



TOP 5 ZIP CODES INVESTMENT ANALYSIS

Carrie Liu | 04/01/2022

OVERVIEW

- Objective: To select the top 5 zip codes in NY and predict their respective return of investment
- Our Approach:
 - Data: Zillow Research
 - To select the top 5 zip codes with a certain criteria
 - To establish time series modeling with ARIMA to forecast the monthly return (i.e. home values)
- Review Period: 01/31/2000 – 02/28/2022

5 ZIPCODES

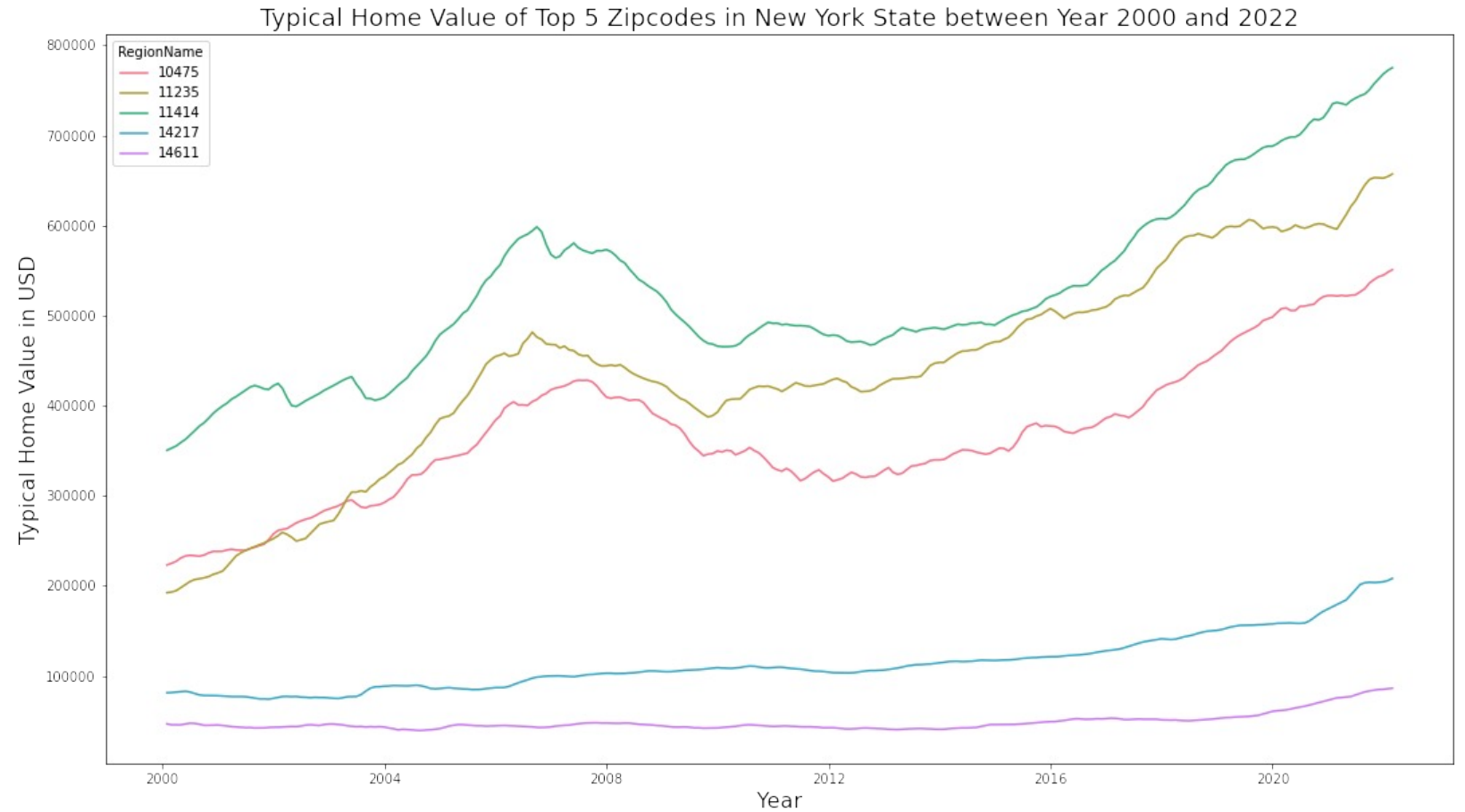
State: NY

Typical Home Value:
ZHVI

Urbanization: Top
25% of SizeRank

Total Growth Rate:
2009 - 2020

Diversification:
Different County



TIME SERIES MODELING WITH ARIMA

Stationarity Check

- rolling mean shows a trend
- rolling standard deviation
- Dickey-Fuller test

Autoregressive integrated moving average – ARIMA

- ACF-PACF (Autocorrelation – Partial Autocorrelation Function)
- Parameters selection: AIC (Akaike Information Criterion) as Regularization Measure
- Validation with the MSE (Mean Square Error):
 - One-step Ahead Forecasting
 - Dynamic Forecasting

FORECASTING

ZIP CODE	CITY	1-YEAR ROI	3-YEAR ROI	5-YEAR ROI	10-YEAR ROI
11235	Brookly	5.60%	18.09%	32.05%	74.63%
14217	Kenmore	6.62%	16.50%	27.26%	58.72%
10475	Bronx	4.49%	13.51%	23.31%	51.67%
11414	Queens	3.87%	11.68%	20.06%	43.85%
14611	Rochester	4.03%	10.29%	16.92%	35.30%

Note: The 5 zip codes are ordered by 3-year ROI (descending).

NEXT STEPS

We need to consider other external factors to improve the models and ultimately the quality of the forecasts.

The factors to be further taken into consideration are:

- Historic Event: financial crisis / pandemic
- Macro Economics: interest rate (mortgage rate, our client will apply leverage to their investment)
- House Market Safety Score: given the hate crime is severe in the New York City, the safety will be a key concern when people buy the houses.



THANK YOU!