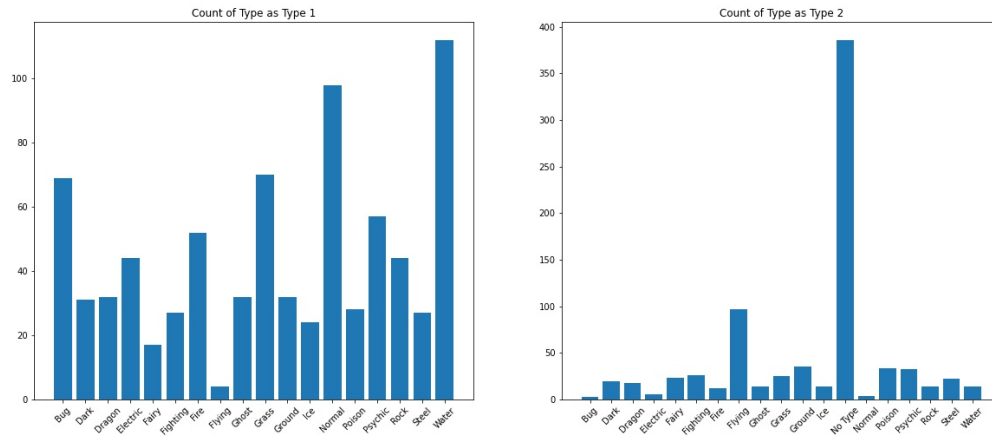**Topic 4 HW**

Alexander Bonnet
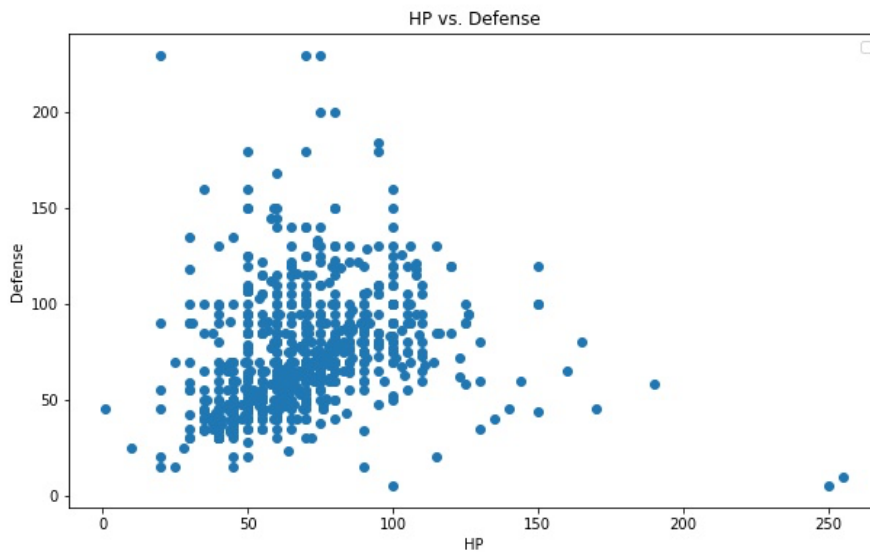
Grand Canyon University

DSC - 510

Edward Ofori

3/13/2024

Evaluate Plots

In this plot I can improve it by adding color coordination the types of Pokémon. For example, grass will be green fire will be red and so on. This will allow the view to easily associate the bars with the types.


With this plot I can add a line of best fit so that we can see the trend in the graph as well as adding a point of average. This will show what the average data point would be to the viewer.

Distrobution of Total Power
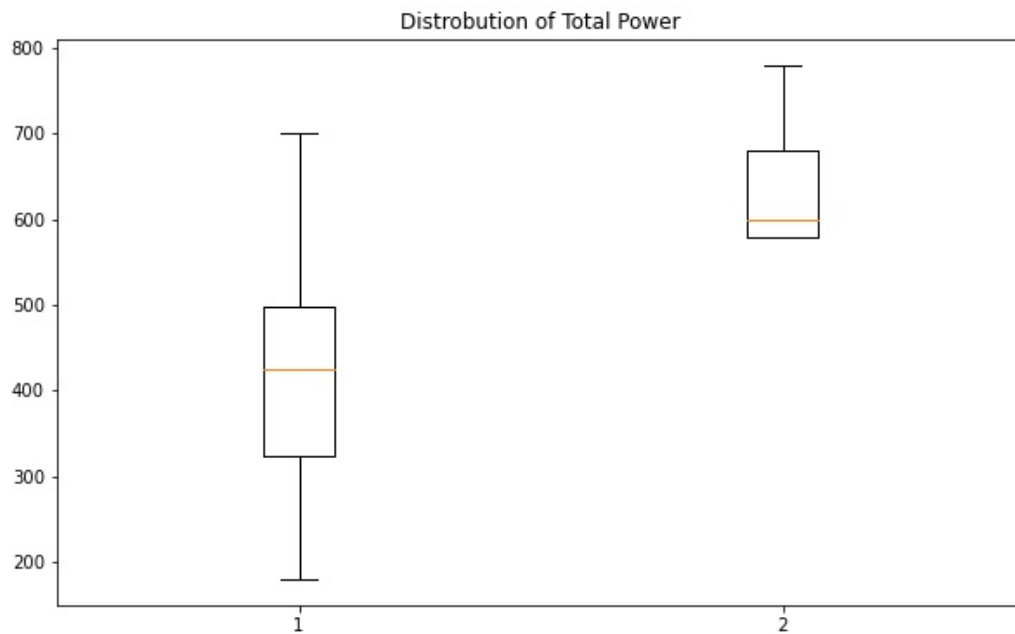
To make this plot more readable I will add a label to the axis, as well as name the two plots so that they are differentiable. I will then add to the title that the two plots represent legendary vs. non-legendary Pokémon. Another thing I can do is to rotate the plot so that they are horizontal. I feel that this will make it easier to read.

Attack vs. Sp. Atk
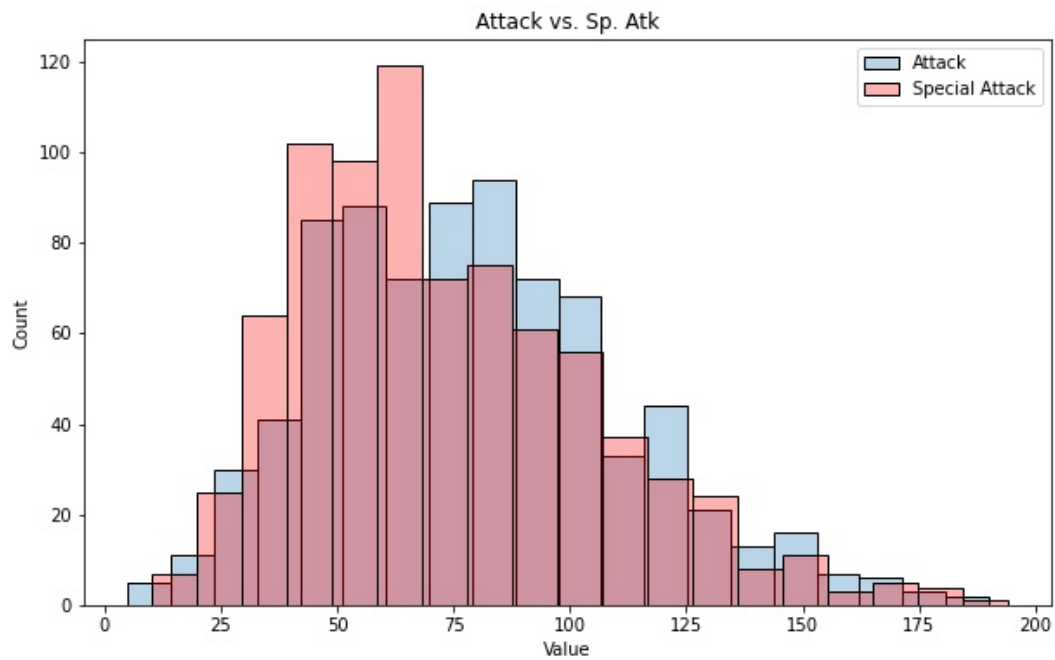
For this plot I will add distribution lines over the bars so we can see the peaks of the distribution of the data. This will allow us to see the difference in distributions of the data a little easier.
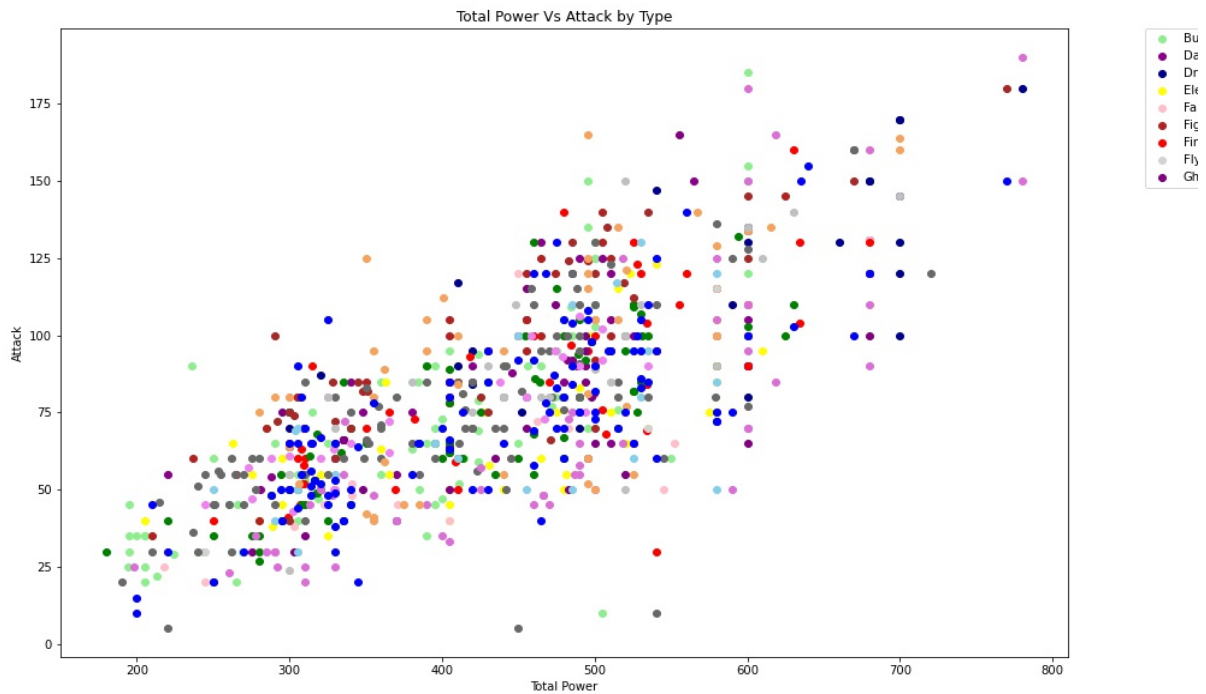
This plot does not show a lot of information regarding the difference in type, so I will calculate the average for each type and plot that on the graph. I will then make the background points less visible so that the average points are more prominent. I will also fix the legend, so it does not ger cut off

Overall Improvements to Make:

1) Add Color to plots to help differentiate data points.

2) Add features to plots that will improve the readability. Such as distribution lines, fixing legends, or adding points to amplify the purpose of a visual.

3) Use more descriptive axis labels and plot titles. So that the purpose of the plot is clearer to the reader.

Final Report: Intended Audience - Beginner

Pokémon is a game in which the player, referred to as a trainer, collects wild Pokémon to use in battle against other trainers. There are two main objectives to the game. One, is to collect all the Pokémon in the game, and the second is to become the most powerful trainer in the world. In this we will discuss what it means to be the most powerful trainer and how we can use data to discover the most powerful Pokémon.

In Pokémon there are 18 types of Pokémon, such as fire, water, and grass, each of Pokémon are weak and super effective against other elements, so it is important to gather a diverse team that will be strong against any type of opponent. Each Pokémon will have a base type, and some will have a secondary type as well. This is important because adding another typing will allow you to be vulnerable to more types, but on the other hand it allows the Pokémon to learn moves from its secondary typing, allowing you to be more effective against more types. It is a double-edged sword.
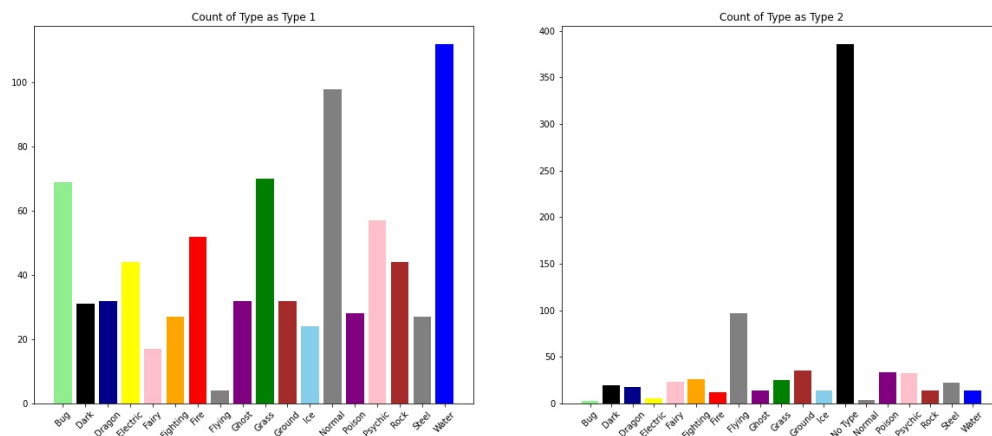
We can look at this plot to see the breakdown of the types of Pokémon and then use that to see common secondary typing's. From this we can see that there are many Pokémon that do not have a second typing, as well as the most common secondary typing is flying. This does make sense

as Flying is also the least common primary typing. Digging deeper into multityping also shows us that the proportion of Pokémon that have two types added per generation, every time they create a new game, has been increasing from generation one to generation six.
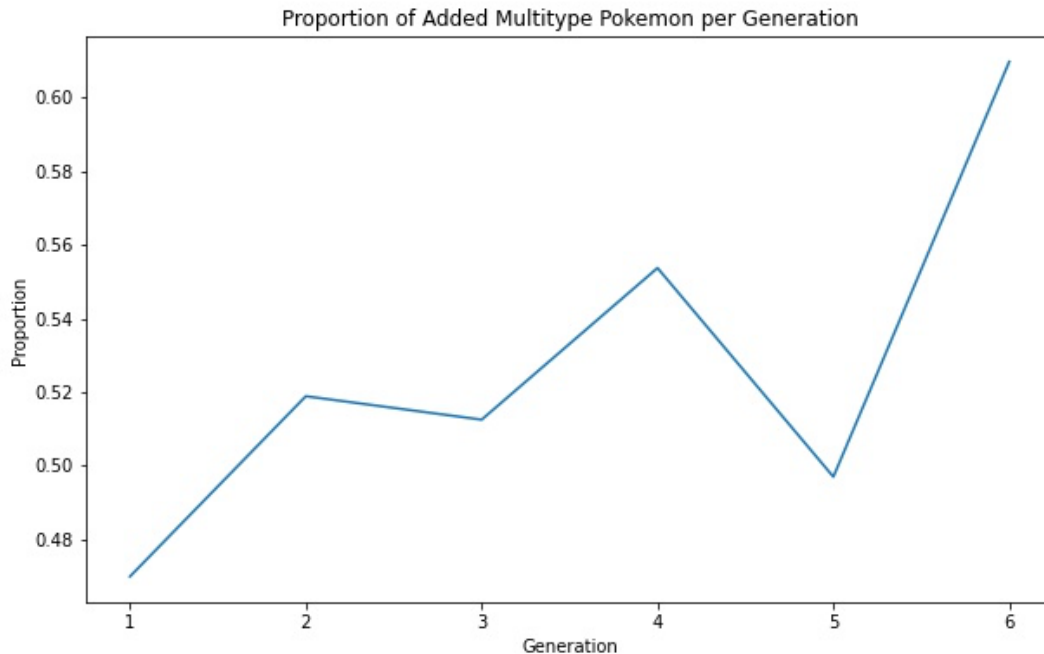
This means that trainers have more access to two typed Pokémon than ever before. This allows us to exploit a variety of type combinations and move combinations to become the most powerful trainer possible.

The typing of a Pokémon is not the only deciding factor on if you win or lose an encounter though. Every Pokemon has a collection of stats; Health Points (HP), Attack, Defense, Special Attack (Sp. Atk), Special Defense (Sp. Def), and speed. All of these stats combine to help us evaluate what is the best Pokémon. When you take all of these values and add them together, we

get a value called total power that we can use to evaluate how good a Pokémon is.
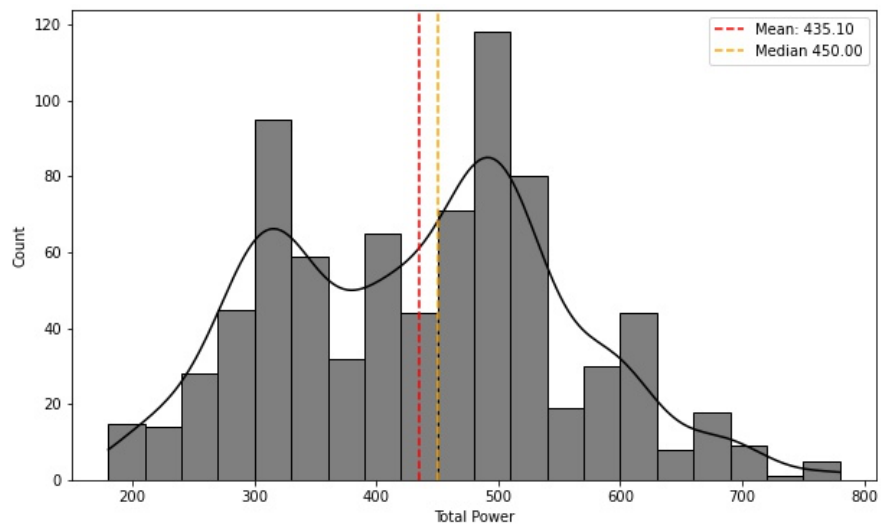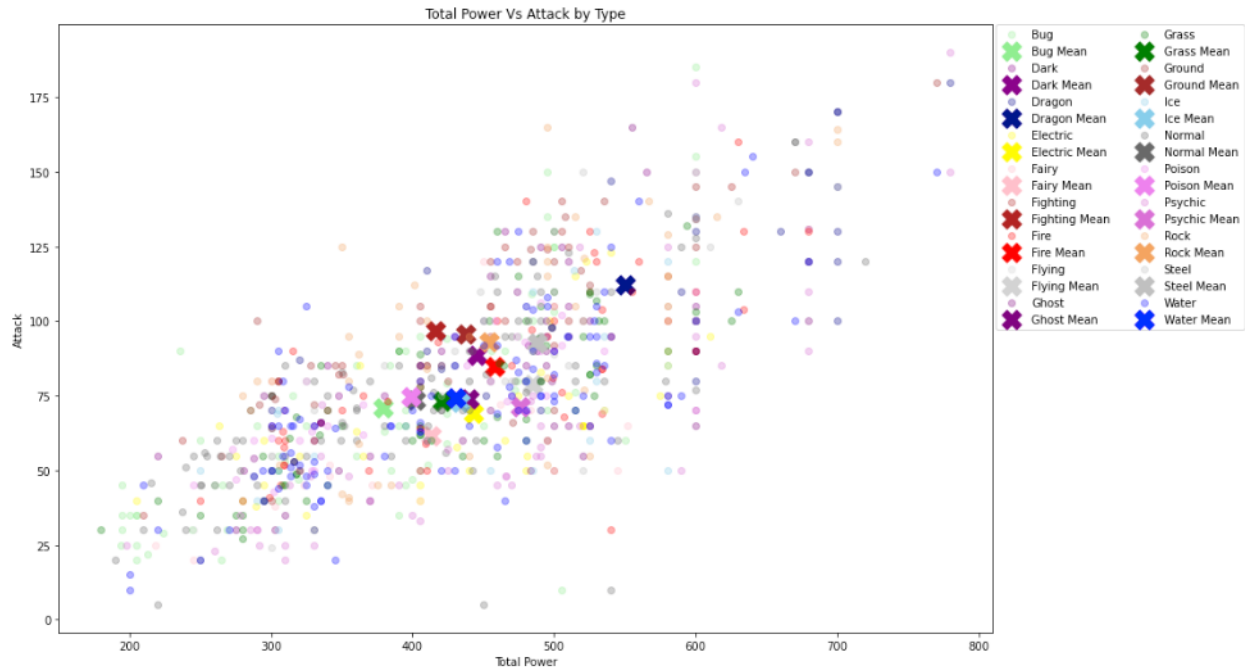

From this we can see the breakdown of total power in Pokémon in the dataset. From this we can see that average Pokémon has a power of about 435, but there are many Pokémon that are above that line. Those are the ones that we are after to create the best team possible.

Another aspect of Pokémon is legendary Pokémon. These are Pokémon that you can only catch one of in a game, and they are considered some of the strongest Pokémon in the game.
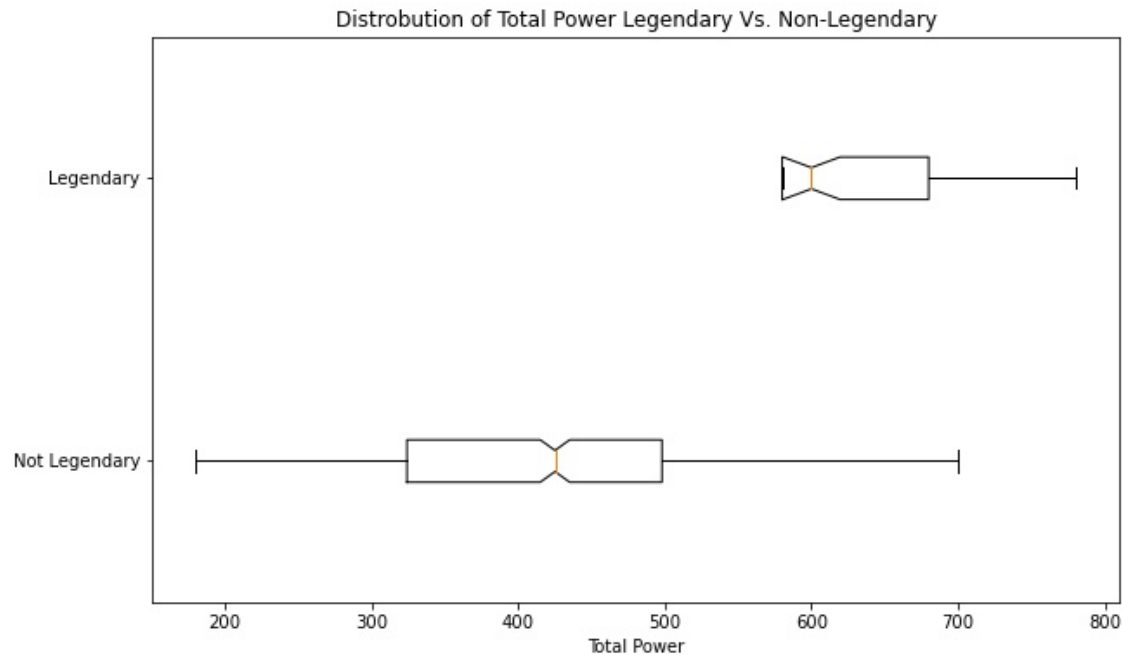

From this we can see that legendary Pokémon are in fact some of the most powerful creature in the game. In fact, the most powerful Pokémon in the game are all legendries, Mega Mewtwo and Mega Rayquaza have the highest total power value at 780.

Legendary's are not the solution to all our problems though. In most cases specific Legendary's are difficult or even impossible to acquire in specific games and even if they are not available until very late in the game. We need to analyze what type of Pokémon is the most powerful.

Total Power Vs Attack by Type

From this plot we can see where all the Pokémon rank in terms of total power vs. their attack

stat. This will give us the strongest attackers in the game. From this we can see that Dragon types

tend be the strongest in terms of attacking in the game.

Total Power Vs Defense by Type
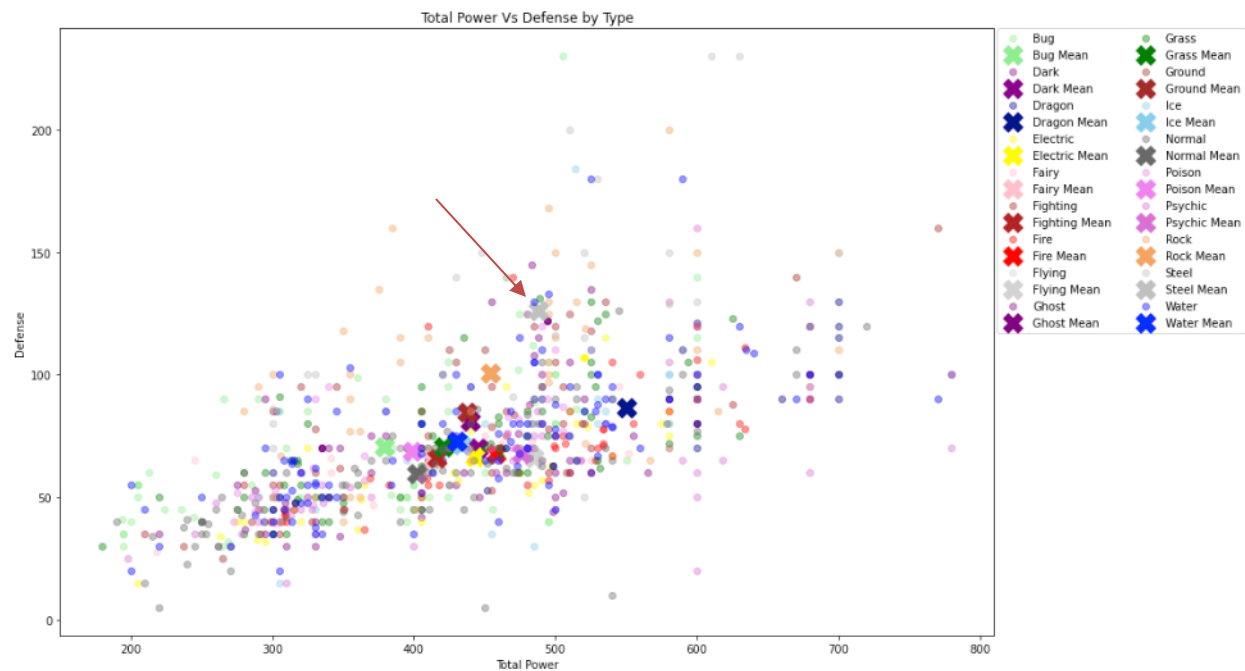
If we want to find the most powerful defensive Pokémon, we can see that steel types tend to be the most defensive. From both plots we see that bug types tend to be the weakest of the Pokémon, and the rest of the types tend to all have similar average total power values.

From our analysis we can see that legendary Pokémon tend to be the most powerful in terms of total power, and steel/dragon type Pokémon tend to be the strongest of the rest. To make conclusions on the best Pokémon we would need more data such as potential attacks it can learn, when you can acquire it, what game you are playing, and so on, but from this analysis we can at least gain a basic understanding of what Pokémon tend to be powerful and which ones to avoid. We can also use this dataset to evaluate the Pokémon contained in it to see if they are worth using.

Reference

Pokemon With Stats. (2016). Kaggle [Dataset].

    https://www.kaggle.com/datasets/abcsds/pokemon/data.

Rogel-Salazar, J. (2023). Statistics and Data Visualization with Python. CRC Press.