

TIME SERIES MODELLING FOR REAL ESTATE **USING ZILLOW DATA**

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BUSINESS UNDERSTANDING

INTRODUCTION

Real estate is real property that includes land and anything permanently attached to it or built on it, whether natural or man-made.

Investing in real estate includes purchasing a home, rental property, or land. Indirect investment in real estate can be made via REITs or through pooled real estate investment.



PROBLEM STATEMENT

You are a consultant for a Zillow real-estate investment firm. As a consultant your work is to help clients who are buyers or renters to get which property is best to invest in and in which zipcodes.

OBJECTIVES

MAIN OBJECTIVES

- * To develop a time series model that would predict the top five best Region codes to invest in

SPECIFIC OBJECTIVES

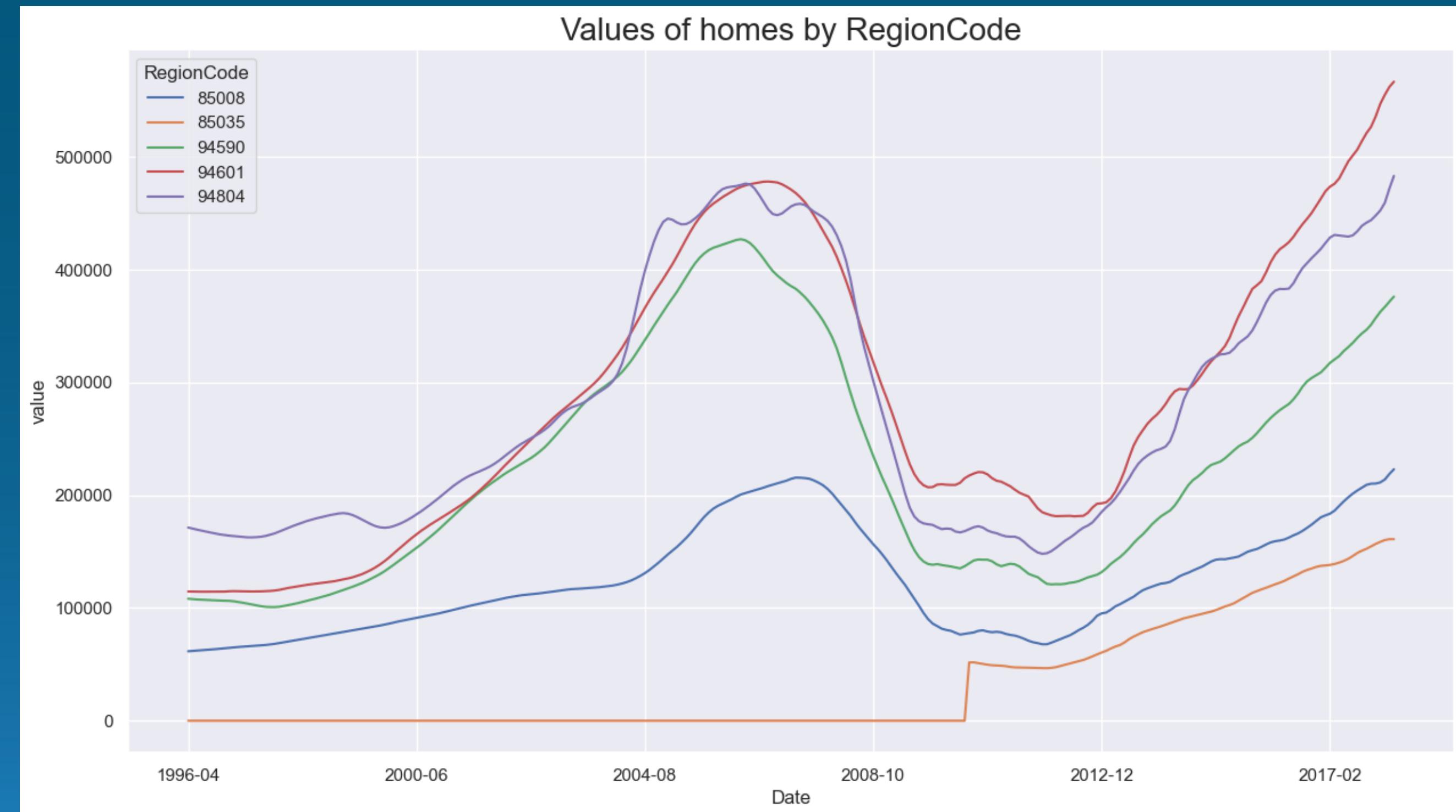
- * To look at the profits it brings over a period of time
- * To look at the RMSE of the model to see how well your model is performing
- * To look at which Region / zip codes are good to invest in

DATA UNDERSTANDING

- 01** **REGIONID** : REPRESENTS A UNIQUE ID FOR EACH REGION.
- 02** **REGIONNAME** : REPRESENTS THE NAME OF THE REGION/ ALSO THE ZIPCODE
- 03** **CITY** : THE CITY WHERE THE REGION IS LOCATED.
- 04** **STATE** : STATE WHERE THE REGION IS LOCATED
- 05** **METRO** : IT IS THE METROPOLITAN AREA WHERE THE REGION IS LOCATED
- 06** **COUNTYNAME** : THE NAME OF THE COUNTY WHERE THE REGION IS LOCATED.
- 07** **SIZERANK** : SIZE OF THE REGION COMPARED TO OTHER REGIONS IN THE DATASET.
- 08** **1996 UPTO 2018** : REPRESENTS THE MEDIAN HOME PRICE FOR THE REGION IN MONTHS AND YEARS.

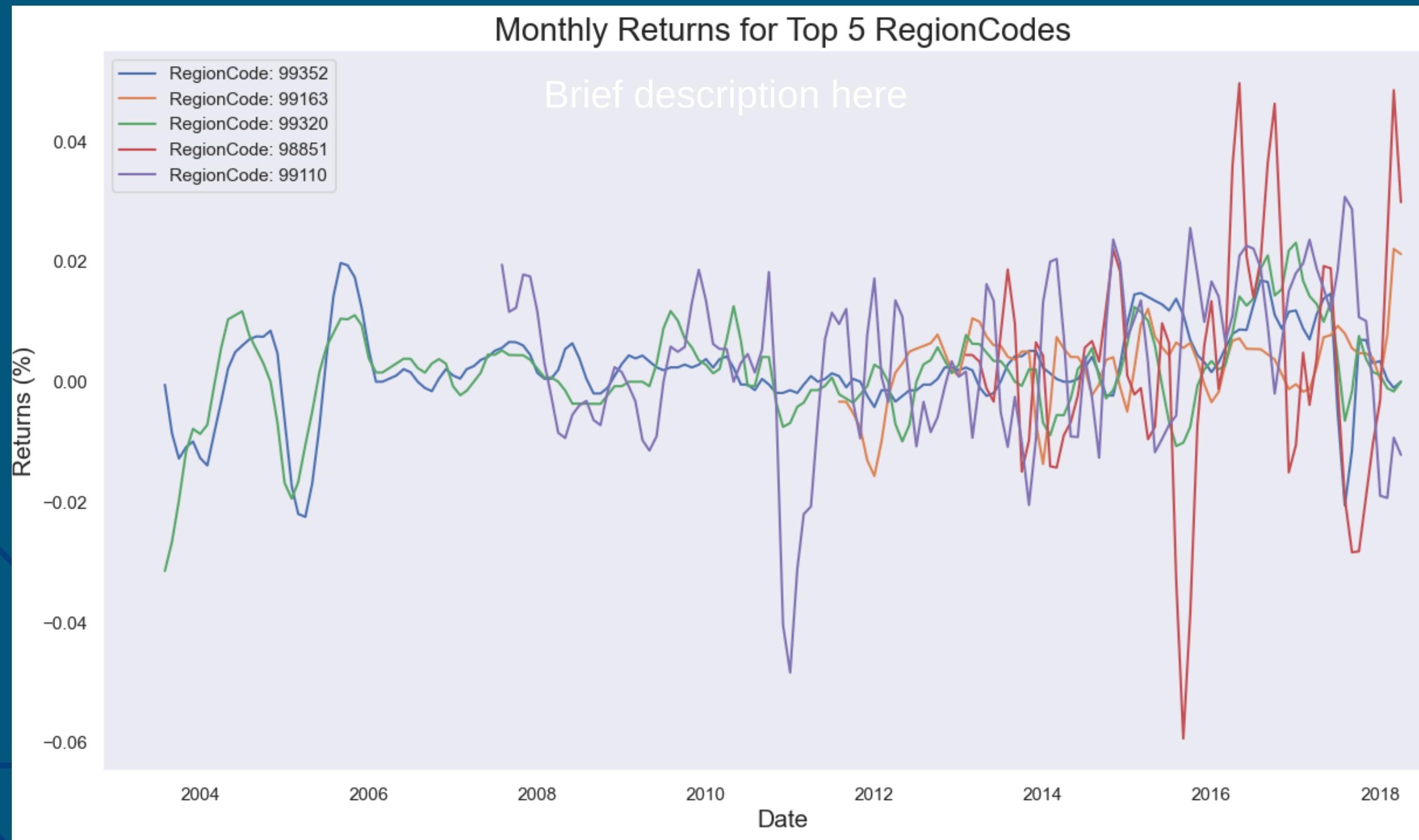
MODELLING

- The graph is a value (price) of homes by region showing how the real estate was growing and dropping over the years

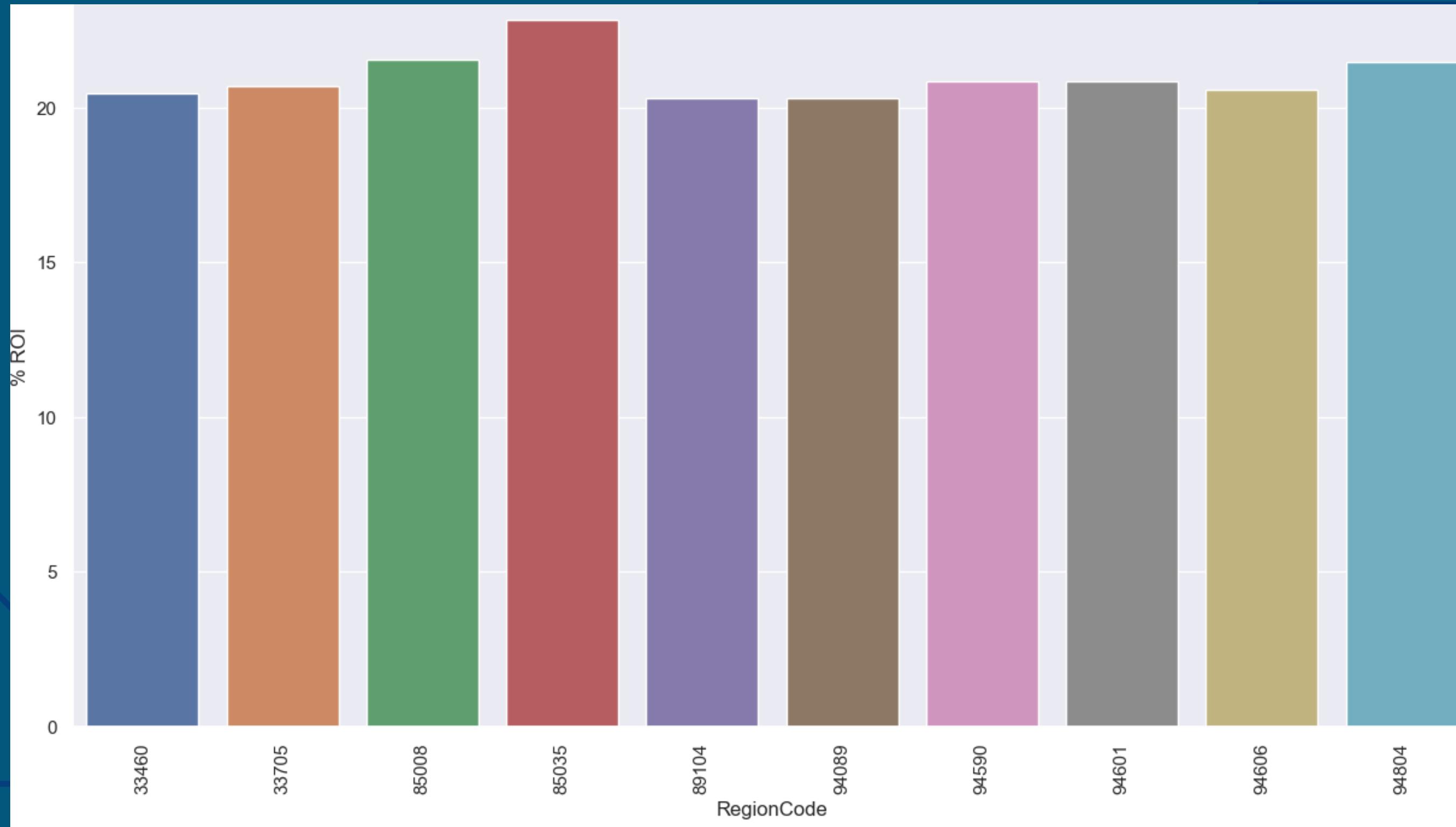


WHICH REGION / ZIP CODES ARE GOOD TO INVEST IN?

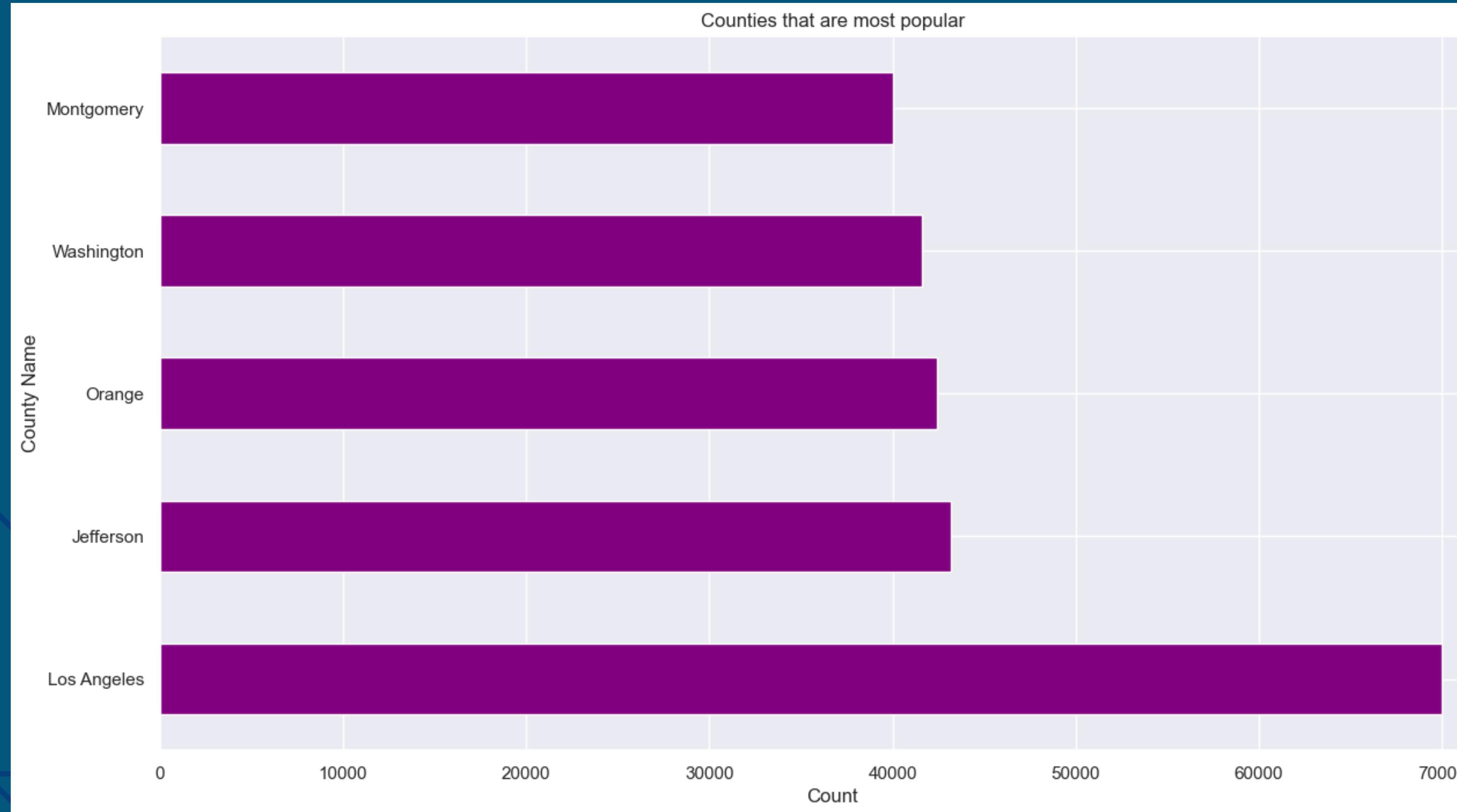
Monthly Returns for Top 5 RegionCodes



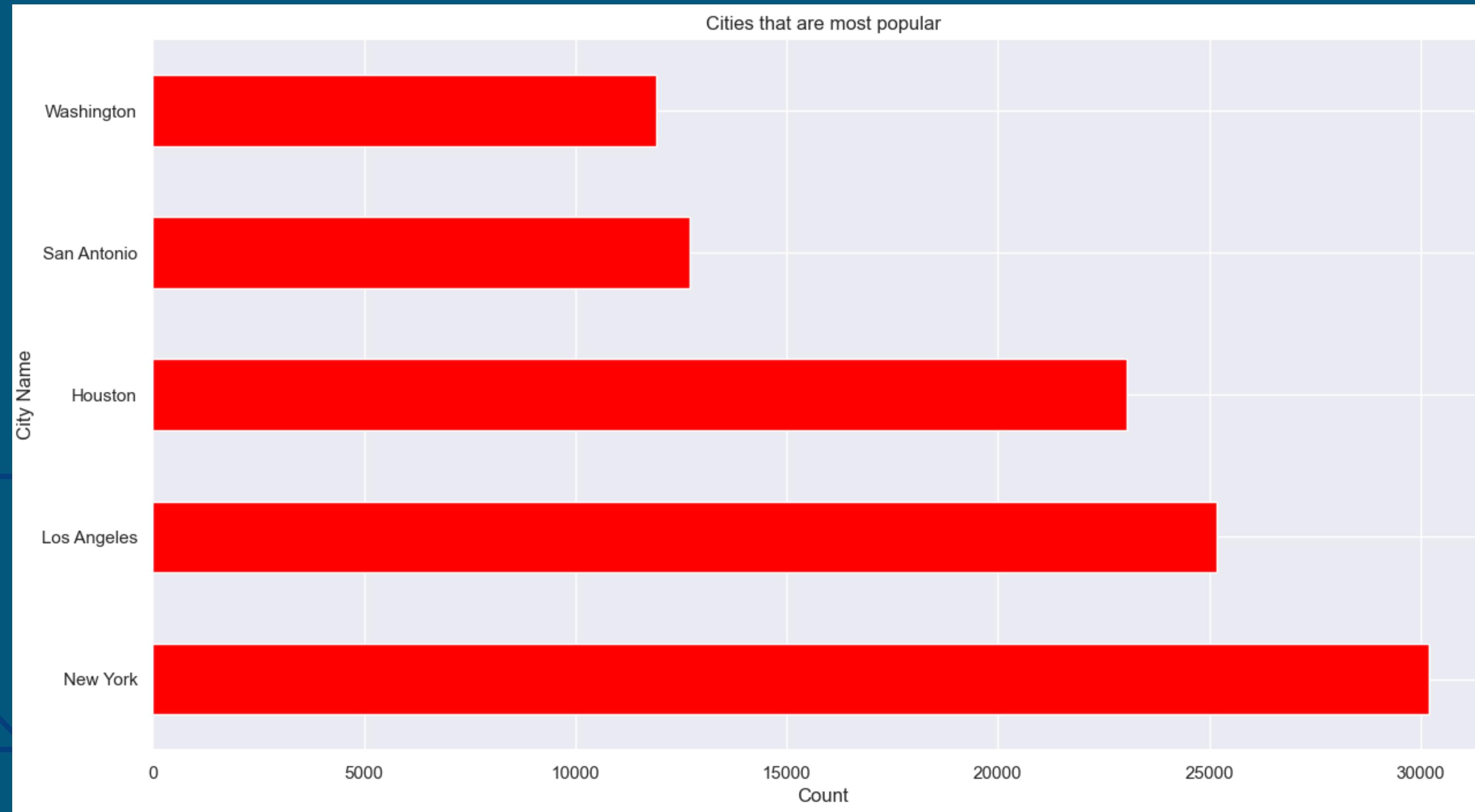
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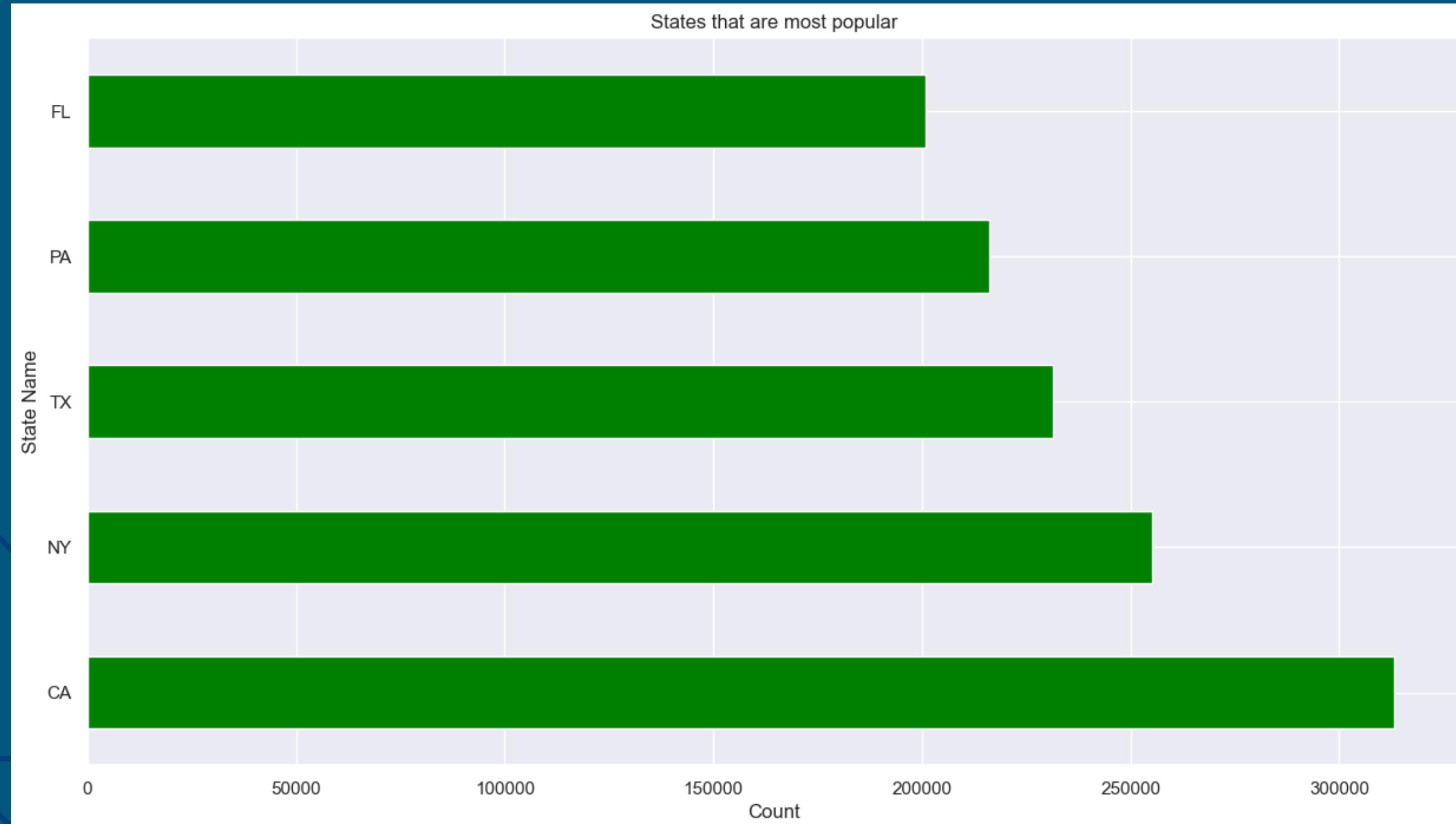
WHICH COUNTIES ARE MOST POPULAR?



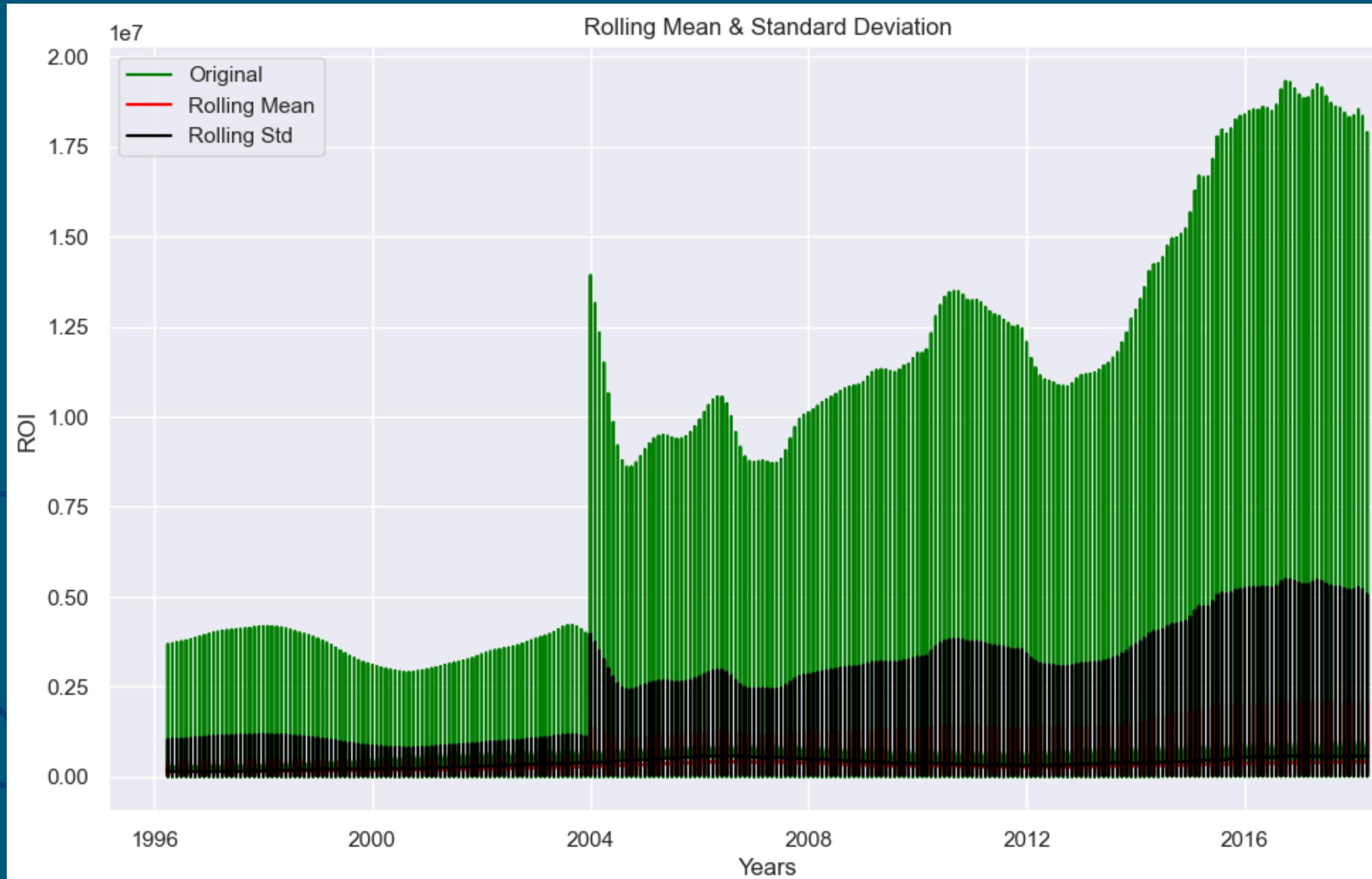
WHICH CITIES ARE MOST POPULAR?



WHICH STATES ARE MOST POPULAR?

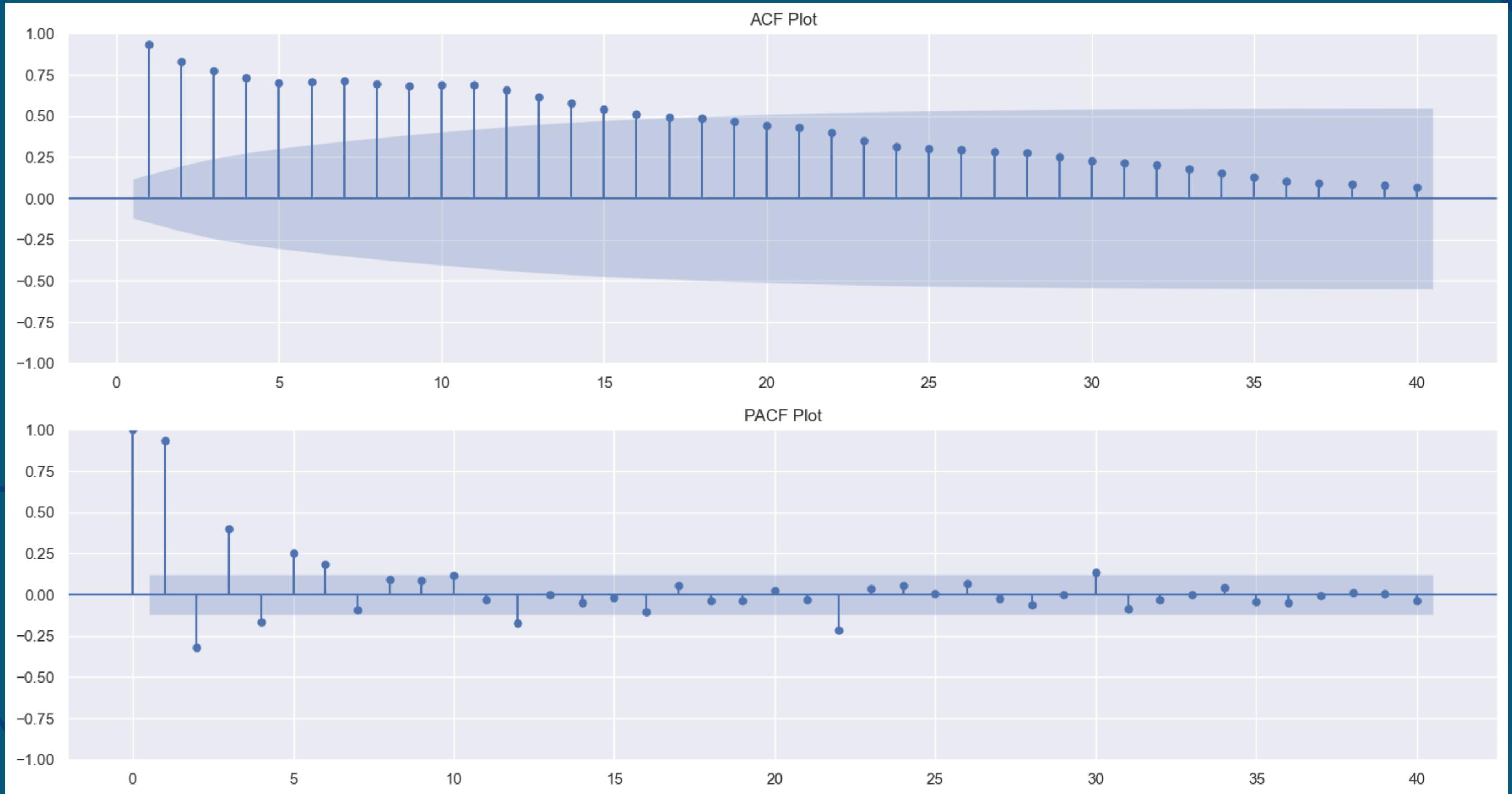


ROLLING MEAN AND STANDARD DEVIATION



This shows how the
the Return On
Investments over
the years. How it
began and its
growth over the
years

ACF AND PACF PLOT



- ACF helps detect overall correlations with different lags.
- PACF helps identify direct correlations while removing the influence of intermediate lags

CONCLUSION

- From the Zillow Real Estate database, I have concluded that :-
 1. Real estate is being appreciated
 2. There is high return on investment in real estate
 3. There are zipcodes to invest in that are at the top 5 Region codes (states, cities and counties)
 4. The model created is has a 0.95 confidence interval.

RECOMMENDATION

1. Real estate is being appreciated - From the data we have seen that , more and more people are appreciating real estate in that people are looking to mostly buy homes and other than being tenants.
2. There is high return on investment in real estate - From the dataset we have seen that the return on investment has risen over the years and it keeps rising.
 - * This means that people are buying homes and can either rent them out to bring them more money using the monthly pay or selling it after some time and making a profit from the initial pricing that they had bought it as.
 - * This can also mean that some improvements have been done to the property hence increasing its value.
3. There are zipcodes to invest in that are at the top 5 Regioncodes - From the zillow data that we have seen which regioncodes are the top fives that have been invested on in terms of real estate .The top 5 regioncodes are the best to invest in .
4. The model created has a 0.95 confidence interval - From the model we have found out that it works and can also be used to help in predictions in the future .

ANY QUESTIONS?

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THANK YOU!

