

A decorative graphic on the left side of the slide consisting of two overlapping parallelograms. The front parallelogram is blue and the back one is a light green color. Both are oriented diagonally from the top-left towards the bottom-right.

# Zillow Time Series Analysis

Keene Kelderman



# Background

Number of zip codes: 14,723

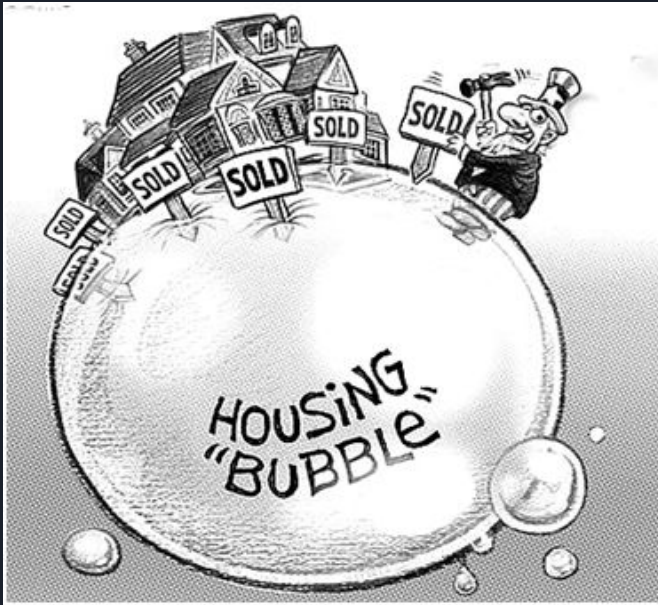
Number of cities: 7,554

Number of Metro Areas: 702

Months of data: 265



# Data Exploration



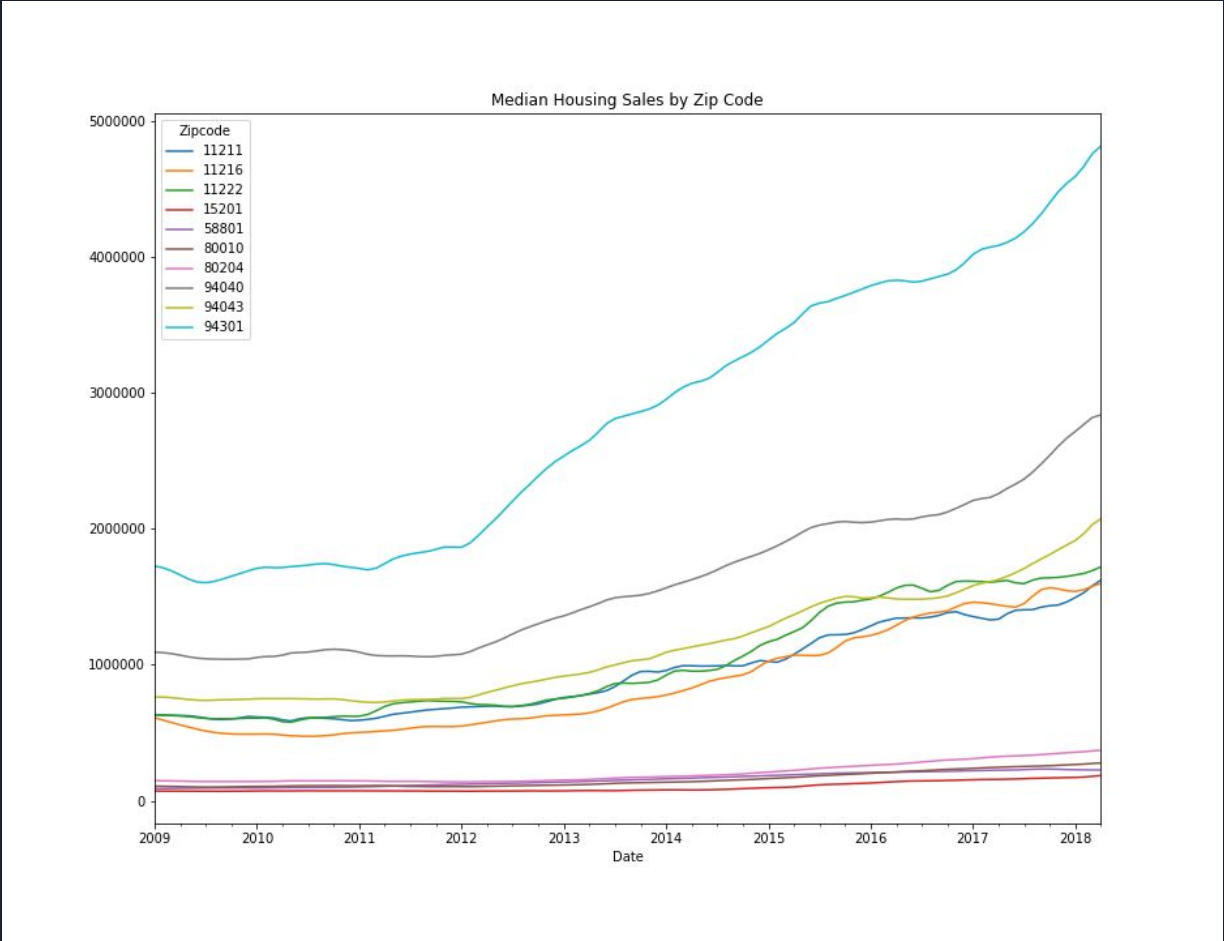
**Profit Margin** =  $1 - (\text{price paid for house} / \text{price house sold})$

**Return on Investment (ROI)** =  $(\text{price house sold} - \text{price paid for house}) / \text{price paid for house}$

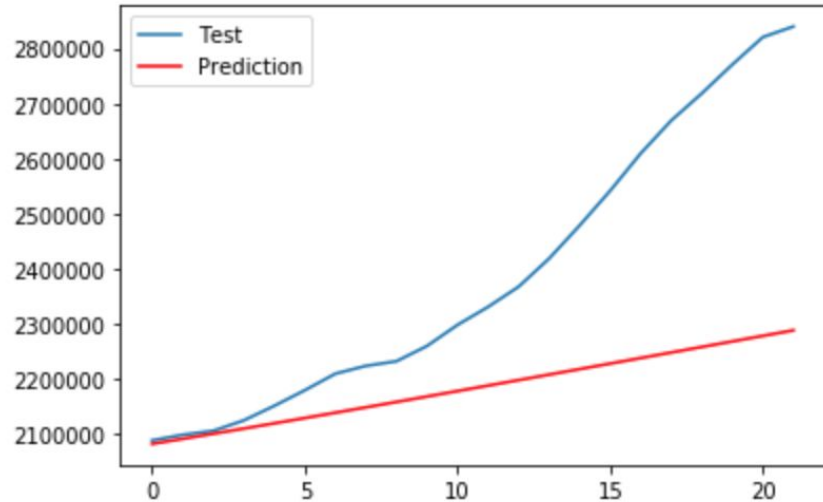
[illegible]

[illegible]

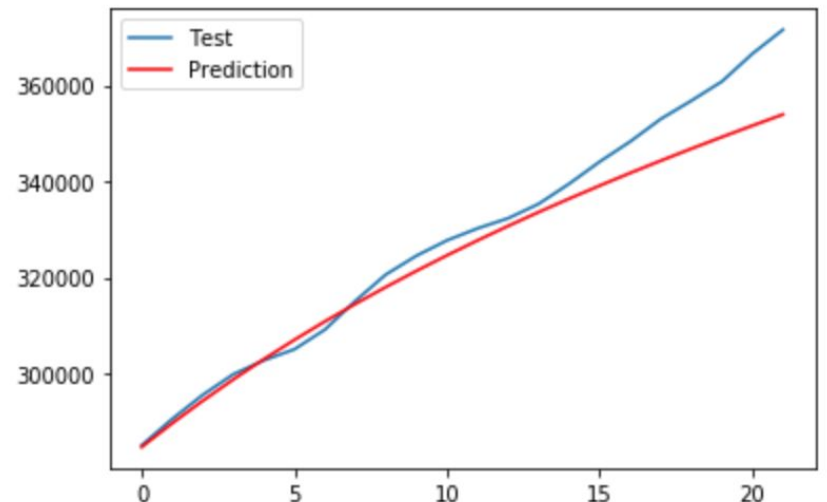
Zipcode	City	State
94301	Palo Alto	CA
11222	New York	NY
94043	Mountain View	CA
11216	New York	NY
15201	Pittsburgh	PA
94040	Mountain View	CA
80010	Aurora	CO
11211	New York	NY
58801	Williston	ND
80204	Denver	CO



# Modeling: Round 1

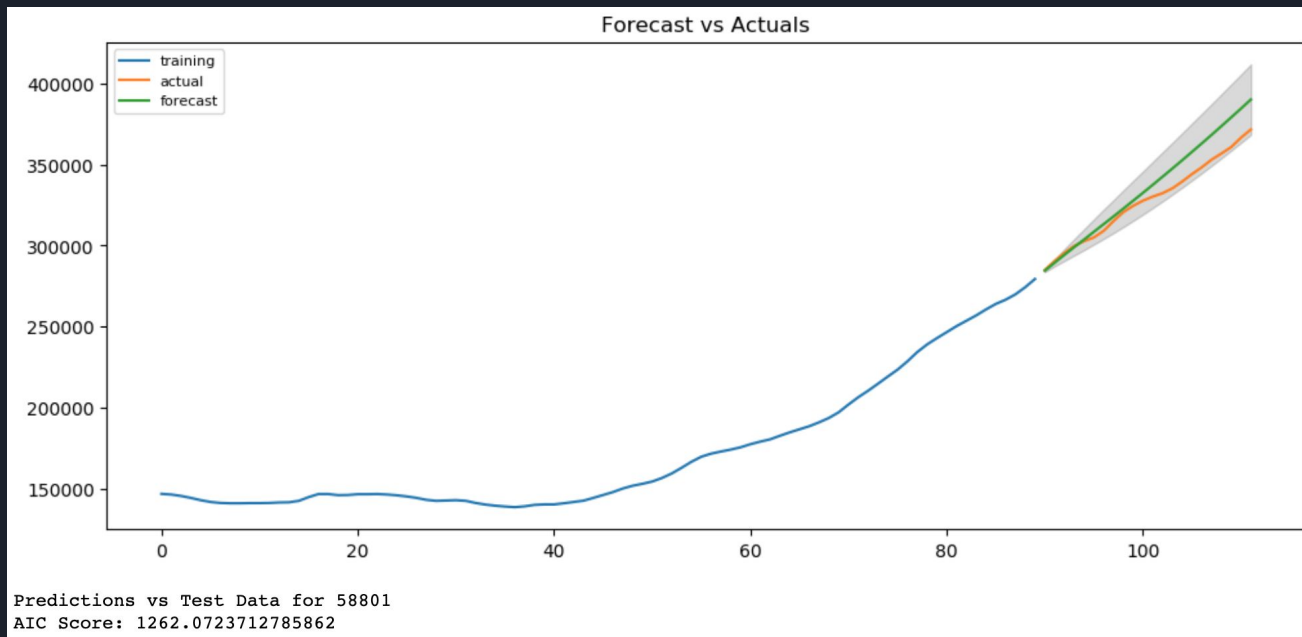


Predictions vs Test Data for 80204  
AIC Score: 1362.239576960895



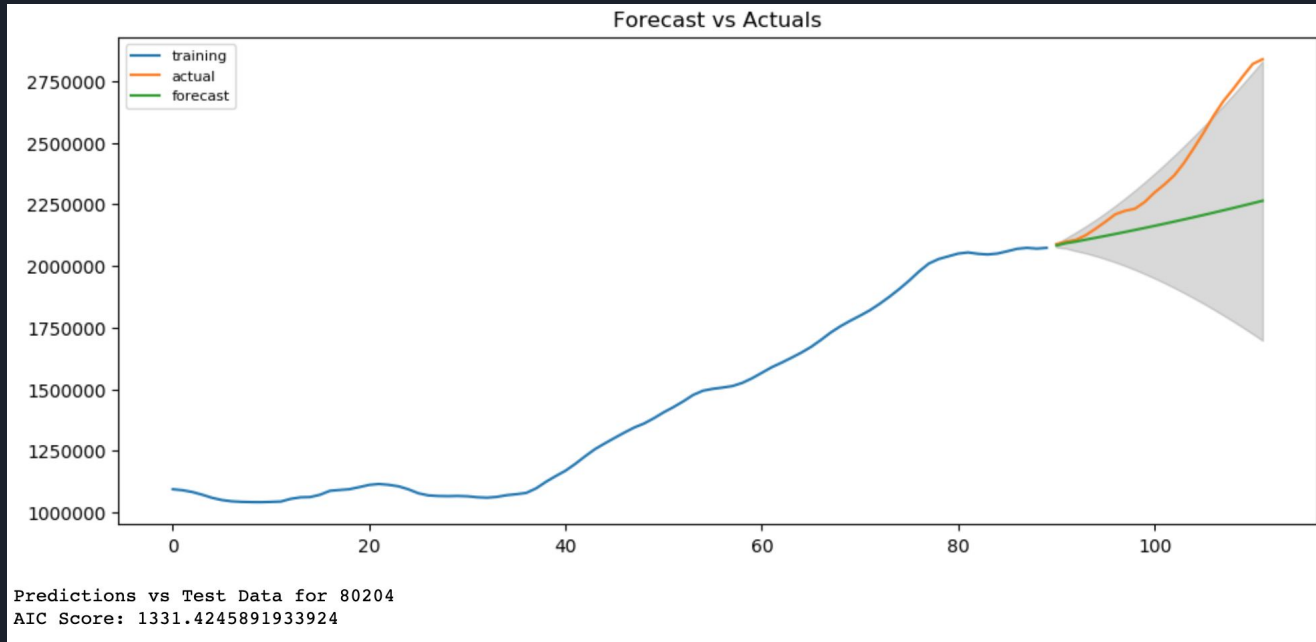
Predictions vs Test Data for 58801  
AIC Score: 1297.0239476186598

# Modeling: Round 2

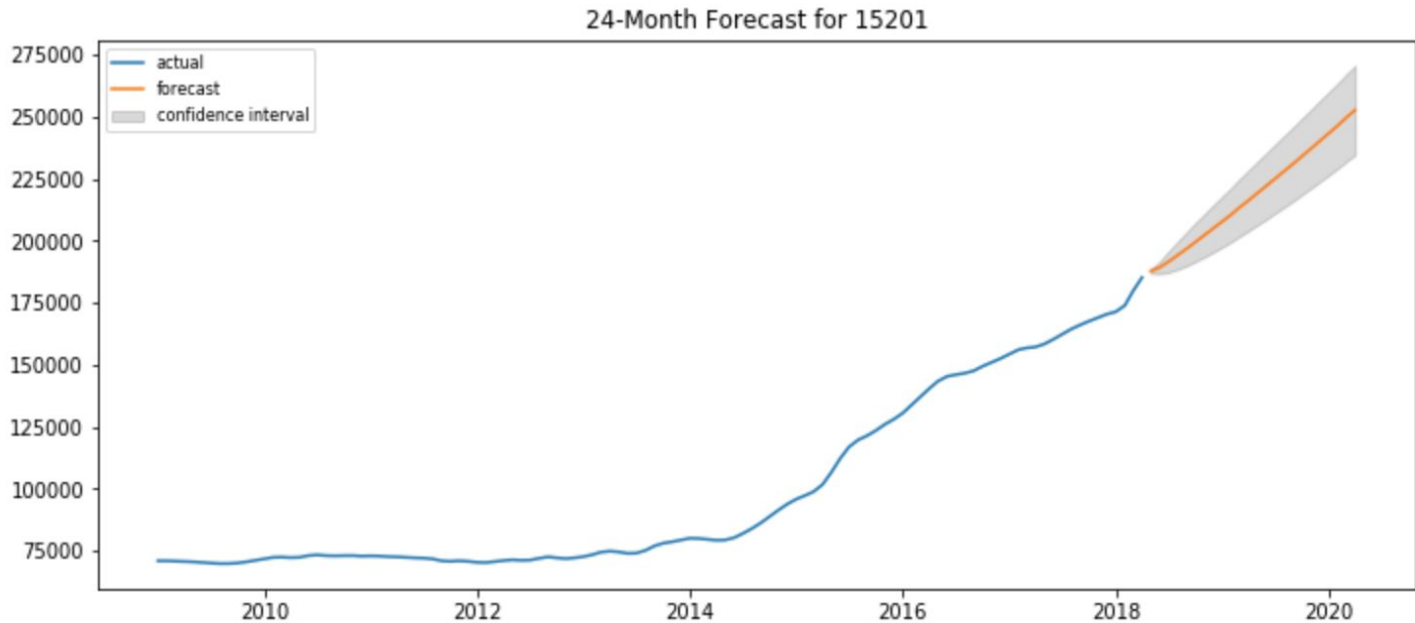




# Modeling: Round 2



# Modeling: Round 3



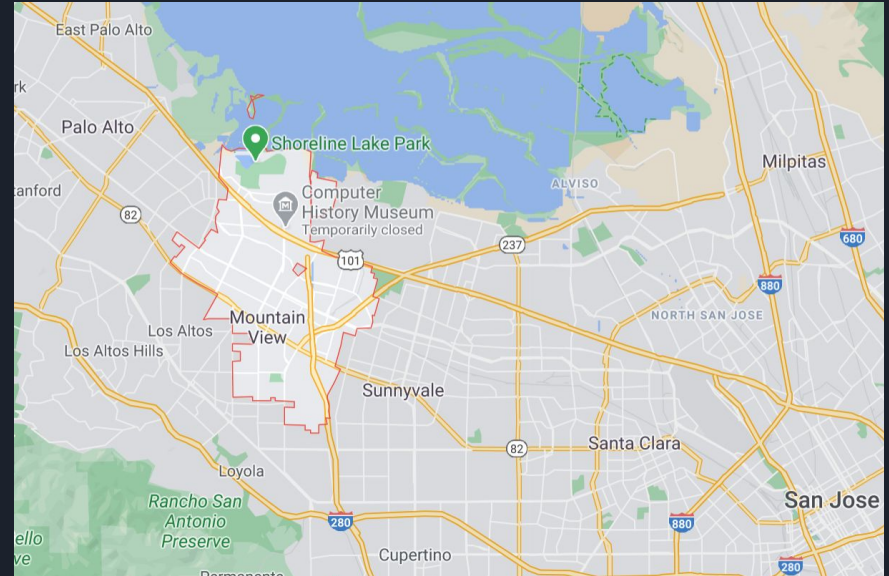
AIC Score: 1674.4758473266984

# Summary: Data gaps



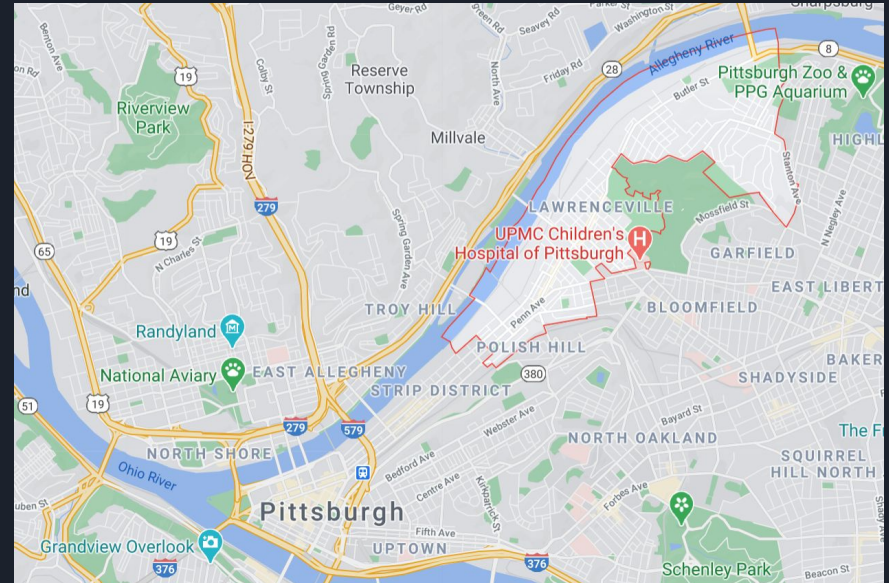
# Summary: Recommendations (1-year)

- 1) 94043 - Mountain View, CA - 17.3% ROI
- 2) 15201 - Pittsburgh, PA - 16.8% ROI
- 3) 80204 - Denver, CO - 16.0% ROI
- 4) 80010 - Aurora, CO - 14.8% ROI
- 5) 11222 - New York City, NY - 14.4% ROI



# Summary: Recommendations (3-years)

- 1) 15201 - Pittsburgh, PA - 58.4% ROI
- 2) 94043 - Mountain View, CA - 57.7% ROI
- 3) 80204 - Denver, CO - 56.0% ROI
- 4) 80010 - Aurora, CO - 52.7% ROI
- 5) 11222 - New York City, NY - 48.4% ROI



# Future Analyses





Thanks for listening!