

World Population Analysis

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Agenda



Introduction

We analyzed the data of world population from 1970 to 2022. Here we analyzed the data and provided insights of data for countries, continents and whole world. We have shown the demographics of population growth in year to year according to countries, continents and world. Also, we implemented machine Learning models and Numpy to show the population growth trends and predicted population growth for year 2030.





Techniques

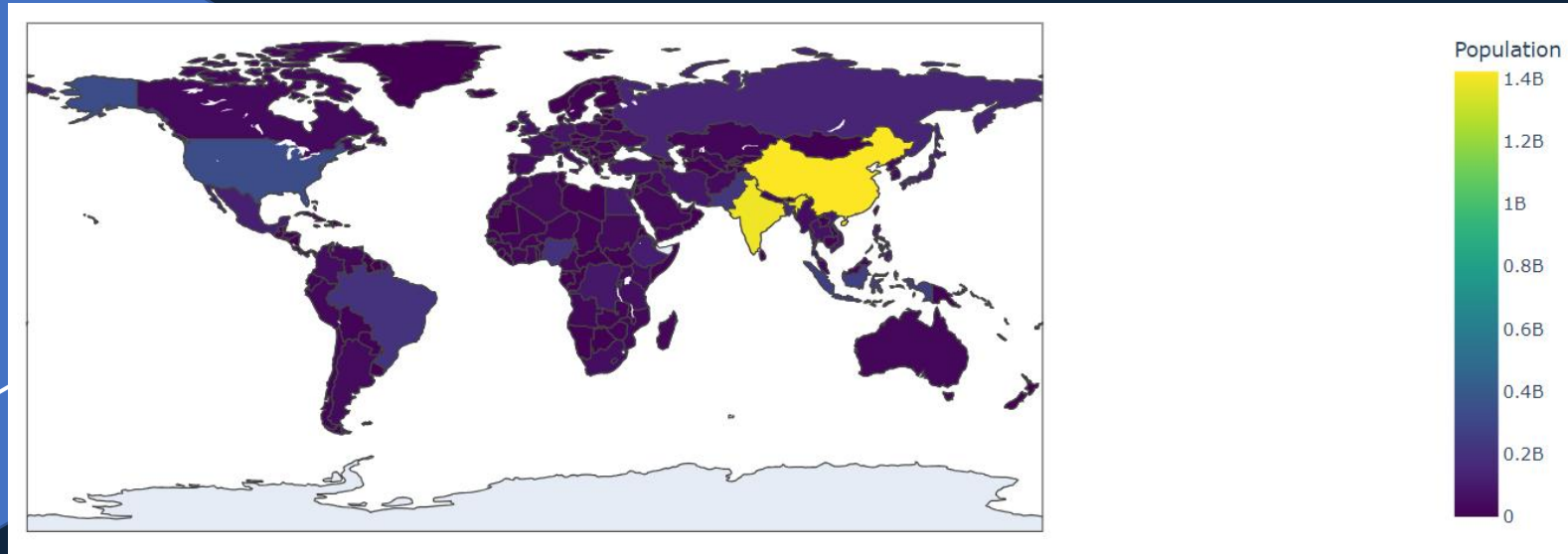
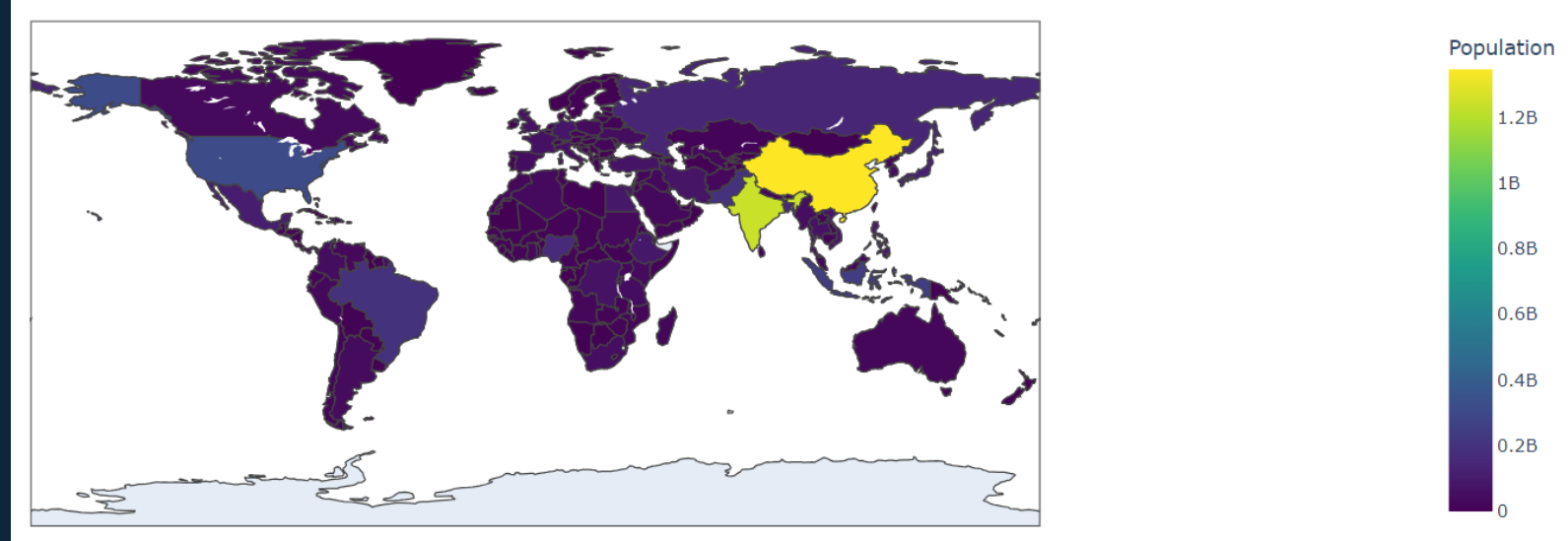
1. PROGRAMMING LANGUAGE : PYTHON
2. DATA CLEANING : NUMPY & PANDAS
3. DATA ANALYSIS : NUMPY & PANDAS
4. INFOGRAPHICS : MATPLOTLIB, SEABORN & PLOTLY
5. MODELS : SCIKIT-LEARN – LINEAR REGRESSION & RANDOM FOREST

Primary Goals

1. Year-wise population by countries
2. Top 5 countries by population in a year
3. Year-wise population by continents
4. Machine learning models to predict the population
5. Predict the population of a country in 2030
6. Predict the population of a continent in 2030
7. Population trends worldwide from 1970 – 2022
8. Predict the population of world in 2030

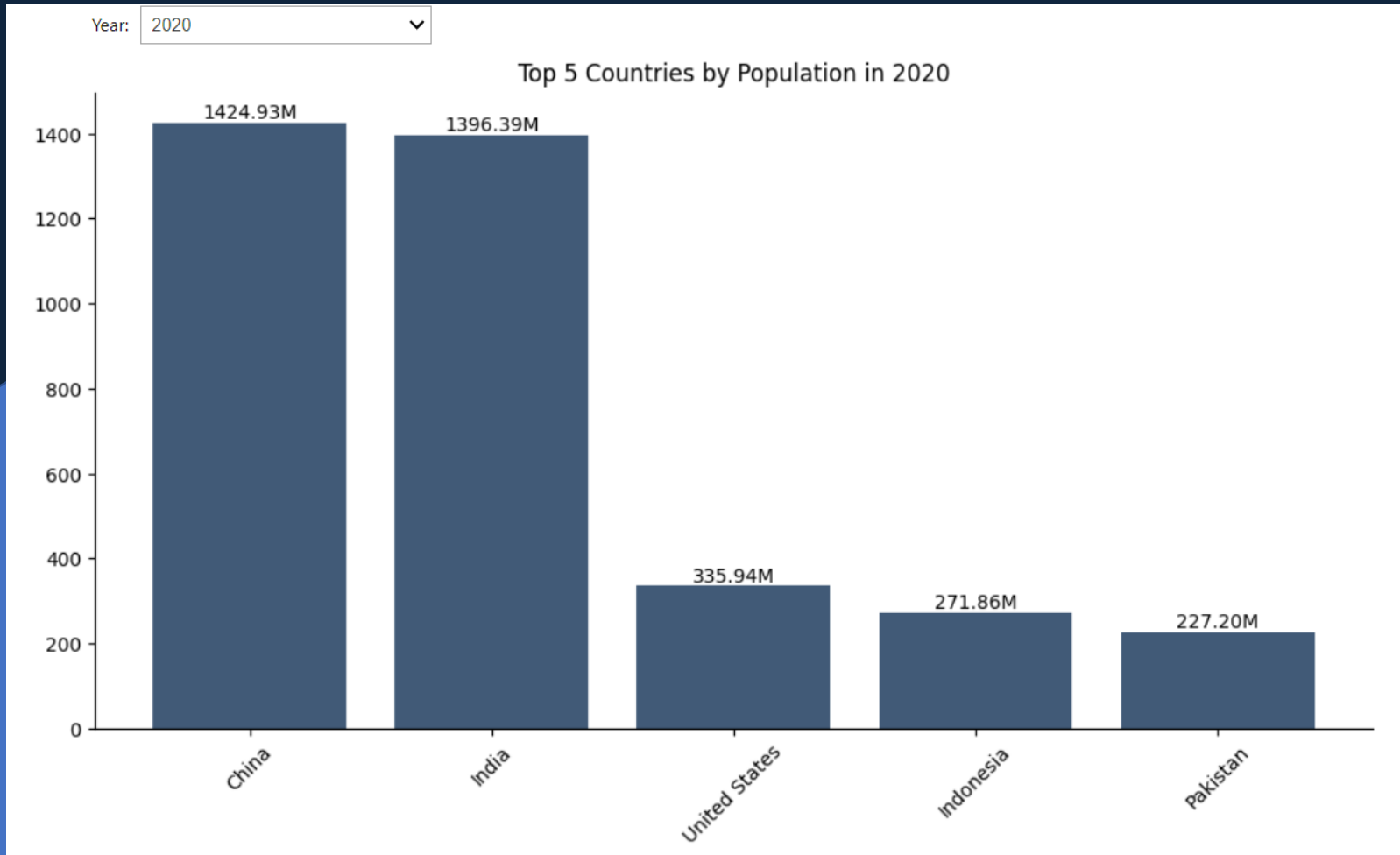
Analysis | Total Population Over The World in Recent Years (2010 & 2020)

2010



2020

Analysis | Top 5 Countries Population in Selected Year - 2020



Here, in 2020, China had the most population among world. The next one most populated country was India.

In 2020 the top 5 countries by population were :

China – 1424.93 M

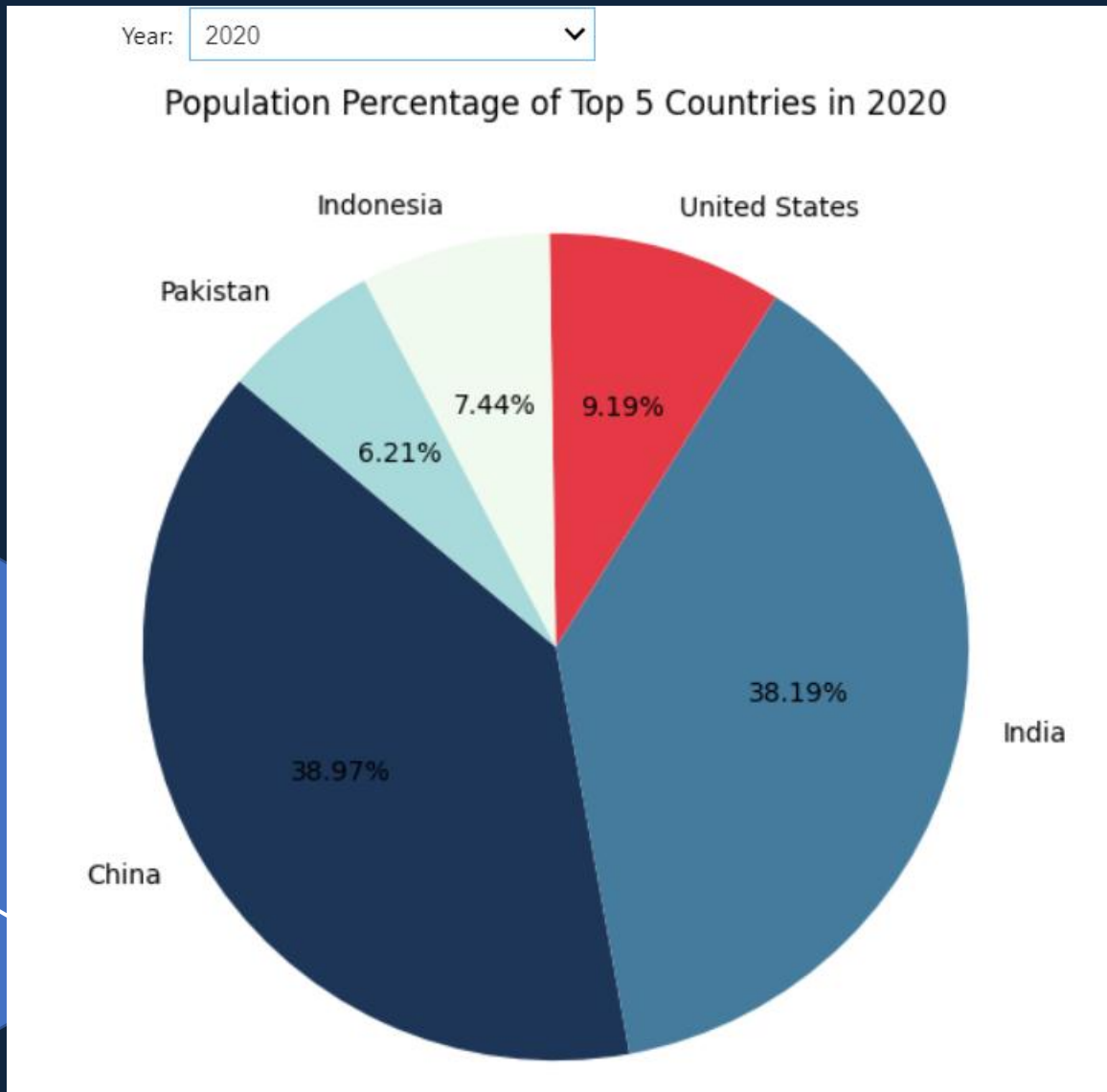
India – 1396.39 M

United States – 335.94 M

Indonesia – 271.86 M

Pakistan – 227.20 M

Analysis | Top 5 Countries Population Percentage by Year : 2020



Here, China & India hold most percentage of total population in the world.

In 2020 population percentage of top 5 countries are :

China – **38.97 %**

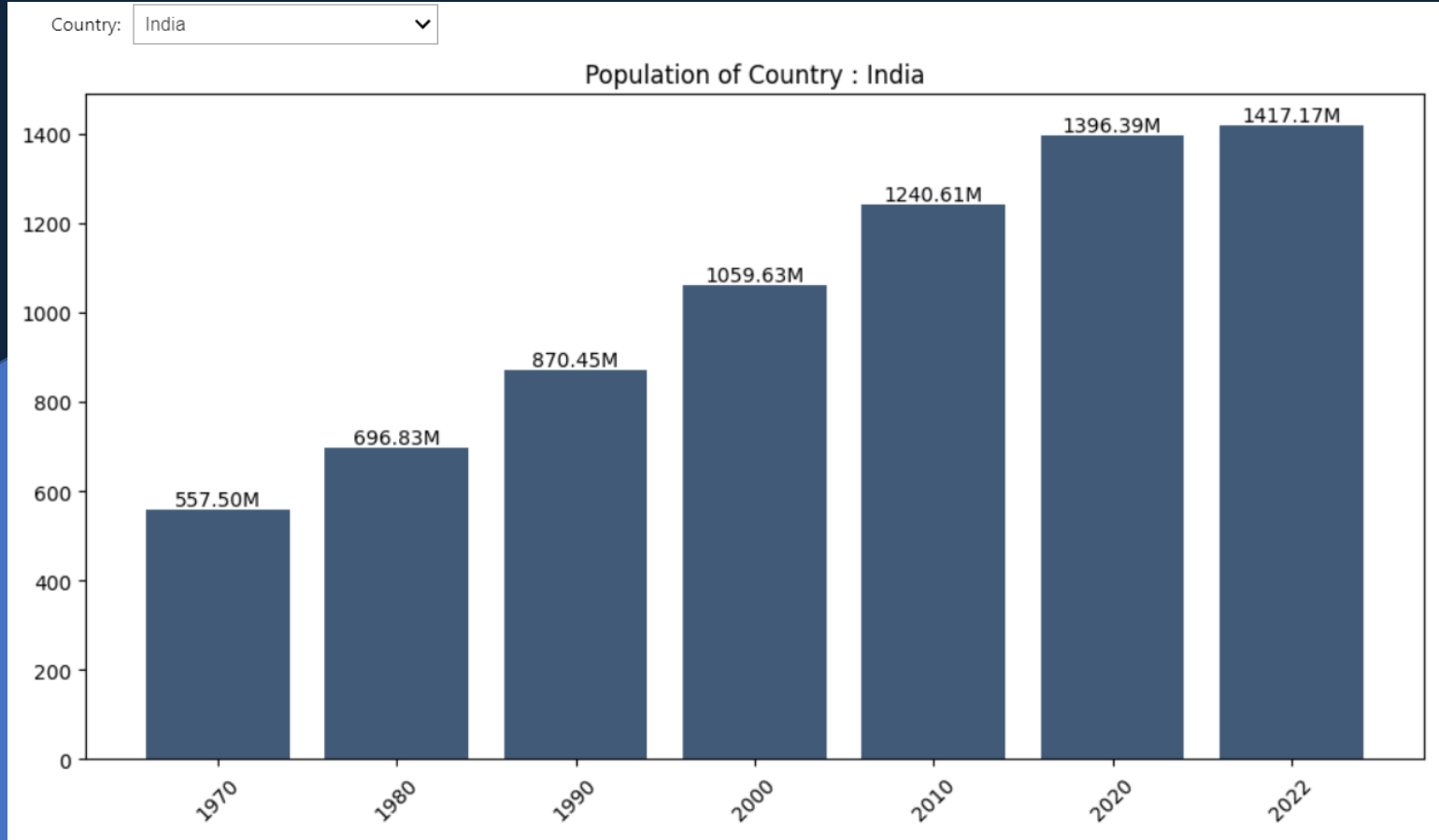
India – 38.19 %

United States – 9.19 %

Indonesia – 7.44 %

Pakistan – 6.21 %

Analysis | Year-wise Population by Selected Country - India



Here, in India, from 1970 to 2022, population was increasing gradually in positive manner.

In 2022 population was the most among all years in India.

1970 – 557.50 M

1980 – 696.83 M

1990 – 870.45 M

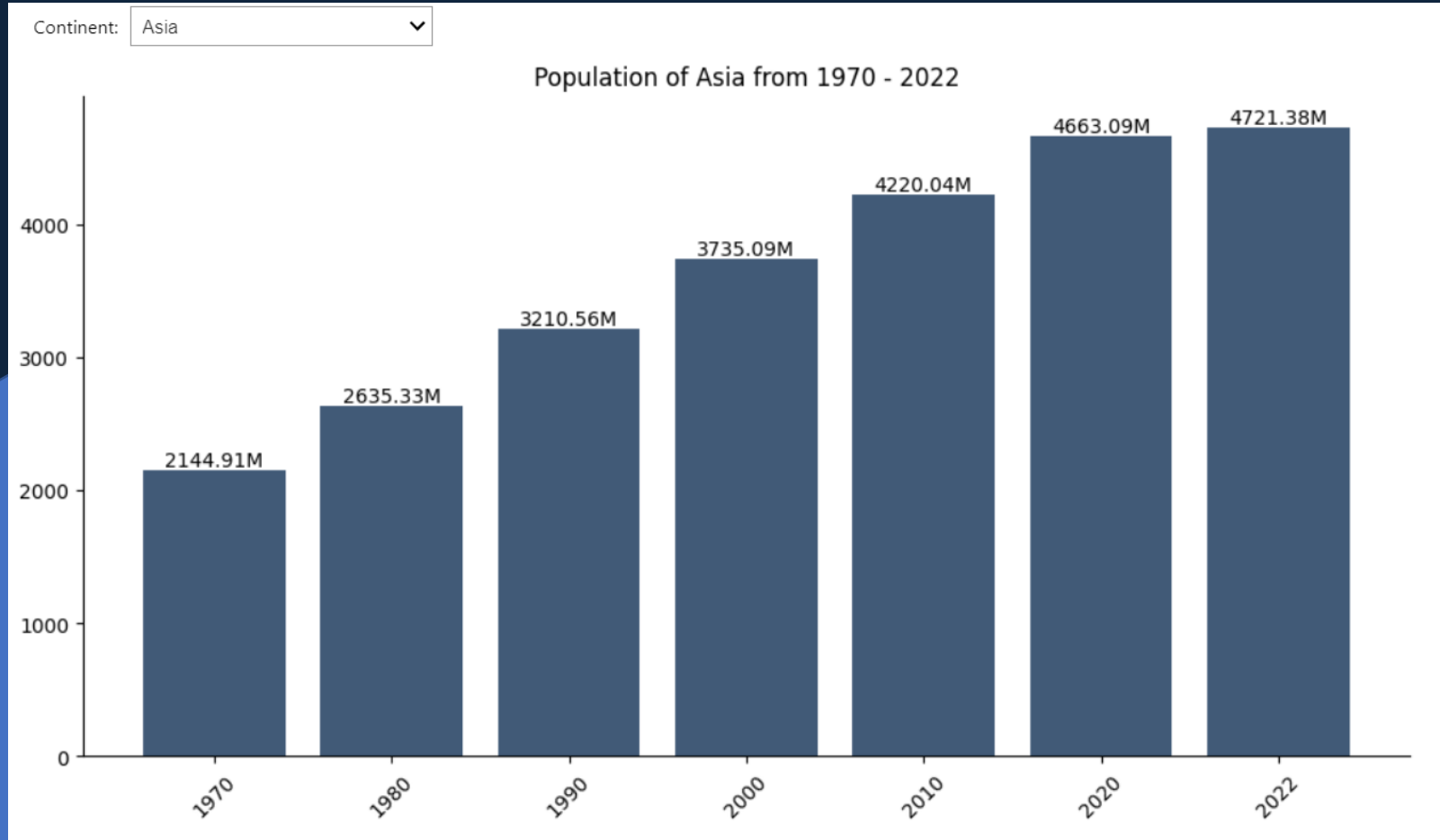
2000 – 1059.63 M

2010 – 1240.61 M

2020 – 1396.39 M

2022 – 1417.17 M

Analysis | Year-wise Population by Selected Continent - Asia



Here, in Asia, from 1970 to 2022, population was increasing gradually in positive manner.

In 2022 population was the most among all years in Asia.

1970 – 2144.91 M

1980 – 2635.33 M

1990 – 3210.56 M

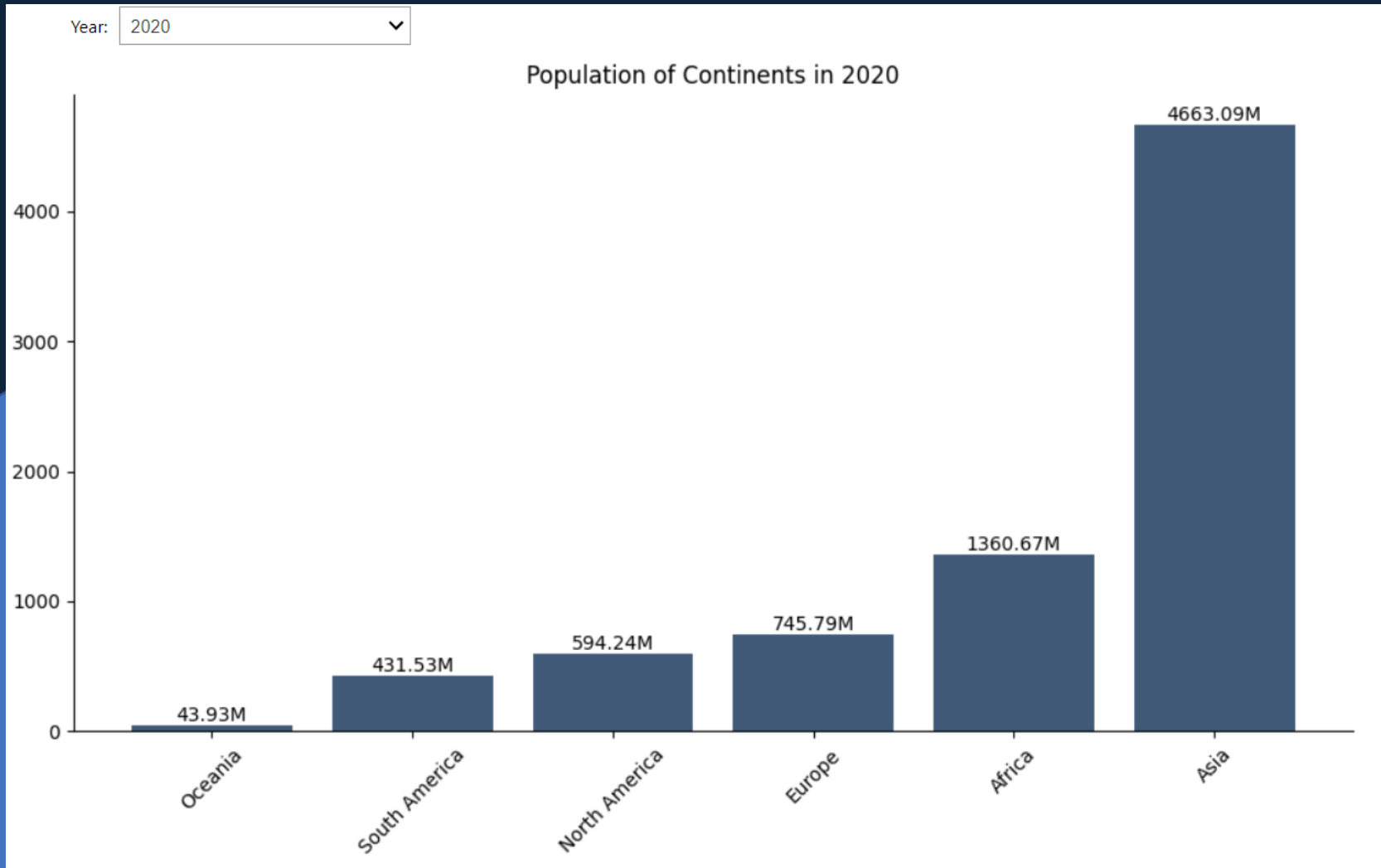
2000 – 3735.09 M

2010 – 4220.04 M

2020 – 4663.09 M

2022 – 4721.38 M

Analysis | Continent-wise Population by Selected Year - 2020



Here, in 2020, among all continent, population was the most in Asia.

In 2020 population of continents were :

Oceania – 43.93 M

South America – 431.53 M

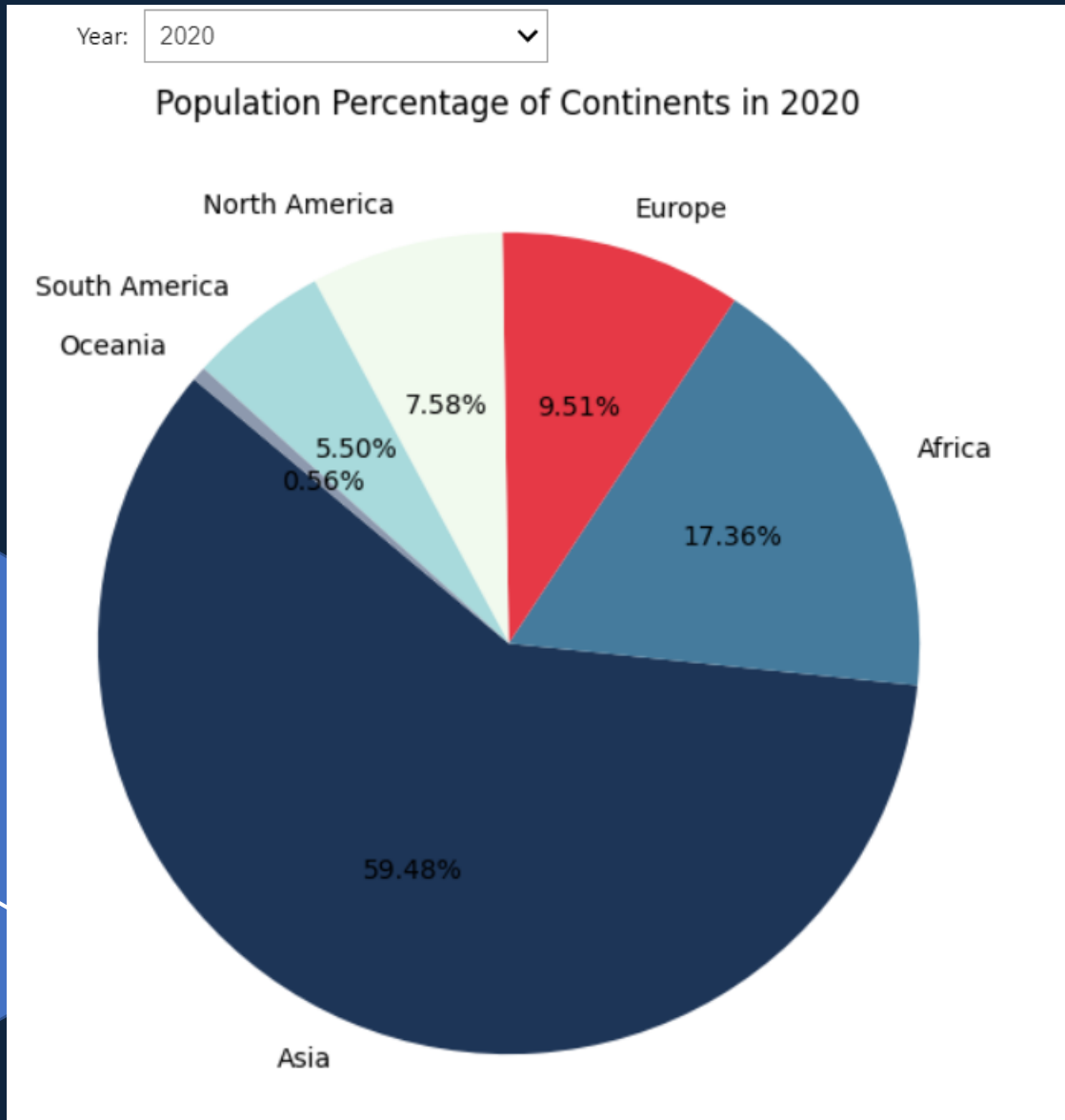
North America – 594.24 M

Europe – 745.79 M

Africa – 1360.67 M

Asia – **4663.09 M**

Analysis | Continent-wise Population Percentage by Year : 2020



Here, Asia hold most percentage of total population in the world.

In 2020 population percentage of continents are :

Asia – **59.48 %**

Africa – 17.36 %

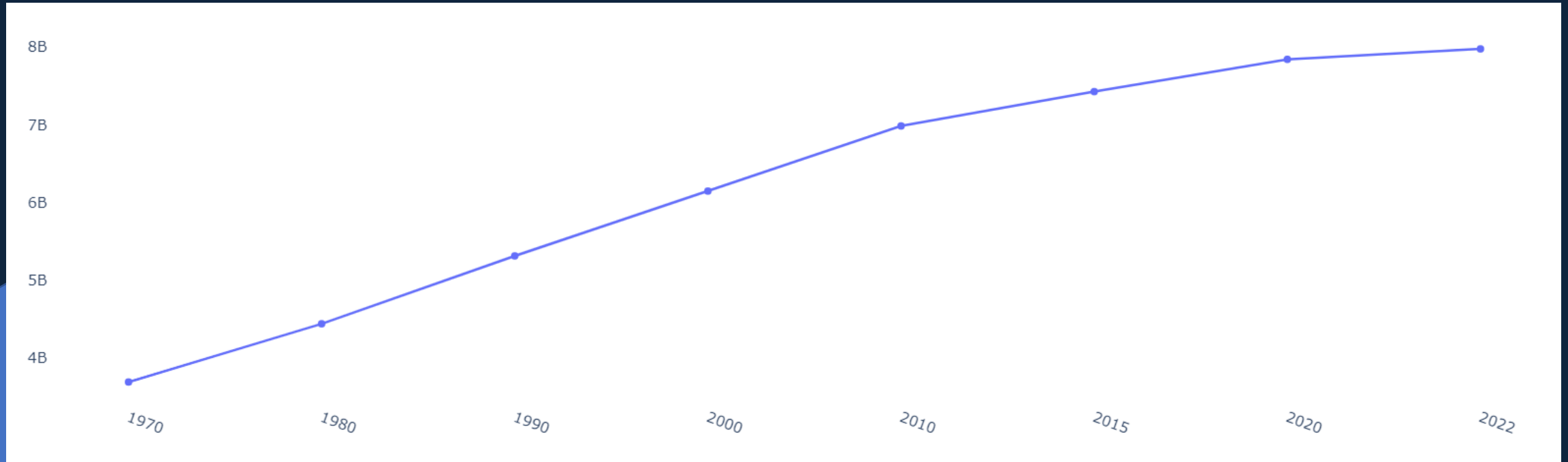
Europe – 9.51 %

North America – 7.58 %

South America – 5.50 %

Oceania – 0.56 %

Analysis | World Population Trend (1970 – 2022)



Here, population trend in the world is increasing drastically in year-wise. In 1970, it was near about **4 Billion** and now in 2022, it became near about **8 Billion**.

Analysis | Machine Learning Model : Linear Regression to Predict Population

```
model = LinearRegression()  
model.fit(X_train, y_train)  
  
y_pred = model.predict(X_test)  
  
r2 = r2_score(y_test, y_pred)  
r2
```

✓ 0.1s

Linear Regression :

Using Linear Regression, the accuracy was almost 96 %, which was very good to prediction.

The predicted population of India in 2030 is : **1108.84 Million**

R2 Score : **96.30 %**

Predicted population of India in 2030: 1108.84 million
R² Score: 0.9630

Analysis | Machine Learning Model : Random Forest to Predict Population

```
model_rf = RandomForestRegressor()  
model_rf.fit(X_train, y_train)  
  
y_pred_rf = model_rf.predict(X_test)  
  
r2_rf = r2_score(y_test, y_pred_rf)  
r2_rf  
✓ 0.3s
```

Random Forest :

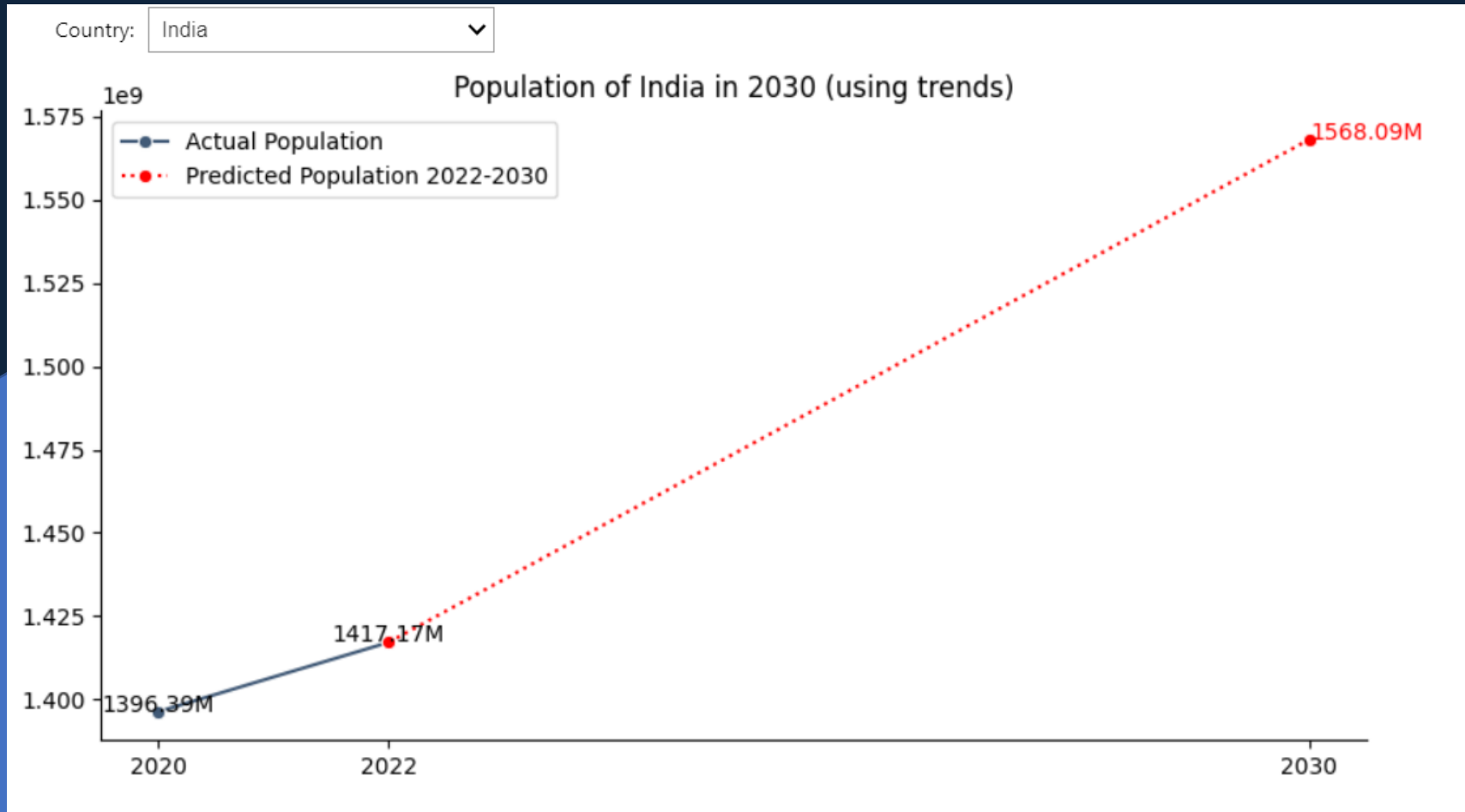
Using Random Forest , the accuracy was almost 98 %, which was very good to prediction.

The predicted population of India in 2030 is : **1380.60 Million**

R2 Score : **98.69 %**

Predicted population of India in 2030: 1380.60 million
R² Score: 0.9869

Analysis | Numpy Population Trend Prediction : India in 2030

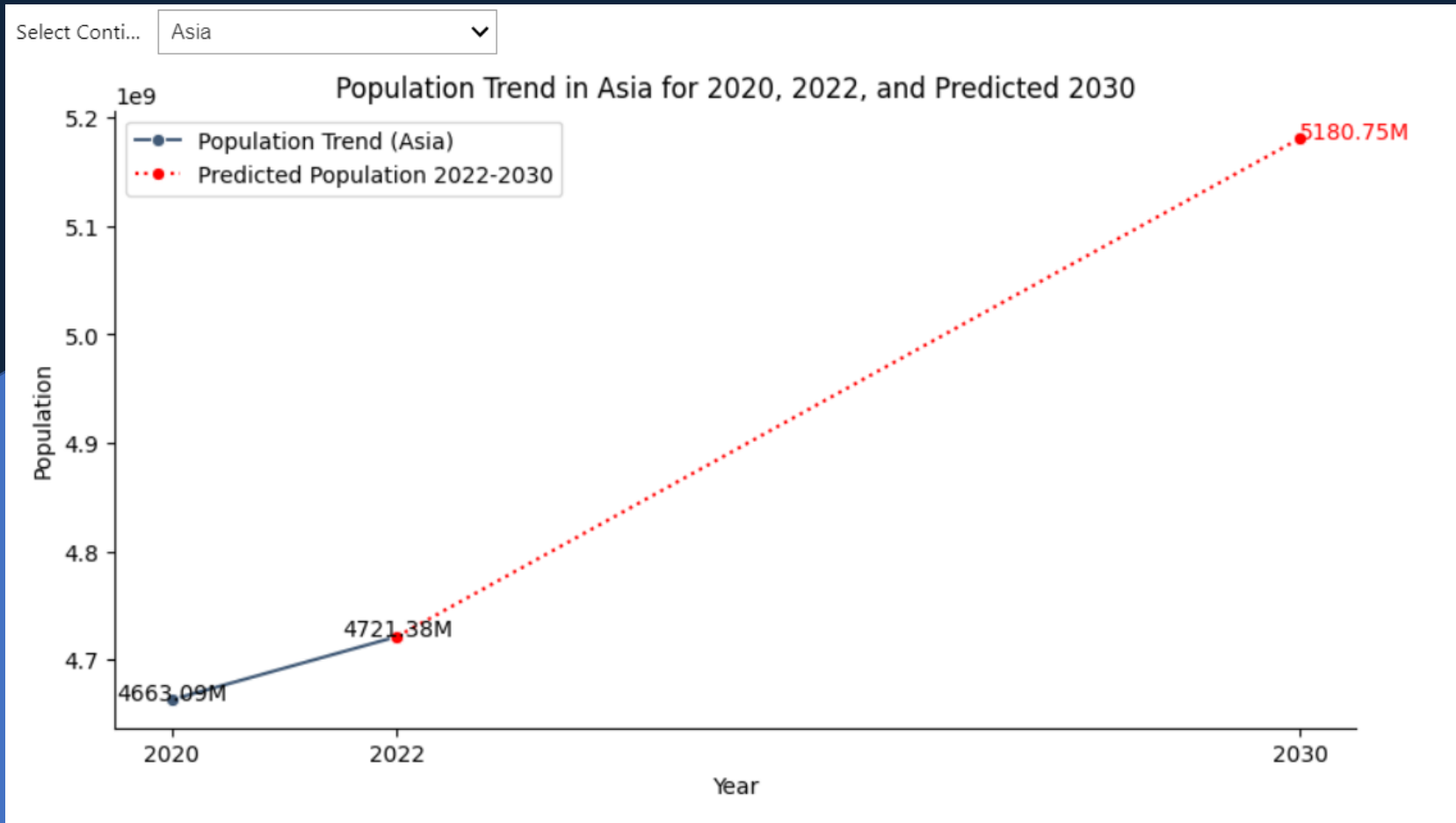


Using numpy and formula : $mx + b$ to analysis the trend and predict the population in 2030.

In 2020 and 2022, population was 1396.39 M and 1417.17 M respectively.

According to trend of population growth, the population of India in 2030 will be : **1568.09 M**

Analysis | Numpy Population Trend Prediction : Asia in 2030

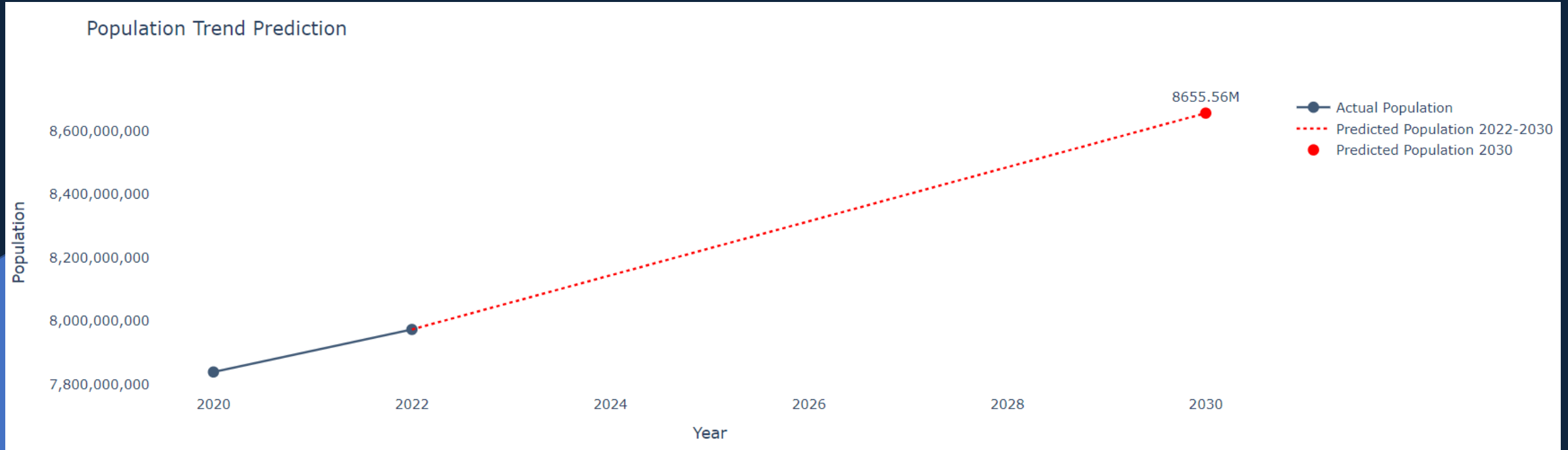


Using numpy and formula : $mx + b$ to analysis the trend and predict the population in 2030.

In 2020 and 2022, population was 4663.09 M and 4721.38 M respectively.

According to trend of population growth, the population of Asia in 2030 will be : **5180.75 M**

Analysis | Numpy Population Trend Prediction : World in 2030



Using numpy and formula : $mx + b$ to analysis the trend and predict the worldwide population in 2030. According to trend of population growth, the population of World in 2030 will be : **8655.56 M**

Summary

After the analysis of data, it is clear that the population of world is increasing drastically, which may lead to huge population density in many countries.

China and India became the most populated country in the world. In 2020, their population was **1424.93 M (38.97 %)** and **1396.39 M (38.19 %)** respectively.

Among all continents, Asia became the most populated continent in the world, population was in 2020 : **4663.09 M (59.48 %)**

In whole world, population also increasing fast. In 2030, the population of world would be **8655.56 M**



A decorative pattern of hexagons in various shades of blue, orange, and white, arranged in a honeycomb-like structure. Some hexagons contain icons: a group of people, a globe with children, a globe with a face, and a globe with many faces.

Thank You

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