



# Time Series Modeling

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# Project Breakdown

**we are going to create a time series model to predict the property value of San Jose metro area, CA**

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**ANALYZING DATASET  
OBTAINED FROM ZILLOW**

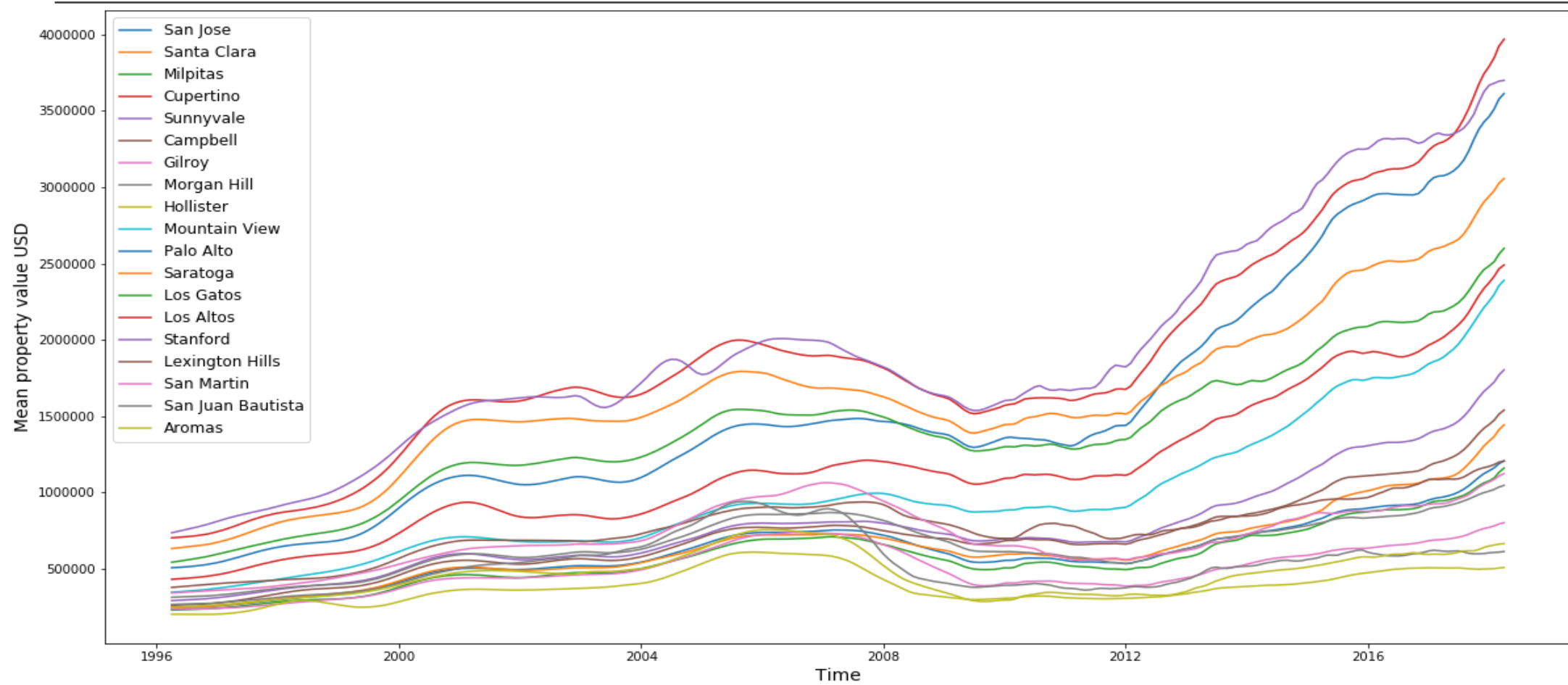


**CREATING AND VALIDATING  
TIMESERIES MODEL**



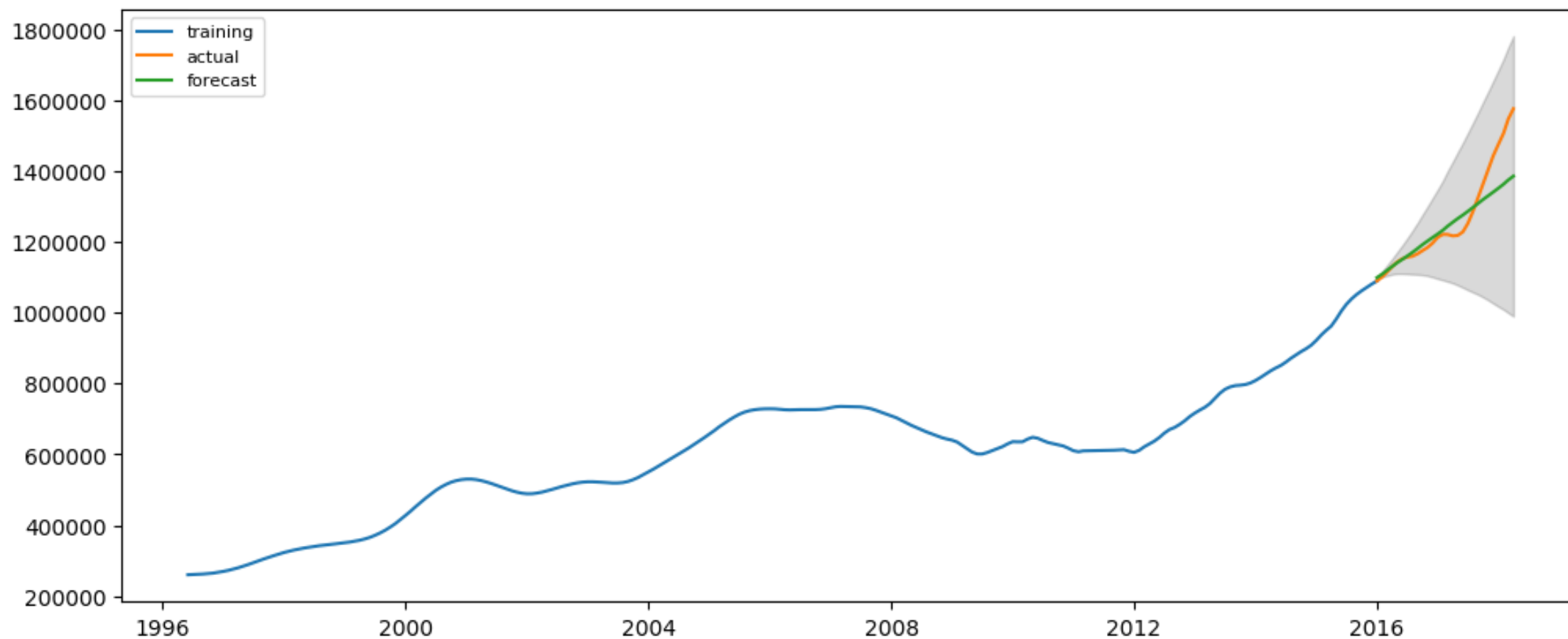
**PREDICTING FUTURE PROPERTY  
VALUES AND TRENDS**

## The general trend of property values for different cities in San Jose metro area, CA

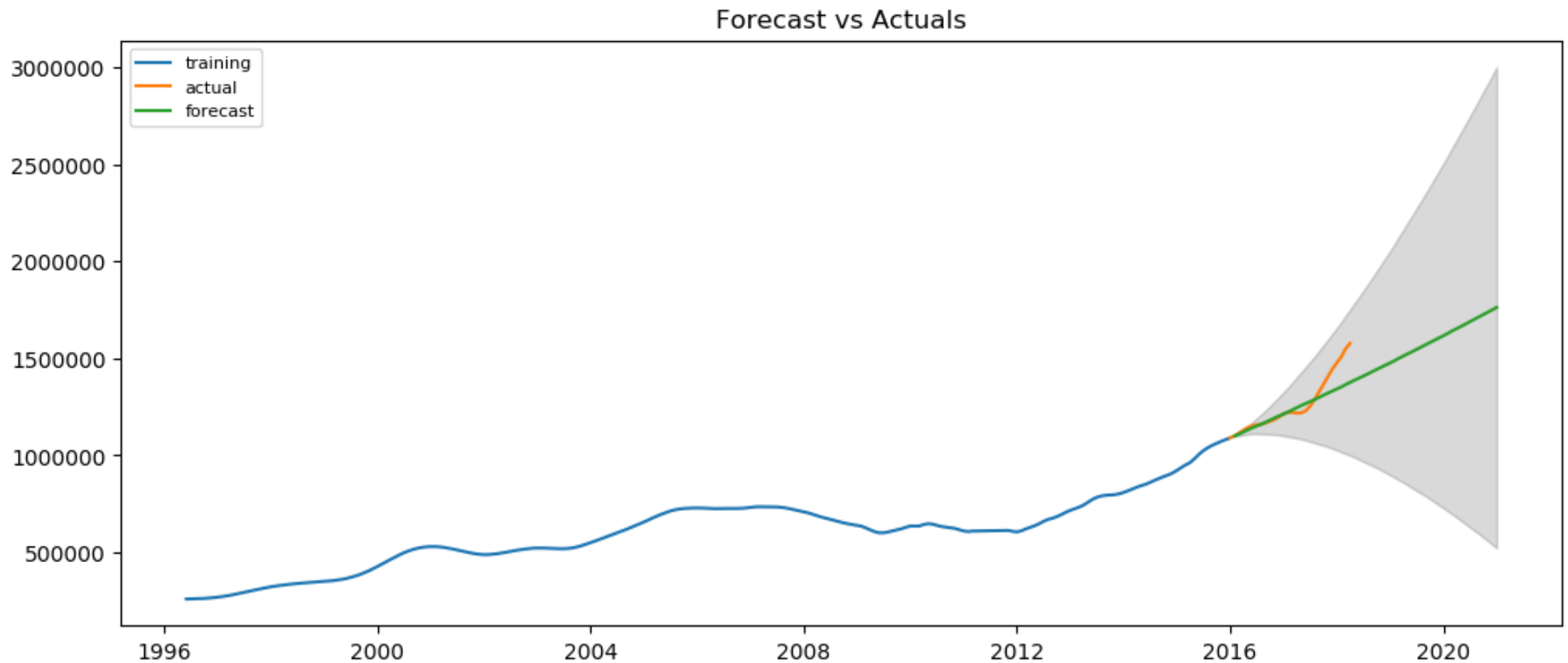


## The ARIMA model in-sample predictions for general trend of average property value change in San Jose metro area, CA

Forecast vs Actuals



# The ARIMA model out-of-sample future predictions for general trend of average property value change in San Jose metro area, Ca



## Finding best zip codes within San Jose metro area, CA to invest :

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the prices are predicted for the next 2 years of our data set, from 2018 to 2020 and found the 5-top most growing trends within San Jose metro area based on zip code.

Calculate the percentage of profit made from the investment within 4 years :

profit = (Predicted property value on 2020 – investment value on 2016)/investment value on 2016

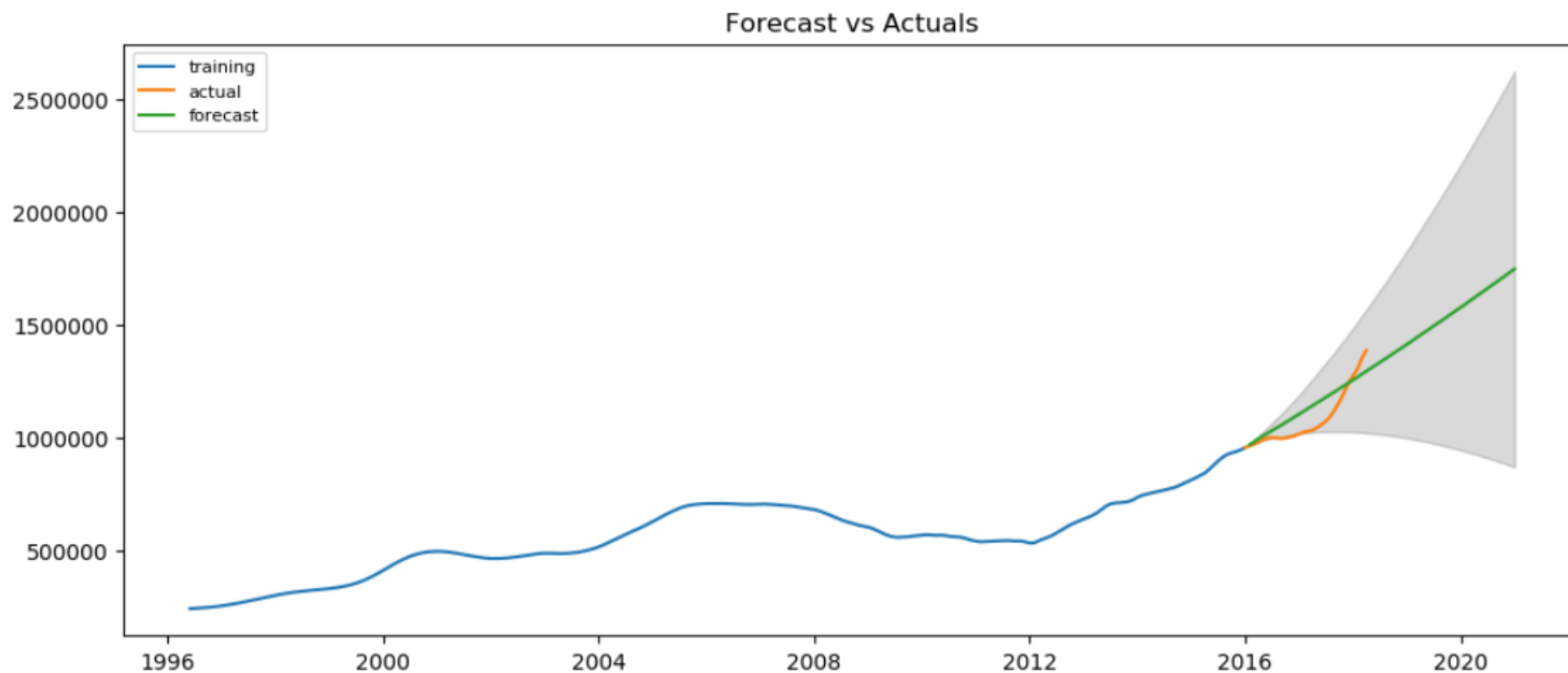
	zipcode	profit		model	sell	purchase
7	95050	0.689942	<statsmodels.tsa.arima_model.ARIMAResultsWrapp...	1.668578e+06	9.873583e+05	
24	94089	0.617839	<statsmodels.tsa.arima_model.ARIMAResultsWrapp...	1.458239e+06	9.013500e+05	
21	95131	0.561827	<statsmodels.tsa.arima_model.ARIMAResultsWrapp...	1.393332e+06	8.921167e+05	
29	95130	0.529279	<statsmodels.tsa.arima_model.ARIMAResultsWrapp...	1.825985e+06	1.194017e+06	
2	95112	0.518737	<statsmodels.tsa.arima_model.ARIMAResultsWrapp...	1.030083e+06	6.782500e+05	

## TOP FIVE PROFITABLE ZIP CODES FOR INVESTMENT:

1. The most profitable and highest return of investment goes to zip code 95050, Santa Clara

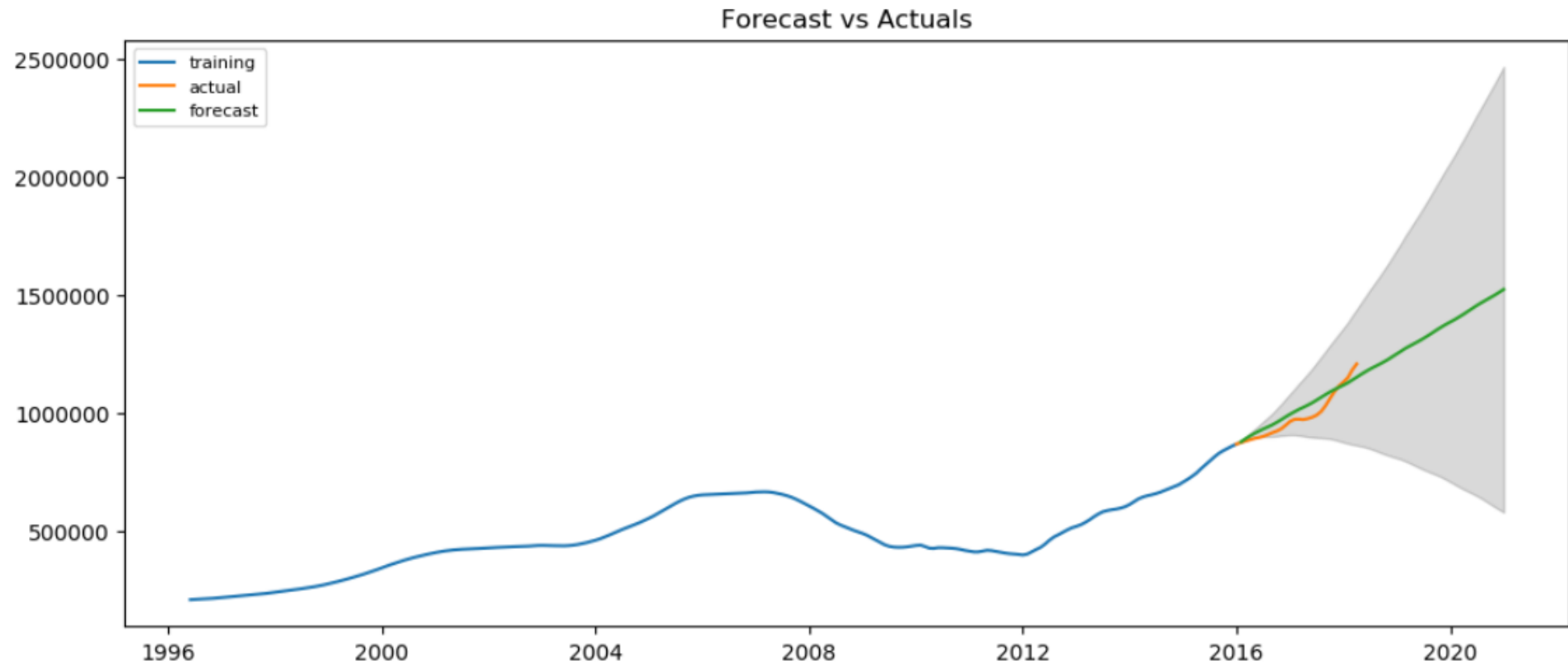
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Zip Code: 95050



## 2. The second top profitable zip code for investment is 94089, Sunnyvale

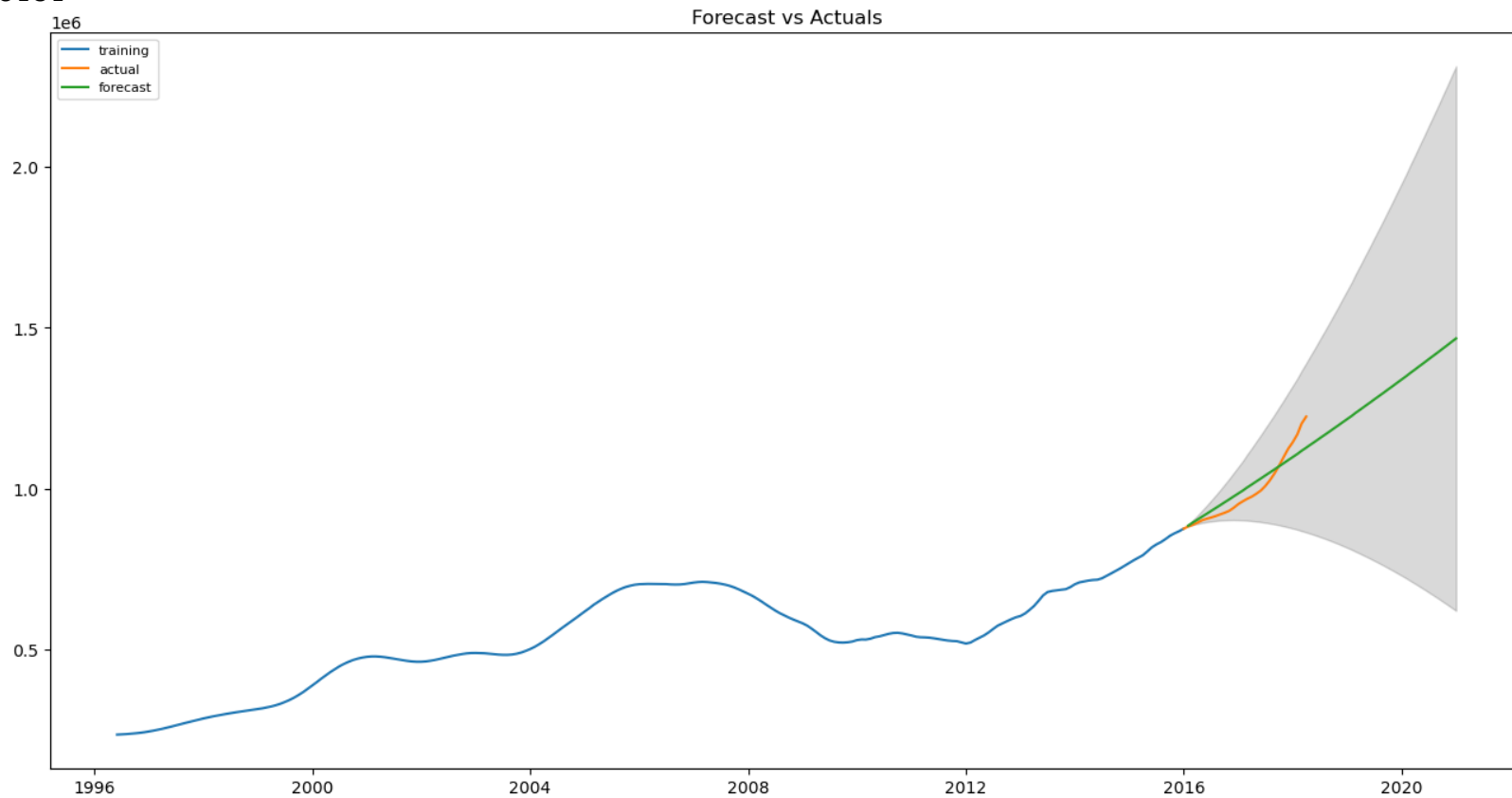
Zip Code: 94089



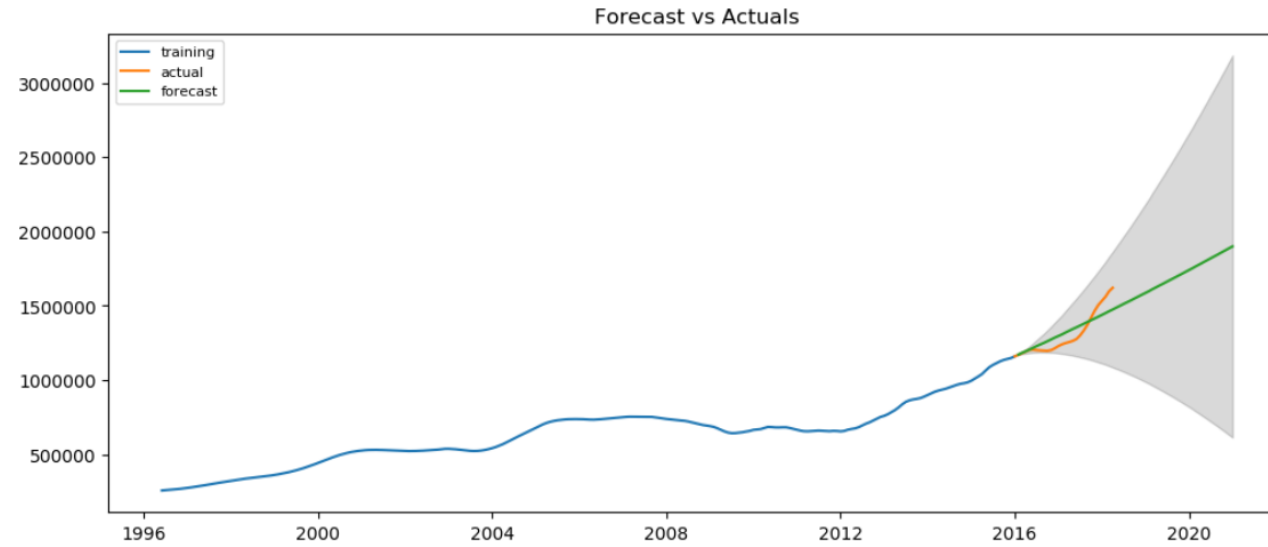


3. Another 3 top ranked profitable zip codes for investment are located in San Jose;  
95131, 95130 and 95112

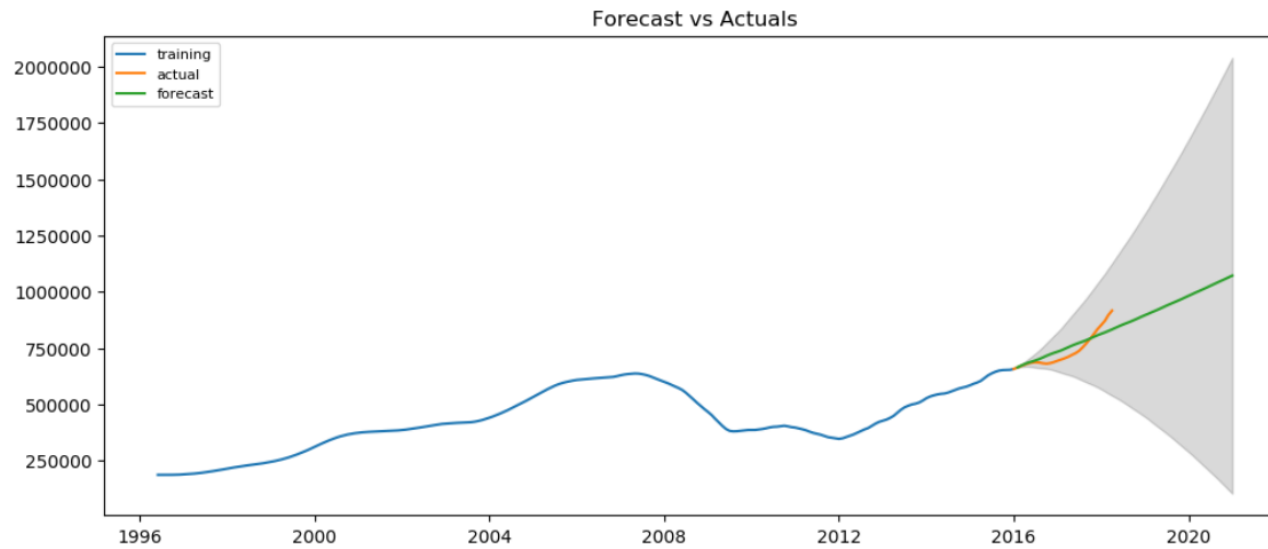
Zip Code: 95131



Zip Code: 95130



Zip Code: 95112



## Important notes regarding our future price predictions

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1. Our data is collected from Zillow database from year 1996 to 2018.
2. The generated ARIMA model is capable of predicting the average property value and its changes for any given period of time using the trends of previous years.
3. For more accuracy, it sounds better to keep short steps/periods of future predictions, longer periods of predictions will be more accurate after applying latest updates and changes to the dataset.

# **Thank you**

FARNAZ GOLNAM