In this spreadsheet I have simulated dealing out poker hands to 3 players. I then determined what type of hand each player has: 1 pair, 2 pair, 3 of a kind, etc. Using 500 simulations, I have claculated the probability that a player will be dealt a certain type of hand, as well as the probability that the hand the player was dealt will beat out the hands of the other two players. Finally I found the probability that a player would get a particular hand type AND be sure to win with that hand type.

It must be noted that this simulation does not calculate the winner when more than one player has the highest hand type. For simplicity-sake, this simulation simply treats this case as one where neither player was dealt a "winning" hand type since either player could be beaten by the matching hand type. Thus for this model a "winning" hand is defined as a hand where the players hand type is higher than that of both other players.

The probabilities found that a certain hand type will be dealt matches the theoretical probabilities fairly well. A player will get type 0 about half the time and type 1 most of the other half. Other hand types are fairly rare and types 7 and 8 almost never occur.

If a player *is* delt one of the rarer hands(type 3 or higher), however, that player has around a 90-100% chance of having the winning hand right away. Then chance to win with hand type 1 is very low.

Because of the extremely low chance of getting a higher hand type, the chance that a player will be dealt a winning hand that is a lower type is higher than the chance to be dealt a winning hand that is a higher type. The end result is that a player has less than a 10% chance to be dealt a winning hand in poker.

This model could be improved by including formulas to handle the case where there is a "tie" for winning hand type. One could also simulate how the probabilities change when more players are added.