Housing Prices vs. Unemployment Trends

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Purpose

In our study of housing prices and unemployment in California, we analyze how the housing market and labor market interact. With our carefully chosen datasets, we can get a good overview of the overall situation and examine whether **rising unemployment** is related to **falling house prices** and whether these trends differ across **counties** and **prices**. We also discover how the pandemic has affected housing prices and unemployment rates.
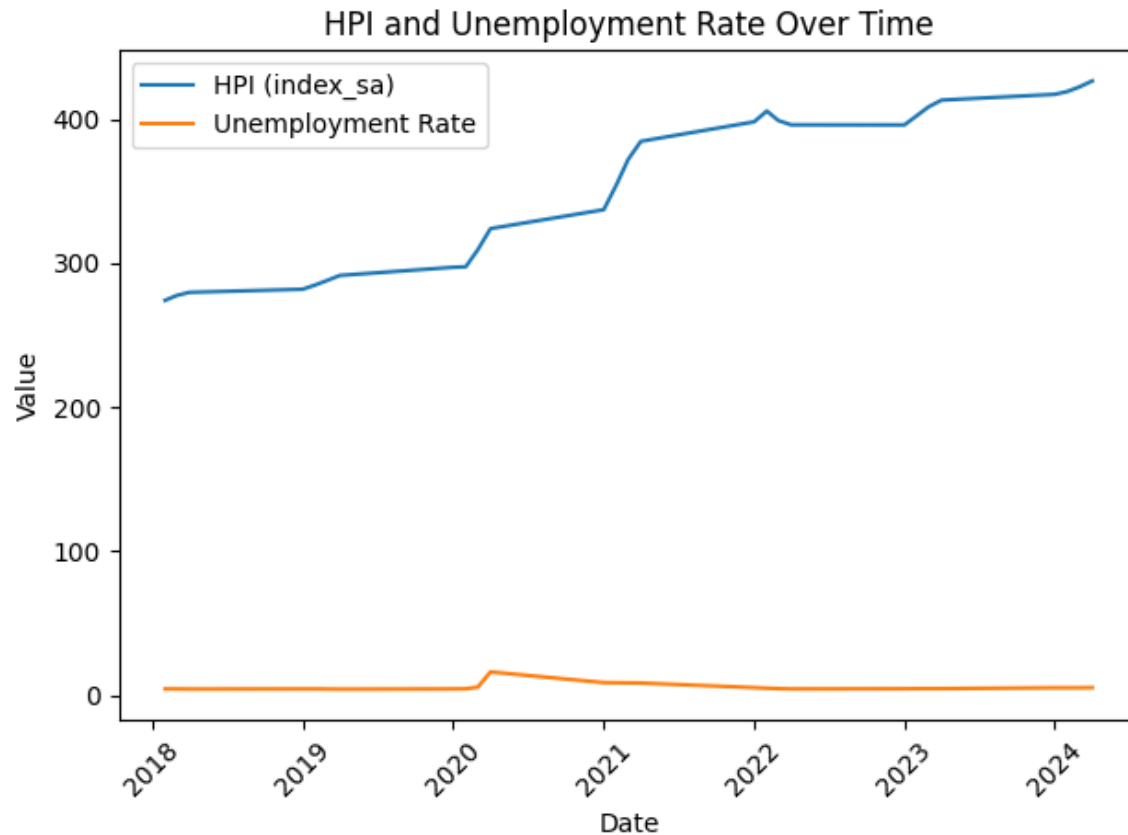
Our Datasets

- FHFA House Price Indexes
  - Data Size: 131541

- Local Area Unemployment Statistics
  - Data Size: 256101
  - Region: CA

- US Housing Trends
  - Data Size: 895

Pivot table

year	unemp_group price_tier	low	medium	high
2018	low	429978.688231	NaN	NaN
2019	low	448620.196408	NaN	NaN
2020	middle	460551.875165	463845.548129	465766.869179
2021	middle	NaN	NaN	514563.130986
2022	middle	593539.574788	583184.876710	NaN
	high	612035.713214	NaN	NaN
2023	middle	588147.257035	NaN	NaN
	high	594428.751854	NaN	NaN
2024	high	NaN	611690.723610	NaN

- The following shows a pivot by unemployment group of the price tier

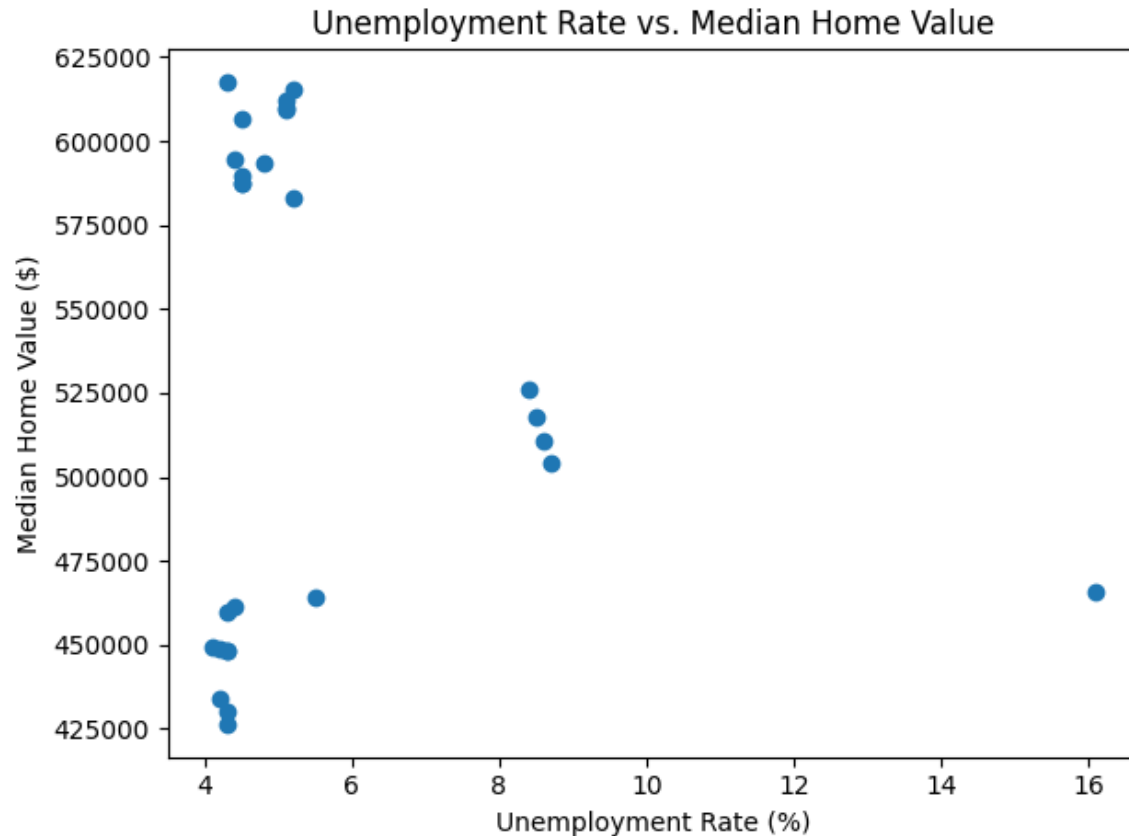# HPI vs Unemployment Rate

Line Plot:
HPI and Unemployment Rate from 2018 to 2024

- HPI steadily **increases over time**, indicating rising home values.
- Also shows that unemployment changes **very little** over time.

Unemployment Vs. Median Home Values
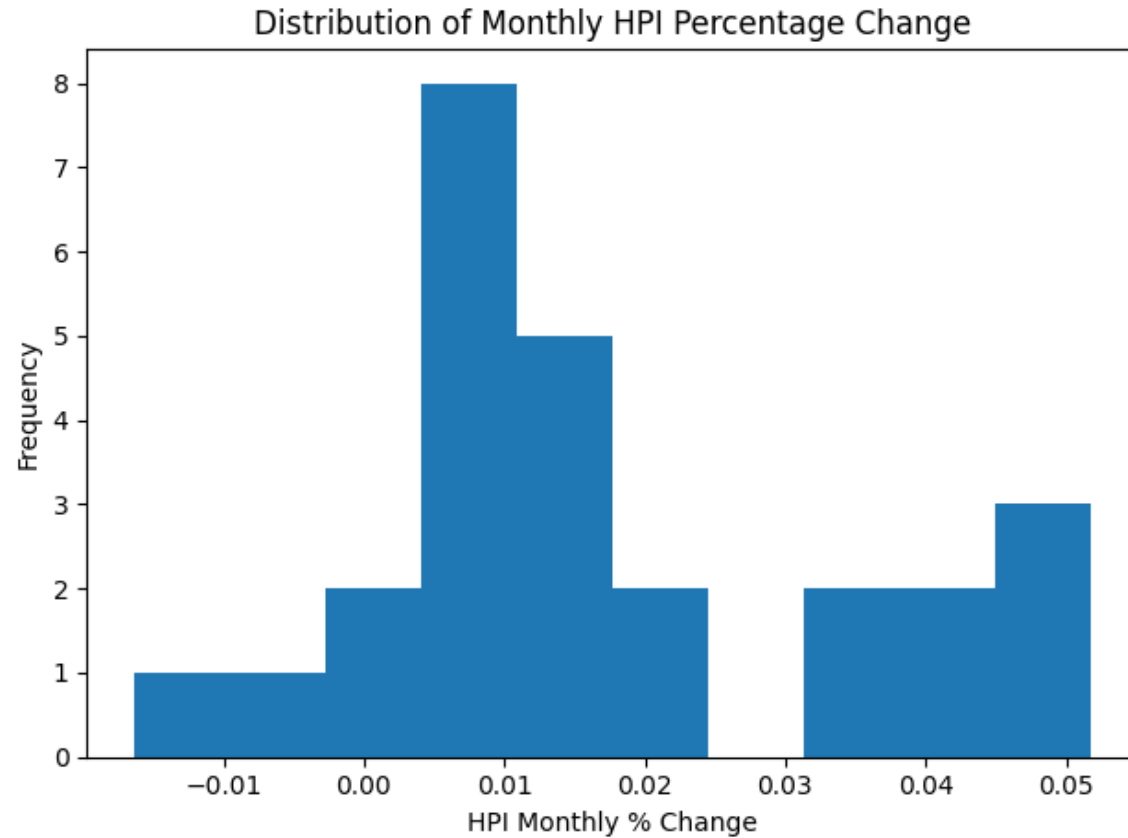

Unemployment Rate vs. Median Home Value

Scatter Plot:
Unemployment Rate vs. Median Home Value

- Median home values tend to **vary the most** when unemployment is **low**.
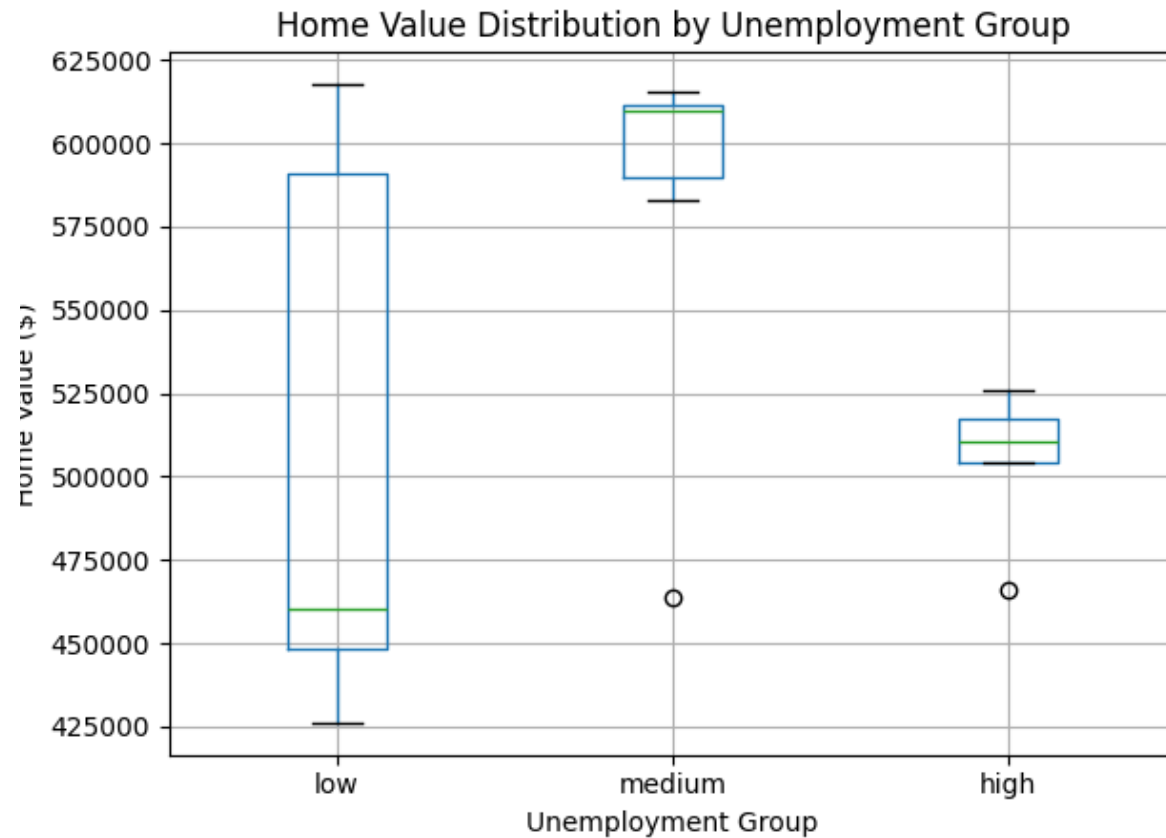- As unemployment **increases**, home values show **less variation**

HPI Percent Change (Monthly)

Distribution of Monthly HPI Percentage Change

Histogram:
HPI monthly % change

- Small positive monthly **increase** in home prices
- Appears roughly **normal**

Home Value by Unemployment

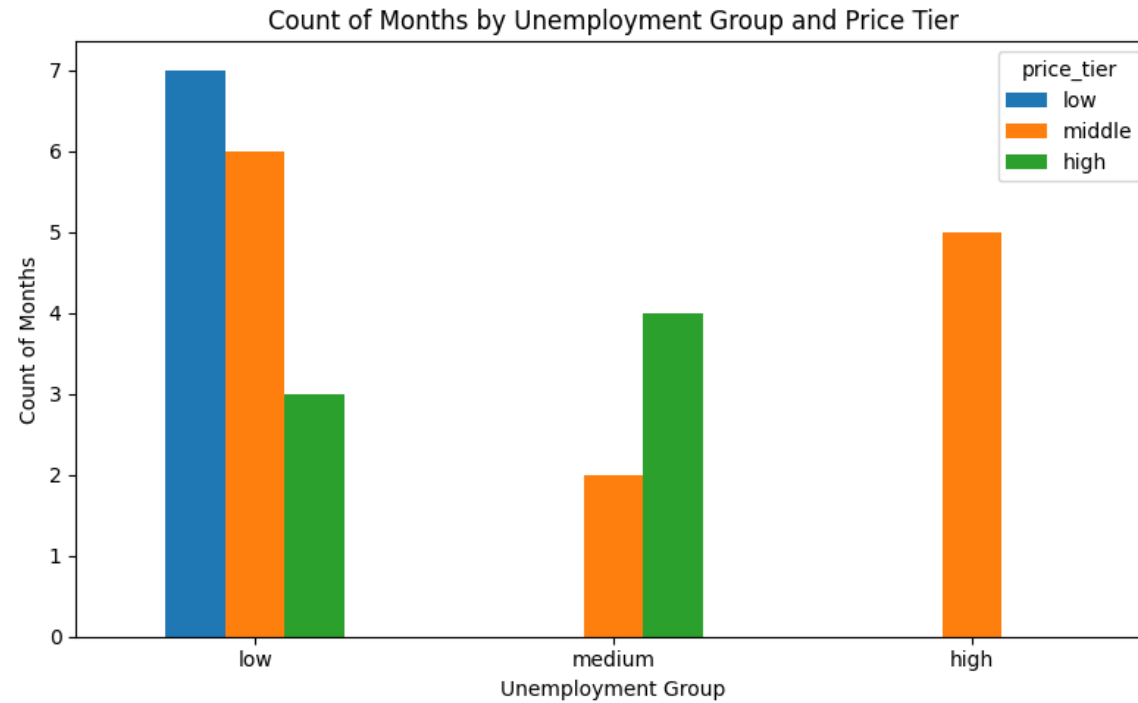Home Value Distribution by Unemployment Group

Box Plot:
Home Value by unemployment Group

- **Largest** IQR for **low** unemployment
- Low and medium have **similar maxes**
- Medium has **highest** average **home value**

Months by UE and Price Tier

Count of Months by Unemployment Group and Price Tier

Bar Graph:
Unemployment grouped by price tier

- Steady **decrease** in count of months
- Low price tier is the **highest** in **low unemployment**

Final Analysis + Interesting Discoveries

- Unemployment Rate was the highest before at the beginning of the pandemic

- Pandemic made hpi soar high despite the lower unemployment rate

- As unemployment rates increased, the corresponding housing prices also increased, which is interesting considering unemployment should lower housing prices.

The End

Resources

- https://github.com/MouHuoZheDeRen/CS176Project/tree/main

- https://github.com/MouHuoZheDeRen/CS176Project/blob/main/Databases/fhfa_hpi.csv

- https://github.com/MouHuoZheDeRen/CS176Project/blob/main/Databases/kaggle_hpi.csv

- https://github.com/MouHuoZheDeRen/CS176Project/blob/main/Databases/kaggle_real_estate.csv

- https://github.com/MouHuoZheDeRen/CS176Project/blob/main/Databases/laus.csv
https://github.com/MouHuoZheDeRen/CS176Project/blob/main/Databases/laus_dict.csv