

# Modeling Voter Turnout in Local Elections With Housing Data

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# Odd Year Elections

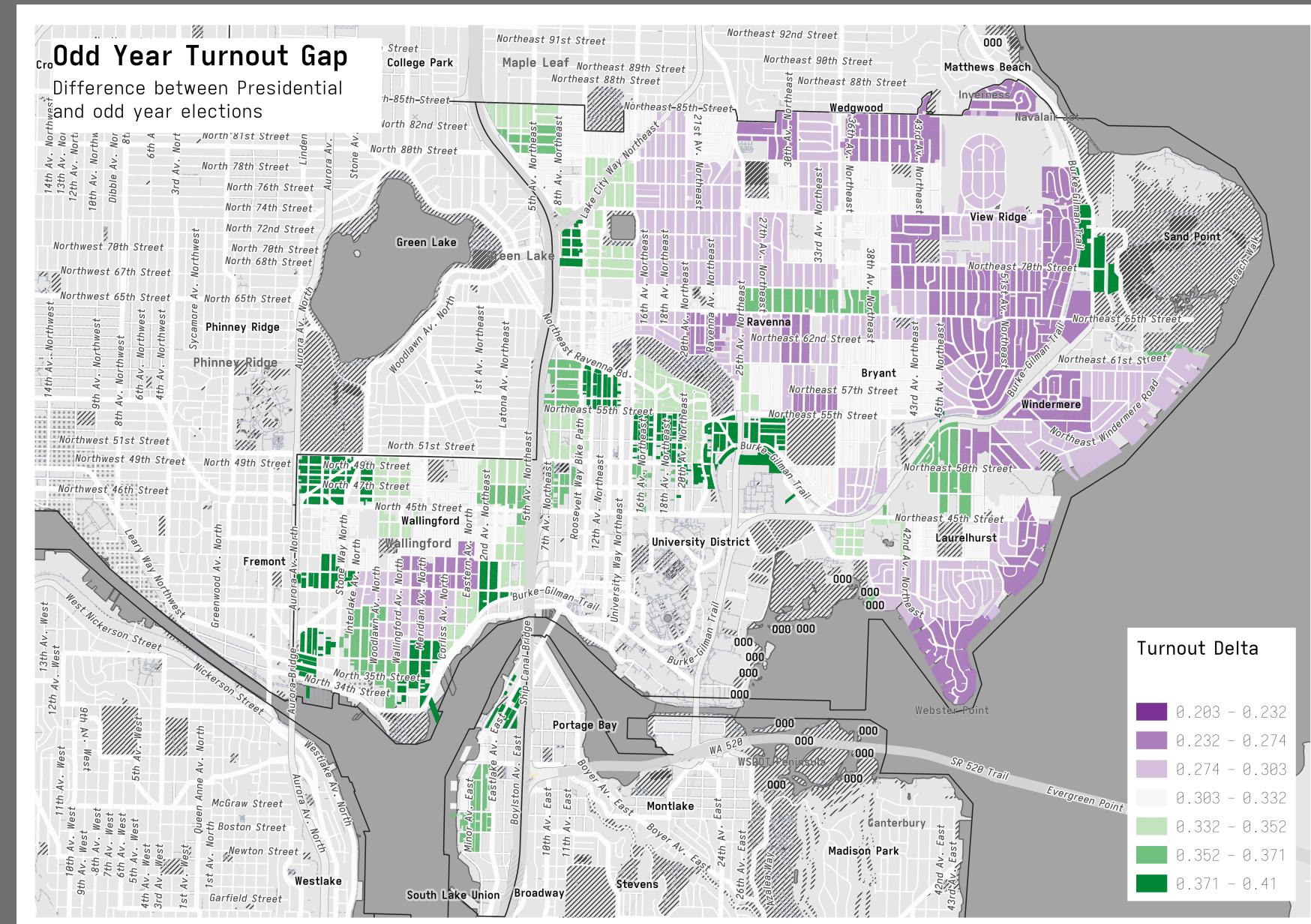
In the State of Washington, elections for local office are held in odd-numbered years.

This results in an electorate for local offices that is different than the one for congressional seats and president.

# An Example

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## Shaun Scott, candidate for City Council in Seattle Council District 4



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**Shaun Scott, candidate for City Council in Seattle Council District 4**

**Lost by more than 4 points in an odd year**

**If precincts had voted with the same preference (conservative assumption) at the rate of the 2020, that margin shrinks to less than a percent**

2019 Seattle City Council District 4		
	Actual	Presidential Turnout
<b>Shaun Scott</b>	15568	24548
	45.84%	47.33%
<b>Alex Pedersen</b>	16954	24982
	49.92%	48.16%
<b>Votes Cast</b>	33962	51871
<b>Registered Voters</b>	61367	61367

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(And either way if you want to win local elections you need to be prepared for the electorate that will be participating.)

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- Using housing data to build a durable estimator of hypothetical voter turnout scenarios based on previous turnout patterns.
- Of interest to campaigns, election administrators, researchers, and nonprofits
- The dataset is extensive and has many potential other applications

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- Using housing data to build a durable estimator of hypothetical voter turnout scenarios based on historical turnout patterns and future landscapes.
- Of interest to campaigns, election administrators, researchers, and nonprofits
- The dataset is extensive and has many potential other applications

# The Data

# King County Assessor

*A record for every residence in the county (~989,000)  
Seattle and surrounding area; relatively diverse  
demographically and in terms of housing across the county*

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*A record for every residence in the county (~989,000)*

# The Voter File

*A record for every voter in the county (~1.4 million)*

# The Targets

- Registered Voters Per Parcel

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# The Models

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- RandomForestRegressor

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- Keras Neural Network

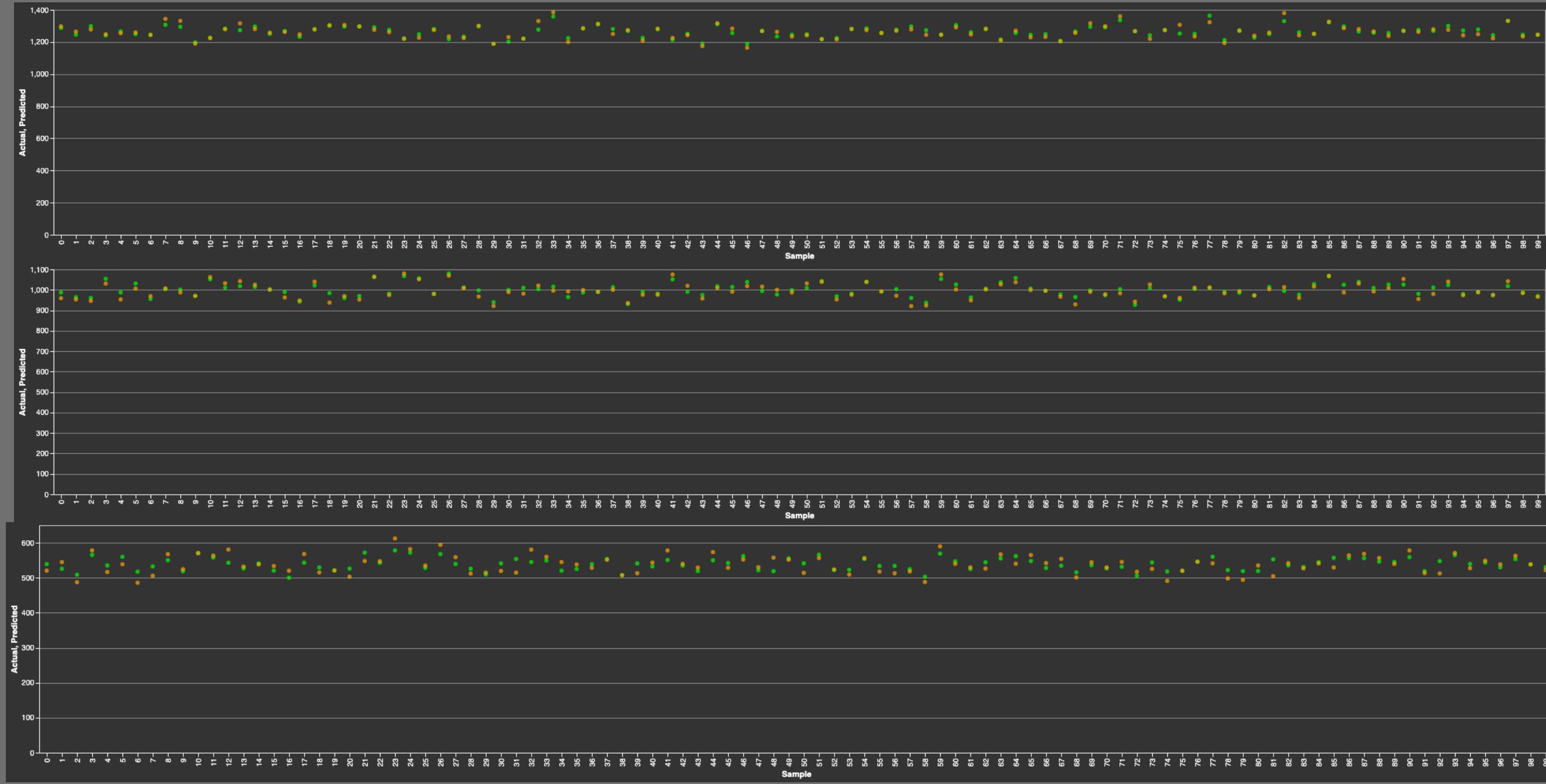
# Random Forest

- RandomizedSearchCV
- Then trained on full dataset

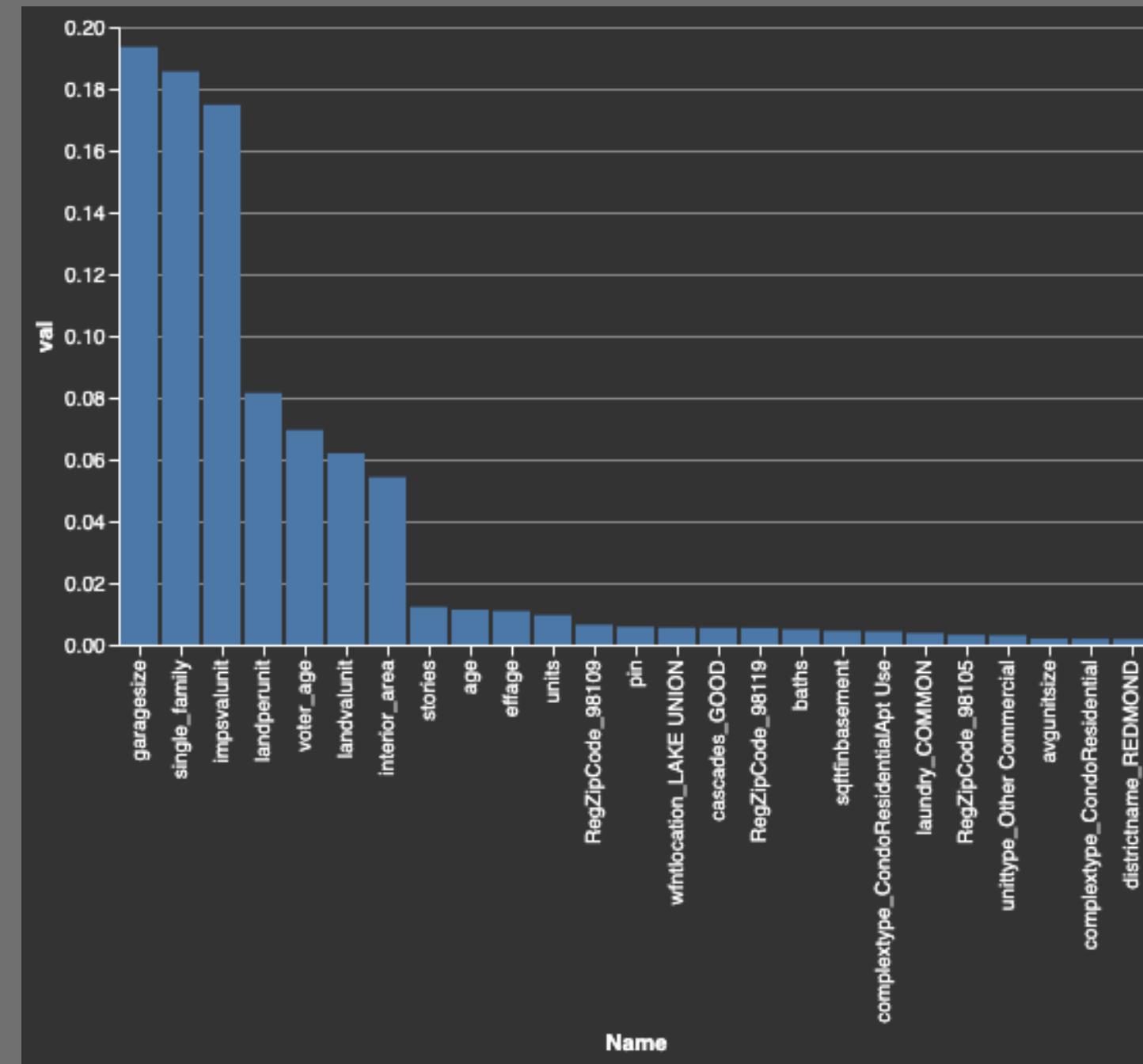
# Neural Regressor

- Early stopping
- Lots of trial and error

# Aggregate Accuracy



# Feature Importances



# Evaluation

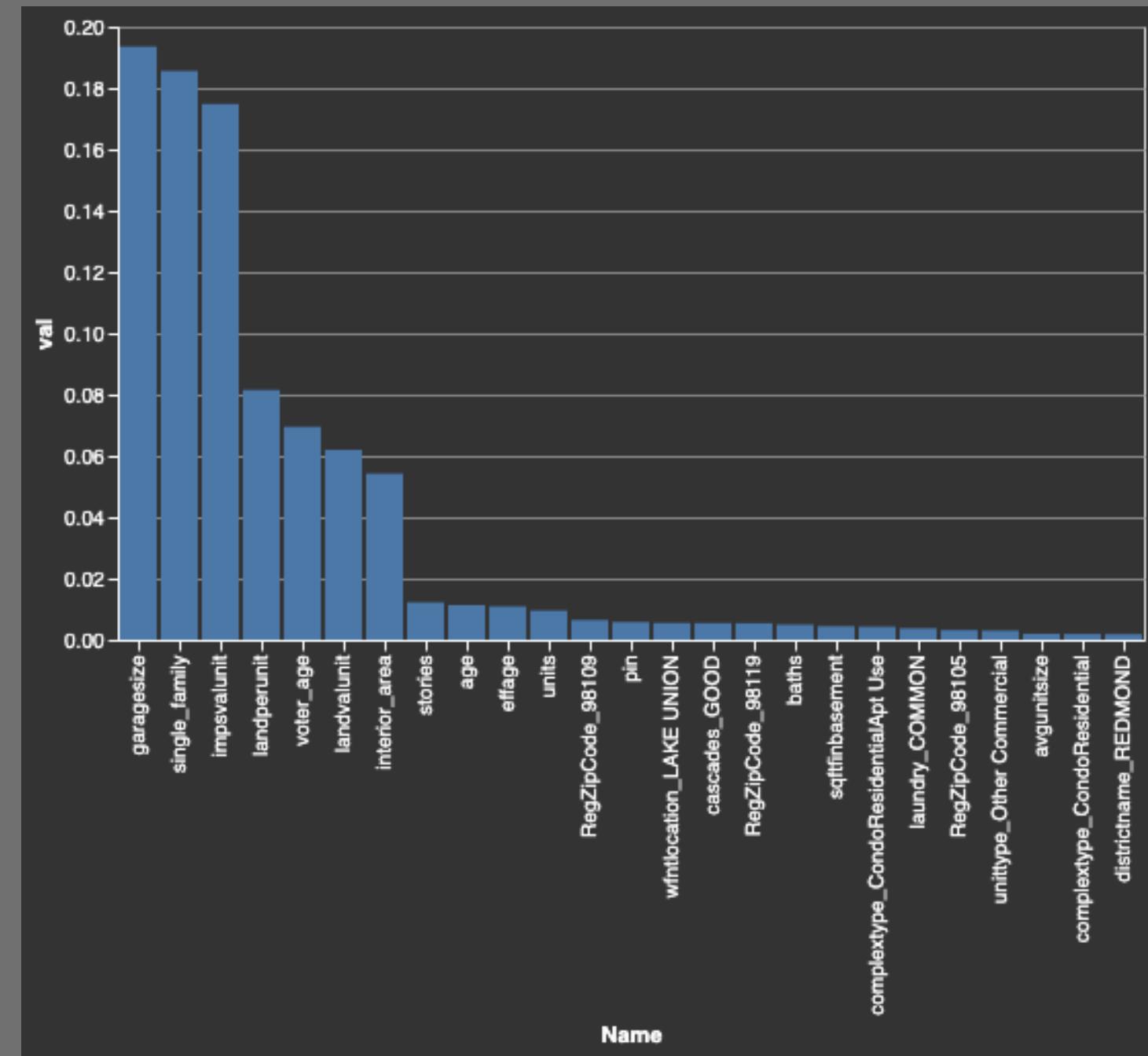
# Evaluation

Goal:

# Evaluation

Goal: Compare model performance on different forms  
and sizes of aggregation

# Evaluation



# What's Next

- Error analysis
- New Features (e.g. gated communities)
- Analyzing and modeling candidate preference, including measuring for when such a preference is expressed in patterns related to housing