

HOUSING MARKETING ANALYSIS

DATE: 14th of November 2023

PROJECT TITLE: Housing Market Analysis

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OBJECTIVE: The primary objective of this project is to understand the key determinants of housing prices in a particular area. It aims to provide valuable insights for homeowners, buyers, and real estate professionals to make informed decisions.

INTRODUCTION: The real estate market is a vital part of any economy, and housing prices are influenced by a multitude of factors. This project seeks to gain insights into the relationship between various house features and their impact on housing prices. By analyzing the provided dataset, we can help individuals and real estate stakeholders understand the price dynamics better.

METHODOLOGY:

- Dataset description
- Data Cleaning and Preparation
- Data Visualization and Dashboard
- Insights
- Questions and answers

DATA SOURCE:

The dataset used in this project is obtained from the tech4dev program facilitator.

DATASET DESCRIPTION:

Price: The price of the house.

Area: The total area of the house in square feet.

Bedrooms: The number of bedrooms in the house.

Bathrooms: The number of bathrooms in the house.

Stories: The number of stories in the house.

Mainroad: Whether the house is connected to the main road (Yes/No).

Guestroom: Whether the house has a guest room (Yes/No).

Basement: Whether the house has a basement (Yes/No).

Hot water heating: Whether the house has a hot water heating system (Yes/No).

Air conditioning: Whether the house has an air conditioning system (Yes/No).

Parking: The number of parking spaces available within the house.

Prefarea: Whether the house is located in a preferred area (Yes/No).

Furnishing status: The furnishing status of the house (Fully Furnished, Semi-Furnished, Unfurnished).

Extract statistical summaries using formulas and functions.

- a. Count (=COUNTIF (A1:A10, <3))
 - b. Total (=SUM)
 - c. Minimum (=MIN)
 - d. Maximum (=MAX)
 - e. Mean (=AVERAGE)
 - f. Median (=MEDIAN)
 - g. Mode (=MODE)
 - h. Range (=RANGE)
 - i. Q1: =QUARTILE (A1:B10, 1))
 - j. Q2: =QUARTILE (A1:B10, 2))
 - k. Q3: =QUARTILE (A1:B10, 3))
 - l. Q4: =QUARTILE (A1:B10, 4))
 - m. Standard deviation (=STDEV),
 - n. Variance (=VAR),
 - o. Standardization with Z-score (=),
 - p. Hypothesis testing
 - i. T-Test: T.TEST (range1, range2, tails, type)
 - ii. Z-Test: Z.TEST (range1, test statistics, STDEV)
 - q. Correlation: =CORREL (A1:A10, B1:B10)
 - r. Kurt (=A1:A10)
 - s. Skew (=A1:A10)
12. Apply some visual charts to the data (Histogram, scatter plot, box plot etc.)

INSIGHTS

- The house's total area and the number of bathrooms exhibit a strong correlation with the house prices.
- Houses equipped with air conditioning, located in preferred areas, and featuring a guest room command the highest prices.
- Noticeable disparities exist between house prices and the area variables, with the histogram revealing left-skewed distributions for both prices and area. Additionally:
- The box plot indicates the presence of outliers in both the price and area variables.
- House prices generally increase with the number of bedrooms, except for six-bedroom houses, which have lower prices.
- Increasing numbers of bathrooms and stories are associated with higher house prices.
- Furnished houses surpass semi-furnished and unfurnished counterparts in terms of expense.
- While house prices generally rise with an increasing number of parking spaces, those with three parking spaces tend to have lower prices.
- Proximity to the main road, along with features such as a guest room, basement, hot water heating, and air conditioning, contributes to higher house prices, particularly in preferred areas.
- A majority of surveyed houses are connected to the main road.

QUESTIONS AND ANSWERS:

1. **Question: What is the average price of houses in preferred areas compared to non-preferred areas?**

Answer: The average price of houses in preferred areas is higher than in non-preferred areas. On average, houses in preferred areas tend to have a higher market value.

2. **Question: How does the number of stories in a house relate to its price?**

Answer: The number of stories in a house has a positive correlation with its price. Generally, houses with more stories tend to be priced higher.

3. **Question: Do fully furnished houses have a higher price compared to semi-furnished or unfurnished houses?**

Answer: Yes, fully furnished houses tend to have a higher average price compared to semi-furnished or unfurnished houses. Buyers are willing to pay more for houses that come with complete furnishings.

4. **Question: What is the average price per square foot in this dataset?**

Answer: The average price per square foot is obtained by dividing the average 'Price' by the average 'Area' of houses. This metric provides an estimate of the cost efficiency of the houses in the dataset.

5. **Question: Is there a difference in house prices based on whether they have a guest room or a basement?**

Answer: Houses with a guest room tend to have a slightly higher average price compared to houses without one. However, the presence of a basement does not seem to have a significant impact on house prices in this dataset.