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| **Climate change data analysis based on World Bank data**  Agricultural land, cereal yield, GDP, arable land, urban land, CO2 emission, population growth, and greenhouse gas emissions indicator were examined concerning climate change in 12 different countries from across the globe.  Through analysis, some connections between causes and contributing factors were found. | | | |
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| The above bar chart demonstrates that Ukraine and South Africa have more than 70% of their land used for agriculture. But the majority of these lands are used for other than cereal production, as shown by the cereal bar chart; the Netherlands and the US produce more cereal than these two nations do. | | The production of cereal in the US is increasing with every passing year, which may be contributing to the country's declining CO2 emissions.  The Netherlands emits very little CO2 and other greenhouse gases compared to other nations, but due to a recent decline in cereal production, these emissions have slightly increased. | |
| **C:\Users\munir\AppData\Local\Microsoft\Windows\INetCache\Content.Word\c1.png** | | |  |  |  |  | | --- | --- | --- | --- | | **Country** | **1990** | **2010** | **2020** | | Australia | 2.207 | 3.3312 | 3.984 | | Chine | 13.207 | 12.877 | 12.6756 | | Germany | 34.288 | 33.984 | 33.383 | | India | 54.977 | 52.808 | 52.256 | | Japan | 13.077 | 11.7475 | 11.2525 | | Mexico | 11.167 | 11.7971 | 10.324 | | Netherland | 26.036 | 30.317 | 29.8434 | | Russia | No data | 7.428 | 7.4280 | | Turkey | 32.0244 | 27.3784 | 25.34485 | | Ukraine | No data | 56.060 | 56.824 | | US | 20.272 | 17.2416 | 17.2438 | | South Africa | 10.551 | 10.3314 | 9.8920 | | |
| The heatmap of the Netherlands shows a negative relation between cereal yield with greenhouse gases and agricultural land which means cereal production have decreased greenhouse gases emission and co2 emission. It also shows that as the urban population increases cereal production also increases. | | The above tables show the change in arable land in different countries between 1990 and 2020. The changes are in small numbers but it shows decrement, it's because of the increase in the urban population. | |
|  | | | The urban population of the Netherlands and Japan have increased significantly from 59% and 69% to above 90% respectively. Because of the increase in the urban population, the decrease in the agricultural land can be seen in the agricultural land bar chart. |
|  | | | China's CO2 emissions have increased significantly over time. The urban population of China has increased, as shown in the urban population line chart, and this has led to an increase in CO2 emissions. China is world's most populous country, which is another factor contributing to CO2 emissions because of negative correlation between co2 and population growth. |
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| Correlation heatmap of US shows that as  cereal yield and urban population as urban population  increase cereal yield also increases, it’s also shows  negative relation between cereal yield with agricultural  land, co2 emission and arable land which means as  the cereal production increases other  indicators descreases. | | | SA heatmap shows that as urban population, cereal yield increase co2 emission increases that could be because of deforestration cutting down the tree. |