

Problem Statement:

What are all the factors that could influence residential home prices across the United States over the next decade? And how?

MECE stands for mutually exclusive and collectively exhaustive. The MECE principle was invented at McKinsey by Barbara Minto to be used for problem-solving and logical problem structuring.

MECE is a principle for breaking down items into small pieces. “Mutually exclusive” means no overlap between each piece, while “collectively exhaustive” means all the pieces combined from the original item without any gap.

Solution:

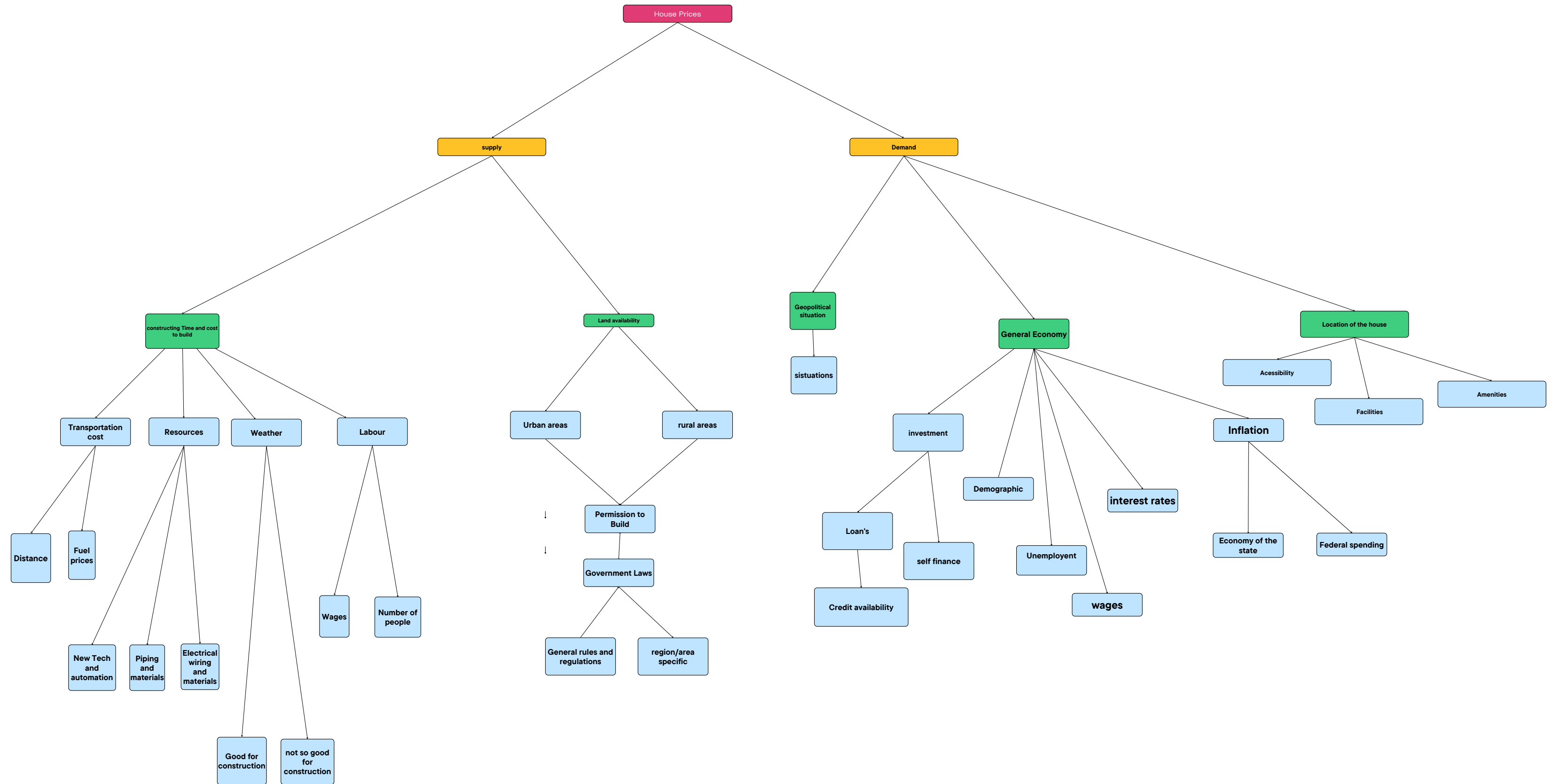
In the MECE framework's decision-tree-like structure, the factors are displayed. Here, we'll examine the problem to see what influences home prices and how those influences will play out over the next ten years. How supply and demand affect housing prices and also other various factors.

The majority of the issues that affect home prices can be solved by breaking each node up into smaller, farther away, and non-overlapping nodes. In this case, I divided the supply into the time required to construct as well as the availability of the land. Whereas the demand includes geopolitical, economical and geographical factors.

The environment, labour availability, and labourers' varying wages are also examples of other factors that affect construction costs and time which result in the valuation of the house. This has an effect on the availability of homes to meet the ongoing demand. The proximity of amenities and property facilities both affect the demand for a particular residential zone.

Here are some significant factors that could affect housing prices for the next ten years.

MECE Framework on Factors that effect house prices



1. Demographics

The United States has an increasing population, with (Under 18 years 22.2% (2021); 18-44 years 35.9% (2021); 45-64 years 25.2% (2021); and 65 and over 16.8% (2021)); the population is expected to increase by an average of 2.3 million people every year through 2030, according to the U.S. Census.

2. Growth in the economy

According to future predictions, the USA's population will consist largely of people from the working class. People who have good incomes are able to save more and obtain credit more easily. Furthermore, the US Bureau of Labor Statistics published an article by The Economic Daily(TED). Data indicates that employment will rise by 7.7% between 2020 and 2030, with the COVID-19 recovery accounting for 1.7% of the expansion. This boosts the local economy and leads to better living conditions and adequate housing.

As also result of Joe Biden's new strategy, which aims to relieve the burden of housing costs in 5 years by closing the gap between supply and demand, an increase in interest in the likelihood of buying a new home can be expected.

3. New tech and automation

The cost of building materials has risen as a result of the pandemic, but so have housing prices. This demonstrates that higher costs for construction aren't isolated to supplies—they also apply to real estate development. Whereas emerging technologies like 3D printing and robotic bricklayers reduce time spent on homebuilding by significant margins. This helps to meet the supply needed. And also new technologies like automation and cloud computing have made working from home too simple. As a result, a large number of workers have left the construction industry in favour of working remotely. This has created an even greater demand for housing construction and driven up costs even further.

4. Transportation cost

Because transportation to the construction site is convenient due to technological advancements, residential zones can be constructed quickly if they are close to business districts. Typically, the price of these houses doesn't change over time. The need for dwellings with shorter commutes to nearby commercial centers grows as a result. Moreover, gasoline prices rose as a result of inflation, driving up the price to build a house. It raises the cost of the house overall.

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5. Situation

Due to the recent pandemic, the current geopolitical situation significantly impacts inflation, leading to higher costs for nearly everything that may endure for a few more years. Additionally, individuals are looking to build or purchase a home due to the fact that work-from-home or hybrid situations forced people to remain at home, which made them desire to live in a healthy environment.

The housing market is expected to continue growing due to the above-mentioned factors, and will also be fueled by consumers' desire for a safe place to live. This trend will lead to an increase in demand for houses and apartments, which could further drive up prices.

6. Mortgage Rate

Home loan interest rates are trapped in a struggle between high inflation and Federal Reserve initiatives to control inflation, which have inadvertently raised rates. Rates are expected to continue to be under some upward pressure in the upcoming months, or at least until inflation starts to decline, according to the widespread view. Given the tremendous volatility and economic unpredictability of the previous year, some real estate professionals believe that mortgage rates have likely peaked in the wake of the most recent rate decreases. Despite this, they continue to be cautious. As a result, housing affordability may decrease for a few months or years.

Here are some Insights from the data analysis done on some sample Kaggle datasets related to US housing prices

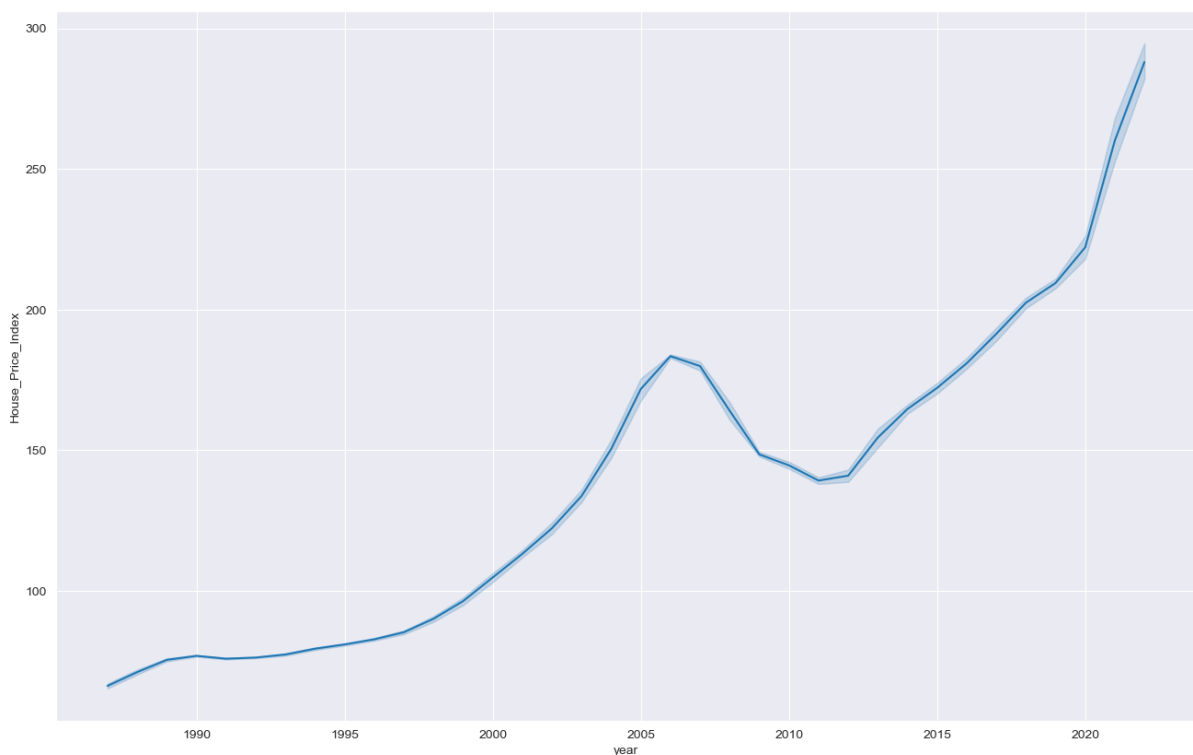
1. The housing price index has been steadily increasing over time.
2. The GDP has also gradually increased over time.
3. The number of homes sold increased until 2005 when it sharply decreased before beginning to rise in the following two to three years.
4. The cost of building a house follows the same trajectory as the price of dwellings sold.
5. The unemployment rate has been on a downward trend over the past two years after reaching its peak in 2011.
6. Population growth is consistently rising by a small margin.
7. The mortgage rate has gradually fallen since 1990 with just minor ups and downs, but it will begin to rise once more in 2020 due to inflation.

Summary:

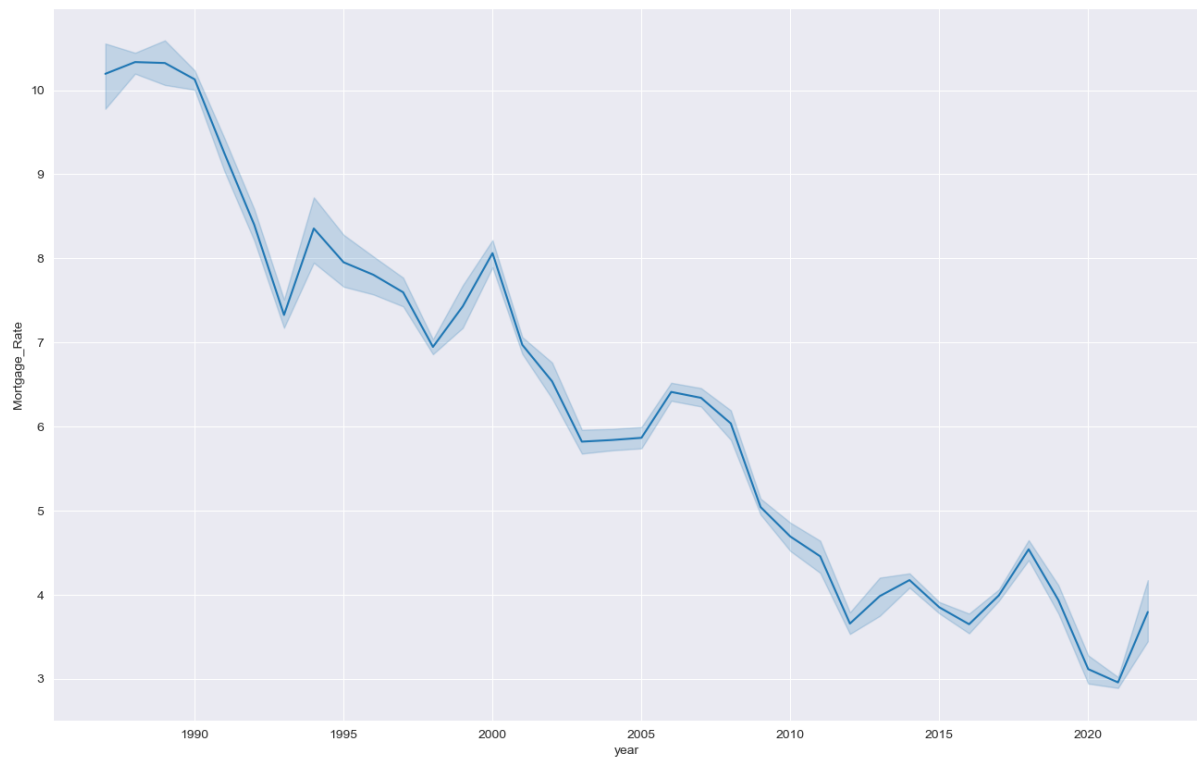
Using the MECE framework, we can break the problem down into smaller parts, mutually exclusive, and collectively exhausted parts. If we did this, we could concentrate on things that don't overlap. How will these problems impact residential property prices in general over the next 10 years? identifying and closely analyzing every element that influences the cost of residential housing. See, while factors like geopolitics and inflation-affected mortgage rates point to potential hesitation on the part of buyers of new homes until inflation is brought under control, factors like demographics, transportation costs, technological advancements, income wages, and employment rate point to a healthy supply and demand balance for home prices. throughout the following ten years

USA Housing Prices analysis can be found from [GitHub URL](#). Here are some of the graphs from the Analysis.

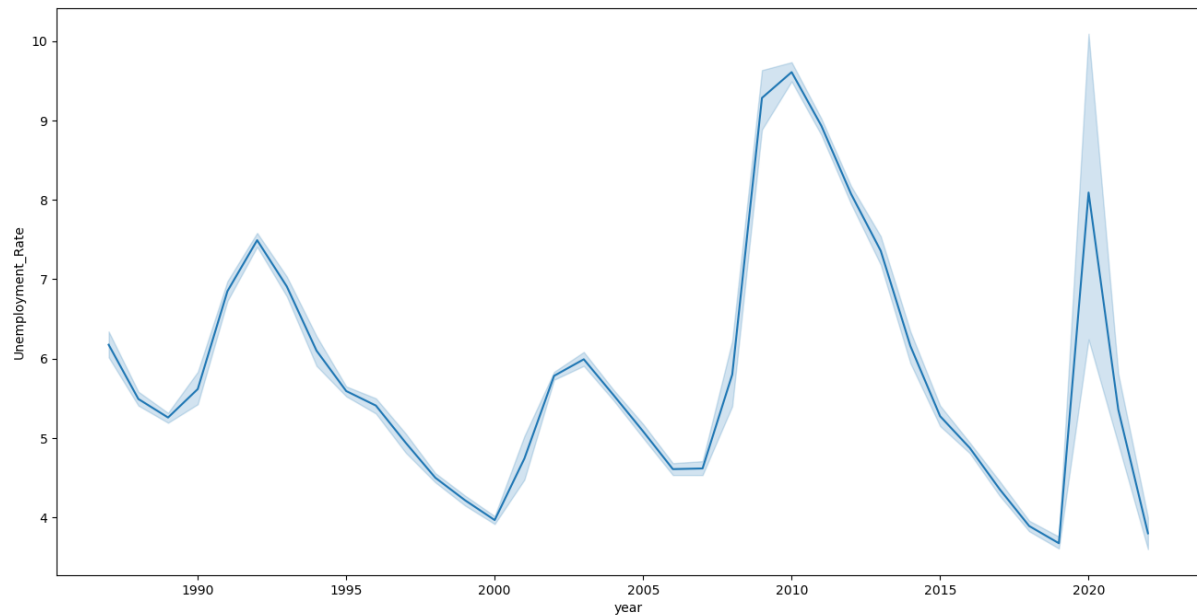
Housing Price Index for the past 30 years.



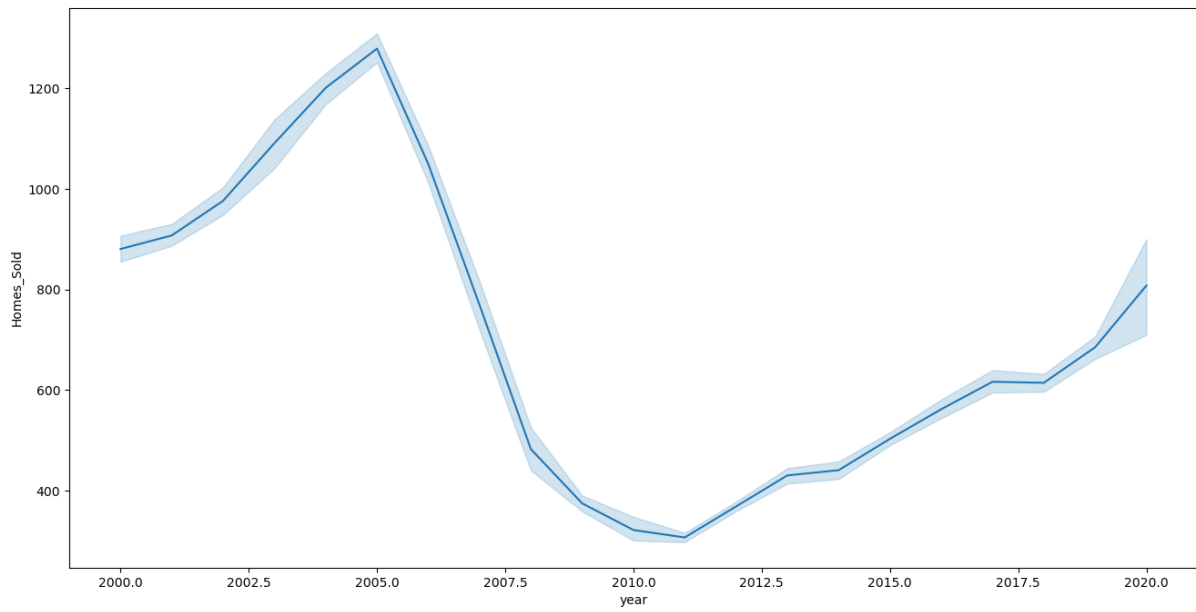
Mortgage Rate for the past 30 years



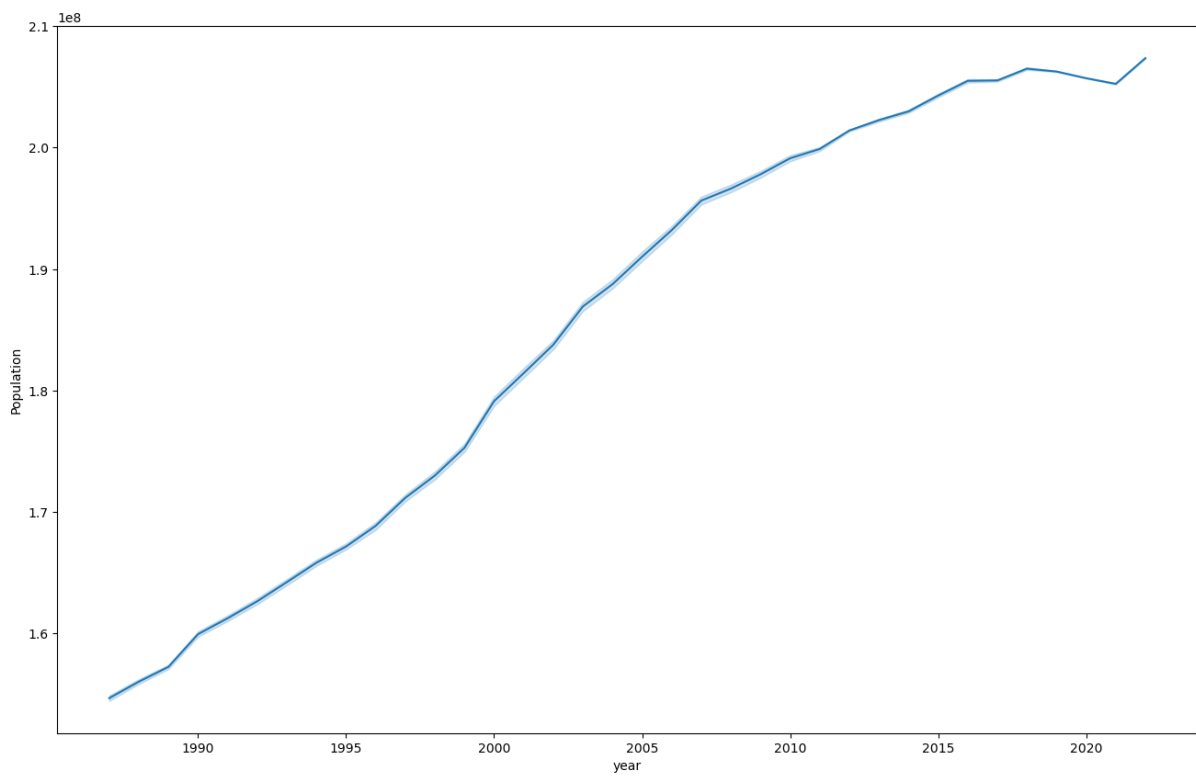
The unemployment rate for the past 30 years



Houses sold for the past 20 years



Population growth for the past 30 years



GitHub URL:

1.https://github.com/prashanth-ds-ml/Guvi_DW16/blob/main/USA_housing_prices.ipynb

Datasets links:

- 1.<https://www.kaggle.com/datasets/ankitsharma0467/factors-influence-the-home-prices-across-us>
- 2.<https://www.kaggle.com/datasets/faryarmemon/usa-housing-market-factors>

Reference links:

- 1.<https://www.bls.gov/opub/ted/2021/employment-to-grow-7-7-percent-from-2020-to-2030-1-7-percent-excluding-covid-19-recovery.htm>
- 2.<https://www.renofi.com/learn/projecting-the-value-of-homes-in-the-us-in-2030-analyzing-the-impact-of-covid-19/>
- 3.<https://www.infodocket.com/2018/03/13/demographics-u-s-census-releases-new-population-projections-by-2030-older-people-projected-to-outnumber-children-for-first-time-in-u-s-history/#:~:text=The%20population%20is%20projected%20to%20grow%20by%20an%20average%20of,year%20from%202040%20to%202060.>
- 4.<https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/16/president-biden-announces-new-actions-to-ease-the-burden-of-housing-costs/>
- 5.https://www.researchgate.net/publication/324558767_Impact_of_Transportation_Costs_on_Real_Estate_Values_in_Cities_of_Texas
- 6.<https://www.forbes.com/advisor/mortgages/mortgage-interest-rates-forecast/>