



NYC Time Series Analysis

Grace Calip

Topics to Cover

- Business Understanding
- Data
- Strategy
- Results
- Recommendations
- Future Work



Business Understanding

Business Problem

- In 2018 which zip codes will bring profit in the future years?
- What zip codes based on our data has the highest ROI and will it continue to generate profit?

Business Value

- Determine which zip code and borough holds value in the future based on prior historical values our prediction time series model
- Provide clients information on which NYC area is worth investing in

Data

Historical Zillow Home Values

- Year: 2010-2018 (Post Market Crisis)
- NYC Zip Codes: 114
- Metric: Return on Investment



Strategy

Data Preparation

- Filter data by location
- Set date to post Market Crisis

Investigate profitable Zip Codes

- Average Location Value
- Zillow Value Index (ROI)

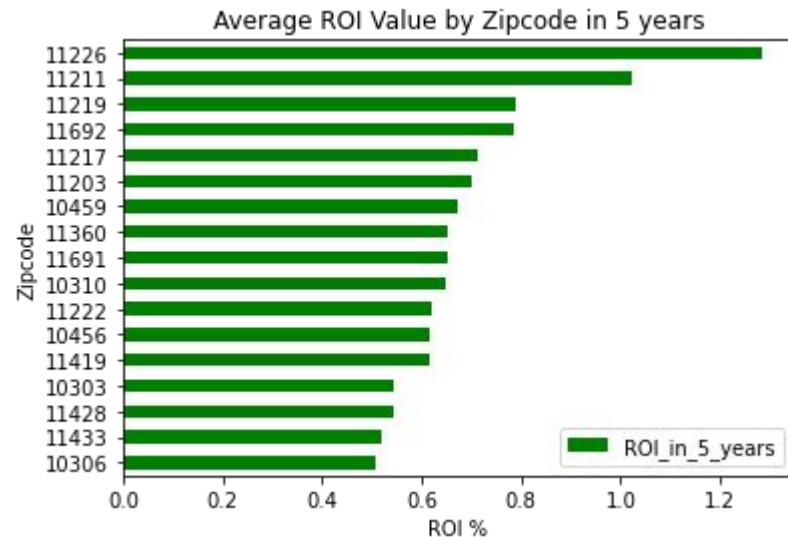
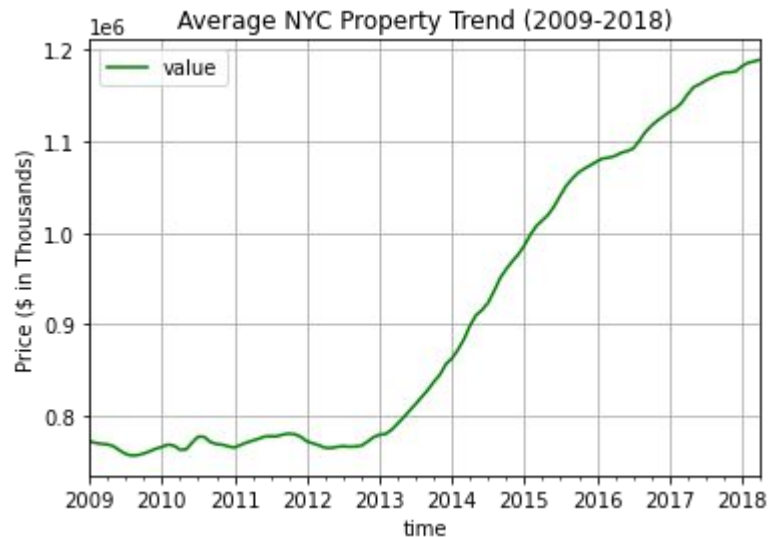
Model - SARIMA

- Test and tune models
- Choose best model with best metrics

Results

- Interpret results for recommendations
- Provide information

Chosen Zip Codes



- Profitable Boroughs: Brooklyn and Queens

Model Results

Top 5 Zip Codes to invest based on ROI

Brooklyn

- 11226: Flatbush (ROI 128%)
- 11211: Williamsburg (ROI 102%)
- 11219: Borough Park (ROI 78%)
- 11217: Downtown Brooklyn (ROI 71%)
- 11203: East Flatbush (ROI 70%)

Explained variance on model: $\sim .95-.99$



Zip Code – 11226: Flatbush, Brooklyn



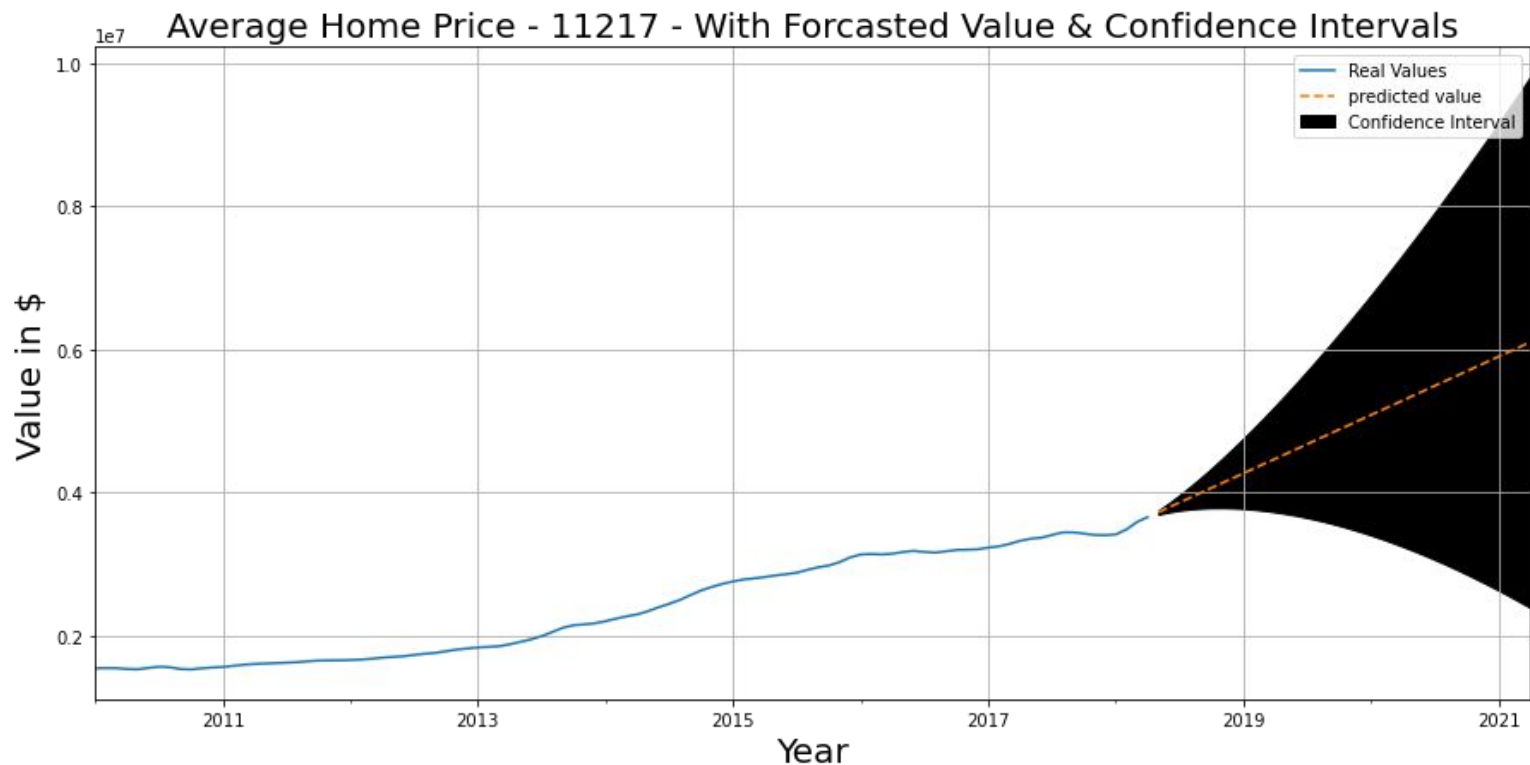
Zip Code – 11211: Williamsburg, Brooklyn



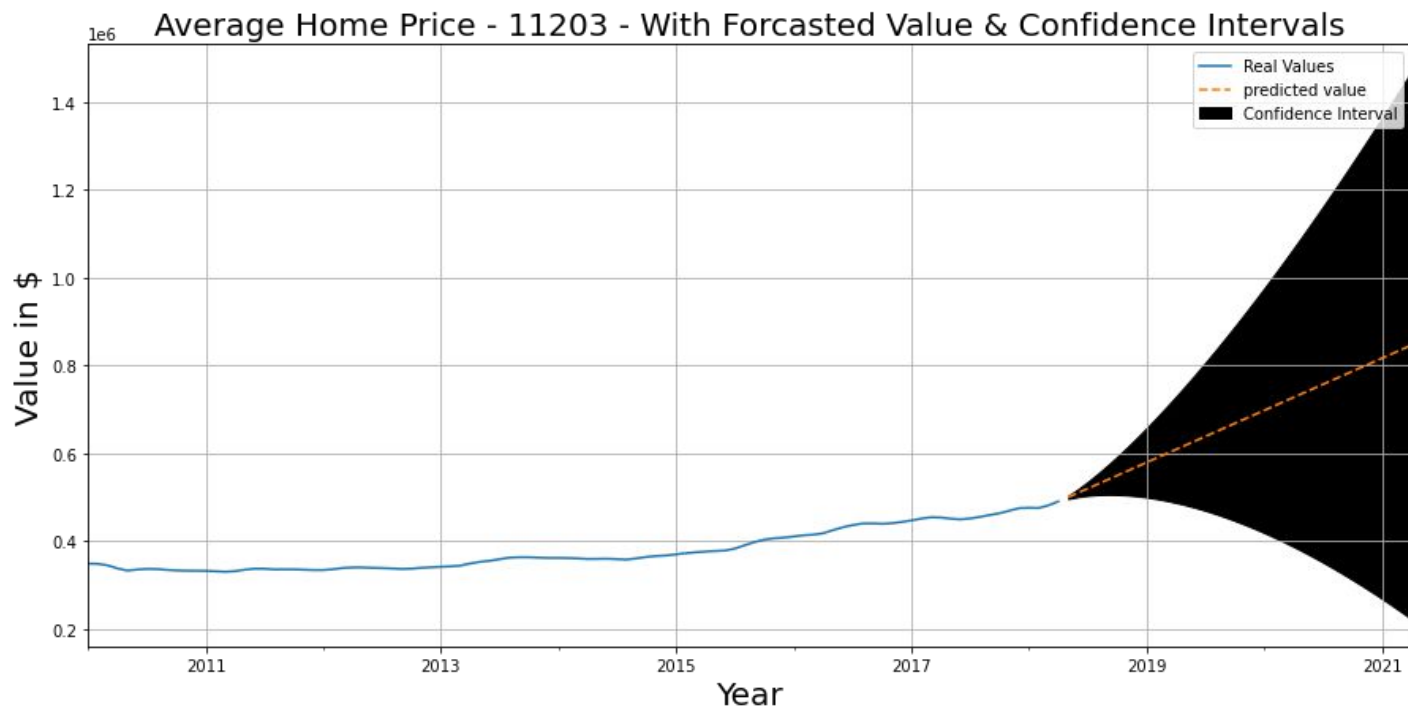
Zip Code – 11219: Borough Park, Brooklyn



Zip Code – 11217: Barclays, Brooklyn



Zip Code – 11203: East Flatbush, Brooklyn



Recommendations

Where to invest?

- Invest in known residential area like Brooklyn

Why?

- Train access
- Close to Manhattan
- Popular Neighborhoods



Future Work

Include Exogenous variables:

- COVID pandemic
- Crime Rating
- Neighborhood Rating
- Train Lines
- Distance to Manhattan

Compare Data Rent Value:

- RedFin
- StreetEasy
- Rent Profitability



Thank You!

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