

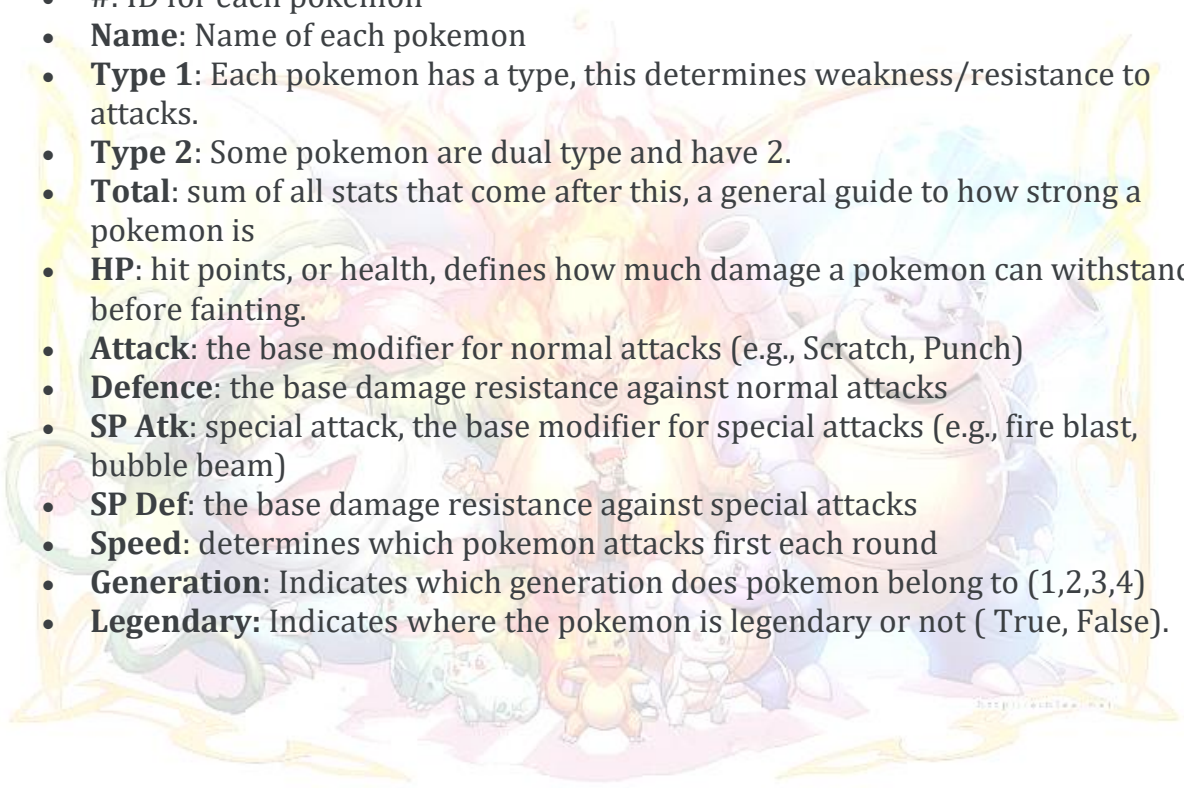
# Pokémon: Gotta Viz 'Em All

linkedIn: NitinMadas

## Data Description:

Pokémon, mystical creatures with diverse ecologies, inhabit various environments alongside humans or in the wild. They can be captured using Poké Balls for easy transportation. The dataset contains 721 Pokémon with key attributes:

- **#:** ID for each pokemon
- **Name:** Name of each pokemon
- **Type 1:** Each pokemon has a type, this determines weakness/resistance to attacks.
- **Type 2:** Some pokemon are dual type and have 2.
- **Total:** sum of all stats that come after this, a general guide to how strong a pokemon is
- **HP:** hit points, or health, defines how much damage a pokemon can withstand before fainting.
- **Attack:** the base modifier for normal attacks (e.g., Scratch, Punch)
- **Defence:** the base damage resistance against normal attacks
- **SP Atk:** special attack, the base modifier for special attacks (e.g., fire blast, bubble beam)
- **SP Def:** the base damage resistance against special attacks
- **Speed:** determines which pokemon attacks first each round
- **Generation:** Indicates which generation does pokemon belong to (1,2,3,4)
- **Legendary:** Indicates where the pokemon is legendary or not ( True, False).



# Importing Libraries and Data:

# Installing and importing req. lib and Data

```
install.packages(c('tidyr', 'dplyr', 'ggplot2'))
```

```
library(ggplot2)
```

```
library(dplyr)
```

```
library(tidyr)
```

```
pokemon_data = read.csv(file.choose())
```

X.	Name	Type.1	Type.2	Total	HP	Attack	Defense
1	Bulbasaur	Grass	Poison	318	45	49	49
2	Ivysaur	Grass	Poison	405	60	62	63
3	Venusaur	Grass	Poison	525	80	82	83
3	VenusaurMega Venusaur	Grass	Poison	625	80	100	123
4	Charmander	Fire		309	39	52	43
5	Charmeleon	Fire		405	58	64	58
6	Charizard	Fire	Flying	534	78	84	78
6	CharizardMega Charizard X	Fire	Dragon	634	78	130	111
6	CharizardMega Charizard Y	Fire	Flying	634	78	104	78
7	Squirtle	Water		314	44	48	65
8	Wartortle	Water		405	59	63	80

Sp..Atk	Sp..Def	Speed	Generation	Legendary
65	65	45	1	False
80	80	60	1	False
100	100	80	1	False
122	120	80	1	False
60	50	65	1	False
80	65	80	1	False
109	85	100	1	False
130	85	100	1	False
159	115	100	1	False
50	64	43	1	False
65	80	58	1	False

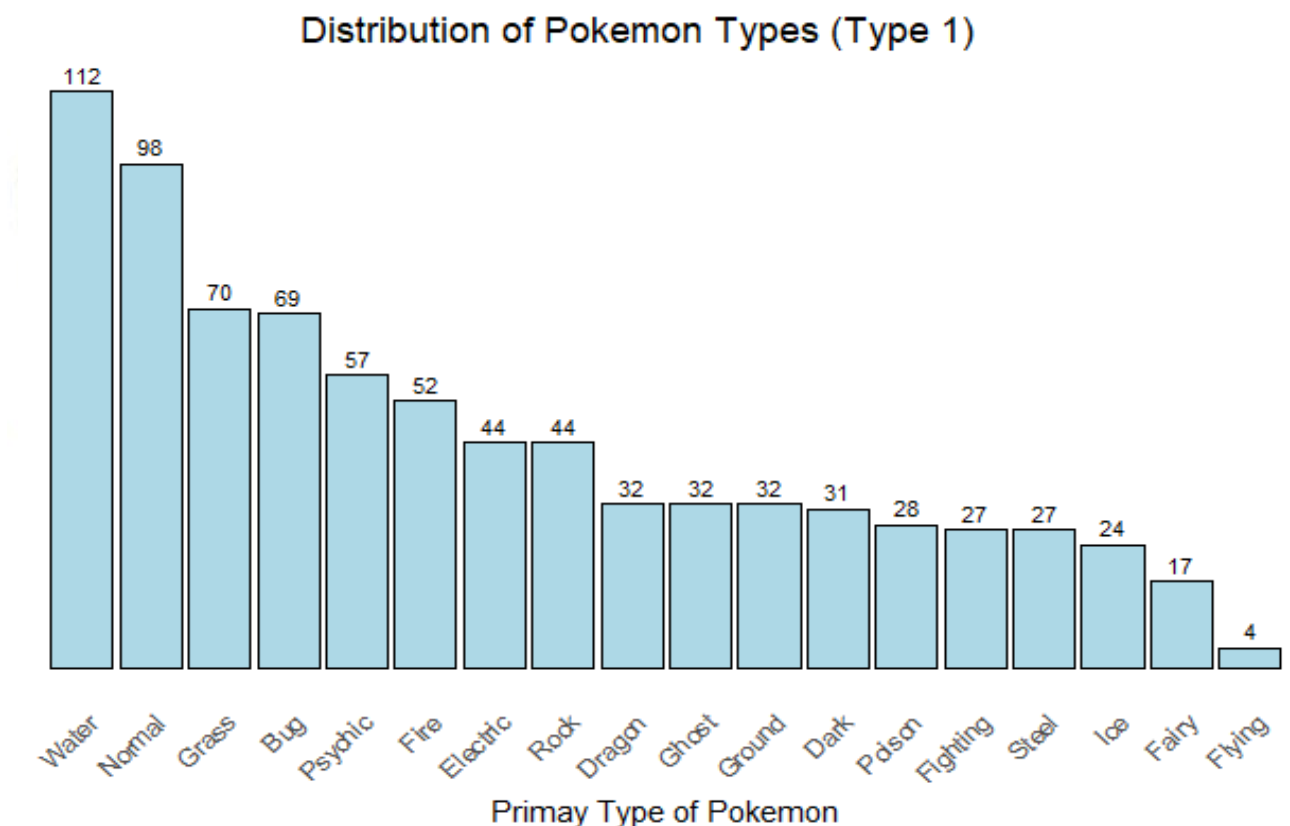
# Plot 1: Bar Plot

```
# Plot 1: BAR PLOT: Pokemon Type Distribution
```

```
# Grouping data according to Type 1 and finding Count
```

```
type_wise_data <- pokemon_data %>%  
  group_by(Type.1) %>%  
  summarise(count = n())
```

```
ggplot(type_wise_data, aes(x = reorder(Type.1, -count), y = count)) +  
  geom_bar(stat = "identity", fill = "lightblue", color = "black") +  
  geom_text(aes(label = count), vjust = -0.5, color = "black", size = 3) +  
  theme_minimal() +  
  labs(title = "Distribution of Pokemon Types (Type 1)",  
       x = "Primay Type of Pokemon") +  
  theme(axis.text.x = element_text(angle = 45, hjust = 1),  
        axis.title.y = element_blank(), # Remove y-axis label  
        axis.text.y = element_blank(), # Remove y-axis ticks and text  
        axis.ticks.y = element_blank(),  
        plot.title = element_text(hjust = .45), # Center Title  
        panel.grid.major = element_blank(), # Remove grid lines  
        panel.grid.minor = element_blank())
```



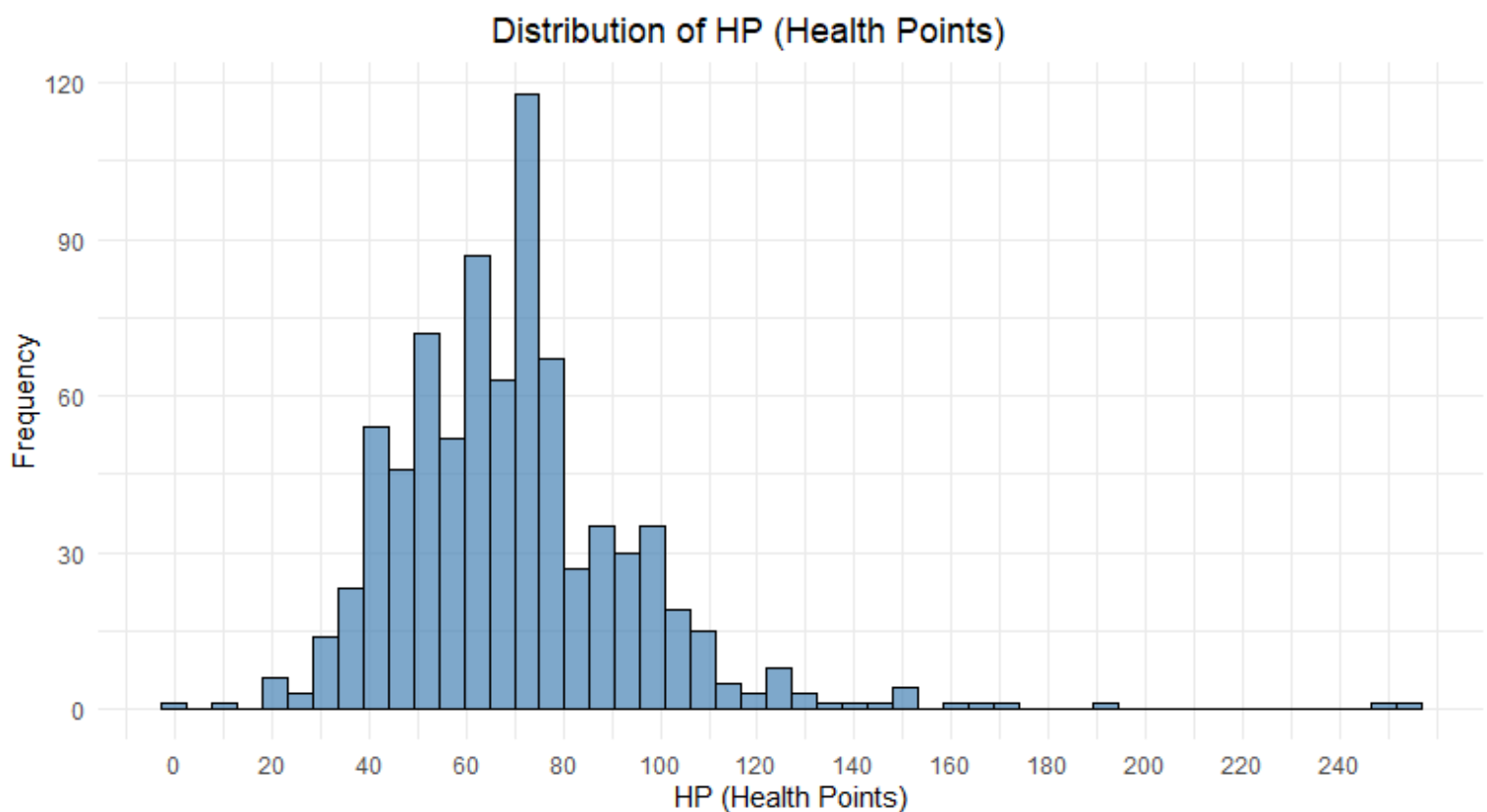
**Interpretation:** The above bar graph shows count of Pokémon's of different types. Here we can observe there are 112 Pokémon's of water Type which is highest. 98 normal type Pokémon's being the second

dominant Type followed by Grass, Bug, Psychic in top 5. Ice, Fairy, and Flying Type are Bottom 3 with count 24, 17, 4 respectively.

## Plot 2: Histogram

```
# Plot 2: HIST PLOT: HP Distribution

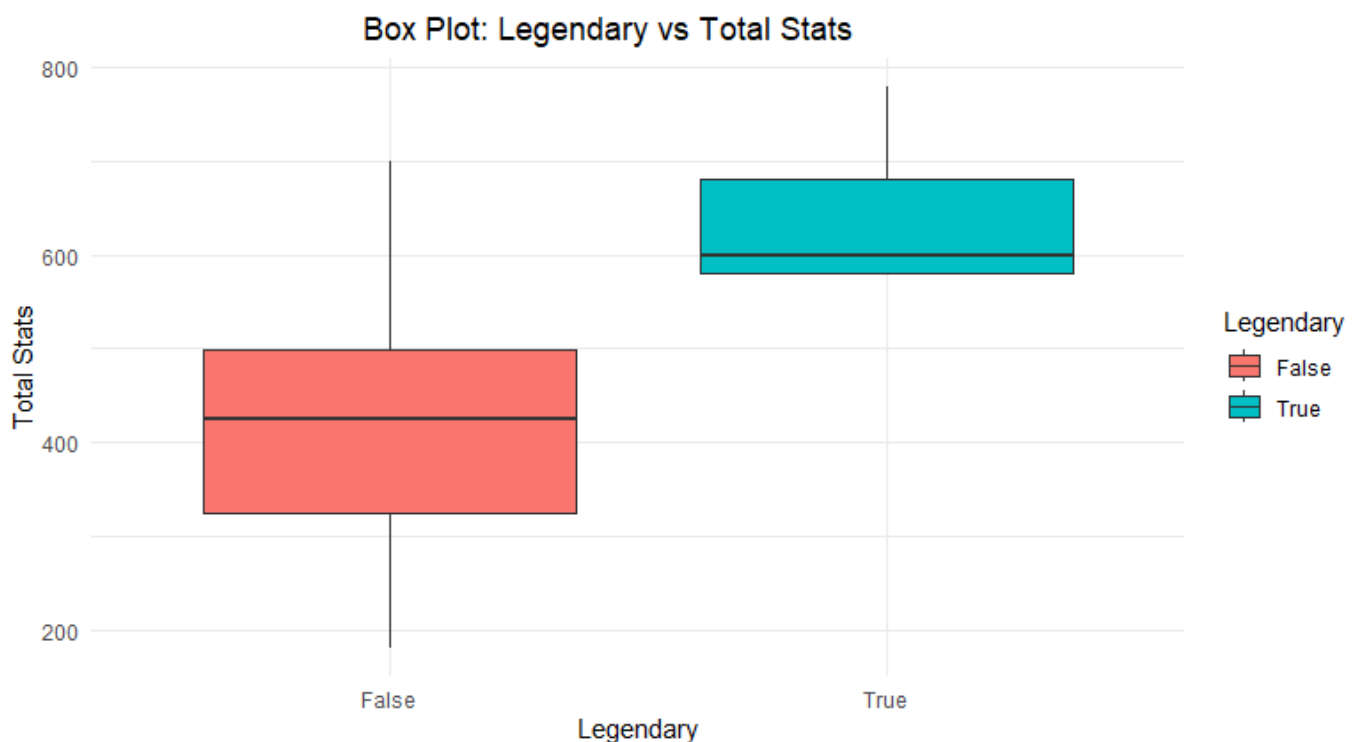
ggplot(pokemon_data, aes(x = HP)) +
  geom_histogram(bins = 50, fill = "steelblue", color = "black", alpha = 0.7) +
  theme_minimal() +
  scale_x_continuous(breaks = round(seq(0, 250, by = 20),1)) +
  labs(title = "Distribution of HP (Health Points)",
       x = "HP (Health Points)",
       y = "Frequency") +
  theme(plot.title=element_text(hjust=.45))
```



**Interpretation:** The above histogram shows distribution of Pokémon's HP. Here we can observe data is mostly concentrated between 30 to 120. Peak is around 70 to 80. We can notice some outliers. There are some pokemon whose HP exists below 20 and above 160. Further analysis should be done do understand them more.

## Plot 3: Box Plot

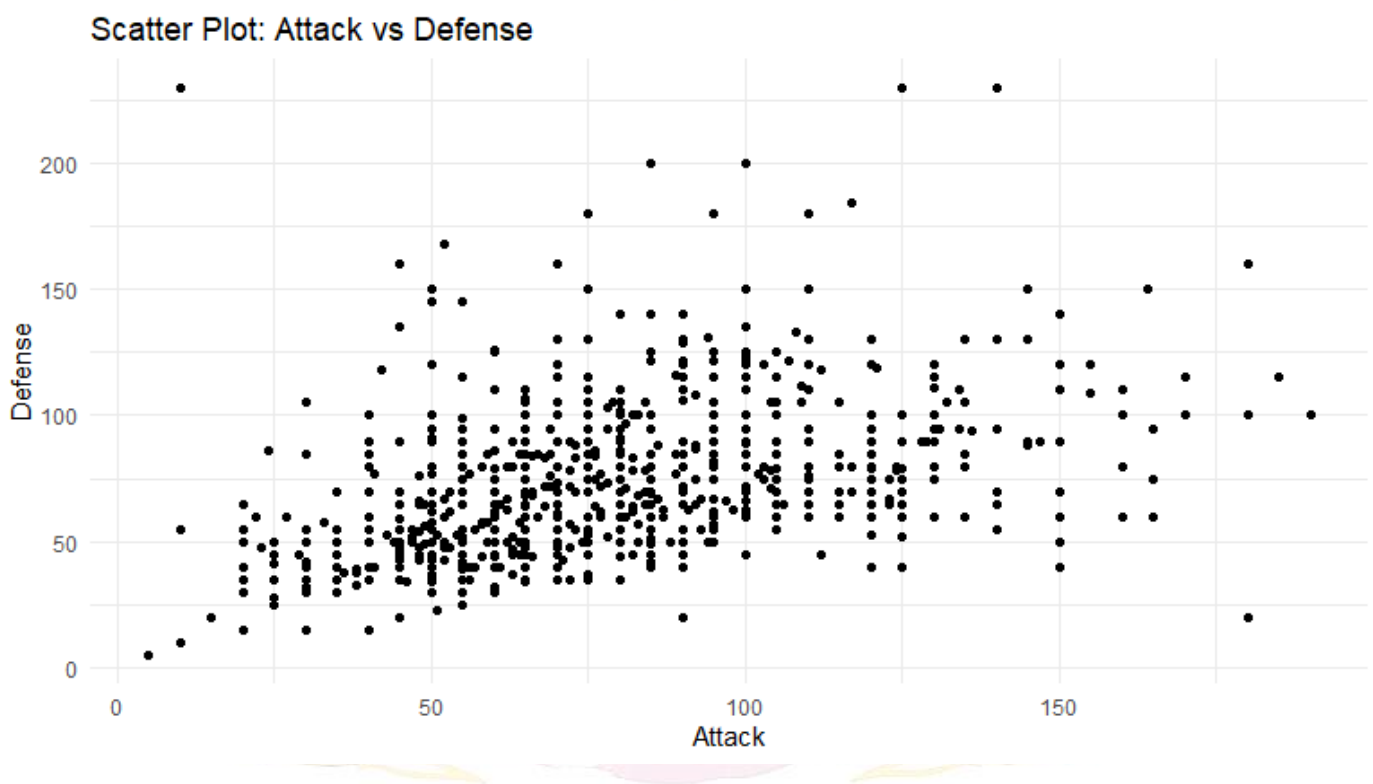
```
# Plot 3: Box Plot: Legendary vs Total Stats
ggplot(pokemon_data, aes(x = Legendary, y = Total, fill = Legendary)) +
  geom_boxplot() +
  labs(title = "Box Plot: Legendary vs Total Stats",
       x = "Legendary",
       y = "Total Stats") +
  theme_minimal() +
  theme(plot.title=element_text(hjust=.45))
```



**Interpretation:** The above Box shows distribution of Pokémon's Total Stats separated by Legendary status. Here we can observe that median of non-legendary pokémon's is around 400-450 and 75% of pokémon's total stats falls below 500, While median of legendary pokémon's is around 600 and 75% data falls below approx. 650.

## Plot 4: Scatter Plot

```
# Plot 4 : Scatter Plot: Attack vs Defense
ggplot(pokemon_data, aes(x = Attack, y = Defense)) +
  geom_point() +
  labs(title = "Scatter Plot: Attack vs Defense",
       x = "Attack",
       y = "Defense") +
  theme_minimal()
```



**Interpretation:** In the above scatter plot Attack and Defence stats of all pokemon's. We can clearly observe positive correlation between these variables. But we can also spot some of outliers.

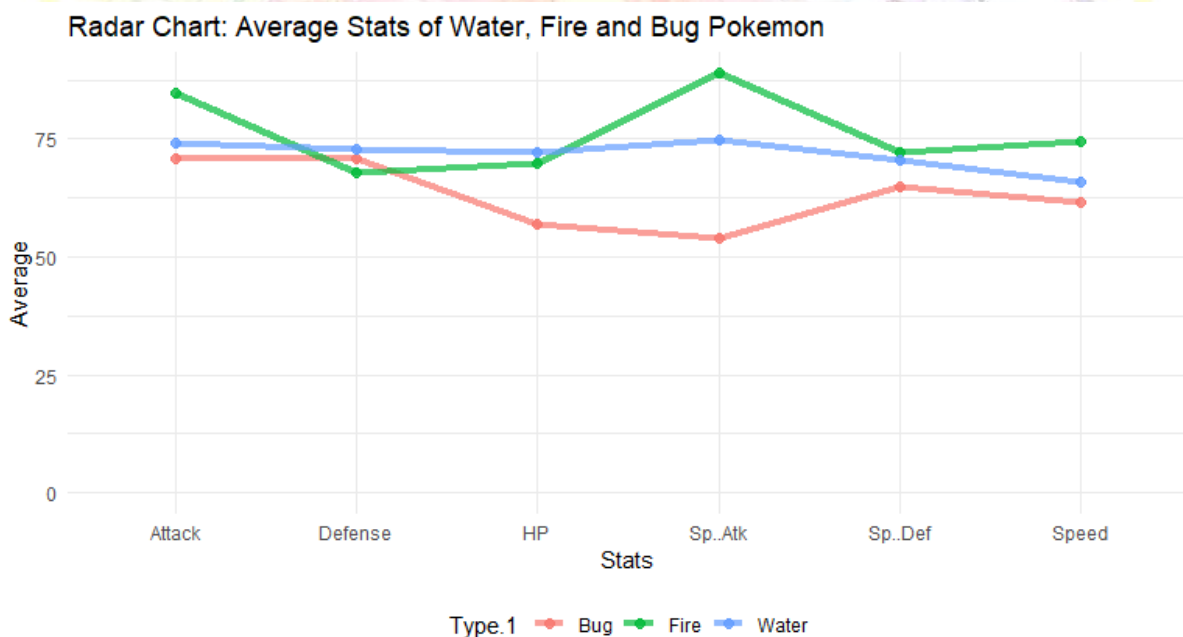
## Plot 5: Line Plot

```
# Plot 4: RADAR PLOT
selected_columns <- c("Type.1", "HP", "Attack", "Defense", "Sp..Atk", "Sp..Def", "Speed")
selected_data <- pokemon_data %>%
  filter(Type.1 %in% c("Water", "Fire", "Bug")) %>%
  select(all_of(selected_columns))

# Calculate average stats for each Pokemon type
avg_stats <- selected_data %>%
  group_by(Type.1) %>%
  summarise_all(mean)

# Melt the data for the radar chart
melted_data <- gather(avg_stats, key = "Stat", value = "Value", -Type.1)

# Radar Chart: Average Stats of Water and Fire Pokemon
ggplot(melted_data, aes(x = Stat, y = Value, group = Type.1, color = Type.1)) +
  geom_line(size = 1.5, alpha = 0.7) +
  geom_point(size = 2, alpha = 0.8) +
  labs(title = "Radar Chart: Average Stats of Water, Fire and Bug Pokemon",
       x = "Stats",
       y = "Average") +
  theme_minimal() +
  theme(legend.position = "bottom") + ylim(0, NA)
```



**Interpretation:** In the above Line Plot, we are plotting the avg. of different stats of all pokemon's joined by line. This way we can compare different stats of different pokemon Types easily. In the above plot we have bug type, fire type and water type avg stats. We can observe fire type pokemon's on an avg have better attack and sp. Attack and also speed.