

Zillow Time Series Modelling

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Outline

- Business Problem
- Data and Methods
- Data Filtering
- Results
- Conclusions and Recommendations
- Future Work

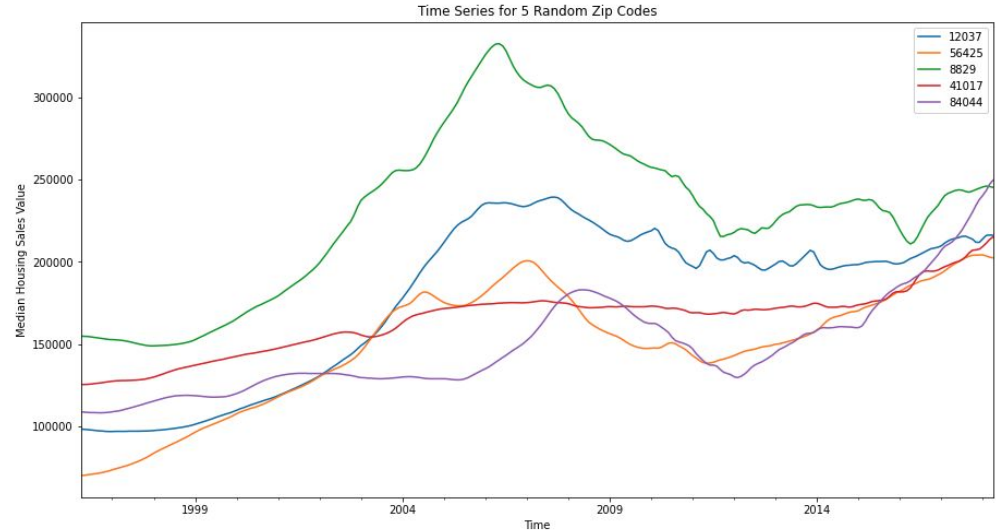
Business Problem



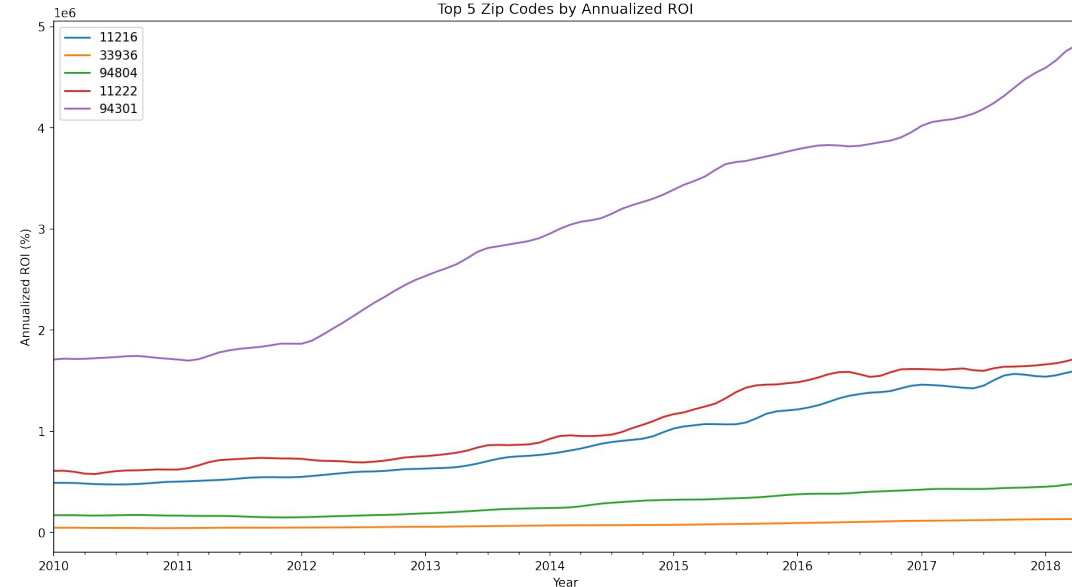
- What are the top 5 best zip codes to invest in?
- How do we define “best zip code”?
- What factors should be considered when comparing a zip code to another?

Data and Methods

- Dataset obtained through *Zillow Research* contains time series data for 14,723 zip codes around the country
- Median housing sales value was recorded for each zip code from 1996 to 2018
- Annualized return on investment (ROI) was used to compare zip codes with one another



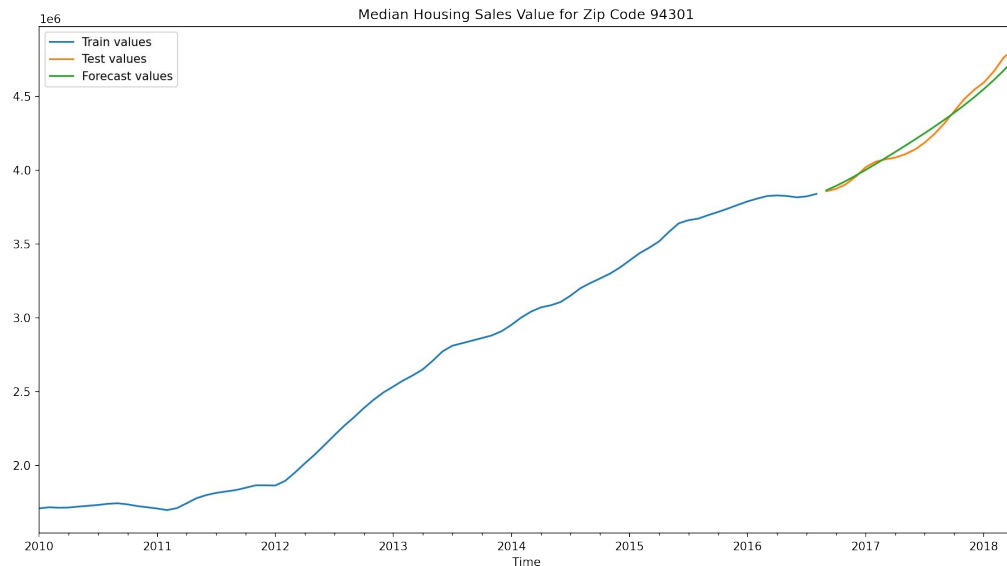
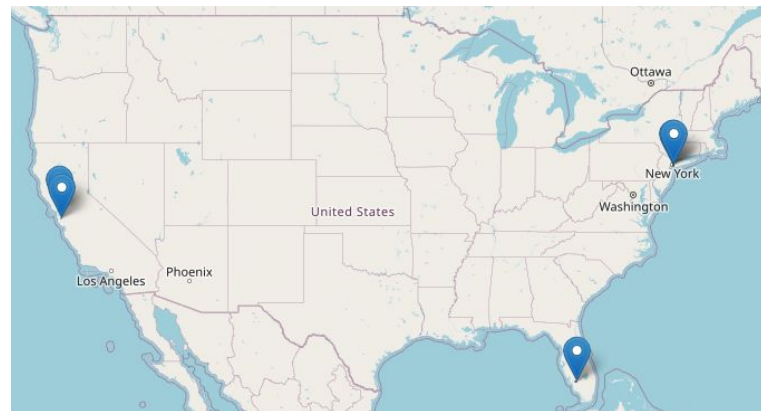
Data Filtering



- Not all the data is relevant to the business problem at hand
- External factors like the 2008 stock market crash skews time series data
- Only data from 2010 onwards and no missing values was considered

Results

RegionName	City	State	Metro	CountyName	SizeRank	2010-01	2010-02	2010-03	...	2017-08	2017-09	2017-10	2017-11
11216	New York	NY	New York	Kings	476	490200.0	490600.0	489000.0	...	1506100	1553100	1567700	155971
33936	Lehigh Acres	FL	Fort Myers	Lee	4437	46400.0	46300.0	46300.0	...	124000	125900	127500	12861
94804	Richmond	CA	San Francisco	Contra Costa	1854	169900.0	170400.0	170100.0	...	434100	438900	441700	44391
11222	New York	NY	New York	Kings	1156	608500.0	610000.0	599200.0	...	1623800	1638700	1640400	164411
94301	Palo Alto	CA	San Jose	Santa Clara	5739	1710700.0	1718100.0	1715300.0	...	4247600	4319300	4401100	448171

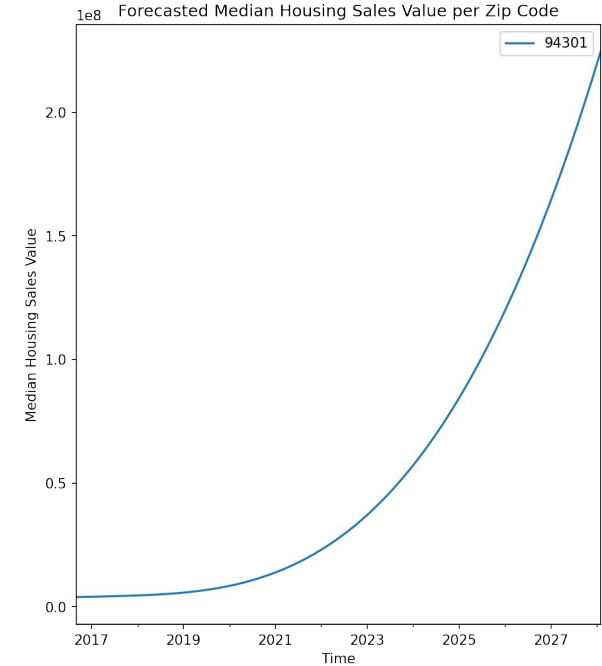
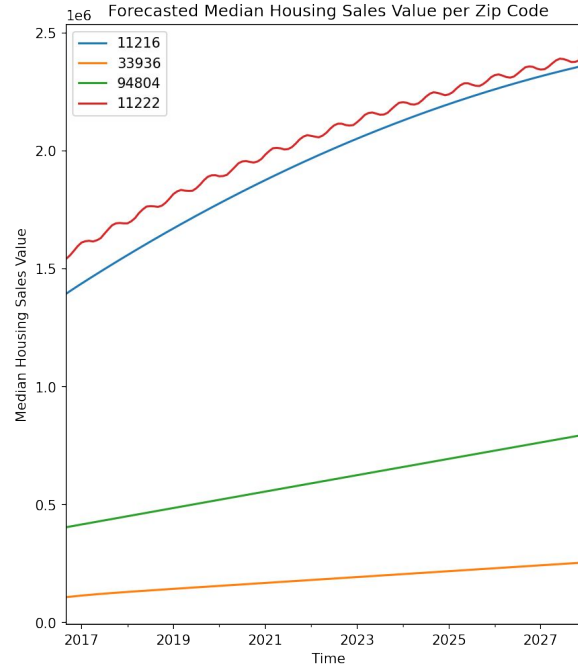


- The 5 best zip codes to invest in were 11216, 33936, 94804, 11222, and 94301
- 11216 (New York, NY) had the largest annualized ROI of 15.41%
- Zip code 94301 (Palo Alto, CA) had the largest median housing sales value overall

Results

TIME SERIES FORECASTS

- 94301's value increases the most
- Even though all the forecasts increase, the rate is what matters
- Less degree of confidence in forecasts as we predict further and further into the future



Conclusions and Recommendations

- Invest in zip code 94301
- Also consider investing in real-estate in Brooklyn, NY
- Historical data provides context and helps in investment decision-making



Future Work



- Consider a different metric to use - this could result in different zip codes
- Gather recent data and analyse the effect the COVID-19 pandemic had on zip code's value
- Take other factors into consideration: school district, income, etc.

Thank You!

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