Deciphering New York's Housing Market: Unveiling Price Influence and Trends

Abstract:

This research project investigates the intricate relationship between property attributes and housing prices in New York. By analyzing a dataset encompassing 4,801 properties and 17 variables, including property size, location, number of bedrooms, and additional factors, we aim to interpret the various influences on housing market dynamics. Through a multifaceted approach combining both categorical and numerical data analysis techniques, we seek to uncover significant correlations and patterns. The diverse range of variables provides a rich landscape for comprehensive exploration, offering insights into the complexities of housing valuation in a dynamic urban environment. This study contributes to a deeper understanding of the determinants shaping housing prices, thereby informing stakeholders and policymakers in making informed decisions within the real estate market. From our analysis, we concluded that as the number of bedrooms, bathrooms and property size increases, the house also increases. We also concluded that a property's location has a bearing on its price.

Introduction:

In the dynamic landscape of real estate markets, understanding the multi-layered determinants of housing prices is crucial for stakeholders, policymakers, and investors alike. The state of New York, renowned for its diverse neighborhoods and vibrant urban fabric, presents a particularly intriguing case study for examining the relationship between property attributes and market prices. This introduction sets the stage for a comprehensive exploration of the factors influencing housing prices in New York, leveraging a rich dataset comprising 4,801 properties and 17 variables.

Among the many factors shaping housing prices, property size, location, the number of bathrooms and the number of bedrooms stand out as pivotal determinants. Beyond these primary attributes, additional variables such as proximity to amenities, neighborhood demographics, and economic indicators further contribute to the influences on market dynamics. By analyzing these variables collectively, we aim to unravel the underlying patterns and correlations, shedding light on the drivers of housing price variations across different neighborhoods and property types.

The significance of this research holds practical implications for various stakeholders. For prospective homebuyers and sellers, understanding the factors influencing property values can inform strategic decision-making, whether in pricing a property for sale or negotiating a purchase. Similarly, policymakers can benefit from insights into the dynamics of the housing market to

formulate effective urban development strategies and housing policies.

Moreover, this research contributes to the broader academic dialogue on housing economics and urban studies by offering empirical evidence and insights into the complex relationship between property attributes and market valuations. By employing a rigorous analytical approach that integrates both categorical and numerical data analysis techniques, we seek to provide a nuanced understanding of the factors driving housing prices in New York.

Dataset:

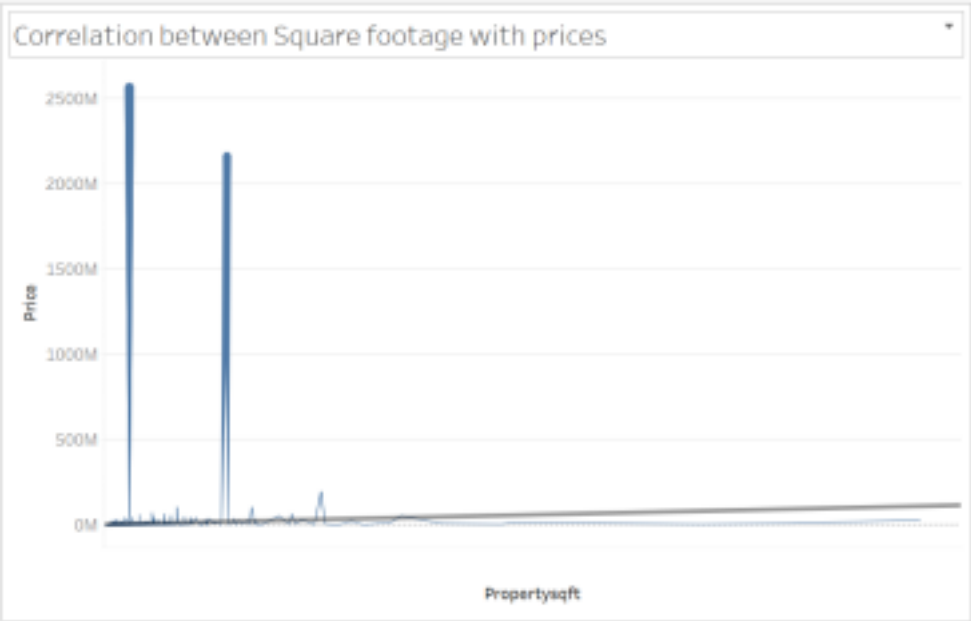
The New York Housing Market dataset was posted on Kaggle for the purpose of exploring trends and prices of properties in New York. The dataset contains broker information, type of property, square footage, number of bedrooms and bathrooms and exact location. Our focus was on the impact of each of these factors on the property price.

We first checked our data for any missing values, errors and to ensure consistency before uploading it to Tableau. In order to answer the research questions raised, we visualized our data using maps, scatterplots, and packed bubbles visuals to tell an interesting story about the relationships between the variables and property prices.

Analysis and Results:

Prior to exploring visualizations, we conducted a correlation analysis to examine the relationship between house prices and independent variables. Our findings reveal that the square footage of the property exhibits a more pronounced influence on property prices when compared to other variables.

	PRICE	*BEDS*	*BATH*	*PROPERTYSQFT*
PRICE	1			
BEDS	0.052189129	1		
BATH	0.079370577	0.776447396	1	
PROPERTYSQFT	0.110888769	0.420503261	0.483935066	1

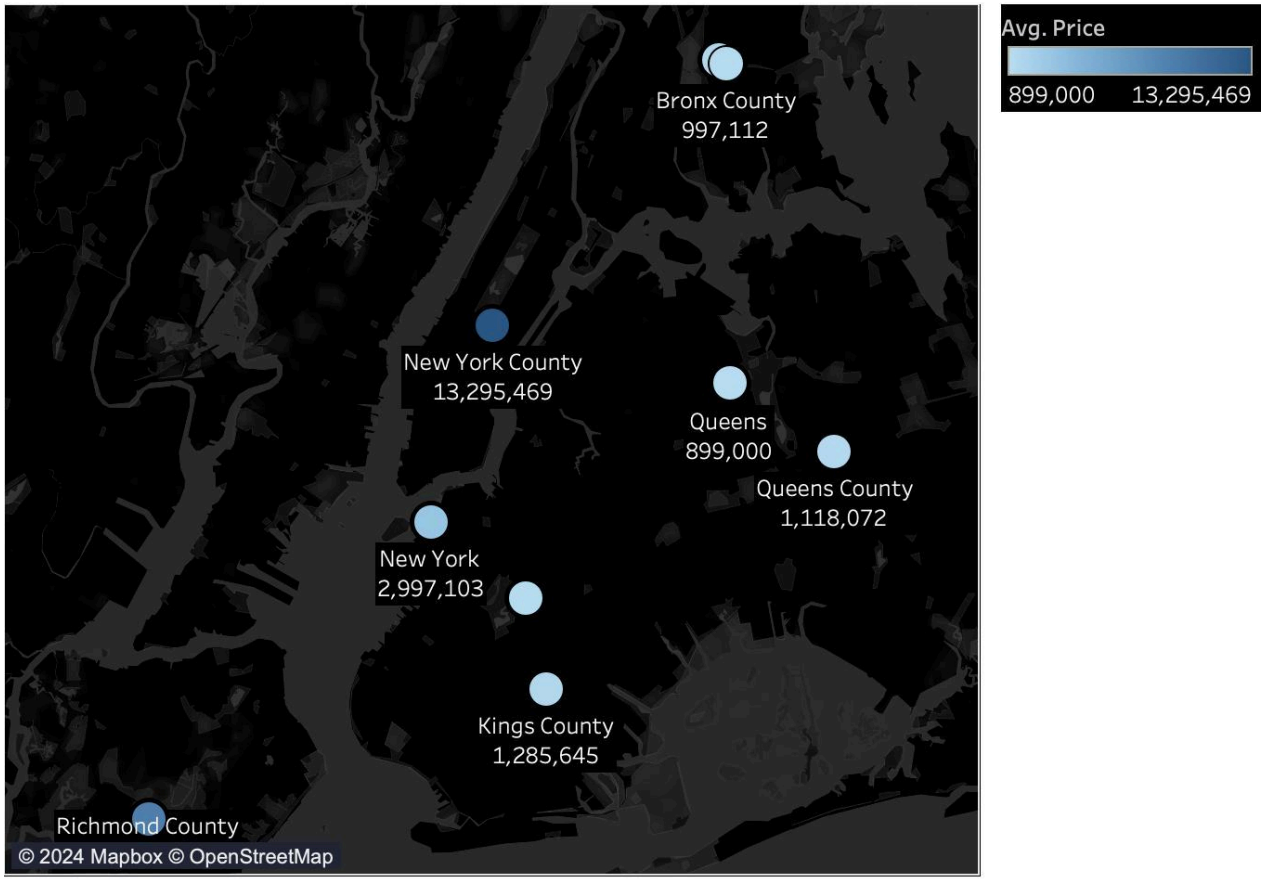


The upward trend suggests a positive correlation, meaning as square footage increases, property prices tend to increase. The two outliers significantly influence the correlation. One property with 2184sqft costs $2,569,615,122 and the other is 1000sqft and costs $2, 166,983,643, deviating from the overall trend. Possible reasons for their divergence could be that there is historical value attached to the properties. Other variables, such as location, amenities, or property type, might be influencing the correlation. Correlation does not imply causation. Even if there is a strong correlation between square footage and prices, it does not necessarily mean that one variable causes the other. There may be confounding factors or a bidirectional relationship.

What patterns emerge in the distribution of house prices within the dataset?

The use of Tableau's map and circle feature was a game-changer in spotting trends and patterns within the NYC housing dataset.. This provides transparency and allows for a better understanding of the analytical approach we took to explore the NYC housing dataset.

avg price by sublocality - type

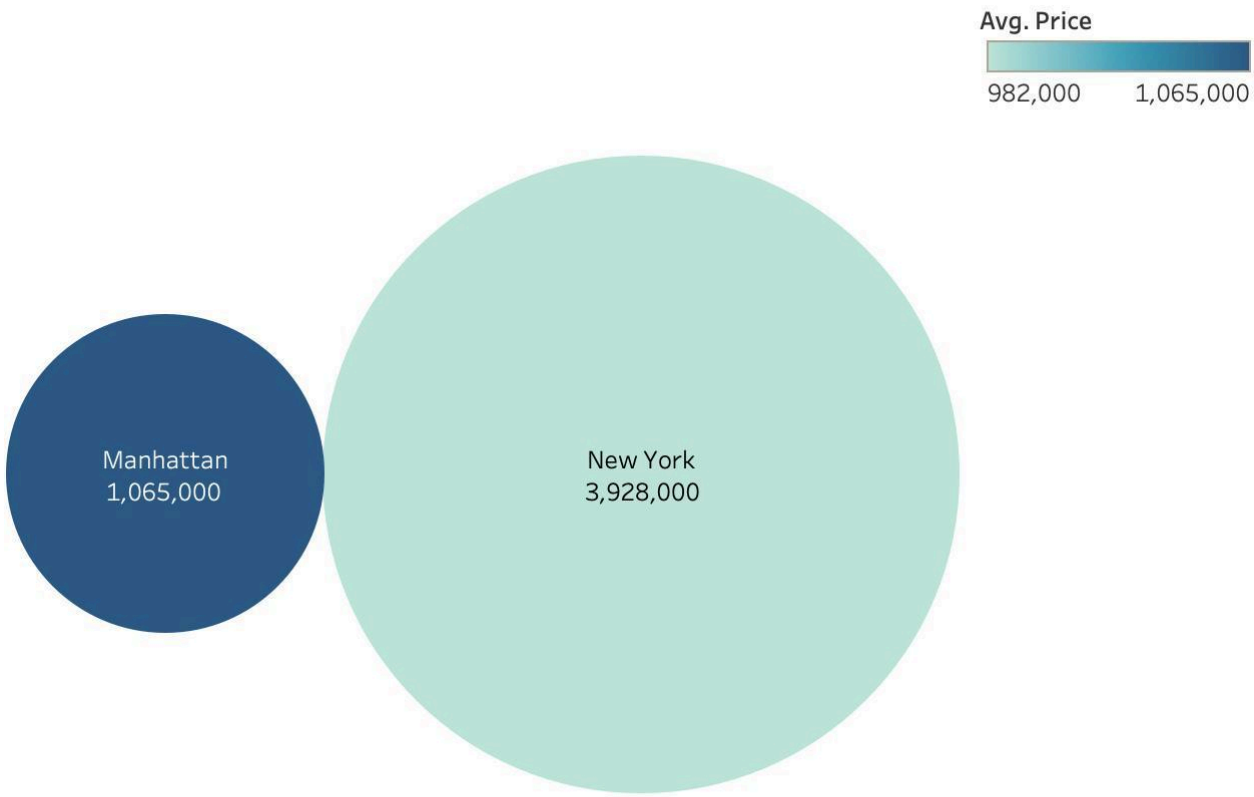


Map based on average of Longitude and average of Latitude. Color shows average of Price. The marks are labeled by Sublocality and average of Price. Details are shown for Sublocality. The data is filtered on Type, which keeps House for sale.

Based on the analysis of using the map feature, the overall distribution of house prices reveals distinct trends and patterns across different sub localities and property types.

When examining the average prices by sublocality and filtering by the type "house for sale," we observe significant variations in average prices. New York County stands out with the highest average price at $13,295,469, while Queens County has the lowest average price at $899,000. This disparity in prices suggests varying market dynamics and demand-supply factors across different neighborhoods within the city.

Average Price vs Property sqft



Sublocality and sum of Price. Color shows average of Price. Size shows sum of Propertysqft. The marks are labeled by Sublocality and sum of Price. The data is filtered on Type, which keeps Condop for sale.

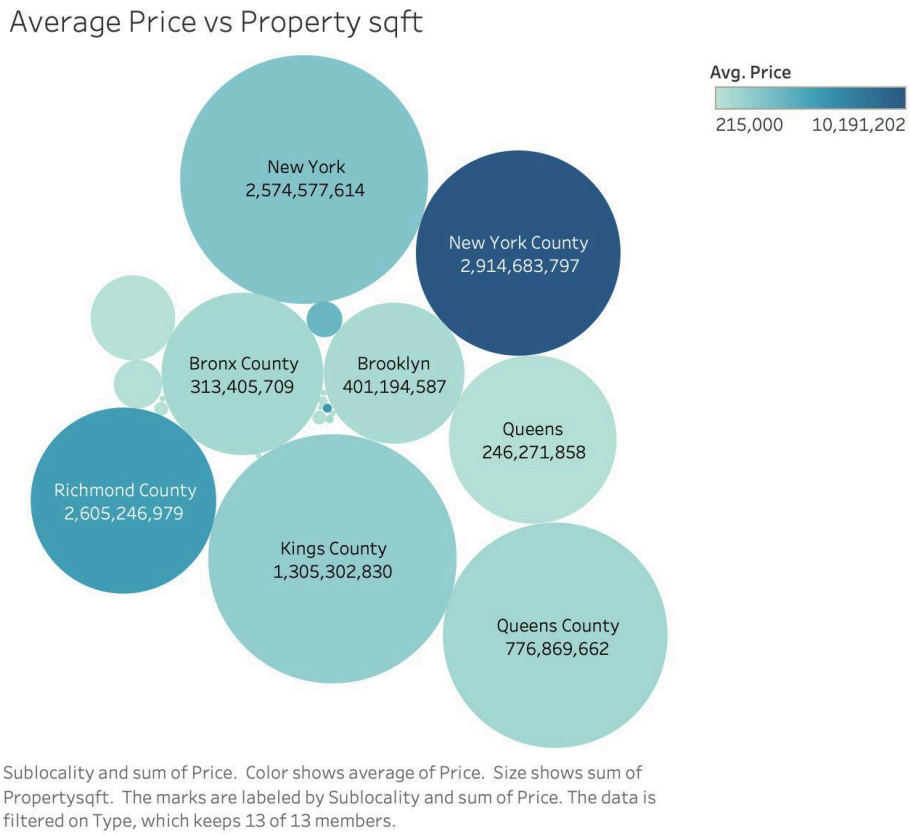
avg price by sublocality - type

Map based on average of Longitude and average of Latitude. Color shows average of Price. The marks are labeled by Sublocality and average of Price. Details are shown for Sublocality. The data is filtered on Type, which keeps Condop for sale.

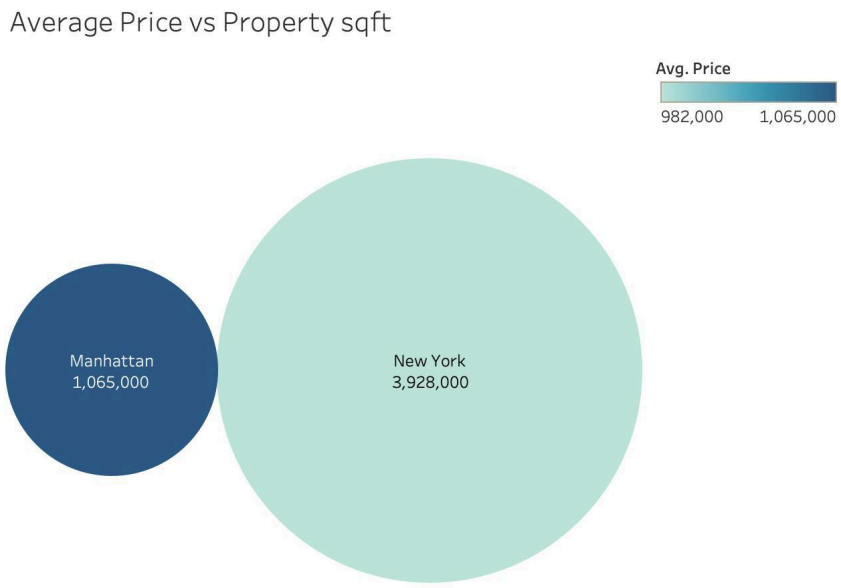
Furthermore, when comparing different property types, condos for sale in Manhattan exhibit the highest average price at $1,065,000, surpassing the average prices of condos in New York County ($982,000). This observation highlights the prevalence of condos in these sub localities and indicates potential preferences or market preferences for certain property types over others.

Overall, while condos may be more common in certain sublocalities, the analysis underscores that houses for sale command higher average prices, emphasizing the significance of property type and location in determining housing prices within the NYC housing market.

Upon further exploration using Tableau's circle feature, where property square footage is represented by size and price is indicated by color, notable patterns emerge across different sub localities and property types.



In the case of houses for sale, despite New York County boasting the highest average price, it is observed that properties in this area tend to have smaller square footage, with an average of 211,729 square feet. On the other hand, Queens County stands out with significantly larger properties, averaging 635,672 square feet. This observation suggests a trend where the location of the housing unit may influence its size, indicating potential preferences or market dynamics within different neighborhoods.



Sublocality and sum of Price. Color shows average of Price. Size shows sum of Propertysqft. The marks are labeled by Sublocality and sum of Price. The data is filtered on Type, which keeps Condop for sale.

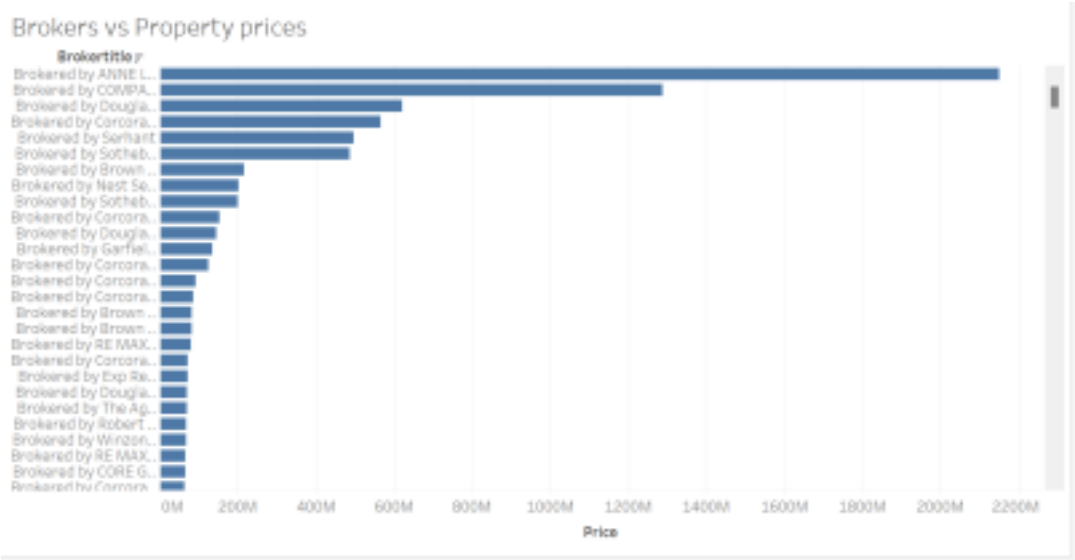
Similarly, when examining condos for sale, Manhattan exhibits smaller properties with an average size of 2,184 square feet, despite commanding the highest average price. In contrast, properties in New York County have a substantially larger average size of 8,737 square feet. This trend underscores the influence of location on property size and pricing, highlighting the importance of neighborhood characteristics in the NYC housing market.

In summary, the analysis reveals that while average prices may vary across sub localities, there exists a correlation between property size and location. Understanding these trends provides valuable insights into the distribution of house prices within the dataset and sheds light on the interplay between location, property size, and pricing dynamics in the NYC housing market.

These findings suggest distinct price distributions among sub localities and property types within the NYC housing market which are essential for anyone looking to buy, sell, or invest in NYC real estate, providing valuable information for informed decision-making. The bottom line is this: understanding the dynamic factors driving the city's housing market is key to finding the right property at the right price.

Correlations between the count of bedrooms, bathrooms, and house prices

The scatterplots above show the relationship between property price and the number of bedrooms and bathrooms that the property has. Considering how the points are clustered around the trend lines, it could be concluded that there is a strong positive relationship between the number of bedrooms in a house and its price,and similarly there is also a strong positive correlation between the property price and number of bathrooms, with the exception of only two outliers. It could be concluded that there is a positive relationship between the number of bathrooms and bedrooms in a house and its price.



Broker Ann Lopa Real Estate has the most expensive properties. Corcoran group also only sells highly priced properties. The majority of brokers are selling properties that are below $1million dollars. Real estates like Douglas Elliman-1995 Broadway, RE MAX group are spread across all price ranges. Real estates like Hot homes Realty, Bizzarro Agency, Coldwell Banker Signature Prop e.t.c only sell low priced properties.

Limitations of Study

Though this dataset provides valuable insights into properties in New York City, there are a few limitations we can point out from this study.

Sample Size and Representativeness: The dataset used for this research comprises 4,801 properties, which may not fully represent the entire spectrum of housing characteristics and market dynamics in New York. While efforts were made to ensure data integrity and completeness, the sample size might not capture the full diversity of property types, neighborhoods, and market conditions in the city.

Correlation vs. Causation: The correlation analysis conducted in this study identifies relationships between housing prices and various independent variables. However, establishing causality between these factors requires further investigation and consideration of confounding variables not included in the current analysis. Without causal inference, the identified correlations should be interpreted with caution.

Generalizability: The findings from this study is specific to the context of the New York housing market dataset used. Extrapolating these findings to other geographical locations or real estate

markets may not be appropriate due to differences in market dynamics, regulatory environments, and socio-economic factors.

Addressing these limitations could provide avenues for future research to deepen our understanding of the complex interplay between property attributes and housing prices in New York City and beyond.

Conclusion

In conclusion, this research delved into the intricate relationship between property attributes and housing prices in the vibrant real estate landscape of New York City. Through a comprehensive analysis of a dataset encompassing 4,801 properties and 17 variables, including crucial factors such as property size, location, and the number of bedrooms and bathrooms, our study aimed to unravel the complexities of housing market dynamics in this dynamic urban environment. The multifaceted approach, combining categorical and numerical data analysis techniques, allowed us to identify significant correlations and patterns. Key findings include a positive correlation between property size and prices, the impact of location on property values, and the influence of the number of bedrooms and bathrooms on housing prices. The use of Tableau's mapping and visualization tools played a pivotal role in uncovering trends and patterns, providing transparency to our analytical approach.

Furthermore, our analysis highlighted the role of real estate brokers, with Ann Lopa Real Estate and Corcoran Group specializing in high-priced properties, while others cater to a broader price range. Understanding the distribution of house prices among different sub-localities and property types is crucial for informed decision-making by prospective buyers, sellers, and investors in the NYC real estate market. However, the study has its limitations, including a sample size that may not fully represent the diversity of the housing market, the challenge of establishing causation from correlation, and the specificity of findings to the New York housing market dataset. These limitations emphasize the need for caution when interpreting the results and provide avenues for future research. In essence, our research contributes valuable insights to the complex interplay between property attributes and housing prices in New York City. As the real estate market continues to evolve, this study serves as a foundation for deeper investigations, guiding stakeholders, policymakers, and researchers in navigating the ever-changing dynamics of the housing landscape. Understanding the factors influencing property values is not only crucial for individual decision-making but also for shaping effective urban development strategies and housing policies.

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