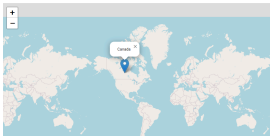
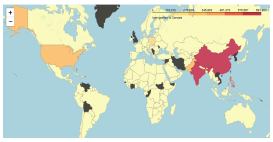
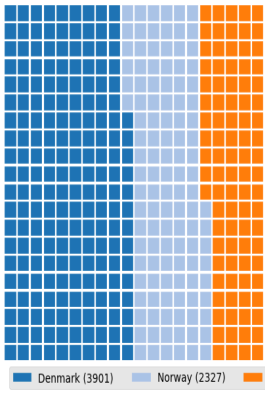
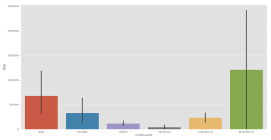
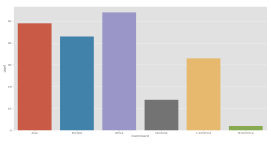
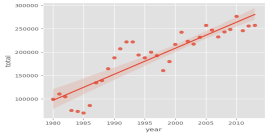
# Data Visualization with Python

## Cheat Sheet : Maps, Waffles, WordCloud and Seaborn

| Function | Description | Syntax | Example | Visual |
|---|---|---|---|---|
| Folium | | | | |
| **Map** | Create a map object with specified center coordinates and zoom level. | `folium.Map(location=[lat, lon], zoom_start=n)` | `world_map = folium.Map()`<br><br>`canada =folium.Map(location=[56.130, -106.35], zoom_start=4)` |  |
| **Marker** | Add a marker to the map with custom icon, popup, and tiles<br><br>Tiles as Stamen Toner | `folium.Marker(location=[lat , lon ], popup='Marker Popup', tiles='Stamen Toner').add_to(map)` | `folium.Marker(location=[556.130, -106.35], tooltip='Marker', tiles='Stamen Toner').add_to(world_map)` |  |
| | Tiles as Stamen Terrain | `folium.Marker(location=[lat , lon ], popup='Marker Popup', tiles='Stamen Terrain').add_to(map)` | `folium.Marker(location=[556.130, -106.35], tooltip='Marker', tiles='Stamen Terrain').add_to(world_map)` |  |
| **Circle** | Add a circle to the map with specified radius, color, and fill opacity. | `folium.features.CircleMarker(location=[lat, lon], radius=n, color='red', fill_opacity=n).add_to(map)` | `folium.features.CircleMarker(location= [56.130, -106.35], radius=1000, color='red', fill_opacity=0.5).add_to(world_map)` |  |
| **Chorpleth** | Create a choropleth map based on a GeoJSON file and a specified data column. | `folium.Choropleth(geo_data='path/to/geojson_file', data=df, columns=['region', 'value_column'], key_on='feature.properties.id', fill_color='YlGnBu', fill_opacity=0.7, line_opacity=0.2, legend_name='Legend').add_to(map)` | `world_map.choropleth(geo_data=world_geo, data=df_can, columns=['Country', 'Total'], key_on='feature.properties.name', fill_color='YlOrRd', fill_opacity=0.7,line_opacity=0.2, legend_name='Immigration to Canada')` |  |
| PyWaffle | | | | |
| **Waffle** | Create a waffle chart based on values and categories. | `plt.figure(FigureClass = Waffle,rows = 20, columns = 30, values = values)`<br><br>`waffle_chart = waffle.Waffle(values=[value1, value2, ...], rows=n, columns=n)` | `plt.figure(FigureClass = Waffle,rows = 20, columns = 30, values = df_dsn['Total'], cmap_name = 'tab20', legend = {'labels': label,'loc': 'lower left', 'bbox_to_anchor':(0,-0.1),'ncol': 3})` |  |
| **Legend** | Add a legend to the waffle chart. | `waffle_chart.legend(loc='upper left', bbox_to_anchor=(1, 1))` | | |

| Function | Description | Syntax | Example | Visual |
|---|---|---|---|---|
| **Title** | Add a title to the waffle chart. | `waffle_chart.set_title('Waffle Chart Title')` | | |
| **Labels** | Add labels to the waffle chart. | `waffle_chart.set_labels(['Label 1', 'Label 2', ...])` | | |
| WordCloud | | | | |
| **WordCloud** | Create a word cloud object based on text data. | `wordcloud = WordCloud().generate(text_data)` | `alice_wc = WordCloud(background_color='white', max_words=2000, mask=alice_mask, stopwords=stopwords)`<br>`alice_wc.generate(alice_novel)`<br>`plt.imshow(alice_wc, interpolation='bilinear')` |  |
| **Generate** | Generate the word cloud based on the text data. | `wordcloud.generate(text_data)` | | |
| **Display** | Display the word cloud using matplotlib or other plotting libraries. | `plt.imshow(wordcloud, interpolation='bilinear')` | | |
| **Options** | Set various options for the word cloud, such as font, colors, mask, and stopwords. | `wordcloud = WordCloud(font_path='path/to/font_file', background_color='white', colormap='Blues', mask=mask_image, stopwords=stopwords).generate(text_data)` | | |
| Seaborn | | | | |
| **barplot** | Create a bar plot to visualize the relationship between a categorical variable and a numeric variable. | `sns.barplot(x='x_variable', y='y_variable', data=dataframe)` | `sns.barplot(x='Continent', y='Total', data=df_can1)` |  |
| **countplot** | Create a count plot to display the frequency of each category in a categorical variable. | `sns.countplot(x='category', data=dataframe)` | `sns.countplot(x='Continent', data=df_can)` |  |
| **regplot** | Create a scatter plot with a linear regression line to visualize the relationship | `sns.regplot(x='x_variable', y='y_variable', data=dataframe)` | `sns.regplot(x='year', y='total', data=df_tot)` |  |

| Function | Description | Syntax | Example | Visual |
|---|---|---|---|---|
| | between two numeric variables. | | | |

## Author(s)

Dr. Pooja

## Changelog

| Date | Version | Changed by | Change Description |
|---|---|---|---|
| 2023-06-18 | 0.1 | Dr. Pooja | Initial version created |