Analysis of COVID-19 Data using Python and Tableau

Introduction

This study was conducted using publicly and freely available COVID-19 data along with a related set of population statistics for three selected countries. A summarized intermediate data file was constructed from the daily COVID cases data sets. Using this summarized data, various trends and observations were visualized and presented.

Key Terms and References

Case Fatality Ratio:
Number of recorded deaths / Number of cases.

Incident Rate:
Number of cases per 100,000 persons.

Urban Poplulation %:
Number of people living in urban area / Total population.
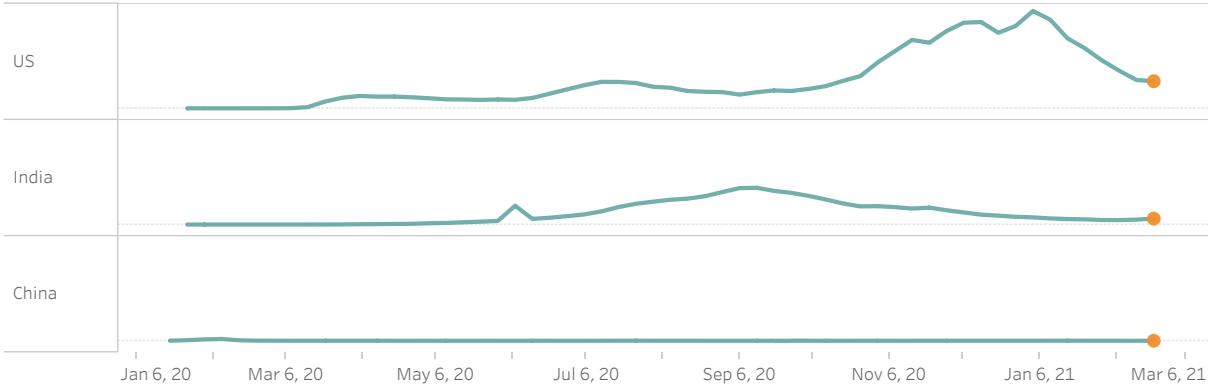
CSSE at Johns Hopkins University Github Repository
https://github.com/CSSEGISandData/COVID-19/tree/master/csse_covid_19_data

Software

Tableau Desktop 2020.3
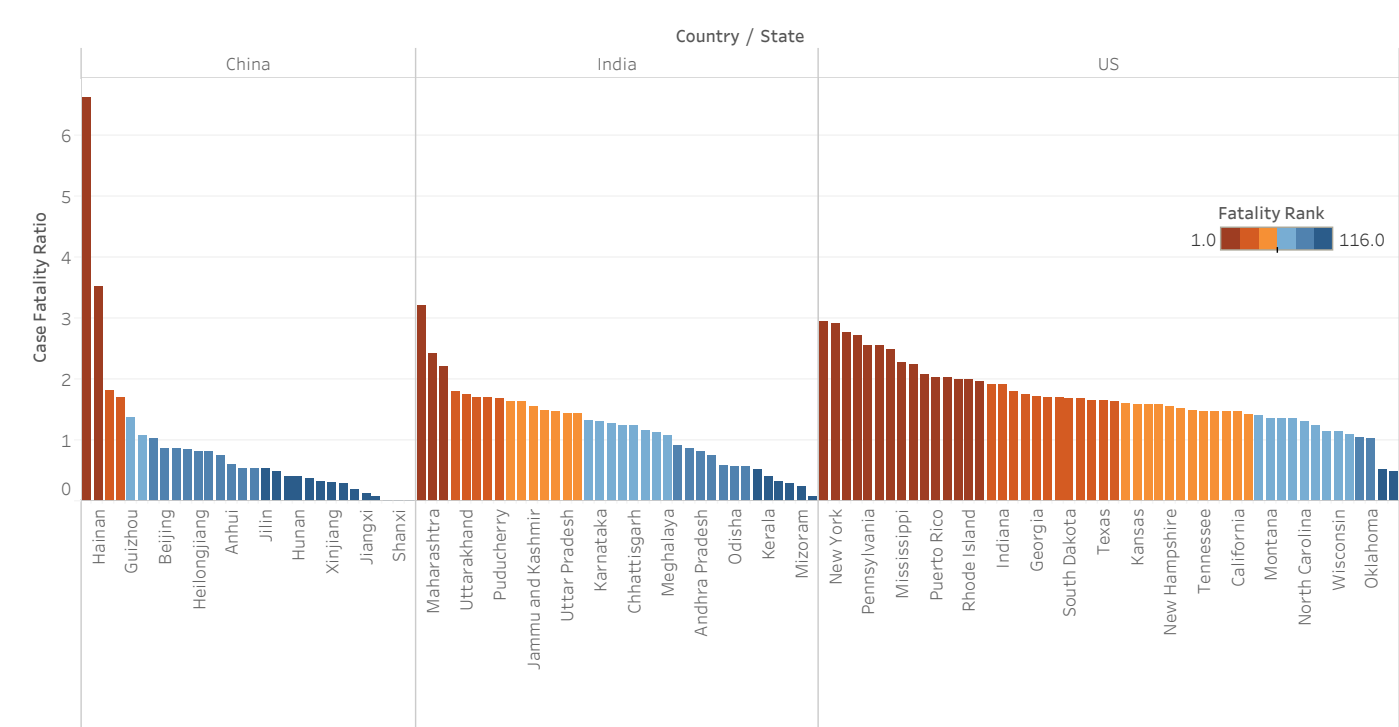Python 3.7

COVID-19 Weekly New Case Counts

A sparkline chart comparing the weekly new case counts for the three countries included in the study.
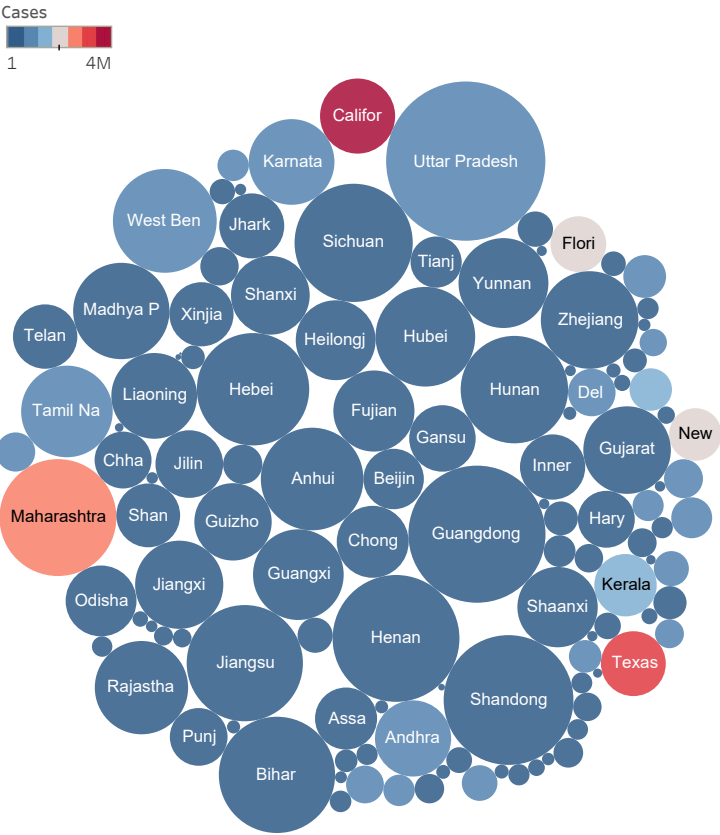
Case Fatality Ratio for Countries

China 4.79
US 1.78
India 1.45

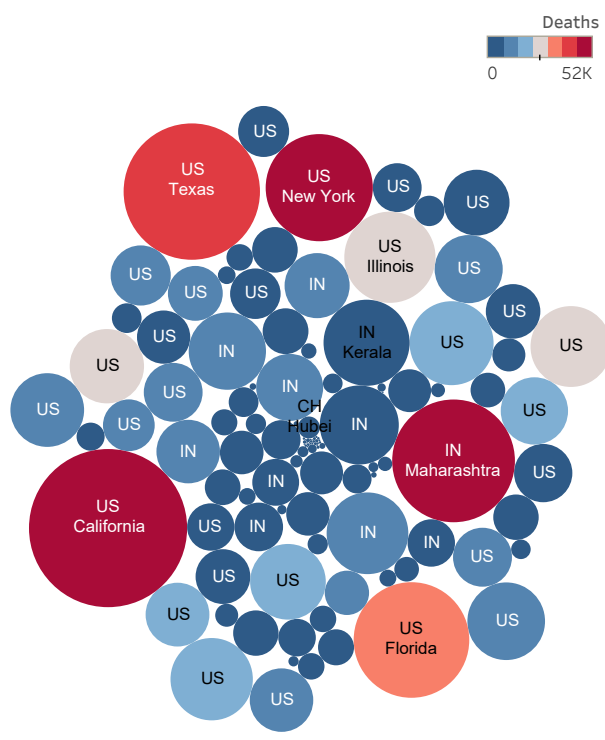## Case Fatality Ratio for States

Country / State

Case Fatality Ratios for the countries and the states ordered by highest to lowest. States in the US has higher case fatality ratios observed.
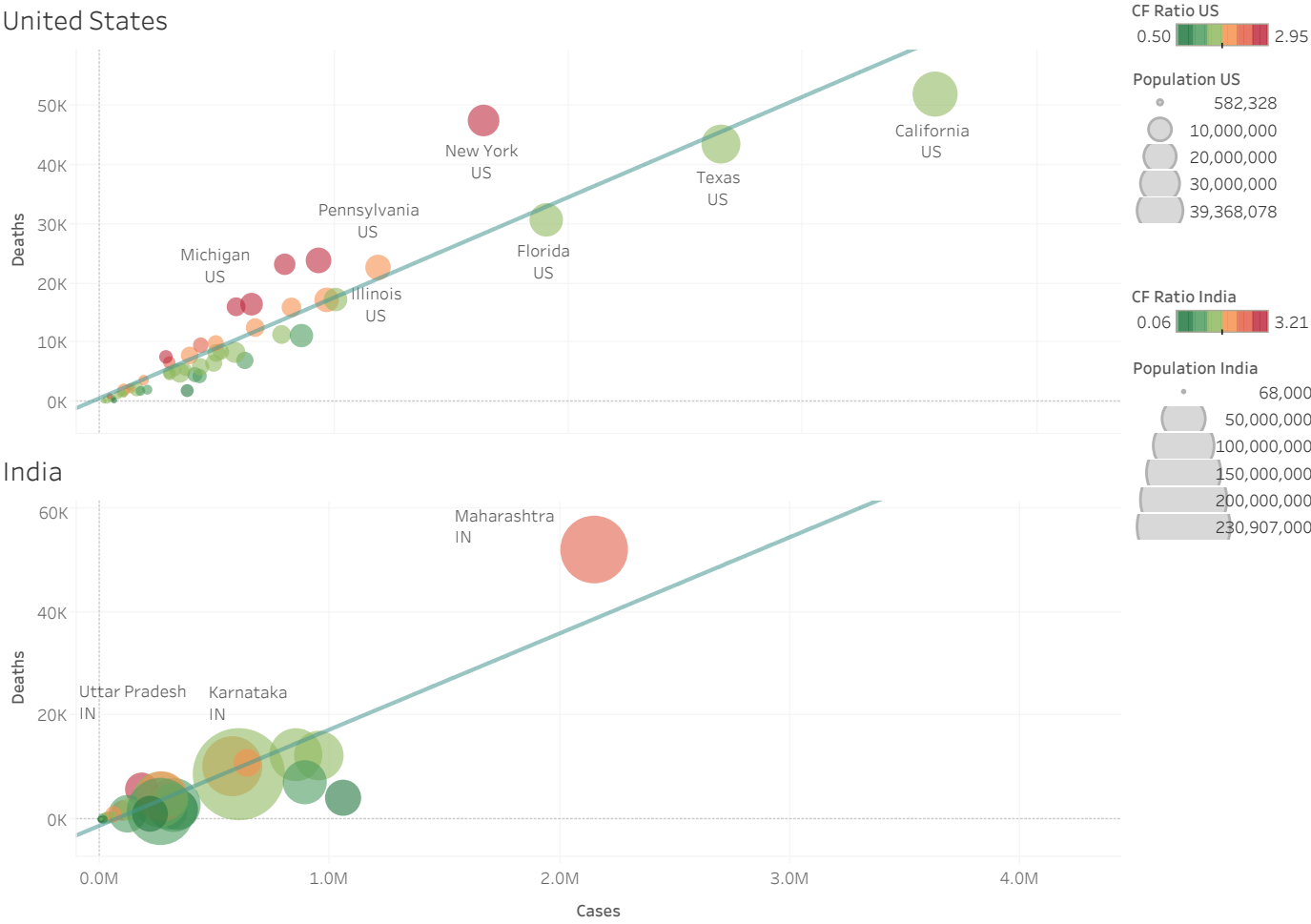
Population vs Case Count

Cases

1   4M

Case Count vs Total Deaths

Deaths

0   52K

Bubble size represents population

A comparision of total population of individual states with the corresponding total case counts (Left). Total case counts for a state compared with the total deaths (Right).

Cases vs Deaths for States

United States

CF Ratio US
0.50 ▬▬▬▬▬ 2.95

Population US
· 582,328
○ 10,000,000
○ 20,000,000
○ 30,000,000
○ 39,368,078

CF Ratio India
0.06 ▬▬▬▬▬ 3.21

Population India
· 68,000
○ 50,000,000
○ 100,000,000
○ 150,000,000
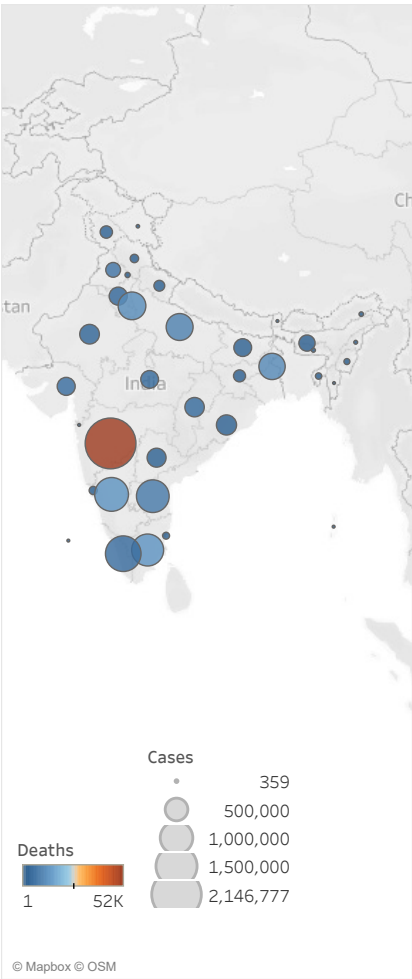○ 200,000,000
○ 230,907,000

India

Total cases and total deaths at the state level for US and India. The trendlines indicate a fatality rate of 1.69 and 1.85 per 100 cases for states in US and India respectively.
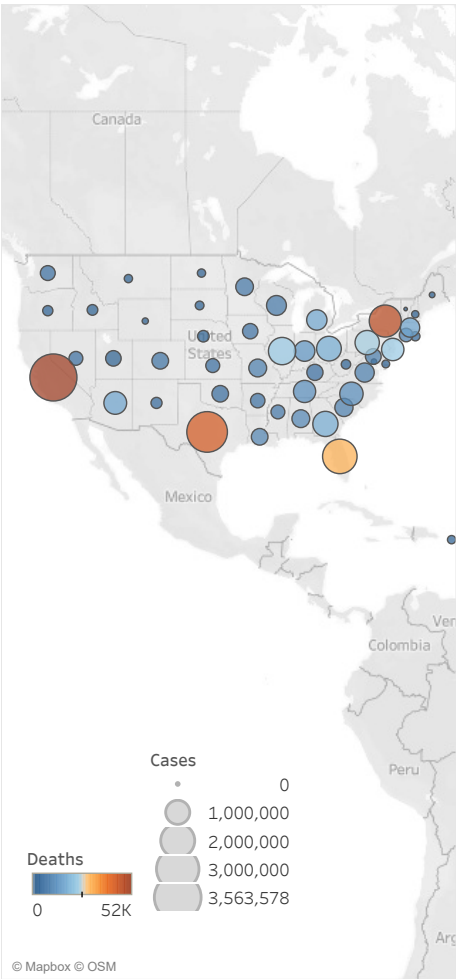
China

India

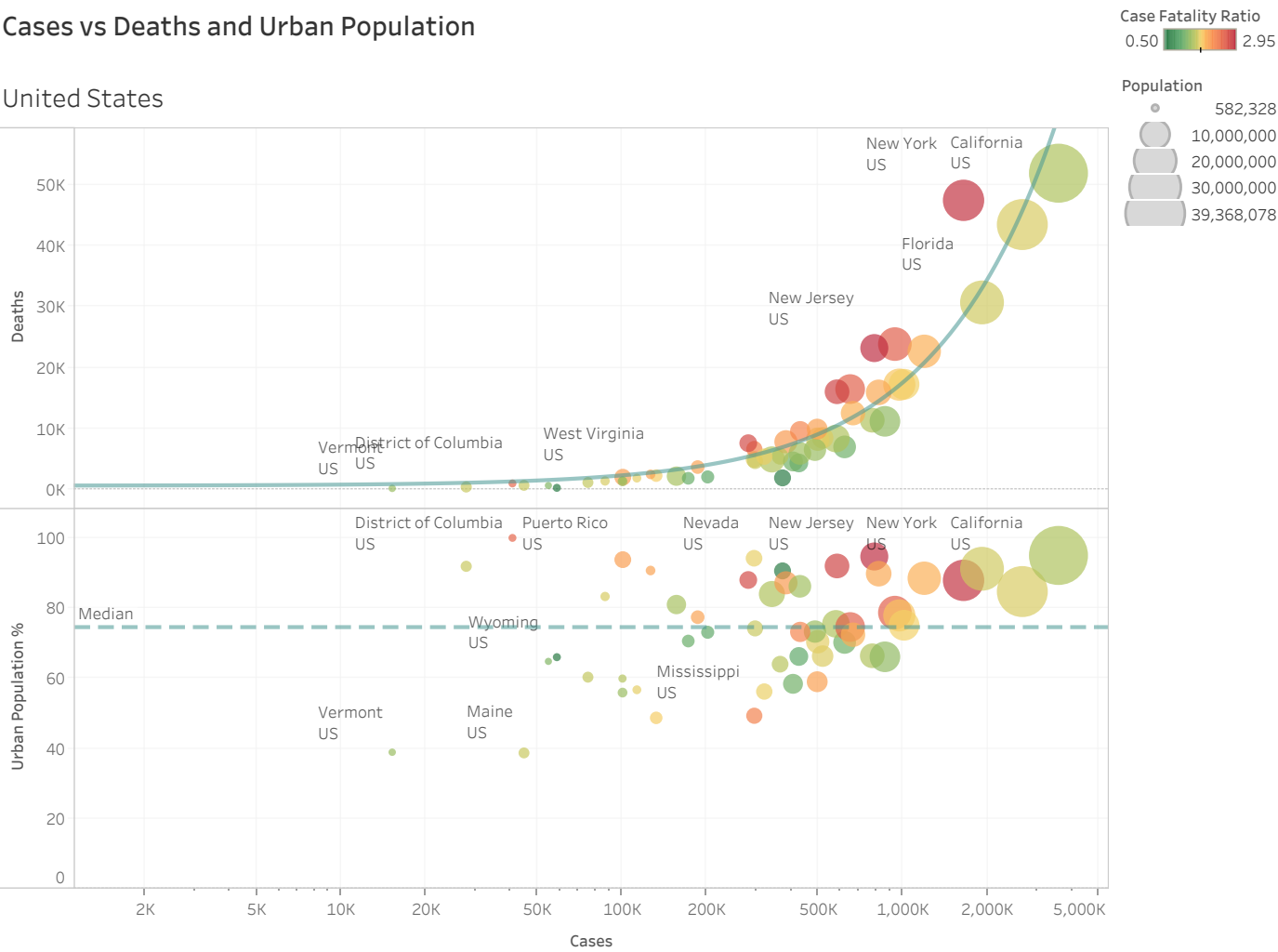## United States

Geographical distribution of cases and fatality within each of the three countries.
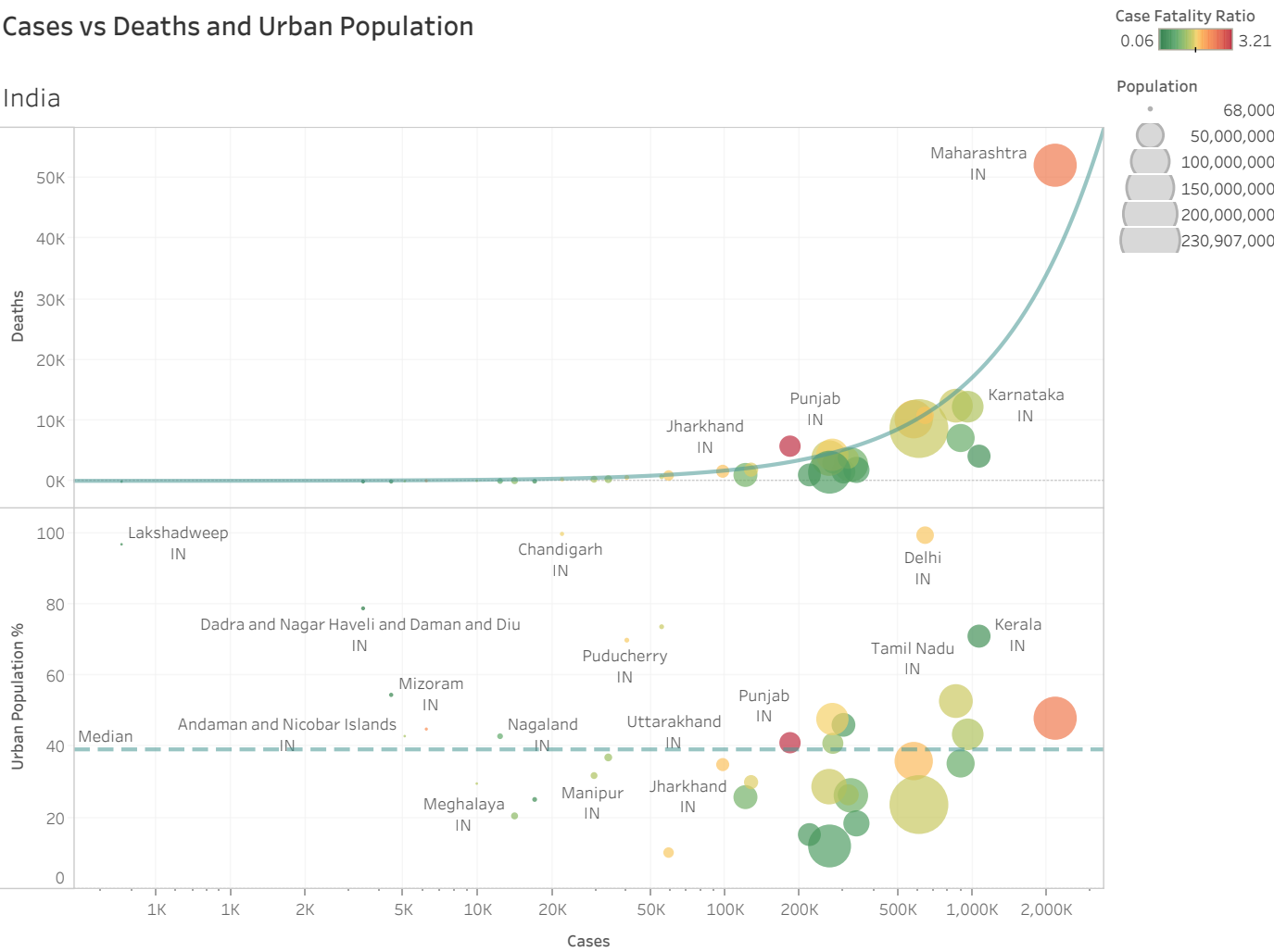
Cases vs Deaths and Urban Population

Case Fatality Ratio
0.50 — 2.95

United States

Population
- 582,328
- 10,000,000
- 20,000,000
- 30,000,000
- 39,368,078

Case Fatality Ratio (represented using a logarithmic scale) and the urban population percentage for the states in US. The median urban population is 74.4%.
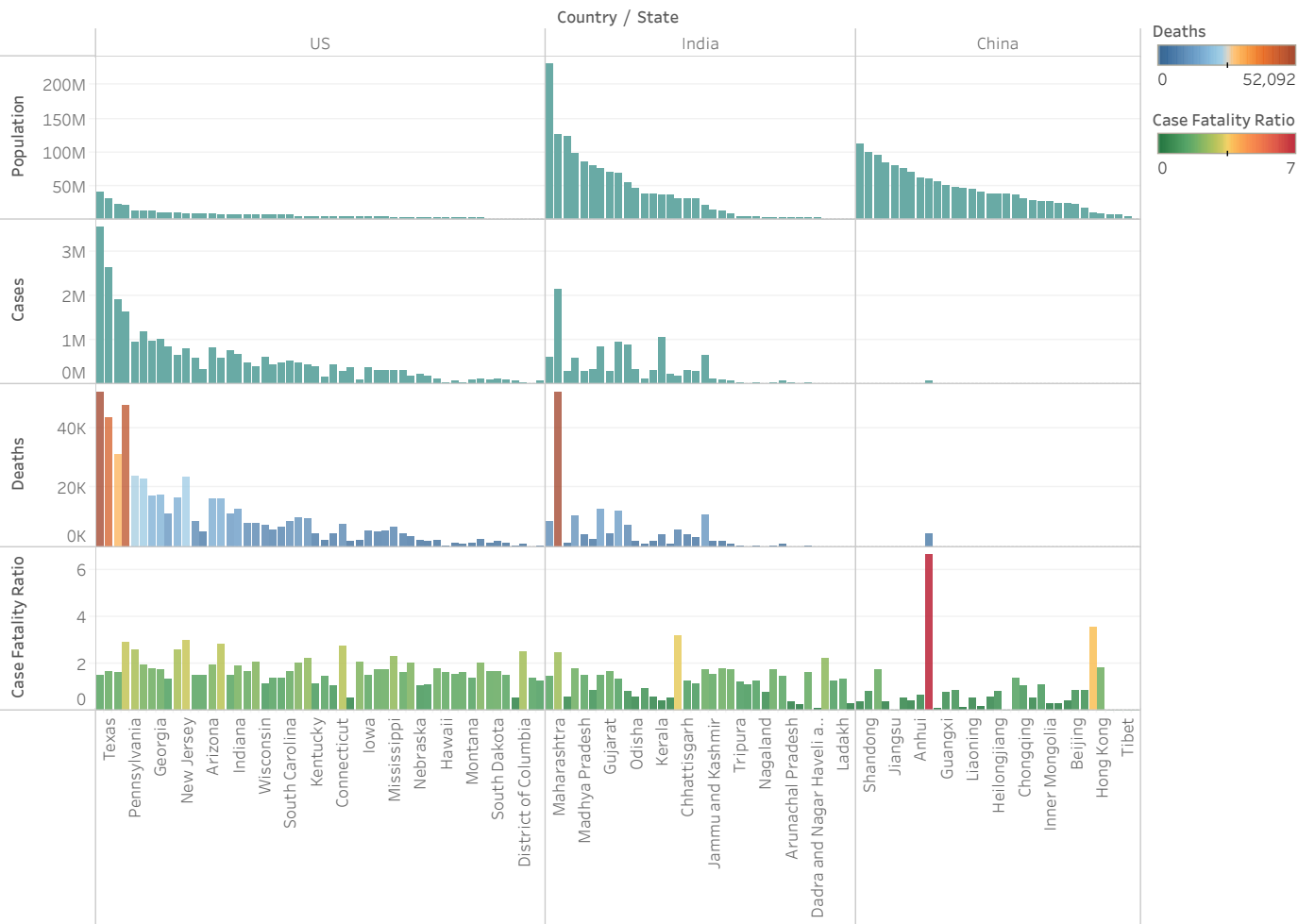
Cases vs Deaths and Urban Population

Case Fatality Ratio

0.06 ▬▬▬ 3.21

India

Population

· 68,000
○ 50,000,000
○ 100,000,000
○ 150,000,000
○ 200,000,000
○ 230,907,000

Case Fatality Ratio and the urban population percentage for the states in India. The median urban population is 38.95%.
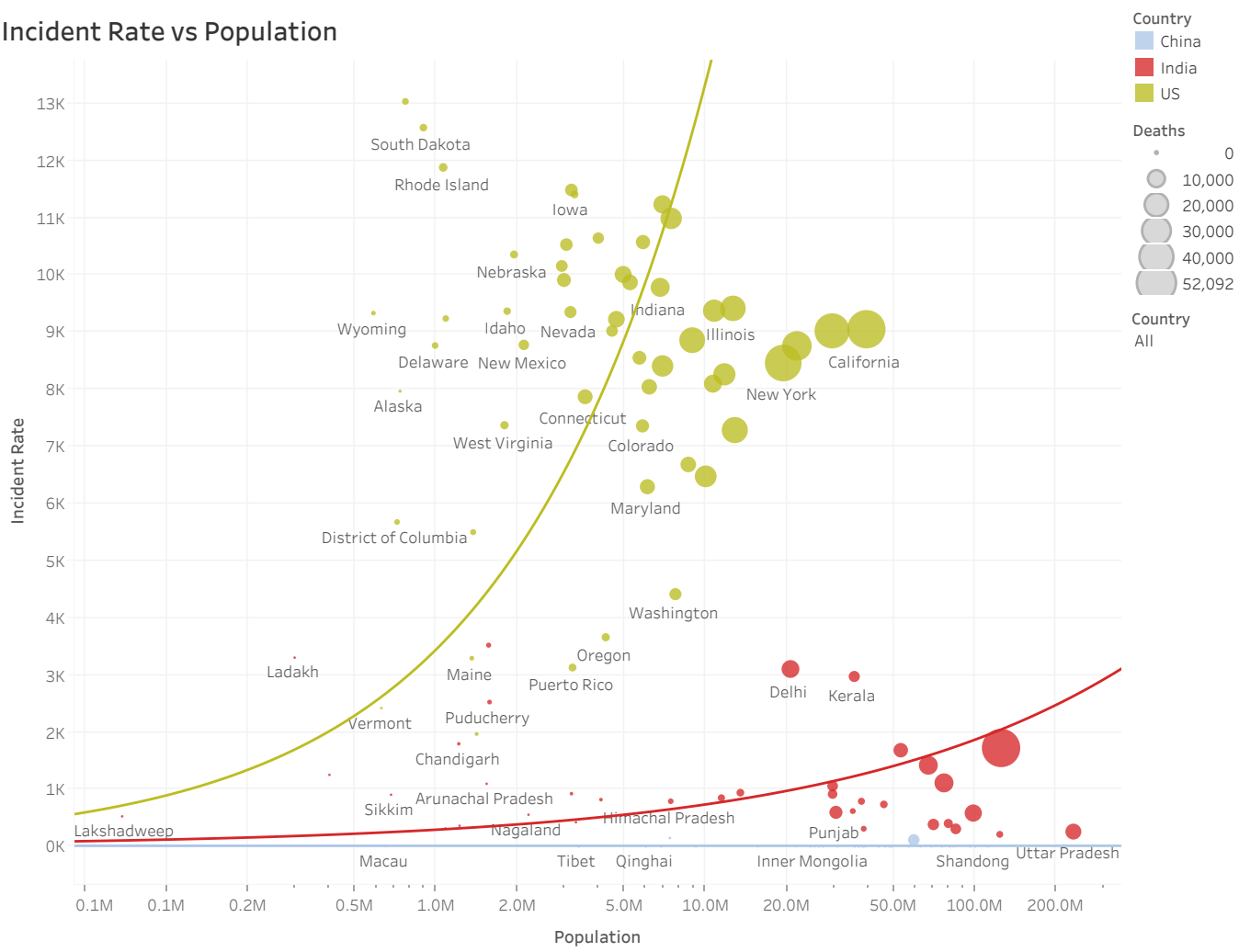
Population and Case Fatality Ratio

Country
All

Comparison of absolute total population and total deaths. Note that the states with the highest number of deaths do not always correspond to higher fatality rates.

Incident Rate vs Population

Total number of incidens per 100K of population for each of the states. Countries shown are distinguished using color.