Texas Hold Em – Will it Win? Measuring Dispersion of Data

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Intro

- There are 2,598,960 possible hands in Texas Hold Em.
- Unknown factors include opponents hand and the cards that will be drawn in later stages (“the turn” and “the river”).
- Cards in hand have greater significance than cards in the river.
- Our dataset has classified each hand for us eg. Hand has a pair.

Analysing the Dataset

- Based on the hand classifications from our dataset, these are the results from 1,000,000 entries.
  - Nothing in Hand – 501209
  - One Pair – 422498
  - Two Pair – 47622
  - Three of a Kind – 21121
  - Straight – 3885
  - Flush – 1996
  - Full House – 1424
  - Four of a Kind – 230
  - Straight Flush – 12
  - Royal Flush – 3

Analysing the Dataset

- Converting those the dataset to percentages
  - Nothing in Hand – 50.1209%
  - One Pair – 42.25%
  - Two Pair – 4.76%
  - Three of a Kind – 2.11%
  - Straight – 0.39%
  - Flush – 0.20%
  - Full House – 0.14%
  - Four of a Kind – 0.0230%
  - Straight Flush – 0.0012%
  - Royal Flush – 0.0003%

Mean

- The mean is the average result of a set of numbers.
- Mean = total value / total number of inputs.
- Mean = 616,902/1,000,000
- Mean = 0.616902
- What does this mean? The average type of hand in our dataset is between Nothing in Hand and having One Pair.

Variance

- Variance measures how far each number in the set is from the mean.
- Variance = (value – mean)^2
- Average variance = total variance / total number of inputs.
- Average variance = 3.80567316468823 49E17 / 1,000,000
- Average variance = 0.000000000038056731646882 35
- Very, very small variance.

Standard Deviation

- Standard deviation is a measure of how spread out numbers are.
- Standard deviation = √variance
- Our variance is a very small number which results in an even smaller number for the standard deviation.
- What does this mean? Our data is closely distributed around the mean value, it does not change a lot.

Considerations

- It is very common to get a One Pair in 5 cards.
- The One Pair is only significant when it consists of at least one card from your hand.
- Otherwise, all players have access to the One Pair because it's in the Flop.
- Therefore, taking the classifications of Hand types directly from our dataset is not enough.
- With that in mind, we decided to clean our dataset and classify Hand types based on whether your hand interacts with the Flop.

Cleaning the Dataset

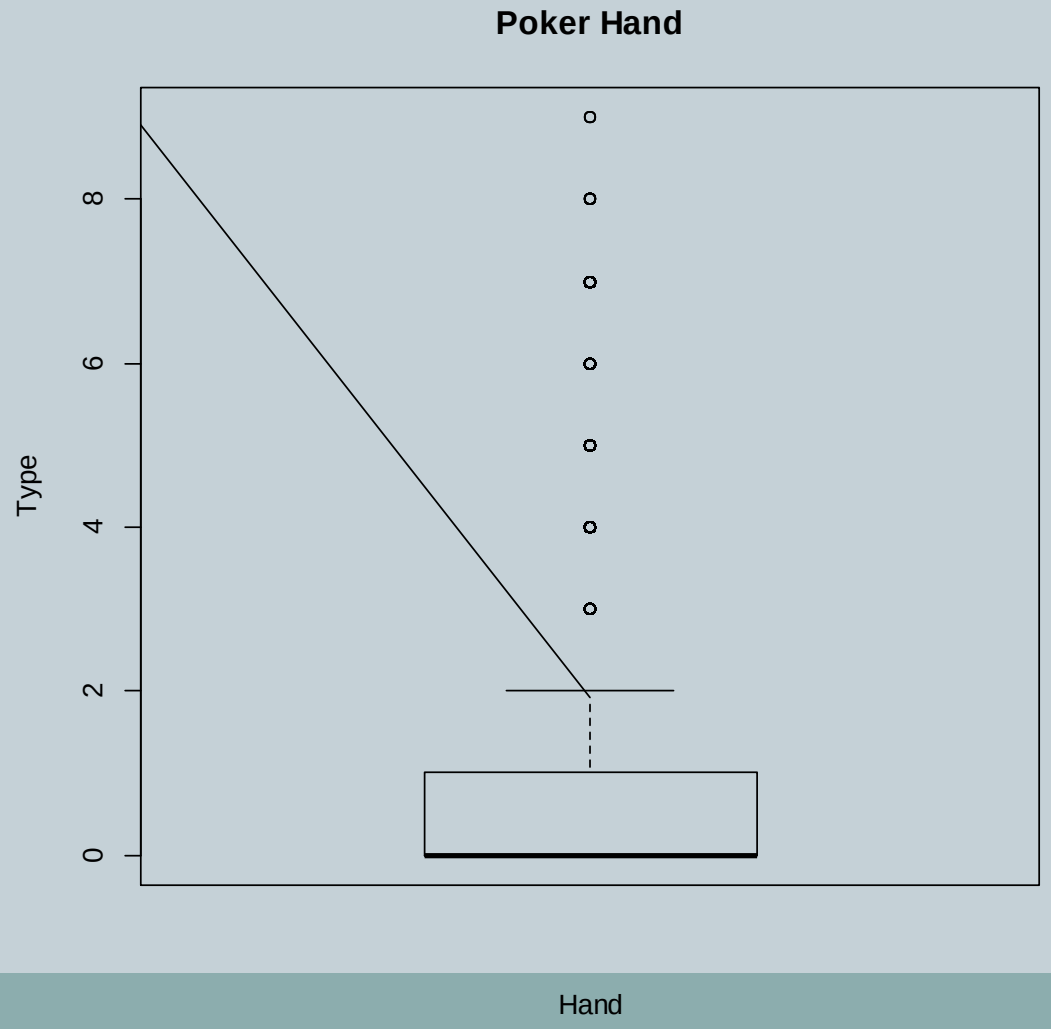
- Results of the cleaning:
  - Nothing in Hand – 639089
  - One Pair – 296260
  - Two Pair – 38113
  - Three of a Kind – 18988
  - Straight – 3885
  - Flush – 1996
  - Full House – 1424
  - Four of a Kind – 230
  - Straight Flush – 12
  - Royal Flush – 3

Cleaning the Dataset

- Nothing in Hand has increased from 50% to 64%.
- One Pair, Two Pair and Three of a Kind occurences have been reduced.
- The rest of the Hand types are not affected because they all require interaction between a player's Hand and the Flop.
- This is now a more accurate representation of the Strength of your hand in a game of Texas Hold Em.

End Results

Min.	0.0000
1st Qu.	0.0000
Median	0.0000
Mean	0.4652
3rd Qu.	1.0000
Max.	9.0000



The End