

BOSTON UNIVERSITY

Assignment 1

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AD571 A1: Business Analytics Foundations

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As the real estate business environment is constantly evolving in New York City, and with this change comes the need for real estate companies to decide whether to open a new office, specifically in the HARLEM-CENTRAL neighborhood. Based on the existing data, I selected three KPIs that offer a comprehensive view of the market from multiple perspectives and provide insights to the company on decision-making. To facilitate a more intuitive and accessible interpretation of data, I have incorporated data visualization techniques corresponding to each KPI. Prior to creating the data visualization, I eliminated unnecessary data including sale prices and square feet that are equal to zero. Then I specifically located and selected the neighborhood labeled HARLEM-CENTRAL. With the extraction of the year of sales and joining the matching building code ID, I can thus create visual representations.

The first KPI is to project the average sales price per year which reveals trends and patterns in the market on an annual average basis. As it provides insight into a specific geographical neighborhood, it allows the company to assess the success of sales and identify the demand as well as the economic health in that area. In data visualization, I first categorized the sales data into distinct groups based on each year 2000 to 2021, then calculated the average sales for each year group in terms of millions to understand the typical sale prices of each year. As a result, the graph shows the following and the overall trend of sales is increasing, albeit with some fluctuations.

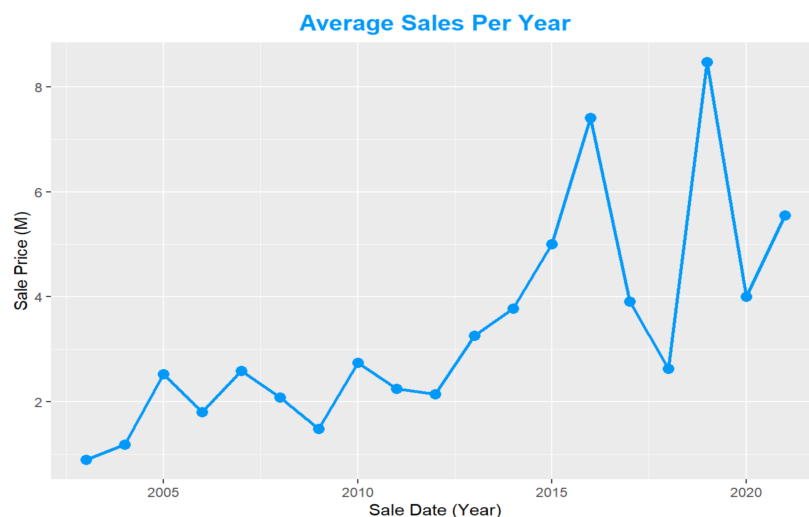


Figure 1: The average sales per year

The second KPI is to find the top 10 average sales building classes that may help the business understand which building types are performing well so the company can compare to their existing real estate portfolio. Firstly, I separated data into groups that each represent a building class (description) with the sales. Secondly, calculate the average sale price in million for each description. By sorting the average sale price in descending order, I can then select the top 10 descriptions that appear on the top of the dataset with the highest average sales prices which shows below. From the graph, the miscellaneous elevator apartments were sold the most followed by hotel/boatel.

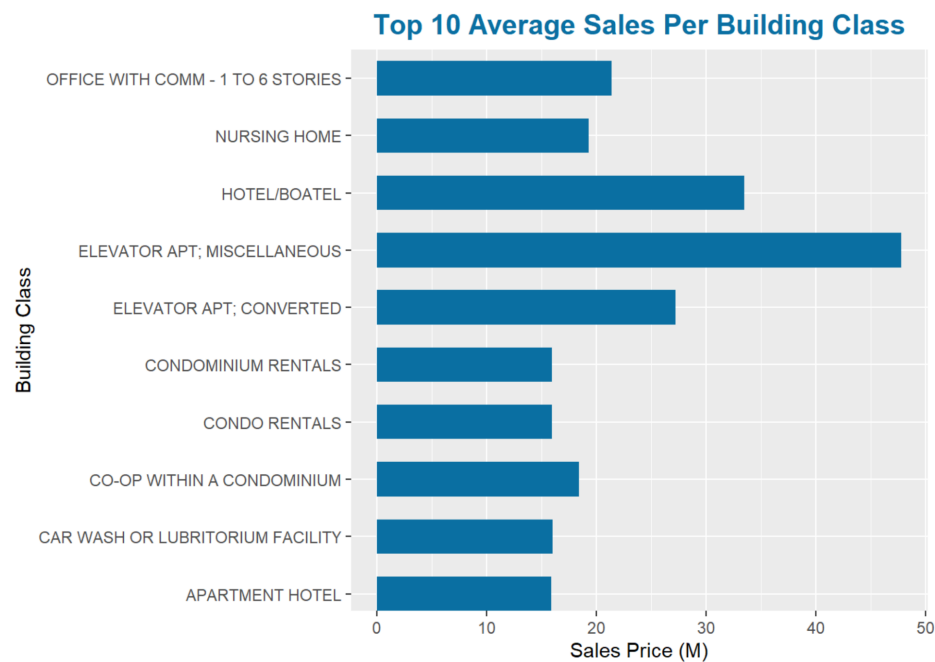


Figure 2: The top 10 average sales in building class

The third KPI is finding the sum of building units sold each year for both commercial and residential types that identify the trend and shifts in types, allowing a strategic guide. Initially, I grouped the dataset by year and calculated the total number of both residential and commercial units sold each year, respectively. By combining the annual total unit sales of resident and commercial type, dual line charts were created to compare two types where both categories indicate an overall decreasing trend.

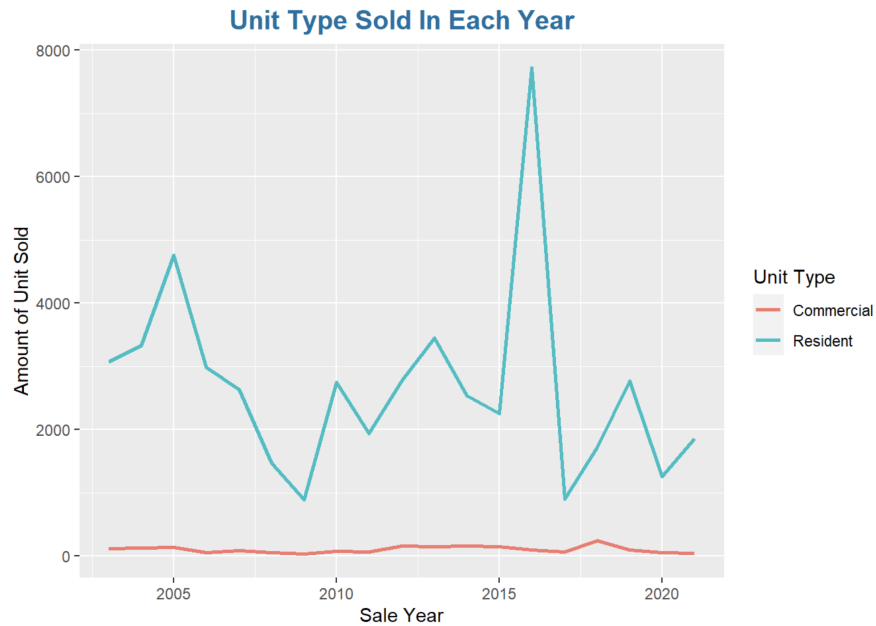


Figure 3: Units of commercial and residential building sold in each year

Commission

In addition, the commission earned can be predicted according to the existing data. Based on the data of 2021, if the real estate companies earn a commission of 5% per dollar on total sales on average, the total commission in 2021 can be computed using the following method. I first isolate sales in the HARLEM-CENTRAL neighborhood and specifically target transactions carried out in 2021. By multiplying the total sales in HARLEM-CENTRAL, the total commission earned is \$65,504,299. If the firm manages to capture 12.5% of the market within this locality, this percentage would account for their portion of total sales for the year 2021. Accordingly, the company's commission for this portion would be calculated as 5% of this amount, equating to \$8,188,037.