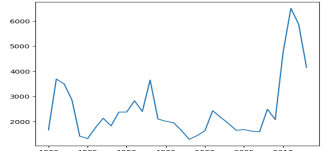
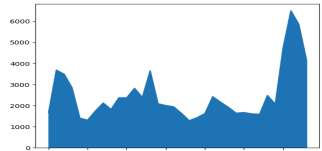
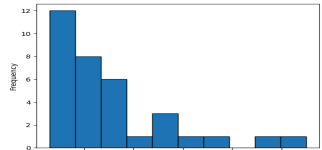
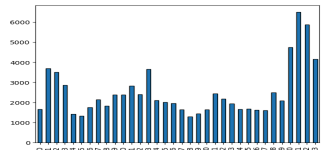
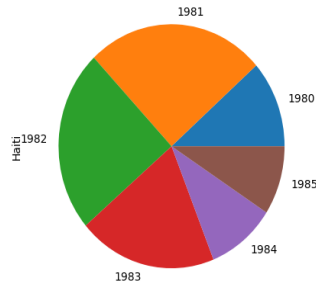
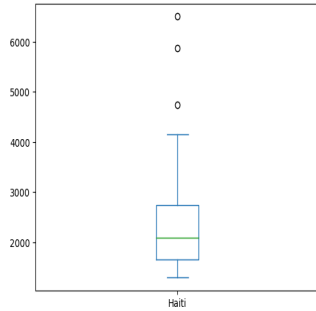
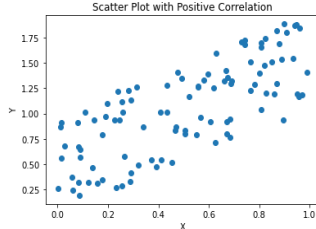


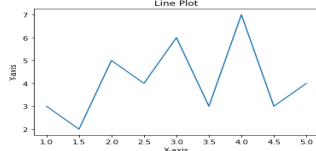
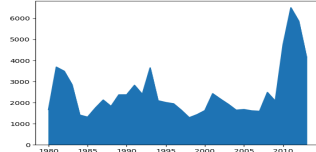
## Data Visualization with Python

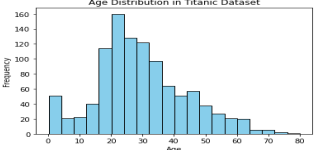
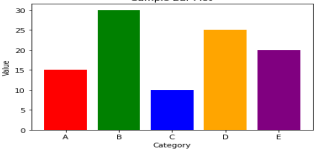
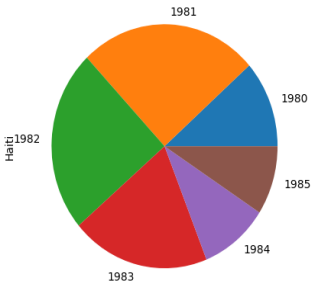
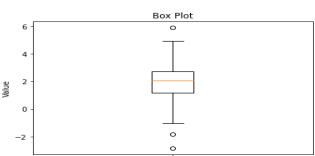
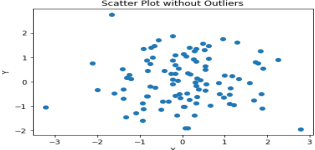
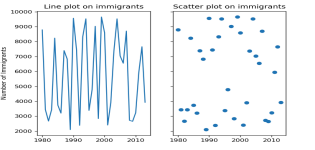
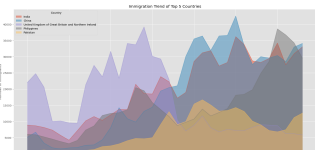
### Cheat Sheet : Plotting with Matplotlib using Pandas

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

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	<pre>Series.plot.pie() Series.plot(kind = 'pie') DataFrame.plot.pie(y, labels) DataFrame.plot(kind = 'pie')</pre>	<pre>s.plot(kind='pie', autopct='%1.1f%%') df.plot(x='Category', y='Percentage', kind='pie')</pre>	
Box Plot	Displays the distribution of a dataset along with key statistical measures	<pre>DataFrame.plot.box() DataFrame.plot(kind = 'box')</pre>	<pre>df_can.plot(kind='box')</pre>	
Scatter Plot	Uses Cartesian coordinates to display values for two variables	<pre>DataFrame.plot.scatter() DataFrame.plot(x, y, kind = 'scatter')</pre>	<pre>df.plot(x='Height', y='Weight', kind='scatter')</pre>	

## Cheat Sheet : Plotting directly with Matplotlib

Plot Type	Description	Matplotlib Function	Example	Visual
Line Plot	Shows trends and changes over time	<code>plt.plot()</code>	<code>plt.plot(x, y, color='red', linewidth=2)</code>	
Area Plot	Display data series as filled areas	<code>plt.fill_between()</code>	<code>plt.fill_between(x, y1, y2, color='blue', alpha=0.5)</code>	

Plot Type	Description	Matplotlib Function	Example	Visual
Histogram	Displays bars representing the data count in each interval/bin	<code>plt.hist()</code>	<code>plt.hist(data, bins=10, color='orange', edgecolor='black')</code>	 <p>A histogram titled "Age Distribution in Titanic Dataset". The x-axis is labeled "Age" and ranges from 0 to 80. The y-axis is labeled "Frequency" and ranges from 0 to 160. The bars are light blue with black outlines, showing a distribution that peaks around age 20-25.</p>
Bar Chart	Displays data using rectangular bars	<code>plt.bar()</code>	<code>plt.bar(x, height, color='green', width=0.5)</code>	 <p>A bar chart titled "Sample Bar Plot". The x-axis is labeled "Category" with categories A, B, C, D, and E. The y-axis is labeled "Value" and ranges from 0 to 30. The bars are colored red, green, blue, orange, and purple respectively, with heights approximately 18, 28, 10, 25, and 20.</p>
Pie Chart	Displays data as a circular plot divided into slices, representing proportions or percentages of a whole	<code>plt.pie()</code>	<code>plt.pie(sizes, labels=labels, colors=colors, explode=explode)</code>	 <p>A pie chart with six slices representing years: 1981 (orange), 1980 (blue), 1985 (brown), 1984 (purple), 1983 (red), and 1982 (green). The slices are slightly exploded. The y-axis is labeled "Height".</p>
Box Plot	Displays the distribution of a dataset along with key statistical measures	<code>plt.boxplot()</code>	<code>plt.boxplot(data, notch=True)</code>	 <p>A box plot titled "Box Plot". The y-axis is labeled "Value" and ranges from -2 to 6. The x-axis is labeled "Data". The plot shows a central box with a notch, whiskers, and several outliers represented by small circles.</p>
Scatter Plot	Uses Cartesian coordinates to display values for two variables	<code>plt.scatter()</code>	<code>plt.scatter(x, y, color='purple', marker='o', s=50)</code>	 <p>A scatter plot titled "Scatter Plot without Outliers". The x-axis is labeled "X" and ranges from -3 to 3. The y-axis is labeled "Y" and ranges from -2 to 2. The plot shows a dense cluster of blue circular markers.</p>
Subplotting	Creating multiple plots on one figure	<code>plt.subplots()</code>	<code>fig, axes = plt.subplots(nrows=2, ncols=2)</code>	 <p>Two subplots side-by-side. The left plot is a line plot titled "Line plot on immigrants" showing the number of immigrants over time (1960-2010). The right plot is a scatter plot titled "Scatter plot on immigrants" showing a relationship between two variables over time (1980-2010).</p>
Customization	Customizing plot: adding labels, title, legend, grid	Various customization	<pre>plt.title('Title') plt.xlabel('X Label') plt.ylabel('Y Label') plt.legend() plt.grid(True)</pre>	 <p>A stacked area chart titled "Immigration: Period of Top 5 Countries". The x-axis represents years from 1960 to 2010. The y-axis represents the number of immigrants, ranging from 0 to 10,000. The chart shows the cumulative immigration from five different countries over time.</p>

**Author(s)**

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