

Housing Price Predictions

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Agenda

01

Background

02

Data Collection

03

**Data Joining +
Cleaning**

04

Models

05

**Data
Visualization**



Background + Context

- > Many factors impact housing prices:**
 - Demographic factors**
 - Economic Cycles**
 - Interest Rates**
 - Government Policies**
- > How can we use specific indicators to predict housing prices in Washington?**

Data Collection

**Zillow Home Value
Index (ZHVI)**

01.

**30-Year Fixed
Mortgage Rates**

03.

**Federal Funds
Rate**

05.

02.

GDP (WA)

04.

CPI

06.

**Population
Growth (WA)**



Zillow Home Value Index

- > Measures typical home value**
- > Focuses on market changes**
- > Draws on Zestimates of 100 million U.S. homes**
 - Models home value based on aspects of homes**
- > Able to observe statewide pricing**

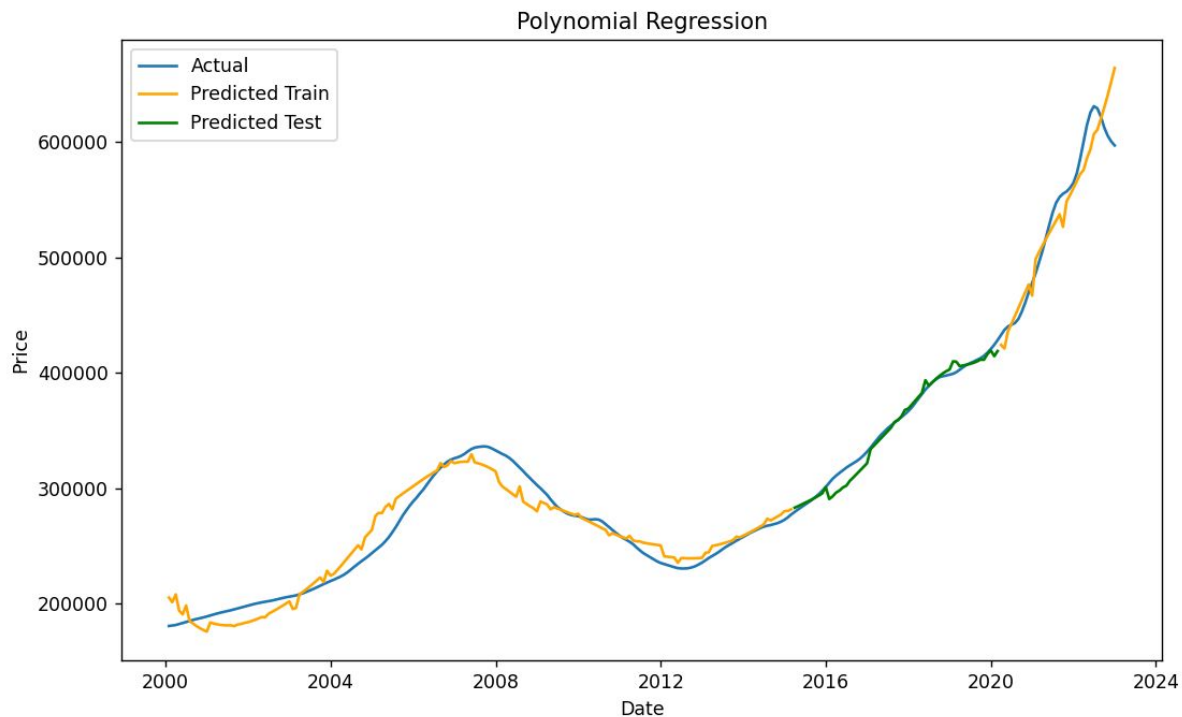


Data Joining + Cleaning

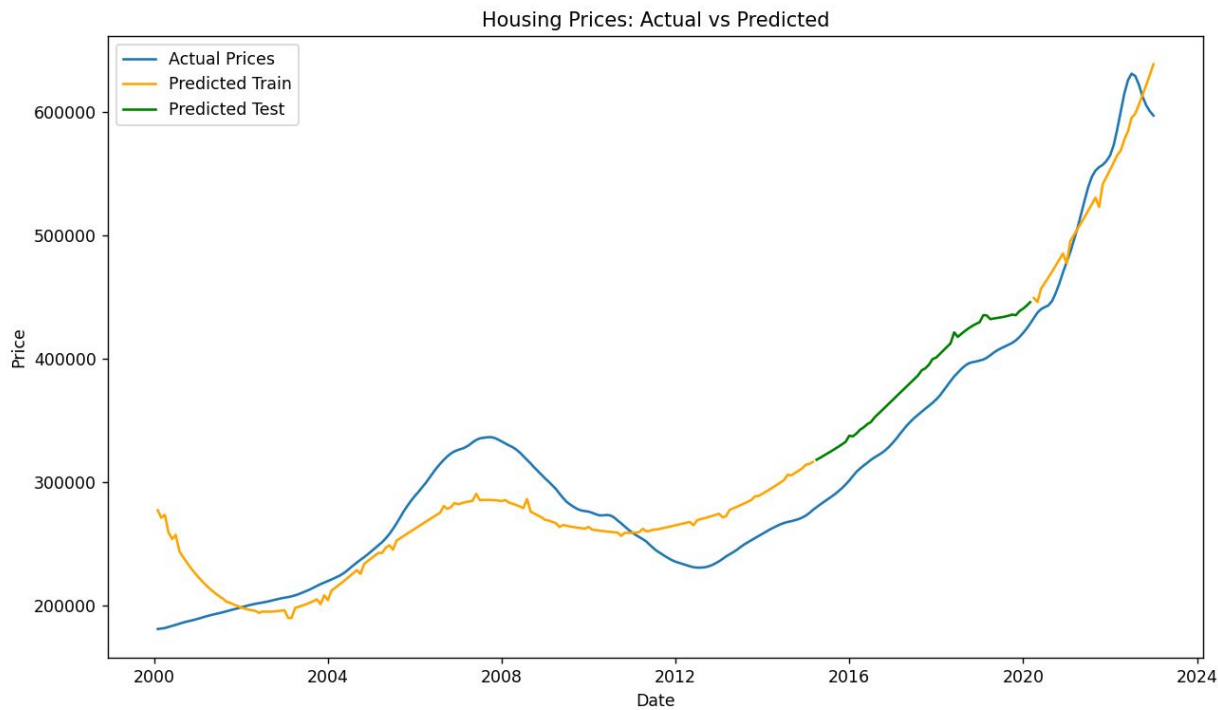
- > **Date frequencies**
 - All data sets published data at different intervals
- > **Interpolation: Spline**
 - More consistent than ffill/bfill
- > **Joining on Dates**
- > **Removing null & impossible values, calculated columns**



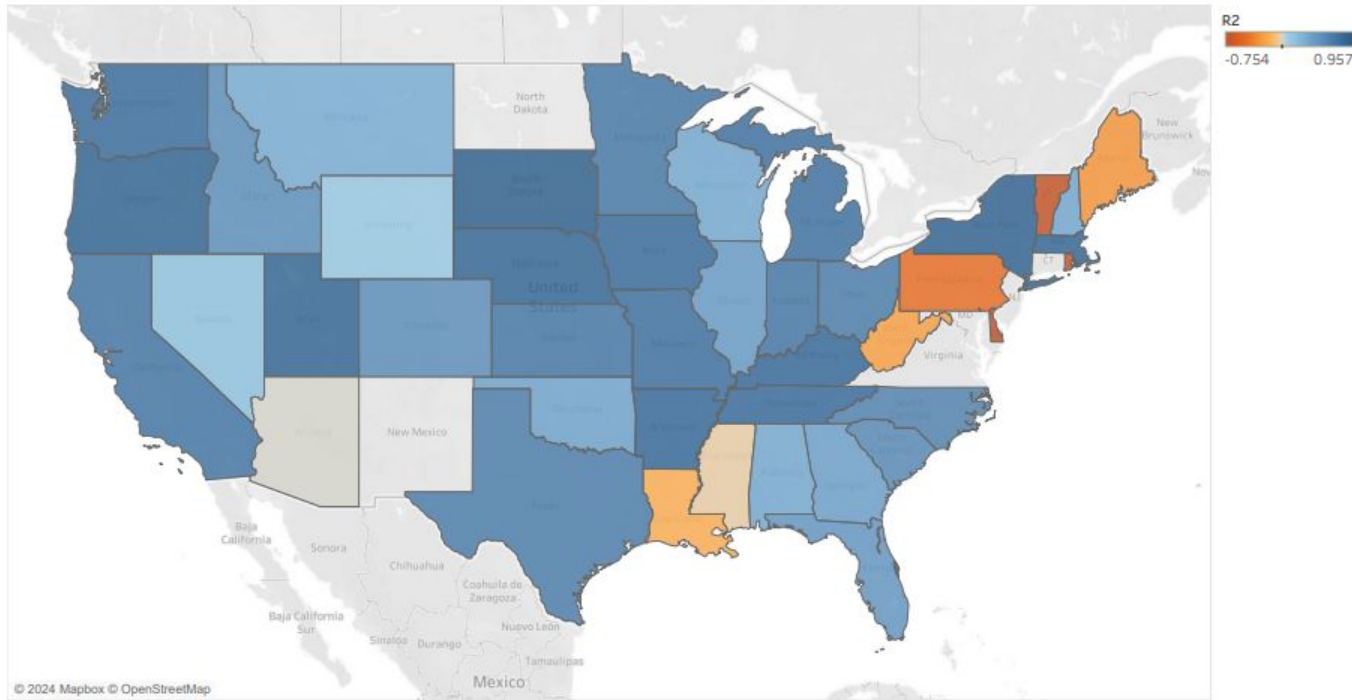
Polynomial Regression Model



Lasso Regression Model



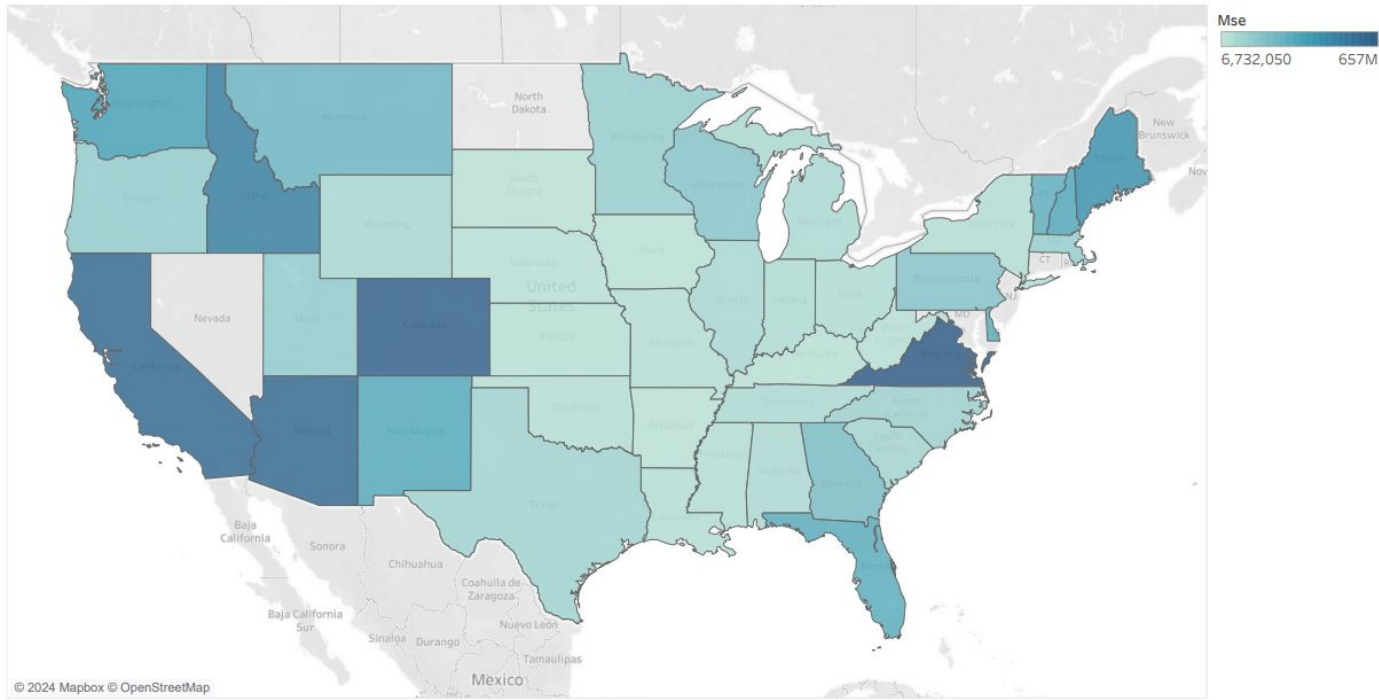
How our model compares to other states: R2



Map based on Longitude (generated) and Latitude (generated). Color shows sum of R2. Details are shown for State.



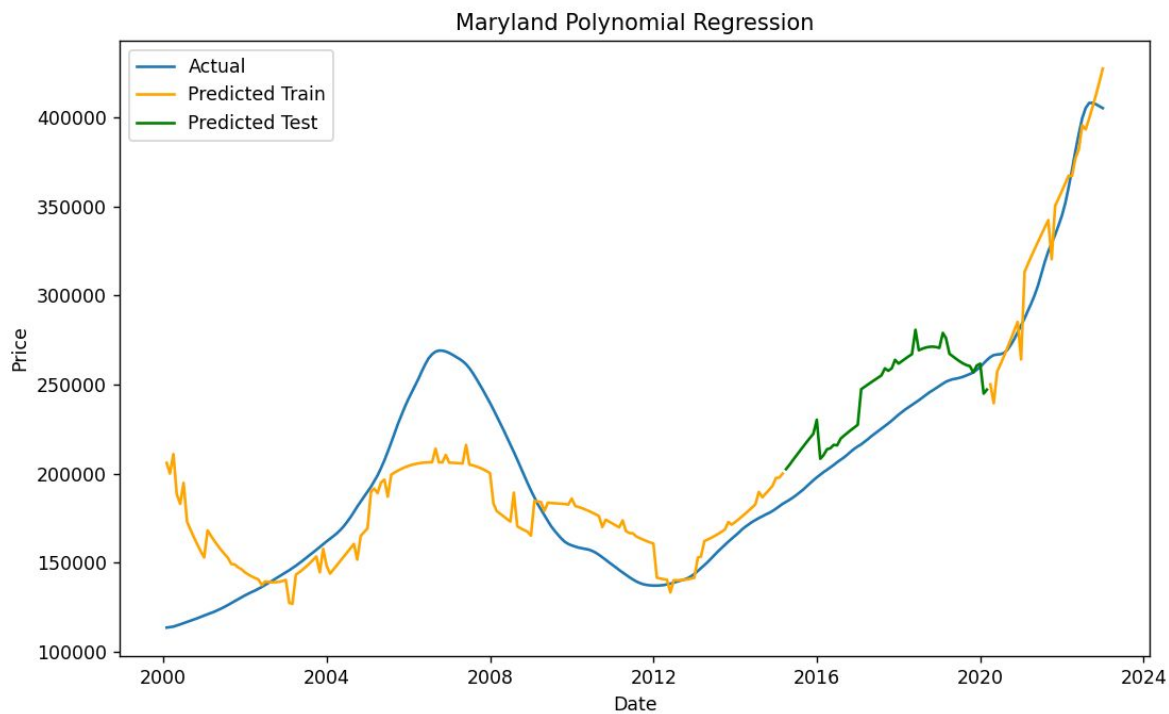
How our model compares to other states: MSE



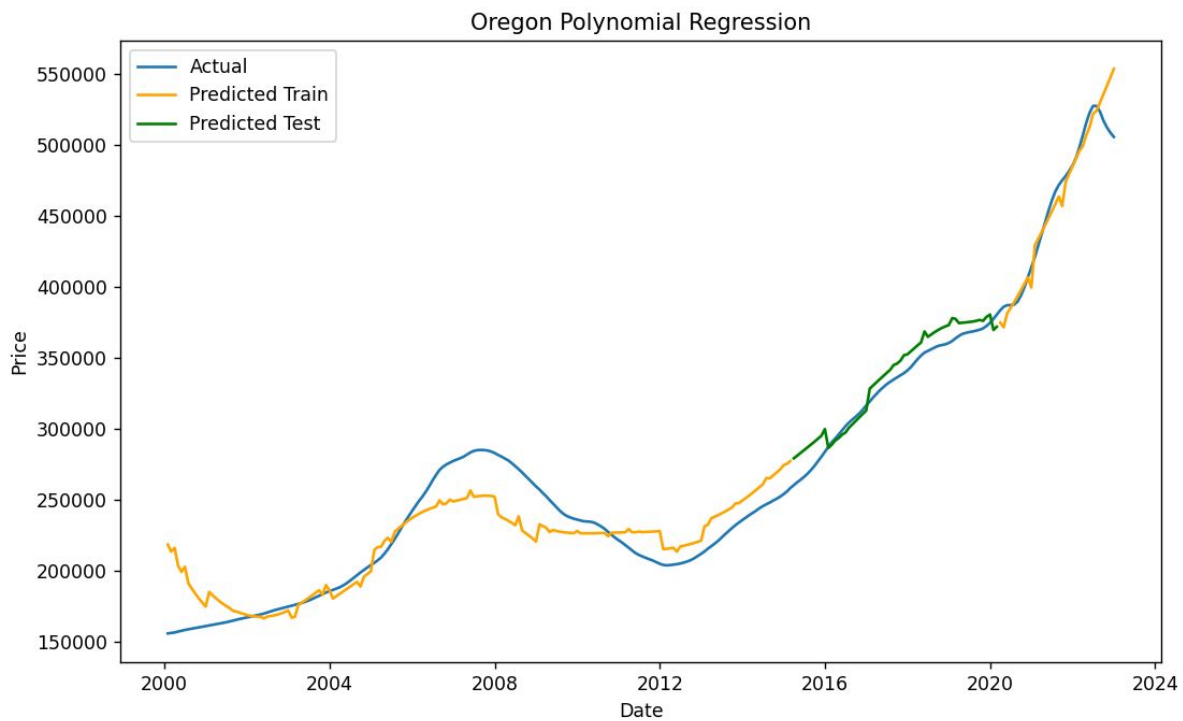
Map based on Longitude (generated) and Latitude (generated). Color shows sum of Mse. Details are shown for State.



Maryland



Oregon



Takeaways

- > Washington R-squared:**
 - Polynomial Regression: 0.832
 - Lasso: 0.505
- > Significance of various variables**
- > Overfitting our data**
 - LASSO vs Polynomial Regression
- > Effectiveness of our model on other states**

Thank you!

