

Student Name: **FATIK JAN**

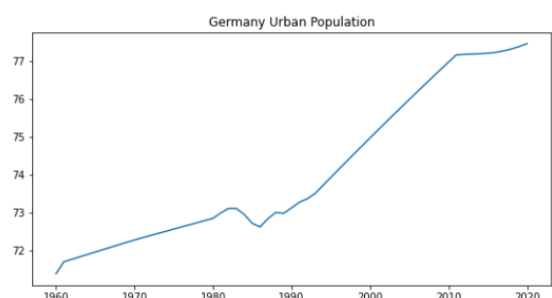
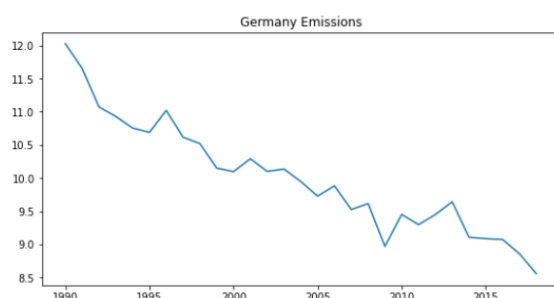
Student ID: **21031182**

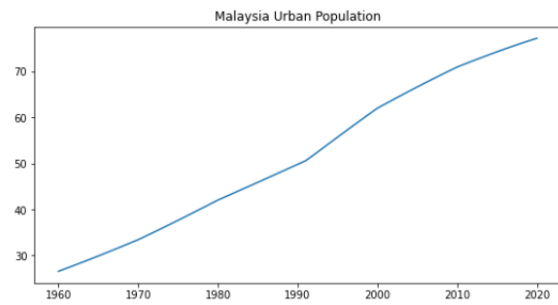
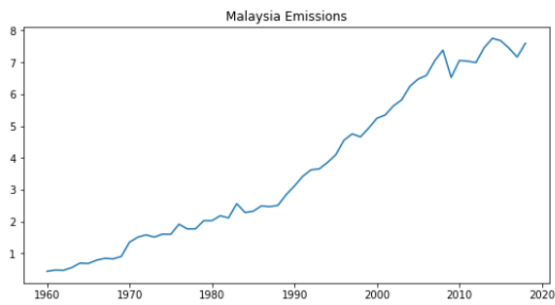
# Urban Population and CO2 Emissions

Urban population is the amount of people living in metropolitan areas. Metropolitan areas are modern cities where industries, residential areas, health and education, public transport etc are all present in one place. Since all the industry and transport is present in urban areas. Urban population is directly responsible for the CO2 emissions of a country. Urban population requires construction and the production of energy which indirectly contribute towards increasing CO2 emissions. I set out to explore data related to urban population and CO2 emissions to see if my presumptions were correct. Firstly, I calculated the correlation of urban population percentage with respect to CO2 emissions for each country.

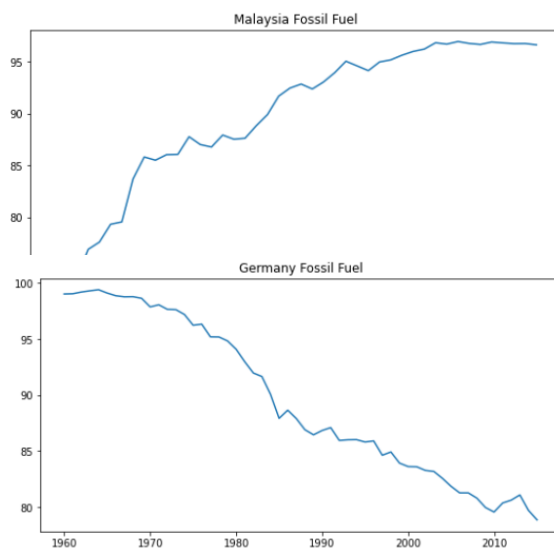
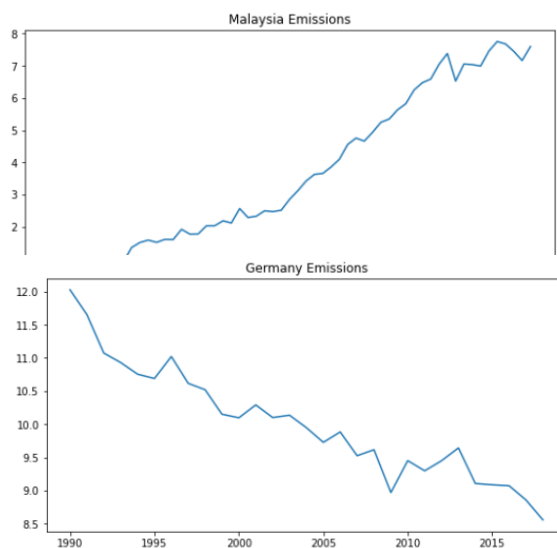
Tuvalu	-0.996398
Aruba	-0.951589
Germany	-0.950319
United Kingdom	-0.936866
Luxembourg	-0.879966
...	
East Asia & Pacific	0.980105
Hong Kong SAR, China	0.982392
Malaysia	0.989288
Tunisia	0.989930
Indonesia	0.992520
Length: 245, dtype: float64	

As shown in the image above we can observe that while some countries have a highly positive correlation, countries like Germany and the UK have a strong negative correlation between CO2 emissions and Urban population. This is surprising since our hypothesis says otherwise.





Plotting time series plots side by side further shows the correlation through the years. It is remarkable how countries like Germany have managed to reduce CO2 emissions despite increasing urban population. To understand this, we further explore the data.



Upon further exploration we find that the difference is made by reducing the amount of energy consumed by fossil fuels.

In conclusion, urban population is a significant factor in increasing carbon emissions however we also find that controlling fossil fuel energy production will help in keeping the carbon emissions low. The data shows that developed countries are more equipped with the technology to produce electricity using renewable sources. It may also be true that the developed countries' industry uses technology to reduce carbon emissions.

## **Reference:**

<https://data.worldbank.org/topic/climate-change>