Milestone 1 Assignment

Background

To assist cities to evaluate future land use scenarios, my data science task is to build a home price prediction model.

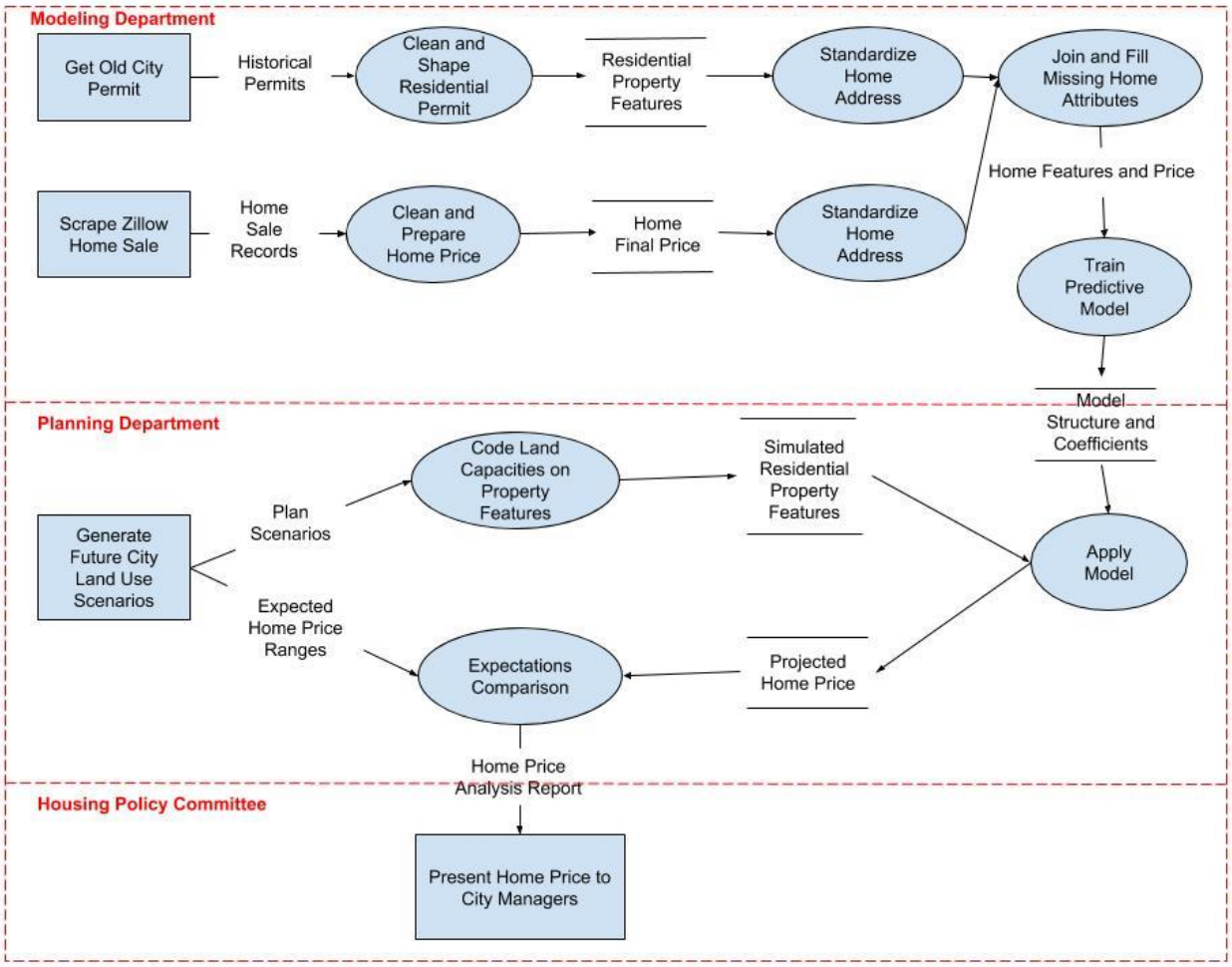
Seattle Metropolitan Area is one of the most dramatic growth regions in the U.S. Along with jobs and traffic congestion; the housing market has been a hot topic in Seattle for years. City planners face pressure in increasing land use capacity to match the demand. Meanwhile, more housing means more density, more traffic congestion and more public infrastructure investment. To control the density and home price become a dilemma for policy makers. I discovered historical permit licenses could be a reliable and rich data source to help predict changes in land use price and quantitatively measure housing policies.

Data Frame Diagram break downs

Any significant renovations or new development must file permits with the cities. Licenses provide all sort of features of the residential property. However, it doesn't have the sale price, so I will extract Zillow home sales records. By standardizing the home addresses, I can join license and Zillow dataset by looking up to the home address. Then I will develop the model to predict the home price. The home price prediction model will be stored to wait for future applications.

Meanwhile, the planning team will generate future land use scenarios from the cities' master plans. The goal of this task is being able to apply the model to future land use scenarios to predict the potential home prices. So, I will simulate the key residential property features out of the scenarios, by maximizing the land use capacities on parcels.

To consume the predicted price, I will present the predicted the home price at housing policy committee. Before the presentation, to better serve the policymakers, I will compare the predicted price with the planner's expectations, and then generate a report to analyze the gap between expectations.


Modeling Department
Get Old City Permit
Historical Permits
Clean and Shape Residential Permit
Residential Property Features
Standardize Home Address
Join and Fill Missing Home Attributes
Home Features and Price
Scrape Zillow Home Sale
Home Sale Records
Clean and Prepare Home Price
Home Final Price
Standardize Home Address
Train Predictive Model
Model Structure and Coefficients
Planning Department
Code Land Capacities on Property Features
Simulated Residential Property Features
Generate Future City Land Use Scenarios
Plan Scenarios
Apply Model
Expected Home Price Ranges
Expectations Comparison
Projected Home Price
Home Price Analysis Report
Housing Policy Committee
Present Home Price to City Managers