Applied Data Science -1

Assignment 2: Statistics and trends – Report

STUDENT ID: 21073209

STUDENT NAME: AKHIL KUMAR MATALA

ABSTRACT :

Data study on climate change was done using a World Bank dataset between 2016 and 2021. To perform the visualisation and examine the relationships between the many elements causing climate change, 15 countries were chosen. The bar graph illustrates the variations caused by climate and how each country's urban population is impacted by climate. Aruba's country analysis on many indicators, including population based on urban area, land area based on agriculture (data in), and other characteristics, is shown using a heatmap.In some nations, the outcome improved during a different climate change year. The Forest area and the year of the year are two of the elements included in the heatmap. Because it is based on colour, the heatmap is simple to grasp.

Data Analysis based on Climate Change on the World Bank Data

According to the performed data analysis on climate change data, 15 countries were selected to do the visualization and look over the interrelations of the different factors on climate change were urban population, land area based on agriculture (data in %), Aruba Land, Forest area based on %, Land area based on Arable (% of land area), Marine protected area (% of territorial waters).

The analysis initiates some correlations with causes behind them, and factors were investigated.

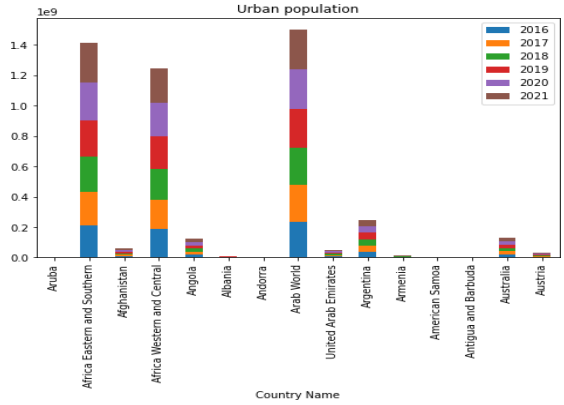

Figure 1 Urban population analysis

The above bar graph shows the analysis made of the urban population. Visualize the bar graph using the data from 15 countries based on five years, from 2016 to 2021. The urban population based on the Arab World data was the highest bin. This means the urban population of the Arab World was the highest. The lowest bin of the population of the urban area was Albania Country. In the above graph, you see the changes based on the climate and how the climate affects the urban population of any country. Different colours show the year-wise change in the urban population of 15 different countries.

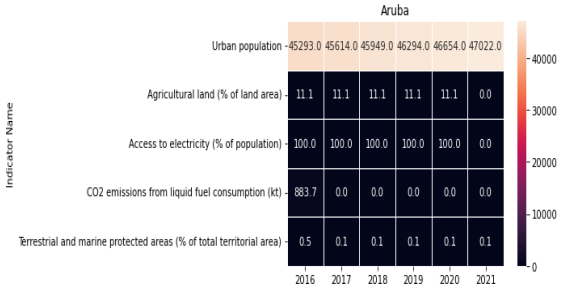

Figure 2 Aruba heat map

Using the heatmap to show Aruba country analysis on the different indicators of population based on an urban area, land area based on agriculture (data in %), Access to electricity (% of the population), CO2 emissions based on the liquid fuel consumption (kt), Terrestrial and marine protected areas in the % of the total territorial area. These were all the indicators based on the year between 2016 to 2021 of Aruba Country. The heatmap analysis shows the different factors of Aruba Country based on the year and indicator.

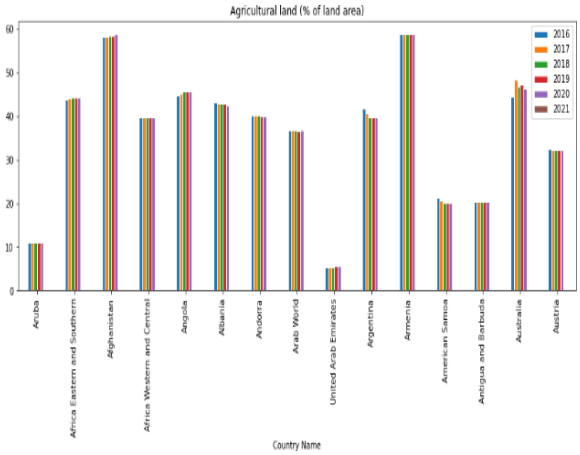

Figure 3 Agricultural land analysis

The above bar graph shows the analysis made on the agricultural land of different countries based on the five years. According to the year, the graph shows the highest ratio of Afghanistan in 2020. The lowest changes were seen in the graphs of the United Arab Emirates country. The graphs show the changes based on climate change and "how they affect the agriculture land of the different countries." The average changes show Aruba's country on the agricultural land.

The below table shows the data on how climate change affects. For renewable energy, the data based on the four years were from 2016,2017,2018 and 2019. The table contains information on the indicator "Energy Renewable consumption (total final energy consumption in the %)" with the analysis of the 15 countries.

You can see the climate changes in the table ahead. In some countries, the result increased in a different year, and in some countries, the result decreased year by year of climate change.

Country Name	2016	2017	2018	2019
Aruba	6.99	6.7	8.02	7.48
Africa Eastern and Southern	0	0	0	0
Afghanistan	19.92	19.21	17.96	18.51
Africa Western and Central	0	0	0	0
Angola	49.03	56.25	57.36	54.69
Albania	39.43	37.07	38.11	40.2
Andorra	19.32	19.15	18.58	18.4
Arab World	0	0	0	0
United Arab Emirates	0.12	0.19	0.32	0.67
Argentina	9.38	10.37	10.52	10.74
Armenia	13.15	12.56	11.13	10.34
American Samoa	0.3	0.49	0.49	0.5
Antigua and Barbuda	0.6	0.6	0.9	0.91
Australia	9.42	9.69	9.67	10.13
Austria	34.64	33.98	34.11	33.77

Figure 4 line graph shows the Arable land based on the five years. The highest line shows the continuous change in the Alania country in the Arable land. The lowest line shows the least changes in the climate change of the United Arab Emirates among all the countries. This shows the Arable land data based on the Arable land (% of land area).

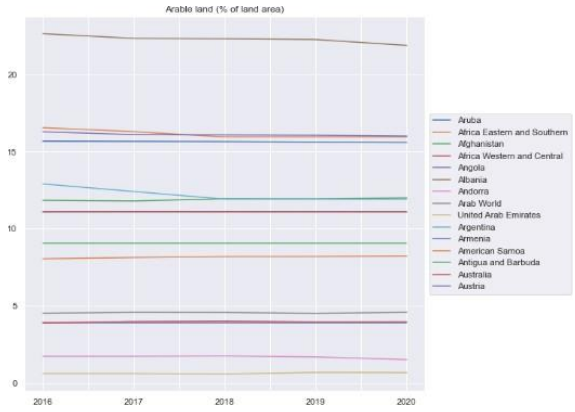

Figure 4 Arable landline plot

The different colour shows the data on the Arable Land of different countries.

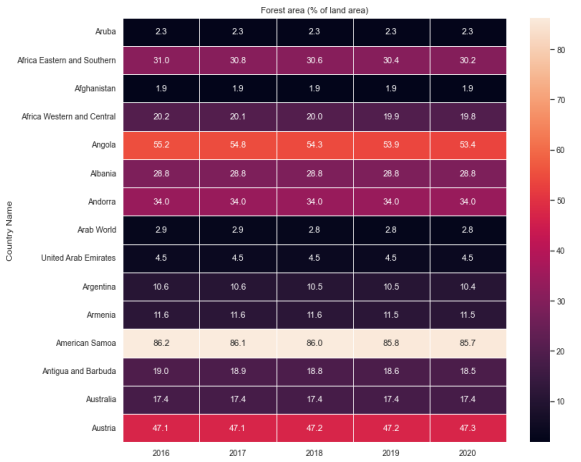

Figure 5 climate change heat map of 15 countries

In this heatmap shown in figure 5, the climate changes were made in the forest area. The climate affects the different countries on their forest area, which is based on the five years. It shows the highest changes in the data in the light colour and the lowest changes in the climate in the dark colours. You can easily understand the heatmap, which is based on the colour effect. The heatmap includes two factors which were the Forest area and the year.

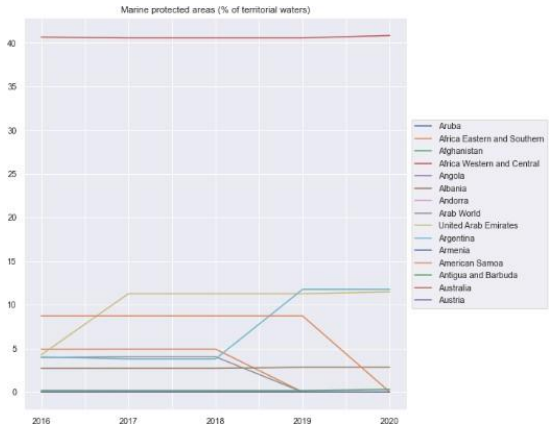

Figure 6 marine protected areas of 6 years

After the analysis of all the factors, see the climate changes made to the water; figure 6 analyzed Marine Protected areas on the five years of data. This clearly shows how climate changes affect the country based on the Marine protected area. The Marine Protected Area shows the percentage of the territorial waters. The highest marine protected area was the African western and central, and the lowest marine protected area was the Arab World.