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CS5665 Assignment 1

Is The “Hot Hand” Real

1. Experiment

To test if the “hot hand” effect is real, I made 100 paper basketball shots and recorded the results. To do this, I made 5 paper balls from 5x11 notebook paper. I positioned a small garbage can, roughly 4”x12” in size, against the wall across the room. I made my shots from about 6’ away from the garbage can, stopping to collect my paper balls periodically. After each shot, I recorded whether it was a hit or a miss.

2. Results

The following binary string represents my results, with 0 representing a miss and 1 representing a hit.

S = 00000001100011010000001110110100101101111101101101111110001100111101100000111
1110000010010101101100 10

3.

a. Probability of a win after a win = 0.56000
b. Probability of a win after a loss = 0.44898
c. p_win_after_win - p_win_after_loss = 0.11102

4.

p-value: 0.115639

5.

No, my data was not statistically significant. In order to have the “hot hand” with a confidence level of 95%, the p-value would have to be 0.151428, which is not the case for my data.

6.

While shooting my shots, I did not feel like I had the “hot hand”. There were a few streaks of hits, but I made a lot of misses as well. My feeling aligned with the results of the statistical analysis.

7.

For this definition of a “hot hand”, yes this experiment seems valid. I can think of several other variations of how you could define the “hot hand”, which may lead to different results or may require different testing methods.