

Playing the Player: Ethical Implications of Data-Driven Personalization in Sports Betting

Skylar Furey

DATA 740: Governance, Bias, Ethics and Fairness in Data Science and AI

Dr. Kathryn Wymer

UNC Chapel Hill: School of Data Science and Society

July 12, 2025

Abstract

This analysis explores ethical challenges in the sports betting sector, focusing on how behavioral data is used to personalize betting recommendations. Acting as Chief Data Officer at a sports betting technology startup, I examine the tension between user engagement and the risks of algorithmic exploitation. Key stakeholders include users, regulators, data scientists, and mental health advocates. Ethical concerns arise when models prioritize profit over user well-being or reinforce risky gambling behavior. The ethical matrix outlines the impacts on autonomy, harm prevention, fairness, and accountability across stakeholder groups. The report maps ethical considerations across the data lifecycle—collection, access, cleaning, curation, usage, and privacy—and proposes mitigations like fairness-aware ML and consent dashboards. It also recommends governance structures including internal ethics boards, third-party audits, and regulatory compliance. Ultimately, the platform must align innovation with responsibility, ensuring that data-driven decisions promote user safety, fairness, and trust in an increasingly personalized and high-risk digital environment.

Contents

Role and Sector	1
Problem Statement.....	1
Key Decisions and Stakeholders.....	1
Ethical Matrix.....	2
Data Lifecycle.....	2
Collection	2
Access.....	2
Cleaning	2
Curation.....	3
Usage (Modeling & Personalization)	3
Mitigations.....	3
Privacy & Consent	3
Governance Structures	3
Internal Governance	3
External Governance	3
Conclusion	4

Role and Sector

For this analysis, I am assuming the role of a Chief Data Officer at a rapidly growing sports betting technology startup. Our company provides an app that offers fans the ability to place wagers on live sporting events, access betting predictions, and receive personalized recommendations based on their behavior. Operating in the sports betting sector, our company intersects heavily with data science, entertainment, finance, and digital marketing.

As the Chief Data Officer, I am responsible for designing, implementing, and governing the data infrastructure and algorithms that support user engagement and betting behavior. My role involves balancing the company's growth and revenue objectives with ethical considerations around user privacy, informed consent, and the potential for algorithmic harm.

Problem Statement

The core ethical problem addressed in this project is the use of behavioral and engagement data to personalize sports betting recommendations, which may lead to exploitative practices, especially for users who are vulnerable to compulsive gambling behaviors. While data-driven personalization increases user engagement and platform profitability, it also raises serious concerns about user autonomy, mental health, and fairness.

This challenge mirrors broader concerns in the data ethics community about algorithmic manipulation and the use of predictive analytics to drive revenue at the expense of social well-being. The central question is: *How can sports betting platforms responsibly use behavioral data while preventing harm to vulnerable users?*

Key Decisions and Stakeholders

The ethical tension arises across multiple decision points involving various stakeholders:

- Users: Ranging from casual fans to problem gamblers. Their data is collected and used to personalize experiences, but they may be unaware of how these recommendations are generated or influenced.
- Data Scientists: Design the algorithms that power engagement. They must balance accuracy and business performance with harm mitigation.
- Investors: Seek profit and market share growth, which may conflict with social responsibility goals.
- Regulators: Include federal and state gaming commissions, FTC (Federal Trade Commission), and international bodies overseeing data protection (ex. GDPR, CCPA).
- Mental Health Advocates: Monitor industry practices for signs of algorithmic exploitation and consumer harm.

Key decisions include:

- What types of user data can be ethically collected and stored?
- How much transparency is required for personalized betting suggestions?
- Should the platform actively detect and intervene in cases of problematic behavior?
- How are algorithmic models trained to avoid reinforcing harmful betting loops?

Ethical Matrix

Stakeholder	Autonomy	Harm Prevention	Fairness	Accountability
Users	Right to opt-in/opt-out	Protection from addiction	Equal access, no targeting of vulnerable users	Clear terms
Data Scientists	Model transparency	Minimize unintended harms	Unbiased feature engineering	Explainable ML, documentation
Investors	Informed about ethical risks	Avoid investing in harmful practices	Expect fairness in market operations	Demanding ethical compliance
Regulators	Enforce consent laws	Monitor social harm	Ensure compliance across user segments	Oversight, penalties
Mental Health Advocates	Advocate for vulnerable users	Promote addiction safeguards	Push for equal treatment of at-risk users	Public campaigns, lobbying for audits

Data Lifecycle

The responsible use of fan data requires careful planning across the entire data lifecycle:

Collection

- Data Types: Browsing history, clickstream behavior, betting history, time-on-app, device metadata, location, and in-app messages.
- Concerns: Passive data collection often lacks meaningful user consent. Dark patterns may encourage users to share more than they understand.
- Solutions: Implement GDPR/CCPA-compliant data collection with explicit consent toggles and regular reminders.

Access

- Data should be tiered based on sensitivity. For example, developers may only access anonymized behavioral aggregates unless they are debugging a specific issue.
- Introduce role-based access control to prevent unnecessary exposure.

Cleaning

- Maintain transparent data cleaning logs for missing values, duplicates, or inferred fields.

- Ensure demographic or behavioral imputation doesn't introduce bias against vulnerable groups (ex. lower-income users).

Curation

- Define clear data retention policies, with regular deletion schedules.
- Avoid creating persistent user profiles without strong justification. Consider implementing temporary sessions where it is feasible to reduce long-term profiling.

Usage (Modeling & Personalization)

- Predictive models are used to recommend bet types (ex. parlays, in-game bets) or incentivize re-engagement ("You might like this bet").
- Ethical concerns arise when:
 1. Models optimize for revenue over user well-being
 2. Personalization reinforces high-risk betting behavior

Mitigations

- Implement fairness-aware ML practices
- Introduce randomized control trials for feature testing with opt-out options
- Flag users exhibiting high-risk patterns and throttle recommendations

Privacy & Consent

- Default all tracking to opt-in with contextual descriptions
- Allow users to review and delete historical data
- Consider user dashboards showing how recommendations are generated

Governance Structures

To operate ethically and compliantly, the platform must be embedded within robust governance frameworks:

Internal Governance

- Ethics Review Board: Multidisciplinary team of engineers, ethicists, legal advisors, and external auditors
- Model Documentation: Maintain model cards describing purpose, data inputs, risks, and performance
- Data Incident Protocols: Playbooks for misuse, breaches, or algorithmic failures

External Governance

- Regulatory Compliance:
 - GDPR (EU): Right to explanation, right to be forgotten, consent requirements
 - CCPA (California): Consumer access to personal data, opt-out of sale
 - Gambling Commissions: Age verification, addiction mitigation, anti-money laundering

- Third-party Audits: Annual review by independent algorithmic accountability organizations
- User Representation: Consult with user advocacy groups to guide feature development

Conclusion

The fusion of data science and sports betting presents a powerful, but ethically precarious, business model. While personalization can enhance user experience, it also opens the door to predatory practices, especially for vulnerable populations. By designing with ethical foresight centered on transparency, harm reduction, and user empowerment, platforms can uphold both innovation and integrity.

As a Chief Data Officer, I advocate for a culture where data-driven success is not measured solely by engagement or profit, but by how responsibly we wield influence over the fans we serve. Ultimately, ethical awareness must become a core competency in any organization that uses data to shape behavior, particularly when profit and well-being can so easily collide.