ISM6419
Prof. Dr. Reichgelt

Final Project Report

Data Visualization on U.S. Presidential Approval Ratings Over the Past 40 Years

Neha Satpute(U19160274)

Introduction

Understanding public sentiment towards the President of the United States is essential for analyzing political trends, assessing the effectiveness of presidential leadership, and shaping public policy. This proposal outlines a detailed project aimed at developing a sophisticated data visualization tool that will comprehensively track and display the approval ratings of U.S. Presidents over the past 40 years.

The proposed visualization dashboard will serve as an analytical tool, enabling users to observe how presidential approval ratings fluctuate over time within a president's term and vary across different administrations. It will incorporate historical data to show trends, dips, and spikes in public approval, potentially correlating these movements with and national crises.

This tool will not only highlight patterns in presidential approval across different periods but also provide insights into the factors that might influence these changes. By integrating data layers, such as economic indicators, the dashboard will offer a multidimensional view of how external circumstances and presidential actions align with changes in public opinion.

Ambitiousness of this Project

The ambitiousness of this project stems from its goal to provide a sophisticated visualization of presidential approval ratings over a span of 40 years, offering more than just numerical data by contextualizing these ratings within broader political and historical events. This project aspires to integrate a variety of data sources, including economic indicators to create a dynamic, interactive dashboard that not only tracks fluctuations in presidential approval but also analyzes the potential influences behind these changes.

Research Questions:

1. Patterns in Presidential Approval Ratings:
   - The approval ratings of the last seven U.S. Presidents show significant fluctuations influenced by economic conditions, major events, and policy successes or failures. Periods of economic prosperity generally boost ratings, while crises often lead to declines.

2. Fluctuations in Inflation Rates During Presidential Terms:
   - Inflation rates varied significantly across presidential terms, with some presidents experiencing stable low inflation and others facing high rates due to economic crises or policy impacts.

3. Unemployment Trends Across Different Presidencies:
   - Unemployment trends reflect economic cycles, with sharp increases typically seen during economic downturns and recoveries often coinciding with falling unemployment rates.

4. Changes in Interest Rates During Presidential Terms (1981-2024):

- Interest rates fluctuated in response to economic conditions, with rates generally being lowered during recessions to spur economic growth and raised during periods of recovery to control inflation.

5. Correlation of Economic Factors with Presidential Approval Ratings:
   - Economic stability, marked by low interest rates, controlled inflation, and reduced unemployment, tends to correlate with higher presidential approval ratings, indicating public sensitivity to economic management.

6. Comparison of Approval Ratings: Donald Trump vs. Joe Biden:
   - Donald Trump’s approval ratings were relatively volatile and trended downward, while Joe Biden’s started higher but faced declines influenced by ongoing economic challenges and recovery efforts.

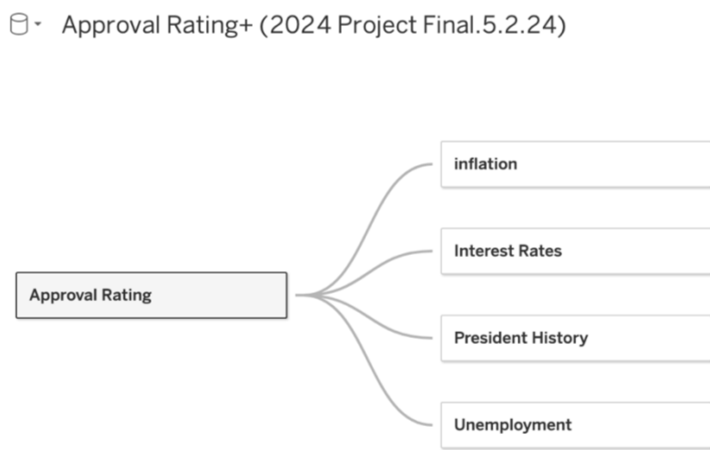
7. Fluctuations in Inflation Rates: Trump vs. Biden:
   - During Trump's term, inflation remained relatively low until the onset of the COVID-19 pandemic. Biden’s term saw a significant increase in inflation, influenced by pandemic-related economic policies and geopolitical tensions.

8. Fluctuations in Unemployment Rates: Trump vs. Biden:
   - Trump experienced low unemployment until a dramatic spike due to the COVID-19 pandemic. Biden inherited high unemployment, which gradually decreased as recovery measures took effect.

9. Fluctuations in Interest Rates: Trump vs. Biden:
   - Interest rates were historically low during Trump’s term to support economic growth and further reduced due to the pandemic. Under Biden, interest rates began to rise as part of the economic recovery efforts to control inflation.

These answers encapsulate how economic indicators and presidential policies play crucial roles in shaping the public’s perception and approval of U.S. Presidents, reflecting the interconnectedness of economics and politics.

Methodology



The data used in project has been sourced form multiple sources mentioned below

DataSource

1) Presidential Approval Ratings (American Presidency Project)
   - Link: [American Presidency Project - Presidential Approval Ratings]

This dataset provides historical approval ratings for U.S. Presidents, allowing for a detailed analysis of how public perception of each president has changed over time. By examining these trends, you can identify periods of significant increase or decrease in approval ratings.

2)Unemployment Data (Federal Reserve Economic Data, FRED)

- Link: [FRED - Unemployment Data Series LNS14000024]

  Utility: This dataset offers monthly unemployment rates from 1989 to the present, providing a timeline of how unemployment has fluctuated through different presidential terms. Analyzing this data can help determine if there is a correlation between unemployment rates and presidential approval ratings. It can also provide insights into how economic performance under different administrations affects public sentiment.

3)Inflation Data (U.S. Bureau of Labor Statistics, BLS)

- Link: [BLS - Inflation Data]

  Utility: This dataset includes detailed records of inflation rates over the years, which is essential for assessing the economic climate under various presidents. By correlating inflation trends with changes in presidential approval

4) FEDFUNDS

- Link**:** [Federal Reserve Economic Data (FRED) - FEDFUNDS Series]

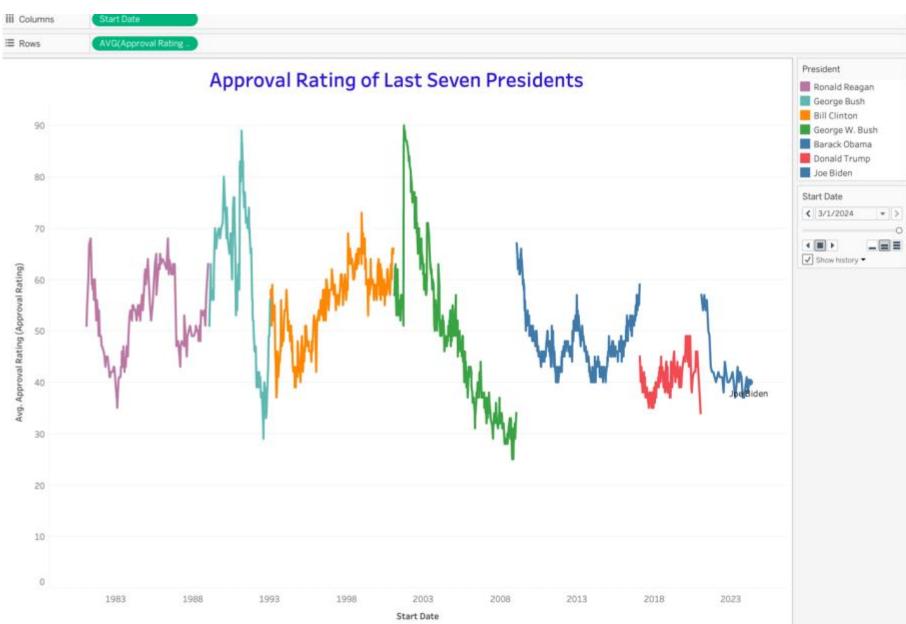
Utility: This dataset represents the Federal Funds Effective Rate, which is the interest rate at which depository institutions trade federal funds (balances held at Federal Reserve Banks) with each other overnight. The data covers the period from 1982 to 2024 and is frequently used as a benchmark for interest rates in the United States. This data is provided by the Federal Reserve Bank of St. Louis.

Data Preprocessing Steps

1. Standardizing President Names Across All Sheets:
    - Purpose: To maintain consistency in naming conventions across all datasets, ensuring that each dataset can be accurately merged or compared without discrepancies in how presidents' names are recorded.
2. Data Transformation:
    - Purpose: To adjust data into formats or structures that are more suitable for analysis and to handle any data integrity issues such as missing values or outliers.
3. Aggregating Data by Presidential Period:
    - Purpose: To simplify analysis by summarizing data within the specific time frames that correspond to each president's term in office.

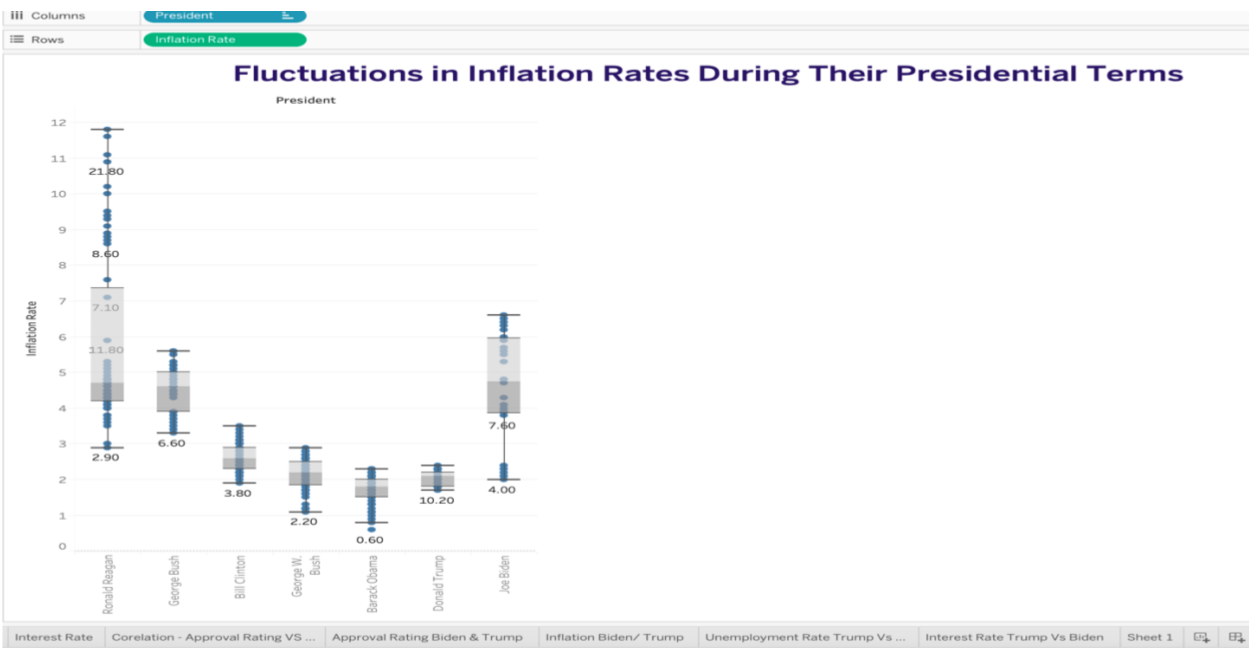
Data Visualization Tools: I have used Tableau as the visualization tool, to create visualization and dashboards for my project.
Analysis

1.What patterns are observed in the approval ratings of the last seven U.S. Presidents, and what might these indicate?



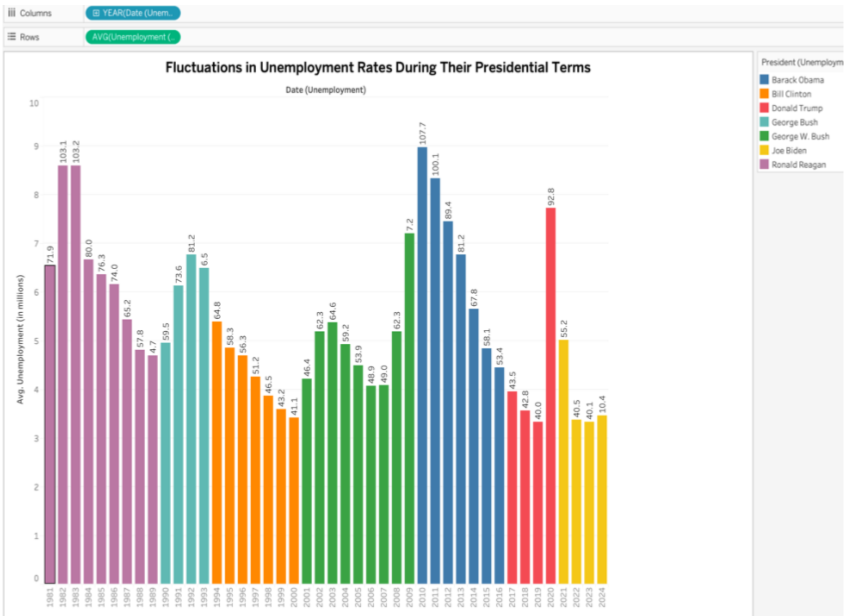
- The Visualization above shows **Ronald Reagan** and **Bill Clinton** both experienced significant recoveries in their approval ratings, suggesting successful policy impacts or economic conditions during their terms.
- **George H.W. Bush** saw a steep decline in approval, possibly reflecting public dissatisfaction with economic or foreign policies.
- **George W. Bush's** approval spiked early due to the rally-around-the-flag effect post-9/11 but declined in the latter part of his presidency.
- **Barack Obama's** approval ratings were relatively stable, indicating steady public sentiment.
- **Donald Trump** displayed more volatility in approval, likely due to controversial policies and political events.
- **Joe Biden** shows a declining trend in the early part of his presidency, possibly due to challenges such as the pandemic response or economic issues.

2.What is the Fluctuations in Inflation Rates During Their Presidential Terms?



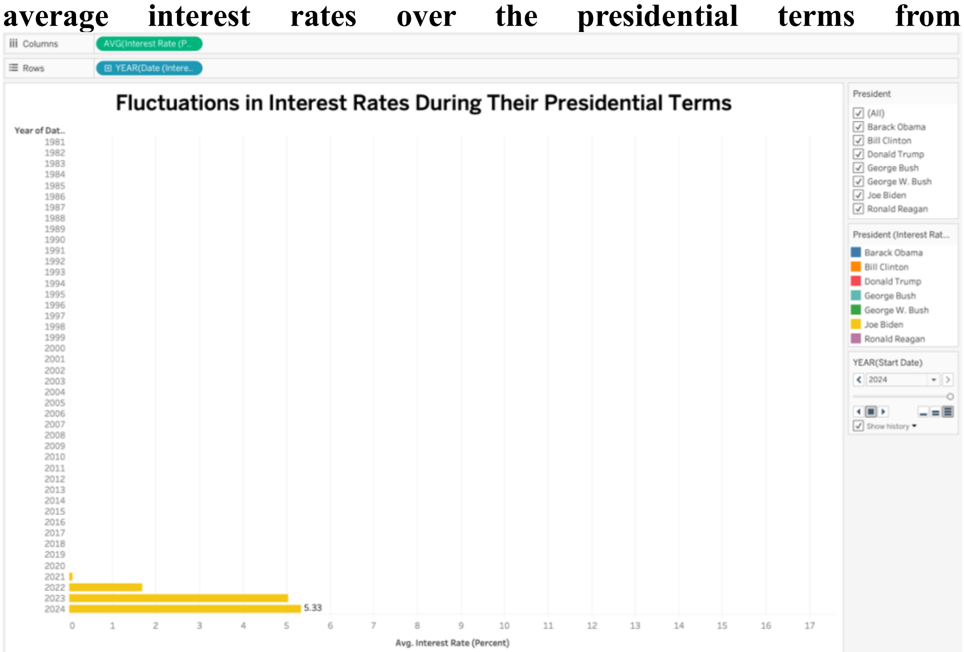
The graph displays the inflation rates experienced during the terms of the last seven U.S. Presidents, visualized as box plots. Each box plot represents the distribution of inflation rates for one president, showing the median, interquartile range, and any outliers during their presidency. The graph illustrates how inflation varied under each president, providing insights into the economic challenges or stability during their administrations. For instance, some presidents show wider ranges indicating more volatile economic conditions, while others display more stable inflation trends.

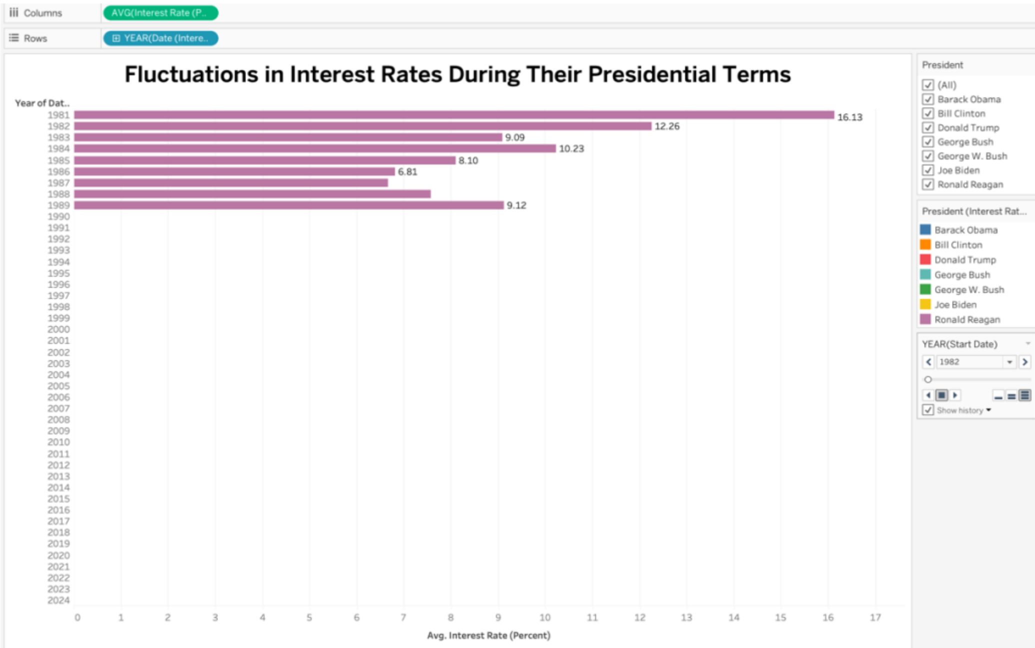
3.llustrate the unemployment trends across different U.S. presidencies?



The graph presents a visual comparison of average unemployment rates during the presidential terms of the last seven U.S. Presidents. Each president's term is represented by bars of a specific color, showing the average unemployment rate for each year of their presidency. This visualization highlights the variations in unemployment across different administrations, indicating how economic conditions have fluctuated and how these fluctuations corresponded with each president's term. For example, higher bars during certain terms suggest periods of increased unemployment, potentially reflecting economic downturns or challenges faced during those presidencies.

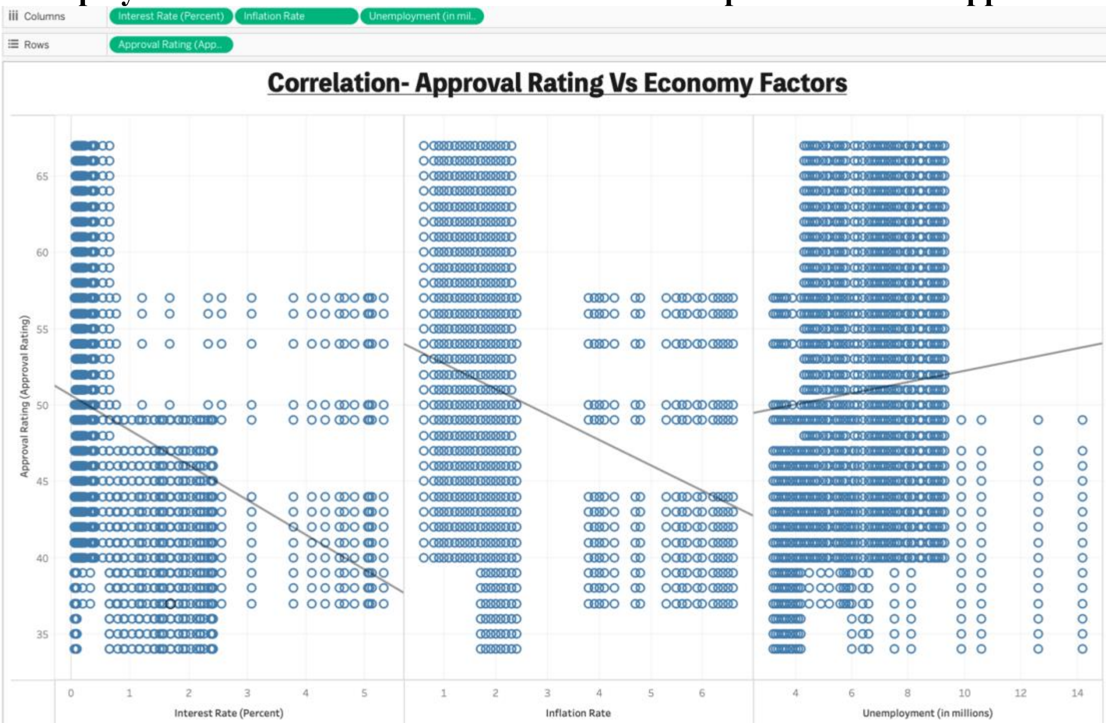
4.Fluctuations in Interest Rates During Their Presidential Terms reveal about changes in average interest rates over the presidential terms from 1981 to 2024?





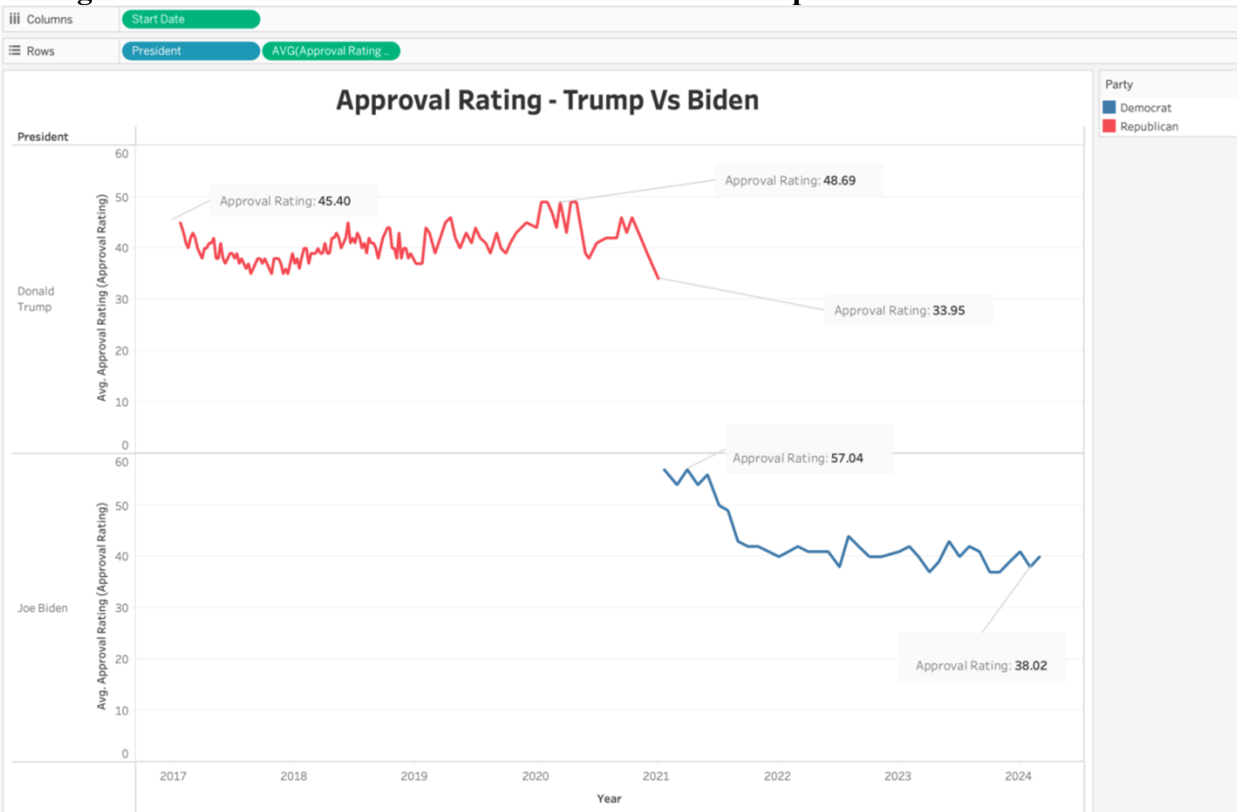
The animated graph illustrates the average interest rates for each year across the presidential terms from Ronald Reagan to Joe Biden. By progressing through the years, the animation highlights how interest rates have fluctuated significantly over time, peaking in the early 1980s and showing variable trends in subsequent years. This visualization dynamically portrays the economic environment each president managed, providing insights into the challenges and conditions faced during their administrations.

5.How do changes in economic factors such as interest rates, inflation rates, and unemployment levels correlate with presidential approval ratings?



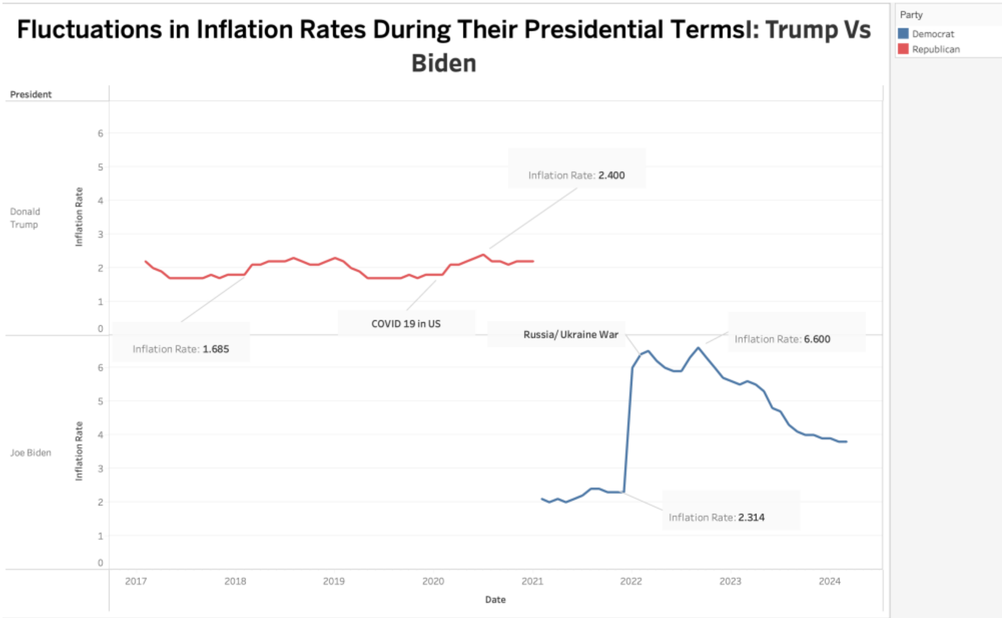
The visualization "Correlation - Approval Rating Vs Economy Factors" demonstrates that there is a tendency for presidential approval ratings to increase as key economic indicators such as interest rates, inflation rates, and unemployment levels decrease. Each column in the graph represents a different economic factor, showing a pattern where lower economic stress (indicated by lower rates of interest, inflation, and unemployment) aligns with higher approval ratings. This pattern suggests that improved economic conditions, which typically enhance public sentiment, positively impact how citizens view presidential performance.

6.How do the approval ratings of Presidents Donald Trump and Joe Biden compare throughout their respective terms?



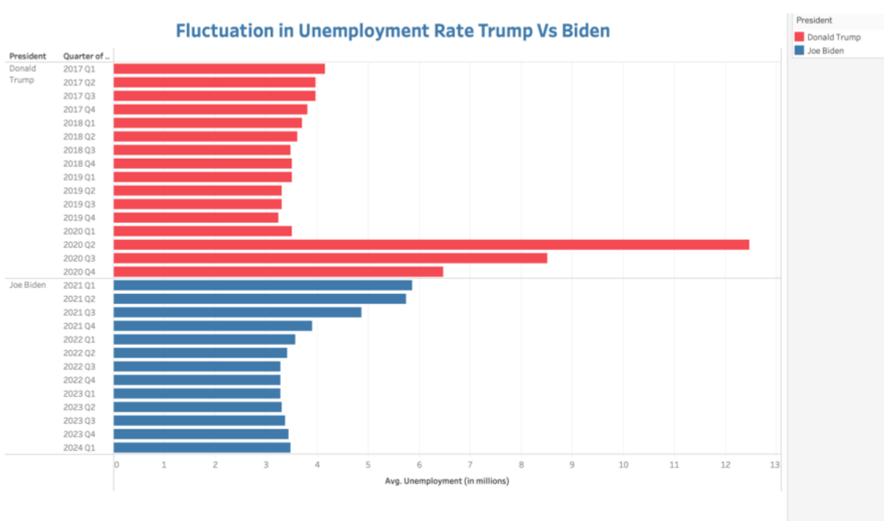
The graph "Approval Rating - Trump Vs Biden" shows the trends in average approval ratings for Presidents Donald Trump and Joe Biden over their respective terms. Donald Trump's ratings are depicted in red and show a general decline over time, starting around 45% and dipping to just under 34% towards the end of his term. Joe Biden's ratings, depicted in blue, start higher at around 57%, experience a decline, and then stabilize at around 38% by 2024. This visualization highlights the volatility in public approval each president faced and the overall downward trend in approval ratings for both presidents during their terms.

7.How did inflation rates fluctuate during the presidential terms of Donald Trump and Joe Biden, and what major events influenced these changes?



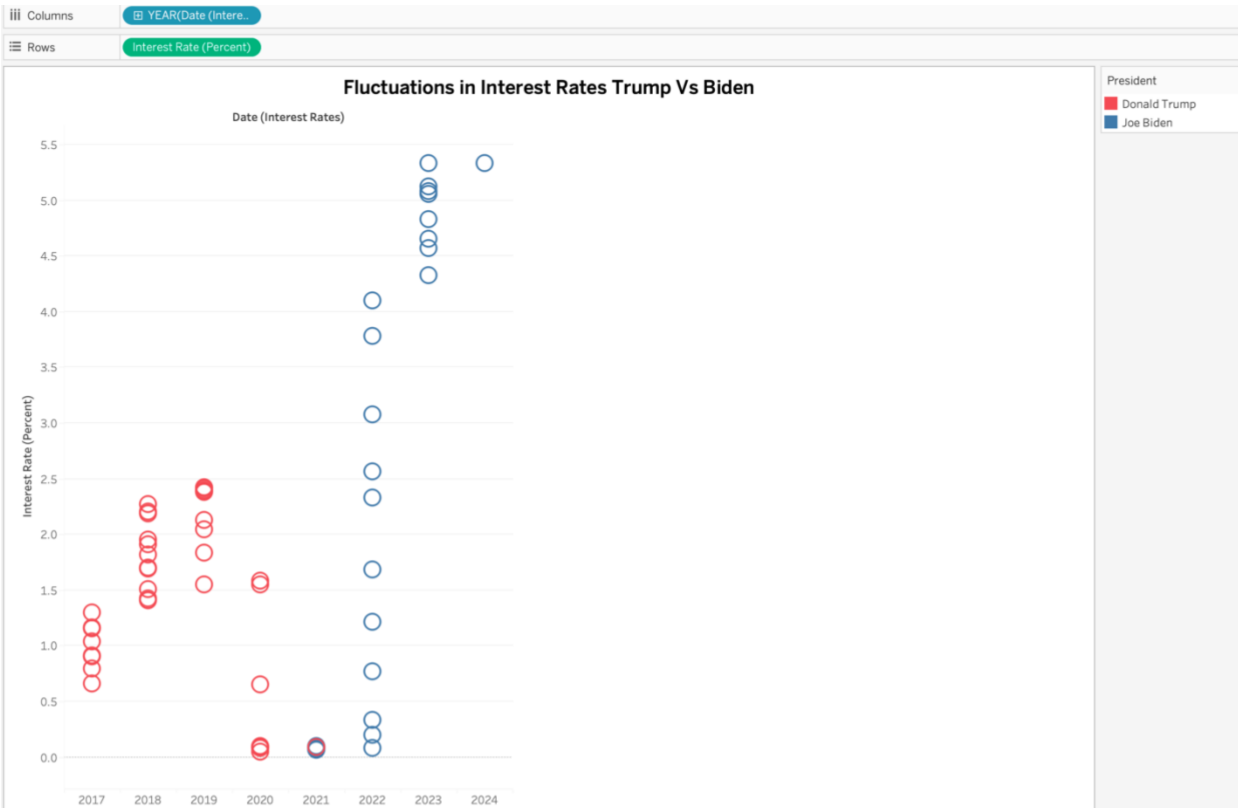
The graph "Fluctuations in Inflation Rates During Their Presidential Terms: Trump Vs Biden" shows the inflation rate trends during the terms of Presidents Donald Trump and Joe Biden. For Trump, the inflation rate remained relatively stable and low, hovering around 1.685 to 2.400 percent. During Biden's term, there was a significant spike in inflation, reaching up to 6.00 percent, followed by a decline. Key events marked on the graph, such as the COVID-19 pandemic and the Russia/Ukraine war, appear to correlate with significant changes in inflation rates, suggesting that these events had a considerable impact on economic conditions.

8. How have unemployment rates fluctuated during the presidencies of Donald Trump and Joe Biden?



The graph "Fluctuation in Unemployment Rate Trump Vs Biden" displays the quarterly unemployment rates throughout the terms of Presidents Donald Trump and Joe Biden. The red bars represent Trump's presidency, showing relatively stable unemployment rates initially, which spike dramatically in 2020, corresponding to the onset of the COVID-19 pandemic. The blue bars represent Biden's presidency, beginning with high unemployment rates inherited from the pandemic's peak, which then show a noticeable decrease over subsequent quarters as recovery efforts take effect. This visualization highlights the significant impact of external crises on employment and the subsequent recovery phase under different administrations.

9.How did interest rates fluctuate during the presidential terms of Donald Trump and Joe Biden?



The graph "Fluctuations in Interest Rates Trump Vs Biden" visually compares the changes in interest rates under Presidents Donald Trump (red circles) and Joe Biden (blue circles) from 2017 onwards. During Trump's term, the interest rates were generally low, averaging around 0.5% to 2.5%, with a noticeable drop towards the end of his presidency. In contrast, under Biden, interest rates started low but began to increase significantly around 2022, reaching levels above 4.5%. This graph effectively illustrates the economic policy environment and the central bank's responses to different economic conditions under each presidency.

Key Findings:
The data visualization project examining U.S. presidential approval ratings from 1982 to 2024 reveals several key insights into how economic factors influence public sentiment. By comparing approval ratings across different presidencies and correlating these with inflation and unemployment data through line graphs and bar charts, it becomes evident that economic stability plays a significant role in shaping approval ratings. Higher inflation and unemployment rates generally correlate with lower presidential approval, indicating that economic discontent directly impacts how presidents are viewed by the public.
The focused analysis on Presidents Biden and Trump further illustrates how specific events and economic policies during their terms influenced their approval ratings. For instance, President DonaldTrump's ratings were affected by his handling initial response to the COVID-19 pandemic, while President Joe Biden's ratings have been influenced by his administration's economic recovery measures. These visualizations not only help in understanding the immediate effects of economic policies and events on presidential approval but also offer a broader view of the enduring impact of economic health on political leadership across decades.

Research Question Conclusion:
From the series of data visualizations comparing various economic indicators during the terms of recent U.S. presidents, here are the overarching conclusions:

1. **Presidential Approval Ratings:**
    - Approval ratings fluctuate significantly across presidencies, generally showing declines during periods of economic downturn or crisis and recovering during periods of stability or successful management of significant events.
2. **Economic Indicators' Influence on Approval Ratings:**
    - Economic conditions such as inflation, unemployment, and interest rates have a noticeable impact on presidential approval ratings. Lower unemployment and inflation rates are generally associated with higher approval ratings, suggesting that economic health is a key driver of public satisfaction with presidential performance.
3. **Inflation Trends:**
    - Presidents experience different inflation environments. Those presiding over lower, stable inflation rates tend to have higher approval ratings, while those encountering high inflation, such as during economic crises or due to policy decisions, often see dips in public approval.
4. **Unemployment Fluctuations:**
    - Sharp increases in unemployment, often resulting from economic recessions or crises like the COVID-19 pandemic, negatively impact presidential approval ratings. Conversely, successful job growth and lower unemployment rates correlate with higher approval.
5. **Interest Rate Adjustments:**
    - Interest rates tend to be lowered during economic hardships to encourage borrowing and spending and are raised in times of economic recovery to control inflation and stabilize the economy. These adjustments reflect the government’s response to current economic conditions and can influence public perception of economic management.

General Conclusion: The relationship between economic indicators and presidential approval ratings underscores the importance of economic conditions in shaping public opinion. Presidents who manage to maintain or restore economic stability often enjoy higher approval ratings, reflecting the public's response to their handling of economic policies and crises.

Additional Research Questions:
How do specific economic policies enacted by presidents influence their approval ratings both immediately and over the longer term?

What role do external global events (such as international conflicts or global pandemics) play in shaping presidential approval ratings in conjunction with domestic economic conditions?

How do demographic factors (such as age, income level, and education) influence public sensitivity to economic changes, and how does this in turn affect presidential approval ratings?

Is there a discernible pattern in how approval ratings influence or predict the outcomes of subsequent elections?

How do media portrayal and public perception interact with actual economic indicators to influence approval ratings?

What is the impact of social media on presidential approval ratings, and how does this interact with economic indicators?

How do emergency economic measures (like stimulus packages during recessions) impact presidential approval ratings short-term versus long-term?

These additional questions not only build on the initial project but also introduce new dimensions that could be explored through further data collection and analysis, enriching the academic and practical understanding of the interplay between economics, media, demographics, and presidential leadership.