

Housing and Real Estate

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<https://github.com/dishasaha/DSC680>

Which Domain?

What domain is this data going to come from? Please list 10 references (with a brief annotation) to use to make sense of what you're doing with these data.

The domain of this project will highlight and explore housing and real estate within the United States. I will specifically focus on what potential factors could be impacting the price of a house. I found the following articles to aid in my research.

1. <https://www.yahoo.com/now/unprecedented-lumber-shortage-8-charts-223000018.html>
 - a. This article talks about the lumber shortage within the United states. This article describes how the potential price hikes can be a contributing factor to house price increases.
2. <https://www.businessinsider.com/housing-shortage-real-estate-inventory-foreclosures-builders-millennials-goldman-sachs-2021-5>
 - a. This article discusses 3 issues contributing to the housing shortage currently facing the real estate market. The first being that millennials are just now entering the home-buying market causing higher demand, the second are the constraints on labor and land causing a slowdown in new homes being built, and the third is that while there is anticipation in more homes being foreclosed and added in the market in the coming months it is not enough to meet the current supply.
3. <https://www.bankrate.com/real-estate/why-are-house-prices-going-up/>
 - a. This article discusses the issues around low inventory and states that there might be low inventory for the next few years. This is due to the fact that many individuals are staying in their homes longer and there is also not enough new homes being built.
4. <https://www.stlouisfed.org/publications/regional-economist/fourth-quarter-2020/impact-covid-residential-real-estate-market>
 - a. This article discusses COVID-19 impacts on the housing market. The first being less sellers and buyers on the market, however despite less turnover in the market home prices remained stable due to low interest rates. Issues started to arise when the demand from buyers recovered however inventory and sellers remained low causing pricing to increase.
5. <https://www.vox.com/22264268/covid-19-housing-insecurity-housing-prices-mortgage-rates-pandemic-zoning-supply-demand>
 - a. This article discusses how home ownership inequality has increased due to the changes in the real estate market. Due to home price increases and millennials now entering the housing market there is going to be some age inequality in the housing market and the price increases have also exacerbated the home ownership inequality between white and black Americans.
6. <https://link.springer.com/article/10.1007/s11408-021-00384-6>

- a. This article examines the coronavirus pandemic effects on the real estate market both from a residential and commercial standpoint.
7. <https://www.rocketmortgage.com/learn/historical-mortgage-rates-30-year-fixed>
 - a. This article discusses interest rates over the past few decades starting with the 1970s. Overall interest rates from the 1970s till the 2020s have steadily declined from a high of 8-10% range down to 3-4% range. Interest rates hit a peak in 1981 at 16% when inflation had increased in the US and the federal reserve had to increase short term interest rates as a countermeasure.
8. <https://www.bankrate.com/mortgages/analysis/>
 - a. This article discusses mortgage interest rates and where they might end up in the future.
9. <https://www.businessinsider.com/us-underbuilding-housing-over-the-past-decade-2020-9>
 - a. This article discusses the United States home building process over the past few years and how supply has not been able to keep up demand for new homes. Although this problem has been going on the past few years, low interest rates and high demand has exacerbated the problem.
10. <https://www.investopedia.com/mortgage/mortgage-rates/house-price-vs-interest-rate/>
 - a. This article discusses different scenarios around home buying and interest rates. While it will be impossible to time the market in real estate as low interest rates and low prices it provides some guidance on when individuals should make the purchase.
11. <https://www.noradarealestate.com/blog/housing-market-predictions/>
 - a. This article discusses the current state of the housing market and provides some statistics around the market from the past few months.

Which Data?

What is the dataset you'll be examining? Please provide a codebook if there is one or a link to the dataset as well as a detailed description.

1. https://econdata.s3-us-west-2.amazonaws.com/Reports/Core/RDC_Inventory_Core_Metrics_Country_History.csv
 - a. This data is published by realtor.com, which shows the historical residential real estate data within the United States. The data dictionary can be found here: <https://www.realtor.com/research/data/>
2. <https://fred.stlouisfed.org/series/IPG321S>
 - a. The data is published by the Federal Reserve Economic Data. This data shows the industrial production index of Lumber/Wood per each month from 1972 to April of 2021
3. <https://fred.stlouisfed.org/series/MORTGAGE30US>
 - a. This data is published by the Federal Reserve Economic Data. This data shows the 30 year fixed mortgage rate within the United states starting from 1971.
4. <https://fred.stlouisfed.org/tags/series?t=housing+starts>
 - a. This data is published by the Federal Reserve Economic Data. This data shows how many new homes have been built in the US.

Research Questions? Benefits? Why analyze these data?

How are you proposing to analyze this dataset? This is about your approach. Here, you'll be proposing your research questions as well as justifications for why you'd offer these data in this way.

The following questions will be answered during my analysis. These are important factors facing the real estate market today and consumers knowing how prices might be impacted once these issues are resolved is an important step in deciding whether to purchase a home today.

1. How has low inventory impacted real estate prices
2. How has the lumber shortage impacted real estate prices
3. How has interest rates impacted real estate prices
4. How has the coronavirus pandemic impacted real estate prices
5. Where will real estate prices once short term issues have been resolved

What Method?

What methods will you be using? What will those methods provide in terms of analysis? How is this useful?

I will be using multiple linear regression to create a model to forecast real estate prices based on location and interest rates and other correlated factors. Then I will forecast 2021 real estate prices to find the difference in price to see how real estate prices have been impacted from other unique factors such as lower inventory and lumber shortages. This will be useful by being able to see where real estate prices may end up in the future once all the near term effects have been removed.

Potential Issues?

What challenges do you anticipate having? What could cause this project to go off schedule?

The potential issues I see with doing this analysis is being able to quantify the near term effects going on in the real estate market. I would need to ensure that my model can forecast accurately in order to reliably predict the real estate market prices.

Concluding Remarks

Tie it all together. Think of this section as your final report's abstract.

Recently there has been a lot of buzz around the real estate market as prices have skyrocketed in recent months due to a lot of unique challenges in inventory. There have been changes in residents moving from urban to suburban areas within cities, a shortage of inventory due to the Coronavirus pandemic and individuals not wanting to sell or move for the past year. Interest rates have dropped to an all time low and individuals have also been moving from high taxed states to low taxed states as remote working became the norm. With so many unique changes it may be difficult to quantify just how this has impacted real estate prices in recent months. My plan is to attempt to quantify this change and predict where prices might land once the short issues have been resolved. I will first begin by developing a model to track real estate prices up to 2019 and then develop a forecast into 2021 to see where prices would likely be given the status quo. I will then look at different markets and calculate the difference between the forecast and the actual median price of homes to quantify how these short term issues have impacted prices and look to see where prices may end up in the next few years as these issues get resolved.