DREAMHOUSE

Zillow Real Estate Time Series Analysis

Group3

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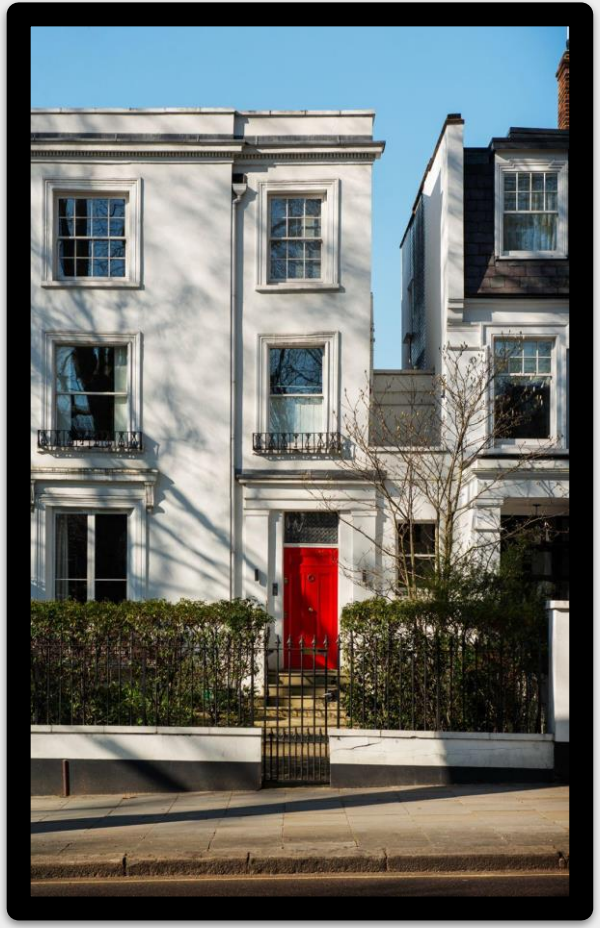

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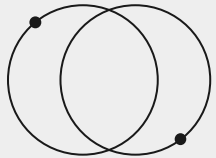

Business Understanding

Following its success in the real estate business over the years, Dream House International, a real estate agency, has provided housing solutions to many of the people living in the United States. Dream House International now wants to expand its reach further in the existing states but want to focus in the best ones for further investment. Using the Zillow dataset, this project aims to determine the best 5 investment opportunities for Dream House International.

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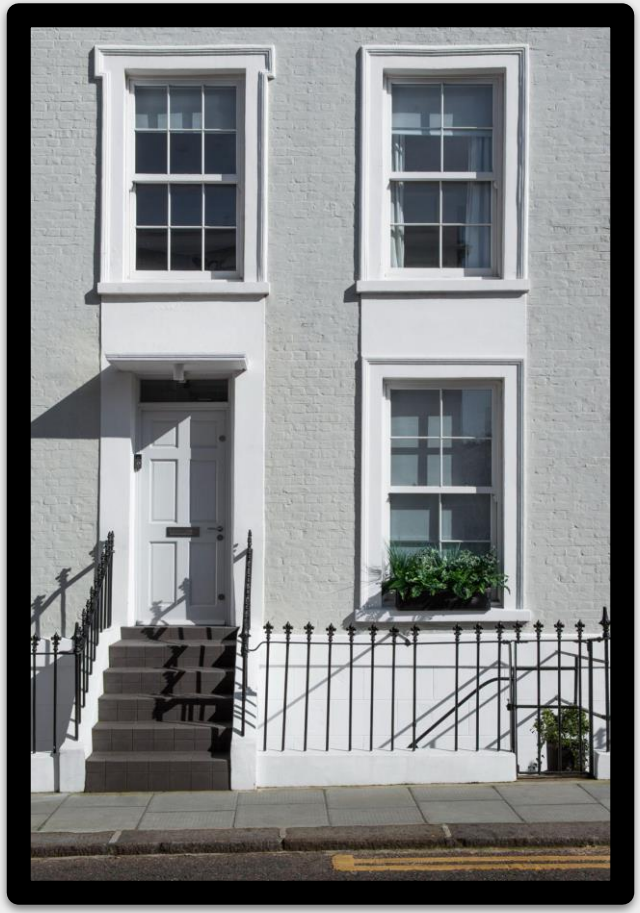

Objectives

1. To identify the top 5 best states for Dream House International to invest in.
2. To identify the top 5 states with the highest ROI(Return on Investment).
3. To forecast future real estate prices for the zip codes over various time horizons.

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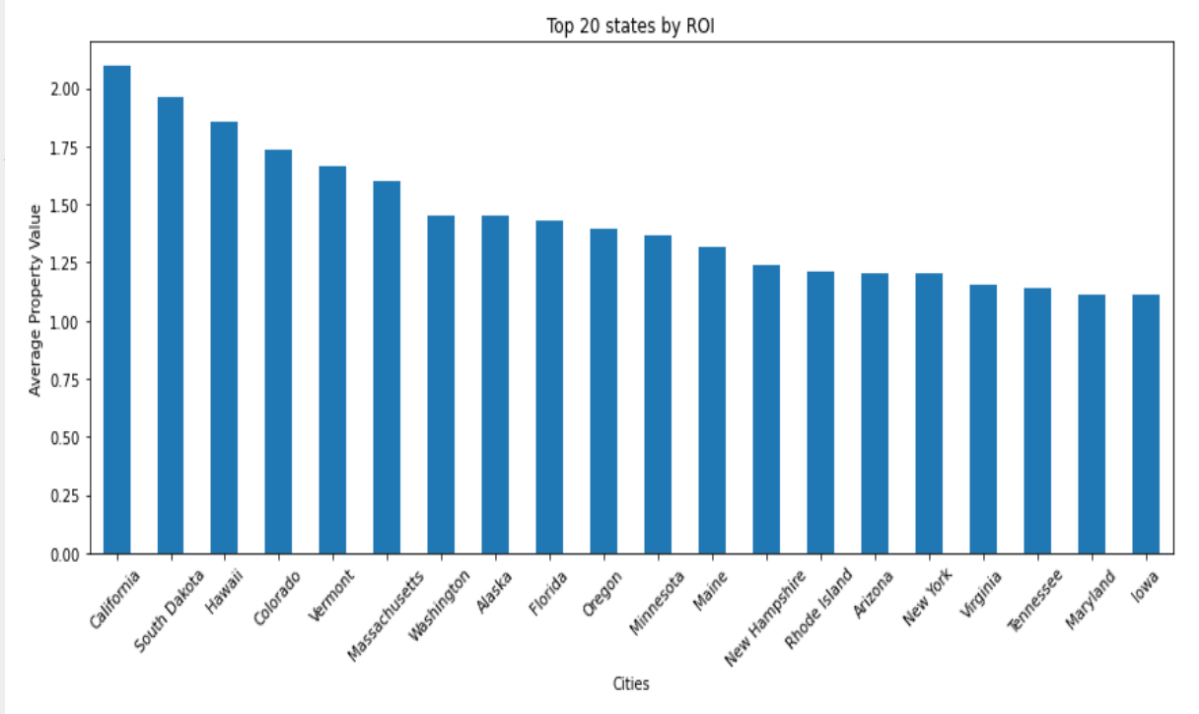
Data Understanding

Zillow Housing dataset, a CSV file for this project from Zillow Research having Real estate prices of various zip codes .
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.

States by ROI

This bar graph represents the ROI(Rate On Investment) by States.



Modelling

The following models were used during the developing of a machine learning model that can predict what are the top 5 best zip codes for us to invest in.

1. The base model is simple and serves as a benchmark.
2. The ARIMA model involves identifying the order of differencing, autoregression, and moving average components to handle non-seasonal data.
3. The SARIMA model extends ARIMA by incorporating seasonality, improving forecast accuracy for seasonal time series data.

Evaluation

In this project, multiple evaluation metrics were used to assess the performance of different models in predicting the top 5 best zip codes to invest in.

1. MSE (Mean Squared Error): Measures the average of the squares of the errors.
2. RMSE (Root Mean Squared Error): Square root of MSE, providing error magnitude in the same units as the original data.
3. Compare multiple ARIMA models using AIC (Akaike Information Criterion) and select the model with the lowest AIC.

Conclusion

The top 5 best zip codes to invest in are:

1. California
2. New York
3. Texas
4. Pennsylvania
5. Florida

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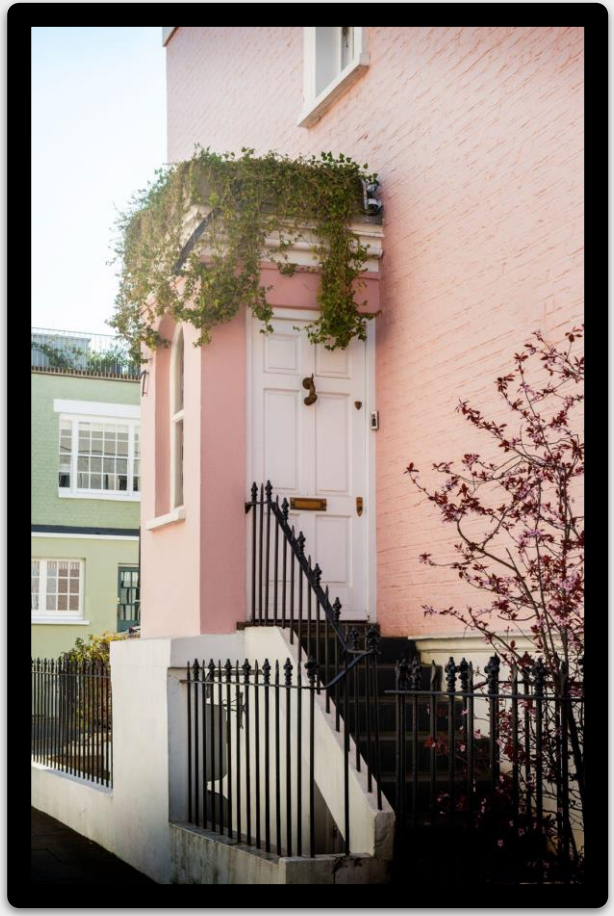

Thanks!

Do you have any questions?