

Analysis of Real Estate Trends in Connecticut (2001-2020)

Introduction and Background:

The real estate industry plays a vital role in driving the US economy. Historically, real estate has been a significant contributor to the country's Gross Domestic Product (GDP) and job creation. The housing market, in particular, has a considerable impact on various sectors, including construction, finance, retail, and more. The value of residential and commercial properties not only reflects the wealth of individuals and businesses but also influences consumer spending and investment behavior.

Literature Review:

During the 2000s, there was a significant housing bubble in the United States, which occurred due to the influx of funds into the housing market, relaxed lending standards, and governmental initiatives aimed at encouraging home ownership. Low-interest rates and easily available credit encouraged borrowing and speculative investments in residential properties. Mortgage lenders relaxed lending standards, offering subprime mortgages to borrowers with limited creditworthiness, which further fueled the demand for housing. In addition to the financial aspect, government initiatives played a significant role in promoting homeownership. Policies, such as the Community Reinvestment Act (CRA) and government-sponsored entities like Fannie Mae and Freddie Mac, aimed to expand access to mortgage credit, particularly among low-income and minority borrowers.

This housing bubble impacted more than half of the US leading to an increase in housing prices. Prices increased in 2006 and started to decline 2007 onwards with a huge crash in 2011. The housing bubble was a significant contributor to the Great Recession in America in 2008 that had global impact (Team, 2022). The collapse of the housing market triggered a financial crisis that spread across the banking sector, leading to the failure of numerous financial institutions. The increasing credit and debt as a result of the bursting of the housing bubble is what led to the recession.

Research Problem:

In this research, we are exploring the real estate dataset for Connecticut from 2001-2020. We looked at the impact of the housing bubble in the state of Connecticut. If Connecticut was impacted by the housing bubble, the real estate prices would have increased and then declined starting 2007. We analyzed the type of properties and towns most impacted by the bursting of the bubble. We also analyzed how the real estate market recovered as the economy rebounded in 2011 and the type of properties that started recovering i.e. the impact of government policies and macroeconomic factors on real estate purchases and mortgages, and buybacks. Additionally, we also analyzed the correlation of prices of units to their location and access and explored the following research questions:

- What is common to clusters by property type and residential type?
- Is there a correlation between the assessed value of properties and their geographical location? Can we identify areas with higher or lower property values?

- Are there any relationships between the assessed value or sale amount and specific property features like the size of the property or the number of bedrooms/bathrooms? Which residential type is the easiest one to sell?
- What is the trend between assessed value and sales value over the year? What makes the sales ratio higher than 1, say when and where?

Dataset Used and Suitability:

To research the impact of the housing bubble on the Connecticut real estate market, we used the dataset from the Office of Policy and Management of the State of Connecticut which records the real estate sale town wise along with their assessed price. Our research is based on the sales between 2001-2021 (Data Gov, 2023) which can be found on <https://catalog.data.gov/dataset/real-estate-sales-2001-2018>. The Office of Policy and Management of the State of Connecticut is a reputable government agency responsible for collecting and managing such data, ensuring reliability and accuracy.

Since this dataset specifically focuses on real estate sales in Connecticut, it aligned perfectly with our research objective of exploring the impact of the housing bubble in the state. Additionally, the dataset spans over two decades, covering sales data from 2001 to 2021 providing an extensive time range to conduct a comprehensive analysis of long-term trends, including the pre-housing bubble period, the bubble's peak, its burst, and the subsequent recovery. The data also provides town-wise records of real estate sales, enabling us to perform a localized analysis, which can reveal variations in the impact of the housing bubble across different regions in Connecticut. Furthermore, since the data is publicly available on Data Gov it indicates a level of transparency and openness, allowing other researchers to validate our findings and potentially replicate our study across different regions.

Data Preparation and Cleaning:

The study is inference based focussing on the details that can be derived from the past data and help make decisions based on them. Prior to performing any analysis, the data was cleaned to remove unnecessary data and N/A (missing) values from the records for more accurate derivatives.

After examining the dataset, we noticed the data contains variables that are irrelevant to our research: "Serial.Number", "Non.Use.Code", "Assessor.Remarks", "OPM.remarks", and "Location". These variables have no impact on our research finding and were thus removed. Variables like "Sale_Amount" and "Town" contained values that were invalid which were also removed. Some properties' Sale_Amount values were unrealistic (ex:0 or 1), which in normal circumstances is highly unlikely. Since it's stated in the dataset description, the data is only supposed to record properties with sales value higher than 2000, Rows with Sale_Amount values greater than 2000 dollars were also removed. For some rows' Town variable had values that are "unknown" or "", which were also removed, as it might have affected our analysis result.

Data Analysis:

To examine the correlation of prices with location and access, we attempted to utilize the cor() function. However, this approach encountered challenges as the location variable could not be meaningfully coerced into numeric values for the analysis. As an alternative, we opted for visualizing the data but faced issues due to the plot's size, resulting in a muddled representation.

To mitigate this problem, we introduced a filter, focusing on sale amounts less than \$400,000 to achieve a clearer view of the relationship.

For the analysis of price variations grouped by town, we utilized median as the measure of center of tendency to reduce the impact of outliers as other measures like mean are more susceptible to errors. By aggregating data based on town, the study aimed to explore how property prices differ across various areas in Connecticut and identify any significant variations in real estate values.

In this research, we also conducted a hierarchical cluster analysis to identify common patterns and similarities among different property types and residential types in the Connecticut real estate market. The primary objective was to group similar properties and residential areas based on their characteristics, such as size, features, and location. Hierarchical clustering was an effective method for this as it helped identify natural clusters within the dataset and allowed for a comprehensive analysis of the relationships between different property types and residential areas. We assessed the quality of the hierarchical clustering by computing the Cophenetic correlation coefficient, which is a measure of how well the clustering preserves the pairwise distances between data points. A Cophenetic correlation coefficient value of 0.7239674 indicated a good fit of the hierarchical clustering method to the data, suggesting that the clustering adequately represented the underlying patterns in the dataset. To gain a deeper understanding of the clusters' characteristics and to visualize the grouping results, we developed plots. Visualization is crucial for better analysis as it provides a clear and intuitive representation of the relationships between property types and residential areas.

Hierarchical clustering was chosen for this research as it is an unsupervised learning method, i.e. that it does not require predefined labels or classes allowing the algorithm to identify natural groupings within the data without prior knowledge, making it suitable for exploratory analysis in cases where the specific groupings are not known in advance. Since the Real estate dataset contained a large number of variables and complex relationships between different attributes, Hierarchical clustering can handle multidimensional data and capture complex patterns, allowing for a more comprehensive analysis of the data structure.

To investigate the correlation between the assessed value and residential type we used linear regression. In our analysis, we fitted a linear regression model to the data and obtained the names of the variables with p-values less than 0.05, indicating statistical significance. The obtained results from the regression analysis were summarized using the R-squared value, which indicated the goodness-of-fit of the model. In this case, the R-squared value was relatively low, suggesting that the model may not adequately explain the variations in assessed values based on residential type.

In this research, we also investigated the trend between the assessed value and sale value of properties over the years in the Connecticut real estate market. To identify any patterns or changes in the relationship between these two variables and understand how they evolved over time, we used median as the measure of center of tendency to reduce the influence of outliers on our analysis. The median is relatively robust to extreme values, making it a suitable choice for this investigation. Additionally, we looked into instances where the sales ratio was higher than 1. The sales ratio refers to the ratio of the sale value to the assessed value of a property. A sales ratio higher than 1 indicates that the property was sold at a price higher than its assessed value. We examined when and where such cases occurred to understand the factors influencing these higher sales ratios. By analyzing the trend between assessed and sale values over the years and

exploring instances of sales ratios higher than 1, we aimed to gain insights into the dynamics of property prices and sales in the Connecticut real estate market.

To analyze the change in trends across residential types over the years, we used Time Series to model and analyze our data. Time series models can be used to identify long-term trends and make inferences about the underlying causes of these trends. These models can also be used to make predictions about future values of a variable based on its past behavior. To determine which residential type is the easiest one to sell we grouped the data by Residential Type and calculated the total count of units sold for each type. The data was visualized using a bar plot to show the proportion of houses sold per residential type. Assuming Listing was made in the first month of the year, to determine which town has the quickest sales and which property type, we calculated the time it took to sell each property using the difference between the Recorded Date and the Assumed Listing Date. The data was then filtered to include only positive sale times (properties that were sold after being listed). The results were sorted in descending order of the sale time, indicating the quickest sales first. The time to sell for the properties was visualized using a time series plot, aggregating the data by month. To observe the change in trends across the top 5 towns over the years in regards to sales and their profitability, we used time series. We grouped the data by Year and Town and calculated the mean Sales Ratio for each combination. The results were sorted in descending order of the mean Sales Ratio, indicating the top-performing towns in terms of profitability. The change in trends for the top 5 towns was visualized using a time series plot, showing the mean Sales Ratio over the years.

Furthermore, to better understand the correlation of prices of units to their location and properties before and after the Recession, we performed a logistic regression to examine whether the Recession had a statistically significant impact on real estate prices. This helped us assess how specific property characteristics influenced real estate prices during different periods and identify whether certain property features became more or less important factors in pricing after the Recession.

Each analysis provided insights into different aspects of the real estate market in Connecticut, such as the ease of selling different residential types, the time taken to sell properties, and the changing trends in sales and profitability for specific towns. The visualizations enhanced the understanding of these trends and patterns, enabling better decision-making for real estate professionals and investors.

Results/ Findings:

1. Variations in Sale Amounts across Towns

Upon analyzing the cleaned up data of the state of Connecticut real estate market, we observed the top 35 towns out of the 169 towns in the dataset with the highest sale amounts as shown in Fig 1 below). Greenwich town came on top with the Highest Median Sale amount followed by Darian. In the chart shown below, we can see how there is a significant disparity in sale amounts from town to town, particularly top five towns with the highest sales amount for property and bottom five towns with lowest sales amount for property. We also observed the variation increases after the first 4 towns (Greenwich, Darien, New Cannan & Westport). This information will help us effectively deploy marketing strategies to improve sales in towns with low sales amounts and employ better strategies to monitor the real estate market town by town.

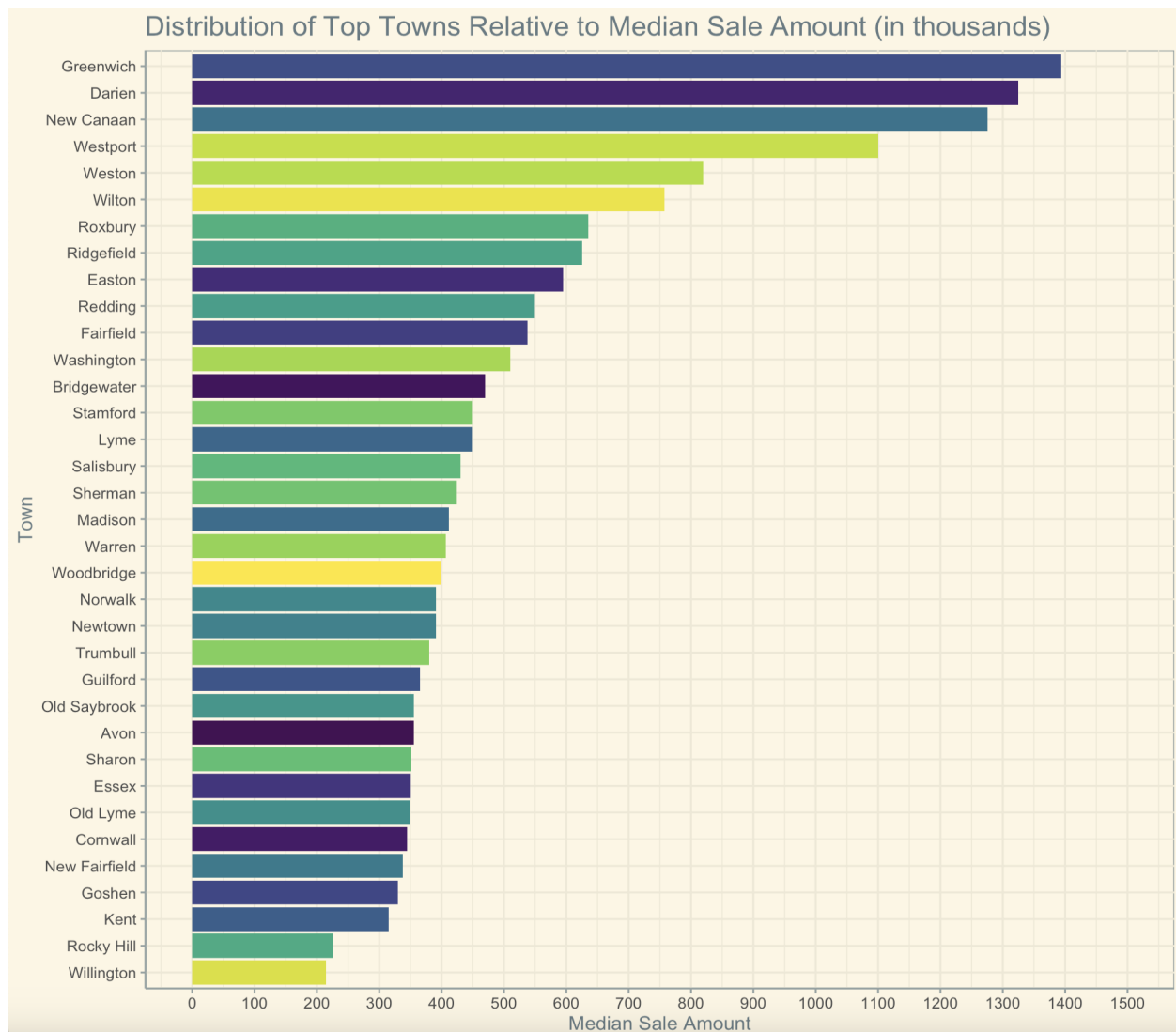


Fig 1: Distribution of Top Towns Relative to Median Sale Amount

2.What is common to clusters by property type and residential type?

	Property.Type	Residential.Type	mean_Price	median_Price	min_Price	max_Price	Cluster Name`
	<chr>	<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<int>
1	Condo	Condo	260246.	175000	487	39885000	1
2	Four Family	Four Family	314437.	189900	2500	157000000	1
3	Residential	Four Family	320073.	284950	3000	1330000	1
4	Residential	Two Family	272222.	235500	5625	2425000	1
5	Residential	Condo	422521.	205000	2000	72000000	2
6	Residential	Single Family	514379.	325000	2500	318790019	2
7	Residential	Three Family	404490.	250000	10000	194149073	2
8	Single Family	Single Family	388602.	250000	1	120000000	2
9	Three Family	Three Family	179845.	153000	1671	6700000	3
10	Two Family	Two Family	199097.	162000	2000	17900000	3

Fig 2: Clusters based on Property Type and Residential Type

The table states the different aspects of each component of the cluster and the dendrogram below shows 3 different clusters that can be worked upon. On choosing the 3 cluster model we can see the relationship between the Property Type & Residential Type and how it affects the mean price of the same. We computed the Cophenetic correlation coefficient to check the fit of the hierarchical clustering and it appeared to be a good fit at 0.7239674.

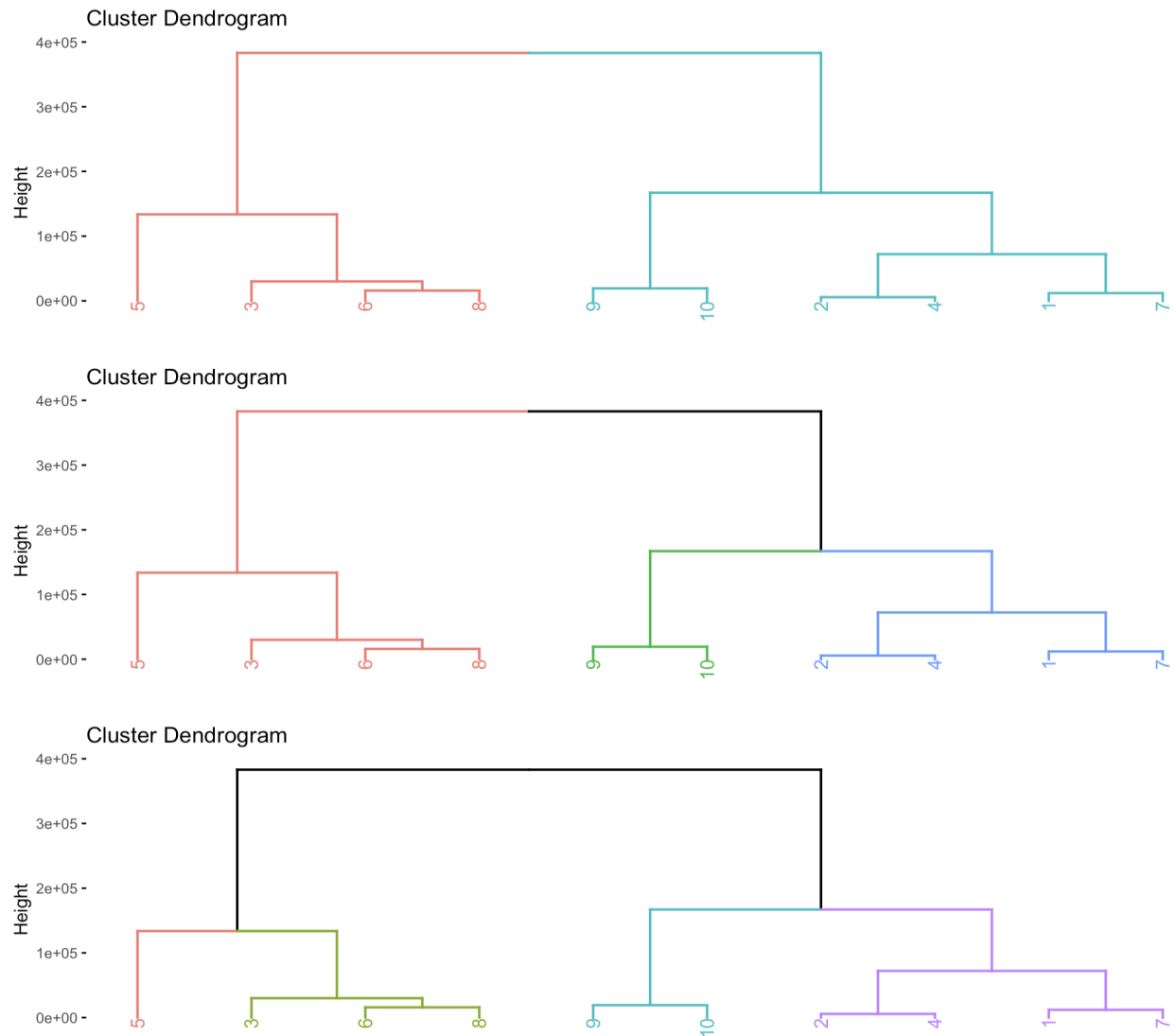


Fig 3: Cluster Dendrogram

3. Correlation between the assessed value of properties and their geographical location and identification of areas with higher values

```
> print(significant_vars)
```

[1]	"(Intercept)"	"TownBridgewater"	"TownDarien"	"TownEaston"
[5]	"TownFairfield"	"TownGreenwich"	"TownLyme"	"TownMadison"
[9]	"TownNew Canaan"	"TownNorwalk"	"TownOld Saybrook"	"TownRedding"
[13]	"TownRidgefield"	"TownRoxbury"	"TownSalisbury"	"TownSharon"
[17]	"TownSherman"	"TownStamford"	"TownWashington"	"TownWeston"
[21]	"TownWestport"	"TownWilton"		

Fig 4: Geographic Locations influencing property prices

Upon running the linear regression on the assessed value of properties, we observed that there is a correlation between assessed value of properties and their geographic location. We observed that certain towns command higher prices and the difference is statistically significant. The same is depicted in the table above showing all the significant locations where the Assessed Value of a property has been affected due to their relationship. We observed that Willington shows the highest value of properties followed by Norwalk. Note, previously Willington in the section above was the town with lower sales amount as it didn't account for any extreme cases.

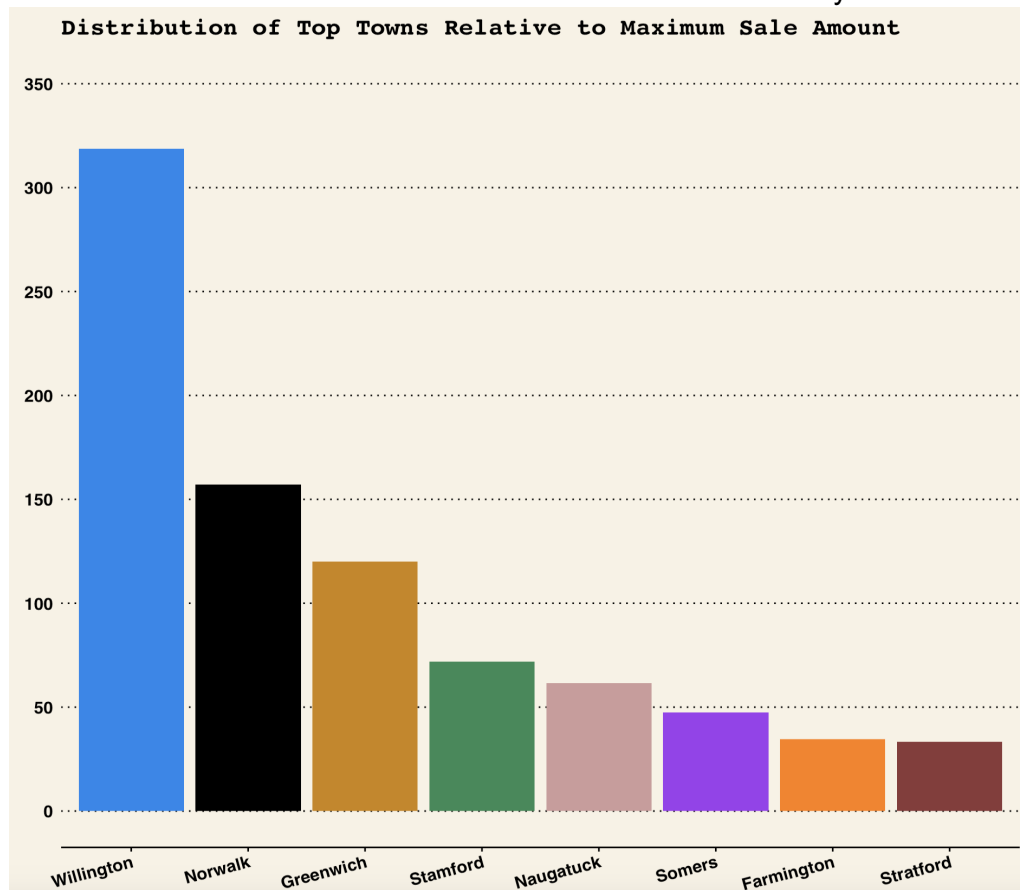


Fig 5: Distribution of Top Towns Relative to Maximum Sale Amount

4.Relationships between the assessed value or sale amount and specific property features

```
> print(significant_vars_2)
```

```
[1] "(Intercept)"          "Residential.TypeSingle Family"  
[3] "Residential.TypeThree Family" "Residential.TypeTwo Family"
```

Fig 6: Residential Types Impacting Sales Amount

We performed the linear regression to identify relationships between the assessed value and Residential Type. We observed that the Three Family, Single Family & Two Family residentials impacted the sales amount as well as the assessed value of the property. On further visualizing the data, we observed that Single Family showed the highest Assessed Value compared to other resident types.

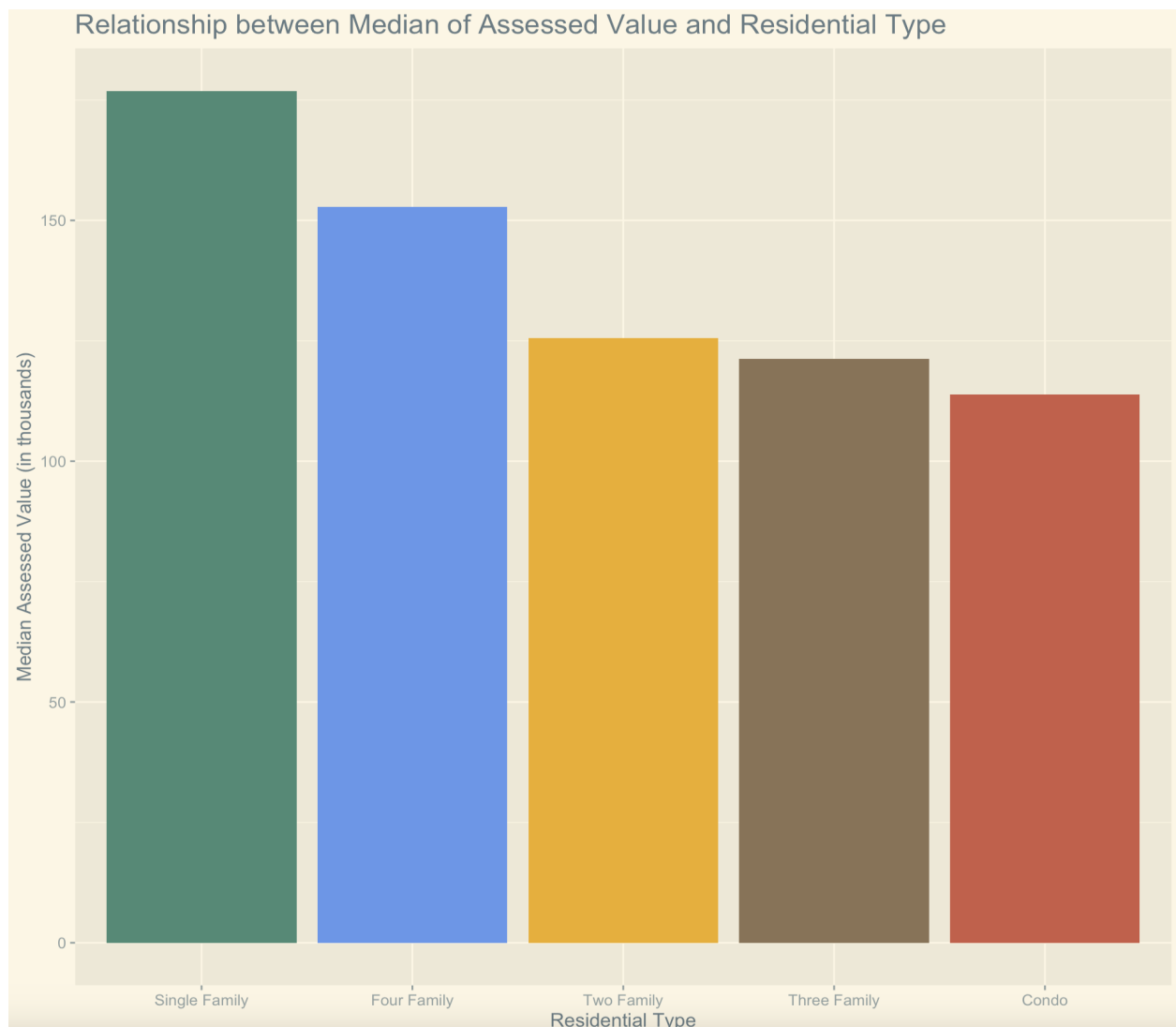


Fig 7: Relationship between Residential Type and Assessed Value

5.Trend between assessed value and sales value over the years

Sale ratio is the profit range of the sale which can be seen to vary for different residential types over the years. We observed that the sales ratio increased steadily between 2007 - 2011 post

which it came back to its normal ratio in line with the housing bubble. Between 2008-2013 Four Family Housing, Three Family Housing and Two Family Housing crossed the sale ratio of 1.

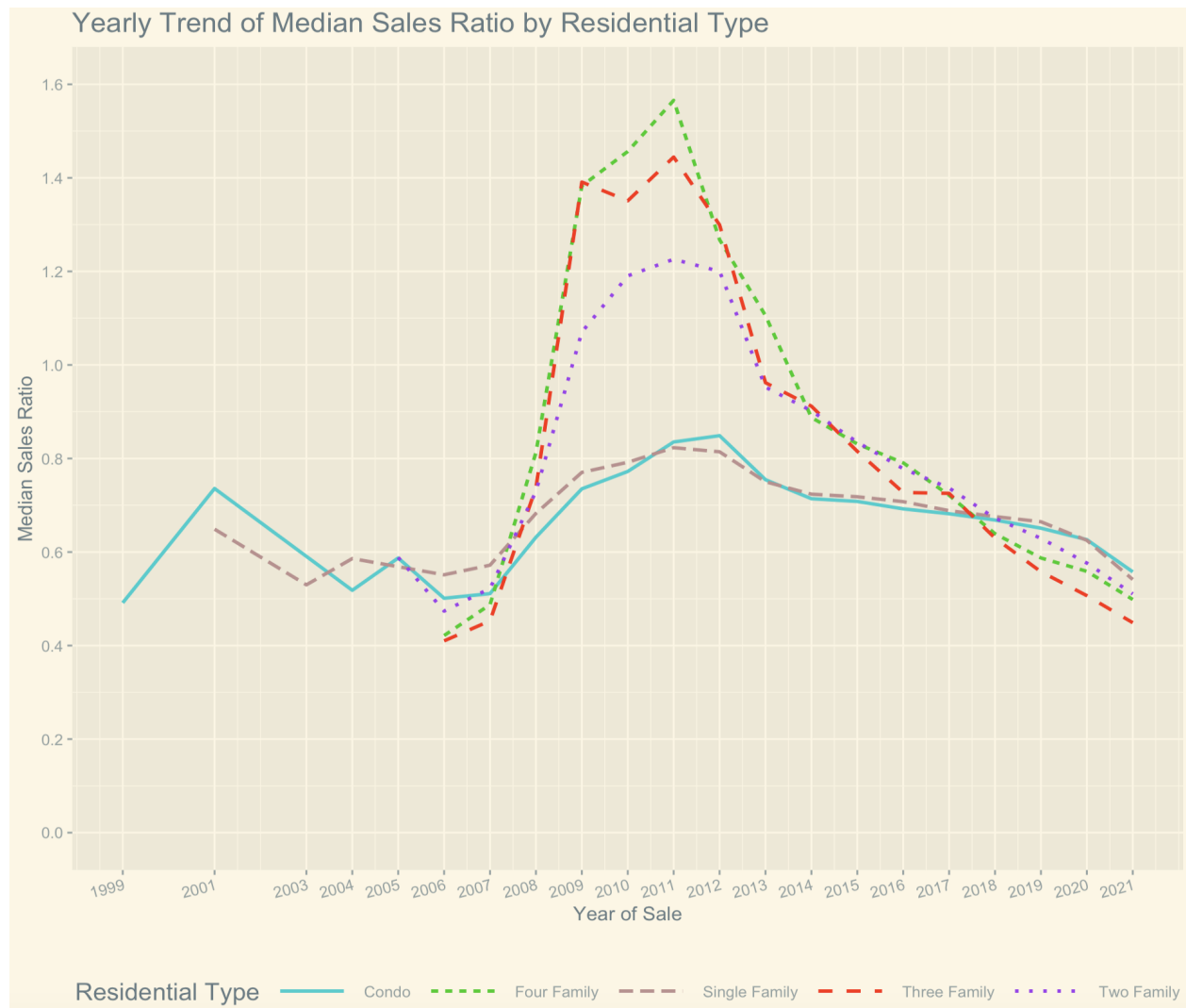


Fig 8: Trend of Sales Ratio by Residential Type

6. Easy selling residential types

As per the data shown in the records, we observed that Single Family residential Type is the most popular purchase across the years and Four Family residential is the least popular one.

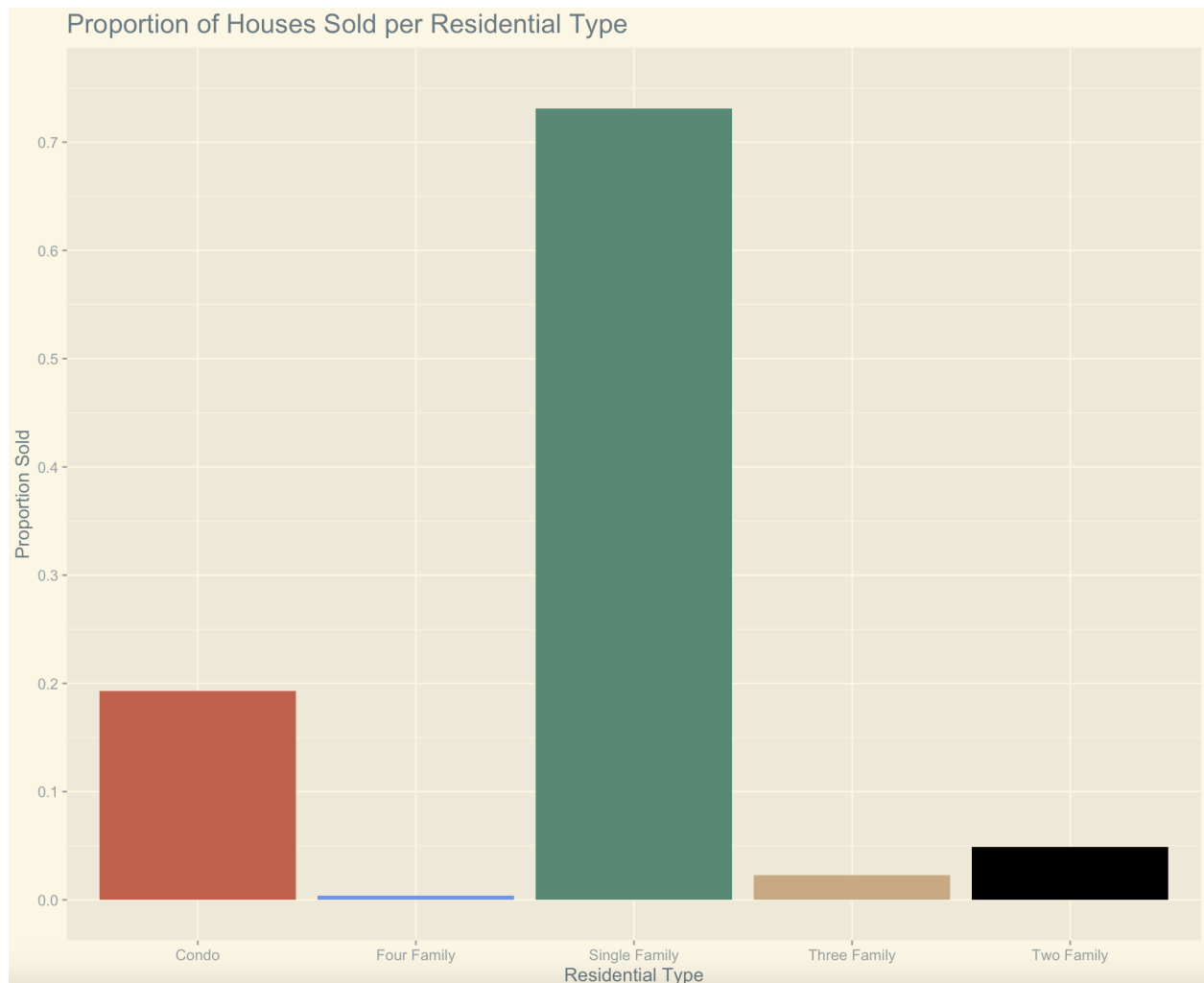


Fig 9: Proportion of Houses Sold per Residential Type

7. Quickest and Slowest Sale rate across different towns

	Town	saletime
1	Norfolk	448.5157
2	Derby	452.8238
3	Colebrook	453.2937
4	Eastford	454.1811
5	Putnam	454.9084

	Town	saletime
1	Weston	480.5378
2	Darien	479.8644
3	Fairfield	479.2417
4	Wilton	478.1379
5	New Canaan	478.0758

Fig 10: Selling Rate across Towns

Across the years we observed that Norfolk had the quickest sale time of 448 days followed by Derby and Colebrook. Whereas Weston and Darien took the most time to sell properties

suggesting that more effort will be required to sell properties in these towns so real estate agents can plan their efforts based on property location in different towns.

8.Changes in trends across Residential Types over the years in regards to sales and their profitability

We observed that irrespective of residential type most properties sold in the year 2007 which can be explained by the housing bubble in Connecticut similar to the rest of the US. Single family were most sold in that year due to higher profitability. Post 2007, between 2008-2011 we observed a decrease in overall property sales due to the bursting of the housing bubble and the great economic recession. However, during this period we observed there was an increase in four family property type sales and decrease in single family property sales suggesting that due to the recession more families were probably staying together to reduce costs. Between 2008 to 2017 we can see a rise and fall of sale ratio for Four Family and Three Family residential types. We can see in 2018 there was a rise again in single family property sales and then a fall again. Condos more or less have been the same with 2021 they have been the most profitable ones.

Change in trends across Residential types over the years in regards to sales and their profitability

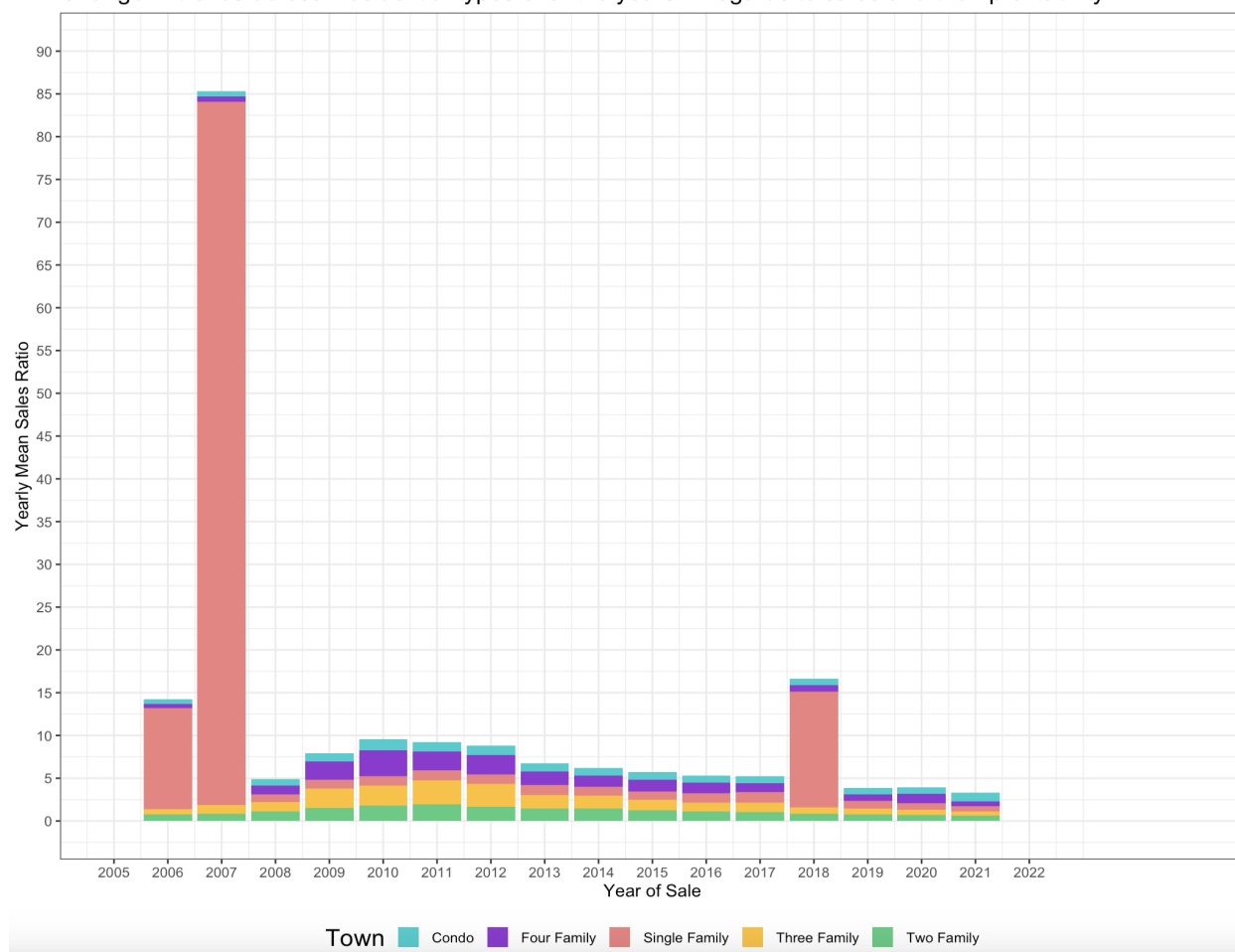


Fig 11: Changes in trends

9. Correlation of prices of units to their location and properties before and after the Recession

[1] "(Intercept)"
 [3] "TownBethany"
 [5] "TownBranford"
 [7] "TownBrookfield"
 [9] "TownCanton"
 [11] "TownChester"
 [13] "TownDanbury"
 [15] "TownDurham"
 [17] "TownEaston"
 [19] "TownEssex"
 [21] "TownFarmington"
 [23] "TownGoshen"
 [25] "TownGuilford"
 [27] "TownLitchfield"
 [29] "TownMadison"
 [31] "TownMilford"
 [33] "TownMorris"
 [35] "TownNew Fairfield"
 [37] "TownNewtown"
 [39] "TownNorwalk"
 [41] "TownOld Saybrook"
 [43] "TownOxford"
 [45] "TownRidgefield"
 [47] "TownSalisbury"
 [49] "TownShelton"
 [51] "TownSimsbury"
 [53] "TownStamford"
 [55] "TownSuffield"
 [57] "TownWarren"
 [59] "TownWest Hartford"
 [61] "TownWeston"
 [63] "TownWilton"
 [65] "TownWoodbury"
 [67] "Residential.TypeSingle Family"
 [69] "Residential.TypeTwo Family"

"TownAvon"
 "TownBethel"
 "TownBridgewater"
 "TownBurlington"
 "TownCheshire"
 "TownCornwall"
 "TownDarien"
 "TownEast Lyme"
 "TownEllington"
 "TownFairfield"
 "TownGlastonbury"
 "TownGreenwich"
 "TownKent"
 "TownLyme"
 "TownMiddlebury"
 "TownMonroe"
 "TownNew Canaan"
 "TownNew Milford"
 "TownNorfolk"
 "TownOld Lyme"
 "TownOrange"
 "TownRoxbury"
 "TownSharon"
 "TownSherman"
 "TownSouthbury"
 "TownStonington"
 "TownTrumbull"
 "TownWashington"
 "TownWestbrook"
 "TownWestport"
 "TownWoodbridge"
 "Residential.TypeFour Family"
 "Residential.TypeThree Family"

Fig 12: Significant Variables (Pre-2011)

[1] "(Intercept)"
 [3] "TownBethel"
 [5] "TownBrookfield"
 [7] "TownDarien"
 [9] "TownEaston"
 [11] "TownFairfield"
 [13] "TownGlastonbury"
 [15] "TownGreenwich"
 [17] "TownKent"
 [19] "TownLyme"
 [21] "TownMiddlebury"
 [23] "TownNew Canaan"
 [25] "TownNewtown"
 [27] "TownOld Lyme"
 [29] "TownOrange"
 [31] "TownRedding"
 [33] "TownRocky Hill"
 [35] "TownSalisbury"
 [37] "TownShelton"
 [39] "TownStamford"
 [41] "TownTrumbull"
 [43] "TownWashington"
 [45] "TownWeston"
 [47] "TownWillington"
 [49] "TownWindham"
 [51] "Residential.TypeSingle Family"
 [53] "Property.TypeFour Family"
 [55] "Property.TypeThree Family"

"TownAvon"
 "TownBridgewater"
 "TownCornwall"
 "TownEast Lyme"
 "TownEssex"
 "TownFarmington"
 "TownGoshen"
 "TownGuilford"
 "TownLitchfield"
 "TownMadison"
 "TownMonroe"
 "TownNew Fairfield"
 "TownNorwalk"
 "TownOld Saybrook"
 "TownOxford"
 "TownRidgefield"
 "TownRoxbury"
 "TownSharon"
 "TownSherman"
 "TownStonington"
 "TownWarren"
 "TownWaterbury"
 "TownWestport"
 "TownWilton"
 "TownWoodbridge"
 "Residential.TypeThree Family"
 "Property.TypeResidential"
 "Property.TypeTwo Family"

Fig 13: Significant Variables (Post-2011)

Dividing & analyzing the data pre & post 2011 gives us a better understanding of what changed after the housing bubble burst. As seen in the table above, using logistic regression we can see the significant factors before 2011, where all residential types excluding condos impacted the pricing and assessed value of the property. Post 2011 we can see the property type as well as residential type affecting the prices. Condos seem to have a different pricing structure altogether being unaffected by the changes. We can also notice the changes in towns and how certain towns affected the pricing of the property.

Recommendations:

1. Variations in Sale Amounts across Towns

Significant variation was observed in sale amounts across different towns in Connecticut suggesting that real estate companies should customize their strategies for each town. Companies might concentrate on high-end properties in high-sale towns like Greenwich, Darien, New Canaan, and Westport, while viewing lower-sale towns as potential opportunities for affordable housing projects.

2. What is common to clusters by property type and residential type?

Our clustering analysis resulted in three clusters with similarities based on property type and residential type suggesting that different real estate agents can be handling each cluster/portfolio of properties depending on their expertise. Additionally, real estate companies and developers could focus on types of properties that align with their expertise and resources based on the

cluster that aligns with their skillset. For example, if a company has a strong portfolio in single-family homes, it might choose to maintain focus in that area given the identified cluster similarities. They could also consider exploring new markets that share these common traits to expand their business.

3. Correlation between the assessed value of properties and their geographical location and identification of areas with higher values.

Our analysis revealed that there is a correlation between assessed value of properties and their geographic location suggesting that companies should consider focusing their resources on areas with higher assessed property values such as Willington and Norwalk. These areas can provide a higher return on investment. However, companies should also consider other factors (like demand, community characteristics, or local amenities) that can influence property values. It could also be useful to look at areas with lower property values as potential opportunities for investment and development, particularly if those areas are on the upswing or present other appealing characteristics.

4. Relationships between the assessed value or sales amount and specific property features

Given the significant relationship between certain property features i.e. Three Family, Single Family & Two Family residentials and sales amount, it is recommended that developers should focus on incorporating these features into their designs. For example, providing additional bedrooms or bathrooms can potentially increase the sale amount. Further, given that Single Family homes are the easiest to sell, companies should prioritize these residential types in their property portfolio, balancing with other factors such as construction cost and desired profitability.

5. Trend between assessed value and sales value over the years

Investing in multi-family properties like Four Family, Three Family, and Two Family Housing showed profitability, particularly during the 2008-2013 period. While past performance does not guarantee future results, this historical trend might indicate potential areas for profitable investments. However, it's crucial to consider factors like current market conditions and location before investing.

6. Easy selling residential types

By analyzing our graph (Fig 9), it is clear that single family properties have significantly higher properties sold compared to any other property types. Over 70% of total properties sold are single family properties. Therefore, Real estate developers should focus on investing in single family properties when the economic condition is in healthy status. Especially in high value towns like Greenwich, Darien, and New Canaan to maximize return.

7. Quickest and Slowest Sale rate across different towns

In our analysis, we discovered that Norfolk is fastest selling towns, and single family being the fastest selling property type. Therefore real estate developers should concentrate their efforts in developing real estate in these towns (before the point of saturation). Additionally, investors

should also explore buying options for single family properties in towns like Norfolk, Derby, Colebrook to get maximum return on their investment in a short amount of time.

8.Changes in trends across Residential Types over the years in regards to sales and their profitability

Real estate developers and investors should adjust their strategies based on historical market trends and shifting residential property sales. The increased sales of multi-family properties during economic downturns suggest a cost-sharing appeal during harder times, while single-family homes surge in sales during recoveries. Recently, condos' profitability indicates a possible shift in housing preferences that could be capitalized on.

9. Correlation of prices of units to their location and properties before and after the Recession

Our analysis reveals the market dynamics pre and post 2011 (as the market rebounded post housing bubble burst). Prior to 2011, all residential types, except condos, influenced property pricing and assessed value. Post-2011, both the property and residential type play significant roles in property pricing, indicating a shift in consumer preferences and market behavior. Interestingly, condos appear to have a distinct pricing structure, seemingly unaffected by these changes. This suggests that real estate developers and investors may benefit from a diversified portfolio that includes condos. Additionally, the shifting significance of certain towns on property pricing post-2011 suggests the need for geographically dynamic strategies, considering localized economic factors and demographic changes.

Conclusion:

Real estate is a dynamic market that is influenced by numerous factors such as location, property characteristics, and economic conditions. For real estate developers, investors, and companies, it is critical to understand these factors and their interactions to make informed and strategic decisions. Our study explored the impact of some of these factors on real estate prices and provides a comprehensive analysis of real estate data, highlighting trends, correlations, and potential opportunities for stakeholders in this sector. Our analysis was based on several research questions designed to explore these various facets of the real estate market. The questions ranged from understanding correlations between property attributes and their valuations to identifying trends across different towns and property types.

Our analysis showed that there are identifiable clusters within property types and residential types, which often share similar characteristics. For companies specializing in specific types of properties, such as single-family homes, these findings suggest that focusing on these similar clusters could be beneficial, considering their expertise and available resources. Additionally, exploring new markets that share these common traits could be a viable strategy for business expansion.

The assessed value of properties showed a significant correlation with their geographical location. Areas like Willington and Norwalk had higher property values, potentially offering a higher return on investment. However, it's crucial to note that real estate investments should not be guided solely by property values. Other factors such as demand, community characteristics, and local amenities also play a role.

Our findings also revealed a strong relationship between property type (such as the size of the number of bedrooms/ single family homes etc) and their sales value. We concluded that Single Family homes tend to sell the fastest, making them a potentially valuable addition to any property portfolio for real estate agents. This also gives developers a better idea about the needs of the market so they can direct their efforts toward developing those properties.

We observed varying trends in the sales ratio (the ratio of sales value to assessed value) over the years. In periods when this ratio is expected to increase, it could be beneficial for companies to sell more properties to maximize returns. In contrast, during periods with a lower sales ratio, the focus could shift towards acquiring and developing properties.

We noticed fluctuating trends in different towns over the years in regards to sales and their profitability. Most sales were seen in 2007 during the housing bubble. It implies that real estate companies should be adaptable, adjusting their investment strategies in line with these shifts. For instance, our analysis suggests that investing in condos may offer consistent profitability, while Four Family and Three Family residential types have shown peak profitability in certain years.

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Type&blobcol=urldocumentfile&blobtable=SPComSecureDocument&blobheadervalue2=inline%3B+filename%3Ddownload.pdf&blobheadername2=Content-
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