Detailed Analysis:

Introduction

- **Purpose of the Analysis**: Project 1
- **Research Questions**: What are the most expensive cities in Ontario for housing and how have their average house values changed overtime?
- **Scope**: This analysis aims to provide insights for homebuyers, allowing them to compare cities based on the average sold prices of homes over previous years.

Data Description

- **Source of Data**: House Sigma for Canadian real estate data platform
- **Dataset Overview**: 5,10,920 Rows and 18 columns.
- **Data Attributes**: Contains columns like area/community name, cities name, Period (house sold year and month), house sold price etc.

Methodology

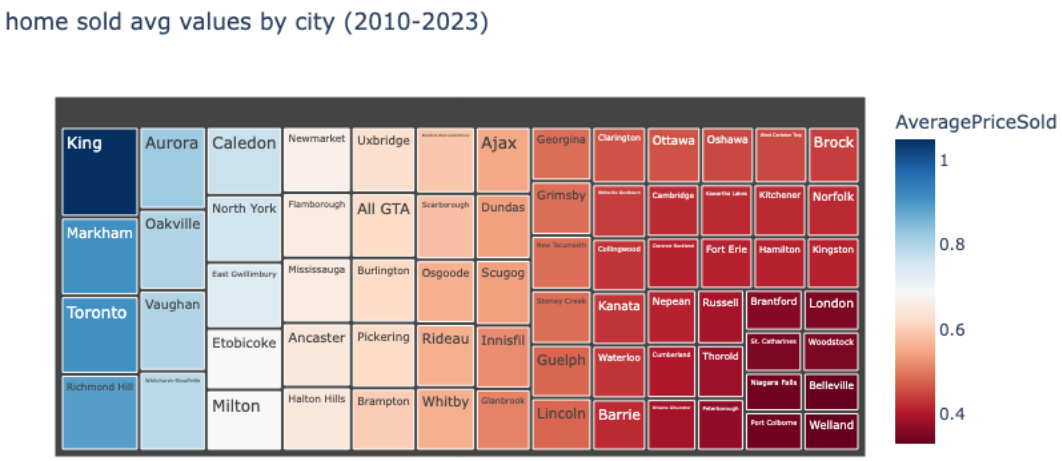
- **Data Exploration**: Checked for number of rows for each column. Used panda's library to understand the data structure.
- **Data Cleaning**: Outline any data preprocessing steps such as:
    - checked duplicates or irrelevant data
    - checked null values
    - Changing the data type
    - Remove unnecessary columns

Data Analysis:

The analysis aims to identify the most expensive cities in Ontario for housing and to examine how their average house values have changed over time. To achieve this, two visualizations were created: a **tree map** displaying the relative housing prices across different cities and a **line chart** illustrating the trend of average house values over specific time periods.

Tree Map Analysis - The **tree map** provides a visual representation of the housing market in Ontario, highlighting the most expensive cities based on average house prices. Each city

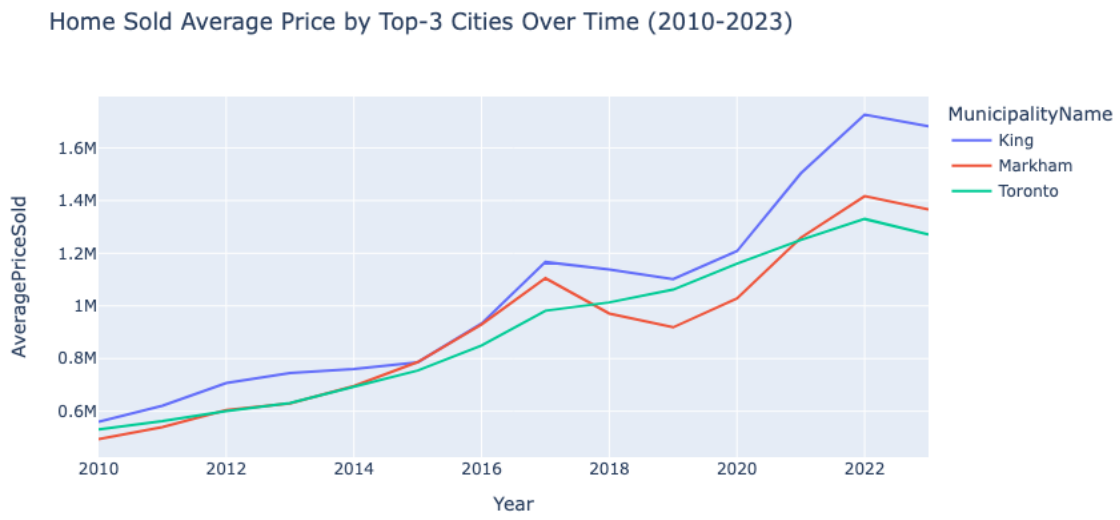
is represented as a square, with the size and color shades corresponding to its average house value.



Key Observations:

- Cities such as **King**, **Markham**, and **Toronto** stand out as the most expensive, occupying the largest areas within the tree map. This indicates that they have significantly higher average house prices compared to other cities.
- **King** remains the most prominent city with approximately $1.6 million. Average house sold price, reflecting its status as a major urban center with high pricing for housing.
- Cities like **Markham** and **Toronto** also show substantial average prices, indicating a competitive housing market in those areas.
- Some neighborhoods like Brampton and Pickering, represented by lighter shades of blue, have shown an increase in average home sold values over time. This suggests a trend of rising home prices in these areas.
- Cities like London, Woodstock, and Belleville are represented by red shades, indicating lower average home sold values compared to the top-tier neighborhoods.
- This contrast highlights the significant price differences across various neighborhoods in Ontario.

2. Line Chart Analysis - The **line chart** illustrates the changes in average house values in the top 3 cities over time, providing insights into trends and patterns.



Key Observations:

- The line chart indicates a general upward trend in average house values across most cities from 2010 to 2023. This trend suggests a robust demand for housing in Ontario, particularly in urban areas.
- **King** exhibits the most pronounced increase in average house values, particularly from 2020, which could correlate with economic growth and an influx of residents.
- Around 2016-2017, there was a noticeable spike in home prices across all three cities.
- Markham and Toronto have similar trends, with prices closely following each other, but both remain below King.
- Notably, any periods of stagnation or decline in average house values can also be observed.

Conclusion of Analysis

- The combination of the tree map and line chart effectively illustrates that the most expensive cities in Ontario, particularly **King**, **Markham**, and **Toronto** have experienced significant increases in average house values over time. This upward trend emphasizes the ongoing housing market challenges in

Ontario, driven by high demand, limited supply, and urbanization. Understanding these dynamics is crucial for potential buyers, investors, and policymakers as they navigate the complexities of the real estate market.

- **Tools and Libraries**:
    - Python: Pandas, Matplotlib, Squarify, Plotly for analysis and visualization.