



The Rise of Online Gambling: *What's at Stake?*

Gambling is a major industry in both the United States and the United Kingdom, and has grown even larger in recent years due to the rise in online gambling via websites and phone apps. In the U.S., which has more restrictive gambling laws than the U.K., growth in online gambling was buoyed by a 2018 ruling that repealed a long-time ban on sports betting¹. In 2025, American sports betting platforms brought in roughly \$15 billion in revenue from \$150 billion in wagers, equivalent to over \$400 per person in the U.S.^{2,6}. Reports indicate that 22% of Americans have online sports gambling accounts, with the number higher for certain demographics (e.g., almost 50% for men aged 18-49)³. The U.K. has seen similar growth in online sports gambling⁴.

Many have embraced online sports gambling, viewing it as an entertaining way to engage with sports. Indeed, many professional sports leagues and media outlets have welcomed increased interest in sports gambling, which has been associated with increased viewership and revenue⁵. Like other forms of gambling, such as casinos and lotteries, taxes collected from online sports gambling can be used to raise revenues for government programs⁶.

At the same time, concerns have been raised. Beyond high-profile scandals, including illegal betting in the National Basketball Association⁷, online betting accounts and phone apps significantly reduce the barrier to placing sports bets. Addiction and problem gambling are natural risks of increased access⁸. Although the legal age to gamble is 18 or 21 in most states and in the U.K., these problems affect young students as well⁹. Moreover, even among users who may not be considered problem gamblers, gambling can be an expensive form of entertainment, taking a toll on financial health by reducing savings and increasing debt¹⁰.

Given the issues outlined above, should society be concerned about online gambling and its continued growth? You are tasked with helping answer this question by quantifying and assessing the financial impact of gambling on individuals.

- **Q1: Playing With House Money**—Like other forms of entertainment, the amount of money an individual spends on sports gambling is tied to their disposable income (what is left over after paying for essentials like food, rent, taxes, and healthcare). Develop a model that takes as input an individual's salary, age, and any other demographic information you deem relevant, and returns an estimate of the person's disposable income. Your solution should include a demonstration of your model on inputs from a variety of demographic groups.
- **Q2: Know the Spread**—The profit of sports gambling companies can be used to get a rough idea of how much total money is being lost via sports gambling in the U.S. and U.K. However, the way these losses are distributed across the population is less clear. Some demographics (ages, genders, etc.) might gamble more frequently than others. Even within demographic groups, a gambler's risk tolerance or choice of bets can impact how much they win or lose. Create a model that predicts how much an individual will gain or lose through online sports gambling over the course of one year based on their demographics and other assumptions about the individual (e.g., their risk tolerance).
- **Q3: Don't Break the Bank**—From Q1 and Q2, you should have a good sense of how much individuals spend on online sports gambling compared to their disposable income. But what should society take away from these predictions? In this problem, you are tasked with quantifying the impact of spending on sports gambling in a way that is understandable to the general public. There is no single correct approach. You might choose to compare the amount spent on sports gambling to other forms of entertainment, you might quantify how gambling losses will impact long-term household savings, or you might model the percentage of people that are at risk of going into debt due to online gambling. Take these ideas as starting points and be creative.

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The first page of your submission should be an executive summary of your findings. This should be followed by your solution paper, which should include clear explanations of why you chose the mathematical approaches used in your model(s). We recommend that your solution paper not exceed 20 pages in length.

Remember to cite your sources, including the provided data file, if you use it. If you choose to write code as part of your work to be eligible for the technical computing prize, please include it either in the body of your paper or in a separate appendix. If the majority of your coding was done in MATLAB, please check the technical computing box when you upload your paper in order to be considered for the MATLAB Technical Computing Awards. Appendices and references/citations do not count toward the recommended 20-page limit.

Disclaimer: If you, a family member, or a friend has a gambling problem, there is a list of resources available for help by U.S. state at: <https://www.ncpgambling.org/help-treatment/help-by-state/>. Resources in the U.K. can be found at: <https://www.nhs.uk/live-well/addiction-support/gambling-addiction/>.

- 1 <https://cardozolawreview.com/legalized-sports-wagering-in-america> (Cardozo Law Review)
- 2 <https://www.legalsportsreport.com/sports-betting-states/revenue/> (Legal Sports Report)
- 3 <https://scri.siena.edu/2025/02/18/22-of-all-americans-half-of-men-18-49-have-active-online-sports-betting-account/> (Siena University Research Institute)
- 4 <https://www.gamblingcommission.gov.uk/statistics-and-research/publication/statistics-on-gambling-participation-annual-report-year-1-2023-official> (Gambling Commission, United Kingdom)
- 5 <https://rg.org/research/cultural/influence-of-sports-betting-on-viewership> (RG Research)
- 6 <https://www.americangaming.org/resources/commercial-gaming-revenue-tracker/> (American Gaming Association, Commercial Gaming Revenue Tracker)
- 7 <https://www.nytimes.com/live/2025/10/23/nyregion/nba-illegal-gambling-arrests> (The New York Times)
- 8 <https://pubmed.ncbi.nlm.nih.gov/38311694/> (Journal of Gambling Studies)
- 9 [https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667\(21\)00026-8/fulltext](https://www.thelancet.com/journals/lanpub/article/PIIS2468-2667(21)00026-8/fulltext) (The Lancet Public Health)
- 10 <https://insight.kellogg.northwestern.edu/article/online-sports-betting-is-draining-household-savings#> (Online Sports Betting Is Draining Household Savings) See also: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4881086

Data Statement:

Various organizations and agencies collect all kinds of data that may be relevant to this problem. A small amount of data has been compiled, and a link to a spreadsheet with four worksheets of data is provided. The data is available at <https://m3challenge.siam.org/q1ddt931qcgqy5sz/> (password: 2ykZ55dDW5cpQU8T). You are not required to use this data; that is, you may choose to use none, some, or all of this data and/or any additional data sources you may identify while working on this problem. If you use this data, please cite it as follows: The Rise of Online Gambling, MathWorks Math Modeling Challenge 2026, curated data.

MATLAB Users:

If you use Excel or any other spreadsheet data in MATLAB, you can import the data by double-clicking the files in MATLAB's "Current Folder" browser or use the [Import Data Button](https://www.mathworks.com/help/matlab/spreadsheets.html?ue) (<https://www.mathworks.com/help/matlab/spreadsheets.html?ue>) at the top of the Toolbar.

Watch this quick MATLAB video tutorial (https://www.youtube.com/watch?v=0hArv-UBKQQ&list=PLn8PRpmsu08oBSjfGe8WIMN-2_rwWFSG&index=14) about importing spreadsheet data.

This problem was written by M3 Challenge Problem Development Committee members Dr. Jennifer Gorman, Lake Superior State University; Dr. Christopher Musco, New York University; and Dr. Neil R. Nicholson, University of Notre Dame.