

REAL ESTATE DATA TEAM WEBSITE ANALYSIS & DATA VISUALIZATION REPORT

Group Number: 01

Group Member: Yan Tsang Ying, Jensen 3036034203
Fung Ka Yan, Kris 3035537818
Tsui Tsz Hin, Hin 3036033948

HOUSE730 DATA ANALYTICS TEAM



PROJECT OBJECTIVES

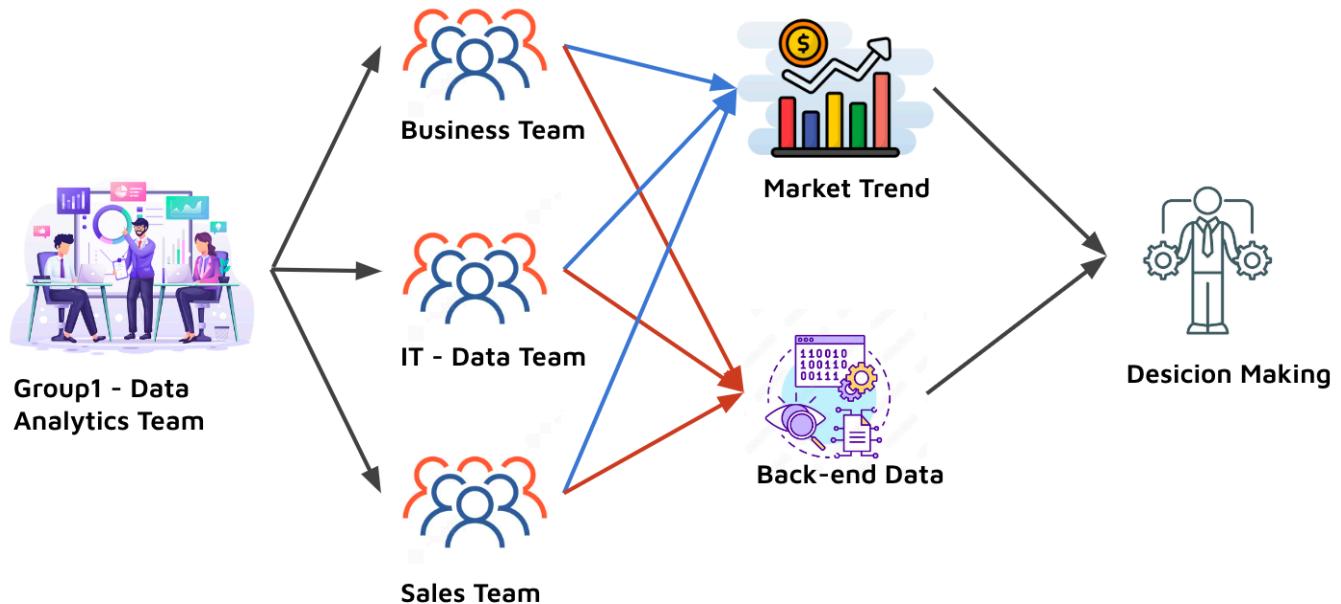
Our team would act as data analytics team for House730, our objective is to leverage the company's database data to gain insights into the Hong Kong property market. Through data visualization and statistical analysis techniques, we aim to identify key market trends, customer behaviours, and operational inefficiencies that can inform business strategy, improve customer experience, and drive growth for House730.

PROJECT HIGHLIGHTS

1. Agency Performance (Rent & Sales) by Kris
2. Rent & Sales Overview by Jensen
3. Time Trend Analysis Overview by Hin

STORYLINE

The storyline for our project is that we act as a House730 data analytics team, and we are going to present our designed 6 dashboards to the Business/ IT Data/ Sales Team. Which can help all the teams understand the market trend, back-end data in order to make better business decisions in the future.



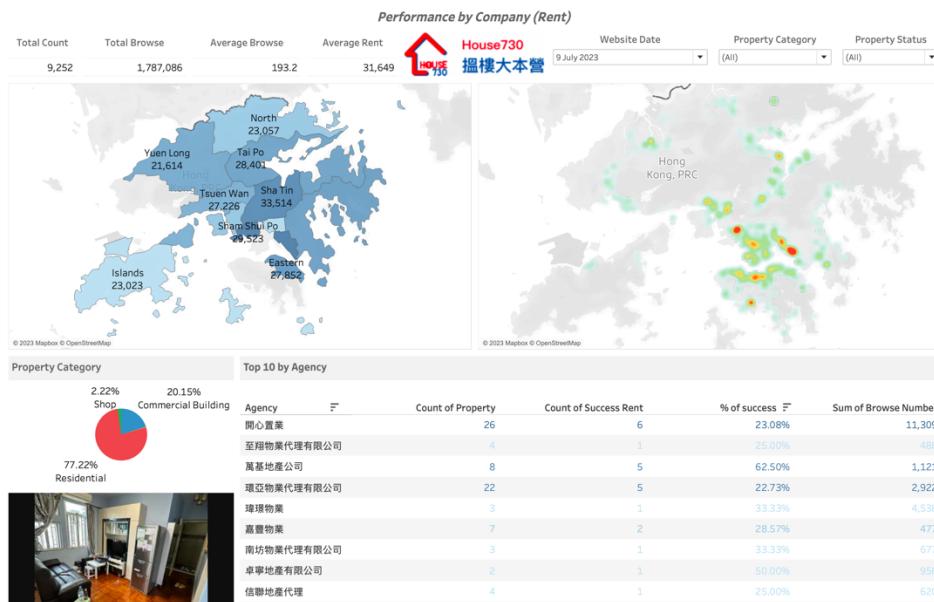
* firgure1: Storyline

AGENCY PERFORMANCE (RENT & SALES)

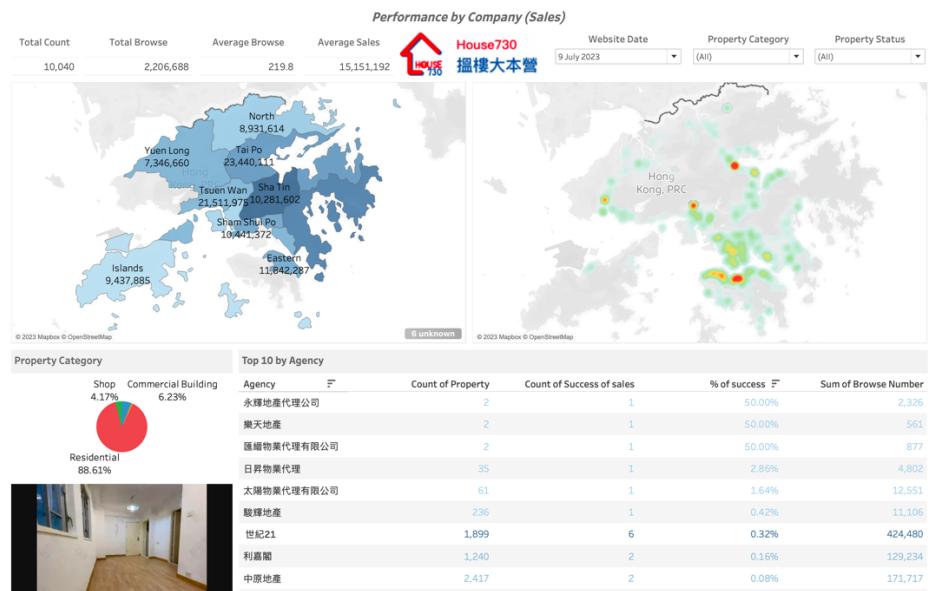
Introduction

This project three focuses on dashboard design which are mentioned in project highlight. The first focus is trying to measure the agency performance on housing hub. We would like to see which agency has the most successful rate on leased and sold property. Based on the final dashboard result, we have found some interesting results.

There are two dashboards for agency performance which is separated to rent performance by agency and sales performance by agency respectively.



* figure2: Performance by Agency (Rent)



* figure3: Performance by Agency (Sales)

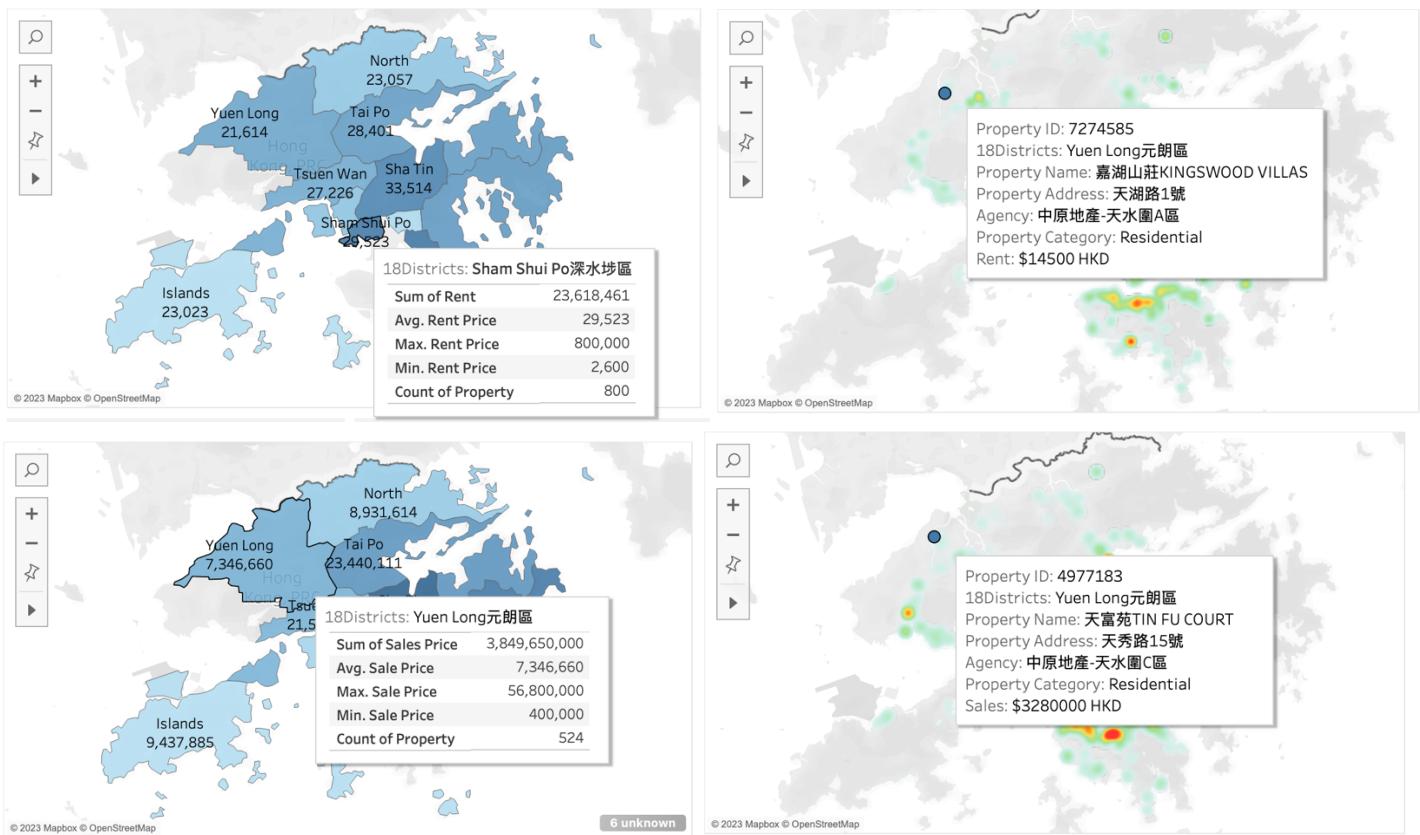
Visualizations

Remarks: Both dashboards the using same design but with separate rent and sales data source only.



- * figure4: Top bar of rent dashboard
- * figure5: Top bar of sales dashboard

On the top of the dashboard, left hand-side showing the indicators of total post count on House730, total browsing number, average browsing number and average rent price of all property post. Right hand-side showing the filters, which user can filter by website date, property category and property status. For website date filter, it is a dropdown box with selecting single value (Date selection from 30 June to 9 July). For property category filter, it is a dropdown box with multiple values (Category selection options: Commercial Building, Land, Parking Space, Shop, Residential). For property status filter, it is a dropdown box with multiple values (Status selection options: For rent/Leased or For sales/Sold). The House730 icon is in the middle for giving a clear sight to indicators and filters.



- * figure6: Two maps of rent dashboard
- * figure7: Two maps of sales dashboard

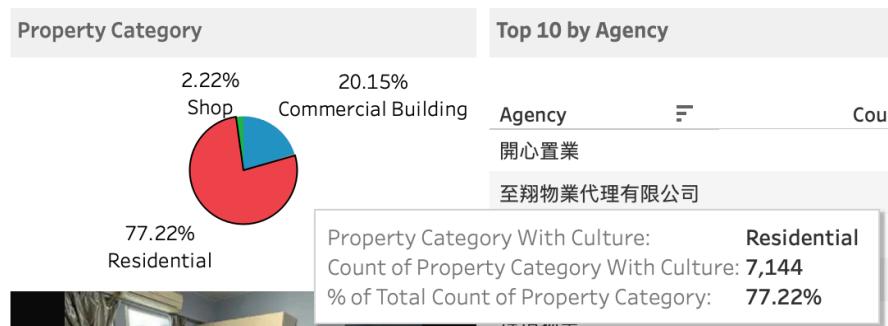
In the middle of the dashboard, left hand-side showing the map which is by 18 districts in Hong Kong, the label is showing the district name and the average rent/sales price of that district (e.g. Yuen Long average rent price is \$21614). When user hover to one of the districts the tooltip will be shown. The tooltip includes the district name by Chinese and English

as well as showing the table of maximum, minimum price, count of property etc. The color is order by the count of property for this map. Right hand-side showing the map which is by each property record, the color is order by the rent/sales price for this map. When user hover to one of the districts the tooltip will be shown. The tooltip includes the information of that property like address, property ID and Agency Name etc.



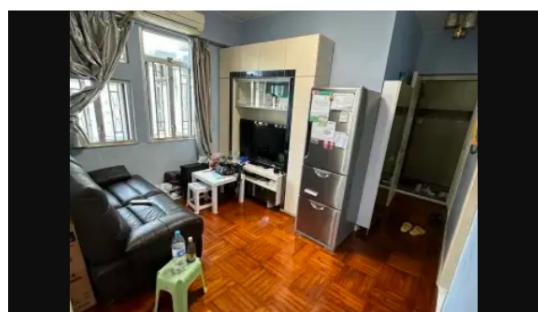
* figure8: Overview and detail example

Between these two maps, the interaction technique is applied which is using overview and details. When user select one district, the map on right hand-side will be zoom to that district for user to read the property information and details, for example, Sha Tin. Therefore, left hand-side is overview and right hand-side is detail.



* figure9: Bar Chart of category percentage

Under the district map, there is a bar chart show the category proportion. The tooltip is stated the count of property category and the percentage of total count of property category. When user select one of the angles, the right hand-side map will show the property correspondingly.



* firgure10: Web page object showing image

In the bottom left of the dashboard, we used an object function which is web page and showing the image by property. The way to change the image path is by clicking one of the properties in the right hand-side map.

Top 10 by Agency

Agency	Count of Property	Count of Success Rent	% of success	Sum of Browse Number
開心置業	26	6	23.08%	11,309
至翔物業代理有限公司	4	1	25.00%	488
萬基地產公司	8	5	62.50%	1,121
環亞物業代理有限公司	22	5	22.73%	2,922
璇璟物業	3	1	33.33%	4,538
嘉豐物業	7	2	28.57%	477
南坊物業代理有限公司	3	1	33.33%	677
卓寧地產有限公司	2	1	50.00%	956
信聯地產代理	4	1	25.00%	620
上水通物業代理行	1	1	100.00%	135

Top 10 by Agency

Agency	Count of Property	Count of Success of sales	% of success	Sum of Browse Number
永輝地產代理人公司	2	1	50.00%	2,326
樂天地產	2	1	50.00%	561
匯緯物業代理有限公司	2	1	50.00%	877
日昇物業代理	35	1	2.86%	4,802
太陽物業代理有限公司	61	1	1.64%	12,551
駿輝地產	236	1	0.42%	11,106
世紀21	1,899	6	0.32%	424,480
利嘉閣	1,240	2	0.16%	129,234
中原地產	2,417	2	0.08%	171,717
龍鳳地產公司	13	0	0.00%	2,148

* figure11: Top 10 table of rent dashboard

* figure12: Top 10 table of sales dashboard

The major focus on the dashboard is the above table, it is showing the top 10 performance index of agency, user can sort by the four columns. For the column of % of column, it is a calculated field. The formula is as below:

```
Success Rent 
if [Property Status With Culture] = "Leased" Then [Property ID] END

% of success 
COUNT([Success Rent])/COUNT([Property ID])
```

Other than the calculated field, this table is also set to show the top 10 index only, it applied below filter.

```
Index() <= 10 
Results are computed along Table (across).
Index() <= 10
```

The information we get from rent dashboard is that seems when people want to find a property, they will prefer to find the property that is from Hong Kong. So, when sales and marketing team would like to boost up the browsing rate of our website, they could find more real estate companies that are located in Hong Kong, see whether there is any new property post can post on the website. Also, seems property that located in Hong Kong is getting more attention, IT team could also rearrange the ranking of the website for each post. Or on the other hand, sales and marketing team could think of a strategy that to promote other districts property in order to boost up the browsing rate and successful rental percentage as well. For the sales dashboard, the successful sold properties are mainly located in Sai Kung and Sha Tin.

Another fun fact is that Ricacorp and centanet are not on the top 3 when sort by % of success, one of the reasons should be they have their own website/ portal for user. And for the small size real estate company, they could only rely on the housing hub like House730.

RENT & SALES OVERVIEW

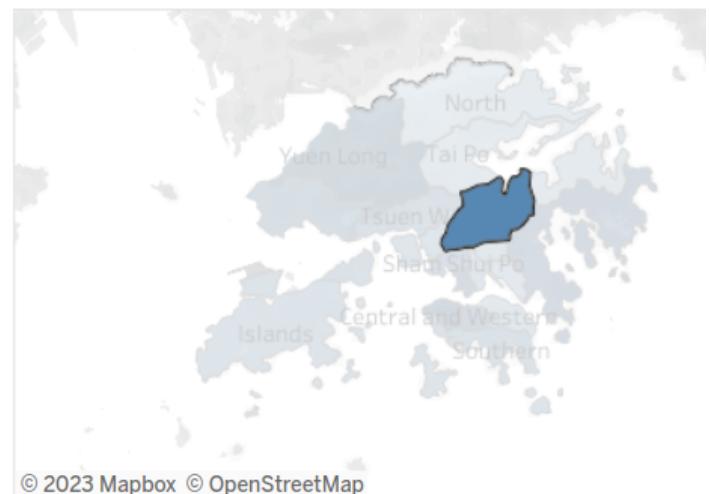
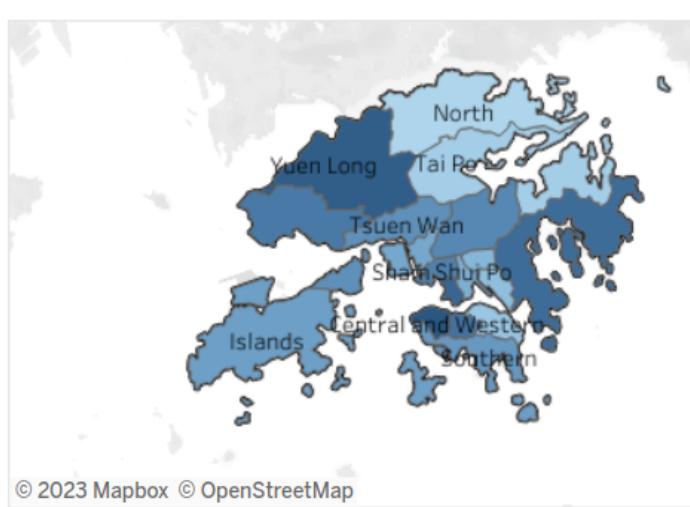
Introduction

As the real estate market in Hong Kong continues to grow and evolve, it is essential for marketing teams to stay up-to-date with the latest trends and data to make informed decisions. The Rent & Sale Overview Dashboard created by the data analytical team of House 730 provides a comprehensive overview of the property market in Hong Kong, with a range of features that can help marketing teams adjust their advertising and business strategies. These features include a map that displays the number of properties in each district, maps that show the density of rent and sale prices, bar charts that display the number of properties and average sale price per estate, pie charts that display the percentage of properties with certain features, and filters that allow users to narrow down data by specific criteria. In this report, we will discuss how each of these features can help marketing teams adjust their advertising and business strategies.

Visualizations

Map Displaying 18 District of Hong Kong:

The map displaying is an essential feature of the Rent & Sale Overview Dashboard, as it allows marketing teams to go into the property details about the district they want to investigate.

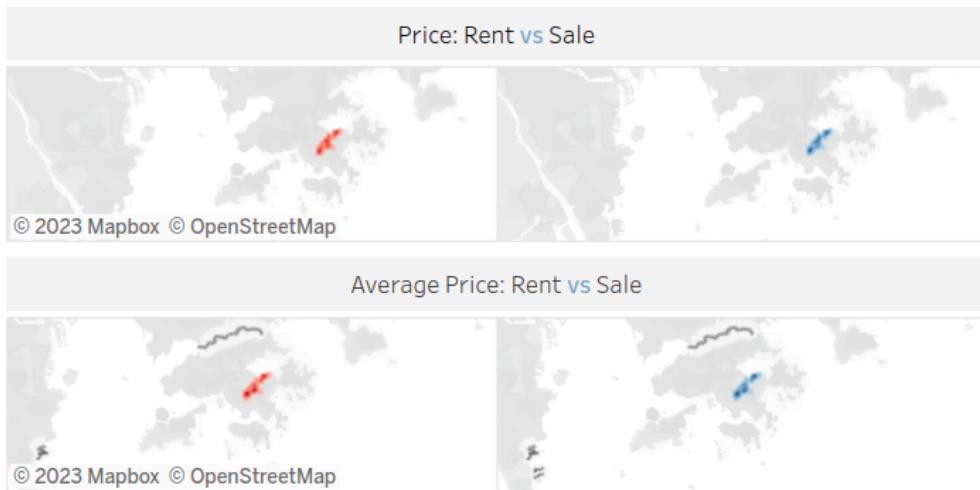


* figure13: picture showing main map after selecting the ShaTin district

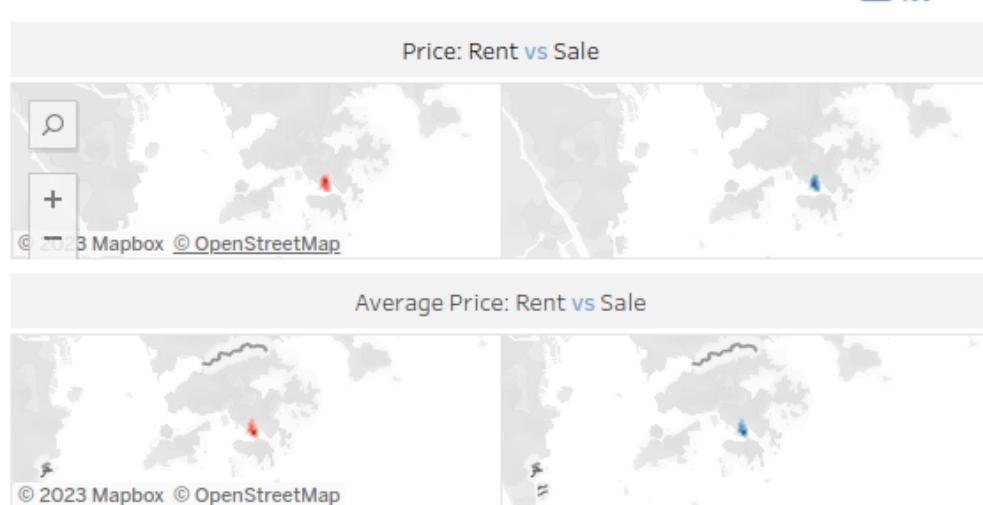
Maps Showing the Density of Rent and Sale Prices:

The maps showing the density of rent and sale prices are a powerful feature of the Rent & Sale Overview Dashboard, as they allow marketing teams to compare the pricing trends in different areas of Hong Kong. The map on top displays the rent and sale prices, while the map below displays the price per square foot. By horizontally comparing the rent with sale prices and vertically comparing the price with price per square foot, the marketing team can suggest a competitive price range to the property owner, which can increase the success rate of selling or renting the property. For example, if the team notices that the average rent price per square foot is much higher in a particular district,

they can suggest that the property owner increase the rent price to be more competitive with other properties in the area.



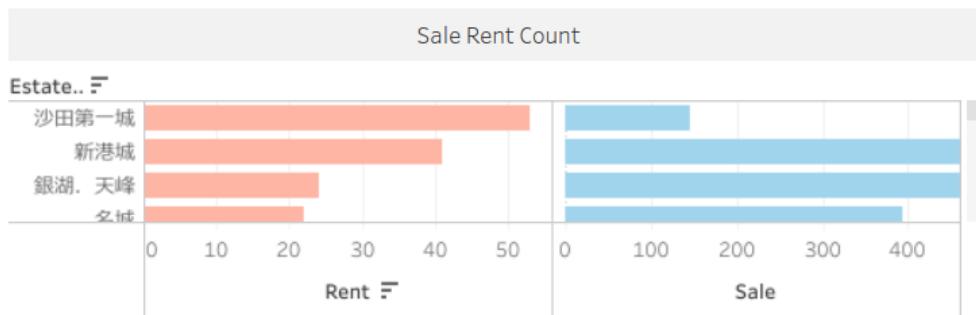
* figure 14: picture showing example of sale & rent map after selecting the ShaTin district



* figure15:picture showing example of sale & rent map after selecting the Kowloon City District

Bar Charts Displaying the Number of Properties and Average Sale Price per Estate:

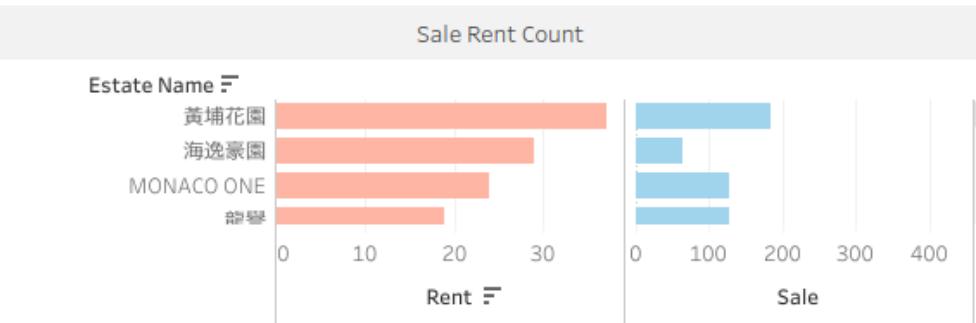
The bar charts displaying the number of properties and average sale price per estate are an essential feature of the Rent & Sale Overview Dashboard, as they allow marketing teams to identify areas with high demand for properties. The bar charts on the bottom left display the number of properties corresponding to each estate, while the charts on the bottom right display the average sale price and price per square foot corresponding to each flat in the estate. This information can help marketing teams identify areas with high demand for properties, enabling them to adjust their advertising strategies accordingly. For example, if the team notices that a particular estate has a high demand for properties, they can increase their advertising efforts in that estate to attract potential buyers or renters.



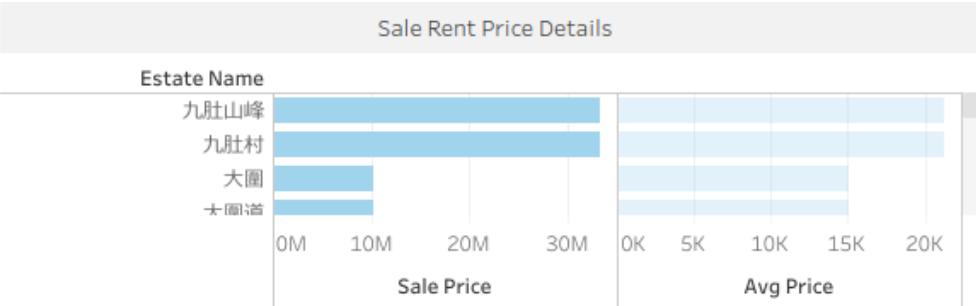
* figure16: picture showing example sale rent count bar chart after selecting the ShaTin District and sorted by Rent Count



* figure17: picture showing example sale rent details bar chart after selecting the Kowloon City District and sorted by Rent Sale Details



* figure18: picture showing example sale rent count bar chart after selecting the Kowloon City District and sorted by Rent Count



* figure19: picture showing example sale rent count bar chart after selecting the Kowloon City District and sorted by Rent Sale Details

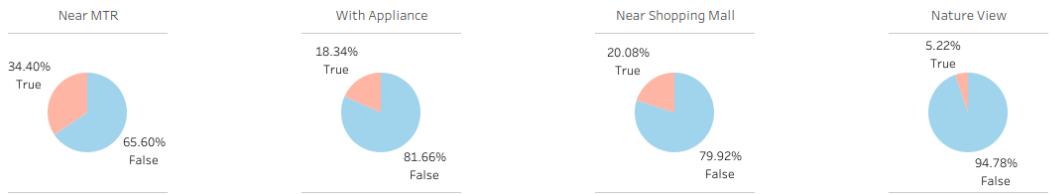
Pie Charts Displaying the Percentage of Properties with Certain Features:

The pie charts displaying the percentage of properties with certain features are a powerful feature of the Rent & Sale Overview Dashboard, as they allow marketing teams to identify the features that are

most appealing to potential buyers or renters. The pie charts display the percentage of properties in the surrounding area that are close to the MTR, have a nature view, are close to shopping malls, and have appliances or not. This information can help marketing teams adjust their advertising strategies by highlighting the features that are most appealing to potential buyers or renters. For example, if the team notices that a high percentage of properties in a certain area are close to the MTR, they can highlight this feature in their advertisements to attract buyers or renters who value convenience.



*figure20: picture showing example pie charts after selecting the ShaTin District



*figure21: picture showing example pie charts after selecting the Kowloon City District

Building Age Filter:

The building age filter is a valuable feature of the Rent & Sale Overview Dashboard, as it enables marketing teams to narrow down their data analysis by the age of the property. This information can provide marketing teams with a better understanding of the property market, allowing them to adjust their advertising strategies accordingly. For example, if the team notices that properties of a certain age are in high demand, they can adjust their advertising strategies to focus on those properties.

A key use case for the building age filter is in identifying trends in the property market. By filtering data by building age, marketing teams can identify areas where newer or older properties are in high demand. For example, if the team notices that properties that are less than five years old are in high demand, they can adjust their advertising strategies to focus on these properties. This can include highlighting the latest features and amenities, as well as emphasizing the quality of the property.

Another use case for the building age filter is in adjusting advertising strategies for properties that are older or in need of renovation. By identifying areas where older properties are in high demand, marketing teams can adjust their advertising strategies to highlight the potential for renovation or upgrade. This can include emphasizing the value of the property as a fixer-upper or the potential for customization to suit the needs of the buyer or renter.



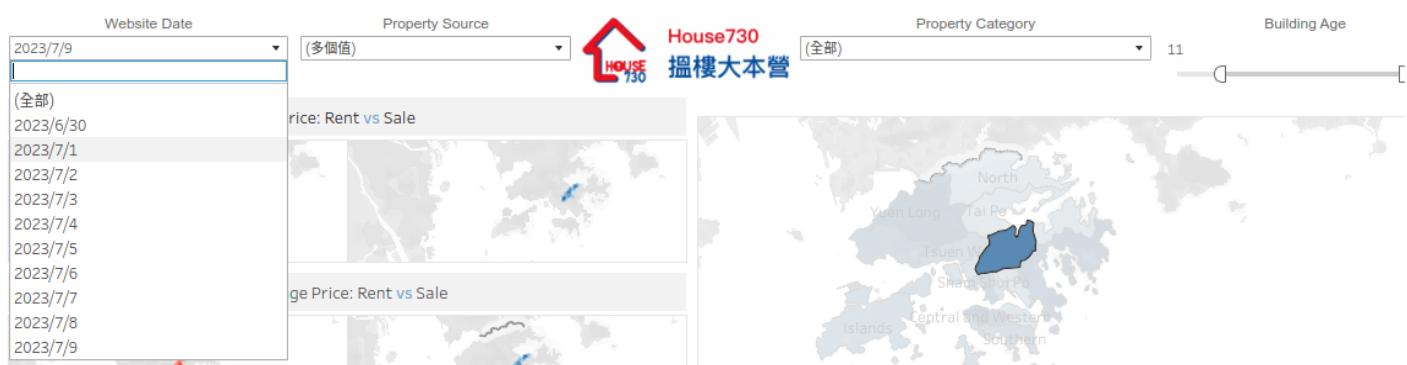
Website Date Filter:

The website date filter is a valuable feature of the Rent & Sale Overview Dashboard, as it enables marketing teams to filter data by specific date. This information can provide marketing teams with a better understanding of the property market, allowing them to adjust their advertising strategies

accordingly. For example, if the team notices that certain days of the week or months of the year are more active in the property market, they can adjust their advertising strategies to focus on those periods.

A key use case for the time period filter is in identifying trends in the property market over specific periods of time. By filtering data by days, marketing teams can identify patterns in property sales or rentals. For example, if the team notices that certain days of the week or months of the year are more active in the property market, they can adjust their advertising strategies to focus on those periods. This can include increasing advertising efforts during peak periods or adjusting pricing strategies to reflect demand.

Another use case for the time period filter is in adjusting advertising strategies based on real-time market conditions. By filtering data by day, marketing teams can monitor changes in the market and adjust their advertising strategies accordingly. For example, if the team notices that there is a sudden increase in demand for a certain type of property, they can adjust their advertising strategies to focus on that type of property. This can include highlighting the features or amenities that are most appealing to buyers or renters.



Property Categories Filter:

The property categories filter is a valuable feature of the Rent & Sale Overview Dashboard, as it enables marketing teams to filter data by specific property categories. This information can provide marketing teams with a better understanding of the property market, allowing them to adjust their advertising strategies accordingly. For example, if the team notices that certain property categories are in high demand, they can adjust their advertising strategies to focus on those categories.

A key use case for the property categories filter is in identifying trends in the property market by category. By filtering data by property category, marketing teams can identify areas where certain categories are in high demand. For example, if the team notices that commercial properties are in high demand, they can adjust their advertising strategies to focus on commercial properties. This can include highlighting the potential for business growth or the ideal location for a business.

Another use case for the property categories filter is in adjusting advertising strategies for specific types of properties. By filtering data by property category, marketing teams can adjust their advertising strategies to highlight the features and amenities that are most appealing to buyers or renters. For example, if the team notices that residential properties are in high demand, they can adjust their advertising strategies to highlight features such as proximity to schools or parks, or the availability of high-speed internet.



Property Source Filter:

The property source filter is a valuable feature of the Rent & Sale Overview Dashboard, as it enables marketing teams to filter data by the source of the property listing. This information can provide marketing teams with a better understanding of the property market, allowing them to adjust their advertising strategies accordingly. For example, if the team notices that properties listed by owners are in high demand, they can adjust their advertising strategies to focus on owner-listed properties.

A key use case for the property source filter is in identifying trends in the property market by listing source. By filtering data by property source, marketing teams can identify areas where certain sources are in high demand. For example, if the team notices that properties listed by agents are in high demand, they can adjust their advertising strategies to focus on agent-listed properties. This can include highlighting the expertise of the agent or the added value of working with an agent.

Another use case for the property source filter is in adjusting advertising strategies based on the preferences of buyers or renters. By filtering data by property source, marketing teams can adjust their advertising strategies to better target specific audiences. For example, if the team notices that younger buyers or renters prefer properties listed by owners, they can adjust their advertising strategies to focus on owner-listed properties. This can include highlighting the benefits of working directly with the owner, such as flexibility in negotiations or lower fees.

In addition, the property source filter can also help marketing teams identify potential partnerships or collaborations with agents or owners. By filtering data by property source, marketing teams can identify areas where certain sources are in high demand and reach out to those sources for potential collaborations or partnerships. This can include working with agents to create joint advertising campaigns or partnering with owners to offer exclusive deals or promotions.



Overall, the Rent & Sale Overview Dashboard is a powerful tool that can help marketing teams stay up-to-date with the latest trends and data in the Hong Kong property market. By using the various features of the dashboard, marketing teams can identify areas with high demand for properties, understand pricing trends, and adjust their advertising strategies to highlight the features that are most appealing to potential buyers or renters. We believe that this dashboard can be a valuable tool for marketing and business strategies, and we encourage marketing teams to take advantage of its features for their benefit.

TIME TREND ANALYSIS OVERVIEW

Introduction

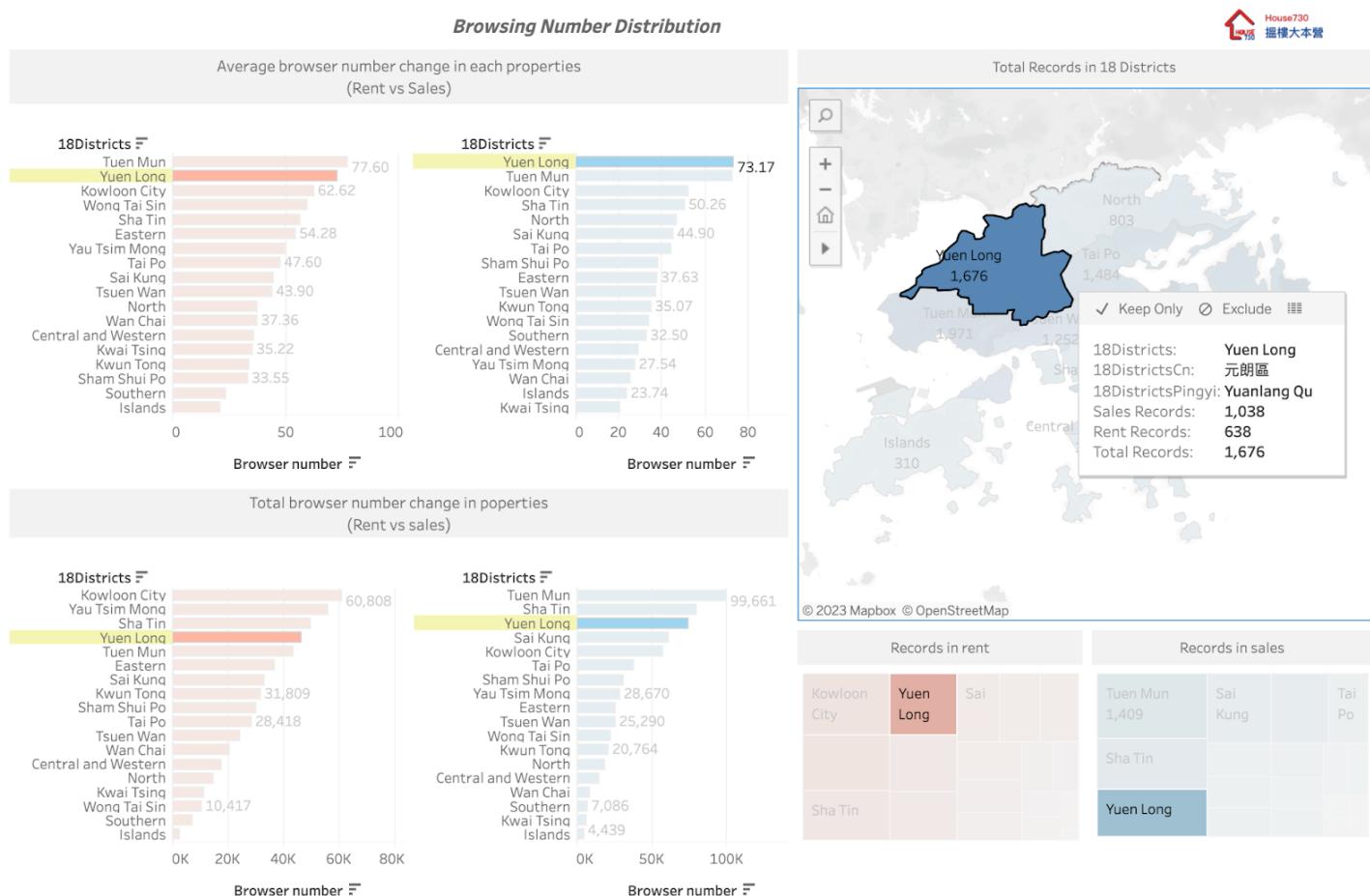
The tableau dashboard provides an overview of the trends in the rent and sales data obtained from a dashboard that collects data every day. The data is compared based on the number of browsers, new properties, and price changes in districts. The report provides insights into the distribution of demand and supply across 18 districts.

Visualizations

Browsing Number Distribution:

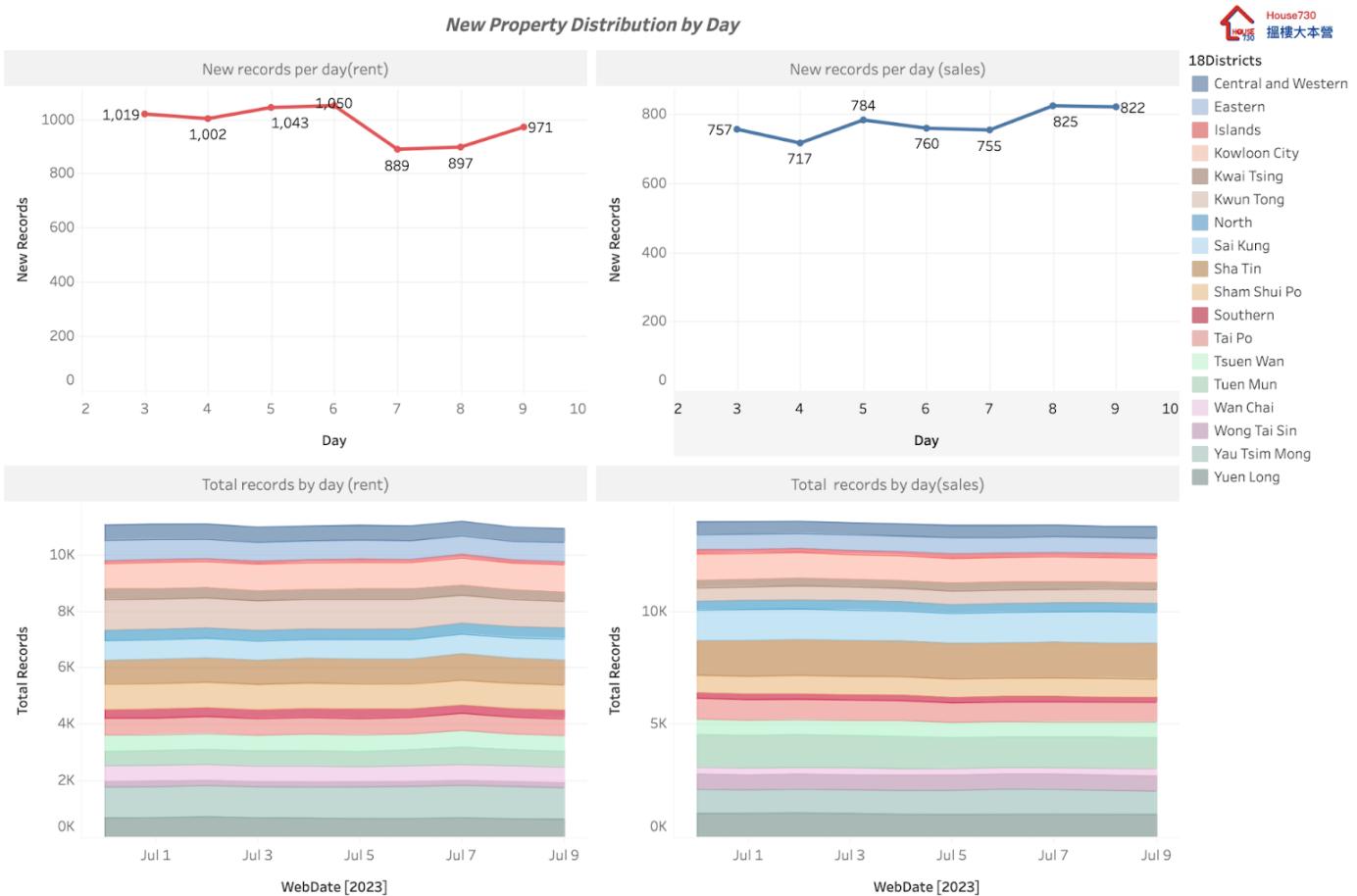
The map shows the total records in each of the 18 districts. The treemap below displays the records in rent and sales separately. The bar chart on the left-hand side shows the average change in browser numbers within ten days of records. Tuen Mun and Yuen Long have the highest change in browser numbers, indicating a higher demand for properties in these areas. The data suggests that demand and supply distributions vary across districts.

The interactive feature also makes it easier to compare and contrast the browsing number trends of different districts, facilitating the identification of potential investment opportunities or areas with high demand for rental or sales properties.



New Property Distributions:

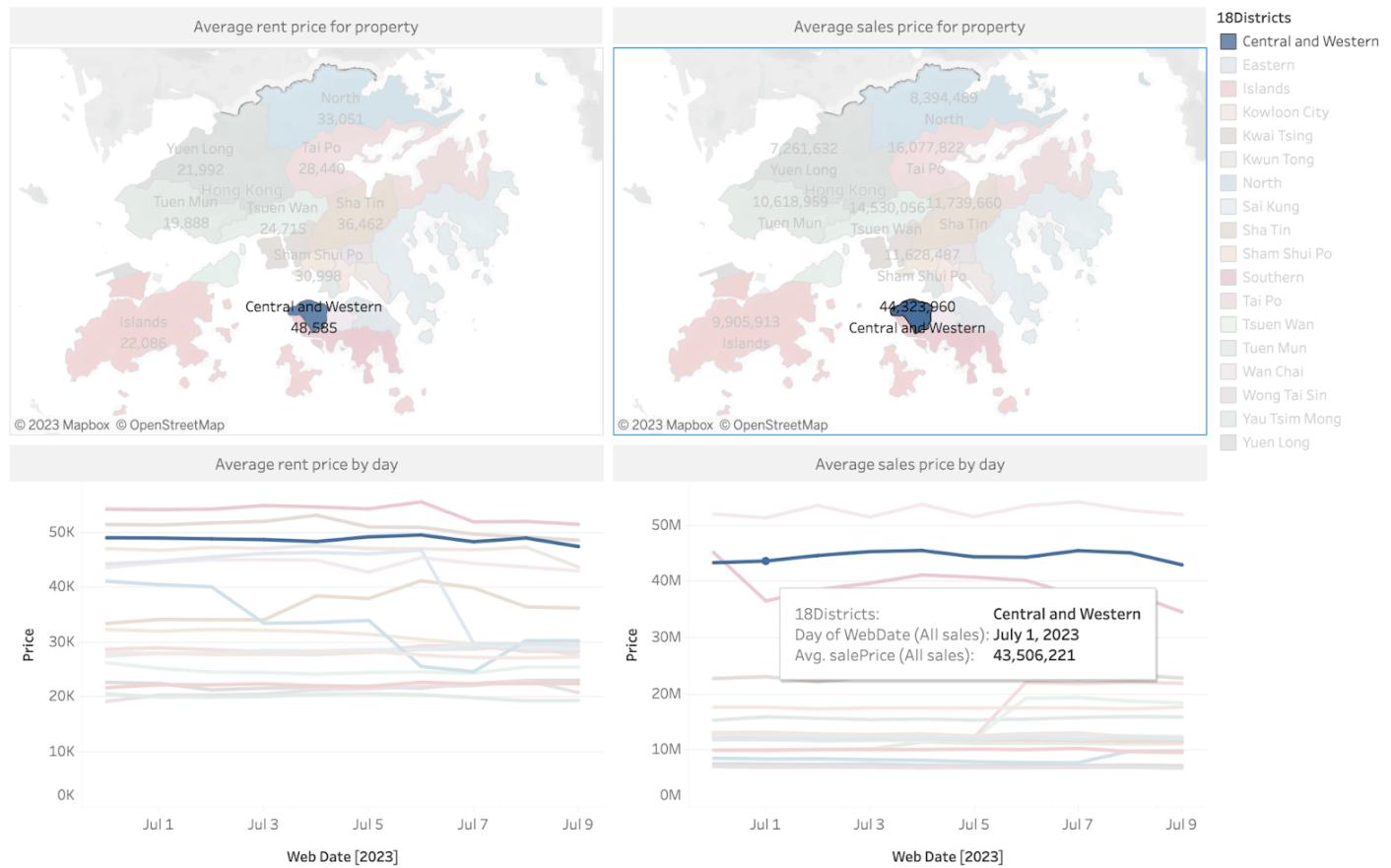
The upper line chart shows the new records per day in rent and sales properties. The below stack shows the total active records in the 18 districts, which range from 10,000 to 15,000. The records have an expiry date of 1 to 3 weeks, ensuring that the properties are new and up-to-date.



Price Trend Overview:

The upper chart displays the average prices of rent and sales in each of the 18 districts. The lower line chart shows the change in average price over time. Hong Kong Island has the highest average rent and sales prices, with a slight drop in prices over the ten-day period. However, the prices may not be representative of the actual prices due to factors such as the type and size of the property and human input. The report suggests that long-term trends would provide a more accurate representation of the price trends.

Price Trend Overview



In conclusion, the time trend analysis provides valuable insights into the demand and supply of properties across 18 districts, helping stakeholders to make informed decisions.

LIMITATION AND DIFFICULTIES

Collect Data (Data Cleaning)

Web scraping poses several challenges, including the semi-structured nature of the data, which requires extraction and transformation into a usable format. Additionally, data quality can be problematic due to inconsistencies and incorrect inputs, necessitating advanced data cleaning techniques. Managing the volume of data can also be challenging because of the daily changes that require regular tracking to keep the data up-to-date and accurate.

Limited Data

Due to time limitation, our data could only include 10 days data from 30 June to 9 July, we could not see a huge difference of the time trend analysis and the browsing data. However, if there are further team would like to the housing analysis, it is suggested to collect the whole year data which they maybe can see the data trend differently from different months or quarter.

LIST OF TASKS:

Based on our own strengths, we have distributed our role in below table:

Member	Major Role (Role play in House730 data analytics team)	Tasks	Status
Hin	Data analyst, Tableau Creator	● Dataset Decision	Completed
		● Data Study for Methodology	Completed
		● Tableau Study	Completed
		● Project Proposal Completion	Completed
		● Scope and Goal Setting - Dashboard	Completed
		● Data Architecture design	Completed
		● Dashboard Design	Completed
		● Progress Update	Completed
		● Development Debug/Re-design (If any)	Completed
		● Test Dashboard	Completed
		● Test Tableau Publish	Completed
		● Publish Dashboard Public	Completed
		● Report	Completed
Kris	Project Manager, Data analyst, Tableau Creator	● Dataset Decision	Completed

		<ul style="list-style-type: none"> ● Project Objectives ● Data Study for Methodology ● Tableau Study ● Project Timeline ● Project Proposal Completion ● Scope and Goal Setting - Dashboard ● Data Architecture design ● Dashboard Design ● Progress Update ● Development Debug/Re-design (If any) ● Test Dashboard ● Test Tableau Publish ● Publish Dashboard Public ● Report 	Completed
Jensen	Programmer, Tableau Creator	<ul style="list-style-type: none"> ● Dataset Decision ● Project Objectives ● Data Web Scraping - Initial Stage ● Project Proposal Completion ● Scope and Goal Setting - Dashboard ● Data Web Scraping - Data Type Design ● Dashboard Design ● Progress Update ● Development Debug/Re-design (If any) ● Test Dashboard ● Test Tableau Publish ● Publish Dashboard Public ● Report 	Completed

The project timeline has created. (Please refer to below capture)

Group 1 - Project Timeline

PROJECT TITLE	Real Estate Data Team Website Analysis & Data Visualization Report						COMPANY NAME	House730					
PROJECT MANAGER	Kris						TEAM NAME	Data Analytics Team					
DATE	6/24/23						PHASE ONE	PHASE TWO	PHASE THREE	PHASE FOUR	PHASE FIVE		
TASK NUMBER	TASK TITLE	TASK OWNER	START DATE	DUUE DATE	DURATION	PCT OF TASK COMPLETE	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5		
1	Project Proposal	Hin, Kris, Jensen	6/19/23	6/24/23	5	100%							
1.1	Dataset Decision	Hin, Kris, Jensen	6/19/23	6/24/23	5	100%							
1.2	Project Objectives	Hin, Kris, Jensen	6/24/23	6/30/23	6	100%							
1.3	Data Study for Methodology	Hin, Kris	6/24/23	6/30/23	6	100%							
1.4	Tableau Study	Hin, Kris	6/24/23	6/30/23	6	100%							
1.5	Project Timeline	Kris	6/24/23	6/30/23	6	100%							
1.6	Data Web Scraping - Initial Stage	Jensen	6/24/23	6/30/23	6	100%							
1.7	Project Proposal Completion	Hin, Kris, Jensen	6/24/23	6/30/23	6	100%							
2	Project Design												
2.1	Scope and Goal Setting - Dashboard	Hin, Kris, Jensen	6/27/23	6/30/23	3	100%							
2.2	Data Architecture design	Hin, Kris	6/27/23	6/30/23	3	100%							
2.3	Data Web Scraping - Data Type Design	Jensen	6/30/23	7/2/23	2	100%							
3	Development												
3.1	Dashboard Design	Hin, Kris, Jensen	7/3/23	7/11/23	8	100%							
3.1.1	Dashboard 1	Hin	7/3/23	7/11/23	8	100%							
3.1.2	Dashboard 2	Kris	7/3/23	7/11/23	8	100%							
3.1.3	Dashboard 3	Jensen	7/3/23	7/11/23	8	100%							
3.2	Progress Update	Hin, Kris, Jensen	7/7/23	7/11/23	4	100%							
3.3	Development Debug/Re-design (If any)	Hin, Kris, Jensen	7/9/23	7/11/23	2	100%							
4	Testing												
4.1	Test Dashboard	Hin, Kris, Jensen	7/11/23	7/14/23	3	100%							
4.2	Test Tableau Publish	Hin, Kris, Jensen	7/11/23	7/14/23	3	100%							
5	Release												
5.1	Publish Dashboard Public	Hin, Kris, Jensen	7/14/23	7/15/23	1	100%							
6	Project Report												
6.1	Report	Hin, Kris, Jensen	7/15/23	7/22/23	7	100%							

REFERENCES:

1. House730 Limited (2023). House730. Retrieved June 26, 2023, from <https://www.house730.com/en-us/>
2. Tableau, from <https://www.tableau.com>
3. Tableau map article, from https://help.tableau.com/current/pro/desktop/en-us/maps_dualaxis.htm
4. Lecture Note, from lecture 8 Interaction