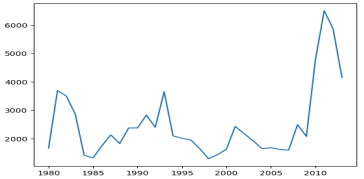
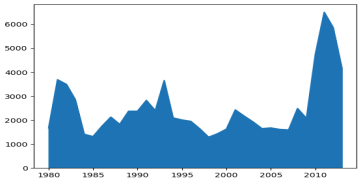
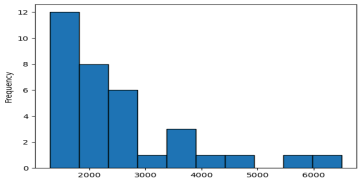
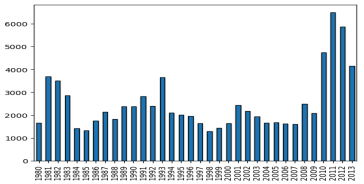
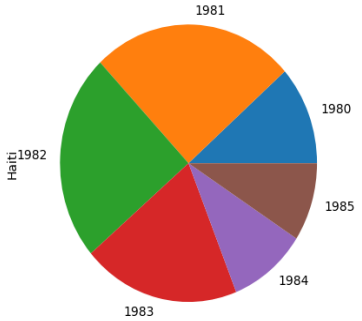
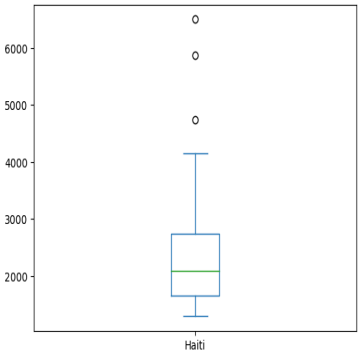
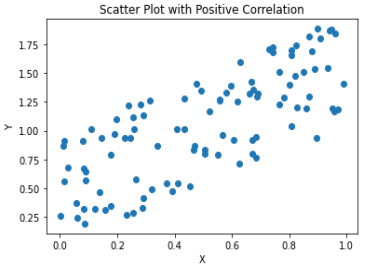
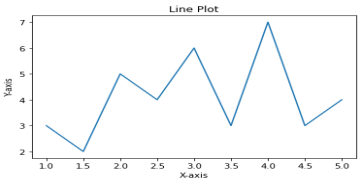
# Data Visualization with Python

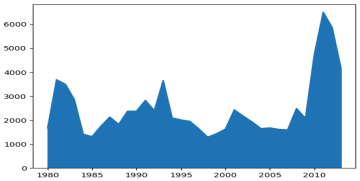
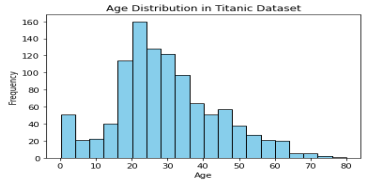
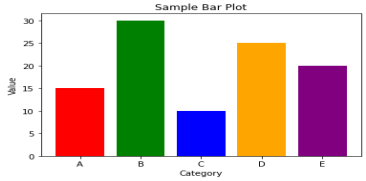
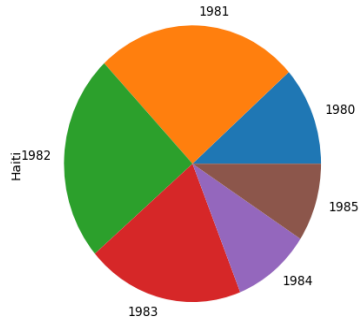
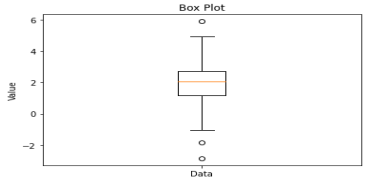
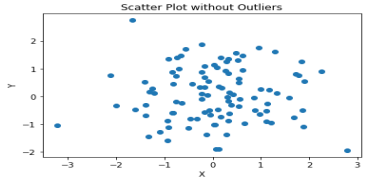
# Cheat Sheet : Plotting with Matplotlib using Pandas

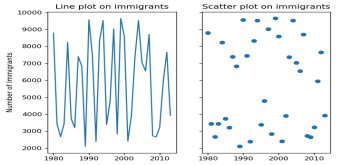
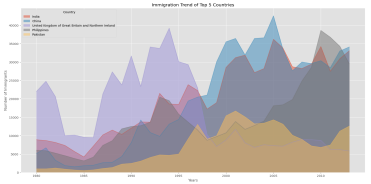
| Plot Type | Description | Pandas Function | Example | Visual |
|---|---|---|---|---|
| Line Plot | Shows trends and changes over time | `DataFrame.plot.line()`<br>`DataFrame.plot(kind = 'line')` | `df.plot(x='year', y='sales', kind='line')` |  |
| Area Plot | Displays data series as filled areas, showing the relationship between them | `DataFrame.plot.area()`<br>`DataFrame.plot(kind = 'area')` | `df.plot(kind='area')` |  |
| Histogram | Displays bars representing the data count in each interval/bin | `Series.plot.hist()`<br>`Series.plot(kind = 'hist', bins = n)` | `s.plot(kind='hist', bins=10)`<br>`df['age'].plot(kind='hist', bins=10)` |  |
| Bar Chart | Displays data using rectangular bars | `DataFrame.plot.bar()`<br>`DataFrame.plot(kind = 'bar')` | `df.plot(kind='bar')` |  |

| Plot Type | Description | Pandas Function | Example | Visual |
|---|---|---|---|---|
| Pie Chart | Displays data as a circular plot divided into slices, representing proportions or percentages of a whole | `Series.plot.pie()`<br>`Series.plot(kind = 'pie')`<br>`DataFrame.plot.pie(y, labels)`<br>`DataFrame.plot(kind = 'pie')` | `s.plot(kind='pie',autopct='%1.1f%%')`<br>`df.plot(x='Category',y='Percentage',kind='pie')` |  |
| Box Plot | Displays the distribution of a dataset along with key statistical measures | `DataFrame.plot.box()`<br>`DataFrame.plot(kind = 'box')` | `df_can.plot(kind='box')` |  |
| Scatter Plot | Uses Cartesian coordinates to display values for two variables | `DataFrame.plot.scatter()`<br>`DataFrame.plot(x, y, kind = 'scatter')` | `df.plot(x='Height', y='Weight', kind='scatter')` |  |

# Cheat Sheet : Plotting directly with Matplotlib

| Plot Type | Description | Matplotlib Function | Example | Visual |
|---|---|---|---|---|
| Line Plot | Shows trends and changes over time | `plt.plot()` | `plt.plot(x, y, color='red', linewidth=2)` |  |

| Plot Type | Description | Matplotlib Function | Example | Visual |
|---|---|---|---|---|
| Area Plot | Display data series as filled areas | `plt.fill_between()` | `plt.fill_between(x, y1, y2, color='blue', alpha=0.5)` |  |
| Histogram | Displays bars representing the data count in each interval/bin | `plt.hist()` | `plt.hist(data, bins=10, color='orange', edgecolor='black')` |   |
| Bar Chart | Displays data using rectangular bars | `plt.bar()` | `plt.bar(x, height, color='green', width=0.5)` |   |
| Pie Chart | Displays data as a circular plot divided into slices, representing proportions or percentages of a whole | `plt.pie()` | `plt.pie(sizes, labels=labels, colors=colors, explode=explode)` |   |
| Box Plot | Displays the distribution of a dataset along with key statistical measures | `plt.boxplot()` | `plt.boxplot(data, notch=True)` |   |
| Scatter Plot | Uses Cartesian coordinates to display values for two variables | `plt.scatter()` | `plt.scatter(x, y, color='purple', marker='o', s=50)` |   |

| Plot Type | Description | Matplotlib Function | Example | Visual |
|---|---|---|---|---|
| Subplotting | Creating multiple plots on one figure | `plt.subplots()` | `fig, axes = plt.subplots(nrows=2, ncols=2)` |   |
| Customization | Customizing plot: adding labels, title, legend, grid | Various customization | `plt.title('Title')`<br>`plt.xlabel('X Label')`<br>`plt.ylabel('Y Label')`<br>`plt.legend()`<br>`plt.grid(True)` |   |

# Author(s)

Dr. Pooja

# Changelog

| Date | Version | Changed by | Change Description |
|---|---|---|---|
| 2023-06-10 | 0.1 | Dr. Pooja | Initial version created |