Introduction

The analysis of the world development indicators depicts the growth of a nation both economically and demographically. The happiness index of a national is also measured by using the development indicators. In this analytical task, world-bank dataset has been retrieved from the world-bank site with using the "Wbgapi" python module. The climate change indicators such as "Access to electricity", "Urban Population", and "Agricultural irrigated land" are analyzed for selected countries (Kraay, 2018). A total of ten countries have been selected and the total number of indicators included in this task are five. The observations of indicators are taken from 2016 to 2020. The statistical description of each indicator is included country-wise and also correlation analysis is conducted for assessing the degree of association between different indicators in the dataset.

Data Retrieval

After installing the "wbgapi" module. A set of countries list and the indicator have been created and the data from the world-bank site has been retrieved. The indicator names are displayed in the picture below.
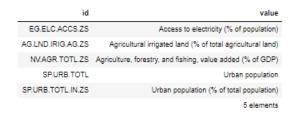
id	value
EG.ELC.ACCS.ZS	Access to electricity (% of population)
AG.LND.IRIG.AG.ZS	Agricultural irrigated land (% of total agricultural land)
NV.AGR.TOTL.ZS	Agriculture, forestry, and fishing, value added (% of GDP)
SP.URB.TOTL	Urban population
SP.URB.TOTL.IN.ZS	Urban population (% of total population)
	5 elements

Figure 1: Indicator Names and Id

economy	series	YR2016	YR2017	YR2018	YR2019	YR2020
	AG.LND.IRIG.AG.ZS	NaN	NaN	NaN	NaN	NaN
	EG.ELC.ACCS.ZS	1.000000e+02	1.000000e+02	1.000000e+02	1.000000e+02	NaN
ABW	NV.AGR.TOTL.ZS	NaN	NaN	NaN	NaN	NaN
	SP.URB.TOTL	4.529300e+04	4.561400e+04	4.594900e+04	4.629400e+04	4.665400e+04
	SP.URB.TOTL.IN.ZS	4.319200e+01	4.329300e+01	4.341100e+01	4.354600e+01	4.369700e+01
	AG.LND.IRIG.AG.ZS	NaN	NaN	NaN	NaN	NaN
	EG.ELC.ACCS.ZS	5.094894e+01	4.884820e+01	5.125325e+01	5.134142e+01	NaN
AFW	NV.AGR.TOTL.ZS	2.100622e+01	2.080529e+01	2.093141e+01	2.125716e+01	2.300483e+01
	SP.URB.TOTL	1.873058e+08	1.950161e+08	2.029611e+08	2.111338e+08	2.195312e+08
	SP.URB.TOTL.IN.ZS	4.540181e+01	4.601933e+01	4.663314e+01	4.724285e+01	4.784863e+01

Figure 2: Preview of retrieved Dataset

The data points of each indicators are shown in the above picture. There are various null value and all observations were belong to the period 2016 and 2020.

Findings

The time series plot for the indicators "Access to electricity", "Agricultural Irrigated Land", and "urban population" is shown below. As per the derived time series plot, the observations of each indicator includes a positive increasing trend (Nowbar, et al 2019). The country "American Samoa" has nearly 100% access to electricity as the curve for the country is at top and near to 100%. "African Western and Central (AFW)" is at bottom in case of providing access to electricity. On average the country has nearly 50% access to electricity.
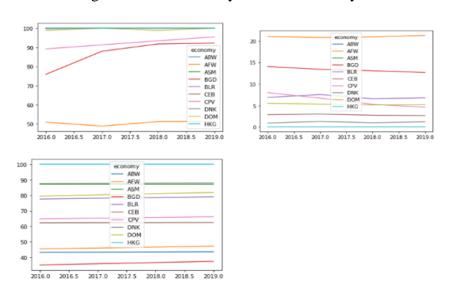

Figure 1: Time series graph for "Access to Electricity", "", and ""

series	count	mean	std	min	25%	50%
AG.LND.IRIG.AG.ZS	3.0	2.276440e+01	3.223827e+01	0.355104	4.290851e+00	8.226597e+00
EG.ELC.ACCS.ZS	9.0	9.053605e+01	1.694490e+01	50.948939	8.922770e+01	9.982783e+01
NV.AGR.TOTL.ZS	8.0	7.422262e+00	7.060061e+00	0.076211	2.408286e+00	6.201277e+00
SP.URB.TOTL	10.0	3.351836e+07	5.890082e+07	45293.000000	1.513106e+06	7.345307e+06
SP.URB.TOTL.IN.ZS	10.0	6.825823e+01	2.174506e+01	35.083000	4.959748e+01	7.122250e+01

Figure 3: Summary Statistics Table

The summary statistics includes the major statistical parameter values such as mean, SD, count, 25%, and 75% quantile values. The average value of "Access to Electricity" indicator is 90.5% and the average area of agricultural land is 22.78 hectares (Jafino, et al 2020).

	AG.LND.IRIG.AG.ZS	EG.ELC.ACCS.ZS	NV.AGR.TOTL.ZS	SP.URB.TOTL	SP.URB.TOTL.IN.ZS
AG.LND.IRIG.AG.ZS	1.000000	0.999922	0.999704	0.999374	0.998931
EG.ELC.ACCS.ZS	0.999922	1.000000	0.999931	0.999739	0.999435
NV.AGR.TOTL.ZS	0.999704	0.999931	1.000000	0.999939	0.999764
SP.URB.TOTL	0.999374	0.999739	0.999939	1.000000	0.999944
SP.URB.TOTL.IN.ZS	0.998931	0.999435	0.999764	0.999944	1.000000

Figure 4: Correlation Analysis

The correlation table indicates the indicators are correlated with a correlation coefficient value of 0.9.

Conclusion

In this report, world-bank dataset has been retrieved from the world-bank site with using the "Wbgapi" python module. The climate change indicators such as "Access to electricity", "Urban Population", and "Agricultural irrigated land" are analyzed for selected countries. A total of ten countries have been selected and the total number of indicators included in this task are five. As per the derived time series plot, the observations of each indicator includes a positive increasing trend. The country "American Samoa" has nearly 100% access to electricity. The average value of "Access to Electricity" indicator is 90.5% and indicators are correlated with a correlation coefficient value of 0.9