The prevalence of gambling and problematic gambling: a systematic review and meta-analysis

Lucy T Tran, Heather Wardle, Samantha Colledge-Frisby, Sophia Taylor, Michelle Lynch, Jürgen Rehm, Rachel Volberg, Virve Marionneau, Shekhar Saxena, Christopher Bunn, Michael Farrell, Louisa Degenhardt

Summary

Background Gambling behaviours have become of increased public health interest, but data on prevalence remain scarce. In this study, we aimed to estimate for adults and adolescents the prevalence of any gambling activity, the prevalence of engaging in specific gambling activities, the prevalence of any risk gambling and problematic gambling, and the prevalence of any risk and problematic gambling by gambling activity.

Methods We performed a systematic review and meta-analysis. We systematically searched for peer-reviewed literature (on MEDLINE, Embase, and PsycInfo) and grey literature to identify papers published between Jan 1, 2010, and March 4, 2024. We searched for any gambling, including engagement with individual gambling activities, and problematic gambling data among adults and adolescents. We included papers that reported the prevalence or proportion of a gambling outcome of interest. We excluded papers of non-original data or based on a biased sample. Data were extracted into a bespoke Microsoft Access database, with the Joanna Briggs Institute Critical Appraisal Tool used to identify the risk of bias for each sample. Representative population survey estimates were firstly meta-analysed into country-level prevalence estimates, using metaprop, of any gambling, any risk gambling, problematic gambling, and by gambling activity. Secondly, population-weighted regional-level and global estimates were generated for any gambling, any risk gambling, problematic gambling, and specific gambling activity. This review is registered on PROSPERO (CRD42021251835).

Findings We screened 3692 reports, with 380 representative unique samples, in 68 countries and territories. Overall, the included samples consisted of slightly more men or male individuals, with a mean age of 29·72 years, and most samples identified were from high-income countries. Of these samples, 366 were included in the meta-analysis. Globally, 46·2% (95% CI 41·7–50·8) of adults and 17·9% (14·8–21·2) of adolescents had gambled in the past 12 months. Rates of gambling were higher among men (49·1%; 45·5–52·6) than women (37·4%; 32·0–42·5). Among adults, 8·7% (6·6–11·3) were classified as engaging in any risk gambling, and 1·41% (1·06–1·84) were engaging in problematic gambling. Among adults, rates of problematic gambling were greatest among online casino or slots gambling (15·8%; 10·7–21·6). There were few data reported on any risk and problematic gambling among adolescent samples.

Interpretation Existing evidence suggests that gambling is prevalent globally, that a substantial proportion of the population engage in problematic gambling, and that rates of problematic gambling are greatest among those gambling on online formats. Given the growth of the online gambling industry and the association between gambling and a range of public health harms, governments need to give greater attention to the strict regulation and monitoring of gambling globally.

Funding Australian National Health and Medical Research Council.

Lancet Public Health 2024

Published Online
July 15, 2024
https://doi.org/10.1016/S2468-2667(24)00126-9

National Drug and Alcohol Research Centre, University of New South Wales, Sydney, NSW, Australia (L T Tran MSc, S Colledge-Frisby PhD, S Taylor MPH, M Lynch MGH, Prof M Farrell MD, Prof L Degenhardt PhD); **School of Social and Political Sciences, University of Glasgow, Glasgow, Scotland, UK** (Prof H Wardle PhD, C Bunn PhD); **National Drug Research Institute Melbourne, Curtin University, Melbourne, VIC, Australia** (S Colledge-Frisby); **Centre for Addiction and Mental Health, Toronto, ON, Canada** (J Rehm PhD); **School of Public Health and Health Science, University of Massachusetts, Amherst, MA, USA** (Prof R Volberg PhD); **Centre for Research on Addiction, Control, and Governance, University of Helsinki, Helsinki, Finland** (V Marionneau PhD); **Department of Global Health and Population, Harvard TH Chan School of Public Health, Boston, MA, USA** (Prof S Saxena MD)

Correspondence to:
Ms Lucy T Tran, National Drug and Alcohol Research Centre, University of New South Wales, Sydney, NSW 2031, Australia
thi.b.tran@unsw.edu.au

Introduction

The commercial gambling industry has seen a rapid expansion globally,[1] with estimates that the global gambling yield (the total amount of money lost by consumers to the gambling industry) will reach US$531 billion by 2025.[2] Alongside this global expansion, there is an increasing recognition of gambling as a public health issue.[3] This worldwide recognition was first shown through a definition of excessive gambling being introduced in the ICD in 1977,[4] closely followed by the inclusion of diagnostic criteria for pathological gambling in the Diagnostic and Statistical Manual of Mental Disorders, third edition (DSM-III).[4] Current iterations of both the ICD and DSM define gambling disorder as a persistent pattern of gambling behaviours, despite experiencing substantial distress or impairment within areas of functioning.[5,6] A range of harms have been identified as related to gambling, including adverse effects on an individual's financial situation, physical health, relationships, psychological health, employment, and education.[7–10]

Previous systematic reviews among adult populations have estimated the prevalence of problem gambling

Research in context

Evidence before this study

A search on PubMed on Jan 4, 2024, using key words of "gambling" and "prevalence" for reviews and meta-analyses in any language on gambling prevalences published since 2012 yielded 119 results. From the identified papers, there were only two global reviews that meta-analysed problematic gambling, with no reviews of any gambling activity prevalences. A 2022 review of studies since 2016 (from 23 studies covering 14 countries) estimated an adult prevalence of problem or pathological gambling of 1·29%, and estimated that 2·43% of adults engaged in moderate risk or at-risk gambling. An earlier review published in 2012 focused on problem gambling prevalence. This review estimated that 2·3% of adults were engaged in problem gambling from 202 studies published between 1975 and 2012. No reviews were identified for the global prevalence for any gambling activity. Most other reviews identified for adults were either reviews with no meta-analysis conducted or were focused on a single country, which were mostly European countries.

One identified review of adolescent studies examined overall gambling behaviours. A 2017 review identified 44 adolescent studies examining problem gambling, although no meta-analysis was conducted. There were country-level variations, with studies finding that 0·2–12·2% of adolescents met the criteria for problem gambling.

Two reviews published in 2021 examined the prevalence of problem online gambling. Neither review conducted meta-analyses, although they both found wide variations across studies. Among adult representative studies, they reported that 2·7–11·1% of people who gambled online would be engaging in problematic gambling. 22·9–57·5% of adolescents who gambled online were engaged in some level of risky gambling behaviours. There were no reviews examining a wide range of individual gambling activities among the population of people who gambled.

Added value of this study

This review is a comprehensive update to previous systematic reviews of gambling prevalence, focusing on both overall and activity-specific gambling behaviours, including peer-reviewed and grey literature sources. Our review of studies published since 2010 identified many more studies than earlier reviews: 380 unique samples using representative population sampling, comprising 3 441 720 individuals. We present global-level, regional-level, and country-level data on the prevalence of any risk, and of problem or disordered gambling behaviours; and the prevalence of different gambling activity use across people engaging in different levels of gambling, and rates of problematic gambling by activity.

Implications of all the available evidence

We identified representative studies reporting gambling data in 68 countries and territories, showing that among these jurisdictions, 46·2% of all adults and 17·9% of adolescents have gambled in the past 12 months. Given that 80% of global territories now legally permit some form of gambling, and that online gambling is also widely available in jurisdictions that do not permit gambling, there are many countries where the extent of gambling engagement and related harms are unknown and unmeasured. This gap is problematic given the rapid expansion in the global availability of gambling and the globalisation of the commercial gambling industry.

(panel) and note variations in national prevalence estimates,[3,11,12] although which countries or regions were included in these searches have differed. A 2017 review found that among adolescents, problem gambling ranged from 0·2 to 12·3%.[13] These previous studies have focused on problem or disordered gambling and not on the fuller spectrum of risk severity. The full spectrum ranges from people at the lower end of the spectrum, who might have some problems from gambling but with few or no negative consequences, to people at the higher end, who might have a range of negative consequences and gamble with a loss of control. Previous reviews have also not considered the overall prevalence of gambling, in any form and across different gambling activities. Nor have they considered differences in problem or disordered gambling across different gambling activities. Such differences matter: a recent review of risk factors for problem gambling found that different gambling activities had varying odds of problem gambling,[14] with online gambling, electronic gambling machines (EGMs), and poker having the highest odds of problems.

See Online for appendix

The aim of our study was to update and expand on previous reviews,[3] through synthesising both adult and adolescent estimates of: (1) the prevalence of any gambling activity; (2) the prevalence of engaging in specific gambling activities; (3) the prevalence of any risk gambling and problematic gambling; and (4) the prevalence of any risk and problematic gambling by gambling activity.

Methods

Search strategy

We conducted a systematic review and meta-analysis with summary estimates. Searches were conducted initially on June 21, 2021, with updated searches on March 4, 2024. The peer-reviewed databases that were searched included MEDLINE (via PubMed), Embase (via Ovid), and PsycInfo (via ProQuest). Papers were identified using a broader search strategy developed for peer-reviewed literature, and outlined in the appendix (p 7). Two search term strategies for gambling (eg, "gambl*", "lottery", and "casino") were developed on the basis of previous reviews[15] combined with terms

related to prevalence (eg, "prevalence", "incidence", and "epidemiology").

The grey literature sources were selected on the basis of a previous review[15] and expert consultation, with the full list of websites searched provided in the appendix (pp 7–8). Because many gambling estimates are less likely to be published in peer-reviewed literature, grey literature sources were searched to ensure that the maximum number of relevant gambling reports and estimates were included.

Eligibility criteria

Quantitative studies, including those reported in theses and dissertations, were included if they were published in or after 2010, and reported at least one of the following: (1) an estimation of the prevalence of gambling, any risk gambling, or problematic gambling; (2) an estimation of the prevalence of any risk or problematic gambling among people who gambled in the past 12 months (any gambling and those gambling on specific activities; ie, conditional prevalence); and (3) the number or proportion of people who engaged in different gambling activities. Studies reported in languages other than English were included, with translations undertaken by a research team member or using Google Translate.

Studies that did not report original research, had non-human participants, were clinical trials, or used case–control or trial methods were excluded. Samples that had fewer than 40 participants or were recruited on the basis of gambling disorder or another clinical diagnosis (eg, participants were recruited on the basis of depression or Parkinson's disease diagnosis) or other potentially biased samples (eg, only male participants aged 18–25 years) were excluded. The reference lists of identified reviews were checked for any additional studies not identified through our searches.

Study selection process

The results of the peer-reviewed searches were de-duplicated in Endnote 20, and then exported to Covidence for screening. Two team members screened each title and abstract (inter-rater agreement=75·2% and Cohen's κ=0·50) and full-text articles (inter-rater agreement=87·2% and Cohen's κ=0·54) for inclusion (LTT, SC-F, LD, and ML). All conflicts were resolved via a consensus. The grey literature reports were saved in EndNote and each paper was screened by two reviewers for inclusion (LTT, SC-F, LD, ML, HW, and VM). Figure 1 depicts a flowchart denoting the inclusion of studies.

Data extraction process

Studies were extracted into a bespoke Microsoft Access database (by LTT and SC-F). Extractions were double-checked by a second, different team member (LTT, SC-F, ML, or ST), and conflicts were resolved between the extractor and double-checker by discussion. We extracted data on study year, time period, location, recruitment strategies, study characteristics of total samples, gambling samples, any risk and problematic gambling, engagement in gambling activities, and related gambling behaviours. Summary estimates were sought. We only sought data for the entire cohort and by certain subgroups (eg, sex or gender, and adolescents *vs* adults, if applicable). If a paper reported disaggregated estimates by sex or gender, age groups, recruitment methods, location, or data collection year, we extracted each study separately where possible. A full list of the variables extracted is available in the appendix (pp 9–10).

***Panel:* Terms used to describe gambling behaviours**

- **Problem or problematic gambling:** a commonly used term to describe individuals who gamble in a manner that it creates multiple problems that disrupt personal, family, financial, and employment circumstances
- **Gambling disorder:** a recognised disorder in the two major classifications of mental and behavioural disorders: the Diagnostic and Statistical Manual of Mental Disorders 5 and ICD-11. These classifications identify gambling disorder as a persistent pattern of gambling behaviours despite experiencing significant distress or impairment within areas of functioning
- **Any risk gambling:** this term is used to include those who meet the thresholds for problematic gambling or gambling disorder but also includes those who, at minimum, report sometimes or occasionally experiencing at least one behavioural symptom or adverse personal, social, or health-related consequence from gambling. This group represents the full spectrum of risk severity

Risk of bias assessment

Two researchers (ML and ST) independently assessed the risk of bias by using the critical appraisal checklist for prevalence studies from the Joanna Briggs Institute[16] (appendix pp 11–12). Any disagreements were discussed and resolved by ML and ST. The items in the checklist identified risk on the basis of nine questions, with a higher number of yes responses linked to a lower risk of bias.

Our review did not conduct any publication bias testing or analysis because quantitative testing is not recommended for meta-analyses of proportional or prevalence estimates.[17] Although we could identify 380 representative samples, only 366 were included in our analyses. Because some studies quantitatively examining gambling prevalences might not be publicly available, it should be noted that publication bias might be present.

For the **Covidence website** see www.covidence.org

Synthesis methods

Only data from studies with samples representative of the country or region's population (representative studies) and reporting past 12-month gambling behaviours were included in the pooled analyses reported in this paper (appendix p 13). Data from studies that reported on the prevalence of any gambling, any risk gambling, and problematic gambling were synthesised using STATA 18, with each sample only

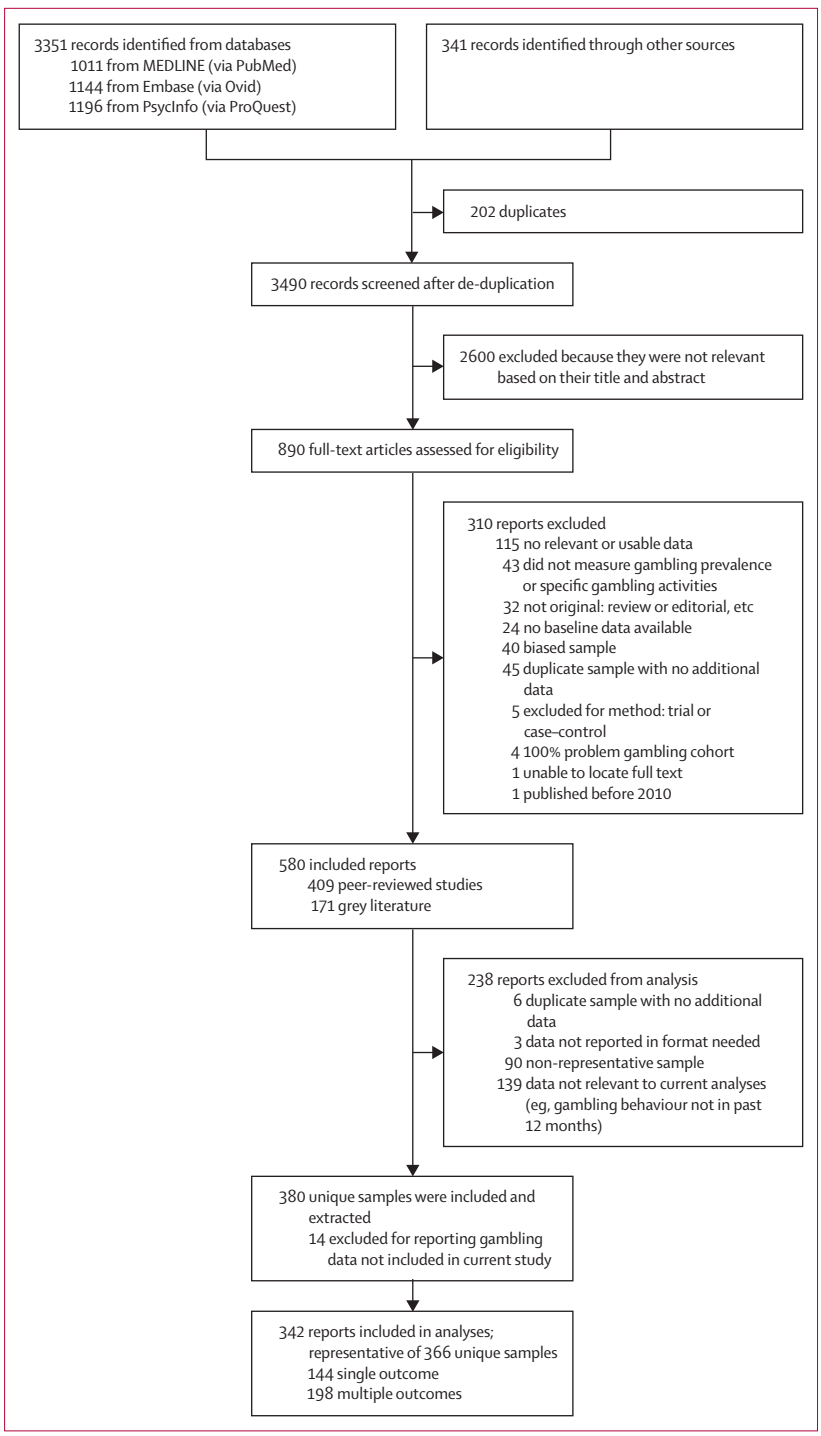


Figure 1: **Flowchart of included studies**

providing one data point (appendix pp 13–14). Random effects meta-analyses using the metaprop command were conducted to estimate the prevalence and 95% CIs of any, any risk, and problematic gambling by country. Global and regional estimates of the number of individuals related to each gambling type prevalence estimate were calculated using the methods developed in previous global reviews conducted by our team.[18–20] The appendix (pp 13–14) details the full methods to estimate regional and global estimates.

Measures and scales that were included in the analyses, with commonly used scales being included, are shown in the appendix (pp 15–16). Any risk was defined as being classified as engaged in any level of gambling risk behaviours, which for most measures consisted of a score of at least 1. Problematic gambling, for our analyses, was an indicator for a substantial risk of experiencing harms associated with gambling. The minimum measure score or cutoff to classify problematic gambling differed between measures, and these definitions are shown in the appendix (pp 15–16). These cutoffs were established by examining each measure and previous research.[21]

Random effects meta-regressions, similar to simple regressions,[22] were conducted to identify potential sources of heterogeneity within the overall prevalence of any, any risk, and problematic gambling within the past 12 months. The potential sources of study-based heterogeneity planned to be explored using meta-regressions were the percentage of women, mean age, percentage of people with alcohol use disorder, percentage of people with substance use disorder, year of data collection, country (other countries *vs* Australia, New Zealand, the UK, Canada, or the USA), and risk of bias score.

A similar analysis method was used to estimate the prevalence and 95% CI for individual gambling activities. Because studies varied in their reported categories of gambling activities, a guide was used to assist in activity categorisation for analyses (appendix pp 16–17). Random effects meta-analyses using the metaprop command estimated, for each individual gambling activity, the proportion among all respondents, people who gambled, and people engaged in problematic gambling in the past 12 months who self-reported engagement with the activity. Additionally, within each individual gambling activity, we estimated the proportion of problematic gambling among people who gambled using that activity in the past 12 months. To explore the potential effect of time on online gambling, we conducted a post-hoc stratification of online gambling prevalences among the general adult population by year of publication (before 2016, 2016–20, and after 2020).

Because of the differences between the availability of gambling avenues for adults and adolescents, we separately analysed studies on adolescents and studies on adults. Adolescent studies were defined as those conducted in primary or secondary schools or where all participants were younger than 18 years. Adult studies were defined as those with participants older than 18 years or did not report an age range. If a study included adolescents and adults but did not report the samples separately, the overall sample was included in the

analyses reflecting the age classification of most participants. Any comparisons made between subgroups were descriptive, with the 95% CI also indicating where differences could be inferred between subgroups. This review is registered on PROSPERO (CRD42021251835).

Role of the funding source

The funder of the study had no role in study design, data collection, data analysis, data interpretation, or writing of the report.

Results

A total of 3692 papers published since 2010 were identified in our searches (figure 1). Of these, 580 identified reports met our inclusion criteria, of which 380 were unique representative samples covering 68 countries and territories and including 3 441 720 individuals (table 1; appendix pp 18–38). Overall, the included samples consisted of slightly more men or male individuals, with a mean age of 29·72 years (table 1). Most samples identified were from high-income countries. No estimates were identified in the Pacific Island states and territories, central Asia, and the Caribbean, with one sample available from the Middle East; nonetheless, the samples covered countries containing 43% of the global population (appendix pp 18–38). Adult samples were from 43 countries and territories, representing 41% of the global adult population. Adolescent samples covered 56 countries and territories and 50% of the global adolescent population.

Of these samples, 366 were included in the meta-analysis (figure 1), covering 67 countries and territories: 299 samples reported on any gambling activity, 209 samples on any risk gambling activity, and 166 samples on problematic gambling in the past 12 months. The full table denoting the studies available for each analysis can be found in the appendix (pp 38–39), with pooled country-level estimates in the appendix (pp 40–44). Across studies, numerous methods were used to measure any risk gambling and problematic gambling, with the most common being the Canadian Problem Gambling Index or Problem Gambling Severity Index, the DSM-IV or DSM-5 criteria, and South Oaks Gambling Screen (appendix pp 15–16).

First, we estimated the prevalence of any gambling, any risk, and problematic gambling. In total, 166 samples reported on any gambling activity in the past 12 months, with the highest number of studies from western Europe (k sample [number of studies]=69), followed by North America (k=38) and Australasia (k=33). Globally, 46·2% (95% CI 41·7–50·8) of adults were estimated to have engaged in a gambling activity in the past 12 months (table 2; figure 2); population estimates using 2021 UN population data are presented in table 3. This would translate to an equivalent of 2·3 billion adults (95% CI 2·1–2·6).

Men (49·1%; 95% CI 45·5–52·6) had higher rates of gambling globally than women (37·4%; 32·0–42·5; appendix pp 45–47). Australasia had the highest estimated prevalence at 70·0% (63·5–75·8), with similar levels in North America (61·3%; 51·3–70·8). Latin America had the lowest estimated prevalence at 31·7% (28·0–35·4), although this was based on only two studies.

Among adult samples, 8·7% (95% CI 6·6–11·3; women: 5·5%; 2·5–8·5, and men: 11·9%; 8·2–16·5) engaged in any risk gambling in the past 12 months. Western Europe (k=62), Australasia (k=29), and North

	k samples: representative studies (N=380)	Number of individuals (N=3 441 720)
Sex or gender		
Women	222	1 059 592
Men	222	1 388 196
Study sample		
Adult study	214	2 134 763
Adolescent study	166	1 305 151
Mean age, SD	29·72	15·05
Study region		
Australasian	36	299 126
East and southeast Asia	25	75 081
South Asia	2	6503
Middle East	1	3244
Eastern Europe	65	216 641
Western Europe	180	2 393 837
Africa	7	11 019
Latin America	5	66 829
North America	59	369 440
Gambling scale used to assess any risk gambling		
Brief Biosocial Gambling Screen	1	2000
Canadian Problem Gambling Index or Problem Gambling Severity Index	105	872 086
DSM-IV or DSM-5	31	210 198
Lie-Bet	9	132 021
National Opinion Research Centre DSM Screen for Gambling Problems or National Opinion Research Centre DSM Screen for Gambling Problems, Loss of Control and Lying, and Preoccupation Items	5	29 053
Problem and Pathological Gambling Measure	8	45 745
South Oaks Gambling Screen or South Oaks Gambling Screen, revised for adolescents	26	207 585
Other	7	56 075
Gambling scale used to assess problematic gambling		
Canadian Problem Gambling Index or Problem Gambling Severity Index	96	793 177
DSM-IV or DSM-5	46	304 818
National Opinion Research Centre DSM Screen for Gambling Problems or National Opinion Research Centre DSM Screen for Gambling Problems, Loss of Control and Lying, and Preoccupation Items	5	21 212
Problem and Pathological Gambling Measure	7	38 559
South Oaks Gambling Screen	30	174 883
Other	3	45 051

Note: the data in the table are based on all representative samples identified by systematic review. DSM=Diagnostic and Statistical Manual.

Table 1: **Included study characteristics**

	Any gambling activity				Any risk gambling				Problematic gambling			
	Adults		Adolescents		Adults		Adolescents		Adults		Adolescents	
	k samples: number of studies reporting outcome (N)	Estimated gambling prevalence, % (95% CI)	k samples: number of studies reporting outcome (N)	Estimated gambling prevalence, % (95% CI)	k samples: number of studies reporting outcome (N)	Estimated gambling prevalence% (95% CI)	k samples: number of studies reporting outcome (N)	Estimated gambling prevalence, % (95% CI)	k samples: number of studies reporting outcome (N)	Estimated gambling prevalence, % (95% CI)	k samples: number of studies reporting outcome (N)	Estimated gambling prevalence, % (95% CI)
Australasia	33 (288 082)[23-55]	70·0% (63·5–75·8)	3 (17 936)[56-58]	9·4% (8·9–10·0)	29 (264 067)[23-26,28-33,35-43,45-49,51,54,55,59]	7·8% (6·3–9·5)	2 (11 559)[56,57]	2·7% (2·2–3·2)	27 (257 092)[23-26,28-33,36-43,45-51,54,55]	0·7% (0·5–0·8)	1 (3746)[56]	0·7% (0·4–1·0)
East and southeast Asia	9 (18 545)[60-69]	49·0% (46·7–51·2)	3 (10 228)[70-72]	10·9% (9·9–12·0)	3 (9745)[63,64,73]	5·9% (5·3–6·6)	1 (4734)[70]	..	7 (23 234)[63,64,67-69,74,75]	1·5% (1·2–1·8)	1 (4734)[70]	..
Eastern Europe	14 (26 560)[76-88]	41·3% (36·7–46·3)	32 (87 386)[81,89-92]	21·9% (19·1–25·0)	9 (24 714)[76-80,85,93-95]	6·0% (3·3–10·3)	4 (5888)[89,91,96]	5·5% (4·8–6·4)	7 (20 596)[76-79,85,93,94]	1·3% (1·0–1·7)	2 (2517)[89,91]	1·9% (1·2–2·9)
Western Europe	69 (559 398)[97-156]	49·0% (43·4–55·0)	77 (907 579)[90,92,118,126,129,132,133,147,157-176]	26·6% (21·1–32·8)	62 (470 396)[98-100,102,103,105-109,111,115-135,137-145,148-153,155,177-184]	7·0% (5·0–9·3)	27 (201 038)[96,118,129,132,133,147,159-165,167,168,172,176,180,185-187]	4·6% (2·9–6·9)	51 (381 993)[97,100,102,103,106-111,114,117,119-142,144,148-151,155,177,180-182,184,188,189]	1·3% (1·0–1·7)	15 (105 748)[129,133,159-165,167,168,180]	1·6% (1·1–2·1)
Middle East	1 (3244)[190]	45·4% (39·9–50·8)	..	..	1 (3244)[190]	10·3% (7·6–13·6)	..	..	..	..	..	..
Africa	..	..	1 (378)[191]	18·9% (15·6–22·5)	1 (3000)[192]	10·7% (8·0–13·9)	1 (796)[193]	..	1 (3000)[192]	1·5% (1·1–2·0)	..	..
Latin America	2 (4307)[194,195]	31·7% (28·0–35·4)	..	..	..	..	..	..	1 (56 877)[196]	1·1% (0·8–1·6)	..	..
North America	38 (293 794)[197-233]	61·3% (51·3–70·8)	13 (33 567)[234-238]	33·7% (24·5–43·6)	26 (229 098)[198,201,203,204,206-208,211,212,215-219,221-224,226,228,229,231,239,240]	13·8% (9·1–19·4)	1 (2484)[236]	27·8% (26·0–29·6)	26 (212 237)[198,201,203,206-208,211,212,215,216,218,219,221-224,226,228,229,231,236,239-242]	1·6% (1·0–2·5)	1 (2484)[236]	10·4% (9·2–11·6)
Global	166 (1 193 930)	46·2% (41·7–50·8)	129 (1 057 074)	17·9% (14·8–21·2)	131 (1 004 264)	8·7% (6·6–11·3)	36 (266 499)	..	121 (958 273)	1·4% (1·1–1·8)	20 (119 229)	..

If there were no or few data reported in a study, it resulted in no estimate calculated. No data were available for the Pacific Island states and territories, central Asia, south Asia, or the Caribbean.

Table 2: **Estimated pooled regional population prevalence of adults and adolescents engaged in any gambling activity, any risk gambling, and problematic gambling in the past 12 months**

www.thelancet.com/infection **Published online July 15, 2024 https://doi.org/10.1016/S2468-2667(24)00126-9**

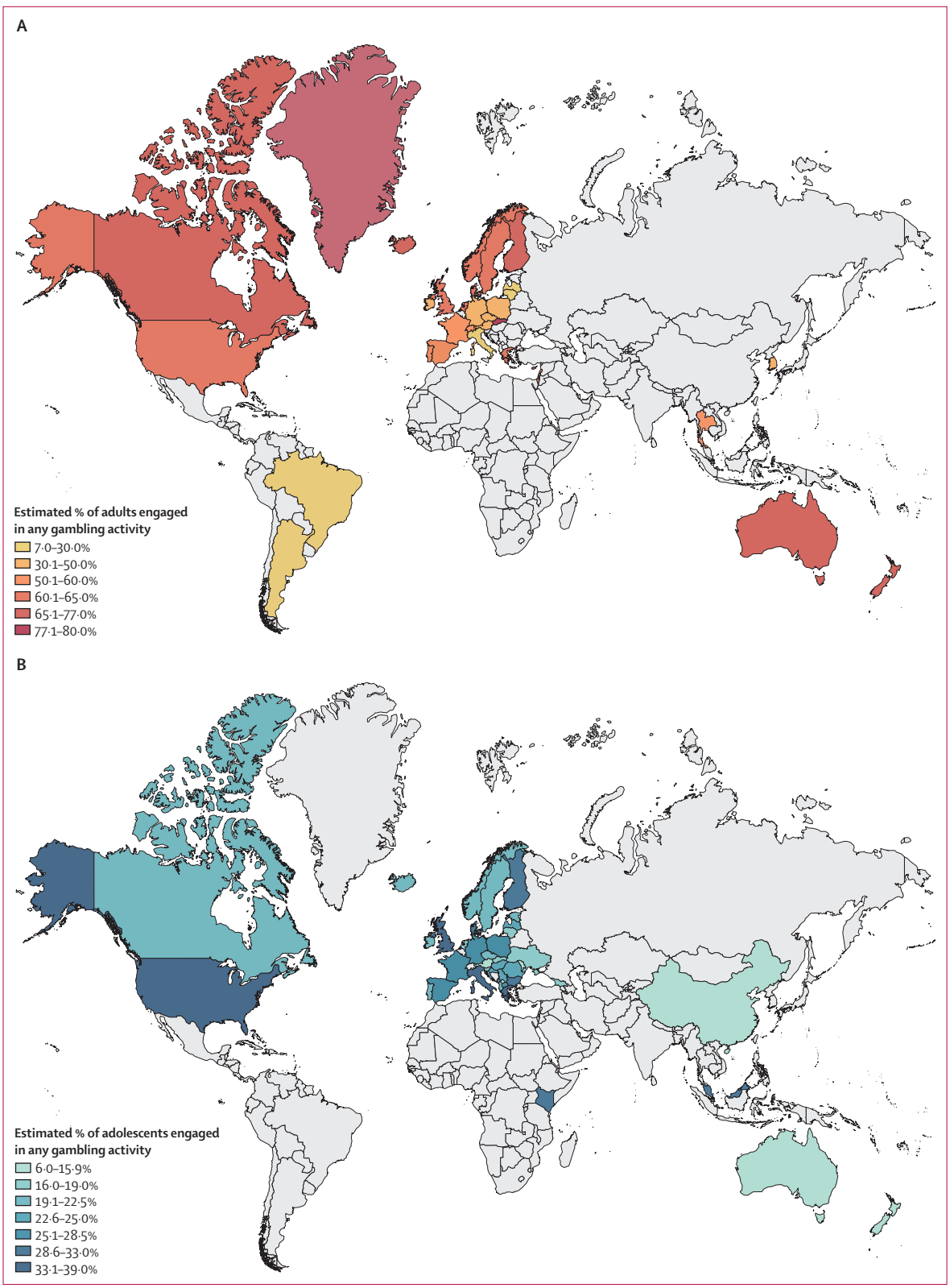


Figure 2: Estimated prevalence of adults (A) and adolescents (B) engaged in any gambling activities in the past 12 months among representative studies

	Any gambling activity	Any risk gambling	Problematic gambling
Adults			
Australasia	13 669 500 (12 409 500–14 813 500)	1 519 000 (1 222 000–1 864 000)	128 000 (97 000–162 500)
Pacific Island states and territories	3 434 000 (3 011 000–3 854 500)*	768 000 (557 000–1 021 500)*	105 500 (75 500–143 000)*
Central Asia	21 569 000 (18 913 500–141 000)*	4 824 000 (3 499 000–6 415 500)*	664 000 (474 500–897 500)*
East and southeast Asia	791 573 500 (755 454 000–827 693 500)	93 811 500 (83 802 000–104 461 500)	23 748 500 (19 629 000–28 363 500)
South Asia	582 364 000 (510 666 500–653 661 500)*	130 251 500 (94 470 500–173 220 000)*	17 922 000 (12 817 000–24 238 000)*
Eastern Europe	87 789 000 (77 928 000–98 369 500)	12 716 000 (6 949 500–21 887 500)	2 840 500 (2 135 500–3 643 500)
Western Europe	138 917 500 (122 903 500–155 712 000)	20 129 500 (14 533 000–26 960 500)	3 618 000 (2 735 500–4 712 500)
Middle East	78 123 500 (68 735 500–87 459 500)†	17 768 500 (13 062 000–23 409 000)†	2 394 500 (1 713 500–3 236 000)*
Africa	339 822 000 (297 985 000–381 426 000)*	80 311 000 (59 951 500–104 661 000)†	11 175 500 (8 115 500–14 928 500)†
Caribbean	12 483 000 (10 946 000–14 011 000)*	2 792 000 (2 025 000–3 713 000)*	384 000 (274 500–519 500)*
Latin America	130 076 500 (114 753 000–145 421 500)	41 504 500 (30 103 000–55 196 000)*	4 775 000 (3 451 000–6 406 500)†
North America	147 238 000 (123 285 000–170 106 500)	33 199 000 (21 743 000–46 626 500)	3 932 500 (2 301 500–6 040 000)
Global	2 347 059 500 (2 116 991 500–2 576 738 500)	439 594 500 (331 917 000–569 436 500)	71 688 000 (53 820 000–93 291 500)
Adolescents			
Australasia	245 500 (231 500–260 500)	70 000 (58 000–83 000)	17 500 (11 000–25 000)
Pacific Island states and territories	352 000 (289 000–420 000)*	..	..
Central Asia	1 618 000 (1 329 000–1 930 000)*	..	..
East and southeast Asia	23 792 000 (21 591 500–26 087 500)	..	..
South Asia	47 694 000 (39 169 500–56 888 000)*	..	..
Eastern Europe	5 233 000 (4 550 000–5 964 000)	1 322 000 (1 136 000–1 524 000)	460 500 (296 500–690 000)
Western Europe	8 768 500 (6 965 000–10 803 500)	1 524 500 (970 500–2 261 500)	528 500 (379 500–707 000)
Middle East	6 299 500 (5 173 500–7 514 000)*	..	..
Africa	40 519 500 (33 354 000–48 234 500)*	..	..
Caribbean	864 500 (710 000–1 031 000)*	..	..
Latin America	12 765 000 (10 483 500–15 225 500)*	..	..
North America	11 430 000 (8 314 000–14 764 500)	9 409 000 (8 818 000–10 011 500)	3 518 000 (3 121 500–3 935 500)
Global	159 581 000 (132 160 500–189 122 000)	..	..

Data are n (95% CI), and are rounded to the nearest 500. *No estimates were reported for analysis, so the calculated global prevalence estimate was used to calculate the estimate for these regions. †Region only had one country estimate, so the estimated number of individuals was mainly based on the calculated global prevalence estimate. Where there are no estimates, this was because of an absence of data.

Table 3: **Estimated number of individuals engaged in any gambling activity, any risk gambling, and problematic gambling in the past 12 months by region**

America (k=26) provided most of the 131 estimates of any risk gambling. The highest estimate was for North America (13·8%; 9·1–19·4). Other regional estimates ranged from 5·9% (5·3–6·6) in east and southeast Asia to 10·7% (8·0–13·9) in Africa.

The majority of the 121 samples reporting on adult prevalence of problematic gambling were from western Europe (k=51), Australasia (k=27), and North America (k=26). We estimated that 1·4% (95% CI 1·1–1·8) of adults (women: 1·0%; 0·5–1·8; and men: 2·2%; 0·9–3·9; appendix pp 45–47) engaged in problematic gambling in the past 12 months, equating to 71·7 million (95% CI 53·8–93·3 million) people. Regional estimates ranged from 0·7% (0·5–0·8) in Australasia to 1·6% (1·0–2·5) in North America.

Among adolescent samples with any gambling estimates (k=129; appendix pp 18–39), the majority were studies from western Europe (k=77) and eastern Europe (k=32). An estimated 17·9% of adolescents had gambled in the past 12 months (95% CI 14·8–21·2; table 2; figure 2). Of the 44 samples reporting any gambling estimates by sex or gender, the estimated prevalence was again lower among girls (21·0%; 15·4–27·9) compared with boys (40·8%; 33·9–48·0; appendix pp 47–49). North America (k=13) had the highest regional estimate at 33·7% (24·5–43·6). Regional estimates otherwise ranged from 9·4% (8·9–10·0; k=3) for Australasia to 26·6% (21·1–32·8; k=77) for western Europe.

There were few data on adolescents for any risk and problematic gambling, resulting in an inability to establish a representative global estimate. 36 samples reported any risk gambling. Most of the data came from western European samples (k=27). North America (k=1) had a higher any risk gambling estimate at 27·8% (95% CI 26·0–29·6) compared with other regions, which ranged from 2·7% (2·2–3·2; k=2) for Australasia to 5·5%

(4·8–6·4; k=4) for eastern Europe. Across regions (k=12), boys were estimated to engaged in any risk gambling at higher rates (9·3–38·1%) than girls (2·5–25·6%).

We found 20 samples estimating the prevalence of problematic gambling among adolescents, most from western Europe (k=15). North America (k=1) had a significantly higher estimate of 10·4% (95% CI 9·2–11·6) compared with other regional estimates ranging from 0·7% (0·4–1·0; k=1) in Australasia to 1·9% (1·2–2·9; k=2) in eastern Europe. Eight samples reported problematic gambling data by sex or gender, with higher rates of boys engaging in problematic gambling (4·7–14·5%) compared with girls (0·5–4·9%).

Conditional estimates were also calculated for the prevalence of any risk and problematic gambling among people who gambled in the past 12 months. An estimated 14·2% (95% CI 9·6–19·7; women: 10·9%; 9·5–12·6; and men: 17·9%; 16·2–19·9) of adults who gambled engaged in any risk gambling, of whom 2·8% (1·9–3·9; women: 1·2%; 0·8–1·7; and men: 2·8%; 2·2–3·6) were estimated to engage in problematic gambling (table 4; appendix pp 47–49). Eastern Europe (k=9; 21·9%; 14·8–30·2) and North America (k=22; 20·6%; 13·6–28·6) had the highest estimates of any risk gambling among those who gambled. The highest regional estimates of problematic gambling were North America (k=25; 4·7%; 3·1–6·6) and eastern Europe (k=6; 4·0%; 3·0–5·0).

Of adolescents who gambled, samples reporting on any risk gambling (k=25) and problematic gambling (k=18) were mostly from western Europe (k=19 and 13, respectively). Similar to adolescent population estimates, North America (k=1; 34·0%; 31·9–36·1) and Australasia (k=3; 33·7%; 30·7–36·7) had higher estimates of any risk gambling compared with western Europe (k=19; 18·4%; 14·7–22·5). Australasia (k=1) had the highest conditional estimate for problematic gambling (12·8%; 8·4–17·8) with the lowest estimate for western Europe (k=13; 5·2%; 2·9–8·9).

Meta-regressions (appendix p 50) indicated that the country of study was the factor most consistently identified as being associated with variations in gambling estimates. Adult samples from Australia, New Zealand, the UK, Canada, and the USA were associated with higher estimates of any gambling activity in the past 12 months compared with all other countries (appendix p 50). For other population estimates, compared with other countries, USA and Canadian samples were found to have higher any risk gambling estimates. Among people who had gambled in the past 12 months, UK and Canadian samples had lower estimates of any risk gambling, and US studies had higher estimates of problematic gambling, compared with all other countries. Samples with higher proportions of women had higher conditional estimates of any risk gambling, but lower estimates of problematic gambling.

Meta-regressions of adolescent estimates found that samples with lower proportions of women and people from the USA were associated with higher estimates of any gambling activity in the past 12 months (appendix pp 50–51). However, Australian samples and later data collection years were associated with lower estimates of any gambling activity. Among population estimates, samples with lower proportions of women and samples from the USA, compared with samples from other

	Any risk gambling				Problematic gambling			
	Adults		Adolescents		Adults		Adolescents	
	k samples: number of studies reporting outcome (N)	Prevalence of gambling, % (95% CI)	k samples: number of studies reporting outcome (N)	Prevalence of gambling, % (95% CI)	k samples: number of studies reporting outcome (N)	Prevalence of gambling, % (95% CI)	k samples: number of studies reporting outcome (N)	Prevalence of gambling, % (95% CI)
Australasia	29 (160 441)[23-26,28-33,35-43,45-49,51,53-55,59]	14·1% (11·4–17·0)	3 (2436)[56-58]	33·7% (30·7–36·7)	26 (152 275)[23-33,36-43,45,47-49,52,54,55]	1·2% (0·9–1·5)	1 (196)[56]	12·8% (8·4–17·8)
East and southeast Asia	2 (1949)[63,64]	4·5% (3·6–5·6)	1 (1324)[70]	..	8 (6889)[60,61,63-65,67-69]	1·4% (0·9–2·1)	2 (1982)[70,71]	11·6% (9·3–14·0)
Eastern Europe	9 (10 853)[76-80,85,93,95,243]	21·9% (14·8–30·2)	1 (453)[89]	..	6 (6642)[76-79,85,93]	4·0% (3·0–5·0)	1 (453)[89]	..
Western Europe	59 (264 229)[99,102,103,105-108,111,114-135,137-146,148-155,179,181,243]	17·0% (9·9–25·6)	19 (69 794)[118,129,132,133,147,159-165,167,168,175,176,244]	18·4% (14·7–22·5)	47 (216 160)[101-104,106-108,111,117,119-142,144,146,148-151,155,166,180,181]	2·6% (1·8–3·4)	13 (42 448)[129,133,159-164,167,168,175,176]	5·2% (2·9–8·9)
Middle East	1 (1626)[190]	19·4% (13·1–26·8)	..	..	1 (1626)[190]	3·5% (2·4–4·8)	..	..
Latin America	1 (2159)[245]	20·3% (14·0–27·6)	..	..	1 (2159)[245]	3·5% (2·4–4·8)	..	..
North America	22 (126 148)[198,203,204,206-208,211,212,215-219,222-226,228,231]	20·6% (13·6–28·6)	1 (2030)[236]	34·0% (31·9–36·1)	25 (117 909)[198,202,203,206-208,211-214,216,218,219,221-226,228,231,246]	4·7% (3·1–6·6)	1 (2030)[236]	12·7% (11·3–14·2)
Global	123 (569 106)	14·2% (9·6–19·7)	25 (76 248)	..	114 (503 660)	2·8% (1·9–3·9)	18 (47 109)	..

If there were no or few data reported in a study, it resulted in no estimate calculated. No data were available for the Pacific Island states and territories, central Asia, south Asia, Africa, or the Caribbean.

Table 4: **Estimated conditional prevalence of adults and adolescents engaged in any gambling activity, any risk gambling, and problematic gambling in the past 12 months**

	Among general population		Among people who gambled in the past 12 months		Among people with problematic gambling		Among people engaging in this activity, prevalence of problematic gambling	
	Adults (k=131)	Adolescents (k=103)	Adults (k=130)	Adolescents (k=87)	Adults (k=39)	Adolescents (k=3)	Adults (k=36)	Adolescents (k=5)
Lottery or raffle tickets	44·7 (42·0–47·4)	11·0 (9·7–12·3)	74·5 (71·5–77·5)	44·5 (40·4–48·6)	70·7 (61·2–79·5)	53·6 (39·3–67·6)	2·0 (1·4–2·7)	11·2 (6·3–17·3)
Instant lottery or win	23·9 (21·6–26·3)	13·2 (8·1–19·2)	39·3 (35·3–43·5)	42·9 (29·8–56·5)	52·7 (43·8–61·5)	71·6 (45·3–92·0)*	2·6 (1·9–3·5)	9·6 (3·9–17·6)
Online gambling	7·8 (6·2–9·5)	10·3 (9·3–11·4)	13·3 (10·4–16·6)	48·7 (43·2–54·1)	43·2 (34·6–52·0)	..	8·6 (6·0–11·5)	10·9 (10·1–11·7)*
Online casino or slots gambling	2·7 (2·1–3·4)	3·9 (2·7–5·2)	4·4 (3·2–5·9)	13·6 (8·8–19·2)	19·4 (11·5–28·7)	28·6 (24·5–32·9)*	15·8 (10·7–21·6)	26·4 (22·3–30·7)
Electronic gambling machines	11·6 (9·8–13·5)	4·9 (3·9–6·0)	18·1 (15·6–20·7)	19·5 (16·0–23·2)	64·6 (56·1–72·7)	64·6 (34·4–89·9)	8·1 (5·5–11·1)	19·6 (2·7–46·6)*
Casino gambling	5·6 (4·8–6·5)	8·3 (7·1–9·5)	9·1 (7·9–10·4)	36·4 (31·5–41·6)	32·4 (26·2–39·0)	46·7 (21·7–72·4)*	10·0 (6·0–14·7)	28·6 (26·9–30·4)*
Sports betting	6·9 (6·0–7·8)	9·1 (7·9–10·4)	11·5 (10·2–12·8)	38·8 (34·2–43·6)	34·3 (27·1–41·9)	65·1 (35·8–89·6)*	8·9 (5·2–13·5)	16·3 (5·9–30·5)*
Betting on races	8·4 (6·7–10·4)	1·4 (1·0–2·0)	12·7 (10·3–15·4)	6·5 (4·6–8·7)	37·2 (29·4–45·3)	..	5·9 (3·6–8·6)	29·1 (26·8–31·5)*
Private or non-commercial betting	6·6 (5·6–7·6)	10·2 (6·3–14·8)	10·8 (9·1–12·5)	48·5 (32·4–64·7)	23·7 (15·2–33·3)	78·6 (61·2–92·1)*	4·4 (2·9–6·1)	3·6 (2·2–5·2)*
Financial market gambling	1·9 (1·2–2·7)	..	3·2 (2·0–4·6)	..	9·7 (6·1–13·9)	..	8·6 (3·9–14·7)	..
Bingo	5·4 (4·7–6·1)	6·7 (5·7–7·8)	9·6 (8·2–11·2)	20·8 (16·3–25·7)	20·8 (12·0–31·2)	46·7 (21·7–72·4)*	5·0 (2·3–8·7)	19·9 (18·7–21·1)*

Data are proportion (95% CI). k is the number of samples. *Three or fewer samples reported estimates.

Table 5: **Proportion of individuals engaged with different gambling activities**

countries, had higher estimates of problematic gambling. Australian studies were also found to have higher estimates of any risk gambling, and later data collection year studies had lower estimates of problematic gambling among people who gambled in the past 12 months.

We then looked at individual gambling activities. 131 adult samples reported estimates of individual gambling activities among the general population (table 5; appendix p 39). The most common form of gambling activity was lottery or raffle tickets (44·7%; 95% CI 42·0–47·4) and instant lottery or win games (23·9%; 21·6–26·3). A pooled estimate of 11·6% (9·8–13·5) of adults had engaged with EGMs and 8·4% (6·7–10·4) had placed a bet on races. 7·8% (6·2–9·5) reported gambling online.

Among adults who gambled in the past 12 months, most had used lottery or raffle tickets (74·5%; 95% CI 71·5–77·5), followed by instant lottery or win games (39·3%; 35·3–43·5). 11·5% (10·2–12·8) had engaged in sports betting, 13·3 (10·4–16·6) had engaged in online gambling, and 18·1% (15·6–20·7) had engaged in EGMs.

There was a variation in risk associated with problematic gambling among each of the gambling activities. The highest risk of problematic gambling was estimated for people who used online casino or slots (15·8%; 95% CI 10·7–21·6) and casino gambling (10·0%; 6·0–14·7). EGMs, sports betting, any online gambling, and financial marketing gambling had similar prevalences of problematic gambling among people using those activities to gamble, ranging from 8·1% (5·5–11·1) to 8·9% (5·2–13·5). The most common activities of lottery or raffle tickets (2·0%; 1·4–2·7) and instant lottery or win games (2·6%; 1·9–3·5) had the lowest prevalences of problematic gambling.

For adolescents, in total, 103 adolescent samples assessed the prevalence of individual gambling activities (table 5; appendix p 39). The highest estimated prevalences were for instant lottery or win games (13·2%; 95% CI 8·1–19·2), lottery (11·0%; 9·7–12·3), any online-based gambling (10·3%; 9·3–11·4), and private or non-commercial gambling (10·2%; 6·3–14·8).

Four individual gambling activities were estimated to be used by 40–50% of adolescents who gambled in the past 12 months: instant lottery or win games (42·9%; 95% CI 29·8–56·5), lottery or raffle tickets (44·5%; 40·4–48·6), private or non-commercial gambling (48·5%; 32·4–64·7), and online-based gambling (48·7%; 43·2–54·1).

Only five samples reported on the prevalence of problematic gambling among adolescents engaging in each gambling activity (table 5). Online casino or slots gambling (26·4%; 22·3–30·7) had the highest rate of problematic gambling among adolescents compared with all other activities.

Considering online gambling, in studies conducted before 2016 (k=40), it was estimated that 5·5% (95% CI 3·6–7·7) of adults engaged in online gambling in the past 12 months. This rate increased to 9·4% (6·7–12·4) among studies conducted between 2016 and 2020 (k=36) and 10·0% (6·3–14·3) for studies conducted after 2020 (k=22).

Regarding risk of bias, overall, representative studies varied from an overall risk score of 4 to 10 (appendix pp 52–70). The majority of adult (86%) and adolescent (73%) studies scored 7 or more, which would map onto an overall judgement of low to moderate risk of bias. When studies did not score a 10, they commonly did not report on participants and the setting in detail or provide an associated error measurement for the study's

prevalence. Meta-regressions using risk of bias found that a higher risk of bias score was associated with lower estimates of any risk gambling among adults who gambled in the past 12 months.

Discussion

This study provides a comprehensive assessment of what is known about gambling prevalence rates globally, for both adults and adolescents, based on representative surveys. We show that an estimated 46·2% of adults globally have gambled in the past 12 months, equating to 2·3 billion people worldwide. Our review also indicated that more than one in six adolescents (17·9%) had gambled in the past 12 months, including on commercial forms of gambling, which are largely age-restricted, equating to an estimated 159·6 million adolescents.

Lotteries were the predominant form of gambling, and an estimated 7·8% of adults and 10·3% of adolescents had gambled online in the past 12 months globally. Online gambling through rapid, ongoing digitalisation is driving industry growth. In Europe, where online gambling markets are mature, the bulk of revenue from gambling is derived from online products.[247] Globally, revenues from online gambling are projected to increase to US$205 billion by 2030.[248] Our study reflects the increased prevalence of gambling in recent years, with pooled estimates of studies since 2016 being higher than those from studies produced between 2010 and 2016. A number of jurisdictions globally, including but not limited to the USA, are legalising online gambling for the first time.[249] This legalisation is often accompanied by widescale advertising, marketing, and sponsorship campaigns to promote online gambling.[250] In addition, growth in online gambling might be further influenced by the COVID-19 pandemic, with shifts to online gambling during this period.[251] Among adolescents, our review showed that online gambling was already the second most prevalent form of gambling activity. Digitalisation and developments in the online market are therefore likely to also shape future gambling trends as this cohort ages.

To our knowledge, our study is the first to estimate global rates of any risk gambling, reflecting the full spectrum of risk severity. We estimated that 8·7% of adults engaged in any risk gambling in the past 12 months. This estimate equates to 439·6 million (95% CI 331·9–569·4) adults engaging with any risk gambling globally. We further estimated the population prevalence of problematic gambling at 1·41% among adults. This estimate is slightly higher than a previous population estimate of 1·29% by Gabellini and colleagues,[11] although the 95% CIs overlap (95% CI 0·63–1·51 in the study by Gabellini and colleagues). The difference is probably due to the wider inclusion of recent studies from a broader geographical area in our review.

The gambling industry is expanding rapidly into new markets, including the USA and many low-income and middle-income countries. We found high regional estimates of problematic as well as any risk gambling in these areas, suggesting that the growth of gambling is translating into growth in associated problems and harms. There was an absence of the adolescent data needed to establish a global estimate. However, regional data estimates show that 2·7–27·8% of adolescents are engaging with any risk gambling.

Population estimates of problem gambling can be misinterpreted (ie, the effect of gambling is small and those experiencing harms are a minority of the population).[252] The Australian Productivity Commission highlights that a focus on population estimates is misleading for policy purposes, because the inclusion of non-gamblers or people who gamble very occasionally masks the true risk of harms associated with gambling and with specific gambling products.[253] Individuals who are below the threshold for problematic or disordered gambling have been shown to bear the greatest burden of harm from gambling.[254–256] Any risk gambling is likely to be a better measure of the full effect of gambling on individuals and societies and our review shows that a substantial number, approximately one in seven, of those who gamble globally experience some risk from gambling.

Assessing the variance in the prevalence of harms among people participating in specific gambling formats is also important. Our data confirm substantial variance by product: among adults engaging in gambling, the pooled estimated prevalence of problematic gambling among those using online casinos (15·8%), casino gambling (10·0%), online gambling (8·6%), and sports betting (8·9%) was substantially higher than for other forms. This finding supports other evidence connecting online gambling products with a higher prevalence of harms.[14,257–260]

The increasing market share and global spread of online gambling products, particularly online EGMs, is likely to exacerbate gambling harms in the future. In terms of a public health response to preventing and limiting these harms, a stronger focus is needed on addressing developments in online environments and regulating harmful product characteristics, as well as limiting the widespread availability and marketing of these products in online environments.

Our study has some limitations. First, there are limitations in the available data. Most studies included in this review used surveys to collect data, through either self-completion or completed by an interviewer. Surveys rely on the individual responding in a truthful manner to questions regarding their gambling, and not engaging in social desirability bias, for a true representation of gambling prevalences and exposure to gambling harms. For a more comprehensive view of gambling behaviours and harms, studies with alternative methods are needed. Studies using more indirect measurement methods could allow for the better capturing of people who gamble, particularly those experiencing harms or feeling

stigmatised by their gambling behaviour.[261] These methods could use multiple data sources, including prevalence studies as one source, which can provide more insight into groups of people that might not be captured through a single household survey.

Second, the included studies varied in sampling frames, methods, and gambling-related definitions, which might have contributed to heterogeneity across studies. Although all but four countries (Argentina, China, Kenya, and Malaysia) had at least one sample using a national sampling frame (appendix pp 18–38), studies varied in the number of regions and populations included in sampling frames. Studies also varied in the methods used to collect data. There has been an increasing push to online-based methods, which, when combined with studies being described as a gambling study, might result in increased estimated gambling prevalence rates.[262]

Another difference across studies was how individual gambling activities and gambling risk severity were defined. To maximise consistency, we used a guide to ensure that only comparable definitions were combined for each individual activity (appendix pp 16–17). Furthermore, numerous measures have been developed to identify gambling risk severity experienced by individuals (appendix pp 15–16), although most studies used either the Canadian Problem Gambling Index or Problem Gambling Severity Index, DSM-IV or DSM-5 criteria, or South Oaks Gambling Screen. These study-level differences might have contributed to heterogeneity.

Our review revealed significant gaps in the knowledge of global gambling behaviours. Only 67 countries and territories reported a gambling estimate, resulting in some regions' estimated population numbers (table 3) relying on extrapolated data (in line with our methods; appendix pp 13–14). Commercial forms of gambling are available worldwide, and it is estimated that more than 80% of jurisdictions offer some form of legal gambling.[249] However, only a minority of jurisdictions are producing data that monitor the effect of such legalisations. This issue represents a substantial gap in the understanding of global gambling trends and ability to identify emerging trends.

Finally, although we searched a range of databases and online websites, we might have missed some studies. Nonetheless, we reviewed all other systematic reviews to ensure no studies had been missed in our searches, reviewed reference lists of identified studies, and consulted with experts in the field of gambling epidemiology. We made efforts to minimise errors in the screening and extraction of data by having two people screen every report or paper, and all extractions were double-checked by another researcher. Additionally, our review did not account for country changes in legislation regarding restrictions or availability of gambling activities.

In conclusion, available data on engagement with any gambling activity and individual gambling activities have shown that almost half of all people globally have recently engaged with gambling, and a notable proportion have engaged with any risk gambling. Our data show that one in seven adults who gamble globally engage with any risk gambling and that the prevalence of any risk or problem gambling is much higher for those engaging in specific gambling products—notably, online gambling formats. Given that online gambling is the greatest growth area for the industry, and the findings from our review show that a notable proportion of adolescents globally engage in online gambling, governments need to take actions to protect their populations from harms.

Contributors

LD, HW, MF, SC-F, and RV contributed to the conceptualisation and data curation. LTT, LD, HW, MF, VM, SC-F, and RV contributed to the literature searches with LTT, SC-F, ST, and ML contributing to the data extraction. LTT conducted the formal analyses. LTT led the writing of the manuscript. All authors commented on and contributed text to the manuscript. LTT, LD, HW, MF, and SC-F accessed and verified the data.

Declaration of interests

In the last 5 years, HW has received grant funding for gambling-related research from The Economic and Social Research Council, National Institute for Health Research, Wellcome Trust, the Gambling Commission (including their regulatory settlement fund), Office of Health Disparities and Improvements and Public Health England, Greater London Authority, Greater Manchester Combined Authority, Blackburn with Darwen Local Authority, and the Department of Digital Culture Media and Sport; received funding from GambleAware in 2018–19 for a project on gambling and suicide; received consulting fees from the Institute of Public Health, Ireland, and the National Institute for Economic and Social Research; received payment for the delivery of seminars from McGill University, the University of Birmingham, Johns Hopkins University, and from the British Broadcasting Corporation; has been paid as an expert witness by Lambeth and Middlesbrough Borough Councils; has received travel costs paid by Gambling Regulators European Forum, the Turkish Green Crescent Society, Alberta Gambling Research Institute, the REITOX Academy (administered through the Austrian National Public Health Institute), and the University of Helsinki; served as the Deputy Chair of the Advisory Board for Safer Gambling between 2015 and 2020, remunerated by the Gambling Commission; is a member of the WHO panel on gambling (ongoing); provided unpaid advice on research to GamCare for their Safer Gambling Standard (until mid-2021); runs a research consultancy for public and third sector bodies only, but has not, and does not, provide consultancy services to gambling industry actors; in researching the gambling industry and their practices, has occasionally attended events where gambling industry actors are present (including industry-sponsored conferences); and as part of her work on the Gambling Survey for Great Britain, is required by the Gambling Commission (the funder) to participate in events disseminating research findings to their stakeholders, which includes the industry, but is independently funded and does not involve collaborations or partnerships with industry. VM has received grant funding for gambling-related projects from the Academy of Finland (project numbers 349589 and 31834), the Finnish Ministry of Social Affairs and Health, and the Finnish Ministry of Justice; as a member of the Gambling Harms Evaluation Committee (2021 onwards) and the Indicators for Gambling Harms work group (2019–21) under the Finnish Ministry of Social Affairs and Health, she interacts with the Finnish gambling monopoly to evaluate company products and practices and to analyse company data; has received a fee for delivering a webinar from Bochum University; did a paid peer review for Routledge; received funding for travel from the Finnish Foundation for Alcohol Studies, University of Bergen, and the Council of Europe; and provides consultation for public and third sector actors, but not the gambling industry. CB has received grant funding for gambling-related projects from The British Academy, The Economic and Social Research Council,

the National Institute of Health Research, Blackburn with Darwen Local Authority, and the Department for Culture, Media and Sport. RV has received grant funding for gambling-related projects from the Massachusetts Gaming Commission, the Connecticut Department of Mental Health & Addiction Services, the Evergreen Council for Problem Gambling, The University of Massachusetts Donahue Institute, Gambling Research Exchange Ontario, NORC Boston, North Dakota Department of Health & Human Services, British Gambling Commission, Public Health Agency of Sweden, Canadian Centre on Substance Abuse, and the Center for Gambling Studies, Rutgers University; has received consultancy fees for gambling-related research from the National Centre for Social Research UK, Gambling Research Exchange Ontario, and the Karolinska Institute; has received honorarium from McGill University for the delivery of a webinar, from the Evergreen Council on Problem Gambling, the Institut für Glücksspiel und Gesellschaft, and the New York State Council on Problem Gambling; and has received travel costs from the Alberta Gambling Research Institute in 2022 and 2023 and from the Nigerian National Lotteries Regulatory Commission in 2023. JR has received funding from various national and international public funding agencies (the Canadian Institutes of Health Research, US National Institutes of Health, the EU, and WHO); and funding for travel from WHO. In the past 5 years, LD and MF have received untied educational grant funding from Indivior and Seqirus for the study of new opioid medications in Australia. SS has been a senior advisor to the McKinsey Health Institute since 2023 for issues on mental health. All other authors declare no competing interests.

Data sharing

Researchers wishing to undertake additional analyses of the data are invited to contact the corresponding author (thi.b.tran@unsw.edu.au).

Acknowledgments

The National Drug and Alcohol Research Centre (NDARC) is supported by funding from the Australian Government Department of Health under the Drug and Alcohol Programme. The views expressed here do not necessarily represent the position of the Australian Government. We acknowledge support from the US National Institutes of Health National Institute of Allergy and Infectious Diseases (grant number R01AI147490–01) and the ASCEND Australian National Health and Medical Research Council (NHMRC) Programme (grant number APP1150078). LTT is supported by an NHMRC Postgraduate Scholarship (number RG212107) and NDARC Higher Degree Research Scholarship. LD is supported by an Australian NHMRC Senior Principal Research Fellowship (number APP1135991) and NHMRC Investigator Grant (grant number APP2016825). We thank Brodie Clark and Christel Macdonald for their assistance on screening, data extraction, and risk of bias.

Editorial note: The Lancet Group takes a neutral position with respect to territorial claims in published maps and institutional affiliations.

References

1 Reith G, Wardle H, Gilmore I. Gambling harm: a global problem requiring global solutions. *Lancet* 2019; **394:** 1212–14.
2 Global Betting and Gaming Consultants. Global Gambling Market Data. 2023. https://www.gbgc.com/product/global-gambling-report/ (accessed Aug 17, 2023).
3 Williams RJ, Volberg RA, Stevens RMG. The population prevalence of problem gambling: methodological influences, standardized rates, jurisdictional differences, and worldwide trends. May 8, 2012. http://hdl.handle.net/10133/3068 (accessed April 23, 2024).
4 Fauth-Bühler M, Mann K, Potenza MN. Pathological gambling: a review of the neurobiological evidence relevant for its classification as an addictive disorder. *Addict Biol* 2017; **22:** 885–97.
5 WHO. International Classification of Diseases 11th Revision. 2018. https://icd.who.int/en (accessed April 23, 2024).
6 American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th edn. Arlington, VA: American Psychiatric Association, 2013.
7 Abbott MW. The changing epidemiology of gambling disorder and gambling-related harm: public health implications. *Public Health* 2020; **184:** 41–45.
8 Wardle H, Reith G, Langham E, Rogers RD. Gambling and public health: we need policy action to prevent harm. *BMJ* 2019; **365:** l1807.
9 Browne M, Bellringer M, Greer N, et al. Measuring the burden of gambling harm in New Zealand. May, 2017. https://openrepository.aut.ac.nz/bitstream/handle/10292/12451/NZ_harms_final_report%202017.pdf?sequence=2 (accessed April 23, 2024).
10 Browne M, Langham E, Rawat V, et al. Assessing gambling-related harm in Victoria: a public health perspective. http://hdl.handle.net/1880/51519 (accessed April 23, 2024).
11 Gabellini E, Lucchini F, Gattoni ME. Prevalence of problem gambling: a meta-analysis of recent empirical research (2016-2022). *J Gambl Stud* 2023; **39:** 1027–57.
12 Calado F, Griffiths MD. Problem gambling worldwide: an update and systematic review of empirical research (2000-2015). *J Behav Addict* 2016; **5:** 592–613.
13 Calado F, Alexandre J, Griffiths MD. Prevalence of adolescent problem gambling: a systematic review of recent research. *J Gambl Stud* 2017; **33:** 397–424.
14 Allami Y, Hodgins DC, Young M, et al. A meta-analysis of problem gambling risk factors in the general adult population. *Addiction* 2021; **116:** 2968–77.
15 Beynon C, Mason J, Burton R, et al. Harms associated with gambling: an abbreviated systematic review. London, UK: Public Health England, 2021.
16 Munn Z, Moola S, Lisy K, Riitano D, Tufanaru C. Methodological guidance for systematic reviews of observational epidemiological studies reporting prevalence and cumulative incidence data. *Int J Evid-Based Healthc* 2015; **13:** 147–53.
17 Barker TH, Migliavaca CB, Stein C, et al. Conducting proportional meta-analysis in different types of systematic reviews: a guide for synthesisers of evidence. *BMC Med Res Methodol* 2021; **21:** 189.
18 Degenhardt L, Peacock A, Colledge S, et al. Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: a multistage systematic review. *Lancet Glob Health* 2017; **5:** e1192–207.
19 Mathers BM, Degenhardt L, Phillips B, et al. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. *Lancet* 2008; **372:** 1733–45.
20 Degenhardt L, Webb P, Colledge-Frisby S, et al. Epidemiology of injecting drug use, prevalence of injecting-related harm, and exposure to behavioural and environmental risks among people who inject drugs: a systematic review. *Lancet Glob Health* 2023; **11:** e659–72.
21 Williams RJ, Volberg RA. The classification accuracy of four problem gambling assessment instruments in population research. *Int Gambl Stud* 2014; **14:** 15–28.
22 Deeks JJ, Higgins JPT, Altman DG. Cochrane handbook for systematic reviews of interventions. https://training.cochrane.org/handbook/current/chapter-10 (accessed April 23, 2024).
23 Abbott M, Bellringer M, Garrett N, Mundy-McPherson S. New Zealand 2012 national gambling study: gambling harm and problem gambling. July 3, 2014. https://phmhri.aut.ac.nz/__data/assets/pdf_file/0018/7542/Report-final-National-Gambling-Study-Report-No.-2.pdf (accessed April 24, 2024).
24 ACIL Allen Consulting. Fourth social and economic impact study of gambling in Tasmania (2017). Jan 17, 2018. https://acilallen.com.au/uploads/projects/158/ACILAllen_FourthTasGambling_Vol1_2018-158130720 7.pdf (accessed April 24, 2024).
25 ACIL Allen Consulting. Third social and economic impact study of gambling in Tasmania. November, 2015. https://www.treasury.tas.gov.au/Documents/20151104ThirdSEISSummaryReportFINAL.PDF (accessed April 24, 2024).
26 Armstrong A, Carroll M. Gambling activity in Australia: findings from wave 15 of the Household, Income and Labour Dynamics in Australia (HILDA) survey. Nov 23, 2017. https://apo.org.au/node/120736 (accessed April 24, 2024).
27 Billi R, Marden P, Stone C. The Victorian Gambling Study. November, 2012. https://responsiblegambling.vic.gov.au/documents/84/Research-report-vic-gambling-study-wave-three-findings.pdf (accessed April 17, 2024).
28 Browne M, Rockloff M, Hing N, et al. NSW Gambling Survey 2019. March 8, 2021. https://www.gambleaware.nsw.gov.au/resources-and-education/check-out-our-research/published-research/nsw-gambling-survey-2019 (accessed April 24, 2024).

29 Queensland Government. Queensland household gambling survey 2011–12. June 20, 2014. https://www.publications.qld.gov.au/dataset/liquor-and-gambling-research/resource/79c83075-5dd6-48f7-84b1-8bd6b106eaff?inner_span=True (accessed April 24, 2024).

30 Dowling NA, Jackson AC, Thomas SA, Frydenberg E. Children at risk of developing problem gambling. 2010. https://www.gamblingresearch.org.au/publications/children-risk-developing-problem-gambling (accessed April 24, 2024).

31 Dowling NA, Youssef GJ, Jackson AC, et al. National estimates of Australian gambling prevalence: findings from a dual-frame omnibus survey. *Addiction* 2016; **111:** 420–35.

32 Hare S. Study of gambling and health in Victoria. 2015. https://responsiblegambling.vic.gov.au/documents/72/Research-report-study-of-gambling-and-health-in-vic-2015.pdf (accessed April 17, 2024).

33 Hing N, Gainsbury S, Blaszczynski A, Wood R, Lubman D, Russell A. Interactive gambling. 2014. https://www.gamblingresearch.org.au/sites/default/files/2019-10/Interactive%20Gambling%202014.pdf (accessed April 24, 2024).

34 Howe P, Vargas-Saenz A, Hulbert C, Boldero J. Gambling and problem gambling in Victoria. 2018. https://responsiblegambling.vic.gov.au/resources/publications/gambling-and-problem-gambling-in-victoria-393/ (accessed April 24, 2024).

35 Kruse K, White J, Walton DK, Tu D. Changes in risky gambling prevalence among a New Zealand population cohort. *Int Gambl Stud* 2016; **16:** 328–46.

36 O'Neil M, Whetton S, Kosturjak A, et al. Fifth social and economic impact study of gambling in Tasmania 2021. June, 2021. https://www.treasury.tas.gov.au/Documents/Fifth%20SEIS%20Volume%201%20-%20Industry%20Trends%20and%20Impacts.PDF (accessed April 29, 2024).

37 Queensland Government. Queensland household gambling survey 2016–17. April 30, 2018. https://www.publications.qld.gov.au/dataset/liquor-and-gambling-research/resource/4267f3c2-950b-407e-b88f-d31e116cedcb (accessed April 29, 2024).

38 Purdie N, Matters G, Hillman K, Murphy M, Ozolins C, Millwood P. Gambling and young people in Australia. 2011. https://www.gamblingresearch.org.au/sites/default/files/2019-09/Gambling%20And%20Young%20People%20In%20Australia.pdf (accessed April 29, 2024).

39 Queensland Government. Queensland household gambling survey 2008–09. 2010. https://www.publications.qld.gov.au/dataset/liquor-and-gambling-research/resource/131dbcb0-a036-487d-895e-1c3b8ce0bb97 (accessed April 29, 2024).

40 Rockloff M, Browne M, Hing N, et al. Victorian population gambling and health study 2018–2019. May, 2020. https://responsiblegambling.vic.gov.au/resources/publications/victorian-population-gambling-and-health-study-20182019-759/ (accessed April 29, 2024).

41 Rossen F. Gambling and problem gambling: results of the 2011/12 New Zealand Health Survey. July, 2015. https://www.health.govt.nz/system/files/documents/publications/gambling-results-of-the-201112-nzhs.pdf (accessed April 29, 2024).

42 Sproston K, Hing N, Palankay C. Prevalence of gambling and problem gambling in New South Wales. April, 2012. https://www.gambleaware.nsw.gov.au/-/media/files/published-research-pdfs/prevalence-of-gambling-and-problem-gambling-in-nsw.ashx?rev=a09cb2e9d3b04b1db45f3de149fc86e8&hash=CE20E2AE8FB5E22DA79CD27D8FAD6D9B (accessed April 29, 2024).

43 Department of Treasury and Finance, Tasmanian Government. Social and economic impact studies. 2011. https://www.treasury.tas.gov.au/liquor-and-gaming/publications-and-research/social-and-economic-impact-studies (accessed April 29, 2024).

44 Walker SE, Abbott MW, Gray RJ. Knowledge, views and experiences of gambling and gambling-related harms in different ethnic and socio-economic groups in New Zealand. *Aust N Z J Public Health* 2012; **36:** 153–59.

45 Woods A, Sproston K, Brook K, Delfabbro P, O'Neil M. Gambling prevalence in South Australia (2018). Feb 7, 2019. https://apo.org.au/node/237946 (accessed April 26, 2024).

46 Northern Territory Government, Menzies School of Health Research. 2015 Northern Territory Gambling Prevalence and Wellbeing Survey Report. April, 2017. https://justice.nt.gov.au/__data/assets/pdf_file/0019/424135/nt-2015-gambling-prevalence-and-wellbeing-survey.pdf (accessed April 29, 2024).

47 Health NSW. Gambling module: NSW population health survey 2008–2009. 2010. https://www.health.nsw.gov.au/surveys/other/Documents/16plus-gambling28JUL10.pdf (accessed April 26, 2024).

48 Paterson M, Leslie P, Taylor M. 2019 ACT Gambling Survey. 2019. https://csrm.cass.anu.edu.au/centres/cgr/2019-act-gambling-survey (accessed April 29, 2024).

49 Davidson T, Rodgers B, Taylor-Rodgers E, Suomi A, Lucas N. 2014 Survey on Gambling, Health and Wellbeing in the ACT. Dec 15, 2015. https://www.gamblingandracing.act.gov.au/__data/assets/pdf_file/0010/846901/2014-Survey-on-Gambling,-Health-and-Wellbeing-in-the-ACT-.pdf (accessed April 24, 2024).

50 Davidson T, Rodgers B. 2009 Survey on the nature and extent of gambling, and problem gambling, in the Australian Capital Territory. Nov 26, 2010. https://www.gamblingandracing.act.gov.au/__data/assets/pdf_file/0005/745043/ACT-Gambling-Prevalence-Study.pdf (accessed April 24, 2024).

51 The Social Research Centre. Gambling prevalence in south Australia. October to December, 2012. https://www.problemgambling.sa.gov.au/__data/assets/pdf_file/0006/528378/sa-gambling-prevalence-study-report-2012.pdf (accessed April 29, 2024).

52 Northern Territory Government, Menzies School of Health Research. Patterns of online gambling, problem gambling risk and harms in the Northern Territory. August, 2021. https://industry.nt.gov.au/__data/assets/pdf_file/0003/1137639/patterns-of-online-gambling-problem-gambling-risk-harms-nt.pdf (accessed March 25, 2024).

53 Browne M, Russell AMT, Begg S, et al. Benchmarking gambling screens to health-state utility: the PGSI and the SGHS estimate similar levels of population gambling-harm. *BMC Public Health* 2022; **22:** 839.

54 Hing N, Russell AMT, Browne M, et al. The second national study of interactive gambling in Australia (2019–20). 2021. https://www.gamblingresearch.org.au/sites/default/files/2021-10/Interactive%20Gambling%20Study.pdf (accessed April 23, 2024).

55 Billi R, Stone CA, Marden P, Yeung K. The Victorian Gambling Study: a longitudinal study of gambling and health in Victoria 2008–2012. July, 2014. https://responsiblegambling.vic.gov.au/resources/publications/the-victorian-gambling-study-a-longitudinal-study-of-gambling-and-health-in-victoria-20082012-77/ (accessed April 24, 2024).

56 Freund M, Noble N, Hill D, et al. The prevalence and correlates of gambling in secondary school students in Victoria, Australia, 2017. October, 2019. https://responsiblegambling.vic.gov.au/resources/publications/the-prevalence-and-correlates-of-gambling-in-secondary-school-students-in-victoria-australia-2017-680/ (accessed April 24, 2024).

57 Rossen FV, Clark T, Denny SJ, et al. Unhealthy gambling amongst New Zealand secondary school students: an exploration of risk and protective factors. *Int J Ment Health Addict* 2016; **14:** 95–110.

58 Freund M, Noble N, Hill D, et al. The prevalence and correlates of gambling in Australian secondary school students. *J Gambl Stud* 2022; **38:** 1173–94.

59 Christensen DR, Dowling NA, Jackson AC, Thomas SA. Gambling participation and problem gambling severity in a stratified random survey: findings from the second social and economic impact study of gambling in Tasmania. *J Gambl Stud* 2015; **31:** 1317–35.

60 Chen JH, Tong KK, Wu AMS, Lau JTF, Zhang MX. The comorbidity of gambling disorder among Macao adult residents and the moderating role of resilience and life purpose. *Int J Environ Res Public Health* 2018; **15:** 2774.

61 Tong KK, Hung EPW, Lei CMW, Wu AMS. Public awareness and practice of responsible gambling in Macao. *J Gambl Stud* 2018; **34:** 1261–80.

62 Tse S, Hong SI, Ng KL. Estimating the prevalence of problem gambling among older adults in Singapore. *Psychiatry Res* 2013; **210:** 607–11.

63 Williams RJ, Lee CK, Back KJ. The prevalence and nature of gambling and problem gambling in South Korea. *Soc Psychiatry Psychiatr Epidemiol* 2013; **48:** 821–34.

64 Wu AM, Lai MH, Tong KK. Gambling disorder: estimated prevalence rates and risk factors in Macao. *Psychol Addict Behav* 2014; **28:** 1190–97.

65 Wu AM, Lai MH, Tong KK. Internet gambling among community adults and university students in Macao. *J Gambl Stud* 2015; **31:** 643–57.

66 Wichaidit W, Prommanee C, Choocham S, Chotipanvithayakul R, Assanangkornchai S. Modification of the association between experience of economic distress during the COVID-19 pandemic and behavioral health outcomes by availability of emergency cash reserves: findings from a nationally-representative survey in Thailand. *PeerJ* 2022; **10:** e13307.

67 National Council on Problem Gambling. Report on survey on participation in gambling activities among Singapore residents, 2020. July 29, 2021. https://www.ncpg.org.sg/docs/default-source/publications/ncpg-gambling-participation-surveys/gps_2020_public_report_(final).pdf (accessed April 23, 2024).

68 National Council on Problem Gambling. Report on survey on participation in gambling activities among Singapore residents, 2017. March 26, 2018. https://www.ncpg.org.sg/docs/default-source/publications/ncpg-gambling-participation-surveys/report_on_ncpg_gambling_participation_survey_2017_final.pdf?sfvrsn=9bfaf26f_3 (accessed April 23, 2024).

69 National Council on Problem Gambling. Report of survey on participation in gambling activities among Singapore residents, 2014. Feb 5, 2015. https://www.ncpg.org.sg/docs/default-source/publications/ncpg-gambling-participation-surveys/2014-ncpg-gambling-participation-survey_final.pdf?sfvrsn=ffb1bc94_3 (accessed April 23, 2024).

70 Cheung NWT. Social strain, self-control, and juvenile gambling pathology. *Youth Soc* 2016; **48:** 77–100.

71 Sheela PS, Choo WY, Goh LY, Tan CP. Gambling risk amongst adolescents: evidence from a school-based survey in the Malaysian setting. *J Gambl Stud* 2016; **32:** 643–59.

72 Zhu Y, Li W, O'Brien JE, Liu T. Parent-child attachment moderates the associations between cyberbullying victimization and adolescents' health/mental health problems: an exploration of cyberbullying victimization among Chinese adolescents. *J Interpers Violence* 2021; **36:** NP9272–98.

73 Assanangkornchai S, McNeil EB, Tantirangsee N, Kittirattanapaiboon P. Gambling disorders, gambling type preferences, and psychiatric comorbidity among the Thai general population: results of the 2013 National Mental Health Survey. *J Behav Addict* 2016; **5:** 410–18.

74 Higuchi S, Matsushita Y. Epidemiological survey on gambling addiction in Japan (Interim summary of national survey results). 2017. https://kurihama.hosp.go.jp/about/pdf/info_20171004.pdf (accessed March 25, 2024).

75 Nitta C, Toyama T, Matsushita S. The prevalence of pathological gambling and gambling-related problems: data from the latest national survey of the general Japanese population. *J Behav Addict* 2023; **12:** 214–15.

76 Niewiadomska I, Panasiuk L, Chwaszcz J, et al. Prevalence and selected determinants of the risk of problem gambling among Polish secondary school students. *Ann Agric Environ Med* 2020; **27:** 650–56.

77 Moskalewicz J, Badora B, Feliksiak M, et al. Oszacowanie rozpowszechnienia oraz identyfikacja czynników ryzyka i czynników chroniących hazardu i innych uzależnień behawioralnych – edycja 2018/2019. 2019. https://bezpiecznaszkola.men.gov.pl/wp-content/uploads/2015/09/oszacowanie-rozpowszechnienia-oraz-identyfikacja-czynnikow.pdf (accessed April 26, 2024).

78 Chomynová P, Mravýík V. Národní výzkum užívání návykových látek 2020. *Zastýeno* 2021; **7:** 1–20 (in Polish).

79 Baxter CM, Young MM, Volberg R, Kokkalou C. Gambling and problem gambling in the republic of Cyprus: results of a 2022 national quantitative survey. May 19, 2023. https://www.greo.ca/Modules/EvidenceCentre/Details/gambling-and-problem-gambling-in-the-republic-of-cyprus-results-of-a-2022-nation (accessed April 24, 2024).

80 Neophytou K, Theodorou M, Theodorou C, Artemi TF, Panayiotou G. Population screening of gambling behavior: playing to escape from problems may be a key characteristic of at-risk players. *Front Psychiatry* 2021; **12:** 690210.

81 Chomynová P, Dvořáková Z, Grohmannová K, et al. Zpráva o hazardním hraní v České republice 2023. 2023. https://www.drogy-info.cz/data/obj_files/33890/1222/Zprava_o_hazardnim_hrani_v_CR_2023.pdf (accessed April 23, 2024).

82 Ipsos. Výsledky prieskumu agentúry. Bratislava: Úrad pre reguláciu hazardných hier; 2023. https://www.urhh.sk/documents/d/guest/vysledky-prieskumu-agentury-ipsos (accessed April 23, 2024).

83 Azartiniai Lošimai Ir Loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos. 2019. https://lpt.lrv.lt/uploads/lpt/documents/files/Lo%C5%A1imai%20 2019-09%20ataskaita.ppt (accessed April 23, 2024).

84 Azartiniai Lošimai Ir Loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos. 2021. https://lpt.lrv.lt/uploads/lpt/documents/files/Lo%C5%A1imai%20 2021-11%20ataskaita.ppt (accessed April 23, 2024).

85 Putniņa A, Pokšāns A, Brants M. Pētījums Par Procesu Atkarību (Azartspēļu, Sociālo Mediju, Datorspēļu Atkarība) Izplatību Latvijas Iedzīvotāju Vidū Un To Ietekmējošiem Riska Faktoriem. Rīga: Veselības Ministrija, 2020. https://esparveselibu.lv/sites/default/files/2020-04/Petijums-par-azartspelu-socialo-mediju-datorspelu-uncitu-procesu-atkaribu-izplatibu-Latvija.pdf (accessed April 23, 2024).

86 Azartiniai lošimai ir loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos. 2020. https://lpt.lrv.lt/uploads/lpt/documents/files/Vilmorus_2020-10_II%20dalis_Azartiniai%20lo%C5%A1imai%20ir%20loterija.ppt (accessed April 23, 2024).

87 Azartiniai lošimai ir loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos. 2022. https://lpt.lrv.lt/uploads/lpt/documents/files/Lo%C5%A1imai%2B2022-11%2Bataskaita.ppt.pdf (accessed April 23, 2024).

88 Azartiniai lošimai ir loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos. 2023. https://lpt.lrv.lt/media/viesa/saugykla/2024/1/fKgjf_jcXQA.pdf (accessed April 23, 2024).

89 Lupu V, Lupu IR. Romanian National Prevalence Study - problem and pathological gambling in children and adolescents. *Clujul Med* 2018; **91:** 435–40.

90 Molinaro S, Benedetti E, Scalese M, et al. Prevalence of youth gambling and potential influence of substance use and other risk factors throughout 33 European countries: first results from the 2015 ESPAD study. *Addiction* 2018; **113:** 1862–73.

91 Pisarska A, Ostaszewski K. Factors associated with youth gambling: longitudinal study among high school students. *Public Health* 2020; **184:** 33–40.

92 European Monitoring Centre for Drugs and Drug Addiction, The European School Survey Project on Alcohol and Other Drugs. ESPAD report 2019: results from the European School Survey project on alcohol and other drugs. 2020. http://www.espad.org/sites/espad.org/files/2020.3878_EN_04.pdf (accessed April 23, 2024).

93 Gyollai A, Urbán R, Kun B, et al. Problematic and pathologic gambling in Hungary: the Hungarian version and use of the South Oaks Gambling Screen (SOGS-HU). *Psychiatr Hung* 2011; **26:** 230–40 (in Hungarian).

94 Demetrovics Z, van den Brink W, Paksi B, Horváth Z, Maraz A. Relating compulsivity and impulsivity with severity of behavioral addictions: a dynamic interpretation of large-scale cross-sectional findings. *Front Psychiatry* 2022; **13:** 831992.

95 Lelonek-Kuleta B, Bartczuk RP, Wiechetek M, Chwaszcz J, Niewiadomska I. The prevalence of E-gambling and of problem E-gambling in Poland. *Int J Environ Res Public Health* 2020; **17:** 404.

96 Andrie EK, Tzavara CK, Tzavela E, et al. Gambling involvement and problem gambling correlates among European adolescents: results from the European Network for Addictive Behavior study. *Soc Psychiatry Psychiatr Epidemiol* 2019; **54:** 1429–41.

97 Abbott MW, Romild U, Volberg RA. Gambling and problem gambling in Sweden: changes between 1998 and 2009. *J Gambl Stud* 2014; **30:** 985–99.

98 Gambling Commission. Gambling behaviour in 2020: findings from the quarterly telephone survey: official statistics. Feb 23, 2021. https://www.gamblingcommission.gov.uk/statistics-and-research/publication/year-to-december-2020 (accessed Aug 30, 2021).

99 Bastiani L, Gori M, Colasante E, et al. Complex factors and behaviors in the gambling population of Italy. *J Gambl Stud* 2013; **29:** 1–13.

100 Brunborg GS, Hanss D, Mentzoni RA, Molde H, Pallesen S. Problem gambling and the five-factor model of personality: a large population-based study. *Addiction* 2016; **111:** 1428–35.

101 Carrà G, Crocamo C, Bebbington P. Gambling, geographical variations and deprivation: findings from the adult psychiatric morbidity survey. *Int Gambl Stud* 2017; **17:** 459–70.

102 Castrén S, Basnet S, Pankakoski M, et al. An analysis of problem gambling among the Finnish working-age population: a population survey. *BMC Public Health* 2013; **13:** 519.

103 Conolly A, Davies B, Fuller E, Heinze N, Wardle H. Gambling behaviour in Great Britain in 2016: evidence from England, Scotland and Wales. September, 2018. https://assets.ctfassets.net/j16ev64qyf6l/60qlzeoSZ1J2QxByMAGJqz/e3af209d552b08c16566a217ed422e68/Gambling-behaviour-in-Great-Britain-2016.pdf (accessed April 24, 2024).

104 Costes J-M, Kairouz S, Pousset M. Jeu problématique en France: une première enquête nationale. *Drogues Sante Societe* 2013; **12:** 1–19 (in French).

105 Costes JM, Kairouz S, Monson E, Eroukmanoff V. Where lies the harm in lottery gambling? A portrait of gambling practices and associated problems. *J Gambl Stud* 2018; **34:** 1293–311.

106 Economou M, Souliotis K, Malliori M, et al. Problem gambling in Greece: prevalence and risk factors during the financial crisis. *J Gambl Stud* 2019; **35:** 1193–210.

107 Fridberg T, Birkelund JF. Pengespil og spilleproblemer i Danmark 2005–2016. 2016. https://www.vive.dk/da/udgivelser/pengespil-og-spilleproblemer-i-danmark-2005-2016-4z6p17xq/ (accessed April 24, 2024).

108 Gambling Commission. Participation in gambling and rates of problem gambling - Scotland 2017: statistical report. December, 2018. https://assets.ctfassets.net/j16ev64qyf6l/4Ktm3dGrbT1WJWXyZryDbL/172a1956c3afb8fffd8a80920ad623b5/Participation-in-gambling-and-rates-of-problem-gambling-Scotland-2017.pdf (accessed April 23, 2024).

109 Gambling Commission. Participation in gambling and rates of problem gambling - England 2016. April, 2018. https://assets.ctfassets.net/j16ev64qyf6l/7mGR5J2SGUTMMExO4fUKyj/bb1a84fa22bb5179c52c3f623001d31a/England-Health-Survey-Findings-2016.pdf (accessed April 24, 2024).

110 Halme JT. Overseas internet poker and problem gambling in Finland 2007: a secondary data analysis of a Finnish population survey. *Nord Alkohol- Narkotikatidskrift* 2011; **28:** 51–64.

111 John A, Lee SC, Wardle H, McManus S, Dymond S. Exploring problem gambling, loneliness and lifetime suicidal behaviours: a cross-sectional study using the Adult Psychiatric Morbidity Survey 2007. 2019. https://assets.ctfassets.net/j16ev64qyf6l/58RWBEnZOy1lCj0c327XQ0/d3362bf0c75f61a475752b9664b01163/Report-2-Exploring-problem-gambling-loneliness-and-lifetime-suicidal-behaviours-a-cross-sectional-study-using-the-Adult-Psyc.pdf (accessed April 24, 2024).

112 Larsen CV, Curtis T, Bjerregaard P. Gambling behavior and problem gambling reflecting social transition and traumatic childhood events among Greenland Inuit: a cross-sectional study in a large Indigenous population undergoing rapid change. *J Gambl Stud* 2013; **29:** 733–48.

113 Luder MT, Berchtold A, Akré C, Michaud PA, Suris JC. Do youths gamble? You bet! A Swiss population-based study. *Swiss Med Wkly* 2010; **140:** w13074.

114 Meyer C, Bischof A, Westram A, et al. The "Pathological Gambling and Epidemiology" (PAGE) study program: design and fieldwork. *Int J Methods Psychiatr Res* 2015; **24:** 11–31.

115 Nordmyr J, Forsman AK, Wahlbeck K, Björkqvist K, Österman K. Associations between problem gambling, socio-demographics, mental health factors and gambling type: sex differences among Finnish gamblers. *Int Gambl Stud* 2014; **14:** 39–52.

116 Olason DT, Hayer T, Meyer G, Brosowski T. Economic recession affects gambling participation but not problematic gambling: results from a population-based follow-up study. *Front Psychol* 2017; **8:** 1247.

117 Pallesen S, Mentzoni RA, Torsheim T, Erevik E, Molde H, Morken AM. Omfang av penge- Og dataspillproblemer i norge 2019. April, 2020. https://lottstift.no/content/uploads/2021/05/Omfang_av_penge-og_dataspillproblemer_i_Norge_2019-1.pdf (accessed April 29, 2024).

118 Raisamo S, Kinnunen JM, Pere L, Lindfors P, Rimpelä A. Adolescent gambling, gambling expenditure and gambling-related harms in Finland, 2011-2017. *J Gambl Stud* 2020; **36:** 597–610.

119 Raisamo SU, Mäkelä P, Salonen AH, Lintonen TP. The extent and distribution of gambling harm in Finland as assessed by the Problem Gambling Severity Index. *Eur J Public Health* 2015; **25:** 716–22.

120 Rey-Brandariz J, Perez-Rios M, Santiago-Perez MI, Lorenzo M, Malvar A, Hervada X. Gambling characteristics in Galicia: a public health problem. *Adicciones* 2021; **35:** 387–96.

121 Salonen A, Hagfors H, Lind K, Kontto J. Gambling and problem gambling - Finnish Gambling 2019. April, 2020. https://www.researchgate.net/publication/340861912_Gambling_and_problem_gambling_-_Finnish_Gambling_2019 (accessed April 29, 2024).

122 Sleczka P, Braun-Michl B, Kraus L. Gamblers' attitudes towards money and their relationship to gambling disorder among young men. *J Behav Addict* 2020; **9:** 744–55.

123 Sleczka P, Romild U. On the stability and the progression of gambling problems: longitudinal relations between different problems related to gambling. *Addiction* 2021; **116:** 116–25.

124 Wales Government. Levels of problem gambling in Wales. 2020. https://www.gamblingcommission.gov.uk/statistics-and-research/publication/levels-of-problem-gambling-in-wales (accessed April 24, 2024).

125 Wardle H, Moody A, Spence S, et al. British Gambling Prevalence Survey 2010. London, UK: National Centre for Social Research, 2011.

126 Folkhälsomyndigheten (The Public Health Agency). Spel om pengar och spelproblem i Sverige 2008 – 2018: resultat över tid från Swelogs longitudinella befolkningsundersökningar. 2021. https://www.folkhalsomyndigheten.se/publikationer-och-material/publikationsarkiv/s/spel-om-pengar-och-spelproblem-i-sverige-2008-2018/ (accessed April 24, 2024).

127 Folkhälsomyndigheten (The Public Health Authority). Tabellsammanställning för Swelogs prevalens-undersökning 2021: tabeller och korta sammanfattningar från Swelogs befolknings-undersökning 2021. 2023. https://www.folkhalsomyndigheten.se/publikationer-och-material/publikationsarkiv/t/tabellsammanstallning-for-swelogs-prevalens-undersokning-2021/#:~:text=Tabellsammanst%C3%A4llning%20f%C3%B6r%20Swelogs%20prevalens%2Dunders%C3%B6kning%202021%20Tabeller%20och%20korta%20sammanfattningar,om%20pengar%2C%20problemspelande%20och%20h%C3%A4lsa&text=I%20den%20h%C3%A4r%20tabellsammanst%C3%A4llningen%20presenterar,om%20pengar%20och%20h%C3%A4lsa%202021 (accessed April 24, 2024).

128 Pallesen S, Mentzoni RA, Syvertsen A, Kristensen JH, Erevik EK, Morken AM. Omfang av penge- og dataspillproblemer i norge 2022. 2023. https://kudos.dfo.no/dokument/33396/omfang-av-penge-og-dataspillproblemer-i-norge-2022-2023 (accessed April 29, 2024).

129 Pacifici R, Mastrobattista L, Minutillo A, Mortali C. "Gioco d'azzardo in Italia: ricerca, formazione e informazione": risultati di un progetto integrato. Oct 1, 2020. https://comunitasisifo.it/gioco-dazzardo-in-italia-ricerca-formazione-e-informazione-risultati-di-un-progetto-integrato/ (accessed April 29, 2024).

130 Costes JM, Richard JB, Eroukmanoff V, Le Nezet O, Philippon A. Les Francais et les jeux d'argent et de hasard: résultats du Baromètre de Santé publique France 2019. June, 2020. https://www.ofdt.fr/publications/collections/tendances/les-francais-et-les-jeux-dargent-et-de-hasard-resultats-du-barometre-de-sante-publique-france-2019-tendances-138-juin-2020/ (accessed April 24, 2024).

131 Balsa C, Vital C, Urbano C. IV Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Geral, Portugal 2016/17. September, 2017. https://www.sicad.pt/PT/Documents/2017/INPG%202016_2017_I%20relatorio%20final_dados_provisorios.pdf (accessed April 24, 2024).

132 Tristán C, Llorens N, García N, et al. Informe sobre adicciones comportamentales 2021: juego con dinero, uso de videojuegos y uso compulsivo de internet en las encuestas de drogas y otras adicciones en España EDADES y ESTUDES. 2022. https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/pdf/2021_Informe_adicciones_comportamentales.pdf (accessed April 24, 2024).

133 Buth S, Meyer G, Kalke J. Glücksspielteilnahme und glücksspielbezogene Probleme in der Bevölkerung: Ergebnisse des Glücksspiel-Survey 2021. 2022. https://www.isd-hamburg.de/wp-content/uploads/2022/03/Glueckss piel-Survey_2021.pdf (accessed April 24, 2024).

134 Banz M. Glücksspielverhalten und Glücksspielsucht in Deutschland: Ergebnisse des Surveys 2019 und Trends. January, 2020. https://www.bzga.de/fileadmin/user_upload/PDF/studien/BZgA-Forschungsbericht_Glueckss pielsurvey_2019.pdf (accessed April 24, 2024).

135 Strizek J, Busch M, Puhm A, Schwarz T, Uhl A. Repräsentativerhebung zu Konsum- und Verhaltensweisen mit Suchtpotenzial. 2021. https://www.sozialministerium.at/dam/jcr:2499eea4-c679-4578-8b00-ee6cff4419ba/Repräsentativer hebung%20zu%20Konsum-%20und%20Verhaltensweisen%20 mit%20Suchtpotenzial.pdf (accessed April 29, 2024).

136 Kruize A, Snippe J, de Muijnck J. Nieuwe meting modernisering kansspelbeleid. 2021. http://hdl.handle.net/20.500.12832/3125 (accessed April 26, 2024).

137 Conolly A, Fuller E, Jones H, Maplethorpe N, Sondaal A, Wardle H. Gambling behaviour in Great Britain in 2015: evidence from England, Scotland and Wales. 2017. https://www.greo.ca/Modules/EvidenceCentre/Details/gambling-behaviour-in-great-britain-in-2015 (accessed April 24, 2024).

138 NHS England. Health Survey for England 2018. Dec 3, 2019. https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2018 (accessed April 29, 2024).

139 Deakin E. The Scottish Health Survey 2021 - volume 1: main report. Chapter 9: gambling. Nov 8, 2022. https://www.gov.scot/publications/scottish-health-survey-2021-volume-1-main-report/pages/14/ (accessed April 24, 2024).

140 Scottish Government. Scottish Health Survey 2016: Part 15 - Gambling. 2017. https://www.gov.scot/publications/scottish-health-survey-2016-supplementary-tables/ (accessed April 23, 2024).

141 Scottish Government. Scottish Health Survey 2015: Part 15 - Gambling. 2016. https://www.gov.scot/publications/scottish-health-survey-2015-supplementary-tables/ (accessed April 23, 2024).

142 Scottish Government. Scottish Health Survey 2014: 15. Gambling. 2015. https://www.gov.scot/publications/scottish-health-survey-2014-supplementary-tables/ (accessed April 23, 2024).

143 Karikoski M. Scottish Health Survey 2017: summary report. Chapter 9: gambling. Sept 25, 2018. https://www.gov.scot/publications/scottish-health-survey-2017-summary-key-findings/pages/10/ (accessed April 26, 2024).

144 Wardle H, Seabury C, Ahmed H, et al. Gambling behaviour in England and Scotland: findings from the Health Survey for England 2012 and Scottish Health Survey 2012. 2014. http://hdl.handle.net/1880/50217 (accessed April 24, 2024).

145 Latvala TA, Lintonen TP, Browne M, Rockloff M, Salonen AH. Social disadvantage and gambling severity: a population-based study with register-linkage. *Eur J Public Health* 2021; **31:** 1217–23.

146 Pallesen S, Mentzoni RA, Morken AM, Engebø J, Kaur P, Erevik EK. Changes over time and predictors of online gambling in three Norwegian population studies 2013-2019. *Front Psychiatry* 2021; **12:** 597615.

147 Turowski T, Bischof G, Brosowski T, et al. Gender and age in gambling participation, gambling onset, and problematic gambling in a general population sample: empirical findings from Germany. *Int J Ment Health Addict* 2022; **21:** 2682–705.

148 NHS England. Health survey for England 2021 part 2. May 16, 2023. https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2021-part-2/gambling (accessed April 5, 2024).

149 Balsa C, Vital C, Urbano C. V Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Geral, Portugal 2022. 2023. https://www.sicad.pt/BK/Documents/2023/CICSNOVA_INPG_2023.pdf (accessed April 23, 2024).

150 Buth S, Meyer G, Rosenkranz M, Kalke J. Glücksspielteilnahme und glücksspielbezogene Probleme in der Bevölkerung: Ergebnisse des Glücksspiel-Survey 2023. 2024. https://www.isd-hamburg.de/wp-content/uploads/2024/03/Glueckss pielsurvey_2023.pdf (accessed April 23, 2024).

151 Mongan D, Millar SR, Doyle A, Chakraborty S, Galvin B. Gambling in the Republic of Ireland: results from the 2019–20 National Drug and Alcohol Survey. 2022. https://www.drugsandalcohol.ie/35305/ (accessed April 23, 2024).

152 Dey M, Haug S. Glücksspiel: Verhalten und Problematik in der Schweiz im Jahr 2017. 2019. https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-76636.html#:~:text=Im%20Jahr%202017%20wiesen%202,hohe%20Rate%20an%20risikoreich%20bzw (accessed April 23, 2024).

153 Svensson J. Spel om pengar bland vuxna– Omfattningen av problem bland spelare och närstående. 2023. https://www.can.se/app/uploads/2023/02/can-fokusrapport-17-2023.pdf (accessed April 22, 2024).

154 Ministerio de Consumo. Estudio de prevalenicia de juego 2022–2023. 2023. https://saludextremadura.ses.es/drogasextremadura/archivos/Resumen_Ejecutivo_EPJ-2022-2023.pdf (accessed April 23, 2024).

155 Observatorio Español de las Drogas y las Adicciones. Informe sobre Trastornos Comportamentales 2022: Juego con dinero, uso de videojuegos y uso compulsivo de internet en las encuestas de drogas y otras adicciones en España EDADES y ESTUDES. 2022. https://pnsd.sanidad.gob.es/profesionales/sistemasInformacion/sistemaInformacion/pdf/2022_Informe_Trastornos_Comportamentales.pdf (accessed April 23, 2024).

156 Lugo A, Stival C, Paroni L, et al. The impact of COVID-19 lockdown on gambling habit: a cross-sectional study from Italy. *J Behav Addict* 2021; **10:** 711–21.

157 Botella-Guijarro Á, Lloret-Irles D, Segura-Heras JV, Cabrera-Perona V, Moriano JA. A longitudinal analysis of gambling predictors among adolescents. *Int J Environ Res Public Health* 2020; **17:** 9266.

158 Brosowski T, Turowski T, Hayer T. Simulated gambling consumption mediation model (SGCMM): disentangling convergence with parallel mediation models. *Int Gambl Stud* 2020; **20:** 466–86.

159 Buja A, Lion C, Scioni M, et al. SOGS-RA gambling scores and substance use in adolescents. *J Behav Addict* 2017; **6:** 425–33.

160 De Luigi N, Gibertoni D, Randon E, Scorcu AE. Patterns of gambling activities and gambling problems among Italian high school students: results from a latent class analysis. *J Gambl Stud* 2018; **34:** 339–59.

161 Giralt S, Müller KW, Beutel ME, Dreier M, Duven E, Wölfling K. Prevalence, risk factors, and psychosocial adjustment of problematic gambling in adolescents: results from two representative German samples. *J Behav Addict* 2018; **7:** 339–47.

162 González-Roz A, Fernández-Hermida JR, Weidberg S, Martínez-Loredo V, Secades-Villa R. Prevalence of problem gambling among adolescents: a comparison across modes of access, gambling activities, and levels of severity. *J Gambl Stud* 2017; **33:** 371–82.

163 Gori M, Potente R, Pitino A, Scalese M, Bastiani L, Molinaro S. Relationship between gambling severity and attitudes in adolescents: findings from a population-based study. *J Gambl Stud* 2015; **31:** 717–40.

164 Hanss D, Mentzoni RA, Blaszczynski A, Molde H, Torsheim T, Pallesen S. Prevalence and correlates of problem gambling in a representative sample of Norwegian 17-year-olds. *J Gambl Stud* 2015; **31:** 659–78.

165 Kristiansen SG, Jensen SM. Prevalence and correlates of problematic gambling among Danish adolescents. *Int J Soc Welf* 2014; **23:** 89–99.

166 LaPlante DA, Nelson SE, LaBrie RA, Shaffer HJ. Disordered gambling, type of gambling and gambling involvement in the British Gambling Prevalence Survey 2007. *Eur J Public Health* 2011; **21:** 532–37.

167 Lepper J, Haden B. Testing NLCLiP: validation of estimates of rates of non-problematic and problematic gambling in a sample of British schoolchildren. *J Gambl Stud* 2013; **29:** 15–27.

168 Motha H, Pye J. Young people & gambling 2020 technical report. August, 2020. https://assets.ctfassets.net/j16ev64qyf6l/7HyrVzN1UdaE9EdHYygy5n/60884d397d53b3ba8f47f69132163373/Young_People_and_Gambling_2020_Technical_Report.pdf (accessed April 26, 2024).

169 Svensson J, Sundqvist K. Gambling among Swedish youth: predictors and prevalence among 15- and 17-year-old students. *Nordisk Alkohol Nark* 2019; **36:** 177–89.

170 Wardle H. The same or different? Convergence of skin gambling and other gambling among children. *J Gambl Stud* 2019; **35:** 1109–25.

171 Weidberg S, González-Roz A, Fernández-Hermida JR, et al. Gender differences among adolescent gamblers. *Pers Individ Dif* 2018; **125:** 38–43.

172 Martínez-Loredo V, González-Roz A, Martin-Roig A, Fernández-Artamendi S. New validity evidence of the global appraisal of individual needs-short screener for evaluating internalizing/externalizing behaviors in Spanish adolescents. *J Stud Alcohol Drugs* 2023; **84:** 754–61.

173 Latvala T, Lintonen T, Raisamo S. Gambling among underage alcohol users between 2008 and 2019: a national cross-sectional study among Finnish adolescents. *J Adolesc Health* 2023; **72:** 796–802.

174 Pérez-Albéniz A, Gil M, Díez-Gómez A, Martín-Seoane G, Lucas-Molina B. Gambling in Spanish adolescents: prevalence and association with mental health indicators. *Int J Environ Res Public Health* 2021; **19:** 129.

175 Observatoire français des drogues et des tendances addictives. Tendances: Les Jeux D'Argent Et De Hasard À 17 Ans Résultats D'Escapad 2022. 2023. https://www.ofdt.fr/BDD/publications/docs/eftxDATAd3da.pdf (accessed April 23, 2024).

176 Folkhälsomyndigheten (The Public Health Agency). Unga och spel om pengar: resultat från en undersökning om spel om pengar bland unga 16–19 år och föräldrar 2021. 2022. https://www.folkhalsomyndigheten.se/publikationer-och-material/publikationsarkiv/u/unga-och-spel-och-om-pengar-resultat-fran-en-undersokning-om-spel-om-pengar-bland-unga-16-19-ar-och-foraldrar-2021/ (accessed April 23, 2024).

177 Dighton G, Roberts E, Hoon AE, Dymond S. Gambling problems and the impact of family in UK armed forces veterans. *J Behav Addict* 2018; **7:** 355–65.

178 Ekholm O, Eiberg S, Davidsen M, Holst M, Larsen CV, Juel K. The prevalence of problem gambling in Denmark in 2005 and 2010: a sociodemographic and socioeconomic characterization. *J Gambl Stud* 2014; **30:** 1–10.

179 MacGregor A, Biggs H, Shields J. The effect of gambling marketing and advertising on children, young people and vulnerable people qualitative research report. *NatCen Social Research* 2020; published online March 27. https://doi.org/10.13140/RG.2.2.29918.79687.

180 Ramboll Management Consulting. Prævalensundersøgelse af pengespil og pengespilsproblemer i Danmark 2021. May, 2022. https://www.spillemyndigheden.dk/uploads/2022-05/Prævalensundersøgelse%20af%20pengespil%20og%20ludomani%20i%20Danmark%202021.pdf (accessed April 29, 2024).

181 Barbaranelli C, Vecchione M, Fida R, Podio-Guidugli S. Estimating the prevalence of adult problem gambling in Italy with SOGS and PGSI. *J Gambl Issues* 2013; **28:** 1–24.

182 Kilibarda B, Nikolic N. National Survey on Lifestyles of Citizens in Serbia: Substance Abuse and Gambling 2018 (Истраживање О Стиловима Живота Становништва Србије 2018. Године). 2018. https://www.batut.org.rs/download/StiloviZivotauSrbiji2018.pdf (accessed March 25, 2024).

183 Kragelund K, Ekholm O, Larsen CVL, Christensen AI. Prevalence and trends in problem gambling in Denmark with special focus on country of origin: results from the Danish health and morbidity surveys. *J Gambl Stud* 2022; **38:** 1157–71.

184 Vuorinen I, Savolainen I, Hagfors H, Oksanen A. Basic psychological needs in gambling and gaming problems. *Addict Behav Rep* 2022; **16:** 100445.

185 Canale N, Vieno A, Billieux J, Lazzeri G, Lemma P, Santinello M. Is medicine use for nervousness associated with adolescent at-risk or problem gambling? *Eur Addict Res* 2017; **23:** 171–76.

186 Koumantakis E, Comoretto RI, Dalmasso P, et al. Risk behaviors among migrant adolescents in Italy. *Children (Basel)* 2023; **10:** 1816.

187 Assimina PP, Lazaratou H, Anagnostopoulos DK, et al. Gambling in adolescents during the financial crisis in Greece. *Psychiatriki* 2021; **32:** 34–42.

188 Chóliz M, Marcos M, Lázaro-Mateo J. The risk of online gambling: a study of gambling disorder prevalence rates in Spain. *Int J Ment Health Addict* 2019; **19:** 404–17.

189 Salonen AH, Alho H, Castrén S. Gambling frequency, gambling problems and concerned significant others of problem gamblers in Finland: cross-sectional population studies in 2007 and 2011. *Scand J Public Health* 2015; **43:** 229–35.

190 Gavriel-Fried B, Loewenthal A, Vana N. Problem gambling severity in a nationally representative sample of the Israeli population: the moderating role of ethnonational affiliation. *Front Public Health* 2023; **11:** 1233301.

191 Okoti D, Ogula PA, Munyua JK. Motivators of students' involvement in sports betting in public secondary schools in Mumias East Sub-County, Kenya. *African Journal of Educational and Social Science Research* 2019; **7:** 73–80.

192 Sharp C, Dellis A, Hofmeyr A, Kincaid H, Ross D. First evidence of comorbidity of problem gambling and other psychiatric problems in a representative urban sample of South Africa. *J Gambl Stud* 2015; **31:** 679–94.

193 Chinawa AT, Ossai EN, Odinka PC, et al. Problem gambling among secondary school adolescents in Enugu, Nigeria. *Afr Health Sci* 2023; **23:** 748–57.

194 Tavares H, Carneiro E, Sanches M, et al. Gambling in Brazil: lifetime prevalences and socio-demographic correlates. *Psychiatry Res* 2010; **180:** 35–41.

195 Departmento Juego Responsible. Estudio De Prevalencia De Tipo De Jugadores En La Población General Mayor De 18 Años, Residentes En La Provincia De Entre Ríos. Análisis De Los Datos Realizados Por El Departamento Juego responsible. 2022. https://www.iafas.gov.ar/wp-content/uploads/2022/12/Informe-Cualitativo-encuesta-de-prevalencia-juego-patologico-en-Entre-Rios.pdf (accessed April 23, 2024).

196 Velázquez JAV, Escobar ER, Gamiño MNB, et al. Magnitude and extent of gambling disorder in the Mexican population. *Salud Ment* 2018; **41:** 157–67.

197 Afifi TO, Cox BJ, Martens PJ, Sareen J, Enns MW. Demographic and social variables associated with problem gambling among men and women in Canada. *Psychiatry Res* 2010; **178:** 395–400.

198 Afifi TO, Sareen J, Taillieu T, Turner S, Fortier J. Life interference due to gambling in three Canadian provinces. *J Gambl Stud* 2019; **35:** 671–87.

199 Barnes GM, Welte JW, Tidwell MC, Hoffman JH. Gambling on the lottery: sociodemographic correlates across the lifespan. *J Gambl Stud* 2011; **27:** 575–86.

200 Currie CL, Schopflocher DP, Wild TC. Prevalence and correlates of 12-month prescription drug misuse in Alberta. *Can J Psychiatry* 2011; **56:** 27–34.

201 El-Guebaly N, Casey DM, Currie SR, et al. The Leisure, Lifestyle, & Lifecycle Project (LLLP): a longitudinal study of gambling in Alberta. 2015. https://prism.ucalgary.ca/server/api/core/bitstreams/24f1bca5-233c-4dc0-990a-3bf2ff17676d/content (accessed April 24, 2024).

202 Gill KJ, Heath LM, Derevensky J, Torrie J. The social and psychological impacts of gambling in the Cree communities of northern Québec. *J Gambl Stud* 2016; **32:** 441–57.

203 Giroux I, Jacques C, Ladouceur R, Leclerc M, Brochu P. Prévalence des habitudes de jeu en Gaspésie et aux Îles-de-la-Madeleine en 2009. *Can J Psychiatry* 2012; **57:** 192–99 (in French).

204 Kairouz S, Paradis C, Nadeau L, Hamel D, Robillard C. Patterns and trends in gambling participation in the Quebec population between 2009 and 2012. *Can J Public Health* 2015; **106:** e115–20.

205 Kim W, Kim I, Nochajski TH. Predictors of gambling behaviors in Filipino Americans living in Honolulu or San Francisco. *J Gambl Stud* 2012; **28:** 297–314.

206 Leonard CA, Williams RJ, McGrath DS. Gambling fallacies: predicting problem gambling in a national sample. *Psychol Addict Behav* 2021; **35:** 939–47.

207 Martins SS, Ghandour LA, Lee GP, Storr CL. Sociodemographic and substance use correlates of gambling behavior in the Canadian general population. *J Addict Dis* 2010; **29:** 338–51.

208 Massatti RR, Starr S, Frohnapfel-Hasson S, Martt N. A baseline study of past-year problem gambling prevalence among Ohioans. *J Gambl Issues* 2016; **34:** 32–54.

209 Parhami I, Mojtabai R, Rosenthal RJ, Afifi TO, Fong TW. Gambling and the onset of comorbid mental disorders: a longitudinal study evaluating severity and specific symptoms. *J Psychiatr Pract* 2014; **20:** 207–19.

210 Patterson-Silver Wolf Adelv Unegv Waya DA, Welte JW, Barnes GM, Tidwell MC, Spicer P. Sociocultural influences on gambling and alcohol use among Native Americans in the United States. *J Gambl Stud* 2015; **31:** 1387–404.

211 Stark S, Zahlan N, Albanese P, Tepperman L. Beyond description: understanding gender differences in problem gambling. *J Behav Addict* 2012; **1:** 123–34.

212 Volberg RA, Williams RJ, Stanek EJ, Houpt A, Zorn M, Rodriguez-Monguio R. Gambling and problem gambling in Massachusetts: results of a baseline population survey. 2017. https://www.umass.edu/seigma/sites/default/files/Updated%20BGPS%20Report_Final.pdf (accessed April 24, 2024).

213 Welte JW, Barnes GM, Tidwell MC, Hoffman JH. Gambling and problem gambling across the lifespan. *J Gambl Stud* 2011; **27:** 49–61.

214 Welte JW, Barnes GM, Tidwell MC, Hoffman JH, Wieczorek WF. Gambling and problem gambling in the United States: changes between 1999 and 2013. *J Gambl Stud* 2015; **31:** 695–715.

215 Williams RJ, Hann R, Schopflocher D, et al. Quinte longitudinal study of gambling and problem gambling. 2015. http://hdl.handle.net/10133/3641 (accessed April 24, 2024).

216 Carliner H, Auerbach A, Showalter E, et al. 2021 statewide assessment of gambling and problem gambling in Illinois. 2022. https://static1.squarespace.com/static/60d20702f51f634af7080137/t/628d29451bf8e12ffd9396fb/1653418311915/Illinois-Problem-Gambling-Assessment.pdf (accessed April 24, 2024).

217 Van der Maas M, Mann RE, Turner NE, Matheson FI, Hamilton HA, McCready J. The prevalence of problem gambling and gambling-related behaviours among older adults in Ontario. 2018. https://doi.org/10.4309/jgi.2018.39.3 (accessed April 23, 2024).

218 Williams RJ, Leonard CA, Belanger YD, et al. Gambling and problem gambling in Canada in 2018: prevalence and changes since 2002. *Can J Psychiatry* 2021; **66:** 485–94.

219 Gemini Research. Impacts of legalized gambling in Connecticut. January, 2024. https://portal.ct.gov/-/media/DMHAS/Publications/2023-CT-FINAL-REPORT-Jan312024.pdf (accessed April 5, 2024).

220 Nower L, Stanmyre JF, Anthony V. The prevalence of online and land-based gambling in New Jersey. 2023. https://www.nj.gov/oag/ge/2023news/PrevalenceReport2023Final.pdf (accessed April 5, 2024).

221 Hochul K, Cunningham C. 2020 OASAS problem gambling prevalence survey summary. 2020. https://oasas.ny.gov/system/files/documents/2024/03/oasas_gambling_survey_2020.pdf (accessed April 23, 2024).

222 Jun M, Lay M, Reynolds D, Lee J. Report on adult gambling behaviors in Indiana - 2022. 2023. https://ipgap.indiana.edu/documents/2022_Adult_Gambling_Behaviors_in_Indiana.pdf?_gl=1*oagzyh*_ga*MTI3NDQwMDk2LjE2ODkwNDM3NDQ.*_ga_61CH0D2DQW*MTY4OTA0Mzc0NC4xLjAuMTY4OTA0Mzc0NC42MC4wLjA.&_ga=2·262835852.1469668823.1689043745-127440096.1689043744 (accessed April 23, 2024).

223 Mills DJ, Lee U, Lewis LE. 2022 Oklahoma Gambling Prevalence Study. 2022. https://www.oapgg.org/wp-content/uploads/2023/08/Prevalence-Study-_-Full-Report-2022-Oklahoma.pdf (accessed April 23, 2024).

224 Mills DJ, Harwell W, Spare KE. 2022 gambling prevalence study: findings from Oklahoma and Missouri. 2023. https://themidwestconference.org/wp-content/uploads/2023/07/Keynote-Devin-Mills-2023-OK-MO-Prevalence-Studies-_-MCPGSA-_-FINAL.pdf (accessed April 23, 2024).

225 Nower L, Volberg R, Caler KR. The prevalence of online and land-based gambling in New Jersey. 2017. https://www.researchgate.net/publication/317267567_The_Prevalence_of_Online_and_Land-Based_Gambling_in_New_Jersey (accessed April 23, 2024).

226 Park KH, Losch ME, Muilenburg R, Zubrod A. Gambling behavior. Gambling attitudes and behaviors: a 2018 survey of adult Iowans. July, 2019. https://www.sieda.org/wp-content/uploads/2019/09/2018_B_Behavior_07-09-2019.pdf (accessed April 24, 2024).

227 Sterner GEI, Russell GEH, Kaye MP, Ahlgren MB. Pennsylvania interactive gaming report 2022. 2022. https://www.ddap.pa.gov/Documents/Agency%20Reports/Interactive%20Gaming%20Reports/2022%20Online%20Gambling%20Report.pdf (accessed April 23, 2024).

228 Anton M, Bosch W, Streich F. Gambling in Minnesota: a study of participation, attitudes, and the prevalence of problem gambling. Feb 1, 2020. https://search.issuelab.org/resource/gambling-in-minnesota-a-study-of-participation-attitudes-and-the-prevalence-of-problem-gambling.html (accessed April 23, 2024).

229 Learning Tree Institute. 2017 Kansas gambling survey: results and analysis. 2017. https://kctcdata.org/wp-content/uploads/2021/10/2017-Kansas-Gambling-Survey-Report.pdf (accessed April 23, 2024).

230 Tracy JK, Maranda L, Scheele C. Statewide gambling prevalence in Maryland: 2017. 2017. https://prism.ucalgary.ca/server/api/core/bitstreams/93bcbede-4dd1-4d5b-ab16-0a40ffec1d41/content (accessed April 23, 2024).

231 Volberg R, Williams RJ, Zorn M, Evans V. Gambling and problem gambling in Massachusetts: results of a follow-up population survey. Dec 15, 2023. https://www.umass.edu/seigma/sites/default/files/FGPS%20Report_Dec15_final%20clean.pdf (accessed April 23, 2024).

232 Kansas Department for Aging and Disability Services. Gambling behaviors and attitudes among adult Kansans: a 2012 statewide survey. December, 2013. https://kctcdata.org/wp-content/uploads/2021/10/2012-Participation-Flyer.pdf (accessed April 23, 2024).

233 Russell GEH, Sterner GE 3rd, Kaye MP, Ahlgren MB. Online gambling in Pennsylvania. *Int Gambl Stud* 2023; published online Sept 6, 2023. https://doi.org/10.1080/14459795.2023.2242903.

234 Ramowski SK, Nystrom RJ, Rosenberg KD, Gilchrist J, Chaumeton NR. Health risks of Oregon eighth-grade participants in the "choking game": results from a population-based survey. *Pediatrics* 2012; **129:** 846–51.

235 Vitaro F, Brendgen M, Girard A, Dionne G, Boivin M. Longitudinal links between gambling participation and academic performance in youth: a test of four models. *J Gambl Stud* 2018; **34:** 881–92.

236 Yip SW, Desai RA, Steinberg MA, et al. Health/functioning characteristics, gambling behaviors, and gambling-related motivations in adolescents stratified by gambling problem severity: findings from a high school survey. *Am J Addict* 2011; **20:** 495–508.

237 Stefanovics EA, Gueorguieva R, Zhai ZW, Potenza MN. Gambling participation among Connecticut adolescents from 2007 to 2019: potential risk and protective factors. *J Behav Addict* 2023; **12:** 490–99.

238 Delaware State Epidemiological Outcomes Workgroup. The Delaware 2023 Epidemiological Profile: substance use, mental health, and related issues. 2023. https://cdhs.udel.edu/seow/epidemiological-reports-and-products/ (accessed April 23, 2024).

239 Barry DT, Stefanovics EA, Desai RA, Potenza MN. Gambling problem severity and psychiatric disorders among Hispanic and white adults: findings from a nationally representative sample. *J Psychiatr Res* 2011; **45:** 404–11.

240 Barry DT, Stefanovics EA, Desai RA, Potenza MN. Differences in the associations between gambling problem severity and psychiatric disorders among black and white adults: findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *Am J Addict* 2011; **20:** 69–77.

241 Petry NM, Blanco C, Stinchfield R, Volberg R. An empirical evaluation of proposed changes for gambling diagnosis in the DSM-5. *Addiction* 2013; **108:** 575–81.

242 Kim HS, Salmon M, Wohl MJ, Young M. A dangerous cocktail: alcohol consumption increases suicidal ideations among problem gamblers in the general population. *Addict Behav* 2016; **55:** 50–55.

243 Costes JM, Kairouz S, Fiedler I, et al. Online gambling practices and related problems in five European countries: findings from the Electronic Gam(bl)ing Multinational Empirical Survey (E-GAMES) Project. *J Gambl Stud* 2023; published online July 19. https://doi.org/10.1007/s10899-023-10229-8.

244 Buja A, Sperotto M, Genetti B, et al. Adolescent gambling behavior: a gender oriented prevention strategy is required? *Ital J Pediatr* 2022; **48:** 113.

245 Saldivia S, Cova F, Melipillán R, López A. Estudio de prevalencia y caracterización de la conducta de juego. 2022. https://www.loteria.cl/absolutenm/articlefiles/1688-Informe%20Final%20(01-06%20envio%20al%20comite%20de%20JR%20de%20loteria).cleaned.pdf (accessed April 23, 2024).

246 Luce C, Kairouz S, Nadeau L, Monson E. Life events and problem gambling severity: a prospective study of adult gamblers. *Psychol Addict Behav* 2016; **30:** 922–30.

247 European Gaming & Betting Association. European online gambling key figures 2022 edition. https://www.egba.eu/uploads/2023/02/230203-European-Online-Gambling-Key-Figures-2022.pdf (accessed May 1, 2024).

248 Polaris Market Research. Online gambling market share, size, trends, industry analysis report, by type (sports betting, casinos, poker, bingo, others); by device (desktop, mobile, others); by region; segment forecast, 2022-2030. https://www.polarismarketresearch.com/industry-analysis/online-gambling-market (accessed May 1, 2024).

249 Ukhova D, Marionneau V, Nikkinen J, Wardle H. Public health approaches to gambling: a global review of legislative trends. *Lancet Public Health* 2024; **9:** e57–67.

250 Sulkunen P, Babor TF, Cisneros Ornberg J, et al. Setting limits: gambling, science and public policy. Oxford, UK: Oxford University Press, 2018.

251 Catalano A, Milani L, Franco M, et al. The impact of COVID-19 pandemic on gambling: a systematic review. *Addict Behav* 2024; **155:** 108037.

252 Orford J. The gambling establishment: the gambling establishment challenging the power of the modern gambling industry and its allies. London, UK: Routledge, 2019.

253 Australian Government Productivity Commission. Gambling (2010). https://www.pc.gov.au/inquiries/completed/gambling-2010/report (accessed April 23, 2024).

254 Browne M, Rockloff MJ. Prevalence of gambling-related harm provides evidence for the prevention paradox. *J Behav Addict* 2018; **7:** 410–22.

255 Browne M, Volberg R, Rockloff M, Salonen AH. The prevention paradox applies to some but not all gambling harms: results from a Finnish population-representative survey. *J Behav Addict* 2020; **9:** 371–82.

256 Volberg RA, Zorn M, Williams RJ, Evans V. Gambling harm and the prevention paradox in Massachusetts. *Addicta* 2022; **8:** 162–70.

257 Booth L, Anderson AS, White V, Pierce H, Moodie R, Pettigrew S. Public perceptions of harm for nine popular gambling products. *J Gambl Stud* 2021; **37:** 1113–26.

258 Mora-Salgueiro J, García-Estela A, Hogg B, et al. The prevalence and clinical and sociodemographic factors of problem online gambling: a systematic review. *J Gambl Stud* 2021; **37:** 899–926.

259 Public Health England. Gambling-related harms evidence review: quantitative analysis of gambling involvement and gambling-realted harms among the general population in England. 2021. https://assets.publishing.service.gov.uk/media/6151d5928fa8f5610f5da4c9/Gambling_evidence_review_quantitative_report.pdf (accessed April 23, 2024).

260 Marionneau V, Kristiansen S, Wall H. Harmful types of gambling: changes and emerging trends in longitudinal helpline data. *Eur J Public Health* 2024; **34:** 335–41.

261 Hickman M, Taylor C. Indirect methods to estimate prevalence. In: Sloboda Z, ed. Epidemiology of drug abuse. New York, NY: Springer, 2005: 1131–135.

262 Sturgis P. Assessment of the gambling survey for Great Britain (GSGB). 2024. https://eprints.lse.ac.uk/121981/ (accessed April 26, 2024).

THE LANCET
Public Health

Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Tran LT, Wardle H, Colledge-Frisby S, et al. The prevalence of gambling and problematic gambling: a systematic review and meta-analysis. *Lancet Public Health* 2024; published online July 15. https://doi.org/10.1016/S2468-2667(24)00126-9.

Appendix for "The prevalence of gambling and problematic gambling: a systematic review and meta-analysis"

PRISMA Reporting Checklist

Section and Topic	Item #	Checklist item	Location where item is reported
TITLE			
Title	1	Identify the report as a systematic review.	1
ABSTRACT			
Abstract	2	See the PRISMA 2020 for Abstracts checklist.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of existing knowledge.	Introduction
Objectives	4	Provide an explicit statement of the objective(s) or question(s) the review addresses.	Introduction
METHODS			
Eligibility criteria	5	Specify the inclusion and exclusion criteria for the review and how studies were grouped for the syntheses.	Eligibility criteria
Information sources	6	Specify all databases, registers, websites, organisations, reference lists and other sources searched or consulted to identify studies. Specify the date when each source was last searched or consulted.	Search strategy, Appendix 2
Search strategy	7	Present the full search strategies for all databases, registers and websites, including any filters and limits used.	Appendix 1, 2
Selection process	8	Specify the methods used to decide whether a study met the inclusion criteria of the review, including how many reviewers screened each record and each report retrieved, whether they worked independently, and if applicable, details of automation tools used in the process.	Methods: Eligibility criteria, study selection process
Data collection process	9	Specify the methods used to collect data from reports, including how many reviewers collected data from each report, whether they worked independently, any processes for obtaining or confirming data from study investigators, and if applicable, details of automation tools used in the process.	Methods: Data extraction process
Data items	10a	List and define all outcomes for which data were sought. Specify whether all results that were compatible with each outcome domain in each study were sought (e.g. for all measures, time points, analyses), and if not, the methods used to decide which results to collect.	Appendix 3
	10b	List and define all other variables for which data were sought (e.g. participant and intervention characteristics, funding sources). Describe any assumptions made about any missing or unclear information.	Appendix 3
Study risk of bias assessment	11	Specify the methods used to assess risk of bias in the included studies, including details of the tool(s) used, how many reviewers assessed each study and whether they worked independently, and if applicable, details of automation tools used in the process.	Methods: Risk of bias assessment, Appendix 4
Effect measures	12	Specify for each outcome the effect measure(s) (e.g. risk ratio, mean difference) used in the synthesis or presentation of results.	Methods: Synthesis methods
Synthesis methods	13a	Describe the processes used to decide which studies were eligible for each synthesis (e.g. tabulating the study intervention characteristics and comparing against the planned groups for each synthesis (item #5)).	Methods: Eligibility criteria, Synthesis methods, Appendix 5
	13b	Describe any methods required to prepare the data for presentation or synthesis, such as handling of missing summary statistics, or data conversions.	Appendix 5

	13c	Describe any methods used to tabulate or visually display results of individual studies and syntheses.	Appendix 5
	13d	Describe any methods used to synthesize results and provide a rationale for the choice(s). If meta-analysis was performed, describe the model(s), method(s) to identify the presence and extent of statistical heterogeneity, and software package(s) used.	Methods: Synthesis methods, Appendix 5
	13e	Describe any methods used to explore possible causes of heterogeneity among study results (e.g. subgroup analysis, meta-regression).	Methods: Synthesis methods
	13f	Describe any sensitivity analyses conducted to assess robustness of the synthesized results.	N/A
Reporting bias assessment	14	Describe any methods used to assess risk of bias due to missing results in a synthesis (arising from reporting biases).	Methods: Risk of bias assessment
Certainty assessment	15	Describe any methods used to assess certainty (or confidence) in the body of evidence for an outcome.	Methods: Synthesis methods
RESULTS			
Study selection	16a	Describe the results of the search and selection process, from the number of records identified in the search to the number of studies included in the review, ideally using a flow diagram.	Figure 1
	16b	Cite studies that might appear to meet the inclusion criteria, but which were excluded, and explain why they were excluded.	Figure 1
Study characteristics	17	Cite each included study and present its characteristics.	Appendix 7
Risk of bias in studies	18	Present assessments of risk of bias for each included study.	Appendix 11
Results of individual studies	19	For all outcomes, present, for each study: (a) summary statistics for each group (where appropriate) and (b) an effect estimate and its precision (e.g. confidence/credible interval), ideally using structured tables or plots.	Results, Table 2-4
Results of syntheses	20a	For each synthesis, briefly summarise the characteristics and risk of bias among contributing studies.	Results, Appendix Tables 11
	20b	Present results of all statistical syntheses conducted. If meta-analysis was done, present for each the summary estimate and its precision (e.g. confidence/credible interval) and measures of statistical heterogeneity. If comparing groups, describe the direction of the effect.	Results, Table 2-4
	20c	Present results of all investigations of possible causes of heterogeneity among study results.	Appendix 10
	20d	Present results of all sensitivity analyses conducted to assess the robustness of the synthesized results.	N/A
Reporting biases	21	Present assessments of risk of bias due to missing results (arising from reporting biases) for each synthesis assessed.	Not reported
Certainty of evidence	22	Present assessments of certainty (or confidence) in the body of evidence for each outcome assessed.	Tables 2-4
DISCUSSION			
Discussion	23a	Provide a general interpretation of the results in the context of other evidence.	Discussion, Research in context
	23b	Discuss any limitations of the evidence included in the review.	Discussion: Limitations
	23c	Discuss any limitations of the review processes used.	Discussion: Limitations
	23d	Discuss implications of the results for practice, policy, and future research.	Discussion, Conclusions

OTHER INFORMATION			
Registration and protocol	24a	Provide registration information for the review, including register name and registration number, or state that the review was not registered.	Methods
	24b	Indicate where the review protocol can be accessed, or state that a protocol was not prepared.	Methods
	24c	Describe and explain any amendments to information provided at registration or in the protocol.	Appendix 4
Support	25	Describe sources of financial or non-financial support for the review, and the role of the funders or sponsors in the review.	Abstract, Declaration of interests
Competing interests	26	Declare any competing interests of review authors.	Declaration of interests
Availability of data, code and other materials	27	Report which of the following are publicly available and where they can be found: template data collection forms; data extracted from included studies; data used for all analyses; analytic code; any other materials used in the review.	Availability of data and materials statement

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71

Gather checklist

Item #	Checklist item	Reported on page #
Objectives and funding		
1	Define the indicator(s), populations (including age, sex, and geographic entities), and time period(s) for which estimates were made.	Methods: Eligibility criteria, Study selection process, Synthesis methods
2	List the funding sources for the work.	Abstract, Declaration of interests
Data Inputs		
For all data inputs from multiple sources that are synthesized as part of the study:		
3	Describe how the data were identified and how the data were accessed.	Methods: Search strategy, Appendix 1-2
4	Specify the inclusion and exclusion criteria. Identify all ad-hoc exclusions.	Methods: Eligibility criteria
5	Provide information on all included data sources and their main characteristics. For each data source used, report reference information or contact name/institution, population represented, data collection method, year(s) of data collection, sex and age range, diagnostic criteria or measurement method, and sample size, as relevant.	Methods: Search strategy, Appendix 7
6	Identify and describe any categories of input data that have potentially important biases (e.g., based on characteristics listed in item 5).	Table 1, Appendix 7
For data inputs that contribute to the analysis but were not synthesized as part of the study:		
7	Describe and give sources for any other data inputs.	N/A
For all data inputs:		
8	Provide all data inputs in a file format from which data can be efficiently extracted (e.g., a spreadsheet rather than a PDF), including all relevant meta-data listed in item 5. For any data inputs that cannot be shared because of ethical or legal reasons, such as third-party ownership, provide a contact name or the name of the institution that retains the right to the data.	Availability of data and materials statement
Data analysis		

9	Provide a conceptual overview of the data analysis method. A diagram may be helpful.	Methods: Synthesis methods, Appendix 5
10	Provide a detailed description of all steps of the analysis, including mathematical formulae. This description should cover, as relevant, data cleaning, data pre-processing, data adjustments and weighting of data sources, and mathematical or statistical model(s).	Methods: Data extraction process, Synthesis methods, Appendix 5-6
11	Describe how candidate models were evaluated and how the final model(s) were selected.	Appendix 5
12	Provide the results of an evaluation of model performance, if done, as well as the results of any relevant sensitivity analysis.	N/A
13	Describe methods for calculating uncertainty of the estimates. State which sources of uncertainty were, and were not, accounted for in the uncertainty analysis.	Data synthesis, Appendix 5
14	State how analytic or statistical source code used to generate estimates can be accessed.	Appendix 5, Availability of data and materials statement
Results and Discussion		
15	Provide published estimates in a file format from which data can be efficiently extracted.	Table 2-4, Appendix 8-9
16	Report a quantitative measure of the uncertainty of the estimates (e.g. uncertainty intervals).	Table 2-4, Appendix 8-9
17	Interpret results in light of existing evidence. If updating a previous set of estimates, describe the reasons for changes in estimates.	Discussion, Research in context
18	Discuss limitations of the estimates. Include a discussion of any modelling assumptions or data limitations that affect interpretation of the estimates.	Limitations

51

52

53 ## Appendix 1: Peer-reviewed literature search strategy

Database	Search group	Search terms
MEDLINE	Prevalence	(gambl* NOT "Iowa Gambling Task") AND prevalence[tiab] Filtered by 2010-Present
EMBASE	Prevalence	gambling/ or pathological gambling/ or gambl*.mp. (Iowa adj gambl*).tw,kw. 1 not 2 Gambling/ virtual good.mp. (lottery or lotteries or lotto).mp. (scratchcard* or scratch card*).mp. in-game purchase.mp. game credit.mp. ("loot box" or "loot crate").mp. slot machine.mp. fruit machine.mp. ("video lottery" or VLT).mp. casino*.mp. amusement arcade.mp. microtransactions.mp. (bingo not gene).mp. ((betting or bet or bets) and (horse* or racing or dog*)).mp. competitive game.mp. 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 exp epidemiologic studies/ epidemiology.tw. exp prevalence/ prevalence.mp. exp incidence/ incidence.ti. 21 or 22 or 23 or 24 or 25 or 26 20 and 27 limit 28 to (human and yr="2010")
PSYCINFO	Prevalence	((noft(gambl*) NOT noft("Iowa Gambling Task")) OR noft((lottery OR lotteries OR lotto) OR (scratchcard OR "scratch card") OR ("loot box" OR "loot crate") OR "slot machine" OR "fruit machine" OR ("video lottery" OR VLT) OR casino OR microtransactions OR (bingo NOT gene) OR ((bet OR bet OR bets) AND (horse* OR racing OR dog*)) OR "competitive game")) AND noft(prevalence OR incidence OR epidemiology) Limited to 01/01/2010 to 21/06/2021

54 Searches were most recently run on 4 March 2024.

55 The databases used for the search were selected to maximise the likelihood of identifying as many relevant
56 studies as possible. The Cochrane Handbook (Lefebvre et al., 2023; www.training.cochrane.org/handbook)
57 identifies that Medline (now PubMed) and Embase should be included for all reviews, where possible. We
58 included PsycInfo, a database for psychology and psychiatry, due to the identification of gambling disorder
59 in the DSM-5.

60

61 ## Appendix 2: Grey literature sources

Grey literature sources:	Website:
Gambling aware InfoHub	
Gambling Commission UK	https://www.gamblingcommission.gov.uk/news-action-and-statistics/Statistics-and-research/Levels-of-participation-and-problem-gambling/Young-persons-survey.aspx
GambLib (Gambling Research Library)	https://www.gamblingresearch.org.au/publications
Gam Care	https://www.gamcare.org.uk/

National Problem Gambling Clinic	https://www.cnwl.nhs.uk/services/mental-health-services/addictions-and-substance-misuse/national-problem-gambling-clinic
Gordon Moody Association	https://www.gordonmoody.org.uk/
Gamblers Anonymous	https://gaaustralia.org.au/
Open Grey	http://www.opengrey.eu/
Gam-Anon	https://gaaustralia.org.au/gam-anon/
Gambling Information Resource Office Research Library	
Advisory Board for Safer Gambling	https://www.rgsb.org.uk/Home.aspx
Gambling Watch UK	https://www.gamblingwatchuk.org/
Australian Gambling Research Centre	https://aifs.gov.au/agrc/
Gambling Research Exchange Ontario	https://www.greo.ca/en/index.aspx
Citizens Advice Bureau	https://www.cabwa.com.au/
Be Gamble Aware	https://www.begambleaware.org/for-professionals/research-and-evaluation
Problem Gambling, Wigan Council	https://www.wigan.gov.uk/index.aspx
Gambling Compliance	https://vixio.com/gamblingcompliance/
Child Family Community Australia	https://aifs.gov.au/cfca/
International Centre for Youth Gambling Problems and High-Risk Behaviours	http://www.youthgambling.com/
Gambling and Addictions Research Centre	https://garc.aut.ac.nz/
Alberta Gambling Research Institute	https://research.ucalgary.ca/alberta-gambling-research-institute
Responsible Gambling Foundation of New Zealand	https://www.pgf.nz/
Ministry of Health, New Zealand	https://www.health.govt.nz/publications?f%5B0%5D=im_field_category%3A668&f%5B1%5D=im_field_category%3A149&f%5B2%5D=im_field_category%3A3763#find-by-region
Victorian Responsible Gambling Foundation	https://responsiblegambling.vic.gov.au/resources/publications/?q=&collection=10&published_year_0=2009&published_year_1=2018
Responsible Gambling NSW	https://www.responsiblegambling.nsw.gov.au/research2/research/nsw-youth-gambling-study-2020
Gambling Commission New Zealand	http://www.gamblingcommission.govt.nz/

62

63

Appendix 3: Variables Extracted

Domain	List of variables
STUDY BACKGROUND	– Author, Publication year, Literature type, Study year, Country, Geographical region, Cohort name – Details on representativeness and its definition, if the study population consisted wholly of people who gamble, and the study definition of gambling – Recruitment methodology and data collection including recruitment sites, limitations on the recruited sample and method of data collection (e.g., online, face-to-face), study recruitment notes – Attrition and participation notes for cross-sectional studies including number of individuals eligible/contacted, respondents who were successfully contacted, those who declined/refused and those who completed the survey
COHORT CHARACTERISTICS	– Sample size (N) and proportion (%) of women, males, non-binary/other, completed high school, AUD, SUD, mean income, mean age, median age for: o Total sample in group o Recent gambling sample (including timeframe) o Lifetime gambling sample – Name of scale, timeframe associated with scale, category definition, cut-off score, number of sample in category, % of sample in category (among gambling sample), number of women in category, % of women in category (among women who gamble), number of men in category, % of men in category (among men who gamble) for: o Risk category 1, 2, 3 o Disordered gambling group 1 and 2 – Estimated prevalence of gambling and disordered gambling including %, LCI, UCI and denominator (N) – Cohort characteristics notes
ACTIVITIES	**Gambling Products** – Timeframe of gambling product use – Prevalence in population, N and % among total sample, N and % for among gambling sample, N and % for product users with disordered gambling, definition of product used for: o Use of lottery/raffle tickets o Use of instant lottery o Use of online gambling (overall) o Use of online casino/slots gambling o Use of other online gambling o Use of electronic gaming machines o Use of casino table games o Use of sports betting o Use of race betting (inc. horse and dog racing) o Use of private/non-commercial betting/gambling (inc. card games, board games, etc.) o Use of financial market gambling o Use of other types of gambling – Gambling products notes, number of types of gambling products participants engaged in (mean, median or overall) **Gambling and Related Behaviours** Help seeking: – Time-period referred to for help-seeking behaviour(s), study definition of help-seeking behaviour(s), denominator for people who could have sought treatment, number who have sought help/treatment for their gambling, % who have sought help/treatment for their gambling. Money: – Time-period referred to for amount spent on gambling; specific 'Other' time-period; average amount spent on gambling; % of total income spent on gambling. Frequency:

	– Time-period referred to for frequency of gambling; average amount spent on gambling; average number of hours spent on gambling; number of times (events) participants gambled. Gambling and related behaviour notes.

65

66

67

68

Appendix 4: Blank risk of bias tool

Quality assessment checklist for prevalence studies	
JBI Critical Appraisal Tool for Prevalence Studies	
Name of author(s): Year of publication: Study title:	
Risk of bias items	**Clarification about item**
1. Was the sample frame appropriate to address the target population?	This question relies upon knowledge of the broader characteristics of the population of interest and the geographical area. If the study is of women with breast cancer, knowledge of at least the characteristics, demographics and medical history is needed. The term "target population" should not be taken to infer every individual from everywhere or with similar disease or exposure characteristics. Instead, give consideration to specific population characteristics in the study, including age range, gender, morbidities, medications, and other potentially influential factors. For example, a sample frame may not be appropriate to address the target population if a certain group has been used (such as those working for one organisation, or one profession) and the results then inferred to the target population (i.e. working adults). A sample frame may be appropriate when it includes almost all the members of the target population (i.e. a census, or a complete list of participants or complete registry data).
2. Were study participants sampled in an appropriate way?	Studies may report random sampling from a population, and the methods section should report how sampling was performed. Random probabilistic sampling from a defined subset of the population (sample frame) should be employed in most cases, however, random probabilistic sampling is not needed when everyone in the sampling frame will be included/ analysed. For example, reporting on all the data from a good census is appropriate as a good census will identify everybody. When using cluster sampling, such as a random sample of villages within a region, the methods need to be clearly stated as the precision of the final prevalence estimate incorporates the clustering effect. Convenience samples, such as a street survey or interviewing lots of people at a public gatherings are not considered to provide a representative sample of the base population.
3. Was the sample size adequate?	The larger the sample, the narrower will be the confidence interval around the prevalence estimate, making the results more precise. An adequate sample size is important to ensure good precision of the final estimate. Ideally we are looking for evidence that the authors conducted a sample size calculation to determine an adequate sample size. This will estimate how many subjects are needed to produce a reliable estimate of the measure(s) of interest. For conditions with a low prevalence, a larger sample size is needed. Also consider sample sizes for subgroup (or characteristics) analyses, and whether these are appropriate. Sometimes, the study will be large enough (as in large national surveys) whereby a sample size calculation is not required. In these cases, sample size can be considered adequate.
4. Were the study subjects and the setting described in detail?	Certain diseases or conditions vary in prevalence across different geographic regions and populations (e.g. Women vs. Men, sociodemographic variables between countries). The study sample should be described in sufficient detail so that other researchers can determine if it is comparable to the population of interest to them.
5. Was the data analysis conducted with sufficient coverage of the identified sample?	Coverage bias can occur when not all subgroups of the identified sample respond at the same rate. For instance, you may have a very high response rate overall for your study, but the response rate for a certain subgroup (i.e. older adults) may be quite low.

6. Were valid methods used for the identification of the condition?	Here we are looking for measurement or classification bias. Many health problems are not easily diagnosed or defined and some measures may not be capable of including or excluding appropriate levels or stages of the health problem. If the outcomes were assessed based on existing definitions or diagnostic criteria, then the answer to this question is likely to be yes. If the outcomes were assessed using observer reported, or self-reported scales, the risk of over- or under-reporting is increased, and objectivity is compromised. Importantly, determine if the measurement tools used were validated instruments as this has a significant impact on outcome assessment validity. **For this review: if the study provides a clear and adequate definition of what gambling is, then take this as 'Yes'**
7. Was the condition measured in a standard, reliable way for all participants?	Considerable judgment is required to determine the presence of some health outcomes. Having established the validity of the outcome measurement instrument (see item 6 of this scale), it is important to establish how the measurement was conducted. Were those involved in collecting data trained or educated in the use of the instrument/s? If there was more than one data collector, were they similar in terms of level of education, clinical or research experience, or level of responsibility in the piece of research being appraised? When there was more than one observer or collector, was there comparison of results from across the observers? Was the condition measured in the same way for all participants?
8. Was there appropriate statistical analysis?	Importantly, the numerator and denominator should be clearly reported, and percentages should be given with confidence intervals. The methods section should be detailed enough for reviewers to identify the analytical technique used and how specific variables were measured. Additionally, it is also important to assess the appropriateness of the analytical strategy in terms of the assumptions associated with the approach as differing methods of analysis are based on differing assumptions about the data and how it will respond. **For this review: this component was separated into two components – Item 8 was used to assess for the numerator, denominator and percentages, whilst Item 8a assessed confidence intervals of estimates.**
9. Was the response rate adequate, and if not, was the low response rate managed appropriately?	A large number of dropouts, refusals or "not founds" amongst selected subjects may diminish a study's validity, as can a low response rates for survey studies. The authors should clearly discuss the response rate and any reasons for non-response and compare persons in the study to those not in the study, particularly with regards to their socio-demographic characteristics. If reasons for non-response appear to be unrelated to the outcome measured and the characteristics of non-responders are comparable to those who do respond in the study (addressed in question 5, coverage bias), the researchers may be able to justify a more modest response rate. **For this review: if the response rate was at least 70%, this was judged to be an adequate response rate. Furthermore, if the data was weighted to ensure representativeness of population, this was judged to be an adequate response to low response rates.**

Note: In the protocol, we stated that we would be using Hoy et al., (2012) assessment tool. Prior to starting risk of bias assessment, it was decided to change to the Joanna Brigg Institute (JBI) critical appraisal tool. This change was made due to the JBI tool being more widely available and updated.

Appendix 5: Method of estimating regional and global prevalences and numbers

Appendix 5.1. Study identification and missing data rules

After all studies were screened to be included in the review, we further excluded studies from analysis if one or more of the following were true:

- Predictor, trajectory or latent class analysis studies;
- A simulation of gambling prevalences or engagement in specific activities;
- Duplicate of another paper that presented the same data, with no additional data present;
- Gambling data was reported with two of the following missing: denominator, numerator or percentage for any gambling, any risk or problematic gambling, and individual gambling activity engagement;
- Data not applicable for current review (e.g., reporting on gambling behaviours in other timeframes other than 12 months, money spent on gambling, frequency of gambling and gambling-related help-seeking behaviours)
- Review of existing data

Furthermore, across studies, country of recruitment, recruitment methodology and years of data collection were compared to identify primary and secondary papers of the same sample of individuals. The paper with the most data presented was assigned to be the primary paper with all subsequent identified papers for that sample considered as a secondary paper. Secondary papers were extracted to identify any additional data that could be used in one of the analyses. Each independent sample only had one estimate included for each analysis.

Studies whose inclusion criteria was people who gambled in the past 12 months were included if one of the following were true, in addition to reporting data on any risk gambling, problematic gambling or engagement in individual gambling activity:

- Initial recruitment was a random sample of the population which was then used to identify people who gambled;
- Sample included all or a random sample of people engaged in any gambling.

Studies reporting on a sample of all or a random sample of people engaged in one or more gambling activity, was only included if they reported data on any risk or problematic gambling.

Studies that did not report any data for the specific analysis were excluded for that analysis. If a study only reported percentages with a denominator or numerator, we then calculated the missing value using the formula of: Percentage is equal to numerator (e.g., individuals who responded 'Yes' to gambling in the past year) divided by denominator (e.g., all individuals who responded to the question).

Appendix 5.2. Data synthesis methodology

Using the following protocol, available country level data were extrapolated to derive regional and global estimates of the prevalences and numbers of people who gamble, engaged in any risk and problematic gambling in the population alongside estimates for any risk and problematic gambling among people who gamble, and to derive uncertainty bounds around these estimates. Our approach was developed and used in previous global reviews conducted by our team members[1,2].

For data synthesis, it was assumed that all countries had evidence of gambling.

First, country-level estimates were pooled using STATA 18 via metaprop with exact binomial method. Estimates where the denominator was based on the number of total respondents contributed to population estimates whereas if the denominator was based on the number of people who gambled in any activity contributed to conditional estimates. If the estimate was based on the number of people who gambled using a specific activity, it only contributed to conditional estimates for that specific activity.

Where possible and appropriate, we calculated population estimates based on conditional estimates and vice versa by calculating the appropriate denominator.

Regional estimates:

Estimated regional and global prevalence estimates for any, any risk and problematic gambling among the population were then based on pooled available country-level estimates, within a region or globally respectively, weighted by estimated country population size. Adult population estimates were based on 15-64 2021 UN population size with adolescent population estimates based on 12-18 2021 UN population size as accessed through https://population.un.org/wpp/. Estimated regional and global prevalence estimates for any risk and problematic gambling among people who gamble (conditional prevalences) were then based on pooled available country- level estimates, within a region or globally respectively, weighted by estimated country gambling population size. Estimated regional prevalence was used where there were two or more countries within a region for which estimates were available. Estimated global prevalence was also used for each country in regions where estimates were not available of any country. If a region only had one country estimate and that country's population was less than 50% of the total regional population, the estimated global prevalence was imputed for each of the countries with no data available.

If a single country contributed more than 50% of the total observed estimates population for an overall global estimate, we did not proceed forward with the calculation of a global estimate. As a result, any regions where only one country estimate was available and required the use of the global calculated estimate to determine a regional estimate was also not calculated.

Uncertainty bounds were based on the lower and upper bounds of the pooled country estimates. If only one estimate was available for a country, the lower and upper bounds were estimated using the exact binomial method.

For each regional population size estimate, the sum of all country estimates (both those reported and those derived as above) and their ranges, was made. The final global population size estimate comprised the sum of all regional estimates.

For each region, the sum of all country estimates (as derived above) and their ranges was made. The final global estimate comprised the addition of all regional estimates.

Appendix 5.3. Visualisation tools used

Data tables were created in Microsoft Word or Excel, with global map visualisations created in Tableau Desktop using pooled country-level estimates.

References

1. Degenhardt L, Gibson G, Leung J, Kumvaj M, Larney S. Searching the grey literature to access research on illicit drug use, HIV and viral hepatitis: A resource to identify drug- related databases and websites. NDARC Technical Report No. 334. Sydney: National Drug and Alcohol Research Centre, University of NSW. https://ndarc.med.unsw.edu.au/resource/searching-grey-literature-access-research- illicit-drug-use-hiv-and-viral-hepatitis-resource Accessed on May 29th 2017;2016.

2. Mathers BM, Degenhardt L, Phillips B, et al. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. Lancet. 2008;372(9651):1733-1745.

3. Nelson PK, Mathers BM, Cowie B, et al. Global epidemiology of hepatitis B and hepatitis C in people who inject drugs: results of systematic reviews. Lancet. 2011;378(9791):571-583.

4. Mathers B, Degenhardt L, Phillips B, et al. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. Lancet. 2008;372:1733- 1745.

Appendix 6: Definition guidelines used for analyses.

Table 6.1. Definitions of any risk gambling and problematic gambling for each included gambling measure scale/instrument.

Gambling measure/instrument	# studies	Minimum score/classification to be identified as:	
		Any risk gambling	Problematic/disordered gambling
Canadian Problem Gambling Index (CPGI)/ Problematic Gambling Severity Index (PGSI)	157	1	5
Diagnostic and Statistical Manual (DSM)-based instrument	61	1	3
South Oaks Gambling Screen (SOGS)	26	1	3
South Oaks Gambling Screen Revised for Adolescents (SOGS-RA)	26	2	4
Lie-Bet	17	1	N/A
Problem and Pathological Gambling Measure (PPGM)	10	1 or At-risk	Problem or Pathological
NORC DSM-IV Screen for gambling problems (NODS)/ NORC DSM-IV Screening for gambling problems – loss of Control, Lying and Preoccupation (NODS-CLiP)	8	1	3
Brief Biosocial Gambling Screen (BBGS)	3	1	N/A
Gambling Problem Severity Subscale of Canadian Adolescent Gambling Index (GPSS/CAGI)	3	Low to moderate severity	N/A
Alcohol Use Disorder and Associated Disabilities Interview Schedule , Diagnostic and Statistical Manual of Mental Disorders, 4th edition (AUDADIS-IV)	4	0	3
Gamblers Anonymous 20 questions (GA-20)	2	2	7
Playscan classification	1	Orange or Red	Orange or Red
Minnesota Impulsive Disorders Interview (MIDI)	1	1	4
Clinical assessment	1	1	3
Gambling disorder Screening Questionnaire-Persian (GDSQ-P).	1	Mild	N/A
NORC Diagnostic Screen for gambling problems – Self Administered (NODS-SA)	1	1	3
FocaL Adult Gambling Screen (FLAGS)	1	Early risk	N/A

Consumption Screen for Problem Gambling	3	N/A	N/A

Note: If studies reported on more than one measure/instrument, the more commonly reported measure/instrument across studies was included in the analysis. Any studies that reported a higher threshold score for problematic gambling than the minimum score reported in the table (e.g., PGSI 8+ only), were still included in the relevant analyses.

Table 6.2. Included activities within each gambling activity classification.

Activity Classification	Definition with included items
Lottery	Can consist of numerous forms with defining feature being that the jackpot accumulates over time. People either choose or given numbers via tickets that may be drawn at a later time for the jackpot. Winning numbers are typically drawn weekly or bi-weekly. Lotteries typically allow for either a winning of a portion of the jackpot or the entirety of the jackpot. If a study reported a lottery engagement estimate including instant lottery activities with no estimate available for instant lottery only or lotteries activities excluding instant lottery activities, that estimate was only included for lottery analyses.
Instant lottery/win	Games where payouts are provided instantly. This category encompasses products such as scratch-cards and instant draw games. Differentiation between instant lottery and lottery is that winning with instant lottery is not dependent on a draw of numbers at a later date.
Online gambling	A generic term to encompass use of any gambling activity using the internet or a mobile device typically via apps. If a study does not separate different types of online gambling activities, then the study's data is included as a whole within this categorisation for analyses.
Online casino gambling	A generic term of any casino-type gambling formats using the internet or a mobile device typically via apps. These can include online electronic gambling machines and online table games.
Electronic gambling machines (EGMs)	Though can encompass different types of machines, they are virtual games based on random numbers generators. People typically win by getting a certain combination of numbers or patterns on a virtual reel. Other names can include fixed odds betting terminals in the UK and pokies in Australia. Virtual or electronic gambling machines in any venue were included in this categorisation for analyses provided the data was not combined with any other group of gambling activities.
Casino games	Games that are played within the venue of a casino, with this category aiming to capture table games such as blackjack, craps, roulette, poker or baccarat. Casino games are provided through a dealer, either a human overseeing the table, or an electronic dealer visualised through a screen. If a study only reports a general casino gambling category, the data was only included for analyses related to casino games. However, if a study reports other forms of gambling in a casino venue (e.g., sports betting, betting on races), these estimates were excluded from specific gambling analyses unless classes of gambling activity within the casino venue were separately reported.
Sports betting	Placing a wager on at least one sporting event. The wager or bet can be placed on any component of the sporting event.
Betting on races	Placing bets on the outcome of an animal-based race. The most common are horse races.
Private/non-commercial betting	A generic term of any gambling activity that takes place in a private location or is only conducted within a specific social network. These can include card games in a private residence or betting pools among friends or family or colleagues.
Financial market gambling	Purchasing and selling of stocks or cryptocurrency at a high frequency (e.g., day trading).
Bingo	A game whereby players are given random numbers on a number card. Numbers are drawn and called out randomly with a player winning once a pattern of their numbers have been called.

Note: It was assumed that all activities took place in land-based venues unless otherwise specified (e.g., online or apps). If a study reported activity data whereby multiple data points could have been included in an activity

classification for analyses but the data points could not be combined, the data point with the highest reported prevalence was included.

Appendix 7: Table of included studies

Table 7.1. Brief summary of all included studies

Author, Year	Country	Study yrs	N	Study description (recruitment method, inclusion, method of survey)	% female	Mean age	% AUD	% SUD	Gambling scales used
Representative cohorts									
Australasia									
ACIL, 2017[3]	Australia	2017	5000	Random Digit Dial landline, pre-screened Random Digit Dial mobile sample and listed mobile phone numbers were used to recruit adults aged 18 years or older living in Tasmania.	51		24		CPGI/PGSI
ACIL, 2014[4]	Australia	2013	5000	Dual frame survey design, Random Digit Dialling of both landline and mobile numbers was used to recruit adults aged 18 years or older living in Tasmania.	51				CPGI/PGSI
The Allen Consulting Group, 2011[5]	Australia	2011	4303	Random Digit Dialling from the Social Research Centre's proprietary enhanced RDD database was used to recruit adults aged 18 years or older living in Tasmania.	39				CPGI/PGSI
Christensen, 2015[6]	*Australia*	*2011*	*4303*	*8 Tasmanian LGAs were selected based on SEIFA scores and EGM density using a landline database. Rest of state sample selected from Tasmanian regions outside LGAs using a Sampleworx database of telephone exchanges containing landline telephone numbers.*					*CPGI/PGSI*
Armstrong, 2017[7]	Australia	2015-2016	15245	The HILDA Survey recruited a national sample.	49				CPGI/PGSI
Tajin, 2021[8]	*Australia*	*2015*	*3602*	*The HILDA survey - Wave 15 recruited individuals aged 18 and over from selected Victorian households.*	*53*				*CPGI/PGSI*
Billi, 2014[9]	Australia	2008-2012	15000	Sampling was stratified to reflect the relative proportions of the populations within the eight Victorian local government areas for individuals aged 18 years and over.					CPGI/PGSI
Billi, 2012[10]	*Australia*	*2008-2011*	*7148*	*Participants were a part of a large representative Victorian cohort, consisting of a longitudinal subset of participants who agreed to be called up for Wave 2.*					*CPGI/PGSI*
Browne, 2022[11]	Australia	2020-2021	2603	Recruited Australian respondents aged 18 and above who had gambled in the past 12 months through a commercial panel provider, where participants were invited by email. Victoria was not sampled due to COVID-19 lockdowns.	42.6				CPGI/PGSI, Short Gambling Harms Screen
Browne, 2019[12]	Australia	2018-2019	10012	The NSW Gambling Survey recruited individuals 18 years and over living in NSW using Random Digit Dialling.	49				CPGI/PGSI
Delfabbro, 2014[13]	Australia	2005-2009	256	Original survey based on probability sampling from residential addresses. Addresses in South Australia were selected at random from a current telephone directory to recruit 16-19 years old for wave 1.	50				DSM-based instrument (DSM-IV-J)
Department Justice and Attorney-General, 2012[14]	Australia	2011-2012	15088	The sample was selected from a household-based frame (list) of individuals aged 18 years or older who were usually residents in private dwellings, which included both Queensland landline and mobile telephone numbers.	56				CPGI/PGSI
Davidson, 2015[15]	Australia	2014-2015	6995	ACT residents sampled from random digit dialling of telephone numbers from a list of numbers linked to their postcode. The adult with the last birthday was invited to participate	55.5				CPGI/PGSI
Davidson, 2010[16]	Australia	2009	5462	ACT residents sampled from random digit dialling incorporating all landline numbers, incl. listed and unlisted numbers. Chosen member of household was either youngest adult male in the first week or youngest adult following first week.					CPGI/PGSI
Dowling, 2016[17]	Australia	2013	2000	Dual-frame sampling using Random Digit Dialling (RDD) was used to nationally recruit individuals aged 18 years and over. A 50% mobile and 50% landline frame was used.					CPGI/PGSI
Dowling, 2010[18]	Australia		3953	Targeted Random Digit Dialling was used to recruit a national sample of adult respondents. Incremental sampling with quota allocation was used to ensure adequate numbers in target groups.	51				CPGI/PGSI
Freund, 2022[19]	Australia	2017	6377	*A random sample of schools, stratified by education sector (Government, Catholic and Independent), was developed for each participating state (Queensland and Victoria) to reflect state wide distributions. Classes of students in Years 7-12 were randomly selected to participate.*	56				DSM-based instrument (DSM-IV-[MR]-J)
Freund, 2023[20]	*Australia*	*2017*	*6377*	*A random sample of schools, stratified by education sector (Government, Catholic and Independent), was developed for each participating state (Queensland and Victoria) to reflect state wide distributions. Classes of students in Years 7-12 were randomly selected to participate.*	*56*				*DSM-based instrument (DSM-IV-[MR]-J)*
Freund, 2019[21]	Australia	2017	3746	Stratified two-stage probability sample was used to recruit students in years 7 to 12 in Victorian secondary schools.	58				DSM-based instrument (DSM-IV-[MR]-J)
Hare, 2015[22]	Australia	2014	13554	Victorians aged 18 years or older were recruited from a dual frame sample (mobile and landline), Random Digit Dialling methodology.	62				CPGI/PGSI
Haw, 2013[23]	Australia	2010	620	Recruitment of individuals 18 years or over who gambled 26 times (~weekly) in the past year was conducted via Random Digit Dialling and administered by a market research company with experience in problem gambling surveys.	43	54			CPGI/PGSI

Hing, 2021[24]	Australia	2019	15000	Exactly 15,000 respondents from all Australian jurisdictions, aged 18 and over were recruited via random digit dial sampling for the National Telephone Survey, and completed a computer-assisted telephone interview.					CPGI/PGSI
Hing, 2014[25]	Australia	2011	15006	A national sample of individuals aged 18 years or older in Australia were drawn from the White Pages using Random Digit Dialling.					CPGI/PGSI
Gainsbury, 2014[26]	*Australia*	*2011*	*15006*	*Random Digit Dialling was used to recruit individuals 18 years and over in Australia. Participants were randomly selected by requesting the interview be conducted with the person aged 18 or older who was having the next birthday.*	*53*				*CPGI/PGSI*
Gainsbury, 2015[27]	*Australia*	*2011*	*2011*	*Used a national Random Digit Dial telephone survey. A household interviewee was randomly selected by requesting the interview be conducted with the person aged 18 or older who was having the next birthday. Only participants who gambled in the last 12 months were included in this analysis.*	*44*				
Howe, 2018[28]	Australia	2016	3361	Recruited by the Online Research Unit (ORU), who maintain a panel of individuals who have agreed to participate in surveys sent to them, including individuals aged 18 and over in Victoria.	52	47			
NSW Health, 2010[29]	Australia	2008-2009	9349	Eligible geo-coded numbers of NSW households were randomly sorted with households contacted using random digit dialling. One person from the household was randomly selected for inclusion in study.					CPGI/PGSI
Office of Regulatory Policy, 2018[30]	Australia	2016-2017	15009	Participants were randomly chosen from a household-based frame (list) including landline and mobile telephone numbers of individuals aged 18 and over residing in private dwellings in Queensland.	54				CPGI/PGSI
O'Neil, 2021[31]	Australia	2020	5009	Sample sourced from Integrated Public Number Database to recruit Adults aged 18 years or older living in Tasmania.	52		41		CPGI/PGSI
Paterson, 2019[32]	Australia	2019	10000	ACT residents selected using dual-frame sampling method with in 70:30 ratio mobile/landline. Listed numbers were selected at random. Landline households recruited person with latest birthday if multiple eligible individuals.	53.4				CPGI/PGSI
Purdie, 2011[33]	Australia	2009	5685	A school-based sampling approach was used for young kids, and telephone-based sampling approach for the older group to recruit youth between 10-24 years. This was supplemented by an on-line surveying of panels of young people.	50				DSM-based instrument
Queensland Government, 2010[34]	Australia	2008-2009	14962	Queensland private dwellings phone numbers were randomly chosen (Random Digit Dialling), with one random adult chosen from each household.	57				CPGI/PGSI
Rockloff, 2020[35]	Australia	2018	10638	Victorians aged 18 years and over were recruited using a dual frame random sample design split evenly between landline and mobile numbers.	54		49		CPGI/PGSI
Sproston, 2012[36]	Australia	2011	10000	Randomly generated telephone numbers of adults aged 18 and over living in NSW.	50				CPGI/PGSI
Stevens, 2017[37]	Australia	2015	4945	NT residents were selected using dual frame sampling with numbers randomly selected from landline telephone frame and 3 mobile phone lists. For landline, household member with most recent birthday was selected.	47.7				
Stevens, 2021[38]	Australia	2018	5000	Dual frame telephone sampling approach.	48.8				CPGI/PGSI
The Social Research Group, 2013[39]	Australia	2012	9246	SA residents were selected using dual-frame sampling method with respondents selected from randomly generated landline sample or list-based mobile phone sample. For landline sample, household member with most recent birthday selected.	51.4				
Woods, 2018[40]	Australia	2018	20017	South Australian phone numbers were randomly chosen (Random Digit Dialling) for landline numbers and the phone database (SamplePages) was used for mobile numbers, to recruit residents aged 18 years and over.	56				CPGI/PGSI
Abbott, 2014[41]	New Zealand	2012	6251	Nationally, mesh blocks (small areas) were selected, then dwellings were selected within each mesh block, and finally an eligible respondent aged 18 years or over was selected for an interview within each dwelling.			38.8		CPGI/PGSI, SOGS
Abbott, 2014[42]	*New Zealand*	*2012*	*6251*	*Nationally, mesh blocks (small areas) were selected, then dwellings were selected within each mesh block, and finally an eligible respondent aged 18 years or over was selected for an interview within each dwelling.*	*58*				
Abbott, 2018[43]	*New Zealand*	*2015*	*6251*	*Nationally, mesh blocks (small areas) were selected, then dwellings were selected within each mesh block, and finally an eligible respondent aged 18 years or over was selected for an interview within each dwelling.*	*58*				*CPGI/PGSI*
Abbott, 2017[44]	*New Zealand*	*2012*	*6252*	*The sample design was a stratified three stage cluster design with the strata being 21 District Health Board regions and 1000 Census 2006 mesh blocks across New Zealand. Up to seven calls were made to each private dwelling household to contact the eligible respondent aged 18 and older.*					SOGS
Bellringer, 2020[45]	*New Zealand*	*2012-2015*	*2770*	*The New Zealand National Gambling Study recruited participants nationally.*	*57*				*CPGI/PGSI*

Kruse, 2016[46]	New Zealand	2012-2014	2672	The survey uses a multistage, stratified, clustered and random probability sampling methodology to recruit individuals 15 years and over living in New Zealand.	57			CPGI/PGSI
Rossen, 2016[47]	New Zealand	2012	7813	Adolescent students from randomly selected secondary schools in New Zealand were sampled.	56			Unhealthy gambling indicators
Rossen, 2015[48]	New Zealand	2011-2012	12596	Interviews with residents of New Zealand were carried out in participant's home. This population includes adults living in permanent dwellings, student accommodation, and aged-care facilities, but excludes people living in long-term hospital care, prisons, homeless, short-term visitors, and tourists.	51[a]		4.8	CPGI/PGSI
Walker, 2012[49]	New Zealand		1973	Nationwide, multistage, random probability sampling was carried out for a youth sample aged 15-17 years and an adult sample aged 18 years and over.				
North America								
Afifi, 2019[50]	Canada	2013-2014	30150	Random, multistage, stratified, cluster design to select private dwelling Canadian residents aged 12 years and older in the 10 provinces and 3 territories. The present study included data from Manitoba, Saskatchewan, and British Columbia.				CPGI/PGSI
Afifi, 2010[51]	Canada	2002	36984	Used a random, multistage stratified cluster design to select private dwelling Canadian residents aged 15 and over from 10 provinces in Canada.	53[a]			CPGI/PGSI
Afifi, 2010[52]	*Canada*	*2002*	*10056*	*Used a random, multistage stratified cluster design to select private dwelling Canadian women residents aged 15 and over from 10 provinces in Canada.*	*100*		*2[a]*	*0.4[a]*	*CPGI/PGSI*
Afifi, 2010[53]	*Canada*	*2002*	*36984*	*Used a random, multistage stratified cluster design to select private dwelling Canadian women residents aged 15 and over from 10 provinces in Canada.*	*100[a]*				*CPGI/PGSI*
Afifi, 2010[54]	*Canada*	*2002*	*10056*	*A random, multistage stratified cluster design to select women residents aged 15 and over in private dwellings.*	*100*				*CPGI/PGSI*
Currie, 2011[55]	Canada	2002	3511	Households in Alberta were selected using telephone numbers generated using Random Digit Dialling, to recruit individuals 18 years and over. People living in group quarters and First Nations communities were excluded.	54				CPGI/PGSI
El-Guebaly, 2015[56]	Canada	2006-2011	1372	Recruited using Random Digit Dialling in Alberta (Edmonton, Calgary, Lethbridge area, and Grand Prairie) for 18–65-year-olds. There were 4 supplemental recruitments techniques at Wave 1: media release, posters in gambling venues, local newspaper advertisements, snowball email sent to individuals who had already participated asking them to tell their friends.	56	38			CPGI/PGSI
Currie, 2017[57]	*Canada*	*2006-2011*	*809*	*Participants were recruited from the Alberta general population through random-digit dialling, as well as a proportion of individuals who were likely to develop gambling problems during longitudinal follow-up. Additional media recruitment to recruit 'at-risk'. Note: this study was only included within analyses for non-probabilistic studies*	*57*	*40*			*CPGI/PGSI*
Currie, 2021[58]	*Canada*	*2006-2011*	*780*	*Recruited using Random Digit Dialling for adolescents and adults in Alberta from general population. It oversampled individuals who were likely to develop gambling problems and consists of adults who reported gambling at time 1.*	*57*	*40*			
Currie, 2012[59]	*Canada*	*2006-2008*	*809*	*Recruited using Random Digit Dialling for adults in Alberta. Study was restricted to participants who had completed time 2 assessment.*	*50*	*40*			*DSM-based instrument*
Faregh, 2013[60]	Canada	2007-2008	7819	A multistage stratified cluster design was used to sample households of residents aged 12 years and older in Saskatchewan.					
Gill, 2016[61]	Canada		506	In each participating Cree community in Quebec a random sample was collected using housing lists, stratified by age and gender.	57	44	23	36	CPGI/PGSI
Giroux, 2012[62]	Canada	2009	1014	A letter and an information sheet describing the study were sent to households with a valid address in the Gaspésie-Îles-de-la-Madeleine region. Telephone numbers were randomly selected and stratified according to the six regional county municipalities. Chose 1 adult aged 18 and over that spoke French or English. If there were multiple adults, a kish grid used.					CPGI/PGSI
Kairouz, 2015[63]	Canada	2009	11888	Private households in Quebec were selected by Random Digit Dialling, and one adult per household was selected randomly. Sample was stratified accordingly to the 16 health regions comparable with the Ministry of Health planning areas.	68[a]				CPGI/PGSI
Kairouz, 2015[63]	Canada	2012	12008	Private households in Quebec were selected by Random Digit Dialling, and one adult per household was selected randomly. Stratification performed by drawing samples from seven district regions according to Statistics Canadas classifications.					CPGI/PGSI
Costes, 2018[64]	*Canada*	*2009-2012*	*23896*	*Two staged, stratified, and non-proportional sampling. Private households in Quebec were selected by Random Digit Dialling, and one French speaking adult per household was selected randomly.*	*50[a]*		*13[a]*		*CPGI/PGSI*
Kairouz, 2016[65]	*Canada*	*2009*	*8117*	*Random sample of non-institutionalised population aged 18 years and over, French, or English speaking in Quebec.*	*49*				*CPGI/PGSI*
Luce, 2016[66]	*Canada*	*2009-2011*	*11888*	*The survey sample was selected using a two-stage random stratified design covering regions and private households in Quebec. 1 individual who spoke French or English from eligible households was interviewed.*					*CPGI/PGSI*

Martins, 2010[67]	Canada		11531	Recruited a sample from Alberta, British Columbia, Newfoundland, Ontario using Random Digit Dialling.	51				CPGI/PGSI
Snaychuk, 2023[68]	Canada	2018	10199	Participants who gambled at least once a month in the past year were recruited via Leger Opinion as part of the Alberta Gambling Research Institute's National Project (ANP) online panel survey.	53.2	52.2			CPGI/PGSI
Hodgins, 2022[69]	*Canada*	*2018*	*10054*	*A sample of regular gamblers were recruited from a pool of online panellists associated with the firm Leger 360. Repeated email notifications were sent out until at least 1400 completed surveys were obtained from each province or region.*					*CPGI/PGSI*
Leonard, 2021[70]	*Canada*	*2018-2019*	*10199*	*Recruited individuals 18 years and over who gambled at least once per month from Leger Opinion's registered pool of online panellists. The panel pool was designed to be geographically and demographically representative of the adult population.*	*53*				*PPGM*
Mackey-Simpkin, 2022[71]	*Canada*	*2018*	*10199*	*Recruited adult online panellists from across Canada who were members of Leger Opinion, which is demographically representative of Canada. Eligibility was restricted to people who indicated on the initial screening question that they usually participated in some type of gambling at least once a month.*					*PPGM*
Stark, 2012[72]	Canada	2005	3604	The survey used Random Digit Dialling of people aged 18 years and over in Ontario.	48				CPGI/PGSI
Stark, 2012[72]	Canada	2007-2007	27757	Participants aged 12 years and over were recruited from Ontario. The study excluded those living on Indian Reserves and Crown Lands, institutional residents, full-time members of the Canadian Forces and residents of certain remote regions.	54				CPGI/PGSI
Bhatti, 2019[73]	*Canada*	*2007-2008*	*30652*	*Recruited individuals aged 18 and over in Ontario. Using the healthcare administrative databases, residence in Ontario was confirmed during the follow-up period based on the last contact of the healthcare system.*	*55*		*11*		*CPGI/PGSI*
Kim, 2016[74]	*Canada*	*2007-2008*	*43958*	*The CCHS uses 3 sampling frames to select households in Ontario: 49% of the sampled households comes from an area frame, 50% comes from a list frame of telephone numbers and 1% comes from Random Digit Dialling. All members of household aged 12 and over are listed and 1 is selected.*					
van der Maas, 2018[75]	Canada		2187	Randomly selected landline telephone numbers of people aged 55 years and over in Ontario. Regular gamblers were oversampled, followed by weighting of player status.	54				CPGI/PGSI
Vitaro, 2018[76]	Canada	1995-2015	766	Participants were recruited from the Quebec Newborn Twin Registry, which identified all twin births occurring in the Province of Quebec between 1995 and 1998. Twin adolescents were asked about gambling behaviour at ages 14 and 17.	52	14			
Vitaro, 2015[77]	*Canada*		*662*	*The participants were drawn from the Quebec Newborn Twin Study, an ongoing longitudinal study.*	*52*	*13*			
Williams, 2020[78]	Canada	2018	23952	Introductory letters explaining the purpose of the survey were first sent to selected households in Canada, each province divided into clusters. Adults 18 and over were randomly selected from each household.					CPGI/PGSI
Williams, 2023[79]	*Canada*	2018	23952	Each province was divided into geographic areas/clusters. Households were sampled within each cluster and an individual was then randomly selected from each household, with ages 18-35 and 65+ being given a higher probability of selection. The study excludes full-time members of the Canadian Forces, youth aged 12 to 17 living in foster homes, the institutionalized population, and people living on First Nation reserves.					PGSI
Williams, 2015[80]	Canada	2006	3065	Random Digit Dialling of telephone numbers from a pool of numbers with area codes and prefixes estimated to be within 70 kilometres of the city of Belleville to recruit individuals aged 18 years or older.	53				PPGM
Currie, 2021[58]	*Canada*	*2006-2011*	*3432*	*Random Digit Dialling recruited adult participants from Quinte region, Ontario. The current study comprised 3054 adults who gambled at time point 1.*	*54*	*46*			
Currie, 2017[57]	*Canada*	*2006-2011*	*3054*	*Random-digit dialling (RDD) recruited participants from Quinte region in Ontario. Participants were adults who reported gambling at time 1, participated in the time 2 data collection and had valid data for gambling-related harms.*	*53*	*46*			*CPGI/PGSI*
Leonard, 2016[81]	*Canada*	*2006-2011*	*4121*	*Recruited from the general adult population of Ontario via Random Digit Telephone Dialling.*	*55*				*PPGM*
Afifi, 2010[82]	United States	2001-2003	3334	Multistage clustered sampling design was used to recruit individuals 18 years and over.	60				DSM-based instrument (DSM-IV)
Richmond-Rakerd, 2013[83]	*United States*	*2001-2003*	*3419*	*Respondents were drawn by probability sampling within a national multistage clustered area probability sample of households; one English speaking adult was randomly selected from each household was sampled.*	*60*				
Barry, 2011[84]	United States		31830	Multi-stage cluster sampling was used to identify respondents 18 years and over: national census sampling units, households, and then household members were sequentially sampled.	52	47	9	2	AUDADIS-IV
Barry, 2011[85]	*United States*		*7888*	*Multistage cluster sampling was used to identify respondents 18 years and over: national census sampling units, households, and then household members were sequentially sampled. Subsample of African Americans analysed.*	*63*		*6*	*2*	AUDADIS-IV

Barry, 2011[85]	*United States*		*32316*	*Multistage cluster sampling was used to identify respondents 18 years and over: national census sampling units, households, and then household members were sequentially sampled. Oversample African American and Hispanic households, as well as 18-24 year olds. For the purpose of this study, sample was restricted.*	*58*	*48*	*8*	*2*	*AUDADIS-IV*
Moghaddam, 2015[86]	*United States*	*2001-2002*	*13578*	*Nationally recruited individuals aged 18 and over. One individual per housing unit (non-institutionalised civilian public) was chosen at random.*	*66*				*DSM-based instrument (DSM-IV)*
Nower, 2013[87]	*United States*	*2001-2002*	*43093*	*The NESARC study nationally recruited individuals aged 18 and over. Young adults, Hispanics, and African Americans were oversampled, and rates were weighted to the 2000 decennial census in terms of age, race, sex, and ethnicity and were further weighted to adjust for sampling probabilities.*					*DSM-based instrument (DSM-IV)*
Parhami, 2014[88]	*United States*	*2001-2005*	*39959*	*The NESARC study nationally recruited individuals aged 18 and over.*	*56*	*45*		*8*	*DSM-based instrument (DSM-IV)*
Pilver, 2013[89]	*United States*	*2001-2005*	*10231*	*Participants were selected nationally through a multistage, clustered sampling strategy. Recruited individuals 55 years and over without lifetime history of cardiovascular conditions, living in households, dormitories, group homes, and shelters.*	*60*				*DSM-based instrument (DSM-IV)*
Pilver, 2013[90]	*United States*	*2001-2005*	*10231*	*Households were selected nationally based on multi-stage stratified sampling design. The current study included individuals aged 55+ years, excluding individuals with lifetime history of the disorders of interest at wave 1.*	*60*	*67*		*9*	AUDADIS
Roberts, 2018[91]	*United States*	*2000-2005*	*25631*	*Households selected based on multi-stage stratified sampling design, to nationally recruit non-institutionalised* 18-year-olds. *In the current study only participants who responded to intimate partner violence questions at Wave 2 comprised the sample.*					
Barnes, 2011[92]	United States	1999-2007	4905	Combined dataset of two national household surveys. Telephone samples were purchased from Survey Sampling, Inc. The first survey sampled 18 years and older and the second survey sampled 14 to 21 years of age.	51				
Barnes, 2010[93]	*United States*	*2005-2007*	*1000*	*A national sample was selected through Random Digit Dialling telephone sampling. The present sample includes 18-21 year olds.*	*52*				*SOGS-RA*
Black, 2012[94]	United States	2006-2008	356	Sampled adults from randomly selected households in Iowa.					SOGS
Carliner, 2022[95]	United States	2021	2029	Randomly selected residents were eligible to complete the survey if they were 18 years or older, a current resident of Illinois with a telephone, and spoke English or Spanish.	52				PPGM
Delaware State Epidemiological Outcomes Workgroup, 2023[96]	United States	2022	4088	Recruited participants from 5th, 8th and 11th grade public school students in Delaware, completed in 18 of the 19 school districts. This sample only includes 5th grade students.					
Delaware State Epidemiological Outcomes Workgroup, 2023[96]	United States	2022	3544	Recruited participants from 5th, 8th and 11th grade public school students in Delaware, completed in 18 of the 19 school districts. This sample only includes 8th grade students.					
Delaware State Epidemiological Outcomes Workgroup, 2023[96]	United States	2022	2936	Recruited participants from 5th, 8th and 11th grade public school students in Delaware, completed in 18 of the 19 school districts. This sample only includes 11th grade students.					
Department for Aging and Disability Services, 2013[97]	United States	2012	1600	Respondents were randomly selected from landline and cell phone numbers located across the state of Kansas, divided into 4 zones: northeast, south central, southwest regions and the fourth being a balance of the state.	57				Combined NODS and PGSI
Gemini Research, 2024[98]	United States	2023	5259	A mailed solicitation was sent to a random sample of addresses from the listing of Connecticut residential addresses provided by the U.S. Postal Service.					PPGM, NODS-CLIP
Gemini Research, 2024[98]	United States	2023	8106	The random sample of addresses from the listing of Connecticut residential addresses provided by the U.S. Postal Service was combined with a sample recruited by sending an email to all members of the Centiment panel who resided in Connecticut inviting them to participate in an online survey.					
Grubbs, 2022[99]	United States	2022	2806	US adults matched and weighted for US norms for age, gender, education, census, region, and race and ethnicity as of the 2019 American Community Survey were recruited via YouGov.	51.4	48.9			PGSI
Hochul, 2020[100]	United States	2020	3823	The New York Problem Gambling Prevalence Survey was conducted among non-institutionalised adult New Yorkers (ages 18 and older).					PPGM
Jun, 2023[101]	United States	2022	854	The address-based sampling (ABS) frame was built using the United States Postal Service (USPS). Addresses were selected using proportionate stratified random sampling. Adults 18+ with the most recent birthday were sampled from households. The target population was the non-institutionalised, civilian adult household population in Indiana.	52.2				CPGI/PGSI, DSM-based instrument (DSM-5), NODS-CLIP
Kim, 2012[102]	United States	1998-1999	2213	A stratified probabilistic sampling technique recruited individuals aged 18-65 years living in San Francisco and Honolulu, of Filipino descent.	61		2		
Krebill-Prather, 2021[103]	United States	2021	9249	A simple random sample of 52,000 residential postal addresses from the US Postal Service Computerized Delivery Sequence File recruited adult residents living in Washington state for longer than one year. Used random sampling of adults within households with the most recent birthday asked.	49.4				PGSI

Massatti, 2016[104]	United States	2012	3495	A Multistage sampling strategy used Random Digital Dialling to recruit individuals aged 18 and over from five regions in Ohio.	63		6[a]		CPGI/PGSI
Mills, 2023[105]	United States	2022	3259	The NGAGE Study recruited a representative sample of adults from Missouri using a non-probabilistic sampling procedure.					DSM-based instrument (DSM-5)
Mills, 2022[106]	United States	2022	4035	Current residents of Oklahoma state aged 18 and above were randomly chosen by postal code then invited to complete the questionnaire. Four sources of recruitment: address-based online survey, CATI phone interview, partner panel participants and social media advertisting.	50.5				DSM-based instrument (DSM-5)
Nower, 2023[107]	United States	2020-2021	3512	The survey included telephone numbers obtained from a Random Digit Dialling sample, as well as cell phone numbers in the pool of eligible numbers. Online survey was sent to a random sample of panellist from New Jersey by Leger, with sample quotas.					CPGI/PGSI
Stanmyre, 2023[108]	*United States*	*2020-2021*	*3414*	*Dual sampling frame: (1) CATI survey to random sample from a random digit dialling pool (landlines and mobile phone; n=1502) and (2) online survey to random sample of online panellists (n=2010)*	*51.5*	*48.2*			
Nower, 2017[109]	United States	2015	3634	A random sample of New Jersey adults aged 18 and over was recruited. The sampling frame included telephone numbers obtained from Random Digit Dialling sample as well as cell phone numbers. An online survey link was also sent to random sample of New Jersey panellists.	51				CPGI/PGSI
Park, 2019[110]	United States	2018-2019	1761	The 2018 Survey of Public Gambling Attitudes and Behaviors Toward Gambling recruited non-institutionalised adults in Iowa using a dual-frame (land and cell) random digit dial (DF-RRD) telephone sampling method.					CPGI/PGSI
Patterson-Silver, 2015[111]	United States	2011-2013	3340	Survey of Gambling in the US (SOGUS2) and The Survey of Native American Gambling (SONAG), which nationally recruited individuals aged 18 and older using Random Digit Dialling.					CPGI, SOGS-R, DIS-IV
Welte, 2015[112]	*United States*	*2011-2013*	*2963*	*National landline and mobile telephone samples were purchased from Survey Sampling, Inc and each participant aged 18 years and over was recruited randomly by selecting the potential respondent with the next birthday.*					*DSM-based instrument (DSM-IV), SOGS-R*
Petry, 2013[113]	United States		2417	Randomly selected US households participating in a nationally based epidemiological survey of gambling participation and problems, the national Gambling Impact and Behavior Study (GIBS).	52				DSM-based instrument (DSM-IV)
Petry, 2013[113]	*United States*		*450*	*A subsample of the Gambling Impact and Behaviour study analysed gambling patrons.*	*42*				*DSM-based instrument (DSM-IV)*
Ramowski, 2012[114]	United States	2009	5348	All Oregon public secondary schools were part of the sampling frame, where school districts were randomly sampled. Participants were 8th graders aged 12-15 years.	48				
Russell, 2023[115]	United States	2020-2021	1147	Participants from Pennsylvania were recruited using a Dual Frame Random Digital Dial method from a sample of 15000 landlines and 15000 cellular. Sample allocated proportionally across all Pennsylvania stratas. All frames were represented with equal probability across counties.	50.2	54			BPGS
Stefanovics, 2023[116]	United States	2019	1807	High schools in Connecticut were selected using random start with probability proportional to enrolment sizes in grades 9 to 12 (aged 12-18). Classes were then selected by a systematic equal probability sampling procedure.	49				
Stefanovics, 2023[116]	United States	2017	2153	High schools in Connecticut were selected using random start with probability proportional to enrolment sizes in grades 9 to 12 (aged 12-18). Classes were then selected by a systematic equal probability sampling procedure.	49				
Stefanovics, 2023[116]	United States	2015	2044	High schools in Connecticut were selected using random start with probability proportional to enrolment sizes in grades 9 to 12 (aged 12-18). Classes were then selected by a systematic equal probability sampling procedure.	50				
Stefanovics, 2023[116]	United States	2013	2226	High schools in Connecticut were selected using random start with probability proportional to enrolment sizes in grades 9 to 12 (aged 12-18). Classes were then selected by a systematic equal probability sampling procedure.	50				
Stefanovics, 2023[116]	United States	2011	1920	High schools in Connecticut were selected using random start with probability proportional to enrolment sizes in grades 9 to 12 (aged 12-18). Classes were then selected by a systematic equal probability sampling procedure.	50				
Stefanovics, 2023[116]	United States	2009	2285	High schools in Connecticut were selected using random start with probability proportional to enrolment sizes in grades 9 to 12 (aged 12-18). Classes were then selected by a systematic equal probability sampling procedure.	50				
Sterner, 2022[117]	United States	2021-2022	2003	A dual frame random digit dial (DFRDD) including a combination of 50% landline and 50% cellular RDD samples, was used to represent adults aged 18 years or older across Pennsylvania who have access to either a landline or cellular telephone.	50.3	49.7			
Streich, 2020[118]	United States	2019	8512	The survey was administered to a stratified random sample of 35,000 households across Minnesota.	49			3.7	PPGM
The Learning Tree Institute at Greenbush Research and Evaluation Department, 2017[119]	United States	2017	1755	The 2017 Kansas Gambling Survey recruited a random sample representative of the state and four gambling regions.		46			DSM-based instrument (DSM-5)

Tracy, 2017[120]	United States	2017	3763	Survey units attempted to contact 119,284 Maryland residents/households during the study period (August to October, 2017) using a dual frame random sample methodology - landline and mobile phones.	53.4				NODS-CLIP
Volberg, 2023[121]	United States	2021-2022	6293	The Follow-up General Population Survey (FGPS) obtained a probability sample of all Massachusetts households. Sample included targets for Asian, Hispanic, and Black populations, and adults aged 18-29, as these groups are less likely to participate in surveys than other groups in the population.	52.4				PPGM
Volberg, 2017[122]	United States	2013-2014	9578	Address Based Sampling (ABS) was used to ensure that all Massachusetts households had a positive probability of selection into the sample regardless of telephone ownership (landline, cell phone, or no telephone). Within each sampled dwelling unit, the adult with the most recent birthday was selected as the survey respondent.	60				PPGM, CPGI/PGSI
Welte, 2015[112]	United States	1999-2000	2631	National landline telephone samples were purchased from Survey Sampling, Inc and each participant was recruited randomly by selecting the potential respondent aged 18 and over and with the next birthday.					DSM-based instrument (DSM-IV), SOGS-R
Welte, 2011[123]	United States	1999-2007	4905	National telephone samples purchased from Survey Sampling. Recruited by selecting randomly from among the residents in each household. The adults survey recruited individuals ages 18 and over and the youth survey recruited 14-21 year olds.	51				DSM-based instrument
Yip, 2011[124]	United States	2006-2007	2484	All public 4-year and nonvocational or special education high schools in the state of Connecticut were invited to participate in this study via letters of invitation and follow-up calls to the school principals, to recruit students in grades 9-12.	43				DSM-based instrument
Kong, 2013[125]	*United States*		*1780*	*All public 4-year high schools in Connecticut were invited to participate to recruit Asian-American and Caucasian students in Grades 9-12.*	*42*				*DSM-based instrument (DSM-IV)*
Stefanovics, 2023[116]	*United States*	*2007*	*1966*	*High schools in Connecticut were selected using random start with probability proportional to enrolment sizes in grades 9 to 12 (aged 12-18). Classes were then selected by a systematic equal probability sampling procedure.*	*50*				
Western Europe									
Molinaro, 2018[126]	Albania	2015	2553	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	13[a]	16			
ESPAD Group, 2020[127]	Austria	2019	4334	The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-bet, CSPG
Molinaro, 2018[126]	Austria	2015	3684	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	9[a]	16			
Strizek, 2021[128]	Austria	2020	5964	Survey participants aged 15 and above from all nine federal states were selected by simple random selection from a pool of 30,000 people from an online panel, recruited offline	51				DSM-based instrument (DSM-5)
Ekholm, 2014[129]	Denmark	2005	5448	Recruited individuals aged 16 and above using a regional stratified random sample of Denmark.	53				Lie-Bet
Ekholm, 2014[129]	Denmark	2010	14225	Recruited a national random sample of individuals aged 16 and above.	54				Lie-Bet
Algren, 2015[130]	*Denmark*	*2005-2010*	*19673*	*Data from two studies was included: Danish Health and Morbidity Survey 2005 region-stratified random sample. Danish Health and Morbidity Survey 2010: recruited participants via post. Recruited participants 16 years and over.*	*54*				*Lie-Bet*
Laursen, 2016[131]	*Denmark*	*2005-2010*	*5233*	*Individuals from Denmark, aged 20 years or over were recruited as part of the Danish Health and Morbidity Surveys.*					*Lie-Bet*
ESPAD Group, 2020[127]	Denmark	2019	2487	The ESPAD 2019 survey used stratified random sampling with schools being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-bet, CSPG
Fridberg, 2016[132]	Denmark	2015-2016	6274	Sample of 18–74-year-olds recruited through the CPR register of Denmark.	51				CPGI/PGSI, NODS/NODS-CLIP
Fridberg, 2016[132]	Denmark	2005	704	Recruited a national sample of 18–74-year-olds.	19				NODS/NODS-CLIP
Kragelund, 2022[133]	Denmark	2017	14022	Individuals aged 16 and above were drawn at random from the Danish adult population using the Danish Civil Registration System, as part of the Danish Health and Morbidity Survey.	54.2				Lie-Bet
Kragelund, 2022[133]	Denmark	2013	14265	Individuals aged 16 and above were drawn at random from the Danish adult population using the Danish Civil Registration System, as part of the Danish Health and Morbidity Survey.	54.8				Lie-Bet
Kristiansen, 2014[134]	Denmark	2008	2223	All Danish municipalities were stratified by the three main Danish regions (Jutland, Sealand and Funen), and within each stratum, municipalities were randomly selected. From selected municipalities, schools were randomly selected, to recruit students aged 11-17 years.	50				SOGS-RA
Molinaro, 2018[126]	Denmark	2015	1670	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	12[a]	16			
Spångberg, 2020[135]	*Denmark*	*2015*	*1654*	*National sample of 15-16 year old were recruited.*	*52*	*16*			*Lie-Bet*

Ramboll Management Consulting, 2022[136]	Denmark	2021		Participants aged 18-79 were randomly selected by Statistics Denmark					CPGI/PGSI
Ramboll Management Consulting, 2022[136]	Denmark	2021		Participants aged 12-17 were randomly selected by Statistics Denmark					CPGI/PGSI
ESPAD Group, 2020[127]	Faroe Islands	2019	511	The ESPAD 2019 survey recruited students from all schools. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Faroe Islands	2015	511	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	10[a]	16			
Castren, 2013[137]	Finland	2010	2826	National Finnish Population register was used to sample individuals aged 15-64.	56	43	15		CPGI/PGSI
ESPAD Group, 2020[127]	Finland	2019	4541	The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected. Aland Islands was not covered by the sampling frame.					Lie-Bet, CSPG
Castren, 2022[138]	*Finland*	*2019*	*4160*	*Used a two stage systematic probability-proportional-to-size sampling method, using NUTS 2 as strata and schools as clusters. Only included individuals who turned sixteen in the calendar year of the survey and spoke Finnish or Swedish, and excluded special schools for students with learning disorders or severe physical disabilities.*	*51.3*				*CSPG*
Halme, 2011[139]	Finland	2007	5008	Random sampling of individuals aged 15 years and over living in mainland Finland.	51	46			SOGS-R
Salonen, 2015[140]	*Finland*	*2007*	*4722*	*Random sample of people aged 15-74 years or older, speaking Finnish or Swedish and residing in mainland Finland were selected from Finnish Population Register.*	*50*	*44*			*SOGS*
Latvala, 2023[141]	Finland	2019	89294	The School Health Promotion Study (SHPS) recruited eighth and ninth graders aged 14-16 years old across all of Finland and was included as part of the school's normal activities.	50.3				
Latvala, 2023[141]	Finland	2017	74544	The School Health Promotion Study (SHPS) recruited eighth and ninth graders aged 14-16 years old across all of Finland and was included as part of the school's normal activities.	50.2				
Latvala, 2023[141]	Finland	2015	50404	The School Health Promotion Study (SHPS) recruited eighth and ninth graders aged 14-16 years old across all of Finland and was included as part of the school's normal activities.	50.1				
Latvala, 2023[141]	Finland	2013	99478	The School Health Promotion Study (SHPS) recruited eighth and ninth graders aged 14-16 years old across all of Finland and was included as part of the school's normal activities.	49.5				
Latvala, 2023[141]	Finland	2010-2011	102545	The School Health Promotion Study (SHPS) recruited eighth and ninth graders aged 14-16 years old across all of Finland and was included as part of the school's normal activities.	49.9				
Latvala, 2023[141]	Finland	2008-2009	108649	The School Health Promotion Study (SHPS) recruited eighth and ninth graders aged 14-16 years old across all of Finland and was included as part of the school's normal activities.	49.9				
Latvala, 2021[142]	Finland	2017	7186	Randomly selected residents of Uusimaa, Pirkanmaa and Kumenlaakso aged 18 years and above from the population register. Institutionalized persons (prisoners, infirmed, etc.) were excluded.	52.3	50.5			PPGM
Molinaro, 2018[126]	Finland	2015	4049	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	16[a]	16			
Spångberg, 2020[135]	*Finland*	*2015-2015*	*3992*	*Students aged 15 and 16 years were recruited as part of the EPSAD study in Finland.*	*51*	*16*			
Nordmyr, 2014[143]	Finland	2011	4642	Randomly sampled 15-80 year-olds in Western Finland from the Population Information System by the Finnish Population Register Centre.	52[a]	49[a]	25[a]		Lie-Bet
Nordmyr, 2016[144]	*Finland*	*2011-2011*	*4624*	*Participants were recruited from Western Finland and aged 15 to 80 years old as part of the Western Finland Mental Health Survey.*	*57*				*Lie-Bet*
Raisamo, 2020[145]	Finland	2011	3443	Participants included individuals aged 12-16 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	57				Number of harms experienced
Raisamo, 2015[146]	Finland	2011-2012	4484	A sample of individuals aged 15–74 was randomly selected from the National Population Register.	53	48			CPGI/PGSI
Edgren, 2016[147]	*Finland*	*2011-2012*	*822*	Finnish Gambling survey initially sampled 15-74 year-olds who spoke Finnish or Swedish and resided in mainland Finland; this is subsample of 15-28-year-olds.	*49*				CPGI/PGSI
Raisamo, 2020[145]	Finland	2013	2599	Participants included individuals aged 12-16 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	57				
Raisamo, 2020[145]	Finland	2015	5080	Participants included individuals aged 12-16 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	56				
Raisamo, 2020[145]	Finland	2017	3054	Participants included individuals aged 12-16 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	57				Number of harms experienced
Raisamo, 2020[145]	Finland	2011	1083	Participants included individuals aged 18 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	64				Number of harms experienced
Raisamo, 2013[148]	*Finland*	*2011*	*4526*	*Participants included individuals aged 12-18 years recruited from the Finnish Population Register Centre on the basis of particular dates of birth.*	*58*				

Raisamo, 2020[145]	Finland	2013	908	Participants included individuals aged 18 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	69				
Raisamo, 2020[145]	Finland	2015	1545	Participants included individuals aged 18 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	62				
Raisamo, 2020[145]	Finland	2017	964	Participants included individuals aged 18 years recruited from the Finnish Population Register Centre, selecting all those born on certain days in June, July or August.	62				Number of harms experienced
Salonen, 2020[149]	Finland	2019	3994	Secondary analysis of a study using systematic random sampling from the National Population Register Centre's sampling frame to recruit individuals aged 15-74 years.	49				CPGI/PGSI
Salonen, 2015[140]	Finland	2011	4484	Random sample of people aged 15-74 years or older, speaking Finnish or Swedish and residing in mainland Finland were selected from Finnish Population Register.	53	44			SOGS
Vuorinen, 2022[150]	Finland	2021	1530	18-75 year old Finnish panel volunteers contacted randomly via email and the provider's mobile application.	49.4	46.7			PGSI
Oksanen, 2022[151]	*Finland*	*2021*	*1530*	*Participants were drawn from Norstat's Web-based panel, of which the gender distribution and age was almost identical to the population aged 18 to 75 years according to statistics provided by statistics Finland. The study only recruited individuals who spoke Finnish.*	*49.4*	*46.7*			*PGSI*
Costes, 2023[152]	France	2017	22750	The E-GAMES study sample was randomly recruited from a large panel of Internet users, proportional to the distribution of Internet use in the general population, based on sex and age.	50				CPGI/PGSI
Costes, 2020[153]	France	2019	9611	The sample is selected from a database of telephone numbers generated randomly and corresponding to households that have a landline or mobile phone. Eligible participants were aged 18-85 years	54				CPGI/PGSI
Costes, 2018[64]	France	2013-2014	15635	Two-stage random sampling design: a selection of households using random digit dialling covering all metropolitan French regions, and a random selection of one member of the household aged 15-75 years. Sampled using landline and cell-phone numbers.	49[a]		8.7[a]		CPGI/PGSI
Costes, 2013[154]	France	2010	24291	The sample is selected from a database of telephone numbers generated randomly and corresponding to households that have a landline or mobile phone. Eligible participants were aged 18-75 years, French speaking and residing in metropolitan France in private households.	48[a]		3		CPGI/PGSI
Kairouz, 2016[65]	*France*	*2009-2010*	*25034*	*A national random sample of 15–85-year-olds were contacted through landline and mobile numbers.*	*48[a]*				*CPGI/PGSI*
Molinaro, 2018[126]	France	2015	2714	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	11[a]	16			
OFDT, 2023[155]	France	2022	7532	The survey protocol, which is based on a random sample, guarantees the representativeness of the entire French adolescent population aged 17.		17.4			CPGI/PGSI
Andrie, 2019[156]	Germany	2011-2012	2354	A random clustered probability sample of adolescents attending school in the 9th and 10th grades was drawn. Official national lists were used as sampling frames, stratified according to region and population density. 100 classes were drawn.					SOGS-RA
Banz, 2019[157]	Germany	2019	11503	Participants aged 16-70 were randomly recruited via a multi-stage methodology based on ADM telephone sample system and mobile network.	50				SOGS
Brosowski, 2020[158]	Germany		1905	Schools in Hamburg, Bremen, and Lübeck were stratified by socioeconomic status and type of school and randomly selected to recruit students aged 12-17 years.		14			
Buth, 2024[159]	Germany	2023	12308	German speaking people living in private households, aged between 16-70 were recruited through a random selection of landline and mobile phone numbers, as well as quota-based random selection of online panellists.	50.2				DSM-based instrument (DSM-5), CPGI/PGSI
Buth, 2022[160]	Germany	2021	12303	Recruited people aged 16-70 based on either a random selection of all numbers assigned with German area codes or from a strictly quoted random selection of online panellists.	50				DSM-based instrument
Buth, 2022[160]	*Germany*	*2021*	*280*	*Recruited people aged 16-17 based on either a random selection of all numbers assigned with German area codes or from a strictly quoted random selection of online panellists.*					*DSM-based instrument (DSM-IV-MR-J)*
Costes, 2023[152]	Germany	2018	46136	A representative panel of 82,985 German Internet users aged 18 years or more were invited to take part in the survey.					CPGI/PGSI
ESPAD Group, 2020[127]	Germany	2019	1459	The ESPAD 2019 survey used systematic random sampling to recruit students in the Federal state of Bavaria, with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Giralt, 2018[161]	Germany	2011-2012	3795	Recruited students aged 12-18 years in Rhineland-Palatinate using random probability sample selection with a stratification regarding school type and regional population density.	51	15			DSM-based instrument (DSM-IV-MR-J)
Giralt, 2018[161]	Germany	2011-2012	5514	Recruited students aged 12-18 years in North Rhine-Westphalia using random probability sample selection with a stratification regarding school type and regional population density.	50	15			DSM-based instrument (DSM-IV-MR-J)
Sleczka, 2020[162]	Germany	2014	2584	Randomly chose males aged 18-25 years from the population registry of Munich, Bavaria.	0	22			DSM-based instrument (DSM-IV)

Turowski, 2022[163]	Germany	2010-2011	15023	A landline sample with stratified and clustered sampling design and a mobile-only sample.	49.4				DSM-based instrument
Turowski, 2022[163]	Germany	2010-2011	947	A landline sample with stratified and clustered sampling design and a mobile-only sample of participants aged 14-17 years.					DSM-based instrument
Kastirke, 2018[164]	*Germany*		14723	A random sample of landline and mobile phone numbers was chosen of individuals 14-64 years old living in Germany. Landline sample was generated using a stratified and multi-stage drawing process. The mobile sample includes respondents who could be reached via a mobile phone but did not have a landline.	*55*				DSM-based instrument (DSM-IV)
Kastirke, 2015[165]	*Germany*	*2010-2011*	15023	Random Digit Dialling procedure was used for landline telephone numbers and mobile-phone numbers of individuals aged 14-64 years. Followed a stratified and clustered sampling design.					DSM-based instrument (DSM-IV-L)
Meyer, 2015[166]	*Germany*	*2010-2011*	*15023*	*Individuals aged 14-64 years were chosen at random from a nationwide telephone sample (landline and mobile) in Germany.*	*44.8*				*DSM-based instrument*
Wejbera, 2021[167]	Germany	2012-2017	11875	Randomly selected participants aged 40-80 years from the registry office of Mainz city and its surrounding Mainz-Bingen district.	49	52			Lie-Bet
Alphassimina, 2021[168]	Greece		339	A random sample of public schools was selected from the pertinent list of the Ministry of Education. In each school unit, a random sample of classrooms with students aged 16-19 years old was chosen.	58.4				DSM-based instrument (DSM-IV-MR-J)
Andrie, 2019[156]	Greece	2011-2012	1967	A random clustered probability sample of adolescents attending school in the 9th and 10th grades was drawn. Official national lists were used as sampling frames, stratified according to region and population density. 100 classes were drawn.					SOGS-RA
Economou, 2019[169]	Greece	2014	4764	Recruited adult participants from two sites: 1. Household Telephone survey from the national phone-number databank. 2. OPAP retail points in random selected cities.	51				CPGI/PGSI
ESPAD Group, 2020[127]	Greece	2019	5988	The ESPAD 2019 survey used stratified clustered random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Greece	2015	3202	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	31[a]	16			
Larsen, 2013[170]	Greenland	2006-2010	2189	A national random sample of Greenland Inuit individuals aged 18 years and over was drawn from the central population register to obtain around 300 participants from included towns.	55				Lie-Bet
Andrie, 2019[156]	Iceland	2011-2012	1926	A random clustered probability sample of adolescents attending school in the 9th and 10th grades was drawn. Official national lists were used as sampling frames, stratified according to region and population density. 100 classes were drawn.					SOGS-RA
ESPAD Group, 2020[127]	Iceland	2019	2534	The ESPAD 2019 survey recruited students from all schools. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Olason, 2017[171]	Iceland	2007-2011	1531	18-70 year-olds were drawn randomly from the National Registry. This sample consists of people who participated in a follow-up study (not full original sample).	55				CPGI/PGSI
Spångberg, 2020[135]	Iceland	2015	2613	The EPSAD survey recruited a national sample of 15- and 16-year-old students.	51	16			
Molinaro, 2018[126]	*Iceland*	*2015*	*2663*	*Used national samples of randomly selected schools/classes in which the cohort of students were born in 1999 (16-year-old students).*	*15[a]*				
ESPAD Group, 2020[127]	Ireland	2019	1940	The ESPAD 2019 survey used stratified systematic random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Reynolds, 2023[172]	*Ireland*	*2019*	*1949*	*Used nationally representative data from the Irish cohort of the 2019 ESPAD wave of students aged 15-16 years.*	*51.5*				*CSPG*
Molinaro, 2018[126]	Ireland	2015	1470	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	12[a]	16			
Mongan, 2022[173]	Ireland	2019-2020	5762	Recruited adults aged 15 years and above using stratified and multistage area probability sampling methods in a three stage process. First, the population was stratified into 10 areas, followed by electoral divisions selected as primary sampling units. Finally, addresses from the primary sampling units and one person in each household were randomly chosen. Participants were required to be living in a private household in the Republic of Ireland.					CPGI/PGSI
Barbaranelli, 2013[174]	Italy	2010	1979	Participants aged 18-74 years were recruited using a quota sample, balanced by geographical area (four areas), city size (five groups), and age by gender (12 groups).	46	45			CPGI/PGSI, SOGS
Bastiani, 2013[175]	Italy	2007-2008	1241	The IPSAD-Italia survey recruited a national sample of young adults aged 15-24.	44		31		CPGI/PGSI
Bastiani, 2013[175]	Italy	2007-2008	3253	The IPSAD-Italia survey recruited a national sample of adults aged 25-64.	46		17		CPGI/PGSI
Buja, 2022[176]	Italy	2014	29988	Sampled using a two-stage procedure, first a set of secondary schools were selected stratified by region and type of school. Then a set of students attending those schools were selected using a clustering method.	50.4				SOGS-RA

Buja, 2017[177]	Italy	2013	34745	Two-stage procedure: first selected a set of secondary schools from a national sample, and then a set of students aged 15-19 years attending the schools selected.	50	17			SOGS-RA
Canale, 2017[178]	Italy	2013-2014	20791	Health Behaviour in School-aged Children" (HBSC) Survey recruited a national sample of students aged 15 years, in Grade 10, from Abruzzo, Aosta Valley, Basilicata, Calabria, Campania, Emilia-Romagna, Friuli Venezia Giulia, Latium, Liguria, Lombardy, Marches, Molise, Piedmont, Puglia, Sicily, Sardinia, Trentino, Tuscany, Umbria and Veneto.	50				SOGS-RA
Canale, 2017[179]	*Italy*	*2013-2014*	*20791*	*Students aged 15 years, in Grade 10, were invited to participate from Abruzzo, Aosta Valley, Basilicata, Calabria, Campania, Emilia-Romagna, Friuli Venezia Giulia, Latium, Liguria, Lombardy, Marches, Molise, Piedmont, Puglia, Sicily, Sardinia, Trentino, Tuscany, Umbria and Veneto.*	*50*				*SOGS-RA*
Costes, 2023[152]	Italy		6500	Sample was randomly recruited from a large access panel of Internet users using quotas to represent the Italian Internet users' population structure according to age and sex, based on the Istat (Instituto Nazionale di Statistica) database. The included sample all gambled online in the past year.					CPGI/PGSI
De Luigi, 2018[180]	Italy	2013-2014	10959	Schools were randomly selected among public high schools from a national sample. At least one class was randomly selected for every grade.	46	16			SOGS-RA
ESPAD Group, 2020[127]	Italy	2019	2542	The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Gori, 2015[181]	Italy	2011	14910	The ESPAD-Italia survey nationally recruited high school students aged 15-19 years.	38a				SOGS-RA
Koumantakis, 2023[182]	Italy	2018	18794	A national survey was carried out in Italy on a representative sample of adolescents aged 15 years from all regions.	50.3				SOGS-RA
Lastrucci, 2022[183]	Italy	2018	6824	The EDIT study adopts a stratified sampling method according to the administrative areas of the Tuscan Health System and the type of secondary school. Participants included students aged 14-19 years old attending the upper secondary schools of the Tuscany Region.	48.2				Lie-Bet
Lastrucci, 2022[183]	Italy	2015	5077	The EDIT study adopts a stratified sampling method according to the administrative areas of the Tuscan Health System and the type of secondary school. Participants included students aged 14-19 years old attending the upper secondary schools of the Tuscany Region.	48.3				Lie-Bet
Lastrucci, 2022[183]	Italy	2011	4829	The EDIT study adopts a stratified sampling method according to the administrative areas of the Tuscan Health System and the type of secondary school. Participants included students aged 14-19 years old attending the upper secondary schools of the Tuscany Region.	48.4				Lie-Bet
Lastrucci, 2022[183]	Italy	2008	5213	The EDIT study adopts a stratified sampling method according to the administrative areas of the Tuscan Health System and the type of secondary school. Participants included students aged 14-19 years old attending the upper secondary schools of the Tuscany Region.	48.4				Lie-Bet
Lugo, 2021[184]	Italy	2020	6003	Participants aged 18-74 years were recruited from panellists of the DOXA online panel for the LOckdown and lifeSTyles IN ITALY (Lost in Italy) study. Quota sampling method by age, sex and region used to randomly select participants. Included an over sample of subjects coming from Lombardy region.	50.7				
Molinaro, 2018[126]	Italy	2015	4059	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	16[a]	16			
Pacifici, 2019[185]	Italy	2017-2018	12007	Sampling methodology follows a two-stage Probability Proportional to Size (PPS) model. First-stage units represented by municipalities and the second-stage units represented by households. Households selected with constant sampling fraction in strata	52	47.4			CPGI/PGSI
Pacifici, 2019[185]	Italy		15602	A three-stage Probability Proportional to Size (PPS) model was used to recruit students aged 14-17. First stage units represented by municipalities, second stage units represented by schools and third stage units represented by classes, with all students belonging to the sample classes included.	51				SOGS-RA
Molinaro, 2018[126]	Liechtenstein	2015	316	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	11[a]	16			
ESPAD Group, 2020[127]	Malta	2019	3043	The ESPAD 2019 survey recruited students from all schools. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Malta	2015	3326	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	8[a]	16			
ESPAD Group, 2020[127]	Monaco	2019	428	The ESPAD 2019 survey recruited students from all schools. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
ESPAD Group, 2020[127]	Montenegro	2019	5700	The ESPAD 2019 survey recruited students from all schools. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG

Molinaro, 2018[126]	Montenegro	2015	3844	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	14[a]	16			
Andrie, 2019[156]	Netherlands	2011-2012	1249	A random clustered probability sample of adolescents attending school in the 9th and 10th grades was drawn. Official national lists were used as sampling frames, stratified according to region and population density. 100 classes were drawn.					SOGS-RA
ESPAD Group, 2020[127]	Netherlands	2019	1288	The ESPAD 2019 survey used multistage random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Kruize, 2021[186]	Netherlands	2021	5876	Participants aged 16 and above was recruited using Kantar's online panel, whose composition is in line with the population composition as stated in the MOA Gold Standard.					CPGI/PGSI
Molinaro, 2018[126]	Netherlands	2015	1684	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	8[a]	16			
ESPAD Group, 2020[127]	North Macedonia	2019	2930	The ESPAD 2019 survey used systematic random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	North Macedonia	2015	2428	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	17[a]	16			
ESPAD Group, 2020[127]	Norway	2019		The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Hanss, 2015[187]	Norway		2045	17-year-olds were drawn randomly from the Norwegian National Registry and informed about the study via a pre-notification letter.	53				CPGI/PGSI
Sagoe, 2017[188]	*Norway*	*2012-2014*	*2055*	*Randomly selected 17-year-olds from the Norwegian National Population Registry and sent postal invitations.*	*53*				*CPGI/PGSI*
Pallesen, 2016[189]	*Norway*		*2059*	*Randomly selected 17.5-year-olds from the Norwegian National Registry.*					
Pallesen, 2023[190]	Norway	2022-2023	7386	Randomly selected 16–74-year-olds from the National Population Registry of Norway.	49	43.9			CPGI/PGSI
Pallesen, 2021[191]	Norway	2019	9248	Individuals aged 16-74 years were randomly selected from the Norwegian Population Registry.					CPGI/PGSI
Pallesen, 2021[191]	Norway	2015	5485	Individuals aged 16-74 years were randomly selected from the Norwegian Population Registry.					CPGI/PGSI
Pallesen, 2021[191]	Norway	2013	10081	Individuals aged 16-74 years were randomly selected from the Norwegian Population Registry.					CPGI/PGSI
Brunborg, 2016[192]	*Norway*	*2013*	*10052*	*Random sample of 16–74-year-olds were drawn from the Norwegian Population Registry.*	*52*	*47*			*CPGI/PGSI*
Molde, 2019[193]	*Norway*	*2013-2015*	*4601*	*Participants aged 16-74 were randomly selected from the National Population Registry of Norway and invited to participate in postal survey. Participants included in the current study had played video games in previous 6 months and/or had participated in gambling activities in the past year.*	*53*	*48*			
Pallesen, 2020[194]	Norway	2019	9248	Randomly selected 16–74-year-olds from the National Population Registry of Norway. Invitation sent in the mail.	50	43			CPGI/PGSI
Spångberg, 2020[135]	Norway	2015	2451	The EPSAD survey recruited a national sample of 15- and 16-year-old students.	48	16			
Molinaro, 2018[126]	*Norway*	*2015*	*2584*	*Used national samples of randomly selected schools/classes in which the cohort of students born in 1999 (16-year-old students).*	*14[a]*				
Balsa, 2023[195]	Portugal	2022	12000	Sampling design based on polyetapic drawing system, stratified by conglomerates with primary and subsection units selected in a proportional random manner. Individuals selected through systematic draw using tables of random numbers					SOGS
Balsa, 2018[196]	Portugal	2016-2017	12023	Participants aged 15-74 were selected using primary and secondary units in a proportional random manner. Selection of final observation units carried out by systematic draw in household elections and tables of random numbers for selection of individual	52				CPGI/PGSI
ESPAD Group, 2020[127]	Portugal	2019	4365	The ESPAD 2019 survey used stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Portugal	2015	3456	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	20[a]	16			
ESPAD Group, 2020[127]	Serbia	2019	3529	The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Kilibarda, 2018[197]	Serbia	2018	2000	Quota non-probability sampling - stratum determined via type of settlement and region. Households were chosen randomly with respect to the defined quotas. Kosovo and Metohija were not included in the sampling.	52.8				CPGI/PGSI

Terzic-Supic, 2019[198]	Serbia	2014	5385	Small territorial units were selected, randomly. The national household register was used as a sampling frame for random selection of the households within each unit, to recruit individuals aged 18-64 years. Incarcerated individuals, patients in hospitals or therapeutic communities, homeless individuals and individuals in elderly homes or homes for children, as well as individuals living in illegal settlements, were excluded.					CPGI/PGSI
ESPAD Group, 2020[127]	Slovenia	2019	3413	The ESPAD 2019 survey used stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Slovenia	2015	3484	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	10[a]	16			
Andrie, 2019[156]	Spain	2011-2012	1980	A random clustered probability sample of adolescents attending school in the 9th and 10th grades was drawn. Official national lists were used as sampling frames, stratified according to region and population density. 100 classes were drawn.					SOGS-RA
Botella-Guijarro, 2020[199]	Spain		2716	Educational centres in Alicante were randomly selected, with a ratio of two centres per town, and within each centre, all classes from each educational were selected. Students from third- and fourth-year compulsory secondary education and 1st year baccalaureate were recruited.	50	15			
Chóliz, 2019[200]	Spain		6816	A representative sample of the Spanish population aged 18-95 years was selected using stratified random sampling based on a national census conducted by the Spanish Department of the Interior with consideration given to age, sex, and residence.	52				NODS/NODS-CLiP (NODS)
ESPAD Group, 2020[127]	Spain	2019	3557	The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Gonzalez-Roz, 2017[201]	Spain	2015	1267	Participants aged 14-18 years were recruited from a total of 16 Spanish secondary schools in Asturias region. Schools were selected following a random stratified and incidental procedure.	45	15			SOGS-RA
Martinez-Loredo, 2023{Martinez-Loredo, 2023 #496	Spain		1547	Participants included individuals aged 14-17 selected from 22 Spanish secondary schools following random stratified and convenience procedures. The study excludes individuals having any sensory impairment or intellectual disability, or not fluent in Spanish.	48.2	15.2			SOGS-RA
Ministerio de Consumo, 2023[202]	Spain	2022-2023	18711	The 3030estudio de prevalencia de juego used three-stage sampling with stratification in the first stage units. The first stage units were census areas, the second stage units were family homes and in the third stage a person over 14 was selected in each home.	51.4				DSM-based instrument (DSM-5)
Observatorio Español de las Drogas y las Adicciones, 2022[203]	Spain	2022	26344	The AGES (EDADES) 2022 survey used three-stage cluster sampling without substitution. The first stage units were census sections. Second stage units were family dwellings and in the third stage, one individual was selected from each household.					DSM-based instrument
Pérez-Albéniz, 2022[204]	Spain		1790	Recruited students aged 14-19 years from the autonomous community of La Rioja using random stratified cluster sampling at the classroom level. Strata was created according to the type of school, the academic stage and different socio-economic levels, where probability of extraction from the classroom was determined by number of students.	53.7	15.7			
Rey-Brandariz, 2021[205]	Spain	2017	7841	Stratified random sampling was carried out using the health insurance card database as a sampling frame; this includes both landlines and mobile phones of all Galicians aged 16 and over who have had some contact with the health system.	50				SOGS
Tristán, 2022[206]	Spain	2020	17899	People aged 15-64 were recruited using a three-stage cluster sampling without substitution. First stage is census sections, second stage are family dwellings/households, third stage involved individual selected within each household.			4.2		DSM-based instrument
Tristán, 2022[206]	Spain	2018	21249	People aged 15-64 were recruited using a three-stage cluster sampling without substitution. First stage is census sections, second stage are family dwellings/households, third stage involved individual selected within each household.			5.1		
Tristán, 2022[206]	Spain	2015-2016	22541	People aged 15-64 were recruited using a three-stage cluster sampling without substitution. First stage is census sections, second stage are family dwellings/households, third stage involved individual selected within each household.					
Tristán, 2022[206]	Spain	2021	22321	Students from 14 to 18 years of age who are enrolled in Secondary Education in Spain were recruited using a two-stage cluster sampling. First cluster was educational centres with second stage being classrooms where all students present given questionnaire					Lie-Bet
Tristán, 2022[206]	Spain	2019	38010	Students from 14 to 18 years of age who are enrolled in Secondary Education in Spain were recruited using a two-stage cluster sampling. First cluster was educational centres with second stage being classrooms where all students present given questionnaire					Lie-Bet
Moñino-García, 2022[207]	*Spain*	*2019*	*2240*	*Students from 14 to 18 years of age were recruited using a two-stage cluster sampling method. A random sample of 52 public and private schools was selected from all the centres of secondary, vocational and high schools in the Region of Murcia.*	*49.4*				*Lie-Bet*

Tristán, 2022[206]	Spain	2016-2017	35369	Students from 14 to 18 years of age who are enrolled in Secondary Education in Spain were recruited using a two-stage cluster sampling. First cluster was educational centres with second stage being classrooms where all students present given questionnaire					
Tristán, 2022[206]	Spain	2014-2015	37486	Students from 14 to 18 years of age who are enrolled in Secondary Education in Spain were recruited using a two-stage cluster sampling. First cluster was educational centres with second stage being classrooms where all students present given questionnaire					DSM-based instrument
Weidberg, 2018[208]	Spain	2015-2016	1810	Students aged 14-17 years were recruited from secondary schools in Asturias and Alicante. Schools were selected following a random stratified and incidental procedure.	45	15			SOGS-RA
Abbott, 2014[209]	Sweden	1997-1998	7037	Participants aged 16-74 years were drawn from the national registers and contacted by post and phone.	86[a]				SOGS-R
Svensson, 2011[210]	*Sweden*	*1997-1998*	*6674*	*Nationally recruited participants aged 17-74 years from the Population register. Only included participants who completed the problem gambling questions.*					*SOGS-R*
Balem, 2023[211]	Sweden	2020	616227	All people who gambled at least once in the study period using Svenska Spel (a state-owned gambling operator)'s subdivision of Sports & Casino.	19				
Claesdotter-Knutsson, 2022[212]	Sweden	2016	17006	The survey was distributed in all 33 municipalities in Skåne, a region in southern Sweden, with a response rate of 77% (9143/11,868) in ninth grade and 73.4% (7949/10,832) in second grade. Included participants were pupils in ninth grade in primary school and second grade of secondary school.	49.7				Lie-Bet
ESPAD Group, 2020[127]	Sweden	2019	2546	The ESPAD 2019 survey used multistage random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Folkhälsomyndigheten, 2022[213]	Sweden	2021	3213	The USUF 2021 survey recruited a random population sample of 10,000 young people aged 16-19.	54				CPGI/PGSI
Folkhälsomyndigheten, 2022[213]	Sweden	2021	1844	The USUF 2021 survey recruited a random population sample of 10,000 young people aged 16-19. This sample only includes 16-17 years old.	52.9				CPGI/PGSI
Public Health Authority, 2023[214]	Sweden	2021	7434	Participants were recruited from Registry of Total Population.	49				CPGI/PGSI
Public Health Authority, 2021[215]	Sweden	2015-2019	10629	Participants were recruited from National Register of the Total Population in 2015 and then followed up in 2018 with the addition of 1209 new 16–18-year-old participants.					CPGI/PGSI
Sleczka, 2021[216]	Sweden	2008-2014	8165	Participants included individuals aged 16-84 years from the Population Registry of Sweden.	48	35			CPGI/PGSI
Abbott, 2014[209]	*Sweden*	*2008-2009*	*7530*	*Participants included individuals aged 16-84 years, recruited through the Population Registry of Sweden.*	*69[a]*				*SOGS*
Svensson, 2011[210]	*Sweden*	*2008-2009*	*7617*	*Participants included individuals aged 16-84 years, recruited through the Population Registry of Sweden.*	*50*				*SOGS*
Froberg, 2015[217]	*Sweden*	*2008-2010*	*6060*	*Participants included individuals aged 16-84 years, recruited through the Population Registry of Sweden. The paper focused on participants aged 16-44 years (n=4364).*					*CPGI/PGSI*
Froberg, 2015[218]	*Sweden*	*2008-2009*	*3592*	*A stratified random sample was selected including individuals aged 16 84-years from (the Population Registry of) Sweden.*					
Spångberg, 2020[135]	Sweden	2015	2462	The EPSAD survey recruited a national sample of 15- and 16-year-old students.	50	16			
Molinaro, 2018[126]	*Sweden*	*2015*	*2551*	*Used national samples of randomly selected schools/classes in which the cohort of students born in 1999 (16-year-old students).*	*14[a]*				
Svensson, 2023[219]	Sweden	2021	9703	Based on a random sample of 27,000 individuals registered in the national register in Sweden who were drawn from the National Personal Address Register (SPAR). Included people who in 2021 turned between 17 and 84 years old.	49.4				CPGI/PGSI
Svensson, 2019[220]	Sweden	2014	4763	A national sample of Swedish students in Grade 9 (15-year-olds) were recruited through classrooms whereby classes were selected and all students in the class had to fill out the questionnaire.	48				
Svensson, 2019[220]	Sweden	2014	3720	A national sample of Swedish students in Grade 11 (17-year-olds) were recruited through classrooms whereby classes were selected and all students in the class have to fill out the questionnaire	50		4	4	
Costes, 2023[152]	Switzerland		1666	The E-GAMES sample was randomly recruited from a large access panel of Internet users (> 130,000) using quotas to represent the Swiss Internet users' population structure according to age and sex. Included sample all gambled online and/or played in PayToWin in the past year.	26.8				CPGI/PGSI
Dey, 2019[221]	Switzerland	2017	16899	The target population of the 2017 Swiss Health Survey (SGB) was all people aged 15 and over who live in private households (including people with foreign citizenship).					Combined Lie-Bet and NODS-CLIP, Lie-Bet, NODS-CLIP
Luder, 2010[222]	Switzerland	2007	1116	The study sample was chosen through a stratified random sampling of a database of all private Swiss households with a land-line telephone, to recruit individuals aged 15-24 years.	48	19			
Barnfield-Tubb, 2021[223]	United Kingdom	2020	4007	Random Digit Dialling of landline and mobile numbers was used to recruit a national sample of individuals aged 16 and over.	52				CPGI/PGSI (PGSI mini-screen)

Conolly, 2018[224]	United Kingdom	2016	14277	HSE, SHeS, and the 2016 Wales Omnibus survey recruited adults aged 16 years and older, living in private households in Great Britain.	56				CPGI/PGSI, DSM-based instrument
Conolly, 2018[224]	*Scotland*	*2016*	*3886*	*SHeS survey recruited adults aged 16 years and older, living in private households in Scotland.*					
Conolly, 2017[225]	United Kingdom	2015	15503	HSE, SHeS, and the 2015 Wales Omnibus survey recruited adults aged 16 years and older, living in private households in Great Britain.	50.9				CPGI/PGSI, DSM-based instrument
LaPlante, 2011[226]	United Kingdom	2006-2007	8968	Individuals aged 16 and over were recruited nationally, with 32 households from each of 317 geographic primary sampling units. Researchers visited dwellings a minimum of five times to recruit eligible residents to participate.	52				DSM-based instrument
Griffiths, 2011[227]	*United Kingdom*	*2006-2007*	9903	*Using the Postcode Address File as the sampling frame, private addresses were randomly selected within 317 postcode sectors stratified by region occupational status and proportion of non-white residents. Eligible participants were those 16 years and over.*					*DSM-based instrument (DSM-IV)*
Lepper, 2013[228]	United Kingdom	2008-2009	8958	School classes in England, Scotland & Wales were randomly selected using a Kish Grid and no more than two classes per school were involved. Students aged 11-15 were recruited.	50				DSM-based instrument (DSM-IV-MR-J), NLCLiP
Forrest, 2012[229]	*United Kingdom*	*2008-2009*	*8958*	*Randomly selected students aged 11-15 years from a list of English, Welsh, and Scottish schools with provision for year 8 and year 10.*	*13[a]*				*DSM-based instrument (DSM-IV-MR-J)*
MacGregor, 2020[230]	United Kingdom	2019	1091	Households were invited to participate in a survey, respondents were drawn from those who had partaken in Scottish Household Survey and Family Resources Survey aged 11-24 years old.	54				DSM-based instrument (DSM-IV-MR-J)
Motha, 2020[231]	United Kingdom	2020	1645	Sample of schools are selected from DfE's database in England and Scotland. The frame stratified by Government Office Region and schools selected proportional to the number of pupils attending the school. One- or two-year groups were selected at random, selecting pupils in curriculum years 7 to 11.	52				DSM-based instrument (DSM-IV-MR-J2)
Wardle, 2019[232]	United Kingdom	2017	2760	Recruited students aged 11-16 from secondary schools that were randomly chosen from the Edubase list in England & Wales and from a listing provided by the Scottish Government.	48				DSM-based instrument (DSM-IV-MR-J)
Wardle, 2014[233]	United Kingdom	2012	11774	The Health Survey for England recruited a random sample of 9,024 addresses selected in 564 postcode sectors. The Scottish Health Survey recruited a random sample of 4,459 addresses selected from the small user postcode address file. Both surveys recruited participants 16 years and over living in private households.	56[a]				CPGI/PGSI
Gambling Commission, 2016[234]	*United Kingdom*	*2012*	*10817*	*Recruited individuals from England and Scotland aged 15 years and older living in private dwellings in a household survey.*	*51*				*DSM-based instrument*
Wardle, 2010[235]	United Kingdom	2009-2010	7750	A random sample of 9,775 addresses from England, Scotland and Wales was selected from the Postcode Address File (PAF), to recruit individuals aged 16 and over.	54				CPGI/PGSI, DSM-based instrument (DSM-IV)
Canale, 2016[236]	*United Kingdom*	*2009-2010*	*7756*	*A national sample was drawn at random from the Postcode Address File and stratified according to age, occupational status, and ethnic group, recruiting individuals aged 16 and over.*	*51*	*46*			*CPGI/PGSI, DSM-based instrument (DSM-IV)*
Gambling Commission, 2016[234]	*United Kingdom*	*2010*	*7756*	*British Gambling Prevalence Survey recruited a sample from England and Scotland.*	*51*				*DSM-based instrument*
Orford, 2013[237]	*United Kingdom*	*2009-2010*	*7756*	*Using the Postcode Address File as the sampling frame to recruit individuals aged 16 and over. Addresses were randomly selected from postcode sectors in England, Scotland, Wales.*					
Wardle, 2011[238]	*United Kingdom*	*2009-2010*	*7756*	*A national sample aged 16 and over was drawn at random from the Postcode Address File.*	*49[a]*				*DSM-based instrument (DSM-IV)*
Gambling Commission, 2018[239]	England	2016	8011	The Health Survey England recruited individuals 16 and over, using small user Postcode Address File (PAF). Excludes homeless people and other people living in homes not on the PAF (e.g. those in care homes)	51[a]				CPGI/PGSI
John, 2019[240]	England	2006-2007	6948	Multistage stratified probability sampling design was used. Sampled national addresses to recruit individuals aged 16 years or older living in private households.	51		24	9	DSM-based instrument
Carrà, 2017[241]	*England*	*2007*	*7328*	*Randomly recruited individuals aged 16 and over living in private households identified from the small user Postcode Address File (PAF), which covers all post office delivery points receiving fewer than 50 items of mail each day in the UK.*	*57*	*51*	*5*	*7*	*DSM-based instrument (DSM-IV)*
Dighton, 2018[242]	*England*	*2007*	*257*	*Recruited veterans aged 16 and over, using a multistage, stratified probability design based on geographical region and socioeconomic status.*	*18*				*DSM-based instrument (DSM-IV)*
Dighton, 2018[242]	*England*	*2007*	*514*	*Recruited non-veterans aged 16 and over, using a multistage, stratified probability design based on geographical region and socioeconomic status.*	*18*				*DSM-based instrument (DSM-IV)*
Jacob, 2018[243]	*England*	*2006-2007*	*7403*	*Used a multistage-stratified probability sampling design where the sampling frame consisted of the small user postcode address file, while the primary sampling units were postcode sectors. Recruited a national sample of individuals 16 years and over living in private households.*	*51*		*6*		*DSM-based instrument*
Jacob, 2021[244]	*England*	*2006-2007*	*6941*	*A multistage stratified probability sampling design was used with the sampling frame consisting of the small user postcode address file and the primary sampling units corresponding to postcode sectors. Recruited a national sample of individuals 16 years and over.*	*51*	*46*	*8*		*DSM-based instrument (*DSM-IV)

Rai, 2014[245]	*England*	*2006-2007*	*6827*	*A multistage stratified probability sampling design was used. The Royal Mail's Small User Postcode Address File (PAF) was used to recruit a national sample individuals 16 years and over, from private households.*			*6*	*4*	*DSM-based instrument (*DSM-IV)
Wardle, 2019[246]	*England*	*2006-2007*	*7403*	*A stratified random probability sampling design was used: sampling Primary Sampling Units (PSUs); England addresses within selected PSUs; and households and individuals within selected addresses. One adult aged 16 and over was selected using the Kish grid method.*	*51*				*DSM-based instrument*
National Centre for Social Research, 2023[247]	England	2021	3652	Multi-stage stratified probability random sampling design of primary sampling units based on postcode sectors. Then a random sample of postal addresses was drawn.	51				CPGI/PGSI, DSM-based instrument (DSM-IV)
Population Health Team, 2019[248]	England	2018-2019	7104	The Health Survey England recruited individuals living in private households 16 and over, using small user Postcode Address File (PAF).	50.7				CPGI/PGSI, DSM-based instrument
Deakin, 2022[249]	Scotland	2021-2022	3356	Random sample of national addresses were selected from the Postcode Address File using a two-staged clustered sample design, recruiting adults aged 16 and over.					CPGI/PGSI
Gambling Commission, 2018[250]	Scotland	2017	3697	Random sample of national addresses were selected from the Postcode Address File using a two-staged clustered sample design, recruiting adults aged 16 and over.	60[a]				CPGI/PGSI
Karikoski, 2018[251]	Scotland	2013	4411	Random sample of national addresses were selected from the Postcode Address File using a two-staged clustered sample design, recruiting adults aged 16 and over.	52.7				CPGI/PGSI, DSM-based instrument
Scottish Government, 2017[252]	Scotland	2016	3866	Random sample of national addresses were selected from the Postcode Address File using a two-staged clustered sample design, recruiting adults aged 16 and over.	51.8				CPGI/PGSI, DSM-based instrument
Scottish Government, 2016[253]	Scotland	2015	4487	Random sample of national addresses were selected from the Postcode Address File using a two-staged clustered sample design, recruiting adults aged 16 and over.	52.2				CPGI/PGSI, DSM-based instrument
Scottish Government, 2015[254]	Scotland	2014	4163	Random sample of national addresses were selected from the Postcode Address File using a two-staged clustered sample design, recruiting adults aged 16 and over.	52.4				CPGI/PGSI, DSM-based instrument
Conolly, 2018[224]	Wales	2016	4023	The 2016 Wales Omnibus survey recruited adults aged 16 years and older, who live in private households in Wales.					
Wales Government, 2020[255]	Wales	2018	4034	The Omnibus sample recruited a national sample of participants aged 16 years and over.	57				CPGI/PGSI, DSM-based instrument (DSM-IV)
Eastern Europe									
ESPAD Group, 2020[127]	Bulgaria	2019	2864	The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Bulgaria	2015	2922	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	21[a]	16			
ESPAD Group, 2020[127]	Croatia	2019	2772	The ESPAD 2019 survey used stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Croatia	2015	2558	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	10[a]	16			
Baxter, 2023[256]	Cyprus	2022	2949	Participants were randomly selected through numbers from telephone directories.	53				CPGI/PGSI
Cakici, 2021[257]	Cyprus	2018	799	Random multi-staged stratified sampling quota of every third household was used to recruit Turkish speaking 18-65 year olds. Was used to be representative of last national statistics and demographic survey for Northern Cyprus.					SOGS
Cakici, 2019[258]	Cyprus	2014	1040	Multi-step stratified random sampling method was used to recruit Turkish speaking 18-65 year olds in Northern Cyprus. One out of every three houses were included in the study and one person was recruited.					SOGS
Cakici, 2016[259]	Cyprus	2012	966	Random multi-staged stratified sampling quota of every third household was used to recruit Turkish speaking 18-65 year olds. Was used to be representative of last national statistics and demographic survey for Northern Cyprus.					SOGS
Cakici, 2012[260]	Cyprus	2007	929	A random multi-staged, stratified sampling quota was used as the method for sampling. Household interviews were conducted with people living permanently in Northern Cyprus who speak Turkish, and aged 18-65 years.					SOGS
ESPAD Group, 2020[127]	Cyprus	2019		The ESPAD 2019 survey used multistage random sampling with schools being the sampling units. Students in government-controlled areas who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Cyprus	2015	2098	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	18[a]	16			

Neophytou, 2021[261]	Cyprus	2019-2020	2118	Participants 18 years and above were recruited from phone numbers that were either selected randomly from phone directories (of mainly stationary numbers) or were randomly generated numbers of mobile phones.	41.4	48			DSM-based instrument (DSM-5 based questions)
Chomynová, 2023[262]	Czech Republic	2022	1784	Respondents were selected by quota sampling so as to represent the population of the Czech Republic with regard to age, gender and region.	51.1				Lie-Bet
Chomynová, 2023[262]	Czech Republic	2022	1000	Online participants were selected to represent the population with regard to age, gender, education, region and size of place of residence.	51.2				
Chomynová, 2023[262]	Czech Republic	2021-2022	1920	School students aged 15-19 years were recruited from 22 randomly selected secondary schools participated from 11 regions of the Czech Republic.					Lie-Bet
Chomynová, 2023[262]	Czech Republic	2019	2778	Students aged 16 years and older were recruited from 255 selected primary and secondary schools throughout Czechia.					Lie-Bet, Consumption Screen for Problem Gambling
ESPAD Group, 2020[127]	*Czech Republic*	*2019*	*2778*	*The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.*					*Lie-Bet, CSPG*
Chomynova, 2021[263]	Czech Republic	2020	3542	Participants aged 15 and above were recruited either online or face-to-face. Online respondents were selected via internet panel by combination of random and quota sampling to be representation. Face-to-face respondents were selected from randomly selected households through 4 stage stratified selection.	51		9.9	14.9	CPGI/PGSI, Lie-Bet
Molinaro, 2018[126]	Czech Republic	2015	2738	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	13[a]	16			
Petrenko, 2023[264]	Czech Republic	2022	13286	Respondents aged 11 to 21 from Prague primary schools, secondary schools and grammar schools were recruited. All schools in Prague were contacted to be included in the survey.					
Petrenko, 2023[264]	Czech Republic	2021	9793	Respondents aged 11 to 21 from Prague primary schools, secondary schools and grammar schools were recruited. All schools in Prague were contacted to be included in the survey.					
Petrenko, 2023[264]	Czech Republic	2020	8724	Respondents aged 11 to 21 from Prague primary schools, secondary schools and grammar schools were recruited. All schools in Prague were contacted to be included in the survey.					
Petrenko, 2023[264]	Czech Republic	2019	9278	Respondents aged 11 to 21 from Prague primary schools, secondary schools and grammar schools were recruited. All schools in Prague were contacted to be included in the survey.					
Petrenko, 2023[264]	Czech Republic	2018	8482	Respondents aged 11 to 21 from Prague primary schools, secondary schools and grammar schools were recruited. All schools in Prague were contacted to be included in the survey.					
Petrenko, 2023[264]	Czech Republic	2017	8644	Respondents aged 11 to 21 from Prague primary schools, secondary schools and grammar schools were recruited. All schools in Prague were contacted to be included in the survey.					
Petrenko, 2023[264]	Czech Republic	2016	18580	Respondents aged 11 to 21 from Prague primary schools, secondary schools and grammar schools were recruited. All schools in Prague were contacted to be included in the survey.					
ESPAD Group, 2020[127]	Estonia	2019	2520	The ESPAD 2019 survey used stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Kantar Emor, 2021[265]	Estonia	2021	2892	Participants aged 15-74 were recruited via a random extract from database of pre-recruits of AS Emor using a proportional population model.					CPGI/PGSI
Molinaro, 2018[126]	Estonia	2015	2452	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	16[a]	16			
ESPAD Group, 2020[127]	Georgia	2019	3092	The ESPAD 2019 survey used multistage random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected. The occupied territories of Abkhazia and South Ossetia were not covered by the sampling frame.					Lie-Bet, CSPG
Molinaro, 2018[126]	Georgia	2015	1966	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	11[a]	16			
Demetrovics, 2022[266]	Hungary		2710	The sampling frame for the National Survey on Addiction Problems in Hungary (NSAPH) consisted of the whole resident population with a valid address according to the register of the Hungarian Central Office for Administrative and Electronic Public Services.	51	39.8			SOGS
ESPAD Group, 2020[127]	Hungary	2019	2355	The ESPAD 2019 survey used stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Gyollai, 2011[267]	Hungary	2007	2710	The National Household Survey on Addiction Problems recruited participants aged 18-64 years with a valid home address.	51				SOGS-HU
Molinaro, 2018[126]	Hungary	2015	2735	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	12[a]	16			

Paksi, 2021[268]	Hungary	2019	1385	The sampling frame for the National Population Survey on Addiction Problems (OLAAP) 2019 was adult residents aged 18-64 years with valid address. The rural subsample, sampled settlements and individuals were selected using a stratified random sampling procedure. Budapest subsample, was recruited using one-stage stratified random sampling.					
ESPAD Group, 2020[127]	Kosovo	2019	1756	The ESPAD 2019 survey used multistage random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected. 4 % of the target population enrolled in schools in Northern Kosovo and/or functioning under the parallel structures of the Ministry of Education of Serbia within the other Serbian municipalities were not covered by the sampling frame.					Lie-Bet, CSPG
ESPAD Group, 2020[127]	Latvia	2019	2743	The ESPAD 2019 survey used stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Latvia	2015	1119	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	19[a]	16			
Putnina, 2019[269]	Latvia	2018	4192	The sample was formed within 64 strata, with 862,305 household records throughout the territory of Latvia. Addresses were then randomly sampled, with one respondent aged 15-64 years interviewed per household.	63.8				CPGI/PGSI
ESPAD Group, 2020[127]	Lithuania	2019	2393	The ESPAD 2019 survey used simple random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Molinaro, 2018[126]	Lithuania	2015	2573	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	10[a]	16			
Vilmorus, 2023[270]	Lithuania	2023	1000	Lithuanian residents aged 18 and above were recruited using probabilistic sampling, while maintaining proportions according to age, sex, place of residence.	54				
Vilmorus, 2022[271]	Lithuania	2022	1000	Lithuanian residents aged 18 and above were recruited using probabilistic sampling, while maintaining proportions according to age, sex, place of residence.	54				
Vilmorus, 2021[272]	Lithuania	2021	1000	Participants aged 18 and above were recruited using probabilistic sampling, while maintaining proportions according to age, gender and place of residence.	54				
Vilmorus, 2020[273]	Lithuania	2020	1001	Lithuanian residents aged 18 and above were recruited using multi-stage probabilistic sampling.	54				
Vilmorus, 2019[274]	Lithuania	2019	1001	Participants aged 18 and above were recruited using multi-stage, probabilistic sampling. The selection of respondents was prepared in a way that every Lithuanian resident would have an equal chance of being interviewed.	55				
Molinaro, 2018[126]	Moldova	2015	2586	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	2[a]	16			
Andrie, 2019[156]	Poland	2011-2012	1978	A random clustered probability sample of adolescents attending school in the 9th and 10th grades was drawn. Official national lists were used as sampling frames, stratified according to region and population density. 100 classes were drawn.					SOGS-RA
Costes, 2023[152]	Poland		8511	The IMAS Internet panel invited panel users to participate in the research.	50.1				CPGI/PGSI
ESPAD Group, 2020[127]	Poland	2019	2372	The ESPAD 2019 survey used stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Lelonek-Kuleta, 2020[275]	Poland		2000	The national sample randomly selected residents 18 years and older on the basis of Personal Identification Number.	52	46			BBGS
Molinaro, 2018[126]	Poland	2015	11822	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	16[a]	16			
Moskalewicz, 2019[276]	Poland	2018-2019	4025	Participants aged 15 and above were selected in a multi-stage manner from the Universal Electronic System of Population Records (PESEL). The first involved drawing a random number in localities, then drawing 15 people from each strata.	53				CPGI/PGSI
Niewiadomska, 2020[277]	Poland		923	Schools in the Lublin Province were randomly selected for the study, for individuals aged 17–21.	52	18			SOGS-RA
Pisarka, 2020[278]	Poland		511	Participants included individuals 16-18 years, classrooms were randomly selected from public/non-public general, technical high schools and basic vocational schools in Warsaw.	43				SOGS-RA
Wojtkowska, 2024[279]	Poland	2022	936	Recruited students aged 7-14 from 12 primary schools in the provinces of West Pomeranian, Lubuskie and Lower Silesia. To obtain a representative and fully random study group, a list of all primary schools was prepared and divided by location size, which created the sampling frame. The automatic number generator drew the schools.	51.6	11.1			

Andrie, 2019[156]	Romania	2011-2012	1830	A random clustered probability sample of adolescents attending school in the 9th and 10th grades was drawn. Official national lists were used as sampling frames, stratified according to region and population density. 100 classes were drawn.					SOGS-RA
ESPAD Group, 2020[127]	Romania	2019	3764	The ESPAD 2019 survey used multistage random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Lupu, 2018[280]	Romania		2006	Pupils aged 11-19 years were chosen from schools in Romania (North-West, North-East, South-East, South-West, South, Centre and Bucharest regions) based on a randomized sample.	52	15			SOGS-RA, 20 GA-RA
Molinaro, 2018[126]	Romania	2015	3500	National samples of randomly selected schools/classes of 16-year-old students were chosen, in which the cohort of students born in 1999.	15[a]	16			
ESPAD Group, 2020[127]	Slovakia	2019	2258	The ESPAD 2019 survey used stratified random sampling with schools being the sampling units and classes being randomly selected by assistants in the last step of school selection. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected.					Lie-Bet, CSPG
Ipsos, 2023[281]	Slovakia	2023	1025	Slovak population aged 15 and above representative by gender, age, region, VMB, education.	50				
Molinaro, 2018[126]	Slovak Republic	2015	2208	National samples of randomly selected schools/classes of 16 year old students were chosen, in which the cohort of students born in 1999.	10[a]	16			
ESPAD Group, 2020[127]	Ukraine	2019	2731	The ESPAD 2019 survey used multistage stratified random sampling with classes being the sampling units. Students who reached the age of 16 years in the calendar year of the survey and who were present in the classroom on the day of the survey were selected. Autonomous Republic of Crimea was not included in the survey, nor were the territories of Donetsk and Luhansk, which are not controlled by the Ukrainian government.					Lie-Bet, CSPG
Molinaro, 2018[126]	Ukraine	2015	2350	National samples of randomly selected schools/classes of 16 year old students were chosen, in which the cohort of students born in 1999.	11[a]	16			
East and Southeast Asia									
Chen, 2016[282]	China	2009-2010	1774	A single grade (grades 7 through 9) of each selected Zhuhai school was randomly selected, and all classes of the selected grade were invited to participate.	46	14			
Chen, 2016[282]	China	2009-2010	3381	A single grade (grades 7 through 9) of each selected Wuhan school was randomly selected, and all classes of the selected grade were invited to participate.	46	14			
Zhu, 2019[283]	China	2009-2010	3232	The sampling frame was the high school population aged 15-17 years old in Xi'an. Firstly, randomly selected three administrative districts from all units. Then randomly selected six schools in each district and randomly selected students from all classes.	52.3	15.8			
Chen, 2016[282]	Hong Kong SAR	2009-2010	6466	A single grade (grades 7 through 9) of each selected Hong Kong school was randomly selected, and all classes of the selected grade were invited to participate.	49	13			
Cheung, 2016[284]	Hong Kong SAR	2007-2010	4734	Used a national cross-sectional survey of high school students aged 12-23 years. The first stage drew a random sample of high schools with the probability proportional to financing mode. Students were then randomly selected based on their birthday month (March).	49	16			DSM-based instrument (DSM-IV-J)
Cheung, 2014[285]	*Hong Kong SAR*	*2007-2010*	*4734*	*Participants were Chinese adolescents aged 12–23 recruited in schools. Schools were randomly selected according to the proportion of publicly funded (82%) and privately funded (18%) schools in Hong Kong. Students were selected based on their birthday month (March).*	*49*	*16*			*DSM-based instrument (DSM-IV-J)*
Higuchi, 2017[286]	Japan	2016-2017	4685	Randomly selected from the basic resident register nationwide.					SOGS
Higuchi, 2017[286]	Japan	2015-2016	993	Randomly selected from the basic resident registers of 11 cities (Sapparo City, Sendai City, Saitama City, Chiba City, Tokyo 23 wards, Kawasaki city, Yokohama city, Sagamihara city, Nagoya city, Osaka city, Fukoka city).					SOGS
Nitta, 2023[287]	Japan	2020	8223	Participants were randomly sampled based on the Basic Resident Register.	51.9				
So, 2019[288]	Japan	2017	5365	Participants included individuals aged 20–75 years from 300 different sites in Japan, who were chosen from a basic resident register using stratified random sampling.					SOGS
Chen, 2018[289]	Macau SAR	2016	1000	A random sampling telephone survey using the Macao 2015 residential phonebook was used to recruit Chinese Macau residents aged 18 years or above (up to 97 years). Two step stratified random sampling: selected eligible participants then selected household member based on birthdays.	56	40			DSM-based instrument (DSM-5)
Chen, 2016[282]	Macau SAR	2009-2010	547	A single grade (grades 7 through 9) of each selected Macau school was randomly selected, and all classes of the selected grade were invited to participate.	38	13			
Tong, 2018[290]	Macau SAR		1020	For study 1, telephone numbers were randomly generated from a local national residential telephone directory and an adult was sampled within a household following the last birthday rule.	55	44			DSM-based instrument (DSM-5)
Wu, 2015[291]	Macau SAR	2011	952	Randomly selected a sample of telephone numbers from the Macau telephone directory, to recruit a national community sample aged 18 or older.	58	43			DSM-based instrument

Wu, 2014[292]	Macau SAR	2013	1018	Randomly sampled household telephone numbers from the 2012 Macau household phonebook, to recruit Chinese speaking Macau residents aged 18 and above. If multiple people were eligible, then the one with the nearest birthday was recruited.	55	42			DSM-based instrument (DSM-5)
Sheela, 2016[293]	Malaysia	2010	2262	Participants aged 12-17 years were randomly selected from secondary schools in Seremban.	58	14			SOGS
Chen, 2016[282]	Taiwan	2009-2010	1782	A single grade (grades 7 through 9) of each selected Taipei school was randomly selected, and all classes of the selected grade were invited to participate.	50	14			
Assanangkornchai, 2016[294]	Thailand	2013	4727	Used a stratified multistage probability sampling technique: Thai population was stratified into Bangkok metropolitan area and four other regions, then an individual living in each selected household was randomly selected using the Kish selection table. Eligible participants were Thai speaking permanent residents of non-institutionalized civilian households aged 18 years or older.	64				DSM-based instrument (DSM-IV-TR)
Wichaidit, 2022[295]	Thailand	2021	1555	Two stage sampling was employed by dividing Thailand into five regions, with study provinces within each region chosen using systematic sampling. Mobile phone numbers were sampled from the list of users in the selected provinces using cumulative systematic sampling. Study population included Thai people aged 18 years and over in 15 provinces, who had a cell phone number.	51.7	41.3			
National Council on Problem Gambling, 2021[296]	Singapore	2020	3000	A probability disproportionate stratified sampling method was used. From a sampling frame of residents' addresses, a randomly selected sample of 3,000 Singapore residents was interviewed using a structured questionnaire between February 2020 and December 2020.					DSM-based instrument (DSM-5)
National Council on Problem Gambling, 2018[297]	Singapore	2017	3000	A probability disproportionate stratified sampling method was used. From a sampling frame of residents' addresses, a randomly selected sample of 3,000 Singapore residents was interviewed using a structured questionnaire.					DSM-based instrument (DSM-5)
National Council on Problem Gambling, 2015[298]	Singapore	2014	3000	A probability disproportionate stratified sampling method was used. From a sampling frame of residents' addresses, a randomly selected sample of 3,000 Singapore residents was interviewed using a structured questionnaire.					DSM-based instrument (DSM-IV)
Subramaniam, 2016[299]	Singapore	2009-2010	2252	The Singapore Mental Health Study (SMHS) nationally recruited individuals aged 18 years and over. This analysis looked at participants who had gambled at least once in their lifetime only.			8		SOGS
Subramaniam, 2015[300]	*Singapore*	*2009-2010*	*6616*	*The Singapore Mental Health Study (SMHS) randomly selected individuals aged 18 and over from a database obtained from a national registry.*					*SOGS*
Subramaniam, 2015[301]	*Singapore*	*2009-2010*	*2252*	*The Singapore Mental Health Study (SMHS) used a probability sample to randomly select individuals aged 18 and over, using a disproportionate stratified sampling design of entire population. Survey data was weighted to the 2007 resident population.*					*SOGS*
Tse, 2013[302]	Singapore	2010-2011	3010	Randomly selected individuals aged 55 years and over from a national sampling frame of residents' addresses provided by one of Singapore ministries.	53				CPGI/PGSI
Park, 2010[303]	South Korea	2006-2007	5333	A Stratified, multi-stage, cluster sample design was used, based on the population census of South Korea conducted in 2005, for individuals 18-64 years.	50		9	21	K-DIS-IV
Sohn, 2024[304]	South Korea	2020	780	The 2020 National Survey on Youth Gambling Problems (2020 NSYGP) used stratified cluster sampling to recruit 13-18 year olds. Employed stratified variables, including the region and school level to assess adolescents attending middle and high schools. The sample all gambled online at least once in the last 3 months.	42.5	16.5			Gambling Problems Severity Scale (GPSS) from Canadian Adolescents Gambling Inventory (CAGI)
Williams, 2013[305]	South Korea	2011	4000	Random Digit Dialling of the universe of possible cell phone numbers and stratified sampling was used to ensure age and gender constituted at least 50% of their 'true' prevalence as determined by the 2010 South Korean census. Recruited a national sample aged 19 and over.	50		0.05		CPGI/PGSI
Middle East									
Gavriel-Fried, 2023[306]	Israel	2022	3244	Israeli Jews aged 18 and over were randomly selected from the population registry database followed by location of their phone number. Households of Israeli Arabs aged 18 and over were randomly selected out of the household database.					CPGI/PGSI
Africa									
Glozah, 2019[307]	Ghana		770	Four schools were selected randomly from the register of all 21 senior high schools in the Accra Metropolitan Assembly based on strata – single sex and mixed sex schools. Three classes from each school randomly selected.	34.5	16.9			
Kyei-Gyamfi, 2022[308]	Ghana	2018	5024	Used a systematic sampling procedure with 20% districts in each region of Ghana selected based on child protection issues and general wellbeing. Then 15 enumeration areas were selected with individual children aged 8-17 years old chosen via probability proportional to size sample from each district.	48.9	12.9			
Okoti, 2019[309]	Kenya		378	Stratified random sampling was used to obtain 2 (out of 5) schools from sub-urban category and 5 (out of 17) schools from rural category.					

Abayomi, 2016[310]	Nigeria	2013	146	In total, 19 gambling locations were identified from 5 randomly selected wards in Ogbomoso local government area for participant recruitment. All persons aged 18 years and above found to be patrons of gambling centres at the time of the study were invited to participate.	10.3	27.5			
Chinawa, 2023[311]	Nigeria	2021	796	Recruited private and public secondary school adolescents using a three stage sampling technique. Firstly, LGAs were stratified into urban and rural LGAs and selected using a simple random sampling technique of balloting. Then schools were chosen using the same technique of balloting. The first respondent from the classes was then selected using a simple random sampling technique of balloting after which the sampling interval was applied.	51.8	15.6			CPGI/PGSI
Sharp, 2015[312]	South Africa	2010	3000	Participants aged 18 years and over were recruited from Enumeration Areas (EAs) (including the Cape Town, Durban, Johannesburg and Tshwane metropoles), defined according to the 2001 national census.	49	39		5	CPGI/PGSI
Kincaid, 2013[313]	*South Africa*	*2008*	3000	*Participants were randomly drawn from the census of households including from Johannesburg, Tshwane, Cape Town and eThekweni (Durban).*					CPGI/PGSI
Anyanwu, 2023[314]	Uganda		921	Multi-stage cluster sampling with two secondary schools randomly selected from each of the six divisions in Mbarara Municipality. At least 60 students were randomly selected from each school.	46.2	16.9			DSM-based instrument (DSM-IV-MR-J)
Latin America									
Departmento of Juego Responsible, 2022[315]	Argentina	2022	1300	Prevalence study in the province of Entre Ríos.					
Tavares, 2010[316]	Brazil	2005-2006	3007	Nationally recruited using a three-stage stratified probabilistic sampling method. Chosen households were approached at least three times at different times of the day on two different days. The interview surveyed all Portuguese speaking members of the household aged 14 years or older.	50				DSM-based instrument (DSM-IV)
Spritzer, 2011[317]	*Brazil*	*2005-2006*	*661*	*Multistage probabilistic stratified sampling method: 143 cities selected, 2 census sectors within each city except for big cities (325 census sectors in total); 8 households within each sector by simple random sampling. Recruited a national sample of adolescents aged 14-17 years, choosing participants based on the closest future birthday approach.*	*49*				*DSM-based instrument (DSM-IV-J-MR), Lie-Bet*
Velázquez, 2018[318]	Mexico	2016	56877	Used a probabilistic, multistage, and stratified design. National random sampling of 1 teenager (12-17 years) and 1 adult (18-65 years) was selected from each household visited.	58				DSM-based instrument (DSM-5)
Saldivia, 2022[319]	Chile	2021	2159	The sample was taken from the Concepción Lottery user registry in force at the time of the survey. Used stratified probabilistic sampling with proportional allocation, based on the variables sex, age and region. Stratified random sample were sent email for participation.	41.3	42.8	3.7		NODS-CLIP (NODS questionnaire)
Zapata, 2011[320]	Colombia		3486	High school students aged 10-19 years old were randomly selected from all educational institutions in Medellin.	57				SOGS
South Asia									
Bhatia, 2019[321]	India	2012-2014	1514	A population-based sample of urban and rural communities of North Goa were selected based on electoral rolls, and participants were selected at random from randomly selected eligible households. This study only sampled male participants.	0	40			
Jaisoorya, 2017[322]	India		4989	Schools were selected by cluster random sampling from the total pool of 168 high and higher secondary schools in the district of Ernakulam, Kerala, South India. Participants were students in years 10 and 12 (15-19 years).	49	16			NODS/NODS-CLiP

176

177 Table 7.2. Studies available reporting adult gambling data by overall and sex/gender

	Any gambling activity		Engaged in any risk gambling activity		Engaged in problematic gambling activity	
	Overall	Sex/gender data	Overall	Sex/gender data	Overall	Sex/gender data
Australasia	3-5,7,9-12,14-18,22-25,28-41,46,48,49,323-337	3-5,7,11,12,14,22,30-37,40,48	3-7,9,11,12,14,15,17,18,22-25,29-37,39-41,46,48,323-327,331-338	3-7,11,12,14-16,22,30-36,40,43,48	3-5,7,9,10,12,14-18,22-25,29-41,48,323-338	3-5,7,12,14,22,30-37,39,40
East and Southeast Asia	289-292,295-298,302,305,339-343	289-291,305	292,294,302,305,339-341	294,305	286,287,289-292,294,296-298,302,305,339-341	289,305
South Asia	-	321	-	-	-	-
Eastern Europe	256,261-263,269-277,281	256,262,263,276	152,256,261,263,266,267,269,275-277	261,266,267,276	256,258,263,266,267,269,276,277	266,267
Western Europe	64,128,132,137,139,142-146,149,153,154,157,159,160,162,163,166,169-171,173,175,184-186,190-192,194-196,202,203,205,206,209,214-216,219,221-225,233,235,239,240,247-255,344-371	128,137,139,145,146,149,153,157,159,160,163,169,171,184,185,190,194,196,202,205,214,215,219,222-226,230,233-235,247,248,252,255	64,128,129,132,133,136,137,142,143,145,146,149,150,152,153,157,159,160,162,166,169,171,173-175,185,190-192,194-197,202,203,205,206,214-216,219,221,223-225,230,233,235,239,240,242,247-255,344,346,349,350,353,354,356,358,359,361,363,365,367-377	56,137,142,144-146,149,157,190,197,202,205,215,219,223,225,233,235,248,249,252-255	128,132,136,137,139,140,146,149,150,152-154,157,159,160,162,166,169,173,174,185,186,190-192,194-197,200,203,205,206,209,214-216,224-226,233,235,239-242,247-250,252-255,346,348-350,352-354,356,358-363,365,367-371,376,378	137,146,154,157,159,190,192,197,200,205,215,219,240,247,249,255
Middle East	306		306		306	

Africa	-		312		312	
Latin America	315,316	316	319	319	318,319,379	319
North America	50,51,55,56,61-63,67,70,72,75,78,80,88,92,95,97,98,100-102,104-107,109-112,115,117-123,380-399	56,67,72,75,88,92,101,109,118,120,122,123	50,56,62,63,67,70,72,75,78,80,84,85,95,97,98,100,101,104-106,109,110,118-122,381,383,384,389-392,394,395,397-401	67,72,88,101,106,109,118,122	50,56,61,62,66,67,70,72,78,80,84,85,95,98,100-102,104-106,109,110,112,113,118,119,121-123,381,383,384,388,389,391,392,394-396,398,399,401	56,67,72,84,85,101,106,107,118,122,123

178

179 Table 7.3. Studies available reporting adolescent gambling data by overall and sex/gender

	Any gambling activity		Engaged in any risk gambling activity		Engaged in problematic gambling activity	
	Overall	Sex/gender data	Overall	Sex/gender data	Overall	Sex/gender data
Australasia	19,21,47	19,21,47	19,21,47,402-404	47	13,21,402,404	
Central Asia	-	-	-	-	-	-
East and Southeast Asia	283,284,293,405,406	284,285,293	284,405	284	284,293	284
South Asia	-	-	-	-	-	-
Eastern Europe	126,127,262,278,280,407,408	280	156,262,278,280		278,280,408	280
Western Europe	126,127,134,141,145,155,158,160,161,163,177,180,181,185,187,199,201,204,206,208,213,215,220,226,228,231,232,409-413	141,145,161,176,185,187,199,204,208,213,220,231,232	134,136,145,155,156,160,161,163,168,176-178,180-183,185,187,201,206,207,212,213,228,231,409,410,412-414	134,145,161,176,178,181,182,187,213,231	134,136,155,160,161,177,180,181,185,187,201,213,226,228,231,409,410,412,414	134,161,181,187,213,231
Middle East	-	-	-	-	-	-
Africa	308,309,314	-	311,314	311	314	-
Latin America	-	-	-	-	-	-
North America	76,114,124,415-419	114,116,124	124,416	124	124,417,418	124

180

181 Table 7.4. Studies available for individual gambling products/activities analysis

Analysis Group	Adults	Adolescents
Among general population	3-5,12,14-18,22,23,25,27,30-37,39-41,48-50,53,56,61,63,64,67,72,75,78,92,93,95,102,112,122,132,137,139,143,149,153,157,160,170,171,174,185,186,190,196,200,205,206,209,214,215,224,225,233,235,239,248-251,256,263,275-277,291,292,302,305,321,420,16511,24,38,97-99,101,103,105-107,109,110,115,117-121,151,152,159,163,173,184,191,195,197,202,203,211,221,247,261,262,269-274,281,286,296-298,306	19,47,96,124,126,127,134,135,155,158,160,163,180,185,201,204,206,208,213,226,262,264,278,279,284,293,304,307,308,421
Among people who gambled in the past 12 months	3-5,12,14-18,22,23,25,30-37,39-41,48-50,53,56,61,63,64,67,72,75,78,92,93,95,102,112,122,132,137,139,143,149,153,157,160,170,171,174,185,186,190,196,200,205,206,209,214,215,224,225,233,235,239,248-251,256,263,275-277,291,292,302,305,321,420,165,11,24,38,68,97,98,101,105-107,109,110,115,117-121,159,163,173,184,191,195,202,203,221,247,261,262,269-274,281,296-298,306,310,319	19,47,96,124,126,127,134,155,158,160,163,180,185,201,204,206,208,213,226,262,278,284,293
Among people engaged in problematic gambling in the past 12 months	3-5,15,16,31,32,35,37,39,56,137,149,157,160,185,186,224,225,235,248,256,16524,38,105,109,119-121,159,319	134,185,201,206,226
Problematic gambling among people who gambled in a specific gambling product/activity	3-5,15,16,31,32,35,37,39,41,56,137,149,157,160,185,186,224,225,235,248,256,16524,38,105,109,119-121,159,319	134,185,201,226

182

Appendix 8: Pooled country-level estimates for any gambling, any risk gambling and problematic gambling

Heterogeneity statistic (I^2) is reported for pooled estimates based off 4 or more study estimates.

Table 8.1: Pooled country-level adult population prevalence estimates for any gambling, any risk gambling and problematic gambling

Country	Any gambling activity				Any risk				Problematic gambling			
	LCI	Estimate	UCI	I^2	LCI	Estimate	UCI	I^2	LCI	Estimate	UCI	I^2
Australasia												
Australia	65.191	69.586	73.809	99.83	6.945	8.177	9.500	99.26	0.523	0.693	0.885	96.47
New Zealand	54.532	71.888	86.404	99.85	2.572	5.620	9.750		0.355	0.446	0.547	
East and South East Asia												
Japan									1.675	1.949	2.244	
Macau SAR, China	20.967	25.507	30.330	91.67	7.260	8.939	10.773		1.271	2.063	3.036	
Republic of Korea	40.275	41.800	43.333		1.410	1.800	2.237		0.342	0.550	0.805	
Singapore	41.463	46.660	51.893						0.661	0.922	1.225	
Thailand	52.311	54.791	57.259		8.111	8.906	9.735					
Eastern Europe												
Cyprus	75.886	77.055	78.203		9.217	10.07	10.955		2.371	3.007	3.716	
Czech Republic	19.858	39.657	61.413		3.805	4.461	5.166		0.950	1.299	1.700	
Hungary					9.945	10.756	11.596		0.929	1.328	1.797	
Latvia	24.873	26.193	27.535		5.672	6.393	7.154		0.968	1.288	1.653	
Lithuania	6.423	7.122	7.853	0.00								
Poland	39.572	40.939	42.314		1.126	5.045	11.518		0.995	1.295	1.633	
Slovak Republic	74.751	77.366	79.878									
Western Europe												
Austria	45.482	46.747	48.015		4.109	4.628	5.176		1.457	1.777	2.129	
Denmark	61.807	63.006	64.197		0.943	2.441	4.612	99.51	0.529	0.681	0.852	
Finland	58.123	68.360	77.770	99.73	6.997	11.655	17.305	99.41	1.338	2.321	3.563	96.75
France	44.543	50.347	56.147		7.828	8.162	8.503		0.595	0.760	0.944	
Germany	33.991	38.961	44.049	99.44	4.060	6.262	8.900	99.39	0.654	1.341	2.266	98.76
Greece	62.738	64.106	65.462		14.294	15.302	16.339		1.977	2.393	2.847	
Greenland	78.288	79.991	81.641									
Iceland	66.433	68.779	71.077		4.871	6.009	7.257					
Ireland (Republic)	47.703	48.993	50.285		3.046	3.506	3.997		0.170	0.295	0.454	
Italy	15.019	27.511	42.124	99.88	7.519	14.127	22.386	99.61	2.831	3.113	3.408	
Netherlands	62.414	63.649	64.874						1.187	1.481	1.806	
Norway	59.769	61.369	62.957	91.24	11.620	12.112	12.613		0.376	0.805	1.392	
Portugal	51.219	51.851	52.483		2.798	3.011	3.231		0.406	0.491	0.584	
Serbia					3.093	3.900	4.795		0.163	0.400	0.732	
Spain	53.175	58.069	62.885	99.56	1.483	2.919	4.818		0.364	0.484	0.619	77.67
Sweden	45.069	61.832	77.259	99.92	4.090	5.470	7.038	97.36	0.215	0.675	1.385	97.62

Switzerland	53.858	54.586	55.312		2.459	2.698	2.948					
United Kingdom	57.784	61.336	64.828	99.41	3.733	4.252	4.802	94.34	0.555	0.660	0.773	72.84
Middle East												
Israel	48.403	50.123	51.844		15.652	16.924	18.234		0.985	1.356	1.785	
Africa												
South Africa					19.723	21.167	22.647		2.629	3.233	3.898	
Latin America												
Argentina	22.757	25.077	27.471									
Brazil	10.581	11.706	12.880									
Mexico									0.257	0.301	0.347	
North America												
Canada	58.104	66.006	73.484	99.91	6.908	11.390	16.814	99.88	0.523	1.741	3.642	99.73
United States	50.564	60.781	70.543	99.92	9.305	14.110	19.722	99.79	1.009	1.626	2.385	98.52

Note: LCI – lower 95% confidence interval; UCI – upper 95% confidence interval

Table 8.2: Pooled country-level adult conditional prevalence estimates for any gambling, any risk gambling and problematic gambling

Country	**Any risk**				**Problematic gambling**			
	LCI	Estimate	UCI	I^2	LCI	Estimate	UCI	I^2
Australasia								
Australia	12.609	15.246	18.084	98.30	0.922	1.237	1.597	96.95
New Zealand	5.459	8.266	11.591		0.606	0.756	0.923	
East and South East Asia								
Japan								
Macau SAR, China	27.028	32.384	37.980		5.787	8.000	10.526	49.03
Republic of Korea	3.391	4.317	5.347		0.822	1.319	1.928	
Singapore					1.372	1.981	2.697	
Thailand								
Eastern Europe								
Cyprus	11.174	12.214	13.294		3.655	4.627	5.706	
Czech Republic	18.195	21.039	24.030		4.514	6.125	7.960	
Hungary	22.805	25.284	27.847		2.209	3.150	4.247	
Latvia								
Lithuania								
Poland	12.075	21.868	33.577		2.792	3.561	4.419	
Slovak Republic								
Western Europe								
Austria	8.818	9.900	11.037		0.312	3.802	4.545	
Denmark	6.042	6.802	7.603		0.777	1.075	1.420	
Finland	16.624	22.695	29.399	98.97	0.967	1.460	2.050	
France	9.342	23.442	41.521		1.989	2.319	2.673	
Germany	13.274	26.411	42.147	99.86	1.830	4.199	7.476	98.90

Greece	35.194	37.327	39.485		4.839	5.837	6.922	
Greenland								
Iceland	7.110	8.745	10.531					
Ireland (Republic)								
Italy	16.787	32.210	49.947	99.82	6.069	6.670	7.296	
Netherlands					1.866	2.326	2.835	
Norway	17.615	19.189	20.813	90.72	1.058	1.546	2.123	91.74
Portugal	5.320	5.721	6.136		0.783	0.947	1.125	
Serbia								
Spain	2.221	4.201	6.772	99.21	0.641	0.797	0.969	63.43
Sweden	6.878	8.763	10.851	96.39	0.476	0.640	0.828	60.72
Switzerland								
United Kingdom	6.118	7.015	7.968	94.84	0.921	1.059	1.206	66.76
Middle East								
Israel	31.484	33.764	36.082		1.969	2.706	3.555	
Africa								
South Africa	35.046	37.331	39.644					
Latin America								
Argentina								
Brazil								
Chile	46.480	48.587	50.697		3.197	3.983	4.851	
Mexico								
North America								
Canada	6.574	10.015	14.084	99.72	0.833	2.703	5.568	99.72
United States	14.437	21.915	30.453	99.67	3.389	4.940	6.756	98.42

Note: LCI – lower 95% confidence interval; UCI – upper 95% confidence interval

Table 8.3: Pooled country-level adolescent population prevalence estimates for any gambling, any risk gambling and problematic gambling

Country	Any gambling activity				Any risk				Problematic gambling			
	LCI	Estimate	UCI	I^2	LCI	Estimate	UCI	I^2	LCI	Estimate	UCI	I^2
Australasia												
Australia	5.826	6.291	6.773		1.983	2.456	2.977		0.429	0.667	0.956	
New Zealand	23.247	24.190	25.146		3.328	3.737	4.170					
East and South East Asia												
China	9.278	10.303	11.375									
Hong Kong SAR, China	26.698	27.968	29.256		3.001	3.507	4.050		0.082	1.098	1.417	
Malaysia	27.235	29.089	30.979									
Eastern Europe												
Bulgaria	27.936	29.099	30.277									

Cyprus	30.093	31.667	33.263									
Czech Republic	18.653	22.013	25.569	95.74								
Estonia	18.263	19.349	20.460									
Georgia	15.261	16.266	17.296									
Hungary	22.024	23.174	24.343									
Kosovo	9.569	10.991	12.498									
Latvia	21.950	23.270	24.617									
Lithuania	17.475	18.544	19.638									
Republic of Moldova	5.506	6.419	7.397									
Poland	19.290	26.348	34.076		2.407	3.091	3.856		0.166	0.783	1.774	
Romania	22.728	24.763	26.855		9.092	10.047	11.044		3.218	4.038	4.946	
Slovak Republic	17.346	18.472	19.624									
Ukraine	17.326	18.380	19.457									
Western Europe												
Albania	20.694	22.288	23.923									
Austria	13.872	14.638	15.420									
Croatia	22.990	24.130	25.288									
Denmark	4.449	32.748	71.328		5.252	5.982	6.755		0.695	0.987	1.327	
Faroe Islands	20.527	23.063	25.700									
Finland	20.621	30.394	41.155	99.98	2.602	3.004	3.434					
France	24.531	25.370	26.217									
North Macedonia	27.230	28.430	29.646									
Germany	17.880	26.786	36.756	99.31	1.837	3.262	5.069	95.50	1.451	1.825	2.239	
Greece	36.557	37.544	38.537		5.633	6.678	7.802		2.018	3.835	6.174	
Iceland	17.258	18.298	19.361		1.500	2.119	2.841					
Ireland (Republic)	21.348	22.740	24.163									
Italy	32.643	38.610	44.754	99.76	2.164	5.882	11.265	99.91	2.774	3.505	4.317	96.88
Liechtenstein	13.411	17.405	21.794									
Malta	12.234	13.050	13.889									
Monaco	22.991	27.103	31.420									
Montenegro	30.983	31.915	32.854									
Netherlands	15.067	16.377	17.731		2.108	3.041	4.135					
Norway	19.658	20.816	21.998		4.889	5.868	6.930		0.068	0.244	0.515	
Portugal	21.169	22.081	23.008									
Serbia	23.578	24.993	26.435									
Slovenia	17.529	18.435	19.360									
Spain	22.445	26.844	31.484	99.58	2.400	5.140	8.832	98.42	0.653	1.184	1.863	
Sweden	15.703	20.363	25.459	98.21	4.829	5.857	6.977		0.531	0.922	1.415	
United Kingdom	13.671	23.216	34.399		4.140	4.528	4.933		1.390	1.623	1.874	
Middle East												
Israel	48.403	50.123	51.844						0.985	1.356	1.785	

Africa												
Nigeria					60.191	63.568	66.879		2.629	3.233	3.898	
North America												
Canada	18.946	21.802	24.798									
United States	25.064	34.850	45.329	99.74	26.033	27.778	29.557		9.216	10.386	11.618	

Note: LCI – lower 95% confidence interval; UCI – upper 95% confidence interval

Table 8.4: Pooled country-level adolescent conditional prevalence estimates for any gambling, any risk gambling and problematic gambling

Country	**Any risk**				**Problematic gambling**			
	LCI	Estimate	UCI	I^2	LCI	Estimate	UCI	I^2
Australasia								
Australia	44.167	48.211	52.266		8.417	12.755	17.820	
New Zealand	14.165	15.792	17.491					
East and South East Asia								
Hong Kong SAR, China	10.807	12.538	14.378		2.943	3.927	5.045	
Malaysia					9.904	12.310	14.936	
Eastern Europe								
Poland	2.565	5.213	8.676					
Romania	44.626	49.227	53.836		14.482	17.881	21.552	
Western Europe								
Denmark	6.901	8.216	9.633		0.031	0.644	1.086	
Germany	8.863	11.787	15.043	80.64	2.468	4.582	7.207	
Italy	10.673	18.080	26.926	99.80	6.569	8.535	10.732	97.59
Norway	18.954	22.388	26.019		0.261	0.933	1.959	
Spain	2.221	4.201	6.772		1.677	3.024	4.735	
United Kingdom	21.493	23.311	25.180		0.208	4.388	13.323	
North America								
United States	31.945	33.990	36.066		11.295	12.709	14.195	

Note: LCI – lower 95% confidence interval; UCI – upper 95% confidence interval

Appendix 9: Estimated gambling prevalences and numbers by sex/gender

Table 9.1: Estimated gambling prevalences for women among adult representative cohorts

	Population prevalence					
	Any gambling activity (k=84)		Any risk gambling (k=59)		Problematic gambling (k=43)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	63.5 (57.9-68.9)	6,386,500 (5,823,500-6,925,000)	6.1 (5.0-7.1)	608,500 (507,500-719,000)	0.37 (0.27-0.48)	36,500 (27,000-48,000)
Pacific Islands States and Territories	-	1,714,500 (1,429,000-1,978,000) [a]	-	273,500 (130,500-447,000) [a]	-	41,500 (19,000-73,000) [a]
Central Asia	-	10,369,500 (8,642,500-74,500) [a]	-	1,653,500 (789,000-2,704,000) [a]	-	251,000 (114,000-441,000) [a]
East and Southeast Asia	27.9 (25.8-30.0)	217,626,000 (201,717,000-234,035,500)	2.9 (0.3-3.5)	22,439,000 (2,136,000-26,985,500)	1.00 (0.45-1.76)	7,788,000 (3,535,000-13,712,500)
South Asia	-	270,603,000 (225,528,500-312,234,000)	-	43,148,000 (20,594,000-70,566,000) [a]	-	6,549,000 (2,979,500-11,512,000) [a]
Eastern Europe	31.2 (25.8-37.3)	33,440,500 (27,633,000-39,988,500)	6.4 (5.4-7.4)	6,824,500 (5,762,000-7,971,500)	1.00 (0.46-1.76)	1,077,000 (491,000-1,891,000) [b]
Western Europe	41.3 (38.4-44.1)	58,338,000 (54,331,500-62,375,000)	4.5 (3.6-5.5)	6,357,500 (5,055,000-7,819,500)	0.45 (0.15-0.92)	639,500 (210,000-1,298,500)
Middle East	-	33,848,500 (28,210,000-39,055,500) [a]	-	5,397,000 (2,576,000-8,827,000) [a]	-	819,000 (372,500-1,440,000) [a]
Africa	-	165,162,000 (137,651,000-190,571,500) [a]	-	26,335,500 (12,569,500-43,070,000) [a]	-	3,997,000 (1,818,500-7,026,000) [a]
Caribbean	-	5,994,000 (4,995,500-6,916,500) [a]	-	956,000 (456,000-1,563,000) [a]	-	145,000 (66,000-255,000) [a]
Latin America	29.4 (24.5-34.0)	61,463,500 (51,175,000-71,121,000) [b]	-	14,030,500 (6,696,500-22,946,500) [a]	-	2,129,500 (969,000-3,743,500) [a]
North America	66.8 (50.9-81.0)	80,286,000 (61,086,500-97,337,500)	10.0 (4.0-18.3)	11,974,500 (4,759,500-21,954,000)	1.54 (0.73-2.64)	1,854,000 (881,500-3,166,500)
Global	**37.4 (32.0-42.5)**	**945,233,000 (808,223,000-1,074,502,000)**	**5.5 (2.5-8.5)**	**139,998,000 (62,032,500-215,573,000)**	**1.00 (0.45-1.76)**	**25,327,500 (11,483,000-44,607,000)**

	Conditional prevalence			
	Any risk gambling (k=47)		Problematic gambling (k=35)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	12.5 (10.2-14.9)	797,500 (653,000-954,000)	0.74 (0.47-1.07)	47,500 (30,000-68,500)
Pacific Islands States and Territories	-	183,000 (160,000-211,000) [a]	-	24,000 (17,500-32,000) [a]
Central Asia	-	1,108,000 (966,500-1,275,000) [a]	-	145,000 (105,500-193,000) [a]
East and Southeast Asia	10.5 (9.1-12.1)	22,765,000 (19,835,500-26,246,500) [b]	0.40 (0.01-1.18)	874,000 (24,500-2,569,000)
South Asia	-	28,909,500 (25,226,000-33,274,000) [a]	-	3,779,500 (2,752,500-5,036,000) [a]
Eastern Europe	19.3 (16.3-22.4)	6,489,000 (5,489,500-7,551,000)	1.39 (1.00-1.88)	469,000 (337,000-632,500) [b]
Western Europe	9.3 (7.9-10.9)	5,438,500 (4,628,000-6,351,000)	0.85 (0.51-1.28)	495,500 (296,000-746,500)
Middle East	-	3,616,000 (3,155,500-4,162,000) [a]	-	473,000 (344,500-630,000) [a]
Africa	-	17,645,000 (15,397,000-20,309,000) [a]	-	2,307,000 (1,680,000-3,073,500) [a]
Caribbean	-	640,500 (559,000-737,000) [a]	-	83,500 (61,000-111,500) [a]
Latin America	12.3 (10.9-14.0)	7,586,500 (6,696,000-8,624,500) [b]	-	901,500 (650,000-1,208,000) [b]
North America	10.0 (8.9-11.5)	8,061,500 (7,124,000-9,233,000)	1.73 (1.35-2.17)	1,390,000 (1,087,000-1,740,000)
Global	**10.9 (9.5-12.6)**	**103,240,000 (89,889,500-118,928,000)**	**1.16 (0.78-1.70)**	**10,989,000 (7,385,000-16,040,500)**

Note: - No samples reported data for analysis; [a] No estimates were reported for analysis, so calculated global prevalence estimate used to calculate; [b] Region only had 1 country estimate so estimated number of individuals mainly based on calculated global prevalence estimate.

Table 9.2: Estimated gambling prevalences for men among adult representative cohorts

	Population prevalence					
	Any gambling activity (k=85)		Any risk gambling (k=59)		Problematic gambling (k=43)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	67.7 (61.1-73.7)	6,757,000 (6,107,000-7,364,500)	9.1 (7.5-10.8)	910,500 (754,000-1,080,500)	0.77 (0.55-1.02)	77,500 (55,500-102,500)
Pacific Islands States and Territories	-	1,985,500 (1,808,000-2,154,500) [a]	-	558,000 (341,000-831,500) [a]	-	90,500 (38,500-165,500) [a]
Central Asia	-	11,164,000 (10,165,500-70,500) [a]	-	3,136,500 (1,917,000-4,675,000) [a]	-	509,500 (216,500-931,500) [a]
East and Southeast Asia	55.3 (53.1-57.5)	450,789,500 (432,902,500-468,597,000)	9.1 (7.9-10.4)	74,316,000 (64,303,500-85,019,000)	2.19 (0.94-4.00)	17,111,500 (7,304,500-31,212,000)
South Asia	44.3 (41.4-47.2)	299,116,500 (279,243,500-318,697,500) [b]	-	88,297,500 (53,960,000-131,610,000) [a]	-	14,348,000 (6,097,000-26,226,000) [a]
Eastern Europe	42.6 (36.6-48.8)	43,730,500 (37,595,000-50,054,500)	14.8 (13.3-16.4)	15,894,500 (14,292,000-17,566,000)	2.13 (0.93-3.85)	2,187,000 (954,000-3,956,500) [b]
Western Europe	51.7 (48.7-54.6)	73,465,500 (69,228,000-77,685,500)	9.6 (7.9-11.5)	13,593,500 (11,159,500-16,276,500)	1.54 (0.89-2.36)	2,173,000 (1,264,500-3,336,500)
Middle East	-	43,708,500 (39,799,000-47,427,500) [a]	-	12,279,500 (7,504,500-18,303,000) [a]	-	1,995,500 (848,000-3,647,000) [a]
Africa	-	181,223,000 (165,015,000-196,644,000) [a]	-	50,913,500 (31,114,000-75,888,000) [a]	-	8,273,500 (3,515,500-15,122,000) [a]
Caribbean	-	6,580,000 (5,991,500-7,140,000) [a]	-	1,848,500 (1,129,500-2,755,500) [a]	-	300,500 (127,500-549,000) [a]
Latin America	35.6 (32.3-38.8)	72,624,500 (65,859,500-79,191,000) [b]	-	26,683,500 (16,306,500-39,772,500) [a]	-	4,336,000 (1,842,500-7,925,500) [a]
North America	69.7 (56.3-81.7)	84,449,500 (68,144,000-98,913,500)	16.7 (7.4-28.8)	20,262,500 (8,975,500-34,885,500)	2.69 (0.94-5.29)	3,259,500 (1,138,500-6,409,000)
Global	**49.1 (45.5-52.6)**	**1,275,594,000 (1,181,858,500-1,365,984,500)**	**11.9 (8.2-16.5)**	**308,694,500 (211,757,000-428,663,500)**	**2.16 (0.93-3.94)**	**54,661,500 (23,403,500-99,583,500)**

	Conditional prevalence			
	Any risk gambling (k=47)		Problematic gambling (k=35)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	17.5 (14.6-20.7)	1,185,500 (985,000-1,400,000)	1.82 (1.24-2.50)	116,000 (79,000-159,500)
Pacific Islands States and Territories	-	336,500 (303,000-373,500) [a]	-	66,500 (55,000-80,000) [a]
Central Asia	-	1,891,000 (1,704,000-2,100,500) [a]	-	375,000 (308,500-450,500) [a]
East and Southeast Asia	16.7 (15.0-18.6)	75,252,500 (67,730,500-83,683,000) [b]	3.88 (2.35-5.76)	8,434,000 (5,111,500-12,538,500)
South Asia	-	50,659,000 (45,653,500-56,277,000) [a]	-	10,048,000 (8,269,000-12,067,000) [a]
Eastern Europe	60.8 (55.0-66.6)	20,442,500 (18,510,500-22,418,000)	3.40 (2.78-4.11)	1,497,000 (1,222,500-1,810,000) [b]
Western Europe	24.6 (22.3-27.0)	14,360,500 (13,014,500-15,775,000)	3.20 (2.50-3.99)	1,869,000 (1,461,000-2,326,000)
Middle East	-	7,402,500 (6,671,000-8,223,500) [a]	-	1,468,000 (1,208,500-1,763,500) [a]
Africa	-	30,692,000 (27,660,000-34,096,000) [a]	-	6,087,500 (5,010,000-7,311,000) [a]
Caribbean	-	1,114,500 (1,004,500-1,238,000) [a]	-	221,000 (182,000-265,500) [a]
Latin America	18.4 (16.6-20.3)	24,671,500 (22,361,000-27,245,500) [b]	3.42 (2.80-4.12)	2,485,000 (2,037,000-2,993,500) [b]
North America	14.0 (12.6-15.7)	11,816,500 (10,637,500-13,240,000)	4.14 (3.55-4.80)	3,498,500 (3,002,000-4,055,500)
Global	**17.9 (16.2-19.9)**	**239,824,000 (216,234,500-266,070,500)**	**2.83 (2.19-3.59)**	**36,166,000 (27,946,000-45,820,500)**

Note: - No samples reported data for analysis; [a] No estimates were reported for analysis, so calculated global prevalence estimate used to calculate; [b] Region only had 1 country estimate so estimated number of individuals mainly based on calculated global prevalence estimate.

Table 9.3: Estimated gambling prevalences for females among adolescent representative cohorts

	Population prevalence					
	Any gambling activity (k=39)		Any risk gambling (k=12)		Problematic gambling (k=8)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	7.9 (7.2-8.6)	100,000 (92,000-109,000)	25.6 (23.1-28.1)	325,500 (294,000-357,000)	-	-
Pacific Islands States and Territories	-	189,500 (128,500-265,000) [a]	-	-	-	-
Central Asia	-	887,500 (600,500-1,240,000) [a]	-	-	-	-
East and Southeast Asia	22.0 (19.9-24.2)	21,565,000 (19,484,500-23,723,500)	-	-	-	-
South Asia	-	25,731,500 (17,409,000-35,953,000) [a]	-	-	-	-
Eastern Europe	20.1 (13.7-28.0)	2,337,500 (1,594,000-3,248,000) [b]	-	-	-	-
Western Europe	23.4 (20.0-27.6)	3,756,500 (3,211,500-4,423,000)	2.5 (1.9-3.1)	393,500 (306,000-498,000)	0.48 (0.22-0.88)	76,500 (34,500-141,000)
Middle East	-	3,461,500 (2,342,000-4,836,500) [a]	-	-	-	-
Africa	-	21,962,000 (14,858,500-30,686,000) [a]	-	-	-	-
Caribbean	-	478,000 (323,500-668,000) [a]	-	-	-	-
Latin America	-	7,045,500 (4,766,500-9,844,000) [a]	-	-	-	-
North America	20.3 (10.2-32.9)	3,364,500 (1,684,500-5,442,500)	14.2 (12.2-16.4)	201,000 (172,000-231,500)	4.87 (3.66-6.25)	68,500 (51,500-88,000)
Global	**21.0 (15.4-27.9)**	**90,879,500 (66,495,500-120,438,000)**	**No global estimate calculated**		**No global estimate calculated**	

	Conditional prevalence			
	Any risk gambling (k=11)		Problematic gambling (k=8)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	12.7 (10.6-14.9)	12,500 (10,500-15,000)	-	-
Pacific Islands States and Territories	-	-	-	-
Central Asia	-	-	-	-
East and Southeast Asia	-	-	-	-
South Asia	-	-	-	-
Eastern Europe	-	-	-	-
Western Europe	6.6 (5.1-8.4)	248,000 (190,500-314,000)	1.91 (1.18-2.91)	71,500 (44,500-109,500)
Middle East	-	-	-	-
Africa	-	-	-	-
Caribbean	-	-	-	-
Latin America	-	-	-	-
North America	19.4 (16.7-22.2)	652,500 (561,500-748,000)	6.63 (4.99-8.49)	223,000 (168,000-285,500)

Note: - No samples reported data for analysis; [a] No estimates were reported for analysis, so calculated global prevalence estimate used to calculate; [b] Region only had 1 country estimate so estimated number of individuals mainly based on calculated global prevalence estimate. – Lack of data to calculate a regional or global estimate

Table 9.4: Estimated gambling prevalences for males among adolescent representative cohorts

	Population prevalence					
	Any gambling activity (k=39)		Any risk gambling (k=12)		Problematic gambling (k=8)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	11.2 (10.3-12.1)	150,000 (137,500-162,500)	37.8 (35.0-40.5)	506,000 (469,000-542,000)	-	-
Pacific Islands States and Territories	-	407,500 (325,500-492,000)	-	-	-	-
Central Asia	-	1,842,000 (1,473,000-2,226,500)	-	-	-	-
East and Southeast Asia	39.6 (36.6-42.6)	43,407,000 (40,175,500-46,678,000)	-	-	-	-
South Asia	-	55,155,000 (44,097,500-66,658,500)	-	-	-	-
Eastern Europe	40.6 (32.7-48.8)	4,968,000 (4,002,000-5,972,500) [b]	-	-	-	-
Western Europe	46.0 (43.2-48.8)	7,796,000 (7,331,500-8,272,000)	9.3 (8.2-10.5)	1,580,000 (1,389,000-1,789,000)	4.72 (3.96-5.63)	800,000 (670,500-954,000)
Middle East	-	7,160,500 (5,725,000-8,654,000)	-	-	-	-
Africa	-	44,341,000 (35,451,000-53,589,000)	-	-	-	-
Caribbean	-	976,500 (781,000-1,180,000)	-	-	-	-
Latin America	-	14,448,000 (11,551,500-17,461,500)	-	-	-	-
North America	42.4 (29.3-56.1)	7,345,000 (5,079,000-9,709,000)	38.1 (35.5-40.7)	6,594,500 (6,154,500-7,040,500)	14.45 (12.65-16.35)	2,503,000 (2,190,000-2,832,500)
Global	**40.8 (33.9-48.0)**	**187,996,500 (156,129,500-221,055,500)**	**No global estimate calculated**		**No global estimate calculated**	

	Conditional prevalence			
	Any risk gambling (k=11)		Problematic gambling (k=8)	
	% (95% CI)	# people (95% CI)	% (95% CI)	# people (95% CI)
Australasia	29.0 (26.4-31.6)	43,500 (39,500-47,500)	-	-
Pacific Islands States and Territories	-	-	-	-
Central Asia	-	-	-	-
East and Southeast Asia	-	-	-	-
South Asia	-	-	-	-
Eastern Europe	-	-	-	-
Western Europe	27.2 (24.1-30.6)	2,124,000 (1,879,000-2,384,500)	10.95 (8.93-13.28)	854,000 (696,000-1,035,500)
Middle East	-	-	-	-
Africa	-	-	-	-
Caribbean	-	-	-	-
Latin America	-	-	-	-
North America	43.3 (40.5-46.1)	268,000 (251,000-285,500)	16.42 (14.39-18.56)	102,000 (89,000-115,000)

Note: - No samples reported data for analysis; [a] No estimates were reported for analysis, so calculated global prevalence estimate used to calculate; [b] Region only had 1 country estimate so estimated number of individuals mainly based on calculated global prevalence estimate. – Lack of data to calculate a regional or global estimat

Appendix 10: Meta-regressions of any, any risk and problematic gambling estimates

Table 10.1: Meta-regressions for estimates of any, minimum low-risk, and problematic gambling among adult samples

	Any gambling activity			**Any risk gambling**			**Problematic gambling**		
	β	SE	p	β	SE	p	β	SE	p
Population estimates									
% women	-.002	.003	.594	.001	.001	.520	<-.001	<.001	.993
Mean age	.005	.006	.407	<.001	.005	.997	<-.001	.001	.724
% with AUD	.004	.003	.310	-.001	.002	.496	<.001	<.001	.848
% with SUD	.002	.009	.825	-.009	.009	.356	.001	.001	.642
Other countries (Ref)									
Australia	**.198**	**.040**	**<.001**	.004	.019	.837	-.005	.004	.226
New Zealand	**.228**	**.094**	**.016**	-.022	.049	.645	-.007	.011	.509
UK	**.128**	**.047**	**.007**	-.038	.022	.090	-.006	.005	.279
Canada	**.170**	**.053**	**.002**	**.057**	**.026**	**.031**	.011	.006	.053
USA	**.127**	**.043**	**.004**	**.070**	**.025**	**.005**	.005	.005	.344
Year data collection started	**-.008**	**.003**	**.003**	-.001	.002	.612	<.001	<.001	.269
Risk of bias score	.011	.010	.300	-.007	.005	.198	-.001	.001	.408
Conditional estimates									
% women				**.001**	**.001**	**.564**	**-.001**	**<.001**	**.021**
Mean age				-	-	-	-	-	-
% with AUD				-.001	.001	.549	<-.001	<.001	.818
% with SUD				-	-	-	-	-	-
Other countries (Ref)									
Australia				-.049	.030	.105	-.011	.006	.093
New Zealand				-.126	.075	.098	-.017	.017	.328
UK				**-.138**	**.037**	**<.001**	-.014	.008	.076
Canada				**-.102**	**.042**	**.016**	.006	.009	.507
USA				.022	.042	.600	**.019**	**.008**	**.028**
Year data collection started				.004	.002	.094	.001	.001	.062
Risk of Bias score				**-.025**	**.008**	**.004**	<-.001	.002	.949

Table 10.2: Meta-regressions for estimates of any, any risk, and problematic gambling among adolescent samples

	Any gambling activity			**Any risk gambling**			**Problematic gambling**		
	β	SE	p	β	SE	p	β	SE	p
Population estimates									
% female	**-.022**	**.006**	**.001**	-.003	.006	.643	**-.004**	**.001**	**.005**
Mean age	.009	.029	.762	-.002	.095	.981	.004	.008	.609
Other countries (Ref)									
Australia	**-.193**	**.085**	**.025**	-.050	.107	.644	-.022	.017	.202
New Zealand	-.013	.119	.911	-.037	.106	.730	-	-	-
UK	-.019	.070	.791	-.018	0.77	.717	-.013	.010	.238
Canada	-.037	.124	.764	-	-	-	-	-	-
USA	**.098**	**.036**	**.008**	.203	.107	.068	**.075**	**.020**	**.002**

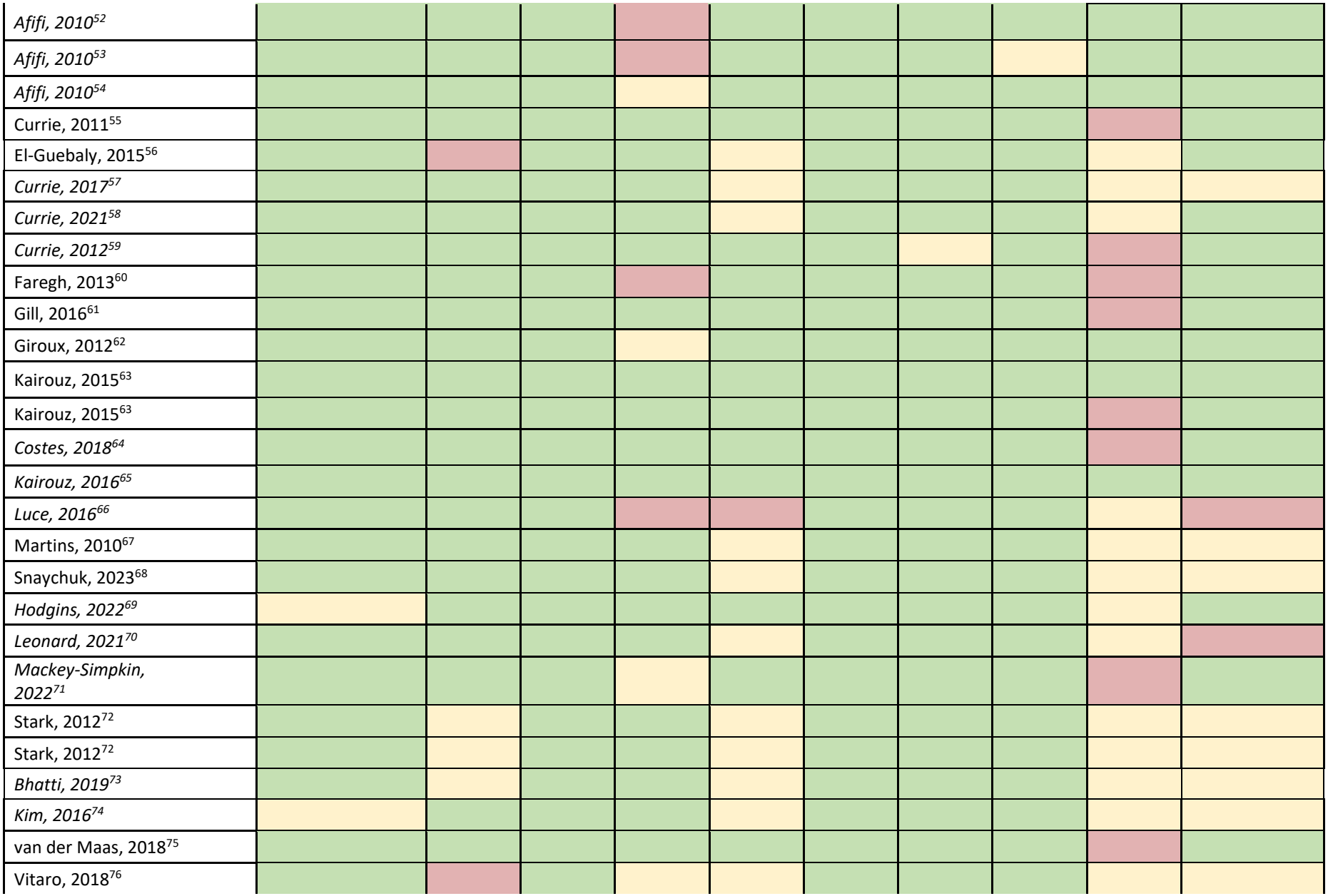
Year data collection started	**-.009**	**.003**	**.002**	.004	.005	.429	-.002	.002	.193
Risk of Bias score	-.016	.009	.064	-.005	.013	.722	<.001	.003	.933
Conditional estimates									
% female				-.003	.004	.537	<.001	.002	.907
Mean age									
Other countries (Ref)									
Australia				**.264**	**.116**	**.034**	.061	.082	.470
New Zealand				-.058	.149	.701	-	-	-
UK				-.008	.110	.945	.014	.034	.680
Canada				-	-	-	-	-	-
USA				.124	.148	.414	.060	.039	.146
Year data collection started				.002	.008	.767	**-.004**	**.002**	**.028**
Risk of Bias score				-.035	.021	.117	.007	.007	.311

Note: insufficient data to conduct meta-regressions for % with AUD or % with SUD

1 # Appendix 11: Complete risk of bias score for each included study

Author, Year	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 8a	Item 9
Representative cohorts										
Australasia										
ACIL, 2017[3]										
ACIL, 2014[4]										
The Allen Consulting Group, 2011[5]										
Christensen, 2015[6]										
Armstrong, 2017[7]										
Tajin, 2021[8]										
Billi, 2014[9]										
Billi, 2012[10]										
Browne, 2019[12]										
Browne, 2022[11]										
Davidson, 2015[15]										
Davidson, 2010[16]										
Delfabbro, 2014[13]										
Department Justice and Attorney-General, 2012[14]										
Dowling, 2016[17]										
Dowling, 2010[18]										
Freund, 2022[19]										
Freund, 2023[20]										
Freund, 2019[21]										
Hare, 2015[22]										
Haw, 2013[23]										
Hing, 2021[24]										
Hing, 2014[25]										

Gainsbury, 2014[26]										
Gainsbury, 2015[27]										
Howe, 2018[28]										
NSW Health, 2010										
Office of Regulatory Policy, 2018[30]										
O'Neil, 2021[31]										
Paterson, 2019[32]										
Purdie, 2011[33]										
Queensland Government, 2010[34]										
Rockloff, 2020[35]										
Sproston, 2012[36]										
Stevens, 2017[37]										
Stevens, 2021[38]										
The Social Research Group, 2013[39]										
Woods, 2018[40]										
Abbott, 2014[41]										
Abbott, 2014[42]										
Abbott, 2018[43]										
Abbott, 2017[44]										
Bellringer, 2020[45]										
Kruse, 2016[46]										
Rossen, 2016[47]										
Rossen, 2015[48]										
Walker, 2012[49]										
North America										
Afifi, 2019[50]										
Afifi, 2010[51]										

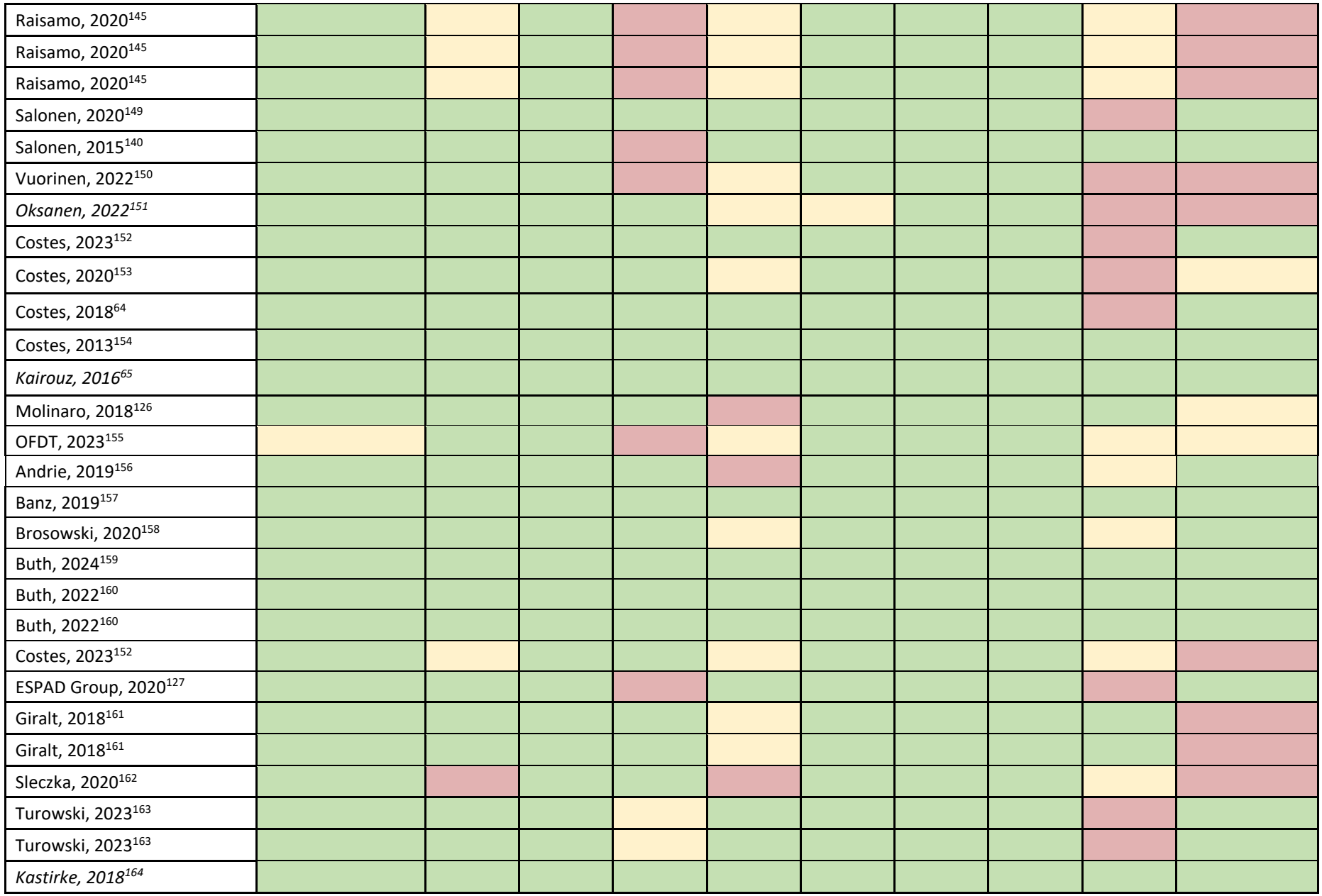

Afifi, 2010[52]
Afifi, 2010[53]
Afifi, 2010[54]
Currie, 2011[55]
El-Guebaly, 2015[56]
Currie, 2017[57]
Currie, 2021[58]
Currie, 2012[59]
Faregh, 2013[60]
Gill, 2016[61]
Giroux, 2012[62]
Kairouz, 2015[63]
Kairouz, 2015[63]
Costes, 2018[64]
Kairouz, 2016[65]
Luce, 2016[66]
Martins, 2010[67]
Snaychuk, 2023[68]
Hodgins, 2022[69]
Leonard, 2021[70]
Mackey-Simpkin, 2022[71]
Stark, 2012[72]
Stark, 2012[72]
Bhatti, 2019[73]
Kim, 2016[74]
van der Maas, 2018[75]
Vitaro, 2018[76]

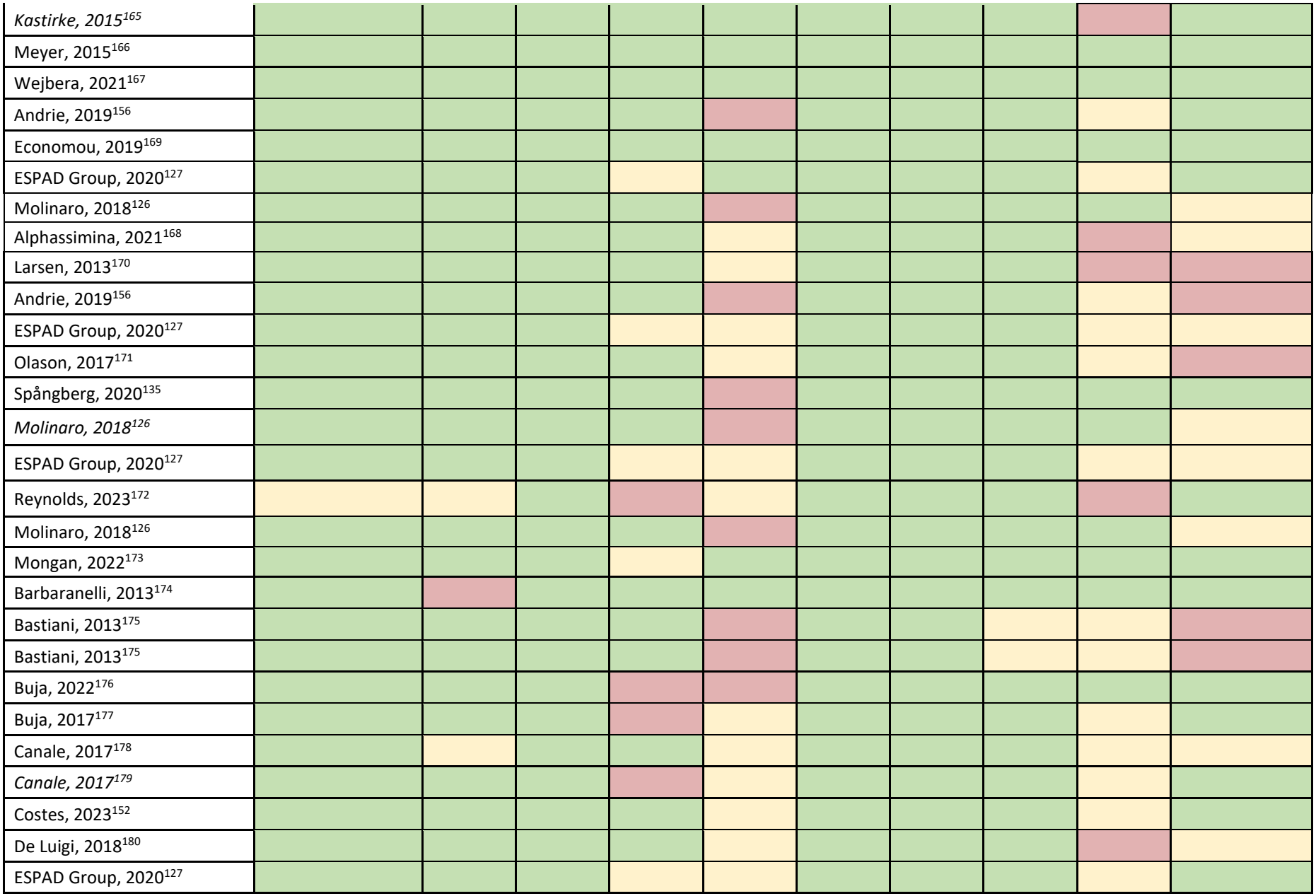
Vitaro, 2015[77]										
Williams, 2020[78]										
Williams, 2022[79]										
Williams, 2015[80]										
Currie, 2021[58]										
Currie, 2017[57]										
Leonard, 2016[81]										
Afifi, 2010[82]										
Richmond-Rakerd, 2013[83]										
Barry, 2011[84]										
Barry, 2011[85]										
Barry, 2011[85]										
Moghaddam, 2015[86]										
Nower, 2013[87]										
Parhami, 2014[88]										
Pilver, 2013[89]										
Pilver, 2013[90]										
Roberts, 2018[91]										
Barnes, 2011[92]										
Barnes, 2010[93]										
Black, 2012[94]										
Carliner, 2022[95]										
Delaware State Epidemiological Outcomes Workgroup, 2023[96]										
Delaware State Epidemiological Outcomes Workgroup, 2023[96]										
Delaware State Epidemiological Outcomes Workgroup, 2023[96]										

Department for Aging and Disability Services, 2013[97]										
Gemini Research, 2024[98]										
Grubbs, 2022[99]										
Hochul, 2020[100]										
Jun, 2023[101]										
Kim, 2012[102]										
Krebill-Prather, 2021[103]										
Massatti, 2016[104]										
Mills, 2023[105]										
Mills, 2022[106]										
Nower, 2023[107]										
Stanmyre, 2023[108]										
Nower, 2017[109]										
Park, 2019[110]										
Patterson-Silver, 2015[111]										
Welte, 2015[112]										
Petry, 2013[113]										
Petry, 2013[113]										
Ramowski, 2012										
Russell, 2023[115]										
Stefanovics, 2023[116]										
Stefanovics, 2023[116]										
Stefanovics, 2023[116]										
Stefanovics, 2023[116]										
Stefanovics, 2023[116]										
Stefanovics, 2023[116]										
Sterner, 2022[117]										

Streich, 2020[118]										
The Learning Tree Institute at Greenbush Research and Evaluation Department, 2017[119]										
Tracy, 2017[120]										
Volberg, 2023[121]										
Volberg, 2017[122]										
Welte, 2015[112]										
Welte, 2011[123]										
Yip, 2011[124]										
Kong, 2013[125]										
Stefanovics, 2023[116]										
Western Europe										
Molinaro, 2018[126]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
Strizek, 2021[128]										
Ekholm, 2014[129]										
Ekholm, 2014[129]										
Algren, 2015[130]										
Laursen, 2016[131]										
ESPAD Group, 2020[127]										
Fridberg, 2016[132]										
Fridberg, 2016[132]										
Kragelund, 2022[133]										
Kragelund, 2022[133]										
Kristiansen, 2014[134]										
Molinaro, 2018[126]										
Spångberg, 2020[135]										

Ramboll Management Consulting, 2022[136]										
Ramboll Management Consulting, 2022[136]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
Castren, 2013[137]										
ESPAD Group, 2020[127]										
Castren, 2022[138]										
Halme, 2011[139]										
Salonen, 2015[140]										
Latvala, 2023[141]										
Latvala, 2023[141]										
Latvala, 2023[141]										
Latvala, 2023[141]										
Latvala, 2023[141]										
Latvala, 2023[141]										
Latvala, 2021[142]										
Molinaro, 2018[126]										
Spångberg, 2020[135]										
Nordmyr, 2014[143]										
Nordmyr, 2016[144]										
Raisamo, 2020[145]										
Raisamo, 2015[146]										
Edgren, 2016[147]										
Raisamo, 2020[145]										
Raisamo, 2020[145]										
Raisamo, 2020[145]										
Raisamo, 2020[145]										
Raisamo, 2013[148]										




Kastirke, 2015[165]
Meyer, 2015[166]
Wejbera, 2021[167]
Andrie, 2019[156]
Economou, 2019[169]
ESPAD Group, 2020[127]
Molinaro, 2018[126]
Alphassimina, 2021[168]
Larsen, 2013[170]
Andrie, 2019[156]
ESPAD Group, 2020[127]
Olason, 2017[171]
Spångberg, 2020[135]
Molinaro, 2018[126]
ESPAD Group, 2020[127]
Reynolds, 2023[172]
Molinaro, 2018[126]
Mongan, 2022[173]
Barbaranelli, 2013[174]
Bastiani, 2013[175]
Bastiani, 2013[175]
Buja, 2022[176]
Buja, 2017[177]
Canale, 2017[178]
Canale, 2017[179]
Costes, 2023[152]
De Luigi, 2018[180]
ESPAD Group, 2020[127]

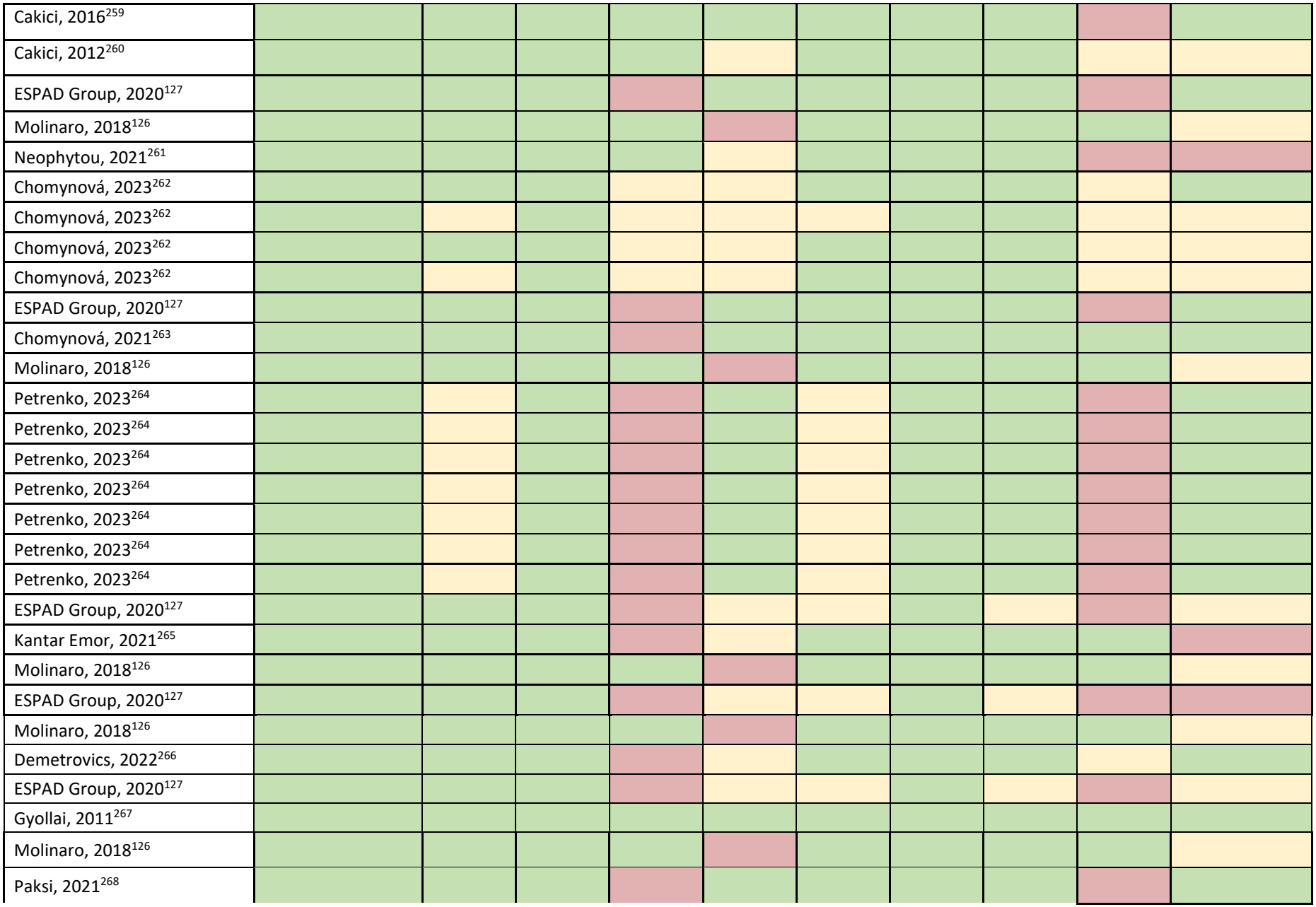
Gori, 2015[181]										
Koumantakis, 2023[182]										
Lastrucci, 2022[183]										
Lastrucci, 2022[183]										
Lastrucci, 2022[183]										
Lastrucci, 2022[183]										
Lugo, 2021[184]										
Molinaro, 2018[126]										
Pacifici, 2019[185]										
Pacifici, 2019[185]										
Molinaro, 2018[126]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
ESPAD Group, 2020[127]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
Andrie, 2019[156]										
ESPAD Group, 2020[127]										
Kruize, 2021[186]										
Molinaro, 2018[126]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
ESPAD Group, 2020[127]										
Hanss, 2015[187]										
Sagoe, 2017[188]										
Pallesen, 2016[189]										
Pallesen, 2023[190]										
Pallesen, 2021[191]										

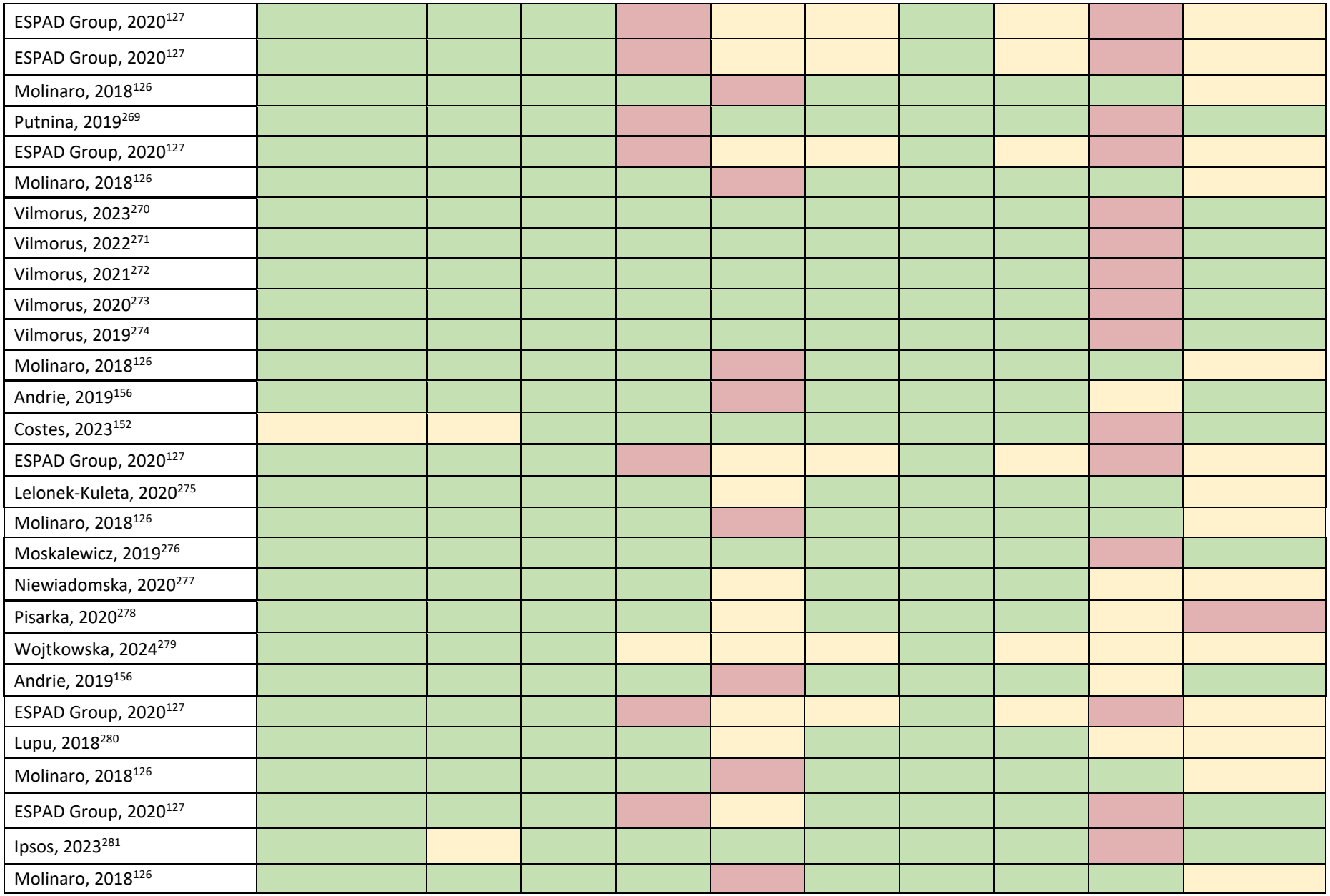
Pallesen, 2021[191]										
Pallesen, 2021[191]										
Brunborg, 2016[192]										
Molde, 2019[193]										
Pallesen, 2020[194]										
Spångberg, 2020[135]										
Molinaro, 2018[126]										
Balsa, 2023[195]										
Balsa, 2018[196]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
ESPAD Group, 2020[127]										
Kilibarda, 2018[197]										
Terzic-Supic, 2019[198]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
Andrie, 2019[156]										
Botella-Guijarro, 2020[199]										
Chóliz, 2019[200]										
ESPAD Group, 2020[127]										
Martinez-Loredo, 2023[413]										
Ministerio de Consumo, 2023[202]										
Observatorio Español de las Drogas y las Adicciones, 2022[203]										
Pérez-Albéniz, 2022[204]										
Gonzalez-Roz, 2017[201]										
Rey-Brandariz, 2021[205]										
Tristán, 2022[206]										

Tristán, 2022[206]										
Tristán, 2022[206]										
Tristán, 2022[206]										
Tristán, 2022[206]										
Moñino-García, 2022[207]										
Tristán, 2022[206]										
Tristán, 2022[206]										
Weidberg, 2018[208]										
Abbott, 2014[209]										
Svensson, 2011[210]										
Balem, 2023[211]										
Claesdotter-Knutsson, 2022[212]										
ESPAD Group, 2020[127]										
Folkhälsomyndigheten, 2022[213]										
Folkhälsomyndigheten, 2022[213]										
Public Health Authority, 2023[214]										
Public Health Authority, 2021[215]										
Sleczka, 2021[216]										
Abbott, 2014[209]										
Svensson, 2011[210]										
Froberg, 2015[217]										
Froberg, 2015[218]										
Spångberg, 2020[135]										
Molinaro, 2018[126]										
Svensson, 2023[219]										

Svensson, 2019[220]										
Svensson, 2019[220]										
Costes, 2023[152]										
Dey, 2019[221]										
Luder, 2010[222]										
Barnfield-Tubb, 2021[223]										
Carra, 2017[241]										
Conolly, 2018[224]										
Conolly, 2018[224]										
Conolly, 2017[225]										
Dighton, 2018[242]										
Dighton, 2018[242]										
LaPlante, 2011[226]										
Griffiths, 2011[227]										
Lepper, 2013[228]										
Forrest, 2012[229]										
MacGregor, 2020[230]										
Motha, 2020[231]										
Wardle, 2019[232]										
Wardle, 2014[233]										
Gambling Commission, 2016[234]										
Wardle, 2011[235]										
Canale, 2016[236]										
Gambling Commission, 2016[234]										
Orford, 2013[237]										
Wardle, 2011[238]										

Gambling Commission, 2018[239]										
John, 2019[240]										
Jacob, 2018[243]										
Rai, 2014[245]										
Jacob, 2021[244]										
Wardle, 2019[246]										
National Centre for Social Research, 2023[247]										
Population Health Team, 2019[248]										
Deakin, 2022[249]										
Gambling Commission, 2018[250]										
Karikoski, 2018[251]										
Scottish Government, 2017[252]										
Scottish Government, 2016[253]										
Scottish Government, 2015[254]										
Conolly, 2018[224]										
Wales Government, 2020[255]										
Eastern Europe										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
Baxter, 2023[256]										
Cakici, 2021[257]										
Cakici, 2019[258]										


Cakici, 2016[259]
Cakici, 2012[260]
ESPAD Group, 2020[127]
Molinaro, 2018[126]
Neophytou, 2021[261]
Chomynová, 2023[262]
Chomynová, 2023[262]
Chomynová, 2023[262]
Chomynová, 2023[262]
ESPAD Group, 2020[127]
Chomynová, 2021[263]
Molinaro, 2018[126]
Petrenko, 2023[264]
Petrenko, 2023[264]
Petrenko, 2023[264]
Petrenko, 2023[264]
Petrenko, 2023[264]
Petrenko, 2023[264]
Petrenko, 2023[264]
ESPAD Group, 2020[127]
Kantar Emor, 2021[265]
Molinaro, 2018[126]
ESPAD Group, 2020[127]
Molinaro, 2018[126]
Demetrovics, 2022[266]
ESPAD Group, 2020[127]
Gyollai, 2011[267]
Molinaro, 2018[126]
Paksi, 2021[268]


ESPAD Group, 2020[127]
ESPAD Group, 2020[127]
Molinaro, 2018[126]
Putnina, 2019[269]
ESPAD Group, 2020[127]
Molinaro, 2018[126]
Vilmorus, 2023[270]
Vilmorus, 2022[271]
Vilmorus, 2021[272]
Vilmorus, 2020[273]
Vilmorus, 2019[274]
Molinaro, 2018[126]
Andrie, 2019[156]
Costes, 2023[152]
ESPAD Group, 2020[127]
Lelonek-Kuleta, 2020[275]
Molinaro, 2018[126]
Moskalewicz, 2019[276]
Niewiadomska, 2020[277]
Pisarka, 2020[278]
Wojtkowska, 2024[279]
Andrie, 2019[156]
ESPAD Group, 2020[127]
Lupu, 2018[280]
Molinaro, 2018[126]
ESPAD Group, 2020[127]
Ipsos, 2023[281]
Molinaro, 2018[126]

ESPAD Group, 2020[127]										
Molinaro, 2018[126]										
East and Southeast Asia										
Chen, 2016[282]										
Chen, 2016[282]										
Zhu, 2021[283]										
Chen, 2016[282]										
Cheung, 2016[284]										
Cheung, 2014[285]										
Higuchi, 2017[286]										
Higuchi, 2017[286]										
Nitta, 2023[287]										
So, 2019[288]										
Chen, 2018[289]										
Chen, 2016[282]										
Tong, 2018[290]										
Wu, 2015[291]										
Wu, 2014[292]										
Sheela, 2016[293]										
Chen, 2016[282]										
Assanangkornchai, 2016[294]										
Wichaidit, 2022[295]										
National Council on Problem Gambling, 2021[296]										
National Council on Problem Gambling, 2018[297]										
National Council on Problem Gambling, 2015[298]										
Subramaniam, 2016[299]										
Subramaniam, 2015[300]										

Subramaniam, 2015[301]										
Tse, 2013[302]										
Park, 2010[303]										
Sohn, 2024[304]										
Williams, 2013[305]										
Middle East										
Gavriel-Fried, 2023[306]										
Africa										
Glozah, 2019[307]										
Kyei-Gyamfi, 2022[308]										
Okoti, 2019[309]										
Abayomi, 2016[310]										
Chinawa, 2023[311]										
Sharp, 2015[312]										
Kincaid, 2013[313]										
Anyanwu, 2023[314]										
Latin America										
Departmento of Juego Responsible, 2022[315]										
Tavares, 2010[316]										
Spritzer, 2011[317]										
Velázquez, 2018[318]										
Saldivia, 2022[319]										
Zapata, 2011[320]										
South Asia										
Bhatia, 2019[321]										
Jaisoorya, 2017[322]										

Note: Green cells denote low risk; yellow cells denote unclear or no information given; red cells denote high risk for that specific criteria of the critical appraisal tool. For a description of each item, please see Appendix 4

References

1. Degenhardt L, Peacock A, Colledge S, et al. Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: a multistage systematic review. *Lancet Glob Health* 2017; **5**(12): e1192-e207.
2. Mathers BM, Degenhardt L, Phillips B, et al. Global epidemiology of injecting drug use and HIV among people who inject drugs: a systematic review. *Lancet* 2008; **372**(9651): 1733-45.
3. ACIL Allen Consulting, Deakin University, Central Queensland University, The Social Research Centre. Fourth Social and Economic Impact Study of Gambling in Tasmania. Hobart: Tasmanian Department of Treasury and Finance, 2017.
4. ACIL Allen Consulting, The Social Research Centre, The Problem Gambling Research and Treatment Centre. Third social and economic impact study of gambling Tasmania. Melbourne, 2014.
5. The Allen Consulting Group, Problem Gambling Research and Treatment Centre, Social Research Centre. Social and Economic Impact Study of Gambling in Tasmania. Melbourne, 2011.
6. Christensen DR, Dowling NA, Jackson AC, Thomas SA. Gambling Participation and Problem Gambling Severity in a Stratified Random Survey: Findings from the Second Social and Economic Impact Study of Gambling in Tasmania. *J Gambl Stud* 2015; **31**(4): 1317-35.
7. Armstrong A, Carroll M. Gambling activity in Australia: Findings from wave 15 of the Household, Income and Labour Dynamics in Australia (HILDA) Survey. Melbourne: Australian Gambling Research Centre, Australia Institute of Family Studies, 2017.
8. Tajin R, Sakata K, Khokhar T, Jenkinson R. Gambling participation and at-risk behaviour in problem gambling among Victorian adults. Commonwealth of Australia: Australian Institute of Family Studies, 2021.
9. Billi R, Stone CA, Marden P, Yeung K. The Victorian Gambling Study: A longitudinal study of gambling and health in Victoria, 2008-2012. Victoria, Australia: Victorian Responsible Gambling Foundation, 2014.
10. Billi R, Marden P, Stone C. The Victorian Gambling Study. 2012.
11. Browne M, Russell AMT, Begg S, et al. Benchmarking gambling screens to health-state utility: the PGSI and the SGHS estimate similar levels of population gambling-harm. *BMC Public Health* 2022; **22**(1): 839.
12. Browne M, Rockloff M, Hing N, et al. NSW Gambling Survey 2019. Sydney: NSW Responsible Gambling Fund, 2019.
13. Delfabbro P, King D, Griffiths MD. From adolescent to adult gambling: an analysis of longitudinal gambling patterns in South Australia. *J Gambl Stud* 2014; **30**(3): 547-63.
14. Department of Justice and Attorney-General. Queensland Household Gambling Survey 2011-12. Queensland: Queensland Government, 2012.
15. Davidson T, Rodgers B, Taylor-Rodgers E, Suomi A, Lucas N. 2014 Survey on Gambling, Health and Wellbeing in the ACT: Centre for Gambling Research, Australian National University, 2015.
16. Davidson T, Rodgers B. 2009 Survey on the Nature and Extent of Gambling, and Problem Gambling, in the Australian Capital Territory: Centre for Gambling Research, Australian National University, 2010.
17. Dowling NA, Youssef GJ, Jackson AC, et al. National estimates of Australian gambling prevalence: f indings from a dual-frame omnibus survey. *Addiction* 2016; **111**(3): 420-35.
18. Dowling NA, Jackson AC, Thomas SA, Frydenberg E. Children at risk of developing problem gambling. The Problem Gambling Research and Treatment Centre, 2010.
19. Freund M, Noble N, Hill D, et al. The Prevalence and Correlates of Gambling in Australian Secondary School Students. *J Gambl Stud* 2022; **38**(4): 1173-94.
20. Freund M, Noble N, Hill D, et al. Exposure to other people's gambling and gambling behaviors in Australian secondary school students. *Psychol Addict Behav* 2023; **37**(3): 509-18.

21. Freund M, Noble N, Hill D, et al. The prevalence and correlates of gambling in secondary school students in Victoria, Australia 2017. Melbourne: Victorian Responsible Gambling Foundation, 2019.
22. Hare S. Study of gambling and health in Victoria. 2015.
23. Haw J, Holdsworth L, Nisbet S. Gambling and co-morbid disorders: Gambling Research Australia, 2013.
24. Hing N, Russell AMT, Browne M, et al. The second national study of interactive gambling in Australia (2019-20). Melbourne: Gambling Research Australia, 2021.
25. Hing N, Gainsbury S, Blaszczynski A, Wood R, Lubman D, Russell A. Interactive Gambling: Gambling Research Australia, 2014.
26. Gainsbury SM, Russell A, Hing N, Wood R, Lubman DI, Blaszczynski A. The prevalence and determinants of problem gambling in Australia: assessing the impact of interactive gambling and new technologies. *Psychol Addict Behav* 2014; **28**(3): 769-79.
27. Gainsbury SM, Russell A, Hing N, Wood R, Lubman D, Blaszczynski A. How the Internet is changing gambling: findings from an Australian Prevalence Survey. *J Gambl Stud* 2015; **31**(1): 1-15.
28. Howe P, Vargas-Saenz A, Hulbert C, Boldero J. Gambling and problem gambling in Victoria. Melbourne: Victorian Responsible Gambling Foundation, 2018.
29. NSW Health. Gambling Module: NSW Population Health Survey 2008-2009: Centre for Epidemiology and Research, NSW Department of Health, 2010.
30. Office of Regulatory Policy. Queensland Household Gambling Survey 2016-17. Queensland: Queensland Government, 2018.
31. O'Neil M, Whetton S, Delfabbro P, et al. Fifth Social and Economic Impact Study of Gambling in Tasmania 2021. Adelaide: South Australian Centre for Economic Studies, University of Adelaide, 2021.
32. Paterson M, Leslie P, Taylor M. 2019 ACT Gambling Survey: Centre for Gambling Research, Australian National University, 2019.
33. Purdie N, Matters G, Hillman K, Murphy M, Ozolins C, Millwood P. Gambling and young people in Australia: Gambling Research Australia, 2011.
34. Queensland Government. Queensland Household Gambling Survey 2008-09. Queensland, Aus: Queensland Government, 2010.
35. Rockloff M, Browne M, Hing N, et al. Victorian population gambling and health study 2018-2019. Melbourne: Victorian Responsible Gambling Foundation, 2020.
36. Sproston K, Hing N, Palankay C. Prevalence of gambling and problem gambling in New South Wales, 2012.
37. Stevens M. 2015 Northern Territory Gambling Prevalence and Wellbeing Survey Report. Uniprint NT, Charles Darwin University: Menzies School of Health Research, 2017.
38. Stevens M. Patterns of online gambling, problem gambling risk and harms in the Northern Territory. Darwin, NT: Menzies School of Health Research, 2021.
39. The Social Research Group. Gambling Prevalence in South Australia (2012). Adelaide, SA: Office for Problem Gambling, Department for Communities and Social Inclusion, 2013.
40. Woods A, Sproston K, Brook K, Delfabbro P, O'Neil M. Gambling prevalence in South Australia 2019.
41. Abbott M, Bellringer M, Garrett N, Mundy-McPherson S. New Zealand 2012 National Gambling Study: Gambling harm and problem gambling. Auckland: Gambling and Addictions Research Centre, Auckland University of Technology, 2014.
42. Abbott M, Bellringer M, Garrett N, Mundy-McPherson S. New Zealand 2012 National Gambling Study: Overview and Gambling Participation. Auckland, New Zealand: Gambling and Addictions Research Centre, Auckland University of Technology, 2014.
43. Abbott M, Bellringer M, Garrett N. New Zealand National Gambling Study: Wave 4 (2015). Auckland: Auckland University of Technology, Gambling and Addictions Research Centre, 2018.

44. Abbott M. Gambling and Gambling Harm in New Zealand: a 28-Year Case Study. *International Journal of Mental Health and Addiction* 2017; **15**(6): 1221-41.
45. Bellringer ME, Janicot S, Ikeda T, Lowe G, Garrett N, Abbott M. New Zealand National Gambling Sutdy: Correspondence between changes in gambling and gambling risk levels and health, quality of life, and health and social inequities. Auckland: Auckland University of Technology, Gambling and Addictions Research Centre, 2020.
46. Kruse K, White J, Walton DK, Tu D. Changes in risky gambling prevalence among a New Zealand population cohort. *International Gambling Studies* 2016; **16**(2): 328-46.
47. Rossen FV, Clark T, Denny SJ, et al. Unhealthy Gambling Amongst New Zealand Secondary School Students: An Exploration of Risk and Protective Factors. *Int J Ment Health Addict* 2016; **14**: 95-110.
48. Rossen F. Gambling and problem gambling: Results of the 2011/12 New Zealand Health Survey. Auckland, New Zealand: Centre for Addictions Research, The University of Auckland, 2015.
49. Walker SE, Abbott MW, Gray RJ. Knowledge, views and experiences of gambling and gambling-related harms in different ethnic and socio-economic groups in New Zealand. *Aust N Z J Public Health* 2012; **36**(2): 153-9.
50. Afifi TO, Sareen J, Taillieu T, Turner S, Fortier J. Life Interference Due to Gambling in Three Canadian Provinces. *J Gambl Stud* 2019; **35**(2): 671-87.
51. Afifi TO, Cox BJ, Martens PJ, Sareen J, Enns MW. Demographic and social variables associated with problem gambling among men and women in Canada. *Psychiatry Res* 2010; **178**(2): 395-400.
52. Afifi TO, Cox BJ, Martens PJ, Sareen J, Enns MW. The relationship between problem gambling and mental and physical health correlates among a nationally representative sample of Canadian women. *Canadian Journal of Public Health* 2010; **101**(2): 171-5.
53. Afifi TO, Cox BJ, Martens PJ, Sareen J, Enns MW. The relation between types and frequency of gambling activities and problem gambling among women in Canada. *The Canadian Journal of Psychiatry* 2010; **55**(1): 21-8.
54. Afifi TO, Cox BJ, Martens PJ, Sareen J, Enns MW. The relation between types and frequency of gambling activities and problem gambling among women in Canada. *Can J Psychiatry* 2010; **55**(1): 21-8.
55. Currie CL, Schopflocher DP, Wild TC. Prevalence and correlates of 12-month prescription drug misuse in Alberta. *The Canadian Journal of Psychiatry* 2011; **56**(1): 27-34.
56. El-Guebaly N, Casey DM, Currie SR, et al. The Leisure, Lifestyle, & Lifecycle Project (LLLP): A longitudinal study of gambling in Alberta, 2015.
57. Currie SR, Hodgins DC, Casey DM, et al. Deriving low-risk gambling limits from longitudinal data collected in two independent Canadian studies. *Addiction* 2017; **112**(11): 2011-20.
58. Currie SR, Hodgins DC, Williams RJ, Fiest K. Predicting future harm from gambling over a five-year period in a general population sample: a survival analysis. *BMC Psychiatry* 2021; **21**(1).
59. Currie SR, Hodgins DC, Casey DM, et al. Examining the predictive validity of low-risk gambling limits with longitudinal data. *Addiction* 2012; **107**(2): 400-6.
60. Faregh N, Derevensky J. Epidemiology of problem gambling in a Canadian community. *Community Ment Health J* 2013; **49**(2): 230-5.
61. Gill KJ, Heath LM, Derevensky J, Torrie J. The Social and Psychological Impacts of Gambling in the Cree Communities of Northern Quebec. *J Gambl Stud* 2016; **32**(2): 441-57.
62. Giroux I, Jacques C, Ladouceur R, Leclerc M, Brochu P. Prévalence des habitudes de jeu en Gaspésie et aux Îles-de-la-Madeleine en 2009. *The Canadian Journal of Psychiatry* 2012; **57**(3): 192-9.
63. Kairouz S, Paradis C, Nadeau L, Hamel D, Robillard C. Patterns and trends in gambling participation in the Quebec population between 2009 and 2012. *Can J Public Health* 2015; **106**(3): e115-20.
64. Costes JM, Kairouz S, Monson E, Eroukmanoff V. Where Lies the Harm in Lottery Gambling? A Portrait of Gambling Practices and Associated Problems. *J Gambl Stud* 2018; **34**(4): 1293-311.

65. Kairouz S, Paradis C, Nadeau L, Tovar ML, Pousset M. A cross-cultural comparison of population gambling patterns and regulatory frameworks: France and Quebec. *Journal of Public Health Policy* 2016; **37**(4): 467-82.
66. Luce C, Kairouz S, Nadeau L, Monson E. Life events and problem gambling severity: A prospective study of adult gamblers. *Psychol Addict Behav* 2016; **30**(8): 922-30.
67. Martins SS, Ghandour LA, Lee GP, Storr CL. Sociodemographic and substance use correlates of gambling behavior in the Canadian general population. *J Addict Dis* 2010; **29**(3): 338-51.
68. Snaychuk LA, Ashley AM, McGrath DS, Hodgins DC, Williams RJ, Kim HS. Demographic, gambling, and psychological characteristics of sports bettors in a stratified sample of adults who gamble regularly. *Psychol Addict Behav* 2023; **37**(8): 1089-100.
69. Hodgins DC, Williams RJ, Belanger YD, et al. Making Change: Attempts to Reduce or Stop Gambling in a General Population Sample of People Who Gamble. *Front Psychiatry* 2022; **13**: 892238.
70. Leonard CA, Williams RJ, McGrath DS. Gambling fallacies: Predicting problem gambling in a national sample. *Psychol Addict Behav* 2021; **35**(8): 939-47.
71. Mackey-Simpkin S, Williams RJ, Shaw CA, Russell GEH. Prevalence and predictors of illegal gambling in Canada. *International Gambling Studies* 2022; **23**(3): 387-402.
72. Stark S, Zahlan N, Albanese P, Tepperman L. Beyond description: Understanding gender differences in problem gambling. *J Behav Addict* 2012; **1**(3): 123-34.
73. Bhatti JA, Thiruchelvam D, Redelmeier DA. Gambling and Subsequent Road Traffic Injuries: A Longitudinal Cohort Analysis. *J Addict Med* 2019; **13**(2): 139-46.
74. Kim HS, Salmon M, Wohl MJ, Young M. A dangerous cocktail: Alcohol consumption increases suicidal ideations among problem gamblers in the general population. *Addict Behav* 2016; **55**: 50-5.
75. Van der Maas M, Mann RE, Turner NE, Matheson FI, Hamilton HA, McCready J. The prevalence of problem gambling and gambling-related behaviours among older adults in Ontario. *Journal of Gambling Issues* 2018; (39).
76. Vitaro F, Brendgen M, Girard A, Dionne G, Boivin M. Longitudinal Links Between Gambling Participation and Academic Performance in Youth: A Test of Four Models. *J Gambl Stud* 2018; **34**(3): 881-92.
77. Vitaro F, A CH, Laursen B, Brendgen M, Dionne G, Boivin M. Reciprocal Longitudinal Associations Between Adolescent Twin Gambling and Delinquency. *J Gambl Stud* 2015; **31**(4): 1449-61.
78. Williams RJ, Leonard CA, Belanger YD, et al. Gambling and Problem Gambling in Canada in 2018: Prevalence and Changes Since 2002. *Can J Psychiatry* 2020; **66**(5): 485-94.
79. Williams JN, Williams RJ, Gooding NB, Mix J. Financial speculation in Canada: prevalence, correlates and relationship to gambling. *International Gambling Studies* 2022; **23**(1): 1-14.
80. Williams RJ, Hann R, Schopflocher D, et al. Quinte Longitudinal Study of Gambling and Problem Gambling. Guelph, Ontario: Ontario Problem Gambling Research Centre, 2015.
81. Leonard CA, Williams RJ. The relationship between gambling fallacies and problem gambling. *Psychol Addict Behav* 2016; **30**(6): 694-704.
82. Afifi TO, Brownridge DA, MacMillan H, Sareen J. The relationship of gambling to intimate partner violence and child maltreatment in a nationally representative sample. *J Psychiatr Res* 2010; **44**(5): 331-7.
83. Richmond-Rakerd LS, Slutske WS, Piasecki TM. Birth cohort and sex differences in the age of gambling initiation in the United States: evidence from the National Comorbidity Survey Replication. *International Gambling Studies* 2013; **13**(3): 417-29.
84. Barry DT, Stefanovics EA, Desai RA, Potenza MN. Gambling problem severity and psychiatric disorders among Hispanic and white adults: findings from a nationally representative sample. *J Psychiatr Res* 2011; **45**(3): 404-11.
85. Barry DT, Stefanovics EA, Desai RA, Potenza MN. Differences in the associations between gambling problem severity and psychiatric disorders among black and white adults: findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *Am J Addict* 2011; **20**(1): 69-77.

86. Moghaddam JF, Yoon G, Dickerson DL, Kim SW, Westermeyer J. Suicidal ideation and suicide attempts in five groups with different severities of gambling: Findings from the National Epidemiologic Survey on Alcohol and Related Conditions. *Am J Addict* 2015; **24**(4): 292-8.
87. Nower L, Martins SS, Lin KH, Blanco C. Subtypes of disordered gamblers: results from the National Epidemiologic Survey on Alcohol and Related Conditions. *Addiction* 2013; **108**(4): 789-98.
88. Parhami I, Mojtabai R, Rosenthal RJ, Afifi TO, Fong TW. Gambling and the onset of comorbid mental disorders: a longitudinal study evaluating severity and specific symptoms. *J Psychiatr Pract* 2014; **20**(3): 207-19.
89. Pilver CE, Potenza MN. Increased incidence of cardiovascular conditions among older adults with pathological gambling features in a prospective study. *J Addict Med* 2013; **7**(6): 387-93.
90. Pilver CE, Libby DJ, Hoff RA, Potenza MN. Problem gambling severity and the incidence of Axis I psychopathology among older adults in the general population. *J Psychiatr Res* 2013; **47**(4): 534-41.
91. Roberts A, Landon J, Sharman S, Hakes J, Suomi A, Cowlishaw S. Gambling and physical intimate partner violence: Results from the national epidemiologic survey on alcohol and related conditions (NESARC). *Am J Addict* 2018; **27**(1): 7-14.
92. Barnes GM, Welte JW, Tidwell MC, Hoffman JH. Gambling on the lottery: sociodemographic correlates across the lifespan. *J Gambl Stud* 2011; **27**(4): 575-86.
93. Barnes GM, Welte JW, Hoffman JH, Tidwell MC. Comparisons of gambling and alcohol use among college students and noncollege young people in the United States. *J Am Coll Health* 2010; **58**(5): 443-52.
94. Black DW, McCormick B, Losch ME, Shaw M, Lutz G, Allen J. Prevalence of problem gambling in Iowa: Revisiting Shaffer's adaptation hypothesis. *Annals of Clinical Psychiatry* 2012; **24**(4): 279-84.
95. Carliner H, Auerbach A, Showalter E, et al. 2021 Statewide Assessment of Gambling and Problem Gambling in Illinois. Boston, MA: Health Resources in Action, 2022.
96. Delaware State Epidemiological Outcomes Workgroup. The Delaware 2023 Epidemiological Profile: Substance Use, Mental Health, and Related Issues. Newark, Delaware: Centre for Drug & Health Studies, University of Delaware, 2023.
97. Department for Aging and Disability Services. Gambling Behaviors and Attitudes among Adult Kansans: A 2012 Statewide Survey. Topeka, KS: Department for Aging and Disability Services, 2013.
98. Gemini Research. Impacts of legalized gambling in Connecticut: Connecticut Department of Mental Health and Addiction Services (DMHAS), 2024.
99. Grubbs JB, Kraus SW. Symptoms of Problem Gambling Among US Adults Who Wager on Sports. *JAMA Netw Open* 2022; **5**(10): e2239670.
100. Hochul K, Cunningham C. 2020 OASAS Problem Gambling Prevalence

Survey Summary. New York State: Office of Addiction Services and Supports, 2020.
101. Jun M, Lay M, Reynolds D, Lee J. Adult Gambling Behaviors in Indiana 2022. Bloomington, IN: Prevention Insights, 2023.
102. Kim W, Kim I, Nochajski TH. Predictors of gambling behaviors in Filipino Americans living in Honolulu or San Francisco. *J Gambl Stud* 2012; **28**(2): 297-314.
103. Krebill-Prather RL, McCall J, Miller K. Washington State Adult Problem Gambling Prevalence Study. Pullman, Wsahington: Social & Exconomic Sciences Research Centre, Washington State University, 2021.
104. Massatti RR, Starr S, Frohnapfel-Hasson S, Martt N. A Baseline Study of Past-Year Problem Gambling Prevalence Among Ohioans. *Journal of Gambling Issues* 2016; (34).
105. Mills DJ, Harwell W, Spare KE. 2022 Gambling Prevalence Study: Findings from Oklahoma and Missouri. Midwest Consortium on Problem Gambling and Substance Abuse; 2023; Kansas City, MO; 2023.
106. Mills DJ, Lee U, Lewis LE. 2022 Oklahoma Gambling Prevalence Study. Norman, Oklahoma: Oklahome Association on Problem Gambling & Gaming, 2022.

107. Nower L, Stanmyre JF, Anthony V. The prevalence of online and land-based gambling in New Jersey. New Brunswick, NJ: Center for Gambling Studies Rutgers University, 2023.
108. Stanmyre JF, Nower L, Malkin ML. Problem Gambling and Sexual Minority Individuals: Evaluating Influence of Age and Comorbid Mental Health and Substance Use Problems. *J Gambl Stud* 2023.
109. Nower L, Volberg R, Caler KR. The Prevalence of Online and Land-Based Gambling in New Jersey. New Brunswick, NJ: Authors, 2017.
110. Park KH, Losch ME, Muilenburg R, Zubrod A. Gambling Attitudes and Behaviors: A 2018 Survey of Adult Iowans. Gambling Behavior. Cedar Falls, IA: Center for Social and Behavioral Research, University of Northern Iowa, 2019.
111. Patterson Silver Wolf DA, Welte JW, Barnes GM, Tidwell MC, Spicer P. Sociocultural Influences on Gambling and Alcohol Use Among Native Americans in the United States. *J Gambl Stud* 2015; **31**(4): 1387-404.
112. Welte JW, Barnes GM, Tidwell MC, Hoffman JH, Wieczorek WF. Gambling and Problem Gambling in the United States: Changes Between 1999 and 2013. *J Gambl Stud* 2015; **31**(3): 695-715.
113. Petry NM, Blanco C, Stinchfield R, Volberg R. An empirical evaluation of proposed changes for gambling diagnosis in the DSM-5. *Addiction* 2013; **108**(3): 575-81.
114. Ramowski SK, Nystrom RJ, Rosenberg KD, Gilchrist J, Chaumeton NR. Health risks of Oregon eighth-grade participants in the "choking game": results from a population-based survey. *Pediatrics* 2012; **129**(5): 846-51.
115. Russell GEH, Sterner GE, Kaye MP, Ahlgren MB. Online gambling in Pennsylvania. *International Gambling Studies* 2023: 1-18.
116. Stefanovics EA, Gueorguieva R, Zhai ZW, Potenza MN. Gambling participation among Connecticut adolescents from 2007 to 2019: Potential risk and protective factors. *J Behav Addict* 2023; **12**(2): 490-9.
117. Sterner GEI, Russell GEH, Kaye MP, Ahlgren MB. Pennsylvania Interactive Gaming Report 2022. Abington, PA: Criminal Justice Research Center, The Pennsylvania State University Abington Campus 2022.
118. Streich F, Anton M, Bosch W. Gambling in Minnesota: A Study of Participation, Attitudes, and the Prevalence of Problem Gambling. Saint Paul, Minnesota: Wilder Research Center, 2020.
119. Learning Tree Institute. 2017 Kansas Gambling Survey: Results and Analysis. Girard, KS: Learning Tree Institute at Greenbush

Research and Evaluation Department, 2017.
120. Tracy JK, Maranda L, Scheele C. Statewide Gambling Prevalence in Maryland: 2017. Baltimore, MD: Maryland Center of Excellence on Problem Gambling, 2017.
121. Volberg R, Williams RJ, Zorn M, Evans V. Gambling and Problem Gambling in Massachusetts:

Results of a Follow-up Population Survey. Amherst, MA: School of Public Health and Health Sciences,

University of Massachusetts Amherst, 2023.
122. Volberg RA, Williams RJ, Stanek EJ, Houpt A, Zorn M, Rodriguez-Monguio R. Gambling and problem gambling in Massachusetts: Results of a baseline population survey. Amherst, MA: School of Public Health and Health Sciences, University of Massachusetts Amherst, 2017.
123. Welte JW, Barnes GM, Tidwell MC, Hoffman JH. Gambling and problem gambling across the lifespan. *J Gambl Stud* 2011; **27**(1): 49-61.
124. Yip SW, Desai RA, Steinberg MA, et al. Health/functioning characteristics, gambling behaviors, and gambling-related motivations in adolescents stratified by gambling problem severity: findings from a high school survey. *Am J Addict* 2011; **20**(6): 495-508.
125. Kong G, Tsai J, Pilver CE, et al. Differences in gambling problem severity and gambling and health/functioning characteristics among Asian-American and Caucasian high-school students. *Psychiatry Res* 2013; **210**(3): 1071-8.

126. Molinaro S, Benedetti E, Scalese M, et al. Prevalence of youth gambling and potential influence of substance use and other risk factors throughout 33 European countries: first results from the 2015 ESPAD study. *Addiction* 2018; **113**(10): 1862-73.
127. ESPAD Group. ESPAD Report 2019: Results from the European School Survey Project on Alcohol and Other Drugs. Luxembourg: EMCDDA Joint Publications, Publications Office of the European Union, 2020.
128. Strizek J, Busch M, Puhm A, Schwarz T, Uhl A. Repräsentativerhebung zu Konsum‐ und Verhaltensweisen mit Suchtpotenzial. Vienna, Austria: Gesundheit Österreich, 2021.
129. Ekholm O, Eiberg S, Davidsen M, Holst M, Larsen CV, Juel K. The prevalence of problem gambling in Denmark in 2005 and 2010: a sociodemographic and socioeconomic characterization. *J Gambl Stud* 2014; **30**(1): 1-10.
130. Algren MH, Ekholm O, Davidsen M, Larsen CV, Juel K. Health behaviour and body mass index among problem gamblers: results from a nationwide survey. *J Gambl Stud* 2015; **31**(2): 547-56.
131. Laursen B, Plauborg R, Ekholm O, Larsen CV, Juel K. Problem Gambling Associated with Violent and Criminal Behaviour: A Danish Population-Based Survey and Register Study. *J Gambl Stud* 2016; **32**(1): 25-34.
132. Fridberg T, Birkelund JF. Pengespil og spilleproblemer i Danmark 2005-2016. Copenhagen, Denmark: SFI – Det Nationale Forskningscenter for Velfærd, 2016.
133. Kragelund K, Ekholm O, Larsen CVL, Christensen AI. Prevalence and Trends in Problem Gambling in Denmark with Special Focus on Country of Origin: Results from the Danish Health and Morbidity Surveys. *J Gambl Stud* 2022; **38**(4): 1157-71.
134. Kristiansen SG, Jensen SM. Prevalence and correlates of problematic gambling among Danish adolescents. *International Journal of Social Welfare* 2014; **23**(1): 89-99.
135. Spangberg J, Svensson J. Gambling among 16-year-olds and associated covariates: A Nordic comparison. *Scand J Public Health* 2020; **50**(2): 257-68.
136. Ramboll Management Consulting. Prævalensundersøgelse af pengespil og pengespilsproblemer i Danmark 2021, 2022.
137. Castren S, Basnet S, Pankakoski M, et al. An analysis of problem gambling among the Finnish working-age population: A population survey. *BMC Public Health* 2013; **13**(519).
138. Castren S, Mustonen T, Hylkila K, Mannikko N, Kaariainen M, Raitasalo K. Risk Factors for Excessive Social Media Use Differ from Those of Gambling and Gaming in Finnish Youth. *Int J Environ Res Public Health* 2022; **19**(4).
139. Halme JT. Overseas Internet Poker and Problem Gambling in Finland 2007: A Secondary Data Analysis of a Finnish Population Survey. *Nordic Studies on Alcohol and Drugs* 2011; **28**(1): 51-64.
140. Salonen AH, Alho H, Castren S. Gambling frequency, gambling problems and concerned significant others of problem gamblers in Finland: cross-sectional population studies in 2007 and 2011. *Scand J Public Health* 2015; **43**(3): 229-35.
141. Latvala T, Lintonen T, Raisamo S. Gambling Among Underage Alcohol Users Between 2008 and 2019: A National Cross-Sectional Study Among Finnish Adolescents. *J Adolesc Health* 2023; **72**(5): 796-802.
142. Latvala TA, Lintonen TP, Browne M, Rockloff M, Salonen AH. Social disadvantage and gambling severity: a population-based study with register-linkage. *Eur J Public Health* 2021; **31**(6): 1217-23.
143. Nordmyr J, Forsman AK, Wahlbeck K, Björkqvist K, Österman K. Associations between problem gambling, socio-demographics, mental health factors and gambling type: sex differences among Finnish gamblers. *International Gambling Studies* 2014; **14**(1): 39-52.
144. Nordmyr J, Österman K. Raising the legal gambling age in Finland: problem gambling prevalence rates in different age groups among past-year gamblers pre- and post-implementation. *International Gambling Studies* 2016; **16**(3): 347-56.
145. Raisamo S, Kinnunen JM, Pere L, Lindfors P, Rimpela A. Adolescent Gambling, Gambling Expenditure and Gambling-Related Harms in Finland, 2011-2017. *J Gambl Stud* 2020; **36**(2): 597-610.

146. Raisamo SU, Makela P, Salonen AH, Lintonen TP. The extent and distribution of gambling harm in Finland as assessed by the Problem Gambling Severity Index. *Eur J Public Health* 2015; **25**(4): 716-22.
147. Edgren R, Castren S, Jokela M, Salonen AH. At-risk and problem gambling among Finnish youth: The examination of risky alcohol consumption, tobacco smoking, mental health and loneliness as gender-specific correlates. *Nordic Studies on Alcohol and Drugs* 2016; **33**: 61-79.
148. Raisamo S, Halme J, Murto A, Lintonen T. Gambling-related harms among adolescents: a population-based study. *J Gambl Stud* 2013; **29**(1): 151-9.
149. Salonen A, Hagfors H, Lind K, Kontto J. Gambling and problem gambling - Finnish Gambling 2019. Helsinki: Finnish Institute for Health and Welfare, 2020.
150. Vuorinen I, Savolainen I, Hagfors H, Oksanen A. Basic psychological needs in gambling and gaming problems. *Addictive Behaviors Reports* 2022; **16**.
151. Oksanen A, Mantere E, Vuorinen I, Savolainen I. Gambling and online trading: emerging risks of real-time stock and cryptocurrency trading platforms. *Public Health* 2022; **205**: 72-8.
152. Costes JM, Kairouz S, Fiedler I, et al. Online Gambling Practices and Related Problems in Five European Countries: Findings from the Electronic Gam(bl)ing Multinational Empirical Survey (E-GAMES) Project. *J Gambl Stud* 2023.
153. Costes JM, Richard JB, Eroukmanoff V, Le Nezet O, Philippon A. Les Francais et les jeux d'argent et de hasard: Résultats du Baromètre de Santé publique

France 2019. Paris, France: Observatoire français des drogues

et des toxicomanies, 2020.
154. Costes J-M, Kairouz S, Pousset M. Jeu problématique en France : une première enquête nationale. *Drogues, santé et société* 2013; **12**(2): 1-19.
155. Observatoire français des drogues et des tendances addictives. Tendances: Les Jeux D'Argent Et De Hasard À 17 Ans Résultats D'Escapad 2022. Paris: Observatoire français des drogues et des tendances addictives; 2023.
156. Andrie EK, Tzavara CK, Tzavela E, et al. Gambling involvement and problem gambling correlates among European adolescents: results from the European Network for Addictive Behavior study. *Soc Psychiatry Psychiatr Epidemiol* 2019; **54**(11): 1429-41.
157. Banz M. Glücksspielverhalten Und Glücksspielsucht In Deutschland: Ergebnisse des Surveys 2019 und Trends. Köln, Germany: Bundeszentrale für gesundheitliche Aufklärung, 2019.
158. Brosowski T, Turowski T, Hayer T. Simulated gambling consumption mediation model (SGCMM): disentangling convergence with parallel mediation models. *International Gambling Studies* 2020; **20**(3): 466-86.
159. Buth S, Meyer G, Rosenkranz M, Kalke J. Glücksspielteilnahme und glücksspielbezogene Probleme in der Bevölkerung: Ergebnisse des Glücksspiel-Survey 2023. Hamburg: Institut für interdisziplinäre Sucht- und Drogenforschung (ISD), 2024.
160. Buth S, Meyer G, Kalke J. Glücksspielteilnahme und glücksspielbezogene Probleme in der Bevölkerung: Ergebnisse des Glücksspiel-Survey 2021. Hamburg, Germany: Institut für interdisziplinäre Sucht- und Drogenforschung (ISD), 2022.
161. Giralt S, Muller KW, Beutel ME, Dreier M, Duven E, Wolfling K. Prevalence, risk factors, and psychosocial adjustment of problematic gambling in adolescents: Results from two representative German samples. *J Behav Addict* 2018; **7**(2): 339-47.
162. Sleczka P, Braun-Michl B, Kraus L. Gamblers' attitudes towards money and their relationship to gambling disorder among young men. *J Behav Addict* 2020; **9**(3): 744-55.
163. Turowski T, Bischof G, Brosowski T, et al. Gender and Age in Gambling Participation, Gambling Onset, and Problematic Gambling in a General Population Sample: Empirical Findings from Germany. *International Journal of Mental Health and Addiction* 2022; **21**(4): 2682-705.

164. Kastirke N, Rumpf HJ, John U, Bischof A, Meyer C. [Migration Background and Pathological Gambling: Results of a Nationwide Epidemiological Study on the Impact of Region of Origin in Germany]. *Gesundheitswesen* 2018; **80**(3): 250-8.
165. Kastirke N, Rumpf HJ, John U, Bischof A, Meyer C. Demographic Risk Factors and Gambling Preference May Not Explain the High Prevalence of Gambling Problems Among the Population with Migration Background: Results from a German Nationwide Survey. *J Gambl Stud* 2015; **31**(3): 741-57.
166. Meyer C, Bischof A, Westram A, et al. The "Pathological Gambling and Epidemiology" (PAGE) study program: design and fieldwork. *Int J Methods Psychiatr Res* 2015; **24**(1): 11-31.
167. Wejbera M, Wolfling K, Dreier M, et al. Risk factors, physical and mental health burden of male and female pathological gamblers in the German general population aged 40-80. *BMC Psychiatry* 2021; **21**(1): 123.
168. Alphassimina PP, Lazaratou H, Anagnostopoulos DK, et al. Gambling in adolescents during the financial crisis in Greece. *Psychiatriki* 2021; **32**(1): 34-42.
169. Economou M, Souliotis K, Malliori M, et al. Problem Gambling in Greece: Prevalence and Risk Factors During the Financial Crisis. *J Gambl Stud* 2019; **35**(4): 1193-210.
170. Larsen CV, Curtis T, Bjerregaard P. Gambling behavior and problem gambling reflecting social transition and traumatic childhood events among Greenland Inuit: a cross-sectional study in a large indigenous population undergoing rapid change. *J Gambl Stud* 2013; **29**(4): 733-48.
171. Olason DT, Hayer T, Meyer G, Brosowski T. Economic Recession Affects Gambling Participation But Not Problematic Gambling: Results from a Population-Based Follow-up Study. *Front Psychol* 2017; **8**: 1247.
172. Reynolds CME, Hanafin J, Sunday S, McAvoy H, Clancy L. Odds of gambling among adolescents: a secondary analysis of the cross-sectional European School Survey Project on Alcohol and Other Drugs. *Lancet* 2023; **402 Suppl 1**: S79.
173. Mongan D, Millar SR, Doyle A, Chakraborty S, Galvin B. Gambling in the Republic of Ireland: Results from the 2019-20 National Drug and Alcohol Survey. Dublin: Health Research Board, 2022.
174. Barbaranelli C, Vecchione M, Fida R, Podio-Guidugli S. Estimating the prevalence of adult problem gambling in Italy with SOGS and PGSI. *Journal of Gambling Issues* 2013; (28).
175. Bastiani L, Gori M, Colasante E, et al. Complex factors and behaviors in the gambling population of Italy. *J Gambl Stud* 2013; **29**(1): 1-13.
176. Buja A, Sperotto M, Genetti B, et al. Adolescent gambling behavior: a gender oriented prevention strategy is required? *Ital J Pediatr* 2022; **48**(1): 113.
177. Buja A, Lion C, Scioni M, et al. SOGS-RA gambling scores and substance use in adolescents. *J Behav Addict* 2017; **6**(3): 425-33.
178. Canale N, Vieno A, Billieux J, Lazzeri G, Lemma P, Santinello M. Is Medicine Use for Nervousness Associated with Adolescent At-Risk or Problem Gambling? *Eur Addict Res* 2017; **23**(4): 171-6.
179. Canale N, Vieno A, Lenzi M, et al. Income Inequality and Adolescent Gambling Severity: Findings from a Large-Scale Italian Representative Survey. *Front Psychol* 2017; **8**: 1318.
180. De Luigi N, Gibertoni D, Randon E, Scorcu AE. Patterns of Gambling Activities and Gambling Problems Among Italian High School Students: Results from a Latent Class Analysis. *J Gambl Stud* 2018; **34**(2): 339-59.
181. Gori M, Potente R, Pitino A, Scalese M, Bastiani L, Molinaro S. Relationship Between Gambling Severity and Attitudes in Adolescents: Findings from a Population-Based Study. *J Gambl Stud* 2015; **31**(3): 717-40.
182. Koumantakis E, Comoretto RI, Dalmasso P, et al. Risk Behaviors among Migrant Adolescents in Italy. *Children (Basel)* 2023; **10**(11).
183. Lastrucci V, Lazzeretti M, Innocenti F, et al. Trends in Adolescent Health Risk Behaviors and Wellbeing: A 10 Year Observation from the EDIT Surveillance of Tuscany Region, Italy. *Int J Environ Res Public Health* 2022; **19**(11).

184. Lugo A, Stival C, Paroni L, et al. The impact of COVID-19 lockdown on gambling habit: A cross-sectional study from Italy. *J Behav Addict* 2021; **10**(3): 711-21.
185. Pacifici R, Mastrobattista L, Minutillo A, Mortali C. "Gioco d'azzardo in Italia: ricerca, formazione e informazione": Risultati di un progetto integrato: Istituto Superiore di Sanità, 2019.
186. Kruize A, Snippe J, de Muijnck J. Nieuwe meting modernisering kansspelbeleid. Netherlands: Breuer&Intraval, 2021.
187. Hanss D, Mentzoni RA, Blaszczynski A, Molde H, Torsheim T, Pallesen S. Prevalence and Correlates of Problem Gambling in a Representative Sample of Norwegian 17-Year-Olds. *J Gambl Stud* 2015; **31**(3): 659-78.
188. Sagoe D, Pallesen S, Hanss D, et al. The Relationships between Mental Health Symptoms and Gambling Behavior in the Transition from Adolescence to Emerging Adulthood. *Front Psychol* 2017; **8**: 478.
189. Pallesen S, Hanss D, Molde H, Griffiths MD, Mentzoni RA. A longitudinal study of factors explaining attitude change towards gambling among adolescents. *J Behav Addict* 2016; **5**(1): 59-67.
190. Pallesen S, Mentzoni RA, Syvertsen A, Kristensen JH, Erevik EK, Morken AM. Omfang Av Penge- Og Dataspillproblemer I Norge 2022: Universitetet I Bergen, 2023.
191. Pallesen S, Mentzoni RA, Morken AM, Engebo J, Kaur P, Erevik EK. Changes Over Time and Predictors of Online Gambling in Three Norwegian Population Studies 2013-2019. *Front Psychiatry* 2021; **12**: 597615.
192. Brunborg GS, Hanss D, Mentzoni RA, Molde H, Pallesen S. Problem gambling and the five-factor model of personality: a large population-based study. *Addiction* 2016; **111**(8): 1428-35.
193. Molde H, Holmoy B, Merkesdal AG, et al. Are Video Games a Gateway to Gambling? A Longitudinal Study Based on a Representative Norwegian Sample. *J Gambl Stud* 2019; **35**(2): 545-57.
194. Pallesen S, Mentzoni RA, Torsheim T, Erevik E, Molde H, Morken AM. Omfang av penge- Og dataspillproblemer i norge 2019. Bergen: Institutt for samfunnspsykologi, Universitetet i Bergen, 2020.
195. Balsa C, Vital C, Urbano C. V Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Geral, Portugal 2022. Lisbon, Portugal: Centro Interdisciplinar de Ciências Sociais (CICS.NOVA); 2023.
196. Balsa C, Vital C, Urbano C. IV Inquérito Nacional ao Consumo de Substâncias Psicoativas na População Geral, Portugal 2016/2017. Lisbon, Portugal, 2018.
197. Kilibarda B, Nikolic N. National Survey on Lifestyles of Citizens in Serbia: Substance Abuse and Gambling 2018 (Истраживање О Стиловима Живота Становништва Србије 2018. Године): Institute for Public Health of Serbia, 2018.
198. Terzic-Supic Z, Jelic M, Santric-Milicevic M, et al. National survey on lifestyles and gambling in Serbia: gambling participation and problem gambling in adult population. *International Gambling Studies* 2018; **19**(2): 265-81.
199. Botella-Guijarro A, Lloret-Irles D, Segura-Heras JV, Cabrera-Perona V, Moriano JA. A Longitudinal Analysis of Gambling Predictors among Adolescents. *Int J Environ Res Public Health* 2020; **17**(24).
200. Chóliz M, Marcos M, Lázaro-Mateo J. The Risk of Online Gambling: a Study of Gambling Disorder Prevalence Rates in Spain. *International Journal of Mental Health and Addiction* 2019; **19**(2): 404-17.
201. Gonzalez-Roz A, Fernandez-Hermida JR, Weidberg S, Martinez-Loredo V, Secades-Villa R. Prevalence of Problem Gambling Among Adolescents: A Comparison Across Modes of Access, Gambling Activities, and Levels of Severity. *J Gambl Stud* 2017; **33**(2): 371-82.
202. Ministerio de Consumo. Estudio de prevalenicia de juego 2022-2023. Madrid: Ministerio de Derechos Sociales, Consumo y Agenda 2030, 2023.
203. Observatorio Español de las Drogas y las Adicciones. Informe sobre Trastornos Comportamentales 2022: Juego con dinero, uso de videojuegos y uso compulsivo de internet en las

encuestas de drogas y otras adicciones en España EDADES y ESTUDES. Madrid: Ministerio de Sanidad, 2022.
204. Pérez-Albéniz A, Gil M, Diez-Gomez A, Martin-Seoane G, Lucas-Molina B. Gambling in Spanish Adolescents: Prevalence and Association with Mental Health Indicators. *Int J Environ Res Public Health* 2021; **19**(1).
205. Rey-Brandariz J, Perez-Rios M, Santiago-Perez MI, Lorenzo M, Malvar A, Hervada X. Gambling characteristics in Galicia: A public health problem. *Adicciones* 2021.
206. Tristán C, Llorens N, García N, et al. Informe sobre Adicciones Comportamentales 2021: Juego con dinero, uso de videojuegos y uso compulsivo de internet en las encuestas de drogas y otras adicciones en España EDADES y ESTUDES. Madrid, Spain: Ministerio de Sanidad. Delegación del Gobierno para el Plan Nacional

sobre Drogas, 2022.
207. Monino-Garcia M, Ballesta M, Huerta JM, et al. The Adolescent Problem Gambling Prevalence Associated with Leisure-Time Activities and Risky Behaviors in Southern Spain. *Int J Ment Health Addict* 2022: 1-15.
208. Weidberg S, González-Roz A, Fernández-Hermida JR, et al. Gender differences among adolescent gamblers. *Personality and Individual Differences* 2018; **125**: 38-43.
209. Abbott MW, Romild U, Volberg RA. Gambling and problem gambling in Sweden: changes between 1998 and 2009. *J Gambl Stud* 2014; **30**(4): 985-99.
210. Svensson J, Romild U, Nordenmark M, Månsdotter A. Gendered gambling domains and changes in Sweden. *International Gambling Studies* 2011; **11**(2): 193-211.
211. Balem M, Karlsson A, Widinghoff C, Perrot B, Challet-Bouju G, Håkansson A. Gambling and COVID-19: Swedish national gambling data from a state-owned gambling sports and casino operator. *Journal of Behavioral Addictions* 2023; **12**(1): 230-41.
212. Claesdotter-Knutsson E, Andre F, Fridh M, Delfin C, Hakansson A, Lindstrom M. Gender Differences and Associated Factors Influencing Problem Gambling in Adolescents in Sweden: Cross-sectional Investigation. *JMIR Pediatr Parent* 2022; **5**(1): e35207.
213. Folkhälsomyndigheten (The Public Health Agency). Unga och spel om pengar: Resultat från en undersökning om spel om pengar bland unga 16–19 år och föräldrar 2021. Solna, Sweden: Folkhälsomyndigheten (The Public Health Agency), 2022.
214. Folkhälsomyndigheten (The Public Health Authority). Tabellsammanställning för Swelogs prevalens-undersökning 2021: Tabeller och korta sammanfattningar från Swelogs befolknings-undersökning 2021 om spel om pengar, problemspelande och hälsa. Solna, Sweden: Folkhälsomyndigheten, 2023.
215. Folkhälsomyndigheten (The Public Health Agency). Spel om pengar och spelproblem i Sverige 2008 – 2018: Resultat över tid från Swelogs longitudinella befolkningsundersökningar. Solna, Sweden: Folkhälsomyndigheten, 2021.
216. Sleczka P, Romild U. On the stability and the progression of gambling problems: longitudinal relations between different problems related to gambling. *Addiction* 2021; **116**(1): 116-25.
217. Froberg F, Rosendahl IK, Abbott M, Romild U, Tengstrom A, Hallqvist J. The Incidence of Problem Gambling in a Representative Cohort of Swedish Female and Male 16-24 Year-Olds by Socio-demographic Characteristics, in Comparison with 25-44 Year-Olds. *J Gambl Stud* 2015; **31**(3): 621-41.
218. Froberg F, Modin B, Rosendahl IK, Tengstrom A, Hallqvist J. The association between compulsory school achievement and problem gambling among Swedish young people. *J Adolesc Health* 2015; **56**(4): 420-8.
219. Svensson J. Spel om pengar bland vuxna– Omfattningen av problem bland spelare och närstående. Stockholm, : Centralförbundet för alkohol- och narkotikaupplysning, CAN, 2023.
220. Svensson J, Sundqvist K. Gambling among Swedish youth: Predictors and prevalence among 15- and 17-year-old students. *Nordisk Alkohol Nark* 2019; **36**(2): 177-89.
221. Dey M, Haug S. Glücksspiel: Verhalten und Problematik in der Schweiz im Jahr 2017. Zürich, Switzerland: Schweizer Institut für Such!- und Gesundheitsforschung, 2019.

222. Luder MT, Berchtold A, Akre C, Michaud PA, Suris JC. Do youths gamble? You bet! A Swiss population-based study. *Swiss Med Wkly* 2010; **140**: w13074.
223. Barnfield-Tubb J, Francis C. Gambling participation: activities and mode of access. In: Commission G, editor.; 2021.
224. Conolly A, Davies B, Fuller E, Heinze N, Wardle H. Gambling behaviour in Great Britain in 2016: Evidence from England, Scotland and Wales. London, UK: NatCen Social Research, 2018.
225. Conolly A, Fuller E, Jones H, Maplethorpe N, Sondaal A, Wardle H. Gambling behaviour in Great Britain in 2015: Evidence from England, Scotland and Wales. London: NatCen Social Research, 2017.
226. LaPlante DA, Nelson SE, LaBrie RA, Shaffer HJ. Disordered gambling, type of gambling and gambling involvement in the British Gambling Prevalence Survey 2007. *Eur J Public Health* 2011; **21**(4): 532-7.
227. Griffiths M, Wardle H, Orford J, Sproston K, Erens B. Internet Gambling, Health, Smoking and Alcohol Use: Findings from the 2007 British Gambling Prevalence Survey. *International Journal of Mental Health and Addiction* 2011; **9**(1): 1-11.
228. Lepper J, Haden B. Testing NLCLiP: validation of estimates of rates of non-problematic and problematic gambling in a sample of British schoolchildren. *J Gambl Stud* 2013; **29**(1): 15-27.
229. Forrest D, McHale IG. Gambling and problem gambling among young adolescents in Great Britain. *J Gambl Stud* 2012; **28**(4): 607-22.
230. MacGregor A, Elliott C, Shields J. The effect of marketing and advertising on children, young people and vulnerable people. Edinburgh, UK: ScotCen Social Research, 2020.
231. Motha H, Pye J. Young people & Gambling 2020 Technical Report: The Gambling Commission, 2020.
232. Wardle H. The Same or Different? Convergence of Skin Gambling and Other Gambling Among Children. *J Gambl Stud* 2019; **35**(4): 1109-25.
233. Wardle H, Seabury C, Ahmed H, et al. Gambling behaviour in England and Scotland: Findings from the Health Survey for England 2012 and Scottish Health Survey 2012. London, UK: NatCen Social Research, 2014.
234. Gambling Commission. Types of gambling and gambling involvement: 2007 to 2012. In: Commission G, editor.; 2016.
235. Wardle H, Moody A, Spence S, et al. British Gambling Prevalence Survey 2010. London, UK: National Centre for Social Research, 2011.
236. Canale N, Vieno A, Griffiths MD. The Extent and Distribution of Gambling-Related Harms and the Prevention Paradox in a British Population Survey. *J Behav Addict* 2016; **5**(2): 204-12.
237. Orford J, Wardle H, Griffiths M. What proportion of gambling is problem gambling? Estimates from the 2010 British Gambling Prevalence Survey. *International Gambling Studies* 2012; **13**(1): 4-18.
238. Wardle H, Moody A, Griffiths M, Orford J, Volberg R. Defining the online gambler and patterns of behaviour integration: evidence from the British Gambling Prevalence Survey 2010. *International Gambling Studies* 2011; **11**(3): 339-56.
239. Gambling Commission. Participation in gambling and rates of problem gambling - England 2016, 2018.
240. John A, Lee SC, Wardle H, McManus S, Dymond S. Exploring problem gambling, loneliness and lifetime suicidal behaviours: A cross-sectional study using the Adult Psychiatric Morbidity Survey 2009, 2019.
241. Carrà G, Crocamo C, Bebbington P. Gambling, geographical variations and deprivation: findings from the adult psychiatric morbidity survey. *International Gambling Studies* 2017; **17**(3): 459-70.
242. Dighton G, Roberts E, Hoon AE, Dymond S. Gambling problems and the impact of family in UK armed forces veterans. *J Behav Addict* 2018; **7**(2): 355-65.

243. Jacob L, Haro JM, Koyanagi A. Relationship between attention-deficit hyperactivity disorder symptoms and problem gambling: A mediation analysis of influential factors among 7,403 individuals from the UK. *J Behav Addict* 2018; **7**(3): 781-91.
244. Jacob L, Lopez-Sanchez GF, Oh H, et al. Association Between Problem Gambling and Functional Disability: A Nationally Representative Study Conducted in the United Kingdom. *J Addict Med* 2021; **16**(2): 235-41.
245. Rai D, Hall W, Bebbington P, et al. Estimated verbal IQ and the odds of problem gambling: a population-based study. *Psychol Med* 2014; **44**(8): 1739-49.
246. Wardle H, Dymond S, John A, McManus S. Problem gambling and suicidal thoughts, suicide attempts and non-suicidal self-harm in England: Evidence from the Adult Psychiatric Morbidity Survey 2007, 2019.
247. National Centre for Social Research, UCL. Health Survey for England 2021 Methods: NHS England, 2023.
248. Population Health Team. Health Survey for England 2018 Adult's Health-Related Behaviours: NHS Digital, 2019.
249. Deakin E. Chapter 9: Gambling: Scottish Government Health Directorates, 2022.
250. Gambling Commission. Participation in gambling and rates of problem gambling - Scotland 2017: Statistical report. 2018.
251. Karikoski M. Chapter 9: Gambling: Scottish Government, 2018.
252. Scottish Government. Scottish Health Survey 2016: Part 15 - Gambling. 2017.
253. Scottish Government. Scottish Health Survey 2015: Part 15 - Gambling. 2016.
254. Scottish Government. Scottish Health Survey 2014: 15. Gambling. 2015.
255. Wales Government. Welsh Problem Gambling Survey 2018 - Summary. Wales: Welsh Government, 2020.
256. Baxter CM, Young MM, Volberg R, Kokkalou C. Gambling and problem gambling in the Republic of Cyprus: Results of a 2022 national quantitative survey: Greo Evidence Insights and Insights Market Research Ltd, 2023.
257. Çakici M, Çakici E, Babayigit A, Karaaziz M. Gambling Behaviour: Prevalence, Risk Factors and Relation with Acculturation in 2007-2018 North Cyprus Adult Household Surveys. *J Gambl Stud* 2021; **37**(4): 1099-111.
258. Çakıcı M, Çakıcı E, Karaaziz M, Babayiğit A. Prevalence of gambling behavior, risk factors and relations with cultural attitudes in TRNC: 2007-2014. *Anatolian Journal of Psychiatry* 2019; (0).
259. Çakici M, Çakici E, Karaaziz M. Lifetime of Prevalence and Risk Factors of Problem and Pathologic Gambling in North Cyprus. *J Gambl Stud* 2016; **32**(1): 11-23.
260. Çakici M. The prevalence and risk factors of gambling behavior in Turkish Republic of Northern Cyprus. *Anatolian Journal of Psychiatry* 2012; **13**: 243-9.
261. Neophytou K, Theodorou M, Theodorou C, Artemi TF, Panayiotou G. Population Screening of Gambling Behavior: Playing to Escape From Problems May Be a Key Characteristic of At-Risk Players. *Front Psychiatry* 2021; **12**: 690210.
262. Chomynová P, Dvořáková Z, Grohmannová K, et al. Zpráva o hazardním hraní v České republice 2023 [Report on Gambling in the Czech Republic 2023.]. Praha: Úřad vlády České republiky, 2023.
263. Chomynová P, Mravÿík V. Národní výzkum užívání návykových látek 2020. *Zastÿeno* 2021; **7**(5): 1-20.
264. Petrenko R, Líbal M, Matějovcová D, Mertlík A. Rizikové chování dětí v Praze. Praha, Czechia: Centrum sociálních služeb Praha; 2023.
265. Kantar Emor. Contacts of the Estonian residents with gambling. Tallinn, Estonia, 2021.
266. Demetrovics Z, van den Brink W, Paksi B, Horvath Z, Maraz A. Relating Compulsivity and Impulsivity With Severity of Behavioral Addictions: A Dynamic Interpretation of Large-Scale Cross-Sectional Findings. *Front Psychiatry* 2022; **13**: 831992.

267. Gyollai A, Urbán R, Kun B, et al. [Problematic and pathologic gambling in Hungary: the Hungarian version and use of the South Oaks Gambling Screen (SOGS-HU)]. *Psychiatria Hungarica* 2011; **26**(4): 230-40.
268. Paksi B, Pillók P, Magi A, Demetrovics Z, Felvinczi K. Az Országos Lakossági Adatfelvétel az

Addiktológiai Problémákról 2019 (OLAAP)

reprezentatív lakossági felmérés módszertana [The National Survey on Addiction Problems

in Hungary 2019 (NSAPH): Methodology and

sample description]. *Neuropsychopharmacologia Hungarica* 2021; **23**(1): 184-207.
269. Putniņa A, Pokšāns A, Brants M. Pētījums Par Procesu Atkarību (Azartspēļu, Sociālo Mediju, Datorspēļu Atkarība) Izplatību Latvijas Iedzīvotāju Vidū Un To Ietekmējošiem Riska Faktoriem. Rīga: Veselības Ministrija, 2020.
270. Vilmorus. Azartiniai lošimai ir loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos; 2023.
271. Vilmorus. Azartiniai lošimai ir loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos; 2022.
272. Vilmorus. Azartiniai Lošimai Ir Loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos; 2021.
273. Vilmorus. Azartiniai lošimai ir loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos; 2020.
274. Vilmorus. Azartiniai Lošimai Ir Loterija. Vilnius, Lithuania: Lošimų priežiūros tarnyba prie Lietuvos Respublikos finansų ministerijos; 2019.
275. Lelonek-Kuleta B, Bartczuk RP, Wiechetek M, Chwaszcz J, Niewiadomska I. The Prevalence of E-Gambling and of Problem E-Gambling in Poland. *Int J Environ Res Public Health* 2020; **17**(2).
276. Moskalewicz J, Badora B, Feliksiak M, et al. Oszacowanie Rozpowszechnienia Oraz Identyfikacja Czynników Ryzyka I Czynników Chroniących Hazardu I Innych Uzależnień Behawioralnych – Edycja 2018/2019. Warsaw, Poland: Ministerstwo Zdrowia, 2019.
277. Niewiadomska I, Panasiuk L, Chwaszcz J, et al. Prevalence and selected determinants of the risk of problem gambling among Polish secondary school students. *Ann Agric Environ Med* 2020; **27**(4): 650-6.
278. Pisarska A, Ostaszewski K. Factors associated with youth gambling: longitudinal study among high school students. *Public Health* 2020; **184**: 33-40.
279. Wojtkowska A, Hewiak E, Gąsiorowska A. Nadużywanie mediów elektronicznych przez dzieci i młodzież: badanie rozpowszechnienia problemu, jego determinantów i nowej interwencji profilaktycznej redukującej skalę problemu. Szczecin, Skierniewice, Poland: Fundacja Badań Społecznych, 2024.
280. Lupu V, Lupu IR. Romanian National Prevalence Study - problem and pathological gambling in children and adolescents. *Clujul Med* 2018; **91**(4): 435-40.
281. Ipsos. Výsledky prieskumu agentúry. Bratislava: Úrad pre reguláciu hazardných hier, 2023.
282. Chen X, Lau M, Kan MY, et al. Lifestyle and Addictive Behaviors Among Chinese Adolescents in Hong Kong, Macau, Taipei, Wuhan, and Zhuhai-a First Cross-subculture Assessment. *Int J Behav Med* 2016; **23**(5): 561-70.
283. Zhu Y, Li W, O'Brien JE, Liu T. Parent–Child Attachment Moderates the Associations Between Cyberbullying Victimization and Adolescents' Health/Mental Health Problems: An Exploration of Cyberbullying Victimization Among Chinese Adolescents. *Journal of Interpersonal Violence* 2019; **36**(17-18): NP9272-NP98.
284. Cheung NWT. Social Strain, Self-Control, and Juvenile Gambling Pathology. *Youth & Society* 2016; **48**(1): 77-100.
285. Cheung NW. Low self-control and co-occurrence of gambling with substance use and delinquency among Chinese adolescents. *J Gambl Stud* 2014; **30**(1): 105-24.

286. Higuchi S, Matsushita Y. Epidemiological survey on gambling addiction in Japan (Interim summary of national survey results), 2017.
287. Nitta C, Toyama T, Matsushita S. The prevalence of pathological gambling and gambling-related problems: Data from the latest national survey of the general Japanese population. *Journal of Behavioral Addictions* 2023; **12**: 214-5.
288. So R, Matsushita S, Kishimoto S, Furukawa TA. Development and validation of the Japanese version of the problem gambling severity index. *Addict Behav* 2019; **98**: 105987.
289. Chen JH, Tong KK, Wu AMS, Lau JTF, Zhang MX. The Comorbidity of Gambling Disorder among Macao Adult Residents and the Moderating Role of Resilience and Life Purpose. *Int J Environ Res Public Health* 2018; **15**(12).
290. Tong KK, Hung EPW, Lei CMW, Wu AMS. Public Awareness and Practice of Responsible Gambling in Macao. *J Gambl Stud* 2018; **34**(4): 1261-80.
291. Wu AM, Lai MH, Tong KK. Internet Gambling Among Community Adults and University Students in Macao. *J Gambl Stud* 2015; **31**(3): 643-57.
292. Wu AM, Lai MH, Tong KK. Gambling disorder: estimated prevalence rates and risk factors in Macao. *Psychol Addict Behav* 2014; **28**(4): 1190-7.
293. Sheela PS, Choo WY, Goh LY, Tan CP. Gambling Risk Amongst Adolescents: Evidence from a School-Based Survey in the Malaysian Setting. *J Gambl Stud* 2016; **32**(2): 643-59.
294. Assanangkornchai S, McNeil EB, Tantirangsee N, Kittirattanapaiboon P, Thai National Mental Health Survey T. Gambling disorders, gambling type preferences, and psychiatric comorbidity among the Thai general population: Results of the 2013 National Mental Health Survey. *J Behav Addict* 2016; **5**(3): 410-8.
295. Wichaidit W, Prommanee C, Choocham S, Chotipanvithayakul R, Assanangkornchai S. Modification of the association between experience of economic distress during the COVID-19 pandemic and behavioral health outcomes by availability of emergency cash reserves: findings from a nationally-representative survey in Thailand. *PeerJ* 2022; **10**: e13307.
296. National Council on Problem Gambling. Report On Survey On Participation In Gambling Activities Among Singapore Residents, 2020. Singapore: National Council on Problem Gambling, 2021.
297. National Council on Problem Gambling. Report On Survey On Participation In Gambling Activities Among Singapore Residents, 2017. Singapore: National Council on Problem Gambling, 2018.
298. National Council on Problem Gambling. Report Of Survey On Participation In Gambling Activities Among Singapore Residents, 2014. Singapore: National Council on Problem Gambling, 2015.
299. Subramaniam M, Tang B, Abdin E, Vaingankar JA, Picco L, Chong SA. Sociodemographic Correlates and Morbidity in Lottery Gamblers: Results from a Population Survey. *J Gambl Stud* 2016; **32**(1): 291-305.
300. Subramaniam M, Abdin E, Vaingankar JA, Wong KE, Chong SA. Comorbid physical and mental illnesses among pathological gamblers: Results from a population based study in Singapore. *Psychiatry Res* 2015; **227**(2-3): 198-205.
301. Subramaniam M, Abdin E, Shahwan S, et al. Culture and age influences upon gambling and problem gambling. *Addict Behav Rep* 2015; **1**: 57-63.
302. Tse S, Hong SI, Ng KL. Estimating the prevalence of problem gambling among older adults in Singapore. *Psychiatry Res* 2013; **210**(2): 607-11.
303. Park S, Cho MJ, Jeon HJ, et al. Prevalence, clinical correlations, comorbidities, and suicidal tendencies in pathological Korean gamblers: results from the Korean Epidemiologic Catchment Area Study. *Soc Psychiatry Psychiatr Epidemiol* 2010; **45**(6): 621-9.
304. Sohn YS, Son H. Online Gambling Patterns and Predictors of Problem Gambling Among Korean Adolescents During the COVID-19 Pandemic: A Cross-sectional Study. *Asian Nurs Res (Korean Soc Nurs Sci)* 2024; **18**(1): 20-7.

305. Williams RJ, Lee CK, Back KJ. The prevalence and nature of gambling and problem gambling in South Korea. *Soc Psychiatry Psychiatr Epidemiol* 2013; **48**(5): 821-34.
306. Gavriel-Fried B, Loewenthal A, Vana N. Problem gambling severity in a nationally representative sample of the Israeli population: the moderating role of ethnonational affiliation. *Front Public Health* 2023; **11**: 1233301.
307. Glozah FN, Tolchard B, Pevalin DJ. Participation and attitudes towards gambling in Ghanaian youth: an exploratory analysis of risk and protective factors. *Int J Adolesc Med Health* 2019; **33**(4).
308. Kyei-Gyamfi S, Coffie D, Abiaw MO, Hayford P, Martey JO, Kyei-Arthur F. Prevalence, predictors and consequences of gambling on Children in Ghana. *BMC Public Health* 2022; **22**(1): 2248.
309. Okoti D, Ogula PA, Munyua JK. Motivators of students' involvement in sports betting in public secondary schools in Mumias East Sub-County, Kenya. *African Journal of Educational and Social Science Research* 2019; **7**(2): 73-80.
310. Abayomi O, Adebayo KO, Adelufosi AO, et al. Risky substance use among patrons of gambling venues in Ogbomoso, Oyo State, Nigeria. *International Journal of Research in Applied, Natural and Social Sciences* 2016; **4**(1): 45-52.
311. Chinawa AT, Ossai EN, Odinka PC, et al. Problem gambling among secondary school adolescents in Enugu, Nigeria. *Afr Health Sci* 2023; **23**(3): 748-57.
312. Sharp C, Dellis A, Hofmeyr A, Kincaid H, Ross D. First Evidence of Comorbidity of Problem Gambling and Other Psychiatric Problems in a Representative Urban Sample of South Africa. *J Gambl Stud* 2015; **31**(3): 679-94.
313. Kincaid H, Daniels R, Dellis A, et al. A taxometric analysis of problem gambling data from a South African national urban sample. *J Gambl Stud* 2013; **29**(3): 377-92.
314. Anyanwu MU, Demetrovics Z, Griffiths MD, et al. Problem Gambling Among Adolescents in Uganda: A Cross-sectional Survey Study. *J Gambl Stud* 2023; **39**(2): 971-85.
315. Departmento Juego Responsable. Estudio De Prevalencia De Tipo De Jugadores En La Población General Mayor De 18 Años, Residentes En La Provincia De Entre Ríos. Análisis De Los Datos Realizados Por El Departamento Juego Responsable. Argentina: Departmento Juego Responsable; 2022.
316. Tavares H, Carneiro E, Sanches M, et al. Gambling in Brazil: lifetime prevalences and socio-demographic correlates. *Psychiatry Res* 2010; **180**(1): 35-41.
317. Spritzer DT, Rohde LA, Benzano DB, et al. Prevalence and correlates of gambling problems among a nationally representative sample of Brazilian adolescents. *J Gambl Stud* 2011; **27**(4): 649-61.
318. Velázquez JAV, Escobar ER, Gamiño MNB, et al. Magnitude and extent of gambling disorder in the Mexican population. *Salud mental* 2018; **41**(4): 157-67.
319. Saldivia S, Cova F, Melipillán R, López A. Estudio de prevalencia y caracterización de la conducta de juego. Concepción, Chile: Universidad de Concepción, 2022.
320. Zapata MA, Torres de G Y, Montoya LP. Riesgo de Juego Patológico. Factores y trastornos mentales asociados en jóvenes de Medellín - Colombia. *Adicciones* 2011; **23**(1): 17-25.
321. Bhatia U, Bhat B, George S, Nadkarni A. The prevalence, patterns, and correlates of gambling behaviours in men: An exploratory study from Goa, India. *Asian J Psychiatr* 2019; **43**: 143-9.
322. Jaisoorya TS, Beena KV, Beena M, et al. Do High School Students in India Gamble? A Study of Problem Gambling and Its Correlates. *J Gambl Stud* 2017; **33**(2): 449-60.
323. Abdollahnejad MR, Delfabbro P, Denson L. The clustering of psychiatric disorders in high-risk gambling populations. *J Gambl Stud* 2014; **30**(4): 933-47.
324. Blaszczynski A, Anjoul F, Shannon K, Keen B, Pickering D, Wieczorek M. Gambling Harm Minimisation Report. Sydney: The University of Sydney Gambling Treatment Clinic, The University of Sydney, 2015.
325. Browne M, Rockloff MJ. Prevalence of gambling-related harm provides evidence for the prevention paradox. *J Behav Addict* 2018; **7**(2): 410-22.

326. Chiu J, Storm L. Personality, perceived luck and gambling attitudes as predictors of gambling involvement. *J Gambl Stud* 2010; **26**(2): 205-27.
327. Cowlishaw S, Little J, Sbisa A, et al. Prevalence and implications of gambling problems among firefighters. *Addict Behav* 2020; **105**: 106326.
328. Delfabbro P, Thomas A, Armstrong A. Observable indicators and behaviors for the identification of problem gamblers in venue environments. *J Behav Addict* 2016; **5**(3): 419-28.
329. Flack M, Morris M. The Temporal Stability and Predictive Ability of the Gambling Outcome Expectancies Scale (GOES): A Prospective Study. *J Gambl Stud* 2016; **32**(3): 923-33.
330. Gainsbury SM, Russell A, Blaszczynski A, Hing N. Greater involvement and diversity of Internet gambling as a risk factor for problem gambling. *Eur J Public Health* 2015; **25**(4): 723-8.
331. Greer N, Rockloff M, Russell AMT. Gambling and video games: Are esports betting and skin gambling associated with greater gambling involvement and harms? Melbourne: Victorian Responsible Gambling Foundation, 2020.
332. Hing N, Nuske E, Gainsbury S. Gamblers at-risk and their help-seeking behaviour. Lismore: Centre for Gambling Education & Research, Southern Cross University, 2011.
333. Jenkinson R, de Lacey-Vawdon C, Carroll M. Weighing up the odds: Young men, sports and betting. Melbourne: Victorian Responsible Gambling Foundation, 2018.
334. Jenkinson R, Sakata K, Khokhar T, Tajin R, Jatkar U. Gambling in Australia during COVID-19: Research Summary. Commonwealth of Australia: Australian Institute of Family Studies, 2020.
335. van Dyke N, Jenner D, Maddern C. The role of loyalty programs in gambling: Gambling Research Australia, 2016.
336. Zheng WY, Walker M, Blaszczynski A. Mahjong gambling in the Chinese-Australian community in Sydney: a prevalence study. *J Gambl Stud* 2010; **26**(3): 441-54.
337. Zheng WY, Walker M, Blaszczynski A. Mahjong and Problem Gambling in Sydney: An Exploratory Study with Chinese Australians. *Journal of Gambling Issues* 2011; (25).
338. Thomas A, Moore S, Kale S, et al. International student gambling: The role of acculturation, gambling cognitions and social circumstances. Gambling Research Australia, 2011.
339. Akiyama K, Shinohara K, Sakamoto A, et al. Risk of gambling disorder based on participation level for the Japanese gambling games of pachinko and pachislot: a preliminary study. *International Gambling Studies* 2019; **19**(1): 125-47.
340. Back KJ, Williams RJ, Lee CK. Reliability and Validity of Three Instruments (DSM-IV, CPGI, and PPGM) in the Assessment of Problem Gambling in South Korea. *J Gambl Stud* 2015; **31**(3): 775-86.
341. Ino H, Iyama A, Takahashi A. Online Survey of Gambling Participation and Problem Gambling in Chiba City: Problem Gambling Rates May be Strongly Influenced by the Administration Mode. *J Gambl Stud* 2020; **36**(3): 957-78.
342. National Council on Problem Gambling. Report of survey on participation in gambling activities among Singapore residents, 2011, 2012.
343. Wong ILK, So EMT, Chu CH. Gambling Behavior Among Hong Kong College and University Students. *International Journal of Mental Health and Addiction* 2021; **20**(4): 2265-76.
344. Challet-Bouju G, Hardouin JB, Thiabaud E, et al. Modeling Early Gambling Behavior Using Indicators from Online Lottery Gambling Tracking Data: Longitudinal Analysis. *J Med Internet Res* 2020; **22**(8): e17675.
345. Costes JM, Kairouz S, Eroukmanoff V, Monson E. Gambling Patterns and Problems of Gamblers on Licensed and Unlicensed Sites in France. *J Gambl Stud* 2016; **32**(1): 79-91.
346. Cutter R. A longitudinal study mapping changes in explicit and implicit measures of gambling behaviour. Newcastle: University of Northumbria; 2016.
347. Deleuze J, Rochat L, Romo L, et al. Prevalence and characteristics of addictive behaviors in a community sample: A latent class analysis. *Addict Behav Rep* 2015; **1**: 49-56.
348. Dezutter M, Guillou-Landreat M, Dewitte JD, et al. Prevalence of problem gambling in an employed population in Brittany, France. *Industrial Health* 2020; **58**: 78-87.

349. Diaz A, Perez L. Online Gambling-Related Harm: Findings from the Study on the Prevalence, Behavior and Characteristics of Gamblers in Spain. *J Gambl Stud* 2020; **37**(2): 599-607.
350. Emond A, Griffiths MD, Hollen L. A longitudinal study of gambling in late adolescence and early adulthood: Follow-up assessment at 24 years, 2019.
351. Grall-Bronnec M, Caillon J, Humeau E, et al. Gambling among European professional athletes. Prevalence and associated factors. *J Addict Dis* 2016; **35**(4): 278-90.
352. Guillou Landreat M, Chereau Boudet I, Perrot B, et al. Problem and non-problem gamblers: a cross-sectional clustering study by gambling characteristics. *BMJ Open* 2020; **10**(2): e030424.
353. Gunstone B, Gosschalk K. Gambling Treatment and Support. London, UK: YouGov, 2020.
354. Gunstone B, Gosschalk K, Joyner O, Diaconu A. Annual GB treatment and support survey 2020. London, UK: YouGov, 2020.
355. Hakansson A, Kostevski A, Ekblad S. Gambling habits, gambling norms, and problem gambling in foreign born and native populations in Denmark - A general population survey. *Addict Behav Rep* 2019; **9**: 100183.
356. Kristiansen S, Reith G, Trabjerg CM. 'The notorious gambling class': patterns of gambling among young people in Denmark. *Journal of Youth Studies* 2017; **20**(3): 366-81.
357. Labrador FJ, Vallejo-Achon M. Prevalence and Characteristics of Sports Betting in a Population of Young Students in Madrid. *J Gambl Stud* 2020; **36**(1): 297-318.
358. Lischer S, Steffen A, Schwarz J, Mathys J. The Influence of Lockdown on the Gambling Pattern of Swiss Casinos Players. *Int J Environ Res Public Health* 2021; **18**(4).
359. May-Chahal C, Humphreys L, Clifton A, Francis B, Reith G. Gambling Harm and Crime Careers. *J Gambl Stud* 2017; **33**(1): 65-84.
360. Orlowski S, Tietjen E, Bischof A, et al. The association of cognitive distortions and the type of gambling in problematic and disordered gambling. *Addict Behav* 2020; **108**: 106445.
361. Pattinson J. British Older Adult Gambling Behaviour; Evaluating Psychological and Physical Health as Predictive Risk for Problem Gambling: University of Lincoln; 2016.
362. Pavarin RM, Zenesini C, Fioritti A. Estimate of the prevalence of subjects with gambling-related problems requiring treatment: a study in Northern Italy. *Ann Ist Super Sanita* 2017; **53**(4): 322-9.
363. Responsible Gambling Council. Remote Gambling Research, 2017.
364. Rutczynska I, Petit A, Germain C, Lejoyeux M. Caractéristiques cliniques de joueurs d'argent en ligne parmi une population d'étudiants en France. *Alcoologie et Addictologie* 2012; **34**(3): 205-11.
365. Sassen M, Kraus L, Bühringer G, Pabst A, Piontek D, Taqi Z. Gambling Among Adults in Germany: Prevalence, Disorder and Risk Factors. *Sucht* 2011; **57**(4): 249-57.
366. Studer J, Baggio S, Mohler-Kuo M, Simon O, Daeppen JB, Gmel G. Latent Class Analysis of Gambling Activities in a Sample of Young Swiss Men: Association with Gambling Problems, Substance Use Outcomes, Personality Traits and Coping Strategies. *J Gambl Stud* 2016; **32**(2): 421-40.
367. Tozzi L, Akre C, Fleury-Schubert A, Suris JC. Gambling among youths in Switzerland and its association with other addictive behaviours. A population-based study. *Swiss Med Wkly* 2013; **143**: w13768.
368. Versini A, LeGauffre C, Romo L, Ades J, Gorwood P. Frequency of gambling problems among parents of pathological, versus nonpathological, casino gamblers using slot machines. *Am J Addict* 2012; **21**(1): 86-95.
369. Wardle H, Fuller E, Maplethorpe N, Jones H. Follow-up study of loyalty card customers: Changes in gambling behaviour over time. London, UK: NatCen Social Research, 2017.
370. Wardle H, Welch G, Bollen A, Kennedy J, Gariban S. Problem gambling in licensed bingo premises. London, UK: Responsible Gambling Trust, 2016.
371. Gisle L, Drieskens S. Pratique des Jeux de Hasard et D'Argent: Enquête de Santé 2018. Bruxelles, Belgique: Sciensano, 2019.

372. Davis JM. Routes in and out of problem internet gambling by gender and by gambling activity: A mixed-method study based on personal accounts of internet gamblers: University of Greenwich; 2014.
373. Harrison GW, Jessen LJ, Lau MI, Ross D. Disordered Gambling Prevalence: Methodological Innovations in a General Danish Population Survey. *J Gambl Stud* 2018; **34**(1): 225-53.
374. Kristiansen S, Trabjerg MC, Reith G. Learning to gamble: early gambling experiences among young people in Denmark. *Journal of Youth Studies* 2014; **18**(2): 133-50.
375. Petruccelli F, Diotaiuti P, Verrastro V, et al. Obsessive-compulsive aspects and pathological gambling in an Italian sample. *Biomed Res Int* 2014; **2014**: 167438.
376. Torrado M, Bacelar-Nicolau L, Skryabin V, Teixeira M, Eusebio S, Ouakinin S. Emotional dysregulation features and problem gambling in university students: a pilot study. *J Addict Dis* 2020; **38**(4): 550-66.
377. Yazdi K, Katzian C. Addictive Potential of Online-Gambling. A Prevalence Study from Austria. *Psychiatr Danub* 2017; **29**(3): 376-8.
378. Karlsson A, Hakansson A. Gambling disorder, increased mortality, suicidality, and associated comorbidity: A longitudinal nationwide register study. *J Behav Addict* 2018; **7**(4): 1091-9.
379. Perez JIR. Juego patológico y dependencia del alcohol en

una muestra de trabajadores y

estudiantes universitarios:

prevalencias, interrelaciones y

diferencias de género. *Psychología: Avances de la Disciplina* 2014; **8**(1): 33-42.
380. April LM, Weinstock J. The Relationship Between Gambling Severity and Risk of Criminal Recidivism. *J Forensic Sci* 2018; **63**(4): 1201-6.
381. Atkinson J, Sharp C, Schmitz J, Yaroslavsky I. Behavioral activation and inhibition, negative affect, and gambling severity in a sample of young adult college students. *J Gambl Stud* 2012; **28**(3): 437-49.
382. Bristow LA, Bilevicius E, Stewart SH, Goldstein AL, Keough MT. Solitary gambling mediates the risk pathway from anxiety sensitivity to excessive gambling: Evidence from a longitudinal ecological momentary assessment study. *Psychol Addict Behav* 2018; **32**(6): 689-96.
383. Dixon MJ, Gutierrez J, Stange M, et al. Mindfulness problems and depression symptoms in everyday life predict dark flow during slots play: Implications for gambling as a form of escape. *Psychol Addict Behav* 2019; **33**(1): 81-90.
384. Elsasser GN, Kavan MG, Westerman GH, Destache CJ, Sexson E, Turner PD. A survey of pharmacy students' experiences with gambling. *American Journal of Pharmaceutical Education* 2010; **74**(2): 1-6.
385. Fong TW, Campos MD, Brecht ML, et al. Problem and pathological gambling in a sample of casino patrons. *J Gambl Stud* 2011; **27**(1): 35-47.
386. Gallaway MS, Fink DS, Sampson L, et al. Prevalence and covariates of problematic gambling among a US military cohort. *Addict Behav* 2019; **95**: 166-71.
387. Grant Weinandy JT, Grubbs JB. Gambling with God: the effect of gambling on religious and spiritual struggles. *Mental Health, Religion & Culture* 2021; **24**(5): 437-49.
388. Grubbs JB, Rosansky JA. Problem gambling, coping motivations, and positive expectancies: A longitudinal survey study. *Psychol Addict Behav* 2020; **34**(2): 414-9.
389. Huang JH, Jacobs DF, Derevensky JL. DSM-based problem gambling: increasing the odds of heavy drinking in a national sample of U.S. college athletes? *J Psychiatr Res* 2011; **45**(3): 302-8.
390. Kraus SW, Potenza MN, Ngo T, Pugh K, Bernice K, Shirk SD. Screening for Gambling Disorder in VA Primary Care Behavioral Health: A Pilot Study. *Issues Ment Health Nurs* 2020; **41**(12): 1076-82.
391. Mishra S, Carleton RN. Use of online crowdsourcing platforms for gambling research. *International Gambling Studies* 2017; **17**(1): 125-43.

392. Morvannou A, Dufour M, Brunelle N, Berbiche D, Roy E. One-Year Prospective Study on Passion and Gambling Problems in Poker Players. *J Gambl Stud* 2018; **34**(2): 379-91.
393. Newton FA. The House Always Wins: Responding to Student Gambling at the University of Delaware: University of Delaware; 2010.
394. Nicholson R, Graves C, Ellery M, Afifi TO. The Temporal Relationship Between Faulty Gambling Cognitions and Gambling Severity in Young Adults. *J Gambl Stud* 2016; **32**(4): 1215-29.
395. Ofori Dei SM, Christensen DR, Awosoga OA, Lee BK, Jackson AC. The Relative and Interactive Effects of Actual and Perceived Gambling Exposure on Gambling Behaviour. *J Gambl Stud* 2021; **37**(3): 853-74.
396. Otis E, Yakovenko I, Sherry S, et al. Applicability of the four-factor personality vulnerability model for substance misuse in understanding gambling behaviour and gambling problems. *Personality and Individual Differences* 2021; **169**.
397. Stefanovics EA, Potenza MN, Pietrzak RH. Gambling in a National U.S. Veteran Population: Prevalence, Socio-demographics, and Psychiatric Comorbidities. *J Gambl Stud* 2017; **33**(4): 1099-120.
398. Williams RJ, Belanger YD, Prusak SY. Gambling and Problem Gambling among Canadian Urban Aboriginals. *Can J Psychiatry* 2016; **61**(11): 724-31.
399. Wohl MJ, Sztainert T. Where did all the pathological gamblers go? Gambling symptomatology and stage of change predict attrition in longitudinal research. *J Gambl Stud* 2011; **27**(1): 155-69.
400. Nguyen J. Epidemiology of Gambling Behavior Among the Adult Vietnamese Population in Orange County, California: The Chicago School of Professional Psychology; 2016.
401. Theriault ER, Norris JE, Tindale JA. Problem Gambling Risk Among Older Francophones in Ontario Canada: Surprising Results that Contradict Previous Findings of Gambling in Minority Groups. *J Gambl Stud* 2020; **36**(1): 119-39.
402. Hing N, Russell AMT, King D, et al. NSW Youth Gambling Survey 2020. Sydney: NSW Responsible Gambling Fund, 2021.
403. Kale SH. Australian teens and poker. Melbourne: Office of Gambling and Racing, Victorian Government Department of Justice, 2011.
404. Splevins K, Mireskandari S, Clayton K, Blaszczynski A. Prevalence of adolescent problem gambling, related harms and help-seeking behaviours among an Australian population. *J Gambl Stud* 2010; **26**(2): 189-204.
405. Kang K, Ok JS, Kim H, Lee KS. The Gambling Factors Related with the Level of Adolescent Problem Gambler. *Int J Environ Res Public Health* 2019; **16**(12).
406. Lau M, Kan MY. Prevalence and correlates of problem behaviors among adolescents in Hong Kong. *Asia Pac J Public Health* 2010; **22**(3): 354-64.
407. Tsai J, Huh J, Idrisov B, et al. Prevalence and Co-Occurrence of Addictive Behaviors Among Russian and Spanish Youth: A Replication Study. *J Drug Educ* 2016; **46**(1-2): 32-46.
408. Floros G, Paradisioti A, Hadjimarcou M, Mappouras DG, Karkanioti O, Siomos K. Adolescent online gambling in Cyprus: associated school performance and psychopathology. *J Gambl Stud* 2015; **31**(2): 367-84.
409. Calado F, Alexandre J, Griffiths MD. Gambling Among Adolescents and Emerging Adults: A Cross-Cultural Study Between Portuguese and English Youth. *International Journal of Mental Health and Addiction* 2020; **18**(3): 737-53.
410. Castren S, Grainger M, Lahti T, Alho H, Salonen AH. At-risk and problem gambling among adolescents: a convenience sample of first-year junior high school students in Finland. *Subst Abuse Treat Prev Policy* 2015; **10**: 9.
411. Melendez-Torres GJ, Anthony RE, Hewitt G, Murphy S, Moore GF. Prevalence of gambling behaviours and their associations with socioemotional harm among 11-16 year olds in Wales: findings from the School Health Research Network survey. *Eur J Public Health* 2020; **30**(3): 432-8.
412. Tani F, Ponti L, Ghinassi S. Gambling Behaviors in Adolescent Male and Female Regular and Non-Regular Gamblers: A Study of Central Italian Adolescents. *J Gambl Stud* 2020; **37**(3): 747-63.

413. Martinez-Loredo V, Gonzalez-Roz A, Martin-Roig A, Fernandez-Artamendi S. New Validity Evidence of the Global Appraisal of Individual Needs-Short Screener for Evaluating Internalizing/Externalizing Behaviors in Spanish Adolescents. *J Stud Alcohol Drugs* 2023; **84**(5): 754-61.
414. Di Nicola M, Ferri VR, Moccia L, et al. Gender Differences and Psychopathological Features Associated With Addictive Behaviors in Adolescents. *Front Psychiatry* 2017; **8**: 256.
415. Chiu EY-W, Woo K. Problem Gambling in Chinese American Adolescents: Characteristics and Risk Factors. *International Journal of Mental Health and Addiction* 2012; **10**(6): 911-22.
416. Elton-Marshall T, Leatherdale ST, Turner NE. An examination of internet and land-based gambling among adolescents in three Canadian provinces: results from the youth gambling survey (YGS). *BMC Public Health* 2016; **16**: 277.
417. Lee GP, Stuart EA, Ialongo NS, Martins SS. Parental monitoring trajectories and gambling among a longitudinal cohort of urban youth. *Addiction* 2014; **109**(6): 977-85.
418. Rider GN, McMorris BJ, Gower AL, Coleman E, Eisenberg ME. Gambling Behaviors and Problem Gambling: A Population-Based Comparison of Transgender/Gender Diverse and Cisgender Adolescents. *J Gambl Stud* 2019; **35**(1): 79-92.
419. Stinchfield R. Gambling among Minnesota public school students from 1992 to 2007: declines in youth gambling. *Psychol Addict Behav* 2011; **25**(1): 108-17.
420. Billi R, Stone CA, Abbott M, Yeung K. The Victorian Gambling Study (VGS) a Longitudinal Study of Gambling and Health in Victoria 2008–2012: Design and Methods. *International Journal of Mental Health and Addiction* 2014; **13**(2): 274-96.
421. Cerrai S, Resce G, Molinaro S. Gambling Consumption 2017. Rome: Consiglio Nazionale delle Richerche, Instituta de Fisiologia Clinica, 2018.