Visualization and Analysis:

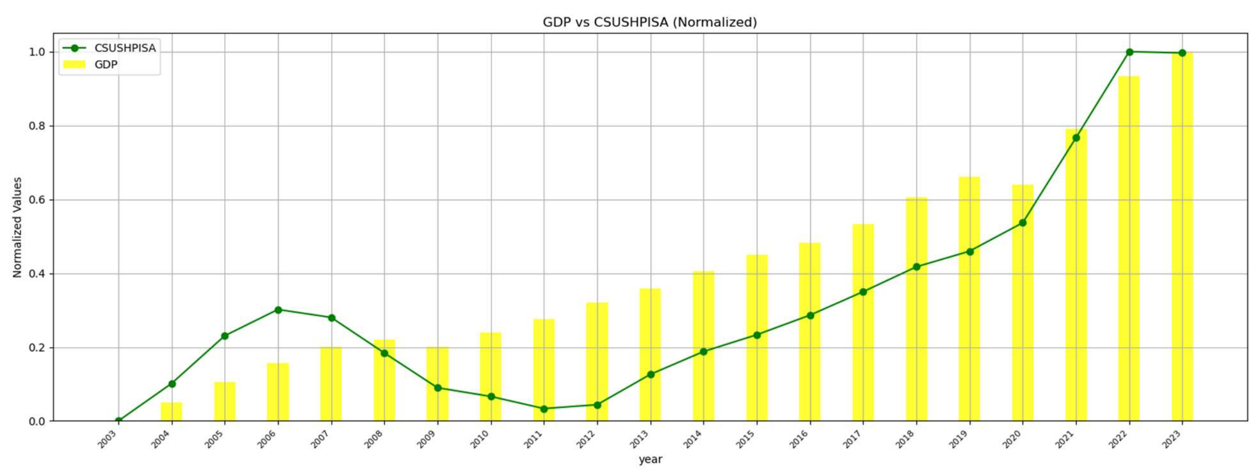
The dataset contains of total 82 records and it contains the data of last 20 years from 01-01-2003 to 01-01-2023 in the form of quarterly ie each year is having 4 rows with three months data fitted into a single row.

CSUSHPISA: S&P/Case-Shiller U.S. National Home Price Index (Index Jan 2000=100, Seasonally Adjusted). This variable serves as a proxy for home prices and represents the home price index for the United States.

1.GDP:

Gross domestic product (GDP) is a measure of the economic activity of a country. It is calculated by adding up the value of all goods and services produced within the country's borders in a specific time period, typically a year. GDP is considered to be the most important indicator of a country's economic health.GDP can be calculated in three ways:

- Expenditure approach: This approach measures the total spending by consumers, businesses, government, and foreigners on goods and services produced in the country.
- Income approach: This approach measures the total income earned by all factors of production, such as labor, capital, and land.
- Output approach: This approach measures the value of all goods and services produced in the country.



Plot of GDP vs CSUSHPISA

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Coefficient:
GDP: 0.0036304552179840894

A positive coefficient indicates that a higher GDP is associated with a hi
gher predicted home price index. However, the coefficient is very small, s
uggesting that the relationship is weak.
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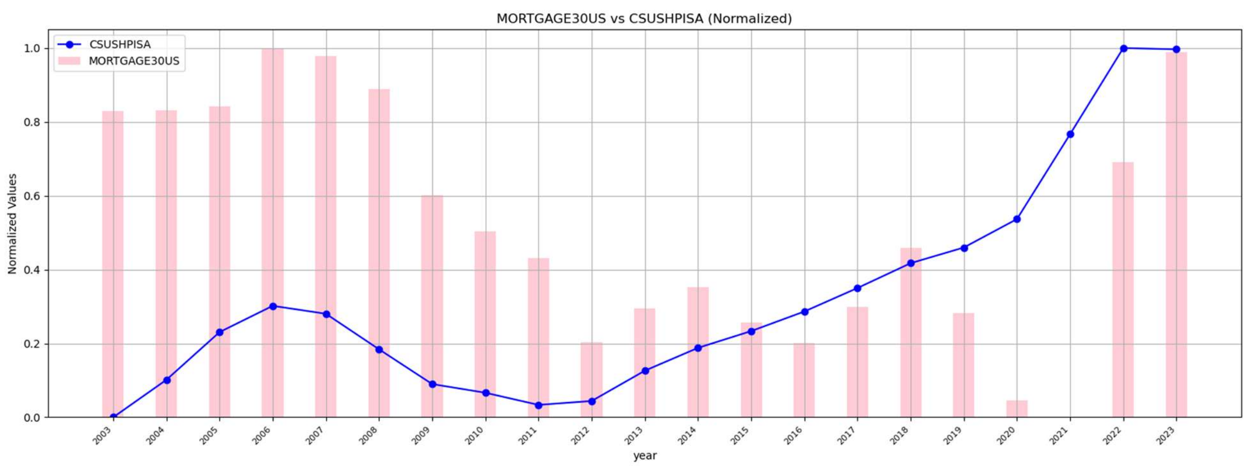
2. MORTGAGE30US:

The MORTGAGE30US feature refers to the 30-year mortgage interest rate in the United States. It is the rate that borrowers pay on a 30-year fixed-rate mortgage, which is the most common type of mortgage in the US. The 30-year mortgage interest rate is important because it affects the mo nthly payments that borrowers make on their mortgages.

The 30-year mortgage interest rate is set by the Federal Reserve Bank and is influenced by a nu mber of factors, including economic conditions, inflation, and the demand for mortgages. When interest rates are low, monthly payments on mortgages are lower, which makes it easier for peo ple to afford to buy a home. When interest rates are high, monthly payments on mortgages are higher, which can make it more difficult for people to afford to buy a home.

The 30-year mortgage interest rate is a closely watched indicator of the housing market. When i nterest rates are low, the housing market tends to be strong, as more people are able to afford to buy homes. When interest rates are high, the housing market tends to be weaker, as fewer people are able to afford to buy homes.



Plot of MORTGAGE30US vs CSUSHPISA

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Coefficient:
MORTGAGE30US: -0.5805671943921097

A negative coefficient indicates that a higher mortgage interest rate is a
ssociated with a lower predicted home price index. This is because higher
interest rates make it more expensive to borrow money to buy a home.
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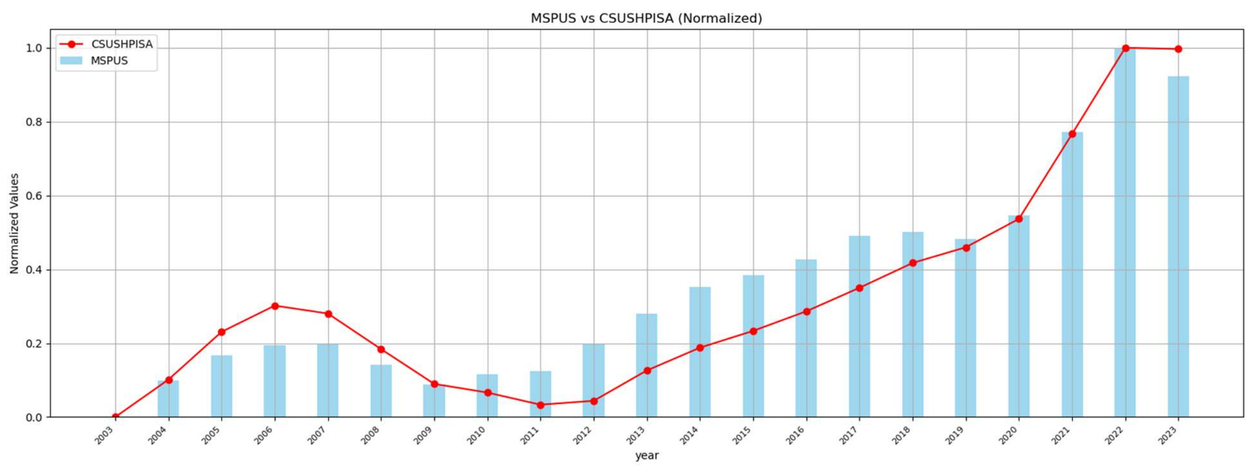
3.MSPUS:

MSPUS stands for Median Sales Price of Houses Sold for the United States. It is a measure of the median price of all homes sold in the United States in a given time period, typically a month or a quarter. MSPUS is a valuable indicator of the overall health of the housing market.

When MSPUS is rising, it indicates that demand for homes is strong and that prices are increasing. This can be a good sign for the economy, as it suggests that people are confident in the future and are willing to invest in homes. However, it can also make it more difficult for people to afford to buy homes.

When MSPUS is falling, it indicates that demand for homes is weak and that prices are decreasing. This can be a bad sign for the economy, as it suggests that people are not confident in the future and are not willing to invest in homes. However, it can also make it easier for people to afford to buy homes.

MSPUS is also a useful tool for comparing the housing markets in different parts of the country. For example, if MSPUS is higher in one city than another, it suggests that the housing market in that city is stronger and that prices are higher.



Plot of MSPUS vs CSUSHPISA

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Coefficient:
MSPUS: 3.5635833361084466e-05
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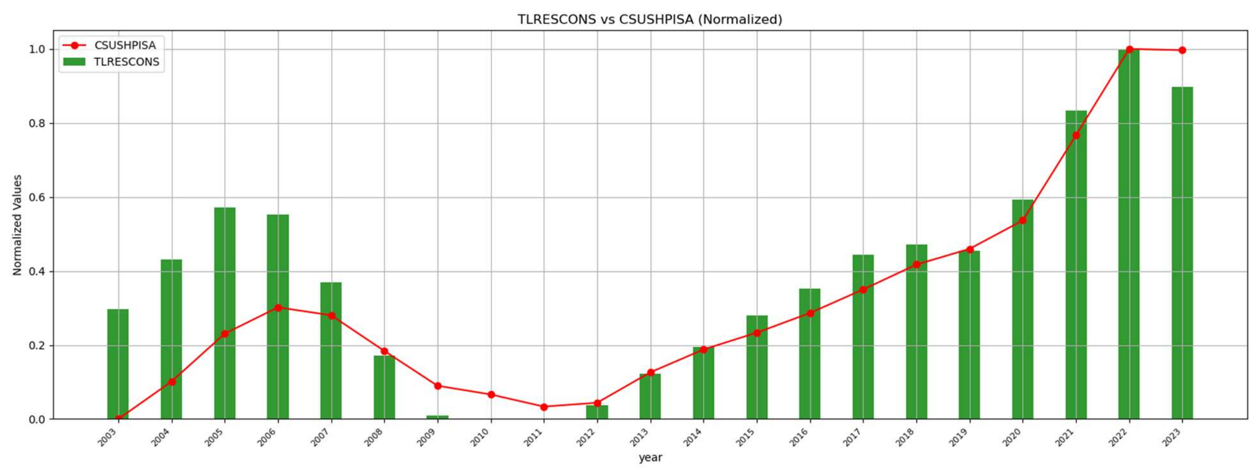
A positive coefficient indicates that a higher median sales price for used homes is associated with a higher predicted home price index. This is because the median sales price is a good indicator of the overall demand for homes.

4. TLRESCONS:

TLRESCONS stands for Total Construction Spending on Residential Projects in the United States. It is a measure of the total amount of money spent on the construction of new homes and multi-family housing units in the United States in a given time period, typically a month or a quarter. TLRESCONS is a valuable indicator of the health of the housing market and the overall economy.

When TLRESCONS is rising, it indicates that investment in the housing market is strong. This can be a good sign for the economy, as it suggests that businesses are confident in the future and are willing to invest in new housing projects. It can also create jobs in the construction industry.

When TLRESCONS is falling, it indicates that investment in the housing market is weak. This can be a bad sign for the economy, as it suggests that businesses are not confident in the future and are not willing to invest in new housing projects. It can also lead to job losses in the construction industry.



Plot of TLRESCONS vs CSUSHPISA

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Coefficient:
TLRESCONS: 0.00017831750037155638
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A positive coefficient indicates that higher total construction spending
on residential projects is associated with a higher predicted home price
index. This is because increased construction spending suggests that there
is a strong demand for new homes.
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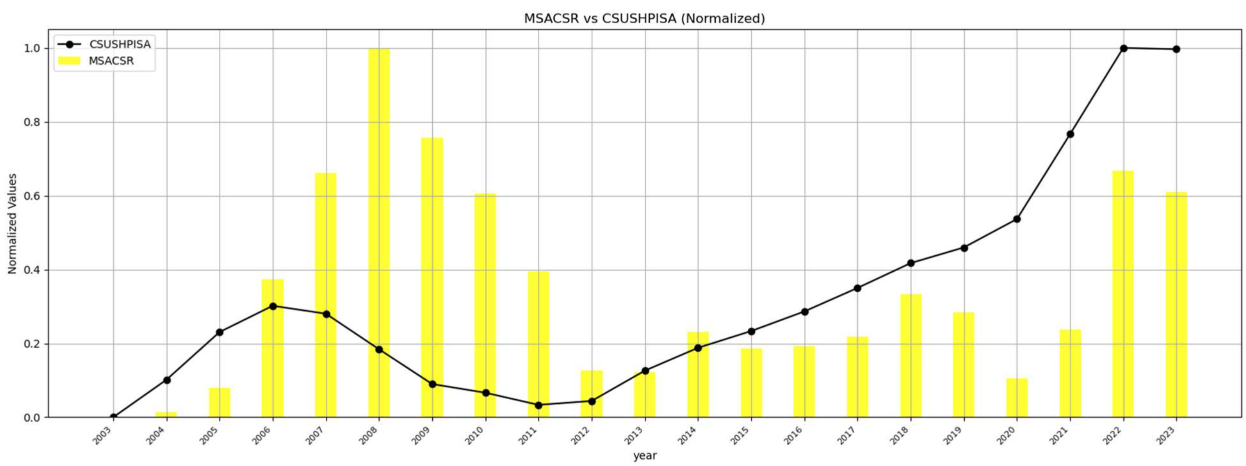
5. MSACSR:

MSACSR stands for Monthly Supply of New Houses in the United States. It is a measure of the number of months it would take to sell the entire inventory of new homes on the market at the current sales rate. MSACSR is calculated by dividing the number of new homes for sale by the number of new homes sold per month.

MSACSR is a valuable indicator of the balance between supply and demand in the housing market. When MSACSR is high, it indicates that there is a large supply of new homes on the market and that demand is weak. This can lead to lower home prices.

When MSACSR is low, it indicates that there is a small supply of new homes on the market and that demand is strong. This can lead to higher home prices.

A balanced housing market is generally considered to have an MSACSR of around 6 months. This means that it would take around 6 months to sell the entire inventory of new homes on the market at the current sales rate.



Plot of MSACSR vs CSUSHPISA

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Coefficient:
MSACSR: 3.198551086453817
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A positive coefficient indicates that a higher monthly supply of new
houses is associated with a higher predicted home price index. This is
because a higher supply of homes suggests that buyers have more choices
and are more likely to find a home that they like.
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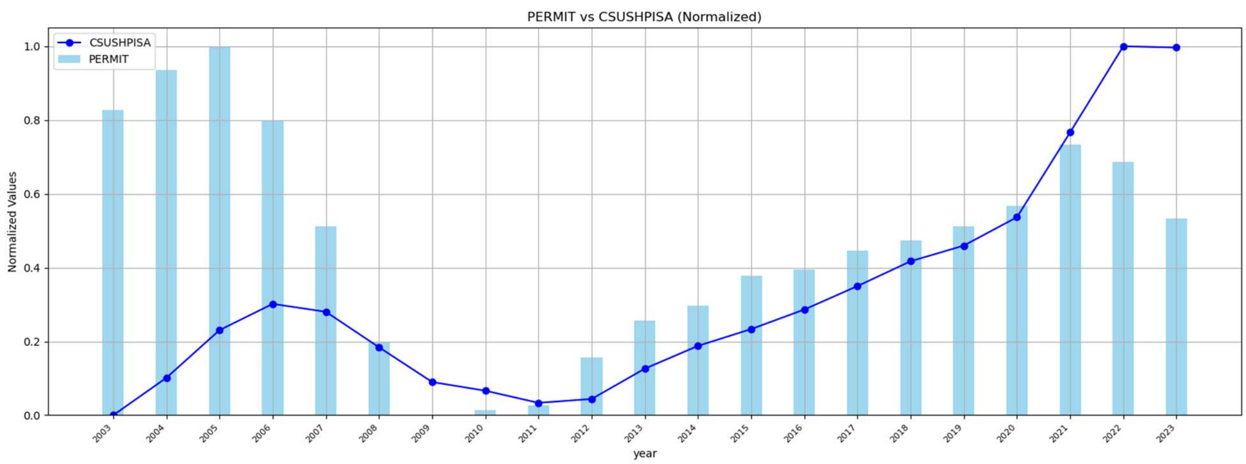
6. PERMIT:

PERMIT in the context of home price index refers to the number of new housing units authorized for construction in a given time period, typically a month or a quarter. It is a measure of future supply of homes.

A higher number of permits indicates that there will be more homes available in the future. This can lead to lower home prices, as buyers will have more choices and will be less likely to compete with each other for homes.

A lower number of permits indicates that there will be fewer homes available in the future. This can lead to higher home prices, as buyers will have fewer choices and may have to compete with each other for homes.

PERMIT is a valuable indicator of the future health of the housing market. When PERMIT is high, it suggests that there will be a strong supply of new homes in the future and that prices are likely to be lower. When PERMIT is low, it suggests that there will be a limited supply of new homes in the future and that prices are likely to be higher.



Plot of PERMIT vs CSUSHPISA

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Coefficient:
PERMIT: -0.019953376507397404

A negative coefficient indicates that a higher number of new housing units
authorized is associated with a lower predicted home price index. This is
because an increase in the number of authorized housing units suggests tha
t there will be more supply of homes in the future, which could lead to lo
wer prices.
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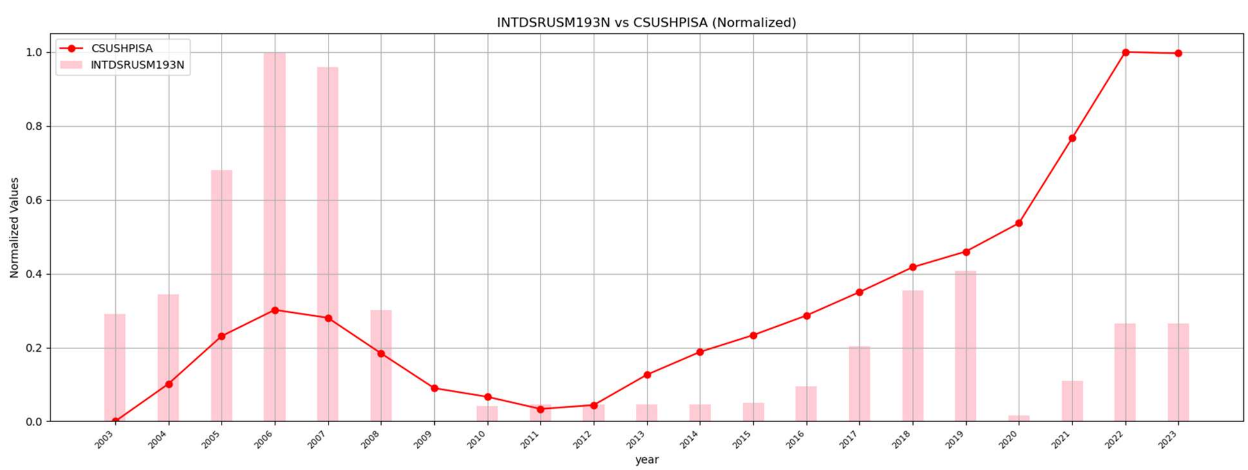
7. INTDSRUSM193N:

INTDSRUSM193N is the Federal Reserve Bank of St. Louis's mnemonic code for the 30-year U.S. Treasury bond interest rate. It is a measure of the long-term interest rate in the United States.

The 30-year U.S. Treasury bond is a debt security issued by the U.S. government that matures in 30 years. It is considered to be a safe investment, as the U.S. government has never defaulted on its debt. Investors buy U.S. Treasury bonds for a variety of reasons, including safety, income, and diversification.

The 30-year U.S. Treasury bond interest rate is important because it affects the cost of borrowing money for long periods of time. For example, businesses borrow money to finance capital expenditures, such as new plants and equipment, and consumers borrow money to buy homes and cars. When interest rates are low, it is cheaper to borrow money, which can boost investment and consumption. When interest rates are high, it is more expensive to borrow money, which can slow investment and consumption.

The 30-year U.S. Treasury bond interest rate is also a valuable indicator of the overall health of the economy. When interest rates are low, it suggests that investors are confident in the future and are willing to lend money to the government for long periods of time. When interest rates are high, it suggests that investors are less confident in the future and are more likely to demand higher returns for lending money to the government.



Plot of INTDSRUSM193N vs CSUSHPISA

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Coefficient:
INTDSRUSM193N: 1.0115931534478504
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A positive coefficient indicates that a higher interest rate on 30-year US
Treasury bonds is associated with a higher predicted home price index.This
is because Treasury bonds are considered to be a safe investment, so when
interest rates rise, investors may shift their money from the stock market
to Treasury bonds, which can drive up the demand for homes.
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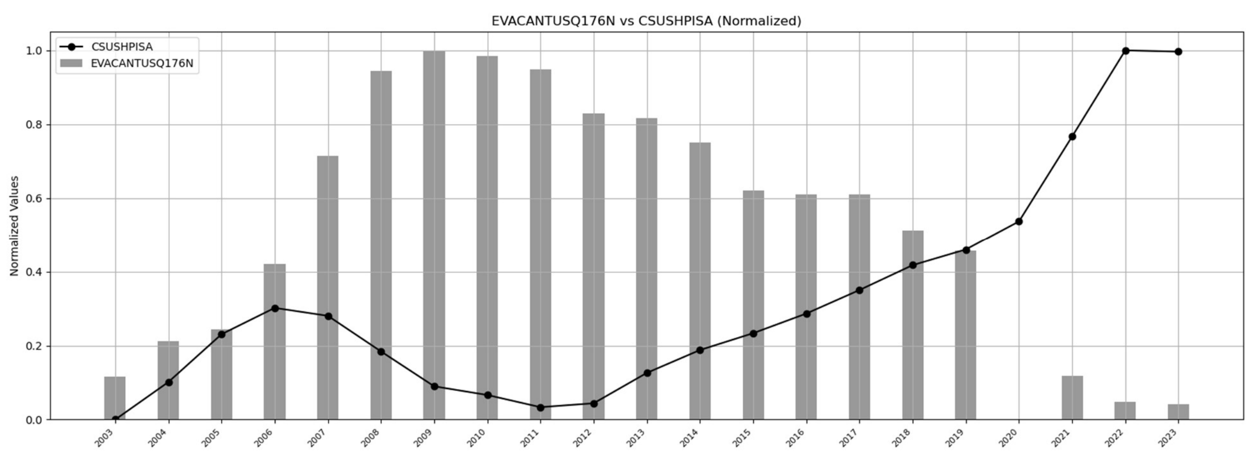
8. EVACANTUSQ176N:

EVACANTUSQ176N is the Federal Reserve Bank of St. Louis's mnemonic code for the Housing Inventory Estimate: Vacant Housing Units in the United States. It is a measure of the total number of vacant housing units in the United States in a given quarter.

A vacant housing unit is a housing unit that is not occupied by people at the time of the interview. It can be a house, apartment, or other type of dwelling unit. Vacant housing units can be classified into two types:

- Vacant housing units for sale or rent: These are housing units that are available for purchase or lease.
- Vacant housing units not for sale or rent: These are housing units that are not available for purchase or lease. They may be vacant because they are under construction, being renovated, or being used as seasonal housing.

EVACANTUSQ176N is a valuable indicator of the supply of homes in the United States. A higher number of vacant housing units indicates that there is a larger supply of homes on the market. This can lead to lower home prices, as buyers will have more choices and will be less likely to compete with each other for homes.



Plot of EVACANTUSQ176N vs CSUSHPISA

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Coefficient:
EVACANTUSQ176N: -0.002628399778930935

A negative coefficient indicates that a higher estimate of vacant housing
units is associated with a lower predicted home price index. This is becau
se a higher number of vacant homes suggests that there is less demand for
homes, which can lead to lower prices.
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CONCLUSION:

Overall, the coefficients suggest that the following factors have a positive impact on home prices:

- GDP
- Median sales price for used homes
- Total construction spending on residential projects
- Monthly supply of new houses
- Interest rate on 30-year US Treasury bonds

The following factors have a negative impact on home prices:

- Mortgage interest rate
- Number of new housing units authorized
- Estimate of vacant housing units

It is important to note that these are just correlations, and they do not necessarily indicate caus ation. For example, it is possible that a higher GDP is associated with higher home prices becaus e a higher GDP leads to higher incomes, which allows people to afford more expensive homes. However, it is also possible that higher home prices are associated with a higher GDP because p eople who own homes are more likely to invest their money in other businesses, which can boo st the economy.

Additional factors that can affect home prices include:

- Location
- Size and condition of the home
- Quality of the school district
- Crime rate
- Amenities nearby