Deducing Investment Opportunity for a Real Estate Investment Company

Where to invest in Queens County, New York

By: Tamjid Ahsan
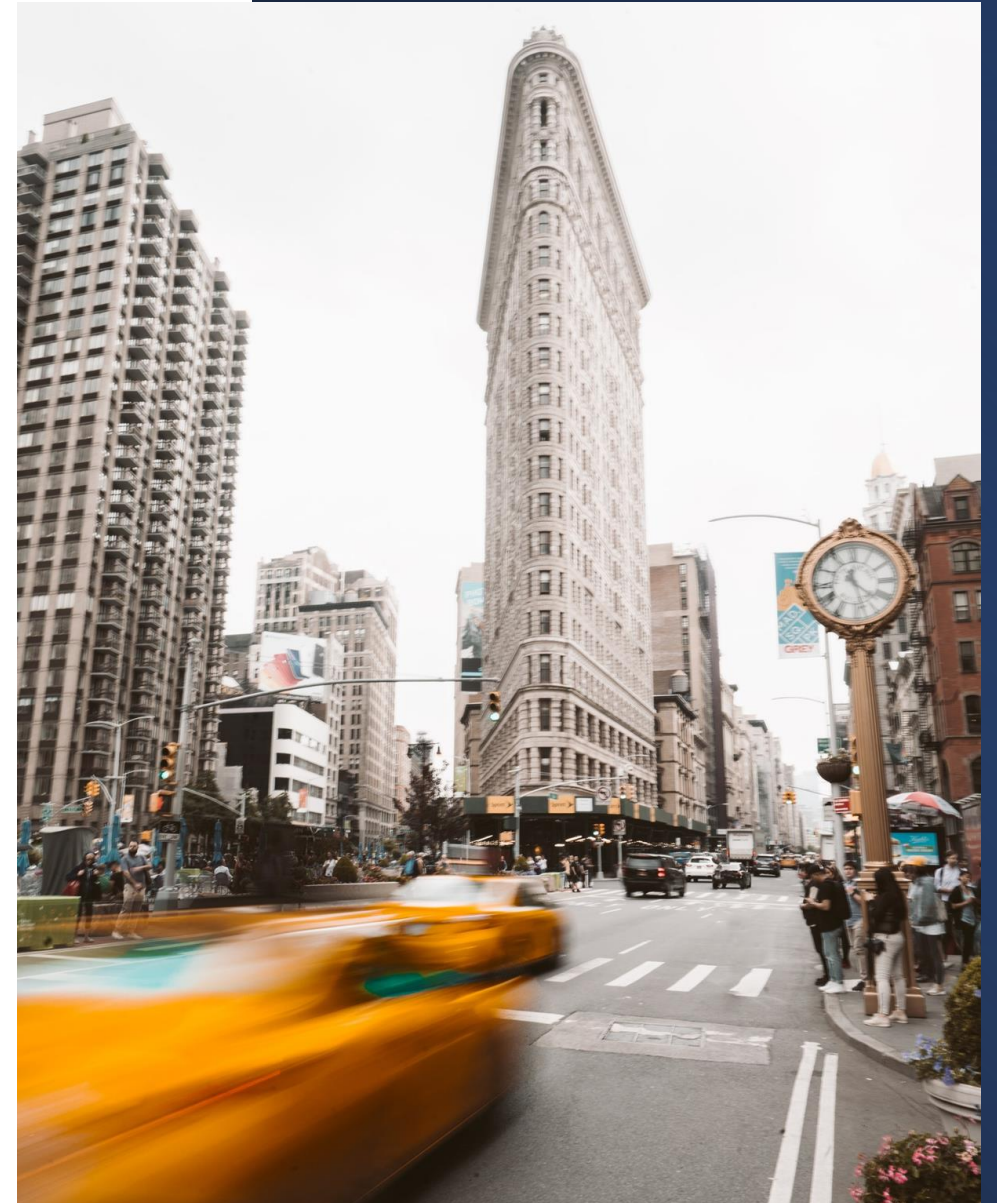Date: June 23, 2021, 05:00 PM [DST]

INDUSTRY OVERVIEW

New York City is among the most expensive and competitive housing markets in the USA.

- Experts predicting strong property appreciation.

- Home prices are still low compared to where they were last year.

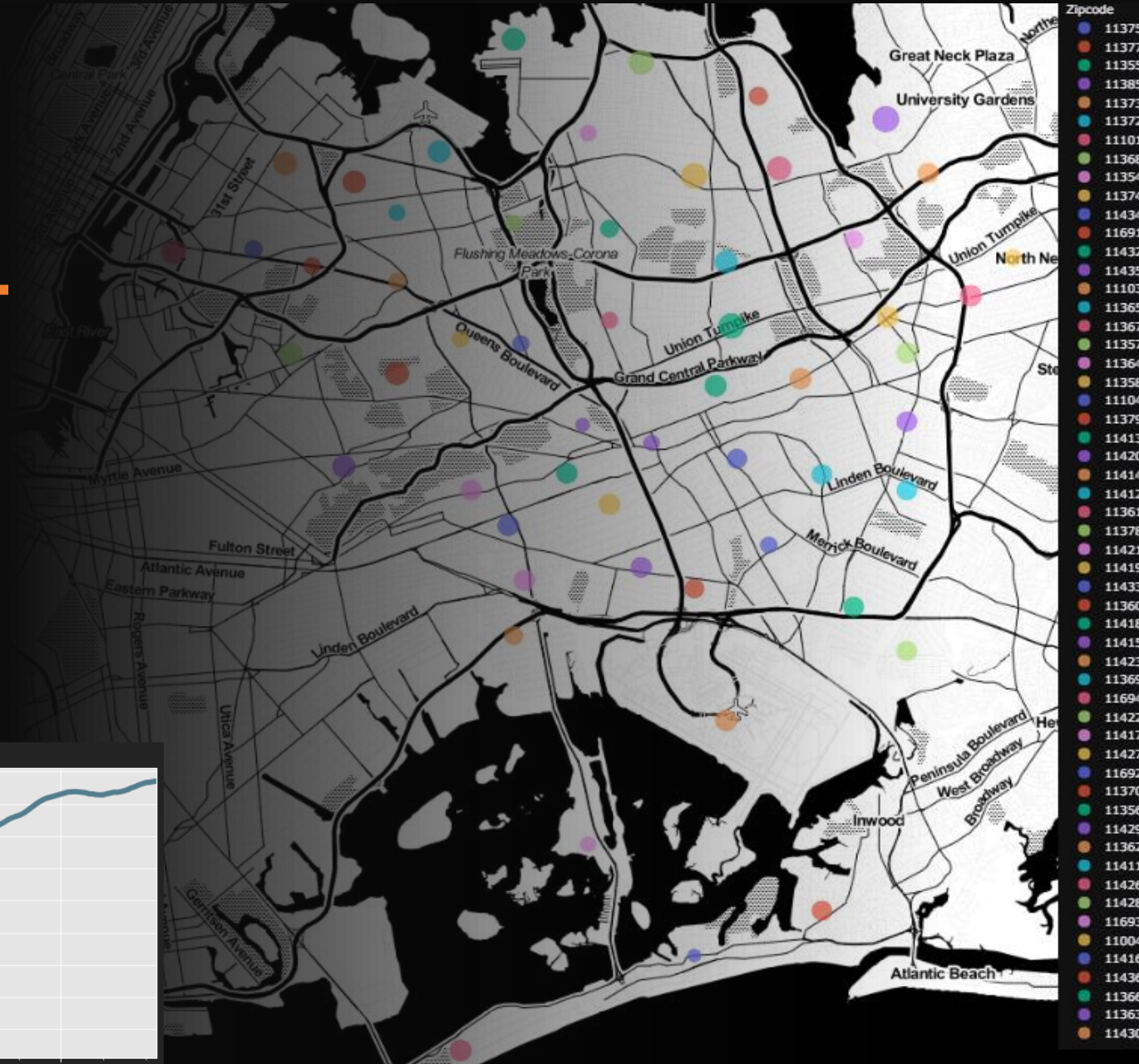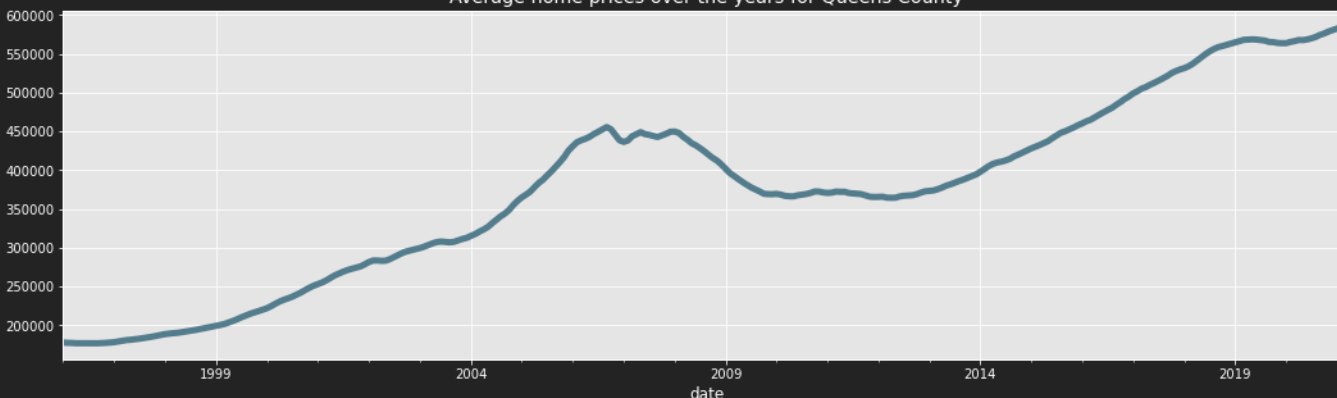- 52% price appropriation as per Zillow Home Value Index.

Queens County

This makes New York as one of the best real estate market for homes to get into.

1. The house prices are relatively low
2. High buyer power
3. Huge inventory of homes
4. Projected uptrend in price leading to higher return on investment.

Average home prices over the years for Queens County

BUSINESS PROBLEM

XYZ, Inc. LLC is a (read: fictional) private equity investment company based on Queens, New York.

- They want to invest in the housing market for three years.

- They want to isolate and invest in properties with the highest return on investment potential based on geographical location close to their operation base in Queens.

- All 55 zip codes of Queens county of New York were considered.

- This analysis will recommend top five zip codes based on return-on-investment potential.

METHODOLOGY

- Zillow House Value dataset is used.
  - Data from January 1996 to April 2021
  - Monthly data

- Several analysis techniques were used
  - ARIMA (autoregressive integrated moving average)
  - SARIMAX (ARIMA with seasonal trends)
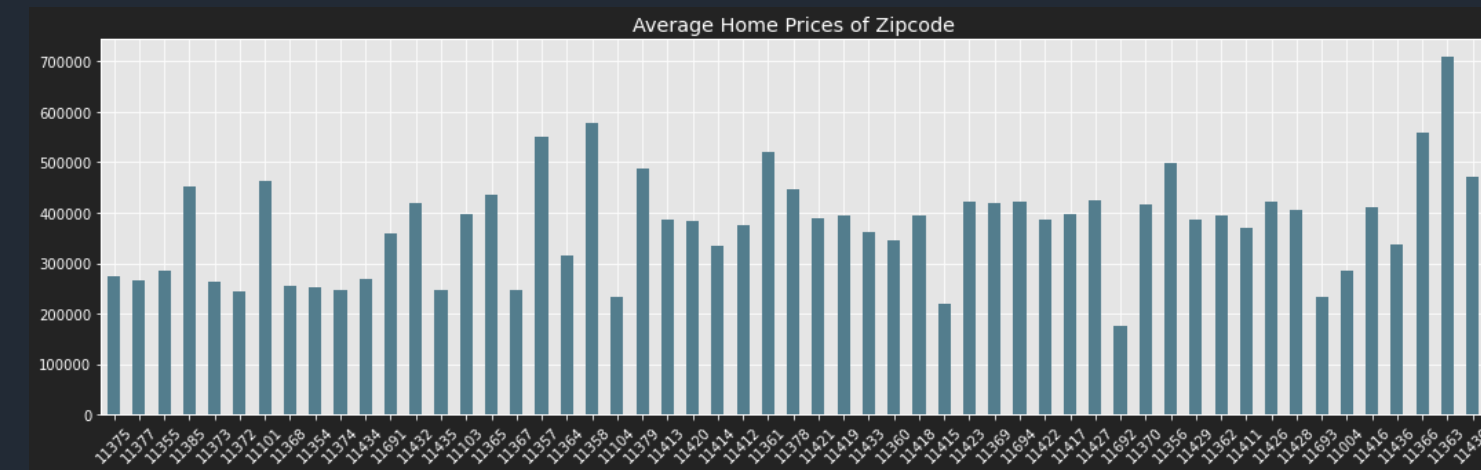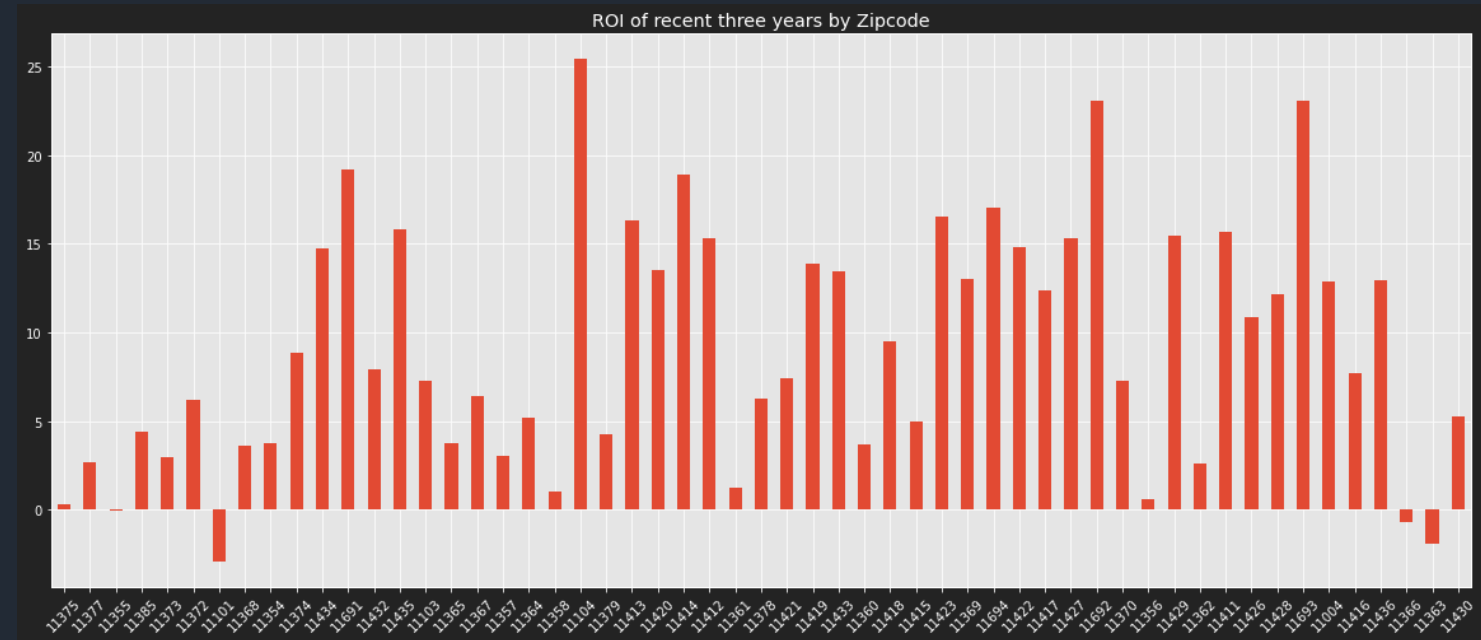
- Forecasted for three years.

Queens County New York
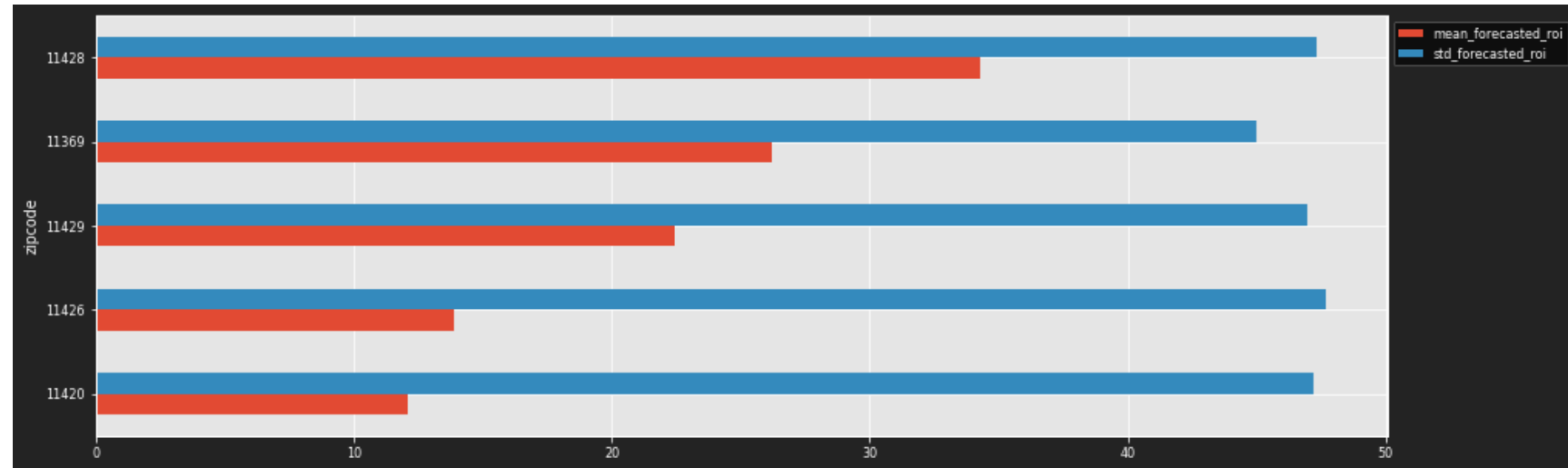
OVER THE YEARS

QUEENS COUNTY OVERVIEW

- ROI is negative for only a few of the zip codes
  - 11101
  - 11436
  - 11366

- Average median value is well above 200k across zip codes.

SELECTION CRITERIA

zipcode	mean_forecasted_roi	std_forecasted_roi
11369	26.222588	44.967227
11429	22.449339	46.963354
11420	12.070833	47.211907
11428	34.257865	47.319473
11426	13.894785	47.684707

- Risk:
  - Cost is the value on April 30, 2021.
  - revenue is assumed to the mean forecasted value after three years.
  - Then relative standard deviation is taken of the return on investment on upper confidence level and lower confidence level respectively as a proxy of risk of investment.
- Top five zip codes is isolated based on best 15 ROI and then selecting top 5 of the based on lowest risk.
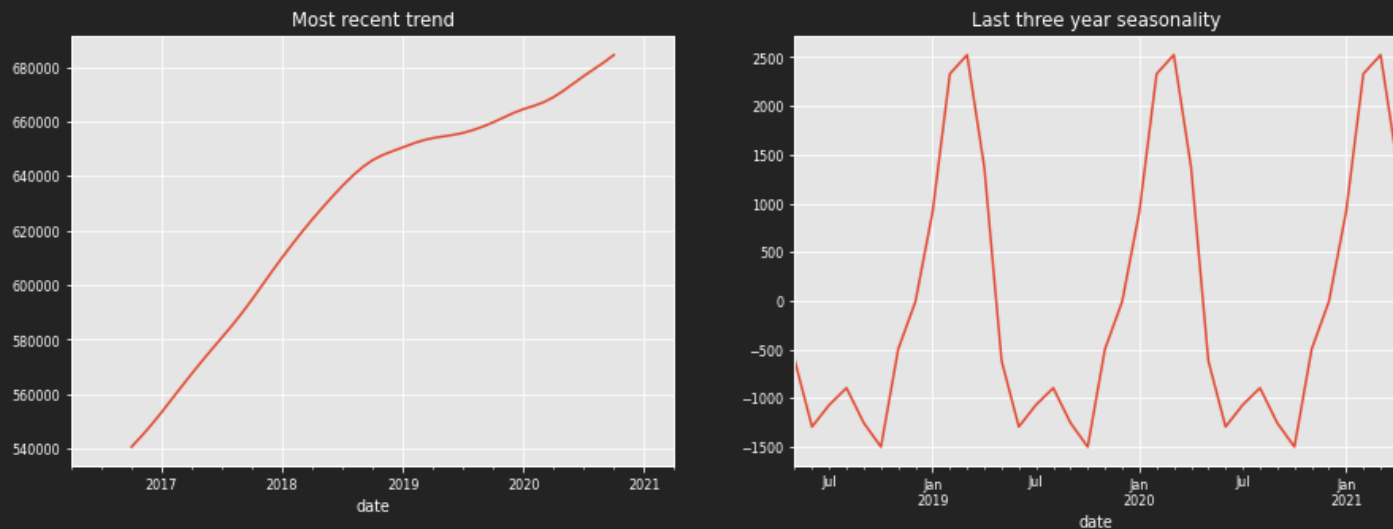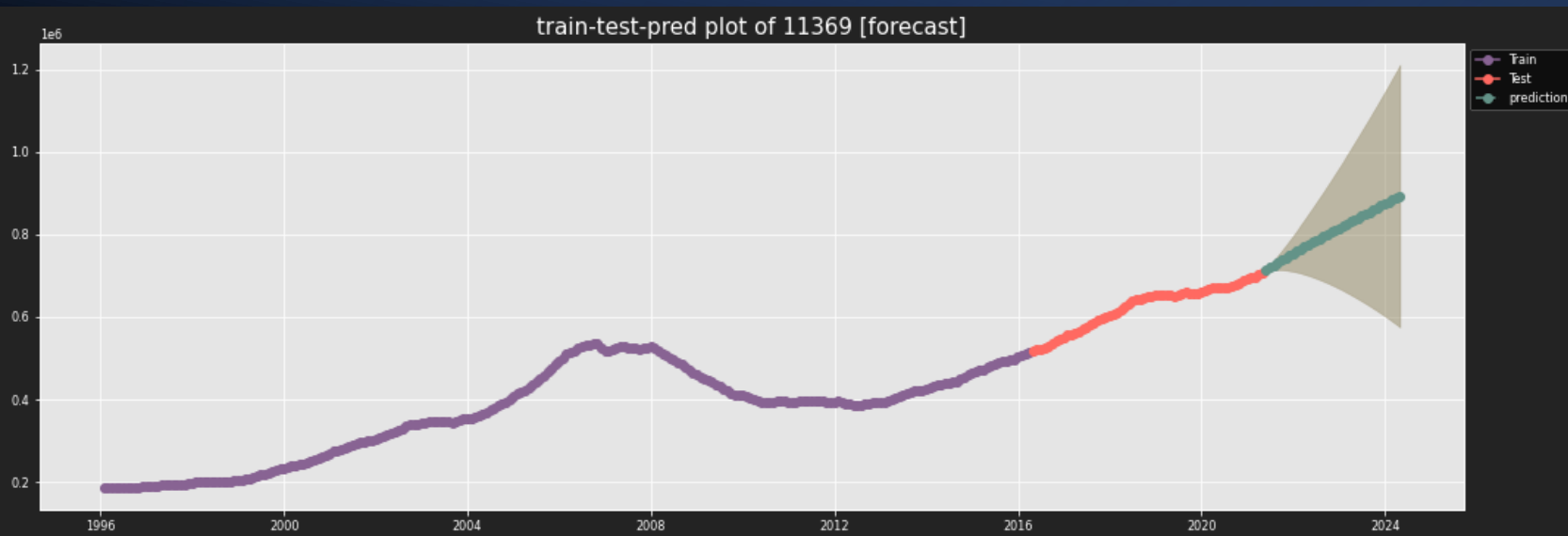
11428
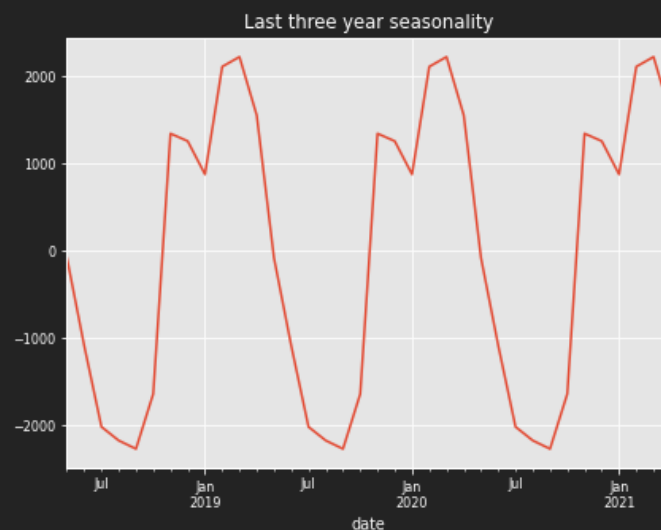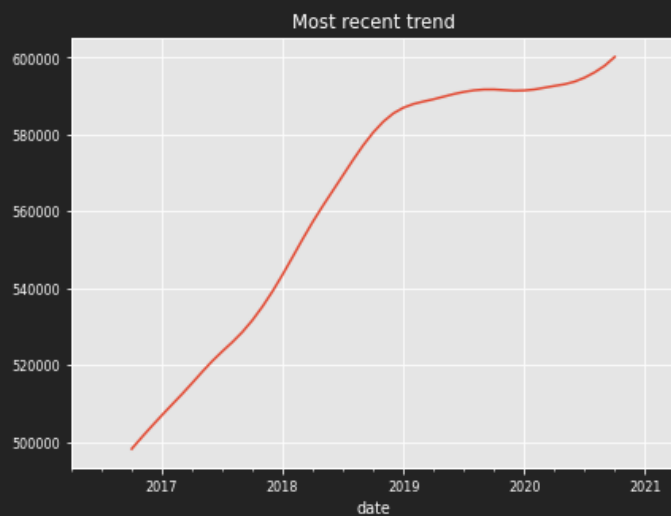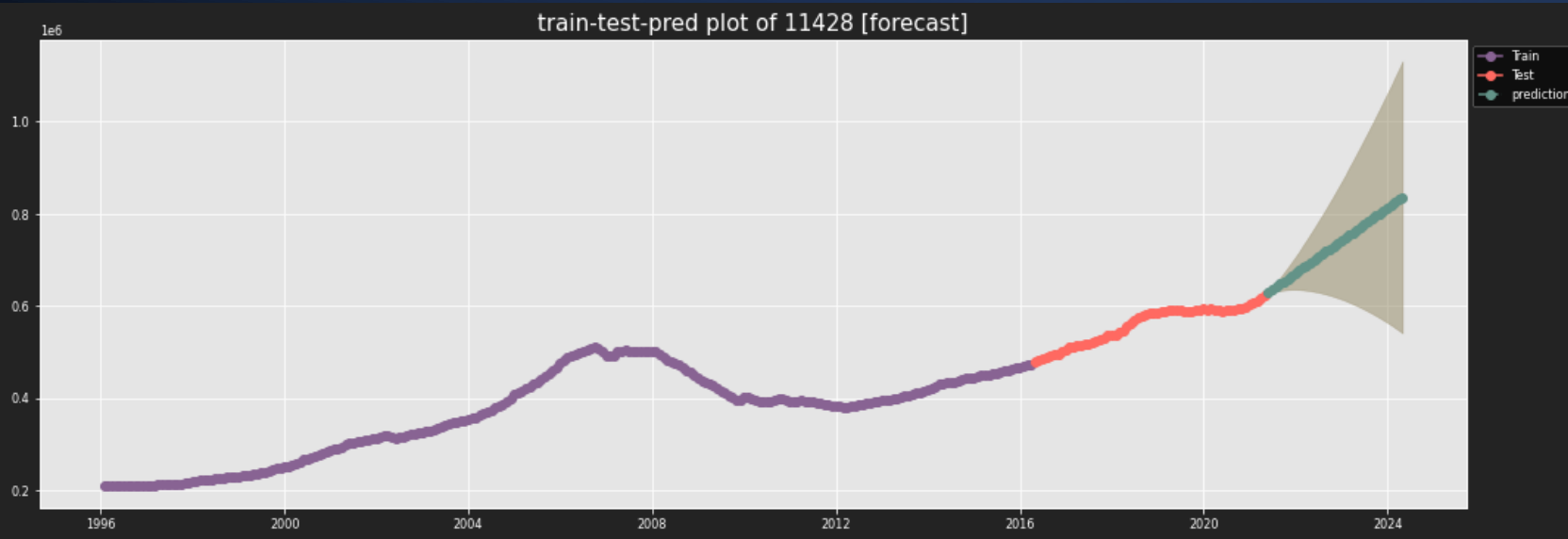
Observation:

- Massive uptrend since 2017
- Got struck by COVID19
- Huge ROI potential.
- Observed ROI – 12%

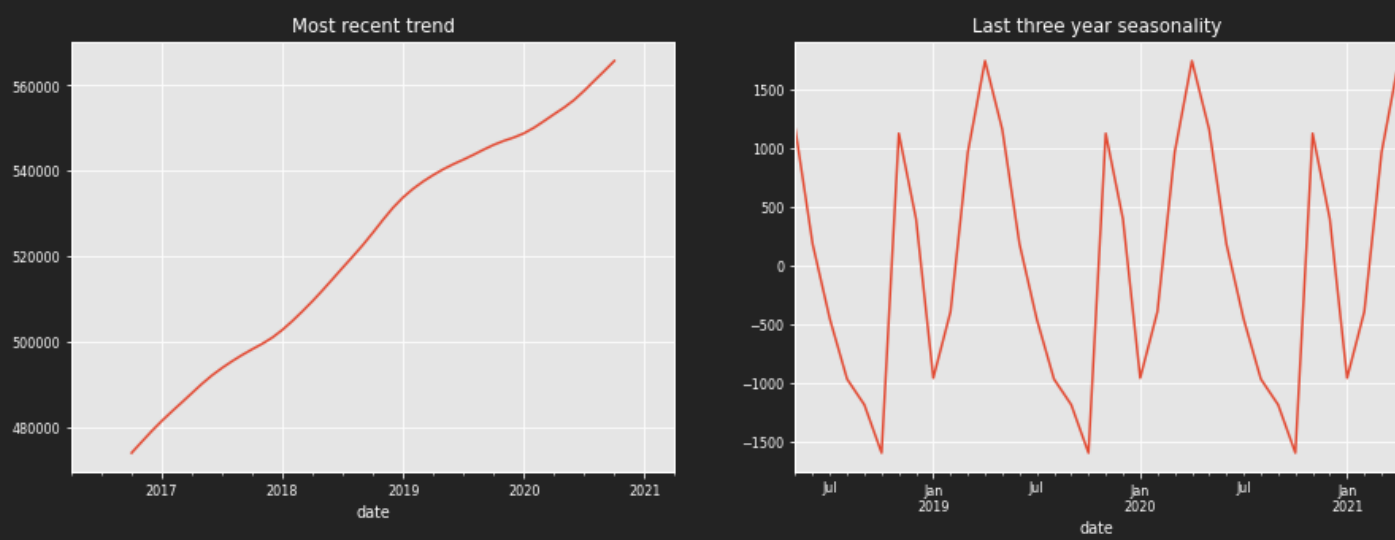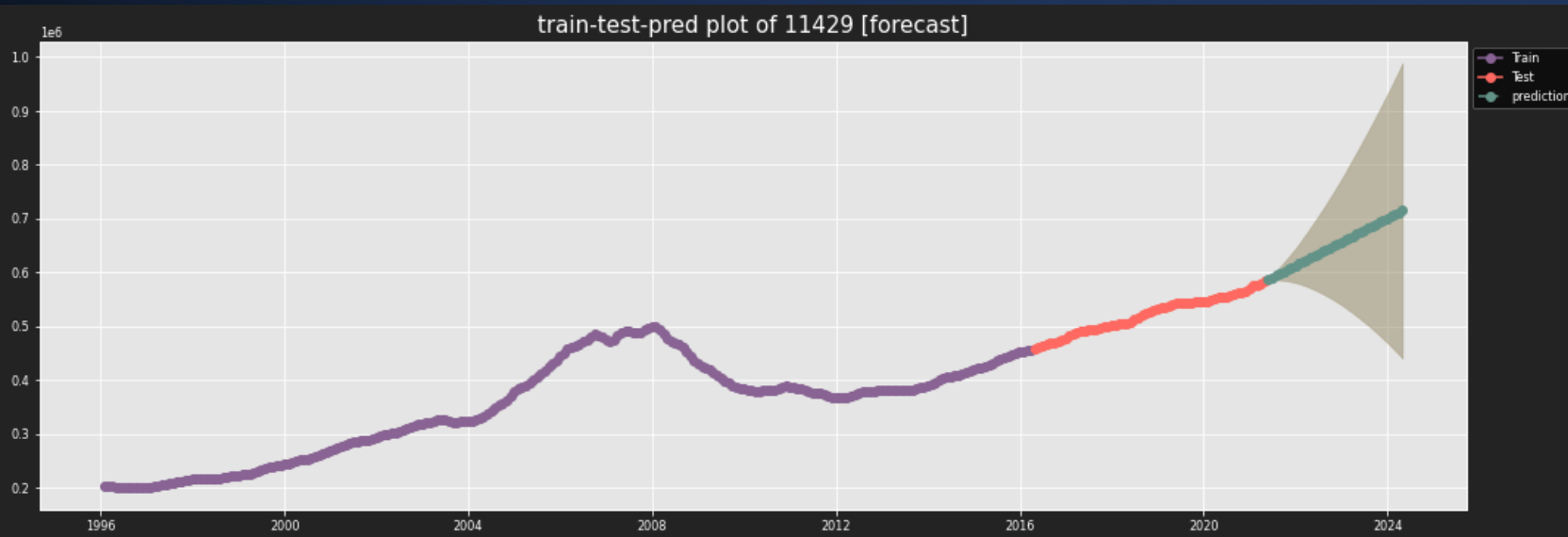| Forecasted ROI	Risk	Current Value
34.26	47.32	$623,049

11369

Observation:

- Massive uptrend since 2017

- Got struck by COVID19

- Substantial ROI gain potential.

- Observed ROI – 13%

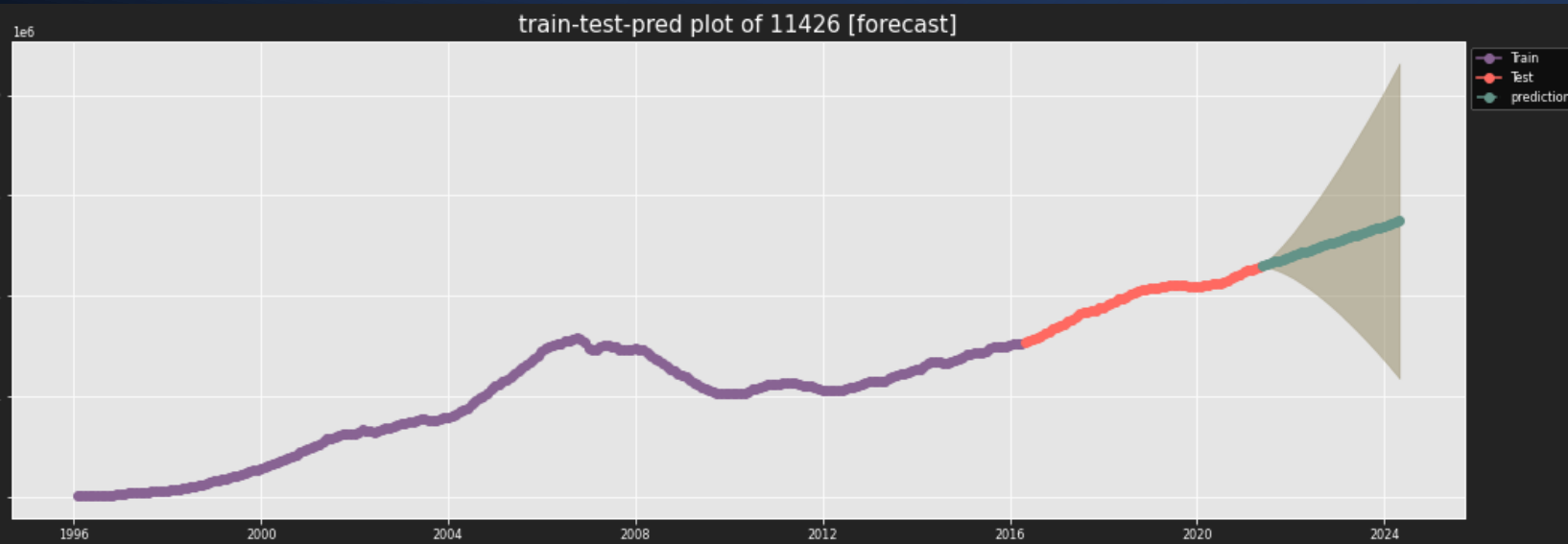| Forecasted ROI	Risk	Current Value
26.22	44.96	$707,477

11429

Observation:

- Massive uptrend since 2017
- Less affected by COVID19
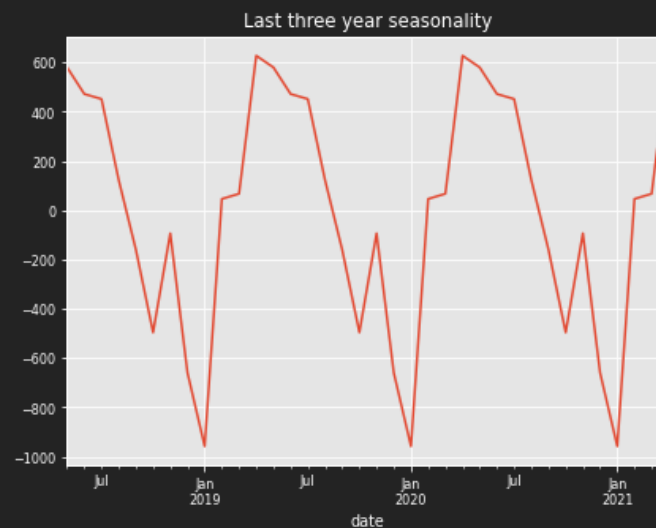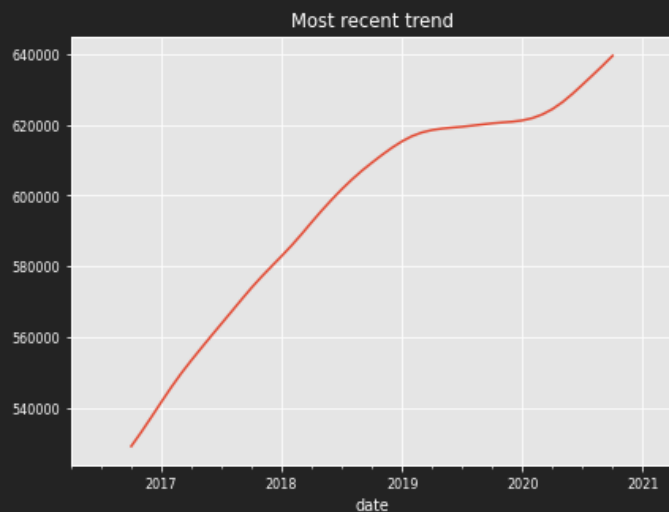- Observed ROI – 15%
- Irregular seasonality.

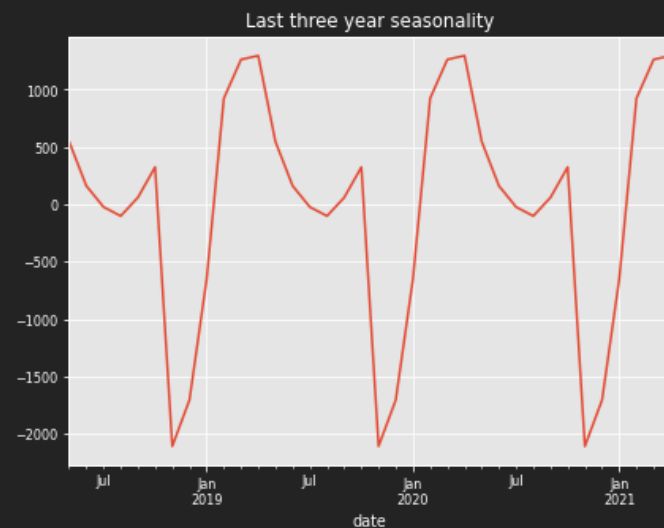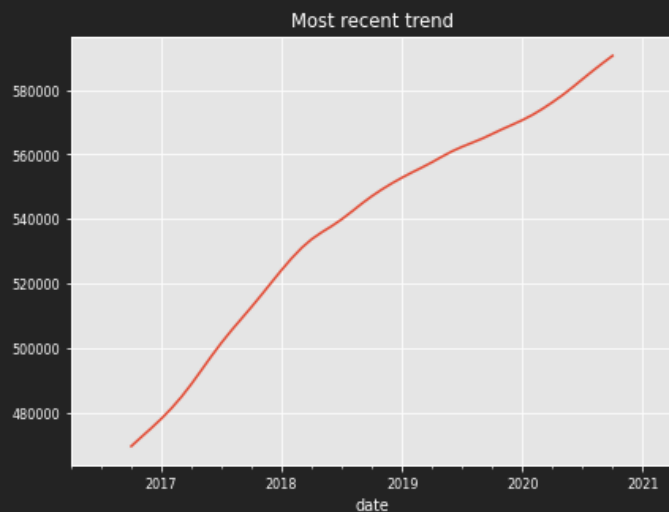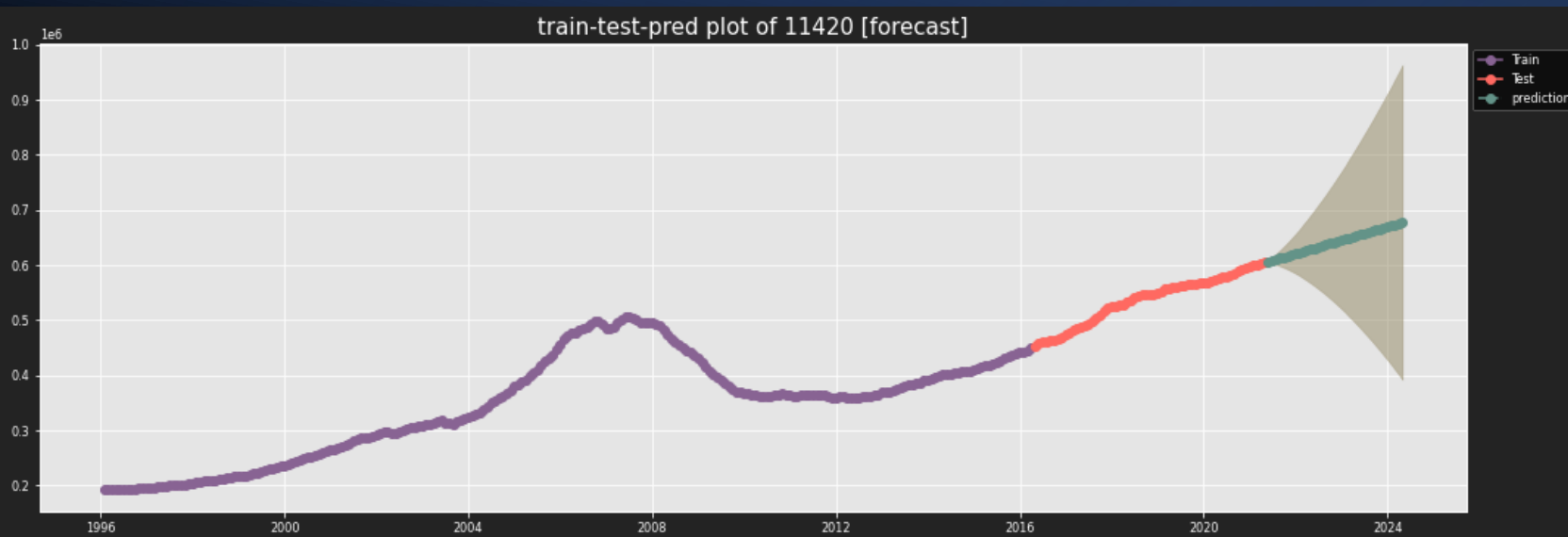| Forecasted ROI	Risk	Current Value
22.45	46.96	$583,710

11426

Observation:

- Massive uptrend since 2017

- Got struck by COVID19

- Good ROI potential.

- Observed ROI – 11%

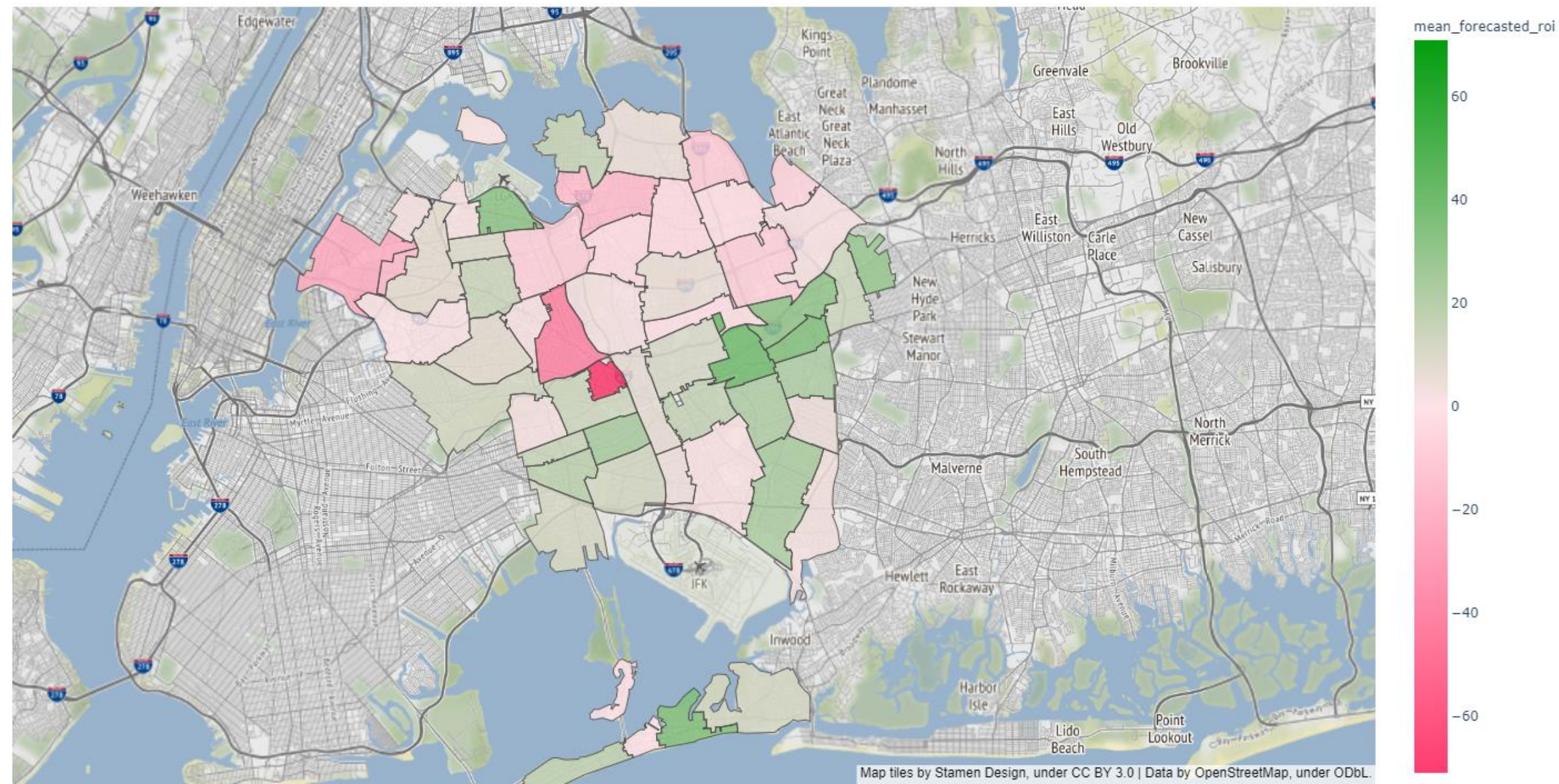| Forecasted ROI	Risk	Current Value
13.89	47.68	$657,969

11420

Observation:

- Massive uptrend since 2017
- Less affected by COVID19
- Good ROI potential.
- Observed ROI – 14%

Forecasted ROI	Risk	Current Value
12.07	47.21	$604,603

Zipcode by Average Price

ON A MAP

mean_forecasted_roi

60

40

20

0

−20

−40

−60

Map tiles by Stamen Design, under CC BY 3.0 | Data by OpenStreetMap, under ODbL.
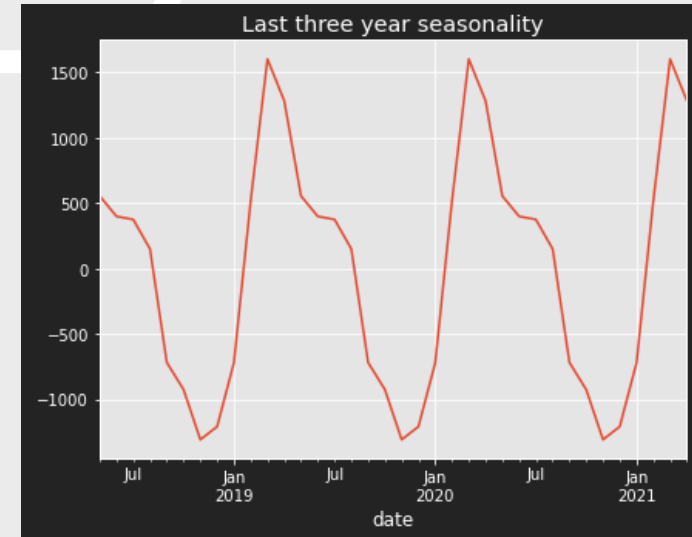
SEASONALITY

- For maximum return
    - Sell at he beginning of a year
    - Buy towards the end of a year

RECOMMENDATION

- Invest in following zip codes:

Zip Code	Forecasted ROI
11428	34.26
11369	26.22
11429	22.45
11426	13.89
11420	12.07

- Stay away from these, they are in a bubble :
  - 11693
  - 11415

- **Rule of thumb:**
  - Go to **southeast** part of Queens for good investment opportunity.
  - Some of the house are **overvalued**, and **awaits correction**, be careful of those houses.
  - For maximum return
    - **Sell** at the **beginning** of a year
    - **Buy** towards the **end** of a year

NEXT STEPS

- Add variables to model, using a SARIMAX model
    - Interest rate
    - Other qualitative indicators of house value based on location, e.g., Schools.
    - Buyer and seller ratio

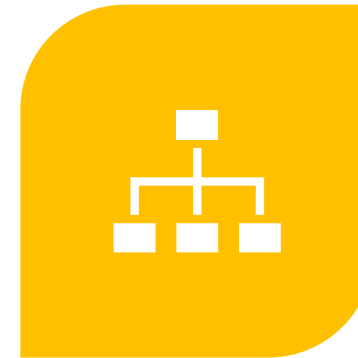- Try other machine learning models

THANK YOU

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PROJECT REPO:
https://github.com/tamjid-ahsan/dsc-phase-3-project

APPENDIX

RELATIVE STANDARD DAVIATION

- Standard deviation expressed in percent and is obtained by multiplying the standard deviation by 100 and dividing this product by the average.

$$\text{standard deviation, } S = \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + (x_3 - \bar{x})^2 + \ldots}{n - 1}}$$

$$\text{relative standard deviation, RSD} = 100S/\bar{x}$$

SUPPORT AND RESISTANCE

- Support is a price level where a downtrend can be expected to pause due to a concentration of demand or buying interest. As the price of assets drops, demand increases, thus forming the support line. Meanwhile, resistance zones arise due to selling interest when prices have increased, investors are not willing to invest in that asset beyond that price.

- Once an area or "zone" of support or resistance has been identified, those price levels can serve as potential entry or exit points because, as a price reaches a point of support or resistance, it will do one of two things -
  - bounce back away from the support or resistance level, or
  - violate the price level and continue in its direction, until it hits the next support or resistance level.
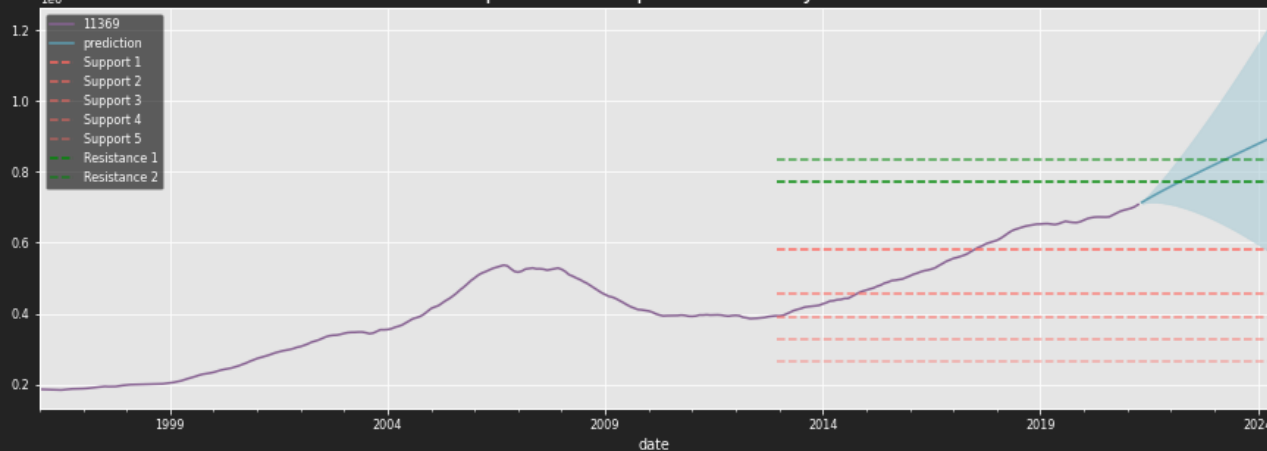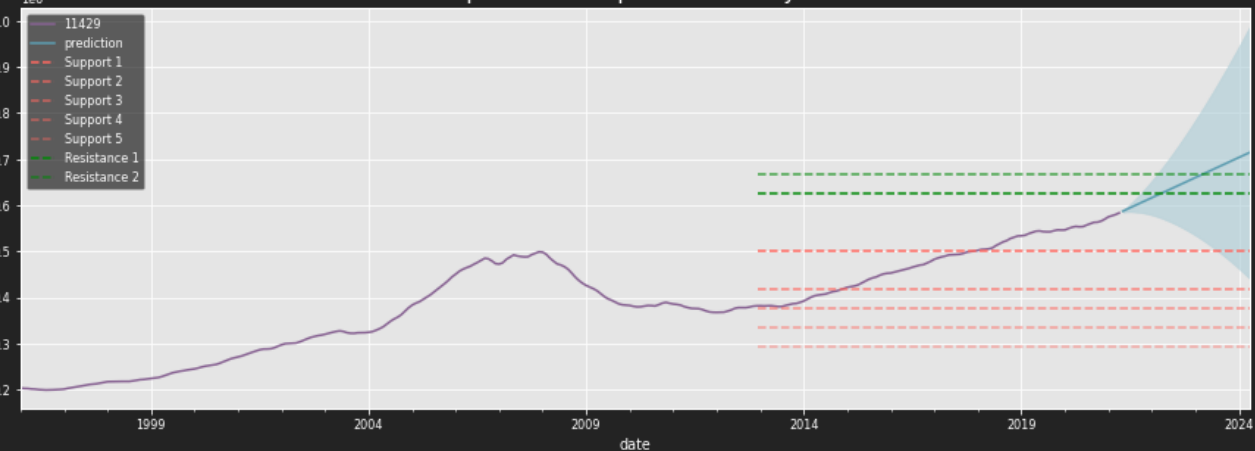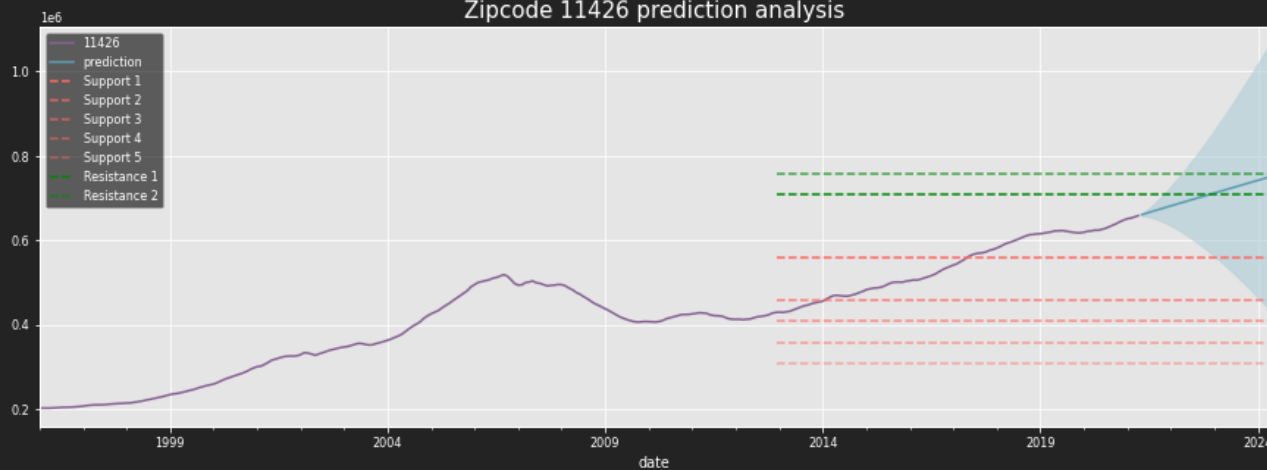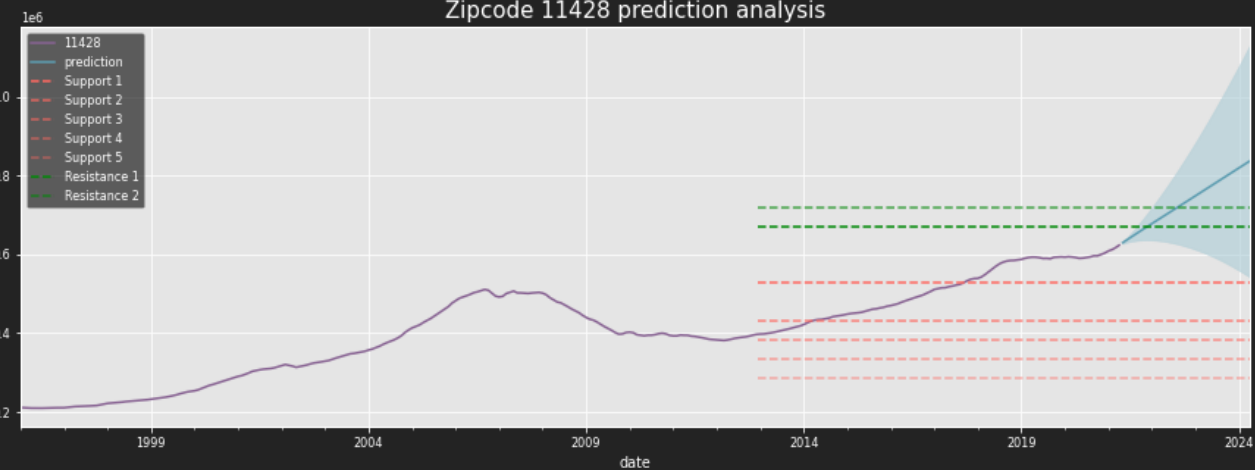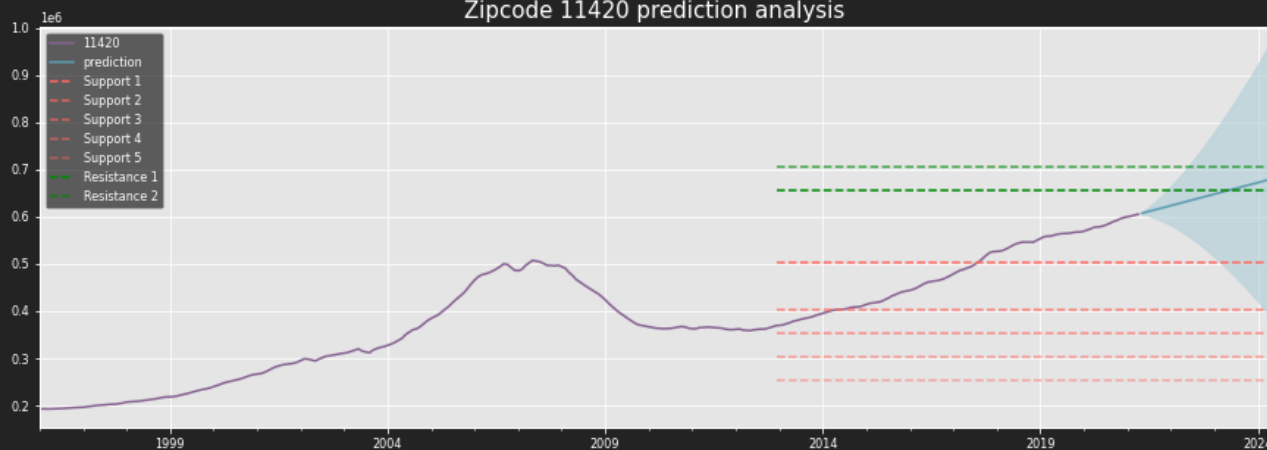
SUMMARY

Invest in properties in these zip codes.

ZIP CODE Location