

Forecasting the 2022 housing market in the Washington DC metro area

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Business Problem

Current Housing Market:

- Highest housing sales in 2021
- Supply shortage
- Rising price in mid-sized towns

Targeting Stakeholder:

- Real estate developer in Washington DC



Overview

Model 1

Housing price prediction

Housing price forecast for
2022

Model 2

Up-and-coming neighborhood prediction

Business revenue changes
for small merchants.

Google people's mobility
index in retail, recreational
stores.

Recommendation

**Recommending the top
10 zip codes for real
estate development in
2022**

Data

- Housing Price Data ([Realtor.com](#)) (July 2016 - December 2021)
- [USPS Change of Address Data](#)
- [Google's Community Mobility Data](#)
- Small Merchants Revenue Data ([Economic Tracker](#))



Housing Price Model

- **VAR Model**

- Housing price
- Number of listings
- Population net inflow

- 191 zip codes

RMSE	32,300
Naïve model RMSE	41,124

Neighborhood Prediction Model

- **SARIMAX**
 - Small merchants revenue changes
 - Google people's mobility in commercial area
- 16 counties

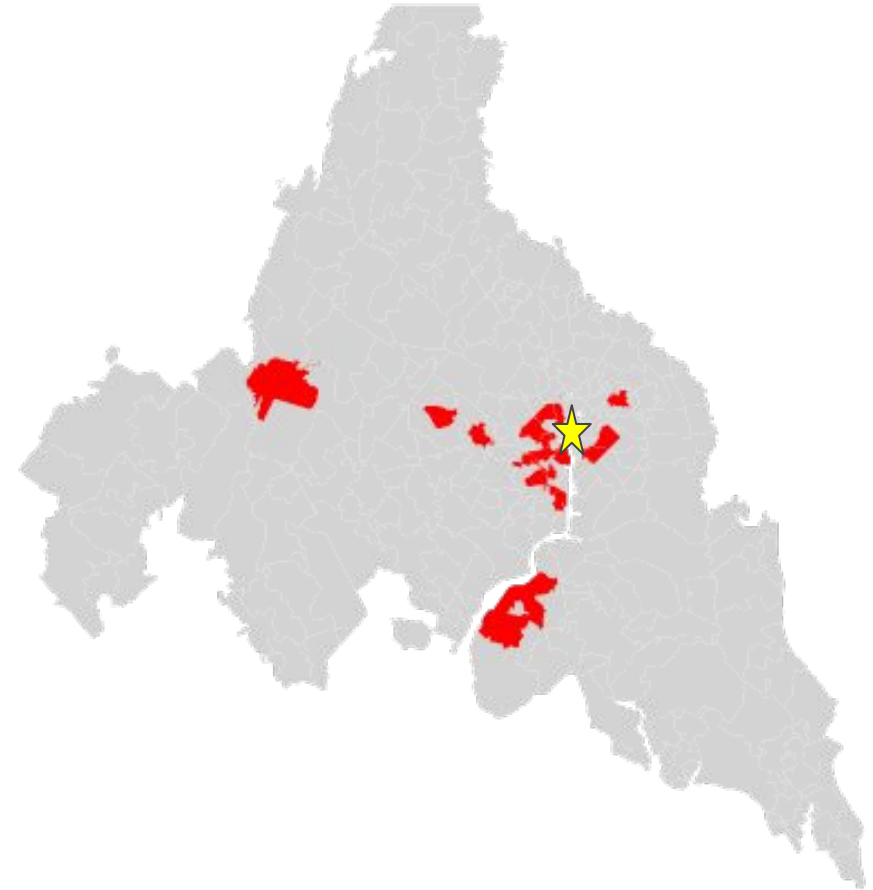
	RMSE	RMSE (Naïve Model)
Marchants Revenue	0.13	0.12
Google Mobility	285	200



Forecasting 2022 Housing Market

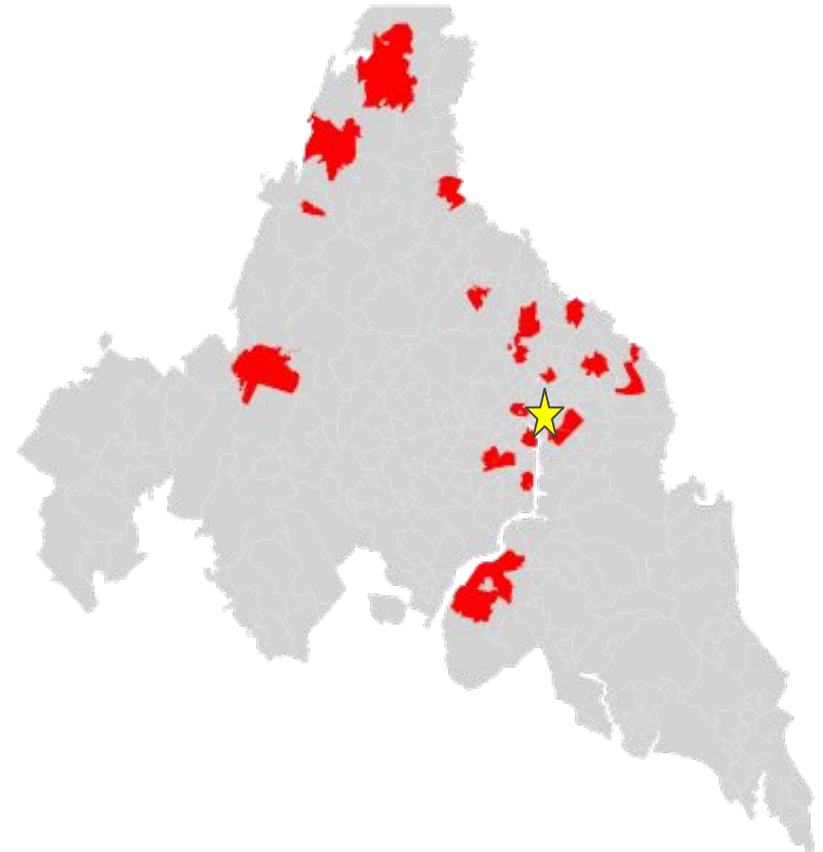
Housing Price Increases in 2019

TOP 20 zip codes in 2019



Housing Price Increases in 2022

TOP 20 zipcode for 2022



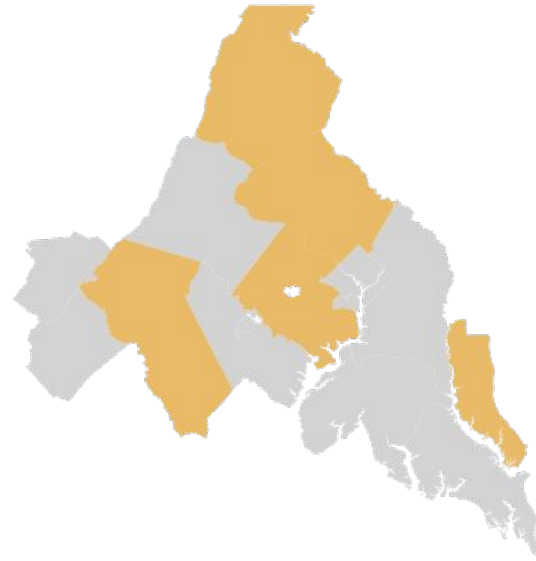
Next up-and-coming neighborhood in 2021

TOP 5 counties: Increase in small merchants' revenues



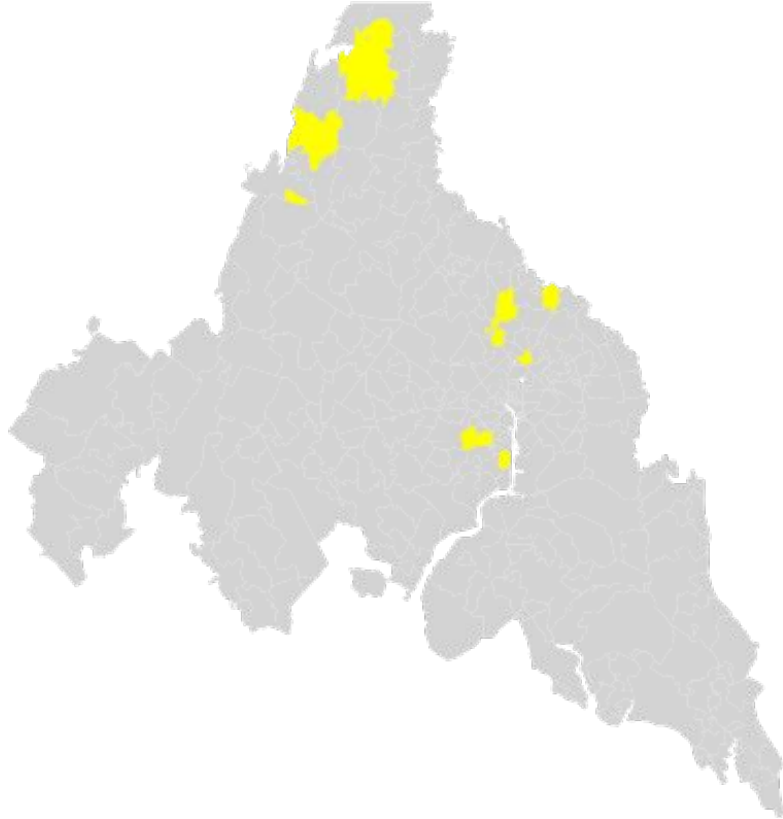
Fairfax
Falls Church
Alexandria
St. Mary's
Frederick

Top 5 counties: Increase in people's mobility in commercial places



Fairfax
Frederick
Fauquier
Calvert
Montgomery

Top 10 recommended zip codes for real estate development in 2022



	Zip Codes	County	States
1	22312	Fairfax	VA
2	22307	Fairfax	VA
3	21788	Frederick	MD
4	21769	Frederick	MD
5	20895	Montgomery	MD
6	20912	Montgomery	MD
7	20906	Montgomery	MD
8	20866	Montgomery	MD
9	22304	Alexandria	VA
10	21716	Frederick	MD

Next step

- Use time-series data with longer coverage
- Expand the model to other metropolitan regions



Questions?

- Contact: [Emiko Naomasa](#)