

**Product characteristics and risk– A current state assessment and template roadmap for building a more robust evidence base**

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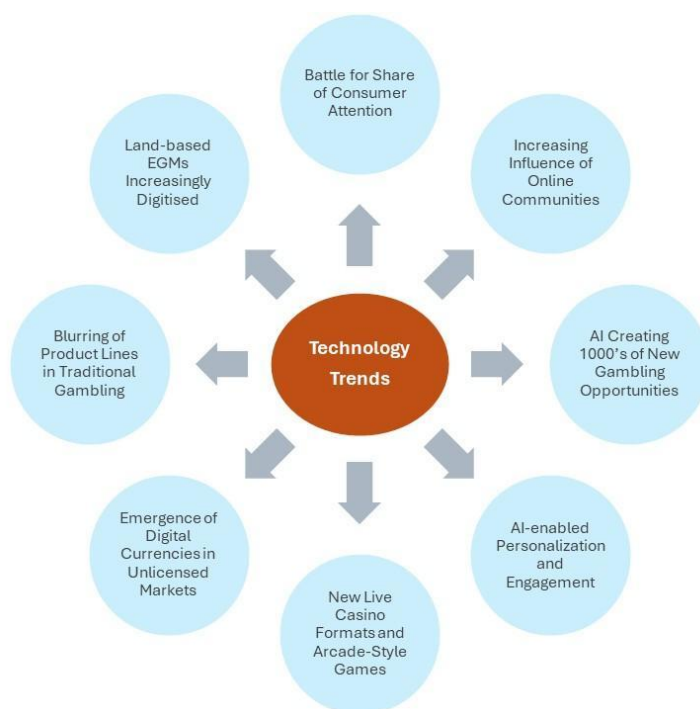
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## Executive Summary

The Game Safety Institute and Dr. Sally Gainsbury have partnered to investigate what needs to be done to better understand why and how gambling products may contribute to the risk of harms. The modern gambling industry is fast paced, diverse, and commercially driven, making it increasingly difficult for global regulators to ensure that their work is truly protecting players. Our discussion paper has identified the following important concerns which need to be addressed through an enhanced programme of research and investigation.

### Key Product Technology Enabling Trends



### Continuous innovation in gambling products running ahead of regulation

There is an ever-expanding range of digital experiences, including increasingly personalised AI-driven content together with gamified and immersive digital products. Little is known about the ways in which such innovations may add to the risk of harms, or how they should best be regulated alongside other forms of consumer protection in the online space.

### Shifts in consumer behaviour contributing to increasing immersion

Consumers generally are spending increasing amounts of time online, supporting the evolution of products: many digital social, interaction and community features are being integrated into the gambling experience without an appropriate protective framework.

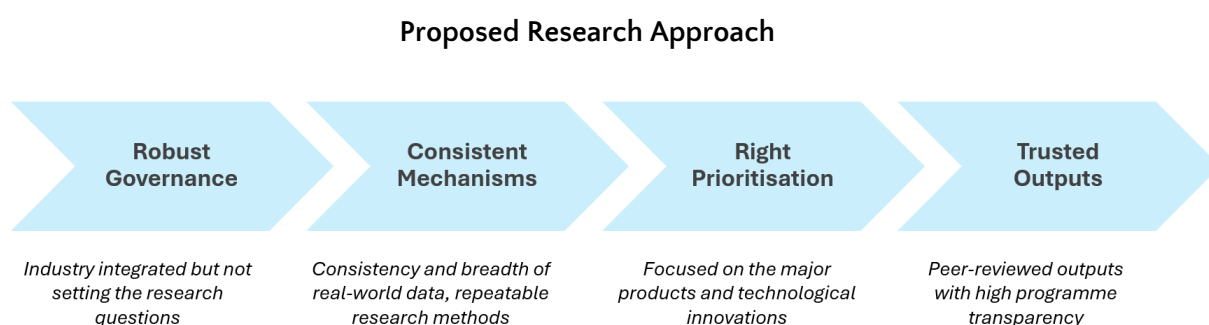
### Blurring of lines between product types, increasing regulatory challenges

The structural distinctions between gambling product verticals such as betting and slots, usually used as the underpinning of a regulatory regime, are becoming less pronounced, driven by continuous innovation by the gambling industry.

## Lack of robust research to underpin best practice regulatory advances

A review of the last decade's research into gambling product characteristics, included in the discussion paper, focused on product characteristics, identified only 23 robust papers in English, predominantly in sports and slots, with only three of these studies using real-world player data to support their conclusions.

We are proposing a multi-year research programme which will assess gambling product characteristics and risks in a more systematic and robust manner. To support the priorities listed here, there will need to be work to agree definitions and establish a trusted research environment of player data and product metadata.



The highest priority research areas are;

- **Online sports betting and slots**, as existing research indicates that they are the most likely to cause harm, and continue to be an area of growth in the market
- **Land-based slots on electronic gaming machines (EGMs)** are also prioritised due to consistent concerns highlighted in research about their potential contributions to harm, alongside their increasing digitisation and enhanced visuals.

We recommend further research into the characteristics of casino games (both land-based and online 'live' versions) to understand how the specific product features of these games, and how they are marketed and consumed, may promote risky behaviours amongst users.

Lottery products are the largest gambling vertical, so there will be significant value in systematically gathering and describing consumer behaviour, especially as research consistently suggests engagement in multiple forms of gambling contributes to harms.

There is a necessity to better understand the impact of emerging digital products and experiences, including arcade-style games and the impact of engagement features. We recommend gaining a more detailed understanding of the products and practices emerging in the unlicensed market too, including those available on crypto casinos.

The overall purpose of the discussion paper is to provide a cogent starting point for stakeholders, building out the specific research questions and potential methodologies. We urge a general collaboration, including the gambling industry, to create a successful and, most importantly, practical research programme to create safer yet still enjoyable gambling experiences for all consumers.

# 1. Introduction

Although most gambling harm prevention efforts have focused on the person, a public health approach encourages consideration of three additional factors: product, place and practices. Gambling product characteristics and operator practices have been identified by the Gambling Commission as evidence gaps<sup>1</sup>, are highlighted by the UK's Department for Culture Media and Sport<sup>2</sup> and are referenced in the UK Government's White Paper<sup>3</sup>. Products cover an expanding range of digital gambling experiences, including increasingly personalised AI-driven gambling related content, and gamified and immersive digital products.

Our main objective of this report is to develop a template roadmap for tackling the most pressing and high-impact research gaps and policy considerations over the coming years with regards to product characteristics. The paper has been written primarily for an audience to include regulators and policy makers, researchers, research funding bodies, and the gambling industry, to support the development of an evidence base for product related research.

This document is structured as follows;

1. **Industry Conceptual Model:** We developed a conceptual model to support the definition of the gambling industry and to support project scoping and structured analyses for this report
2. **PESTLE Industry Analysis:** We assessed the current state of the gambling industry in terms of the different types and availability of gambling products and their characteristics. The report documents key trends likely to impact gambling product development over the next decade
3. **Research Scan:** We summarised the current state of the most high-quality and relevant research into gambling harms and its relation to product characteristics. We summarise the research relating to products and characteristics and overlay on top of the conceptual model
4. **Template Roadmap:** We defined a template roadmap to facilitate discussions amongst stakeholders about how best to tackle the most pressing and high-impact research gaps and policy considerations over the coming years in gambling products and their characteristics.

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<sup>1</sup> <https://www.gamblingcommission.gov.uk/news/article/evidence-gaps-and-priorities-2023-2026>

<sup>2</sup> <https://www.gov.uk/government/publications/dcms-areas-of-research-interest/dcms-areas-of-research-interest#sec35>

<sup>3</sup> <https://www.gov.uk/government/publications/high-stakes-gambling-reform-for-the-digital-age/high-stakes-gambling-reform-for-the-digital-age>

## 2. The Gambling Product, Place and Practice Ecosystem – A Conceptual Overview

To support scoping and the analyses undertaken in this paper, we developed a conceptual model of the gambling industry. This model has been used to identify the entire scope of the industry, with a view to narrowing the analysis of this report to a subset, given the large variety of gambling products and resource limitations of this project.

The authors recognise that the legal definitions of gambling vary globally. For example, Daily Fantasy Sports (DFS) requires a gambling pool betting license in the UK<sup>4</sup>, however many states in the US have enacted laws to confirm that DFS are games of skill and not gambling<sup>5</sup>. The purpose of this model is, therefore, not to define legal definitions of gambling, but to support conceptualising different gambling products and opportunities, and prioritizing which should be in scope when considering developing the research roadmap.

### Product

The conceptual model allocates different forms of gambling to product verticals to assist in planning and scoping. For example, the major verticals include Betting (predominantly sports), Casino (table games of chance), Slots (reel-based games of chance), Lottery (draw-based games of chance) and Instant Win Games (e.g., scratchcard style games). Minor verticals of gambling include eSports (gambling on the outcomes of video game contests), Virtual Sports (simulated sports contests with pre-determined outcomes), Bingo (random number-based games) and Arcade-style gambling (games of chance with fixed outcomes, typically involving some levels of user interaction and arguably skill).

Skill-based gambling includes games such as Poker, DFS, other Card and Board Games. There are increasing examples of gambling mechanics being introduced into games and activities previously not considered gambling, and as a result policy and research often lags behind these marketplace and technology changes. Social and Promotional games exist that have gambling mechanics such as the ability to wager on gambling verticals like sports and casino. However, these may often be played without a wager being placed and prizes awarded in the form of non-monetary points or non-fiat goods without a direct opportunity to exchange for currency cash equivalent. If the prizes have monetary value or can be exchanged directly for monetary value, they are more likely to be gambling. Virtual currency is gambling, but what is not gambling is where there is an in-direct exchange in a non-typical manner e.g., skins marketplaces.

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<sup>4</sup> <https://www.gamblingcommission.gov.uk/licensees-and-businesses/licences-and-fees/remote-pool-betting-licence>

<sup>5</sup> <https://thefsga.org/distinguishing-fantasy-sports-from-sports-betting/>

PRODUCT					PLACE & PRACTICE				
Product Vertical	General Product Characteristics e.g.,					Channel	Payments	Advertising & Marketing	Account-Based Play
	SPEED  CONTINUITY & FREQUENCY  PRIZE  STAKE								
Gambling – Major Verticals Betting Casino Slots Lottery (Draw) Instant Win Games									
Gambling – Minor Verticals eSports Virtual Sports Bingo Arcade-style Games									
Skill-Based Gambling Poker DFS Other Card Games Board Games									
Social and Promotional (with Gambling Mechanics) Social Casino Sweepstakes									
Video Gaming (with Loot Boxes)									
Other Activities (similar to Gambling) e.g., Prediction Markets, Retail Financial Trading									

Figure 1: Industry Conceptual Model



The video gaming industry includes loot boxes, features that enable players to purchase virtual goods of value, which are effectively random outcomes, using fiat currencies. Other activities have similar features to gambling, for example short-term trading, as well as prediction and derivative markets.

‘Gambling platforms’ is a general term that is used to define a range of services that are used to support the provision of gambling products to consumers. We do not aim to define the term platform in detail in this paper as it is used generally within the industry. Some of these services that are provided and supported include player account management (which includes the ability for players to set their own responsible gambling limits), compliance (which includes anti-money laundering and know your customer checks) and marketing services. These services often interact closely with the products as outlined above and the distinction between what is a gambling product and what is a service that impacts the product can be nuanced and difficult to distinguish.

For the purpose of this project, we define the product as the gambling vertical: the sports bet, the slot game, the roulette game. An example of a service is being able to offer a leaderboard, displayed alongside a product and integrating the results of players across products, which an operator can choose to integrate and overlay across different gambling products. When considering the strategic drivers of the industry, we also consider wider developments that impact the player as they engage with the product, including the services offered by platforms.

### **Why Focus on Product Characteristics?**

Within product there are general characteristics which are applicable to all gambling or gambling-like products: speed, continuity and frequency, prize and stake. Much of the research undertaken to date tends to focus on a top-down approach to gambling products. These top-down findings can then drive conclusions of general product characteristics as outlined above. One example of this is the ASTERIG methodology<sup>6</sup> to assess product risk, developed in 2013. It uses a single methodology to assess all forms of gambling using such general characteristics and will tend to draw very high-level conclusions such as that online slots are typically considered high risk due to their fast, continuous and high availability features.

In the paper *Safer by design: Building a collaborative, integrated and evidence-based framework to inform the regulation and mitigation of gambling product risk*<sup>7</sup>, several considerations are discussed about the approaches and limitations of existing research into product risk. It states that comparisons of the relative risk of games have been examined using different lines of evidence including: (1) the level of problem gamblers observed in communities with or without the availability of particular types of games; (2) the proportion of gamblers on a particular class of activity who develop problems; (3) the proportion of higher risk gamblers who gamble on particular activities; (4) game types identified as most harmful by those currently in treatment; or (5) the level of high frequency/expenditure gambling on particular activities as compared with others.

Most important are studies that have examined the relationship between participation in specific activities and problem gambling or harm after controlling for engagement in other activities. Studies that have applied this approach have generally confirmed that lottery products have been positioned at the lower end of the risk continuum, whereas highly continuous activities such as slot machines have appeared to entail the greatest risk. Comparisons based on technological differences may not hold in the future because of the dynamic nature of product designs and developments in digital technology. The structural

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<sup>6</sup> <https://asterig.com/index.php/en/methodology>

<sup>7</sup> <https://cdspress.ca/wp-content/uploads/2022/09/Paul-Delfabbro-Jonathan-Parke-Simo-Dragecivic-Chris-Percy-Richard-Bayliss.pdf>

differences between game types (what we term product verticals) are becoming less distinctive. For example, the relatively high risk of slot games has been attributed to their rapid, continuous reinforcement and immersive game play features. More recently, other forms of gambling, such as sports betting in play whilst a match is happening, and rapid-draw lotteries are evolving with similar attributes. Lottery operators can now offer draws every few minutes, either online or through self-service terminals in retail outlets.

In comparison, a bottom-up approach could discriminate gambling products based on their differing product characteristics. Within each product vertical there will be product types and product characteristics that are specific to each gambling or gambling style product. For example, sports betting can be divided into different types such as pre-event, in-play or live, single bet, or a combination bet, which combines different events or legs that, collectively, make up the whole bet (also referred to as parlays or accumulators). Within sports betting, further characteristics can be integrated into the bet, for example bonuses for placing bets and cashout features, which allows the player to settle a bet before the event ends, receiving a payout based on the current odds and the likelihood of the bet winning.

Likewise, within slots, there are elements which provide a wide range of variety within the vertical itself. Some slots can have characteristics that enable a player to stake-up and buy into a bonus round, effectively paying to skip the specified minimum spin requirement within the base game of the slot before reaching a bonus round. Some slots have persistence characteristics, which allow players to collect items as they play the game, that could be valuable in bonus rounds, and which are often retained for future game play sessions to encourage players to return. Some slots have traditional spin mechanics, for example they spin reels on fixed grids of 5 columns x 3 rows with a relatively small number of distinguishable win opportunities (i.e., paylines), however others have significantly more complex structures that enable effectively several thousand paylines or combinations to be feasible.

Therefore, a bottom-up approach to product risk attempts to understand the contributions of different elements of the product (i.e., characteristics) and their relationship to risk and harms and is the focus of this paper. Whilst focusing on product characteristics addresses some of the weaknesses of a top-down approach, it also poses new challenges. In particular, agreeing consistent data definitions about product characteristics, and getting access to data that explains product characteristics.

There are many different suppliers of gambling products globally, and operators typically source gambling products from a wide range of suppliers. This also poses challenges as there are no global industry standards that define what a gambling product is or how data should be used to describe different elements of the product.

## **Place and Practice**

The environment in which the gambling product is consumed influences the gambling experience – and is a combination of place and practice. The channel within which the product is consumed is an example of place. Channel for lottery may include buying a lottery ticket in a retail store or purchasing the ticket via the internet. The internet could be segmented into sub channels, for example was the gambling product consumed via a desktop, laptop or smart phone. Other variables include the payment options, for example using cash or digital payment methods, which can be further subdivided into credit card, debit card, prepaid cards, eWallet, and open banking. Alongside using fiat currencies, opportunities exist to fund gambling via crypto currencies.

Consumers are exposed to advertising and marketing of gambling products (practices). Advertising refers to 'above the line' exposure, for example general advertisements on the high street or television. Marketing refers to 'below the line' or tailored and personalised

experiences, for example email marketing and in-app offers to purchase gambling products. Technology has enabled greater personalised marketing which may be based on target cohorts or be specific to individuals, thanks to account-based gambling in which the operator knows the customer, their behaviour and has a direct method of contacting consumers. Account-based gambling has traditionally been limited to online gambling, although it is becoming more common in retail venues in some jurisdictions as the land-based sector has evolved technologically.

Figure 2 below describes how next levels of details for product and place and practices could be defined and assessed. The scope of this project is centred on assessing the major gambling verticals and their specific product characteristics. Whilst we include further details of the potential compositions of place and practice by way of examples, a detailed assessment of place and practice is of out of scope for this project.

PRODUCT						PLACE & PRACTICE				
Product Vertical	Product Type	General Product Characteristics e.g.,				Specific Product Characteristics	Channel	Payments	Advertising & Marketing	Account-Based Play
Gambling – Major Verticals	Betting	SPEED	CONTINUITY & FREQUENCY	PRIZE	STAKE	e.g., Cash-out e.g., Game Show Format e.g., Volatility e.g., Second Chance e.g., Slot Mechanics	Online Mobile app Messaging app Desktop TV Online Platform e.g., Kick Console AR / VR  Land Casino Gaming hall Bookmaker Sports venue Kiosk EGM VLT Arcade Retailers Other venues	Cash Credit Debit Open Banking eWallet Crypto currency Virtual currencies Coins In-app purchases	Mass Broadcast media Press Incentives In-venue	Registered Unregistered
	Casino									
	Table Games, Live Dealer									
	Traditional, Modern (e.g., Megaways)									
	Official Draw, Betting									
	Scratchcard, Digital Games									
Gambling – Minor Verticals								Personalised Product Content Incentives		
eSports										
Virtual Sports										
Bingo										
Arcade-style Games										
Skill-Based Gambling										
Poker										
DFS										
Other Card Games										
Board Games										
Social and Promotional (with Gambling Mechanics)										
Social Casino										
Sweepstakes										
Video Gaming (with Loot Boxes)										
Other Activities (similar to Gambling)										
e.g., Retail Financial Trading										

Figure 2: Next-level Details for Product, Place and Practices

### 3. PESTLE Analysis – The Gambling Industry from a Product Perspective

#### Gambling Product and Place/Practice PESTLE Analysis

Like all industries, the gambling industry is subject to various strategic drivers which impact the products that the industry produces and how those products are marketed and consumed across different jurisdictions. These strategic drivers are critical in understanding how the gambling industry is evolving from a product, place and practice perspective. We have used the PESTLE framework to assist in documenting and understanding these strategic drivers.

A PESTLE analysis is a strategic framework used to evaluate the external macro-environmental factors that impact an industry or organization. The acronym PESTLE stands for Political, Economic, Social, Technological, Legal, and Environmental factors, each of which plays a critical role in shaping the operating landscape of an industry. For the gambling industry, which is highly regulated and influenced by a wide range of external forces, a PESTLE analysis provides a comprehensive understanding of the opportunities and challenges it faces.

This PESTLE analysis aims to identify and analyse the key factors that could affect the industry's growth, profitability, and sustainability, with regard to gambling and gambling-adjacent products, their development paths and their availability.

The detailed PESTLE analysis is in Appendix 1. We present a summary of key observations below.

#### Political

The political landscape plays a pivotal role in shaping the gambling industry, as it is one of the most heavily regulated sectors globally. Governments and regulatory bodies exert significant influence over the industry through legislation, taxation, licensing, and policies aimed at ensuring fair play, consumer protection, and the prevention of problem gambling. The political environment can either foster growth and innovation or impose restrictions that challenge the industry's operations and profitability.

Summary findings from the political analysis:

- There is a trend towards the regulation or licensing of gambling globally.
- Government taxation of gambling varies widely across products and jurisdictions.
- Complex political dynamics, with some forms of gambling expanding more rapidly than others.
- Illegal gambling remains a challenge for stakeholders, with increasing trends reported across numerous jurisdictions.
- Estimates of the costs to wider society from problem gambling vary significantly.
- There is increasing political pressure for further consumer protection measures.
- Greater industry self-regulation has, in parallel, emerged as the industry aims to demonstrate sustainable practices.

#### Economic

The economic environment is a critical determinant of the gambling industry's performance, as it directly influences consumer spending power, investment decisions, and overall market dynamics. Economic factors such as disposable income levels, unemployment rates, inflation, and economic growth play a significant role in shaping demand for gambling products and

services. Additionally, the gambling industry is often viewed as a source of revenue for governments, making it sensitive to changes in taxation and fiscal policies.

Summary findings from the economic analysis:

- Global gambling market reached over half a trillion dollars in 2023, with online gambling growing at a faster pace than land-based.
- The UK and Italy remain the largest online gambling jurisdictions globally.
- Land-based gambling has been declining in some regions.
- Despite this, land-based remains the major segment and some forms are growing faster than others.
- Lottery remains the largest gambling vertical globally.
- Competition has been intensifying with gambling competing for "share of attention" against entertainment alternatives, with gambling companies tailoring their products to meet these consumer needs.

## **Social**

The social dimension of the gambling industry is shaped by evolving cultural attitudes, demographic shifts, and changing consumer behaviours. As a form of entertainment that intersects with leisure, risk, and social interaction, gambling is deeply influenced by societal norms, values, and perceptions.

Summary findings from the social analysis:

- Younger generations are increasingly engaged with digital content.
- Growing social and community elements in online gambling as the industry adapts its products to appeal to younger generations.
- Advertising remains controversial, with varying restrictions across jurisdictions.

## **Technological**

Technology is a driving force behind the transformation and growth of the gambling industry, revolutionizing how games are played, accessed, and experienced. From the rise of online platforms and mobile gaming to the integration of artificial intelligence and blockchain, technological advancements have reshaped the industry's landscape. These innovations not only enhance the user experience but also create challenges related to security, regulation, and competition.

### Summary findings from the technological analysis:

- Continuing mobile internet and bandwidth expansion is enabling new gambling products.
- Traditional casino games have evolved to include live dealer experiences and new game show formats.
- Arcade-style games, which typically involve greater consumer interaction, are emerging to appeal to younger generations.
- Sports betting is evolving and is increasingly focus on in-play betting.
- AI application use cases have expanded and are increasing the number of gambling opportunities available.
- Crypto casinos are growing in popularity due to some customers seeking anonymity and higher payouts.
- Personalised marketing technology is enabling the overlay of engagement and social features onto all formats of gambling to driver higher consumer engagement.
- Land-based venues are incorporating digital technologies such as high-definition displays, cashless payments, and radio frequency identification to improve customer experience and operational processes.

### Legal

The legal environment is a critical factor influencing the operations, growth, and sustainability of the gambling industry. As a highly regulated sector, gambling is subject to a complex web of laws and regulations that vary significantly across jurisdictions. These legal frameworks govern everything from licensing and taxation to advertising, data protection, and responsible gambling practices.

- There are complex regulatory frameworks varying significantly across jurisdictions.
- The number of legal "grey areas" is growing with regards to the availability of gambling-like entertainment:
  - Social casinos using virtual currencies
  - Daily Fantasy Sports (DFS)
  - Prediction markets
  - Sweepstakes
  - Loot boxes in video games
  - Certain retail financial instruments.

### Environmental

Whilst we consider environmental factors to be negligible when considering the industry from a productive and place and practice perspective, we acknowledge the ongoing wider societal concerns regarding the negative environmental implications of developing Generative AI applications<sup>8</sup>.

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<sup>8</sup> <https://news.mit.edu/2025/explained-generative-ai-environmental-impact-0117>

## 4. Research Scan

The approach to undertaking the research scan was to focus on research examining product characteristics for our priority verticals. Our objective was to find all relevant academic papers that reached a minimum level of quality and relevance and which examined the links between gambling products and their characteristics with their links to gambling related harms.

### Criteria

Our criteria to meet a minimum level of quality and to manage the scope of the research scan is outlined in Appendix 2: it concentrated on selecting research papers that focused on i) product characteristics and ii) was of sufficient methodological quality that the findings could be reasonably confidently applied in this context.

The DeepDyve platform, an aggregator across most research publications, was used as the initial entry point for this investigation. Searches for relevant papers were carried out using terms including the gambling product name (e.g. slots, EGM, online slots, betting, sports betting, DFS, esports, lottery, scratchcards, bingo) and words indicating gambling harm such as addiction, harms, gambling harm, problem gambling. Only papers which were written in English were reviewed in detail. These searches highlighted several literature reviews on the overall topic of gambling harm/gambling addiction and its relationship with a particular product, especially EGMs (electronic gaming machines). These were then used to 'snowball' for further papers by reviewing in turn, their references. These searches were further corroborated using Google Scholar, PubMed and Ovid.

Most papers which either matched the initial search criteria, or were referenced by papers which were found in the initial search, described the relationship between, for example, slot games and gambling addiction, but did not explain in any detail any features of the product which could be identified as specifically contributing to harms and/or addiction. Most of the papers which did investigate specific product characteristics were related to Electronic Gaming Machines (EGMs) and their slot games. Of the papers which mentioned any specific product characteristics and their potential for causing harm/addiction, this initial list was then winnowed down by publication date (2014 onwards) and whether or not the research methodology included either a recognised measure for gambling harm/addiction, such as PGSI (the problem gambling severity index, self-reported by the participants) or a reasonable proxy for harmful behaviour, such as number of daily deposits or lengthy play sessions.

Papers where the research had been carried out with non-gamblers, such as university students, where the participants did not play for real money, or the product was not portrayed realistically, were excluded as being unlikely to represent real-world gambling behaviour.

### Results

Using the above search criteria and databases we found 23 peer-reviewed papers. The strict search criteria will have filtered out any papers pre-2014, any papers that are theoretical and have no real-world qualitative or quantitative data and any studies that aim to recreate gambling environments and products in an unrealistic laboratory setting. We recognise that our search terms may not be exhaustive. With a time-boxed search effort and a non-exhaustive assessment of research databases, there is a risk some relevant research papers would have not been discovered in the search.

Of the 23 papers identified, 14 covered sports betting (or what authors deemed were adjacent gambling activities, such as eSports and Daily Fantasy Sports), 10 covered slots and one covered casino. Of the remaining 2 priority gambling verticals in our scope, Lottery and Instant Win Games (IWGs), no research papers were found that met our criteria.



Of these papers, 12 focused on online gambling whilst 11 focused on land-based. Only three of the papers used real-world gambling behavioural data to support the research, the remainder focusing on using qualitative data. The most widely used gambling screen was PGSI (used in 20 studies), with 6 other screens used. There were 2 studies that did not use a screen but harm proxies i.e., behavioural markers of harm.

The majority of studies were conducted in Australia (11), followed by the UK (4), Canada (3), New Zealand and the USA (2 each) and Spain (1). Less than half of the studies (8) have been conducted since 2020.

The following table summarises the general and specific product characteristics that had been assessed and were deemed to contribute to gambling related harms to some degree within the research papers;

Priority Domain	General Product Characteristics	Specific Product Characteristics
Sports Betting	<ul style="list-style-type: none"> <li>• Speed</li> <li>• Continuity e.g., Number of betting opportunities</li> <li>• Frequency</li> </ul>	<ul style="list-style-type: none"> <li>• In-Play</li> <li>• Micro Events</li> <li>• eSports</li> <li>• DFS</li> <li>• Combinations e.g., parlay</li> </ul>
Slots	<ul style="list-style-type: none"> <li>• Stake</li> <li>• Speed</li> <li>• Prize</li> </ul>	<ul style="list-style-type: none"> <li>• Audio Visual Effects</li> <li>• Volatility</li> <li>• Interaction Features</li> <li>• Free Spins</li> <li>• Paylines</li> <li>• Jackpot (Capped)</li> <li>• Jackpot (Progressive)</li> <li>• Jackpot (Mystery)</li> </ul>
Casino	<ul style="list-style-type: none"> <li>• Frequency i.e., short-events</li> </ul>	<ul style="list-style-type: none"> <li>• Live Dealer</li> </ul>
Lottery	n/a	n/a
IWGs	n/a	n/a

The most common findings overall were:

- At risk gamblers are more likely to be susceptible to characteristics which may be harmful. For example, games with continuous play allowing for long sessions or games with a short interval between bets and outcomes and a short period to place a bet as this reduces informed choice.
- Large jackpots can create desires based on the potential of a life-changing win, and at-risk gamblers are more susceptible to these cognitions.
- Multi-line slots appear to be riskier, potentially because they allow greater bets to be placed and there is a higher tendency from at-risk players to overstate their competency and skill in these games.
- Games which appear to offer an ability to apply a skilled opinion create false cognitions, particularly in at-risk gamblers.
- In-play sports betting can lead to excessive spending as bets must be placed in a restricted time period, prohibiting informed decision-making and facilitating loss chasing particularly among those with limited self-control or heightened impulsivity.

With many of the papers it was difficult to pick apart correlation from causation: for example individuals classified as experiencing gambling problems were the most likely to use microbetting opportunities; however, it is not clear if these microbets contribute to gambling problems or if it is part of the overall behavioural pattern.

We recognise that our own taxonomy of product verticals outlined in Figure 1 was always likely to be different to how researchers have interpreted gambling products in the past decade. For example, whilst we categorise DFS and eSports into different verticals (not product characteristics), researchers have compared players behaviours in these verticals in the context of traditional sports betting. Likewise, Live Dealer is arguably a product type of the casino vertical rather than a product characteristic in itself. To further complicate this example, within Live Dealer, some newer game formats, such as live game show formats, often do not have any similarities to Live Dealer traditional casino table games.

This exercise outlines the difficulties of using a consistent taxonomy to describe gambling verticals and types together with those general and specific product characteristics that make the analysis and comparison of research findings challenging.

### **Product Vertical Findings**

As part of the research scan, we noted any research papers and their key findings that were flagged, but focused on the product vertical and gambling-related harm. These provided interesting findings at the higher level of the overall product vertical, but were considered out of scope of the product characteristics research scan. As this was not the main objective of the research scan, it is highly likely other research papers exist that assess links between various product verticals and harms, other than the list of 12 papers (Appendix 4).

These papers, which are almost all based on self-reported survey data, generally confirm that it is extremely difficult to identify causation rather than correlation, as those most at risk of harm are also those who gamble across the widest range of products, and at higher levels of intensity. However, a small number of papers with very large sample sizes have managed to isolate electronic gaming machines as posing an additional risk on top of other factors such as ethnicity and education, showing that the product itself is contributing to the risk of harm. Recent papers also call out the increased risk from online slots, shown for example through increasing numbers of calls to helplines as players move from land-based to online. Some papers found that increased risks of harms from certain products coincide with co-addictions such as smoking and vaping, further confounding any specific impact from product characteristics with player demographics.

## Conceptual Model ‘Heatmap’ of Research

We have already highlighted the challenges to analysing and comparing the extant research, due to significant inconsistencies in the terminology used to describe product verticals and product characteristics. Nonetheless, we have attempted to map on to our taxonomy, as outlined in the conceptual model, where most of the research from our scan has been focused. Whilst recognising that this is not a systematic analytical exercise and has limitations, it provides a potentially useful visual reference to support future discussions when setting the priority research questions.

We have applied a very simplistic method to develop the provisional heatmap, given this is a non-systematic review. A red shading relates to a product vertical or characteristic that is referenced >5 in our research scan, an amber shading relates to >3 times, and a yellow shading if referenced either once or twice.

Some interpretations were made when defining the heatmap. The references to in-play sports betting are also counted as a reference for general product characteristics for speed and continuity and frequency, as well as assuming those studies were online sports betting. We include Video Lottery Terminals (VLTs) as a channel where Electronic Gaming Machines (EGMs) are referenced as, whilst they are different, the EGM acronym is often used as a general reference for all forms of physical slot machines. When online is referenced, it typically does not indicate whether the gambling takes place on an app or via a desktop, therefore both are highlighted.

Figure 3 outlines the results of this high-level and indicative heatmap. It indicates that the research findings within the past decade from our research scan signal towards harms being focused primarily in the sports betting, casino and slots product verticals, with product speed and continuity and frequency being most flagged as general characteristics linked to harms. This confirms the earlier assertion in the Introduction that previous studies which have applied a similar approach have generally confirmed that lottery products have been positioned at the lower end of the risk continuum, whereas highly continuous activities such as slot machines appear to entail the greatest risk.

Product Vertical	Product Type	General Product Characteristics e.g.,				Specific Product Characteristics	Channel	Payments	Advertising & Marketing	Account-Based Play
<b>Gambling – Major Verticals</b> Betting Casino Slots Lottery (Draw) Instant Win Games	Pre-event, In-Play, Single Event, Parlay Table Games, Live Dealer Traditional, Modern (e.g., Megaways) Official Draw, Betting Scratchcard, Digital Games	SPEED	CONTINUITY & FREQUENCY	PRIZE	STAKE	Slots: Audio Visual Effects, Volatility, Interaction Features, Free Spins, Paylines	<b>Online</b> Mobile app Messaging app Desktop TV Online Platform e.g., Kick Console AR / VR	Cash Credit Debit Open Banking eWallet	<b>Mass</b> Broadcast media Press Incentives In-venue	Registered Unregistered
<b>Gambling – Minor Verticals</b> eSports Virtual Sports Bingo Arcade-style Games	Console AR / VR						Crypto currency Virtual currencies Coins In-app purchases	<b>Personalised</b> Product Content Incentives		
<b>Skill-Based Gambling</b> Poker DFS Other Card Games Board Games										
<b>Social and Promotional (with Gambling Mechanics)</b> Social Casino Sweepstakes										
<b>Video Gaming (with Loot Boxes)</b>										
<b>Other Activities (similar to Gambling)</b> e.g., Retail Financial Trading										

Figure 3: Heatmap of Research Outputs

Red (>5 references in the research scan), Amber (>3 references in research scan), Yellow (1-2 references in the research scan)

Some of the newer forms of gambling product verticals, such as arcade-style games and social and promotional style games, are relatively new and hence have not been subject to much (if any) research in the past decade. Whilst recognising this heatmap has limitations (in particular, the need to include papers which focus on the product vertical rather than product characteristics), this exercise, given the challenges faced, provides further useful reference for the importance of shared and agreed definitions when considering the current research base and the development of a future research roadmap.

## **Discussion**

The PESTLE analysis suggests that the variety of gambling opportunities has been rapidly increasing in the past decade. This is in part being driven by changes in how people live their lives, spending an increasing amount of time in digital environments, and with the gambling industry increasingly adapting to make its products more relevant, especially for younger generations. The variety of gambling products is also increasing due to advances in technology that allow the creation and delivery of gambling products to be ever more ubiquitous, with multitudes of gambling opportunities available across slots and sports betting in regulated markets at any point in time.

The definition of what constitutes a sports bet, a slot game and a casino product has changed significantly in the past decade. Traditional forms of gambling, for example pre-event sports bets and traditional style slots and table games, whilst still in existence today, are being superseded by products which have more choices of gambling opportunities and more engagement features, integrated within and overlaid on top of gambling products, making gambling experiences more immersive and personalised. There is an increasing blurring of marketing activities with traditional gambling product lines, as marketing platforms can overlay engagement features across all product verticals.

Gambling is arguably becoming more integrated into other social activities where people are increasingly spending their time, whether that be on social media, gaming platforms or consuming other entertainment activities such as live sports. Gambling products are also evolving to incorporate elements of popular social media platforms, for example, social elements that encourage community, game mechanics that involve interaction, and the offering of rewards and achievements. This is being witnessed in more traditional forms of gambling. For lottery Instant Win Games (IWGs), the breadth and speed of games is increasing, with IWGs increasingly mirroring the style and mechanics of slots games.

Whilst technology is driving change across all gambling verticals and products, the rate of change varies significantly. The lottery sector still makes up the largest gambling vertical globally, and the vast majority of lottery products are consumed in retail environments in an anonymous form. This makes understanding consumer behaviours and analysing the impact of product characteristics challenging. The land-based industry, whilst not growing at the same rate as digital, is witnessing growth in some products verticals and jurisdictions, for example slot machines in the US. Slot machines have also modernised and have integrated many of the elements found in online play, such as account-based play, increased choice of games delivered digitally, more immersive audio-visual effects, and wider payment options.

Technological advances are creating a more complex operating environment for regulators, notably with the increasing number of gambling-like opportunities and the threat of consumers accessing digital gambling products in unlicensed markets. New formats of gambling-like products are emerging and for many, their legal status remains uncertain. Social and gaming platforms are also enabling access to gambling and gambling-like content.

On one hand it appears that the gambling industry is adapting to evolve its products to meet the needs of customers, especially emerging adults, who are digitally native and expect elements of the wider digital ecosystem to be integrated into the gambling experience. On the other hand, one could make the argument that an ever-increasing number of gambling opportunities are being created because technology enables this, rather than meeting a specific customer need. For example, do players really need or want 1,500 betting opportunities during a tennis match? Or is this being offered because technology today enables these betting markets to be created and offered in real-time? It is likely a combination of the above and answering these types of questions could form part of the specific research questions of a roadmap.

Some legal forms of gambling remain banned in some jurisdictions and it appears likely that this can fuel activity in the unlicensed market. Even where a gambling vertical or product is available in licensed markets, there appears to be increased choice for consumers to access engaging gambling products from unlicensed sites, often underpinned with new digital payment options that are being sought by technically savvy gamblers, especially crypto currencies. This poses challenges to regulators, given the consumer choice available in both licensed and unlicensed markets. For example, if research suggests product characteristics could increase the risk of harm, but players want to engage with these product characteristics, how should regulators respond? With prohibition of perceived risky products and product characteristics potentially fuelling the unlicensed market, greater focus on education, awareness and frictions for certain gambling product characteristics may offer opportunities to reduce harms. Increased activity in the unlicensed market is also particularly challenging for stakeholders to understand as access to behavioural data in unlicensed markets is severely restricted.

Whilst the industry continues to change and evolve, some sectors at a particularly rapid pace, regulators have a very thin evidence base with which to try to make decisions centred on consumer protection and product characteristics. The research heatmap demonstrates that there is only a very small body of quality evidence related to specific product characteristics. Due to the small numbers of peer-reviewed papers available and the lack of corroborating research for almost all the findings, it is difficult to come to any definitive conclusions about which characteristics within a particular gambling product may be most likely to create harm or addiction. This does not mean that product characteristics do not cause harm: a lack of evidence does not mean lack of existence.

The research evidence that does exist can be used as a basis for more rigorous and focused research to ascertain whether the findings can be replicated. For example, the heatmap articulates that most high-quality evidence points towards increased harms in sports betting, casino and slots. With the industry trends pointing towards sports and slots as the verticals with most current and expected future growth, deeper research into these verticals, examining the relationships between in-play sports betting and harms, as well as examining product characteristics that encourage higher levels of engagement in slots, could be early research questions to explore using new data sets and methodologies.

Typically, research into gambling harms starts from the viewpoint of the player and uses self-reported behaviour to assess the negative impact of the product. If we are to understand how the design and make-up of a gambling product produces harm, it will be necessary to look beyond diagnostic frameworks towards a more nuanced interpretation of gambling behaviour,

gamblers' reasoning and cognitions, and the way in which these are negatively influenced by game design.

New techniques and new ways of approaching this issue are needed to tease out the actual impact of specific gambling product features on player behaviour, and to uncouple problem gambling behaviour from general risk. For example, one of the papers used a data-based analysis to relate certain key game characteristics and player behaviours to harm outcomes, incorporating the panel regression methodology, a sophisticated method that adjusts for whether high-risk players simply happen to play games with certain characteristics (or due to bonus inducements and recent game launches) or whether individual players experience greater levels of harm or risk when they switch to games with those characteristics.

There is a particular lack of recent robust evidence to many land-based gambling forms (with the exception of EGMs), where access to data is heavily restricted due to the nature of how the product is consumed for example, in retail environments, where registration is often not required, for example playing slot machines (EGMs) in some venues, buying lottery tickets and IWGs from supermarkets, and so forth. Some forms of land-based gambling, notably EGMs and table games, have integrated technologies that enable better tracking of player behaviours, which could be leveraged for research if access to such data was available.

As we consider the major gaps in research in key product verticals, another limitation in the current research base has been a lack of access to both product and behavioural data. Only three studies in the past decade have made use of behavioural data and have attempted to link this to product verticals and features and player harms. It is therefore challenging for policy makers to make effective decisions about the products and their characteristics and potential links to harms without an understanding of how consumers use and interact with these products and features in real world environments.

## 5. A Template Roadmap for Product Characteristics

Based on these findings, a roadmap template has been developed to support early discussions with stakeholders – primarily regulators, researchers and industry – about the development of a more detailed roadmap to understand the link between gambling product characteristics and harms. It is generic, in that it is based on the analysis undertaken in this paper, which was global in nature, rather than being developed for a specific jurisdiction.

We appreciate that in some jurisdictions, for example where online gambling is unregulated or unlicensed, the mechanisms and priorities will be different. However, we believe that the vision, objectives and roadmap structure are applicable to all jurisdictions.

Whilst the definition of what is a roadmap varies, we have taken key points from the following UK government definition<sup>9</sup>. For example, in this definition, roadmaps;

- Have a long-term vision
- Show what you are trying to achieve
- Have priorities
- Should have phases and fixed time periods
- Are developed iteratively
- Should be open.

### Vision

Through high quality data and research, develop deeper understandings of the major and rapidly emerging gambling products, their characteristics, and related marketing practices, to understand their potential contributions towards gambling related harms and ultimately to guide more effective gambling regulations.

### Objectives

The objective of the roadmap is to outline the key requirements to achieve the vision. These include the mechanisms and infrastructure required to effectively access a range of required data and to conduct real-world trials to support evaluation. The roadmap also seeks to prioritise the product verticals where, generally, the most pressing evidence gaps exist and establishes priorities as to how these gaps could be effectively tackled.

Ultimately, we expect to see the outputs from the roadmap being used to update and improve gambling regulations. We expect to see the major current assumptions regarding product characteristics in the priority verticals to be validated throughout the programme (if this is considered a priority research question). We expect to see significant improvements in research areas where there is little or no current research available to support policy making.

Note that whilst we highlight the key areas for prioritisation, we do not attempt to pose the specific research questions or discuss research methodologies in detail. We believe these are best answered by the organisations and individuals tasked with governing and implementing the research programme.

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<sup>9</sup> <https://www.gov.uk/service-manual/agile-delivery/developing-a-roadmap>



## Priorities

### 1. Establishing Research Governance

The roadmap describes, in principle, a large-scale, long-term programme of research, suggesting that it should set itself up as a long-term structure in the regulatory landscape. We envisage an approach where different stakeholders could deliver different elements of the programme, using established and agreed mechanisms and infrastructure.

We believe the roadmap would benefit from mapping out a multi-year programme of activity to reassure stakeholders that all key topics will be addressed over the lifetime of the programme, with scope for iteration and prioritisation as learnings develop and the gambling industry evolves.

Any such research programme should endeavour to adhere to best practice in terms of research governance in the areas of ethics, openness and open access to data, code and research outputs.

### *Industry Engagement*

We recognise the importance of wider stakeholder buy-in and consultation when developing a research roadmap to address product characteristics and risk. Specifically, gaining access to detailed product data will require co-operation with industry and we recognise that this can cause tensions amongst stakeholders.

There are several different options that can be considered for the integration of industry input. For example, commissioning all roadmap related work at arms-length from industry is arguably the most independent and most defensible approach to executing the roadmap. As way of example, in a clinical setting, The James Lind Alliance (JLA)<sup>10</sup> has proposed guidelines for setting Priority Setting Partnerships (PSPs) to identify and prioritise evidence uncertainties in particular areas of health and care that could be answered by research. The PSPs are comprised of clinicians, patients and carers, with the objective of developing transparent processes with the aim of defining the Top 10 priorities to highlight important areas for research, but not necessarily to come up with the specific research questions. Whilst emphasising collaboration, a key principle of PSPs is the exclusion of groups or organisations that have significant competing interests, for example pharmaceutical companies.

Whilst replicating a PSP model in the gambling industry would be welcomed by some stakeholders, it would make the achievement of the objectives more challenging, for example due to difficulties in accessing high quality data, and the ability to conduct trials in real-world settings. If the roadmap was to take this approach, regulators can mandate the collection of industry data, a practice that does happen across various jurisdictions and which the industry is well accustomed to delivering on. We would recommend such an approach, so long as the requests are reasonable and are not operationally or financially unsustainable for the industry.

However, we caution against removing the industry as a key stakeholder from the roadmap and would explore models where the principles of the PSP can be delivered, for example establishing research 'firewalls' between industry and academia, whilst building formal and collaborative governance with industry to ensure a 'joined-up' and consistent approach across key activities that are essential if the roadmap vision is to be achieved.

Motivating the gambling industry to find the necessary time and resources to support the delivery of the roadmap will take considerable effort, given that this is not a core revenue generating activity. Regulators will arguably need to focus on providing the necessary

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<sup>10</sup> <https://www.jla.nihr.ac.uk/templates-and-useful-documents>

incentives to industry and focusing on common outcomes from the roadmap that benefit all stakeholders. These could include greater efforts to understand products accessed in unlicensed markets, providing both social (consumer protection) and economic benefits (reducing customer displacement to unlicensed markets).

## **2. Establishing Mechanisms and Infrastructure**

We see the following areas which the roadmap needs to solve in order to start effectively addressing the evidence gaps in product characteristics.

### ***Consistent data definitions for all verticals, products and characteristics***

The first challenge lies in consistent definitions of gambling verticals, products and characteristics. The research scan was difficult to conduct, given wide interpretation of verticals, products and characteristics. Being able to replicate and compare studies across different products verticals and types across jurisdictions will be challenging unless a consistent approach to definitions is undertaken. Whilst we appreciate the challenges in developing global standards and identifying which organisation or body should be responsible for maintaining such a taxonomy, there are benefits to standardisation of definitions before embarking on future research programmes, even if this exercise is undertaken with the boundaries of a single research programme.

We also see an opportunity to use this process to gain consistency and clarity with other key terminology, for example definitions of gambling harms that will be used through this and possibly related roadmaps.

### ***Access to data about players, harms, games and marketing practices***

Player behavioural data needs to be available on a regular basis and at the required levels of granularity, together with robust harms data, product or game meta data and marketing data. Triangulating data from different sources and perspectives is required if we are to begin to get a better understanding of the impact of product characteristics on harms.

We also include qualitative data as an important aspect to supplement play data where insights cannot be gained, for example deep qualitative analysis in which players are interviewed about their real play while having those sessions replayed to them. Qualitative research is also particularly important for understanding areas where data is hard to access, for example, understanding patterns of play using crypto currencies, or player behaviour in heavily land-based verticals.

Game meta data refers to data about each product. For example, with a slot game, it might include the game theme, data about the payout data about the mechanics of the game data about prizes and their nature, as well as platform options which might speed up or automate the game. For sports betting, meta data might relate to the odds of the bet, whether the bet was placed in-play, the sporting event and any other characteristics that is, is the bet a single game parlay, are their bonuses attached to the bet, and so forth.

Marketing data will relate to whether messages, enticements, rewards and engagement features are overlaid on the gambling product when a player engages with it, either by offering free spins or bets, or other rewards such as badges, coins, or points on a leaderboard.

We also encourage exploratory work to assess new forms of data that can potentially shed insights into player behaviours and their product characteristics. For example, open banking data could unlock insights about gambling activity across multiple accounts and RFID tags on chips could be used to track player behaviour in land-based casinos.

### ***Real-world trials***

A major limitation of many previous studies examining products and their characteristics and potential links to harms was that the experiments were conducted in laboratory settings. We believe that access to real-world environments will be essential if the roadmap vision can be achieved. Real-world environments are essential if some of the major types of research are to be conducted and evaluated. In particular:

- Investigating the usage and potential harmful outcomes of key existing product characteristics.
- A/B testing and natural experiments to review how specific changes in product play out for different groups.
- Understanding how players' staking patterns shape harmful outcomes.
- Assessing variance by key player segment and potentially vulnerable sub-groups.

We envisage a future where the gambling industry could be encouraged to trial game innovations and new types of features prior to full commercial launch. We appreciate that laboratory experiments could play a part in which players volunteer to play with laboratory money (potentially for real reward) on new games or experimental games to explore how they react to different circumstances through interviews, play data analysis and eye-tracking software. However, this would, we envisage, be supplementary to the core data required.

### ***Adopting a Variety of Research Questions***

The complexity of the domain suggests that taking a broad and varied approach to researching and building evidence may be beneficial. For example, as well as attempting to understand the contributions of product characteristics to risk, researchers could also examine the impacts of new educational approaches focused on raising awareness and knowledge, or attempts to increase friction of specific product characteristic risks. This could be particularly impactful in jurisdictions where a very broad range of products and characteristics are widely available in the licensed market.

### ***Longitudinal Data***

Given that the existing research suggests there is likely a complex relationship between gambling related harms and people engaging in multiple gambling forms and products, longitudinal data can provide valuable insights about how people interact with products over time and how ongoing exposure to specific gambling products may form risky behavioural patterns. Longitudinal studies also have the possibility to track the impact of policy decisions over more extended periods of time.

### 3. Priority Verticals

#### ***High Priority: Electronic Gaming Machines***

The existing research into gambling harms suggests greater concerns with regards to products that are faster and more continuous in nature, in particular electronic gaming machines (EGMs) in their various configurations which are widely available across jurisdictions. EGMs describe a broad category of gambling machines and part of the scope of the roadmap should be to ascertain which types of EGMs should be prioritised. Those which enable faster and continuous games, for example Video Lottery Terminals (VLTs), are likely to be a higher priority compared with some EGMs that have lower stakes and prizes and slower game cycle times, for example Amusements With Prizes (AWPs). There is also a need to address the challenge that a large proportion of the current EGM activity is unregistered due to the anonymous nature of cash-based retail gambling.

#### ***High Priority: Online slots***

Online slots share many of the elements of risk that are inherent in EGMs. However, arguably the variety of gambling opportunities within this vertical has grown significantly in the past decade. This makes it difficult to confidently ascertain which elements of the gambling experience (e.g., game mechanics, features, math profile and prize elements) could be contributing towards harms when playing online slots. There is very little to no evidence that examines whether features aimed at retention, such as persistence in slots games or rewards, contribute to extended play and potential harms. Likewise, we cannot ascertain the impact of new mechanics, such as cluster pays and Megaways, and whether these contribute further to the existing literature which finds multi-line slots to be riskier.

In this example, if a policy maker was to take the decision that existing research suggests slots are most likely to contribute to harms and therefore should be restricted or banned, industry trends suggest there is a credible counter argument that such decisions could serve to fuel the growing unlicensed market. If a primary aim is to reduce gambling harms, it's not clear whether the decision to ban the product vertical is contributing to this, given the accessibility of the product in the unlicensed market. Policy makers, therefore, currently do not have the evidence to make an informed decision as to whether slots, or certain product features within slots, should indeed be restricted or banned. This makes further research in this growing vertical a priority.

#### ***High Priority: Sports betting***

Alongside slots, most of the recent evidence suggests that more continuous forms of sports betting, usually described as 'in-play', could have a greater contribution towards gambling harms. Unpacking which elements of the sports bet structure or marketing activity, either leading up to the bet or overlaid during the event, contribute most to risk will be very challenging. For example, what was the relative contribution of a personalised news feed about a player in a forthcoming game v. an in-app marketing message promoting the betting opportunity? Also, what role did the player's judgment or perceived skill play in taking a bet? What role do the increased odds that same game parlays offer in persuading a player towards taking the bet?

Whilst researchers might not be able to answer these specific questions, collecting data across a large population over an extended period of time will enable researchers to better describe the product features and player environment, and help them to more clearly differentiate the roles these factors contribute to players who experience harms.

We recognise that the focus for the roadmap should be online sports betting where most technological innovations have occurred in the past five years. There is, however, a trend of

land-based formats rapidly digitizing and mirroring aspects of the online gambling experience, and we recommend that further analysis is undertaken to assess the relevance of extending the work to land-based sports betting.

### ***Medium Priority: Casino***

Online table games have evolved over the past decade and there have been considerable product innovations in the Live Casino product area, with the creation of the live dealer experience and the development of products that are delivered live via game show formats. In addition, other gambling products are being introduced into a live format with multi-player and community features and game show hosts providing ongoing commentary. Whilst some of these gambling products are still in their infancy, we believe collecting data and describing players behaviours in the context of the games and product features will enable more to be understood about these new gambling formats and their impact on player behaviour

Table games in the land-based casino industry provide challenges to data collection to understand behaviour, however advances in the use of RFID could make the analysis of behaviour easier in coming years, and which should be explored further. In the product vertical research, casino table games were flagged as products that those at-risk of harms engaged with, albeit at a lower rate compared with EGMs. We encourage any roadmap to explore the art-of-the-possible in understanding what data can be made available for researching land-based casino gambling.

### ***Medium Priority: Lottery games***

Research suggests that lottery verticals are less problematic, however, there is arguably insufficient data and research to understand user motivations and the relative contribution these products make towards gambling harms. Given the popularity of these products and the fact they are used by the largest populations of gamblers, we believe they merit further research and understanding. This is particularly important given that the research suggests those engaged in multiple forms of gambling are most likely to experience harms. Significant challenges exist in accessing behavioural data related to retail purchases of lottery tickets and scratchcards.

Notwithstanding this, we believe there is value in collecting quantitative and qualitative data, through surveys for example, to better understand peoples' circumstances and their motivations for engaging in these gambling products. There might also be value in exploratory research to describe purchase patterns of lottery products, for example by analysing retail data, to understand the impact of place and practice. One example could be to take geographical locations and purchase times and overlaying this with practice data such as advertising concentration.

IWGs, or digital scratchcards, are a growing product within the vertical. Coupled with emerging evidence that IWGs are mirroring the features of slot games, we recommend that these products are prioritised in the roadmap ahead of retail lottery for draw-based games. Given their online nature, collecting behavioural and game data will be significantly easier compared with IWGs from retail environments. We would also include other number game variants, such as Slingo, in this theme as game mechanics from both lottery and slots are used to develop these types of games.

Online operators provide a further rich opportunity to explore the behavioural patterns of consumers who purchase digital draw-based products, both from formal lottery sites and those that offer lottery betting products. Research should look to better understand the path to risk played by lottery products when they are used in conjunction with other gambling types.

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### ***Medium Priority: Emerging gambling products***

New types of games have emerged in recent years that mirror some of the elements of slots and casino games, but with different mechanics. We recommend that data is collected to further assess behaviours in the contexts of the product characteristics. For example, does the need for an interaction on a crash-style game increase feeling of control and skill in the game, regardless of whether the game has a fixed RTP (return to player)? Existing research suggests this could be a contributing factor towards harms. Does seeing the bets and wins of other players in real-time on such games influence players' decisions to bet? What role do these features have in understanding potential harms? We recognise the need for explorative data gathering, both qualitative and quantitative, to understand behaviours and motivations further.

We recognise that if these types of games gain increased market share then there will be pressure to raise the priority of researching the games in the roadmap. We also advise that the verticals and products in scope of this priority will be influenced by the jurisdiction where the research is being conducted. For example, DFS may be an area of focus to stakeholders in the USA due to its popularity and possible gateway to sports betting. In India, whilst DFS is popular, so are card games, so both may take equal priority.

As well as these priorities, ongoing analysis of the market and trends will be required to ensure that the research remains relevant and is responding to market developments. For example, measuring activity in unlicensed markets can provide a feedback loop on the emerging product development trends that could be entering licensed markets activity.

## **4. Indicative Plan**

We envisage the roadmap being a large scale, long-term programme of research. The high-level Gantt chart in figure 4 below has been developed to support discussions and planning for such a programme. The roadmap indicates significant resources required to plan and co-ordinate the roadmap activities and we recommend that such plans are overseen and executed by organisations with the requisite agency and resources to manage such a complex undertaking for example, a regulator or research agency.

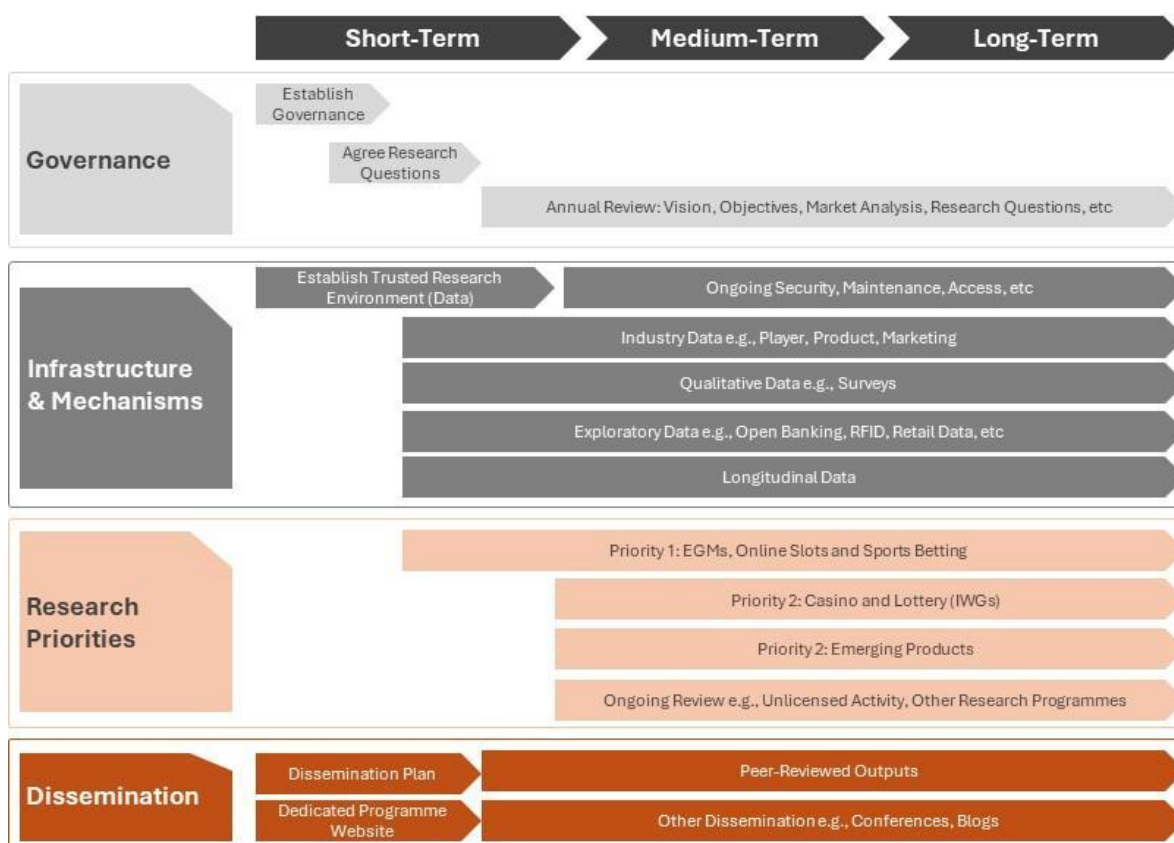


Figure 4: A Template Roadmap for Product Characteristics

We maintain that the gold standard of publishing remains peer-review and would encourage the outputs of the research roadmap to focus on this standard to ensure the highest levels of credibility and independence.

In parallel, we encourage dissemination across a wide range of other channels, for example academic and industry conferences. One idea is to develop a dedicated research programme website, which can facilitate communication (committee minutes, decisions, research outputs etc.), openness through research pre-registration and to provide an ongoing ‘living’ portal of the research outputs from the programme.

It’s challenging to put specific dates and targets and dates to the roadmap. This will be heavily influenced by local factors, for example funding and the extent to which the required data is already being collected within the industry. However, unless we see a significant uplift in the quantity and quality of research in the priority areas highlighted above, regulators will continue to work to try and regulate an ever-increasing number of products without understanding how they are designed and how the design impacts on consumers and harms.

## Appendix 1: Industry PESTLE Analysis

### Political

The political landscape plays a pivotal role in shaping the gambling industry, as it is one of the most heavily regulated sectors globally. Governments and regulatory bodies exert significant influence over the industry through legislation, taxation, licensing, and policies aimed at ensuring fair play, consumer protection, and the prevention of problem gambling. The political environment can either foster growth and innovation or impose restrictions that challenge the industry's operations and profitability.

The general trend has been to push for regulation of all forms of gambling, with the continued trend of expanding online sports betting in US states since 2018 (31 states<sup>11</sup>) and the launching of online gambling in Brazil in 2025<sup>12</sup>. In the European market legalised gambling is widely available; 27 of 31 European countries have some form of multi-licensing for online gaming<sup>13</sup>, as well as all 31 having some forms of land-based regulated gambling.

There remains political opposition to some forms of gambling expansion. Whilst online sports betting has grown rapidly in the US, online casino is legalised in only seven states<sup>14</sup>, reflecting a complex inter-play of interests between land-based incumbents (including tribal casinos) and the wider industry. In addition, physical casinos are regulated differently to online casinos, which can influence customer behaviours.

Some countries have also outlawed online casino, such as Australia and France, due to perceived higher rates of harm associated with casino games and slots compared to other online gambling verticals e.g., poker, sports betting, lottery products<sup>15</sup>. In addition, there are efforts from the land-based casino industry to lobby against expansion into online in France too<sup>16</sup>.

It has long been argued by many that legalising gambling not only helps to drive economic growth and raise taxes for the state, it also combats the threat of the illegal gambling market. While difficult to estimate, there are varying estimates for the size of illegal markets. In the US, the American Gaming Association, an industry trade body, estimates 40% of all gaming machines are unlicensed<sup>17</sup>, whilst other industry trade body estimates have claimed ~50% of all online gambling in Germany is via illegal sites<sup>18</sup>.

In France, the gambling regulator (ANJ) estimated that the black market for casino products in France in 2022 was €748–1,500m<sup>19</sup>. In February 2024, The Dutch regulator, the Kansspelautoriteit, stated that whilst the introduction of the policy rules has led to a reduction in excessive gambling at legal providers, there is a great chance that heavy players have switched to illegal providers<sup>20</sup>. The affiliate SlotCatalog ([www.slotcatalog.com](http://www.slotcatalog.com)), on its site and using the search filters, suggests that over 23,000 online slots are available to play in Australia

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<sup>11</sup> <https://www.americangaming.org/research/state-gaming-map-mobile/>

<sup>12</sup> <https://sbcamericas.com/2025/01/02/sports-betting-igaming-goes-live-brazil/>

<sup>13</sup> <https://www.egba.eu/eu-market/licensing/>

<sup>14</sup> <https://www.statista.com/topics/9667/online-gambling-in-the-united-states/#topicOverview>

<sup>15</sup> <https://www.twobirds.com/en/insights/2024/france/vers-une-legalisation-des-casinos-en-ligne-en-france-coup-de-poker-du-legislateur>

<sup>16</sup> <https://www.rfi.fr/en/france/20241023-plans-to-legalise-online-casinos-in-france-met-with-opposition>

<sup>17</sup> [https://www.americangaming.org/wp-content/uploads/2023/04/AGA\\_SIG\\_Sizing-the-Illegal-Market.pdf](https://www.americangaming.org/wp-content/uploads/2023/04/AGA_SIG_Sizing-the-Illegal-Market.pdf)

<sup>18</sup> <https://igamingbusiness.com/sports-betting/gambling-germany-half-of-all-players-still-using-unregulated-sites/>

<sup>19</sup> [https://anj.fr/sites/default/files/2024-07/Rapport\\_annuel\\_2023.pdf](https://anj.fr/sites/default/files/2024-07/Rapport_annuel_2023.pdf)

<sup>20</sup> <https://igamingbusiness.com/gaming/gaming-regulation/netherlands-illegal-gambling-traffic-grows-significantly-following-deposit-limits-says-kva/>



despite online slots being banned. The affiliate CasinoGuru (casinoguru.com), on its site and using its search filters, suggests there are over 1,000 online casinos available in Australian.

On the other hand, many stakeholders consider gambling to be a public health concern and that populations need to be protected from the harms associated with gambling with widespread restrictions to products and practices. Estimates citing the costs to society of gambling range from up to £1.6bn (UK) to €1.42bn (Sweden)<sup>21</sup>. The French regulator in 2019 estimated that over 38% of the industry's total revenue came from problem gamblers<sup>22</sup>. Other countries have estimated the costs to society to be significantly higher, for example AUS\$7bn in 2014–15 in Victoria in Australia<sup>23</sup>.

There continues to be political pressure for stricter regulations to be introduced to protect consumers better. This is being implemented by governments (in the UK the government's Whitepaper has set out a range of new consumer protection measures<sup>24</sup>) and proactively in some jurisdictions by industry, such as with the Responsible Online Gambling Association trade body in the US<sup>25</sup>, in a bid to demonstrate sustainable industry practices and encourage a wider roll-out of online gambling across states. Industry self-regulation practices are often criticised by stakeholders as being inadequate to protect vulnerable customers. The World Health Organization believes that the way products are designed is not transparent and can mislead customers with design features that encourage extended use<sup>26</sup>.

Governments continue to consider raising taxes for operators in the gambling industry, with this varying widely across jurisdictions. In the US, tax rates on gambling revenues range from 6.75% to 51%<sup>27</sup>. These taxes can have a material impact on consumer experience, for example reduced choice and returns, and can be used as leverage to revive certain gambling products. In Italy, taxes on growing gambling segments have increased, whilst those struggling, such as horse betting, have been reduced 43% to 20.5%<sup>28</sup>. Governments can also regulate advertising and promotions, including bonusing, which impact consumers.

## Economic

The economic environment is a critical determinant of the gambling industry's performance, as it directly influences consumer spending power, investment decisions, and overall market dynamics. Economic factors such as disposable income levels, unemployment rates, inflation, and economic growth play a significant role in shaping demand for gambling products and services. Additionally, the gambling industry is often viewed as a source of revenue for governments, making it sensitive to changes in taxation and fiscal policies.

The global gambling market size was \$536bn in 2023, with ~24.6% from online gambling. In 2020, online accounted for only 14.5% of the total gambling market, seeing a doubling in the absolute market size during a 3 year period.<sup>29</sup>

Much of this growth has been driven by the regulation of online gambling in North America, with an estimated market size of \$10bn and \$7bn for online sports and casino gambling in the

<sup>21</sup> <https://cdspress.ca/wp-content/uploads/2022/09/Paul-Delfabbro-Jonathan-Parke-Simo-Dragecivic-Chris-Percy-Richard-Bayliss.pdf>

<sup>22</sup> <https://sbcnews.co.uk/retail/2024/04/11/anj-sees-observable-results-on-reducing-excessive-gambling-in-france/>

<sup>23</sup> <https://responsiblegambling.vic.gov.au/about-us/news-and-media/gambling-harm-costs-victorians-7-billion-year/>

<sup>24</sup> <https://www.gov.uk/government/publications/high-stakes-gambling-reform-for-the-digital-age>

<sup>25</sup> <https://www.responsibleonlinegaming.org/mission>

<sup>26</sup> <https://www.who.int/news-room/fact-sheets/detail/gambling>

<sup>27</sup> <https://taxfoundation.org/data/all/state/sports-betting-taxes-by-state-2024/>

<sup>28</sup> <https://sbcnews.co.uk/featurednews/2025/01/15/budget-law-italia-tax/>

<sup>29</sup> <https://h2gc.com/news/general/global-gambling-industry-generates-536bn-in-2023-with-7-growth-expected-in-2024>

US and C\$2bn in Ontario, Canada. Europe remains the largest continent in terms of online market share, with an estimated revenue of €30bn in 2023, with the UK and Italy being the largest online jurisdictions globally (in terms of market share).<sup>30</sup> In 2023 Australia was the 3<sup>rd</sup> largest regulated online jurisdiction (US\$3.485bn). By 2028, it is estimated that the UK and Italy will remain the largest jurisdictions, followed by Brazil, Pennsylvania, New Jersey, Ontario and Illinois<sup>31</sup>.

Competition in the development of online gambling products has intensified as the technological costs to development content have reduced. In parallel, gambling is increasingly competing with other entertainment options, with a battle for share of attention and time (as well as share of wallet).

People are spending more time on mobile devices. Data from 2023 showed that daily screen time for Generation Z was over 6 hours per day in the US, compared with 3.5 hours for baby boomers<sup>32</sup>. Generation Z spend a considerable amount of time absorbing digital content and arguably prefer short form and easily digestible content<sup>33</sup>. This explains in some part the success of social media and video platforms such as TikTok, Instagram and YouTube, which have tailored their content over the years to meet the demands of younger generations. Martin Carselund, CEO of the world's largest online casino and slot game supplier, Evolution, recently stated that attention spans are shrinking, and Evolution's games need to be as snappy and engaging as a viral TikTok clip – players decide in mere seconds whether to stay or swipe away<sup>34</sup>. Therefore gambling companies are responding to these trends and consumer preferences with new products and services.

Other forms of land-based forms of gambling are significant contributors to industry revenue and remain popular with older generations, such as sports betting shops and bingo halls in the UK and such as pachinko parlours in Japan, and buying lottery tickets from retail outlets. Industry also argues that this drives wider economic benefit through increased employment opportunities<sup>35</sup>.

There are statistics that suggest many of these forms of gambling are in decline as they struggle to appeal to younger generations. There has been a 9.3% decline on pachinko parlours in Japan in 2024 compared with the previous year<sup>36</sup> and in the UK the number of betting shops have declined for 10 consecutive years (n=5,931), which is 17.8% lower than the pre-covid lockdown number<sup>37</sup>.

Overall US commercial land-based gaming is still significantly larger than internet gaming), with 2024 revenues of \$49.9bn v. \$7.8bn, in part due to limitations and slow roll-out of online gaming across states. However, the rate of growth in land-based gaming was 0.8% v. 27.8% for internet gaming. Overall there is a higher proportion of revenue driven from slot machines v. table games across in every US state<sup>38</sup>. This trend appears to be growing, for example, in Nevada in 2024, whilst slot machine revenues rose 14.4%, table game revenues declined 16.5%

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<sup>30</sup> <https://www.vixio.com/blog/new-markets-disrupt-global-online-rankings>

<sup>31</sup> Vixio International Online Gambling Market Monitor (accessed 11<sup>th</sup> February 2025)

<sup>32</sup> <https://www.statista.com/statistics/1178640/daily-phone-screen-time-by-gen-us/>

<sup>33</sup> <https://www.goldenstepsaba.com/resources/average-attention-span>

<sup>34</sup> <https://next.io/news/features/four-things-we-learned-evolution-q4-earnings-call/>

<sup>35</sup> <https://bettingandgamingcouncil.com/uploads/BGC-Economic-Contribution-Report-2023-Final.pdf>

<sup>36</sup> [https://www.tokyoweekender.com/art\\_and\\_culture/japanese-culture/pachinko-in-decline-in-japan/](https://www.tokyoweekender.com/art_and_culture/japanese-culture/pachinko-in-decline-in-japan/)

<sup>37</sup> [https://www.gamblingcommission.gov.uk/statistics-and-research/publication/industry-statistics-november-2024-official-statistics#:~:text=Machines%20represented%2049.6%20percent%20of,the%20pre%20lockdown%20period\).](https://www.gamblingcommission.gov.uk/statistics-and-research/publication/industry-statistics-november-2024-official-statistics#:~:text=Machines%20represented%2049.6%20percent%20of,the%20pre%20lockdown%20period).)

<sup>38</sup> Vixio US Commercial Gaming Market Monitor (accessed 11<sup>th</sup> February 2025)

(for example in baccarat, craps and roulette)<sup>39</sup>. This could be due to increased availability for slot machines v. table games.

The trends in Europe for land-based gambling generally shows growth. Most jurisdictions saw an increase in 2023, for example 15% growth in The Netherlands, 6% growth in Poland, 8% growth in Portugal, 11% growth in Spain and 7% growth in the UK, with Sweden (-12%) and Switzerland (-1%) showing declines<sup>40</sup>. Sweden has recently decided to shut down all of its land-based casinos<sup>41</sup>.

Resort-style gambling venues have evolved to derive revenues from a diverse range of entertainment options beyond just gambling, including food and beverage and wider entertainment e.g., concerts, shows, night clubs, etc., to remain relevant to a diverse range of clientele. For example, in Las Vegas, the last decade has witnessed the launch of range of venues for shows, sports and performing arts<sup>42</sup>.

With regards to the lottery sector, it remains the largest gambling vertical (or domain) by revenue globally. It was valued at \$355.7bn in 2023 and is forecast to grow to \$525.1bn by 2033. The vast majority of this revenue was driven by land-based lottery, 96.8%, however, the online segment is expected to be the fastest growing segment in future, growing by 8.9% CAGR from 2023–2033. Of the total revenues in 2023, \$131bn was derived from lotto (or draw-based games), however the largest growing type of game is scratch-off instant win games (IWGs), expected to grow 6.2% CAGR between 2023 – 2028.<sup>43</sup>

## Social

The social dimension of the gambling industry is shaped by evolving cultural attitudes, demographic shifts, and changing consumer behaviours. As a form of entertainment that intersects with leisure, risk, and social interaction, gambling is deeply influenced by societal norms, values, and perceptions.

Whilst there could appear to be an increased acceptance of gambling as a form of entertainment as the number of legalised gambling jurisdictions continues to grow globally, previously mentioned political pressures to increase tax revenues, reduce the negative impacts of gambling related harms and reduce the illegal market, could also be drivers of the growth of regulated gambling globally.

Younger generations are increasingly engaging in digital content. The video gaming industry was projected to be \$211bn in 2024<sup>44</sup>, social media usage has continued grow with 3bn Facebook, 2.5bn YouTube, 2bn Instagram, 2bn WhatsApp and 1.58bn TikTok users in 2024<sup>45</sup>. For comparison, in 2014, there were estimated to be 1.4bn Facebook accounts<sup>46</sup> and 1.1bn YouTube users<sup>47</sup>.

Millennials and Generation Z, having grown up in a digital society, are comfortable spending a considerable amount of time on digital platforms and building relationships and communities on such platforms. These trends are being replicated in online gambling and are seen by the

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<sup>39</sup> <https://www.gamblinginsider.com/news/28206/nevada-gaming-revenue-reaches-146bn-for-december-2024-strip-declines-27>

<sup>40</sup> Vixio European Land Based Market Monitor (accessed 11 February 2025)

<sup>41</sup> <https://igamingbusiness.com/casino/sweden-discontinue-land-based-casino-gambling/>

<sup>42</sup> [https://en.wikipedia.org/wiki/Las\\_Vegas\\_Strip](https://en.wikipedia.org/wiki/Las_Vegas_Strip)

<sup>43</sup> <https://finance.yahoo.com/news/lottery-industry-analysis-opportunities-2033-141600341.html>

<sup>44</sup> <https://www.bcg.com/press/12december2024-future-of-global-gaming-industry>

<sup>45</sup> <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>

<sup>46</sup> <https://www.demandsage.com/facebook-statistics/>

<sup>47</sup> <https://www.globalmediainsight.com/blog/youtube-users-statistics/>

industry as key elements to drive customer acquisition and retention through various social elements. Live chats & tournaments create a sense of rivalry between players, and users can discuss strategies and insights with others, or compete directly in tournaments against one another<sup>48</sup>.

Some forms of gambling are integrated with other parts of society, such as lotteries and their focus on raising money for good causes, and sports events which use the broadcast media and digital platforms to not only deliver content, but integrate gambling into the sports experience. There is therefore an increasing trend of gambling becoming integrated with social experience rather than as an individual activity.

Advertising remains a controversial topic within the gambling industry. Some countries have arguably very open regimes with minimal restrictions, for example recently opened markets in the US. Other jurisdictions have restricted some elements. Ontario has banned the use of celebrities to endorse gambling products in advertising<sup>49</sup>, whilst in the UK there is a ban on advertising gambling during major sports events, such as football matches. Other jurisdictions have gone much further, with Italy banning the advertising of gambling in 2018<sup>50</sup>.

Research from the University of Bristol in the UK recently stated clear public support for a change in gambling advertising, with an overwhelming majority saying there is too much gambling advertising (67%), and even more backing regulations relating to it on social media (74%) and TV (72%)<sup>51</sup>.

## Technological

Technology is a driving force behind the transformation and growth of the gambling industry, revolutionizing how games are played, accessed, and experienced. From the rise of online platforms and mobile gaming to the integration of artificial intelligence and blockchain, technological advancements have reshaped the industry's landscape. These innovations not only enhance the user experience but also create challenges related to security, regulation, and competition.

## General

We have referenced the continuing growth of online gambling, enabled by major technical megatrends in the past 20 years such as mobile internet and continued expansion of internet penetration and bandwidth capacity. These have developed new formats of gambling, taking what were once land-based gambling products, such as casino, slots, scratchcards and sports betting, and delivering them via new formats via digital channels

One must also recognise the significant influence of social media platforms and the growth of online communities. This trend is influencing how gambling is now offered and consumed online. The most popular social messaging platforms, such as Telegram and WhatsApp, are now offering integrated gambling experiences with these communications channels that are unregulated e.g., Slotegrator are offering a platform to launch digital casinos via Telegram<sup>52</sup>. However, these gambling opportunities are typically unregulated.

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<sup>48</sup> <https://next.io/news/promoted/social-features-a-new-era-for-igaming/>

<sup>49</sup> <https://www.blakes.com/insights/sidelined-ontario-ban-on-athlete-and-celebrity-igaming-endorsements-takes-effect/>

<sup>50</sup> <https://altenar.com/blog/gambling-laws-in-italy/>

<sup>51</sup> <https://www.gambleaware.org/what-we-do/news/news-articles/new-study-shows-great-britain-lags-behind-europe-on-restricting-gambling-marketing-as-gambleaware-issues-an-urgent-call-to-protect-public-from-gambling-harm/>

<sup>52</sup> [https://slotegrator.pro/telegram\\_casino.html](https://slotegrator.pro/telegram_casino.html)

## Casino

Casino games (e.g., roulette, blackjack) have not only been available in software format digitally for over 30 years, but, due to much greater internet bandwidth, live dealer studios, which create virtual experiences mirroring land-based experiences, have increased in scope and popularity in the past decade.

Slots remains the most dominant online casino type of game, in the UK generating £3.6bn of the total £4.4bn in online casino annual revenues<sup>53</sup>. There have been a significant amount of technological developments on slots mechanics in the past decade. These include evolving from traditional reel-based games with simple grids, paylines and mechanics to including mechanics and features such as cascading reels, megaways, cluster pays, a wide range of jackpots (e.g., daily, progressive), buy-in bonus rounds, persistence features and other mechanisms to automate and speed play e.g., auto play, turbo play.

The live casino experience has been further developed in recent years, with the release of new formats of gambling based on live shows, overlying entertainment experiences mirroring TV game shows and entertainment experiences with gambling, offering enhanced engagement. For example, Evolution has developed a range of live games using a digital wall on a physical wheel that are presenter-led (i.e., live gameshow hosts), such as Funky Time, Monopoly Live and Crazy Time, for example<sup>54</sup>. The rationale for the development of these new gambling formats has been explained by Martin Carlesund, Evolution's CEO, as competing with all other to get consumer attention and time, whether that be watching a movie or Netflix or going to the gym<sup>55</sup>.

Other games have been developed in the live setting that leverage other gambling formats, for example live slots enable people to simultaneously place bets on slots that are operated by a host in real-time, offering an experience that is more engaging compared with playing the slot in isolation on a digital channel. Players are encouraged to chat in this community-style take on traditional online slots e.g., see Playtech's Buffalo Blitz Live as an example<sup>56</sup>.

This trend appears to be influenced by the rise of social influencers called 'streamers'. Casino streamers broadcast their gameplay sessions, allowing viewers to watch the action in real-time while engaging in chat conversations with the streamer and other viewers. Casino streamers typically play various casino games, including slots, blackjack, roulette, poker, and more who play live slots games on popular platforms (e.g., Kick) often with a number of gambling operators advertising whilst the streamers play<sup>57</sup>. However, because much of these adverts are from unlicensed operators, as such some platforms are now restricting access to unlicensed content, for example YouTube<sup>58</sup>.

Some product offerings have been developed to specifically capitalise on the streamer model, for example Livespins have developed technology that enables players to bet alongside the streamer and copy their bets, as well as offering player chant and community features to enable players to directly engage with each other and the streamers<sup>59</sup>.

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<sup>53</sup> <https://www.gamblingcommission.gov.uk/statistics-and-research/publication/industry-statistics-november-2024-official-statistics#:~:text=Online%20casino%20games%20dominate%20the,bingo%20totalled%20%C2%A3167.1%20million.>

<sup>54</sup> <https://www.evolution.com/games/game-shows/>

<sup>55</sup> <https://www.gamblinginsider.com/in-depth/8493/ceo-special-2020-evolution-gaming---staying-humble>

<sup>56</sup> <https://www.megacasino.co.uk/live-casino/buffalo-blitz-live-by-playtech/>

<sup>57</sup> <https://sigma.world/play/blog/casino-streaming/#:~:text=Casino%20streamers%20broadcast%20their%20gameplay,roulette%2C%20poker%2C%20and%20more.>

<sup>58</sup> <https://www.theverge.com/news/623985/youtube-online-gambling-rules-restrictions>

<sup>59</sup> <https://livespins.com/>

## ***Arcade-Style Digital Casino Games***

Some of the video gambling mechanics that have had a significant influence particularly on Millennials and Generation Z, such as team-based play, are also being integrated into gambling products and experiences. Whilst traditional casino games have historically appealed to older generations, younger generations, particularly millennials, are less interested in traditional gambling and are more drawn to video games and other interactive experiences. Skill-based, or arcade-style, games bridge this gap and are offering a gaming experience that resonates with younger players, such as real-time action, strategy and competition<sup>60</sup>.

Arcade-style casino games, which have greater elements of user interaction, have become increasingly more available in the past five years. The most popular type are crash games and is a format of gambling where players bet on a multiplying curve. The longer a player stays active, the more they can win, and they are free to cash out at any time. If the game crashes before they have cashed out, they lose<sup>61</sup>. The most popular crash game is Spribe's Aviator, with over 10m active global players per month<sup>62</sup>. Aviator's appeal, according to the manufacturer Spribe, is centred on its rapid, social, action-packed gaming experience, aligning perfectly with what millennials and Generation Z audiences look for when spending their entertainment time and money<sup>63</sup>. Aviator is the most popular game in Africa and Latin America, where its simple graphics make it playable on low-bandwidth mobile phones<sup>64</sup>.

## ***Sports***

The evolution of sports betting, from a traditional, pre-game betting format, to betting that typically happens during the game, has significantly changed the gambling experience and increased opportunities to bet. For example, in the US, JMP Securities analysts predicted in-play betting to expand at a 31% compound annual growth rate through the end of the decade and will increase US in-play betting to a \$14 billion revenue opportunity by the end of the decade<sup>65</sup>.

In addition, technology has enabled the development of more exotic forms of sports betting, including accumulators or parlays, which involve grouping together bets of different events that, cumulatively, need to happen for the bet to pay out. According to US research by Deutsche Bank, 'Same Game Parlay' stakes as a percentage of total staking increased from 19.2% in 2019 to 24.3% in 2023, with margins from the products increasing from 13.1% to 18.5% during the same period, as customers increasingly added more legs<sup>66</sup>. The increase in margin in these products appears to be a strong incentive for the industry to continue developing and pushing these more exotic forms of sports betting to consumers.

In parallel, the ability to construct one's own bets, based on the players and teams a sports bettor follows, appears to be attractive to consumers. Developments such as cash-out, which enables sports bettors to opportunity to settle bets early (based on the odds offered by the sportsbook), offer increased engagement and control for players<sup>67</sup>, as well as marketing offers, such as risk free bets and bonuses.

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<sup>60</sup> <https://sdlccorp.com/post/the-impact-of-skill-based-mechanics-in-casino-games/>

<sup>61</sup> <https://www.casinolifemagazine.com/blog/crash-games-beginners-basics-crash-gambling#:~:text=Crash%20gambling%20is%20when%20players,typically%20found%20in%20crypto%20casinos.>

<sup>62</sup> <https://igamingbusiness.com/casino-games/crashing-into-the-industry-spribes-aviator-and-the-boom-of-crash-games/>

<sup>63</sup> <https://igamingbusiness.com/casino-games/crashing-into-the-industry-spribes-aviator-and-the-boom-of-crash-games/>

<sup>64</sup> <https://sbcnews.co.uk/technology/2025/02/14/crash-spribe-aviator/>

<sup>65</sup> <https://www.gamblingnews.com/news/jmp-highlights-importance-of-in-play-betting-as-revenue-growth-driver/>

<sup>66</sup> <https://www.flutter.com/news-and-insights/insights/how-same-game-changed-the-game-for-sports-betting/>

<sup>67</sup> <https://www.gamblinginsider.com/magazine/977/cover-feature-how-are-same-game-parlays-and-bet-builders-changing-the-industry>

Sports betting is becoming an integral part of watching many sports globally, with broadcast media advertisements and team sponsorships commonplace with gambling operators.

### ***Lottery and Bingo***

The fastest growing type of lottery product is scratch cards or IWGs, whilst the channel expected to grow the fastest is online<sup>68</sup>. This reflects the technological innovations witnessed in online scratch cards or IWGs, where some of the popular mechanics and feature of online slots, such as autoplay, jackpots, bonuses, persistence features, multipliers and additional gamble features e.g., second chance<sup>69</sup>.

Integrating faster, more continuous mechanics into traditional number-based gambling products has also been witnessed in bingo with variants such as Slingo. Slingo games are a hybrid between bingo games and slot games, with players spinning reels to reveal numbers, and if these numbers are on your grid, then the number will be crossed off the play grid<sup>70</sup>.

Faster draw games are also now a common feature of online lottery websites. Draws are as frequent as every 2-5 minutes. For land-based lotteries, lottery terminals and self-service machines also now enable multiple draws per day e.g., IGT Fast Play<sup>71</sup>.

Further innovations in lottery have seen the development of lottery betting products, where operators offer players the chance to bet on lottery draws outside of their jurisdiction, significantly increasing the availability of lottery gambling opportunities. Courier companies in the US have also developed methods to enable consumers in states where lottery is not available to bet on the outcomes of lotteries in other states.

### ***Artificial Intelligence***

Recent technological mega trends are having further impacts on the development and delivery of gambling products, for example Artificial Intelligence (AI) and cryptocurrencies (crypto).

The use cases for AI in gambling is wide and includes compliance, responsible gambling, security, software development, to product development and marketing. Automated sports betting odds creation for live events utilises data and AI and has created a significant increase in betting opportunities. For example, Sportradar claims to be able to offer 1,500 betting opportunities per match, for example offering markets on how many shots will be in a rally, who will get the next break point, etc<sup>72</sup>.

Generative AI is the most recent AI mega trend to impact the industry, and early use cases appear to be focused on customer support (via the use of Large Language Models), software development, and content creation for marketing. For example, in sports betting, using AI technology, suppliers aim to offer curated micro-bets every 15-45 seconds, keeping users engaged whenever they bet, similar to when playing slots or when they see a TikTok perfectly curated for them. Looking to social media, the firm Kero, has drawn inspiration from the curated feed of news and entertainment these apps provide – such as quick-fire TikToks and Instagram reels – prepared with users' amusement and engagement in mind<sup>73</sup>.

Furthermore, a growing number of sportsbooks are incorporating live video streams directly within their platforms. This integration enhances user engagement by allowing bettors to watch

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<sup>68</sup> <https://finance.yahoo.com/news/lottery-industry-analysis-opportunities-2033-141600341.html>

<sup>69</sup> <https://www.gamingintelligence.com/insight/innovating-ilottery-with-immersive-einstant-games/>

<sup>70</sup> <https://www.boylesports.com/blog/how-to-play-slingo-slingo-slots-guide-boylesports#:~:text=Slingo%20games%20are%20a%20hybrid,diagonally%20to%20create%20a%20slingo.>

<sup>71</sup> <https://www.igt.com/products-and-services/lottery/games/draw-games>

<sup>72</sup> <https://sportradar.com/sportradar-drives-betting-innovation-with-micro-markets-expansion/>

<sup>73</sup> <https://sbcnews.co.uk/featurednews/2022/12/05/kero-sports-devenishek/>

and wager on live events in one place, providing a more immersive and convenient betting experience<sup>74</sup>.

Sports vendors are developing innovative new services that augment data, statistics, and insights into the player viewing experience of sports, further enhancing engagement. The organisation Sportradar offers services developed using AI computer vision technology that can transform data into 3D animations – like ball speed, bounces, heatmaps and more – all in real time<sup>75</sup>.

It also appears that the time to create digital gambling content will be significantly reduced due to Generative AI. The slots developer Xgenia claims to be able to create new slots games in under 20 minutes using generative AI<sup>76</sup>. This, as with sports betting, could increase the choice and range of gambling opportunities significantly over the coming years. For example, there are over 12,000 online slots available to be played in the UK market according to the slots affiliate site SlotCatalog (slotcatalog.com).

There are also claims that AI can be employed to generate dynamic gaming environments that adjust the degree of challenge to the player's skill level. AI-enhanced games will often adapt the odds or gameplay features instantly if it seems that players are about to become too bored or frustrated, keeping them interested for longer. This helps any casino to achieve a key goal: to keep players engaged for as long as possible<sup>77</sup>.

### ***Crypto Currencies***

The ability to gamble using crypto casinos, where users deposit and gamble with crypto currencies rather than fiat currency, is a relatively new phenomenon. A 2024 report by Frontier Economics estimated there to be 150,000 gamblers using a crypto casino in the UK<sup>78</sup>.

The exact number of crypto casinos operating globally is difficult to pinpoint due to the rapidly evolving nature of the industry and the lack of a centralized, comprehensive database. However, estimates suggest there are hundreds of crypto casinos in operation, with the number growing steadily as cryptocurrency adoption increases and more players seek decentralized, anonymous, and fast payment options for online gambling<sup>79</sup>.

There are a number of attractions of crypto casinos, including i) the ease and anonymity of account set-up (as they are unregulated there is less friction – typically only an email address and crypto wallet are needed)<sup>80</sup>, ii) the ability to deposit using crypto currencies and iii) many of the casino and arcade style games have higher Return to Player (RTP) as operators can pass on more money to consumers due to there being fewer regulatory overhead costs.

### ***Marketing and Engagement Platforms***

Sophisticated platform services have been developed to integrate with gambling products to drive further engagement and retention with players. These Customer Relationship

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<sup>74</sup> <https://www.dataart.com/blog/microbetting-explained-unlocking-real-time-betting-opportunities-for-sportsbooks>

<sup>75</sup> <https://sportradar.com/4sight-streaming/>

<sup>76</sup> <https://www.yogonet.com/international/news/2024/05/29/72394-xgenia-launches-first-promptdriven-ai-generated-slots-platform>

<sup>77</sup> <https://ourculturemag.com/2024/12/23/how-ai-revolutionizes-online-casinos-from-personalized-gaming-to-fraud-detection/>

<sup>78</sup> <https://bettingandgamingcouncil.com/uploads/Measuring-the-economic-impacts-of-black-market-gambling-A-report-for-the-BGC-September-2024-FINAL.pdf>

<sup>79</sup> <https://www.statista.com/statistics/1537664/crypto-use-in-gambling-by-age/>

<sup>80</sup> <https://www.softswiss.com/knowledge-base/how-to-start-a-crypto-casino/#:~:text=When%20considering%20the%20option%20of,user%20to%20deposit%20more%20confidently.>



Management (CRM) platforms are considered mature products and have been developed and deployed across all forms of internet commerce for decades, not just gambling.

Whilst many gambling products will have retention features and engagement features built within, the industry is using specialist CRM solutions to drive engagement and activity across all gambling products. These engagement and retention strategies include free rounds and bets, free chips, quests or challenges, flash jackpots, mystery prizes, personalised game recommendations, leaderboards and tournaments, engagement games, and social elements, for example.

These CRM systems also make available insights and data in real-time to help gambling operators execute their CRM campaigns to maximise engagement and activity, increasingly leveraging AI techniques to maximise data-driven insights and predictions that drive marketing campaigns.

### ***Land-Based Innovations***

Land-based gambling has also evolved and developed more digitally-driven and immersive gambling experience. For example, physical gaming machines have evolved from standalone, mechanical machines to digital platforms that can have gambling content served to them remotely. These now offer many of the functionalities that are native in online gambling e.g., digital content, wide choice of games, marketing and engagement features, account-based play, and networked jackpots<sup>81</sup>.

Taking a closer look at Novomatic's slot machines, for example, the latest product releases emphasise high definition large screen displays, touch key pads to select games and controls, the ability to advertise promotional content, as well as high performance sound and ergonomic features<sup>82</sup>. Similar product features can be experienced in self-service sports betting terminals too<sup>83</sup>.

Similarly, account-based play functionality available online can now be deployed on physical gaming machines. In addition, the ability to deposit money into machines using cashless methods (e.g., debit card, prepayment card) has evolved as consumer spending habits switch to utilising more digital forms of payments, a trend that is expected to continue. In retail in the UK, cash transactions are expected to fall to just 7% of total retail transactions by 2032<sup>84</sup>. Other tracking technologies, such as RFID (radio frequency identification) have been integrated with casino chips to track gambling behaviours and link physical table game play to player accounts (where a player account exists)<sup>85</sup>.

## **Legal**

The legal environment is a critical factor influencing the operations, growth, and sustainability of the gambling industry. As a highly regulated sector, gambling is subject to a complex web of laws and regulations that vary significantly across jurisdictions. These legal frameworks govern everything from licensing and taxation to advertising, data protection, and responsible gambling practices.

We have witnessed a growing number of forms of entertainment that can be considered grey areas with regards to legal definitions of gambling. These are interesting as many of them are growing in popularity but at the same time expose consumers to gambling-like mechanics

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<sup>81</sup> <https://www.igtjackpots.com/>

<sup>82</sup> <https://www.novomatic.com/en/products/gaming/cabinets>

<sup>83</sup> <https://www.playtech.com/products/sports/>

<sup>84</sup> <https://www.pwc.co.uk/industries/financial-services/insights/future-of-retailer-payments/key-trends.html>

<sup>85</sup> <https://wdtablesystems.com/>

without necessarily having the consumer safety protections in place as required for products considered gambling by law.

Social casinos are a type of online gaming platform that offers casino-style games, such as slots, poker, blackjack, and roulette, but does not involve real-money gambling. Instead, players use virtual currencies or chips to play games, which can be earned through gameplay, purchased with real money, or received as bonuses. Players cannot win or lose real money. All winnings are in the form of virtual currency, which can only be used within the game. Social casinos often incorporate gamification elements, such as daily rewards, challenges, and progression systems, to keep players engaged.

Daily Fantasy Sports (DFS) is not considered gambling in the US and is estimated to be a \$14.91bn<sup>86</sup> market in 2025 with an estimated 62.5m fantasy sports players in the US. Whilst not legally considered gambling, many of the major DFS operators have adopted voluntarily very similar responsible gambling safety measures as those required of legalised gambling in the US.

Prediction markets are platforms where participants can buy and sell shares in the outcome of future events. These markets aggregate information from a diverse group of participants, using the principles of supply and demand to generate probabilities for specific outcomes. Essentially, they function as a form of collective intelligence, where the "wisdom of the crowd" is used to predict the likelihood of events ranging from political elections to sports results. Certain operators such as Kalshi in the US are attempting to move into sports betting, but are facing regulatory headwinds<sup>87</sup>.

Other forms of digital gambling-like entertainment that are growing in popularity in the US include sweepstakes. The trade association representing the major operators, the Social and Promotional Gaming Association (SPGA), claims that these products offer engaging experiences that blend the thrill of gaming with innovative social and promotional elements, focusing on fun and interactive gameplay rather than monetary rewards<sup>88</sup>. However, there is an argument that because some of the rewards can be converted to cash prizes (i.e., sweep coins), this is in fact gambling, and that there are major similarities between sweepstakes sites and online gambling sites<sup>89</sup>.

According to a report by Eilers & Krejcik Gaming, the sweepstakes industry experienced a compound annual growth rate (CAGR) of 85% between 2019 and 2023. The growth rate in 2023 alone was 61%, reaching \$5.6 billion in purchases and generating \$2 billion in net revenue. Eilers & Krejcik projects that player purchases may amount to \$11.4 billion in 2025<sup>90</sup>.

Loot boxes, which generated \$15bn in revenue in 2023, have been likened by some as a virtual lottery of in-game items. Belgium has banned all loot boxes, while the Netherlands has banned some, arguing they are a game of chance. China has asked game producers to disclose to players the odds they face in finding different items before they open a loot box. New Zealand and Poland have ruled that loot boxes are not gambling, while the United Kingdom and the United States are still exploring the issue<sup>91</sup>.

Retail financial trading is also considered a grey area with regards to gambling. Whilst reliable statistics are hard to ascertain, conservative estimates from what are considered reliable

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<sup>86</sup> <https://www.mordorintelligence.com/industry-reports/north-america-fantasy-sports-market>

<sup>87</sup> <https://subscriber.politicopro.com/article/2025/03/nevada-officials-order-kalshi-to-shut-down-sports-election-markets-00214068>

<sup>88</sup> <https://thespga.org/>

<sup>89</sup> <https://cdcgaming.com/sweepstakes-platforms-provoke-debate-about-gambling-legal-issues/>

<sup>90</sup> <https://sciotovalleyguardian.com/2024/11/25/calls-for-stricter-sweepstakes-regulations-in-the-united-states/>

<sup>91</sup> <https://www.library.hbs.edu/working-knowledge/the-15-billion-question-have-loot-boxes-turned-video-gaming-into-gambling>

sources suggest over 70% of retail traders lose money<sup>92</sup>. In the UK, the financial regulator banned the sale of binary options to retail customers as they were considered gambling products dressed up as financial instruments<sup>93</sup>.

In land-based gambling in the US, the American Gaming Association claims that 40% of all gaming machines in the US are unregulated and unlicensed<sup>94</sup>.

## **Environmental**

Whilst we consider environmental factors to be negligible when considering the industry from a productive and place and practice perspective, we acknowledge the ongoing wider societal concerns regarding the ongoing negative environmental implications of developing Generative AI applications<sup>95</sup>.

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<sup>92</sup> <https://www.ft.com/partnercontent/capital-com/new-research-success-is-limited-until-diy-investors-break-bad-habits.html>

<sup>93</sup> <https://www.fca.org.uk/news/statements/fca-confirms-permanent-ban-sale-binary-options-retail-consumers>

<sup>94</sup> [https://www.americangaming.org/wp-content/uploads/2023/04/AGA\\_SIG\\_Sizing-the-Illegal-Market.pdf](https://www.americangaming.org/wp-content/uploads/2023/04/AGA_SIG_Sizing-the-Illegal-Market.pdf)

<sup>95</sup> <https://news.mit.edu/2025/explained-generative-ai-environmental-impact-0117>

## Appendix 2: Research Scan Criteria

Area	Scope or Quality	Criteria	Rationale
Product Verticals	Scope	<ul style="list-style-type: none"> <li>• Betting</li> <li>• Casino</li> <li>• Slots</li> <li>• Lottery</li> <li>• Instant Win Games</li> </ul>	These are the verticals which dominate the gambling industry (from a revenue perspective). Emerging verticals might be interesting however are unlikely to have a large research base due to i) them not being considered gambling ii) their novelty and iii) limited access to subjects and data
Search Criteria	Scope	Using verticals or similar words e.g., slots, EGMs, online slots, terms like harms, problem gambling, addiction, etc. Also a focus on product and characteristics of those products	Limit scope to the most prevalent gambling domains and product features and harms
Timeline	Scope	From January 2014 onwards	Focus on studies that are more likely to reflect the gambling environment today given the significant rate of change over the past decade, in terms of gambling regulation and products
Publication type	Quality	Peer-reviewed academic papers	Peer-review denotes a minimum threshold of quality via a rigorous evaluation process by experts in the fields
Harm Measures	Quality	Must have a form measure of harm (e.g., clinical screen) or relevant harm proxy e.g., self-exclusion, declined deposits, intensity (e.g., increasing stakes, losses)	Effort to focus on those gambling studies that have real-world validity and links to harms and are not theoretical

Area	Scope or Quality	Criteria	Rationale
Data	Quality	Ideally includes actual observed real-world player behaviours e.g., player behavioural data from real-world play. Also include qualitative data from interviews using gambling screens from real-world players	Focus on studies that can demonstrate the impact of product characteristics on real-world behaviours. Disregard lab-based environments that have limited applicability to the real world

## Appendix 3: Research Scan Results: Product Characteristics

Author, Title and Reference	Journal	Jurisdiction	Year
Browne, M., Langham, E., Rockloff, M., Li, E., Donaldson, P., & Goodwin, B. (2014). EGM Jackpots and Player Behaviour: An In-venue Shadowing Study. <i>Journal of Gambling Studies</i> , 31(4), 1695–1714.	Journal of Gambling Studies	Australia	2014
Dixon, M., Graydon, C., Harrigan, K., Wojtowicz, L., Siu, V., & Fugelsang, J. (2014). The allure of multi-line games in modern slot machines. <i>Addiction</i> , 109(11), 1920–1928.	Addiction	Canada	2014
Donaldson, P., Langham, E., Rockloff, M., & Browne, M. (2015). Veiled EGM Jackpots: The Effects of Hidden and Mystery Jackpots on Gambling Intensity. <i>Journal of Gambling Studies</i> , 32(2), 487–498.	Journal of Gambling Studies	Australia	2015
Li, E., Rockloff, M., Browne, M., & Donaldson, P. (2015). Jackpot Structural Features: Rollover Effect and Goal-Gradient Effect in EGM Gambling. <i>Journal of Gambling Studies</i> , 32(2), 707–720.	Journal of Gambling Studies	Australia	2015
Hing, N., Russell, A. M. T., Vitartas, P., & Lamont, M. (2015). Demographic, Behavioural and Normative Risk Factors for Gambling Problems Amongst Sports Bettors   <i>Journal of Gambling Studies</i> . <i>Journal of Gambling Studies</i> , 32, 625–641.	Journal of Gambling Studies	Australia	2015
Landon, J., Palmer du Preez, K., Page, A., Bellringer, M., Roberts, A., & Abbott, M. (2016). Electronic Gaming Machine Characteristics: It's the Little Things That Count. <i>International Journal of Mental Health and Addiction</i> , 16(2), 251–265.	International Journal of Mental Health and Addiction	New Zealand	2016
Dixon, M., Larche, C., Stange, M., Graydon, C., Fugelsang, J., & , (2017). Near-Misses and Stop Buttons in Slot Machine Play: An Investigation of How They Affect Players, and May Foster Erroneous Cognitions. <i>Journal of Gambling Studies</i> ,	Journal of Gambling Studies	Canada	2017
Gainsbury, S. M., Abarbanel, B., & Blaszczynski, A. (2017). Intensity and gambling harms: Exploring breadth of gambling involvement among esports bettors. <i>Gaming Law Review</i> , 21(8), 610–615. <a href="https://doi.org/10.1089/qlr.2017.21812">https://doi.org/10.1089/qlr.2017.21812</a>	Gaming Law Review	Australia	2017

Author, Title and Reference	Journal	Jurisdiction	Year
Dwyer, B., Shapiro, S. L., & Drayer, J. (2018). Daily Fantasy Football and Self-Reported Problem Behavior in the United States. <i>Journal of Gambling Studies</i> , 34(3), 689–707. <a href="https://doi.org/10.1007/s10899-017-9720-4">https://doi.org/10.1007/s10899-017-9720-4</a>	Journal of Gambling Studies	USA	2017
Landon, J., Palmer du Preez, K., Page, A., & Bellringer, M. (2018). Electronic Gaming Machine Characteristics: It's the Little Things That Count. <i>International Journal of Mental Health and Addiction</i> , 16(2). <a href="https://www.researchgate.net/publication/303507628_Electronic_Gaming_Machine_Characteristics_It's_the_Little_Things_That_Count">https://www.researchgate.net/publication/303507628_Electronic_Gaming_Machine_Characteristics_It's_the_Little_Things_That_Count</a>	International Journal of Mental Health and Addiction	New Zealand	2018
Hing, N., Russell, A. M. T., Li, E., & Vitartas, P. (2018). Does the uptake of wagering inducements predict impulse betting on sport? <i>Journal of Behavioral Addictions</i> , 7(1), 146–157. <a href="https://doi.org/10.1556/2006.7.2018.17">https://doi.org/10.1556/2006.7.2018.17</a>	Journal of Behavioral Addictions	Australia	2018
Russell, A. M. T., Hing, N., Browne, M., Li, E., & Vitartas, P. (2019). Who Bets on Micro Events (Microbets) in Sports? <i>Journal of Gambling Studies</i> , 35(1), 205–223. <a href="https://doi.org/10.1007/s10899-018-9810-y">https://doi.org/10.1007/s10899-018-9810-y</a>	Journal of Gambling Studies	Australia	2018
Lopez-Gonzalez, H., Estévez, A., & Griffiths, M. D. (2018). Internet-Based Structural Characteristics of Sports Betting and Problem Gambling Severity: Is There a Relationship?   <i>International Journal of Mental Health and Addiction</i> . <i>International Journal of Mental Health and Addiction</i> , 17, 1360–1373.	International Journal of Mental Health and Addiction	Spain	2018
Nower, L., Caler, K. R., Pickering, D., & Blaszczynski, A. (2018). Daily Fantasy Sports Players: Gambling, Addiction, and Mental Health Problems. <i>Journal of Gambling Studies</i> , 34(3), 727–737. <a href="https://doi.org/10.1007/s10899-018-9744-4">https://doi.org/10.1007/s10899-018-9744-4</a>	Journal of Gambling Studies	USA	2018
Parke, A., & Parke, J. (2019). Transformation of Sports Betting into a Rapid and Continuous Gambling Activity: A Grounded Theoretical Investigation of Problem Sports Betting in Online Settings. <i>International Journal of Mental Health and Addiction</i> , 17(6), 1340–1359. <a href="https://doi.org/10.1007/s11469-018-0049-8">https://doi.org/10.1007/s11469-018-0049-8</a>	International Journal of Mental Health and Addiction	UK	2019
Gainsbury, S. M., Abarbanel, B., & Blaszczynski, A. (2020). The Relationship Between In-Play Betting and Gambling Problems in an Australian Context of Prohibited Online In-Play Betting. <i>Frontiers in Psychiatry</i> , 11, 574884. <a href="https://doi.org/10.3389/fpsy.2020.574884">https://doi.org/10.3389/fpsy.2020.574884</a>	Frontiers in Psychiatry	Australia	2020
Harris, A., Gous, G., de Wet, B., & Griffiths, M. (2020). The Relationship Between Gambling Event Frequency, Motor Response Inhibition, Arousal, and Dissociative Experience. <i>Journal of Gambling Studies</i> , 37(1), 241–268.	Journal of Gambling Studies	UK	2020

Author, Title and Reference	Journal	Jurisdiction	Year
Percy, C., Tsarvenkov, K., Dragicevic, S., Delfabbro, P. H., & Parke, J. (2021). Volatility under the spotlight: Panel regression analysis of online slots player in the UK. <i>International Gambling Studies</i> , 21(3), 395–410.	International Gambling Studies	UK	2021
Greer, N., Rockloff, M. J., Russell, A. M. T., & Lole, L. (2021). Are esports bettors a new generation of harmed gamblers? A comparison with sports bettors on gambling involvement, problems, and harm. <i>Journal of Behavioral Addictions</i> , 10(3), 435–446. <a href="https://doi.org/10.1556/2006.2021.00039">https://doi.org/10.1556/2006.2021.00039</a>	Journal of Behavioural Addictions	Australia	2021
Hing, N., Smith, M., Rockloff, M., Thorne, H., Russell, A. M. T., Dowling, N. A., & Breen, H. (2022). How structural changes in online gambling are shaping the contemporary experiences and behaviours of online gamblers: An interview study. <i>BMC Public Health</i> , 22(1), 1620. <a href="https://doi.org/10.1186/s12889-022-14019-6">https://doi.org/10.1186/s12889-022-14019-6</a>	BMC Public Health	Australia	2022
Vieira, J. L., Coelho, S. G., Snaychuk, L. A., Parmar, P. K., Keough, M. T., & Kim, H. S. (2023). Who makes in-play bets? Investigating the demographics, psychological characteristics, and gambling-related harms of in-play sports bettors. <i>Journal of Behavioral Addictions</i> , 12(2), 547–556. <a href="https://doi.org/10.1556/2006.2023.00030">https://doi.org/10.1556/2006.2023.00030</a>	Journal of Behavioral Addictions	Canada	2023
Hing, N., Browne, M., Rockloff, M., Russell, A., Tulloch, C., Lole, L., Thorne, H., & Newall, P. (2023). Situational features of smartphone betting are linked to sports betting harm: An ecological momentary assessment study. <i>Journal of Behavioral Addictions</i> , 12(4),	Journal of Behavioral Addictions	Australia	2023
Delfabbro, P., Parke, J., Catania, M., & Chikh, K. (2024). Behavioural Markers of Harm and Their Potential in Identifying Product Risk in Online Gambling. <i>International Journal of Mental Health and Addiction</i> , 22(6), 3451–3469. <a href="https://doi.org/10.1007/s11469-023-01060-8">https://doi.org/10.1007/s11469-023-01060-8</a>	International Journal of Mental Health and Addiction	UK	2023



## Appendix 4: Research Scan Results: Any Noted Papers Focused on Product Vertical

Author, Title and Reference	Journal	Jurisdiction	Year
Castrén, S., Perhoniemi, R., Kontto, J., Alho, H., & Salonen, A. H. (2017). Association between gambling harms and game types: Finnish population study. <i>International Gambling Studies</i> , 18(1), 124–142. <a href="https://doi.org/10.1080/14459795.2017.1388830">https://doi.org/10.1080/14459795.2017.1388830</a>	International Gambling Studies	Finland	2017
Binde, P., Romild, U., & Volberg, R. A. (2017). Forms of gambling, gambling involvement and problem gambling: evidence from a Swedish population survey. <i>International Gambling Studies</i> , 17(3), 490–507. <a href="https://doi.org/10.1080/14459795.2017.1360928">https://doi.org/10.1080/14459795.2017.1360928</a>	International Gambling Studies	Sweden	2017
Mazar, A., Zorn, M., Becker, N. et al. Gambling formats, involvement, and problem gambling: which types of gambling are more risky?. <i>BMC Public Health</i> 20, 711 (2020). <a href="https://doi.org/10.1186/s12889-020-08822-2">https://doi.org/10.1186/s12889-020-08822-2</a>	BMC Public Health	USA	2020
Mazar, A., Zorn, M., Becker, N. et al. Gambling formats, involvement, and problem gambling: which types of gambling are more risky?. <i>BMC Public Health</i> 20, 711 (2020). <a href="https://doi.org/10.1186/s12889-020-08822-2">https://doi.org/10.1186/s12889-020-08822-2</a>	BMC Public Health	USA (MA)	2020
Delfabbro, P., King, D. L., Browne, M., & Dowling, N. A. (2020). Do EGMs have a Stronger Association with Problem Gambling than Racing and Casino Table Games? Evidence from a Decade of Australian Prevalence Studies. <i>Journal of Gambling Studies</i> , 36, 499–511.	Journal of Gambling Studies	Australia	2020
Williams, R. J., Leonard, C. A., Belanger, Y. D., Christensen, D. R., El-Guebaly, N., Hodgins, D. C., McGrath, D. S., Nicoll, F., Smith, G. J., & Stevens, R. M. G. (2021). Predictors of gambling and problem gambling in Canada. <i>Canadian journal of public health = Revue canadienne de sante publique</i> , 112(3), 521–529. <a href="https://doi.org/10.17269/s41997-020-00443-x">https://doi.org/10.17269/s41997-020-00443-x</a>	Canadian Journal of Public Health	Canada	2021
Browne, M., Delfabbro, P., Thorne, H. B., Tulloch, C., Rockloff, M. J., Hing, N., Dowling, N. A., & Stevens, M. (2023). Unambiguous evidence that over half of gambling problems in Australia are caused by electronic gambling machines: Results from a large-scale composite population study. <i>Journal of behavioral addictions</i> , 12(1), 182–193. <a href="https://doi.org/10.1556/2006.2022.00083">https://doi.org/10.1556/2006.2022.00083</a>	Journal of behavioral addictions	Australia	2023

Author, Title and Reference	Journal	Jurisdiction	Year
Russell, A. M. T., Browne, M., Hing, N., Rockloff, M., Newall, P., Dowling, N. A., Merkouris, S., King, D. L., Stevens, M., Salonen, A. H., Breen, H., Greer, N., Thorne, H. B., Visintin, T., Rawat, V., & Woo, L. (2023). Electronic gaming machine accessibility and gambling problems: A natural policy experiment. <i>Journal of behavioral addictions</i> , 12(3), 721–732. <a href="https://doi.org/10.1556/2006.2023.00044">https://doi.org/10.1556/2006.2023.00044</a>	Journal of behavioral addictions	Australia	2023
Wardle, H., & Tipping, S. (2023). The relationship between problematic gambling severity and engagement with gambling products: Longitudinal analysis of the Emerging Adults Gambling Survey. <i>Addiction (Abingdon, England)</i> , 118(6), 1127–1139. <a href="https://doi.org/10.1111/add.16125">https://doi.org/10.1111/add.16125</a>	Addiction	UK	2023
Gooding, N., & Williams, R. (2024). Are There Riskier Types of Gambling?. <i>Journal of Gambling Studies</i> , 40(2), 555–569.	Journal of Gambling Studies	Canada	2024
Marionneau, V., Kristiansen, S., & Wall, H. (2024). Harmful types of gambling: changes and emerging trends in longitudinal helpline data. <i>European Journal of Public Health</i> , 34(2), 335–341. <a href="https://doi.org/10.1093/eurpub/ckae024">https://doi.org/10.1093/eurpub/ckae024</a>	European Journal of Public Health	Nordics	2024
Delfabbro P, Parke J, Catania M. Assessing the Risk of Online Gambling Products: A Replication and Validation of Behavioural Markers of Harm Using the Problem Gambling Severity Index. <i>J Gambl Stud</i> . 2024 Nov 13. doi: 10.1007/s10899-024-10363-x. Epub ahead of print. PMID: 39535585.	Journal of Gambling Studies	UK	2025