



# Mid-Term Project

Do Birth Rates Affect Total Population in the Top Ten Economies?

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# Purpose and Research Question

Recently, media and other sources have reported that many developed and economically stable countries have experienced reduced birth rates with slight increases in death rates due to the COVID-19 pandemic. Much attention has been given to these countries' birth rates and how they affect overall population growth.

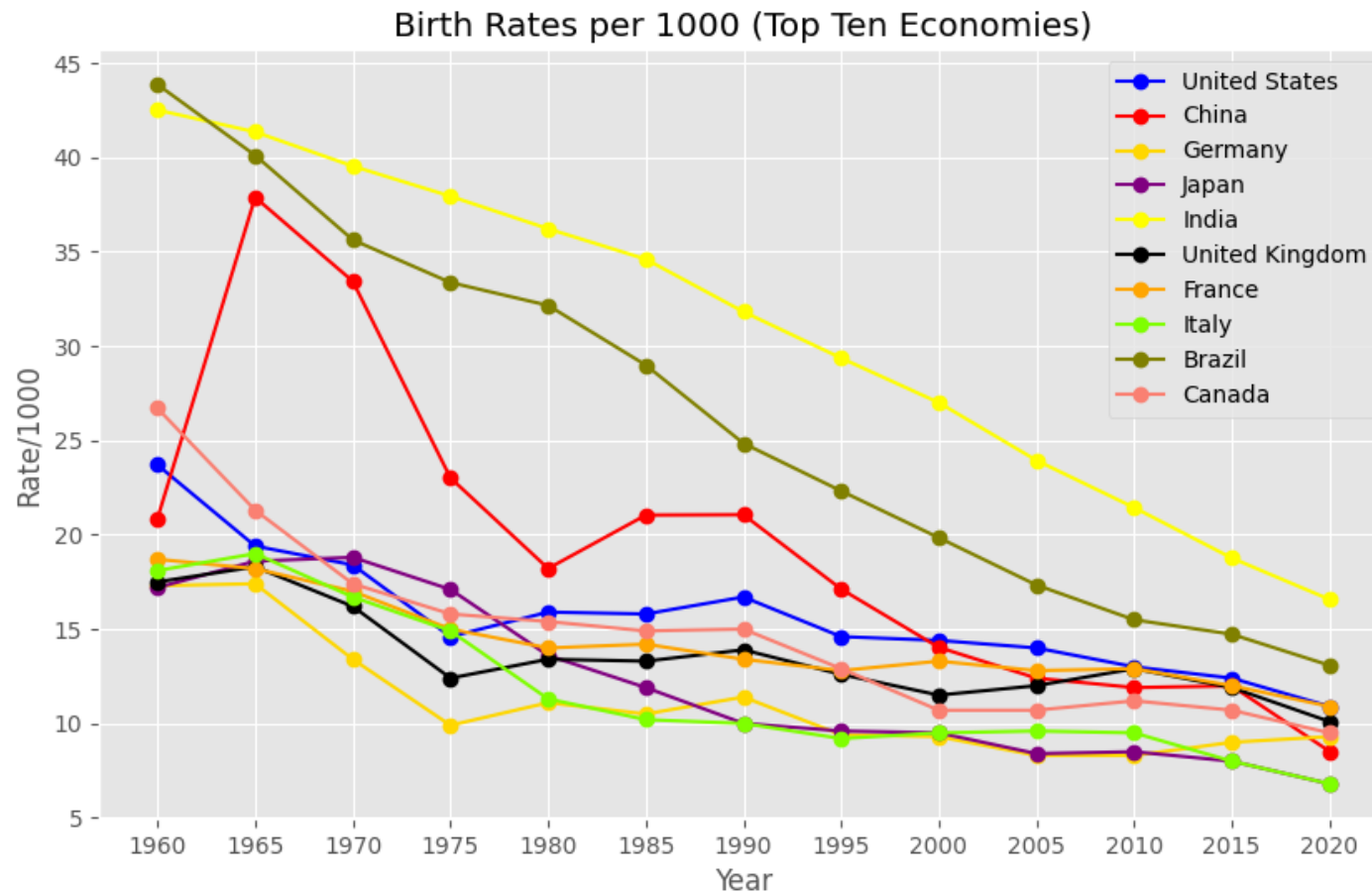
## **Research Question:**

Do birth and death rates affect total population growth in the top ten economies?

# Methodology

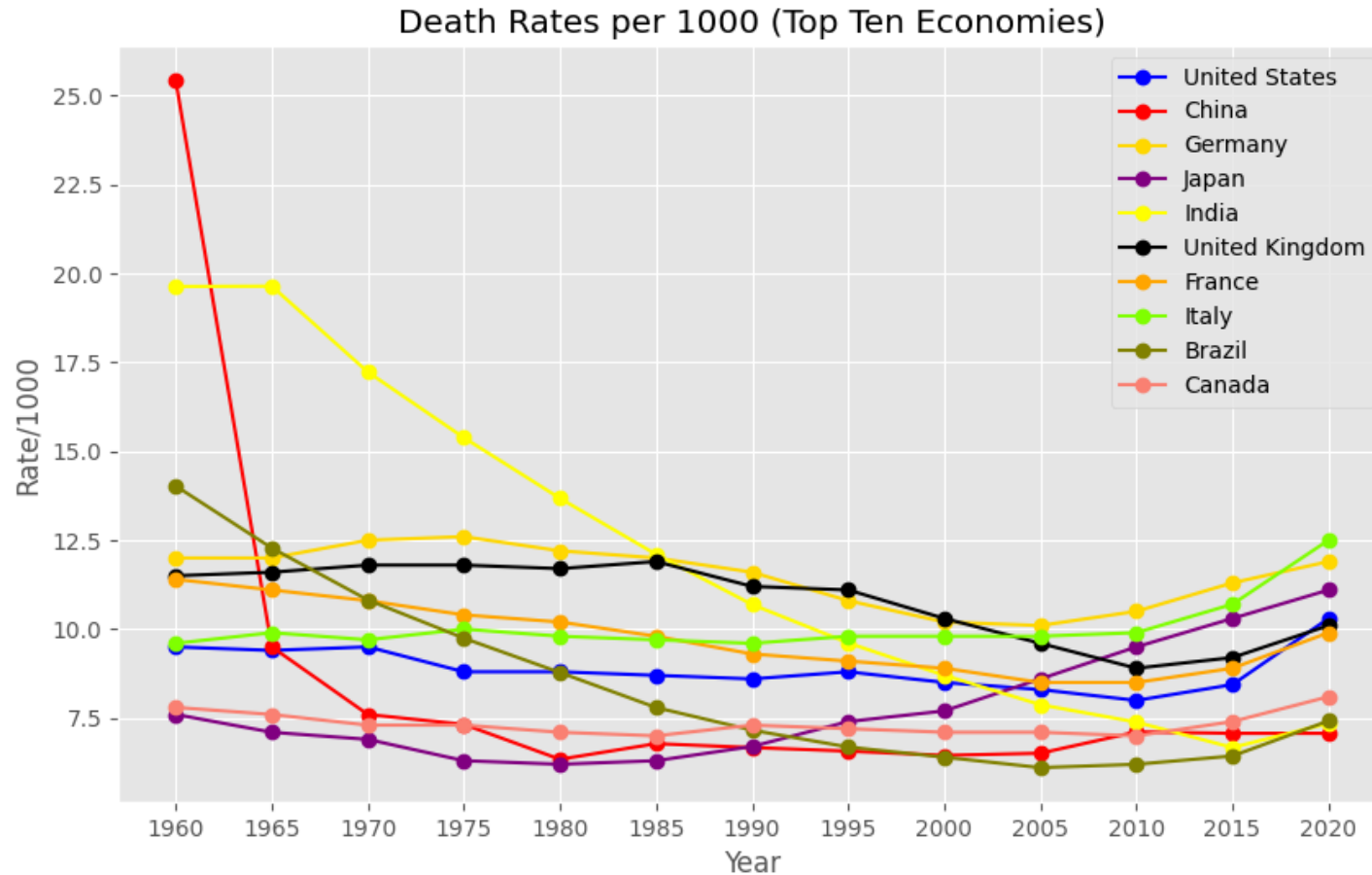
- Conducted research to determine the top ten economies in the world
- Queried the World Bank's Population Estimates and Projections database and saved data into CSV files
- Used Jupyter Lab and Pandas to analyze data and produce initial visualizations
- Converted Jupyter Lab to a python script for repeatability
- Created sparklines using LibreOffice Calc
- Compiled report

# Birth Rates for Top Economies



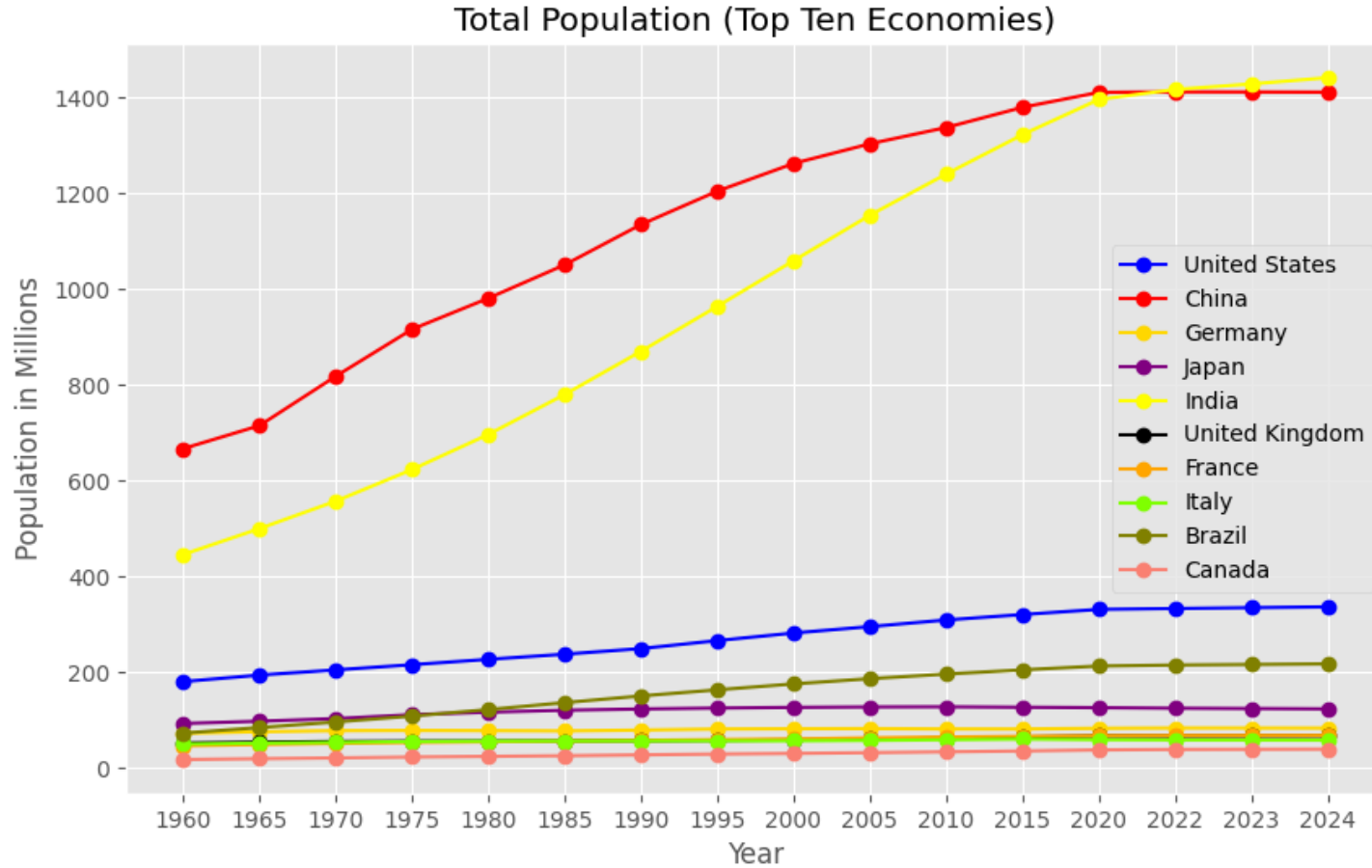
- Between 1960 and 2020 all countries being studied experience declining birth rates
- China displays an interesting spike in 1965, but has trended down since then
- Brazil and India still have the highest birth rates in the top economies

# Death Rates Top Economies



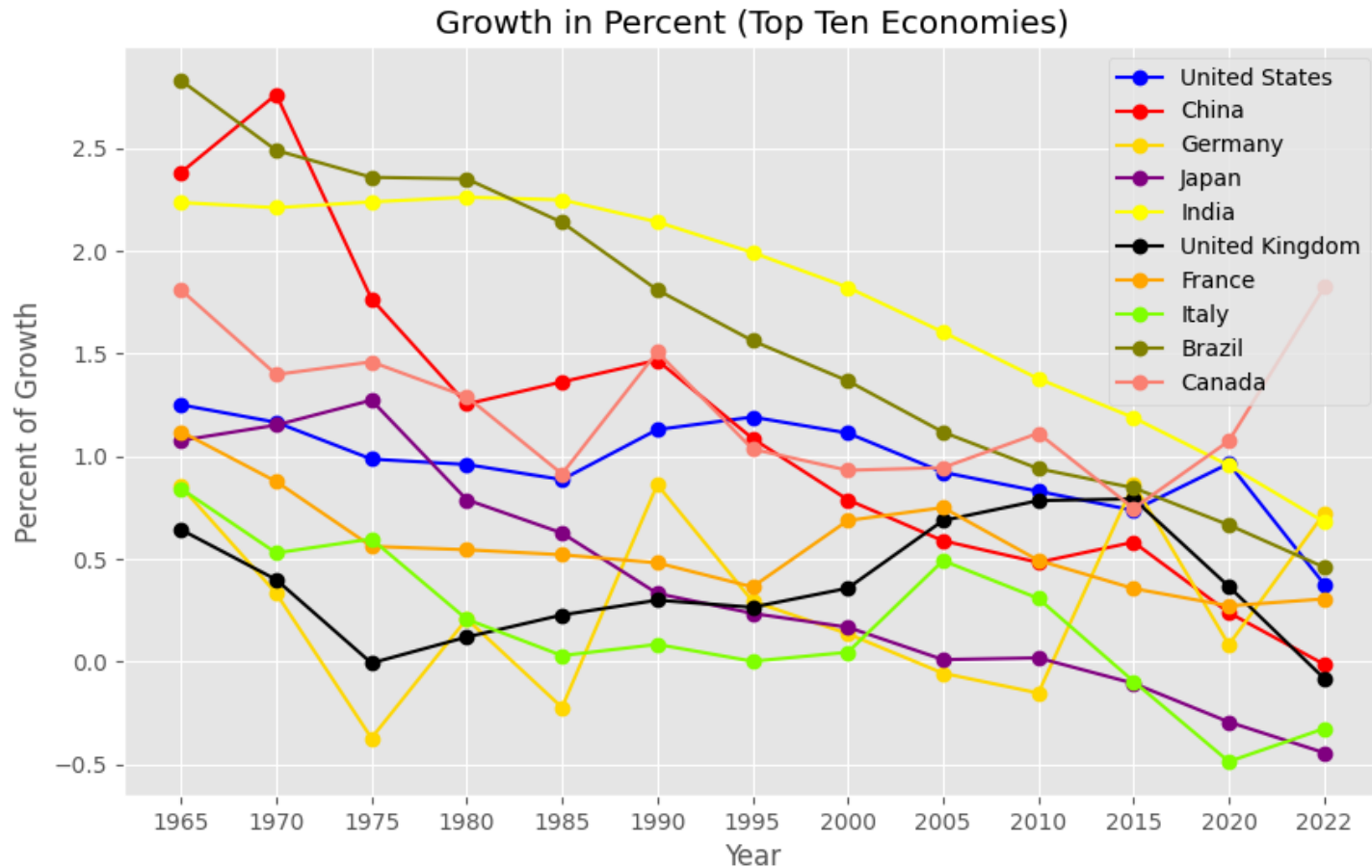
- 1960 China had 25 deaths per 1000 people
- India in 1960-1965 had around 19 deaths/1000 people
- Death rates remained stable or trended down for all nations until approximately 2020 where they started to trend up

# Total Populations


















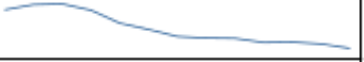











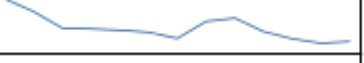







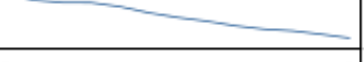


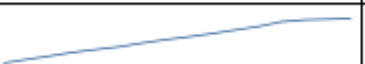
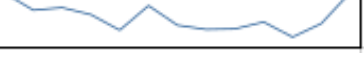
- China and India are the most populated countries, but appears to be leveling off
- Other countries have seen their populations grow more slowly when compared to China and India

# Percent of Population Change



- Graph shows the percent of population change from year to year
- All countries are trending down with **Italy and Japan having negative growth**
- **France trended up in 2022**, but generally has been trending down.

# Population Trends for Each Country

Country	Birth Rate	Death Rate	Total Population	Population Change
United States				
China				
Germany				
Japan				
India				
United Kingdom				
France				
Italy				
Brazil				
Canada				

Except for Germany, all the countries have declining birth rates



# Conclusions

- Birth and death rates are making an impact on the top ten economies' populations but not as fast as people think.
- Countries with lower birth rates are experiencing populations that are stabilizing and will eventually start to decline if the birth rates do not increase
- Japan and Italy have already started this trend with negative growth rates and declining populations

Questions?