Minnesota Home Value Time Series Analysis

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Outline

- Business Problem
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- Methods
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Business Problem

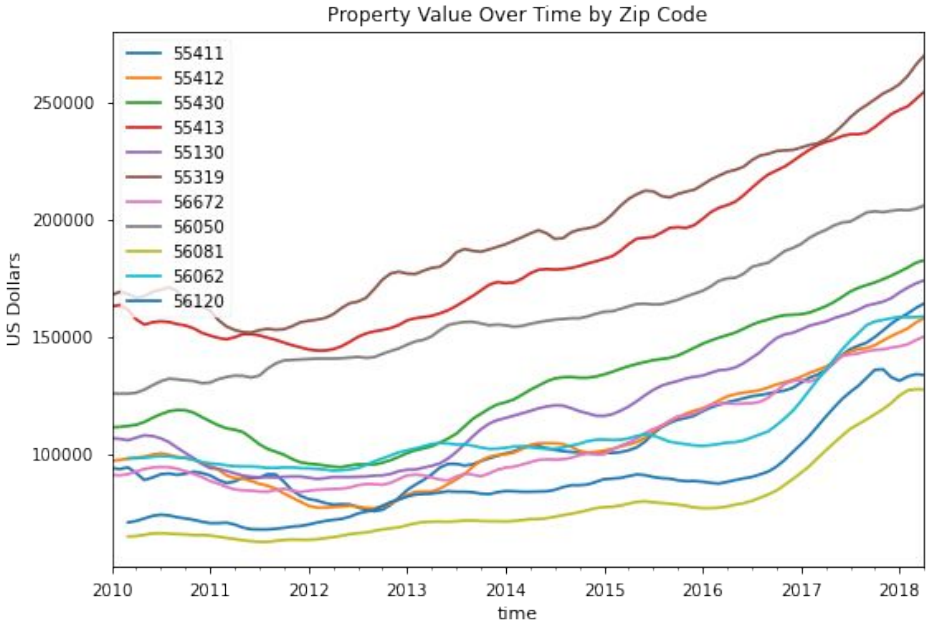
- Real estate investment firm wants to invest in property in Minnesota
- Needs to know in which locations to invest
- Wants to identify the best 5 zip codes for investment

Data

- Data sourced from Zillow Research
- Dataset contains time series data of home values, and 6 variables describing home location
- Dataset encompassed 14,723 entries from 1996-2018

Methods

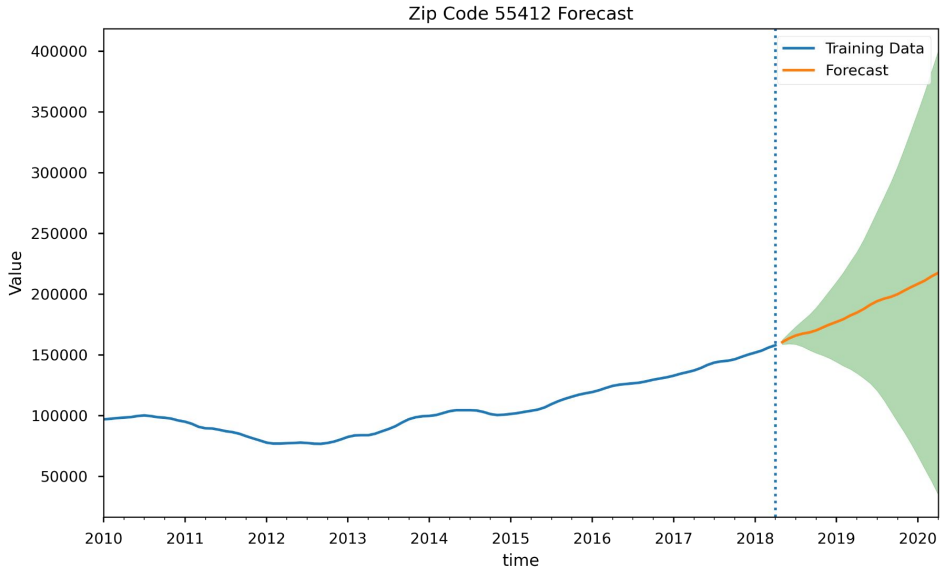
- To reduce computation time, first identified top 11 zip codes with highest historical ROI from 2010-2018 and made forecast for each
- Created SARIMA time series models to forecast future home values for those zip codes
- Evaluated best zip codes for investment by calculating the future potential ROI of property in that location and identified top 5 zip codes



Results

Zip Code 55412:

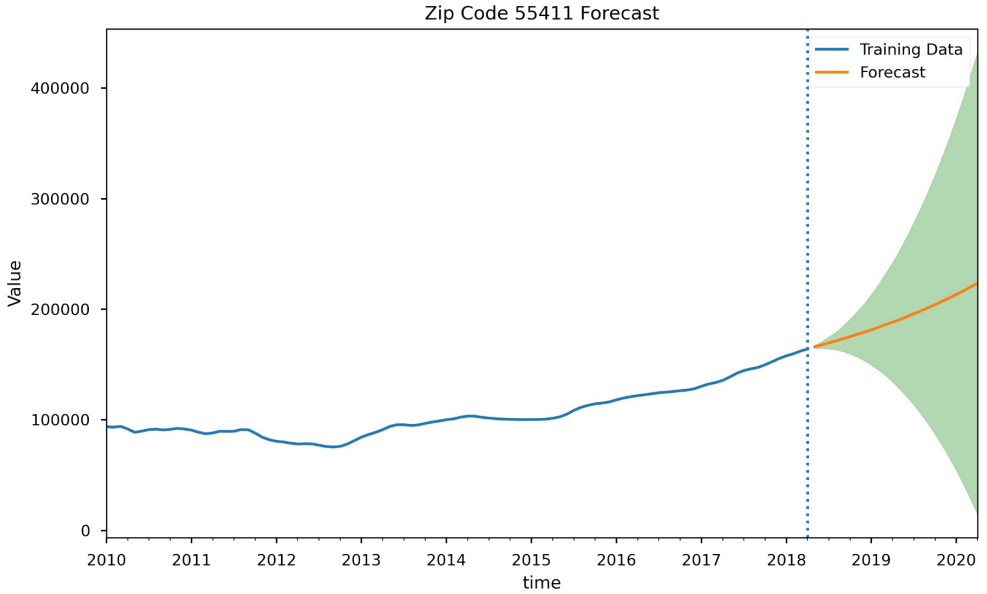
- Initial investment: $157,900
- Forecasted 24 month ROI: 35.6%
- Lower CI ROI: -78.4%
- Upper CI ROI: 149.6%



Results

Zip Code 55411:

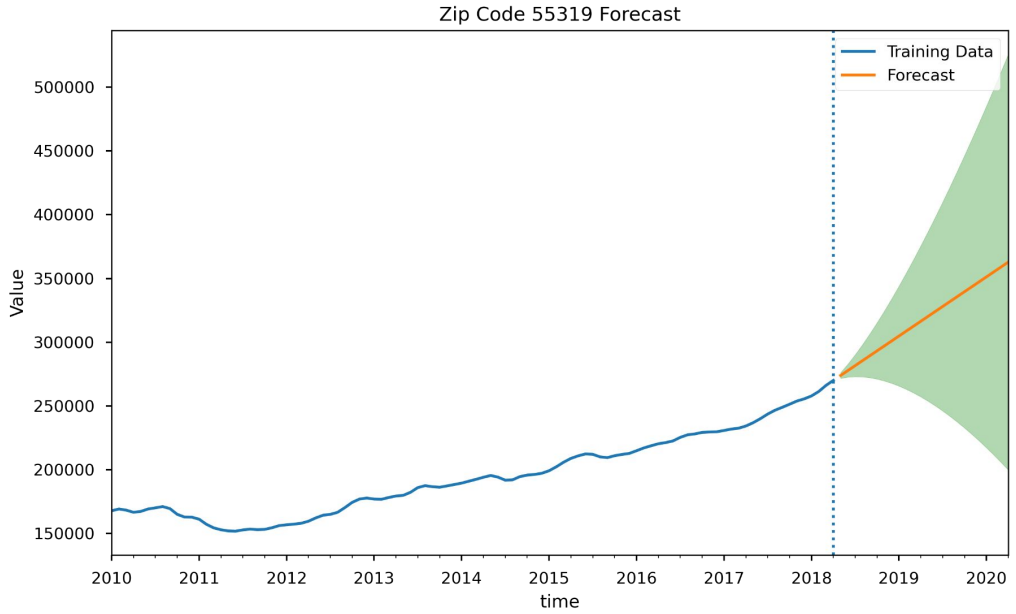
- Initial investment: $164,100
- Forecasted 24 month ROI: 34.6%
- Lower CI ROI: -91.3%
- Upper CI ROI: 160.6%



Results

Zip Code 55319:

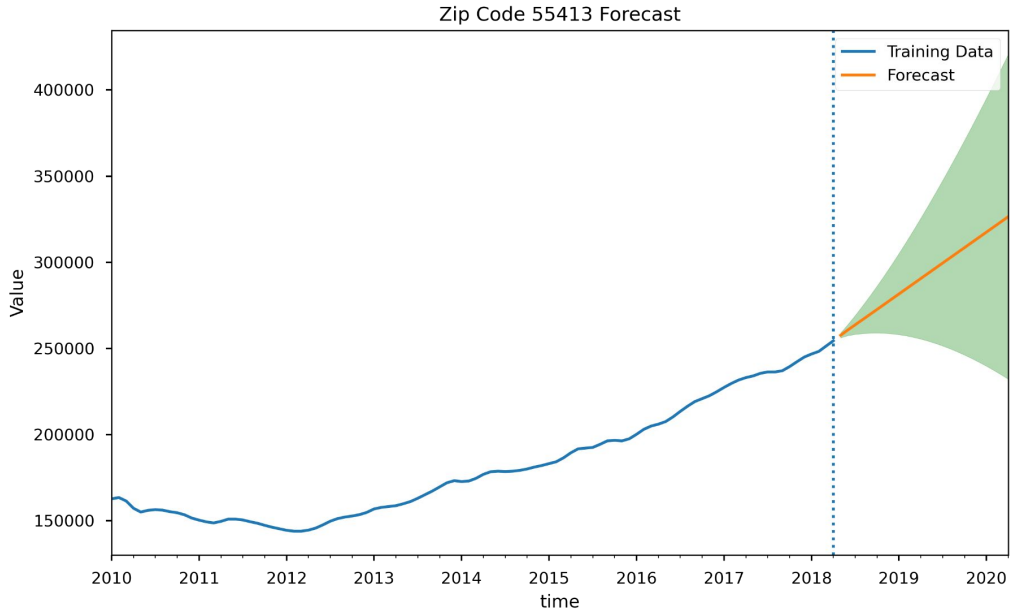
- Initial investment: $270,000
- Forecasted 24 month ROI: 32.4%
- Lower CI ROI: -27.1%
- Upper CI ROI: 92.1%



Results

Zip Code 55413:

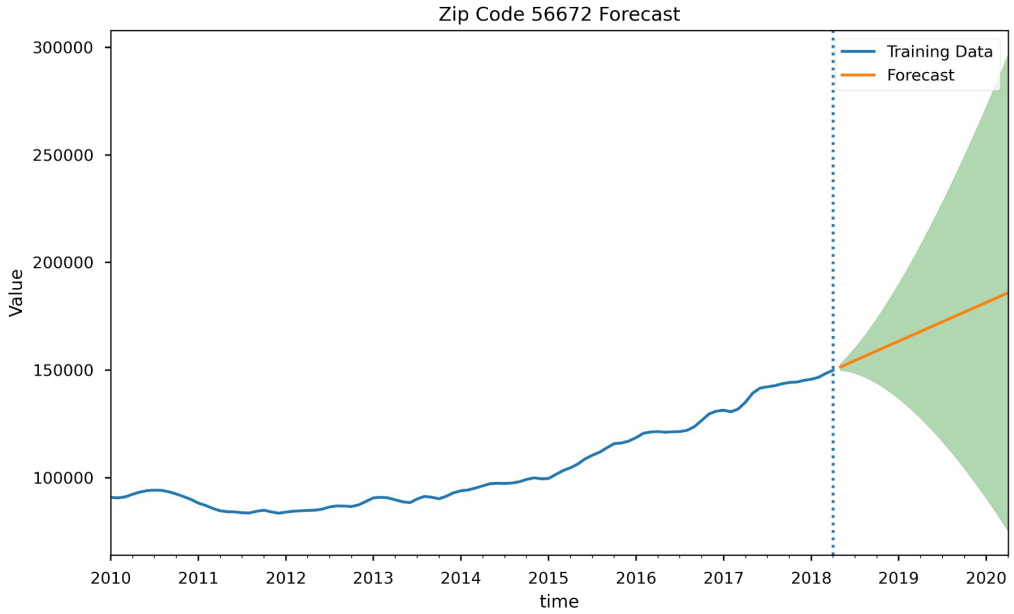
- Initial investment: $254,500
- Forecasted 24 month ROI: 26.7%
- Lower CI ROI: -9.8%
- Upper CI ROI: 63.3%



Results

Zip Code 56672:

- Initial investment: $150,000
- Forecasted 24 month ROI: 22.8%
- Lower CI ROI: -50.3%
- Upper CI ROI: 95.9%



Conclusions

The firm should invest in the following zip codes in Minnesota due to their high ROI percentages:

Zip Code	Forecasted 3 year ROI
55412	35.6%
55411	34.6%
55319	32.5%
55413	26.7%
56672	22.8%

Next Steps

- The model and analysis are not complete solutions
- Time series struggle to perfectly meet the assumption of stationarity
- More accurate forecasts could be produced by further transforming data, and using more powerful models, such as recurrent neural networks, Prophet, or Greykite

Thank You!

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