



Tech to Tech Hub company

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About us

We are a real-estate consulting firm whose main aim is to help clients identify the most suitable homes based on customized needs.

To remain relevant and increase profitability in the Real estate market it is advantageous for leading Real Estate companies to study these trends so as to stay ahead.





Business Problem

- Happy Homes Partners is looking to expand their property investments and are looking for optimal locations for their investment.
- We as Tech to Tech hub have a primary objective to facilitate informed real estate investment decisions for the Happy Homes Partners.

Objectives

1. To identify the top 5 best zipcode for Happy Homes Partners to consider?
2. To identify the top 5 zip codes with the highest ROI.
3. To develop time series models to forecast real estate prices for different zip codes over various time horizons.

Data Understanding



The dataset used for this project is the Zillow Housing dataset, a CSV file.

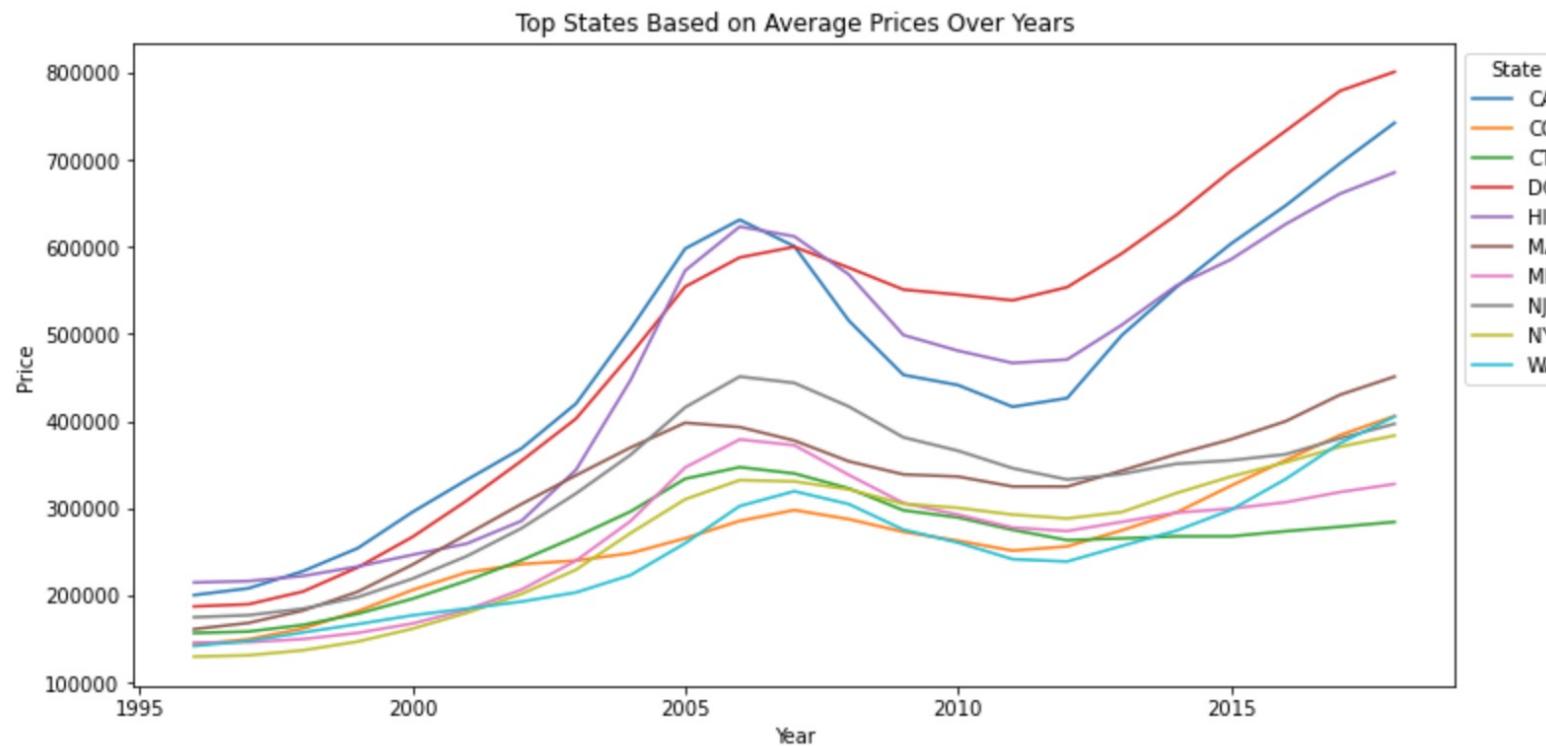


The dataset covers a large period from April 1996 to April 2018, allowing us to study long-term trends and different market conditions. It's a valuable resource for analyzing how prices have changed over time and predicting future trends.

House price trend over the years

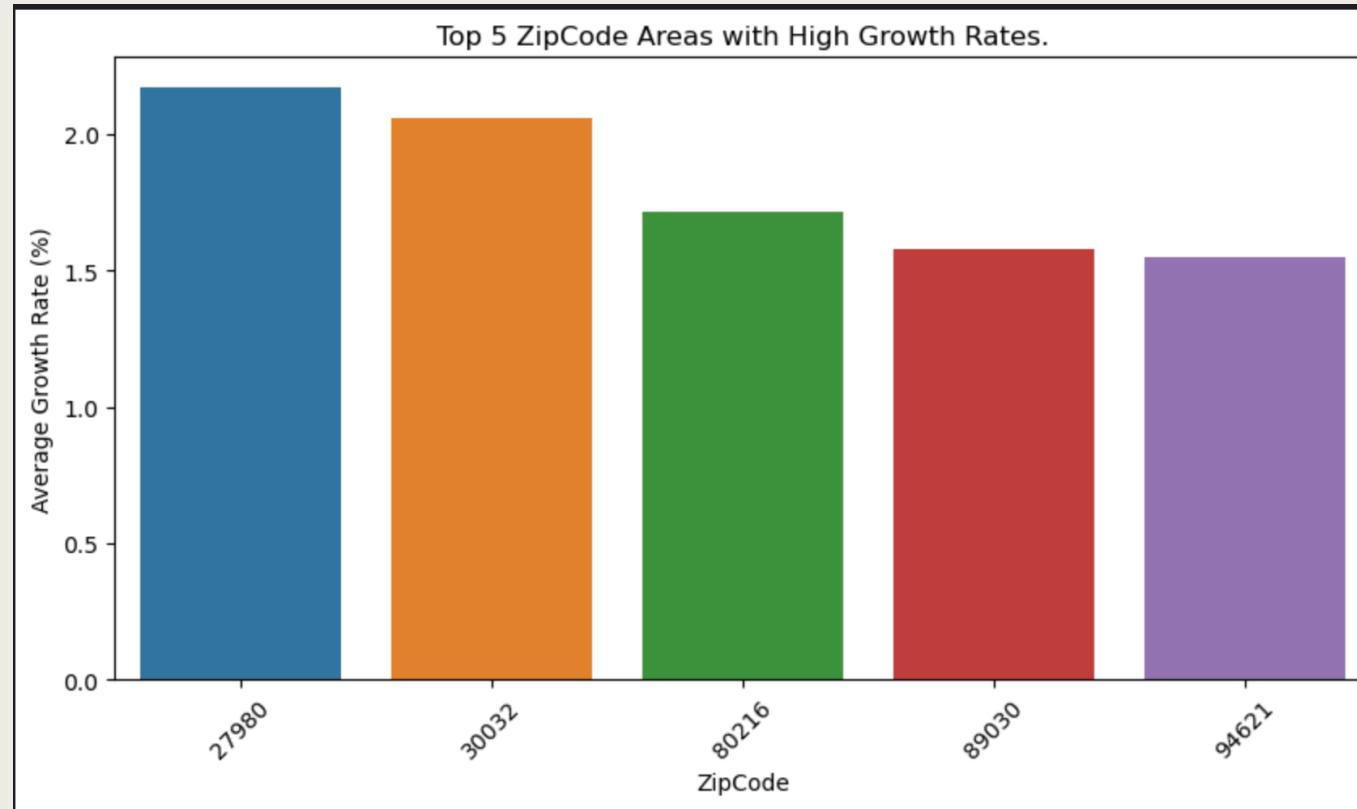


Top states based on prices



California, District of Columbia ,and Hawaii exhibit significant increase, indicating a strong property value growth. Other states like Colorado, New Jersey, and New York demonstrate moderate but steady growth over the years.

Top 5 best zip codes



The top 5 best zip codes based on the average growth rate are:

27980

30032

80216

89030

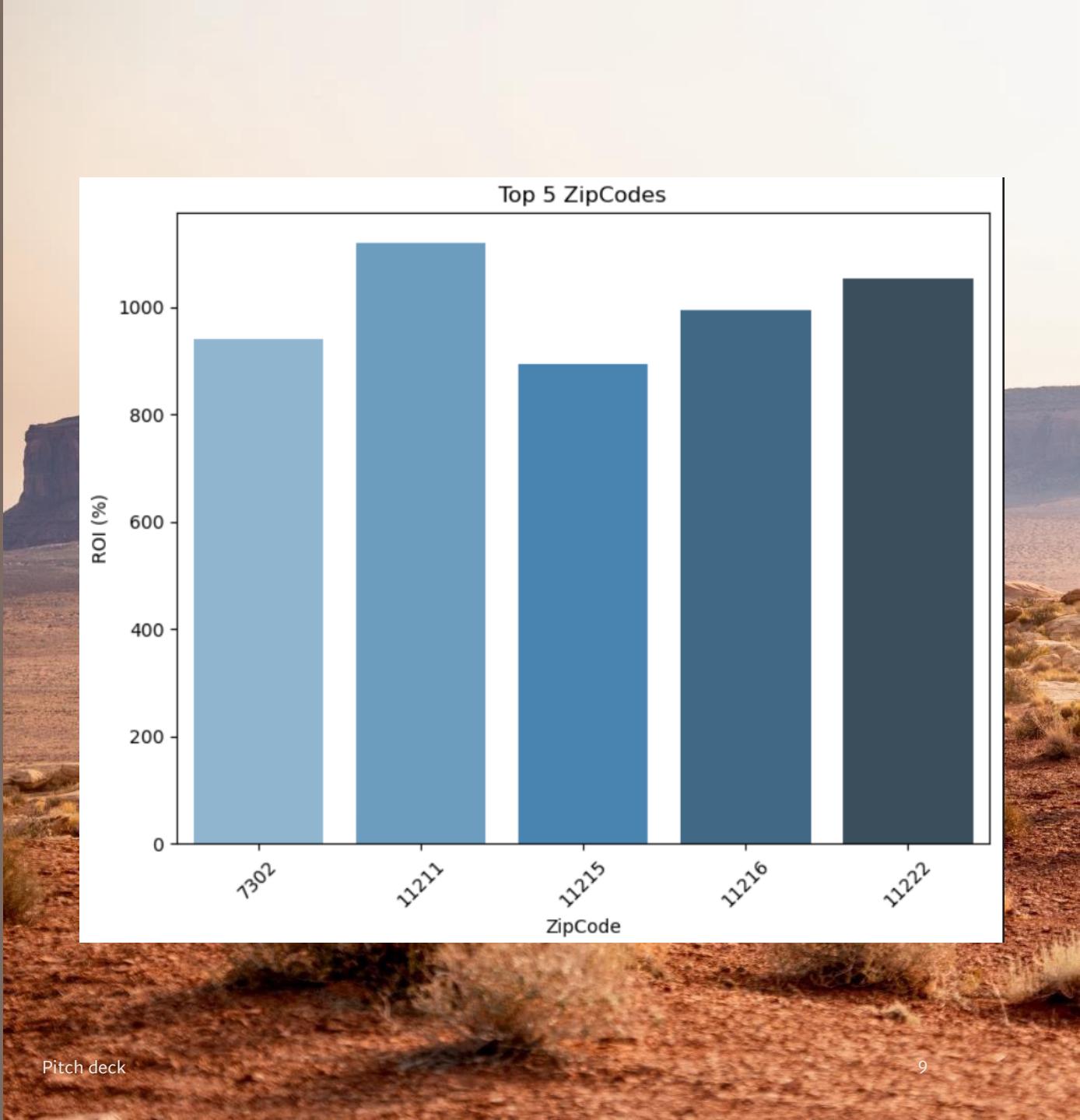
94621

Areas that Happy homes should pay attention to.

Top 5 zipcodes with highest ROI

The top 5 zipcodes with the highest ROI are, 7302, 11211, 11215, 11216, 11222.

We note that zipcode 11211 is the highest.



Models used

ARIMA

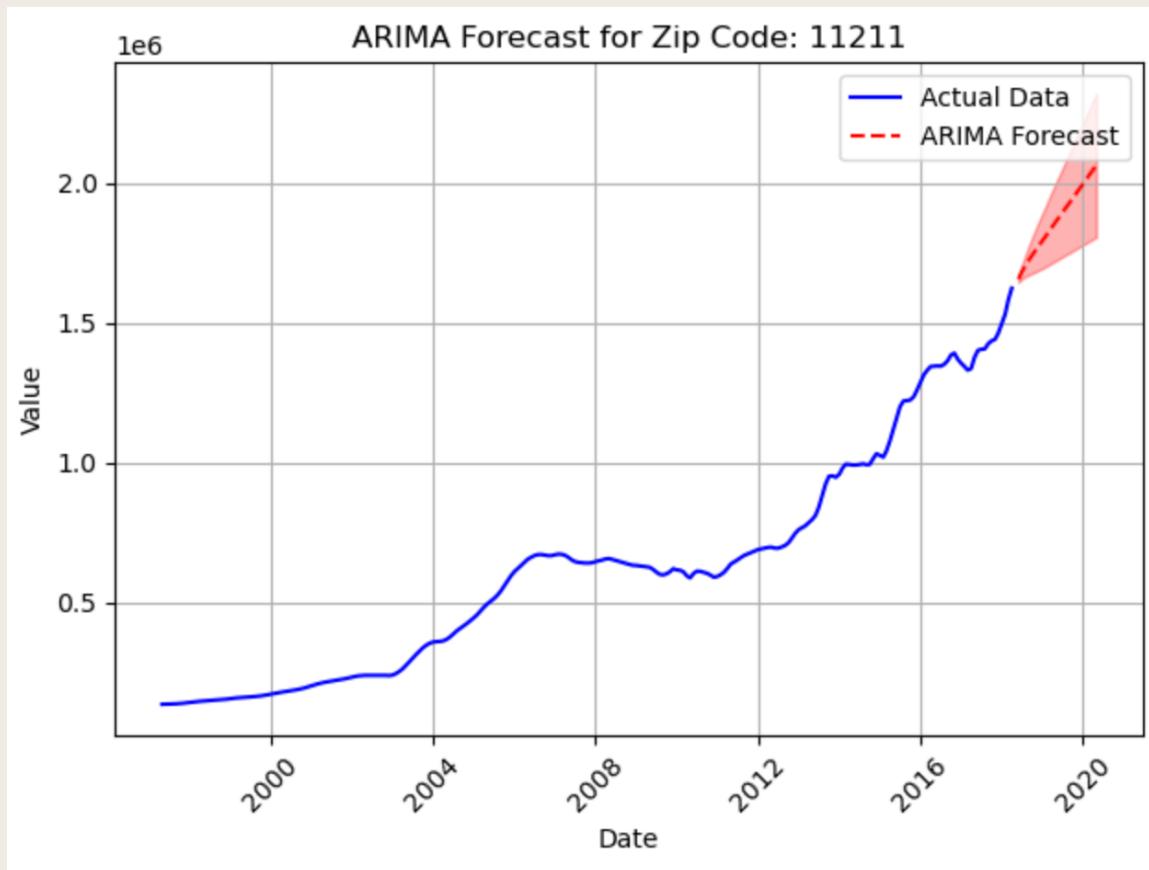
ARIMA is a popular time series forecasting method that combines autoregressive (AR) terms, differencing (I) to make the series stationary, and moving average (MA) terms to model the temporal structure of the data.

FACEBOOK PROPHET

This advanced forecasting tool is designed to handle time series data with seasonal effects and missing values.



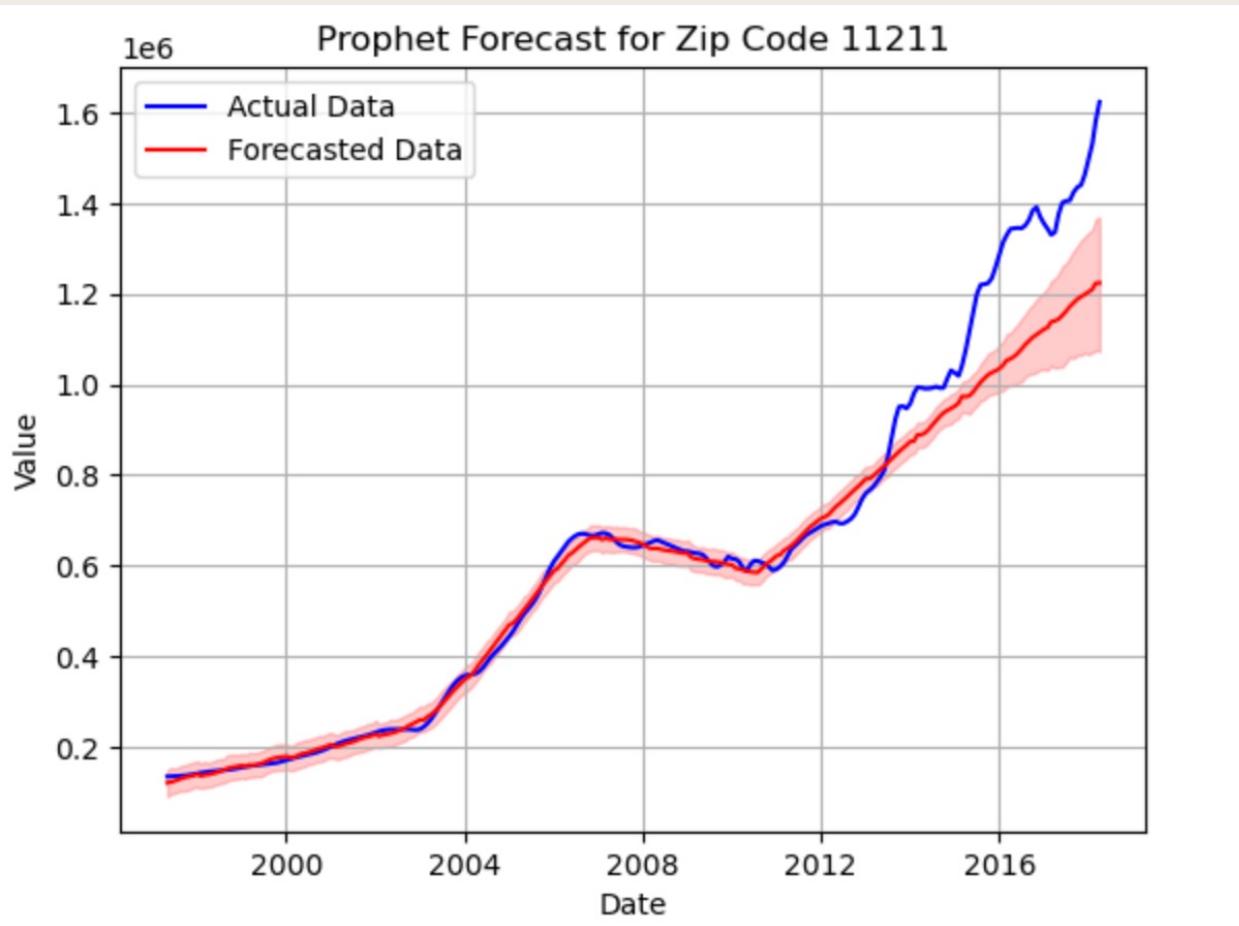
ARIMA Model



Example of ARIMA model of the highest zipcode based on ROI.

The ARIMA model has significantly lower MAE and RMSE values compared to the Prophet indicating that ARIMA provides more accurate predictions.

Best Facebook Prophet forecast



The forecasted trend shows a potential increase in housing pricing in the upcoming seasons after the crisis in 2008.

Conclusion

Despite some limitations, all two models showcased valuable forecasting capabilities with their unique strengths and limitations however the Facebook model performed best.

The Arima model would also be most preferred for minimizing prediction error and achieving a high precision.

Our top 5 best zip codes were 7302,
11211, 11215, 11216, 11222



Recommendation

- 1 Validate both models across other zip codes to ensure consistency.

- 2 Consider the city's unique characteristics, development prospects, and economic growth when making investment decisions.

- 3 Focus on cities with higher ROI figures, as they indicate efficient investment opportunities.



Next steps

A

Deploy both models for easier forecasting

B

Monitor the model's predictions and scores.

C

Augmenting the dataset with additional variables that might influence housing prices, such as interest rates, unemployment rates, or local economic indicators.

Thank you

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