



Housing Analysis Project

Presented by:
Jasmine Cofield
Cassidy Cruz
Widchy Joachim
Daniel Pineda
Edward Tabijie



Overview

This analysis aims to identify national trends and unique marketplace behaviors in the U.S. housing market from January 2017 to June 2024. The analysis covers various metrics including sales prices, sales volumes, days on market, and inventory levels. A key focus is understanding how the COVID-19 pandemic impacted the housing market. (Via Redfin dataset)



Questions

1. How have housing prices on the national and state level (before, during, and after the COVID-19 pandemic (2019 - 2024))?
2. Which areas experienced the largest change in sales price and which experienced a decline?
3. Which markets could be 'affordable' and which are increasingly out of reach?
4. Which areas could be considered real estate 'hotspots' that people are looking to call home?



Methodology

1. Data Preparation

- The data was cleaned by handling missing values and converting date formats.
- The dataset was then transformed to focus on quarterly data for trend analysis.

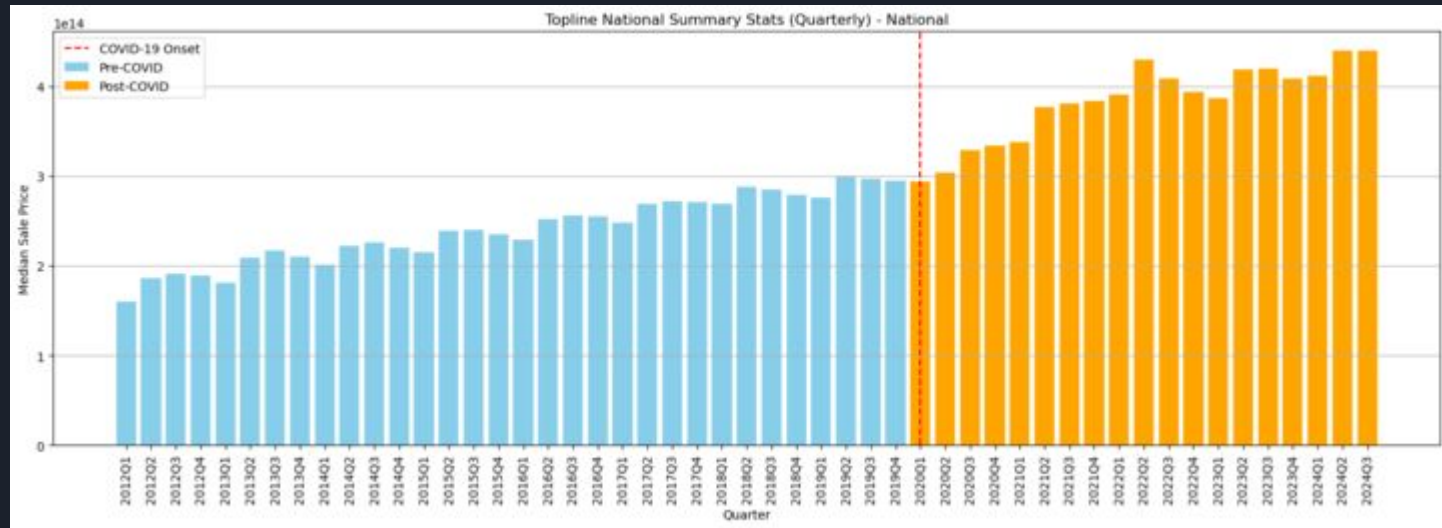
2. Analysis

- We used descriptive statistics to summarize trends and utilized Correlation Analysis to examine the relationship between median sale prices and homes sold.
- Analyzed trends in new listings and sales volume over time.

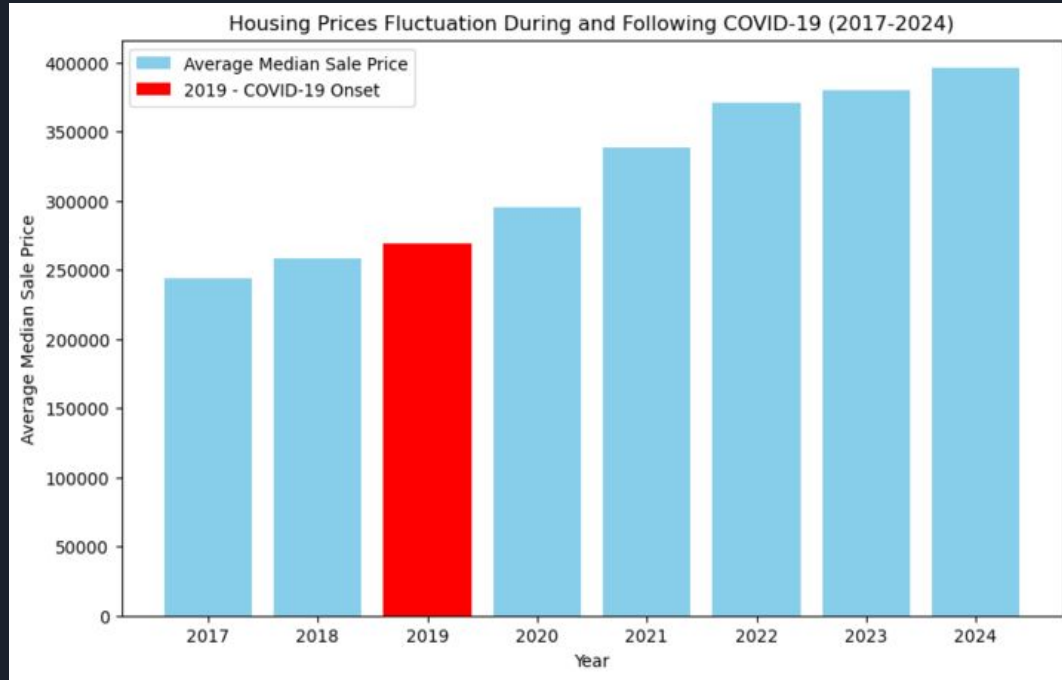
3. Visualization

- Data was visualized using `matplotlib` to create line plots and other charts that represent the findings.

How have housing prices been evolving on the national level?

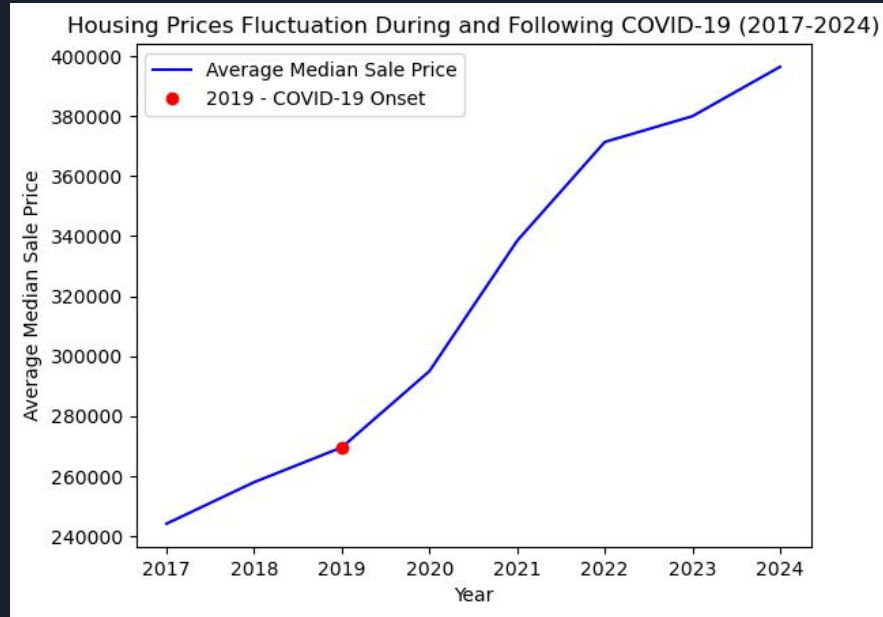


Housing prices continue to rise annually



However, the rate at which housing prices have inflated showed a period of increase in the years following the onset of COVID19 in 2019

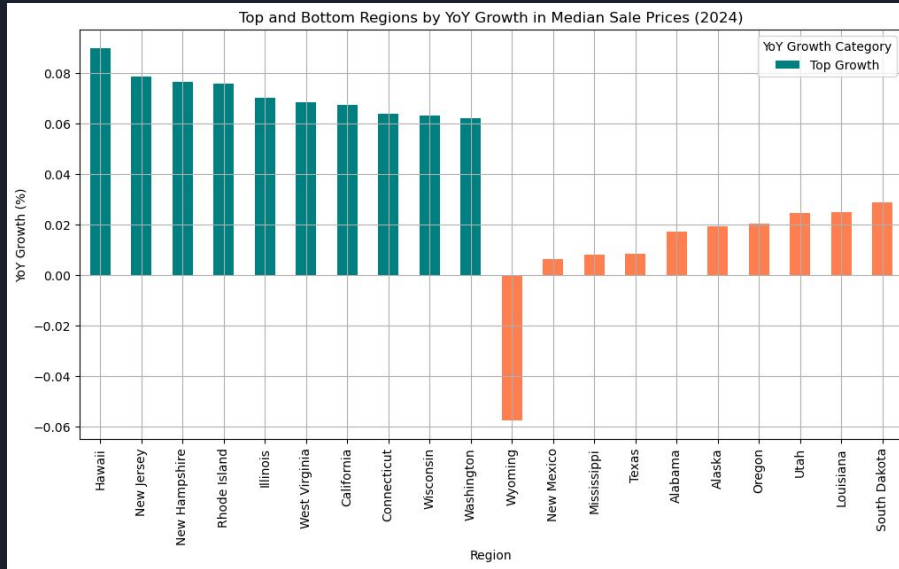
Potential Influential Factors Impacting Housing Price Fluctuations During and Following COVID-19



COVID-19 Pandemic Growth in Price Effects:

1. **Remote Work and Housing Preferences:** The pandemic accelerated trends like remote work, leading many people to seek larger homes or move to less densely populated areas driving up prices in rural areas.
2. **Supply Chain Disruptions:** The pandemic caused disruptions in global supply chains, leading to shortages in construction materials and delays in building new homes. This exacerbated the existing supply constraints, further driving up prices.
3. **Government Stimulus and Economic Relief:** Government stimulus programs and economic relief efforts during the pandemic helped maintain consumer spending power, including the ability to purchase homes. This, coupled with low interest rates, supported continued growth in home prices up until the Fed changed course in an attempt to curb inflation.

How Housing Prices Fair at the State Level: Top and Bottom States by YoY Growth in Median Sale Prices (2024)



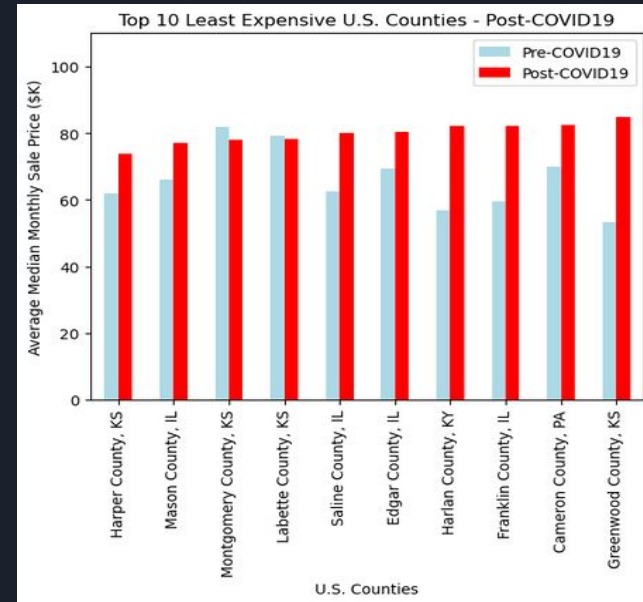
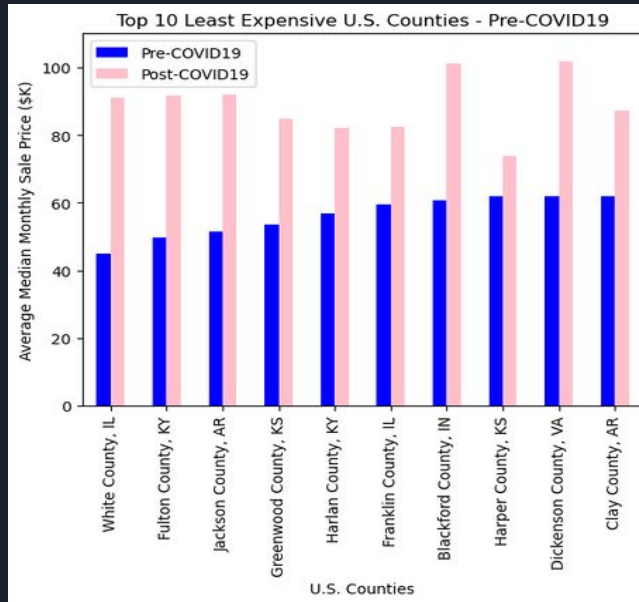
The variations in YoY growth in median sale prices across different regions are a result of a complex interplay of economic, demographic, and market factors. Top regions by YoY growth typically benefit from strong economic performance, high demand, favorable policies, and limited supply. In contrast, bottom regions may suffer from economic challenges, population declines, oversupply, and less favorable market conditions. Understanding these factors can help explain the disparities in housing price growth across different parts of the country.

Affordable..?:

Top 10 Least Expensive US Counties Pre/Post Covid19

Pre-COVID: The least expensive counties were often in rural areas or regions with limited economic opportunities. These areas generally had lower property values and lower demand.

Post-COVID: The pandemic caused shifts in housing demand, with some rural or previously less desirable areas experiencing increased interest due to remote work opportunities. This could lead to rising prices in those areas, potentially changing the rankings of least expensive counties.

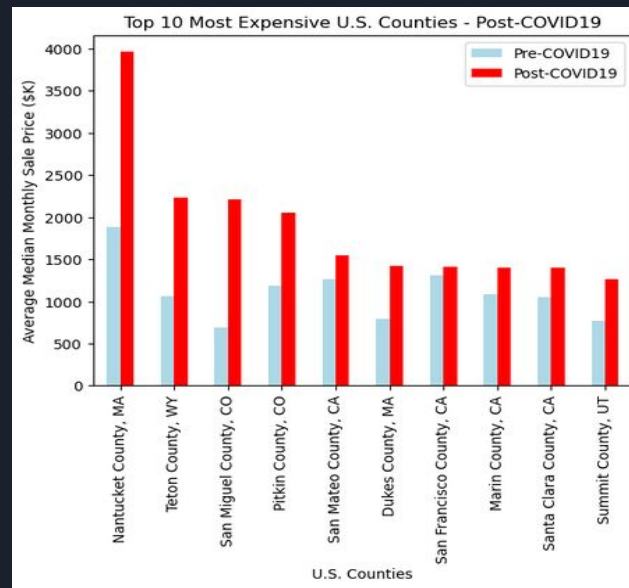
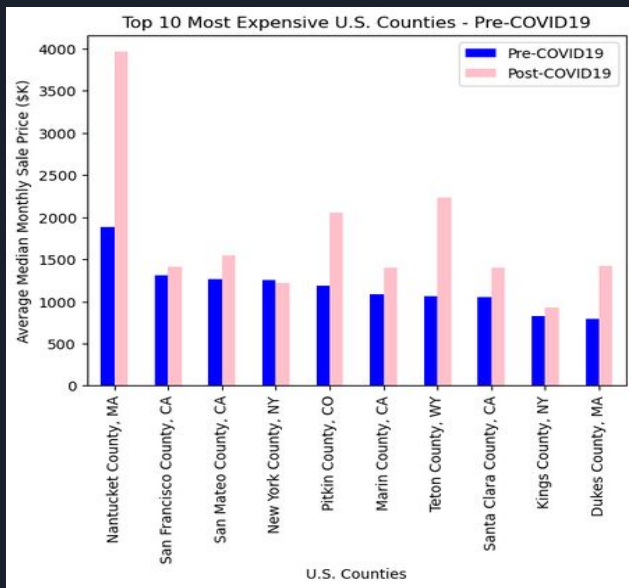


Ever More Out of Reach: Top 10 Most Expensive US Counties Pre/Post Covid19

Home sale prices rose greatly among the top 10.

Major city counties remain within the same range.

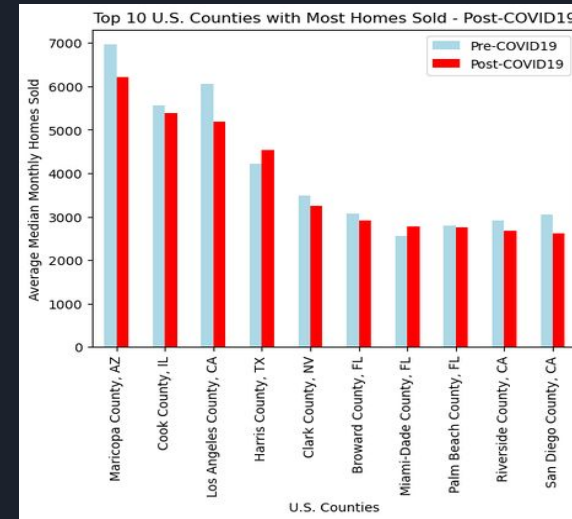
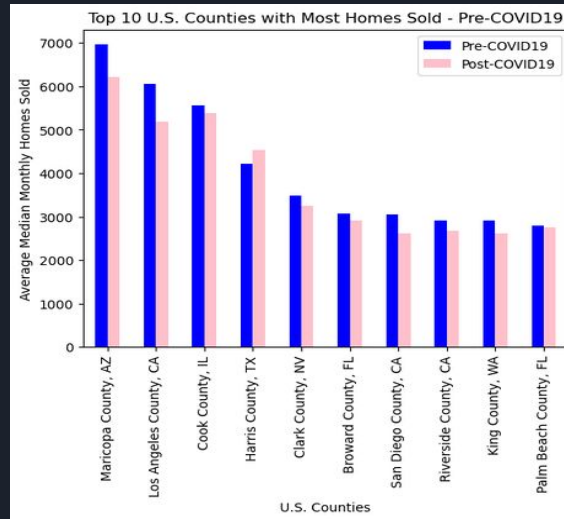
Non major counties had a significant change.



The Newest Destinations to Call Home: Top 10 U.S. Counties with Most Homes Sold Pre/Post Covid19

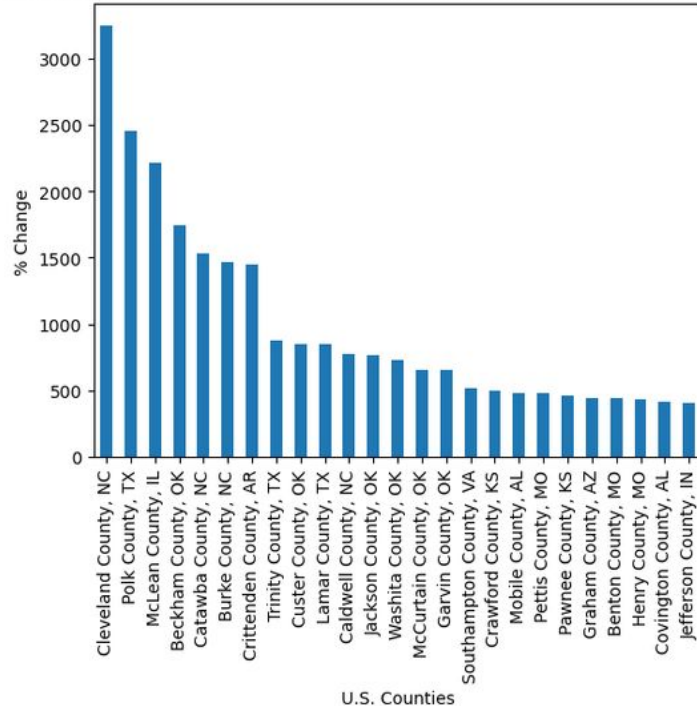
Pre-COVID: Major cities have high population densities, leading to a naturally larger pool of potential homebuyers. High demand for housing in these areas, driven by the concentration of jobs, amenities, and services, results in a higher volume of home sales.

Post-COVID: While there was a shift toward suburban and rural areas, major cities still maintained significant home sales due to their large populations and ongoing demand from people who prefer urban living or cannot relocate.



The Newest Destinations to Call Home: Looking at % Change from before to after COVID19

Top 25 U.S. Counties with Highest % Growth in Home Sales (pre-COVID19 to Post-COVID19)

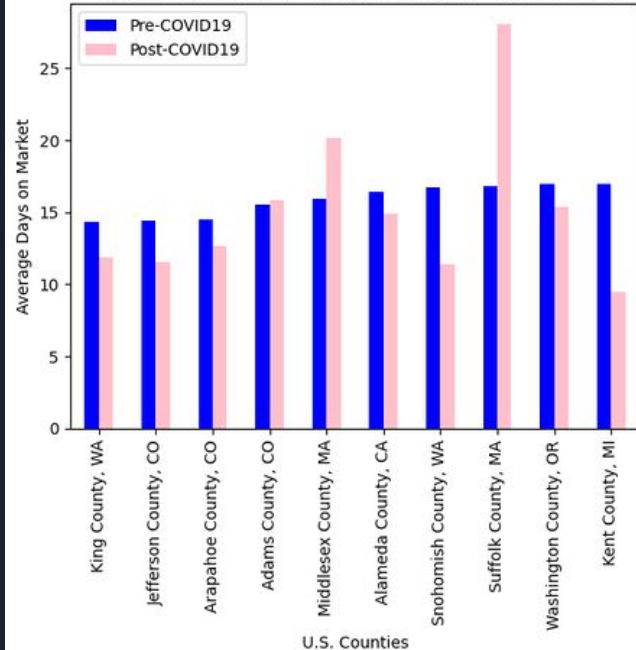


Home Sales volume continue to be dominated by larger counties but % change/growth provides a different perspective

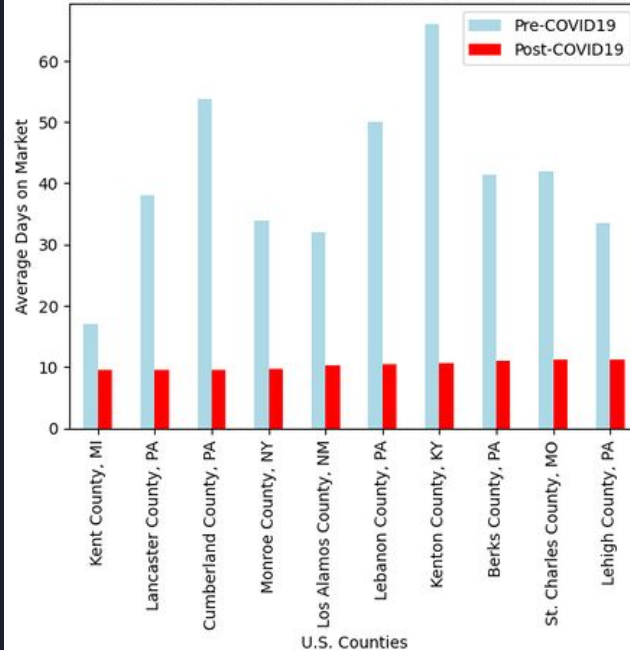
- Unsurprisingly, the counties with the largest change in home sales occurs in smaller non-urban counties

The Newest Destinations to Call Home: Markets that Sell the Fastest

Top 10 U.S. Counties with Fastest Sales - Pre-COVID19



Top 10 U.S. Counties with Fastest Sales - Post-COVID19



Days on Market provides another possible perspective as a measure of motivation:

- Prior to COVID19, the fastest selling homes were found in more urban counties
- Clear shift occurred towards non-urban areas in the post-COVID19 era



Conclusions

- Our group hypothesized that Covid-19 had drastically impacted the housing market by reshaping general market behavior towards home ownership in major metropolitan cities (caused by factors such as changes in remote work, rising costs of homes due to major shifts in the economy, government policies which provided economic relief and stimulus, etc.)
- Based on our analysis, we saw the median price for homes in the US sharply rise between this period and saw a major uptick in sales volumes for counties outside of major metropolitan areas (though we do see states like Florida, California, and Texas experience rapid growth based on annual sales volume)