ISM 6155 – ENTERPRISE INFORMATION SYSTEMS

Group 7- Property Value Analysis 5th Avenue South Boundary

Team

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Introduction

This project aims to conduct a detailed examination of property values in the South St. Petersburg Community Redevelopment Area (CRA) between 2015 and 2022. Our primary research questions are the comparison of property values across these two-time frames, the identification of trends in property value fluctuations, the exploration of property use impacts, and the assessment of the homestead exception's influence. We created relevant graphics such as heat maps, line graphs, and bar graphs by combining two critical datasets and using data visualization and business intelligence tools, primarily Tableau. The project resides on Tableau Public Server for convenient access, and the findings seek to provide significant insights that may guide the City's investment strategy in South St. Petersburg CRA.

Methodology

Data sources:

- We acquired two crucial datasets for this analysis: Property Appraiser/Department of Review Data for 2015 and Property Appraiser/Department of Review Data for 2022.
- Our analysis focused on the variable "Taxable Value Non-School District," which appears in column M of both datasets.

Data integration:

- To enable meaningful comparisons between the 2015 and 2022 datasets, we connected the two using the "Physical Zip Code" field. This column functioned as a common identifier, allowing us to efficiently link the data.

Data cleaning:

- The quality of the datasets was an important consideration in our investigation. We did not do any further data cleaning operations because the datasets given were ready for analysis. The data was correct and free of significant inaccuracies.

Tools and Technology:

- We used Tableau to turn the data into meaningful visualizations and dashboards. Tableau is a versatile data visualization and business intelligence application that excels at rapidly managing and presenting complicated datasets, making it an ideal match for our project.

Analysis and Visualization methodology:

- Our analysis consists of the use of numerous Tableau features, including filters, line graphs, bar graphs, heat maps, and more to produce a wide range of visualizations.

- To make our analysis easily accessible and shareable, we hosted the project on Tableau Public Server. The whole project can be accessed at the URL provided at the conclusion of this document.

Results

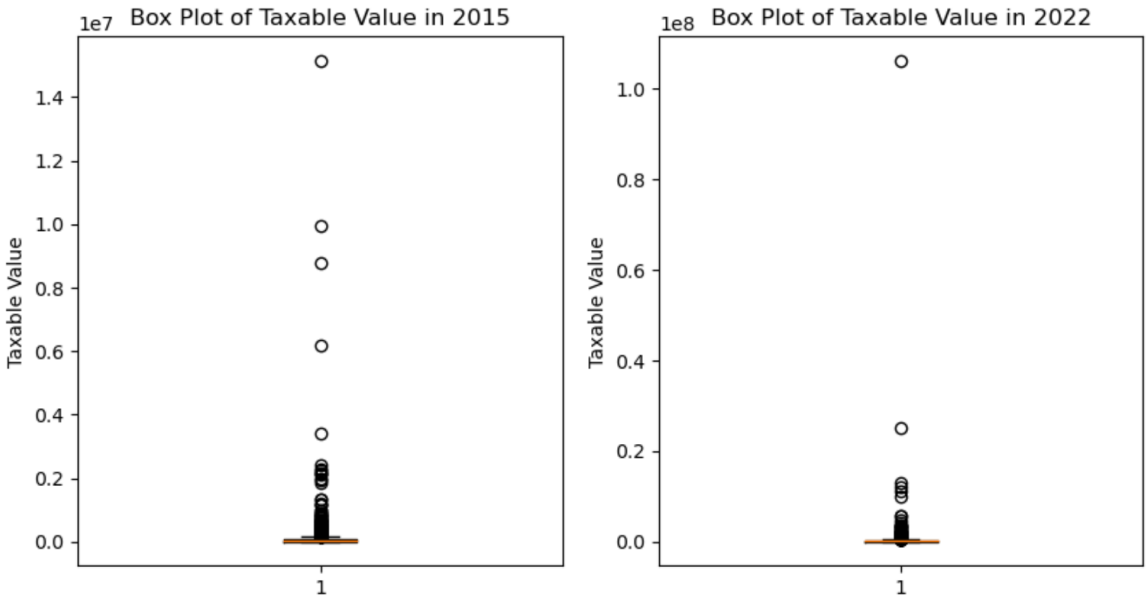
The evaluation of property values in the South St. Petersburg Community Redevelopment Area reveals a complex tapestry of real estate valuation between 2015 and 2022. The results are presented graphically using two types of graphical analyses: box plots and comparative bar plot. Each of these visualizations offers a unique viewpoint on the data, allowing us to make broad conclusions regarding property value trends.

Box plot analysis between 2015 and 2022.

The box plot provides a statistical summary of the property values in the form of five number summaries: the minimum, first quartile (Q1), median, third quartile (Q3), and maximum. Outliers are also shown as individual points.

2015: The box plot displays a relatively compact interquartile range (IQR), representing the area between Q1 and Q3, implying that most of the property values were clustered within a tighter range. The presence of outliers above the upper whisker indicates that there were properties that significantly outperformed the general value range, implying pockets of higher-valued real estate even at this early point in time.

2022: In contrast, the 2022 box plot shows a considerably enlarged IQR, indicating a broadening in the spread of property values. The median, represented by the line within the box, has shifted upward, indicating an overall increase in property values. Furthermore, the range of outliers has extended, implying that the high-value property segment has increased in value as well as and number of properties.



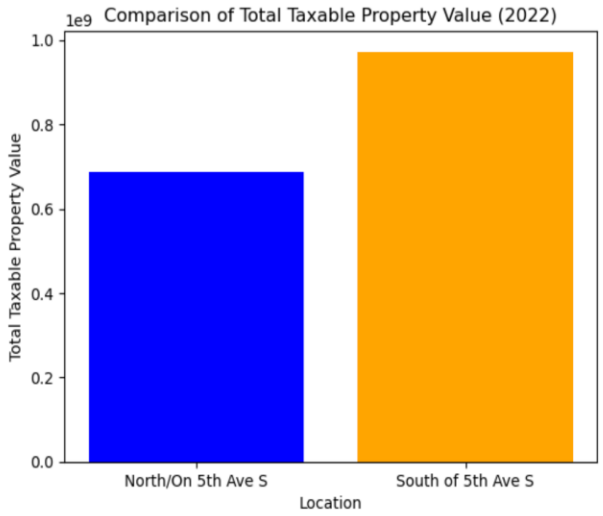
This side-by-side comparison of box plots demonstrates an obvious upward trajectory in property values over a seven-year period, with a significant widening in the range of property valuations by 2022.

Bar plot of total taxable property value (2022)

The bar plot displays an apparent disparity between the total taxable property prices for properties north/on 5th Avenue South and those south of it in 2022:

```
[58]: # Create a bar plot comparing total taxable property value for properties north/on 5th Avenue S to properties South of 5th
categories = ['North/On 5th Ave S', 'South of 5th Ave S']
values = [total_taxable_value_2022_north, total_taxable_value_2022_south]

plt.bar(categories, values, color=['blue', 'orange'])
plt.title('Comparison of Total Taxable Property Value (2022)')
plt.xlabel('Location')
plt.ylabel('Total Taxable Property Value')
plt.show()
```



The bar indicating the north/on 5th Avenue South (shown in blue) towers much above the bar for the south (shown in orange). This stark height difference visibly depicts the differential in overall taxable values, with the north/on side displaying a far higher aggregate value.

This visualization shows the geographic disparity in property valuation, with properties on or north of 5th Avenue South obtaining greater overall taxable values. The consequences are multifaceted, implying not only a variance in individual property values but also the possibility of broader economic reasons such as development patterns, investment trends, and demographic shifts that may have contributed to this gap between them.

By combining these graphical insights, the data tells a story of growth and increasing variation in property values within the CRA. The shift in median values, as well as an expansion of upper-range outliers, indicate a more dynamic and possibly profitable real estate market for certain demographics. The findings show a significant economic gradient along 5th Avenue South, presenting a vivid picture of the area's growing economic landscape.

Questions:

A. Taxable property values for properties On/north of 5th Avenue South:
   What was the total taxable property value in 2015?
   What was the total taxable property value in 2022?
   How much has it increased over time?

[56]:
```
# Filter data for properties On/north of 5th Avenue South
north_2015 = data_2015[data_2015['Group 3 Question: Location Relevant to 5th Ave S'] != 'South of 5th Ave S']
north_2022 = data_2022[data_2022['Group 3 Question: Location Relevant to 5th Ave S'] != 'South of 5th Ave S']

# Calculate total taxable property value in 2015 and 2022 for properties On/north of 5th Avenue South
total_taxable_value_2015_north = north_2015['Taxable Value – Non-School District'].sum()
total_taxable_value_2022_north = north_2022['Taxable Value – Non-School District'].sum()

# Calculate increase over time
increase_over_time_north = total_taxable_value_2022_north - total_taxable_value_2015_north
```

[57]:
```
# Output results
print("A. Taxable property values for properties On/north of 5th Avenue South:")
print("Total taxable property value in 2015:", total_taxable_value_2015_north)
print("Total taxable property value in 2022:", total_taxable_value_2022_north)
print("Increase over time:", increase_over_time_north)
```

```
A. Taxable property values for properties On/north of 5th Avenue South:
Total taxable property value in 2015: 241633640
Total taxable property value in 2022: 688080667
Increase over time: 446447027
```

B. Taxable property values for properties south of 5th Avenue South:
What was the total taxable property value in 2015?
What was the total taxable property value in 2022?
How much has it increased over time?

```
# Filter data for properties south of 5th Avenue South
south_2015 = data_2015[data_2015['Group 3 Question: Location Relevant to 5th Ave S'] == 'South of 5th Ave S']
south_2022 = data_2022[data_2022['Group 3 Question: Location Relevant to 5th Ave S'] == 'South of 5th Ave S']

# Calculate total taxable property value in 2015 and 2022 for properties south of 5th Avenue South
total_taxable_value_2015_south = south_2015['Taxable Value – Non-School District'].sum()
total_taxable_value_2022_south = south_2022['Taxable Value – Non-School District'].sum()

# Calculate increase over time
increase_over_time_south = total_taxable_value_2022_south - total_taxable_value_2015_south
```

```
print("\nB. Taxable property values for properties south of 5th Avenue South:")
print("Total taxable property value in 2015:", total_taxable_value_2015_south)
print("Total taxable property value in 2022:", total_taxable_value_2022_south)
print("Increase over time:", increase_over_time_south)
```

```
B. Taxable property values for properties south of 5th Avenue South:
Total taxable property value in 2015: 331466685
Total taxable property value in 2022: 972295423
Increase over time: 640828738
```

Conclusion:

The analysis of property values along 5th Avenue South in the South St. Petersburg CRA from 2015 to 2022 indicates a substantial increase and rising market diversity. The upward trend in median values and the expanded range of high-valued outliers indicate a strong and maturing real estate market. North/South 5th Avenue properties have significantly higher taxable values, indicating a concentration of economic activity and development possibilities in these locations.

The significant gap in property valuations on either side of 5th Avenue South emphasizes the importance of strategic investment and thoughtful design of urban areas in capitalizing on this growth. Divergent tendencies present stakeholders with both potential for capitalization and a

call to rectify the balance of development. Any subsequent initiatives should aim to maintain this growing trend while ensuring fair growth across the CRA.

Link to Visualizations

For a complete view of the data and accompanying visualizations, please visit our Tableau Public workspace: Tableau Visualization