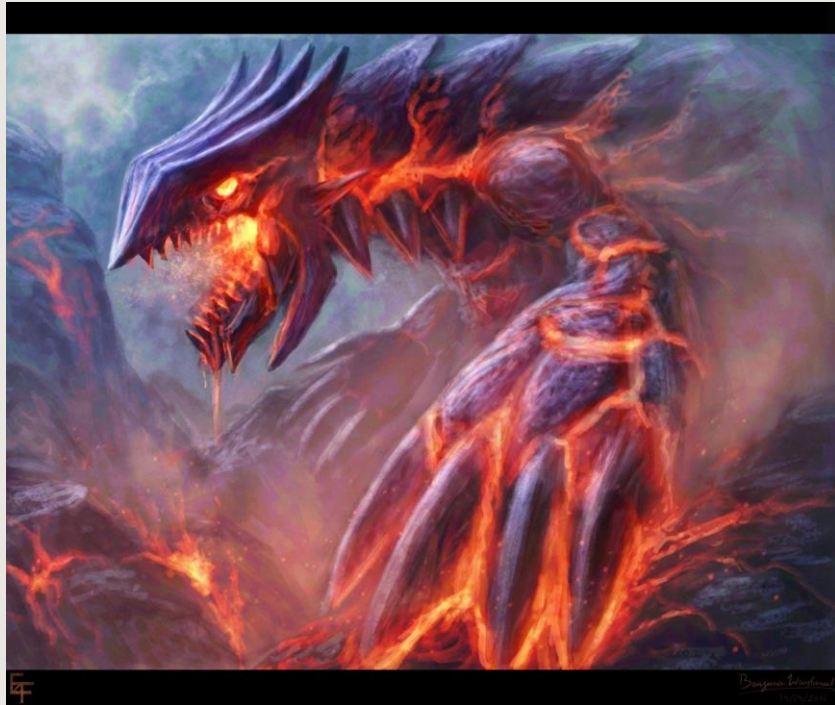


Study Case : Pokemon Development from Generations I to VI

Data Science Mini Portofolio by :
Otniel Rahadiyan Sumantri



#DigitalSkillFair 24.0



Goals

- 1 Analyze how many new Pokemon in every Generation
- 2 Who is Top 20 the most powerful Pokemon in Pokemon Universe
- 3 The Best Pokemon to have in every stats
- 4 Can old generation of Pokemon still competitive with new generation of Pokemon

STEP 1

Data Import

Importing data from CSV
file into VS Code

```
import pandas as pd
pokemon = pd.read_csv("Pokemon.csv")
pokemon
```

[4] ✓ 0.0s

| ... | | # | Name | Type 1 | Type 2 | Total | HP | Attack | Defense | Sp. Atk | Sp. Def | Speed | Generation | Legendary |
|-----|-----|---|-----------------------|---------|--------|-------|-----|--------|---------|---------|---------|-------|------------|-----------|
| 0 | 1 | | Bulbasaur | Grass | Poison | 318 | 45 | 49 | 49 | 65 | 65 | 45 | 1 | False |
| 1 | 2 | | Ivysaur | Grass | Poison | 405 | 60 | 62 | 63 | 80 | 80 | 60 | 1 | False |
| 2 | 3 | | Venusaur | Grass | Poison | 525 | 80 | 82 | 83 | 100 | 100 | 80 | 1 | False |
| 3 | 3 | | VenusaurMega Venusaur | Grass | Poison | 625 | 80 | 100 | 123 | 122 | 120 | 80 | 1 | False |
| 4 | 4 | | Charmander | Fire | NaN | 309 | 39 | 52 | 43 | 60 | 50 | 65 | 1 | False |
| ... | ... | | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| 795 | 719 | | Diancie | Rock | Fairy | 600 | 50 | 100 | 150 | 100 | 150 | 50 | 6 | True |
| 796 | 719 | | DiancieMega Diancie | Rock | Fairy | 700 | 50 | 160 | 110 | 160 | 110 | 110 | 6 | True |
| 797 | 720 | | HoopaHoopa Confined | Psychic | Ghost | 600 | 80 | 110 | 60 | 150 | 130 | 70 | 6 | True |
| 798 | 720 | | HoopaHoopa Unbound | Psychic | Dark | 680 | 80 | 160 | 60 | 170 | 130 | 80 | 6 | True |
| 799 | 721 | | Volcanion | Fire | Water | 600 | 80 | 110 | 120 | 130 | 90 | 70 | 6 | True |

800 rows × 13 columns

STEP 2

Filtering Data

Data showing about the highest "Total" value from top to number 20

```
total_pokemon = pokemon.nlargest(20, "Total")  
total_pokemon
```

[22] ✓ 0.4s

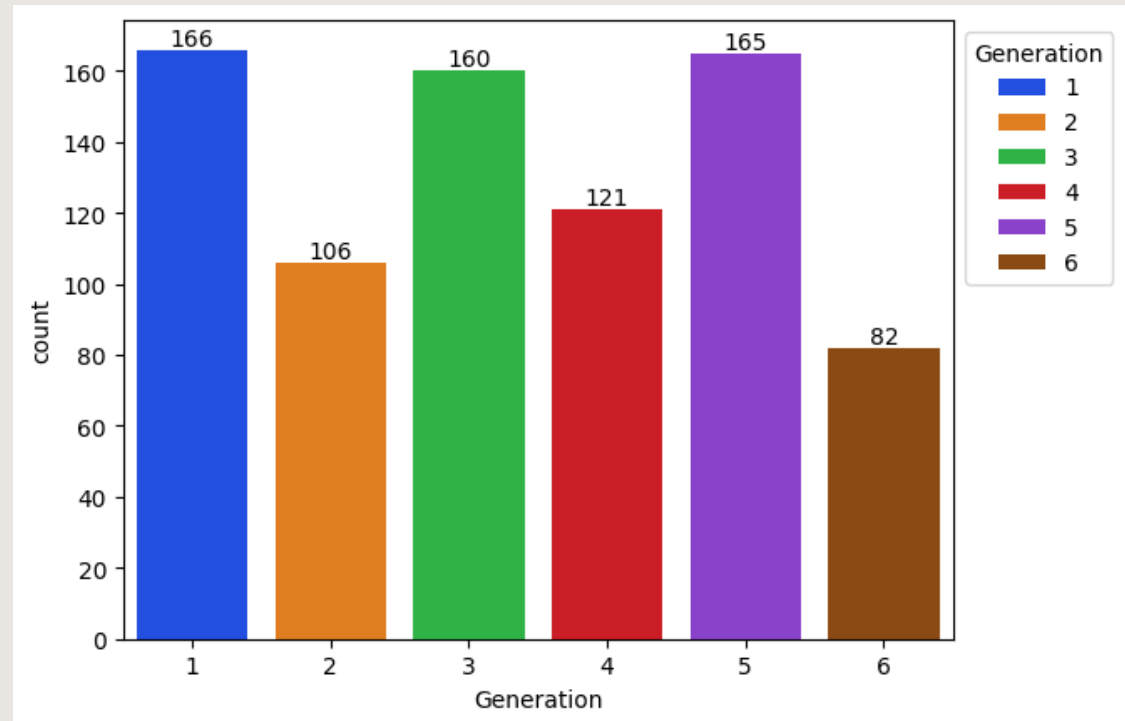
| # | | Name | Type 1 | Type 2 | Total | HP | Attack | Defense | Sp. Atk | Sp. Def | Speed | Generation | Legendary |
|-----|-----|-------------------------|---------|----------|-------|-----|--------|---------|---------|---------|-------|------------|-----------|
| 163 | 150 | MewtwoMega Mewtwo X | Psychic | Fighting | 780 | 106 | 190 | 100 | 154 | 100 | 130 | 1 | True |
| 164 | 150 | MewtwoMega Mewtwo Y | Psychic | NaN | 780 | 106 | 150 | 70 | 194 | 120 | 140 | 1 | True |
| 426 | 384 | RayquazaMega Rayquaza | Dragon | Flying | 780 | 105 | 180 | 100 | 180 | 100 | 115 | 3 | True |
| 422 | 382 | KyogrePrimal Kyogre | Water | NaN | 770 | 100 | 150 | 90 | 180 | 160 | 90 | 3 | True |
| 424 | 383 | GroudonPrimal Groudon | Ground | Fire | 770 | 100 | 180 | 160 | 150 | 90 | 90 | 3 | True |
| 552 | 493 | Arceus | Normal | NaN | 720 | 120 | 120 | 120 | 120 | 120 | 120 | 4 | True |
| 268 | 248 | TyranitarMega Tyranitar | Rock | Dark | 700 | 100 | 164 | 150 | 95 | 120 | 71 | 2 | False |
| 409 | 373 | SalamenceMega Salamence | Dragon | Flying | 700 | 95 | 145 | 130 | 120 | 90 | 120 | 3 | False |
| 413 | 376 | MetagrossMega Metagross | Steel | Psychic | 700 | 80 | 145 | 150 | 105 | 110 | 110 | 3 | False |
| 418 | 380 | LatiasMega Latias | Dragon | Psychic | 700 | 80 | 100 | 120 | 140 | 150 | 110 | 3 | True |
| 420 | 381 | LatiosMega Latios | Dragon | Psychic | 700 | 80 | 130 | 100 | 160 | 120 | 110 | 3 | True |
| 494 | 445 | GarchompMega Garchomp | Dragon | Ground | 700 | 108 | 170 | 115 | 120 | 95 | 92 | 4 | False |
| 711 | 646 | KyuremBlack Kyurem | Dragon | Ice | 700 | 125 | 170 | 100 | 120 | 90 | 95 | 5 | True |
| 712 | 646 | KyuremWhite Kyurem | Dragon | Ice | 700 | 125 | 120 | 90 | 170 | 100 | 95 | 5 | True |
| 796 | 719 | DiancieMega Diancie | Rock | Fairy | 700 | 50 | 160 | 110 | 160 | 110 | 110 | 6 | True |
| 162 | 150 | Mewtwo | Psychic | NaN | 680 | 106 | 110 | 90 | 154 | 90 | 130 | 1 | True |
| 269 | 249 | Lugia | Psychic | Flying | 680 | 106 | 90 | 130 | 90 | 154 | 110 | 2 | True |
| 270 | 250 | Ho-oh | Fire | Flying | 680 | 106 | 130 | 90 | 110 | 154 | 90 | 2 | True |
| 425 | 384 | Rayquaza | Dragon | Flying | 680 | 105 | 150 | 90 | 150 | 90 | 95 | 3 | True |

STEP 3

Visualization Data

Creating visual data (e.g. charts) to increase accurate in analyzing data.

```
import seaborn as sns
ax = sns.countplot(data=pokemon, x="Generation", hue="Generation", palette="bright")
sns.move_legend(ax, "upper left", bbox_to_anchor=(1, 1))
for i in ax.containers:
    ax.bar_label(i,)
```



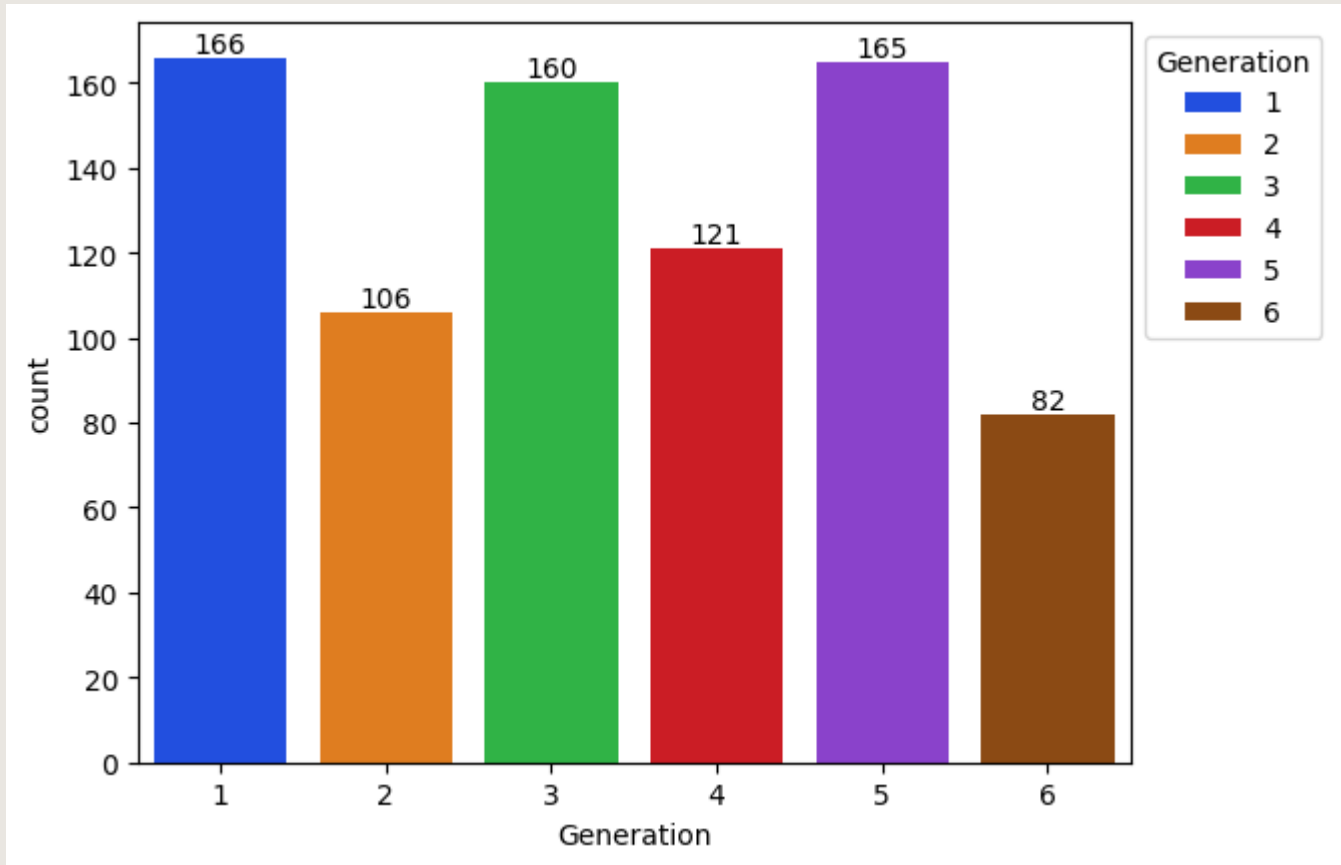


1 Pokemon Development in Each Generation





New Pokemon Development in each Generation

Every time a Pokemon game is released, there will always be new Pokemon added to the Pokedex list (List of Pokemon). There seems to be a gap up and down, which is due to the reuse of Pokemon from previous generations (not all of them).



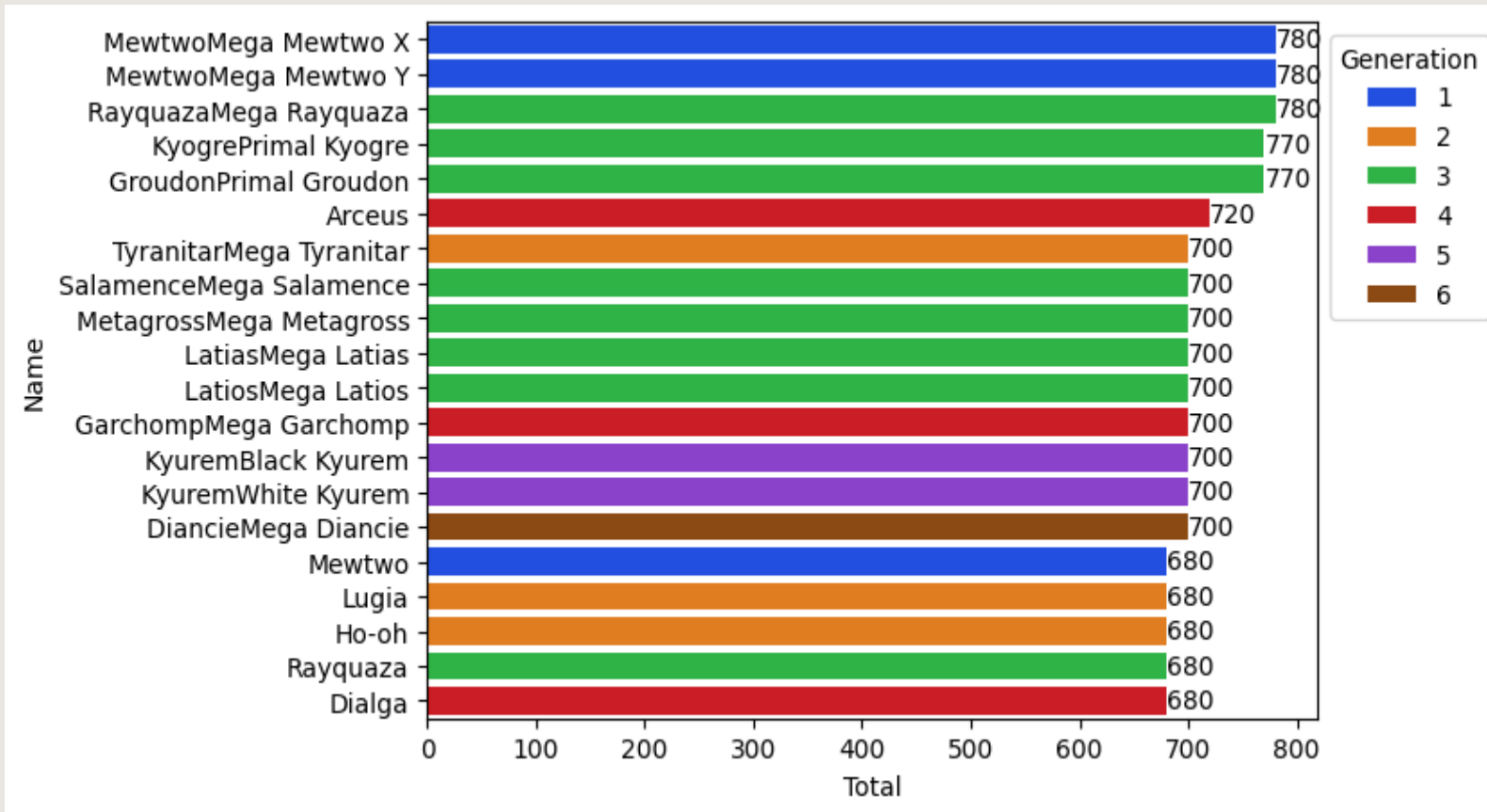
- I. Generation I : Pokemon Red, Green, dan Blue
- II. Generation II : Pokemon Gold, Silver, dan Crystal
- III. Generation III : Pokemon Ruby, Sapphire dan Emerald
- IV. Generation IV : Pokemon Diamond, Pearl dan Platinum
- V. Generation V : Pokemon Black and White, 1 dan 2
- VI. Generation VI : Pokemon X, Y, dan Z



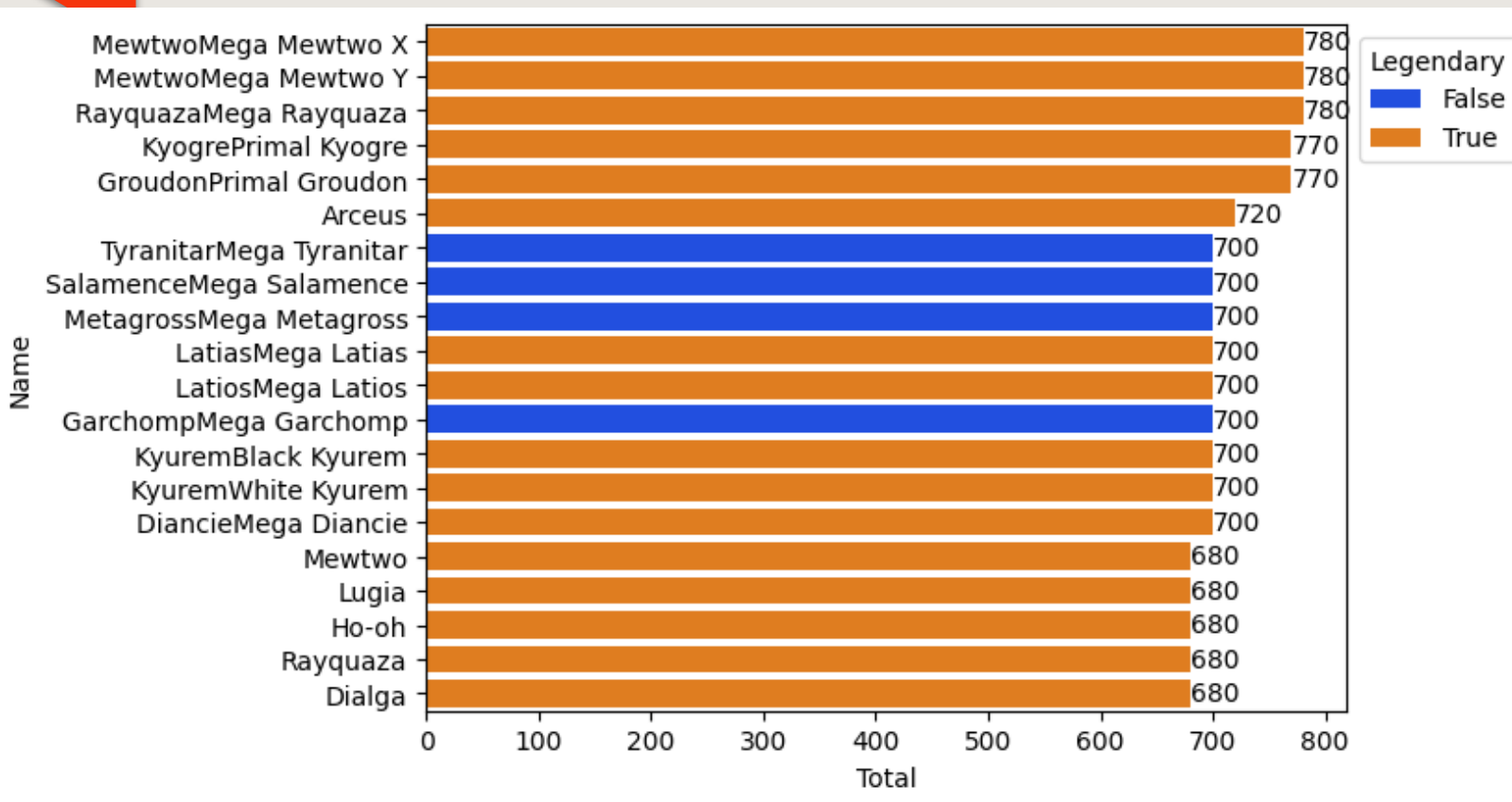
2 Pokemon with the 20 Highest “Total” scores from each Generation

Total Stats


Total stats are the combined total of the 6 main stats in the Pokemon game. The 6 main stats are: Attack, Defense, HP, Special Attack, Special Defense, and Speed.




Of the top 20 pokemon samples in total, 7 out of 20 are pokemon from the 3rd Generation, namely Rayquaza, Kyogre, Groudon, Salamance, Metagross, Latias and Latios



Only 20 percent of the top Total Stats owners are non-Legendary pokemon.

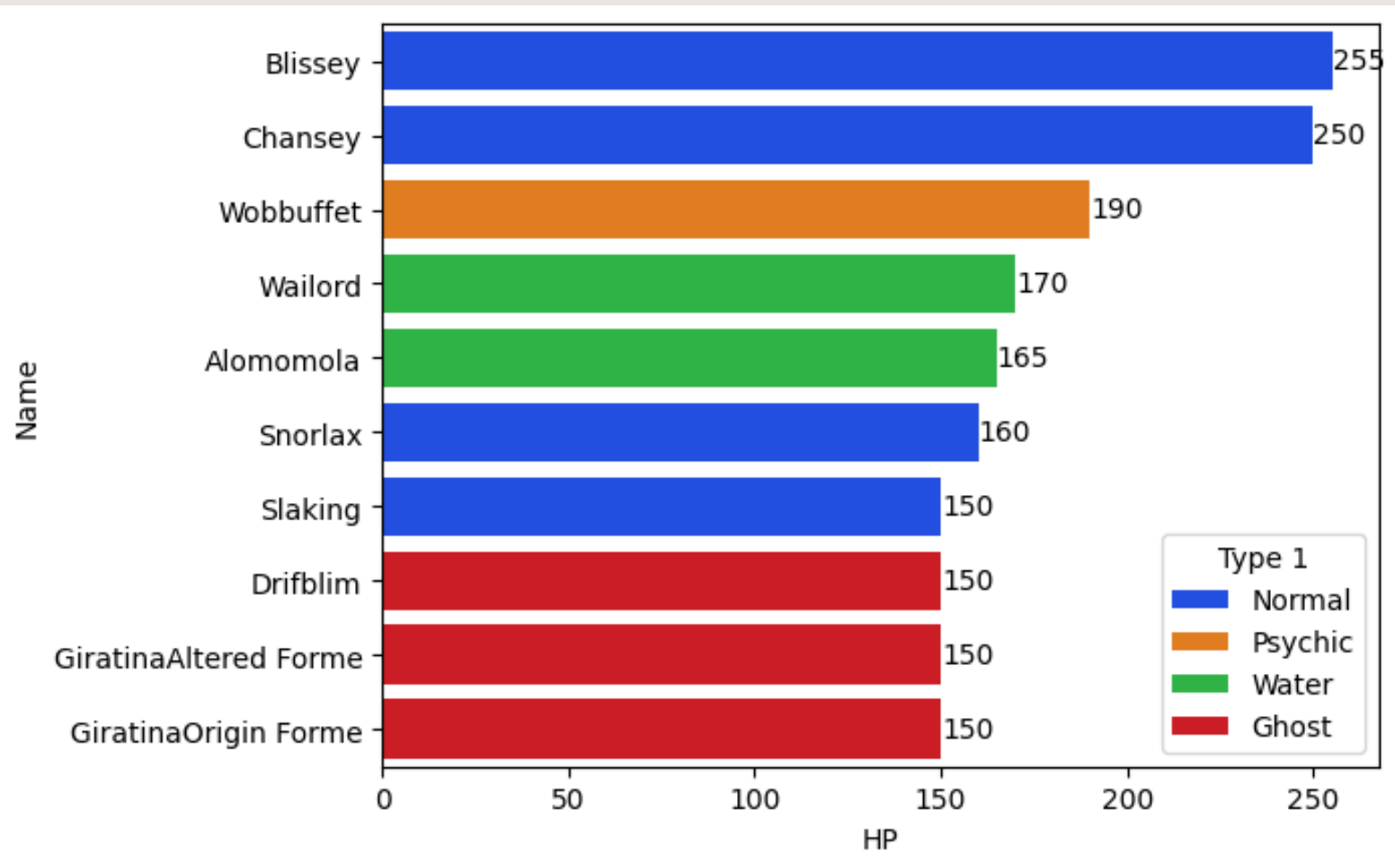


3 10 Pokemon Holding the Highest Base Stats from each category



Health Point (HP)

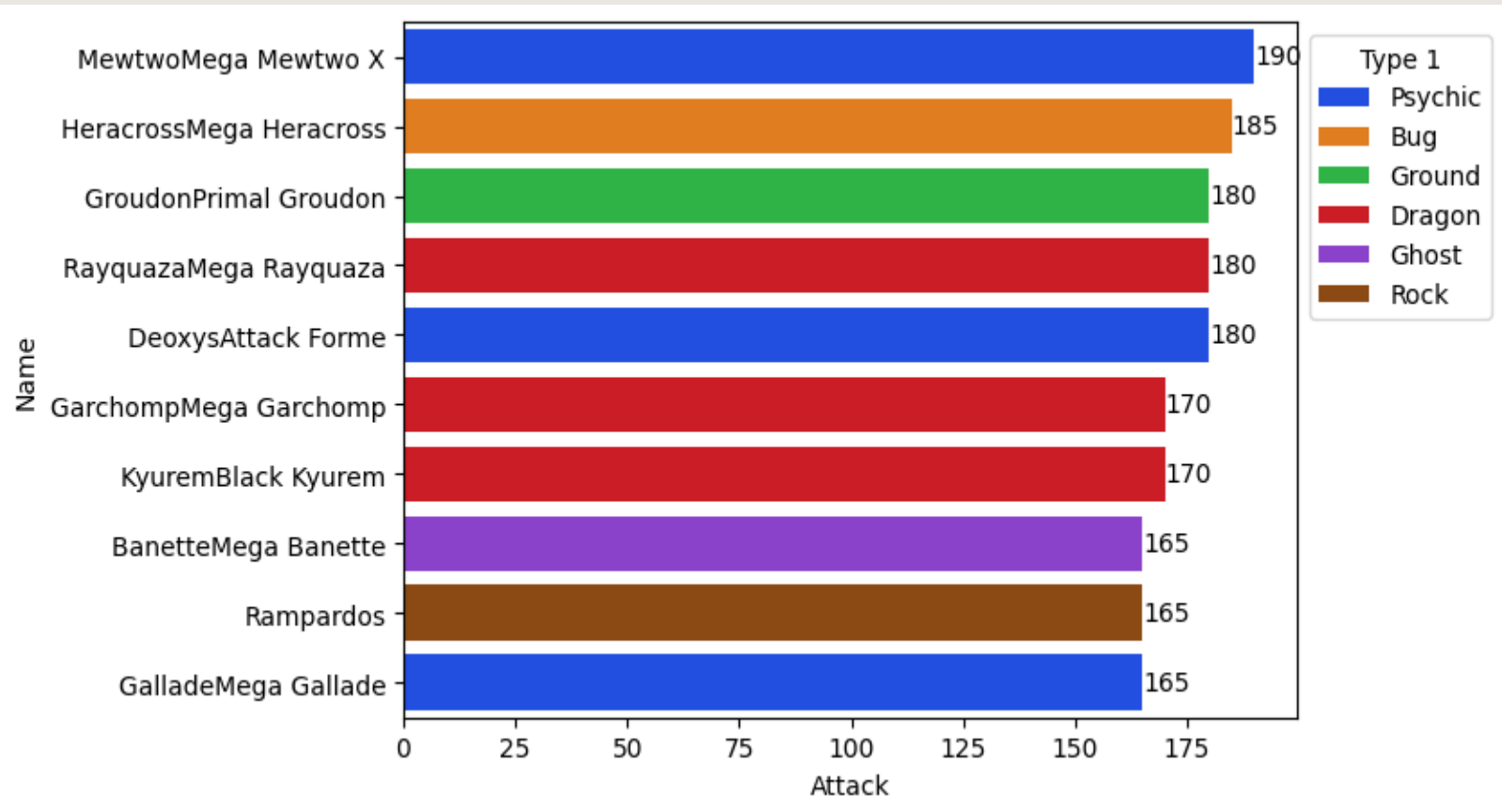
Health Point, which is shortened to HP, is a statistic that determines the number of life points each Pokemon has



Blissey took first place for the Highest HP Stats in Pokemon. One of the best option for Tank Pokemon.

Attack

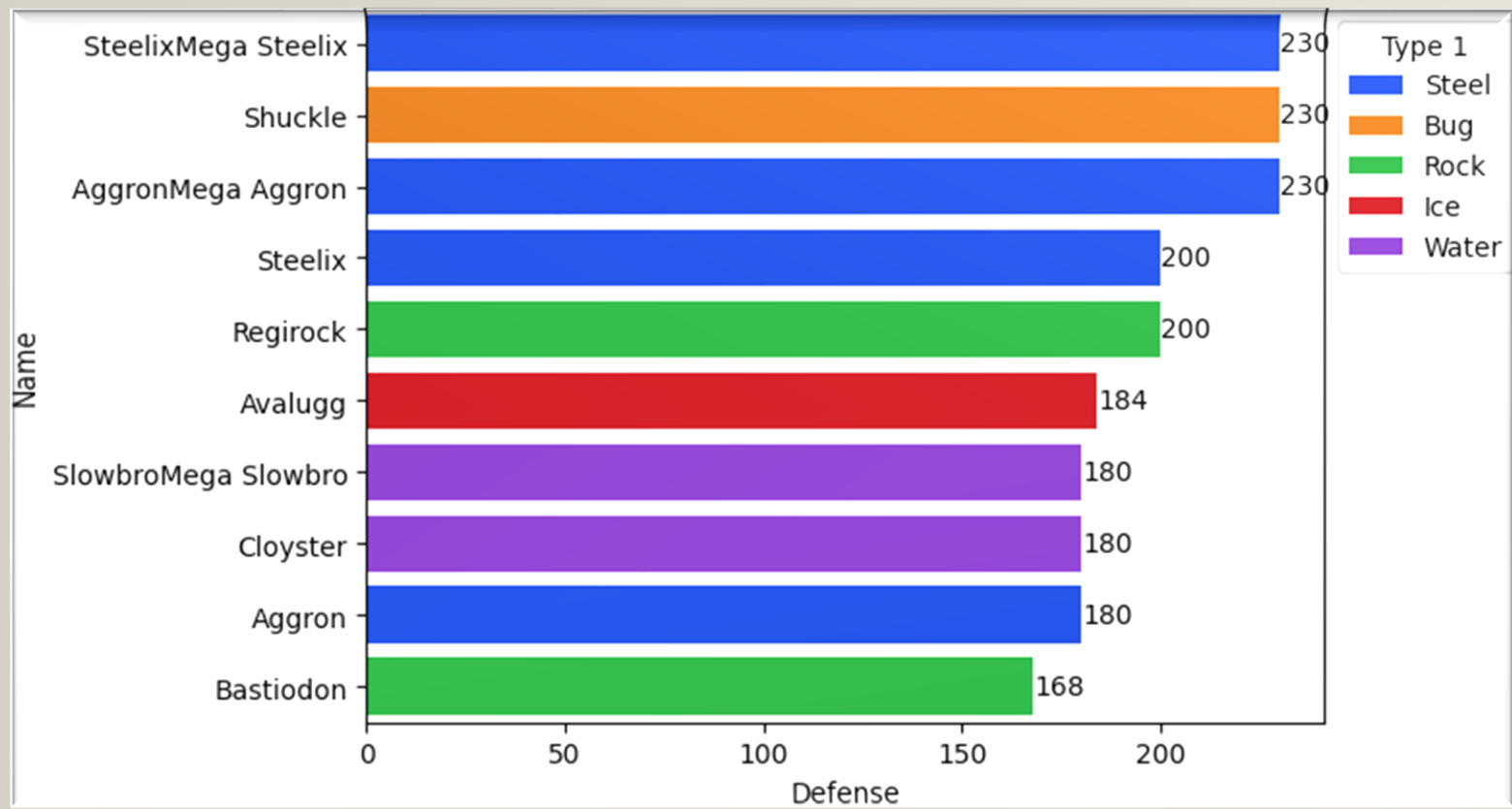
Attack is a base statistic that determines the amount of damage a pokemon's attack gives to the opponent's pokemon.



Dragon and Psychic types can be recommended type Pokemon if the player aiming to have an offensive strategy.

Defense

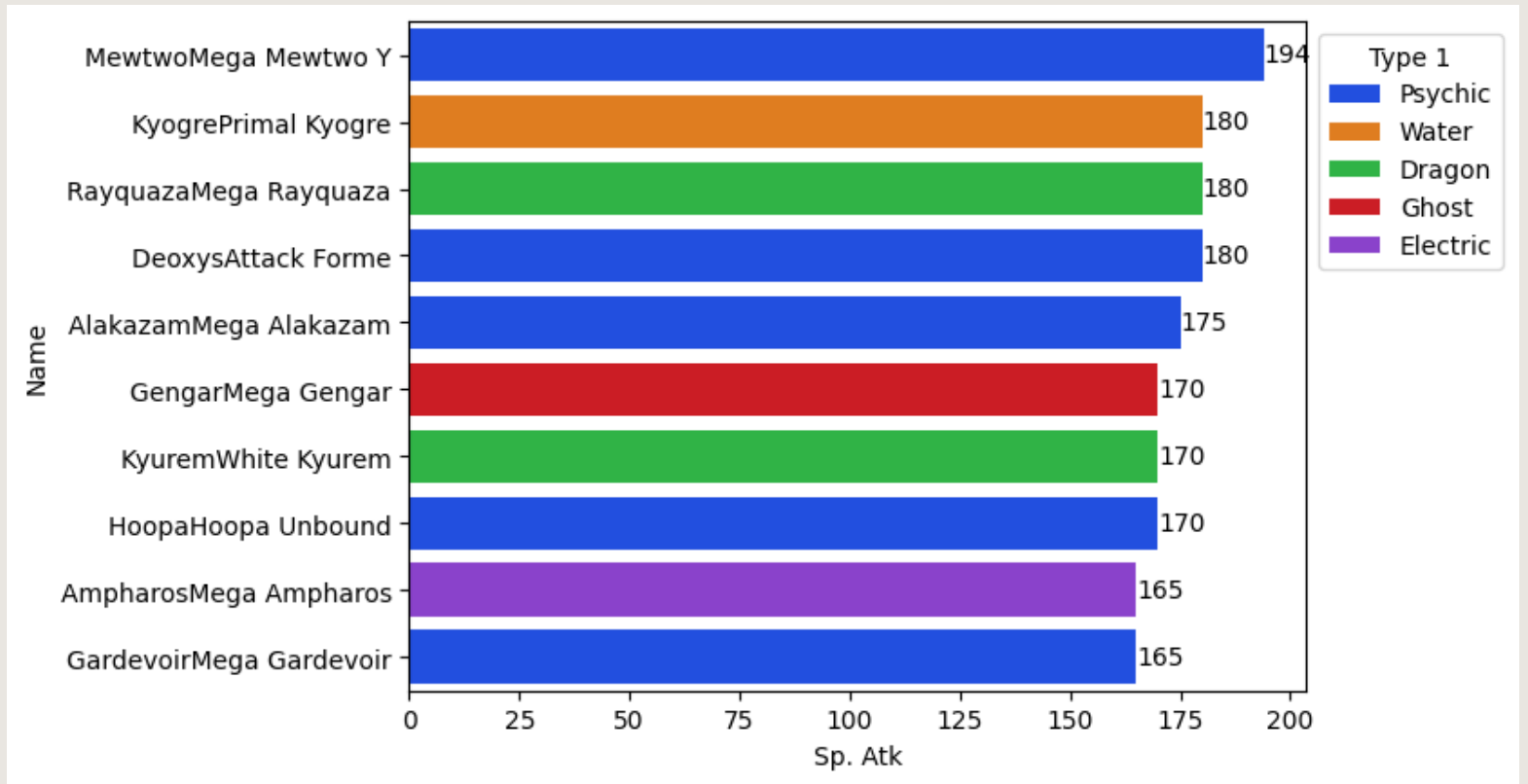
Defense is a status that determines the strength of a Pokemon. The higher a pokemon's Defense stats, the less damage it takes.




Pokemon with Steel Type have quite high defense stats. Steelix or Aggron can be the main choice if players want to have a Pokemon that can act as a Tank in their Team.

Special Attack

Special Attack is one of the offensive stats that every Pokemon has.



The Psychic type is a type of Pokemon that has great potential for special attacks. 50 % of the list is filled by Psychic Pokemon type.




Side
Note!

Difference between Attack and Special Attack

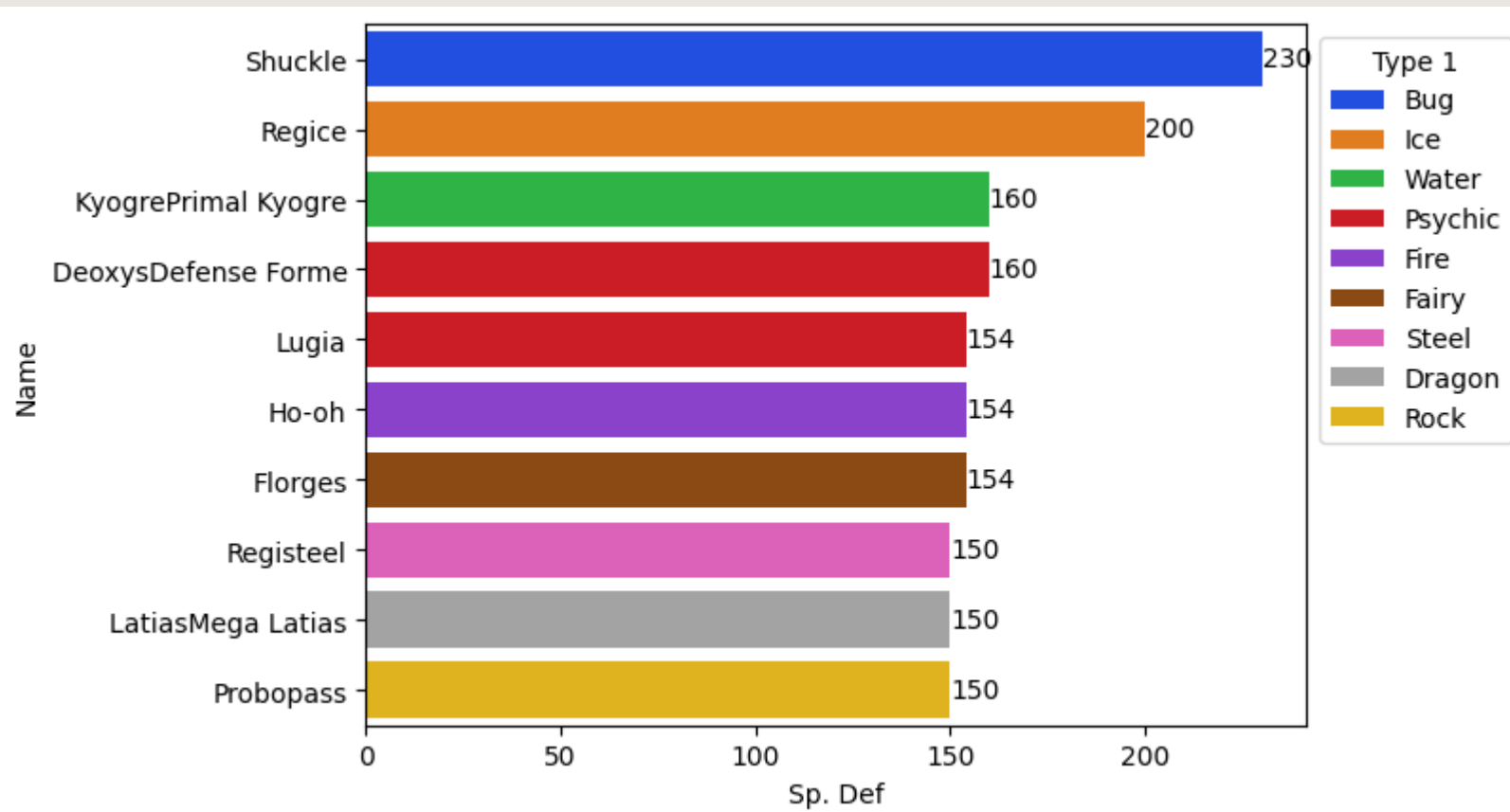
In the Pokemon game, there are 2 types of attacks, namely physical attacks, and also special attacks

If the attack move used is a special type, Sp. Atk will be used to calculate damage output. If Pokemon attack with physical attack move, Attack stats will be used to calculate damage output.



Special Defense

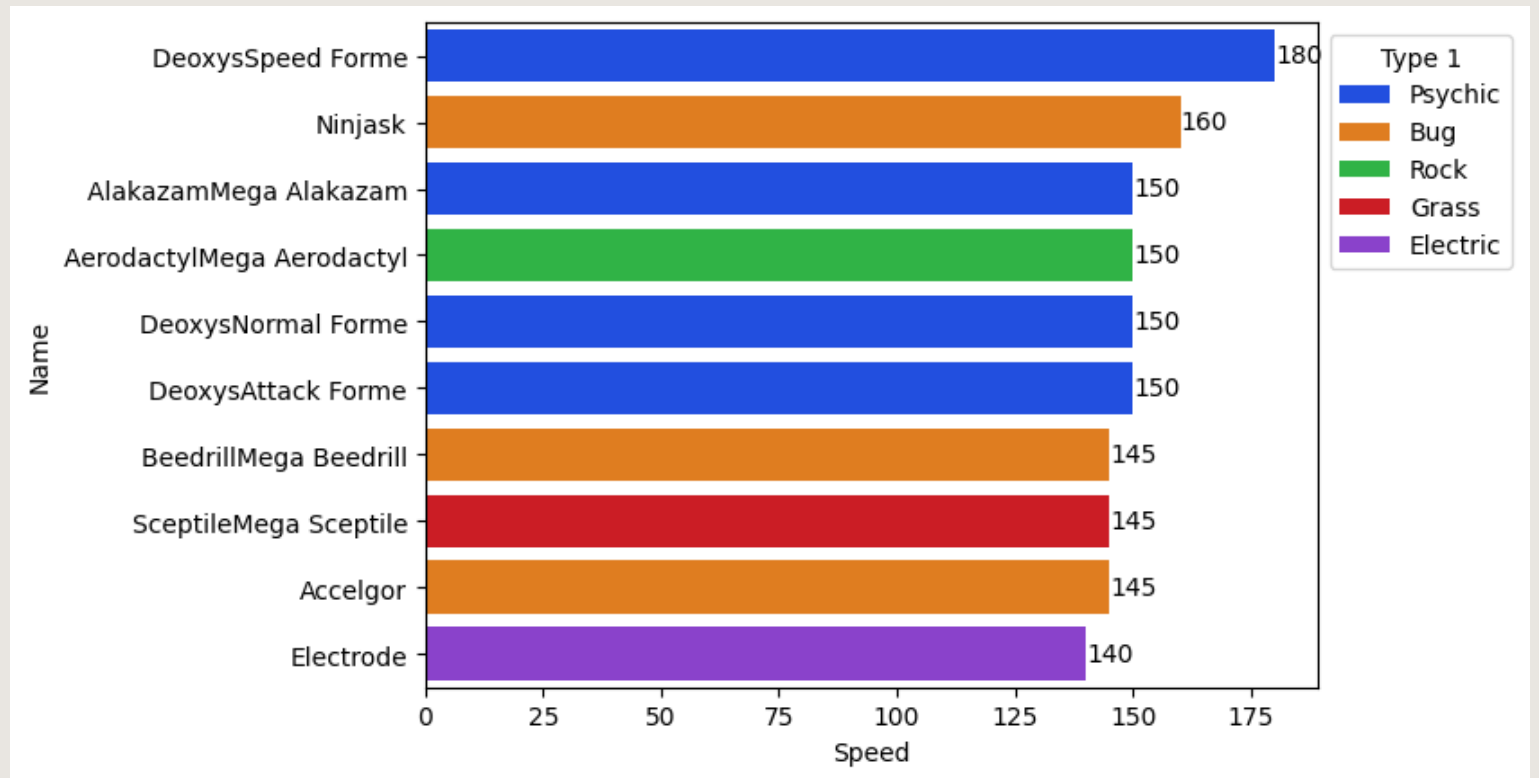
Special Defense is one of the defensive stats that every Pokemon has.



Shackle is the recommended Pokemon for battling against Pokemon with specialty with Special Attack Move.

Speed

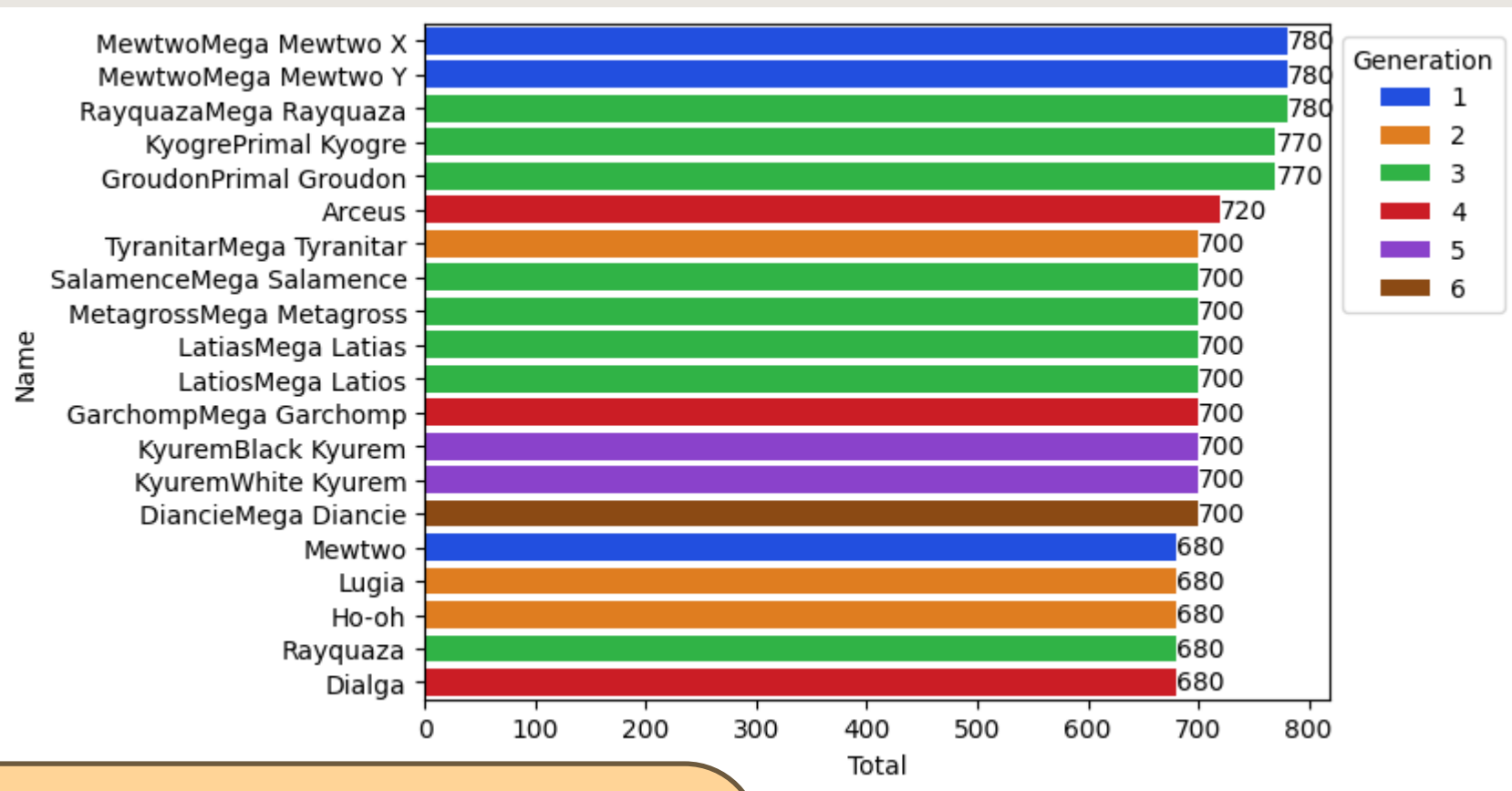
Speed is a status that can determine the sequence of Pokemon's movements. The greater the stats you have, the owner of the highest stats will get the first turn.



In first place, Deoxys in Speed mode is in having the highest Speed stats. But in the matter of non-legendary pokemon, Ninjask can be a substitute.

4 Analysis Conclusion





When Pokemon released the latest generation of games, there were lots of new Pokemon that had quite high stats. Even so, Pokemon from previous generations are still quite competitive when competing against Pokemon from the latest generation. This argument can be supported by the graph above when MewTwo stats are still at the top of the list.

Thank You.

