



Inflation

Alisha- Payal Dhillon

Yonghao Liu (Eric)

Termeh Mohebbie

MD Mohsin Rana

What Is inflation?

Inflation is a rise in prices, which can be translated as the decline of purchasing power over a given time. The rate at which purchasing power drops can be reflected in the average price increase of a basket of selected goods and services over some time of period.

Terms:

CPI: *Consumer Price Index*

A= CPI of Last year

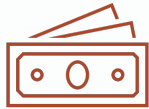
B= CPI of current year

What Is The Inflation Rate Formula?



Inflation Rate = $((B-A)/A) \times 100$. In this post we'll explain the different components of the inflation rate and what it tells you about the economy

Summary



1. How does Inflation affect purchasing habits?



2. How does grocery price and minimum wages relate to inflation?



3. How Inflation affecting Labour Market?



4. How Inflation affects real estate market?



Inflation overview



How does Inflation affect purchasing habits?

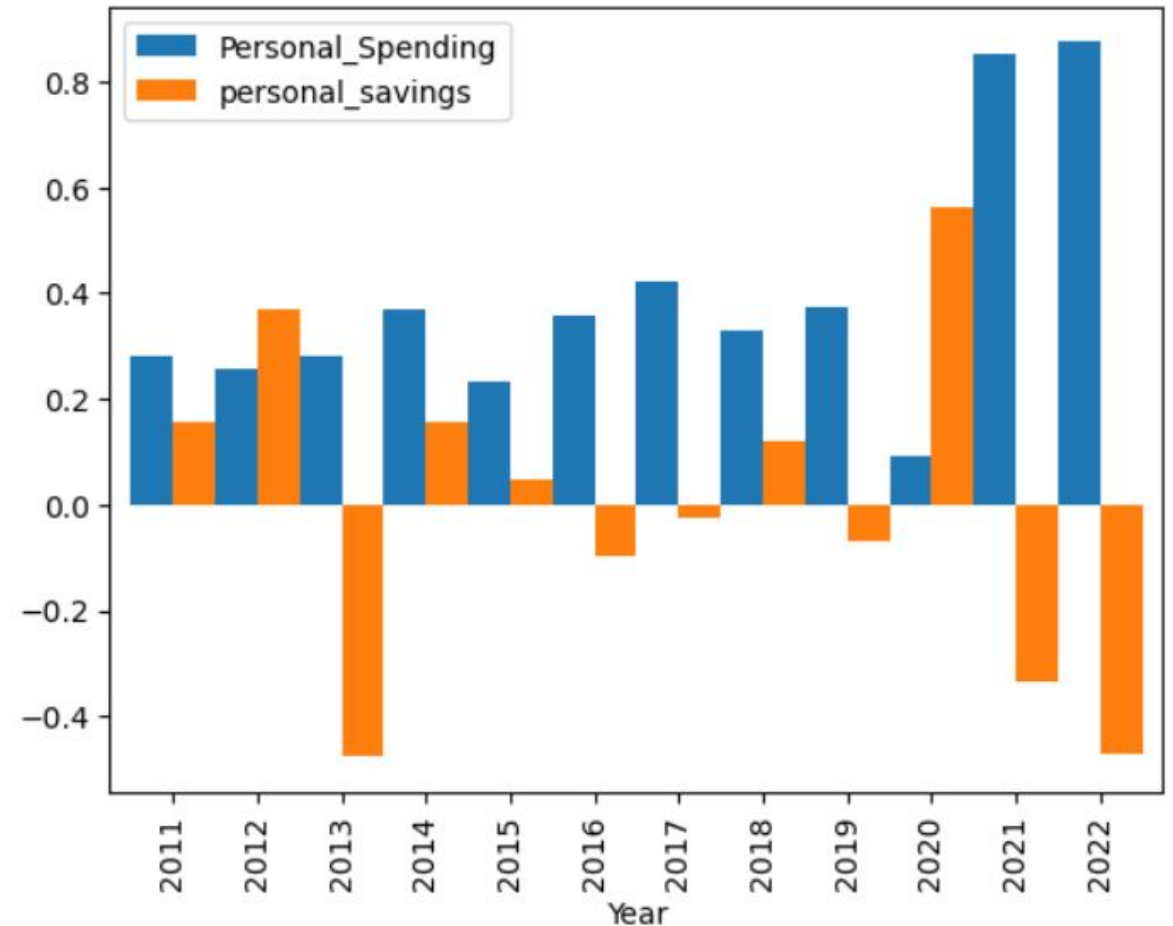
Consumers in the USA

Inflation can increase the quantity a consumer purchases in the short run though, because they might be going to retail stores where they believe they can buy products cheaper, but you can't make a general statement that people all buy less or trade down, it usually depends on there savings and Income.

Year	Personal_Savings	Personal_Spending	Personal_Income
2011	7.163051	0.279282	0.436052
2012	8.816953	0.255540	0.623310
2013	6.133550	0.279161	-0.197608
2014	7.033087	0.369930	0.524938
2015	7.546084	0.232143	0.278287
2016	6.986771	0.356395	0.261151
2017	7.247425	0.421005	0.395787
2018	7.489345	0.327489	0.445925
2019	8.829921	0.373464	0.305717
2020	16.845955	0.091436	0.654558
2021	11.887090	0.852334	0.518868
2022	3.281159	0.874263	0.402799

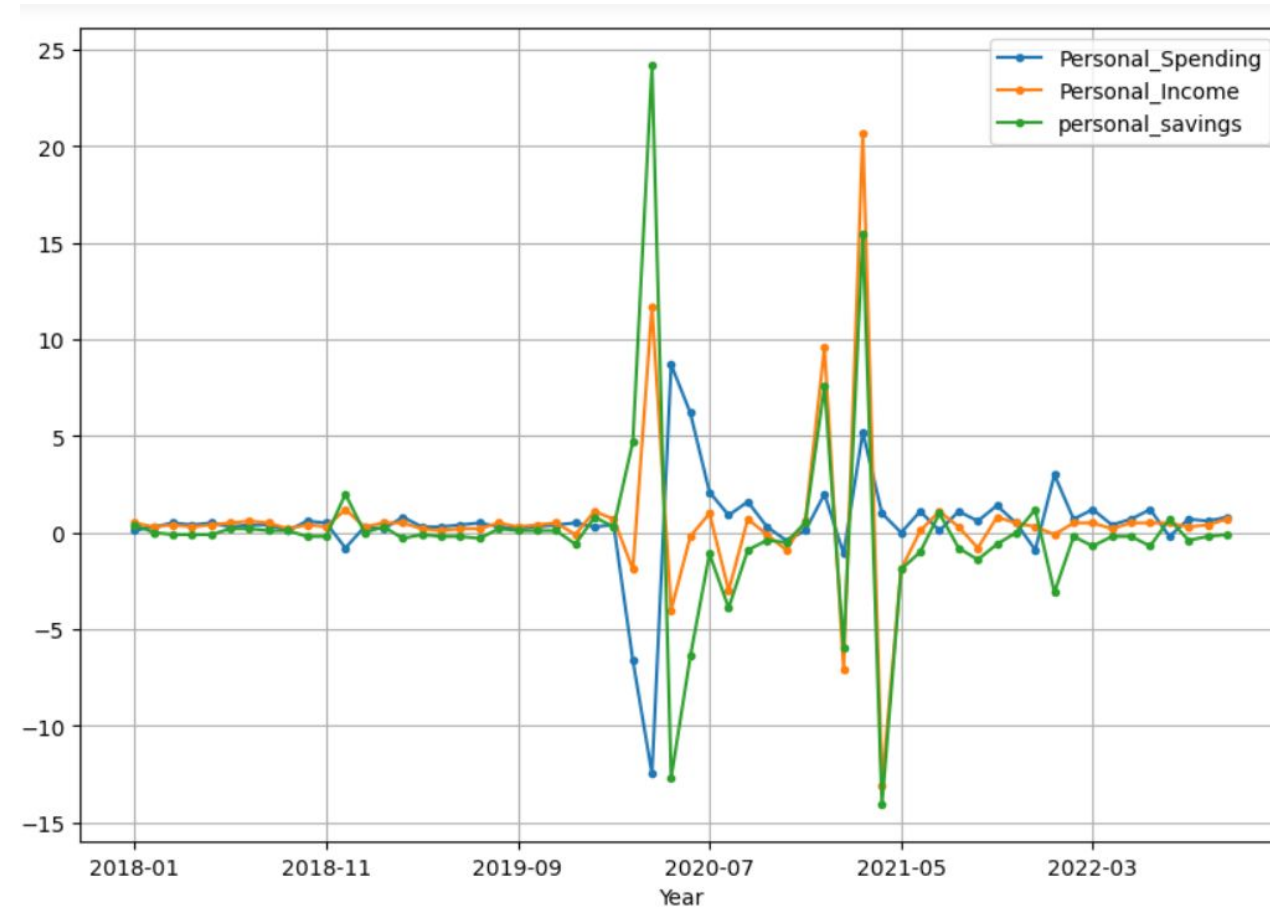
Personal Savings vs Personal Spending

- Personal consumption expenditures (PCE) is the primary measure of consumer spending on goods and services in the U.S. economy minus personal income, therefore PCE shows how much of the income earned by households is being spent on current consumption as opposed to how much is being saved for future consumption.
- Collected data shows that due to the strong inflationary pressure and broad price increases across the economy, mainly in the services sectors have caused consumers spend more than what they have been saving.
- Prices that were seen increasing was for shelter (0.5%), airline fares (18.6%), and new vehicles (1.1%), prices also increased for medical care (0.4%), recreation (0.4%), and for household furnishings and operations,.
- As per the personal saving rate as a share of disposable income in the United States decreased to 2.3% in October of 2022 which is now below 0.4%, this has been the lowest since the great recession in 2013-2014 as the high inflation rate and rising borrowing costs are eating out the cushion Americans accumulated during the COVID-19 pandemic.



Differentiating between Personal Income, Spending & Savings

- Personal Income in the United States averaged 0.53% from 2018 until 2022, reaching an all time high of 20.7% in March of 2021 and recorded a decrease of -13.1% in April of 2021, along with personal savings.
- Looking at the line graph it has shown that there was a strongest increase reading between the years of 2020 and October of 2021, primarily reflecting due to increases in compensation and government social benefits due to the covid- 19 pandemic. The increase in compensation was led by private wages and salaries. Within private wages and salaries, both services-producing industries and goods-producing industries increased. The increase in government social benefits reflected increases in "other" benefits, primarily reflecting one-time refundable tax credits issued by states.
- Personal Savings and Personal Income seem to be running next to each other as of the years of 2020- 2021 October as the US was dealing with the lock downs due to the pandemic as per the Personal Spending was low during that time frame.
- As shown in the graph, Personal spending in the US increased 0.8% October of 2022, following a 0.6% rise in September and matching market forecasts helped by a tight labour market and high savings, despite rising prices and borrowing costs. Within services, the largest positive contributor was spending on food services and accommodations.



CPI

- The Consumer Price Index (CPI) represents changes in prices as experienced by Canadian consumers. It measures price change by comparing, through time, the cost of a fixed basket of goods and services. CPI is one of the most widely used measures of inflation.

CPI data frame (General and Food only)

Base year:

1982-1984 = 100

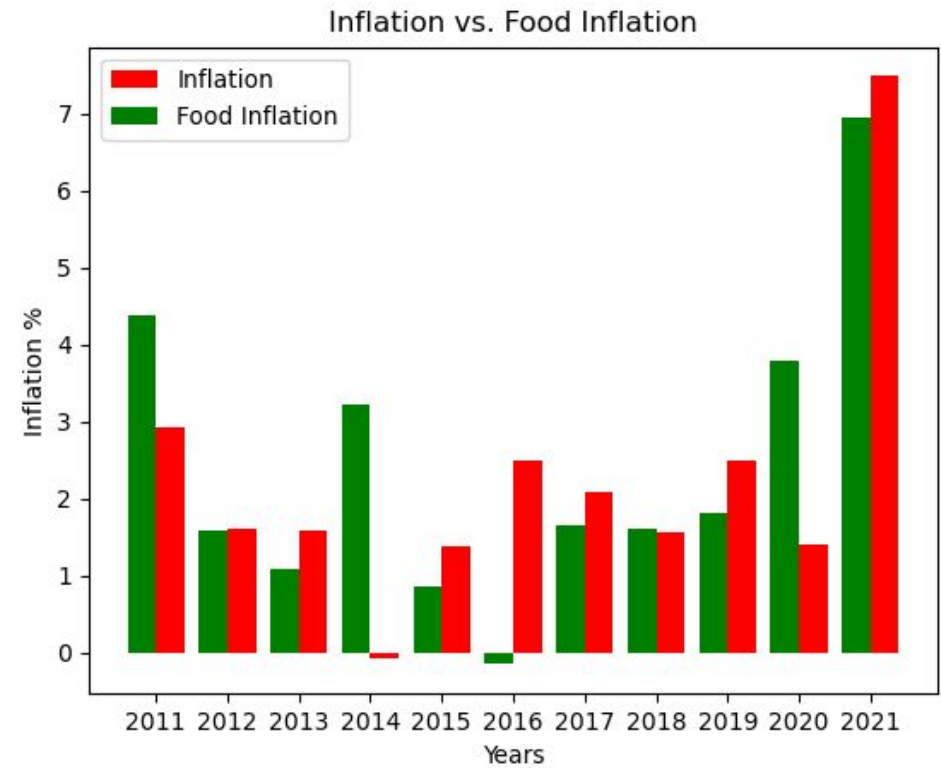
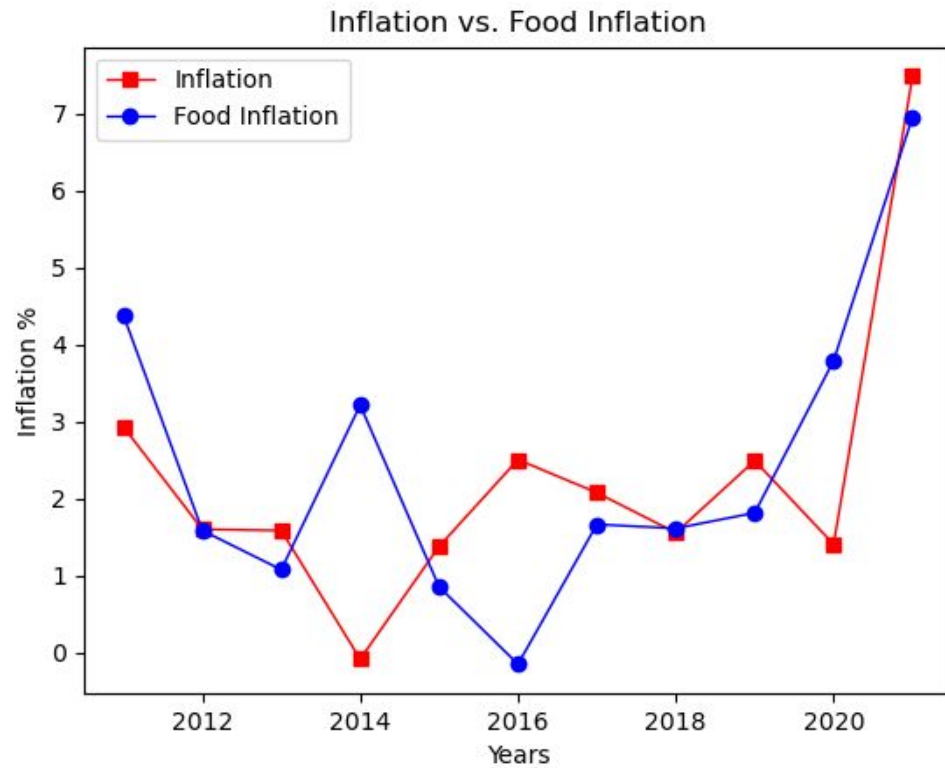
	Year	Jan		Year	Jan
98	2011.0	220.223	11	2011.0	222.912
99	2012.0	226.665	12	2012.0	232.666
100	2013.0	230.280	13	2013.0	236.341
101	2014.0	233.916	14	2014.0	238.872
102	2015.0	233.707	15	2015.0	246.538
103	2016.0	236.916	16	2016.0	248.631
104	2017.0	242.839	17	2017.0	248.242
105	2018.0	247.867	18	2018.0	252.361
106	2019.0	251.712	19	2019.0	256.417
107	2020.0	257.971	20	2020.0	261.057
108	2021.0	261.582	21	2021.0	270.938
109	2022.0	281.148	22	2022.0	289.772

Inflation Rate

Calculated from the cpi on the I

	Year	Annual food inflation rate %	Annual inflation rate %
0	2011	4.38%	2.93%
1	2012	1.58%	1.59%
2	2013	1.07%	1.58%
3	2014	3.21%	-0.09%
4	2015	0.85%	1.37%
5	2016	-0.16%	2.50%
6	2017	1.66%	2.07%
7	2018	1.61%	1.55%
8	2019	1.81%	2.49%
9	2020	3.78%	1.40%
10	2021	6.95%	7.48%

Inflation rate (Charts)



Federal minimum wage

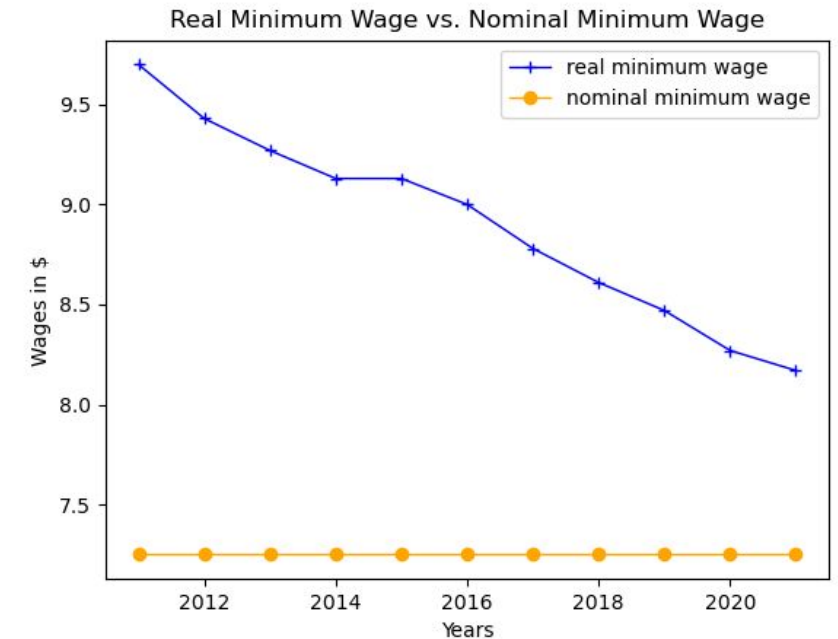
- A minimum wage is **the lowest remuneration that employers can legally pay their employees**
- **Different states could have different minimum wage, but it can't be lower than the minimum wage regulated by the federal law.**
- **The current federal minimum wage is \$7.25 per hour**

Federal minimum wage (Chart)

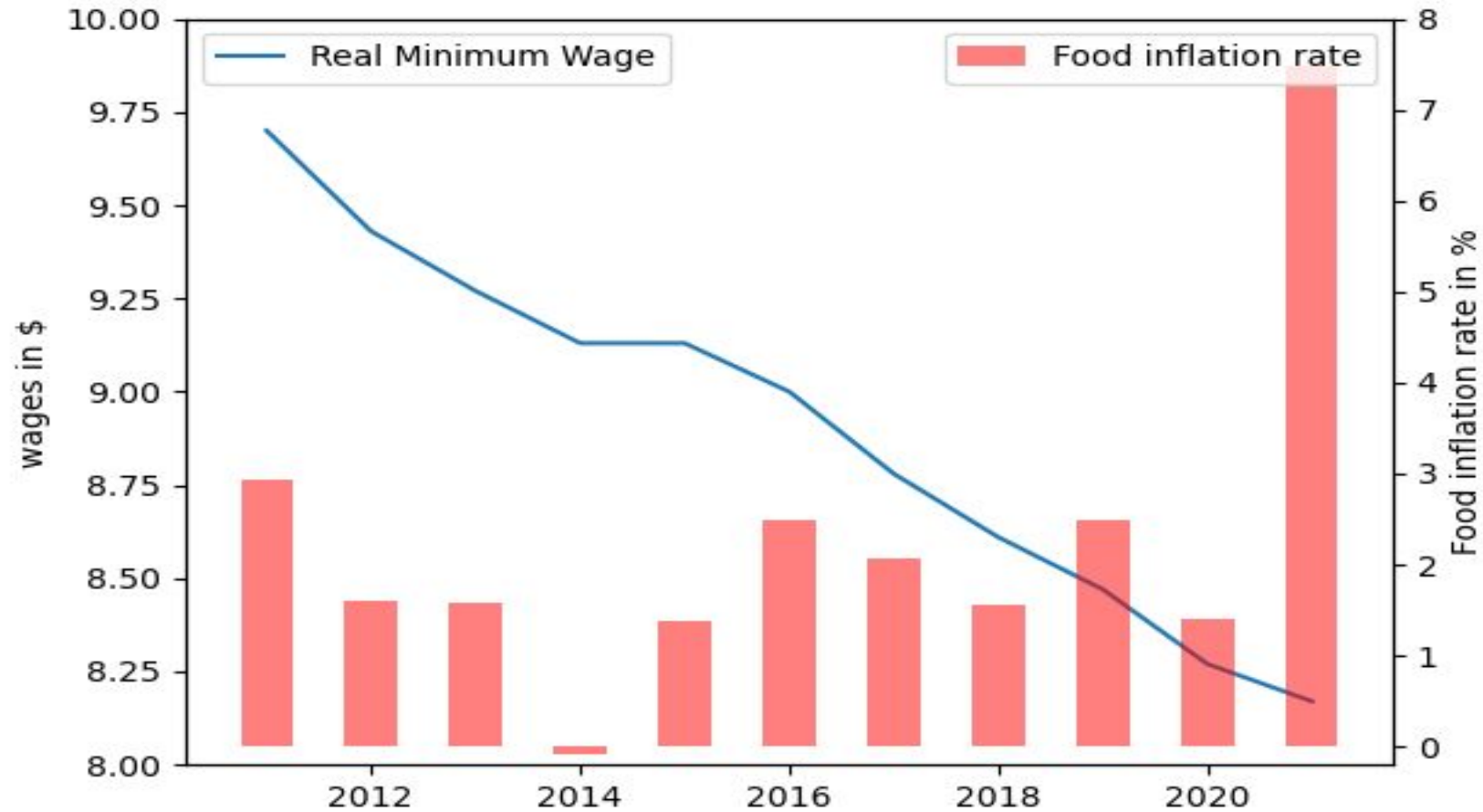
- Real (effective) minimum wage:

The purchasing power of minimum wage.

	Year	Federal minimum wage (nominal dollars Jan 01)	Federal minimum wage(real value 2022-06-01)
0	2022	\$7.25	\$7.59
1	2021	\$7.25	\$8.17
2	2020	\$7.25	\$8.27
3	2019	\$7.25	\$8.47
4	2018	\$7.25	\$8.61
5	2017	\$7.25	\$8.78
6	2016	\$7.25	\$9.00
7	2015	\$7.25	\$9.13
8	2014	\$7.25	\$9.13
9	2013	\$7.25	\$9.27
10	2012	\$7.25	\$9.43
11	2011	\$7.25	\$9.70



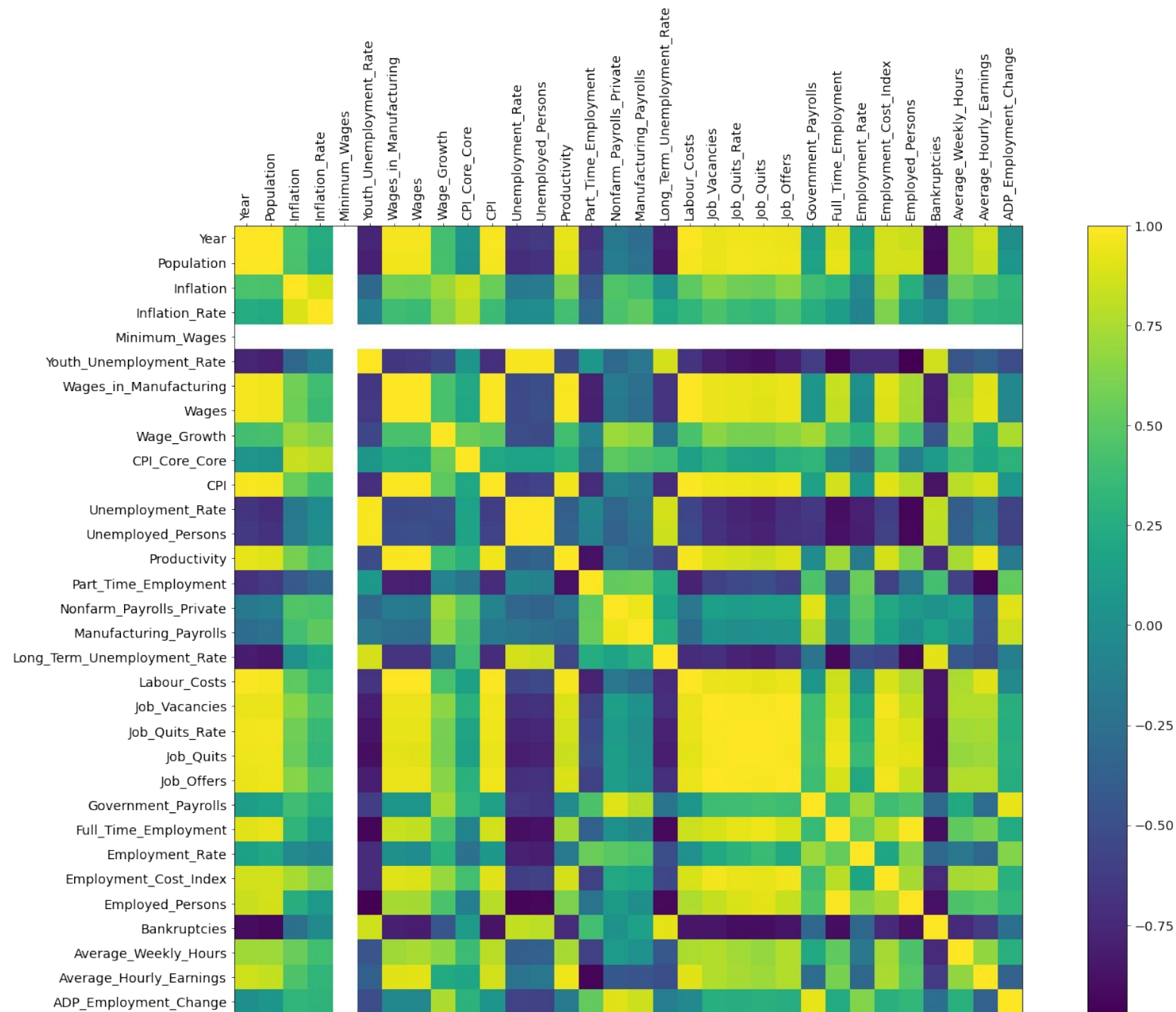
How about wage and grocery inflation?

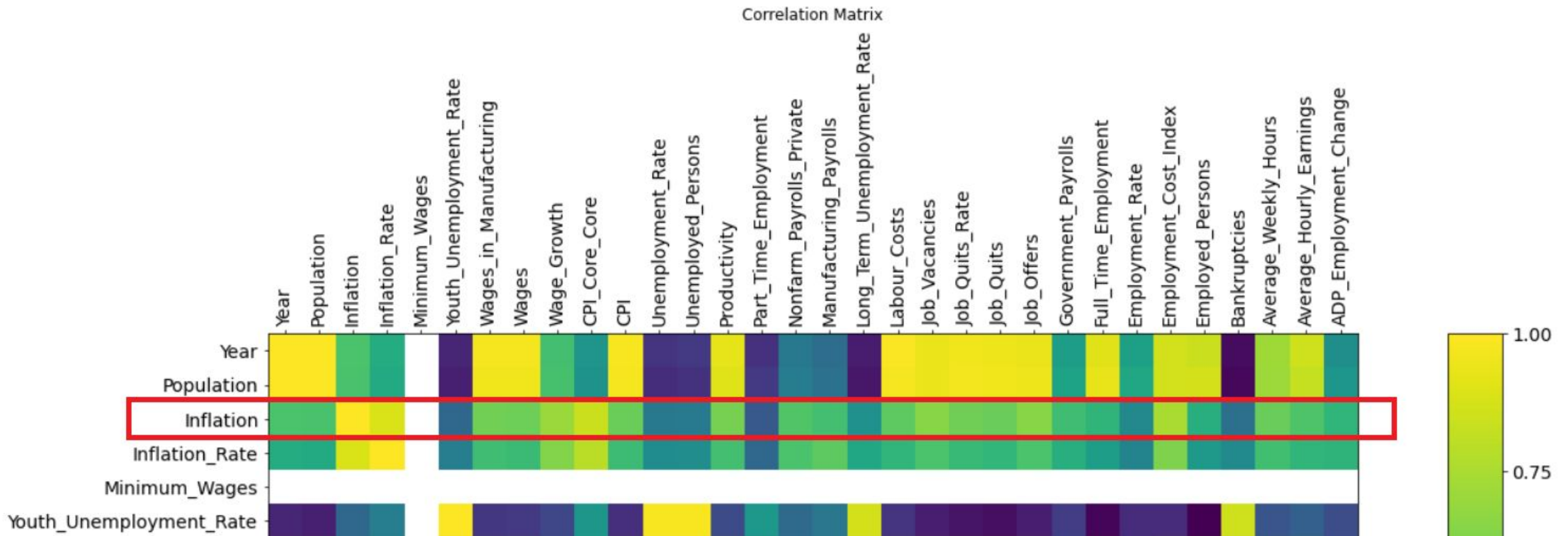


Inflation and Labour Market



Correlation Matrix





- Positive correlation with wage, but stronger correlation with wage growth
- The strongest positive correlated indicator with inflation is core core CPI which tracks changes in prices that consumers pay for a basket of goods excluding cost of food, shelter, energy, and used cars and trucks
- Second strongest correlation is with employment cost index
- The strongest negatively correlated indicators are part-time employment and unemployment rate
- There's also a positive correlation between inflation and job vacancies, job quits and job offers

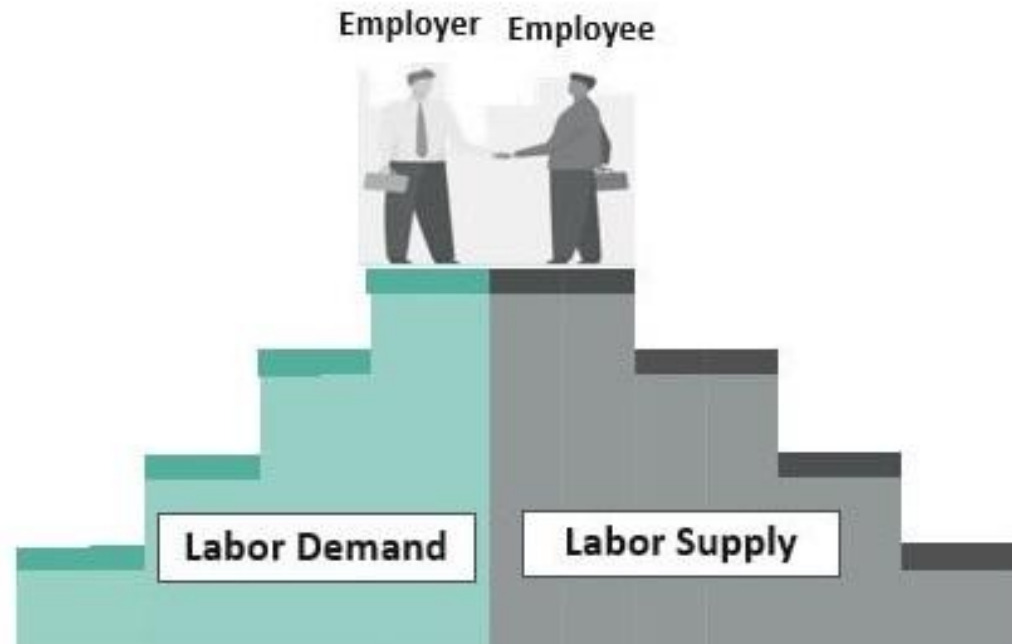
Core core CPI vs. Unemployment rate



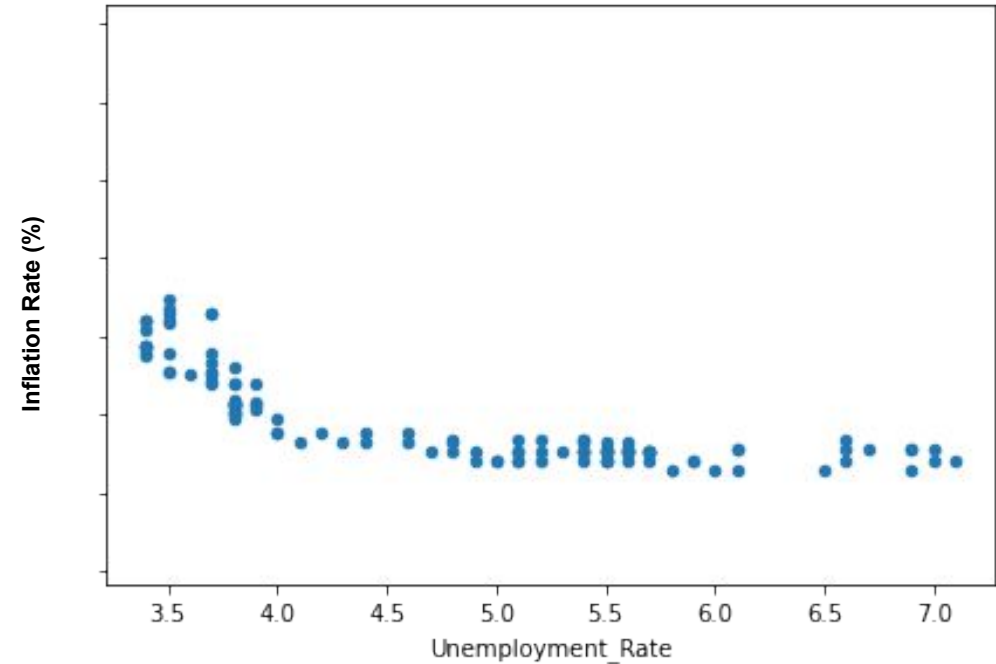
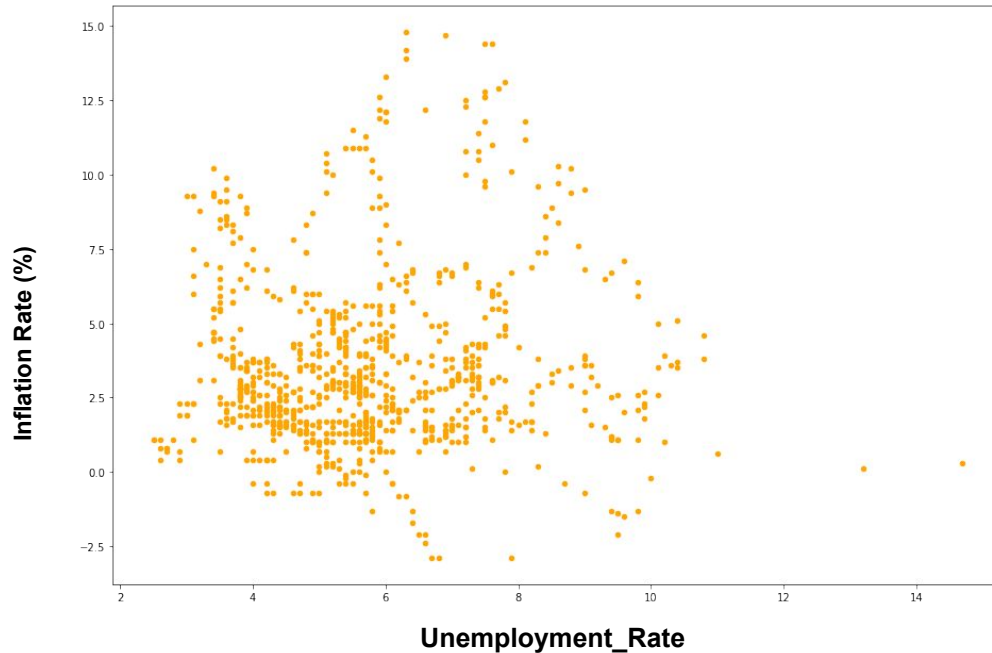
- From 1968 to 2000 we can clearly see that unemployment rate is following core core CPI's trend
- In 2001, the mild recession as a result of 9/11 pushed unemployment higher to roughly 6% while inflation fell below 2.5%.
- In the mid-2000s, as unemployment fell, inflation was steady around 1% to 2.5%.
- During the Great Recession, the rate of change of the CPI fell dramatically as unemployment soared to almost 10%.
- From 2012 to 2015, we can see that the inverse correlation broke down where inflation and unemployment moved in tandem.
- From 2016 to 2019, unemployment steadily declined to 50-year lows (before the onset of COVID-19 at the end of 2019), while inflation remained around 2%. In other words, the inverse correlation between the two indicators wasn't as strong as it was in prior years.

Labour Supply and Demand

The labor market is a marketplace where recruiters and employees meet to fulfill the labor demand and supply, respectively.



Inflation vs. Unemployment



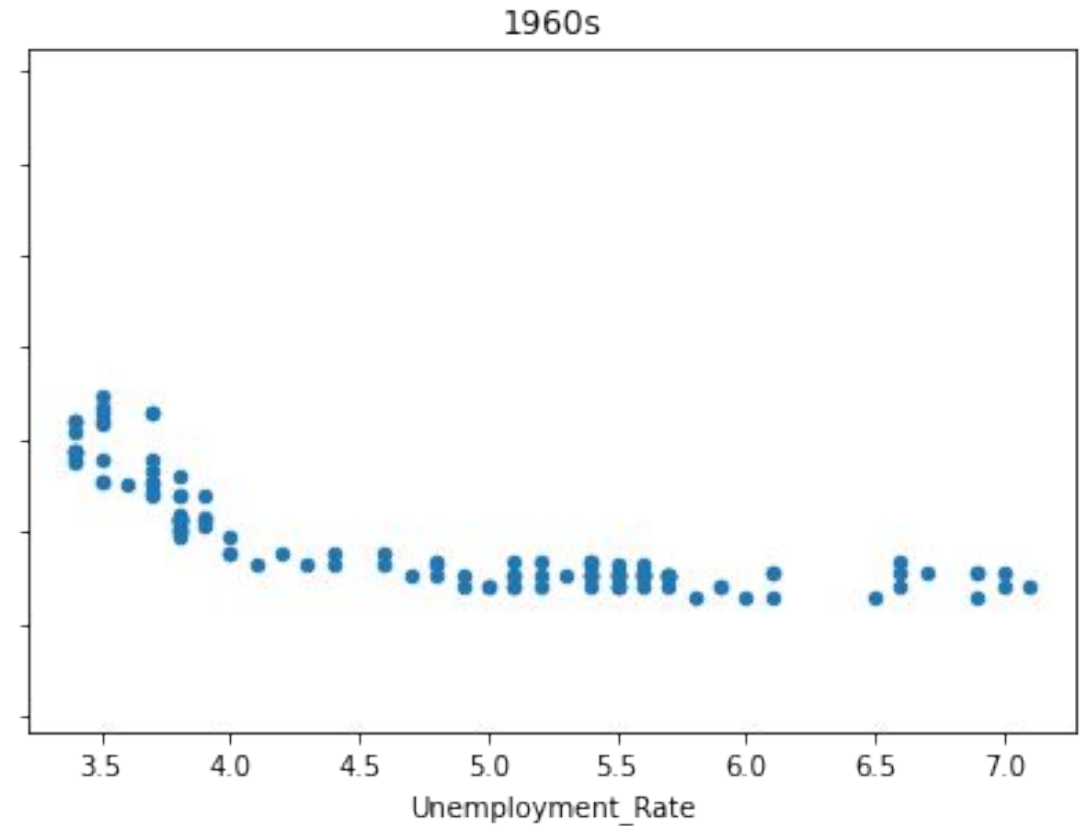
The relationship between inflation and unemployment has traditionally been an inverse correlation. However, this relationship is more complicated than it appears at first glance, and it has broken down on a number of occasions over the past 50 years.

Since inflation and employment (and unemployment) are some of the most closely monitored economic indicators, we'll delve into their relationship and how they affect the overall economy.

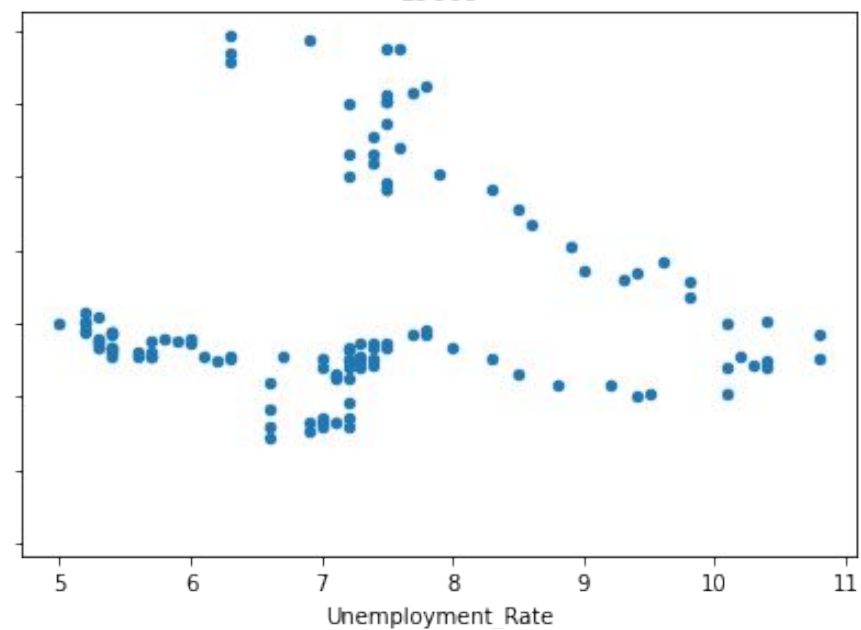
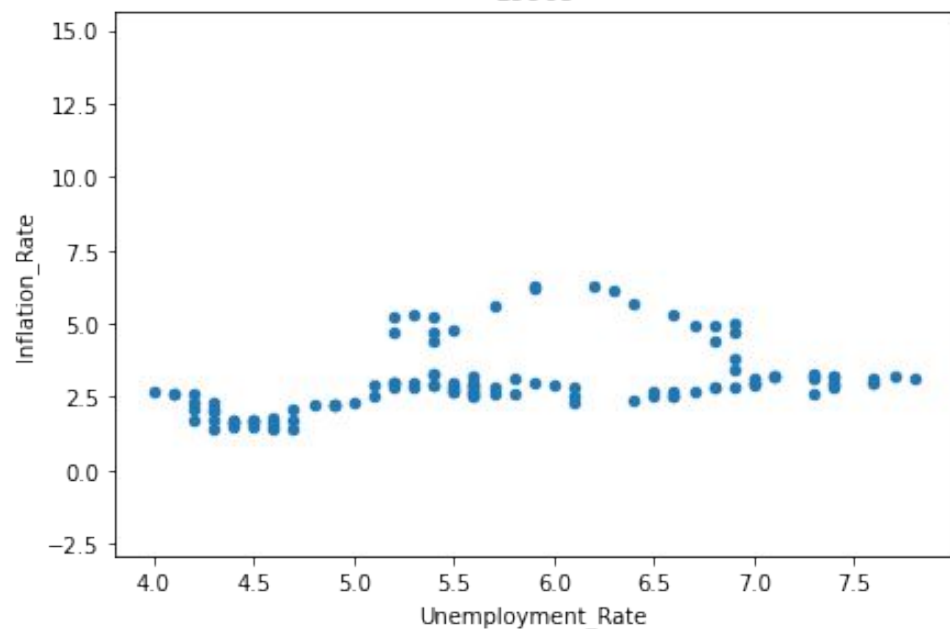
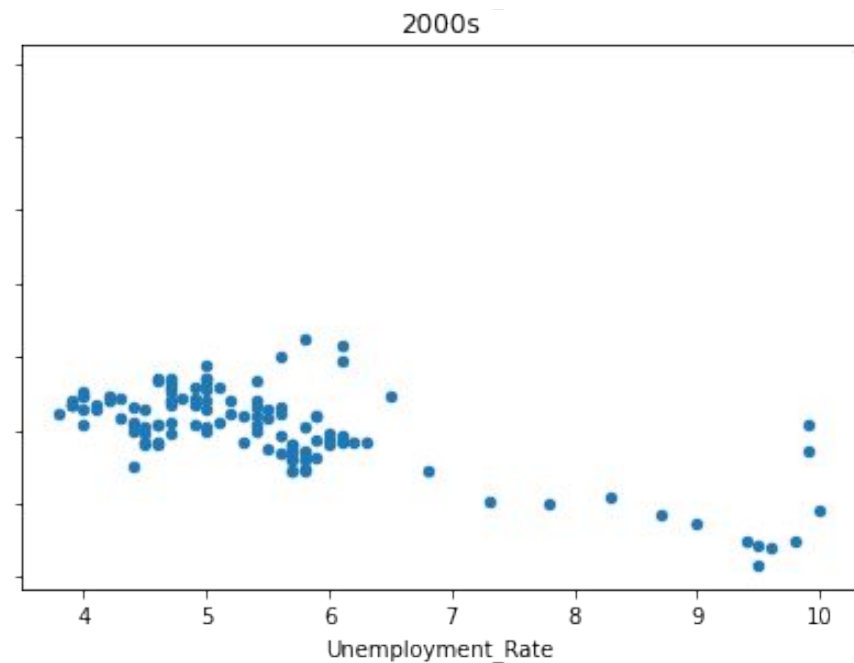
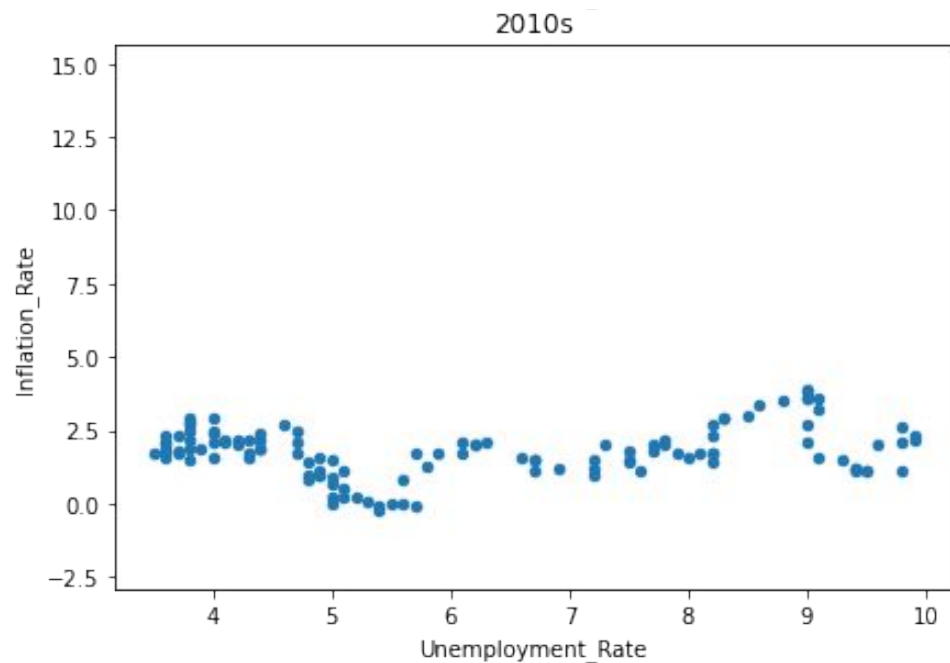
Inflation vs. Unemployment



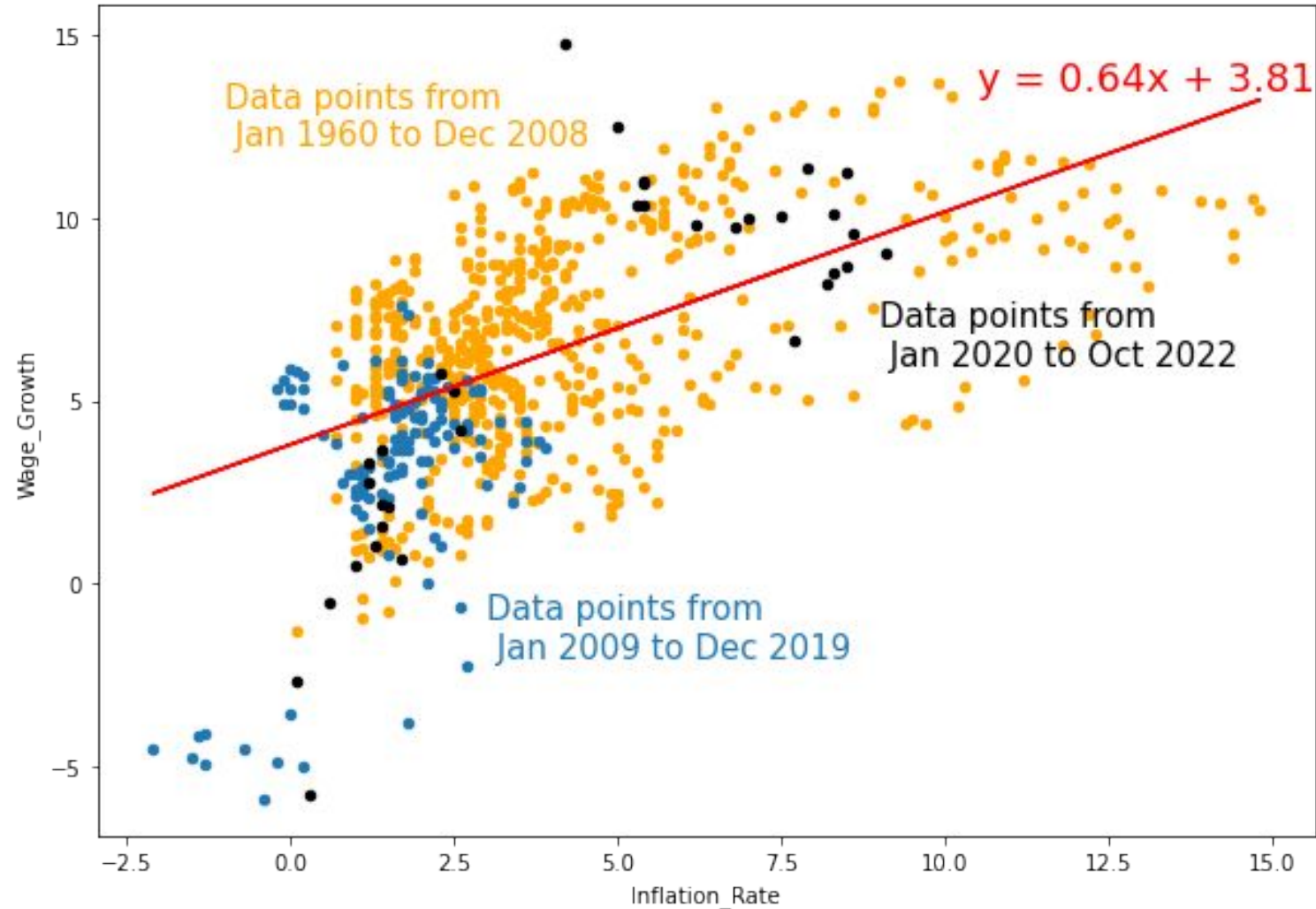
high unemployment and high inflation



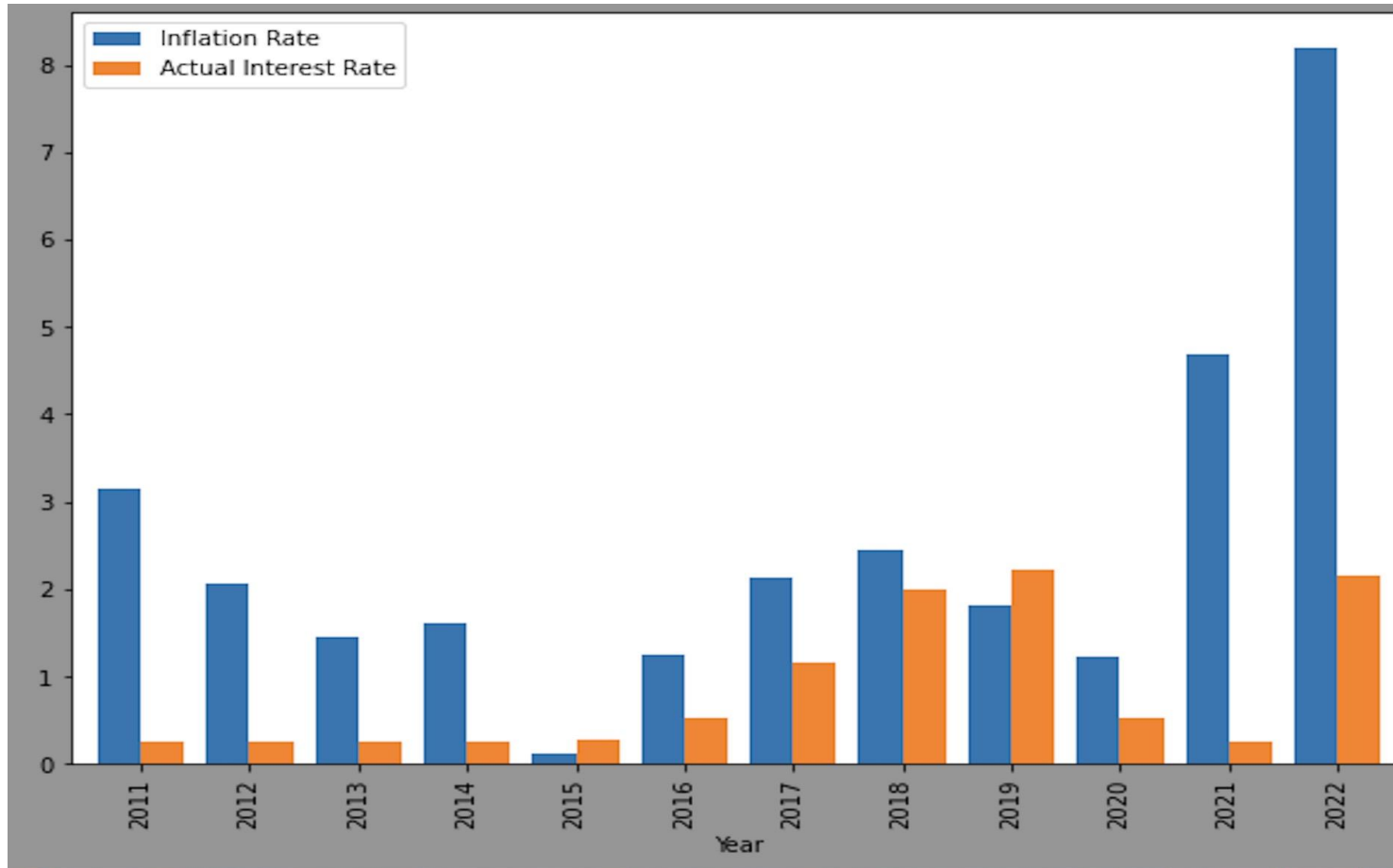
clear evidence of the inverse relationship
between unemployment and inflation



Inflation vs. Wage Growth



Inflation vs. Interest Rate



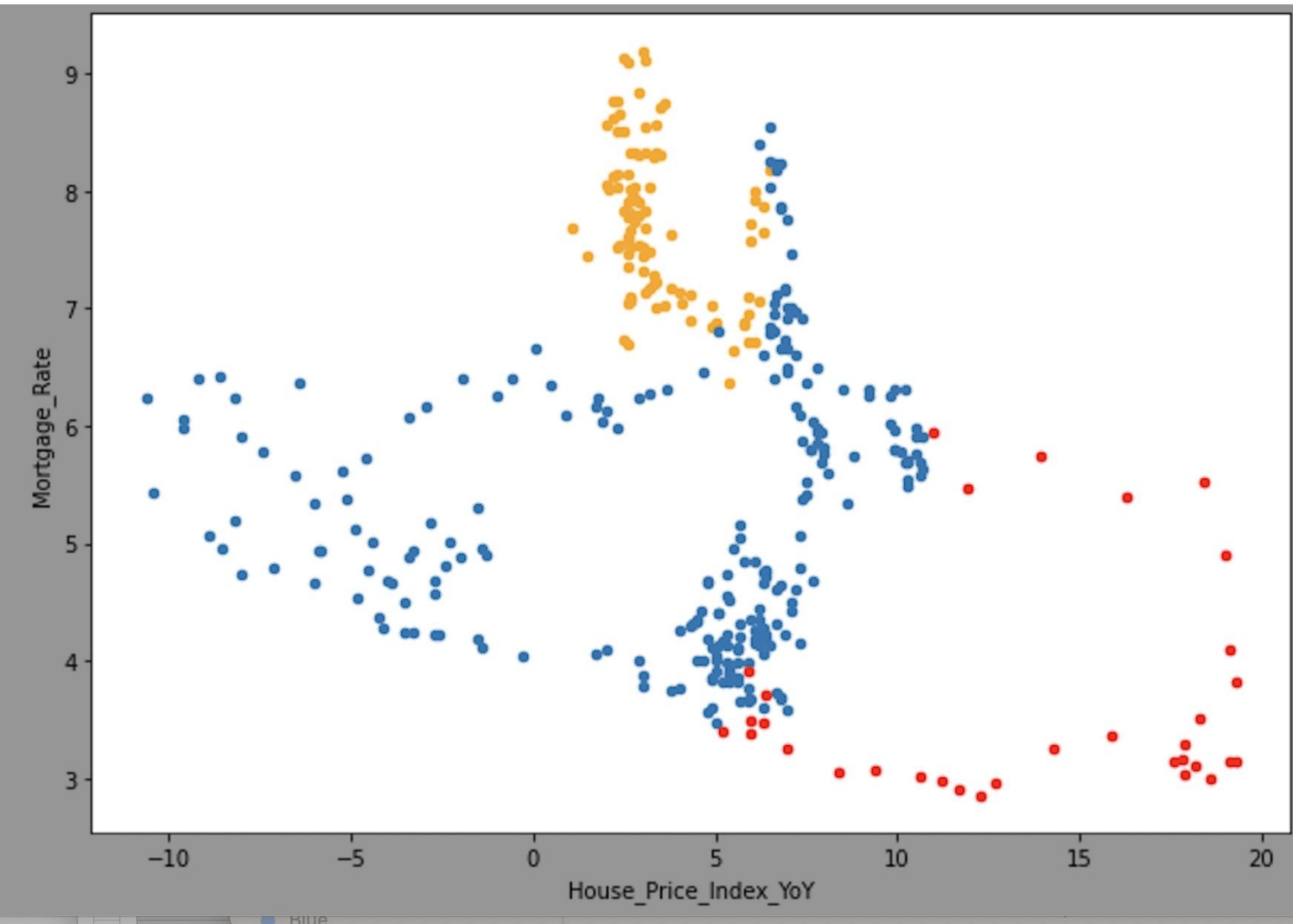
Release Date	Actual	Previous	Increase rate
Nov 02, 2022	4.00%	3.25%	23.08%
Sep 21, 2022	3.25%	2.50%	30.00%
Jul 27, 2022	2.50%	1.75%	42.86%
Jun 15, 2022	1.75%	1.00%	75.00%
May 04, 2022	1.00%	0.50%	100.00%
Mar 16, 2022	0.50%	0.25%	100.00%
Jan 26, 2022	0.25%	0.25%	0.00%

Inflation vs. Interest Rate

Conclusion

- Government increase the interest rate to flight the increased inflation rate
- After analyzing the data we have seen the same is reflecting in the bar chart.
- We have also seen that 3 to 5% inflation rate reconsidered under contorted and no adjustment of interest rate for that period.
- During the time of lockdown and covid the interest rate was reduced to boost the economy

Interest/Mortgage Rate Vs. House Price Index



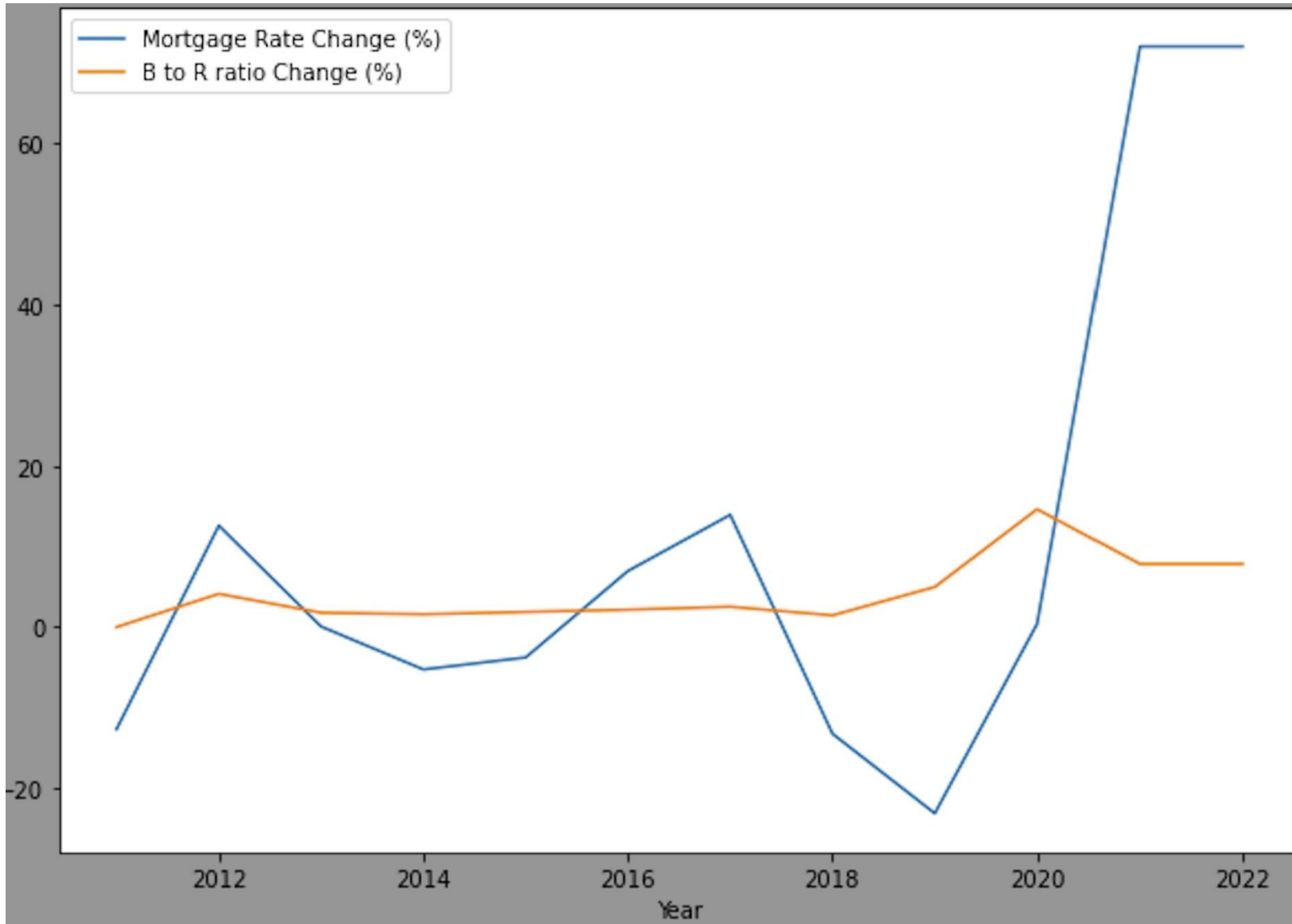
- The Orange Dots are house index before the year of 2000
- The blue dots are house index year between 2000 to 2020
- The red dots are House index of after year 2020

Interest/Mortgage Rate Vs. House Price Index

Conclusion

- The House Price Index (HPI) is a broad measure of the movement of single-family house prices in the United States.
- If the mortgage rate is higher there will be a decline of house price/index and vice versa
- We have seen the same trend of the index from 2000 to 2022

Buying to Rent Ratio



- The higher the B to R ratio goes its better to rent than buy
- The B to R ratio increase as the Mortgage rate increase

Buying to Rent Ratio

Conclusion

- The buy-to-rent ratio shows whether buying or renting would be best for a particular property in a given market.
- The Higher the Ratio is it's better to rent than Buy
- After Analyzing the data we have seen the relation with them as when the mortgage rate is high the Buy to Rent ratio also gone up

Resources

1. [Consumer Price Index US All Commodities | Kaggle](#)
2. [State of Working America Data Library \(epi.org\)](#)
3. [The value of the federal minimum wage is at its lowest point in 66 years | Economic Policy Institute \(epi.org\)](#)
4. [USA CPI Inflation from 1913-2022 | Kaggle](#)
5. <https://tradingeconomics.com/united-states/inflation-cpi>
6. <https://www.in2013dollars.com/current-inflation-rate>
7. <https://ca.investing.com/economic-calendar/interest-rate-decision-168>

Thank you