

EDA Project

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Nico Schreiber

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Client

Client

Zachary Brooks

Request

Invests in historical houses, best neighborhoods, high profits, best timing within a year, should renovate?

Assumption: Mr. Brooks wants to buy cheap houses, renovate them if rewarding and sell them afterwards

Hypotheses

- Big living footage and high graded houses increase the price
- The best timing within a year for selling would be spring or summer
- Renovation would increase the profit a lot

Data

Number of observations	21.420 houses and 21.597 sales
House details	Grade, Building year, coordinates, footage, rooms
Sale details	Sale date, sale price

No missing data, no duplicates, great data quality

Methodology

Requirements

Historical houses

Best neighborhoods

Best timing

Renovation?

High profit



Built before 1949

ZIP codes of great
neighborhoods
(by Chat GPT)

Statistical analysis



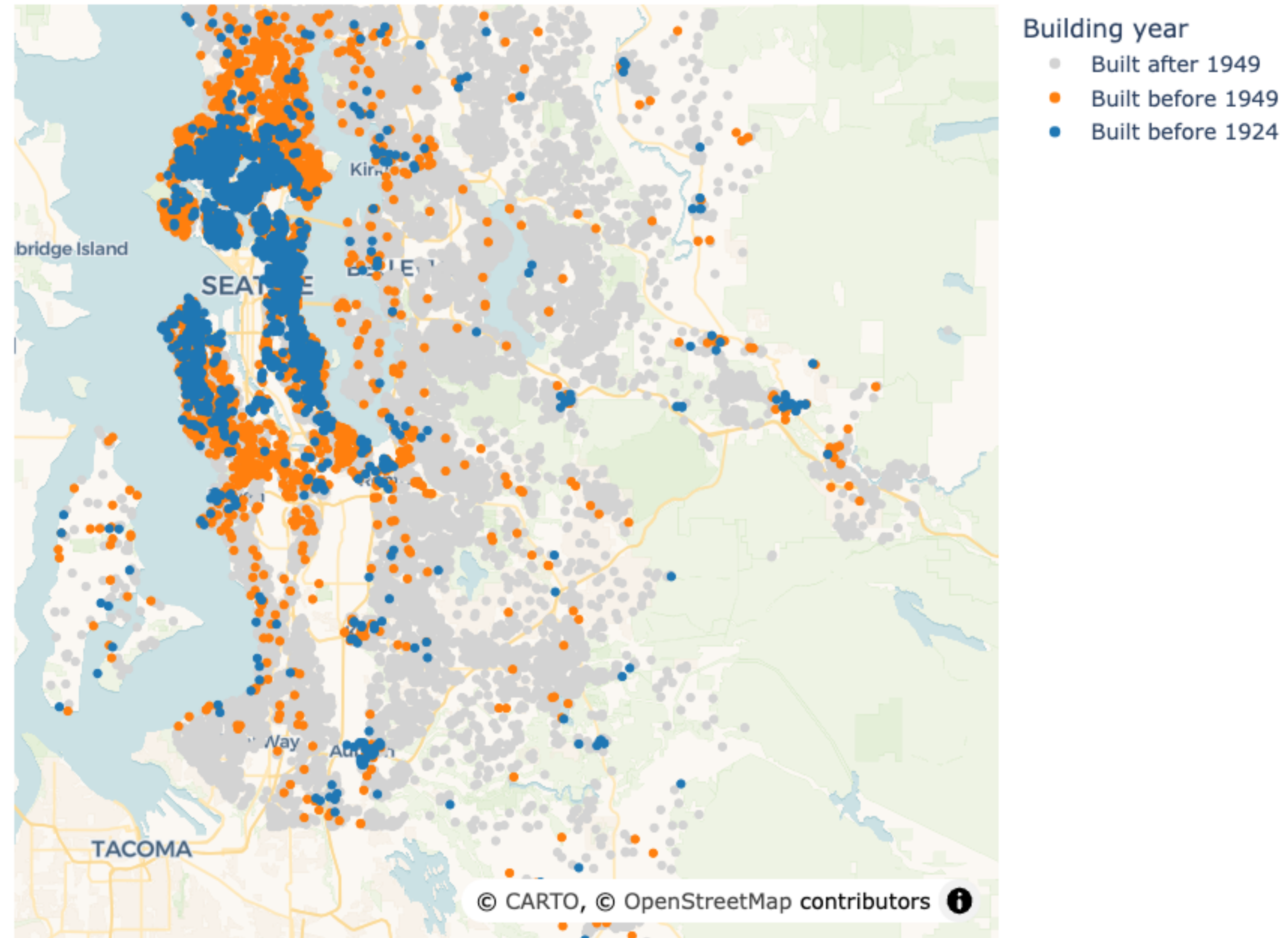
Results



Optimal houses

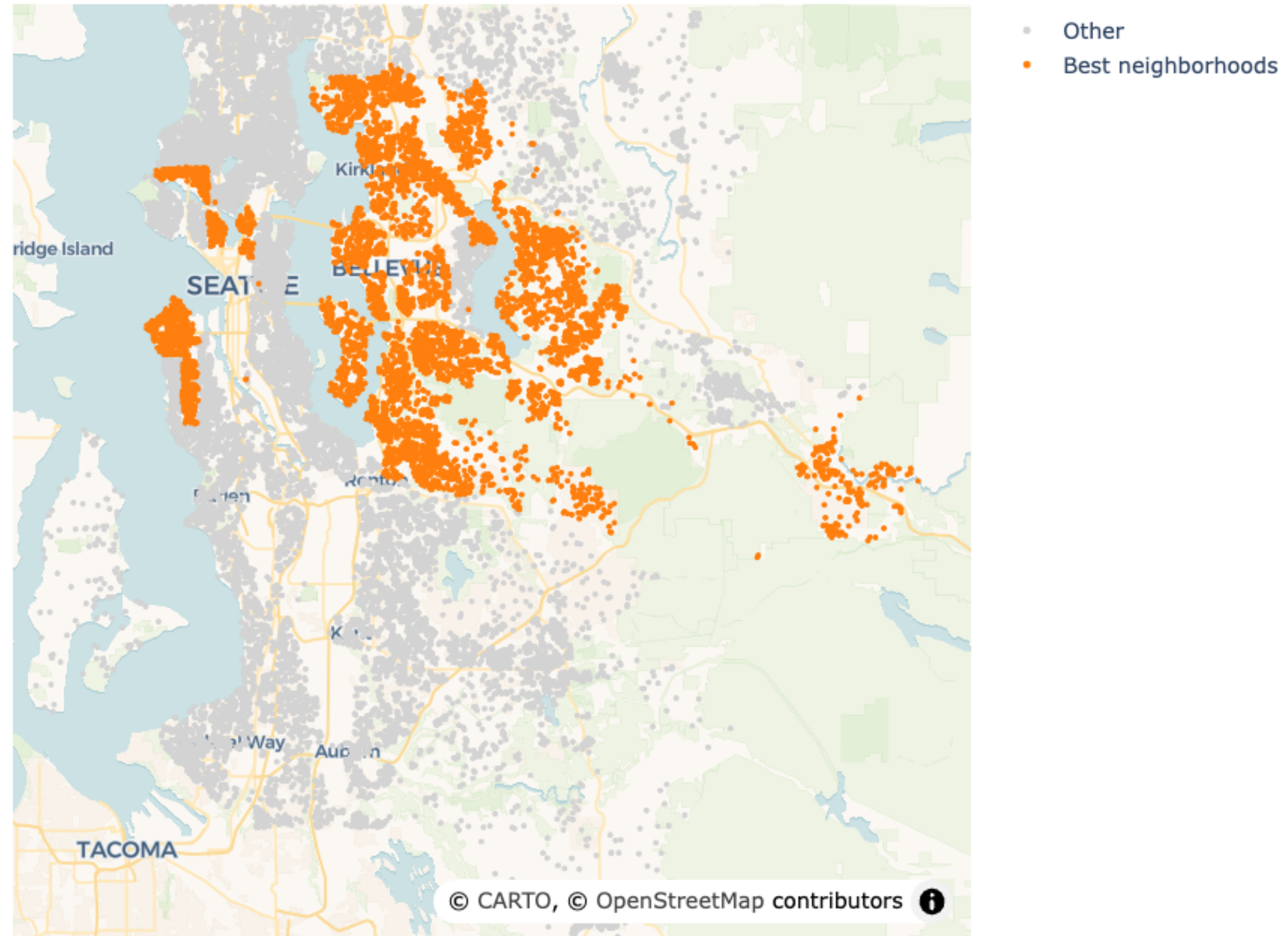
Insights

Historical houses



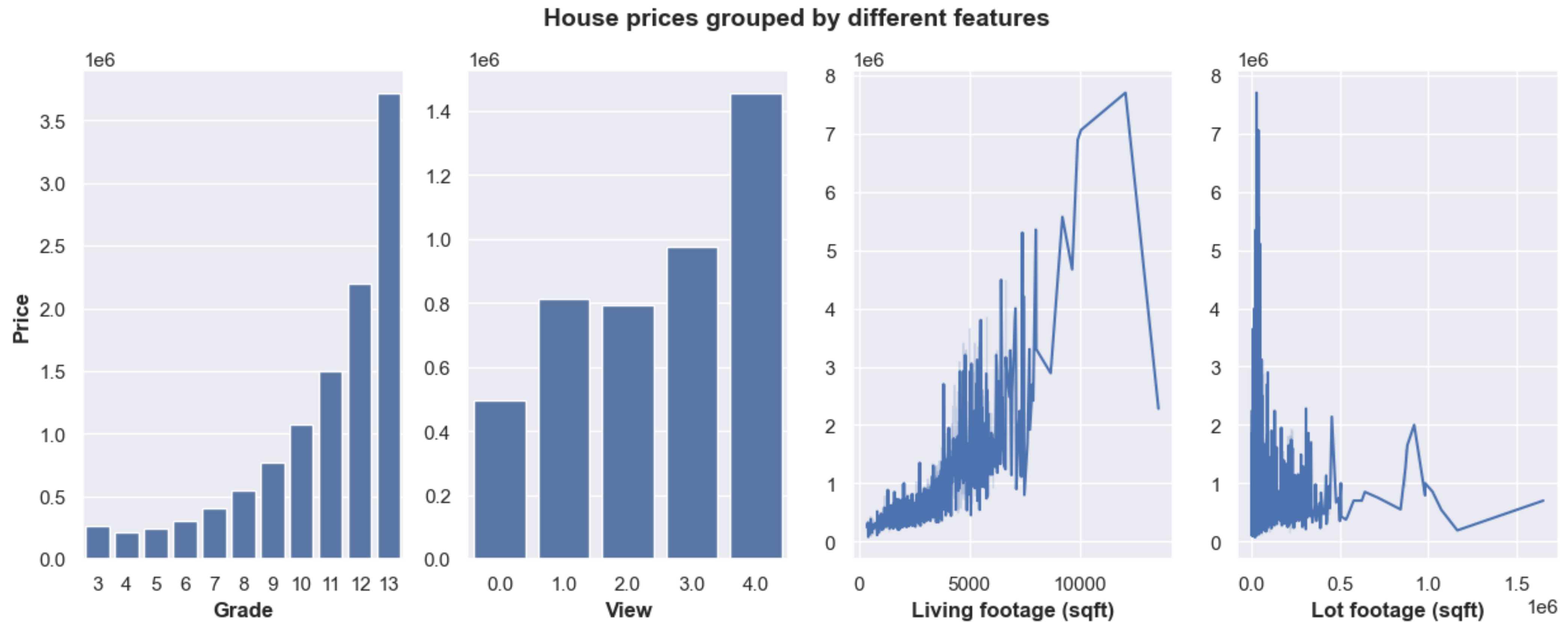
Insights

Best neighborhoods



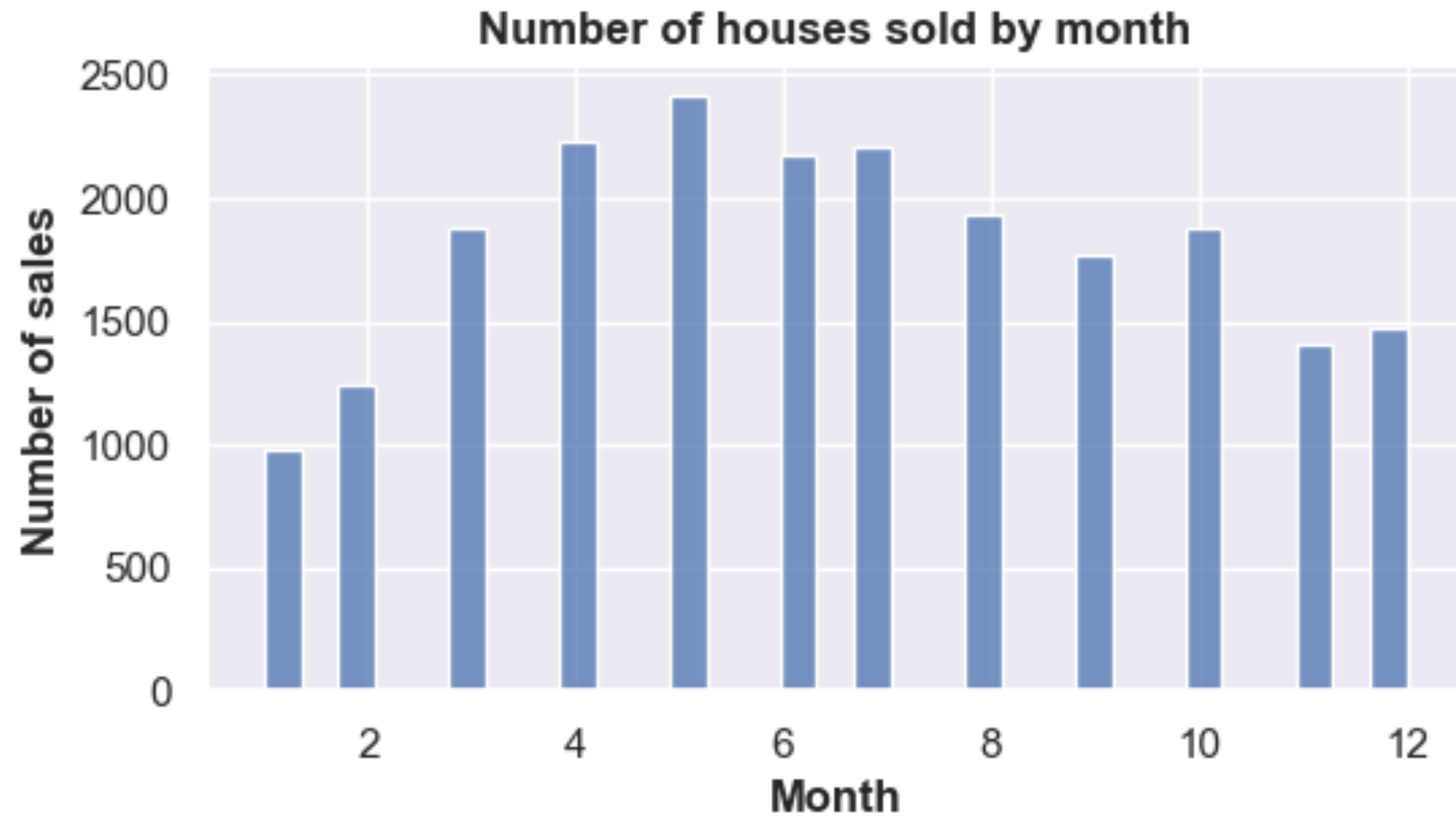
Insights

Impact of properties



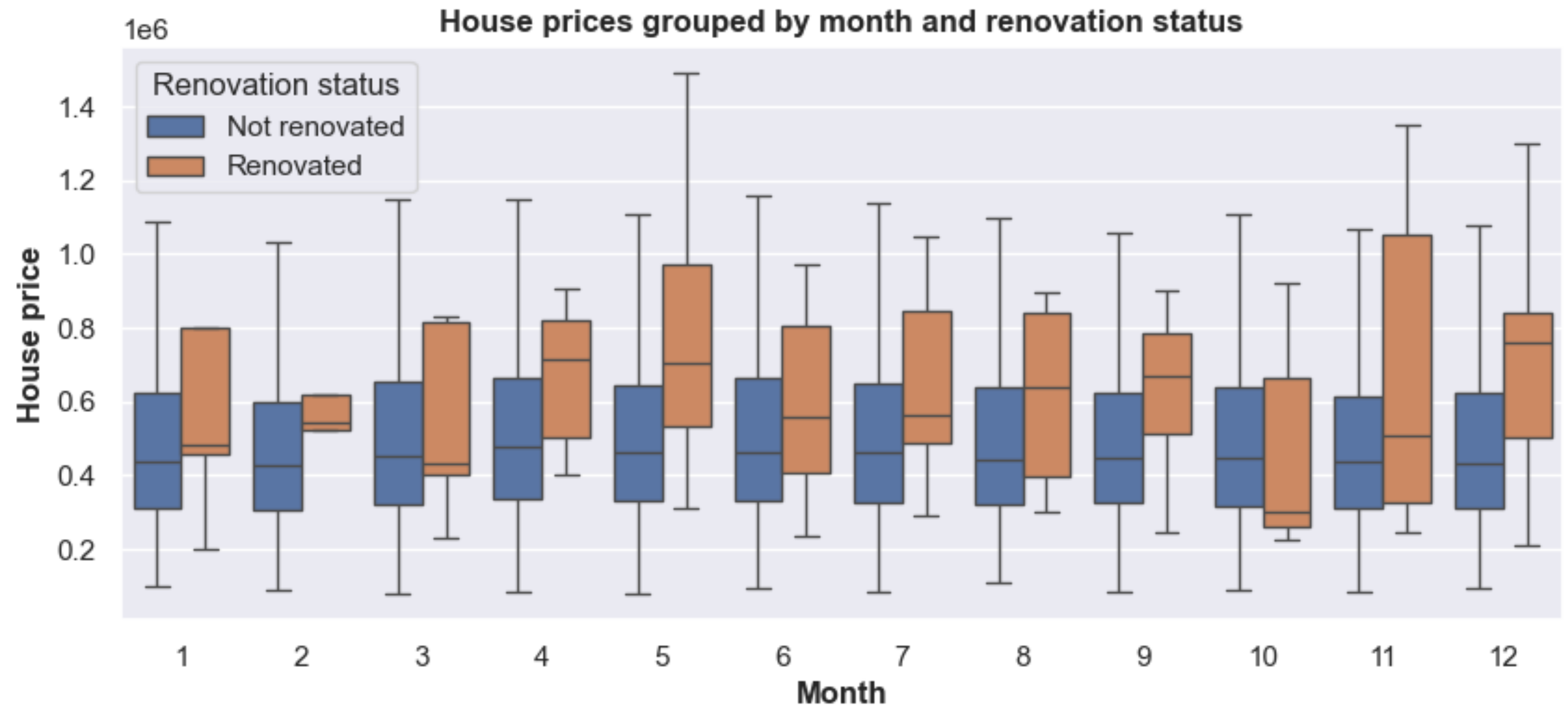
Insights

Sale distribution



Results

Best timing



Result: House prices are slightly higher in spring and summer -> buy in winter, sell in summer

Results

Renovation?

Hypothesis: $\text{mean}(\text{price of renovated houses}) > \text{mean}(\text{price of not renovated houses})$

t-test result: $p\text{-value} = 0.00005$

Result: Renovated houses are significantly more expensive than not renovated houses

Results

High profit

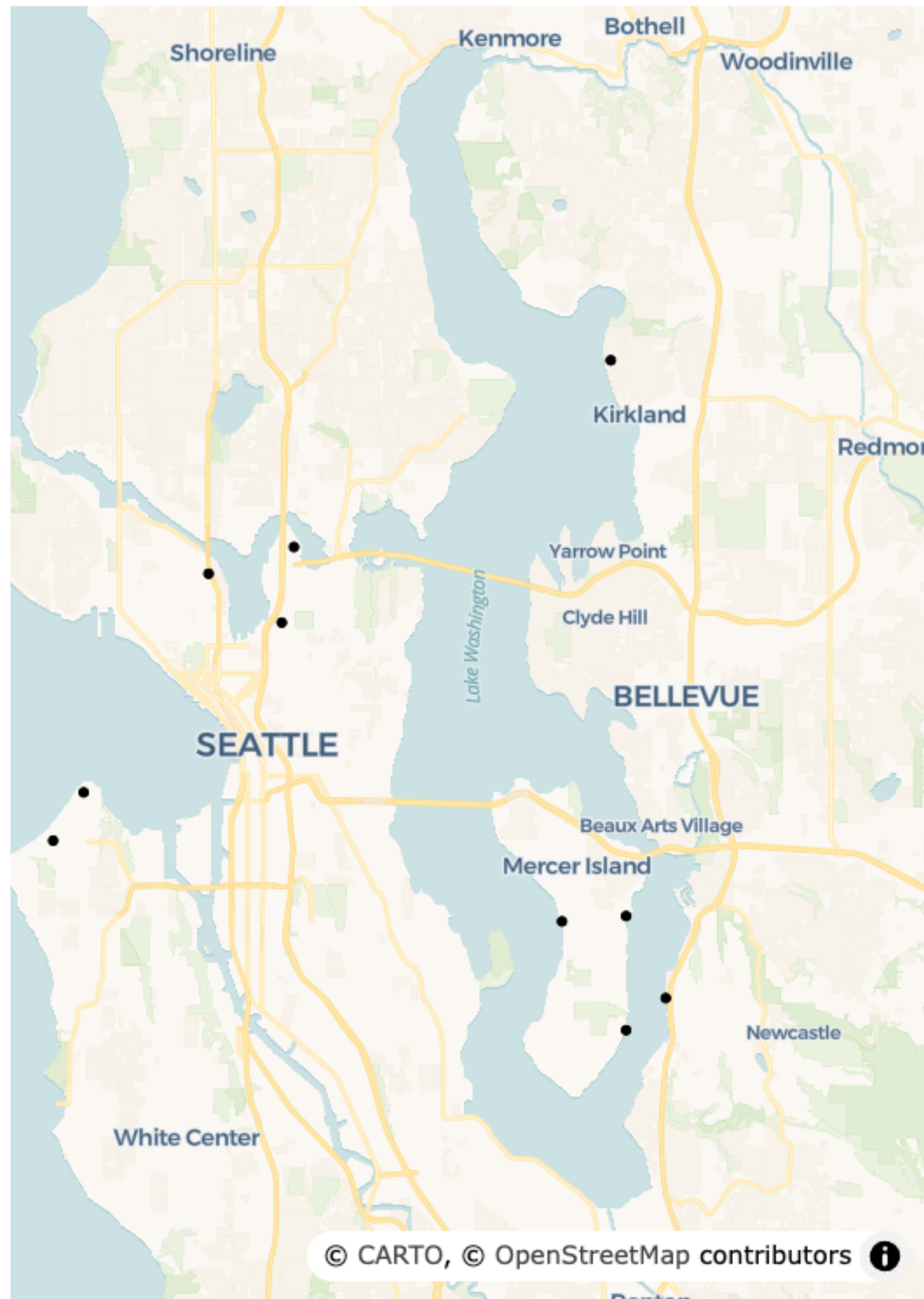
Best buying time: Autumn and winter

Best selling time: Spring and summer

Renovation: YES

Results

Optimal houses



Conditions:

- Building date < 1949
- Most attractive ZIP codes (by Chat GPT)
- House grade > 9
- House view > 2

Results

Hypotheses

- Big living footage and high grades increase houses prices ✓
- The best timing within a year for selling would be spring or summer (✓)
- Renovation would increase the profit a lot ✓