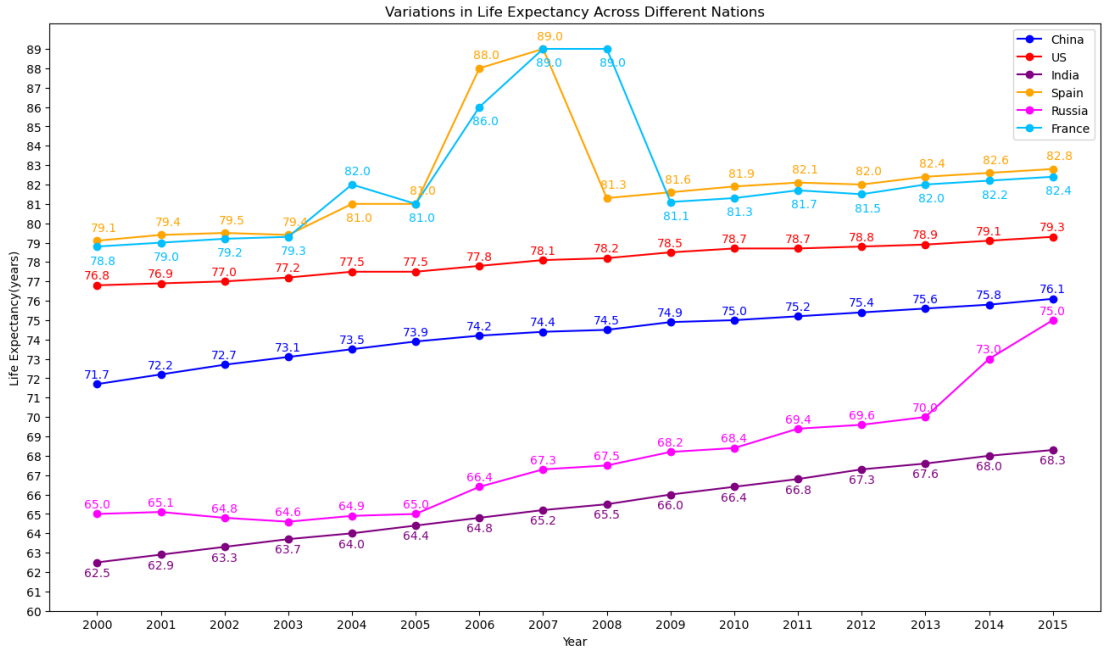
INFSCI 2415 Midterm Report

Variations in Life Expectancy Across Different Nations from 2000 to 2015

Figure 1: Line Plot



Legend explained

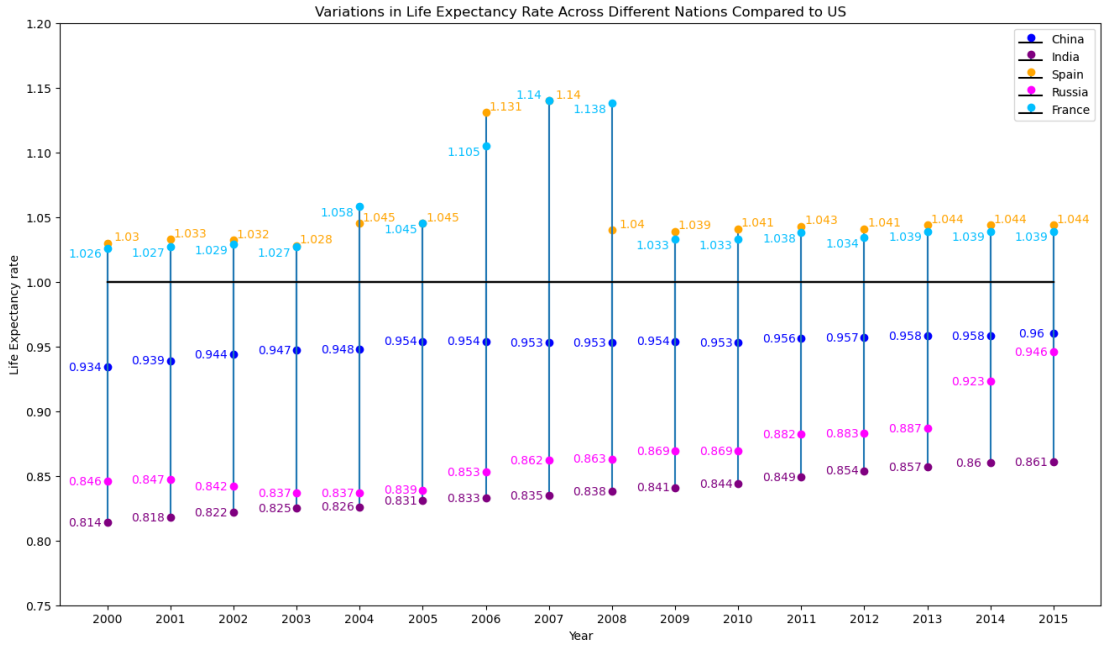
- Blue line represents China.
- Red line represents United States.
- Purple line represents India.
- Orange line represents Spain.
- Magenta line represents Russia.
- Deepskyblue Line represents France.
- The colored value represents life expectancy values for corresponding country.

Findings text introducing highlights of the produced figure in bulletin points

- This graph illustrates the changes in life expectancy in various countries from 2000 to 2015.
- Over this period, China, the United States, and India experienced consistent increases in life expectancy.
- Russia's life expectancy generally showed a steady increase, although there was a slight dip between 2001 and 2005, followed by a significant rise from 2013 to 2015.
- In 2006, both Spain and France observed significant rises in life expectancy. Nonetheless, France encountered a notable drop in 2008, whereas Spain witnessed a similar decline in 2009, possibly as a consequence of the 2008 financial crisis.
- The data suggests an overall improvement in people's lives over the 15-year span, as all countries had higher life expectancy in 2015 compared to 2000.

Data gathered from https://www.kaggle.com/datasets/kumarajarshi/life-expectancy-who
Github link: https://github.com/CaptainSxy/INFSCI-2145

Figure 2: Stem Plot



Legend explained

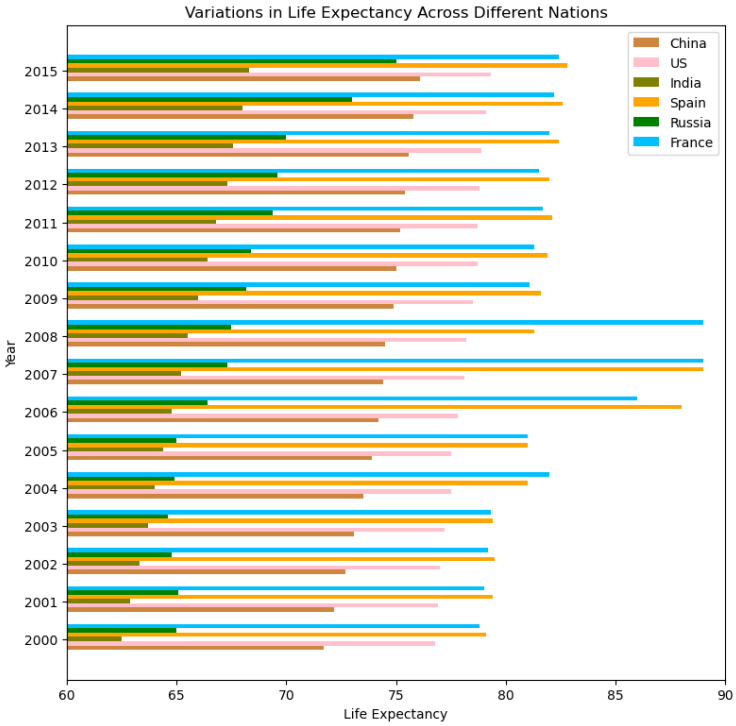
- Blue points represent China.
- Purple points represent India.
- Orange points represent Spain.
- Magenta points represent Russia.
- Deepskyblue points represent France.
- The colored value represents life expectancy rates for corresponding countries compared to the United States.

Findings text introducing highlights of the produced figure in bulletin points

- This stem plot illustrates the comparison of life expectancy rates in various countries with that of the United States from 2000 to 2015. The black line at the bottom represents the life expectancy in the US, serving as the reference point for all other countries. In this graph, higher points indicate better life expectancy.
- China, India, and Russia have life expectancy rates lower than 1, indicating that their life expectancies are below that of the United States. Russia has experienced a significant and rapid increase in life expectancy, bringing it much closer to that of the US compared to the year 2000. The life expectancy rate between China and the US has remained stable over the years, while India has seen a slight increase in its rate.
- Spain and France exhibit higher life expectancy rates than the US, and these rates have generally remained stable over the years, except for a notable decline between 2006 and 2008. In 2006, there was a substantial increase, followed by a significant decrease in 2008.

Data gathered from https://www.kaggle.com/datasets/kumarajarshi/life-expectancy-who
Github link: https://github.com/CaptainSxy/INFSCI-2145

Figure 3: Bar Plot



Legend explained

- Peru bar represents China.
- Pink bar represents US
- Olive bar represents India.
- Orange bar represents Spain.
- Green bar represents Russia.
- Deepskyblue bar represents France.

Findings text introducing highlights

♦ The bar plot demonstrates alterations in life expectancy across different countries.

♦ From 2000 to 2015, there was a general increase in life expectancy. However, significant fluctuations were observed in Spain and France from 2006 to 2008.

Data and method text describing the data and method used in this process

- ♦ Matplotlib, NumPy and CSV is utilized to create all the visualizations in Visual Studio Code.
- ♦ Visual Studio Code is a free and open-source code editor developed by Microsoft, supports running Jupiter Notebook.
- ♦ Matplotlib functions like Matplot.plot() were employed for the line plot, Matplot.stem() for the stem plot, and Matplot.barh() for the horizontal bar chart.
- ♦ To enhance aesthetics, titles, x-axis, y-axis, and legends for all visualizations were individually fine-tuned for a more polished appearance.

Significance statement on why the presented figure is important

- ♦ The visualization could be used to study the change of life expectancy between countries during 16 years.
- ♦ Life expectancy has generally increased in major countries over the years, attributed to advancements in medical science, improved living conditions, better nutrition, public health measures, technological progress, and socio-economic development.
- ♦ Nevertheless, certain factors, like the impact of economic crises, can substantially affect variations in life expectancy among countries, as observed in Spain and France.
- ♦ Dataset contains data of 193 countries in the world, and its life expectancy from 2000-2015.

Data gathered from https://www.kaggle.com/datasets/kumarajarshi/life-expectancy-who

Github link: https://github.com/CaptainSxy/INFSCI-2145