

Pandas AI

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Assignment 4 - Pandas AI

For this assignment I used PandasAI to easily perform queries on the given pokemon dataset, matplotlib and seaborn to plot the graphs from the queries.

I first initialized pandasAI agent in order to do this.

```
import os
import pandas as pd
from pandasai import Agent
import matplotlib.pyplot as plt
import seaborn as sns

df = pd.read_csv('/content/pokemon.csv')

os.environ["PANDASAI_API_KEY"] = "$2a$10$9cUMttcvCZSr7kNmQJWSLudu4YzMgjINQckvjoekVfukWki/ajDw2"

agent = Agent(df)
```

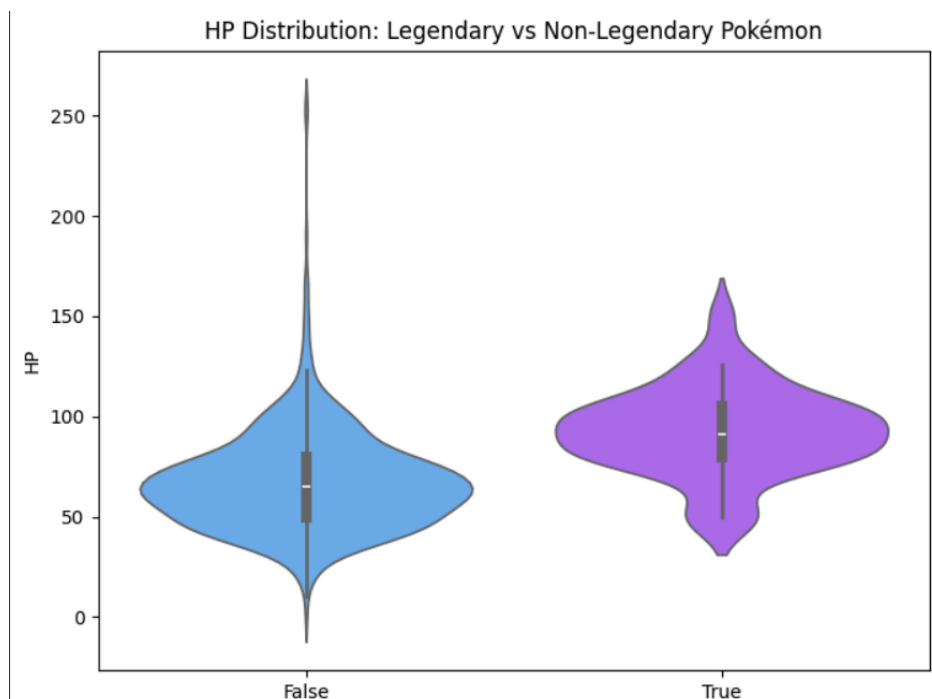
The first observation I wanted to do was get the average HP of Legendary Pokémon and plot a Violin plot for HP distribution among Legendary and Non-Legendary Pokémon

```
result1 = agent.chat('What is the average HP of Legendary Pokémon?')
print(result1)

# Plot 1: Violin plot for HP distribution among Legendary and Non-Legendary Pokémon
plt.figure(figsize=(8, 6))
sns.violinplot(data=df, x='Legendary', y='HP', palette='cool')
plt.title('HP Distribution: Legendary vs Non-Legendary Pokémon')
plt.show()
```

From this I got to know that The average HP of Legendary Pokémon is 92.73846153846154.

Graph 1:



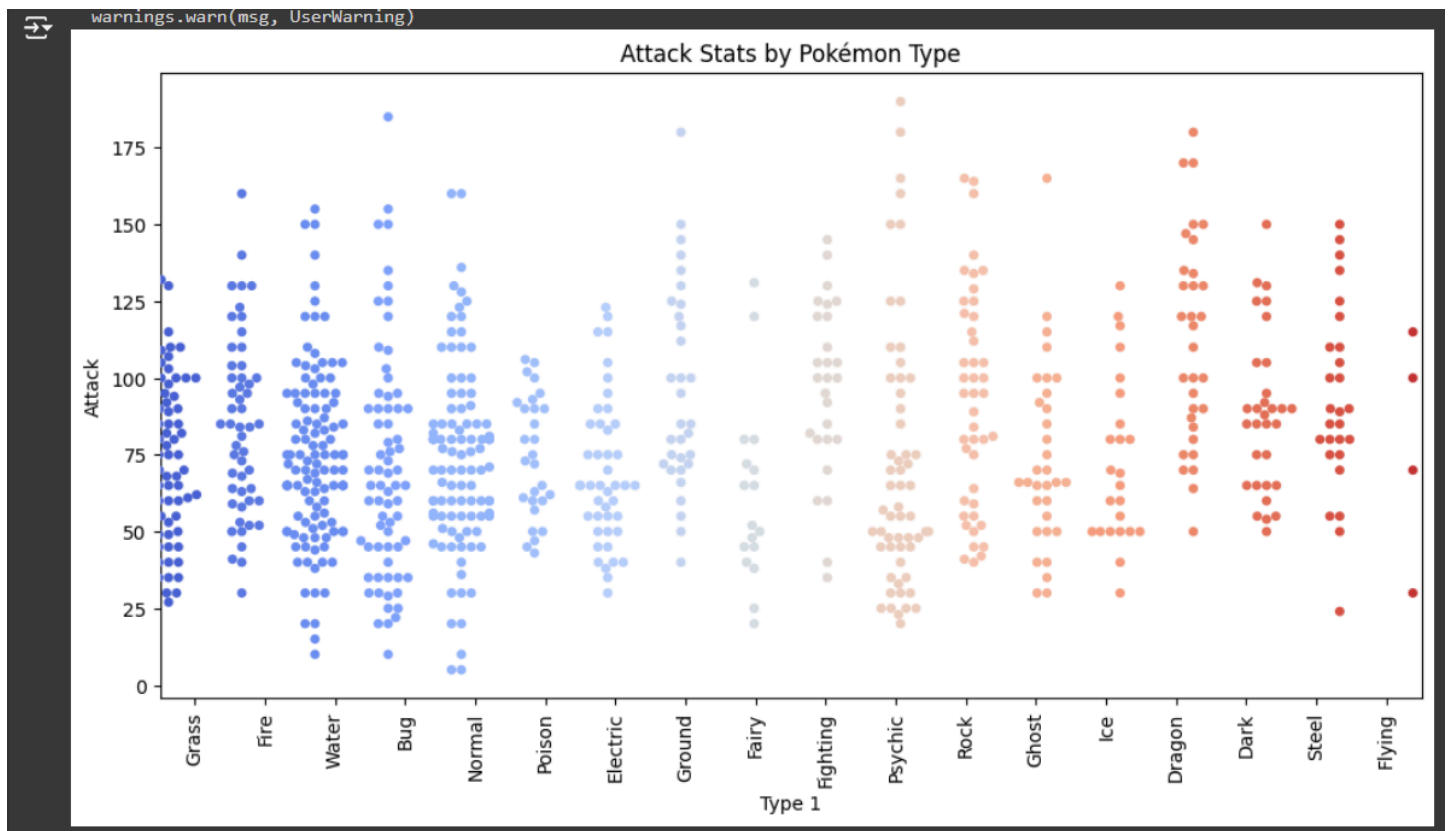
The second thing I wanted to observe was which type of Pokémon has the highest average Attack stat. For this I plotted a Swarm plot for Attack stats by Pokémon Type 1.

```
# 2. Query: Which type of Pokémon has the highest average Attack stat?
result2 = agent.chat('Which type of Pokémon has the highest average Attack stat?')
print(result2)

# Plot 2: Swarm plot for Attack stats by Pokémon Type 1
plt.figure(figsize=(12, 6))
sns.swarmplot(data=df, x='Type 1', y='Attack', palette='coolwarm', dodge=True)
plt.xticks(rotation=90)
plt.title('Attack Stats by Pokémon Type')
plt.show()
```

From this we understand that The type of Pokémon with the highest average Attack stat is Dragon.

Graph 2:



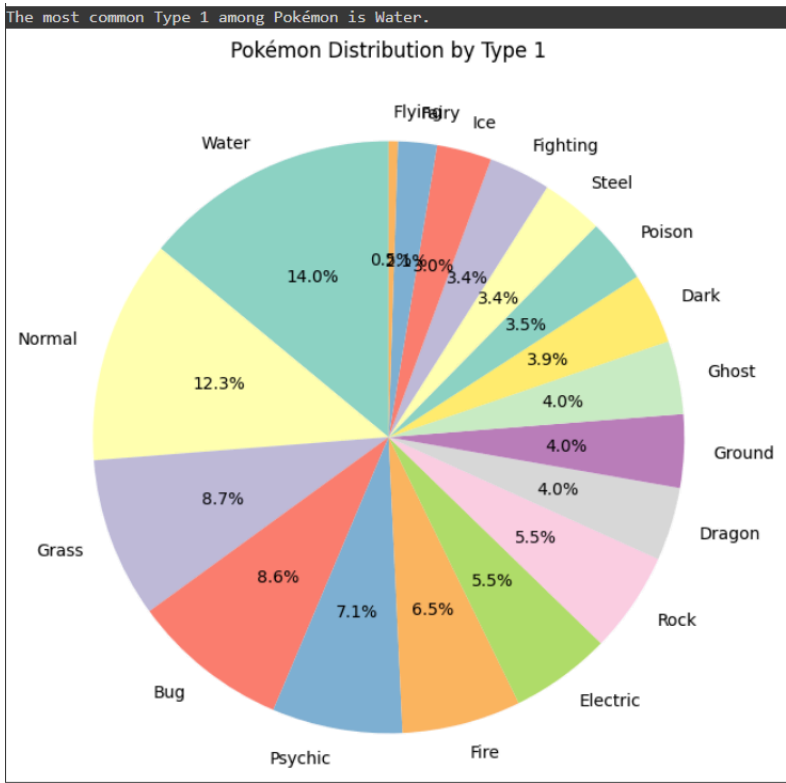
The third thing I wanted to observe was What is the most common Type 1 among Pokémon and for this I plotted a Pie chart of Pokémon distribution by Type 1.

```
# 3. Query: What is the most common Type 1 among Pokémon?
result3 = agent.chat('What is the most common Type 1 among Pokémon?')
print(result3)

# Plot 3: Pie chart of Pokémon distribution by Type 1
type_counts = df['Type 1'].value_counts()
plt.figure(figsize=(8, 8))
plt.pie(type_counts, labels=type_counts.index, autopct='%1.1f%%', startangle=90, colors=sns.color_palette('Set3'))
plt.title('Pokémon Distribution by Type 1')
plt.show()
```

From this I inferred that the most common type of pokemon was water type.

Graph 3:



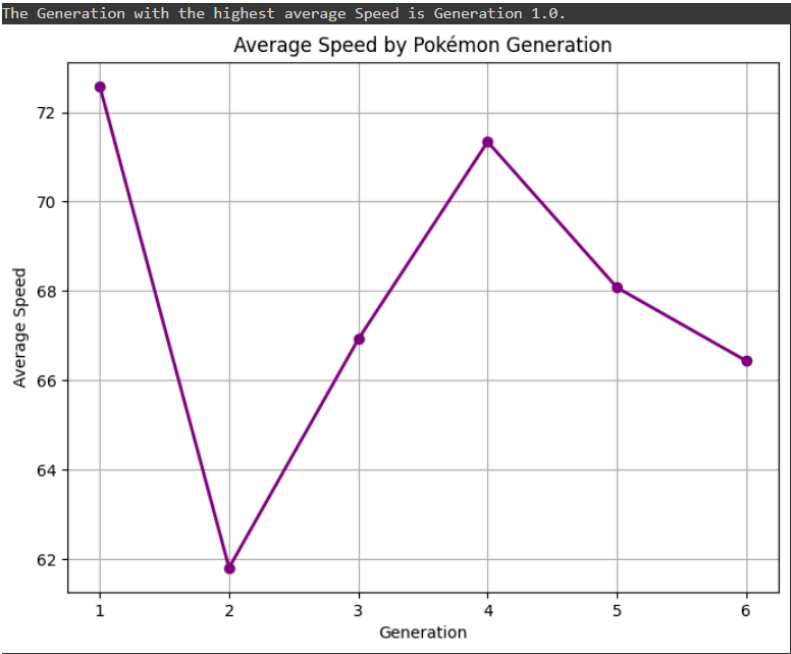
The fourth thing I wanted to observe was Which Generation has the highest average Speed and for this I plotted a Line plot for average Speed by Generation

```
# 4. Query: Which Generation has the highest average Speed?
result4 = agent.chat('Which Generation has the highest average Speed?')
print(result4)

# Plot 4: Line plot for average Speed by Generation
avg_speed_by_gen = df.groupby('Generation')['Speed'].mean()
plt.figure(figsize=(8, 6))
plt.plot(avg_speed_by_gen, marker='o', color='purple', linestyle='-', linewidth=2)
plt.title('Average Speed by Pokémon Generation')
plt.xlabel('Generation')
plt.ylabel('Average Speed')
plt.grid(True)
plt.show()
```

From this I inferred that The Generation with the highest average Speed is Generation 1.0.

Graph 4:



Lastly I was curious to see Which Pokémon has the highest total stats, for this i plotted a Heatmap for the top 10 Pokémon by Total stats (showing their stats).

```
# 5. Query: Which Pokémon has the highest total stats?
result5 = agent.chat('Which Pokémon has the highest total stats?')
print(result5)

# Plot 5: Heatmap for the top 10 Pokémon by Total stats (showing their stats)
top_10 = df.nlargest(10, 'Total').set_index('Name')
plt.figure(figsize=(10, 6))
sns.heatmap(top_10[['HP', 'Attack', 'Defense', 'Sp. Atk', 'Sp. Def', 'Speed']], annot=True, cmap='YlGnBu', linewidths=0.5)
plt.title('Top 10 Pokémon by Total Stats (Individual Stat Breakdown)')
plt.show()
```

From this I inferred that The Pokémon with the highest total stats is MewtwoMega Mewtwo X.

Graph 5:

