**Analysis Melbourne Housing Snapshot**

**Context:**

Melbourne real estate is BOOMING. The objective is to deep dive into the data set to find the insight or predict the next big trend to become a real estate mogul… or even harder.

**Content**

The dataset was scraped from publicly available results posted every week from Domain.com.au. It includes Address, Type of Real estate, Suburb, Method of Selling, Rooms, Price, Real Estate Agent, Date of Sale and distance from Central Business District (CBD).

**Data Size**

13,580 rows with 21 columns

**Critical points that were answered in the analysis**

* Major real estate players in the market with their market share
* Type of housing that were in high demand
* Property Sales monthly & Quarterly
* Property Sales trend in booming regions
* Market dynamics and Sales trend in 2016-2017 period
* Major elements affecting the Melbourne housing price
* Linear Regression to see the correlations between different elements whether they influence the Melbourne housing price
* Geographical presence of major real estate players & customer demand
* And finally, the summary findings from the analysis

**Real estate players and Type of Housing in high demand**

* **Agent Performance**: Jellis and Nelson are the leading agents in terms of total sales and houses sold.
* **Luxury Market**: Agents like Weast and Darras dominate the luxury market, with the highest average property prices.
* **Property Type**: Houses remain the most popular property type, with increasing demand in 2017 compared to 2016.
* **Regional Differences**: There is a clear difference in property values by region, with Southern Metropolitan being the most expensive and regions farther from the city center, like Northern and Eastern Victoria, having lower prices.
* **Distance and Price Correlation**: Properties closer to the CBD command higher prices.

**Market dynamics and Sales trend in 2016-2017 period**

* Sales are clustered mainly in the metropolitan area, especially in the Southern and Northen areas. Victoria Areas are the ones with the less transactions of all regions
* Transactions are condensed in the area surrounding the Central Business District, the culture, business and dining hub of the city.
* Most of the transactions are for home type of real estate, and it’s even across regions
* In the Southern metropolitan area close to the CBD there are more transactions for units. Townhouses had the least number of transactions
* Most of the transactions are for home with 3 and 4 Rooms, the lowest number of transactions are for 0-1 rooms and>5.
* Lower price transactions are in the most distant parts of the city including Victoria and the suburbs, the closest to the CBD the higher the price.
* There are very few transactions below 400K, almost 80% of the transactions are between $600K and $1.5MM.
* Super premium Real State +2.0MM represents 10% of the market
* 2017 sales in AUD have been higher than 2016 in total
* The first half of the year has lower sales so if you are a buyer you probably want to check this time of the year for a lower demand.
* The second half of the year is the most active time to move real estate in Melbourne.
* Average sales for Houses are the highest its 10x Townhouses and 6x Units. Houses trend is higher for the second half of the year
* Both Units and Townhouses sales have drop in the last 2 months
* Average prices start at $396K if you want to buy a 1 Bedroom apartment that would be the lower end of the budget.
* There is a big increase in average price from 2 Rooms to 3 Rooms, it requires almost $300K more for an average price of almost $1MM
* Prices are stable but price has increased in the last few months for 1 Room and 2 rooms homes, and 3 Bedroom have a downward trend.
* Average price for larger real estate has a range between $1.3 and $1.7MM
* Transactions are higher for 2, 3 and 4 rooms, they make the 80%. Most transactions per type of homes per rooms growth in 2017, especially 3 rooms. Only 1 room transactions are declining vs. prior year
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**Linear regression between latitude/longitude and property prices to identify high-demand areas.**

* The analysis shows how location, as represented by the combined latitude and longitude values, impacts property prices. Properties clustered in the represented geographical areas exhibited higher prices, indicating premium locations.
* The Southern and Eastern Metropolitan regions had more pronounced trend, this suggests that they are strongly correlated with price. This shows that these areas are more desirable, potentially due to better amenities, infrastructure, or environment.

**Effect of the sale date on price- Average property price against month and quarter**

* The bar charts show that the Melbourne real estate market follows a pattern, where certain times of the year see more activity and higher prices, while others are quieter and more stable. This can help real estate agents, developers, and investors understand annual trends and plan marketing strategies accordingly.

**Property count trends over time in booming regions.**

* Areas with consistent growth in property counts are likely experiencing development booms. For example, regions such as Southern and Northern Metropolitan showed steady increases in property counts over time, signaling high demand and possible new developments.
* The peaks and troughs in the line chart showing booming regions indicate high and low activity months or periods, respectively.
* Southern Metropolitan shows relatively high and steady counts compared to other regions, suggesting it might be experiencing a more consistent development boom.
* Northern Metropolitan also has several peaks, indicating periods of high activity, but it fluctuates more than others.
* By comparing average prices and property counts over time, we identified that in some regions, increased property counts were associated with rising prices, suggesting strong demand. This can be useful for buyers to plan when to purchase and for developers to know where to invest.

**Chi-Square Test between Property Type and Sales Method**

* The chi-square test highlights if sale method is dependent on property type for the different regions. Since P-value is less than 0.03, this indicates that there is a significant association between Property Type and Sales Method. Also, Chi-Square Statistic is greater than Critical Value.

**Linear Regression to see the correlations between different elements whether they influence the Melbourne housing price**

**Linear Regression:**1.      There is a low R-squared value when we limited the no of rooms, no of bedrooms no of car spot also the type of house to find the relationship between Distance vs Price. With this it can be interpreted that the independent variable in the regression model is not effectively explaining the variation in the dependent variable.2.      Even if we do not limit the no of rooms, types, no of bed rooms, no of car spot, still we see low R-squared value which is 0.026413347782635543. It indicates around 26.4% of the variation in the dependent variable can be explained by the independent variable. And there is still a very weak relationship between Distance vs Price.  
3.      We can further interpret from this analysis that the variables as mentioned in point # 1 & 2 have very little influence on Melbourne housing price.  
**Heatmap:**1.      From the heatmap, we can see the major regions where Melbourne housing is booming for all types of housing. It suggests the most promising areas where investment in housing business is promising.

**CONCLUSIONS**

* The biggest real estate agent in the market was Jellies with 1.80 b (AUD) sales and Neilson was the 2nd biggest with around 1.50 b (AUD)
* High end property best agents were Weast and Darras in terms of revenue in 2016-2017
* Northern, Southern & Eastern metropolitan were the regions where Melbourne housing was booming, and average housing prices were also very high in these areas.
* Market was booming but prices were slowing down in 2017 comparing 2016
* The most active segment was houses, 3-4 bedrooms, close to the CBD in the metropolitan area. Minimum budget of entrance to the market is $400K
* There was no strong correlation between no of rooms/car spot/type of house with Price but there is a relation we found between Price with regions
* By comparing average prices and property counts over time, we identified that in some regions, increased property counts were associated with rising prices, suggesting strong demand. This can be useful for buyers to plan when to purchase and for developers to know where to invest.