ALY 6050

Introduction to Enterprise Analytics

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We were given the task of finding the probability of winning a certain amount of money after betting on the three games between two National Football League (NFL) teams, namely New York Giants (NYG) and Cincinnati Bengals (CB). Both the teams have to play a best of three games series and the one who wins two out of the three games, wins the series. Now, the probability of winning at the team's home ground is obviously higher. So, since the first game is played at New York's home ground, their winning probability was higher. The second game was to be played at Cincinnati Bengal's home ground, thus their winning probability will be higher. And, if at all a third game is needed, then it will be played at the New York Giant's home ground, where the wining probability of the New York Giants is high. Based on the above information, we had to bet on each game played and if the New York Giants won, then we won $500 and if they lost or if the Cincinnati Bengals won, then we would lose $520.

Part I

The probability that the Giants win the series is calculated by adding the individual probabilities of each outcome of the Giants winning two out of the three games. The probability of the Giants winning the series is 56.64%. If you closely analyse the probabilities, you can conclude that it is a good option to bet on the Giants than on the Bengals because of the following reasons:

- The first match is being played the New York Giants home ground and we all know that they have a higher probability of winning and that is already given as 0.6.
- If the Giants lose any one of the first two matches, they have to play a decider or a third match which is to be played at the New York Giants home ground where their winning probability as given is very high.
- Considering the winning probabilities of both the teams, the New york Giants have a higher winning probability of winning at their home ground (0.6) as compared to the Bengals winning on their home ground (0.57) is lesser by 0.03 or 3%. Even if the figure of 3% seems less, it can create a significant difference of winning and losing money.
- Considering the losing probabilities of both the teams, the New york Giants have a lower losing probability of losing at their home ground (0.4) as compared to the Bengals losing on their home ground (0.43) is more by 0.03 or 3%. Even if the figure of 3% seems less, it can create a significant difference of winning and losing money.
- Considering the 95% confidence interval for the 1000 samples we calculated for, the Expected Value (EV) is +58.2877 to -44.4492 approximately. We can clearly see that the mean and the probability fall into the above given range. Thus, the winning probability is supported by the 95% confidence interval as well.

References:

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3. Expectation and Variance – Mathematics A-Level Revision. Accessed September 23, 2020. *https://revisionmaths.com/advanced-level-maths-revision/statistics/expectation-and-variance*.