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Original Research

The impact of gambling advertising and marketing on online gambling behavior: an analysis based on Spanish data

Á. García-Pérez [a], A. Krotter [b], G. Aonso-Diego [c, *]

[a] Department of Psychology, Sociology and Philosophy, University of Leon, Facultad de Educación, Campus de Vegazana, s/n, Leon 24071, Spain
[b] Department of Psychology, Addictive Behaviors Research Group, University of Oviedo, Plaza Feijoo, s/n, Oviedo 33003, Spain
[c] Department of Psychology, University of Deusto, Spain

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ABSTRACT

Objectives: Online platforms have transformed gambling into a daily activity for many, raising concerns about its potential harm. Notably, marketing strategies play a crucial role in influencing gambling behaviors and normalizing gambling. This study aims to explore the relationship between monthly marketing expenditure by the gambling industry, the online amount of money bet, and the number of online accounts (active and new) in Spain. A secondary goal is to assess the impact of marketing restrictions under the Spanish Royal Decree 958/2020 on the relationship between marketing and online gambling behavior.

Study design: Longitudinal study.

Methods: Data covering January 2013 to December 2023. Dependent variables included: new accounts, active accounts, gambler deposits, and the total money bet. Independent variables included: expenditure on advertising, bonuses, affiliate marketing, and sponsorship. A Seasonal Autoregressive Integrated Moving Average (SARIMA) model was employed to assess marketing's impact on online gambling behavior.

Results: Findings show that investment in advertising ($P \leq 0.025$), promotions ($P < 0.001$), and sponsorships ($P \leq 0.004$) significantly increase the number of new and active accounts, deposits, and total money bet. For instance, it has been estimated that, for every €1 invested in bonuses and sponsorship, gamblers deposit €1.6 and €4 into their accounts, respectively. Moreover, the Spanish law regulating gambling advertising has seemingly weakened the link between marketing expenditure and gambling behavior, with the notable exception of bonuses, where the impact has intensified.

Conclusions: These results underline the importance of ongoing monitoring and regulation of gambling behavior in Spain, emphasizing the need for strict adherence to regulations.

Introduction

Gambling is a recreational activity engaged in by millions of people due to its appeal in potentially transforming lives, enhancing social bonds, altering mood states, or generating financial gains.[1] However, gambling can also become a significant public health issue that extends beyond individuals with gambling disorders.[2,3] Problematic gambling behaviors are associated with various adverse health outcomes, including mental health disorders such as depression and anxiety, substance use, and even suicidal tendencies.[2–8] Socially, gambling can lead to financial instability, relationship problems, and reduced work performance, exacerbating social inequalities in the communities and leading to broader societal costs.[2–4,9] In fact, it is estimated that a gambling disorder imposes a burden of harm in terms of years of life lost that is very high, exceeding that associated with diabetes by 2.5 times and substance use disorders by 3 times.[10]

The evolution of online gambling has seen significant growth in recent decades, largely driven by technological advancements and the increasing accessibility of gambling platforms.[5] Traditionally, gambling was an occasional recreational activity conducted in person, whereas nowadays it is part of the daily life of many people, mainly due to the high availability of online gambling at any time.[11] However, this ease and speed of access has also led to an increase in concerns about the potential harm associated with online gambling.[12] In this regard, a recent meta-analysis confirms that

* Corresponding author. Faculty of Health Sciences, Department of Psychology, University of Deusto, Avda. de las Universidades, 24, Bilbao 48007, Spain.
E-mail address: gema.aonso@deusto.es (G. Aonso-Diego).

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online gambling is a clear risk factor for the emergence of gambling problems.[13] Therefore, it is not surprising that online gamblers are more prone to gambling involvement, gambling problems, and gambling-related harm than non-online gamblers.[14–17]

Traditionally, the study of gambling has concentrated on individual variables, including sociodemographic and psychological factors.[13,18] However, recent research indicates the necessity of adopting a broader perspective that encompasses contextual, sociocultural, environmental, commercial, and political determinants to comprehensively understand the development of problematic gambling.[19,20] One of the most extensively studied contextual variables is the marketing of gambling, which is commonly embedded within sports broadcasts and other media outlets. Marketing strategies have demonstrated a substantial impact on gambling behavior, especially among vulnerable populations such as youth and problem gamblers.[21] Specifically, advertising and promotions increase the amount of money wagered and heighten gambling-related expectations (e.g. gambling reduces stress).[22–24] Exposure to various advertising strategies, such as betting promotions during sports broadcasts, can foster gambling intentions and contribute to the normalization of gambling.[21,23,25,26] This could potentially escalate the incidence of problematic gambling behaviors.[27–29] Moreover, this relationship is bidirectional, given that individuals with high severity of problem, gambling are more likely to be exposed to these promotions, perceive them favorably, and express interest in utilizing them.[5,23] Within the realm of marketing strategies, price-related promotions or bonuses (e.g. sign-up offer, stake-back offer, better odds, etc.) are notably more effective compared to other tactics.[25,30,31] These promotional strategies raise concerns, as gamblers often underestimate the true earnings they can achieve from these bonuses,[25,32] believing they are less susceptible to such marketing strategies than others.[30] The use of bonuses not only increases the propensity to bet and the amount of money wagered[23,33,34] but also induces more impulsive betting behavior,[34] leading to higher-risk stakes compared to those influenced by non-bonus advertising.[35] Consequently, the utilization of bonuses is closely linked to problem gambling,[23,34,36] posing significant risks to problem gamblers, especially when they are targeted with personalized bonus offers via email or other channels, which serve to incentivize further betting.[31]

Despite the increasing amount of research in this field in recent years, there are limitations in studies analyzing how advertising affects gambling behavior. Many of these studies rely on surveys and interviews, which may be subject to self-report biases.[21,36,37] In addition, most of these studies are cross-sectional, limiting their ability to establish causal relationships between exposure to gambling advertising and gambling behaviors.[21,22] Therefore, more longitudinal research is needed to better understand these effects. Finally, most studies have focused on just three countries: Australia, New Zealand, and the UK.[5,38,39]

In the Spanish context, according to the report prepared by the National Plan on Drugs,[40] self-report past year prevalence of online gambling (i.e. gamble at least once) has doubled over the past seven years, rising from 2.7% in 2015 to 5.3% in 2022. The available data are particularly concerning among the younger population (i.e. 14–18 years old), with past-year prevalence of online gambling standing at 9.4%, rising up to 15.3% among 18-year-old adolescents. Among individuals who have engaged in online gambling in the past 12 months, 13.6% of adults exhibit a potential gambling disorder, as indicated by meeting at least one DSM-5 criterion. This percentage rises to 23% among adolescents (ages 14–18), as evidenced by scoring 1–2 on the lie/bet questionnaire. In Spain, marketing expenditure tripled between 2013 and 2022, increasing from 111 million euros to 372 million euros. This increase has been particularly notable in the use of bonuses, which have surged by 636% in nine years.[41] Partially in response to the aforementioned information, the Spanish Government approved the Royal Decree (RD)[42] 958/2020 in November 2020. This decree aims to guarantee 'public health through the prevention of addictive behaviors […] and the protection of gamblers.' For this purpose, it regulates the marketing strategies of gambling operators across the country 'due to the severe consequences that the consumption of certain gambling activities can entail'. The RD 958/2020 focuses its efforts on eliminating sports sponsorships and promotions to attract new and active customers while simultaneously limiting and restricting gambling advertising, including advertising through electronic devices, among other measures. Despite the worrying situation in Spain, there are very few works analyzing the relationship between marketing and gambling behavior in Spain[29,30,43,44] within a context that is socially (e.g. interest of gambling content[45]) and legally (e.g. high gambling accessibility[46]) distinct from other countries, impacting the gambling behavior (e.g. prevalence rates) exhibited by the population.[47,48] Furthermore, all of them have employed cross-sectional designs and rely on self-report assessment techniques. In this regard, there is a need for more studies to obtain an updated and consistent understanding of the impact of gambling marketing on online gambling behavior.[49]

In light of the constraints identified in previous literature, the aim of the current study is to examine the relationship between monthly marketing expenditure by the gambling industry, the online amount of money bet, and the number of accounts (active and new) in Spain over the previous decade. A secondary objective is to analyze the impact of marketing restrictions under the Spanish RD 958/2020 on the relationship between marketing and online gambling behaviors.

Methods

Data

The Directorate General for Regulation of Gambling (DGRG), which is part of the Spanish Ministry of Consumer Affairs, provides quarterly data on the online gambling market throughout Spain. The data include the operations carried out by all gambling operators licensed in Spain. These online gambling data were reported by companies and then aggregated by DGRG (https://www.ordenacionjuego.es/es/descarga-datos-mercado-juego-online). Therefore, offline gambling data are not included in this study. Regulated online gambling began in 2012, so the first available data is from 2013. The series used in this study covers from January 2013 to December 2023, the last data available, being the periodicity of the series monthly.

Variables

The dependent variables included were the following: (1) active accounts, meaning the number of accounts in which at least one bet has been placed in a month; (2) new accounts (i.e. number of new user registrations in which at least one deposit has been made); (3) deposits (i.e. total amount credited to gambling accounts); and (4) total amount of money bet (i.e. the total expenditure wagered by gamblers to participate in all online mode games) (which also includes participations with money from prizes and bonuses).

The independent marketing variables were the following: (1) advertising expenditure (i.e. money spent by gambling operators to spread their brand and/or services through the traditional media or the internet); (2) bonus expenditure, which is money spent by gambling operators to promote participation in gambling, or customer loyalty through released bonuses, discounts, and similar mechanisms; (3) sponsorship expenditure (i.e. money spent by

gambling operators in financing goods, activities, or events, with the purpose of promoting its name, brand, image, activities, or products); and (4) affiliation expenditure, which is the money spent by gambling operators in individuals that promote their services and products and divert traffic from their digital media (e.g. streaming channel) to the gambling operators' websites. The total amounts of money in the above variables are in euro currency.

Data analysis

A Seasonal Autoregressive Integrated Moving Average (SARIMA) model was used to evaluate the impact of marketing on online gambling behavior. SARIMA models are characterized by their high versatility and parsimony in time series analysis,[50,51] successfully applied in studies related to addictive behaviors.[52–57] These models are specified as (p, d, q) (P, D, Q, M), where the first set of parameters represents the non-seasonal part, and the second set corresponds to the seasonal part. Here, p indicates the autoregressive order, d represents the order of differencing needed to achieve stationarity, and q denotes the moving-average order. The seasonal terms P, D, and Q have corresponding meanings but account for seasonality, with M indicating the number of periods per season (in this study 12). This structure enables SARIMA models to effectively model both regular and seasonal patterns in time series data, leading to improved predictive accuracy. Linear correlations were calculated between all the variables of the study. Only the correlations at lag 0 are shown since they were those with the highest values. According to Yaffee and McGee[58] guidelines, variables were centered for correlation analysis. In addition, to reduce the risk of obtaining spurious correlations both in SARIMA and correlations, the time series were different. The stationarity of the time series was evaluated with the Augmented Dickey–Fuller test (see supplementary material). The model residuals were tested using the Ljung–Box *Q* statistics. The effect of COVID-19 was controlled as an event in the second quarter of 2020. Furthermore, financial variables (i.e. marketing expenditure, deposits, and total money bet) were adjusted for inflation (reference value = January 2013) using the Consumer Price Index data provided by the National Statistics Institute of Spain (https://www.ine.es/). All statistical analyses were performed with SPSS (version 25, SPSS Inc., Chicago IL, USA), except for the Augmented Dickey–Fuller tests, which were calculated using EViews 12. The linear correlations analyses were also calculated before (i.e. November 2020) and after (i.e. September 2021) the implementation of the gambling law (i.e. RD 958/2020) in Spain. The level of significance for all statistical analyses was set at $P \leq 0.05$.

Results

Description of the time series

Figs. 1 and 2 shows the monthly evolution of the variables from January 2013 to December 2023. The expenditure on marketing strategies has experienced a notable growth from 2013 to 2023; however, the peaks in some time series were recorded prior to the approval of RD 958/2020. Considering the entire historical series, advertising expenses tripled from 2013 to 2020, bonus expenditure increased from 2.5 million to 14 million, affiliation costs had tripled by 2023 (from 1 million to 3.5 million), while sponsorship spending multiplied by 13 from 2013 to 2020, reaching 3.5 million, and as of 2023, stands at a mere 0.3 million. At the same time, the number of active accounts has risen from 300,000 in 2013 to 1.2 million in 2023. The total new accounts generated each month in the last available date (2023) are at the same levels as in 2013; however, before the approval of RD 958/2020, the number of new accounts registered doubled. Gambler deposits have increased sevenfold over the last decade, reaching 260 million per month. Finally, the total amount of money bet in Spain has increased 5 times in 10 years, from 460 million in 2013 to 2.1 billion in 2023.

Bivariate relationship of marketing and gambling behavior

Overall, marketing investment was positively and moderately related to active accounts, new accounts, deposits, and total amount bet (see Table 1). The new accounts exhibited a significant correlation with bonus ($r_{xy} = 0.59$) and advertising ($r_{xy} = 0.49$) expenditure, and a lesser association with sponsorship expenses ($r_{xy} = 0.30$). Concerning active accounts, the strongest correlation was observed with advertising expenses ($r_{xy} = 0.57$), closely followed by bonus expenditure ($r_{xy} = 0.50$), and to a lesser extent, sponsorship ($r_{xy} = 0.29$) and affiliation costs ($r_{xy} = 0.23$). Deposits into accounts exhibited a correlation with investment in advertising ($r_{xy} = 0.39$), followed by expenditure on bonuses ($r_{xy} = 0.32$), affiliate marketing ($r_{xy} = 0.31$), and sponsorship ($r_{xy} = 0.30$). Finally, the total amount bet demonstrated small associations with bonuses ($r_{xy} = 0.22$), advertising expenses ($r_{xy} = 0.21$), and sponsorship ($r_{xy} = 0.19$).

Multivariable relationship between marketing and gambling behavior

Table 2 describes the SARIMA models. The number of new accounts is predicted by expenditure on advertising, bonuses, and sponsorship. Specifically, it has been estimated that for each investment of €200 in bonuses (EST = 0.005, $P < 0.0001$) and advertising (EST = 0.005, $P < 0.0001$) and €67 in sponsorship (EST = 0.015, $P = 0.004$) respectively gambling operators manage to create one new account. Regarding active accounts, once again, advertising (EST = 0.004, $P = 0.025$) and bonus (EST = 0.018, $P < 0.0001$) expenditure predict an increase in such accounts. Specifically, for every €250 and €55 invested per account respectively (i.e. in advertising and bonus), it leads to the active engagement of players in gambling. The variables that predict deposits into accounts are the expenditure on advertising, bonuses, and sponsorship. Specifically, for every euro spent on advertising (EST = 0.737, $P = 0.0002$), bonuses (EST = 1.629, $P < 0.0001$), and sponsorship (EST = 3.947, $P = 0.0001$) marketing, gamblers deposit €.74, €1.63 and €3.95 into their accounts, respectively. Finally, bonuses and sponsorship expenditures impacted the total amount of money bet in gambling. For every euro invested in bonuses (EST = 6.777, $P = 0.001$) and sponsorship (EST = 49.022, $P = 0.0003$), €6.8 and €49 are bet in any of the online gambling modalities respectively. Furthermore, the effects of sponsorship on the total money bet were observed for the four months following the investment. The Ljung–Box tests ($P \geq 0.091$) revealed that the residuals of the SARIMA models were not autocorrelated, thus indicating they are distributed independently and randomly (more information about the model performance can be found in the supplementary material).

Impact of Spanish gambling law on the relationship between marketing and gambling behavior

Tables 3 and 4 show the linear relationships between marketing and gambling behaviors both before and after the entry into force of RD 958/2020. The results indicate that the gambling law has eliminated any association between sponsorship and affiliation expenditure with gambling behavior at a significant level (i.e. active accounts, new accounts, and the total amount of money bet). On the other hand, the relationship between advertising and active

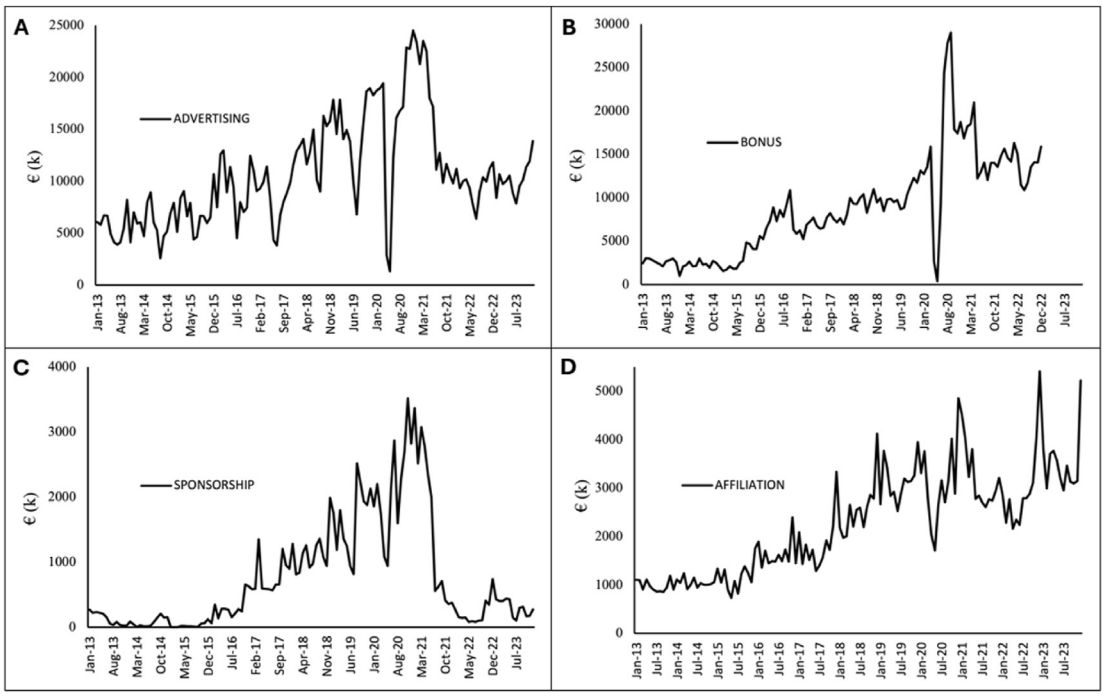

Fig. 1. Marketing time series of the study.

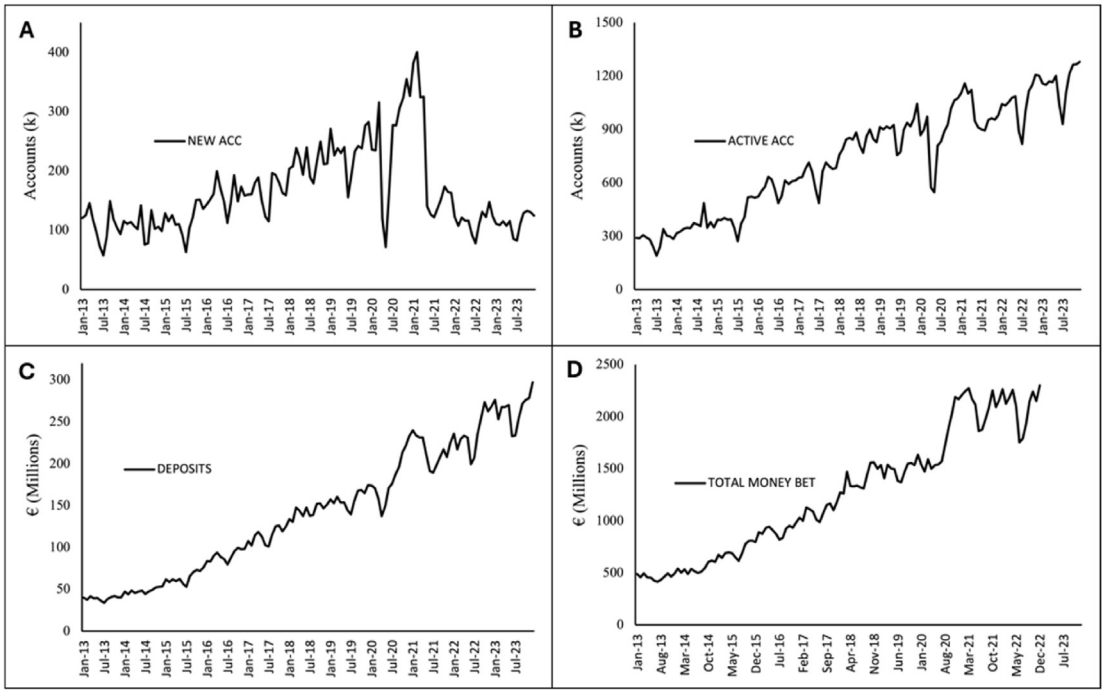

Fig. 2. Gambling behavior time series of the study.

Table 1
Correlations between marketing and gambling variables with confidence intervals.

	Advertising	Bonus	Affiliation	Sponsorship
Active accounts	0.57** [0.44, 0.68]	0.50** [0.36, 0.62]	0.23* [0.06, 0.39]	0.29** [0.12, 0.44]
New accounts	0.49** [0.35, 0.61]	0.59** [0.47, 0.69]	0.17 [−0.01, 0.33]	0.30** [0.14, 0.44]
Deposits	0.39** [0.23, 0.53]	0.32** [0.16, 0.47]	0.31** [0.15, 0.46]	0.30** [0.14, 0.45]
Total money bet	0.21* [0.04, 0.37]	0.22* [0.05, 0.37]	0.08 [−0.09, 0.25]	0.19* [0.02, 0.35]

*$P < 0.05$; **$P < 0.01$.

Table 2
Impact of marketing on gambling variables. Results of SARIMA models.

DV	IV	EST [95% CI]	SE	*t*	*P*	R^2	*Q* (lag)	*P*	SARIMA
New accounts	ADV	0.005 [0.003–0.007]	0.001	6.088	<0.0001	0.906	25.110 (17)	0.092	(1.0.0) (0.0.0)
	BON	0.005 [0.003–0.007]	0.001	6.573	<0.0001				
	SPO	0.015 [0.004–0.024]	0.005	2.937	0.004				
	AFF[a]	–	–	–	–				
Active accounts	ADV	0.004 [0.001- 0.008]	0.002	2.270	0.025	0.788	13.650 (17)	0.692	(0.1.0) (0.1.1)
	BON	0.018 [0.014–0.022]	0.002	8.128	<0.0001				
	SPO[a]	–	–	–	–				
	AFF[a]	–	–	–	–				
Deposits	ADV	0.737 [0.361–1.113]	0.190	3.884	0.0002	0.758	7.262 (15)	0.950	(2.1.0) (.1.1)
	BON	1.629 [1.113–2.145]	0.261	6.233	<0.0001				
	SPO	3.947 [2.307–5.587]	0.990	3.987	0.0001				
	AFF[a]	–	–	–	–				
Total money bet	ADV[a]	–	–	–	–	0.420	21.452 (14)	0.091	(0.1.3) (0.1.1)
	BON	6.777 [2.774–10.780]	2.023	3.349	0.001				
	SPO[b]	49.022 [23.300–74.747]	13.002	3.770	0.0003				
	AFF[a]	–	–	–	–				

Note. DV = Dependent variable. IV = Independent variable. EST = Estimate (units of IV [i.e. euros in marketing] to increase one unit of DV [i.e. number of accounts or euros deposited/bet]). CI = Confidence Interval. SE = Standard error. R^2 = stationary R^2. *Q* = Ljung–Box test. ADV = advertising expenditure; BON = bonus expenditure; SPO = sponsorship expenditure; AFF = affiliation expenditure.
[a] Variable excluded from model.
[b] Lag 4 effect.

Table 3
Correlations between marketing and gambling variables with confidence intervals before RD 958/2020.

	Advertising	Bonus	Affiliation	Sponsorship
Active accounts	0.62** [0.48, 0.73]	0.46** [0.28, 0.61]	0.24* [0.04, 0.42]	0.34** [0.15, 0.51]
New accounts	0.53** [0.37, 0.66]	0.60** [0.45, 0.72]	0.18 [−0.02, 0.37]	0.34** [0.15, 0.51]
Deposits	0.51** [0.34, 0.65]	0.27** [0.07, 0.45]	0.31** [0.11, 0.48]	0.38** [0.19, 0.54]
Total money bet	0.24* [0.04, 0.42]	0.14 [−0.07, 0.33]	0.03 [−0.17, 0.23]	0.16 [−0.05, 0.35]

Note. RD = Royal Decree.
*$P < 0.05$; **$P < 0.01$.

Table 4
Correlations between marketing and gambling variables with confidence intervals after RD 958/2020.

	Advertising	Bonus	Affiliation	Sponsorship
Active accounts	0.58** [0.26, 0.78]	0.68** [0.41, 0.84]	0.17 [−0.21, 0.51]	0.31 [−0.07, 0.61]
New accounts	0.41* [0.04, 0.68]	0.35 [−0.03, 0.64]	0.15 [−0.24, 0.50]	0.09 [−0.29, 0.45]
Deposits	0.33 [−0.05, 0.63]	0.68** [0.41, 0.84]	0.30 [−0.08, 0.61]	0.36 [−0.02, 0.65]
Total money bet	0.34 [−0.04, 0.63]	0.79** [0.59, 0.89]	28 [−0.10, 0.59]	0.26 [−0.13, 0.58]

Note. RD = Royal Decree.
*$P < 0.05$; **$P < 0.01$.

accounts has remained stable ($r_{beforeRD} = 0.62$–$r_{afterRD} = 0.58$). However, its association with the creation of new accounts has diminished ($r_{beforeRD} = 0.53$–$r_{afterRD} = 0.41$), and its linkage to both deposits and the total amount wagered has vanished. Lastly, following the approval of RD958/2020, bonus expenditure has exhibited a stronger relationship with active accounts ($r_{beforeRD} = 0.46$–$r_{afterRD} = 0.68$), deposits ($r_{beforeRD} = 0.27$–$r_{afterRD} = 0.68$), and total money bet ($r_{beforeRD} = 0.14$–$r_{afterRD} = 0.79$). Additionally, its association with the creation of new accounts has become non-significant ($r_{beforeRD} = 0.60$–$r_{afterRD} = 0.35$; $P = 0.069$).

Discussion

The main objective of this study was to find the relationship between spending on different marketing strategies with online gambling behavior in Spain. The main finding was that investment in advertising, promotion, and sponsorships was significantly related to the increase in the number of new and active accounts, as well as to deposits and the total money bet. As a secondary finding, the preliminary results indicated that the Spanish RD regulating advertising in gambling appeared to mitigate the relationship between marketing expenditure and gambling behavior, with the exception of expenditure on bonuses, which seems to have strengthened.

The findings of this study demonstrate that investments in advertising ($P = 0.0002$), bonuses ($P \leq 0.001$), and sponsorship ($P \leq 0.0003$) significantly increased the deposits made into accounts as well as the total money bet. This result points in the same direction as some systematic reviews and meta-analyses indicating that exposure to marketing strategies is related to higher intensity and frequency of gambling behavior, as in the number of bets or expenditure in gambling activities.[22,24] Additionally, our analysis reveals that expenditures on advertising ($P \leq 0.025$), bonuses ($P < 0.0001$), and sponsorships ($P = 0.004$) are capable of attracting new accounts and keeping them active. For instance, in this study, an investment of €55 per month in bonuses was found to keep an account active. This investment in marketing gambling could be specially profitable, given that in 2023, each online gambler in Spain lost an average of €61 per month.[59] Several aspects can explain these results. Advertising and sponsorships may lead, on

the one hand, to the normalization of gambling[25,60] and to the development of favorable attitudes towards gambling, associating gambling with sport or success.[5,61] In addition, promotion, but also advertising, can act as powerful triggers, encouraging the player to gamble,[36] especially within the realm of sports betting. In this context, it is common to encounter persistent direct and personalized messages offering free betting bonuses, which incite individuals to register in gambling websites, to re-engage with gambling after a period of inactivity, or to make larger deposits into their accounts. These last points are especially relevant considering the great accessibility and availability offered by online gambling.[62]

An exploratory analysis of RD 958/2020 has demonstrated that this regulation was partially effective in diminishing the correlation between marketing strategies and online gambling behaviors. However, the influence of bonus utilization has been reinforced, highlighting this marketing strategy for inspection. Furthermore, while the relationship between bonus expenditure and the opening of new accounts is not statistically significant, the confidence intervals (−0.03, 0.64) suggest that it is possible this correlation has only been reduced. This is particularly relevant given that attracting new clients with promotions is completely prohibited by law. In light of the aforementioned prohibition, it is plausible that the observed intensification in the relationship between bonuses and online gambling behavior can be attributed to a shift in promotional strategies aimed at retaining active gamblers and re-engaging inactive ones at all costs. In line with the results of Guillou-Landreat et al.,[5] the importance of continuing to monitor changes in gambling behavior (e.g. prevalence rates) and marketing strategies, increasing regulations, and especially monitoring compliance with regulations is suggested. Legislation on online gambling can extend beyond the mere limitation of marketing strategies. In this regard, several actions have proven to be useful,[63–66] including reducing the number of licenses granted to online gambling operators, the amounts of money bet, the size of the prizes and losses, as well as raising the minimum age for betting and the quantity of penalties for non-compliance with existing regulations.

This study has a series of limitations that should be taken into account. On the one hand, although the time series used do not cover more than 10 years, in this period there has been a great advance in the development of marketing strategies and in the way of betting on online mode. These changes could influence the current results by modifying the intensity of the relationships found. On the other hand, these results may not necessarily be extrapolated to in-person gambling due to the significant differences with the online modality. Another limitation is the lack of control of potential sources of confounding that could not be included due to the nature of the data[13] (e.g. individual factors such as age, or gambling-related, frequency of gambling activity used). In this same vein, it would have been useful to control the SARIMA models with other available advertising investment variables distinct from gambling. Finally, the impact of the RD on marketing influences should be taken with caution given the small amount of data that is available after its implementation. This aspect would only allow for the analysis of the immediate and preliminary effects of the RD, with the statistical analyses being underpowered. In addition, the inability to determine a specific time point at which the RD 958/2020 regulations began to take effect (as RD was progressively implemented from November 2020 to August 2021), combined with the limited number of time points available after the implementation of the law (i.e. 28 months, from September 2021 to December 2023), hindered the feasibility of conducting an intervention time series analysis for the secondary objective.

In conclusion, this study is the first to analyze the relationship between advertising and gambling using official data from a country, thereby contributing evidence to the robust relationship between marketing strategies and online gambling behavior. Furthermore, this study surpasses some limitations found in previous literature by employing longitudinal data and utilizing indicators that are not influenced by individuals' perceptions (e.g. monetary expenditure). Other countries may look to Spain's example in monitoring gambling data and accessing it. The results of this study underscore the importance of adopting a public health perspective, particularly by considering marketing-related variables in addressing gambling issues. These results are especially relevant in the Spanish context, given the unfortunate decision by the Supreme Court of Spain in April 2024 to provisionally annul some of the articles of the RD 958/2020,[67] citing, among other reasons, a lack of scientific evidence to justify the marketing restrictions imposed on gambling operators. In this regard, future research should evaluate the impact of regulatory actions on gambling behavior over time following their implementation.

Author statements

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Ethical approval

None sought.

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Competing interests

None declared.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.puhe.2024.06.025.

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