

TFT Set 3 Level Curve - CASE STUDY

- Introduction

Generalizing levels are a great thing in most games, excluding exceptions like specific strategies or challenges the player is putting upon itself, every opportunity you have you will tend to be the highest level available, but in the strategy game Team Fight Tactics (TFT) from Riot Games, where players skill expression its show though its optimization in champion builds, knowledge in interactions and economy control, you will see that not always is the right call to reach the highest level as fast as possible and in this case study I will reflect in that statement showing that no only is needed to know how to your level up but **when** to do so

- 1) Ask

- The Question

As a TFT player my-self, I always try to be up-to-date with the most competitive strategies, and normally it involves the rarest pieces, said pieces only can be found in the highest level shops, so naturally leveling up whenever possible is the right call, right? It turns out that economy control comes in play during that stage, so I decide to investigate further and see if there were a pattern to be analyzed.

- Where

TFT is a game about with a large roster of sets and thematics, with “sets” being the “season” of the game, meaning that the sets would have each one their uniques mechanics, units and game strategies, So I need to decide with set would have the most coherent data to be analyzed still being with the most diverse player base at the time, and I landed at SET 3 Team Fight Tactics Galaxies, this Set being the one that elevated the competitive scene of TFT as an online game, and a fan favorite of the community, during this case study I used the data set made available through the user [Minyong Shin on the website Kaggle](#), those are games from platinum, diamond, master, gran master and challenger players, 10k matches each, but in this data study I used specifically the challenger matches being the ones in with is the highest level of play, said data set was made in a different methodology than I intend to use, so its was cleaned and prepared to be more efficient for the purpose of this data study

- 2) Prepare

- The Data Set

Has said earlier the data set need to be clean and prepared, I did all the work in the Google Sheets platform, the data appeared to be short in some crucial information, for example the gold in with each player spent in level up and spent in units, but thought data inspections and some mathematical calculus I could be able to determine approximation of said missing variables, but first I would need to be able to precise select champions to match its cost in different spreadsheet and multiply said value by the champions star level, the problem faced was the way the champions were structuralized, they were in a format designed to be used alongside JSON files, so I need to prepare the data in a more convenient way to be used in the way the project need it to be

Example image:

champion
{'JarvanIV': {'items': [27], 'star': 3}, 'Sona': {'items': [46], 'star': 3}, 'Rakan': {'items': [37, 69], 'star': 3}, 'XinZhao': {'items': [69, 25, 25], 'star': 3}, 'Neeko': {'items': [], 'star': 2}, 'Karma': {'items': [], 'star': 2}, 'Soraka': {'items': [], 'star': 2}, 'Lulu': {'items': [59], 'star': 1}}
{'Malphite': {'items': [7], 'star': 2}, 'Yasuo': {'items': [99, 22, 23], 'star': 2}, 'Sona': {'items': [], 'star': 2}, 'MasterYi': {'items': [], 'star': 1}, 'Jinx': {'items': [], 'star': 2}, 'Soraka': {'items': [], 'star': 2}, 'Kayle': {'items': [26, 49, 49], 'star': 2}, 'MissFortune': {'items': [99, 26, 12], 'star': 1}, 'AurelionSol': {'items': [37, 66], 'star': 2}}
{'KaiSa': {'items': [99, 2, 23], 'star': 2}, 'Annie': {'items': [37], 'star': 2}, 'Shaco': {'items': [16, 19, 55], 'star': 2}, 'Rumble': {'items': [36, 45], 'star': 3}, 'Karma': {'items': [], 'star': 2}, 'Lux': {'items': [], 'star': 2}, 'Fizz': {'items': [], 'star': 2}, 'Ekko': {'items': [17], 'star': 1}}
{'KaiSa': {'items': [44, 37], 'star': 2}, 'Annie': {'items': [], 'star': 2}, 'Shaco': {'items': [15, 16, 14], 'star': 2}, 'Rumble': {'items': [], 'star': 2}, 'Fizz': {'items': [99, 46, 55], 'star': 2}, 'MissFortune': {'items': [], 'star': 1}, 'Gangplank': {'items': [37, 36], 'star': 2}, 'Ekko': {'items': [], 'star': 1}}
{'Ziggs': {'items': [], 'star': 1}, 'Yasuo': {'items': [], 'star': 1}, 'Sona': {'items': [], 'star': 1}, 'MasterYi': {'items': [5], 'star': 2}, 'Jinx': {'items': [], 'star': 1}, 'MissFortune': {'items': [12, 79], 'star': 2}, 'Gangplank': {'items': [49, 33, 15], 'star': 1}, 'AurelionSol': {'items': [46, 36, 44], 'star': 2}, 'Lulu': {'items': [], 'star': 2}}

The data was organized in a very technical way and I need it to first: be able to select each champion reliably using only spreadsheets functions and second: that it was a more friendly view for anyone that came to find interest in the topic, and wanted to look for itself

- The Steps

I needed a reliable way to prompt said champions to when I need its cost I could use its name as primary key, so the way that I decided to approach it would be breaking each champion in its own columns, each one with its respective items and star level, so first I clean all the unconventional characters that were there for the JSON file use, then a separated the champions using the “Split text to columns” functions in google sheets, creating a total of 12 Column, not filled for every player so it created some blank spaces, then I saw that some champions had 1 item and some had 3, and different quantity of characters in their names, creating inconsistencies in the champions columns length in comparison of each other, in with would be a problem because the best way to use de VLOOKUP() function in the future to find the units cost and star level, would be with the LEFT(), MID() or RIGHT() functions, so I decided to go with an unconventional approach to format it

First I need to fill all items, so instead of blank it shows“ [00] “for the item slot, I used primarily the “find and replace” tool of the Google sheets and replacing as substituting its old format for a function that select specifically the items and using the “paste special, only values” so none of the data would be compromised, then the unconventional approach was to have blank spaces in the champions names making there length name total to 11 (longest length in champions names) so the Left() function would always return correctly

And to conclude the steps I used the Script extension made available by Google Sheets itself to automatically fill the columns champions that were blanks with “N/A” to symbolize that the player did not have that many champions

- The Functions

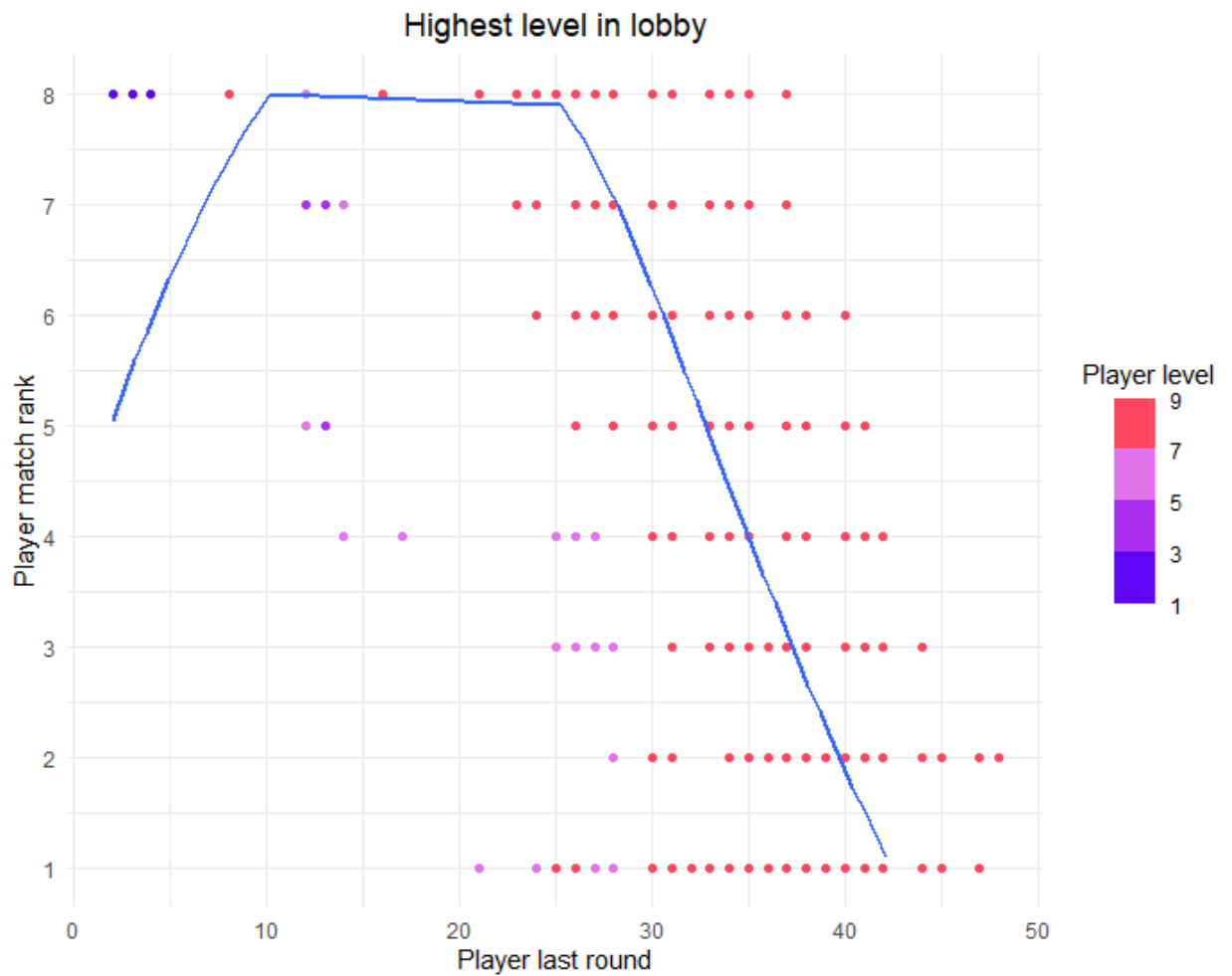
After cleaning and formatting the data, I start working in the new variables, thought the information available I could approximate the gold invested by the players in units and levels, Using VlookUP() to search the champion's cost is a different spreadsheet in conjunction with a SUM() of the ArrayFormula() I was able to determine the MinGoldInUnits column and its values and with the information of cost to level up determine the MinGoldInLeveling column and its values, reaching the final version

The final version of the spreadsheet is available in my GitHub!

- 3) Analyze

- The Data

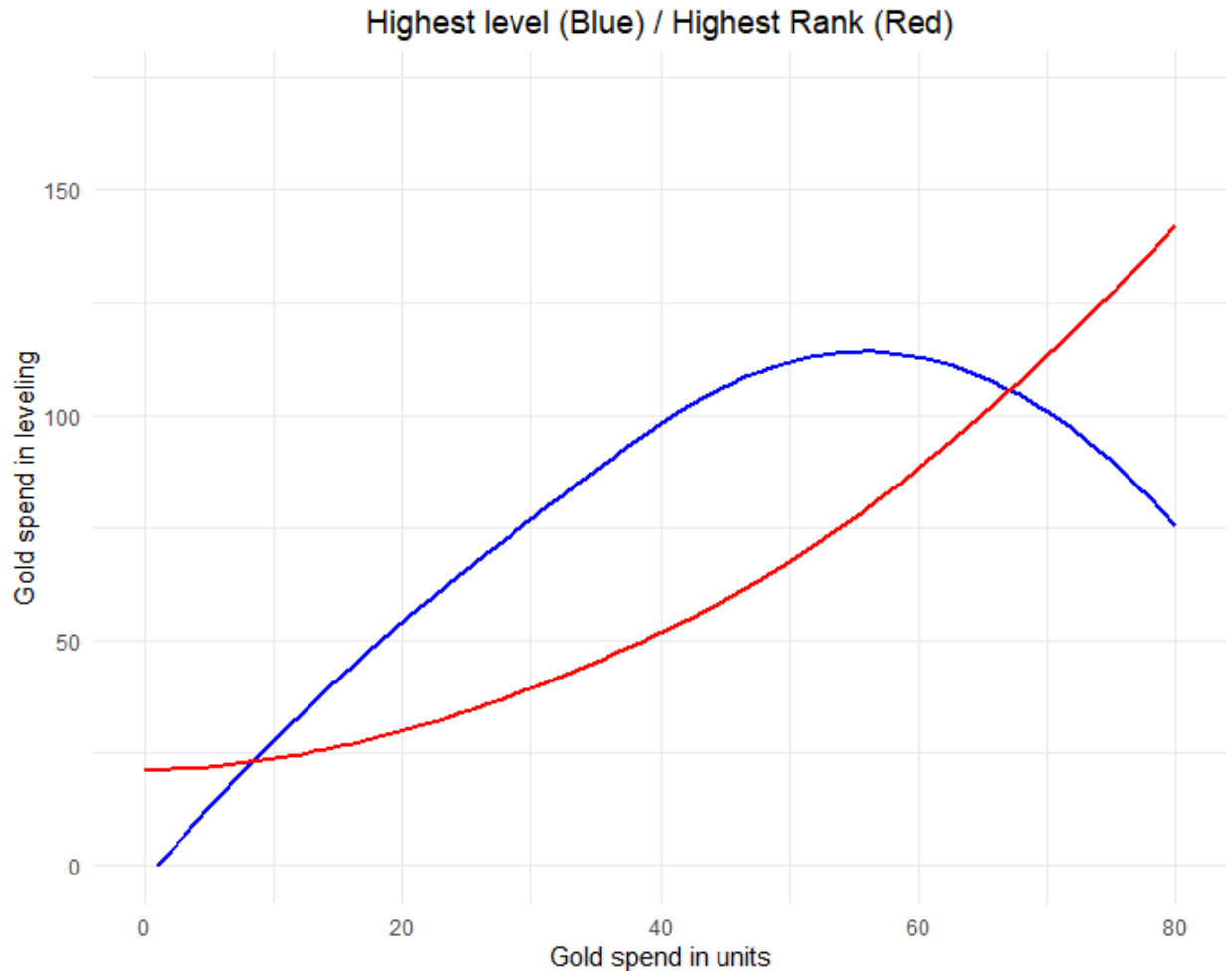
After finishing preparing the spreadsheet, I started analyzing the data, I used the programming language R, and subsequent using the R engine, first I analyzed the player round and how this player were ranked, so I filtered the data for the players with the highest level of its match and with the draw criterion of the lowest rank in said match



In this result, we can see that players that leveled to 9 (max level of the game) during the mid-game (rounds between 20 and 30) got has a result finishing the match at rank 8 and 7 (lowest ranks), with the players that reach said level further in the match got better results

- The comparison

The question at this point is why? What caused this player to rank so poorly, even though they were the highest level in their match? The thing is: in TFT, the same resource (gold) you use leveling up you also use it to purchase units and build your board, so yes having a high level give you more space and accesses to stronger units, you also need to manage your other important resource life, and how does the best of the best approach this leveling up and buying units question?



This graph compares the gold speeded by the players we recently analyzed, the ones with the highest level in their matches (blue line), and the players with the player that reached Rank 1 in their match (red line), we can see that the player prioritization of leveling up costed them in unit power in the short term, and as we saw the last graph there absence of a strong board state cost them there rank

The Markdown and code will be available in this project GitHub page

- **4) conclusion**

By the end of this case study, we saw that leaving up is important, but it's not important enough to though precaution and short term power out of the window, I hope that this was as fun of a Reading as it was fun to make for me!