

23rd Oct 2023 Project 1

Melbourne Real Estate Analysis



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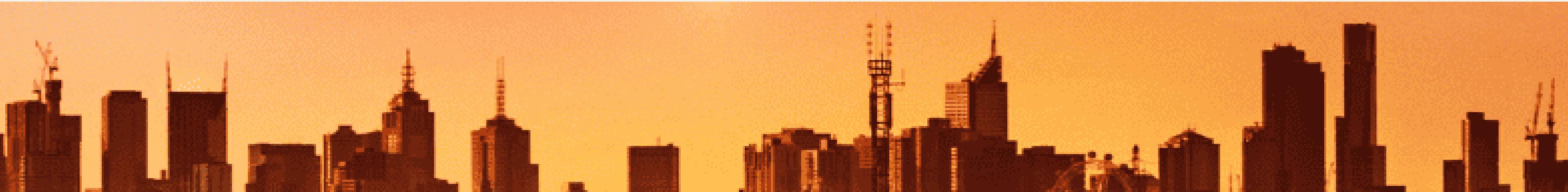
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Hello, Melbourne

Melbourne's property market is a dynamic landscape, influenced by different factors. In this analysis, we delved into property data by using Python to conduct the data cleaning and data analysis for individual use, especially for people relocate or new immigrants, uncovering insights about trends, correlations, and regional disparities .



Background

Project Analysis

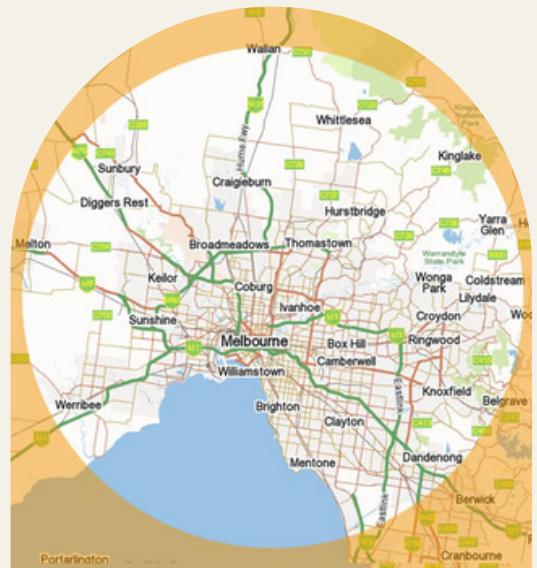


Assumption:

- The data provided is accurate, complete, and reliable
- Does not account for external factors such as changes in economic policy
- Relatively stable market conditions during the specified time frame, no rapid shifts

Background

Project Focuses



Geographical Analysis

Understand how sales activity and price different across the regions

Property Analysis

Figure out sales activity across 2016-2018, and what are the properties' features drives customer interests and property price.



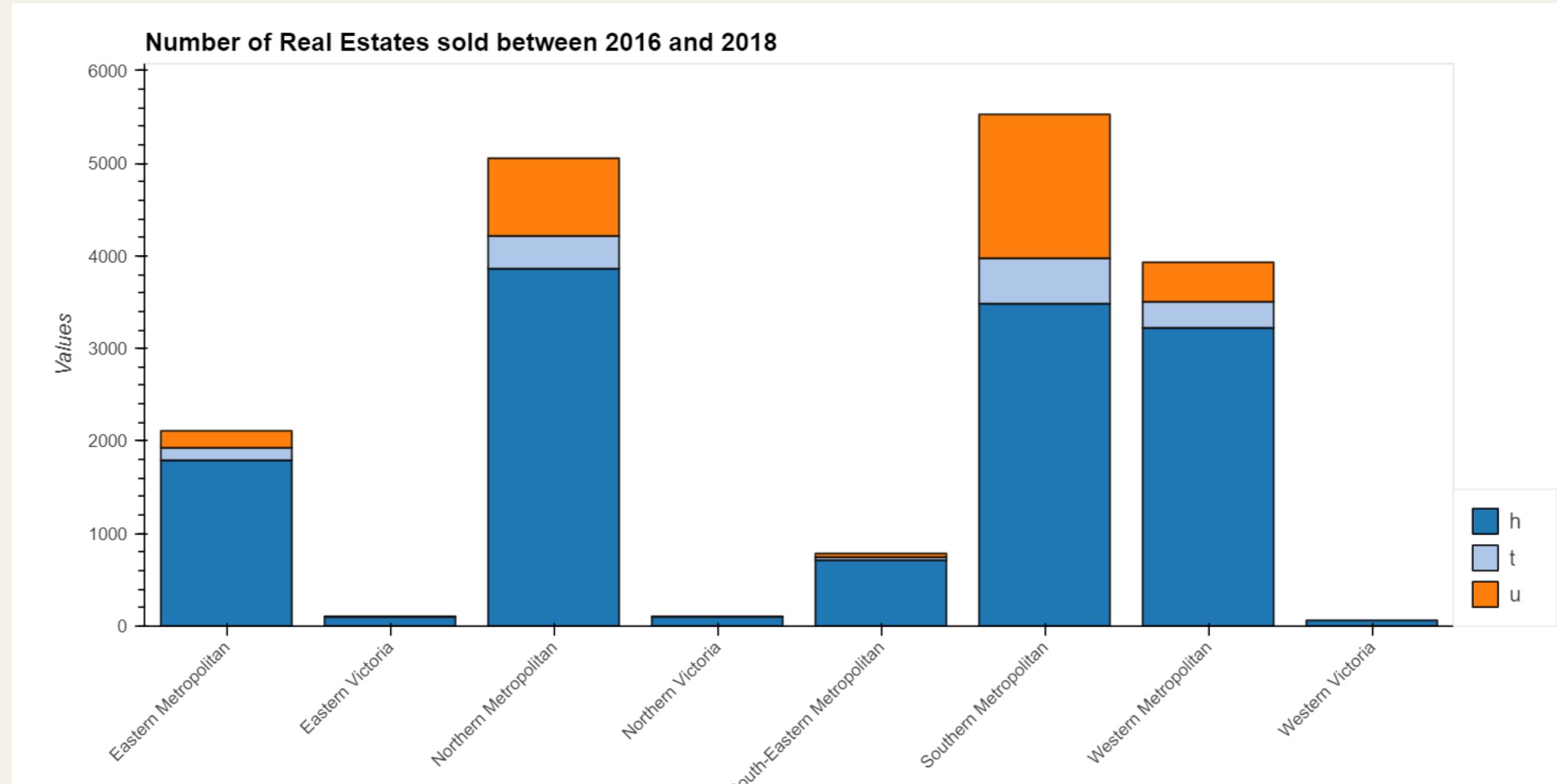
Investment Analysis

Analyse price patterns and market trends using charts and provide future investment references

Geographical Analysis

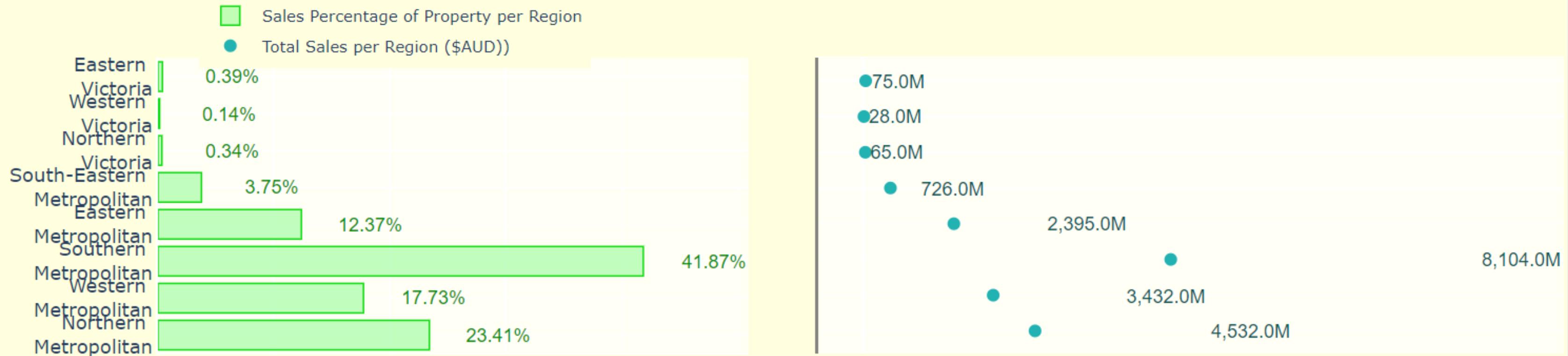
What's the sales distribution across regions, which region yields the most sales in period?

- Housing (75%) takes the majority of the properties sold, followed by units (17%) and townhouses (7%).
- Metropolitan Areas have the largest trading volumes, started off with the Southern part, followed by the Northern part.



Geographical Analysis

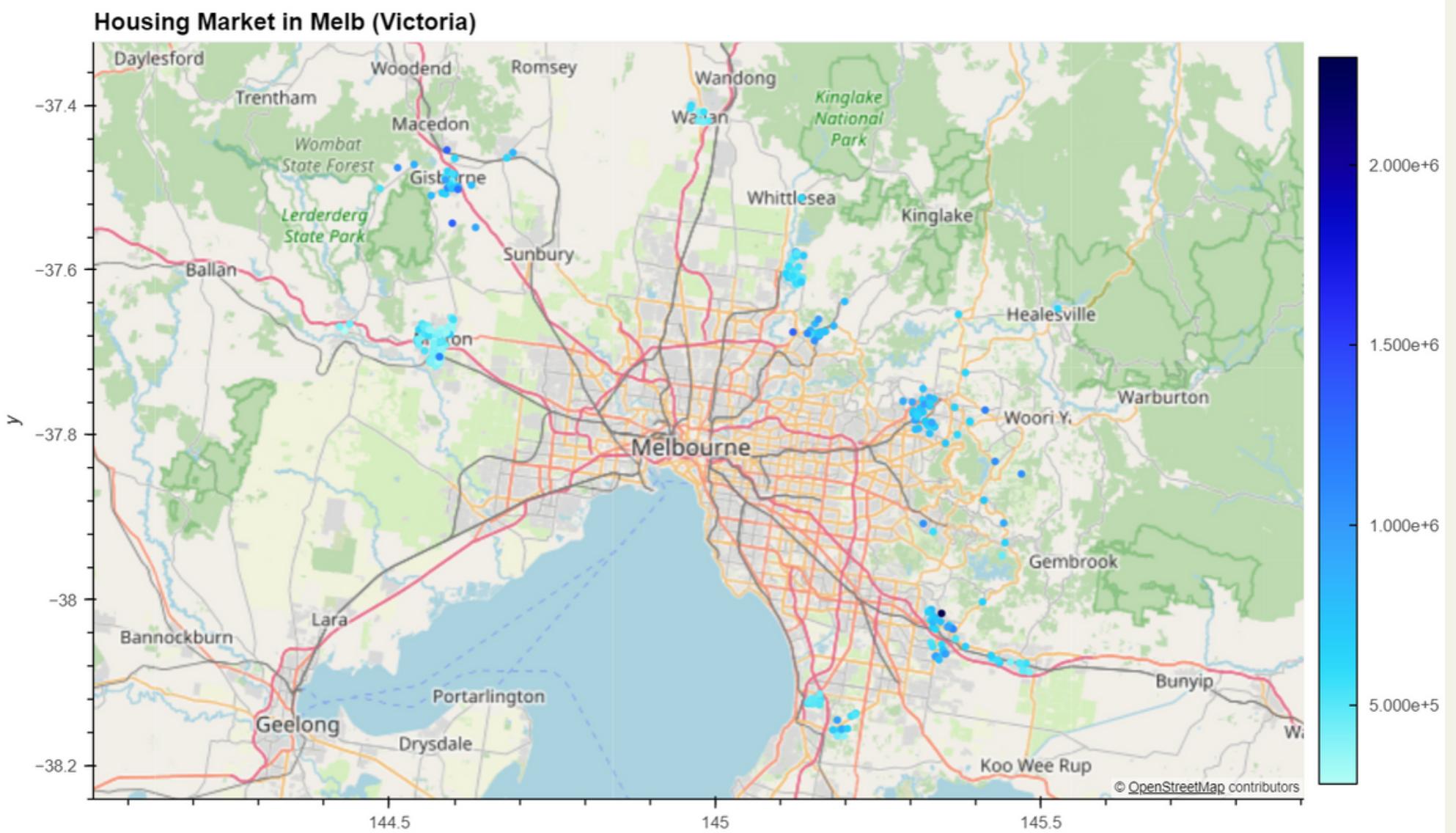
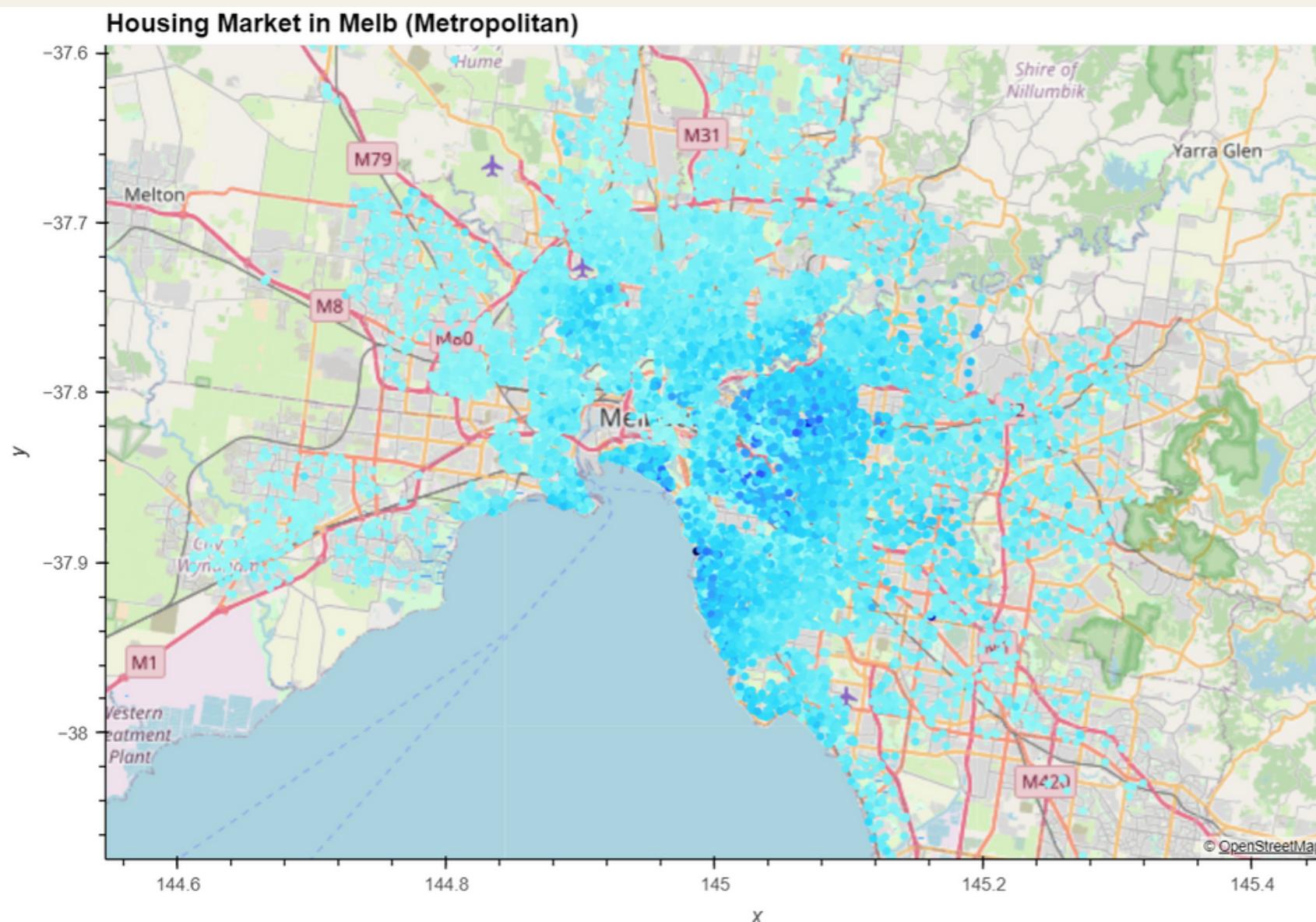
Total Sales in Melbourne Real Estate Market



- Out of \$19B transactions across 2016-2018, about 18k properties had been sold.
- Southern Metropolitan takes up 42% of properties sold totaling about \$8.1B.
- Western Victoria's suburbs have the highest concentration of property sold. First led by Melton South (62%), followed by Melton (30%).

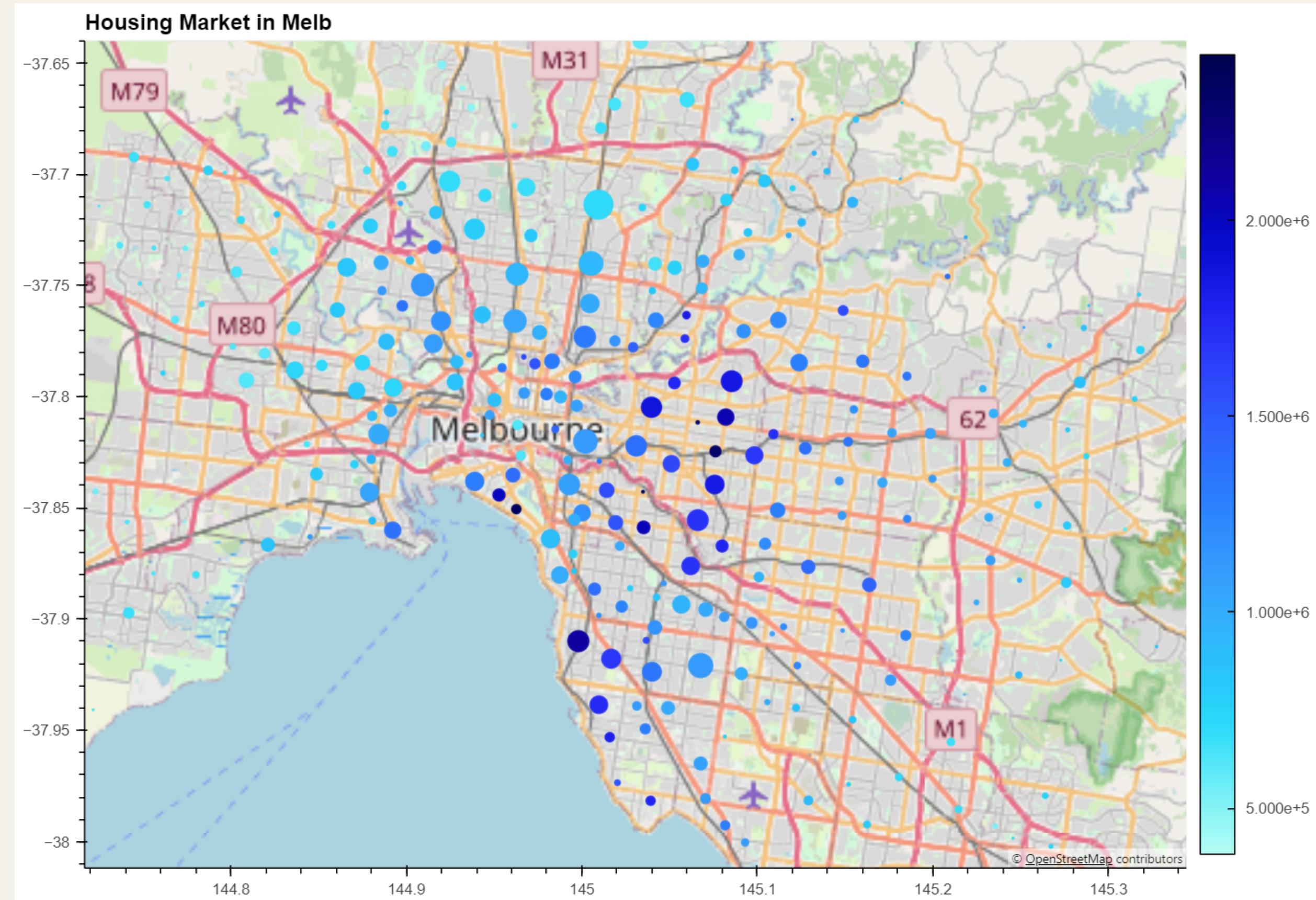
Geographical Analysis

Price v Sales Activity



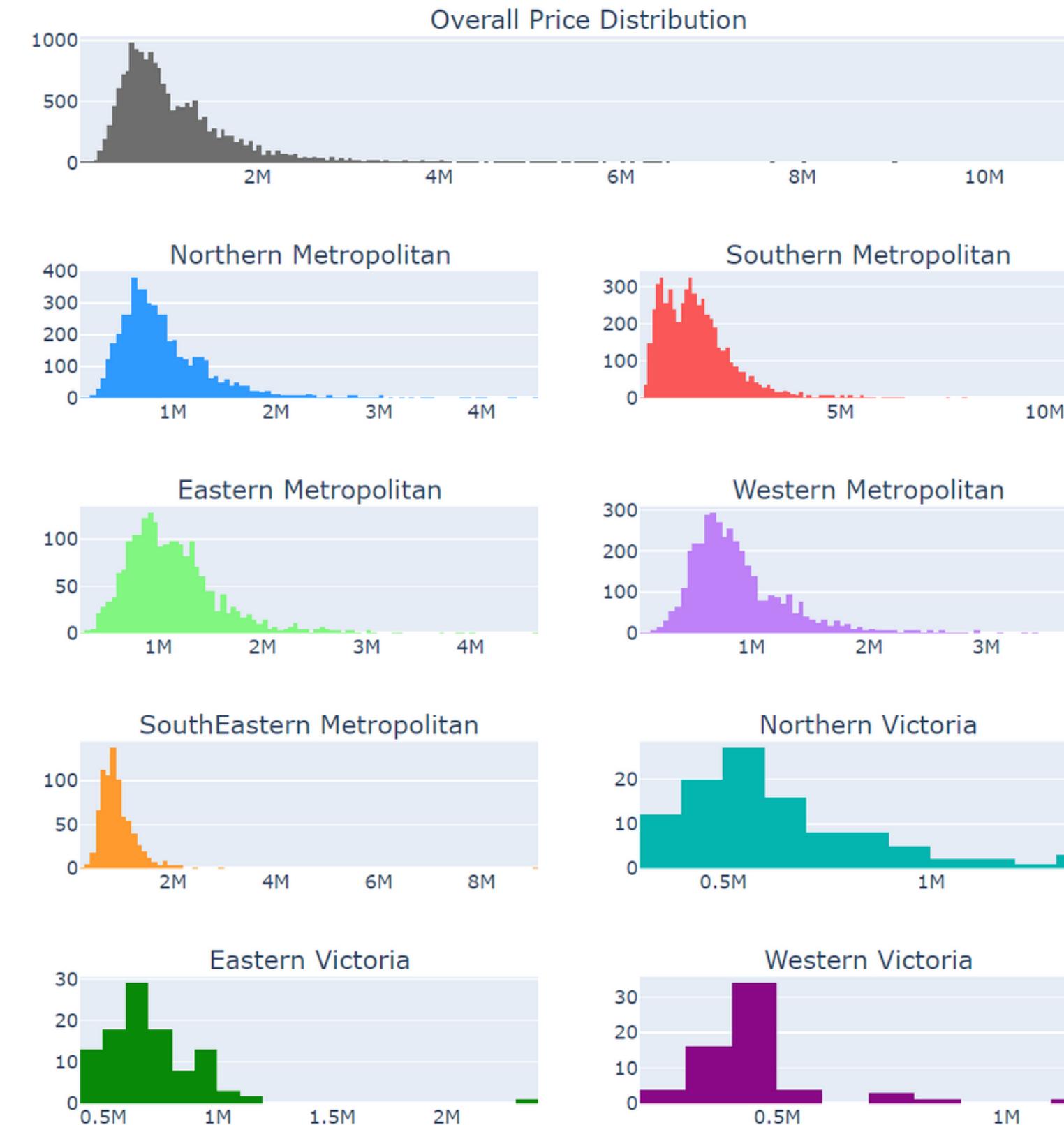
Geographical Analysis

Average Comparison
amongst Suburbs –
Price v Sales Activity



Geographical Analysis

Price Distributions by Region



What's the price range of properties across regions?

Overall:

- \$600-650k as most sought after.

Metropolitan Regions:

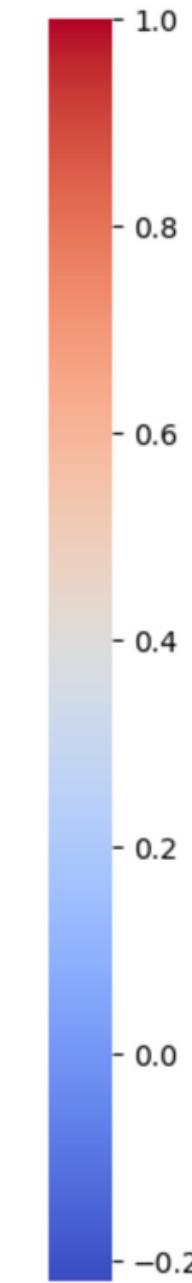
- Northern: \$600-650k as most, consistent distribution with overall.
- **Southern:** \$1.3M-\$1.4M as most, longer tail (up to \$10m+); Higher frequency in lower price ranges than other regions.
- **Eastern:** \$900-950k as most, relatively higher frequency and more evenly distributed around the \$1M range.
- Western: \$ 650-700k, fairly similar distribution with overall.
- **South-Eastern:** \$800-899k, least skewed and kurtosis comparing with other Metropolitan regions.

Victoria Regions:

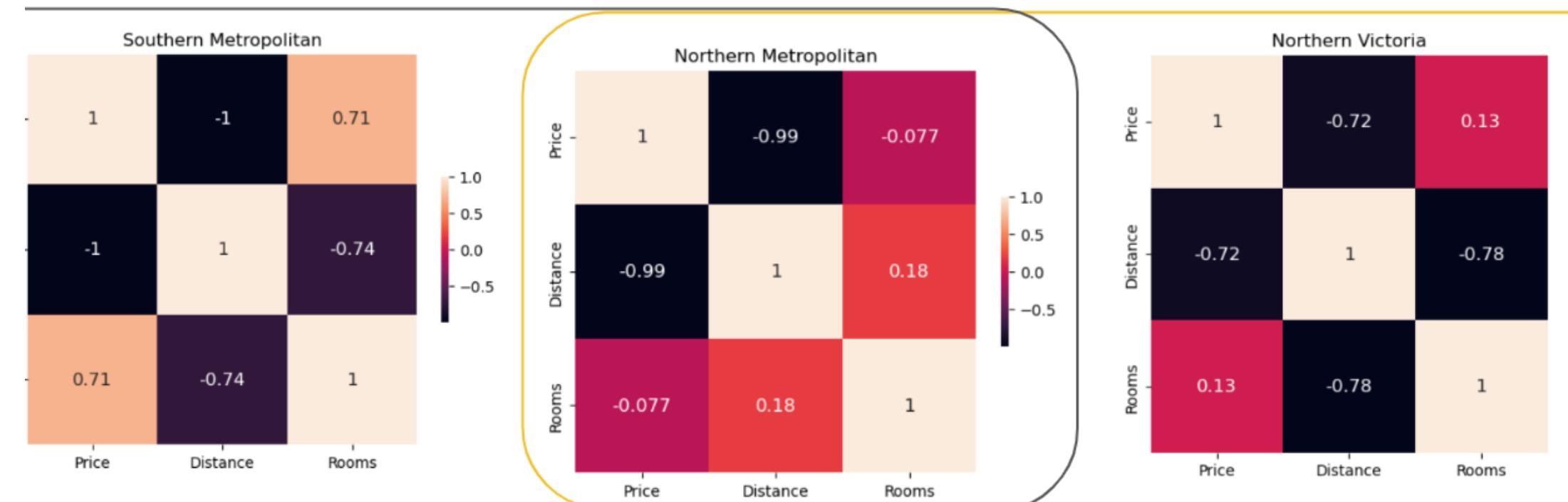
- Northern: \$500-600k at most
- **Eastern:** Higher asks (\$400k+) than others
- Western: Cheapest with \$200k price range as starting point.

Property Analysis

What properties' features impact the sales and price?



- More rooms and bathroom means the price tends to be higher
- Distance closer to CBD, price to be more expensive
- a very weak positive correlation between price and landsize

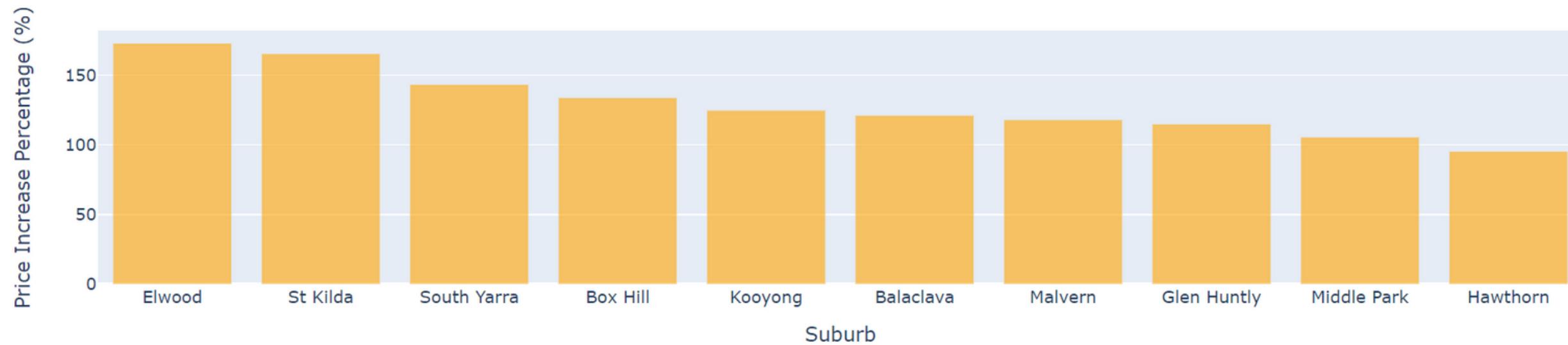


Majority of the regions seem to share the same correlation relationship.

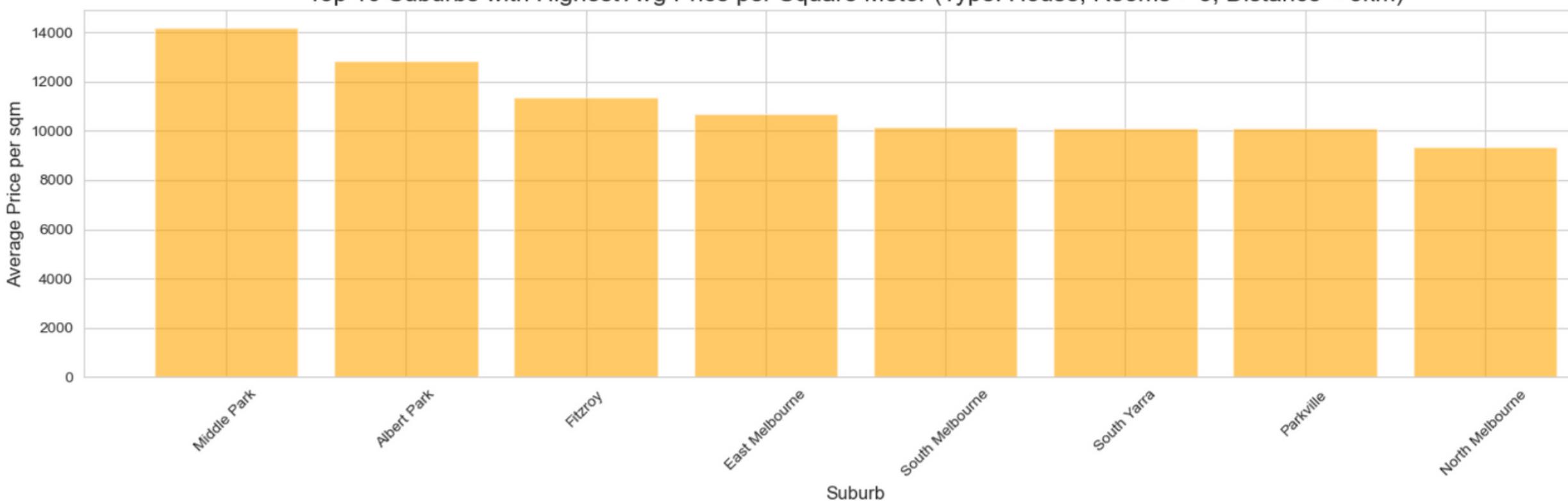
- ↑ Price ; ↑ # of Rooms - Metropolitan Regions shares the highest correlation, followed by Victoria. **Except Northern Metropolitan**
- ↑ Price; ↓ Distance from CBD - Close to -1, All being consistent.
- ↑ Distance from ; ↑ Rooms ; ↑ Landsize. **Except Northern Metropolitan.**

Property Analysis

Top 10 Suburbs with Highest Percentage Increase in Prices (2016 to 2018)



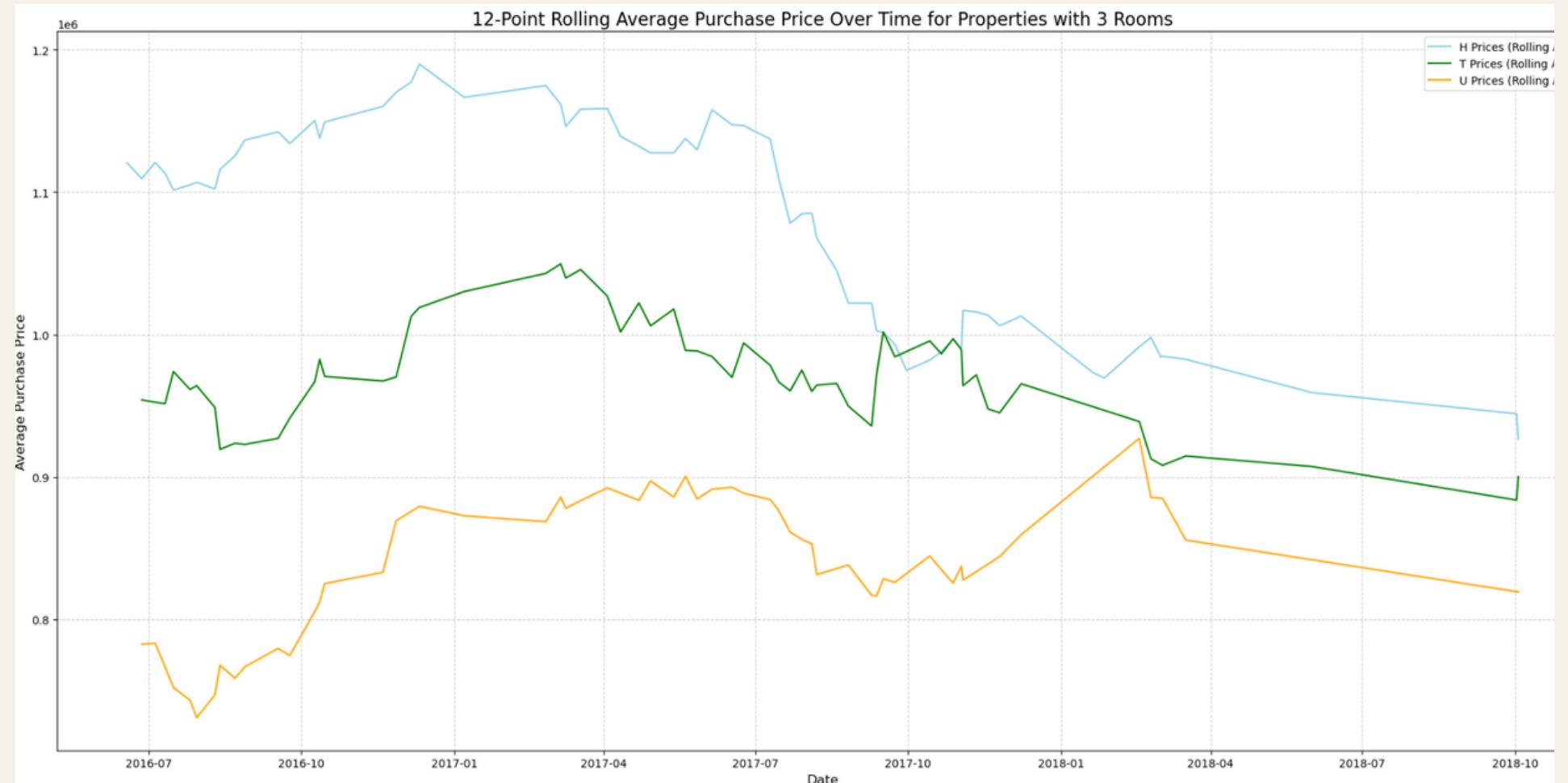
Top 10 Suburbs with Highest Avg Price per Square Meter (Type: House, Rooms > 3, Distance < 5km)



Which suburb might be a potential hotspot for investment in the coming years?

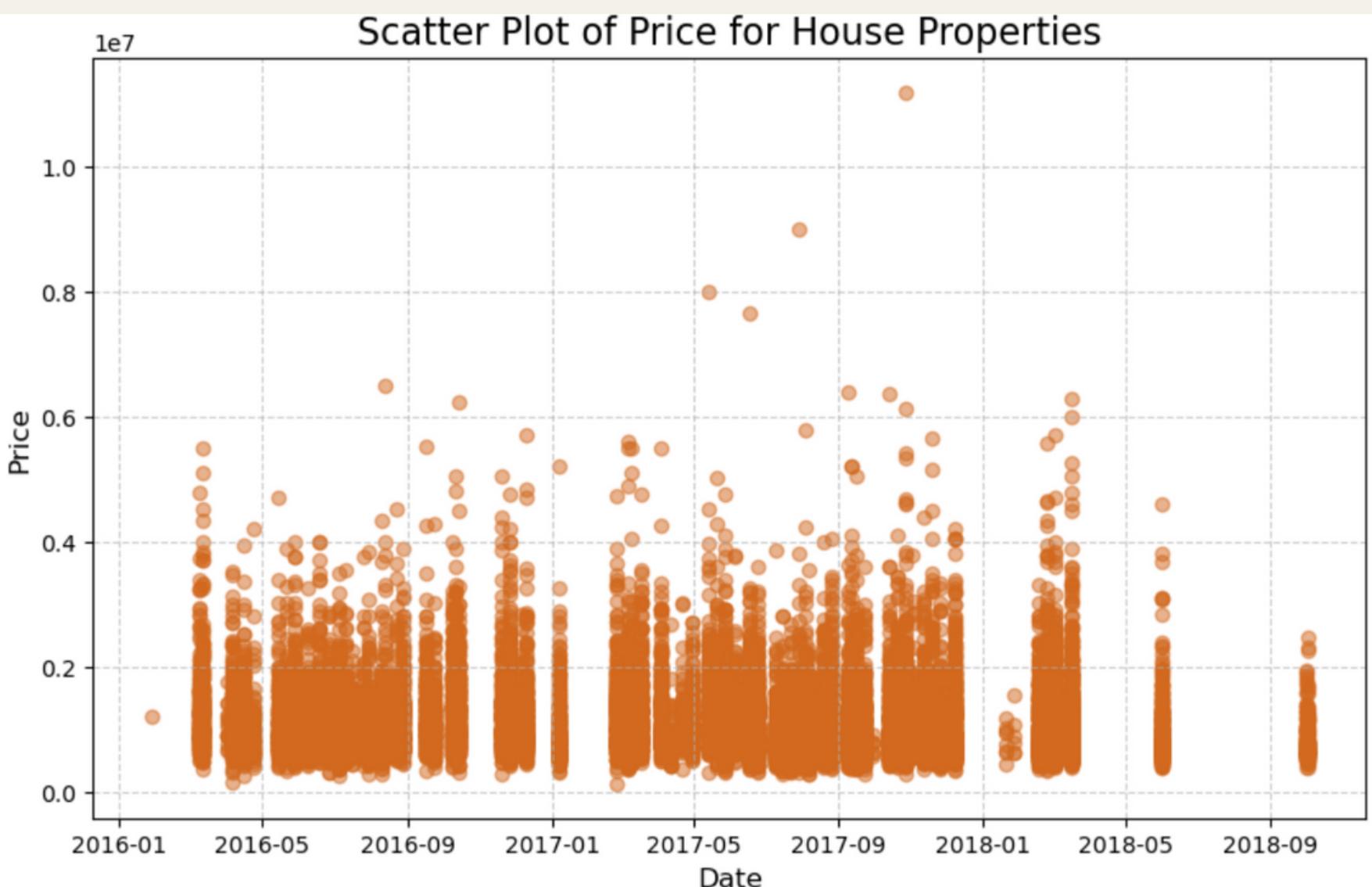
- The most popular choice: 3 bedrooms
- The most popular land size: 300-1000 sqr meters
- The most popular suburb: Reservoir
- Middle park: both listed

Property Analysis

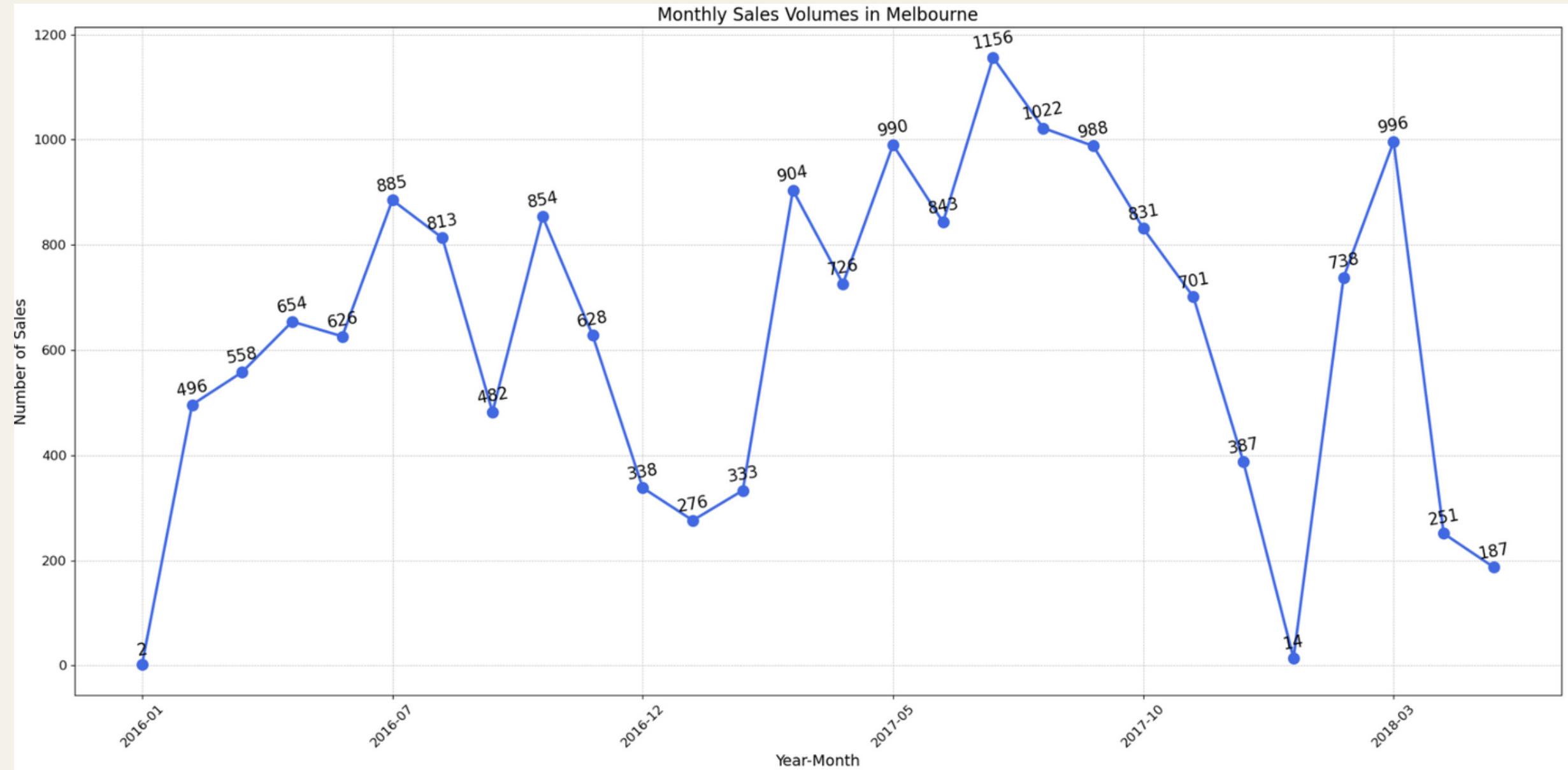


- August 2016 to April 2017 - increase
- April 2017 - Oct 2017 - frustrated
- Unit increased from Oct 17 while House and Townhouse decreased
- After Mar 2018 - relatively flat

How do house prices from the start of the observed period compare with those at the end?



Investment Analysis



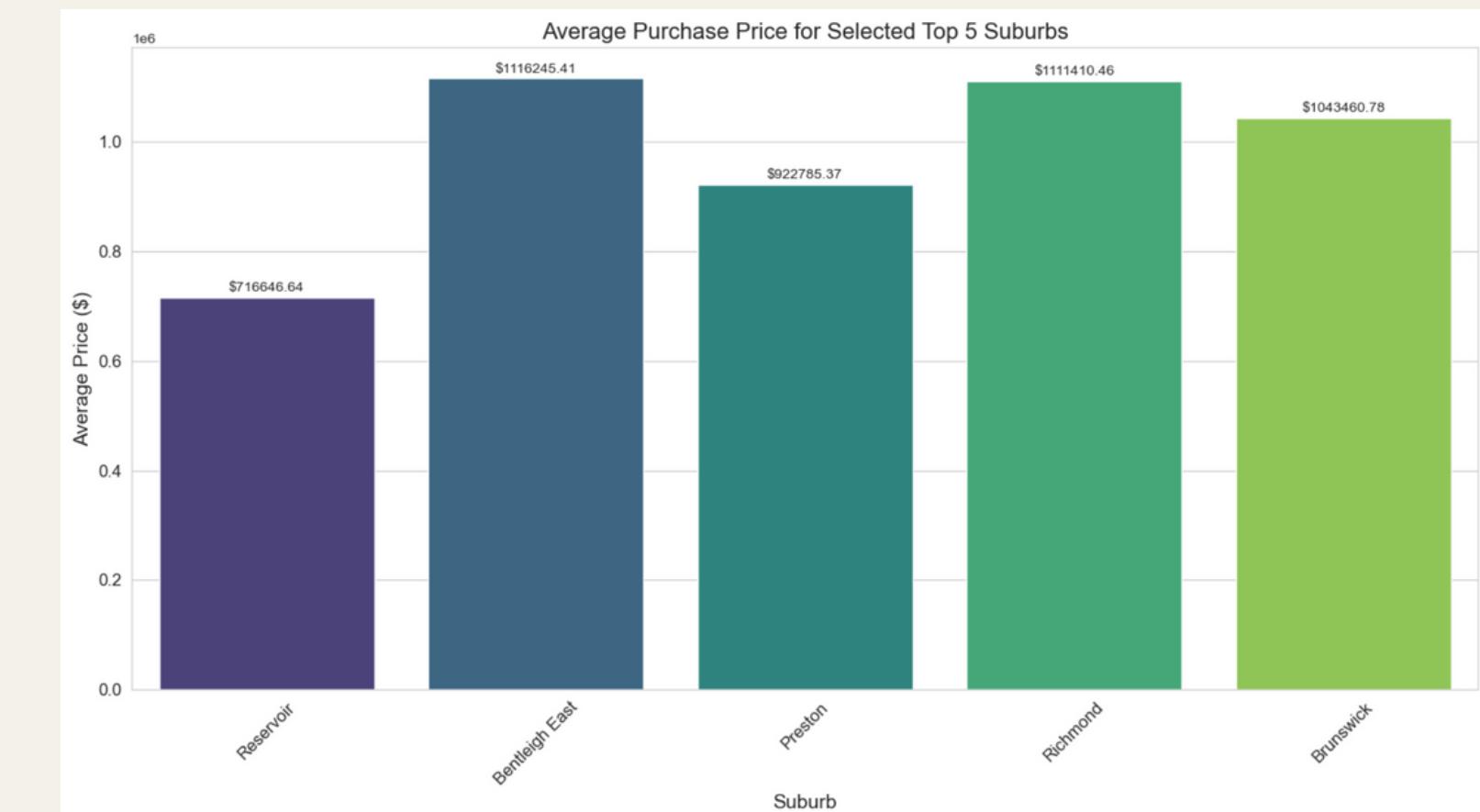
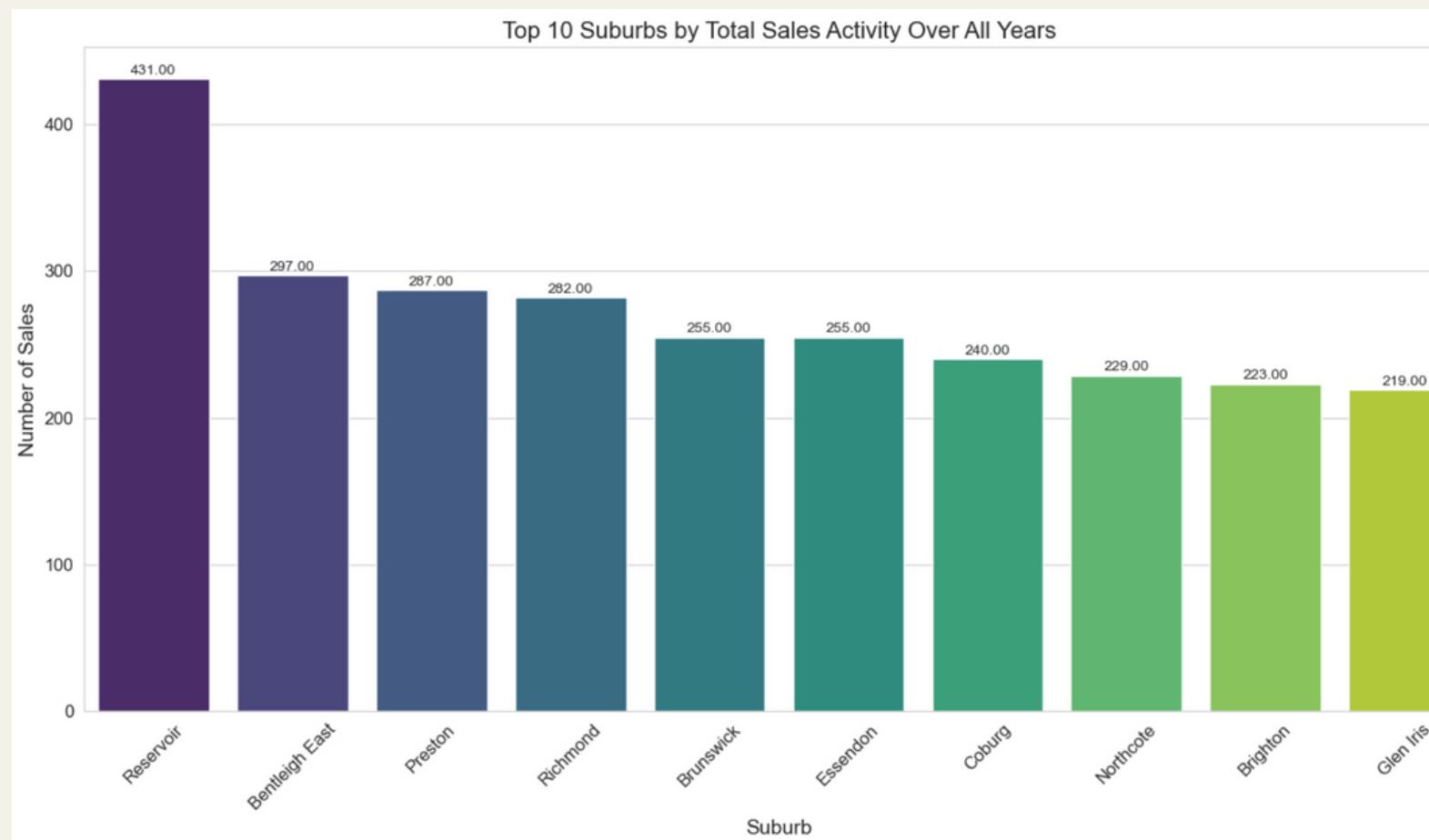
How have the monthly sales volumes trended?

- The housing market has seasonal trends with certain months seeing more activity.
- Starting from mid-2016 and extending to early 2017, there was a sharp increase in the number of sales, indicating heightened market activity.
- After 2018, there appears to be a general decline in sales volume.

Investment Analysis

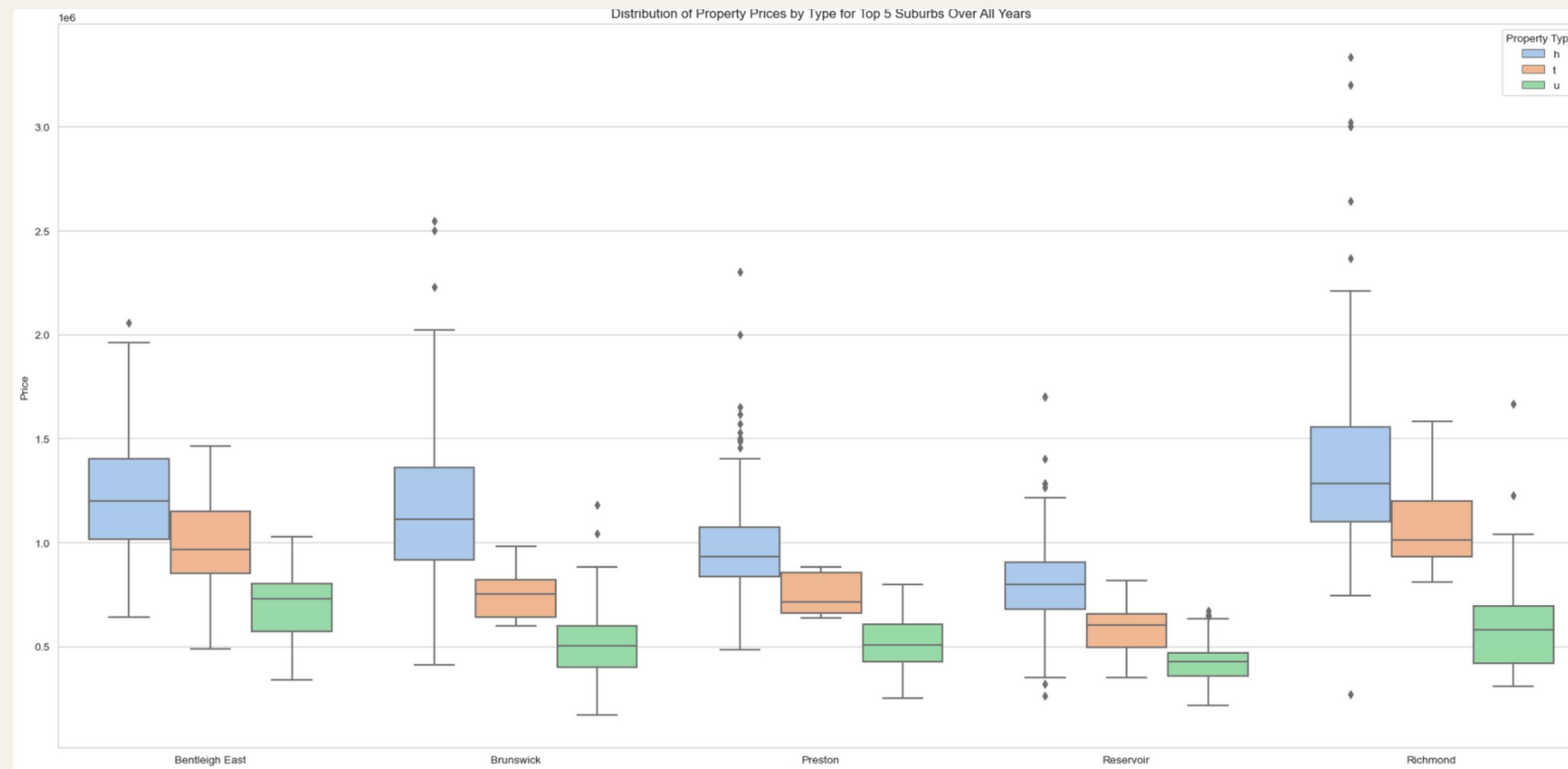
Which suburbs have consistently seen the most sales activity over all years?

- "Reservoir" stands out as having the highest sales activity across all years, indicating high property turnover and possibly high demand.
- "Bentleigh East" and "Preston" follow closely in terms of sales activity, whereas "Richmond" and "Brunswick" have slightly lower sales figures but still rank in the top 5.

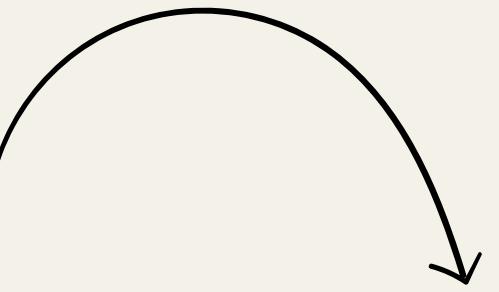


Investment Analysis

How do the median property prices compare across the years, and what is the price distribution for each property type over all years?



Project Insight and Reflection



Future Investment Opportunities

- Seasonal Trends: As an investor, leverage the cyclical nature of sales volumes. Buy during periods of low activity might give you better negotiating power, and sell during high-activity months can provide better returns.

- For High Returns: Investors looking for premium properties with potentially higher returns might consider "Brighton", given its high average purchase price.
- The high price tag often correlates with a premium locale, better amenities, or more luxurious properties, which might appreciate more in value over time.

Reflection

- Majority of the sale method of property is auction, the limited supply may drive up the demand and subsequently, prices. We are focus on the property features based on the data available, it would be worthwhile to access on multiple sources to get a more holistic view of the market.

- More leverage on the Macro economic data set would be very useful in understanding how the price truly fluctuates with time instead of the features specifically listed in the data. e.g. CPI, interest rates, unemployment rates...etc

Limitations

- Data Source: Kaggle.com. It was publicly available results from Domain.com.au.
- Data Reliability: 2nd hand publicly. Extra data points and property details could be more beneficial.
- Date Range: a longer date period to evaluate more sophisticated trends or seasonalities. Current focus on the 2016-18 specific. The latest sold date available was October 2018.

- Geographical Location: Victoria regions has relatively minimal sales comparing with Metropolitan, hindering the reliability of the data.

FinTech Project 1

Thank You!

RESOURCES



<https://www.kaggle.com/datasets/anthonypino/melbourne-housing-market>

TECHNICAL SUPPORT: JUPYTER NOTEBOOK



pandas, matplotlib, plotly (for interactive graphs), numpy, datetime, pathlib, seaborn, hvplot.pandas, os, warnings