Assignment 3 Report
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Introduction

I haven't played Pokemon in a long time, not since Generation 3 came out. I was curious about how Pokemon stats and type popularity changed over time, especially as they added new Types and retyped previous generations of Pokemon. For example, one of my favorite Pokemon Ralts was just a Psychic type but was retyped to be Psychic/Fairy in Generation 6. To assess the trends, I required a dataset with the following:

- Pokemon names
- their types (primary and secondary)
- Stat values (Total, HP, Attack, Defense, Sp.Atk, Sp.Def, Speed)
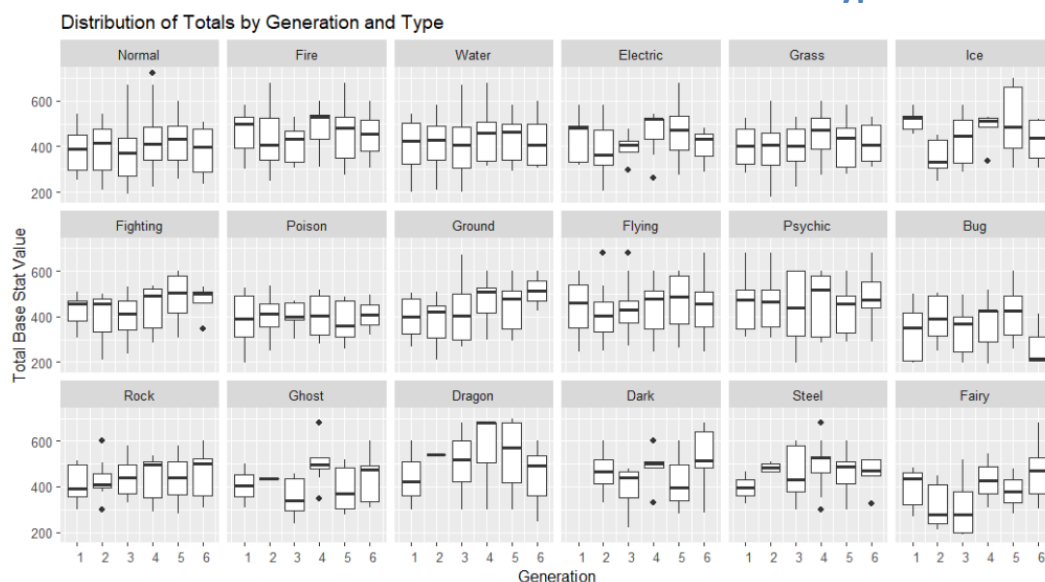- Generation

Thanks to GILLES Armand on github, I found the perfect csv file to work with. It has 800 observations with all my desired variables.

Plot 1: Popularity of Pokemon Types over the Generations

Back when I played Pokemon, I remembered that Steel types didn't exist until Generation 2. Fairy types were also not introduced until Generation 6. The popularity of Water types definitely waned after Generation 1 and Generation 3. This makes sense because most of the region in Generation 3 was water-based and too many Water types were introduced… There was a drastic decrease in Poison types after Generation 1 for a similar reason. Ice types still doesn't seem to have gained popularity. I remember back when I played, Ice types were rare and did not offer much advantage in Pokemon battles.


Popularity of Types Over Generations
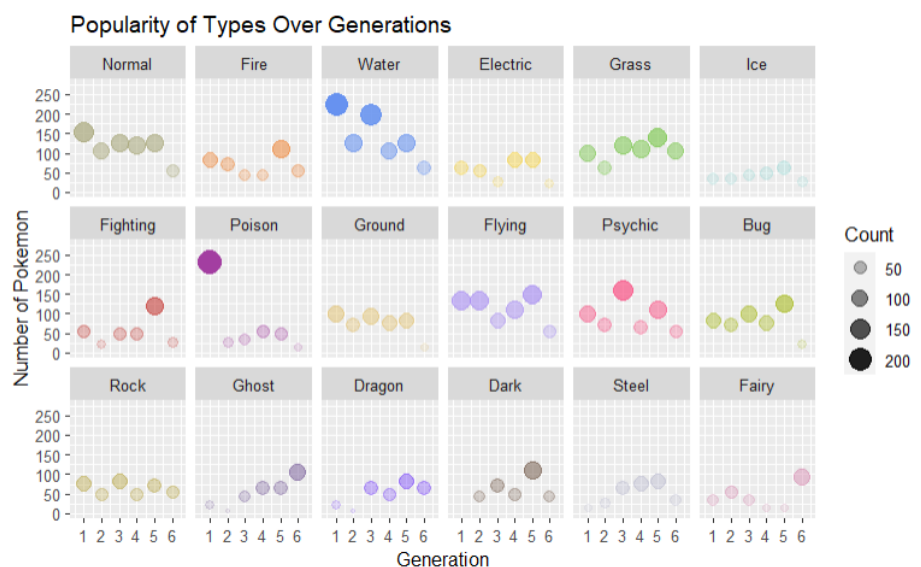
Plot 2: Base Total Stats Over the Generation for Each Type

Distribution of Totals by Generation and Type

The median Total base stat of Normal, Water, Grass, Poison, and Psychic types remain consistent over the generations. By Generation 4, Dragon types experienced a surge in overall Total base stat. They might have been too overpowered though and stat balancing occurred with lower totals in later generations. Dark types were not official in Generation 1 and were sorely needed to compete against all the Fairy types that cropped up in Generation 6. There seems to be experimentation with Ghost, Ice, and Fairy types since their distributions fluctuate over the Generations.

Plot 3: Individual Stat Distributions by Types Over the Past 6 Generations

Distribution of Stats by Types
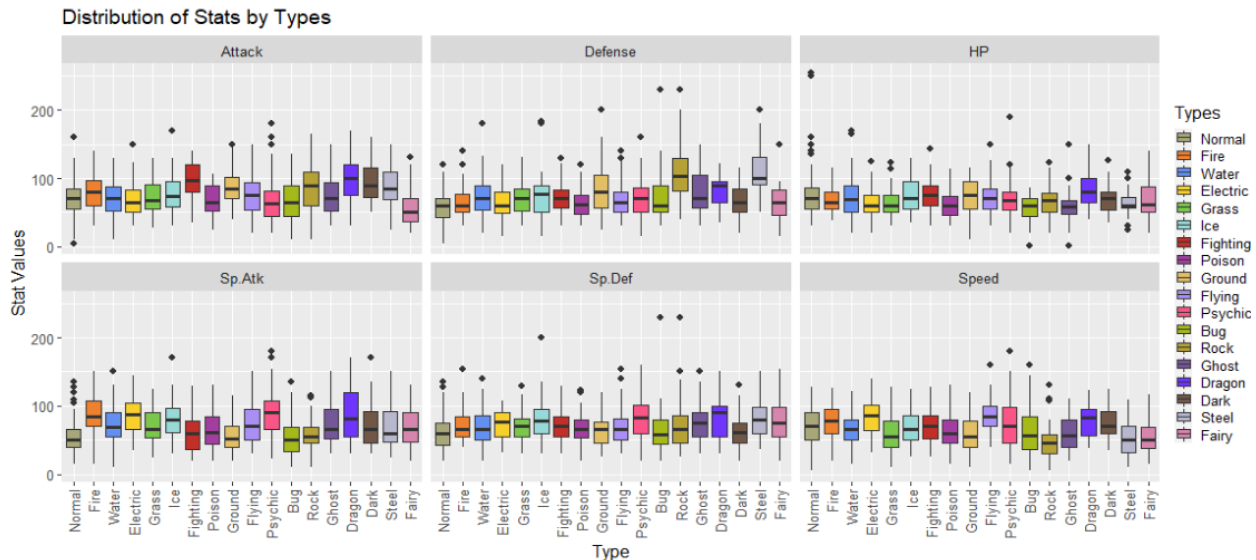
Based on my prior Pokemon experiences, I had some expectations for which type dominated certain Stats. As expected, Rock and Steel types result in hardier Pokemon and the Defense stat were higher on average. Also, as expected, Electric types are speedier than most Pokemon, followed by Flying types. Dragon types have a wide distribution of Sp.Atk, but they edge out most other types with higher Sp.Def. I expected Fire types to have high Attack since most of the movesets for Fire types are physical. I did not expect that Dragon types would also have a pretty high Attack stat. Fairy types had the lowest Attack stat, but they were at least comparable with all other Types with other Stats. Since Normal types do not have special moves and a high Sp.Atk would be wasted on these types, I can understand why they have the lowest Sp.Atk.

Conclusion

It's interesting to see how much more diverse Pokemon has become since I last played. Ghost, Grass, and Dragon types seem to be consistently in demand. Though there are outliers, which I hypothesize may be due to legendary Pokemon stats, most of the Stat distributions was around the same range (between 50 – 100). A follow up question that I have is which of the older generation Pokemon were retyped. Related to that, has their Stats changed for the better? I would also love to follow up my observations on type popularity based on 8 generations worth of data.