ALY6060: Decision Support & Business Intelligence

Assignment 4

IBM SPSS Visualization: Vancouver Property Tax Report 2023

Submitted to: Prof. Fatemeh Abkenari

Submitted by: Group 8

Abhilash Kumar Dikshit

Shamim Sherafati

Date: 12/03/2023

College of Professional Studies, Northeastern University Vancouver, Canada

I.   Introduction:

The extensive visualization and examination of property tax data aimed to delve into and comprehend various aspects related to property tax assessments, with a focus on data storytelling. Employing a dataset comprising 873,124 entries, the research explored relationships between independent variables like zoning details, year built, and neighborhood codes, and dependent variables including land values, improvement values, and legal types. The analysis incorporated visualizations to discern the impact of TAX_LEVY, REPORT_YEAR, and YEAR_BUILT on CURRENT_LAND_VALUE and PREV_LAND_VALUE. This effort aimed to unveil hidden patterns within property tax assessment variables, utilizing a classification tree approach for predicting legal types based on property characteristics.

II.   Analysis:

As depicted in the below bar chart, it illustrates the zoning classification in the Vancouver region along with past and present land values. The examination offers a thorough visualization of zoning attributes in conjunction with previous and current land values, offering insights into the urban landscape. This report delves into the observations derived from the dashboard components, portraying a clear picture of the correlation between zoning classifications and property values.
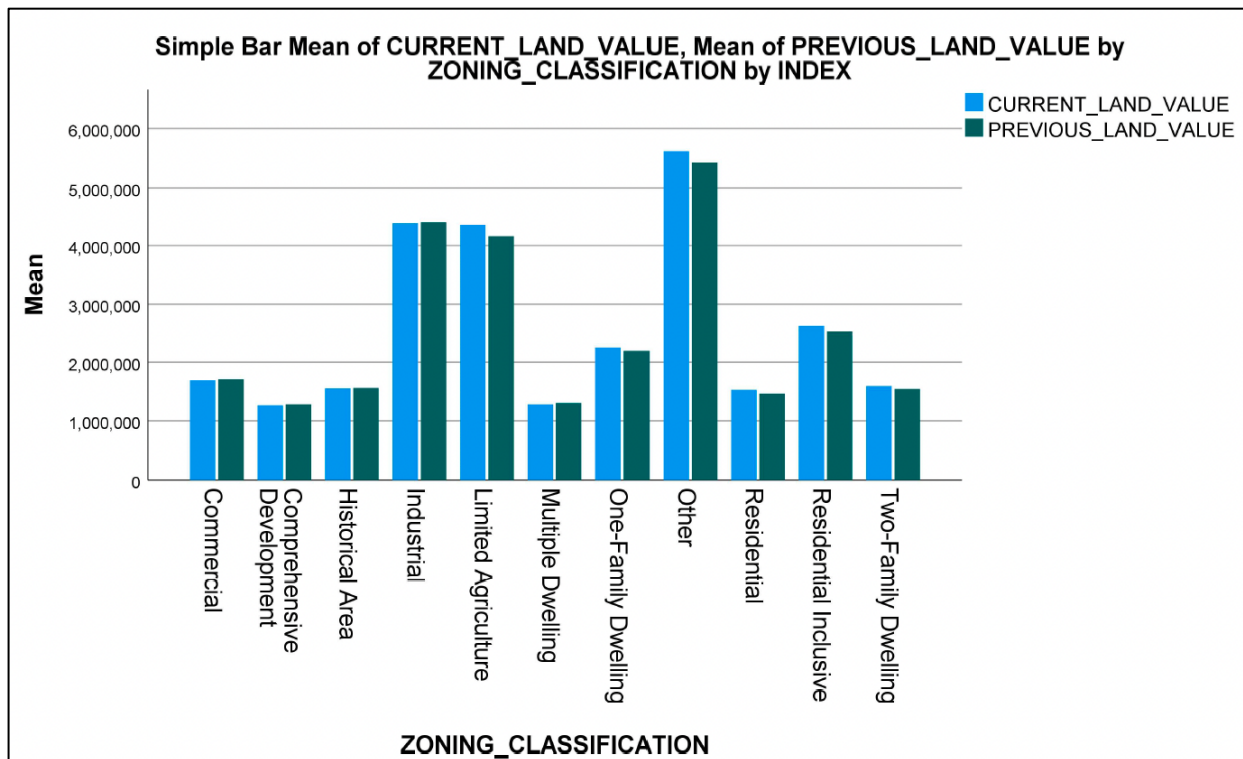

Fig 1: Dynamics of Land Values from 2020 to 2023 Based on Zone classification.

A. Dynamics of Land Values from 2020 to 2023 Based on Zone classification

Examining the trends in property taxes reveals interesting changes in the average present values of land from 2020 to 2023. The bar chart indicates a consistent stability in land and strata values, in contrast to notable fluctuations observed in other property categories. These fluctuations, rising from 22.19 million in 2020 to a peak of 29.59 million in 2023, warrant a more thorough investigation into the underlying trends and their effects on the urban environment.

B. Historical Land Value Trends

Shifting to the stacked area chart, an examination of historical data reveals the correlation between the years of property construction and the average values of land. Noteworthy findings encompass a substantial decline from 1800 to 1890, a noteworthy upswing around 1900, and subsequent variations after the year 1900. These changes inspire inquiries into the economic, societal, and developmental factors that impact the dynamics of property values over time.
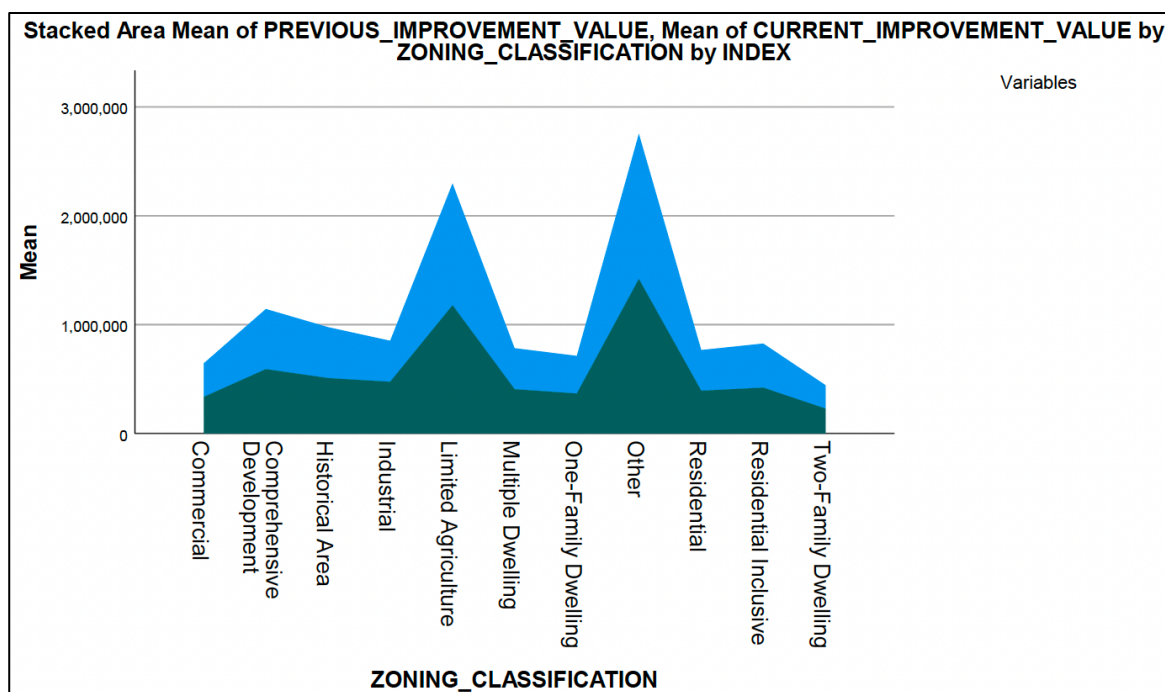

Fig 2: Historical Land Value Trends.

C. Tax Responsibilities and Legal Categories

The clustered column chart offers a glimpse into the distribution of tax obligations among different legal classifications and zoning categories within the land sector. Remarkably, comprehensive development shows the highest tax responsibility at 149k, trailed by historical and industrial zones at 83k and 82k, respectively. In contrast,

3

residential properties consistently carry lower tax burdens, prompting inquiries into the factors influencing their contributions.
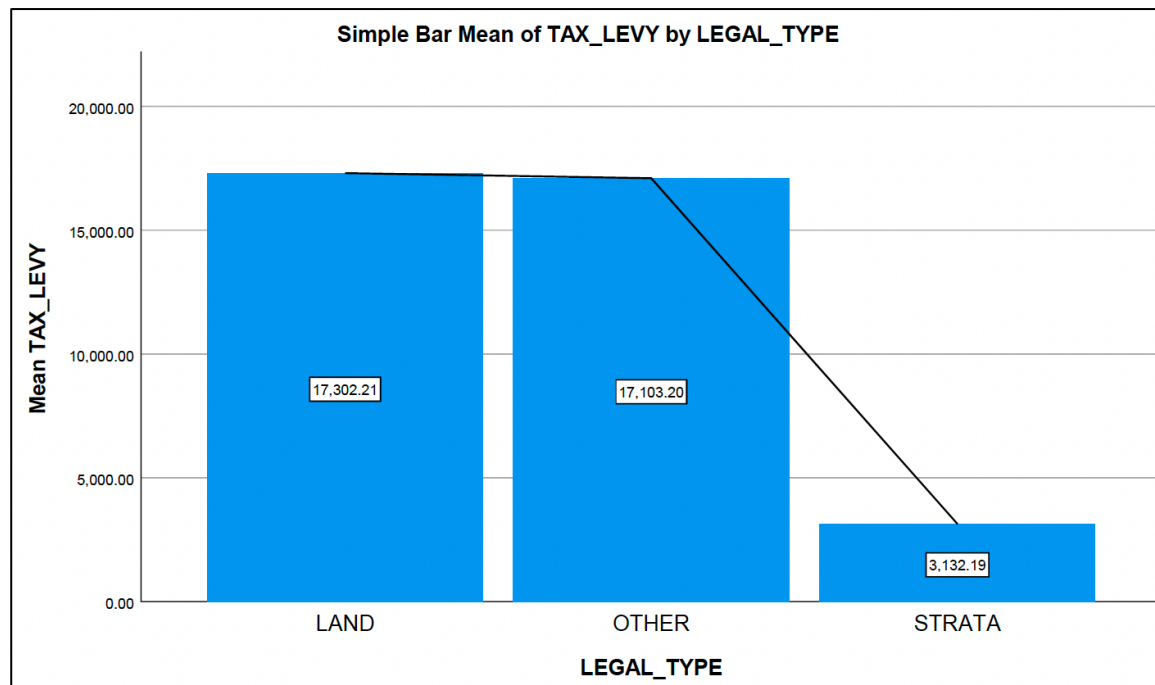

Fig 3: Tax Responsibilities and Legal Categories

III.   Conclusion:

The synthesis of information gleaned from various visual representations creates a nuanced depiction of Vancouver's urban development. It goes beyond merely showcasing visual data; instead, it unfolds a narrative encompassing zoning complexities, property tax fluctuations, historical patterns, and the intricate geographical fabric—all playing a role in narrating the tale of the city's evolution.

IV.   Recommendations:

The profound insights obtained from these visual representations provide stakeholders with a fertile foundation for making strategic decisions. Delving deeper into regional details, the impact of policies, and societal trends through additional analyses will contribute to the formulation of robust policies and urban planning strategies, fostering resilience and vibrancy in Vancouver.

V.   References:

Property tax report. (n.d.). https://opendata.vancouver.ca/explore/dataset/property- tax-report/table/?sort=-tax_assessment_year