SPORTS BETTING OUTCOMES

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INTRODUCTION

This project studies data from sports bets to find out what factors affect whether a bet wins or loses. By using graphs and basic statistical tests, we examine which sports are more profitable, if certain odds make winning more or less likely, and whether betting larger amounts leads to higher returns. The main goal is to give useful insights about what influences success in sports betting.

RESEARCH QUESTION:

How do the type of sport, betting odds, and the amount staked affect the likelihood of winning and the profit or loss from sports bets?

HYPOTHESIS

-(H_0): There is no significant difference in mean Gross Gaming Revenue (GGR) between different sports.
-(H_1): There is a significant difference in mean GGR between different sports.
-(H_0): Betting odds are not associated with the probability of winning.
-(H_1): Betting odds are associated with the probability of winning.
-(H_0): The proportion of winning bets is equal to the proportion of losing bets, so the probability of winning is 0.5.
-(H_1): The proportion of winning bets is different from the proportion of losing bets, so the probability of winning is not 0.5
-(H_0): The stake size is not correlated with net gain.
-(H_1): The stake size is correlated with net gain.

DATA SET

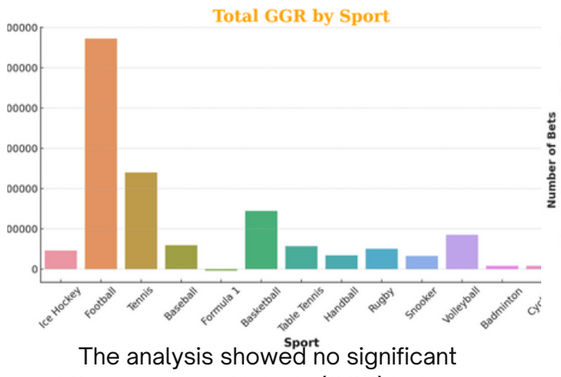
The dataset contains the following features:
- bet_id: Unique identifier for each bet
- user_id: User identifier
- bet_type: Type of bet (single or multiple)
- sport: Type of sport (e.g., Football, Tennis, Ice Hockey)
- Odds: Betting odds for the bet
- is_win: Whether the bet was won (True/False)
- stake: The amount of money staked
- Gain: Amount gained from the bet
- GGR: Gross Gaming Revenue (stake minus gain)

CONCLUSION

This analysis found that while the type of sport did not affect profitability, betting odds strongly influenced win probability, and higher stakes led to higher gains. The win/loss ratio was also significantly unbalanced. These findings offer useful insights but should be viewed with caution due to potential biases in the data.

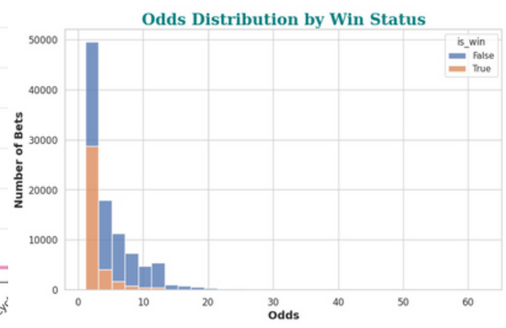
ANALYSIS

1. Sport Profitability



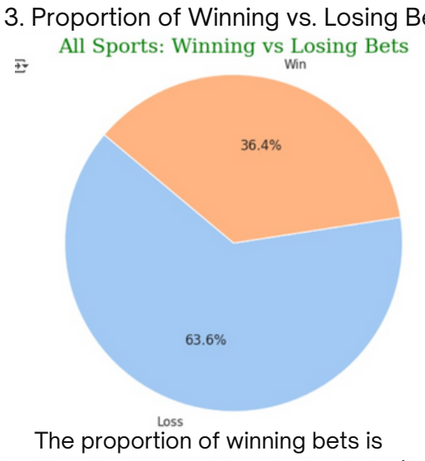
The analysis showed no significant difference in profitability (GGR) between sports (F-statistics: 1.02, p-value: 0.427). Statistical tests confirmed that the type of sport does not impact overall revenue.

2. Odds and Winning Probability



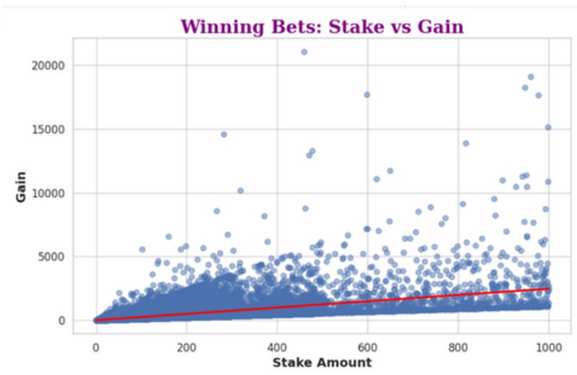
The analysis revealed a significant association between betting odds and the probability of winning (Chi-squared: 22904.02, p-value: 0.000). Higher odds are linked to a lower chance of winning, as confirmed by statistical testing.

3. Proportion of Winning vs. Losing Bets:



The proportion of winning bets is significantly different from losing bets (Z-statistic: -89.05, p-value: 0.000). Statistical testing shows a strong imbalance, with losses occurring much more frequently than wins.

4. Stake Size and Gain



The analysis found a significant linear relationship between stake size and gain among winning bets (Slope: 2.47, r = 0.591, p-value: 0.000). Higher stakes typically result in higher gains, as confirmed by statistical testing.