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How To Assign Win Probabilities In An Election Based On Polling Results. Preliminary report.

Suppose you want to assign a candidate's probability of winning an election based on polling results. Is there a "right" way to do this? I explore this question mathematically in the context of a two-candidate race. The approach is game-theoretical. I posit a game in which the "house" publishes probabilities of winning for each candidate in an election. The house then accepts bets on the outcome of the election. If a player bets on a candidate, and that candidate loses the election, the player pays the house one dollar. But if the candidate wins, the house pays the player an amount that depends on the candidate's chances of winning: the lower the candidate's chances of winning, the higher the payoff. The exact amount of the payoff is calculated according to *fair house rules*: if the published house probability were the actual probability that the candidate wins, then the house's net gain, averaged over many bets, would be zero. The house's strategy in this game is the choice of how to assign win probabilities based on poll results. The player's strategy is the choice of which candidate to bet on. Thus, different ways for the house to assign win probabilities can be compared, by seeing how they fare against an optimal player in this game. (Received September 26, 2017)