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Product Risk:

How to assess the risk of different games and products

Powering Safer Gambling Solutions

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What is the topic?

Product risk refers to how specific aspects of gambling products can create elevated opportunities for risky play for particular players. Product risk can be analysed by vertical (e.g. sports vs slots vs lottery draws), by feature (e.g. speed of play, max poker raise), and by game (e.g. Buffalo Blitz vs Lucky 7s; betting on hockey vs football). This brief describes the different methods, both qualitative and quantitative, for estimating product risk, along with their pros and cons.

Why is it important?

There are several avenues through which player-level risks of harm can be increased, often summarised as player risk (e.g., their financial circumstances, attitude to risk), place risk (e.g., the availability of gambling and support), and product risk (e.g., speed of play, jackpot size). Since different people react differently to place or product features, it is often most effective to intervene at the player-level in a personalised manner. Nonetheless, opportunities to reduce exposure to risk through place- or product-level interventions are also important to examine, implemented most visibly when regulators restrict or open up new verticals in their jurisdiction, such as sports betting.

Correctly estimating product risk is feasible, but requires considerable methodological and analytical care to generate reliable results. A significant amount of the research and commentary available publicly on product risk is not adequately aware of methodological requirements or their limitations, risking both premature or over-confident conclusions and insufficiently prioritising future high quality work that addresses these limitations.

What did the research do?

This brief is based on a presentation by Playtech and subsequent discussions from the IGI conference in May 2023. Playtech Protect has been researching product risk from a variety of dimensions since the 2010s, engaging in public presentations and publications over this period. A few published examples include analysis of risk from volatility in online slots (Percy et al., 2021), the potential to mitigate risks through game labelling in a randomised field experiment (Playtech & William Hill, 2020), collaborations with academics on improving the evidence-based framework for product risk (Delfabbro et al., 2021), and sector discussions around a risk vector map for different product features (Percy, 2018). We were also proactive partners in the UK's Betting and Gaming Council's development of an industry code of conduct for responsible game design, going beyond the regulatory requirements for product restrictions (BGC, 2020). This note summarises our perspective on available methodologies based on discussions and reflections over this period. We welcome comment and new ideas on these issues.

What did the research find?

In total we have identified nine broad categories of method that can be used to assess product risk (table 1). None of these is perfect, pointing towards the importance both of investing effort in mitigating the limitations of each method and of adopting a plurality of methods for important decisions, as well as being cautious in a spirit of continuous research and development.

Much of the published work in particular product features, including some of our published work, draws on historic play data analysis. As well as general good practice principles of data analysis, our discussions have surfaced seven challenges to inference that are particularly pertinent in a product risk setting. These seven challenges are summarised in table 2, with examples tailored towards online slots, a vertical frequently discussed with respect to product risk.

Table 1. Nine categories of method to estimate the relative level of product risk in a given setting

Method	Pros	Cons
Theory-driven e.g. a plausible mechanism can be described for why it leads to risk	• Transparent rationale • Can, in principle, be applied to new game concepts not yet launched	• Plausible mechanisms can often be described in both directions, making the net effect unclear (e.g. volatility, player agency, complexity) • Typically no guide to scale/shape of effect
Player dialogue e.g. asking players what features/games caused them problems and why, ideally also asking low-risk players for base rate insights	• Learning from lived experience • Insight into latest features	• It can be hard to assess the causes of own problems • Motivated reasoning, whether consciously or not • Low validity without comparison to low-risk players
Treatment provider dialogue e.g. ask treatment providers what they are seeing	• Leaning indirectly from lived experience through lens of professional expertise	• No base rate/comparison (unless combined with a dialogue with a broader gambling community) • Partial visibility of marketplace
Forum review e.g. read forums/social media for player view	• Learning from lived experience • Good for new/innovative features	• Can only comment reactively, likely not to address less visible or more long-standing product features • Partial visibility of marketplace
Grounded play e.g. interview players as they play or while reviewing a play session	• Learning from lived experience in a more direct way with less "hindsight" bias	• Needs ethical care • Relies on player self report (mostly qualitative data) • Expensive to get a sample for quantitative insights
Lab experiments e.g. inviting players into a controlled setting to gamble and observing their responses	• Controlled environment • Enables precise test of hypotheses	• Challenging to get a sufficiently large & valid sample • Even with real players/money, typically not ecologically valid due to ethical & financial constraints
Expert consensus e.g. via Delphi method used for ASTERIG (see Blanco et al., 2013; Delfabbro & Parke, 2021)	• Can form a view across the whole of a weak and uncertain evidence base • Transparent	• Can be hard to get right balance of people in process • Needs investment in recruitment, principles, process, and agreed evidence hierarchy to be compelling
A/B test in live environment e.g. conducting a randomised control trial with different product variants	• Closest fit to regulatory intervention	• Players can see as disruptive or unfair (may churn) • Can be hard for a single operator to justify doing ethically/commercially (but a regulator could impose)
Historic play data analysis e.g. regression/clustering analysis on past data	• Real players in a genuine environment at scale – generates quantitative detail	• Needs large volume of data, i.e. poor for new features • Challenging to assess causality (see table 2)

Table 2. Seven challenges for causal inference for product risk when analysing historic play data

Challenge	Brief Description	Options and example approaches for mitigating
Causality	• How to tell if it is the game features driving risk/harm or just happens that players who (look like they) are at risk prefer those games?	• Panel regression tracking the same group of players over time • Natural or controlled experiments, e.g. difference in differences • Instrumented regression, DAG-informed multivariable regression, matching methods (all require suitable variables to be available)
Harm proxy	• What measures / proxies to use for player-level harm or risk of potential harm? • Several are available, but each with their own pros and cons	• Survey data (e.g. PGSI/BBGS) but requires regular re-surveying to track changes over time to support event/exposure analysis • Self-exclusion, operator exclusions, or industry-level exclusions • Algorithmic/modelled risk (e.g. BetBuddy risk scores) • Behavioural flags (e.g. high losses, spike play, declined deposits)
Data linkage	• How to relate game-level data to player-level outcomes?	• Calculate a stake-weighted average exposure to a feature • Analyse at the game level (e.g. most commonly played games) • Analyse on game session basis (but misses holistic player view)
Multiple play types	• How to handle play across multiple types of game or vertical and data gaps?	• Restrict sample to players with few data gaps or whose play is primarily only on the target areas • Collate player-level data across multiple operators/accounts
Sample selection	• Which players should be analysed? • e.g. representing the players of interest and having enough play to unlock necessary statistical techniques	• Perhaps requiring a sufficient number of days or volume of play, being clear that results may not apply to lower-intensity players • Test results against a chronological hold-out sample
Accrued risk	• How to adjust for risks accruing over time? • E.g. feature-driven losses yesterday might result in loss-chasing (on a different set of games) today	• Incorporate time-lagged variables into the analysis • Analyse players at different time frequencies, e.g. session-level, daily, weekly, and monthly play
Confounding factors	• How to adjust for factors outside of game features? • E.g. if branding, marketing, or bonuses are associated with newer or mid-/mass-market propositions, which are then more popular (so appear to be driving activity/risk) and have distinctive set of features (e.g. more middle-of-the-road / sweet spot feature set or more modern style)	• Use control variables or subsamples to test robustness to different interpretations of these factors • Deflate spend on the relevant games by parameters estimated from models that relate the identified features (e.g. recency of launch, bonus spend by operators) to game activity levels in historic data

What are the implications for industry and policy?

Sound research in the field of product risk is challenging but not impossible.

Sector participants and stakeholders should focus on fewer, but higher quality research projects using a diverse range of methods as discussed in this document.

Lower quality research can still suggest insights and hypotheses for further investigation, but should be used cautiously in terms of relaxing or restricting particular products.

In all cases, we should be aware that product risks depend on the context: what is risky in one demographic or jurisdiction or at one period of time might be more or less risky in another.

How can I find out more?

To find out more about this research or if you have any suggestions for future topics to be addressed via the Industry Research Brief, please contact the team via protect@playtech.com.

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