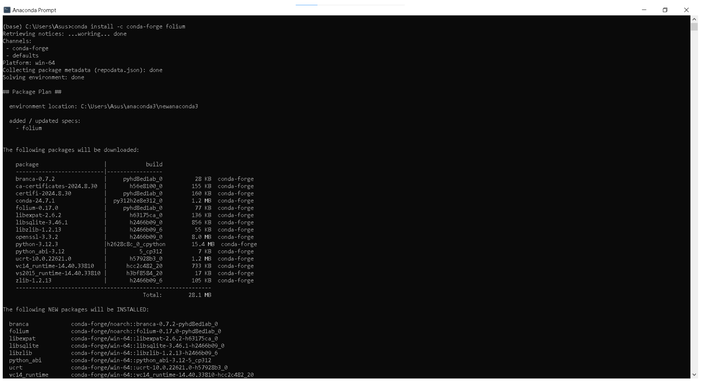
Step 1: Install the Required Libraries

installed the libraries folium and json for geospatial analysis. Using Anaconda



Step 3: Import the Necessary Libraries

In [20]:
```
# Import libraries
import folium  # For creating interactive maps
import json    # For working with JSON/GeoJSON data
import os      # For handling file paths

# Print confirmation
print("Libraries imported successfully.")
```

```
Libraries imported successfully.
```

Step 4: Load and Explore our GeoJSON Data

In [23]:
```
# Define the path to your dataset
path = r'C:\Users\Asus\Music\achievement 6 project'

# Load the GeoJSON file
with open(os.path.join(path, 'Data', 'world-countries.json')) as f:
    data = json.load(f)

# Print the first feature to understand the structure of the data
print(data['features'][0])
```

```
{'type': 'Feature', 'properties': {'name': 'Afghanistan'}, 'geometry': {'type': 'Polygon', 'coordinates': [[[61.210817, 35.650072], [62.230651, 35.270664], [62.984662, 35.404041], [63.193538, 35.857166], [63.982896, 36.007957], [64.546479, 36.312073], [64.746105, 37.111818], [65.588948, 37.305217], [65.745631, 37.661164], [66.217385, 37.39379], [66.518607, 37.362784], [67.075782, 37.356144], [67.83, 37.144994], [68.135562, 37.023115], [68.859446, 37.344336], [69.196273, 37.151144], [69.518785, 37.60899], [70.116578, 37.588223], [70.270574, 37.735165], [70.376304, 38.138396], [70.806821, 38.486282], [71.348131, 38.258905], [71.239404, 37.953265], [71.541918, 37.905741], [71.448693, 37.065645], [71.844638, 36.738171], [72.193041, 36.948288], [72.63689, 37.047558], [73.260056, 37.495257], [73.948696, 37.421566], [74.980002, 37.41999], [75.158028, 37.133031], [74.575893, 37.020841], [74.067552, 36.836176], [72.920025, 36.720007], [71.846292, 36.509942], [71.262348, 36.074388], [71.498768, 35.650563], [71.613076, 35.153203], [71.115019, 34.733126], [71.156773, 34.348911], [70.881803, 33.988856], [69.930543, 34.020212], [70.323594, 33.358533], [69.687147, 33.105499], [69.262522, 32.501944], [69.317764, 31.901412], [68.926677, 31.620189], [68.556932, 31.713331], [67.792689, 31.58293], [67.683394, 31.303154], [66.938891, 31.304911], [66.38145, 30.738899], [66.346473, 29.887943], [65.046862, 29.472181], [64.350419, 29.560031], [64.148002, 29.340819], [63.550261, 29.468331], [62.549857, 29.318572], [60.874248, 29.829239], [61.781222, 30.773985], [61.699314, 31.379506], [60.941945, 31.548075], [60.863655, 32.18292], [60.536078, 32.981269], [60.9637, 33.528832], [60.52843, 33.676446], [60.803193, 34.404102], [61.210817, 35.650072]]], 'id': 'AFG'}
```

Step 5: Explore and Wrangle Our Data

In [27]:
```
# Extract and display country names from the GeoJSON data
country_names = [feature['properties']['name'] for feature in data['features']]

# Print out the first 10 country names to check
print("First 10 countries in the dataset:")
print(country_names[:10])
```

```
First 10 countries in the dataset:
['Afghanistan', 'Angola', 'Albania', 'United Arab Emirates', 'Argentina', 'Armenia', 'Antarctica', 'French Southern and Antarctic Lands', 'Australia', 'Austria']
```

Step 6: Clean our Data

In [30]:
```
# Check for any missing country names
missing_countries = [country for country in country_names if not country]

# Print a message if any missing countries are found
if missing_countries:
    print(f"Missing countries: {missing_countries}")
else:
    print("No missing country names found.")
```

```
No missing country names found.
```

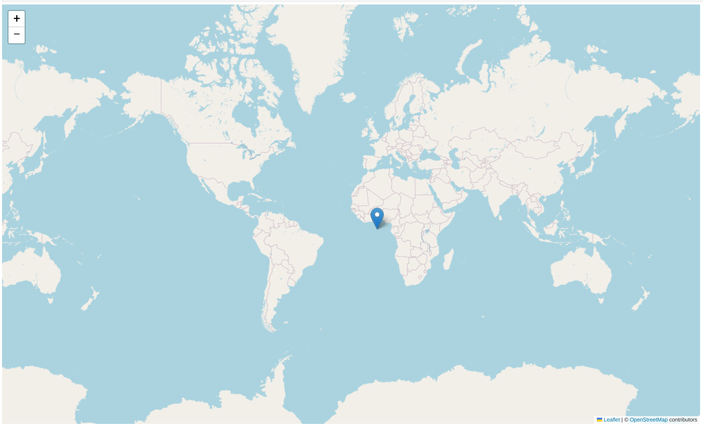
Step 7: Create a Basic Map with Folium

In [42]:
```
# Create a basic map centered around a location (latitude, longitude)
simple_map = folium.Map(location=[0, 0], zoom_start=2)

# Add the map title
folium.Marker([0, 0], popup='World Map').add_to(simple_map)

# Display the map
simple_map
```

Out[42]:



Step 7: Create a Choropleth Map

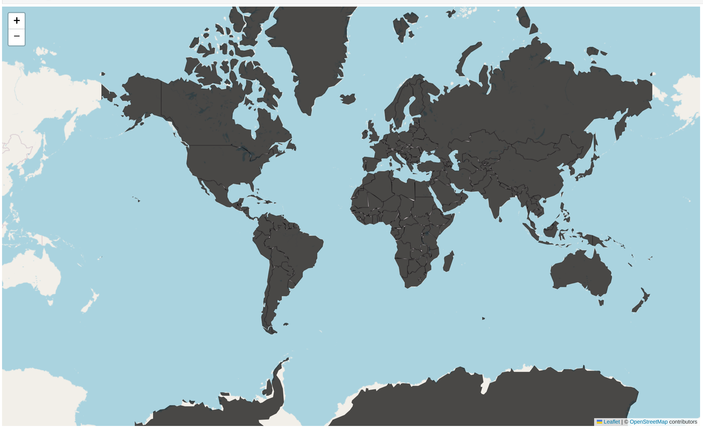
In [47]:
```
# Initialize the map centered around a specific location
choropleth_map = folium.Map(location=[0, 0], zoom_start=2)

# Example: Setting up a blank choropleth (you'll add data in the next step)
folium.Choropleth(
    geo_data=data,
    name='choropleth',
    data=None,  # Replace with your actual data
    columns=['Country Name', 'Variable'],  # Replace with actual columns
    key_on='feature.properties.name',  # Ensure the country names match
    fill_color='YlGn',
    fill_opacity=0.7,
    line_opacity=0.2,
    legend_name='Variable Name'  # Customize this based on your data
).add_to(choropleth_map)

# Save the map as an HTML file
choropleth_map.save(os.path.join(path, 'choropleth_map.html'))

# Display the map
choropleth_map
```

Out[47]:



file:///C:/Users/Asus/Music/achievement%206%20project/choropleth_map.html

Step 9: Discuss the Results in Markdown

Discussion of Results

The choropleth map visually represents the distribution of the chosen variable (e.g., population density, GDP) across different countries. The varying shades of color indicate different levels of the variable, providing a clear geographical overview.

This map helps to answer the research question about the global distribution of [Your Variable]. It also raises new questions, such as why certain regions have lower or higher values, and what factors might contribute to these differences.

In [ ]: