

Identifying subtypes of potential patterns of problem gambling using behavioural data

What this research is about

The prevalence of problem gambling in the adult population has increased in Denmark. As such, there is a growing need to understand how it can be prevented and treated. Past research has suggested that certain behaviours, like betting with larger wagers and making large deposits, are linked to increased risk of problem gambling. However, these behaviours can vary widely between people. This highlights the importance of considering how different combinations of risky behaviours might contribute to problem gambling. In this study, the researchers looked at behavioural data provided by a gambling operator to identify subtypes of gambling patterns that might indicate problem gambling.

What the researchers did

The researchers used a large dataset provided by Danske Spil, a state-owned Danish gambling operator. The dataset included behavioural data from 658,028 users of the platform over a 90-day period. A second dataset involving 619,441 people, collected over a separate 90-day period, was used to validate the results.

The researchers examined the following information for each user:

- Basic demographic information (age).
- Behavioral markers reflecting intensity of gambling, like winnings.
- Behavioural markers reflecting changes or patterns in behaviour that did not depend on overall spending levels, like changes in wagers after a large loss or win.

What you need to know

Problem gambling can involve many different patterns of gambling behaviours. In this study, the researchers analyzed gambling behaviour patterns to identify subtypes of gambling that might be problem gambling. The researchers used behavioural tracking data from 658,028 people who had gambled with Danske Spil, a state-owned Danish gambling operator. The results were then validated using a second dataset involving 619,441 people.

The researchers identified seven distinct gambling profiles that differed in intensity, product type, spending patterns, and responses to wins and losses. Some profiles reflected high overall gambling involvement and escalating money deposits. On the other hand, others reflected increased wagering after large wins or losses. Not all high-intensity gambling patterns showed clear signs of harm, suggesting that high spending alone might not indicate increased risk. Moreover, people with the same profile still somewhat differed from each other.

The results suggest that problem gambling may involve multiple different combinations of behaviours. These findings can inform tailored approaches to problem gambling detection and prevention.

The researchers carried out statistical analyses to identify clusters of gambling behaviour patterns. They then identified subtypes of gambling that might be considered problem gambling based on these clusters.

What the researchers found

The researchers found seven distinct clusters of gambling behaviour patterns. Three of the clusters reflected lower-risk patterns suggestive of recreational gambling. Users in these clusters had low-to-average gambling engagement and few behavioural markers of risk. On the other hand, four clusters showed behavioural patterns that meaningfully differed from the lower-risk ones. The researchers further analyzed these four clusters to identify subtypes of gambling that might be problem gambling.

The first cluster was named “High Activity Gamblers” and was split into two subtypes. The first subtype reflected high gambling engagement, including escalating money deposits, frequent money reloads, and increased nighttime gambling activity. The second subtype also reflected high gambling engagement but was less financially involved compared to the first.

The second cluster was named “High-winning Gamblers” and was also split into two subtypes. The first subtype reflected high winnings and high engagement with poker. The second subtype reflected positive net gain, large winnings, and high betting activity. These two subtypes lacked many of the behavioural markers that are usually linked to gambling-related harm, like escalating losses. This suggests that high-stakes gambling does not necessarily indicate an increased risk for problem gambling on its own.

The third cluster was named “Grey-zone Gamblers” and was split into three subtypes. The first subtype showed increased money deposits, multiple money reloads, and late-night gambling. The second subtype involved engagement in a high number of games and high winnings, but moderate financial engagement. The third subtype was distinguished by high engagement across a range of different gambling products.

The final cluster was named “Change-Driven Gamblers” and was split into two subtypes. Both subtypes reflected increased wagers after large wins and losses and escalating money deposits. One of the subtypes appeared to be a more extreme version of the other.

Most clusters appeared to be heterogeneous, meaning that the behaviours of people within the same cluster still somewhat differed from one another. This reflects the real-world complexity of gambling behaviours and suggests that people might develop problem gambling through different pathways.

The researchers also validated these results with the second dataset. They found that the subtypes were largely replicated in this second dataset.

How you can use this research

The findings can inform tailored approaches to problem gambling detection and prevention based on behavioural patterns.

About the researchers

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