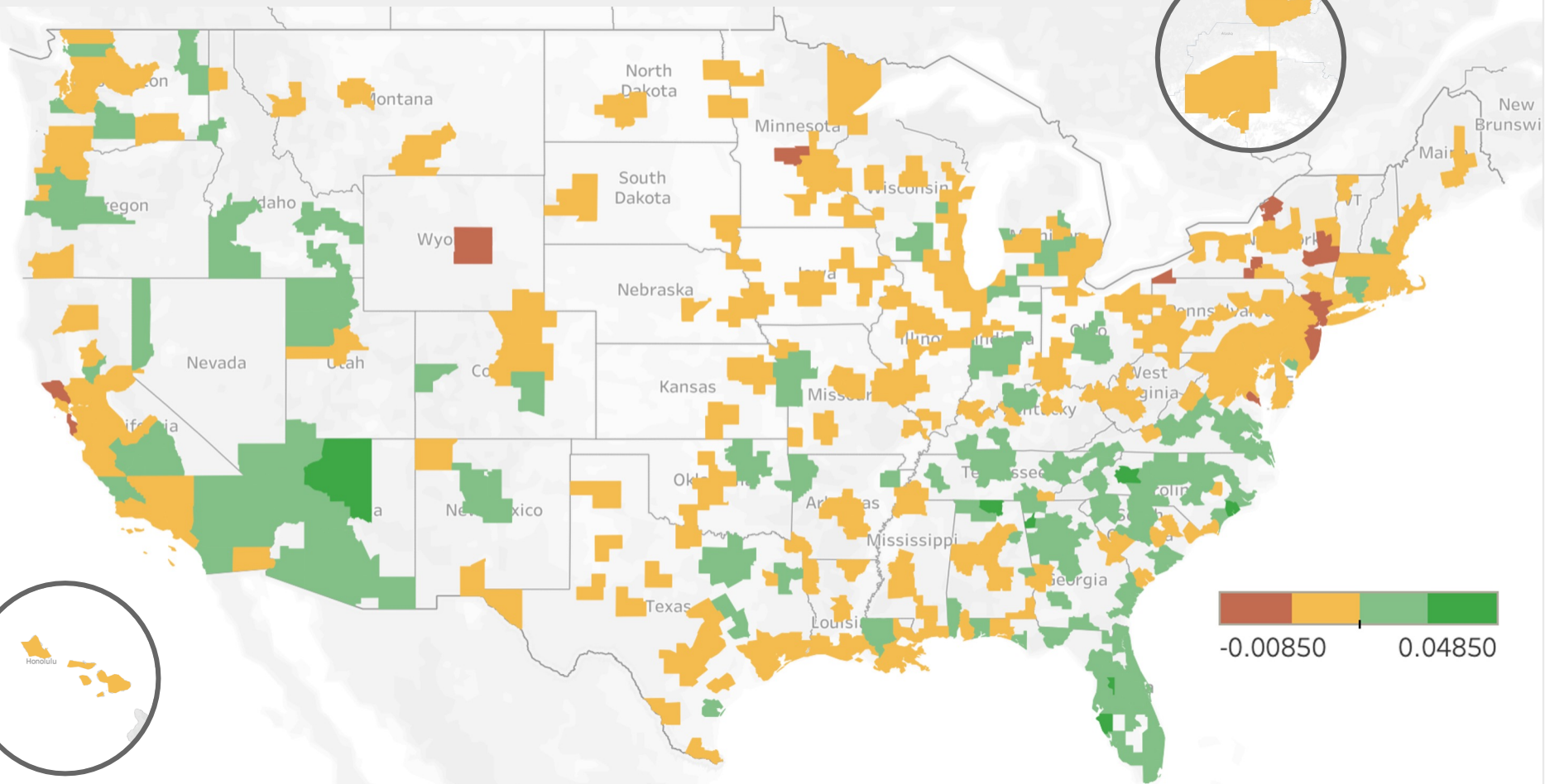# Market Analysis

Identify US markets to invest in Multi-Family real estate

- What are the key factors influencing index growth ?

- How can we forecast future growth?

MSA index growth rate. 3 y weighted avg.

What features affect the growth?

RF ML model

Households
Industrial Employment
Industrial Employment Rate
Market Cap Rate
Median Household Income
National index
Office Employment
Office Employment Rate
Pop_cat_high_pop
Pop_cat_low_pop
Pop_cat_medium_pop
Population
Rent Burden Rate
Total Employment
Total Employment / Households
Total Employment Rate

0.0040
0.0070
0.0150
0.1410
0.0110
0.7540
0.0060
0.0090
0.0000
0.0000
0.0000
0.0040
0.0100
0.0040
0.0150
0.0070

National average index

Market Cap Rate

What causes the difference in MSA index values
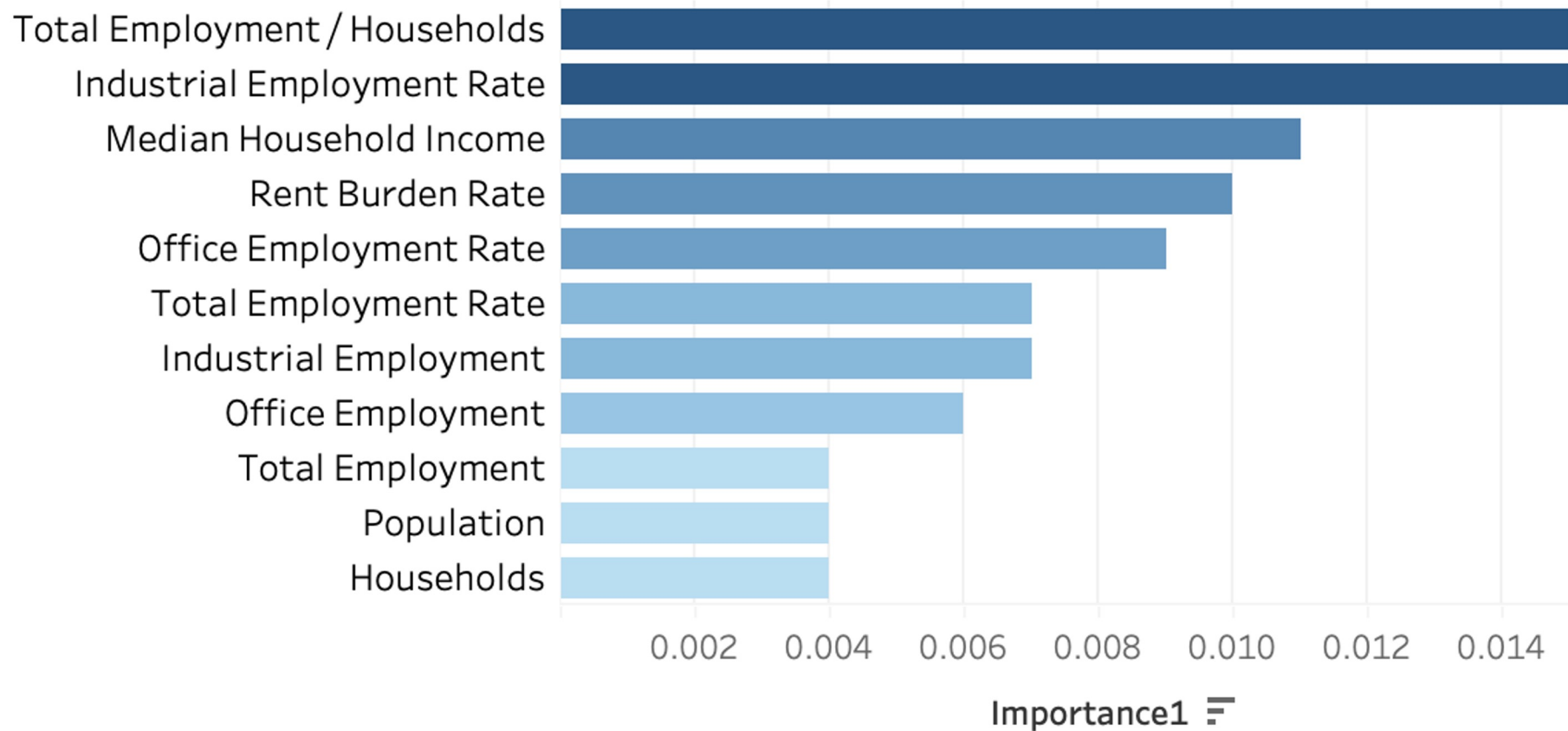
92.59 % of growth explained by the model
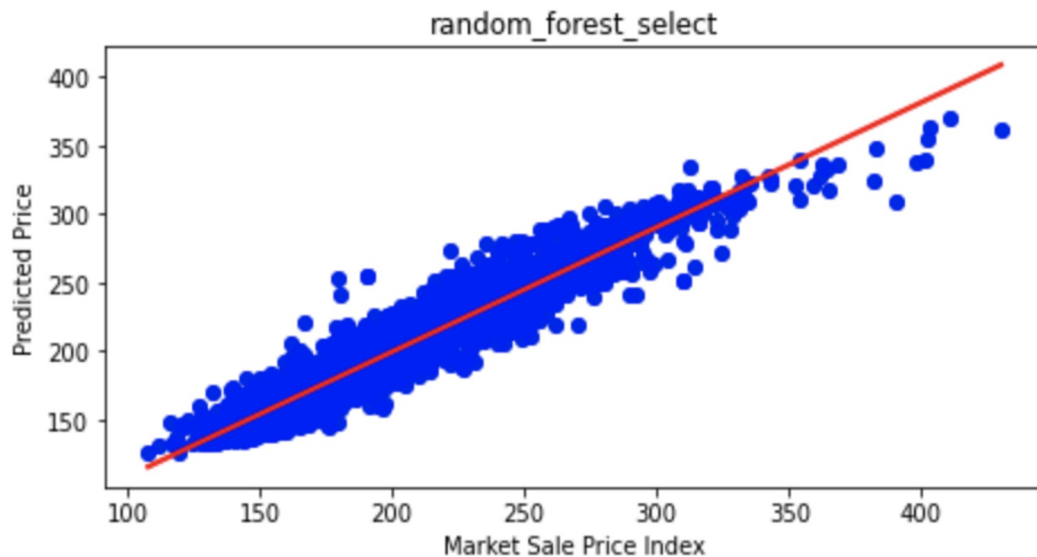
Is it a good model?

NO

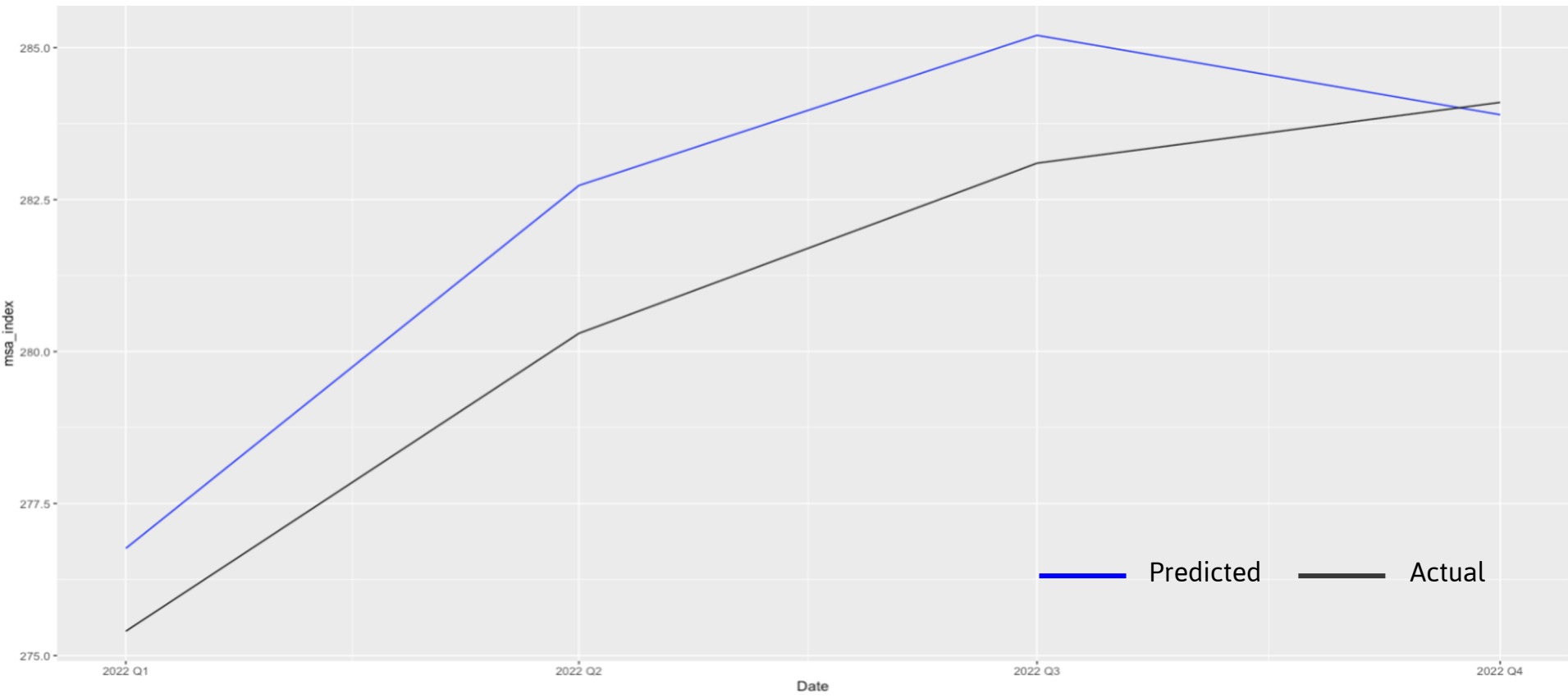
random_forest_select
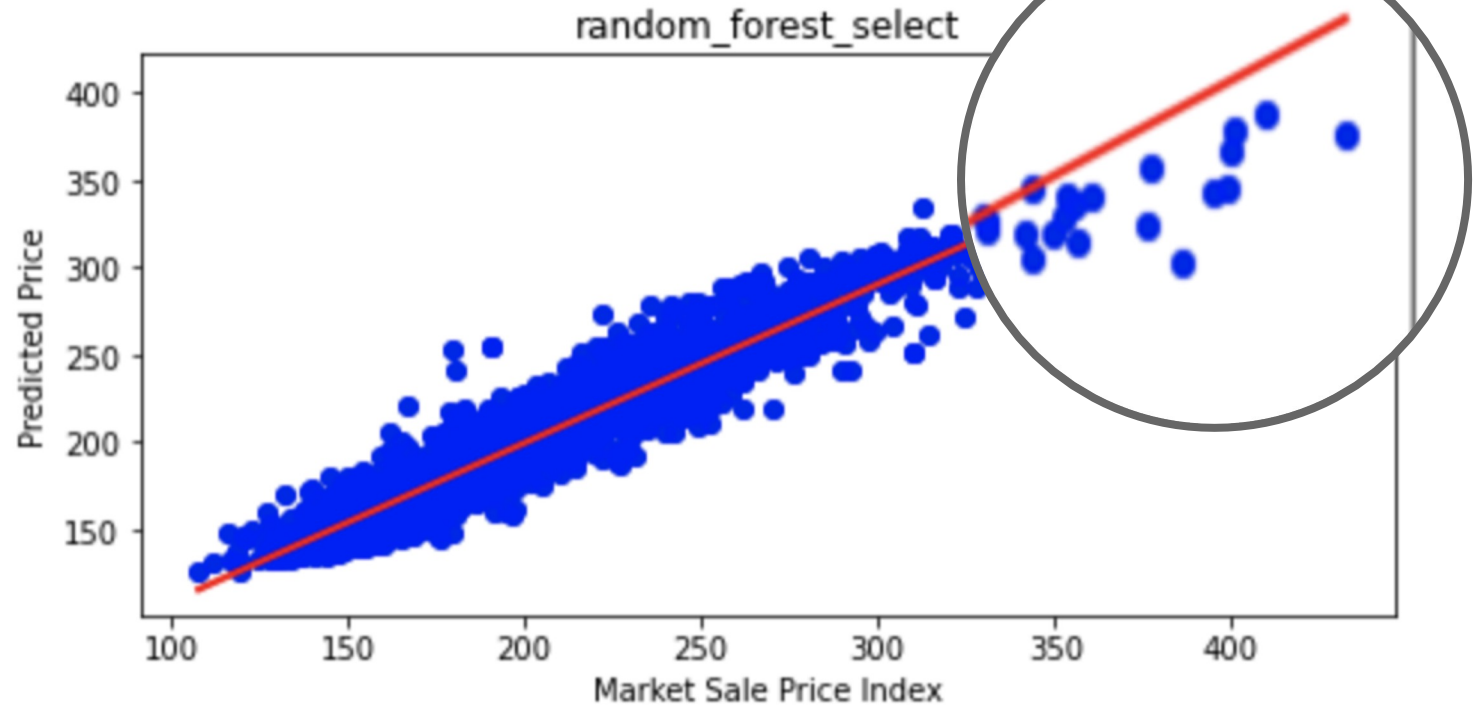
Predict Growth

Dynamic Regression model

ARIMA (MSA_index – National index + Market Cap Rate + Total Employment/ Households + Industrial Employment Rate + Median Household Income + Rent Burden Rate + Office Employment Rate + Total Employment Rate + Industrial Employment + Office Employment + Total Employment + Households + Population)
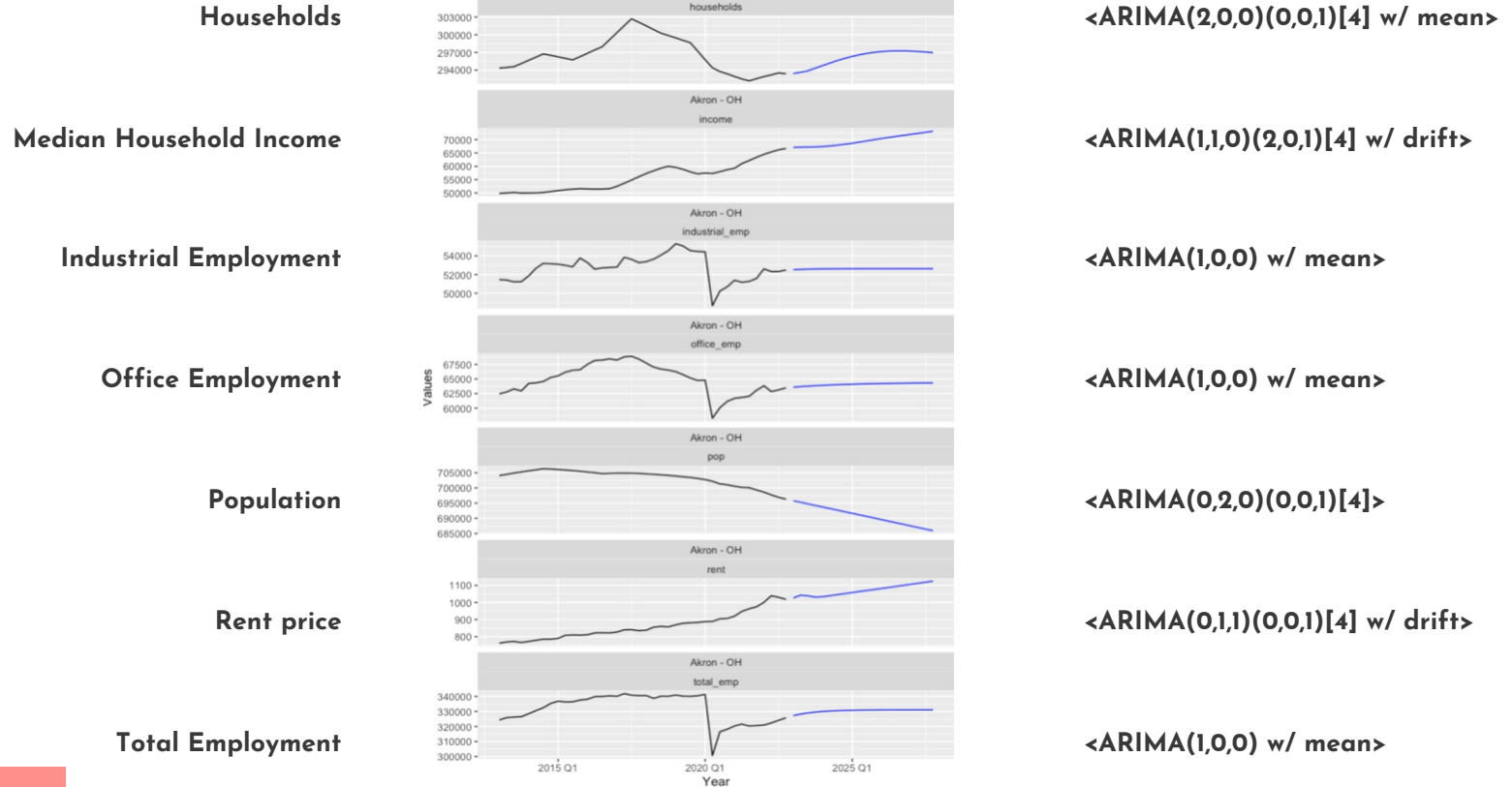
Use the Dynamic Regression model to perform analysis for a single MSA (Abilene - TX)
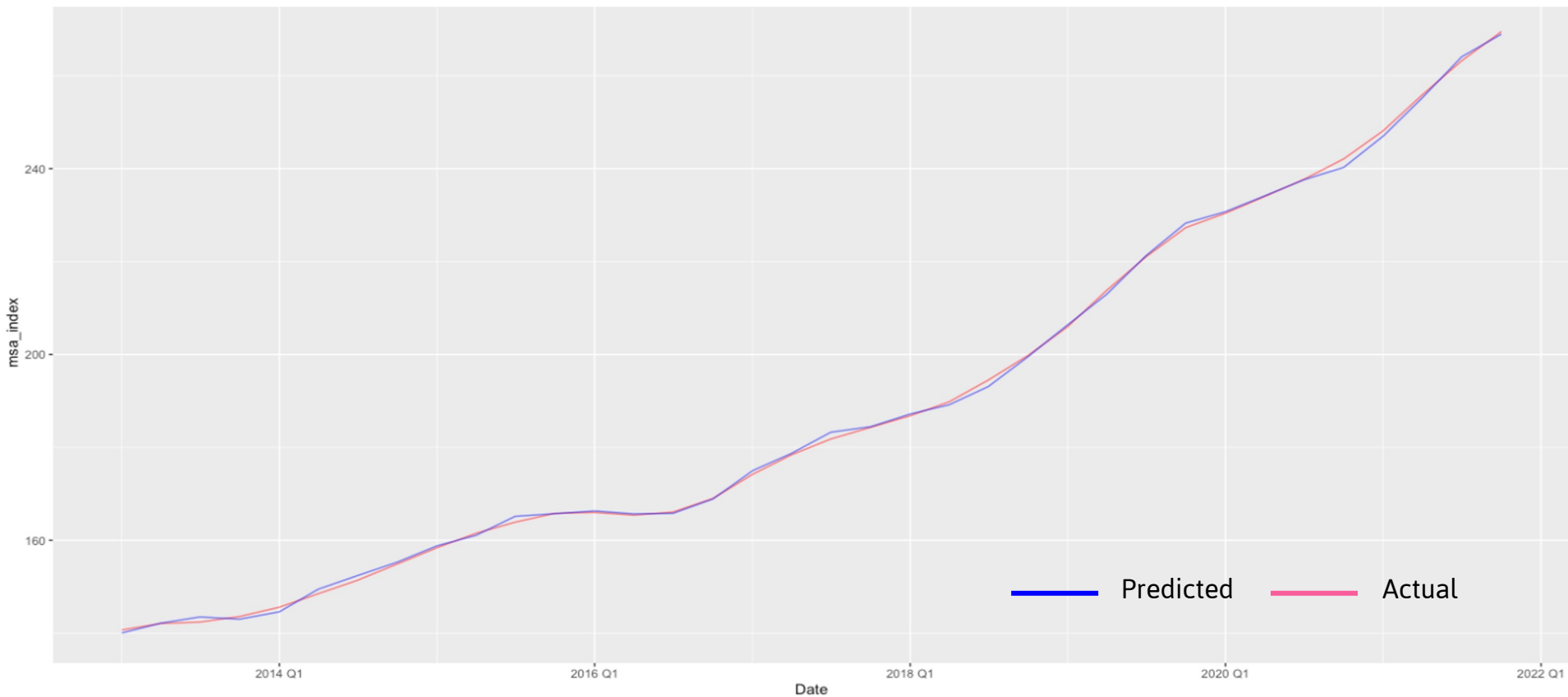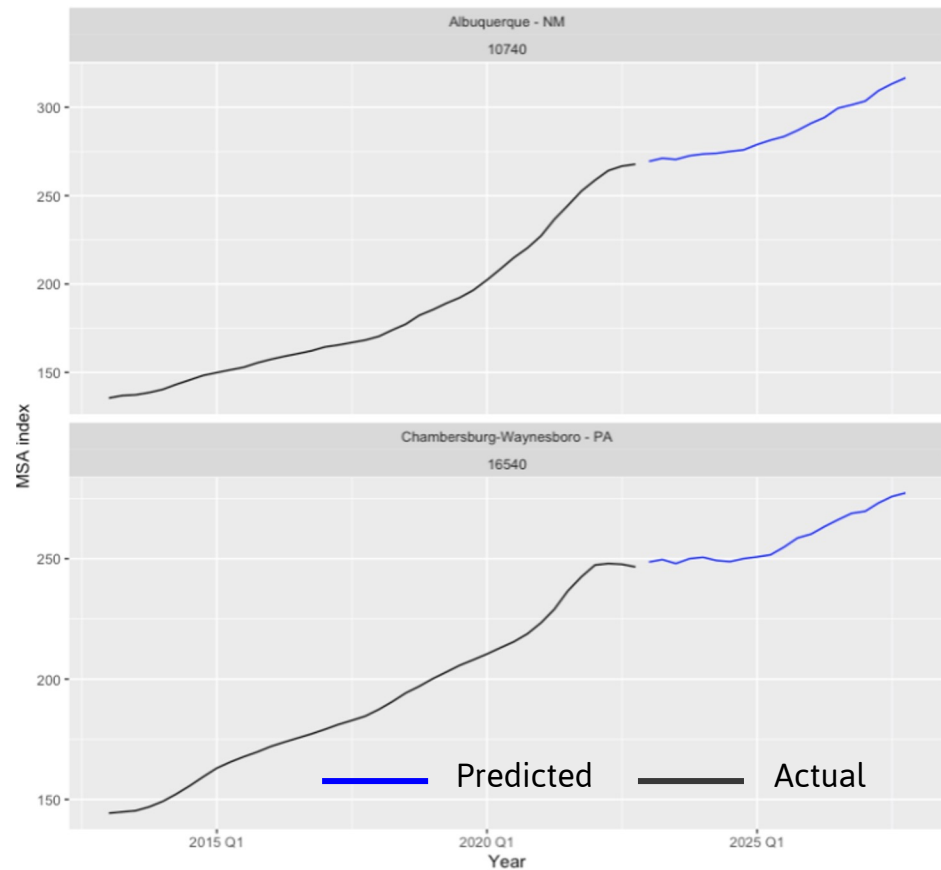
Forecast index for 2022 for a single MSA
(Abilene - TX)

Forecast important variables for all 390 MSAs

Households — <ARIMA(2,0,0)(0,0,1)[4] w/ mean>

Median Household Income — <ARIMA(1,1,0)(2,0,1)[4] w/ drift>

Industrial Employment — <ARIMA(1,0,0) w/ mean>

Office Employment — <ARIMA(1,0,0) w/ mean>

Population — <ARIMA(0,2,0)(0,0,1)[4]>

Rent price — <ARIMA(0,1,1)(0,0,1)[4] w/ drift>

Total Employment — <ARIMA(1,0,0) w/ mean>

Use Dynamic Regression model to predict the index for all 390 MSAs
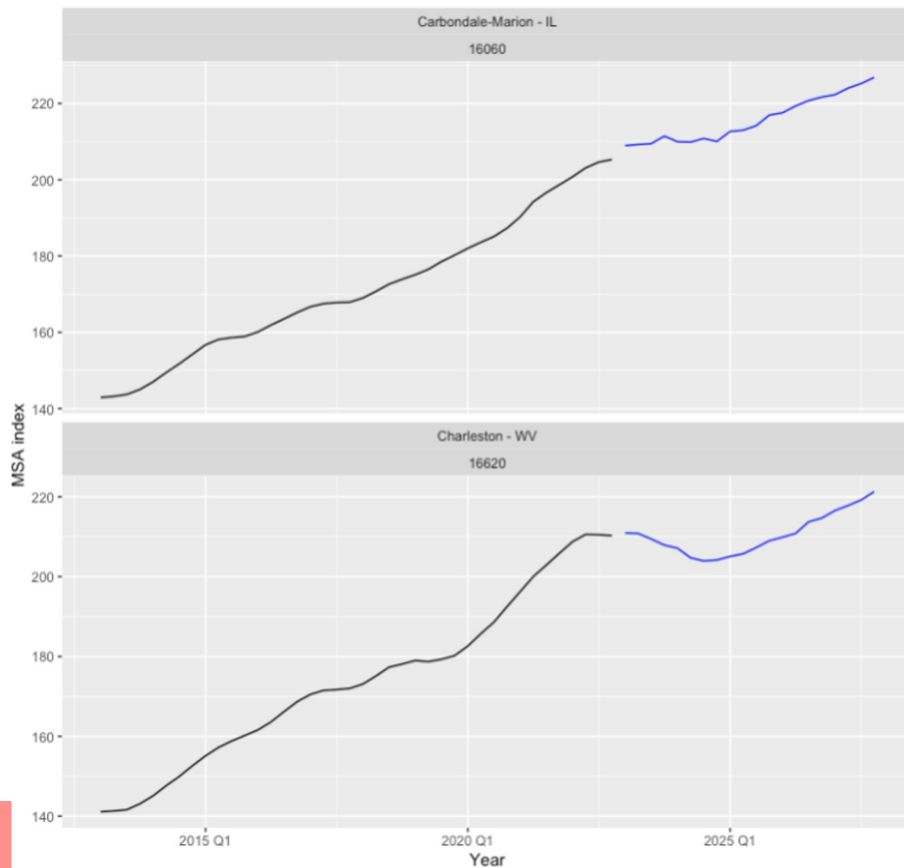
MSA index growth rate. 5 y forecast

-0.0219   0.6665

avanath+
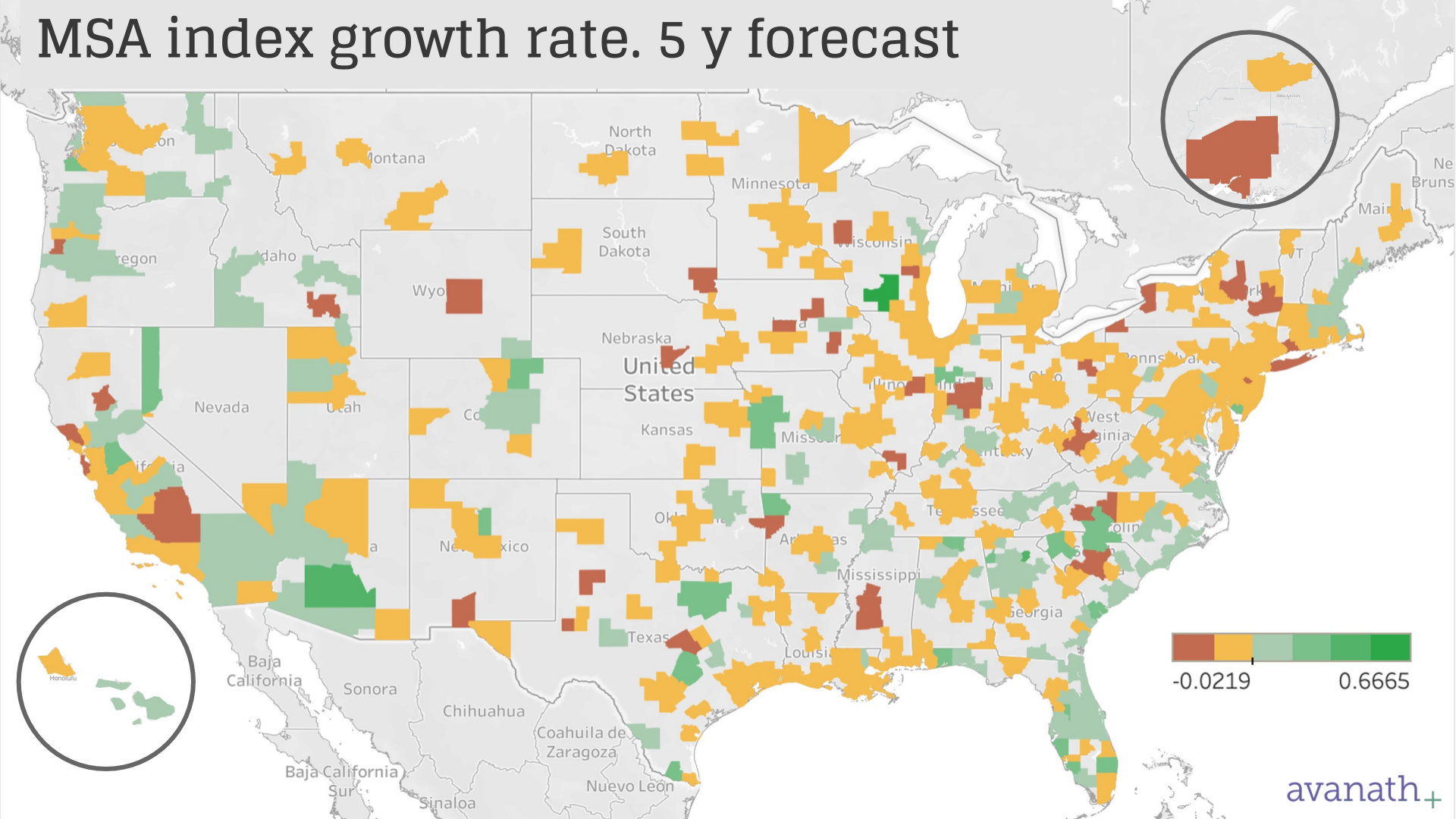
Top MSAs. 5 Year Forecast

Top 5 MSAs →

Geo ⯆
- Madison - WI
- Phoenix - AZ
- Gainesville - GA
- Charlotte - NC
- Lafayette-West Lafayette - IN

0.0 0.1 0.2 0.3 0.4 0.5 0.6

Bottom 5 MSAs →

- Canton - OH
- New Haven - CT
- San Francisco - CA
- Odessa - TX
- Lubbock - TX

0.0 0.1 0.2 0.3 0.4 0.5 0.6