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30901

An Analysis of My Own Chess Games

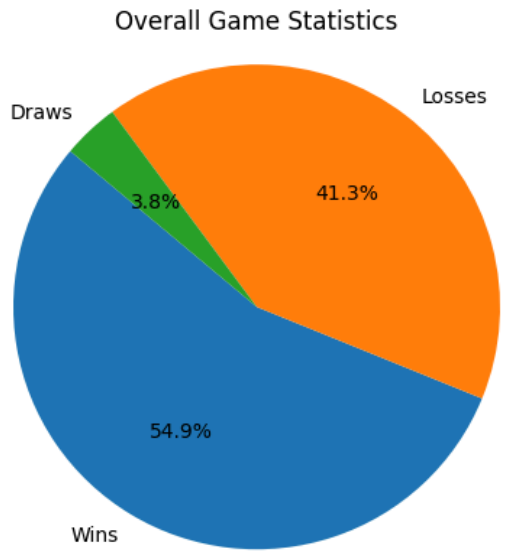
Motivation: The motivation for the topic of my project is that I have played chess ever since I was 8 years old and I wanted to see what are some patterns in my games. I wanted to know what are my strengths and weaknesses in my play and also where I can improve. If I perform well under time pressure, or how well do I play my endgames were just a couple of the questions I wanted to answer with this project.

Data Source: The data I collected for this project is from the chess.com website. When I go to my profile with the username ‘emrecubukcu’ I can see all of my games listed from newest to oldest. I then downloaded them, chess.com has a feature where you can download multiple games. The downloaded game files were in a pgn file. I then parsed those pgn files into a single dataframe with information such as opponent username, my username, my rating, opponent rating, date, time control, result, moves, etc. I also added some other categories into the data frame such as whether the game reached the endgame. The data contains 637 games spanning 3 years.

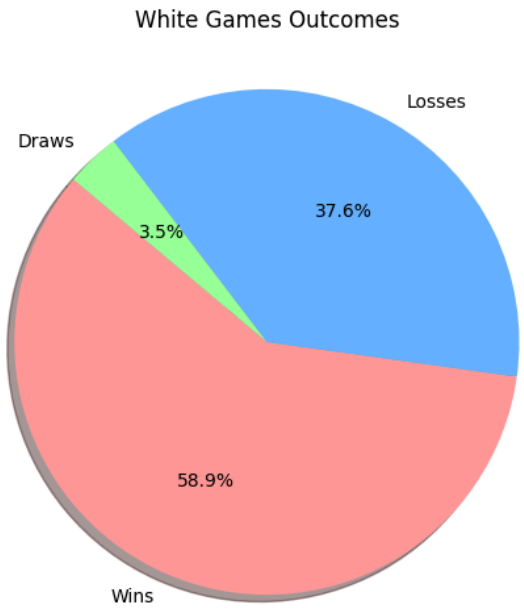
Data Analysis: I used custom functions for chess analysis such as is_endgame(board) and is_rook_endgame(board) to determine if the games reached the endgame or not.

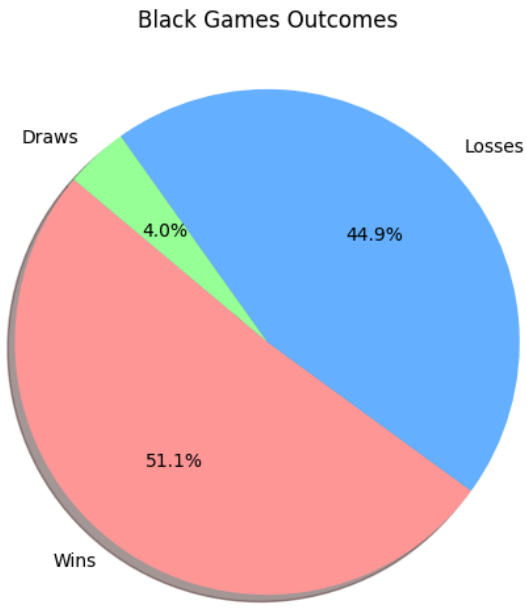
The endgame in chess starts when both sides' queens are off the board and a rook endgame is when both sides only have their rooks and pawns in the game. I coded the logic in python. I then used statistical analysis to gather information about many aspects of my games. Firstly, what percentage of games I won, ended in a draw or lost. After some trivial questions I moved onto more advanced statistical analysis, like how well do I perform against higher rated opponents as opposed to lower rated opponents. After doing the statistical analysis, I used data visualization on the statistical analysis. I used pie charts for win/loss/draw percentages and bar graphs for quantitative data, like what is the most amount of games I played in a single day.

Results and Findings: The first statistical analysis I found was the percentage of my win/draw/loss spread. Of all 637 of my chess.com games, I won 54.9% of them, lost 41.3% and drew 3.8%. This is an indication that my rating is consistently increasing since I am winning significantly more than losing.

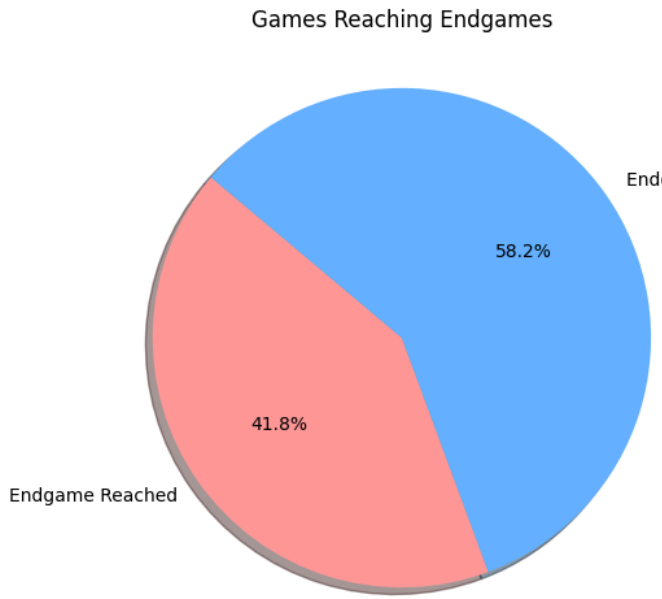


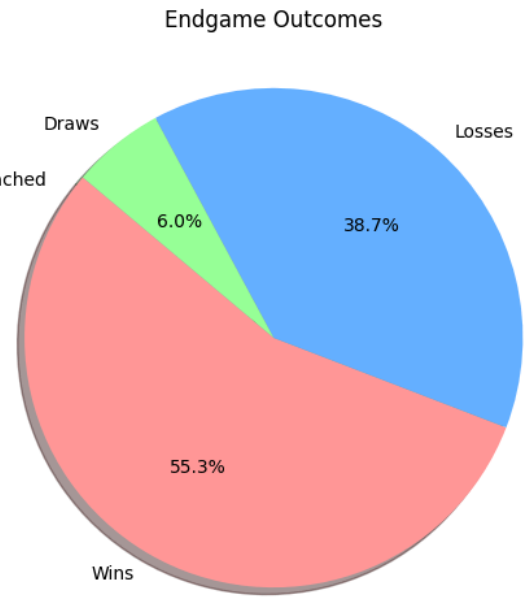
Another statistic I was interested in was my winning percentage in both colors. The data indicates that I'm winning 58.9% of my games as white and 51.1% of my games as black. This is expected since at the start of each game, white side has a slight advantage by virtue of making the first move. What is also interesting is that my games end in a draw ever so slightly more as black than my white games. This could be due to a small sample size, although my opening choices might also have an effect on this. My white repertoire consists of more sharp, attacking openings and lines like the Scotch Gambit or against the Sicillian, the Grand Prix Attack. My usual response to e4 (the most common opening move for white) is Nf6 - Alekhine's Defense - is a much more safe and solid opening choice than other common responses to e4 like the Sicillian or the Pirc Defense.



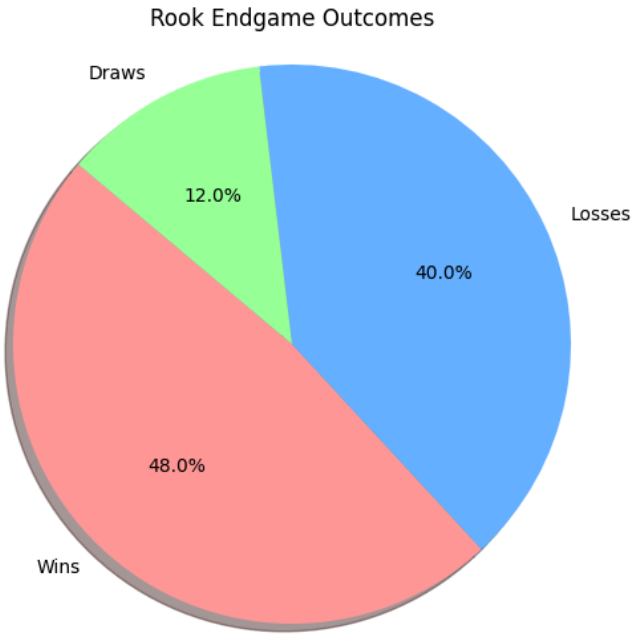


The part I struggle the most in chess is the endgame, so I wanted to gain insight on how well I perform in endgames. I was surprised by the amount of games that reached the endgame. I would assume a lot less than 41.8% of my games reached the endgame since I'm an attacking player and my games usually end in the middlegame. I was also surprised by how well I performed in the endgame. My win percentage in the endgame is slightly higher than my total win percentage. Also as expected, there are more draws in the endgame since there are less pieces to attack and some endgame positions are theoretical draws that are known by most players.

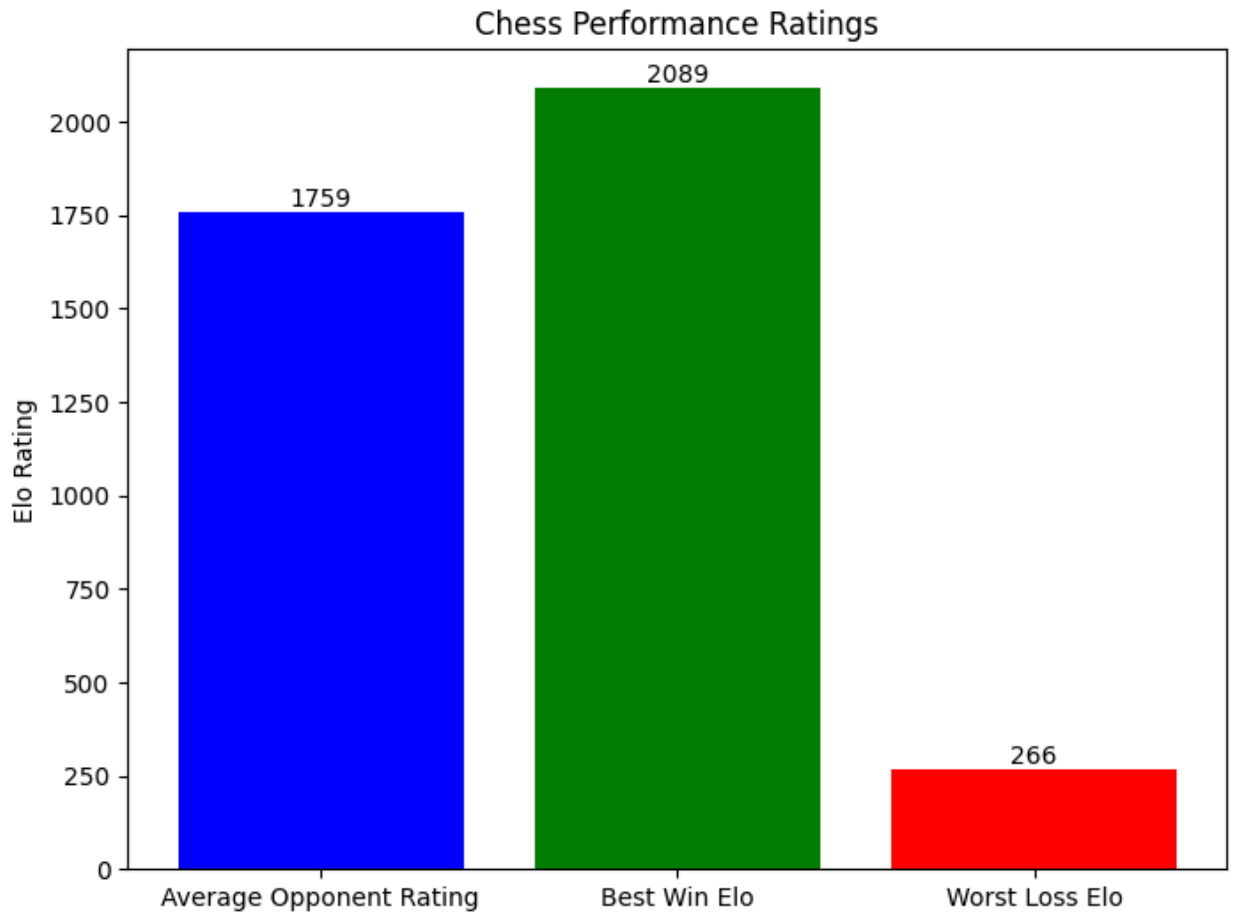




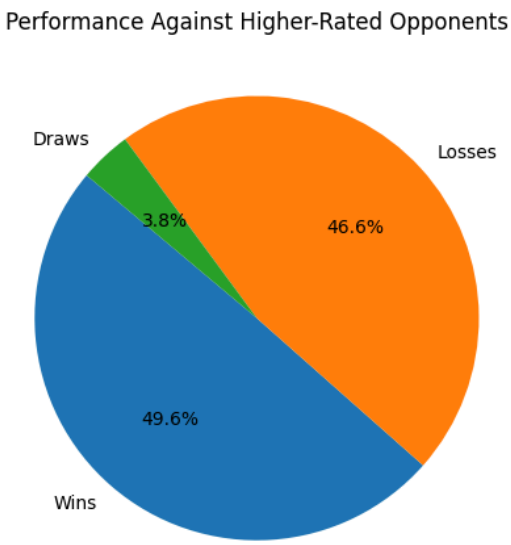
There is a saying in chess that all rook endgames are drawn. This is an exaggeration of course however there is some truth in that rook endgames tend to end in draws than any other type of endgame. The data also supports this. I would say the weakest aspect of my play is the rook endgames. The difference between the win and loss percentage is significantly lower than my total win/loss percentage difference. Which is not surprising because I think rook endgames are my weakest aspect of my play. I can't convert winning positions and I can't hold onto a draw in drawn positions, I always find a way to lose them.

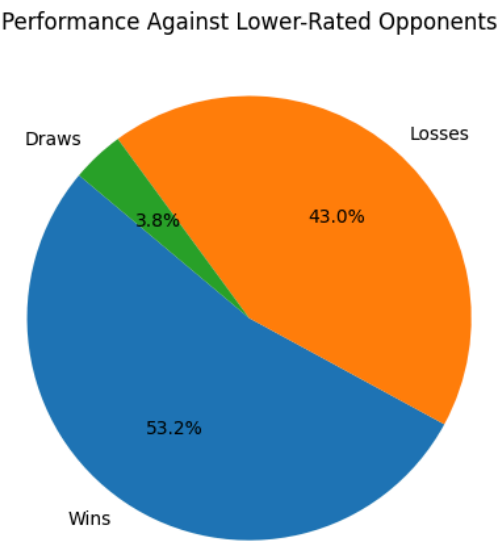


Here is a bar graph that shows the average opponent rating, the highest rated player I won against and lowest rated player I lost to. At the time of this project, my rating in blitz (which is the time control I almost exclusively play on) is 1825. My average opponent rating being slightly lower than my current rating is expected since on chess.com, you start on 1200 rating and as you win games your rating increases. The site matches you with similarly rated players, so as I was climbing up to my current rating, I played against players ranging upwards from 1200.

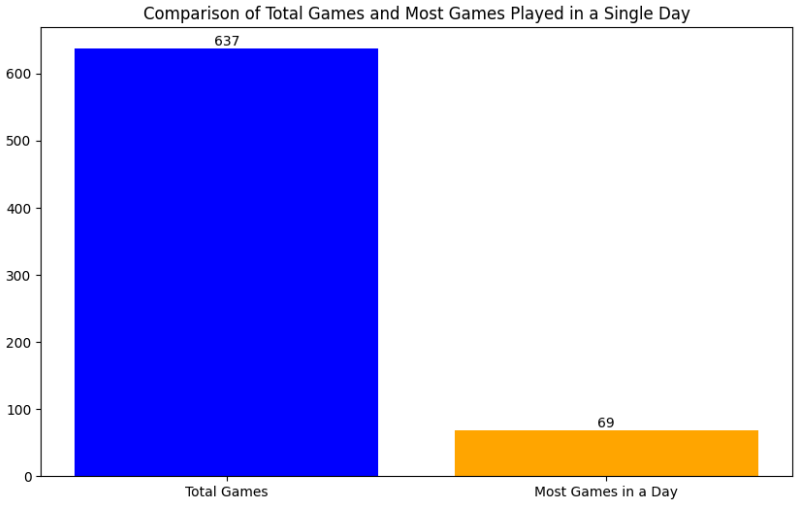


These two pie charts show my performance against higher rated opponents. These include games against opponents that have a higher rating than me *at the time of the game, not higher than my current rating of 1825.* Since these games do not include unrated games and games against unrated opponents, the win percentage is slightly lower than the total win percentage we got at the start. As expected, I perform slightly better against lower rated opponents. Still, having a 3% better win percentage against higher rated opponents is a respectable statistic, indicating that my current rating doesn't reflect my strength perfectly accurately.

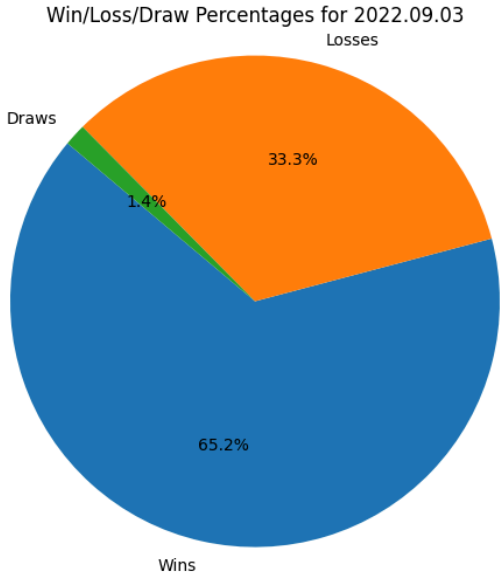




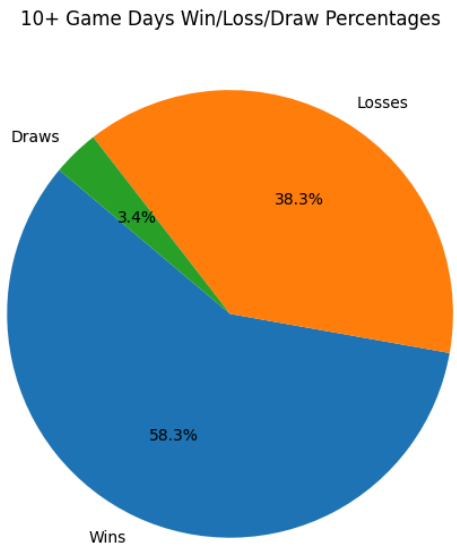
The most games I played in a single day is 69 on the date of 2022.09.03. The date is written in a YYYY.MM.DD format in the downloaded pgn files.

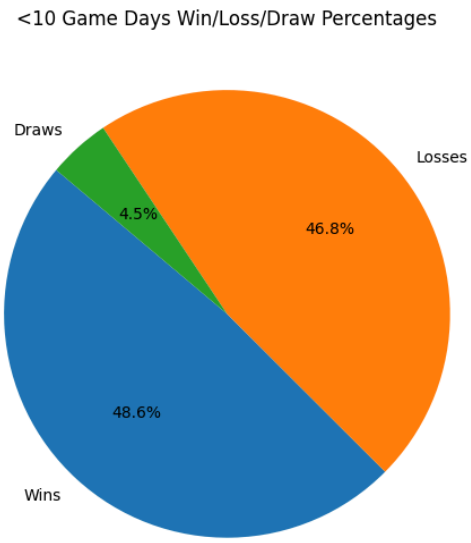


On that day, I won 65.2% of my games which is incredibly high. This indicates that I perform well in consecutive games, maybe due to warming up.



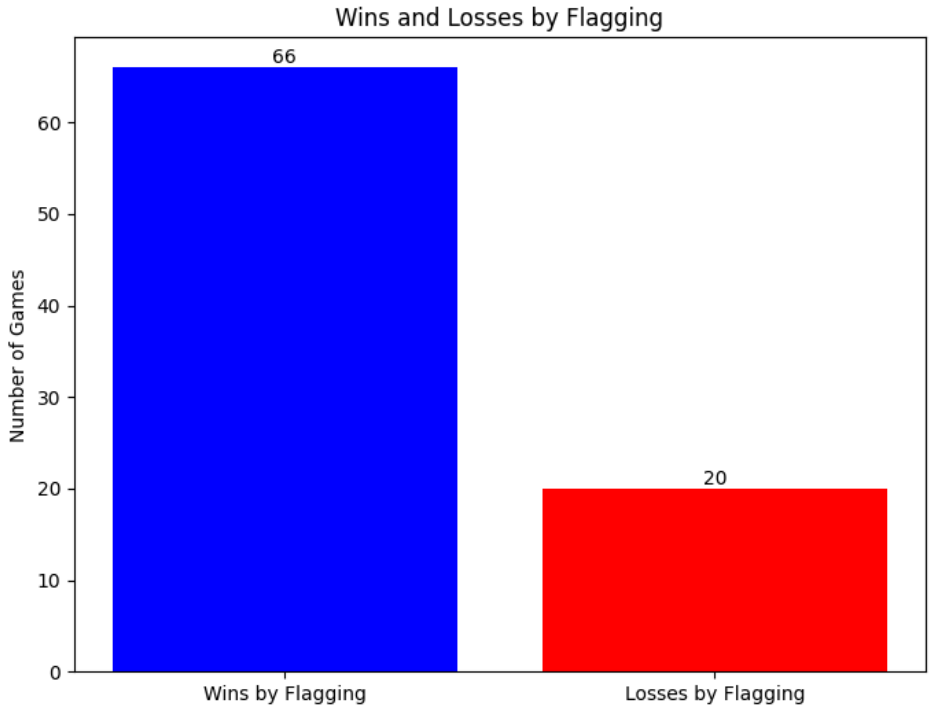
To test my hypothesis on performing well when binge playing chess, I wanted to check out the days when I played more than 10 games and the days I played less than 10 games and got a win/loss/draw spread of those games to compare.



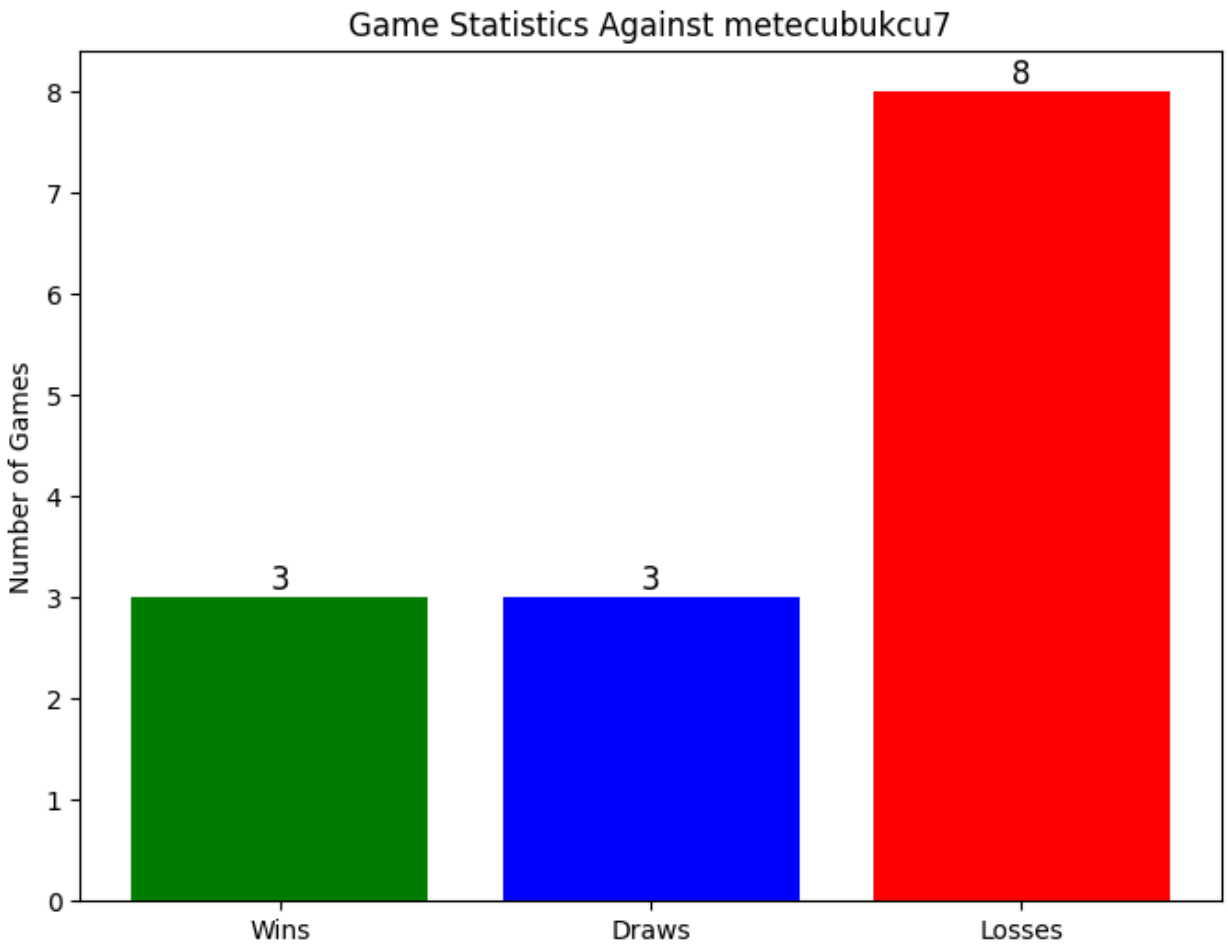


We can clearly see that I win almost 10% more when I play more than 10 games in a day. This is something that I will keep in mind for my future game sessions.

I also wanted to check out how well I do in time pressure. On chess.com, you can lose games by resigning, getting mated and your time running out which is called “Flagging” (there used to be ‘flags’ in old timey chess clocks and they would drop when your time ran out). I won more than three times more than I lost by flagging which indicates that I’m better at time pressure against my average opponents.



And finally, I wanted to check out how well I do against my older brother who also plays chess. I have a higher real life rating than him and also I usually win against him whenever we play over the board. But the results on chess.com were embarrassing…



These are my findings for my project. What I gathered from them is that I should study endgames -especially rook endgames-, if I'm going to play I should play at least 10 games in a day and finally I shouldn't underestimate my because he has a better score against me.

Limitations and Future Work: One major limitation for this project was that I couldn't incorporate a chess engine that would analyze my games move by move and offer me a much deeper insight on my chess. I was planning on what percentage of Mate in X's I missed or what was my centipawn loss per move (how much you deviate from the engine's top move) etc. I also had trouble downloading an openings database that would tell me which opening was played each game. I was planning on figuring out what was my win percentage for each of my openings in repertoire and also against which openings I was struggling the most. These are the two major things that can be improved further in future.