

# Real Estate Prices v. Mortgage Rates

Nashville Metro Area 2018-2024

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# Agenda

- Takeaways & Elevator Pitch
- Overview
- Data Visualizations
- Key Results
- Conclusion

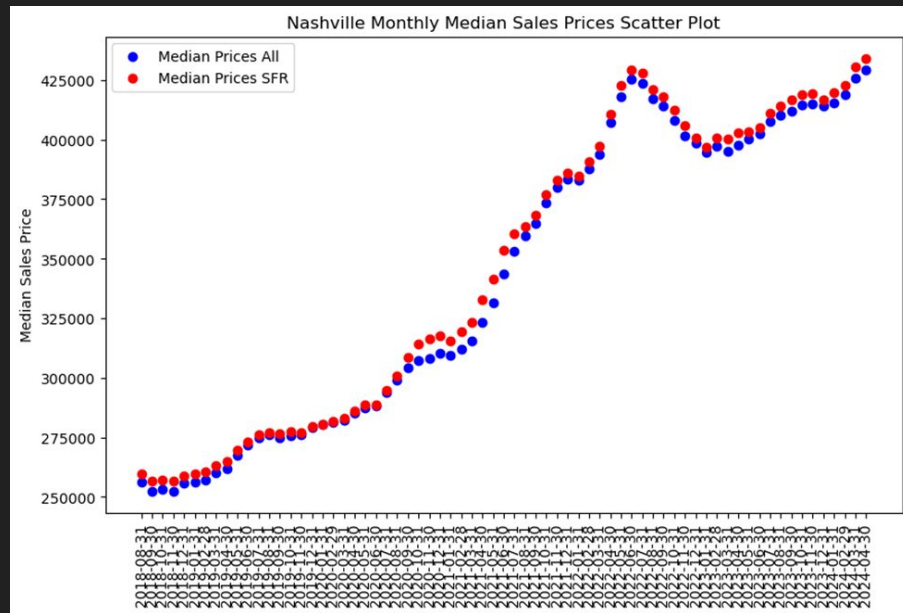
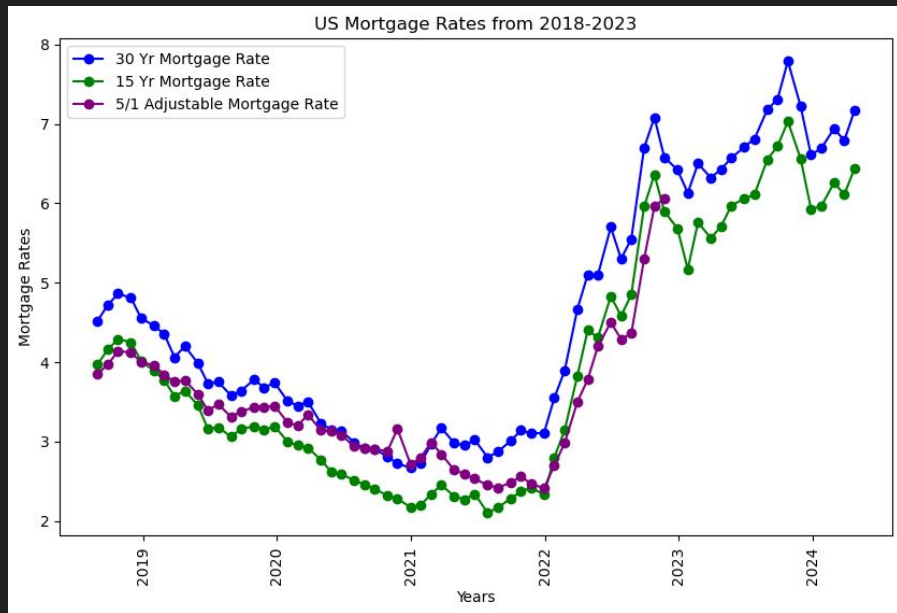
# Takeaways

- Median home prices increased
- Real estate prices do not have a linear relationship with mortgage rates.
- 15/30 year mortgages increased at similar rates
- Mortgage rates can only explain 44.5% of changes in variance of real estate prices

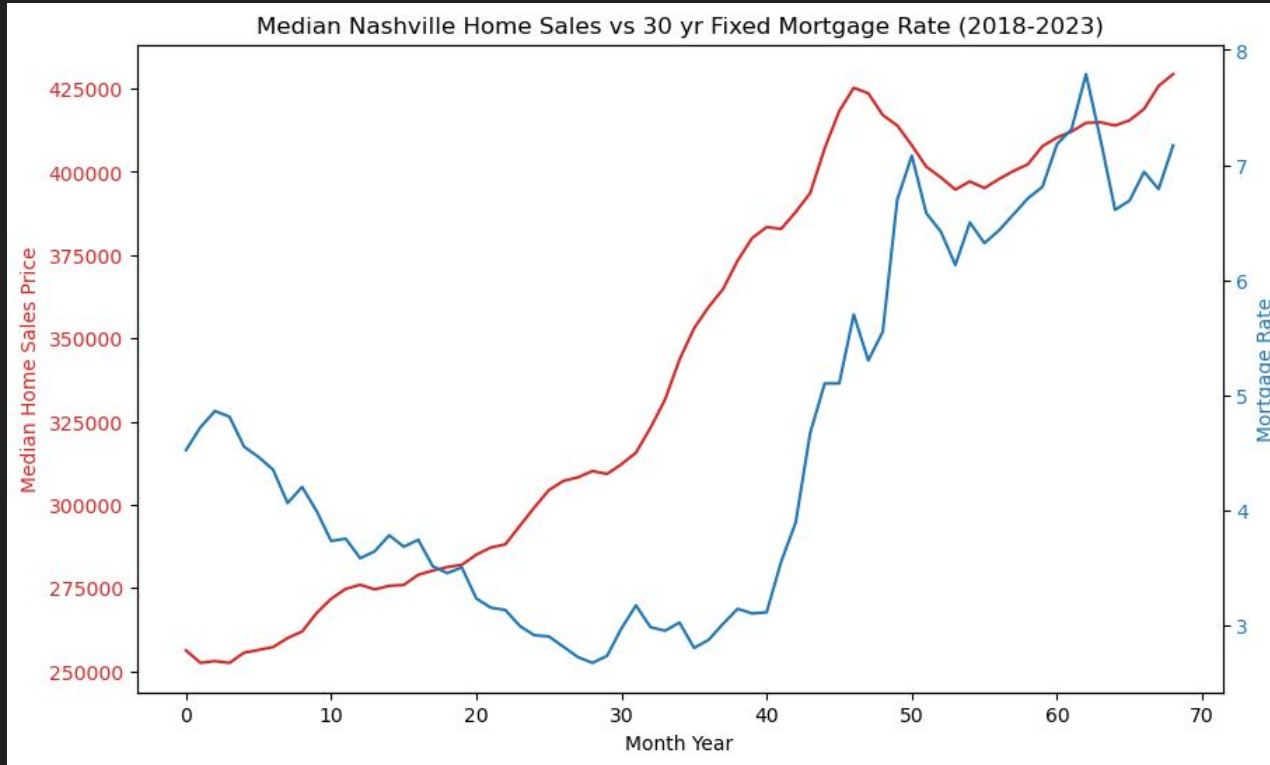
# Overview

- Median sales price data was sourced from Zillow and historical mortgage rates were sourced from the FreddieMac website (Federal Home Loan Mortgage Corporation).
- There is a positive correlation between mortgage rates and real estate prices. However they may not have a linear relationship.
- Linear regression analysis found that as interest rates for a 30yr FRM mortgage increase by 1%, the median sales price for Nashville would increase by \$26,368.
- In the future we plan to use alternative models and data for a more accurate relationship between mortgage rates and real estate prices.

# Real Estate & Mortgage Rate Data Over Time

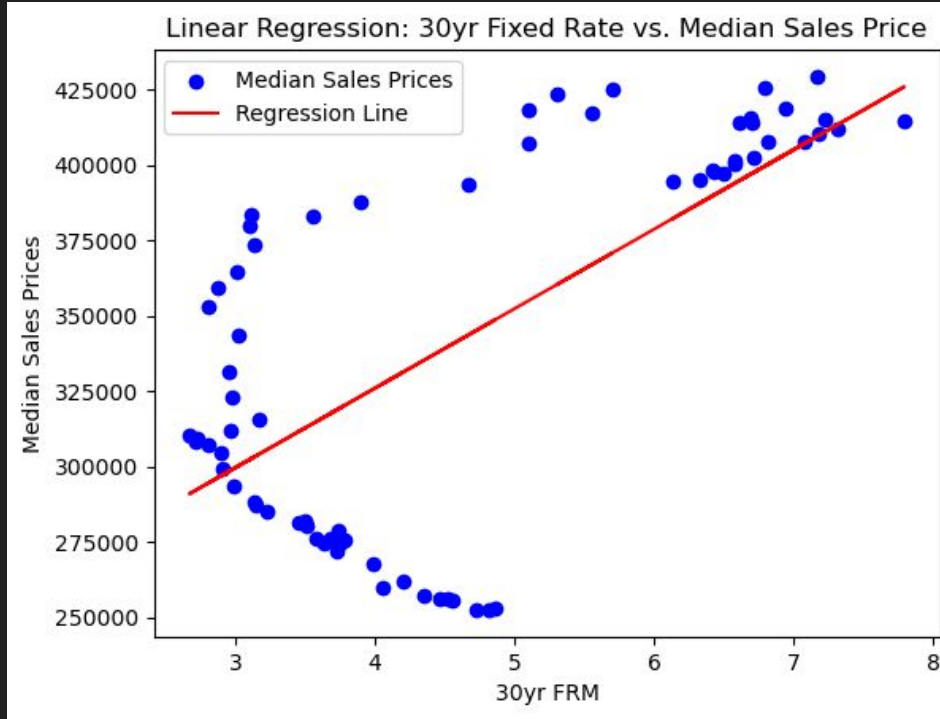


# Real Estate v. Mortgage Over Time (Chart)



Comparison real estate prices to 30 year fixed rate mortgages respectively, the correlation coefficients are 0.668, 0.633 and the pvalues are  $3.718e-10$ ,  $5.412e-09$ .

# Regression of Mortgage v. Sales - Regression



Slope: 26368.50

Intercept: 220555.39

R-squared: 0.4457

Standard Error: 3592.40

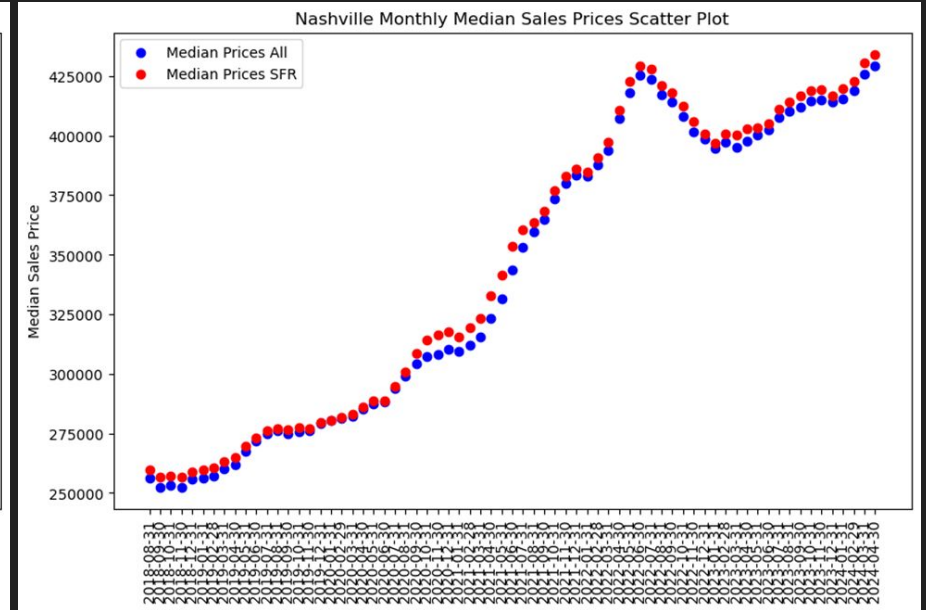
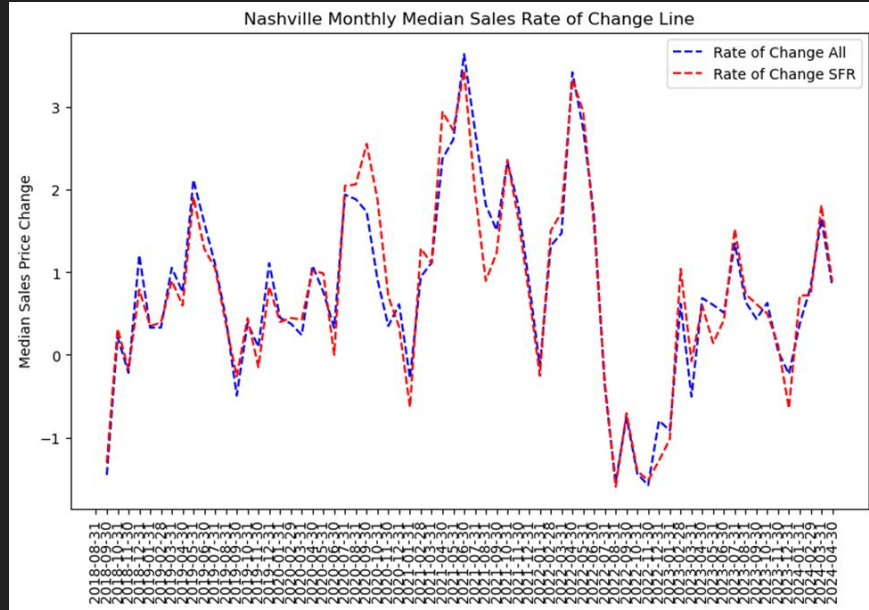
# Future Considerations and Limitations

- In the future we'd like to incorporate census data (demographic data like education, race, or income) to help explain changes in real estate prices.
- Additionally, we would like to explore what effect the pandemic had on median prices. In the future we could also look at the frequency of homes being put up for sale or being taken off the market. Mortgage rates affect buyers borrowing power and may have a greater effect on frequency of sales rather than price.
- Our data was limited to median sales prices for only single family rentals and condos. We if had more time we would have explored the differences across commercial and residential prices and across different types of homes (1br, 2br, 3br).

# Appendix



# Real Estate Data Over Time & Rate of Change Over Time



f\_statistic: -4.1648212076891234e-32

P-Value: nan

T-Statistic: -0.350225144795936

P-Value: 0.7267115604952825

# Rate of Change Also isn't Statistically Significant - T Test

Median Home Prices v Median SFR Prices:

T-Statistic: -0.350225144795936

P-Value: 0.7267115604952825

Mortgage Rate Comp: 30 year vs 15 year vs 5/1 ARM

f\_statistic: -4.1648212076891234e-32

P-Value: nan