

Gross Domestic Product Forecast

Introduction

A time series is a list of dates, each of which is associated with a value and It is a structured way of representing data. Plotting this kind of data can allow us to visually see the evolution of a situation over the time. Time series forecasting is considered one of the most applied data science techniques that are used in different industries such as finance, supply chain management, production, and inventory planning. Stock prices forecasting, weather forecasting, business planning are only a few of the many possible applications.

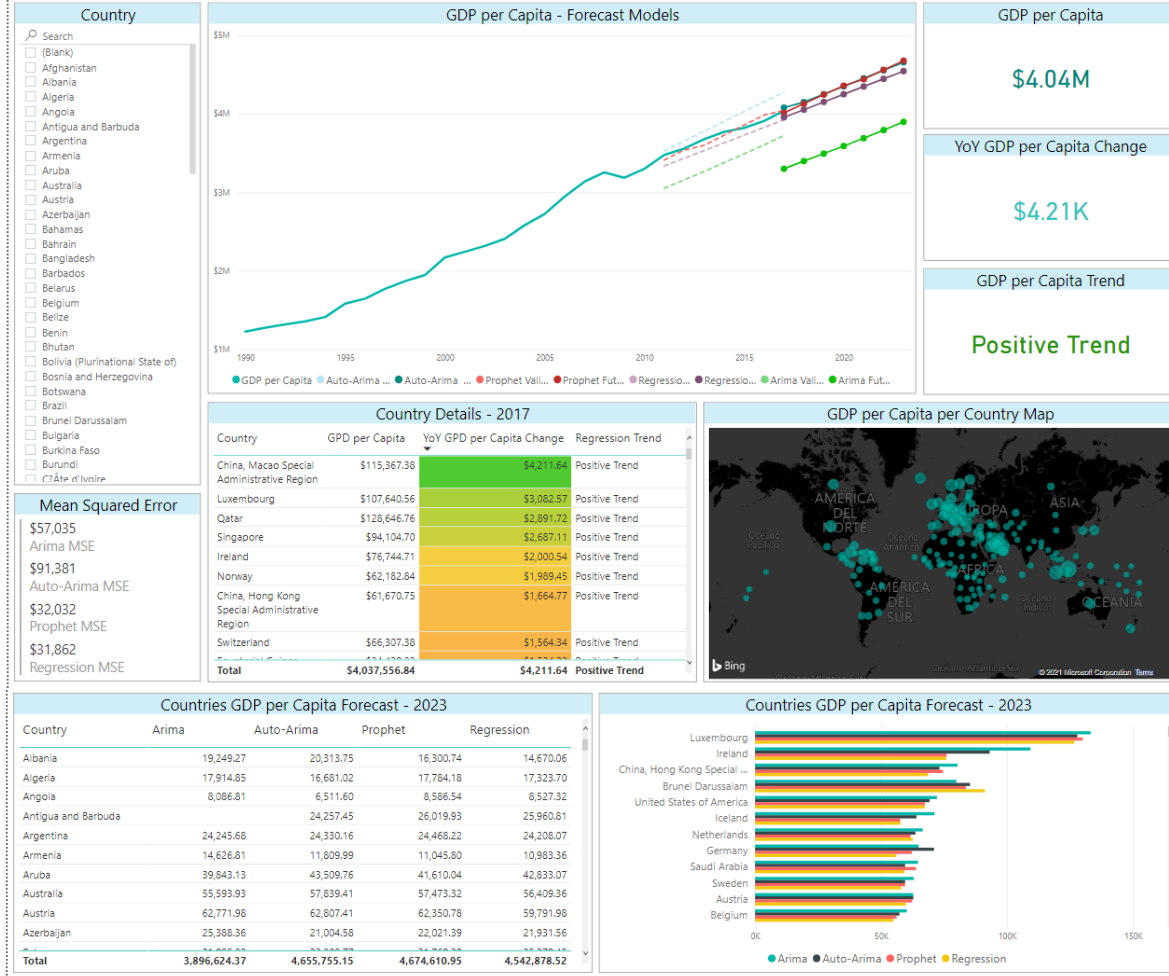
Time series forecasting means extending the historical values of the series into the future, where measurements have not yet been made. Two main variables are defined for forecasting: number of periods and prediction horizon. The number of periods represents the level of aggregation of the data. Usually the data is by months, weeks or days, allowing the necessary degree of disaggregation to be obtained in order to draw correct conclusions. Every forecast has a scope associated with it, which can be short, medium or long term. In general terms, the following summary table is presented, although the scope varies according to the industry.

Objetive

Our goal is to forecast the Gross Domestic Product per capita for all the countries we have in our dataset for the 3 years ahead of the data and deploy our models into a Power BI App so users can easily get insigths about the world.

Our data consist in a time series, so first we are going to use Python to pre-process the data and build 4 time series forecast models with ARIMA, Auto-ARIMA, Prophet and Regression to forecast the values of the upcoming years. Each of this models may be slightly different from each other, so we would like to know wich one has the best fit by calculating the RMSE.

Dashboard



Countries GDP per Capita Forecast - 2023

Country	Arima	Auto-Arima	Prophet	Regression
Albania	19,249.27	20,313.75	16,300.74	14,670.06
Algeria	17,914.85	16,681.02	17,784.18	17,323.70
Angola	8,086.81	6,511.60	8,586.54	8,527.32
Antigua and Barbuda		24,257.45	26,019.93	25,960.81
Argentina	24,245.68	24,330.16	24,468.22	24,208.07
Armenia	14,626.81	11,809.99	11,045.80	10,983.36
Aruba	39,843.13	43,509.76	41,610.04	42,833.07
Australia	55,593.93	57,839.41	57,473.32	56,408.36
Austria	62,771.98	62,807.41	62,350.78	59,791.98
Azerbaijan	25,388.36	21,004.58	22,021.39	21,931.56
Total	3,896,624.37	4,655,755.15	4,674,610.95	4,542,878.52

Countries GDP per Capita Forecast - 2023

Conclusion

Time series analysis plays an important role in the analysis required for forecasting future events. There are several ways or methods of estimating what the trend in the behavior of the process under study will be.

Every institution or organization, from a small one like a family o larger ones like businesses or governments, has to plan for the future in order to survive and progress. Today, various organizations require knowledge of the future behavior of certain phenomena in order to plan, forecast or prevent. Rational planning requires foreseeing future events that are likely to occur.