

# Gambling-related harms evidence review: Analysis protocol

## Background

Concern regarding the harms associated with gambling has been increasing in the UK. In response, in March 2018, the Public Health England (PHE) remit letter from Health Minister Steve Brine confirming PHE's priorities for 2018/2019 included the request for PHE to 'inform and support action on gambling-related harm as part of the follow up to the Department for Digital, Culture, Media & Sport-led (DCMS) review of gaming machines and social responsibility'<sup>1</sup>. In May 2018, DCMS published their response to the consultation on proposals for changes to Gaming Machines and Social Responsibility Measures and in it they announced that 'PHE will conduct an evidence review of the health aspects of gambling-related harm to inform action on prevention and treatment'<sup>2</sup>.

To fulfil this commitment, two complimentary evidence reviews are being undertaken. The National Institute of Health Research (NIHR) will undertake a review of the literature on the effectiveness of national and international policies and interventions to reduce gambling-related harms. PHE will undertake a broader evidence review on the prevalence of gambling and associated health harms and social and economic burden.

This protocol relates to the quantitative analysis aspect of the work conducted by PHE only.

## Aim

To describe the prevalence and determinants of gambling, the harms associated with gambling and the social and economic burden of gambling.

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<sup>1</sup> <https://www.gov.uk/government/publications/phe-remit-letter-2018-to-2019>

<sup>2</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/707815/Government\\_response\\_to\\_the\\_consultation\\_on\\_proposals\\_for\\_changes\\_to\\_gaming\\_machines\\_and\\_social\\_responsibility\\_measures.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/707815/Government_response_to_the_consultation_on_proposals_for_changes_to_gaming_machines_and_social_responsibility_measures.pdf)

# Objectives

This analysis protocol concerns the quantitative analysis of secondary data as described in the methodology of the PHE high-level protocol, specifically work to meet the following objectives:

1. To describe the prevalence of gambling and gambling-related harms in England by sociodemographic characteristics, geographical distribution and year.
2. To identify the determinants of gambling and harmful gambling.
4. To examine the social and economic burden of gambling-related harms.

# Methods

## Quantitative analysis of secondary data (Objectives 1, 2 and 4)

A brief search of literature has been undertaken to see if published data for England is available to fulfil these objectives. Limited published data is available. The Health Survey for England (HSE) (years 2012, 2015, 2016 and 2018) has been identified as the primary dataset.

Tables and reports published by NHS Digital will be used to source headline prevalence figures including breakdowns by certain sociodemographic and health measures of interest. However, this in isolation will not address the relevant objectives as outlined in the high-level protocol. Further analysis, including multivariate methods to understand sociodemographic and health factors which may explain the determinants of gambling behaviour, is required to fill gaps not currently addressed elsewhere. The resulting profile of gamblers and problem gamblers will seek to add value to the published work. Furthermore, the exploration of prevalence across groups and explanatory factors that relate specifically to problem gambling may require the combination of multiple years of the HSE. This is necessary due to smaller numbers in the problem gambling group and will necessitate discussion with NatCen, particularly around the method used to combine datasets and issues of appropriate weighting etc. Meeting this objective will address a gap in the published work and seek to add value to current knowledge regarding problem gambling. Consequently, this protocol identifies key variables within the HSE dataset to more fully answer the specific research questions this protocol seeks to address:

- What is the prevalence of gambling and harmful gambling in England by year?
- What sociodemographic factors are associated with gambling and harmful gambling in England?
- Is gambling and harmful gambling associated with health status?

- What are the unit costs associated with these harms?

Although not as recent as the HSE, initial feedback from the Expert Reference Group confirmed there to be greater detail on certain issues included in the 2007 and 2010 British Gambling Prevalence Surveys (BGPS). The BGPS offers additional data on gambling frequency ('regular' gambling or days per month) and gambling volume (money, time spent) and this data is considered good quality following robust testing and assessment. Another important aspect of gambling for Public Health not included in the HSE is the harmful impact upon family members. The BGPS asks one question concerning this issue: "In the last 12 months has any close relative of yours (including partner) had a gambling problem?" The proportion who answered yes is several times higher than the proportion who are estimated to have a problem based on the two screening methods also included (DSM-based questions and the PGSI). The Expert Reference Group consider this to be a neglected area of harm and one that is important to include in this protocol.

### Primary dataset: The Health Survey for England (2012, 2015, 2016 and 2018)

The Health Survey for England (HSE) is a survey of the general population aged 16 and over. Gambling specific questions are included in the 2012 (N= 8,291), 2015 (N=8,034), 2016 (N= 8,011), and 2018 (N = 8,178) surveys only. The full list of variables deemed relevant to the proposed analysis is given at the end of this document.

Typical definitions of gambling participation, low risk, moderate risk, and problem gambling will follow NatCen published reports, particularly 'Gambling behaviour in Great Britain in 2016'<sup>3</sup>. From the HSE, problem gambling can be identified as follows:

- Problem gambling severity index (PGSI) has 9 items, with a maximum possible score of 27 (1-2 = low risk, 3-7 = moderate risk, and 8+ = problem gambler);
- Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-4) has 10 items (3/10 = problem gambler and 5/10 = pathological gambler).

Numbers are small for problem gamblers, so it is likely that the three sets of data will need to be combined to increase the power to detect statistically significant associations in the multivariate analysis.

The Expert Reference Group consider the use of PGSI/DSM-4 to be a very narrow and 'clinical' definition of problem gambling that fails to take into account broader Public

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<sup>3</sup> Conolly, A. et al (2018) *Gambling behaviour in Great Britain in 2016: Evidence from England, Scotland, and Wales*, NatCen.

Health harms such as harms to others. One suggested approach is to include a ROC curve analysis in the report to quantify this as far as possible.

One important aspect of the high-level objectives concerns the possibility of geographical analysis. The lowest geography the project team currently has access to is Government Office Region (GOR). There is potential for NatCen to add a geographical marker to the dataset to permit more discrete analysis; this will incur a standard data release charge of £1,000. The proposal is to purchase aggregated data for the HSE (2012, 2015, 2016, 2018) with a geographical identifier added for key variables that relate to gambling prevalence. This will certainly include ANYACTY (whether spent money on any gambling activity in last 12 months) and NACTYGR (the grouped version) and possibly standard activities like Lotto, bookmakers etc. split by gender if numbers allow. The aim is for this to enable a geographical analysis of gambling prevalence below GOR, and potentially to include a map in the final report. This is contingent on initial exploratory analysis to confirm the feasibility of the approach.

The HSE does ask children certain questions, particularly concerning smoking and alcohol, but this is not the case for the gambling questions. However, a brief search of literature suggests that data may already be published for England which fulfils the aim to include children in the analytic aspect of the work, at least to an extent. The Gambling Commission published an analytical report 'Young people and gambling' in November 2019 which explores the gambling behaviours of young people aged 11-16 years old in England, Scotland, and Wales. The survey the report is based on was conducted by Ipsos MORI and includes adolescent-appropriate application of the DSM-4 to measure at-risk and problem gambling; this corresponds to a measure included in the HSE for adults (see below). This source only permits limited analysis of associations linked to gambling in children as it is exclusively gambling behaviour focused. However, the exploration of gambling behaviours in the cohort is very detailed and includes aspects such as in-game gambling, parental gambling, and those following gambling companies on social media. Furthermore, trend data is available. At time of writing this appears to be the most robust and usable source of intelligence regarding gambling in children. In addition to a review of the published report, the lead for the analytical work will enquire with the Gambling Commission whether England-specific outputs/datasets are accessible to better complement the study population of this protocol. Exploratory work will continue in the early stages of the project to confirm this as the best available source.

Following standard univariate and multivariate analyses, outputs will be non-response weighted in line with standard procedure of HSE analysis since 2003. Weighting ensures the outputs are representative of the population. All key information is available in the comprehensive User Guide, Data Dictionary, and Methods tables published as part of the standard dissemination of the Health Survey for England series. Where

appropriate, confidence intervals will be calculated to quantify the variability of the data in the analysis. Typically, chi-square tests will be used for categorical data, t-tests for continuous data, and other statistical tests as appropriate for the data to determine whether results are statistically significant.

The HSE dataset is available to registered users via the UK Data Archive; in addition, the dataset can be accessed via PHEs Data Lake under current license agreements. Analysis and QA will primarily be conducted in SPSS and the R environment.

## Proposed analysis

The first step in the analysis is to explore the published reports and collate relevant adult and child prevalence data already available. Following this, supplementary analysis will be undertaken to fill gaps in the objectives. Supplementary analyses will broadly cover:

- Gambling participation, low risk, moderate risk, and problem gambling by Index of Multiple Deprivation quintile;
- Geographical prevalence analysis and creation of England map (contingent on feasibility analysis);
- Sociodemographic profile showing which factors explain the determinants of gambling behaviour in the population to a greater and lesser extent based on multivariate analysis;
- Health status profile showing which factors explain the determinants of gambling behaviour in the population to a greater and lesser extent based on multivariate analysis;
- Inclusion and analysis of the HSE 2018 data.

## Reporting

A brief narrative report of the findings of the analysis (including any significant tables/charts etc.) will be presented to the project team to inform the writing of the full peer-reviewed report.

Dissemination materials (e.g. summary and slide-set) and academic outputs will then be produced out of the report as appropriate.

# Governance

Project and Advisory Teams will be set up. The final report will be externally peer reviewed.

## Project Team

Marguerite Regan is project manager for the high-level protocol.

Mark Cook will lead the analytical work.

Fionnuala O'Toole will conduct the review of published data.

Emma Parker/Mark Cook will conduct appropriate quality assurance.

Clare Griffiths and Caryl Beynon will provide support if necessary.

## Expert Reference Group and Internal Advisory Panel

The expert reference group will provide feedback on the protocols and methodological approaches at the beginning of the project, insight throughout as needed and will review a draft of the full report at the end of the review.

List of Expert Reference Group members:

1. Dimitrinka Atanasova, Lancaster University
2. Andrew Booth, Sheffield University
3. Luke Clark, University of British Columbia, Canada
4. Linda Davies, Manchester University
5. Charles Livingstone, Monash University, Australia
6. Jim Orford, Birmingham University
7. Kathryn Oliver, London School of Hygiene and Tropical Medicine
8. Anna van der Gaag, University of Surrey and Chair of the Advisory Board for Safer Gambling

Observers:

1. Julie Carney/Beth Hiles, DCMS
2. Mark Davies/Andrea Duncan, DHSC

An internal advisory panel will be set up to meet on an adhoc basis to help resolve issues that arise in in terms of the evidence synthesis work and other relevant work. This group will be made up of internal PHE staff.

# Timescales

Indicative timescales for the analysis component of the work are given below.

Analysis protocol: Indicative timescales				
Action		Responsibility	Indicative due date	Status
Preliminary review to find published data		Published data review lead	N/A	Complete
Identification of primary dataset		Published data review lead	N/A	Complete
Identification of key variables		Published data review lead	N/A	Complete
Analysis plan shared		Analytical lead	N/A	Complete
Decision log shared		Analytical lead	N/A	Complete
Gambling/harmful gambling definition finalised		Project team	N/A	Complete
Consult with NatCen		Project team	N/A	Complete
Objective 1: To describe the prevalence of gambling and gambling-related harms in England by sociodemographic characteristics, geographical distribution and year	• collation of published works and summary report	Analytical lead	December 2019	Incomplete
	• supplementary analysis	Analytical lead	December 2019	Incomplete
	• quality assurance (repeat analysis)	Analytical lead	December 2019	Incomplete
	• updated brief report	Analytical lead	December 2019	Incomplete
Objective 2: To identify the determinants of gambling and harmful gambling	• multivariate analysis	Analytical lead	April 2020	Incomplete
	• quality assurance (repeat analysis)	Analytical lead	April 2020	Incomplete
Objective 4: To examine the social and economic burden of gambling-related harms	• support to evidence review team	Analytical lead	April 2020	Incomplete
Final quality assurance of all analysis: sense check		Analytical lead	May 2020	Incomplete
Analysis narrative (1st draft)		Analytical lead	May 2020	Incomplete
Review draft		Project team	May 2020	Incomplete
Amend in line with comments		Analytical lead	TBC	Incomplete
Final analysis narrative		Analytical lead	TBC	Incomplete
Peer review		Project team	TBC	Incomplete