

Executive Summary

To: President X

From: Data Consultant Y

Subject: Analysis of Boston Suburban Housing Values, Executive Summary'

Project Purpose: The purpose of the project is to build a model that provides Boston Suburban Housing price estimates based on different preferences a customer can have and to identify the important features that affect the price of a house as the real estate company wants to assess if a customer's budget is realistic or not based on different preferences, they may have in purchasing a house.

Data: The Boston data set contains information from 504 geographic areas and 14 attributes for each area. The attributes include Structural properties such as Age of property as a proportion of owner-occupied units built prior to 1940, Average number of rooms per dwelling, Proportion of residential land zoned for lots over 25,000 sq.ft. Accessibility properties such as Distance to major employment centers, Closeness to highways. Neighborhood properties such as Per Capita Crime Rate by Town, Pupil-teacher ratio by town indicating the education quality, Whether the area is by the Charles River or not. Other properties such as Proportion of non-retail business acres per town, Nitrogen Oxides concentration in the area, Property tax, Proportion of Black people by town, Percentage of the lower status population. All these attributes are factored in determining the Housing Price.

Model & Insights: After refining the analysis model, found out that the attributes such as Age of property, proportion of non-retail business acres per town, Property tax and Lot size allowed by zoning laws in the area do NOT either positively or negatively impact the housing prices. The most important attributes that affect house prices in Boston are the Average number of rooms per dwelling – For every additional room, the house value increases by 10% (\$2,200), When the house is closer to the Charles River – the price increase by 12% (\$2,600), whereas with a unit increase in Crime Rate, house value tend to decrease by 1% (\$200) and with 0.1 parts per 10 million increase in nitrogen oxides concentration, the housing prices reduce by 8% (\$1800).

The baseline scenario for our analysis includes relatively young houses near decent schools with great accessibility. The estimated median house value for a house that is relatively young, has 4 rooms, is located near decent schools, and has great accessibility is \$ 39,000. We would expect the price range for a house with these characteristics to be between \$ 31,000 and \$ 46,000. For buyers on a budget, sacrificing neighborhood attributes such as being close to the Charles River and accepting crime rate can result in a larger house for less price \$26,000. This means that buyers can still afford a larger house even if they compromise on certain attributes.

Conclusion: In conclusion, the attributes that yield the highest house values (houses that are in the top 5% in value) include a large number of rooms per dwelling, being located near the Charles River, and low crime rates. Houses with these attributes tend to have a higher value than other houses in Boston. Whereas attributes such as Age of property, proportion of non-retail business acres per town, Property tax and Lot size allowed by zoning laws in the area do NOT either positively or negatively impact the housing prices.