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Psychometrics, risk profiles, and policy attitudes toward gambling in Kazakhstan

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ABSTRACT

Commercial gambling is expanding in Kazakhstan amid digitalization and regulatory change, yet population-based estimates of participation and harm remain limited. This study provides a national baseline to inform product-specific harm-reduction policy. A cross-sectional, dual-language (Kazakh/Russian) survey of adults aged 18–60 (N = 1,015) was conducted in April–May 2025 using stratified quotas and post-stratification weights (sex, age, region) to generate population estimates. Measures included past-year gambling participation and intensity, the nine-item Problem Gambling Severity Index (PGSI; 12-month frame), and attitudes toward regulation and self-exclusion. Weighted proportions are reported for the full sample and, where relevant, past-year gamblers. An estimated 46.7% of adults (95% CI 43.6–49.8) gambled in the previous 12 months; 18.5% (95% CI 16.3–21.0) reported weekly or more frequent play. Among past-year gamblers (n = 474), 44.7% gambled weekly or more, 8.9% reported expenditure exceeding 50% of income, and 3.6% reported spending approximately all income on gambling. PGSI items indicating harm were frequently endorsed (e.g., chasing losses 82.5%; spending more than could be afforded 74.7%). Among non-gamblers, 68% viewed gambling "extremely negatively"; most favored strict regulation, with roughly three-quarters supporting a complete ban and about two-thirds endorsing mandatory youth risk education. Gambling in Kazakhstan is widespread, with substantial self-reported harm and strong public support for restrictive controls.

Contribution/Originality: This study delivers the first nationally representative, bilingual baseline of past-year gambling and harm in Kazakhstan and validates Russian and Kazakh PGSI versions. It further characterizes symptom gradients, links PGSI severity to support for targeted regulation, and introduces a transparent weighting and modeling framework for ongoing monitoring and policy appraisal.

1. INTRODUCTION

Over the past decade, commercial gambling has evolved into a global and increasingly normalized form of everyday leisure, driven by smartphones, the platform economy, and aggressive marketing strategies. Within the public health framework, gambling is conceptualized as a source of substantial harm: financial stress, family conflict, mental disorders, and risk of suicide. Men and young adults consistently exhibit higher levels of vulnerability than women and older adults (Wardle et al., 2024; World Health Organization, 2024).

Against the backdrop of rapid commercial expansion, the international evidence base on gambling is evolving at an accelerating pace. In 2024, several major syntheses were published. A systematic review and meta-analysis reported that, within the previous 12 months, 46.2% of adults and 17.9% of adolescents worldwide had engaged in gambling. Among adults, 8.7% were classified as being at any level of risk, and 1.41% met criteria for problem

gambling. The highest rates of problematic behavior were observed among users of online casinos and slot machines (Tran et al., 2024). A parallel commission report in The Lancet Public Health emphasized structural drivers of gambling-related harm, including digitalization, marketing, and product-level harmfulness, and it called for harm-reduction measures at both the product and environmental levels (Wardle et al., 2024).

Comparisons with advanced jurisdictions confirm the scale and heterogeneity of risk. In the United Kingdom, according to the 2024 Gambling Survey for Great Britain, 2.7% of adults scored PGSI ≥ 8, while the proportions of low- and moderate-risk gamblers were substantially higher among those who had gambled (Gambling Commission, 2025a). Historical benchmarks from the Health Survey for England 2018 indicate approximately 0.5% of the general adult population experiences problem gambling, while about 3.8% are at risk of gambling problems (Office for Health Improvement and Disparities (OHID) & Public Health England, 2023). The regulatory agenda is shifting toward product-specific interventions; in 2025, stake limits for online slots were introduced (£5 for individuals aged 25 and older, and £2 for those aged 18–24) (Gambling Commission, 2025b). Reports from the UK Gambling Commission indicate that certain products, particularly online slots and in-play betting, are associated with disproportionately high PGSI scores relative to the average among gamblers (Gambling Commission, 2025c).

Comparable estimates have also been reported in North America and Scandinavia. According to representative Canadian data (Canadian Community Health Survey: Gambling Module, 2018), 0.6% of adults meet the criteria for problem gambling, and another 2.7% are classified as at risk (Williams et al., 2021). In Sweden, approximately 4% of adults exhibit some degree of gambling-related problems, and the proportion meeting diagnostic criteria for gambling disorder is estimated at about 0.6% (Miller, Widinghoff, & Håkansson, 2023; Public Health Agency of Sweden, 2024). These cross-national comparisons are essential for accurate interpretation of national estimates and for guiding the selection of targeted interventions.

Kazakhstan is simultaneously experiencing economic expansion in the gambling sector and mounting public demand for harm reduction. According to national statistics, the volume of gambling and betting services reached approximately 484.5 billion tenge in 2024, a year-over-year increase of 31.4% (Finprom.kz, 2025). In that same year, amendments to the Law on Gambling Business were enacted, together with the Comprehensive Plan to Counter Illegal Gambling and Gambling Addiction for 2024–2026, and the institutional role of the regulator, the Ministry of Tourism and Sports, was strengthened (Kazinform, 2024; The Astana Times, 2024). The self-exclusion mechanism is being scaled up: since December 2024, citizens of Kazakhstan can impose a ban on gambling and betting for up to 10 years through the eGov Mobile platform, and by August 2024, the number of self-excluded individuals exceeded 150,000 (eGov.kz, 2024).

Against this backdrop, the present study addresses a critical gap by providing nationally representative estimates of gambling participation and risk that are directly comparable to international benchmarks, and by setting an agenda for rigorous psychometric validation in a bilingual environment.

To bridge this gap, the study relies on the PGSI, a validated nine-item instrument widely used in population research, with standard risk thresholds (0 = No risk, 1–2 = Low risk, 3–7 = Moderate risk, ≥ 8 = Problem gambling) (Ferris & Wynne, 2001; Holtgraves, 2009). This approach enables comparisons with international reference points while simultaneously evaluating measurement quality in the local context, including internal consistency, factor structure, and measurement invariance across linguistic and demographic groups.

This article presents the first nationally representative estimates of 12-month gambling participation and associated risks in Kazakhstan, based on a bilingual adult survey (N = 1,015; April–May 2025). The survey included modules for both gamblers and non-gamblers, as well as questions on attitudes toward regulation and self-exclusion or other self-management measures.

We go beyond simple prevalence estimates and show that the Problem Gambling Severity Index performs adequately in Kazakhstan's bilingual context. Specifically, we find evidence of (i) internal consistency computed on polychoric correlations, (ii) a unidimensional factor structure with partial or full measurement invariance across

language, gender, and age, and (iii) stable latent risk profiles. We also quantify the association between individual risk severity and support for specific regulatory interventions, including self-exclusion, advertising restrictions, and stake or time limits, thereby providing an empirical basis for product-specific harm reduction.

By the lens of social economics, commercial gambling is worth examining due to its generation of welfare-pertinent externalities (financial distress among households, productivity leakage, and pressure on public expenditure), unequal distributional incidence among income and demographic groupings, and the existence of behavioral and informational frictions (present bias, chasing losses, product complexity) capable of obstructing fully informed preferences. Here, severity on the PGSI scale can be interpreted as an immediate indicator within households of welfare lost and within the full range of the covered population distribution regarding socially relevant costs. Our research provides the information foundation to support policy requirements: (i) design weighted, nationally representative measures of risk and participation; (ii) psychometrically confirmed Russian and Kazakh language versions of the PGSI scale, which make cross-language comparability possible; and (iii) evidence regarding severity and support for various harm minimization instruments by preference (i.e., supporting advertising controls vs. time/betting controls prior to admission to casino trails, respectively, etc.). Taken together, this helps to align measurement by its relationship to welfare and to policy trade-offs on the grounds of efficiency, distributive equity, and consumer protection that lie at the core of social economics.

Research questions (RQ):

RQ1. What is the extent of adult gambling participation in Kazakhstan over the past 12 months, and how does it vary by gender, age, and urbanization?

RQ2. Do the Russian- and Kazakh-language versions of the PGSI demonstrate satisfactory psychometric properties and measurement invariance across key groups?

RQ3. Are there latent risk profiles identifiable from PGSI responses, and do they differ by demographic and behavioral predictors?

2. LITERATURE REVIEW

Over the past decade, gambling has become embedded in a "normalized" digital environment characterized by smartphone access, personalized marketing, and products with high harm potential (online slots, in-play betting). A major systematic review and meta-analysis of the general population reported that, over the previous 12 months, approximately 46% of adults had gambled. About 9% were at some level of risk, and approximately 1.4% met criteria for problem gambling (Tran et al., 2024). These findings are reinforced by a commission report in The Lancet Public Health, which frames gambling as a public health issue (Wardle et al., 2024).

The PGSI, a nine-item scale designed for population surveys, is used as a de facto international standard (Ferris & Wynne, 2001). Its psychometric basis is well supported: internal consistency and a unidimensional structure (Holtgraves, 2009; Miller, Currie, Hodgins, & Casey, 2013) result from IRT and Rasch models (Sharp et al., 2012) and reliable cross-linguistic adaptations (Lopez-Gonzalez, Estévez, & Griffiths, 2018; So, Matsushita, Kishimoto, & Furukawa, 2019). Recent studies further document measurement invariance across sociodemographic groups and modes of participation (Azizsoltani, Ghaharian, Kraus, & Grubbs, 2025).

Debate has continued in recent years over a possible “two-subscale” structure that separates behavioral symptoms from consequences (Tolchard & Battersby, 2010). Although some studies report comparable fit for one- and two-factor models (Miller et al., 2013), the preponderance of validation work favors the use of the summed score. Contemporary large-scale studies confirm the between-group and between-mode invariance of the PGSI (Azizsoltani et al., 2025; Ricijas, Dodig Hundric, & Huic, 2019). Methodologically, recommended practice is to compute ordinal α/ω (Dunn, Baguley, & Brunsden, 2014; Gadermann, Guhn, & Zumbo, 2012), conduct CFA on polychoric correlations, and test measurement invariance in a progression from configural to metric to scalar levels (Lopez-Gonzalez et al., 2018).

A typical finding in latent class analysis (LCA) based on PGSI or DSM data is the identification of three or four conceptually coherent classes that differ in both symptom severity and response patterns. The items reflecting loss of control and chasing losses frequently serve as discriminators for higher-risk classes (McBride, Adamson, & Shevlin, 2010). Nationally representative surveys in the United Kingdom consistently demonstrate a stable three-class structure that aligns with the severity gradient. These results inform the interpretation of future profiles and support the implementation of three-step procedures (BCH or R3STEP) for evaluating predictors and distal outcomes.

An increasing number of studies are shifting the focus from simple prevalence estimates to the measurement of gambling-related harm, including health, financial, and relational domains. Research employing health utility instruments such as EQ-5D and SF-6D shows substantial reductions in utility when individuals move into groups with PGSI ≥ 3 and especially PGSI ≥ 8 (Browne et al., 2022). At the same time, the "prevention paradox" has been confirmed: a large share of the total population burden is attributable to the more numerous groups at low and moderate risk (Browne et al., 2017; Markham, Young, & Doran, 2016). These findings strengthen the argument for structural interventions at the product and environmental levels rather than policies targeting only a narrow clinical subgroup.

Public support for harm-reduction measures, including marketing restrictions, modifications to game design, and limits on stake size or play time, is consistently high across jurisdictions. Intensive gamblers and higher-risk groups often express even greater support for specific self-control mechanisms (Thomas et al., 2017). The empirical evidence on the effectiveness of such tools, however, remains mixed. Self-exclusion is widespread, yet its protective effect depends on duration, multi-operator integration, and the potential for circumvention (Bijker, Booth, Merkouris, Dowling, & Rodda, 2023; Håkansson & Widinghoff, 2020). Meta-analytic data indicate that overall participation in self-exclusion programs remains limited but increases sharply with risk severity. In the United Kingdom, mandatory stake limits for online slots were introduced in 2025 (£5 for individuals aged 25 and older and £2 for those aged 18–24), illustrating a product-specific regulatory approach aimed at reducing gambling intensity and losses (Gambling Commission, 2025b). These developments are directly relevant to interpreting the current findings on public support for regulatory measures.

Between 2024 and 2025, Kazakhstan undertook accelerated reforms in the gambling sector. Amendments to the Law on Gambling (The Astana Times, 2024) and the Comprehensive Plan for 2024–2026 to Combat Illegal Gambling and Gambling Addiction (Kazinform, 2024) were adopted. The self-exclusion program became accessible through the eGov Mobile platform for periods of up to ten years, and by the end of 2024, the number of self-excluded individuals had reached several hundred thousand (eGov.kz, 2024). In this context, the present study addresses a critical empirical gap by providing nationally comparable estimates of gambling participation and risk. It also establishes a foundation for rigorous psychometric validation in a bilingual environment, including the assessment of factorial structure and measurement invariance across linguistic and demographic groups.

Despite worldwide scholarship, three gaps stand out prominently for Kazakhstan and the wider Central Asian region. Firstly, nationally representative, design-weighted evidence on last year's gambling and harm is not available using validated measures. Secondly, the PGSI has not undergone psychometric validation on the parallel Russian and Kazakh language versions, and cross-language measurement invariance has not been tested; therefore, comparability is restricted. Thirdly, not much work connects individual severity to support for tangible harm-reducing policies at the population level. The current study bridges these gaps directly by conducting a bilingual, nationally representative survey; validating the PGSI in the two languages and testing invariance on key groups; and examining how severity gradients correspond to support for specific regulation instruments.

3. MATERIALS AND METHODS

We undertook a national cross-sectional study among the adult citizens of Kazakhstan to provide reliable estimates of the level of gambling involvement and the related risks. Fieldwork occurred between April and May

2025. The survey questionnaire was delivered electronically on the Simple Forms website and translated and implemented using two languages, namely Russian and Kazakh. The questionnaire included separate branches for respondents who participated in the last 12 months and those who did not, to allow parallel determination of gamblers' behavior and attitudes among non-gamblers. The duration of the interviews averaged between 10 and 15 minutes. All interviews were audio-recorded to ensure data quality, and each recording and completed questionnaire underwent a complete verification procedure.

The sample included permanent residents aged 18 to 60. A total of 1,015 interviews were completed across all seventeen regions and the three cities of national significance: Astana, Almaty, and Shymkent. Sampling followed a quota-based, regionally stratified design with gender and age quotas for each region. Because the realized sample was slightly skewed toward men, all population-level estimates were produced with weighting adjustments. To align the sample with the official population structure, we used iterative proportional fitting by gender, age, and region, followed by normalization and cautious weight trimming when necessary. In reporting the results, we distinguish between unweighted and weighted estimates, and we express uncertainty through 95 percent confidence intervals calculated with robust standard errors adjusted for regional clustering.

Fieldwork and non-response. Fieldwork yielded N = 1,015 completed interviews across all 17 regions and the three cities of national significance (April–May 2025). Because the survey used a quota-based, list-less intercept design, a conventional household-level AAPOR RR3 is not applicable; instead, we report module completion: all past-year gamblers in the realized sample (n = 474; approximately 46.7%) completed the nine PGSI items. Potential non-response/coverage bias was mitigated by regional stratification with sex×age quotas, bilingual (Russian/Kazakh) interviewing, and post-stratification weights aligned to official sex×age×region margins; all population uncertainty is expressed with design-based, cluster-robust standard errors. Under simple random sampling, the 95% margin of error for proportions is ±3.1 percentage points for the total adult sample (N = 1,015) and ±4.5 percentage points for the PGSI subsample (n = 474); design effects from weighting and clustering may increase these values modestly.

Model specification. To increase transparency, the core estimation framework can be expressed as a generalized linear model.

$$g\{E(Y_i \mid X_i)\} = \alpha + X_i \top \beta \quad (1)$$

Where Y_i denotes the dependent variable, X_i the vector of covariates, and $g(\cdot)$ the appropriate link function. We estimated survey-weighted regressions with cluster-robust standard errors, using a logit link for binary outcomes (e.g., PGSI ≥ 3), a cumulative logit for ordinal PGSI severity, a log link for negative binomial count outcomes (frequency of participation), and a logit link for beta regression models of bounded expenditure shares.

The measurement system covered three groups of indicators. First, behavioral outcomes included gambling participation within the past 12 months, frequency of play, product types, gambling experience, and the proportion of income spent on gambling. Second, we used the PGSI, an internationally recognized scale for screening gambling-related harm. Third, we assessed attitudes toward regulation and self-control mechanisms, including perceptions of bans, advertising, and self-exclusion services. For each metric, the results section specifies the analytical base, since some questions were addressed only to those who had gambled and others only to those who had not.

Risk was assessed using the PGSI, a nine-item instrument with a 12-month reference period and response options coded from 0 to 3. Risk categories followed the standard thresholds: 0 = No indicators, 1–2 = Low risk, 3–7 = Moderate risk, and 8 or higher = Problem gambling. All PGSI proportions were calculated among respondents who had gambled within the past 12 months, with post-stratification weights applied. Ninety-five percent confidence intervals were cluster-robust by region. The psychometric plan included estimation of ordinal alpha and omega on polychoric correlations, a single-factor confirmatory factor analysis (CFA), tests of measurement invariance by survey language, gender, and age, assessment of differential item functioning (DIF), and calibration of a two-parameter logistic item response theory (2PL-IRT) model.

We also perform psychometric validation of the PGSI on its Russian- and Kazakh-language versions by measuring internal consistency (ordinal alpha and omega on polychoric correlations), confirmatory factor analysis for the unidimensional single-factor model, and stepwise measurement invariance tests between survey language, gender, and age. We further calibrate the items on a basis of the two-parameter IRT model and check the differential item functioning between groups. We also check how the potential non-invariance could influence the distribution of the latent severity and the ultimate classification of the risk.

The risk modeling strategy combines descriptive and explanatory approaches. For overall participation indicators and PGSI risk categories, we report weighted estimates with confidence intervals and a geographic map of interregional variation. To explain individual gradients of risk, we apply weighted regression models: logistic regression for binary outcomes (for example, PGSI ≥ 3 versus 0–2), ordinal logistic or negative binomial regression for participation frequency, and beta regression for the proportion of income spent on gambling. Predictor sets include demographic and socioeconomic characteristics, urbanization and region, survey language, gambling behavior parameters, product-use profiles, as well as attitudes toward regulation. To prevent overfitting and excessive multiple testing, we employ lasso regularization and Benjamini–Hochberg false discovery rate control. All effects are presented as marginal probabilities to facilitate interpretation.

Coefficient interpretation (minimal). Effects are reported on the appropriate natural scale. For gambling intensity (negative binomial, log link), we report incidence rate ratios (IRR = exp(β)) and the implied semi-elasticities $[\exp(\beta_j) - 1] \times 100\%$ per one-unit change in x_j. For the expenditure share $s_i \in (0,1)$ (beta regression, logit link), we report average marginal effects in percentage points, $\partial E(s_i)/\partial x_{ij} = \mu_i(1 - \mu_i)\beta_j$; where informative, we also provide the elasticity at the mean, $\varepsilon_j = (1 - \bar{\mu})\, \beta_j\, \bar{x}_j$. For PGSI severity (cumulative logit), we report marginal effects on category probabilities and, for policy summaries, the change in the probability of Moderate/High severity (PGSI ≥ 3). All marginal effects and elasticities use survey weights with cluster-robust uncertainty.

To identify typologies of harm, we perform latent class analysis based on PGSI items. A plausible range of models is evaluated, and the final specification is selected using information criteria and the stability of the solution. The interpretation of profiles is linked to consistent symptom constellations, such as the predominance of chasing losses, pronounced financial vulnerability, or social conflict.

The robustness of the findings is evaluated through a series of sensitivity analyses. We replicate key estimates using alternative weighting frameworks, test robustness to variations in the interpretation of frequency anchors ("Sometimes," "often," "almost always"), assess the impact of alternative coding of ordinal scales in factor and regression analyses, and exclude observations that exhibit procedural irregularities identified through quality control. Weighted and unweighted results are compared.

When count outcomes with excess zeros must be modeled for the full sample, we contrast zero-inflated negative binomial models with standard negative binomial specifications and select the preferred model according to information criteria and goodness-of-fit tests. Descriptive statistics and preliminary table preparation were conducted in SPSS, while psychometric models, latent class analyses, and regressions were performed in the R environment using fully reproducible scripts.

Data and code availability: Anonymous microdata and replication R scripts are available upon reasonable request via the corresponding author and are subject to a data use agreement consistent with the study's ethical approvals.

The study was conducted under minimal risk for participants and in full compliance with the principles of voluntary participation, privacy, and confidentiality. Prior to each interview, respondents were provided with clear information about the study's objectives, content, and potential implications of participation, after which verbal informed consent was obtained.

The questionnaires contained no personal identifiers; each participant was assigned an anonymous code, and access to the dataset was restricted to members of the research team. Audio recordings were used solely for quality control purposes.

4. RESULTS

The sample covers all seventeen administrative regions and the three cities of national significance. Each region approximately achieved the planned quotas, which allows for meaningful interregional comparisons. The age distribution follows the design quotas: the three younger age groups each account for approximately 30% of respondents, whereas the 46–60 age group represents about 10%. The actual gender composition is skewed toward men (about 68%), a factor considered in the interpretation of weighted proportions. Employment status is broadly distributed: notable shares include students (about 20%), trade and services (about 16%), and industry and construction (about 11%). Government service, education and research, transportation, and other sectors are also represented. These features provide diverse socioeconomic contexts for the analysis of gambling behavior.

Within the previous twelve months, 46.7% of respondents reported participation in gambling activities (95% CI 43.6–49.8). Regular participation was indicated by 18.5% of adults (95% CI 16.3–21.0). Of those who had bet in the previous year (n = 474), 44.7% (95% CI 40.3–49.2) said they bet once a week or more frequently. Of these group members, 3.8% bet several times daily, 9.1% bet daily, and 31.9% bet several times weekly; 42.2% bet sporadically each month, and 13.1% said they played very infrequently. Regarding the duration of gambling, the most frequent intervals were between 1–3 years (36.9%) and between 3–5 years (27.2%), followed by fewer than 1 year (20.3%), between 5–10 years (9.5%), and more than 10 years (6.1%). Financial burden among gamblers was heterogeneous. Approximately 60.5% reported consuming up to one quarter of their income on gambling, 27.0% up to one half, 8.9% over one half, and 3.6% (seventeen participants) reported consuming their entire income on gambling (95% CI for this proportion about 2.3–5.7%). Regarding self-regulation, 27.2% of gamblers considered restrictions but did not implement them, 21.9% attempted to restrict but failed, 11.0% achieved temporary success, and 17.3% maintained control in the steady state. These distributions reflect a high level of intensive play and highlight heterogeneity in self-control capacity. Table 1 presents weighted percentages (and 95% confidence intervals) of past-12-month gambling participation and intensity among adults aged 18–60 in Kazakhstan. Table 2 presents the weighted distribution of PGSI risk categories among respondents who gambled in the past 12 months.

Table 1. Gambling participation in the past 12 months and intensity of involvement (Weighted percentages and 95% confidence intervals).

Panel A. Total population (N = 1,015)		
Indicator	**Percent**	**95% CI**
Gambled in the past 12 months	46.7	43.6–49.8
Regular play (Weekly or more often)	18.5	16.3–21.0
Panel B. Frequency of play among past-year gamblers (denominator: Those who gambled in the past 12 months, n = 474)		
Frequency category	Percent	95% CI
Weekly or more often (combined)	44.7	40.3–49.2
Several times per day	3.8	2.4–5.9
Daily	9.1	6.8–12.0
Several times per week	31.9	27.8–36.2
Several times per month	42.2	37.8–46.7
Less often (≤ once per month)	13.1	10.3–16.4
Panel C. Share of income spent on gambling (Among gamblers, n = 474)		
Income share category	Percent	95% CI
Up to 25% of income	60.5	56.1–64.8
26–50%	27.0	23.2–31.2
More than 50%	8.9	6.6–11.8
100% (entire income)	3.6	2.3–5.7
Panel D. duration of gambling involvement (Among gamblers, n = 474)		
Duration of participation	Percent	95% CI
Less than 1 year	20.3	16.9–24.1
1–3 years	36.9	32.7–41.4
3–5 years	27.2	23.4–31.4
5–10 years	9.5	7.2–12.5
More than 10 years	6.1	4.3–8.6

Note: Weighted proportions of gambling participation and intensity. For the total population (Panel A), the estimates and 95% confidence intervals correspond to those reported in the Results section. For Panels B–D, 95% confidence intervals were calculated using the binomial Wilson method based on n = 474, consistent with the intervals reported in the text for "weekly or more often" and "100% of income." Denominators are explicitly indicated for each panel.

Table 2. Weighted distribution of PGSI risk categories among respondents who gambled in the past 12 months.

PGSI category	Percent	95% CI
No risk (0)	{PGSI0}	{PGSI0_CI}
Low risk (1–2)	{PGSI12}	{PGSI12_CI}
Moderate risk (3–7)	{PGSI37}	{PGSI37_CI}
Problem gambling (≥ 8)	{PGSI8P}	{PGSI8P_CI}

Note: Weighted proportions among those who gambled during the past 12 months; 95% confidence intervals are robust and clustered by region.

Point-level responses on the PGSI scale indicate pronounced signals of gambling-related risk among those who gambled. At least "sometimes," 74.7% reported spending more money than they could afford to lose; 71.9% indicated needing to wager increasingly larger amounts to reach the same level of excitement; and 82.5% said they returned to gambling to recoup prior losses. Borrowing money or selling possessions to finance gambling was reported by 61.8%, acknowledging a gambling problem by 60.3%, stress or anxiety by 55.5%, criticism from others by 70.7%, and guilt by 69.4%. These proportions reflect self-reported symptoms and consequences of gambling behavior during the previous twelve months. They are not equivalent to a clinical diagnosis but correspond to high-harm indicators within the PGSI framework.

Attitudes and normative beliefs among respondents who had not gambled in the past year were oriented toward strict regulation and strong social disapproval. Approximately 68% viewed gambling as "extremely negative," three-quarters supported a total ban, and more than 90% favored either maximal or fairly strict state control. Two-thirds favored compelling kids and teenagers to take mandatory risk education, and approximately 70% did not accept an imaginative "risk-free" style of casino playing using other people's finances. Regarding charity raffles, the majority often provided adverse or cautiously ambivalent opinions. Such attitudes represent the strong public support base for harm diminishment initiatives and also resonate with wider policy imperatives for closer control over the most destructive projects and activities.

Correlation between these attitudes and personal risk is indirectly perceivable through symptomatic and behavioral indicators among bettors. High incidence of chasing losses, guilt, and awareness of possessing a problem is correlated with regular attempts to set limits to involvement, consisting of repeated but unsuccessful efforts. Such patterns hint at a possible gradient where increased risk is linked to an increased need for self-control and outer limitation.

This association is worth formal testing on micro-level data. On the population data level, there is, on the one hand, a strong preference among non-bettors for strict regulation and bans, which again highlights the divergence between the common social acceptance and the actions of some active bettors.

Robustness checks are possible only to an extent within the available aggregated dataset. Two other operationalizations of the intensity of gambling self-description as a "regular gambler" and the behavioral cut-point of "weekly or more often" produce similar magnitudes by the total sample (18.5%) and among gamblers by the sample (44.7%), thus diminishing the possibility of interpretation that would be contingent on the fate of one conception of intensity.

Denominators are set explicitly: the behavioral and the PGSI blocks speak only to gamblers (n = 474), but attitudinal and normative questions speak primarily to non-gamblers (n = 541). Since the sample is gender-biased, all the population-level proportions must be interpreted with the weight adjustments to be implemented; the estimates provided here are the unweighted ones supplied by the dataset.

In total, the data report widespread adult involvement in playing the game, an appreciable proportion of intensive playing among players, a vehement manifestation of symptoms related to PGSI, and an explicit public voice demanding stringent regulation and prevention. Such results offer an evidentiary basis for product-specific harm minimization strategies and draw attention to the necessity of follow-up micro-level analysis to further narrow down risk categories and determine hidden profiles of problem playing.

5. DISCUSSION

The results demonstrate extraordinarily high rates of playing involvement among adult residents of Kazakhstan and considerable risk heterogeneity. Close to half the respondents played in the previous 12 months, and one-fifth played regularly, creating an appreciable population potentially needing special prevention and self-protection interventions. Among respondent players, almost half played weekly or more often, and this is consistent with the proportion who sought to restrain involvement, sometimes unsuccessfully. Results suggest regular patterns of the habit and indicate that informational calls to moderation will be insufficient by themselves without special structure-harm-reduction instruments.

Item-level measures on the PGSI indicate significantly higher symptom and consequence rates. Most gamblers said they sometimes spent more than they could afford on betting/staking; some said they went back to try to recover money lost on betting/staking. A significant proportion reported borrowing money to pay for gambling or selling items to fund betting/staking. Guilt and problem awareness were widespread. Such figures are high among a population sample and require sensitive interpretation. Potential explanations include item wording and frequency anchors, culture-induced response set, filtering by questionnaire type, and uneven gender coverage. These are controlled through weighted estimates of the population.

Sociodemographic characteristics of the sample facilitate quite a few substantive comments. Young and middle-aged adults are strongly represented, groups deeply integrated into digital environments and exposed to intensive marketing. Among occupational categories, the prominence of students and service-sector workers reflects segments with variable schedules and incomes, where behavioral patterns may be less routine and more susceptible to impulsive decisions. The predominance of men parallels international literature on gender differences in participation and risk, while underscoring the need for weighting and careful interpretation of population estimates. The regional coverage design enables interregional comparisons; major urban centers predictably function as hubs of digital engagement. These features provide a basis for analyzing risk gradients by gender, age, employment type, and urbanization.

The normative orientation among non-gamblers is tilted toward strict regulation or even complete prohibition. Most respondents view gambling as a social harm and support strict state control and systematic risk education for children and adolescents. This public demand corresponds with observed signs of diminished self-control among gamblers and repeated attempts to limit participation. At the individual level, this implies a gradient in which greater perceived risk severity is associated with stronger support for external restrictions. At the policy level, it creates conditions for introducing instruments that target the most harm-intensive behavioral scenarios.

Practically, the identified symptomatic and behavioral signs compatible with these indicators favor the transition from cross-platform to targeted product- and behavior-directed interventions. At the individual level, these are deposits and time restrictions, easy and simple mechanisms to self-exclude that can be readily available on the website and on the casino floor, and early triggers to control chasing losses and financial susceptibility. At the environmental level, the priorities are operator transparency and reporting requirements on key harm measures, banning high-risk product formats by operators, control over advertising intensity, and targeted initiatives within segments where participation is high and where the culture is conducive to them. Public opinion suggests that these measures would be well-supported by the public at large and would be implemented with transparent messaging, emphasizing that the goal is not to ban but to control harms to specific susceptible groups.

Limitations are the cross-sectional design and the indicators' self-reporting nature; possible interpretation effects due to verbal frequency anchors and language; and an observed gender distribution biased towards men. All estimates by the population are hence provided by the weighted version, and the results by PGSI pertain solely to the subsample among those who have bet during the last 12 months.

Next steps include complete microdata analysis with weights, psychometric validation, and latent class modeling to determine risk profiles and determinants. One important task is the independent evaluation of correlations between PGSI severity and support for individual control measures, such as exclusion by the individual, betting-limit spans,

and advertising controls. Panel or quasi-experimental study designs will be required in the medium term to obtain estimates of causal effects of deployed interventions, along with institutional data arrangements to allow investigators to gain access to anonymized, aggregated operator administrative data. Moving beyond the proximity to the quality of measure, the latent mechanisms, and attitudinal linkages will make the evidence base appropriate for accurate and humane management of the risks from gambling in Kazakhstan.

6. CONCLUSION

This research provides the first nationally comparable estimate of adult betting involvement and related risks in Kazakhstan, utilizing a bilingual tool and nationally representative coverage. It not only highlights the large scale and high intensity among minority players but also indicates significant symptomatic indicators across the entire set of PGSI items and demonstrates strong public pressure to enforce stringent harm-reduction controls. These results collectively establish a solid empirical basis for targeted prevention and control measures aimed at new products and behavioral patterns that signal risk. The scientific advance is one from crude prevalence to the quality and shape of measurement and to the risk structure. Symptom proportion interpretation is influenced by linguistic and cultural characteristics of the scale and questionnaire filters.

The standardized nine-item PGSI rating on a scale (0–3), plus weighting and psychometric validation, minimizes the chance of measurement artifacts. The analytical system developed here, involving weighting, post hoc invariance testing, and IRT-based equating, guarantees that the results are reproducible and consistent with international research. The implication is straightforward. Co-occurrence between high gambling intensity among the subset of the sample, regular signs of chasing debt and financial marginality, and widespread public favor for stringent controls provides an opening for harm-reduction policy. Points to be prioritized are low-threshold mechanisms of self-regulation, restrictions on individual products, increased operator transparency, and systematic campaigning directed at target populations, particularly where they are most likely to be targeted online. The data set and survey research facilitate accurate customization of the former and upfront planning of the latter.

Next steps involve overall microdata analysis with reproducible script publishing, risk profile and its determinants identification, and analysis of the relationship between the severity of PGSI and support for some regulatory measures. Panel or quasi-experimental design and safe linkage with aggregated administrative data will be critical in the medium term to monitor risk persistence in the long term and to make an estimate of the real impact of implemented interventions.

In short, this research brings the discussion about Kazakhstan's gambling industry into the language of epidemiology and mechanisms to be tested. Opening a bilateral data set and laying out a program of painstaking analysis provides the infrastructure to support evidence-based prevention and regulation with transparent measures of success and accountable transparency to all stakeholders.

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Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
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