

The background image shows a laptop screen with a dark overlay. On the screen, there is a line graph with a blue line showing fluctuations over time, and a pie chart with a green slice. The text 'Time Series Analysis' is prominently displayed in white, bold font across the middle of the screen.

Time Series Analysis

of Jacksonville Zip Code Housing Prices

Client Breakdown

-Relocating for a 2-year work contract in Jacksonville, FL. It begins in 3 months.

-Might relocate again after the contract ends. Wants a house that will offer the best potential ROI.

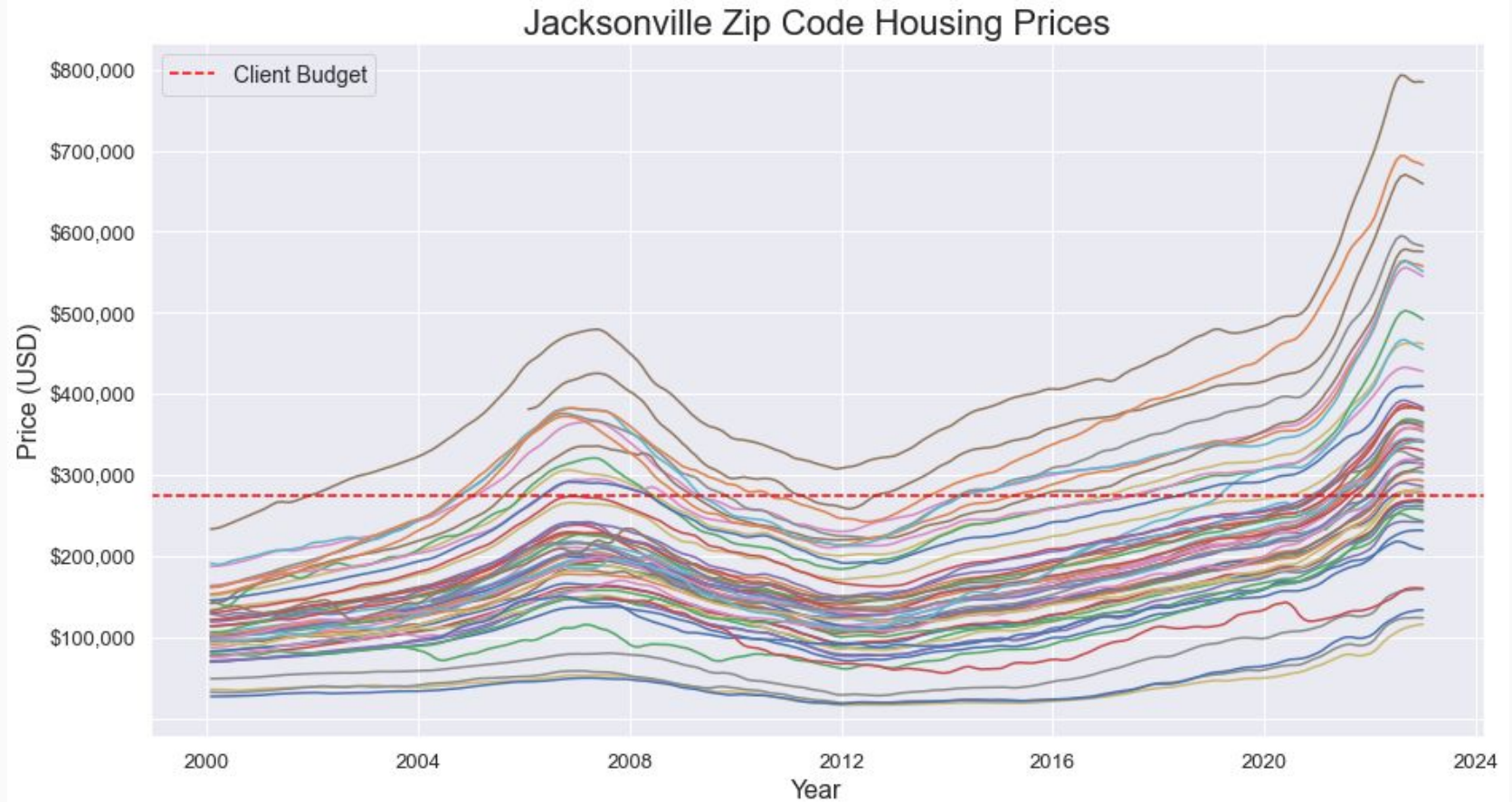
- Budget: \$275,000

-Looking for a single-family home.

Housing Prices Dataset

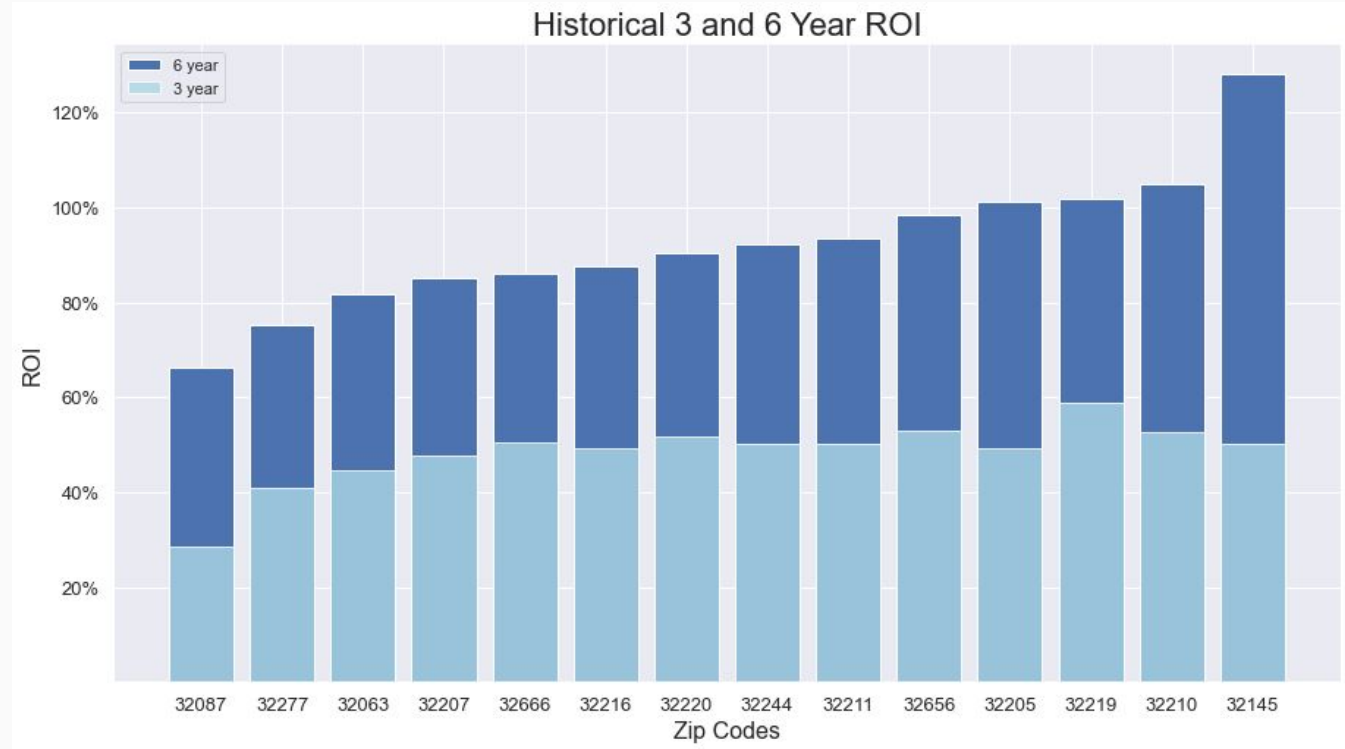
- available from [Zillow](#)
 - smoothed (non-seasonal)
 - median housing prices by zip code dating back to 1996.
 - data has been trimmed to start in January 2012. This period best captures the recent market trends.
 - supplementary Zillow data has been used to inform the analysis
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Median Housing Prices by Zip Code:



Zip Code Breakdown:

- 56 Jacksonville zip codes
- Price Range:
\$200,000 - \$300,000
- 14 zip codes within price range



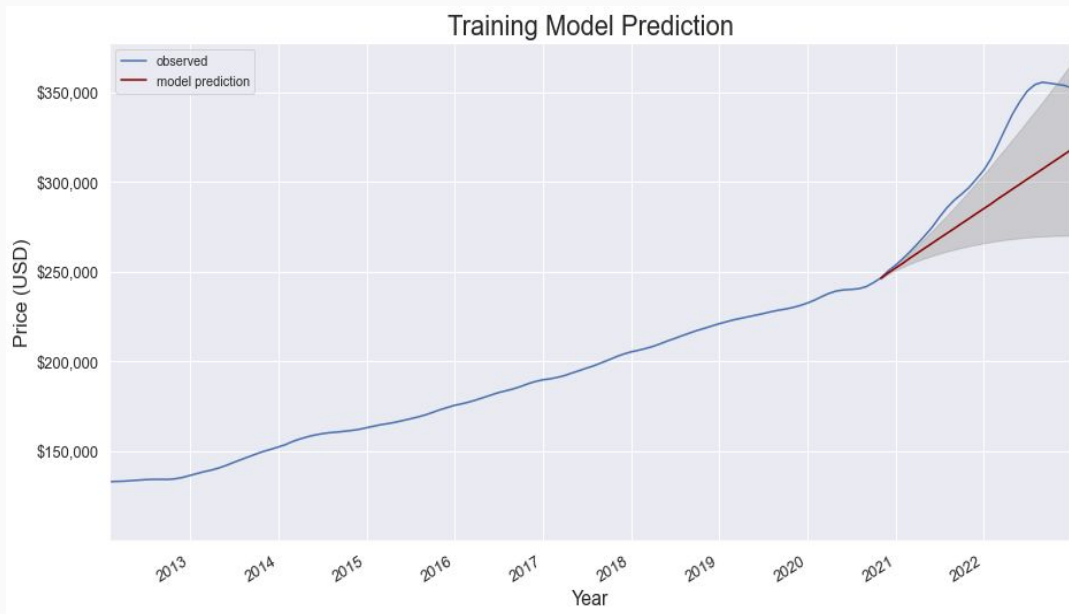
Modeling Preparation:

Average median house price of all Jacksonville zip codes:



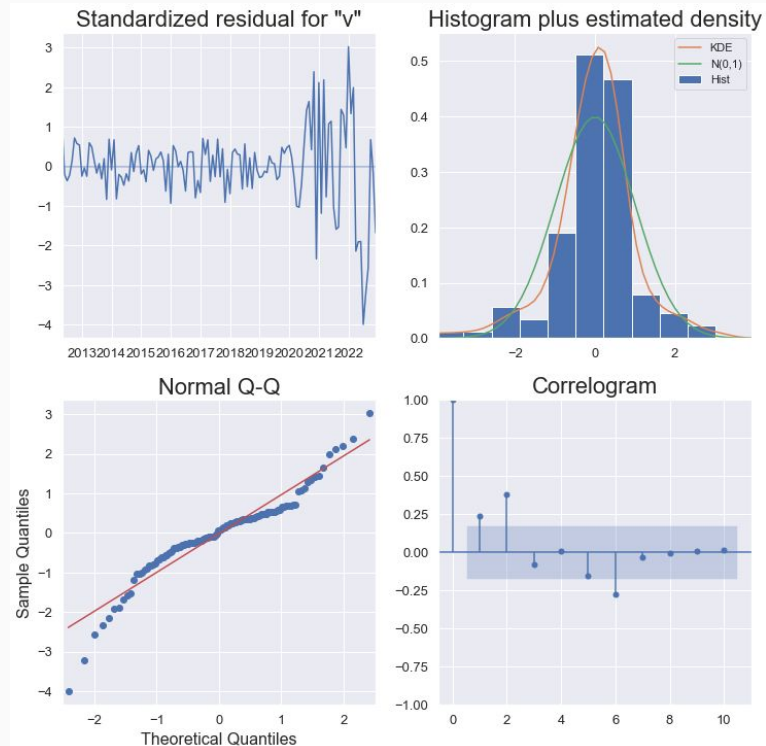
- start date: 01-31-2012
- 80/20 Split
- Difference in price growth creates issues for modeling

Training Model Diagnostics:

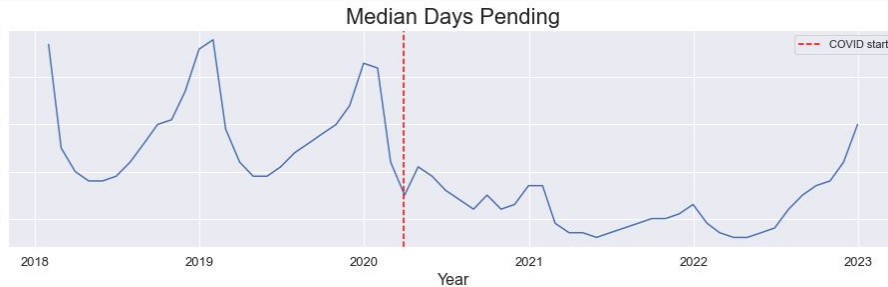
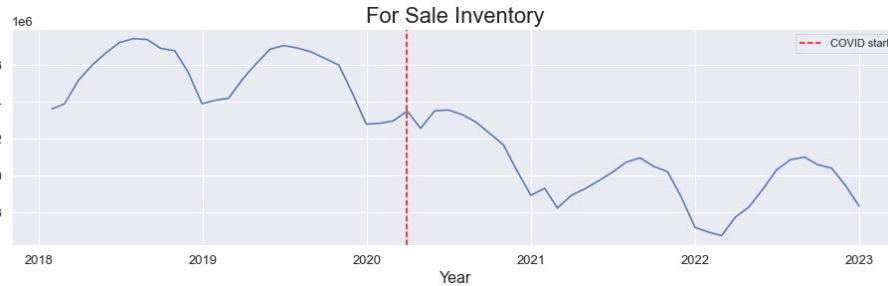


ARIMA parameters: (0,2,1)

Model trained on full data:



Supplementary US Data:



- pandemic effects are apparent starting in March 2023

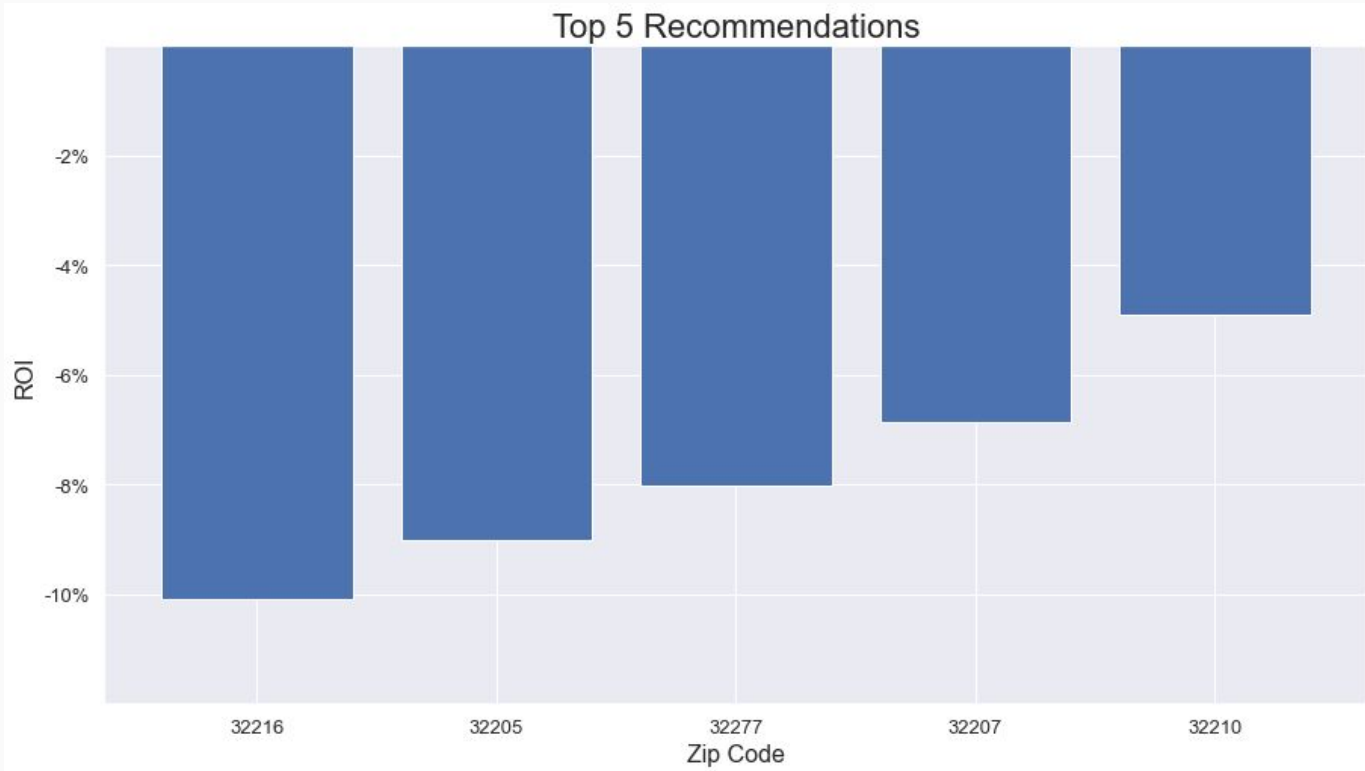
- For Sale Inventory has dropped and shows no sign of recovery yet.

-Days Pending and Sale-to-List Ratio deviate from expected values, but show a return to pre-pandemic levels in late 2022

Model Forecasting:



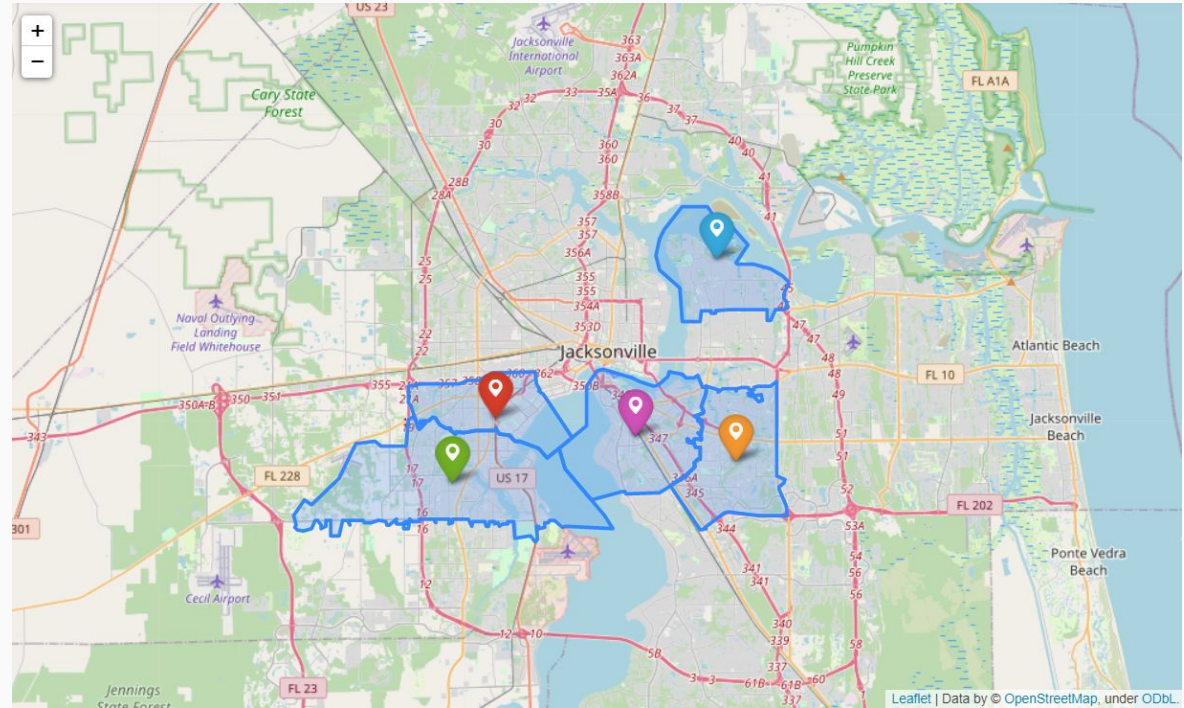
Results:



- the models predict a drop in price for all zip codes
- these 5 retain the most value

Final Recommendations:

- 2-year forecast predicts a drop in prices
- prices are currently stagnant, and a return to pre-pandemic patterns are possible
- zip code recommendations allow us to move forward with the client as we narrow the search further



Questions?

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[LinkedIn](#)

[GitHub](#)