The Housing Market In A Recession

The benefits and drawbacks of buying a house during an economic downturn.

Table of Contents

1 Project Description

1.1 Problem Overview

By the end of October 2022, Americans' overwhelming negative view of the economy was in full force. Roughly eight-in-ten adults (82%) said that economic conditions were poor (36%) or only fair (46%) and fewer than two-in-ten (17%) said that conditions were excellent (2%) or good (16%). Though these ratings were a significant improvement from the second quarter of the year, they were still lower than the first quarter of 2022. The battered psyche of most Americans raised concerns and sparked speculations that mainly revolved around whether or not the country was on the brink of a recession.
Recessions are periods of economic decline and are officially declared by the National Bureau of Economic Research. While the idea of a recession may come as a surprise, it's all part of the business cycle and is set to happen on average every 6 years. During this period, the economy is marked by high unemployment rates and lower consumer spending due to a significant increase in cost of living.

1.2 Specific Issue

With its extreme attributes, a recession significantly impacts the housing market. Though housing costs may decrease while rental costs increase, banks have tighter lending restrictions making it harder for a potential buyer to get approved for a mortgage loan. When posed with the question of whether it is a good idea to take advantage of the lower prices and competition during this period to buy a house, there is no clear cut answer that can be provided. Unlike some aspects of personal finance that have blanket rules that present a simple solution, the choice to purchase a house during a recession is variable and highly dependent on factors including location, job security. With knowledge of how the housing market works during a recession, and the benefits and drawbacks of buying a house during such a period, as defining tools, individuals can however make this decision as supported by their personal financial situations and circumstances.

1.3 Business Impact

Buying a house is a huge financial investment not everyone can make. There is a commitment to make regular monthly mortgage payments diligently or the homeowner risks losing the house and all their investments if they default. Unfortunately recessions come with risk of job layoffs and reduced economic activities which might affect the ability to make the regular monthly mortgage payments. When people are unable to make their mortgage payments, the number of foreclosures increases.

On another hand, due to the risks stated above, the number of people that can afford to buy a house during a recession reduces which means properties could stay in the market longer than usual. Does this affect the value of the property? If yes, would the reduction in the property value encourage sales? The Federal Reserve also has the responsibility to keep the economy on track and usually resorts to lowering interest rates to improve economic activities. So with lowered interest rates, anyone could borrow more at a reduced cost over time. Would the lowered interest rates encourage people to borrow money to purchase homes?

By studying the 2001 and 2008 recessions in San Francisco, Dallas and New York, we aim to identify the impact various factors that arose during those recessions had on housing costs so that people could make a more informed decision on house phasing. Those cities were particularly chosen because of their familiarity and size.

1.4 Background

2001 Recession (March - November): Known as the Dot Com Recession

- Causes:
  - With the internet becoming widely popular, investing in tech became very attractive to venture capitalists. There was a big burst of e-commerce.
  - Low interest rates made it very easy to finance debt.
  - Everything went awry when those ecommerce and tech companies had no clear paths of profitability and suffered tremendous losses.
- Results
  - They experienced major layoffs around 1.2 million. In turn, Investments took a big a hit and the economy experienced a slowdown in industrial production.
- Recovery/Aftermath:
  - Once the tragic incident of 9/11, the federal reserve bank decrease interest rates to gain the trust of investors and boost the economy.

2008 (Dec 2007 - June 2009): Known as the Great Recession

- Causes:
  - Reduction of the federal funds rate
  - Mortgages were extended at low interest rates to unqualified borrowers who could not repay them.
    - NINJA loans (no income, no job, and no assets)
    - Mortgage fraud for derelict homes (the building is boarded up or has metal screens over the doors and windows
    - Adjustable-rate loans
    - Interest-only loans
      - Investment like a bond that consists of a bundle of home loans bought from the banks that issued them.
    - Mortgage-backed securities
- Results:
  - The United States alone shed more than 8.7 million jobs causing the unemployment rate to double.
  - American households lost roughly $19 trillion of net worth as a result of the stock market plunge.
  - 3 million foreclosure filings
- Recovery/Aftermath:
  - Dodd-Frank Act in 2010

2 Data

2.1 Source

To tackle our project we looked at several data sets from the U.S. Bureau of Labor and Statistics (BLS), Kaggle, The Organisation for Economic Co-operation and Development (OECD) and Federal Reserve Economic Data (FRED). The U.S Bureau of Labor and Statistics "measures labor market activity, working conditions, price changes, and productivity in the U.S. economy to support public and private decision making". Kaggle is a web repository of data across multiple fields and industries. OECD is an international organization whose mission statement is to build better policies for better lives. They work with governments, policy makers and citizens to initiate evidence-based standards and display solutions for social, economic and environmental challenges. Fred is an online database consisting of hundreds of thousands of economic data time series from scores of national, international, public, and private sources".

The first group of our datasets looked at identifying the recession periods using indicators and indices:

Gross Domestic Product (GDP)	The monetary value of all finished goods and services made within a country during a specific period. It is used to estimate the size of an economy and its growth rate.
Employment Rate	The percentage of working age people currently employed.
Industrial Production	The output of industrial establishments and measures economic expansion. It covers sectors such as mining, manufacturing, electricity, gas and steam and air-conditioning.
Inflation	The rate at which prices for goods and services rise.
Real Income	How much money an individual or entity makes after accounting for inflation.

The second group of data focused on the real estate market specifically housing cost:

Housing Cost	Cost of a single-family home in cities of interest
Federal Reserve Interest Rate	Cost of borrowing among banks. It also Influences short-term interest rates such as home and auto loans.

2.2 Data Wrangling and Cleaning

The inflation data from the U.S. Labor and Statistics was fairly cleaned and didn't require any extensive manipulation. We melted our data frame to be in the format needed and set our index to a date column assuring that the periods needed were available and there were no missing data points. From Kaggle, the data set included the housing cost information about cities across the United States. To get it ready for our analysis we had to filter the cities of interest, transpose, reset the column headers and assign the date column as the index for our data frame.

About GDP, Employment Rate, and Industrial Production, those were captured from OECD. Given that the OECD is an internal organization it holds data from different countries such as Australia, China, Mexico etc… We dropped unnecessary columns, set the index using the date column, and filtered the data frame to only keep information relating to the United States. The last two datasets, Real Median Income and Federal Reserve Interest Rate were pulled from FRED and required no manipulation. There were no null values identified and we were able to set our index and start plotting our graphs.

2.3 Exploratory Data Analysis

Gross Domestic Product (GDP)

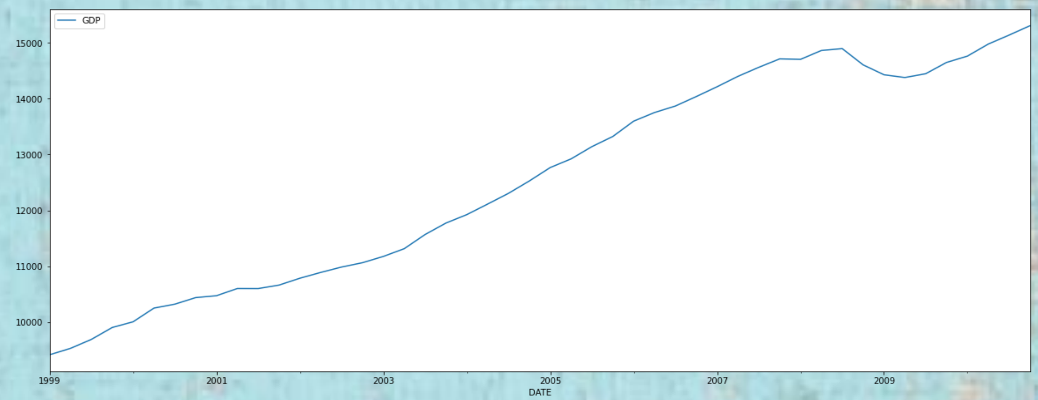

Figure 1: Graph of GDP from 1999 - 2010

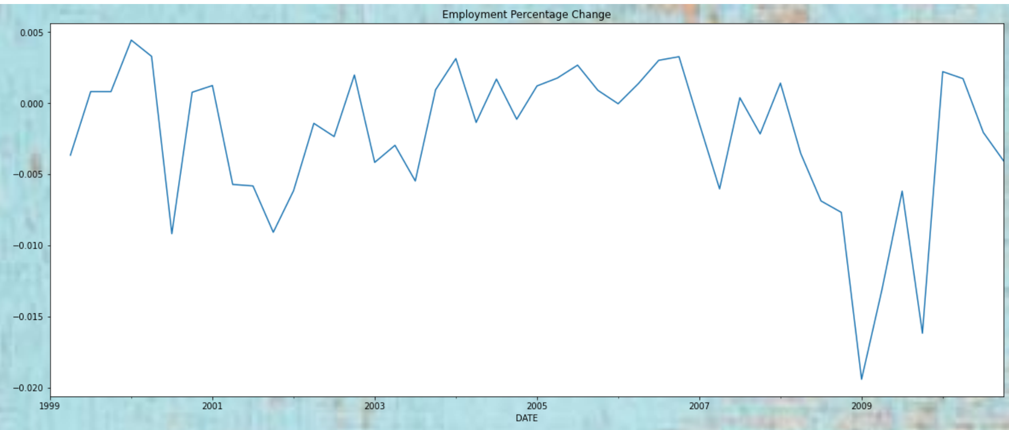

Figure 2: Graph of GPD percentage change from 1999 - 2010

Once the data set was graphed, there is a steady increase of gdp over the years with a slight decrease in 2008. Based on the definition of a recession where the economy is experiencing a downturn, the GDP did not react as expected. To look further in the data set, a percentage change graph was done to highlight the peaks and dips that may have been missed in graphing the data points. The percentage change graph shows that there was 1% decrease in 2000, followed by a fluctuation of .5% in the following months. In the 2008 recession, the GDP decreased to -2%, the lowest that it has been in the previous 10 years. Towards the end of 2009, the GDP started on an upward trend and peaked at 1% change.

Employment Rate

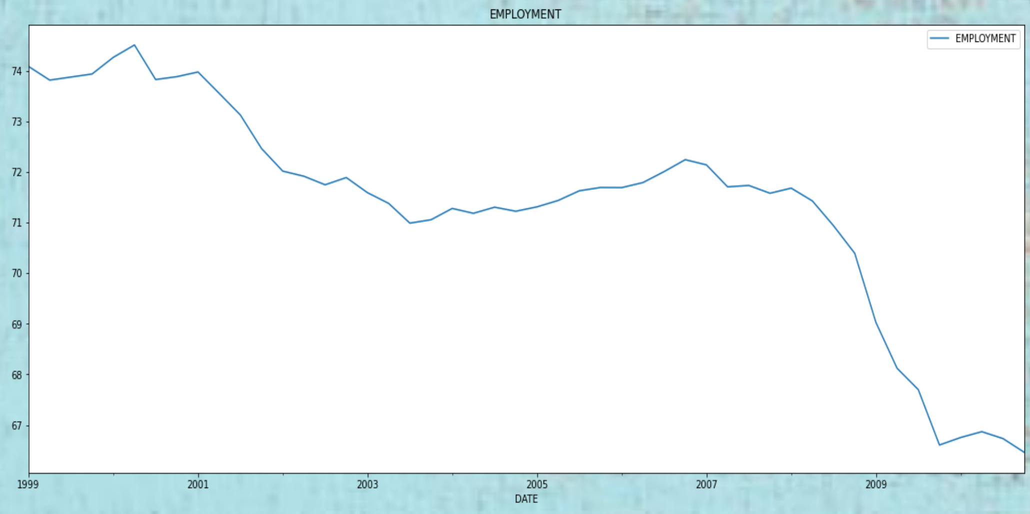

Figure 3: Graph of Employment Rate from 1999 - 2010

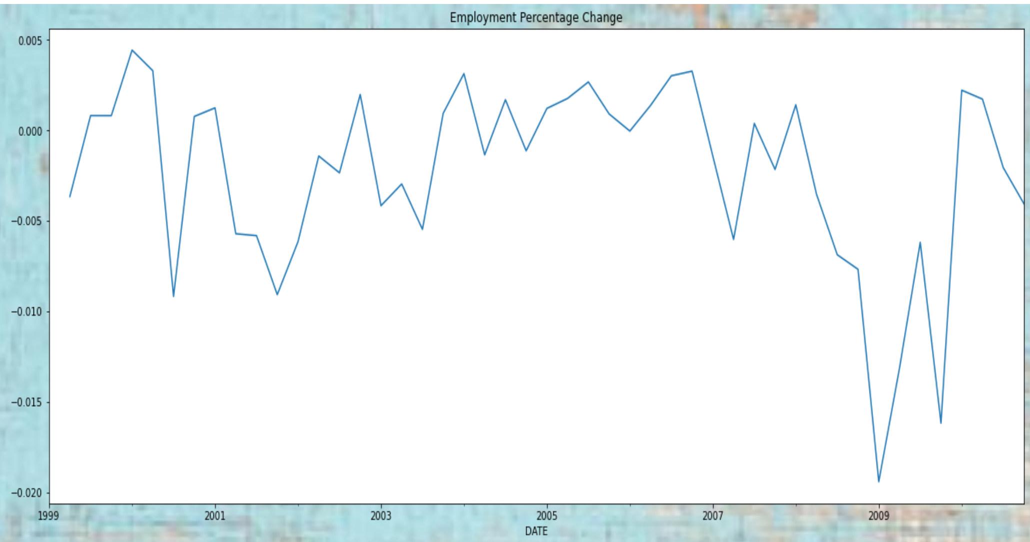

Figure 4: Graph of Employment Rate percentage change from 1999 – 2010

During an economic downturn, economists notice that the employment rate tends to trend downward. Just as expected, the employment rate decreased in 2001 and 2008. Taking a deeper look, the observation can be made that the employment rate decreased by -1% in mid-year 2000 and 2001. For the 2008 period, the employment rate experienced a -2% change.

Industrial Production

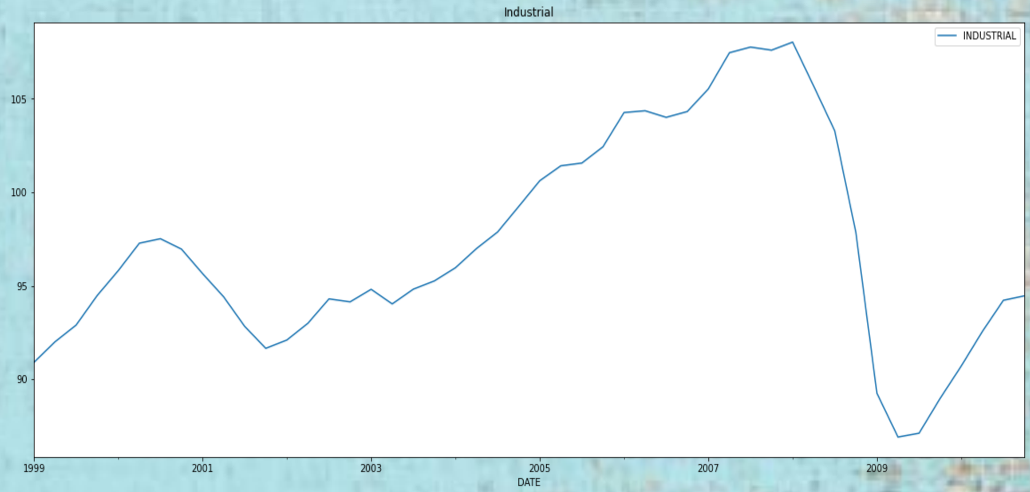

Figure 5: Graph of Industrial Production from 1999 – 2010

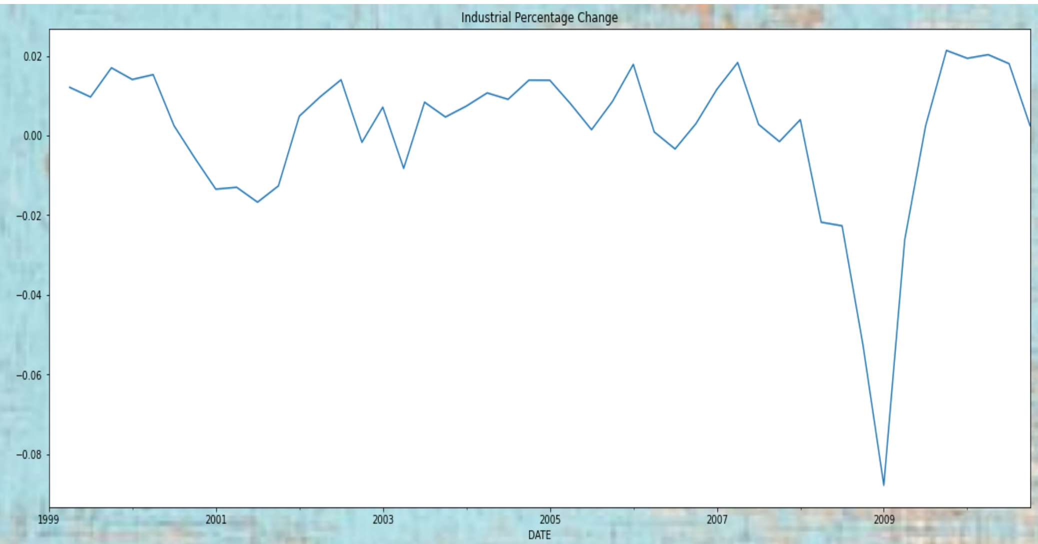

Figure 6: Graph of Industrial Production percentage change from 1999 – 20120

Based on the assumption of a recession, industrial production had a downward trend during the identified period of 2001 and 2008 being the steepest one. In 2001, there was a -2% change and in 2008 we saw a -8% change.

Real Personal Income

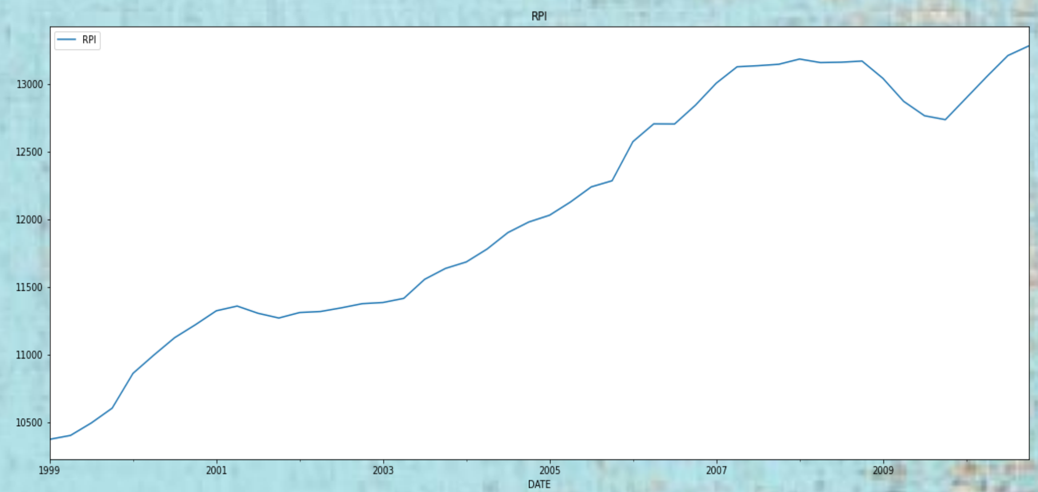

Figure 7: Graph of Real Personal Income form 1999 – 2010

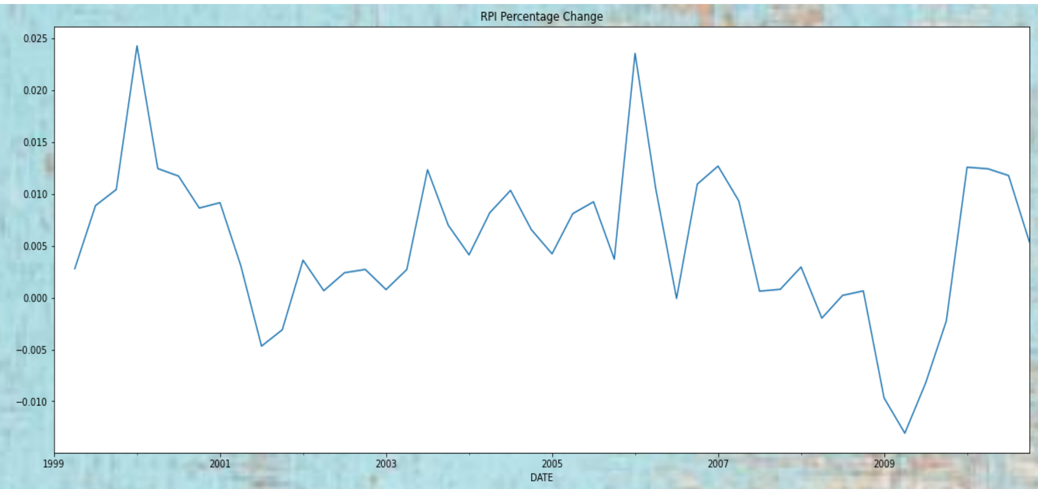

Figure 8: Graph of Real Personal Income percentage change from 1999 – 2010

In a recession, it is normal for the real income to decrease, simply because inflation is expected to increase. Similarly, to the GDP data set, graphing the percentage change for the real income data set was necessary to do a thorough evaluation. In 2000, real income experienced a 2.5% increase, the following year there was a steady decrease to -0.5% in the midst of the recession. During the 2008 recession, the real income hovered right above -0.5%, before the lowest decrease in early 2009 at -1%.

Inflation

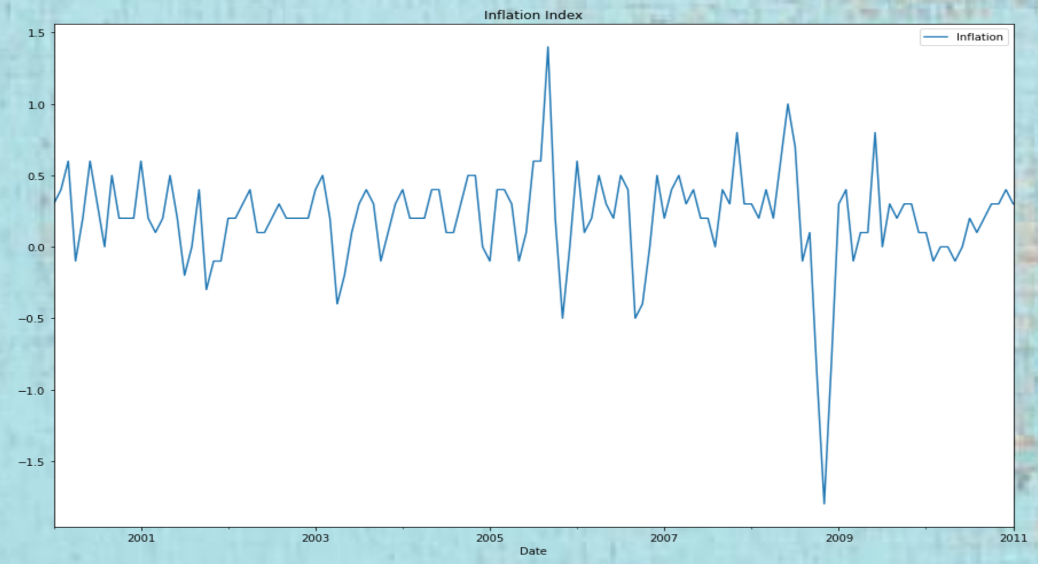

Figure 9: Graph of Inflation from 1999 - 2011

Inflation is the rate at which prices for goods and services rise. From 2000 to 2015, there's a consistent fluctuation of 0.5 which suggests very little change in the cost. In 2008, the lowest decrease in the inflation index was -1.5.

Federal Reserve Interest Rate

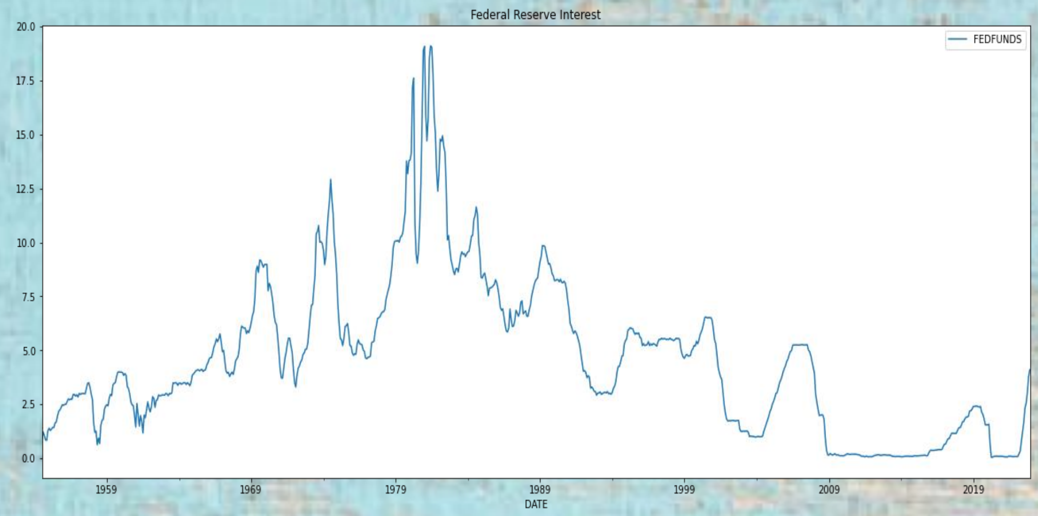

Figure 10: Graph of Federal Reserve Interest Rate from 1950 – 2020

From the plot, rates have risen by the most in a single year since the 1960s. It then began drifting downward sharply, falling first to a target range of 5-6 percent around 1986. After several oscillations, interest rates haven’t eclipsed 10 percent since 1984. It can also be seen that the Federal Funds Target Rate in 2008 had the lowest of 1 percent.

Housing Cost In New York

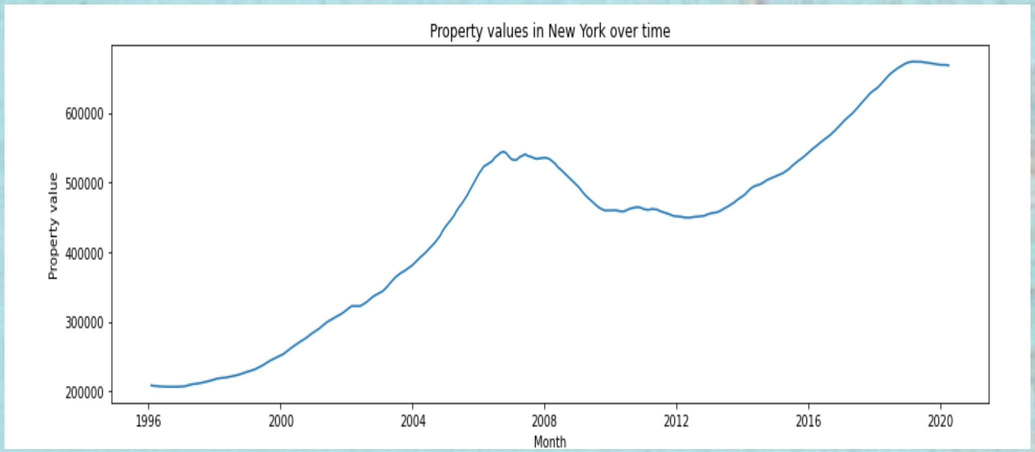

Figure 11: Housing Cost graph for New York, NY from 1990 – 2020

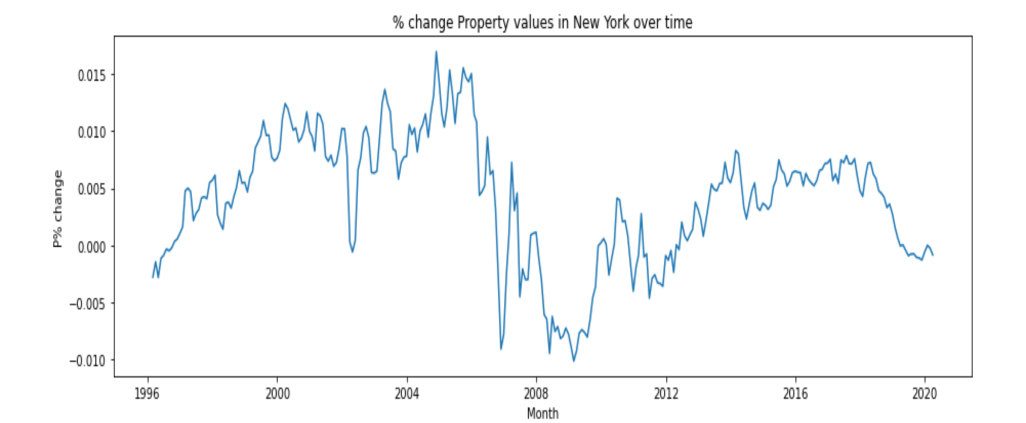

Figure 12: Housing percentage change graph for New York, NY from 1990 – 2020

The graph of Property Values over time in New York shows a steady rise in property value from 1996 up until around 2007. The property value fluctuates around the same price range from 2007 till 2008 and then starts a steady fall that continues till about 2012. The graph of the % change in Property Value also shows a similar story. It shows an increasing trend from 1996 and then the trend changes around 2006/2007 and starts decreasing. The two graphs show that during the recession of 2008, there was a fall in the Property Values in New York.

Housing Cost In Dallas

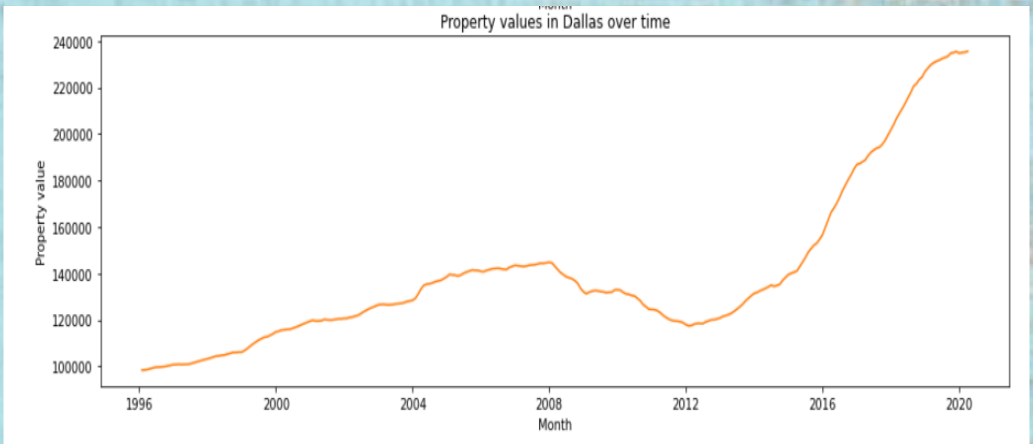

Figure 13: Housing cost graph for Dallas, TX from 1990 – 2020

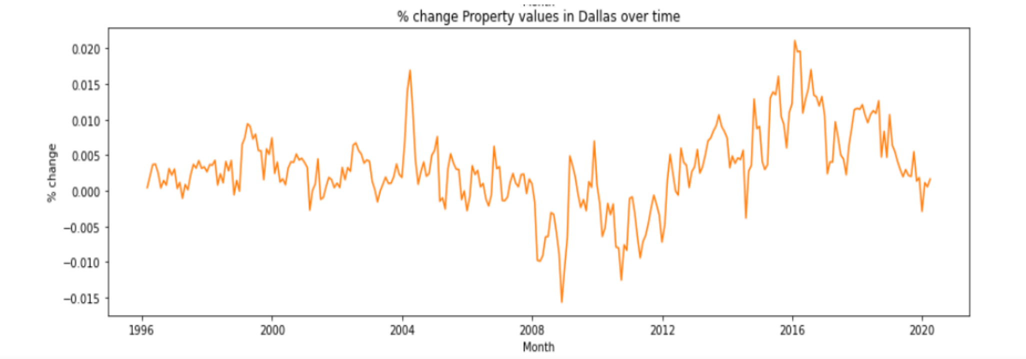

Figure 14: Housing percentage cost graph for Dallas, TX from 1990 – 2020

In Dallas, the graph above shows a major fall starting from 2008 with a steady rise beginning in 2012. Looking at the percentage graph, we see a consistent fluctuation for 0.5% from 1996 to 2004 where the housing cost peaked at an increase of 1.5%. In 2008, the housing cost saw a decline of -1.3 percent, the lowest that it has ever been.

Housing Cost In San Francisco

Figure 15: Housing Cost graph in San Franciso, CA from 1990 – 2020

Figure 16: Housing Cost percentage change graph for San Francisco, CA from 1990 – 2020

In San Francisco, we saw a continuous rise in housing costs during the 2001 recession. On further analysis, this increase was caused by a number of factors such as the job market and low interest rates. San Francisco is a technology hub and during the dot-com boom, many high-paying jobs were being created, leading to an increase in housing demand and prices. For the 2008 recession, the housing costs decreased over the period of the recession which made it more attractive for borrowers.

3 Dashboard

To present our dashboard, both recession periods were overlaid on one graph over a two year period. It helped us identify any similarities or differences. The selected time frames are as follows; 2001 - from April 2000 to April 2002 and 2008 - from January 2007 to January 2009.

It features multiple sections where we analyze benefits and drawbacks of buying a house during an economic downturn. We picked the best graphs that displayed the greater impact on the economy to feature on our dashboard: Gross Domestic Product (GDP), Employment Rate, Inflation Rate and the cost for the housing market along with their respective percentage graphs. The first tab of our dashboard displays a map highlighting the states of the selected cities (New York NY, Dallas, TX and San Francisco, CA) along with a brief description of our project. The next two tabs focus on our analysis of the recession periods: 2001 and 2008.

On our second tab, you may interact with our different plot charts where we analyze how the different economic indicators such as the Gross Domestic Product, Employment, Federal Reserve Interest Rate and inflation fluctuate during the recession periods on a monthly basis. Our approach is to showcase the impact of those economic factors by comparing how they evolve during the two recession periods.

On our last tab, we analyze the housing market throughout a recession comparing the average home prices and percentage change of the three major cities selected and also represented by an interactive plot chart, you will be able visualize how these components have varied for each cities. We can foresee how an eventual recession can affect prices or homebuyers and homeowners in the New York NY, Dallas TX and San Francisco CA.

[The Housing Market In A Recession]

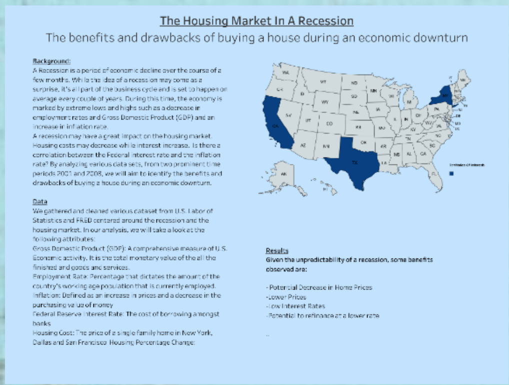

Figure 1: Description of project scope and Map representing the state of New York, Texas, and California.

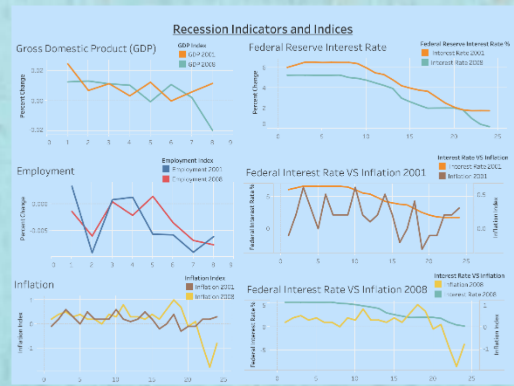

Figure 2: Representation of the recession indicators of 2001 and 2008

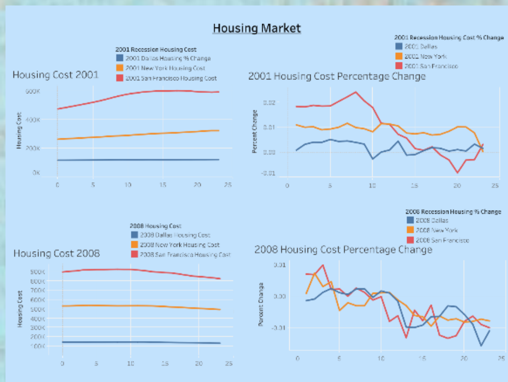

Figure 3: Evolution of the housing market for Dallas, New York, and San Francisco for the recession of 2001 and 2008.

4. Conclusion

In conclusion, the decision to buy a house during an economic downturn is a complex one, and there is no clear-cut answer that fits all. It is dependent on a variety of factors such as location, job security, and the state of the economy.

On the one hand, there are several benefits to buying a house during an economic downturn. Firstly, there is a potential decrease in home prices as a result of lower demand due to people's uncertain financial situations. Secondly, lower mortgage rates may also be an advantage as interest rates tend to be reduced to stimulate the economy during a recession.

On the other hand, there are also several drawbacks to buying a house during an economic downturn. Firstly, obtaining a financial source could be difficult as banks are less likely to lend money during a recession, and lenders may be less likely to approve mortgages due to the higher odds of borrowers defaulting on their payments. Secondly, financial and job security could also be a concern as a result of mass layoffs and pay cuts, which could make it difficult to keep up with mortgage payments.

Therefore, while there are benefits and drawbacks to buying a house during an economic downturn, it is ultimately a personal decision that must be made after careful consideration and evaluation of one's financial situation and future prospects.

5. Future Work

Further research in the following areas could provide a more comprehensive understanding of the benefits and drawbacks of buying a house during an economic downturn, and help individuals make more informed decisions in the future.

1. Analyzing the effect of recessions on rental markets: The study could also explore the effect of recessions on rental markets, including changes in rental prices, the availability of rental properties, and the stability of rental income.
2. Impact of natural disasters and pandemics on the housing market during a recession: It would be interesting to examine the effect of large-scale events, such as natural disasters or pandemics, on the housing market during a recession and how they compare to the impact of a typical recession.
3. Conduct a comparative analysis between populous cities and sparsely populated cities: The study could be expanded to include sparsely populated cities and compare the housing market trends during recessions in these different locations.

6. References

1. CFI Team. "Recession". *Corporate Finance Institute*. 5 December 2022 https://corporatefinanceinstitute.com/resources/economics/recession/

2. "How Do Economists Determine Whether the Economy Is in a Recession?". *The White House*. 21 July 2022 https://www.whitehouse.gov/cea/written-materials/2022/07/21/how-do-economists-determine-whether-the-economy-is-in-a-recession/

3. Pew Research. "Election 2022". *Pew Research Center* 20 October 2022 https://www.pewresearch.org/politics/2022/10/20/views-of-the-economy-and-economic-concerns/

4. "Real Estate Trends: Should You Buy A House In A Recession? Pros And Cons". *Forbes*. 3 January 2023. https://www.forbes.com/sites/qai/2023/01/03/real-estate-trends-should-you-buy-a-house-in-a-recession-pros-and-cons/?sh=12d3c45d6869

5. Jeremy Salvucci. "What Was the Dot-Com Bubble & Why Did It Burst?". *The Street*. 12 January 2023. https://www.thestreet.com/dictionary/d/dot-com-bubble-and-burst

6. David S. Langdon, Terence M., McMenamin, and Thomas J. Krolik. "U.S. labor market in 2001: economy enters a recession". *U.S Bureau of Labor Statistics.* February 2022. https://www.bls.gov/opub/mlr/2002/02/art1full.pdf