

## Revisiting Nick Anderson with Bayesian Approach

1. From my Frequentist approach using the binomial distribution, there was a 1.19% chance that Nick Anderson would miss 4 free throws in a row as a 67% FT shooter.
2. To set up the Bayesian calculation, my null hypothesis is that Anderson did NOT choke during the 4 free throws in the 1995 NBA Finals. This means that my alternative hypothesis is that he did choke. My expectation is that 15% of players would have choked in Anderson's free throw situation. This becomes the probability of the null hypothesis. This means that my expectation is that 85% of players would not choke. This becomes the probability of the alternative hypothesis. I estimated that Anderson's FT% would be 50% if he were choking. This percentage was raised to the 4th power to calculate the probability of Anderson missing 4 free throws, given that he was choking.
3. From my Bayesian approach, I calculated that there is a 48.19% chance that Nick Anderson choked in the 1995 NBA Finals, which is the alternative hypothesis. This means that there is a 51.81% chance that Anderson did not choke (got unlucky), which is the null.

## Bayesian Approach for Surprising Slugger

1. After 150 at-bats, the posterior probability of Kay being a 'true' .300 hitter is 78.26% using the Bayesian approach. This is obviously a large chance that Kay is a 'true' .300 hitter, so I would start her over the senior first baseman.
2. With a prior probability of 1% that Kay would hit .300, the posterior probability falls to 40.85% for the 'true' .300 average. This makes the decision a little bit more difficult between Kay and the senior first baseman, as the posterior probability of Kay being a 'true' .200 hitter is 59.15%. Therefore, I would probably start the senior first baseman. With a prior of 50% both ways, the posterior probability of Kay being a 'true' .300 hitter is 98.56%. Therefore, I would go with Kay.
3. I would want more context on the hitting numbers of the two players. Batting average is important, but hitting for power is also extremely important in baseball and softball. I would consider starting the senior first baseman if they hit for more power than Kay, even if Kay has the higher batting average. I would also consider the quality of defense that the two players are capable of playing.