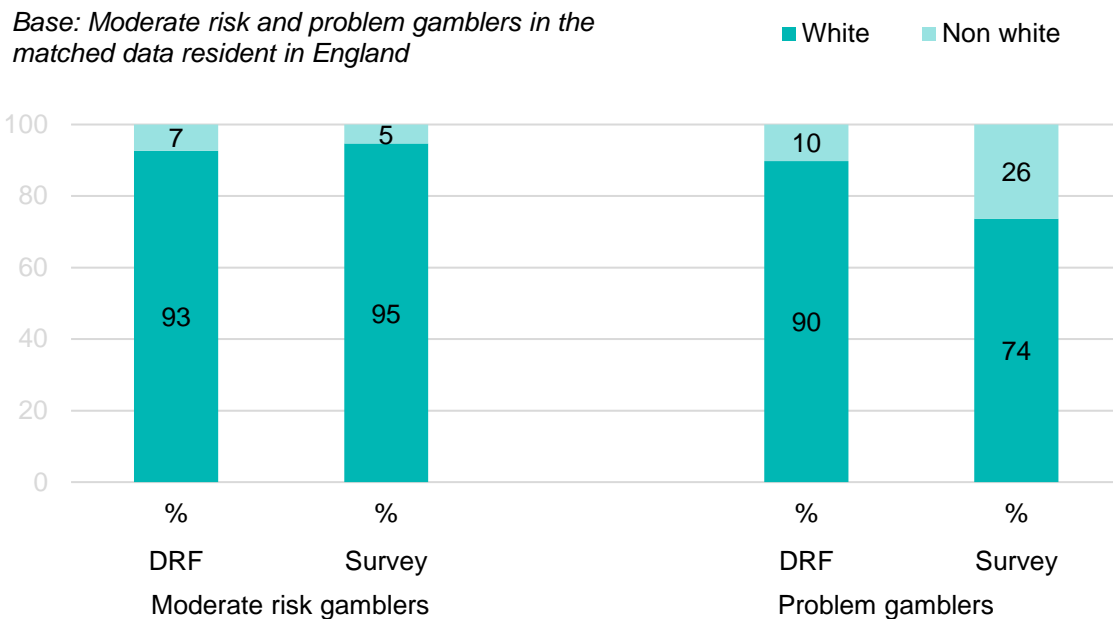


It was not possible to compare regional differences within countries as the available DRF data only contained postcode area. This means it was not possible to append a standard measure of region to the DRF data corresponding to the regional variable, based on the former Government Office Regions, in the survey data.

### 5.2.4 Comparison of ethnicity of gamblers in treatment and the general population

A final comparison was made looking at differences by ethnic group. Ethnicity was only available for HSE data, not SHeS, therefore the comparison has been made within England only. Within the problem gambler group, the survey data contained a significantly higher proportion of people from a non-white ethnic background than the DRF, however, there were no significant differences in the ethnic profile of the two datasets when looking at moderate risk gamblers. This is shown in Figure 5.7.

Figure 5:7 Ethnicity by gambling severity and data source



### 5.3 Gambling activities carried out by individuals in treatment and in the general population

This section discusses the gambling activities carried out by those in treatment and gamblers in the wider population. It should be noted that there are major differences in the way gambling activity has been measured in each data source, hence the following results are indicative only.

In both the HSE and SHeS, gambling behaviour is reported by respondents in a self-completion questionnaire. The respondent is asked 'Have you spent any money on any of the following activities in the last 12 months? Please tick ONE box for each activity'.

The question used by DRF is: 'What are your main types of Gambling: (Put a number '1' against the one you do most, '2' against the next and so on). You do not need to enter a number for those that do not apply'.

The DRF question does not specify a time frame and does not ask respondents to provide an exhaustive list of activities in which they may have participated. It is possible for respondents to exclude some forms of gambling as they do not view them as their 'main' activity. In addition, the DRF questionnaire includes a more detailed list of response options; 48 options, compared with 19 in the HSE and SHeS questionnaires. This means the two questions do not measure exactly the same concept.

An attempt was made to improve comparability by recoding the data from the DRF (so that the derived variable = 1 if the respondent has taken part in that gambling activity,

and zero otherwise). In addition, the two sets of activity codes were reconciled as closely as possible to give a list of 18 activities. These are listed in Appendix B. The comparison is based on these derived variables.

The nature of the question meant that the survey respondents could and did record a higher number of total activities. The majority of respondents in the DRF recorded a single activity. This meant problem gamblers in the DRF reported a mean of 1.6 activities, compared to 5.7 in the survey data. Similarly, moderate risk gamblers reported a mean of 1.4 in the DRF and 4.9 in the survey data. This is unlikely to be a genuine reflection of the number of gambling activities carried out by individuals accessing treatment. Instead we believe this is an artefact of the question wording and the time period covered by each survey.

A comparison was made of the five most common gambling activities by gambling severity and data source. These are shown in Table 5.2. The comparison excludes the national lottery and scratch cards, since these were the most common activities among non-problem gamblers in the general population (see Table 3.2), and therefore not indicative of risky or problem gambling. They were also unlikely to be listed as the main activity by problem gamblers in the DRF, possibly because DRF respondents were more likely to focus on gambling activities they saw as most problematic.

If national lottery and scratch cards are excluded, then a number of common activities can be compared. Both virtual gaming machines in bookmakers and betting on horse races are present in the top five activities for problem gamblers in both data sources. Online gambling is also a commonly occurring activity, particularly for moderate risk gamblers. However, the underlying differences in question wording preclude us from drawing any conclusions about the differences in gambling activities carried out by individuals accessing treatment and in the general population.

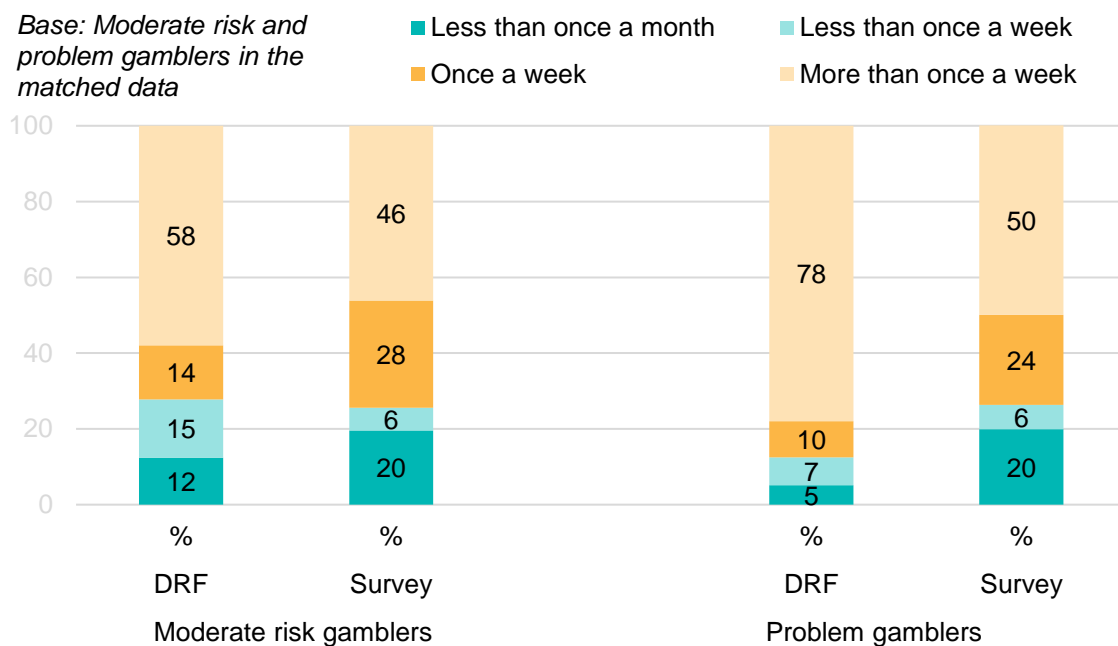
**Table 5:2** Five most commonly occurring gambling activities by gambling severity and data source

Rank	Moderate risk gamblers		Problem gamblers	
	DRF	Survey data	DRF	Survey data
1	Online gambling	Online betting with a bookmaker on any event or sport	Online gambling	Virtual gaming machines in a bookmaker
2	Virtual gaming machines in a bookmaker	Online gambling	Virtual gaming machines in a bookmaker	Fruit or slot machines
3	Online betting with a bookmaker on any event or sport	Fruit or slot machines	Online betting with a bookmaker on any event or sport	Betting on horse races
4	Betting on horse races	Betting on horse races	Betting on other events	Online gambling
5	Table games (roulette, cards or dice) in a casino	Betting on sports events	Betting on horse races	Betting on sports events

### 5.3.1 Comparison of gambling frequency of gamblers in treatment and the general population

A comparison was made of gambling frequency. As with gambling activities, there are underlying differences in data collection. The DRF asks respondents to record how many days they gambled out of the last 30, whereas the survey data asks respondents to record their average frequency of gambling over the last year. To make the two measures more comparable the information collected from the DRF was used to generate a frequency variable. For example, an individual who reported gambling once in 30 days was said to gamble once a month, whereas an individual who gambled 20 out of the 30 days was said to gamble more than once a week. The caveat is that this transformation relies on the last 30 days recorded in the DRF being a typical representation of the individual's gambling behaviour. A comparison of the derived gambling frequency by gambling severity is shown in Figure 5.8. The figures suggest that problem gamblers and moderate risk gamblers in the DRF sample are more likely to gamble more frequently. This intuitively makes sense as we would expect those in treatment to gamble more frequently, although this finding should be treated with caution due to the underlying differences in question wording.

Figure 5:8 Gambling frequency by gambling severity and data source





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## 5.4 Multivariable analysis of gamblers in treatment and gamblers in the general population

Multivariable analysis methods were used to explore the relationship between socio-demographic characteristics and gambling behaviour and to understand how both of these relate to accessing treatment. Specifically, the analysis investigates whether the significant differences between socio-demographic characteristics of those accessing treatment (DRF) and those in the wider population (combined health survey), outlined earlier in this chapter, remain once they are looked at in combination with each other and, when PGSI score and frequency of gambling are controlled for.

A logistic regression model was used to interrogate the data. The outcome variable was data source<sup>31</sup> and the independent variables were PGSI score, frequency of gambling, age, gender, economic status, and country. The model only included variables that were comparable across the data sources and existed for all sample members. Gambling activities were excluded from the model due to concerns over measurement error. The gambling frequency variable was included despite some concerns since it was felt that the differences in variables largely reflected genuine differences in gambling behaviour.

In both models, the difference in PGSI score remained significant even after the different socio-demographic profiles had been controlled for.

The model tests whether some socio-demographic groups were more likely to access treatment than others, even after gambling severity was controlled for. The results indicate whether access to treatment was mainly driven by gambling behaviour, or whether socio-demographic characteristics were also a key factor.

For both models, PGSI score and frequency of gambling remained significant in the model. This means, both for problem gamblers and moderate risk gamblers, there are important differences in the severity of gambling and frequency of gambling of individuals in the DRF (who are representative of the population in treatment) and individuals in the survey data (who are representative of the general population). In both instances, individuals in the DRF are more likely to present higher PGSI scores, and therefore more severe gambling behaviour, and to gamble more frequently than individuals in the survey data.

In addition, the models show that there are some significant differences in the socio-demographic characteristics of those accessing treatment.

- For **problem gamblers** there were significant differences in economic status, age group, and country of residence by data source. The model indicates that, even after controlling for differences in gambling severity (PGSI score) and gambling frequency, problem gamblers in the DRF were more likely to be employed than corresponding problem gamblers in the survey data. Similarly, problem gamblers in the DRF were almost three times more likely to be aged 25-44 than problem gamblers in the survey data, and more likely to be resident in England than problem

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<sup>31</sup> A binary variable where 1 = the case came from the DRF data and 0 = survey data.

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gamblers in the survey data. There was no significant association between gender and data source for problem gamblers.

This suggests that employed problem gamblers are more likely to access treatment than problem gamblers who were not working, that problem gamblers aged 25-44 were more likely to access treatment than those aged 55 and over, and that problem gamblers in England are more likely than those in Scotland to be in treatment, even after differences in gambling severity and frequency were taken into account.

- For **moderate risk gamblers**, there was a significant association between gender and data source; moderate risk gamblers in the DRF were significantly more likely to be male than moderate risk gamblers in the survey data. The difference by country of residence was also significant, with a higher proportion of English residents in the DRF data. There were no significant differences by age group and economic status amongst this group.

This suggests that, even after controlling for differences in gambling severity (PGSI score) and gambling frequency, men in the moderate risk category were more likely to access treatment than women, and English residents who were moderate risk gamblers were more likely to access treatment than their counterparts in Scotland.

The full output of the logistic regression models is given in Appendix C

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## 6 Discussion and conclusions

The following discussion focuses on the aims and research questions of this study which were to:

- Describe the characteristics of those classified as low, moderate and problem gamblers within the general population;
- Describe the characteristics of gamblers accessing treatment for problem gambling;
- Compare the characteristics of these two groups to identify characteristics associated with whether (or not) problem gamblers access treatment.

### 6.1.1 Discussion of findings about gamblers in the general population

Less than five per cent of the population of England and Scotland were found to be experiencing some level of harm (low risk, moderate risk or problem gamblers). The proportion classed as problem gamblers was less than one per cent.

Survey data was used to gain insight into the characteristics of gamblers and non-gamblers in the general population of these countries. Problem gamblers and moderate risk gamblers were more likely to be male compared to non-gamblers. The proportion of male gamblers increased as gambling severity increased. Gamblers were most likely to be individuals in their mid-twenties and thirties. Differences by economic status were likely to be related to these age differences, with problem gamblers and moderate risk gamblers more likely to be in employment than other groups. There were also differences in the socio-economic classification and level of education, with problem gamblers in particular more likely to be in routine and manual occupations and for their highest qualification to be at GCSE level or equivalent. Finally, in England there were differences by ethnicity, with problem gamblers more likely to be non-white than the wider population. Data on ethnicity was not available for Scottish respondents.

There were strong differences in the mental wellbeing by gambling behaviour, with problem gamblers having poorer wellbeing than other gambling groups. Gamblers at moderate and low risk also had poorer wellbeing than non-problem gamblers and non-gamblers but fared better than the problem gamblers. The differences by physical health were less clear, with problem gamblers having worse self-reported general health than all other groups, but less likely to have a large number of health conditions than non-gamblers. This finding is likely due to the underlying age differences of the groups, with non-gamblers and non-problem gamblers more likely to be older, and therefore more likely to have health conditions.

Gambling becomes more frequent with the number of activities increasing as gambling becomes more problematic. Whilst the most common gambling activity overall was the national lottery, beyond that there were a number of differences in the type of activity by gambling severity; in particular, virtual gaming machines were more common amongst problem gamblers and various online activities became more common as risk increased.

### 6.1.2 Discussion of findings about gamblers in treatment

The DRF was used to investigate the characteristics and gambling behaviour of problem gamblers and moderate risk gamblers who were in treatment in England and Scotland. Most gamblers in treatment were classed as problem gamblers. There was a marked gender and age skew, with the vast majority of gamblers in treatment being

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male and aged between 25-34 years. The majority of gamblers in treatment were in employment. Problem gamblers were less likely to be in a relationship than moderate risk gamblers and were also more likely to be from a non-white ethnic background. A relatively low proportion of gamblers in treatment were Scottish residents. It is worth noting that problem gamblers were more likely to have started gambling at a younger age and were more likely to have experienced a big win early on. Problem gamblers were also more likely than moderate risk gamblers to have experienced negative consequences of gambling in the form of relationship loss, job loss and debt. Looking at available health related indicators, problem gamblers were more likely to have additional diagnoses than moderate risk gamblers and were also more likely to have poorer mental health. Problem gamblers were also more likely to have clinical mental health issues rated as severe or moderate/severe.

Problem gamblers in treatment gambled with a higher frequency and spent more money on gambling than the moderate risk gamblers in treatment. Both groups reported participating in very similar types of gambling activities; the three most common activities listed by each group were the same, each listing online gambling, virtual gaming, and online betting with a bookmaker at the top three.

### 6.1.3 Comparison of gamblers in the general population and in treatment: evidence of a treatment gap

Differences between the treatment data and population data can be used to identify areas where there is a potential treatment gap. A comparison of the two data sources showed that individuals accessing treatment tended to have higher PGSI scores, suggesting that those in treatment have a greater severity of gambling harms, within both the problem gamblers and the moderate risk group. In both data sources the problem gamblers and moderate risk gamblers were more likely to be male. It is worth noting that within the general population the proportion of men increased with gambling severity, whereas, in the treatment group there was a higher proportion of men within the moderate risk group. This implies that male gamblers in the moderate risk category are more likely to seek treatment than female gamblers in the same group.

Problem gamblers and moderate risk gamblers were more likely to be aged 25-34 years in both the treatment group and the general population. However, the proportions within these age bands was higher in the treatment group, suggesting problem gamblers and moderate risk gamblers outside these age ranges were less likely to be in treatment. Similarly, the proportion of problem gamblers in employment was higher in the treatment group than in the general population, suggesting that employed people were more likely to be in treatment than those not in employment. Regarding the distribution of problem gamblers from different ethnic backgrounds, there was a lower proportion of non-white problem gamblers in England who were in treatment in comparison to those in the general population in England, which may suggest that individuals from a non-white ethnic background were less likely to be in treatment. Suggesting perhaps treatment centres are not targeting individuals from non-white ethnic groups as effectively as they might.

Looking at health indicators, problem gamblers exhibit a far higher incidence of poor mental health than moderate risk gamblers. Whilst the direction of causality is not clear (whether those with poor mental health are more likely to be drawn to problematic gambling behaviours, or whether problem gambling results in poor mental health) it is

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clear there is a strong association. In particular, amongst the general population, poor mental wellbeing increases alongside gambling severity. On the other hand, the high proportion of problem gamblers in treatment with poor mental health suggests that poor mental health may not be a barrier to treatment. However, since the two mental health measures are not directly comparable it is not possible to conclusively rule out a treatment gap.

The relationship between physical health and access to treatment is not clear, since there is a lack of data in the DRF on physical health. The DRF data also shows that problem gamblers are more likely to have other diagnoses in addition to gambling, whether pharmacological, psychological, or a combination. Looking at physical health conditions in the general population, problem gamblers are less likely to have a large number of health conditions than non-gamblers, although this is likely due to underlying differences in the age profile. However, when asking about self-assessed general health, problem gamblers in the general population are less likely to rate their own health as good or very good. Whilst there is no evidence of a treatment gap due to physical health conditions, without more detail about the different health conditions experienced by gamblers in treatment it is not possible to conclude that poor physical health is a barrier to treatment. It may be that there are some specific health conditions that make accessing treatment more difficult.

Problem gamblers and moderate risk gamblers who accessed treatment reported gambling with higher frequency. Excluding the national lottery and scratch cards (which were rarely reported on by individuals in treatment) there was a predominance of online gambling activities amongst both those in treatment and the general population. Virtual gaming features highly for all gamblers in treatment and for problem gamblers in the general population, as does betting on horse racing. The moderate risk gamblers who are in treatment appear to report activities that are more similar to those reported by problem gamblers in the general population than those reported by moderate risk gamblers in the general population. This suggests that moderate risk gamblers who access treatment exhibit a similar gambling behaviour with problem gamblers (in terms of frequency and activities) than with the rest of the moderate risk population.

Multivariate analysis between socio-demographic characteristics of those accessing treatment and those in the wider population controlling for PGSI score and frequency of gambling yielded significant differences. In particular, controlling for age, gender, country of residence, and economic status, individuals accessing treatment have more problematic gambling behaviour, whether they are classified as problem gamblers or moderate risk gamblers. Individuals accessing treatment exhibit higher scores on the PGSI and report a higher frequency of gambling. In many respects, this suggests that treatment is being targeted at the groups that need it the most i.e. individuals with most severe behaviour are the ones accessing treatment. The treatment gap therefore concerns problem gamblers and moderate risk gamblers who exhibit less severe behaviour and gamble less frequently than their peers.

In addition, the models show that there are certain socio-demographic characteristics that are significantly associated with accessing treatment. Problem gamblers accessing treatment are significantly more likely to be employed, more likely to be aged 25-44, and more likely to be resident in England. This may reflect an element of self-selection, for example, that individuals in employment have a greater incentive to get treatment to retain their job. Moreover, moderate risk gamblers who access treatment are significantly more likely to be male. This suggests that for moderate risk gamblers, men are more likely to access treatment than women regardless of their PGSI score,

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gambling frequency, economic status, and age. Additional research is necessary to explore and understand the reasons why women are less likely to access treatment. Similarly, the differences by age need further investigation. Figures 5.3 and 5.4 demonstrated 14% of those aged 55 and over identified problems in gambling, yet only around half of this group (8%) were in treatment. The under-representation of older people accessing treatment was also identified in the REA. Finally, multivariate analysis identified a significant difference in the country profiles of each data source. The DRF contains a smaller proportion of individuals (both problem gamblers and moderate risk gamblers) living in Scotland, indicating that a smaller proportion of the treatment population is in Scotland. The difference in country of residence may reflect a relative lack of treatment available outside England, which needs to be investigated further.

#### 6.1.4 Recommendations for future provision of treatment and support

Findings in this report suggested that problem gamblers not in treatment are more likely to be under the age of 25 years or over the age of 45, not in employment, or resident in Scotland. Moderate risk gamblers are also less likely to access treatment if they are female or are resident in Scotland. Like individuals living in England, individuals from a non-white ethnic background were also less likely to be in treatment. Although more research is needed to profile the level of unmet need in these groups, as this research suggests that such groups may be more vulnerable and in need of targeted support. Such support can take the form of culturally adapted interventions aimed at ethnic minorities or services targeting women who are also underrepresented within treatment services. Findings from the REA suggested that treatments targeting specific sub populations (e.g. interventions aimed at and involving women only or ethnic minority groups) are effective especially with reducing isolation and establishing relationships, both which constituted a foundation to recovery.

Furthermore, stakeholders in roles outside traditional gambling support (e.g., education providers, healthcare clinicians and non-clinicians, prison officers and third sector staff) will need further training to identify problem gamblers and/or include gambling activities/patterns/challenges in any routine health checks. Such training will also need to focus on identifying problem gamblers who are underrepresented within treatment/support services. Training will also enable stakeholders to signpost problem gamblers to gambling treatment and support services.

In addition to training, advertisements should be introduced for and directed to vulnerable groups to raise awareness around the risks of gambling as well as the availability of support and treatment services for gambling problems. Such advertisements should be developed strategically between the NHS and charity organisations working with vulnerable groups and gamblers experiencing harm with the aim to reach those groups who are more vulnerable to gambling problems and who are less likely to be in receipt of treatment. Targeted advertisements can be delivered through different communication channels, such as television adverts, leaflets in GP surgeries, libraries, community centres, betting shops, or social media.

It is also worth noting that for individuals both in treatment and in the general population, this report found that problem gamblers have a high incidence of poor mental health. Although the high proportion of problem gamblers in treatment with poor mental health suggests that mental health problems are not a barrier to treatment, future provision must take into account the complexities associated with gambling

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problems. For example, provision should provide the flexibility in terms of style (e.g. type of therapy), mode (e.g. group, 1-2-1, online therapy) and intensity in order to address complex mental/physical, social, financial needs associated with gambling problems (as opposed to focusing therapy on gambling behaviour). These findings are in support of the REA findings, where the availability of appropriate and specialised treatment services for problem gambling and flexibility (e.g. treatment options that accommodate patients' daily commitments) constituted effective practical enablers to accessing treatment.

## 6.2 Limitations of the analysis

The scope of the analysis is limited by the available data. First, the relatively small proportion of gamblers within the general population means that the survey data, comprising more than 22,000 cases, included less than 100 problem gamblers.

Analysis was also limited by the type of information available and the comparability of the information across data sources. For example, both data sources collect extensive information about the types of gambling activities. However, the comparison was limited because the information was collected in different ways to meet different objectives. Consequently, it was not possible to ascertain whether differences in the range and types of activities were genuine or due to differences in measurement. Whilst some comparisons are presented in Section 5, these are necessarily limited in nature and findings are indicative.

It has not been possible to respond definitively to some of the wider research questions using the secondary data. In particular, it is not possible to identify the size of the population not accessing treatment (a finding that was also evident in the REA), since this information is not collected by either survey. However, the analyses allowed for a number of inferences regarding the profile of people in the general population who do not access treatment.

Finally, the survey data suggested there were some differences in the proportion of problem gamblers by region. However, it was not possible to comment on regional distributions between the treatment data and population data as the treatment data did not contain a standard measure of region that was comparable to the regional variable in the survey data.

## 6.3 Conclusions

Whilst it is not possible to directly comment on the general population of problem gamblers not accessing treatment, (comparable data on this group is not available), it is possible to use the results presented in this report to outline the expected demographics of this group. The multivariate analysis was used to compare gamblers in treatment to the overall population of gamblers (those in treatment and not in treatment). The results can be used to make inferences about gamblers not in treatment. The results suggest that problem gamblers not in treatment are more likely to exhibit less severe gambling behaviour (as measured by the PGSI), gamble less frequently, be under the age of 25 years or over the age of 45, not in employment, or

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resident in Scotland. Moderate risk gamblers are also less likely to access treatment if they have less severe gambling behaviour and gamble less frequently, but also if they are female, or are resident in Scotland.

Data suggests that, amongst English residents, individuals from a non-white ethnic background were less likely to be in treatment. In addition, both among individuals in treatment and in the general population, problem gamblers have a far higher incidence of poor mental health than moderate risk gamblers. The high proportion of problem gamblers in treatment with poor mental health suggests that this is not a barrier to accessing treatment, although the two measures are not directly comparable.

Finally, a comparison of gambling activities suggests moderate risk gamblers who end up accessing treatment participate in similar gambling activities that problem gamblers participate in, compared to the rest of the moderate risk population. This suggest moderate risk gamblers in treatment have more in common with problem gamblers (in terms of frequency and activities) than they do with the rest of the moderate risk population.



## Appendix A. Accompanying figures

The tables in this section contain the figures behind the charts presented in the main text.

Appendix table A:1 Survey data socio-demographics, by gambling severity						
Base: All respondents England and Scotland	Data from the HSE/SHeS					
	Non gambler	Non problem gambler	Low risk gambler	Moderate risk gambler	Problem gambler	Total
	%	%	%	%	%	%
<b>Gender</b>						
Male	43.6	50.7	77.5	75.7	90.6	49.0
Female	56.4	49.3	22.5	24.3	9.4	51.0
P-values	P = <0.0001					
<b>Age (grouped)</b>						
Under 25	17.0	10.5	29.0	21.5	18.1	13.9
25-34	15.3	17.0	29.8	32.4	32.5	16.9
35-44	13.9	17.6	14.6	19.7	15.2	16.0
45-54	16.1	19.1	12.2	12.6	20.4	17.6
55+	37.7	35.8	14.4	13.7	13.9	35.7
P-values	P = <0.0001					
<b>Marital status (defacto)</b>						
Married/cohabiting	62.0	71.2	52.0	57.8	47.5	66.6
Single	29.3	20.0	42.1	35.3	44.4	24.8
Divorced/ Separated/ Widowed	8.8	8.8	5.9	6.8	8.1	8.6
P-values	P = <0.0001					
<b>Activity status</b>						
Missing	0.2	0.2	0.1	0.0	0.0	0.2
Employed	47.9	63.4	67.8	69.3	63.9	57.1
Student/training	8.5	2.7	7.1	3.3	0.0	5.3
Inactive - seeking	5.3	3.9	12.6	9.1	12.9	4.8
Other inactive	12.8	9.1	7.2	10.8	20.6	10.7
Retired	25.3	20.7	5.3	7.6	2.6	21.9
P-values	P = <0.0001					

Appendix table A:2 (cont) Survey data socio-demographics, by gambling severity

Base: All respondents England and Scotland		Data from the HSE/SHeS				
	Non gambler	Non problem gambler	Low risk gambler	Moderate risk gambler	Problem gambler	Total
<b>Country of residence</b>						
England	92.3	90.0	91.6	90.5	91.7	91.1
Scotland	7.7	10.0	8.4	9.5	8.3	8.9
P-values	P = <0.0001					
<b>Region (grouped)</b>						
North West, North East and York&Humber	24.1	26.0	27.9	26.4	32.6	25.3
East Mids, West Mids, East of England	26.8	28.1	23.9	25.8	30.6	27.4
London	17.1	11.9	13.8	16.2	16.7	14.2
South East, South West	24.2	24.1	26.2	22.1	11.8	24.2
Scotland	7.7	10.0	8.4	9.5	8.3	8.9
P-values	P = <0.0001					
<b>Highest educational qualification</b>						
Degree (or equivalent) or higher	30.6	28.0	22.4	22.6	13.7	28.8
Higher education below degree	9.4	11.9	18.5	16.8	16.7	11.2
A-level / Scottish highers / or equivalent	16.4	17.8	23.8	15.5	15.2	17.4
GCSE /Scottish Standard Grades / or equivalent	22.1	25.5	23.8	24.1	33.6	24.2
Other	1.5	1.1	0.2	0.5	0.0	1.2
No qualifications	19.8	15.6	11.3	20.5	20.8	17.2
P-values	P = <0.0001					
<b>Socio-economic group</b>						
Item not applicable	2.8	1.2	2.8	3.1	2.4	1.9
Managerial and professional occupations	33.2	36.8	30.7	28.7	29.0	35.0
Intermediate occupations	21.8	23.6	19.7	23.3	15.4	22.7
Routine and manual occupations	33.6	36.5	39.6	41.1	49.9	35.5
Other	8.6	1.8	7.2	3.9	3.3	4.8
P-values	P = <0.0001					

Appendix table A:3 (cont) Survey data socio-demographics, by gambling severity

Base: All respondents England and Scotland		Data from the HSE/SHeS				
	Non gambler	Non problem gambler	Low risk gambler	Moderate risk gambler	Problem gambler	Total
<b>Wellbeing (WEMWBS)</b>						
15% lowest wellbeing	17.4	14.9	28.8	23.6	40.8	16.5
Mid wellbeing	67.6	72.6	65.0	69.6	56.2	70.2
15% highest wellbeing	15.0	12.5	6.2	6.8	3.0	13.2
P-values	P = <0.0001					
<b>Self-assessed general health</b>						
Very good/ good	76.4	76.8	79.1	71.7	51.1	76.5
Fair	15.8	17.2	15.6	20.9	36.8	16.7
Bad / Very bad	7.8	5.9	5.3	7.4	12.1	6.8
P-values	P = <0.0001					
<b>Number of health conditions</b>						
No conditions	58.7	59.2	68.9	67.3	55.5	59.3
One	22.3	22.1	17.5	17.4	35.9	22.0
Two	11.6	11.2	8.4	6.2	7.8	11.2
Three or more	7.5	7.5	5.2	9.0	0.7	7.4
P-values	P = <0.0001					
<i>Bases (unweighted)</i>	8451	11935	466	187	90	21129
Base: All respondents in England		Data from the HSE				
	Non gambler	Non problem gambler	Low risk gambler	Moderate risk gambler	Problem gambler	Total
	%	%	%	%	%	%
<b>Ethnicity</b>						
White Br/other	81.0	92.2	87.4	94.7	73.7	87.3
Asian	11.2	3.8	4.9	1.5	8.0	6.9
Black	4.2	2.0	4.3	1.0	8.2	3.1
Mixed+Other	3.6	2.0	3.4	2.8	10.1	2.7
P-values	P = <0.0001					
<i>Bases (unweighted)</i>	5635	7292	306	121	60	13414

Appendix table A:4 Gambling behaviour in the survey data, by gambling severity					
Base: All gamblers in England and Scotland	Data from the HSE/SHeS				
	<b>Non problem gambler</b>	<b>Low risk gambler</b>	<b>Moderate risk gambler</b>	<b>Problem gambler</b>	<b>Total</b>
	%	%	%	%	%
<b>Average freq of gambling activity</b>					
> once a month	51.6	26.2	19.6	19.9	28.8
< once a month,> once a week	9.6	19.2	6	6.4	5.7
Once a week	27.6	26.4	28.3	23.8	16
> once a week	11.2	28.2	46.1	50	7.6
P-values	P = <0.0001				
<i>Bases (unweighted)</i>	11787	463	187	89	12526

Appendix table A:5 Gambling activities listed in the survey data, by gambling severity	
	Combined HSE/SHeS
<b>Gambling activity</b>	<b>Proportion carrying out this activity</b>
<i>Non-problem gamblers (n=11,035)</i>	%
Tickets for the National Lottery/Other lotteries	82.0
Scratchcard	34.0
Betting on horse races	16.0
Fruit or slot	10.0
Online betting with a bookmaker on any event or sport	10.0
Bingo cards	9.0
Betting on sports events	7.0
Private betting	6.0
Football pools	4.0
Online gambling	4.0
Table games (roulette, cards or dice) in a casino	4.0
Betting on dog races	3.0
Virtual gaming machines	3.0
Other gambling activity	2.0
Playing poker in a pub tournament/ league or at a club	1.0
Betting exchange	1.0
Betting on other events	1.0
Spread-betting	1.0

Appendix table A:6 (cont) Gambling activities listed in the survey data, by gambling severity

	Combined HSE/SHeS
<b>Gambling activity</b>	<b>Proportion carrying out this activity</b>
<i>Low risk gambler (n=466)</i>	<b>%</b>
Tickets for the National Lottery/Other lotteries	74.0
Scratchcard	58.0
Online betting with a bookmaker on any event or sport	46.0
Betting on horse races	34.0
Betting on sports events	34.0
Fruit or slot	32.0
Virtual gaming machines	30.0
Online gambling	29.0
Private betting	27.0
Table games (roulette, cards or dice) in a casino	20.0
Football pools	17.0
Bingo cards	15.0
Other	11.0
Betting on dog races	11.0
Betting exchange	9.0
Betting on other events	9.0
Playing poker in a pub tournament/ league or at a club	6.0
Spread-betting	5.0

Appendix table A:7 (cont) Gambling activities listed in the survey data, by gambling severity

	Combined HSE/SHeS
<b>Gambling activity</b>	<b>Proportion carrying out this activity</b>
<i>Moderate risk gambler (n=188)</i>	<b>%</b>
Tickets for the National Lottery/Other lotteries	69.0
Scratchcard	59.0
Online betting with a bookmaker on any event or sport	51.0
Online gambling	43.0
Betting on horse races	40.0
Fruit or slot	39.0
Betting on sports events	39.0
Virtual gaming machines	30.0
Table games (roulette, cards or dice) in a casino	29.0
Private betting	25.0
Football pools	19.0
Betting on dog races	19.0
Bingo cards	17.0
Betting on other events	16.0
Other	12.0
Playing poker in a pub tournament/ league or at a club	11.0
Betting exchange	11.0
Spread-betting	10.0

Appendix table A:8 (cont) Gambling activities listed in the survey data, by gambling severity	
	Combined HSE/SHeS
<b>Gambling activity</b>	<b>Proportion carrying out this activity</b>
<i>Problem gambler (n=90)</i>	<b>%</b>
Tickets for the National Lottery/Other lotteries	70.0
Fruit or slot	61.0
Virtual gaming machines	61.0
Scratchcard	57.0
Betting on horse races	49.0
Online gambling	48.0
Online betting with a bookmaker on any event or sport	42.0
Betting on sports events	42.0
Table games (roulette, cards or dice) in a casino	38.0
Private betting	30.0
Betting on other events	28.0
Betting on dog races	26.0
Bingo cards	24.0
Other	22.0
Football pools	20.0
Playing poker in a pub tournament/ league or at a club	20.0
Betting exchange	18.0
Spread-betting	11.0

Appendix table A:9 Socio-demographic characteristics in the DRF data, by gambling severity

Base: All gamblers, England and Scotland	<i>DRF data for moderate risk and problem gamblers</i>		
	<b>Moderate risk gamblers</b>	<b>Problem gamblers</b>	<b>All DRF gamblers</b>
	%	%	%
<b>Gender</b>			
Male	90.7	87.7	87.7
Female	9.3	12.3	12.3
P-values	P = 0.193		
<b>Age (grouped)</b>			
Under 25	16.2	16.8	16.8
25-34	33.3	43.1	42.9
35-44	27.5	23.0	23.1
45-54	14.7	11.4	11.5
55+	8.3	5.6	5.7
P-values	P = 0.050		
<b>Ethnicity (grouped)</b>			
Missing	0.5	0.6	0.6
White British/other	92.6	90.1	90.1
Asian	3.4	4.5	4.5
Black	2.0	2.4	2.3
Mixed+Other	1.5	2.5	2.5
P-values	P = 0.796		
<b>Activity status</b>			
Employed	79.9	78.4	78.5
Student/training	2.9	2	2.1
Inactive - seeking	8.3	10.4	10.3
Other inactive	5.9	7.7	7.6
Retired	2.9	1.5	1.5
P-values	P = 0.273		



Appendix table A:10 (Cont) Socio-demographic characteristics in the DRF data, by gambling severity

Base: All gamblers, England and Scotland	<i>DRF data for moderate risk and problem gamblers</i>		
	<b>Moderate risk gamblers</b>	<b>Problem gamblers</b>	<b>All DRF gamblers</b>
	%	%	%
<b>Relationship status</b>			
Missing	1.5	1.7	1.7
Married	29.9	25	25.1
Cohab/relationship	39.2	36.4	36.5
Single	24.5	30.5	30.3
Separated	2.5	3.6	3.6
Divorced	1	2.3	2.3
Widowed	1.5	0.5	0.5
P-values	P = 0.106		
<b>Country of residence</b>			
England	98.5	95.8	95.8
Scotland	1.5	4.2	4.2
P-values	P = 0.051		
<b>Average freq of gambling activity</b>			
DKN	17.2	9.2	9.4
> once a month	10.3	4.7	4.9
< once a month,> once a week	12.7	6.6	6.7
Once a week	11.8	8.7	8.8
> once a week	48.0	70.8	70.2
P-values	P = 0.000		
<b>Additional client diagnosis</b>			
Missing	2.0	2.0	2.0
Yes- Pharmacological	6.4	13.8	13.6
Yes - Psychological	2.0	2.2	2.2
Yes - Both pharmacological and psychological	1.0	3.2	3.1
No	88.7	78.9	79.2
P-values	P = 0.008		

Appendix table A:11 (Cont) Socio-demographic characteristics in the DRF data, by gambling severity

Base: All gamblers, England and Scotland	DRF data for moderate risk and problem gamblers		
	Moderate risk gamblers	Problem gamblers	All DRF gamblers
	%	%	%
<b>CORE10 score (grouped)</b>			
Non clinical (0-10)	61.9	16.8	18.0
Mild (11-15)	18.3	17.1	17.1
Moderate (16-20)	11.9	21.9	21.7
Moderate/severe (21-25)	5.5	21.4	21.0
Severe (26+)	2.5	22.8	22.2
P-values	P = <0.0001		
<b>Job Loss through gambling</b>			
Refused	0.5	0.9	0.9
Don't know	3.4	3.1	3.1
Yes	4.9	12.3	12.1
No	91.2	83.8	84.0
P-values	P = 0.014		
<b>Relationship loss through gambling</b>			
Refused	1.5	1.5	1.5
Don't know	3.4	3.1	3.1
Yes	14.7	26.6	26.3
No	80.4	68.8	69.1
P-values	P = 0.002		
<b>Early big win</b>			
Refused	1.0	1.1	1.1
Don't know	2.5	2.6	2.6
Yes	51.0	60.7	60.4
No	45.6	35.7	35.9
P-values	P = 0.036		

Appendix table A:12 (Cont) Socio-demographic characteristics in the DRF data, by gambling severity

Base: All gamblers, England and Scotland	DRF data for moderate risk and problem gamblers		
	Moderate risk gamblers	Problem gamblers	All DRF gamblers
	%	%	%
<b>Debt due to gambling</b>			
Missing	8.9	6.9	7.0
No	58.8	25.5	26.3
Under £5000	11.8	26.5	26.1
£5000 - £9999	6.9	13.0	12.9
£10,000 - £14,999	4.4	8.0	7.9
£15,000 - £19,999	2.9	5.1	5.0
£20,000 - £99,999	5.9	12.8	12.6
£100,000 or more	0.5	1.2	1.2
Bankruptcy	0.0	0.5	0.4
In an IVA	0.0	0.5	0.5
P-values	P = <0.0001		
<i>Bases</i>	<i>204</i>	<i>7672</i>	<i>7876</i>

Appendix table A:13 Gambling activities listed in the DRF, by gambling severity

	DRF data
<b>Gambling activity</b>	<b>Proportion selecting this activity</b>
<i>Moderate risk gamblers (n = 205)</i>	<b>%</b>
Online gambling	28.8
Virtual gaming machines in a bookmakers	24.9
Online betting with a bookmaker on any event or sport	24.4
Betting on horse races	13.2
Table games (roulette, cards or dice) in a casino	12.2
Betting on other events	10.7
Fruit or slot machines	9.8
The football pools	6.3
Betting on dog races	4.4
Another form of gambling	1.0
Bingo cards or tickets, including playing at a bingo hall (not online)	0.5
Betting on sports events	0.5
Playing poker in a pub tournament/ league or at a club	0.0
Betting exchange	0.0
Spread-betting	0.0
Private betting	0.0

Appendix table A:14 (Cont) Gambling activities listed in the DRF, by gambling severity

	DRF Data
<b>Gambling activity</b>	<b>Proportion selecting this activity</b>
<i>Problem gamblers (n = 7689)</i>	%
Online gambling	32.9
Virtual gaming machines in a bookmakers	28.9
Online betting with a bookmaker on any event or sport	24.7
Betting on other events	18.5
Betting on horse races	12.1
Fruit or slot machines	11.8
Table games (roulette, cards or dice) in a casino	9.7
The football pools	4.7
Betting on dog races	4.6
Another form of gambling	2.5
Bingo cards or tickets, including playing at a bingo hall (not online)	1.2
Spread-betting	1.2
Betting on sports events	1.0
Playing poker in a pub tournament/ league or at a club	0.5
Private betting	0.2
Betting exchange	0.2

Appendix table A:15 Comparison of gamblers in the DRF and HSE/SHeS

Base: All gamblers, England and Scotland	Combined data from the HSE/SHeS and DRF			
	Problem Gamblers		Moderate risk	
	HSE/SHeS	DRF	HSE/SHeS	DRF
	%	%	%	%
<b>Gender</b>				
Male	90.6	87.6	75.7	90.2
Female	9.4	12.4	24.3	9.8
P-values	P = 0.404		P=<0.0001	
<b>Age (grouped)</b>				
Under 25	18.1	16.8	21.5	15.2
25-34	32.5	43.1	32.4	33.7
35-44	15.2	23	19.7	27.3
45-54	20.4	11.4	12.6	14.6
55+	13.9	5.7	13.7	8.3
P-values	P = 0.010		P=0.133	
<b>Activity status</b>				
In work	63.9	78.4	69.3	80
Student/training	0	2.1	3.3	2.9
Inactive - seeking	12.9	10.3	9.1	8.3
Other inactive	20.6	7.7	10.8	5.9
Retired	2.6	1.5	7.6	2.9
P-values	P = 0.010		P=0.170	
<b>Country of residence</b>				
England	91.7	95.8	90.5	98.5
Scotland	8.3	4.2	9.5	1.5
P-values	P = 0.005		P=0.000	
<i>Bases</i>	90	7689	187	205

Appendix table A:16 Comparison of ethnicity of gamblers in the DRF and HSE

Base: All gamblers, England	Combined data from the HSE and DRF			
	Problem Gamblers		Moderate risk	
	HSE	DRF	HSE	DRF
	%	%	%	%
<b>Ethnicity (grouped)</b>				
White British/other	73.7	89.8	94.7	92.6
Asian	7.9	4.6	1.5	3.5
Black	8.1	2.4	1	2
Mixed+Other	10.2	2.6	2.8	1.5
P-values	P = 0.011		P=0.537	
<i>Bases</i>	60	7363	121	202

Appendix table A:17 Frequency of gambling for gamblers in the DRF and HSE/SHeS

Base: All gamblers, England and Scotland	Combined data from the HSE/SHeS and DRF			
	Problem Gamblers		Moderate risk	
	HSE/SHeS	DRF	HSE/SHeS	DRF
	%	%	%	%
Frequency of gambling <sup>1</sup>				
More than once a month	19.9	5.2	19.6	12.4
More than once a week but less than once a month	6.4	7.3	6.0	15.3
Once a week	23.8	9.6	28.3	14.3
Less than once a week	50.0	78.0	46.1	58.0
P-values	P = <0.0001		P=0.001	
<i>Bases</i>	89	6966	188	169

<sup>1</sup> Excludes DRF cases with missing responses

## Appendix B. Approaches to reconciling the gambling activities

Gambling behaviour is asked in both HSE and SHeS in a self-completion document. The respondent is asked **‘Have you spent any money on any of the following activities in the last 12 months? Please tick ONE box for each activity’**.

The question used by DRF is: **What are your main types of Gambling: (Put a number ‘1’ against the one you do most, ‘2’ against the next and so on). You do not need to enter a number for those that do not apply.**

The DRF data will be recoded so that the derived variable = 1 if the respondent has taken part in that gambling activity, and zero otherwise.

The DRF question does not specify a time frame, it is also possible for respondents to exclude some forms of gambling as they do not view them as their ‘main’ activity. This means the two questions do not measure exactly the same concept. However, there is sufficient overlap that the two sets of variables can be used to indicate where there are differences in the types of gambling carried out by the general population and the population receiving treatment.

In addition, the DRF questionnaire includes a more detailed list of response options; 48 options, compared with 19 in the HSE/SHeS questionnaire. An attempt was made to reconcile the two sets of activity codes. The two sets of response codes and suggested parallels are given below:

<b>Gambling activities listed in HSE/SHeS</b>
Spent money on: Tickets for the National Lottery
Spent money on: Scratch cards (not online or newspaper or magazine Scratch cards)
Spent money on: Tickets for any other lottery, including charity lotteries
Spent money on: The football pools
Spent money on: Bingo cards or tickets, including playing at a bingo hall (not online)
Spent money on: Fruit or slot machines
Spent any money on: Virtual gaming machines in a bookmakers
Spent money on: Table games (roulette, cards or dice) in a casino
Spent any money on: Playing poker in a pub tournament/ league or at a club
Spent any money on: Online gambling
Spent any money on: Online betting with a bookmaker on any event or sport
Spent money on: Betting exchange
Spent money on: Betting on horse races <u>in a bookmakers, by phone or at the track</u>
Spent any money on: Betting on dog races <u>in a bookmakers, by phone or at the track</u>
Spent money on: Betting on sports events <u>in a bookmakers, by phone or at the venue</u>
Spent money on: Betting on other events <u>in a bookmakers, by phone or at the venue</u>
Spent money on: Spread-betting
Spent money on: Private betting
Spent any money on: Another form of gambling



<b>Gambling activities used on the DRF questionnaire and parallels with the codes used on HSE/SHes codes</b>	
<b>DRF questionnaire</b>	<b>Parallels to HSE CODES</b>
Adult Entertainment Centre: Gaming Machine	Fruit/slots
Adult Entertainment Centre: Other	NO DIRECT PARALLEL – Another form of gambling
Bingo: Gaming Machines	Fruit or slot machines
Bingohall: LiveDraw	Bingo cards or tickets
Bingohall: Other	Bingo cards or tickets
Bingohall: Skill Machine	NO DIRECT PARALLEL – Another form of gambling
Bingohall: Terminal	Bingo cards or tickets
Bookmaker: Other	Betting on other events <u>in a bookmakers, by phone or at the venue</u>
Bookmakers: Dogs	Betting on dog races <u>in a bookmakers, by phone or at the track</u>
Bookmakers: Gaming Machines	Virtual gaming machines in a book maker
Bookmakers: Horses	Betting on horse races <u>in a bookmakers, by phone or at the track</u>
Bookmakers: Sports	Betting on sports events <u>in a bookmakers, by phone or at the venue</u>
Casino: Gaming Machines	Fruit or slot machines
Casino: Other Card Games	Table games in a casino
Casino: Other	Table games in a casino
Casino: Poker	Table games in a casino
Casino: Roulette	Table games in a casino
Family Entertainment Centre: Gaming Machine	Fruit or slot machines
Family Entertainment Centre: Other	NO DIRECT PARALLEL – Another form of gambling
Live Events: Dogs	Betting on dog races <u>in a bookmakers, by phone or at the track</u>
Live Events: Horses	Betting on horse races <u>in a bookmakers, by phone or at the track</u>
Live Events: Other	Betting on other events <u>in a bookmakers, by phone or at the venue</u>
Live Events: Sports	Betting on sports events <u>in a bookmakers, by phone or at the venue</u>
Misc: Football Pools	Football pools
Misc: Lottery Other	Other lottery
Misc: Private Organised Games	Private betting or gambling
Misc: Scratch Cards	Scratch cards
Misc: Service Station Gaming Machines	Fruit or slot machines
Online: Betting Exchange	Betting exchange
Online: Bingo	Online gambling on online casino games/slots/bingo
Online: Casino Slots	Online gambling on online casino games/slots/bingo

<b>Gambling activities used on the DRF questionnaire and parallels with the codes used on HSE/SHes codes</b>	
Online: Casino Table Games	Online gambling on online casino games/slots/bingo
Online: Dogs	Online betting
Online: Horses	Online betting
Online: Other	Online betting
Online: Poker	Online gambling on online casino games/slots/bingo
Online: Scratch cards	Online gambling on online casino games/slots/bingo
Online: Sports events	Online betting
Online: SpreadBetting	Spreadbetting
Private Club: Gaming Machines	Fruit or slot machines
Private Club: Other Card Games	NO DIRECT PARALLEL – Another form of gambling
Private Club: Other	NO DIRECT PARALLEL – Another form of gambling
Private Club: Poker	Poker played at a club, pub etc
Pub: Gaming Machines	Fruit or slot machines
Pub: Poker	Poker played at a club, pub etc
Pub: Sports	NO DIRECT PARALLEL – Another form of gambling

## Appendix C. Results of the multivariate analysis

In this section we present the full output of the multivariate models presented in Section 5. The outcome variable is data source. The predictor variables are all the variables in the combined data that are in a comparable format.<sup>32</sup>

The odds ratios show the direction and size of the relationship between the different characteristics and the data source. If the value is greater than one it indicates that the characteristic is more likely to appear in the DRF data, a value less than one indicates the reverse. T-tests were used to formally test the relationship between the different characteristics and data source. The p-values indicate whether this relationship is statistically significant; if the p-value for a category is less than 0.05 then the proportion of sample belonging to the DRF in that category is significantly different from the reference category. The tables also present lower and upper confidence intervals.

Appendix table C:1 Multivariate model of differences between problem gamblers in the DRF and HSE/SHeS

Base: <i>All problem gamblers</i>	<i>Combined data from the HSE/SHeS and DRF</i>					
	Odds Ratio	Linearized standard error	t	P>t	95% confidence interval	
					Lower	Upper
PGSI score	1.28	0.05	5.8	<0.0001	1.18	1.39
Frequency of gambling <sup>1</sup>						
More than once a month	0.23	0.10	-3.3	0.001	0.10	0.55
More than once a week but less than once a month	0.96	0.43	-0.1	0.925	0.39	2.33
Once a week	0.31	0.11	-3.5	0.001	0.16	0.60
Less than once a week	(baseline)					
Gender						
Female	1.69	0.71	1.2	0.213	0.74	3.85
Male	(baseline)					
Age (grouped)						
Under 25	1.41	0.73	0.7	0.504	0.51	3.91
25-34	2.29	1.07	1.8	0.077	0.91	5.71
35-44	2.67	1.33	2.0	0.048	1.01	7.07
45-54	1.41	0.63	0.8	0.446	0.58	3.41
55+	(baseline)					

<sup>32</sup> This analysis is based on 7779 problem gamblers (i.e. 7689 DRF cases plus 90 survey cases) and 392 low and moderate risk gamblers (i.e. 205 DRF plus 187 survey cases) as defined by PGSI

**Appendix table C:2 (Cont) Multivariate model of differences between problem gamblers in the DRF and HSE/SHeS**

Base: <i>All problem gamblers</i>	Combined data from the HSE/SHeS and DRF					
	Odds Ratio	Linearized standard error	t	P>t	95% confidence interval	
					Lower	Upper
Activity status						
Inactive - seeking	0.53	0.27	-1.2	0.219	0.19	1.47
Other inactive	0.20	0.08	-4.2	0.000	0.10	0.42
Retired	1.30	0.92	0.4	0.714	0.32	5.20
In work	(baseline)					
Country						
Scotland	0.39	0.11	-3.4	0.001	0.23	0.67
England	(baseline)					
Constant	0.29	0.22	-1.6	0.101	0.07	1.27

Where outcome is 1= GamCare data, 0= HSE/SHeS

Problem gamblers (n= 7779)

**Appendix table C:3 Multivariate model of differences between moderate risk gamblers in the DRF and HSE/SHeS**

Base: <i>All moderate risk gamblers</i>	Combined data from the HSE/SHeS and DRF					
	Odds Ratio	Linearized standard error	t	P>t	95% confidence interval	
					Lower	Upper
PGSI score	1.83	0.21	5.4	0.000	1.47	2.28
Frequency of gambling <sup>1</sup>						
More than once a month	0.69	0.31	-0.8	0.408	0.29	1.65
More than once a week but less than once a month	2.22	1.09	1.6	0.104	0.85	5.81
Once a week	0.47	0.17	-2.1	0.038	0.23	0.96
Less than once a week	(baseline)					
Gender						
Female	0.29	0.13	-2.8	0.005	0.12	0.69
Male	(baseline)					
Age (grouped)						
Under 25	1.05	0.63	0.1	0.931	0.33	3.41
25-34	1.58	0.82	0.9	0.383	0.56	4.41
35-44	1.66	0.94	0.9	0.373	0.54	5.07
45-54	1.09	0.69	0.1	0.890	0.31	3.81
55+	(baseline)					

Appendix table C:4 (Cont) Multivariate model of differences between moderate risk gamblers in the DRF and HSE/SHeS

Base: All moderate risk gamblers	Combined data from the HSE/SHeS and DRF					
	Odds Ratio	Linearized standard error	t	P>t	95% confidence interval	
					Lower	Upper
Activity status						
Inactive - seeking	1.13	0.71	0.2	0.845	0.33	3.89
Other inactive	0.46	0.27	-1.3	0.196	0.14	1.49
Retired	0.64	0.50	-0.6	0.569	0.14	2.99
In work	(baseline)					
Country						
Scotland	0.10	0.08	-2.8	0.006	0.02	0.52
England	(baseline)					
Constant	0.02	0.02	-5.4	0.000	0.01	0.09
<i>Where outcome is 1= GamCare data, 0= HSE/SHeS</i>						
<i>Moderate risk gamblers (n= 392)</i>						