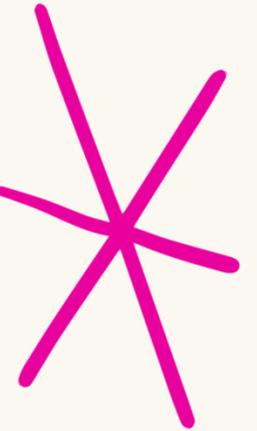


By GROUP 4



Property

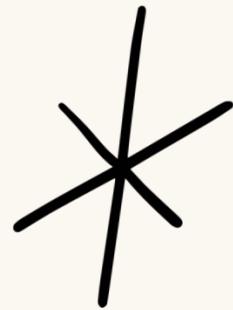
RENTAL PRICING



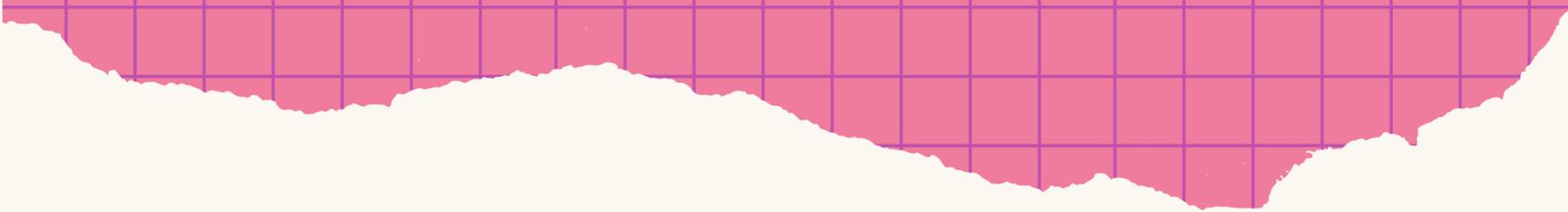
surrounding Kuala Lumpur and Selangor Region

CDCS2306A | DSC651

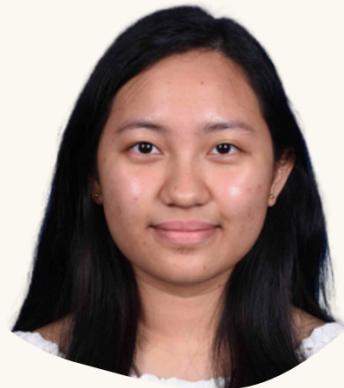




# Team Members



**Nadiah Humaira**  
2023149175



**Siti Jessmin**  
2023185023



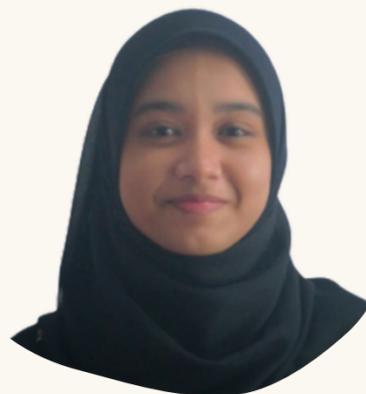
**Aisyah Syakirah**  
2023385555



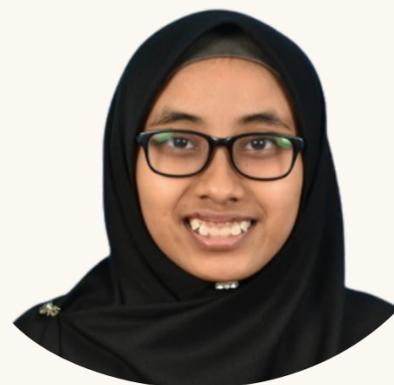
**Siti Munirah**  
2023189821



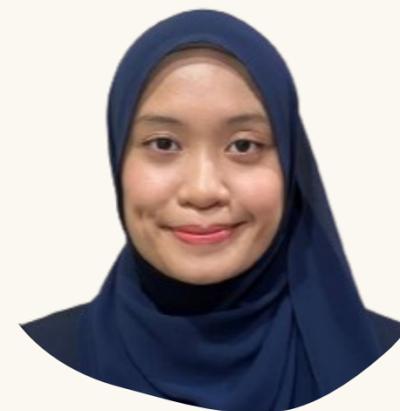
**Nor Tasnim Amani**  
2023387791



**Nur Fatihah**  
2023388493



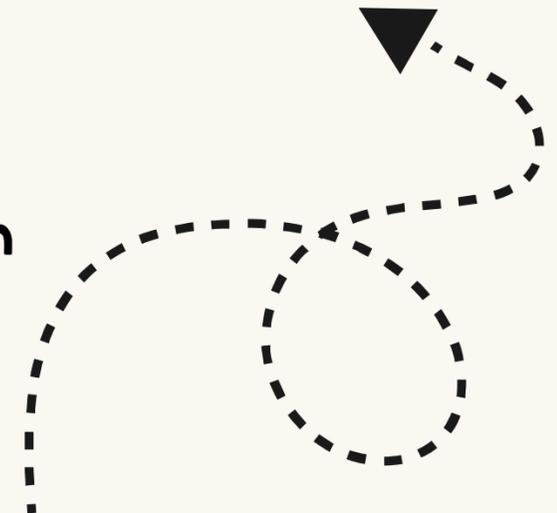
**Nurul Syazwina Syahirah**  
2023168543

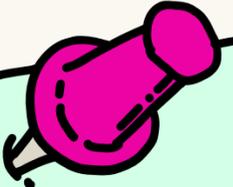


**Aisyah Afiqah**  
2023189511



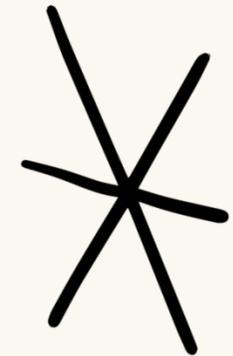
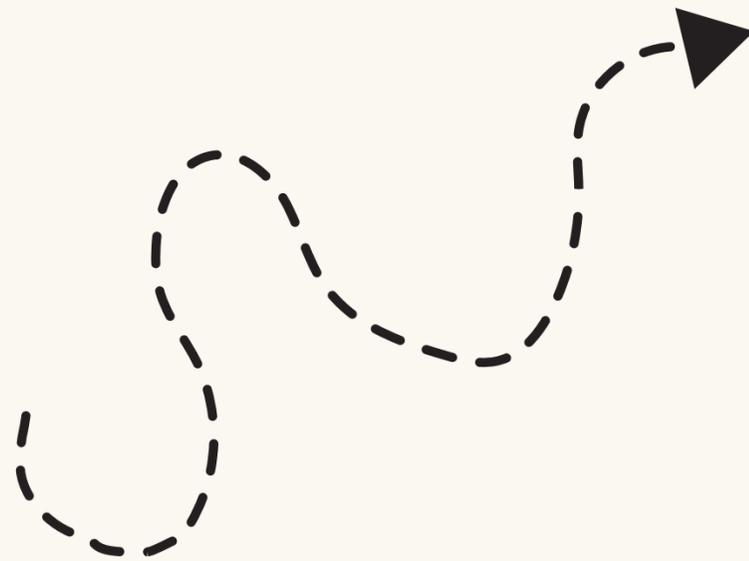
**Intan Maisarah**  
2023388981





# Contents

1. Introduction
2. Literature Review
3. Methodology
4. Design and Development
5. Analysis and Findings

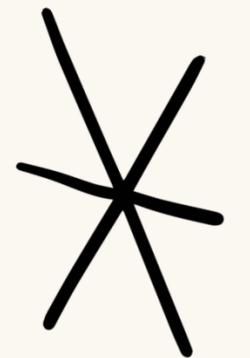


# Introduction



## Chapter 1

- 1.1 Introduction
- 1.2 Problem Statement
- 1.3 Project Aim
- 1.4 Objectives
- 1.5 Scope
- 1.6 Significance





# INTRODUCTION

- Housing is often the biggest financial transaction for most individuals, shaping long-term financial plans.
- Housing purchase options: cash purchase, mortgage, rent-to-purchase agreements.
- Cost of rental in rent-to-purchase agreements: difference between periodic payments and the cash price of the property.
- High property prices escalate rental costs, especially in areas with better amenities and infrastructure.
- Many residents face unaffordability, stuck in a rental cycle without ownership prospects.
- Surging rental prices highlight a growing affordability gap in high-demand regions.



## DID YOU KNOW?

KL has the most expensive property market in Malaysia with an average subsale house price: RM801,557 whereas an average new house price: RM708,462 (NST, 2024).

# PROBLEM STATEMENT

## Housing Affordability

Due to high costs, little market awareness, and a lack of financial transparency tenants

This leads to poor decisions like overspending or selecting unsuitable properties

## Income vs. Housing Costs

Household income growth lags behind the sharp rise in property prices.

Widening affordability gap limits access to quality housing and contributes to economic inequality.

## Real Estate Market Practices

Some real estate agents inflate rental prices for profit.

Results in consumers overpaying and discouraging prospective buyers from entering the market.



# PROJECT AIM

Analyze rental market trends in Kuala Lumpur and Selangor region.

**AIM**

Examine how property type, location, size, and amenities influence rental prices.

**Key Factors**

Identify high-demand rental hotspots and affordable areas.

**Geographical Insights**

Utilize historical data to predict future rental market trends.

**Trend**





# OBJECTIVES

## OBJECTIVES 1

To collect data on rent pricing in Kuala Lumpur and Selangor region

## OBJECTIVES 2

To generate different graphs to visualize data in a dashboard

## OBJECTIVES 3

To analyze the data collected to obtain patterns and attributes that impact rent pricing



# SCOPE

**01**

Dataset includes 19,991 property records from Kuala Lumpur and Selangor.

**02**

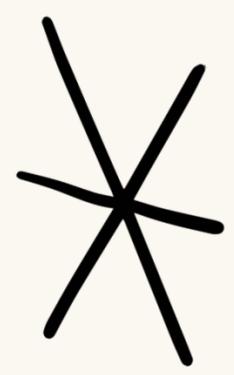
Attributes: ID, year of completion, monthly rent, location, property type, etc.

**03**

Data source: Secondary dataset from Kaggle, scraped from mudah.my.

**04**

Tool: Microsoft Power BI for visualizing trends and creating dashboards.



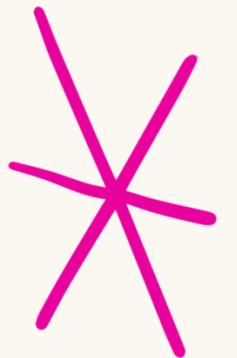
# SIGNIFICANCE

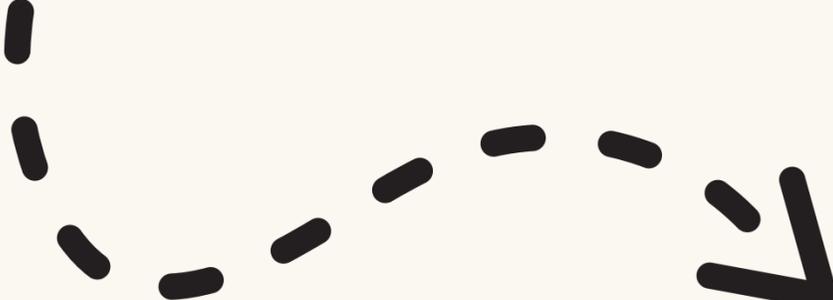
## UNDERSTANDING MARKET TRENDS

- Identifies whether rental prices are rising, falling, or remaining stable in specific areas.
- Helps stakeholders understand market direction and make informed decisions.

## DEMAND AND SUPPLY PATTERNS

- Rental prices are rising, it could indicate high demand and limited supply.
- Falling prices might suggest a surplus of rental properties or reduced demand





# SIGNIFICANCE

## IMPACT OF AFFORDABILITY ON PRICING

- Monthly income, property types, and house price affect rental prices.
- Enables property owners, investors, and tenants to understand why prices in one area might be higher than in another.

## MARKET INSIGHTS FOR STAKEHOLDERS

- Provides valuable insights into trends, demand-supply, and location-based pricing.
  - Supports property owners, investors, and tenants in making informed decisions.
  - Insights enable stakeholders to implement competitive pricing strategies in the rental market.
- 



## Chapter 2

# Literature Review

2.1 Rental Pricing

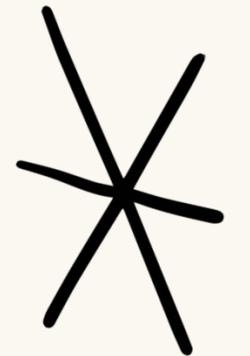
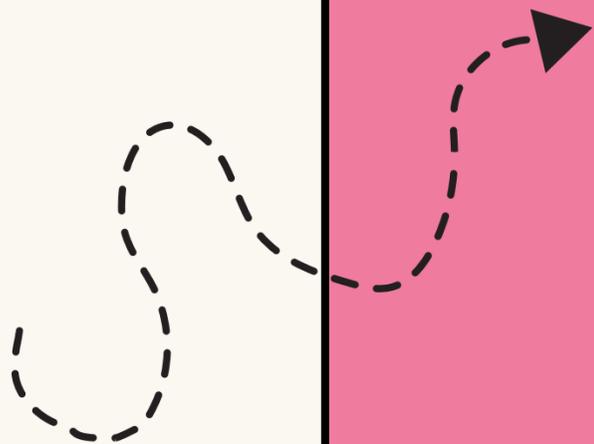
2.2 Residential property

2.3 Affordable Housing In Malaysia

2.4 Market Trend

2.5 Factors Influencing Rental Prices

- 2.5.1 Financial Considerations
- 2.5.2 Demographic and Social Factors
- 2.5.3 Property-Specific and Public Amenities
- 2.5.4 Household Income
- 2.5.5 Interest Rate
- 2.5.6 Flexibility to Move



## Critical Market Factors

- Infrastructure: Connectivity and facilities influencing demand and pricing.
- Urban development: Growth patterns affecting rental costs.
- Economic conditions: Role in shaping affordability and investment attractiveness.

## Definition

- Definition of rental pricing: Sum charged for short-term use of properties.
- Importance: Impacts housing affordability, investment opportunities, and economic stability.

## Selangor: Suburban and Rural Blend

- Overview: Surrounds Kuala Lumpur, offering a mix of suburban and rural living.
- Cost advantage: Relatively lower rental costs compared to Kuala Lumpur.
- Appeal: Spacious living options catering to families and those seeking affordability.

# Rental Pricing

2.1

## Benefits of Renting

- Cost management: Reduces current monthly expenses.
- Alternative to property purchase: Avoids large upfront financial commitments.

## Kuala Lumpur: Urban Rental Dynamics

- Overview: Vibrant capital with diverse neighborhoods and real estate options.
- Property types: Landed homes to high-rise apartments.
- Market factors: Urban development and high demand drive pricing dynamics.

2.2

# RESIDENTIAL PROPERTY



## • INTRODUCTION

- **Definition:** Real estate primarily for housing.
- **Examples:** Single-family homes, apartments, condominiums, townhouses.
- **Purpose:**
  - Provides shelter and comfort.
  - Reflects social and economic status.
- **Ownership Benefits:**
  - Long-term investment
  - Potential for capital growth and rental income.

## • CHALLENGES

- **Affordability Issues:**
  - High construction costs.
  - Limited land availability in urban areas.
- **Rising Cost of Living:**
  - Increased expenses for food, transportation, and essential facilities.
- **Saving for a Down Payment:**
  - Economic burden makes saving difficult.

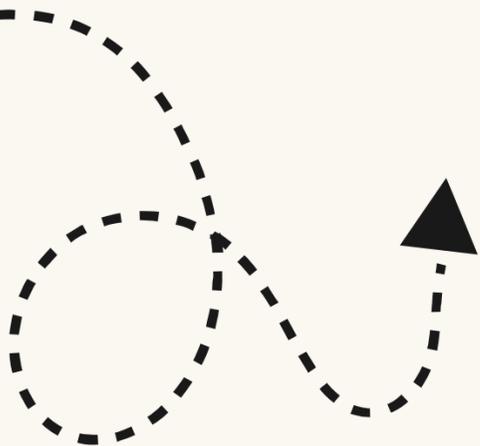
## AFFORDABLE HOUSING IN MALAYSIA

Malaysia faces a housing crisis due to a supply-demand mismatch and slower income growth. Developers prioritize expensive homes, leaving affordable options scarce. Families struggle with rising property prices, compounded by low financial literacy and a preference for owning over renting. In Q2 2017, 146,497 unsold units were mostly priced above RM250,000, failing to meet average household needs. Solutions include policies to boost affordable housing, financial literacy programs, and aligning income growth with property prices.

## MARKET TREND

In Q4 2021, rental demand surged with a 30.53% QoQ and 57.91% YoY increase, driven by affordability issues and changing preferences. Despite rising demand, rental prices showed mixed trends, with a 0.74% QoQ rise but a 2.91% YoY drop. Rental supply grew by 13.78% QoQ, offering more options after four quarters of decline.

Nationwide, the average rent is RM1,920 (+1.8% YoY), with Kuala Lumpur at RM2,735 (+7.6%) and Selangor at RM1,879 (fully recovered to pre-pandemic levels). Slower rental growth signals potential affordability improvements, influenced by urban housing demand and economic growth.



# 2.5 Factors Influencing Rental Prices

## Financial Considerations

Inflation and income levels impact tenants' affordability and landlords' pricing strategies.

## Demographic and Social Factors

Age, income, and lifestyle preferences shape rental demand, especially in urban areas.

## Property-Specific and Public Amenities

Property type and proximity to amenities like schools and transport influence rental value.

## Household Income

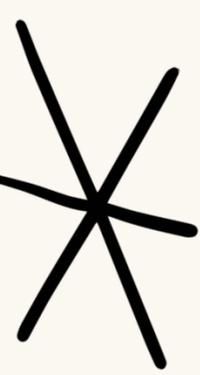
The gap between income growth and housing costs creates affordability challenges.

## Interest Rate

Higher interest rates drive demand for rentals, leading to price increases.

## Flexibility to Move

Accessibility to public transportation raises demand and rental prices in connected areas.





## Chapter 3

# Methodology

**3.2 Flow of the Project**

**3.3 User Requirement**

**3.4 Research Questions**

**3.5 Data Collection**

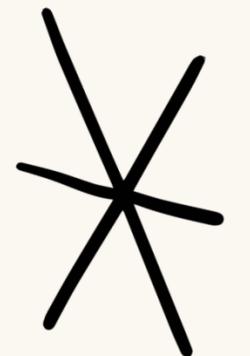
**3.6 Data Description**

**3.7 Data Preparation**

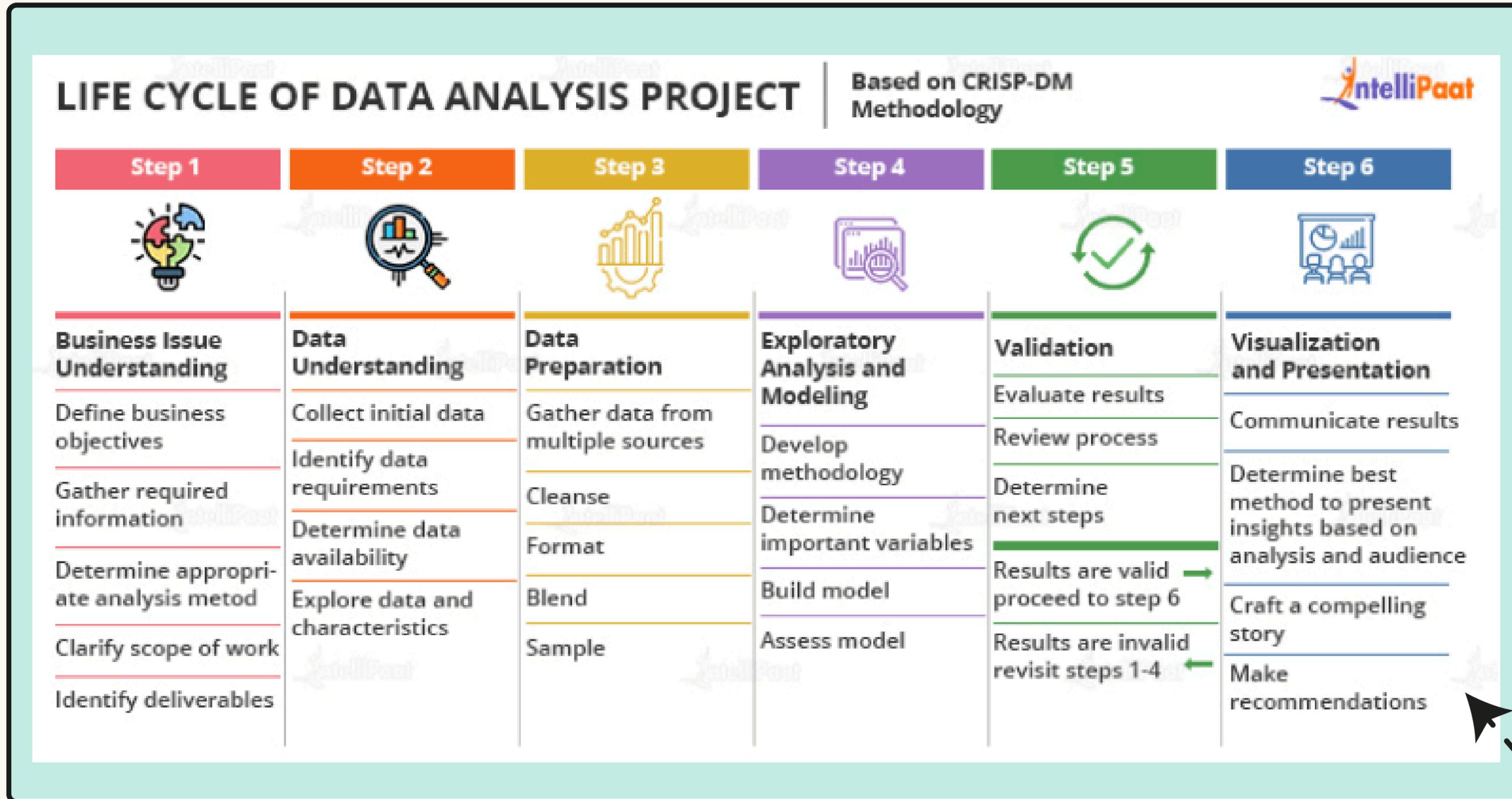
- **3.7.1 Edit Data Types and Rename Attributes**
- **3.7.2 Replace Missing Values**
- **3.7.3 Remove Outliers and Extreme Values**
- **3.7.4 Numeric to Nominal**
- **3.7.5 Select Attributes**

**3.8 Data Dictionary**

**3.9 Exploratory Data Analysis**



# 3.2 Flow of The Project



# 3.3 USER REQUIREMENTS



- **PURPOSE**

To assist users in analyzing rental pricing trends in Kuala Lumpur, Malaysia.

- **OBJECTIVE**

Provide users with a clearer understanding of the rental market through:

- Clear, engaging, and well-organized information.
- Effective use of data visualization techniques.

- **BENEFITS**

- Enable users to explore price variations across different areas and property types.
- Simplify decision-making for users regarding rental properties.



# 3.4



# RESEARCH QUESTIONS



How does the completion year of properties influence their categorization into different monthly rent ranges?



How does property furnished status and the average number of rooms in Kuala Lumpur and Selangor affect the Monthly Rent?



What is the percentage of properties are fully furnished, partly furnished, or not furnished in Kuala Lumpur and Selangor?

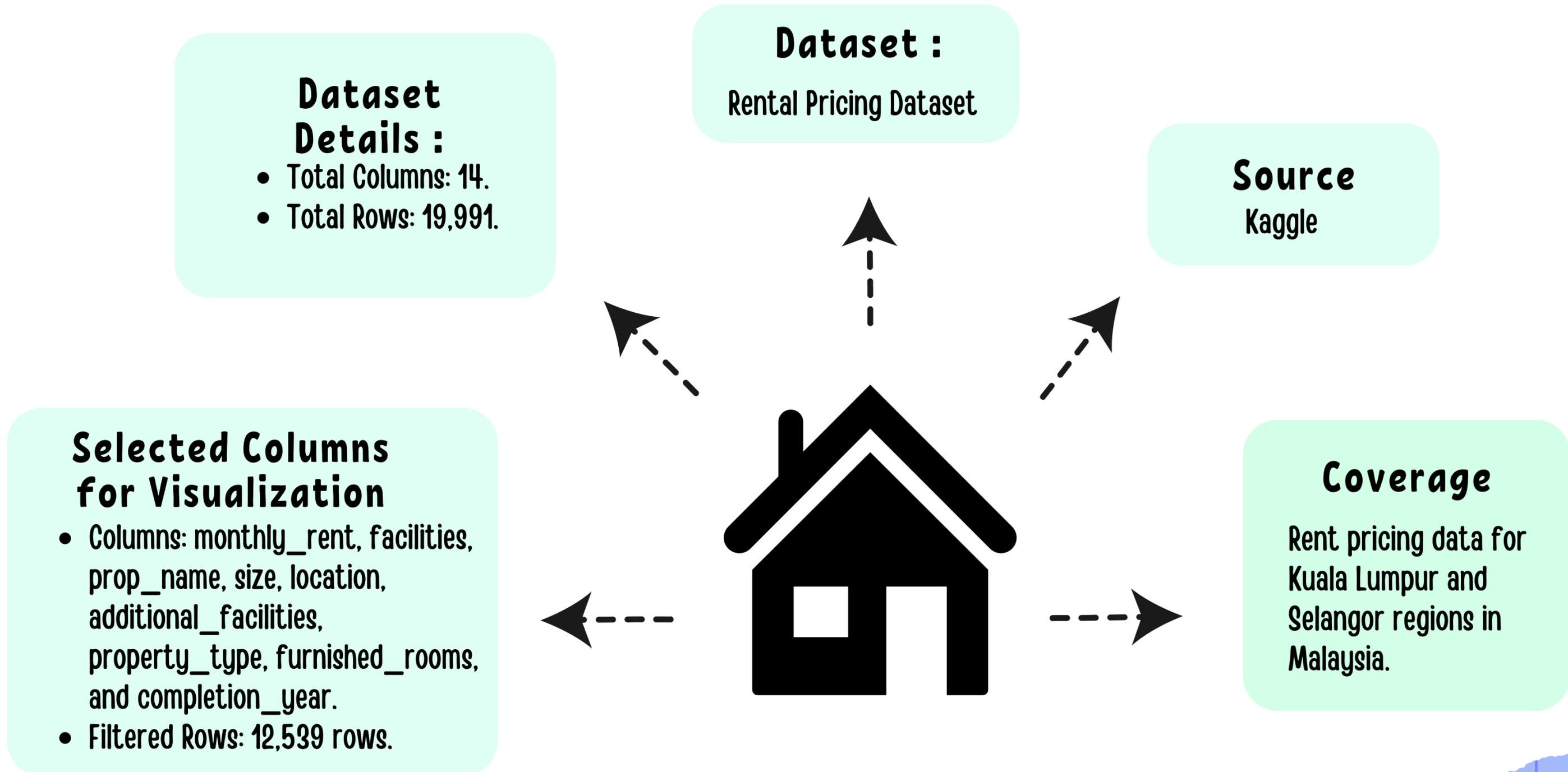


How does furnishing options change for different property types in Kuala Lumpur and Selangor?



What do the rental price ranges show about the affordability of properties in Kuala Lumpur and Selangor?

# 3.5 DATA COLLECTION



# 3.6 DATA DESCRIPTION

Each of the attributes in the dataset are discussed in this table.

<b>NO</b>	<b>Attributes</b>	<b>Description</b>
1.	monthly_rent	monthly rent in ringgit malaysia (RM)
2.	facilities	main facilities available
3.	prop_name	name of the building/ property
4.	size	total area of the unit in square feet
5.	location	property location in Kuala Lumpur and Selangor region
6.	additional_facilities	additional facilities (proximity to attraction area, mall, school, shopping, railways, etc)
7.	property_type	property type such as apartment, condominium, flat, duplex, studio, etc
8.	furnished	furnishing status of the unit (fully, partial, non-furnished)
9.	rooms	number of rooms in the unit
10.	completion_year	completion/ established year of the property

# 3.7 DATA PREPARATION

Edit Data Type  
And Rename  
Attributes

1

Replace  
Missing  
Values

2

Remove  
Outliers and  
Extreme Values

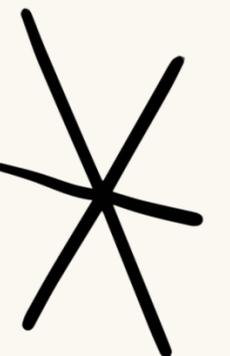
3

Numeric to  
Nominal

4

Select  
Attributes

5

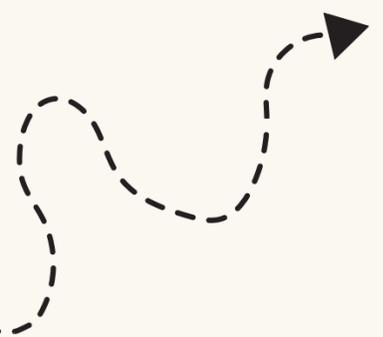
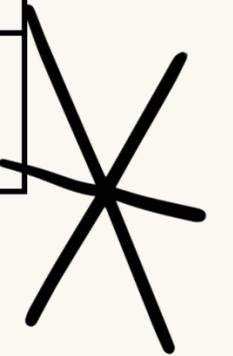


# 3.7 DATA PREPARATION

**Edit Data Type And Rename Attributes**

Before	After
ads_id	ads_id
prop_name	prop_name
completion_year	completion_year
monthly_rent	monthly_rent (RM/per month)
location	location
property_type	property_type
rooms	rooms

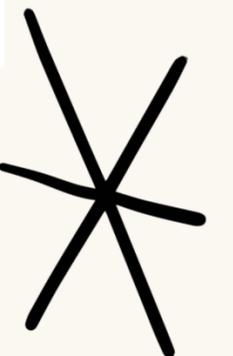
Before	After
parking	parking
bathroom	bathroom
size	size (sq.ft.)
furnished	furnished
facilities	facilities
additional_facilities	additional_facilities
region	region



# 3.7 DATA PREPARATION

## Replace Missing Values

<p>Selected attribute Name: prop_name Missing: 948 (5%)</p>	<p>Selected attribute Name: completion_year Missing: 9185 (46%)</p>	<p>Selected attribute Name: monthly_rent (RM/per month) Missing: 2 (0%) Distinct: 387</p>	
<p>Selected attribute Name: rooms Missing: 6 (0%)</p>	<p>Selected attribute Name: parking Missing: 5702 (29%)</p>	<p>Selected attribute Name: bathroom Missing: 6 (0%)</p>	<p>Selected attribute Name: furnished Missing: 5 (0%)</p>
<p>Selected attribute Name: facilities Missing: 2209 (11%)</p>	<p>Selected attribute Name: additional_facilities Missing: 5948 (30%)</p>		

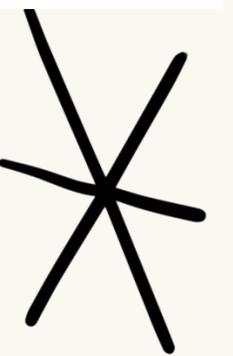


# 3.7 DATA PREPARATION

Remove Outliers and Extreme Values

Before				After			
Selected attribute Name: Outlier Missing: 0 (0%) Distinct: 2 Type: Nominal Unique: 0 (0%)				Selected attribute Name: Outlier Missing: 0 (0%) Distinct: 1 Type: Nominal Unique: 0 (0%)			
No.	Label	Count	Weight	No.	Label	Count	Weight
1	no	17882	17882	1	no	17882	17882
2	yes	2109	2109	2	yes	0	0

Before				After			
Selected attribute Name: ExtremeValue Missing: 0 (0%) Distinct: 2 Type: Nominal Unique: 0 (0%)				Selected attribute Name: ExtremeValue Missing: 0 (0%) Distinct: 1 Type: Nominal Unique: 0 (0%)			
No.	Label	Count	Weight	No.	Label	Count	Weight
1	no	12539	12539	1	no	12539	12539
2	yes	5343	5343	2	yes	0	0



# 3.7 DATA PREPARATION

## Numeric to Nominal

Completion Year

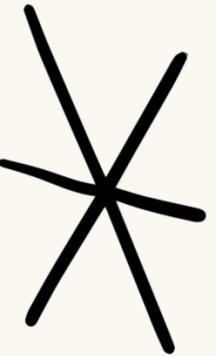
Monthly Rent (RM/per month)

Before		After			
Selected attribute Name: completion_year      Type: Numeric Missing: 9185 (46%)      Distinct: 42      Unique: 2 (0%)		Selected attribute Name: completion_year      Type: Nominal Missing: 0 (0%)      Distinct: 5      Unique: 0 (0%)			
Statistic	Value	No.	Label	Count	Weight
Minimum	1977	1	2015-2017	7972	7972
Maximum	2025	2	2018-2020	1930	1930
Mean	2014.822	3	2020-2023	1564	1564
StdDev	6.735	4	2012-2014	672	672
		5	2009-2011	401	401

Before		After			
Selected attribute Name: monthly_rent (RM/per mo...      Type: Nume... Missing: 2 (0%)      Distinct: 387      Unique: 148 (1...		Selected attribute Name: monthly_rent (RM/per mo...      Type: Nomi... Missing: 0 (0%)      Distinct: 5      Unique: 0 (0%)			
Statistic	Value	No.	Label	Count	Weight
Minimum	70	1	Medium	3054	3054
Maximum	2400000	2	Medium-Low	7111	7111
Mean	2269.084	3	Medium-High	1010	1010
StdDev	22412.852	4	High	306	306
		5	Low	1058	1058

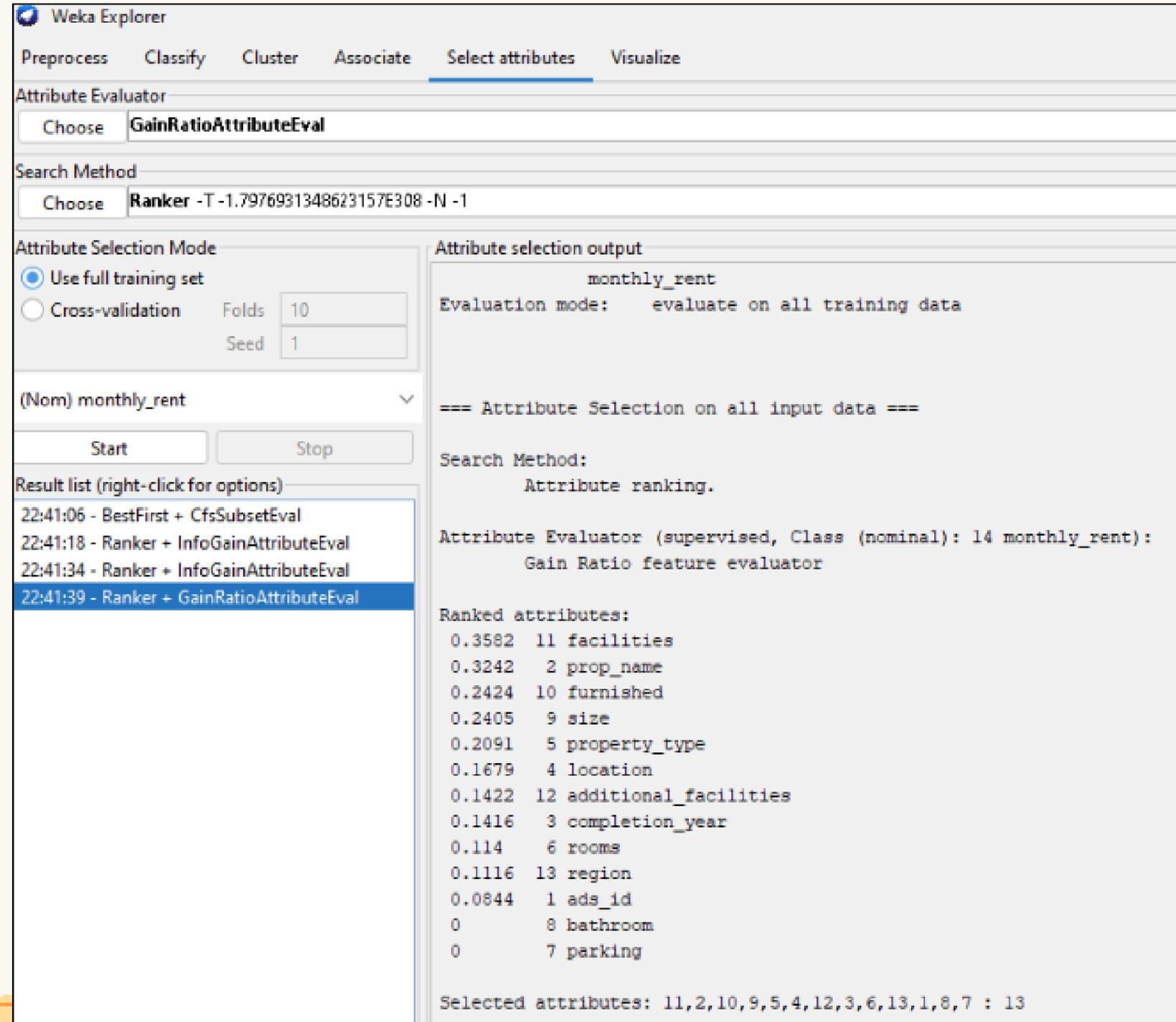
Size(sq.ft.)

Before		After			
Selected attribute Name: size (sq.ft.)      Type: Numeric Missing: 0 (0%)      Distinct: 1215      Unique: 300 (2%)		Selected attribute Name: size (sq.ft.)      Type: Nominal Missing: 0 (0%)      Distinct: 3      Unique: 0 (0%)			
Statistic	Value	No.	Label	Count	Weight
Minimum	1	1	Medium	11790	11790
Maximum	99999999	2	Large	594	594
Mean	5922.172	3	Small	155	155
StdDev	707259.587				



# 3.7 DATA PREPARATION

Select Attributes



The screenshot shows the Weka Explorer interface with the 'Select attributes' tab active. The 'Attribute Evaluator' is set to 'GainRatioAttributeEval' and the 'Search Method' is 'Ranker -T -1.7976931348623157E308 -N -1'. The 'Attribute Selection Mode' is 'Use full training set'. The 'Result list' shows the selected method: '22:41:39 - Ranker + GainRatioAttributeEval'. The 'Attribute selection output' pane displays the following information:

```
monthly_rent
Evaluation mode: evaluate on all training data

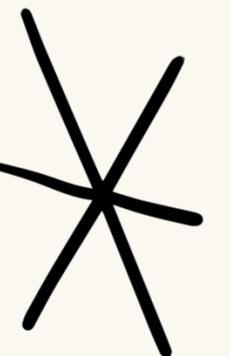
=== Attribute Selection on all input data ===

Search Method:
Attribute ranking.

Attribute Evaluator (supervised, Class (nominal): 14 monthly_rent):
Gain Ratio feature evaluator

Ranked attributes:
0.3582 11 facilities
0.3242 2 prop_name
0.2424 10 furnished
0.2405 9 size
0.2091 5 property_type
0.1679 4 location
0.1422 12 additional_facilities
0.1416 3 completion_year
0.114 6 rooms
0.1116 13 region
0.0844 1 ads_id
0 8 bathroom
0 7 parking

Selected attributes: 11,2,10,9,5,4,12,3,6,13,1,8,7 : 13
```



# 3.8 DATA DICTIONARY

Data dictionary outlining information on rent pricing surrounding Kuala Lumpur and Selangor region, Malaysia.

NO	Attributes	Data Format	Type	Field Size
1.	monthly_rent	-	String	286
2.	facilities	-	String	6893
3.	prop_name	-	String	2043
4.	size	-	String	767
5.	location	-	String	122
6.	additional_facilities	-	String	141
7.	property_type	-	String	9
8.	furnished	-	String	3
9.	rooms	-	Decimal	8
10.	completion_year	-	Decimal	16

### 3.9 EXPLORATORY DATA ANALYSIS

## Monthly Rent

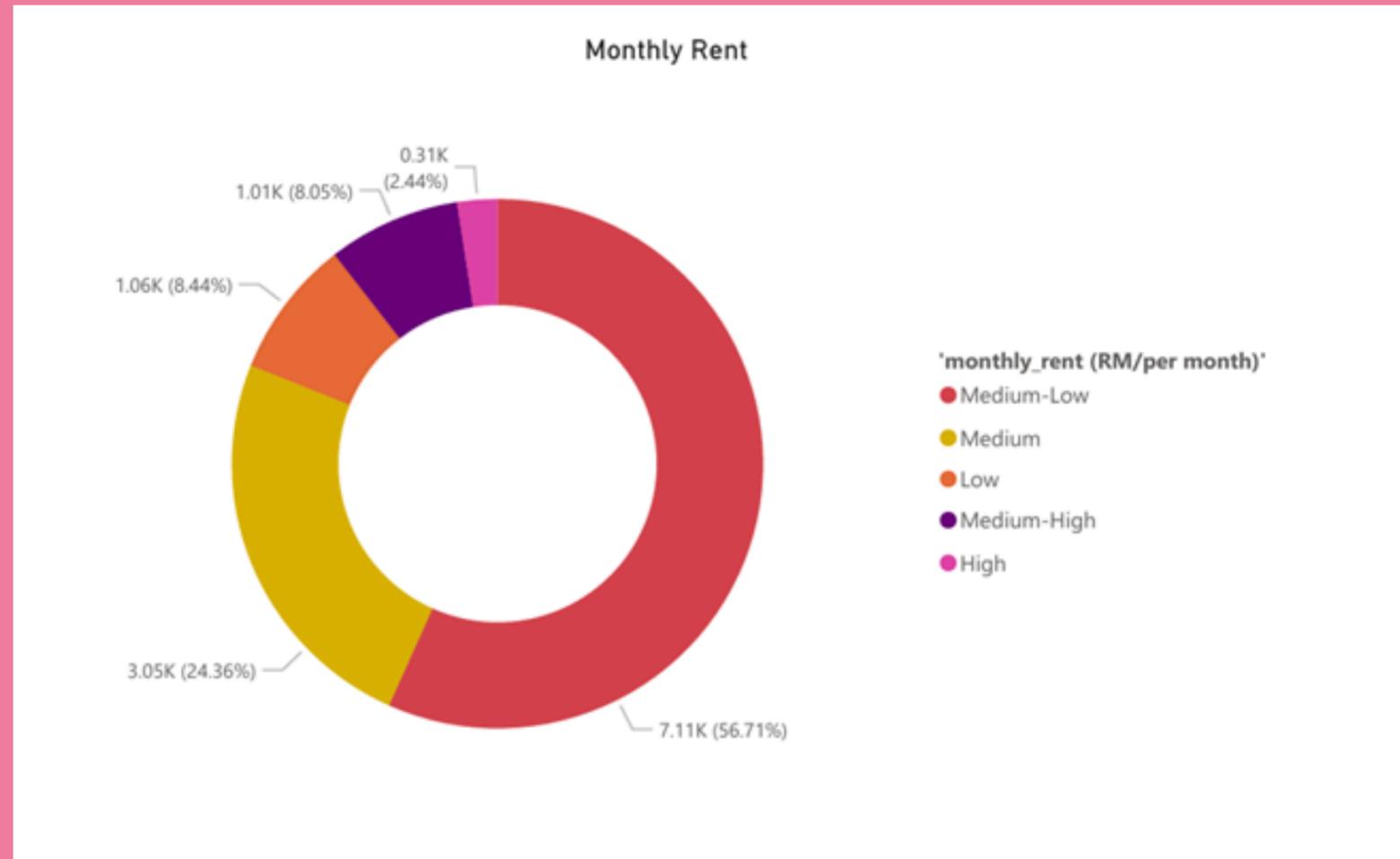
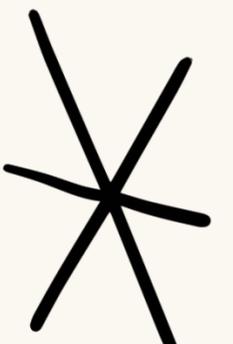


Figure 3.3

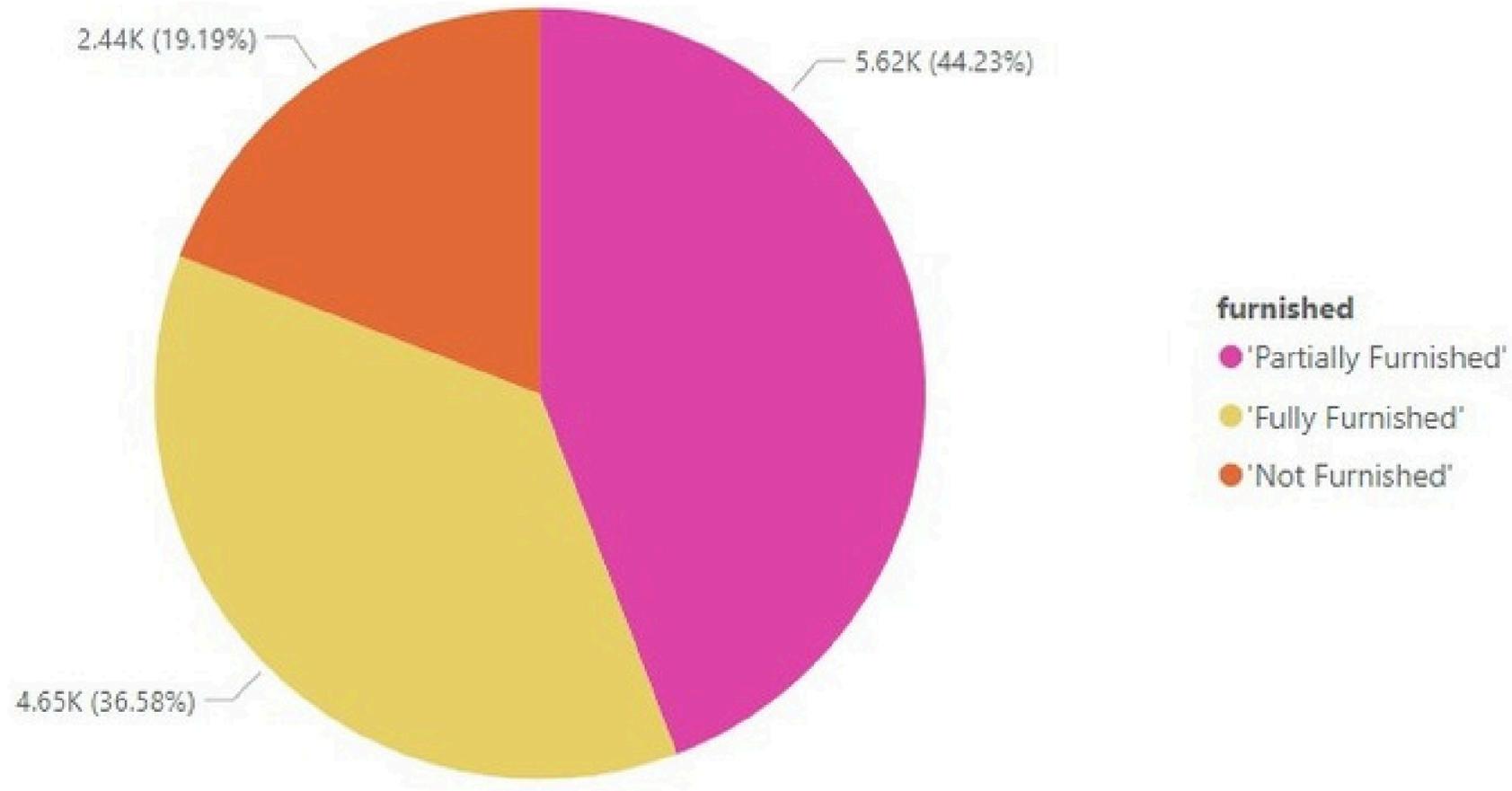
### Doughnut Chart

- Figure 3.3 illustrates the monthly rent distribution in the Kuala Lumpur and Selangor.
- The largest share of properties falls under the 'Medium-Low' rent category, comprising 56.71% of the market.
- 'Medium' rent properties are the second most common, making up 24.36% of the market.
- Low, Medium-High, and High rent categories are less prevalent, representing 8.44%, 8.05%, and 2.44%, respectively.
- This distribution highlights that affordability is a key factor influencing housing choices in the region, with most renters opting for budget-friendly options.



**3.9  
EXPLORATORY  
DATA ANALYSIS**

# Furnished



**Figure 3.4**

## Pie Chart

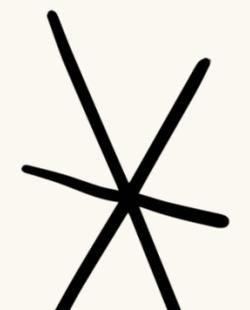
Figure 3.4 is a pie chart that shows the distribution of house furnishing which can be divided in 3 sections,

**fully furnished : 36.58%**

**partially furnished : 44.23%**

**not furnished : 19.19%**

Partially furnished properties dominated the rental market, followed by property that are fully furnished and lastly property that are not furnished



### 3.9 EXPLORATORY DATA ANALYSIS

## Property Size

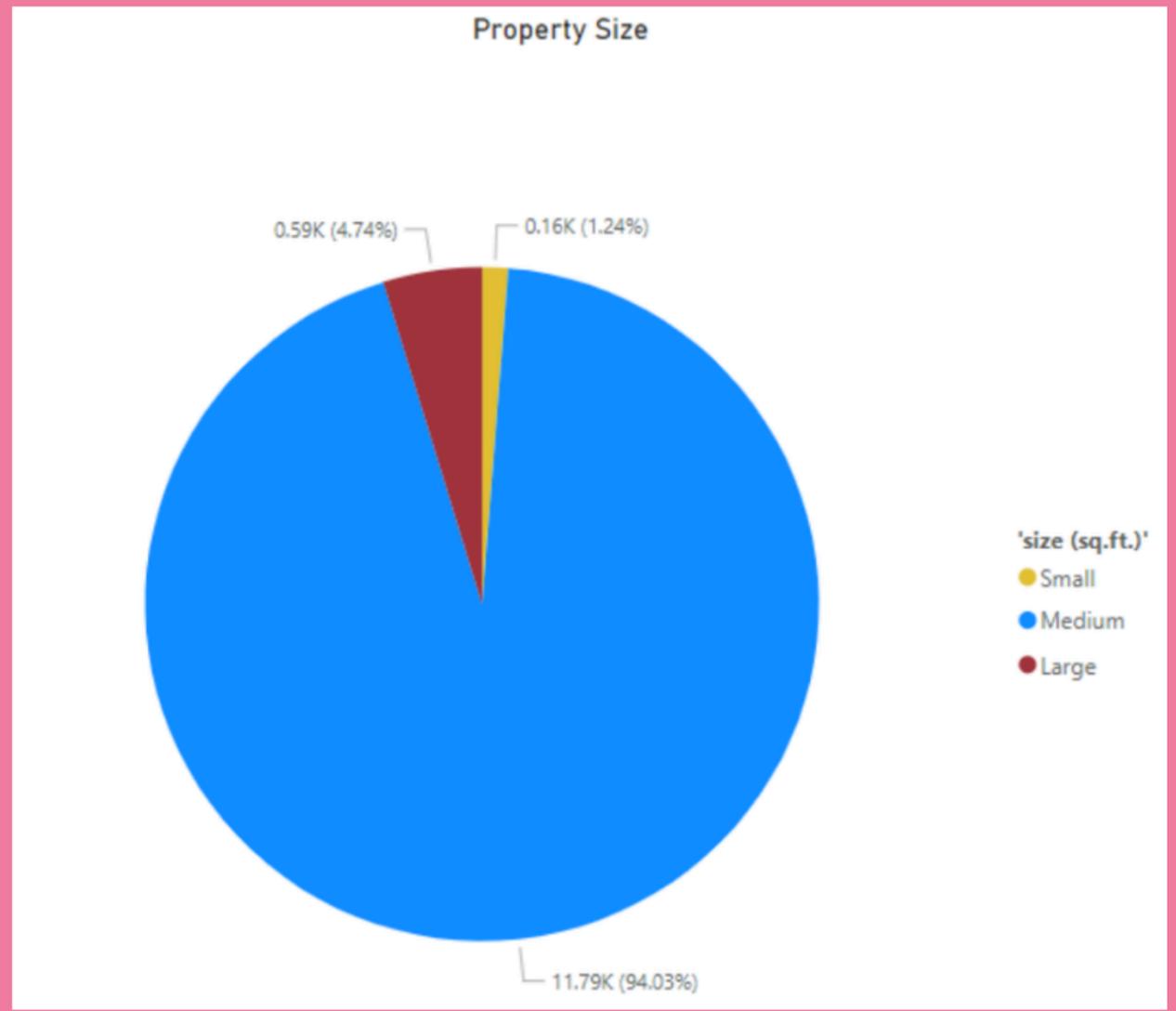


Figure 3.5

## Pie Chart

- Figure 3.5 illustrates the property size distribution in the Kuala Lumpur and Selangor regions.
- Categorized as:
  - Medium = 94.03%
  - Large = 4.74%
  - Small = 1.24%
- The data is heavily skewed towards Medium-sized properties
- This indicates that the majority of properties in the dataset fall into Medium-sized
- This suggests that factors like affordability and availability of medium-sized properties have a bigger impact on rental prices in Kuala Lumpur and Selangor than small or large properties.

### 3.9 EXPLORATORY DATA ANALYSIS

## Completion Year

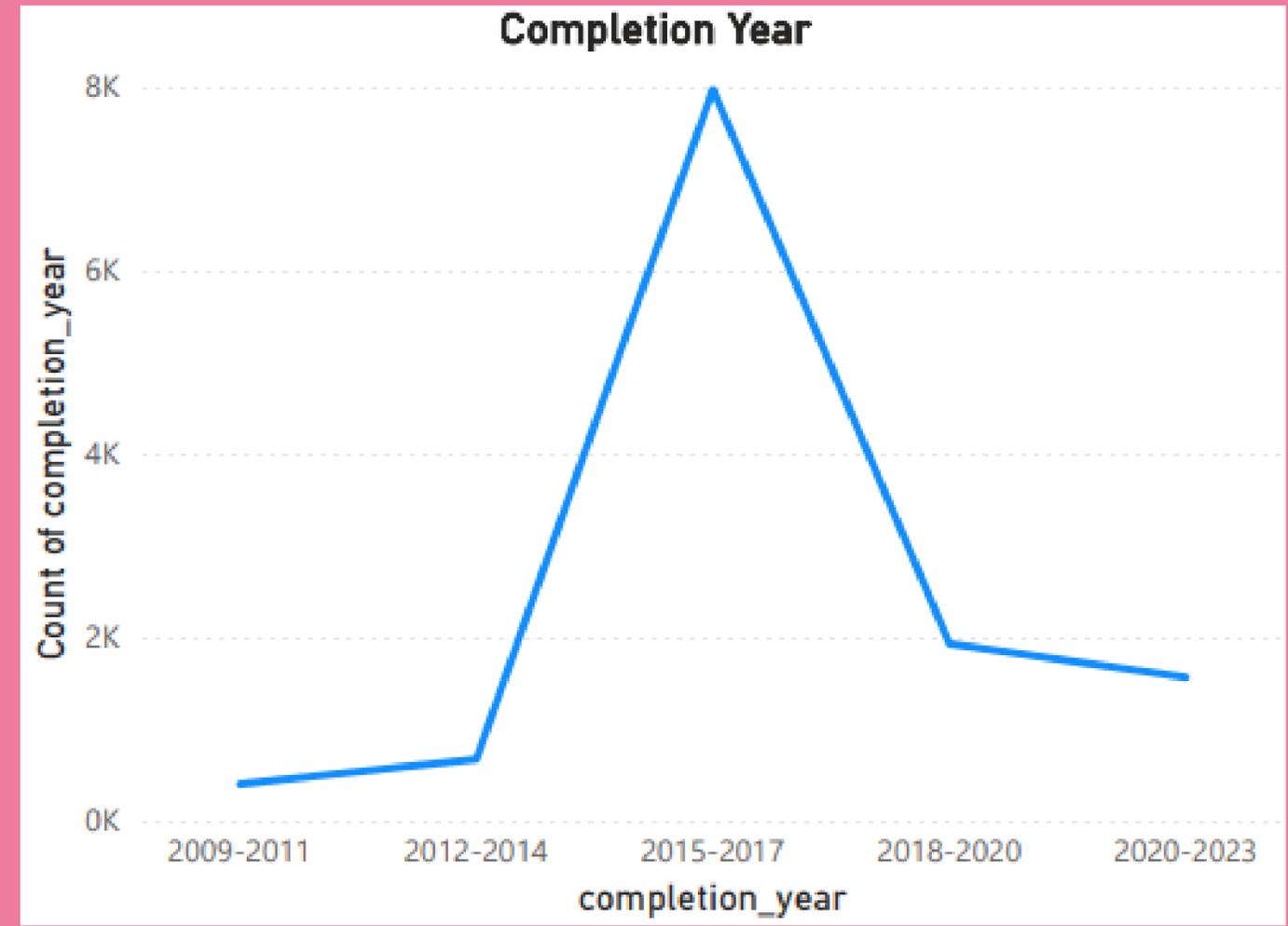


Figure 3.6

### Line Chart

- Figure 3.6 represents the count of properties categorized by their completion years.
- 2009–2011: Low property completion counts, reflecting low construction activity.
- 2012–2014: Gradual increase in property completions.
- 2015–2017: Sharp peak, highest property completions, likely driven by high demand or favorable economic conditions.
- 2018–2020 & 2020–2023: Significant decline in property completions, suggesting market slowdown, reduced demand, or policy changes.
- The chart highlights the changing in property completions affect rental pricing trends in Kuala Lumpur and Selangor.

**3.9  
EXPLORATORY  
DATA ANALYSIS**

# Sum of Rooms by Room Numbers

## Line Chart

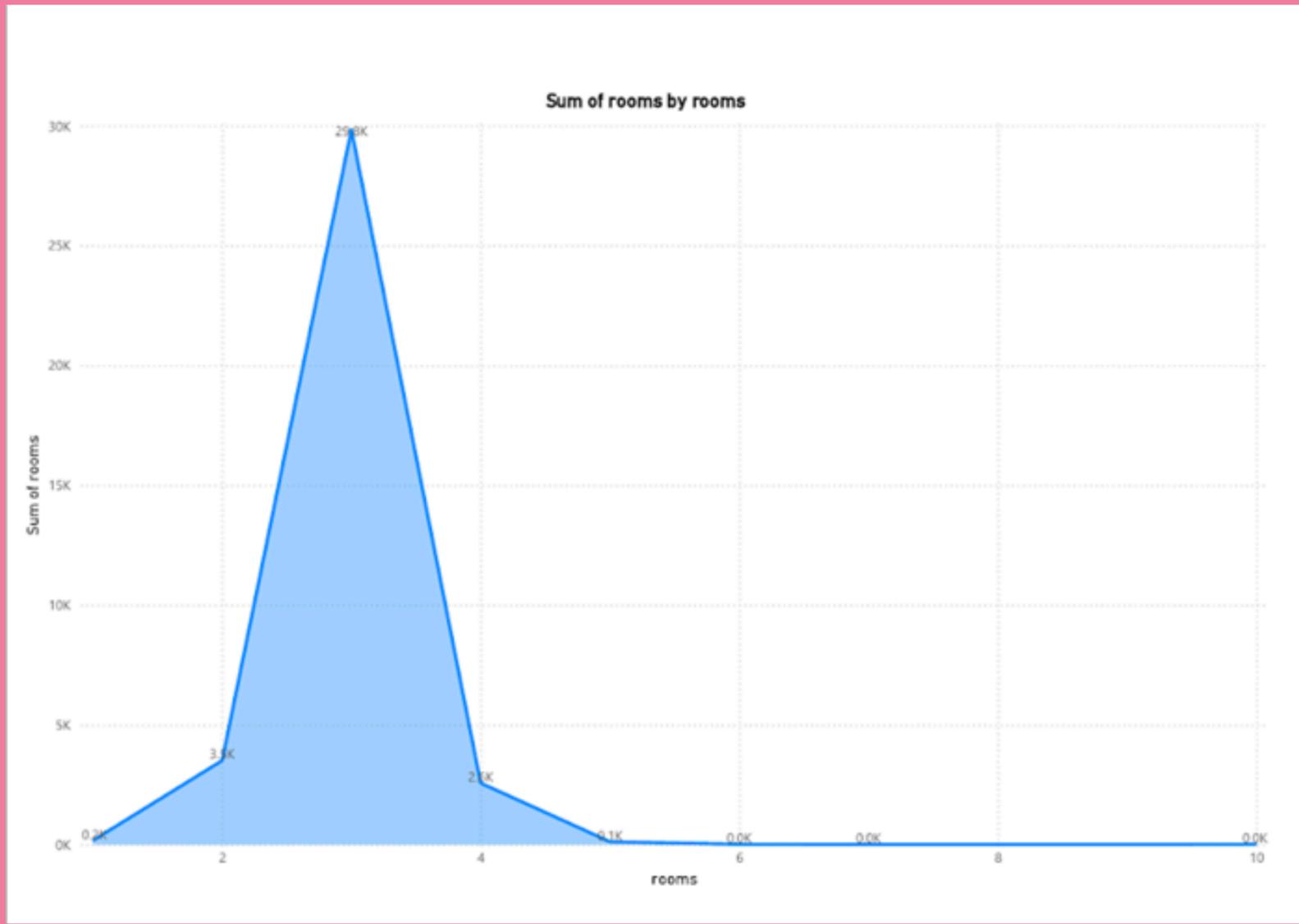
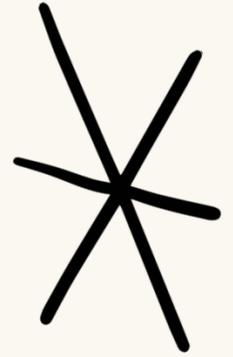


Figure 3.7 shows the sum of rooms based on different categories of room numbers. The total number of rooms reaches approximately 29,800 for 3 rooms, while the minimum value is 7 among room 6 and onwards which indicates that only a few properties consist of 6 rooms or more. This proves that most properties in the Kuala Lumpur and Selangor region consist of a standard amount of 3 rooms in one property only.

**Figure 3.7**



### 3.9 EXPLORATORY DATA ANALYSIS

## Property Name

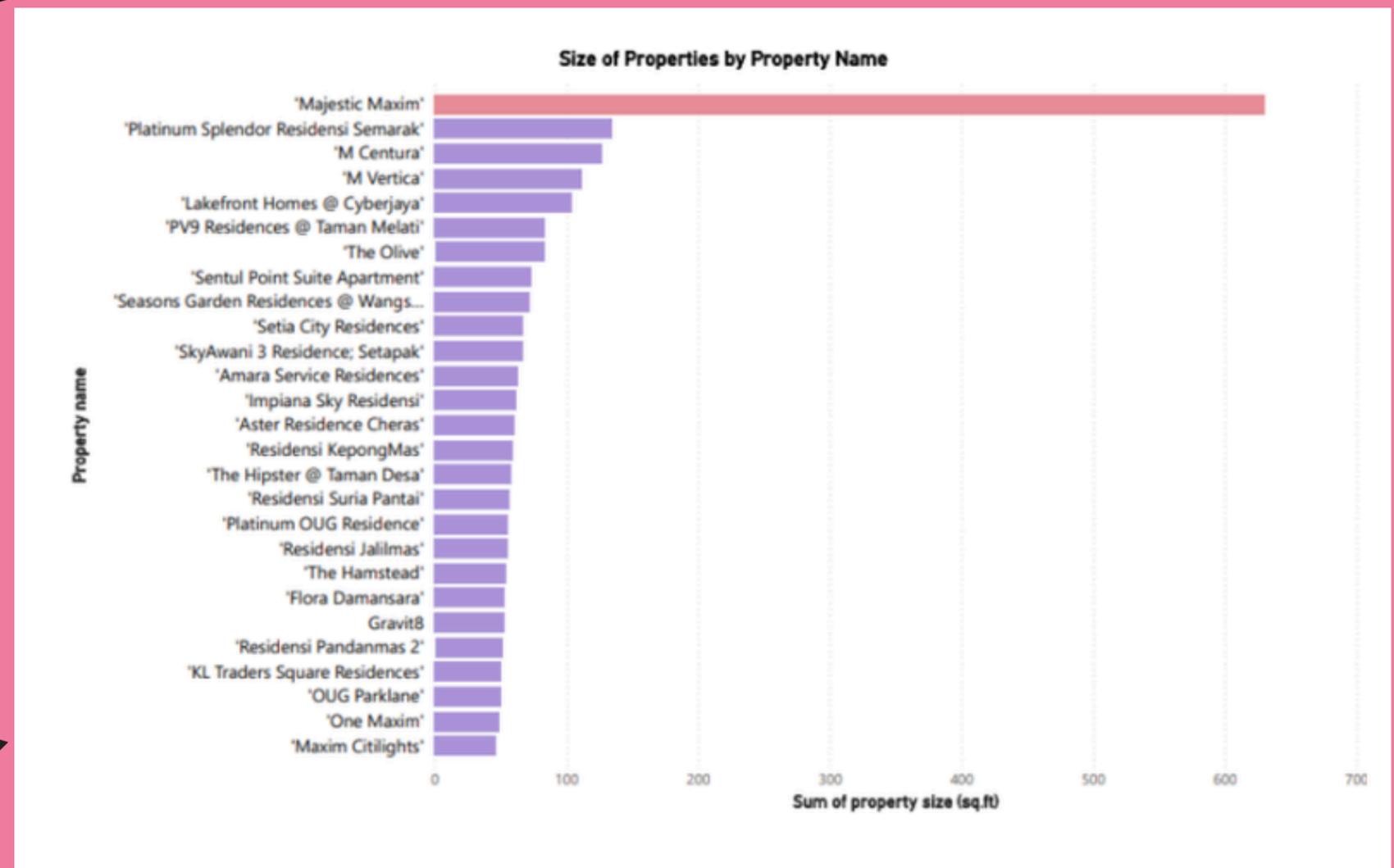


Figure 3.8

## Stacked Bar Chart

- Figure 3.8 is a bar chart representing the total size of properties by property name Kuala Lumpur and Selangor.
- **Majestic Maxim** has the largest total property size, followed by **Platinum Splendor Residence Semarak** and **M Centura**.
- These properties stand out due to their significantly larger sizes compared to others.
- Larger properties likely cater to high demand and market segments.
- Smaller properties focus on providing compact and affordable housing options, showcasing the diversity of property sizes to meet various market needs.

### 3.9 EXPLORATORY DATA ANALYSIS

## Property Types

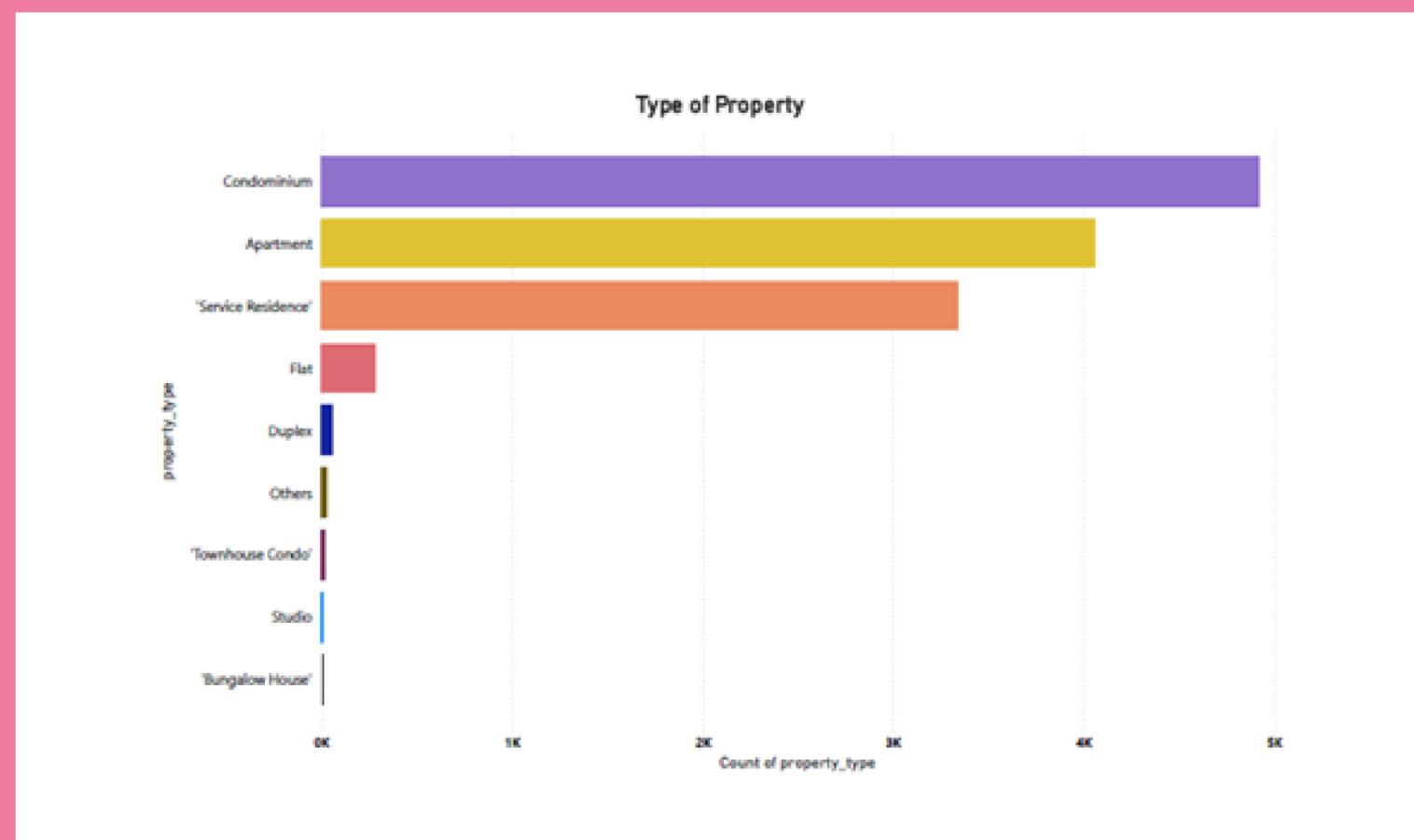
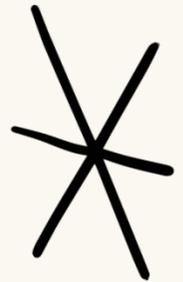


Figure 3.9

### Stacked Bar Chart

- Figure 3.9 illustrates the distribution of property types in the Kuala Lumpur and Selangor regions.
- Condominiums are the most common property type with approximately 4,500 units, followed by Apartments with around 3,800 units and Service Residences totaling about 3,200 units.
- These property types are concentrated in urban areas.
- Condominiums and apartments dominate the market due to their accessibility and suitability for city living, while service residences attract those seeking a blend of residential and serviced amenities.



### 3.9 EXPLORATORY DATA ANALYSIS

## Property Locations

### Stacked Bar Chart

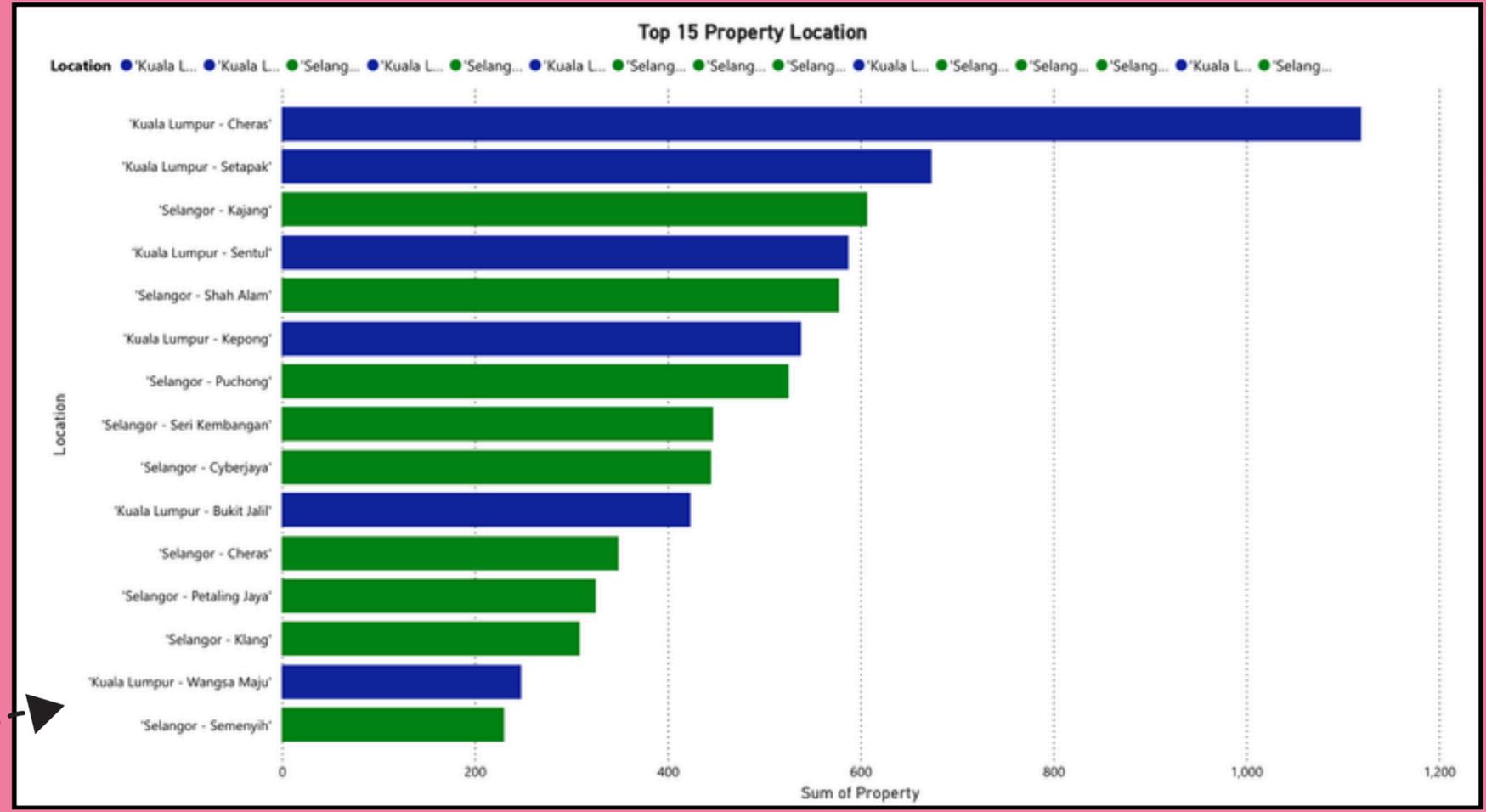
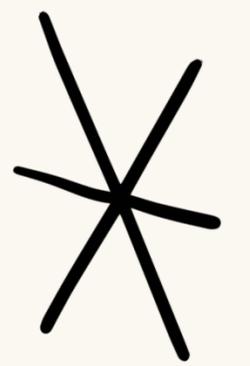
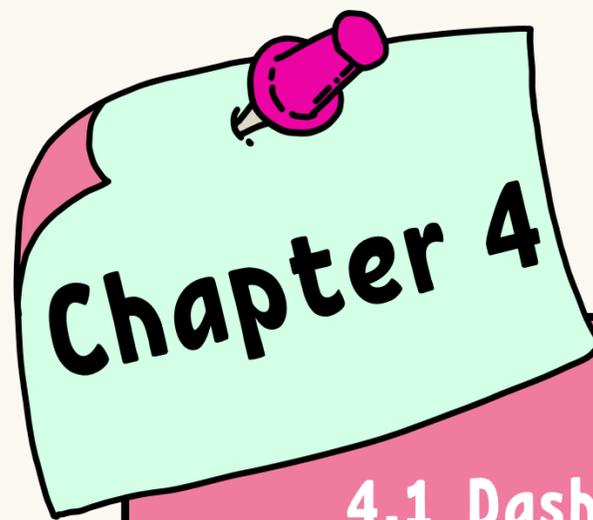


Figure 3.10

- Figure 3.10 highlights the top 15 property locations in Kuala Lumpur and Selangor.
- The top three locations are Kuala Lumpur - Cheras with 1,119 properties, Kuala Lumpur - Setapak with 674, and Selangor - Kajang with 607.
- Most properties are concentrated in urban areas of Kuala Lumpur and nearby urbanized parts of Selangor. While this data may not fully represent smaller or less urbanized areas, it provides insight into the real estate markets in major towns.





## Chapter 4

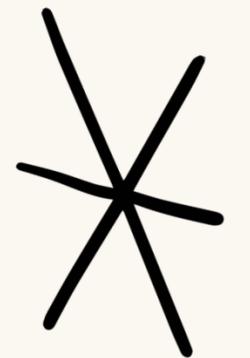
# Design & Development

4.1 Dashboard Sketch

4.2 User Interface

4.4 Basic Visualization Design

- 4.4.1 Tree Map
- 4.4.2 Ribbon Chart
- 4.4.3 Doughnut Chart
- 4.4.4 Stacked Bar Chart
- 4.4.5 Aster Plot



## 4.1 DASHBOARD SKETCH



## DASHBOARD HIGHLIGHTS

- **Aster Plot Chart:** Distribution of property types across monthly rent categories.
- **Treemap Chart:** Monthly rent distribution by property completion year and rent categories.
- **Ribbon Chart:** Average number of rooms based on completion year and monthly rent.
- **Donut Chart:** Distribution of properties by furnishing status.
- **Stacked Bar Chart:** Rooms distribution by property type and furnishing status.

## INSIGHTS

- Availability of furnished properties.
- Trends in rental pricing ranges.
- Impact of completion year and furnishing status on rental patterns.



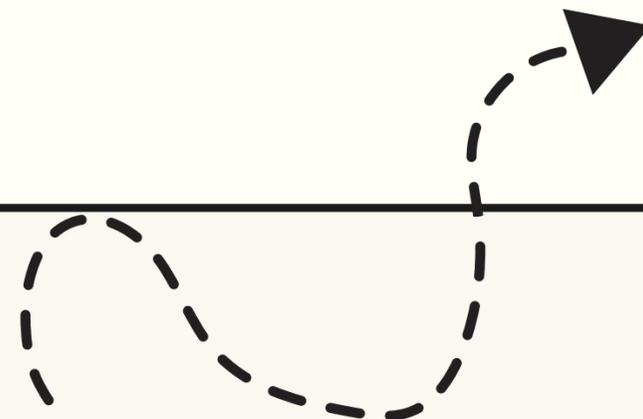
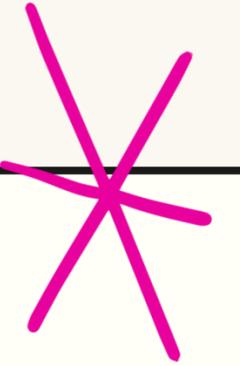
## 4.2 USER INTERFACE

Method for Dashboard  
Design

Data-Driven  
Design

### HIGHLIGHTING THE PRESENTATION OF RELEVANT, ACCURATE AND WELL-VISUALIZED DATA (DIAMOND ET AL., 2017)

- **Define the Research Question:** To ensure the scope is reduced and only relevant information is chosen for study.
- **Identify Relevant Metrics:** Select metrics that directly relate to research questions and focus on important metrics.
- **Visualize Data Effectively:** Employ different chart types to represent data effectively.



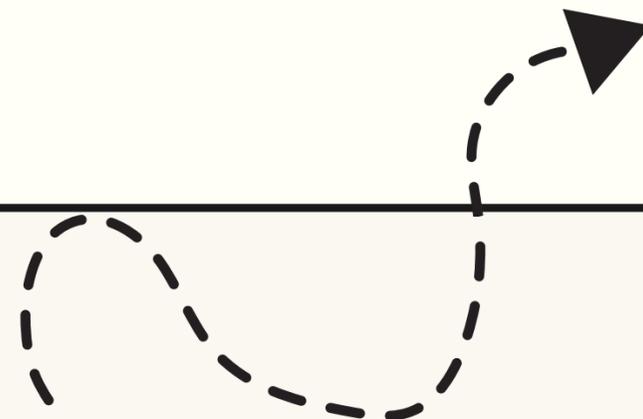
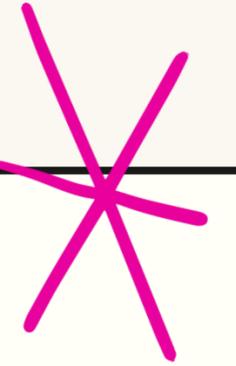
## 4.2 USER INTERFACE

Method for Dashboard  
Design

Layout and  
Structure

### STRUCTURING DASHBOARD COMPONENTS FOR CLARITY AND SIMPLICITY (BACH ET AL., 2023)

- **Use a Consistent Grid Layout:** Implement a grid-based structure to align components evenly and maintain visual consistency.
- **Establish an Information Hierarchy:** Organize the dashboard content so that the most critical and high-level information is prominently displayed at the top or center.



## 4.2 USER INTERFACE

Method for Dashboard  
Design

Visual  
Design

### MAKING THE DASHBOARD VISUALLY ATTRACTIVE AND EASY TO COMPREHEND (BACH ET AL., 2023)

#### Consistent Category-Color Mapping

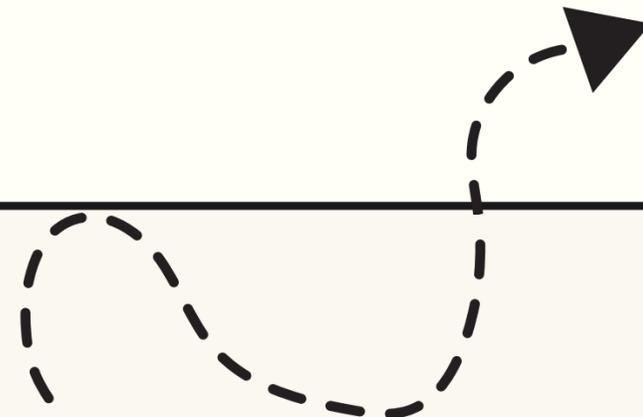
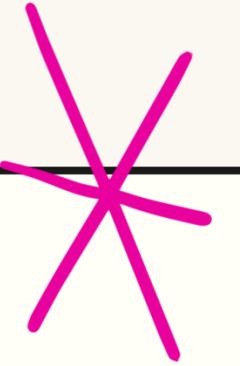
- Assign specific, unique colors to each category or data type.
- Maintain consistency across all visualizations on the dashboard.

#### Distinct Color Palette

- Utilize a qualitative color palette with distinct, easily distinguishable colors.
- Ensure clarity and differentiation for categorical data.

#### Interactive Highlights

- Implement a highlighting feature for selected data points or categories.
- Temporarily accentuate the chosen data while dimming others.



# BASIC VISUALIZATION DESIGN

## Categories:

- Monthly rent categorized as medium-low, medium, medium-high, low, high

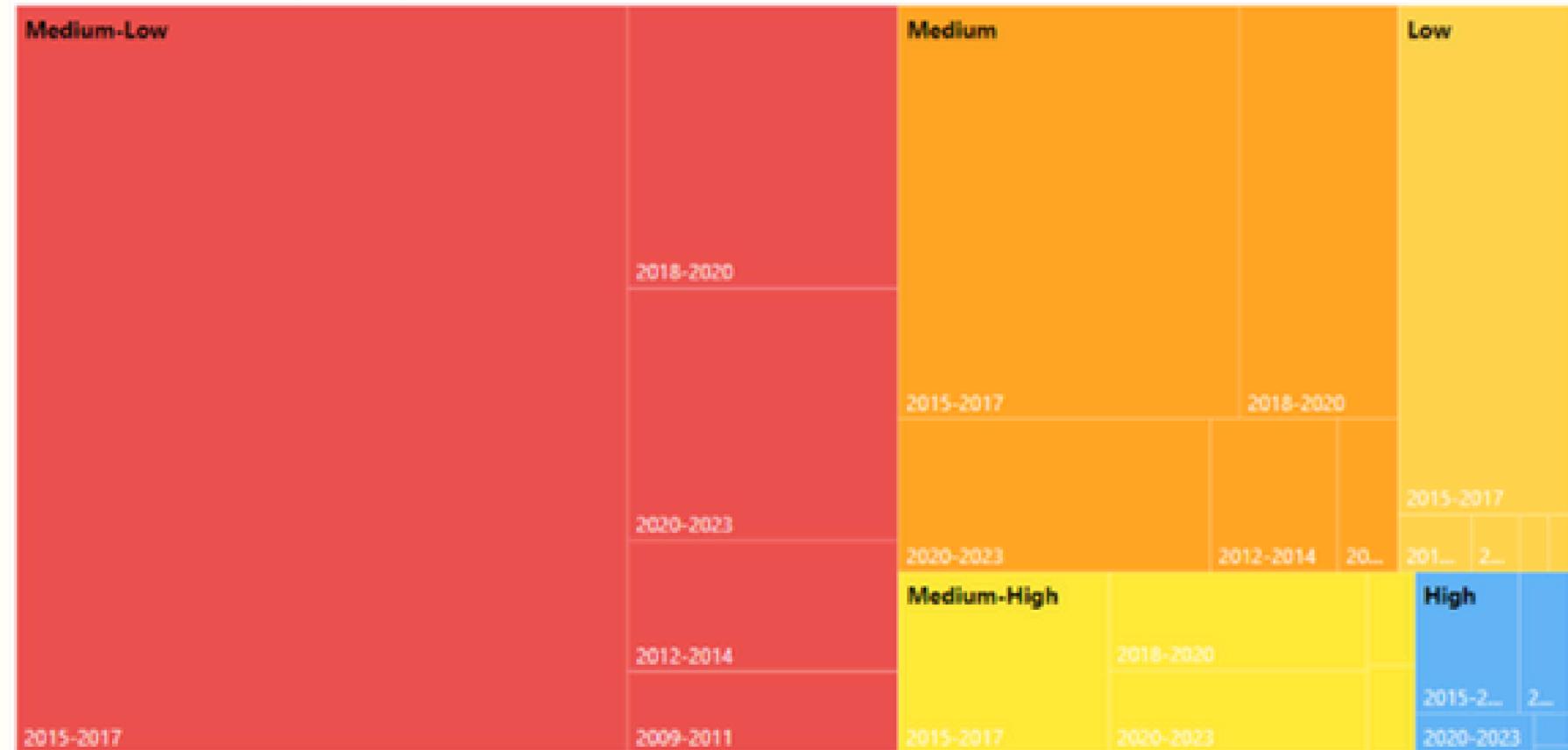
## Values:

- Size of each rectangle represents the count of monthly rent of each category based on completion year
- Largest rectangle (left): Medium-low rent category has the highest count.
- Smaller rectangles (right): Gradual decrease in rent category counts.

Purpose: Highlights the distribution pattern of monthly rent across completion years.

## Tree Map

Distribution of Monthly Rent by Completion Year



# BASIC VISUALIZATION DESIGN

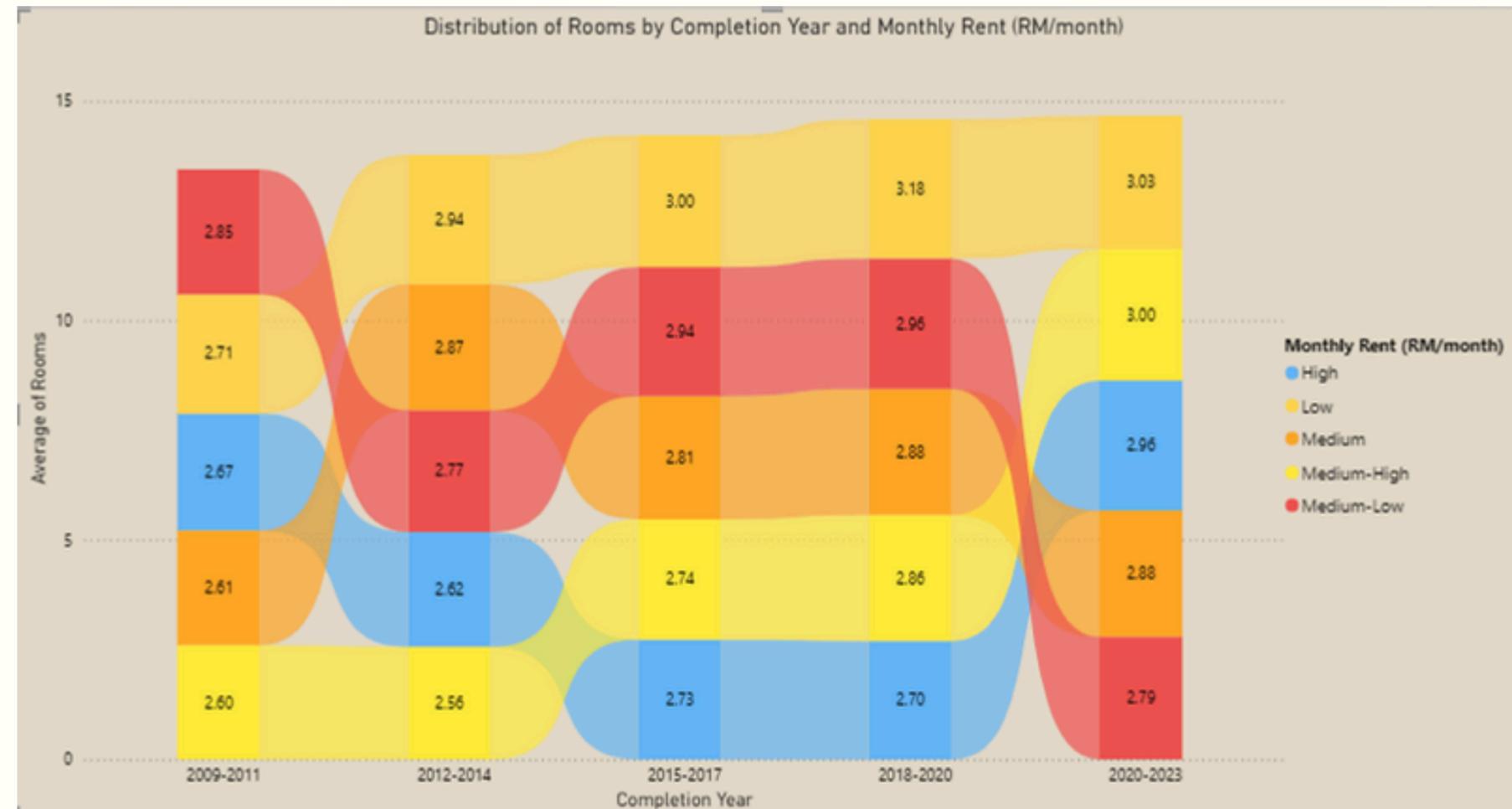
## Rent Categories and Room Trends:

- **Low Rent (Mustard Yellow):** Average number of rooms increased from 2.71 (2009-2011) to 3.03 (2020-2023), peaking at 3.18 (2018-2020).
- **Medium-Low (Red):** Fluctuated, peaking at 2.96 (2018-2020) and dropping to 2.79 (2020-2023).
- **Medium (Orange):** Stable, increasing from 2.61 (2009-2011) to 2.88 (2018-2020).
- **Medium-High (Yellow):** Increased indicating growing size for mid-tier rent properties.

## Highlight:

- Lower rent categories now offer larger living spaces over time.
- Medium categories show stability, balancing affordability and size.
- High rent properties show modest growth in room size, adapting to evolving market demands.

## Ribbon Plot



# BASIC VISUALIZATION DESIGN

## Categories:

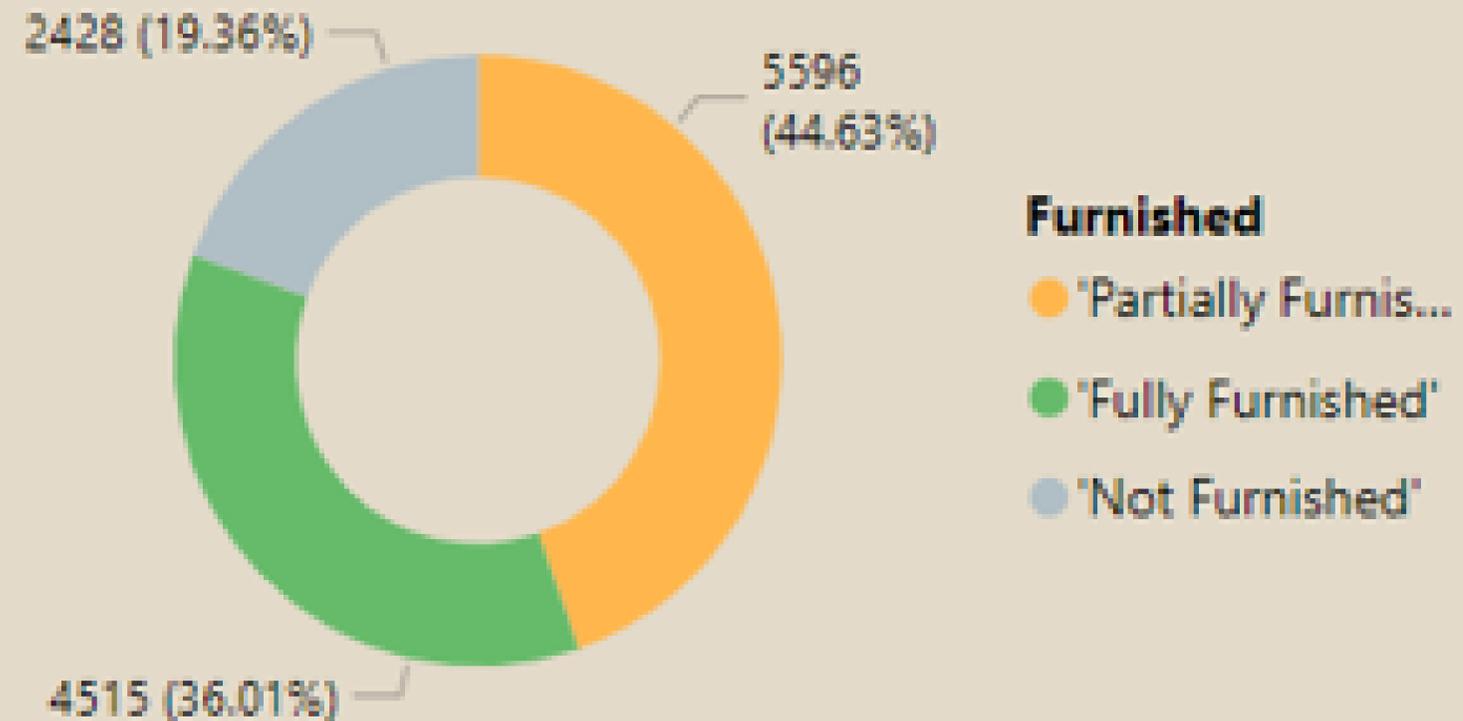
- Partially Furnished (Yellow): 44.63% (5,596) – Largest segment.
- Fully Furnished (Green): 36.01% (4,515).
- Not Furnished (Grey): 19.36% (2,428) – Smallest segment.

## Key Insights:

- Partially Furnished properties are in highest demand, preferred for essential furniture with flexibility for customization.
- Not Furnished properties are in least demand, highlighting a preference for convenience and readiness.

## Doughnut Chart

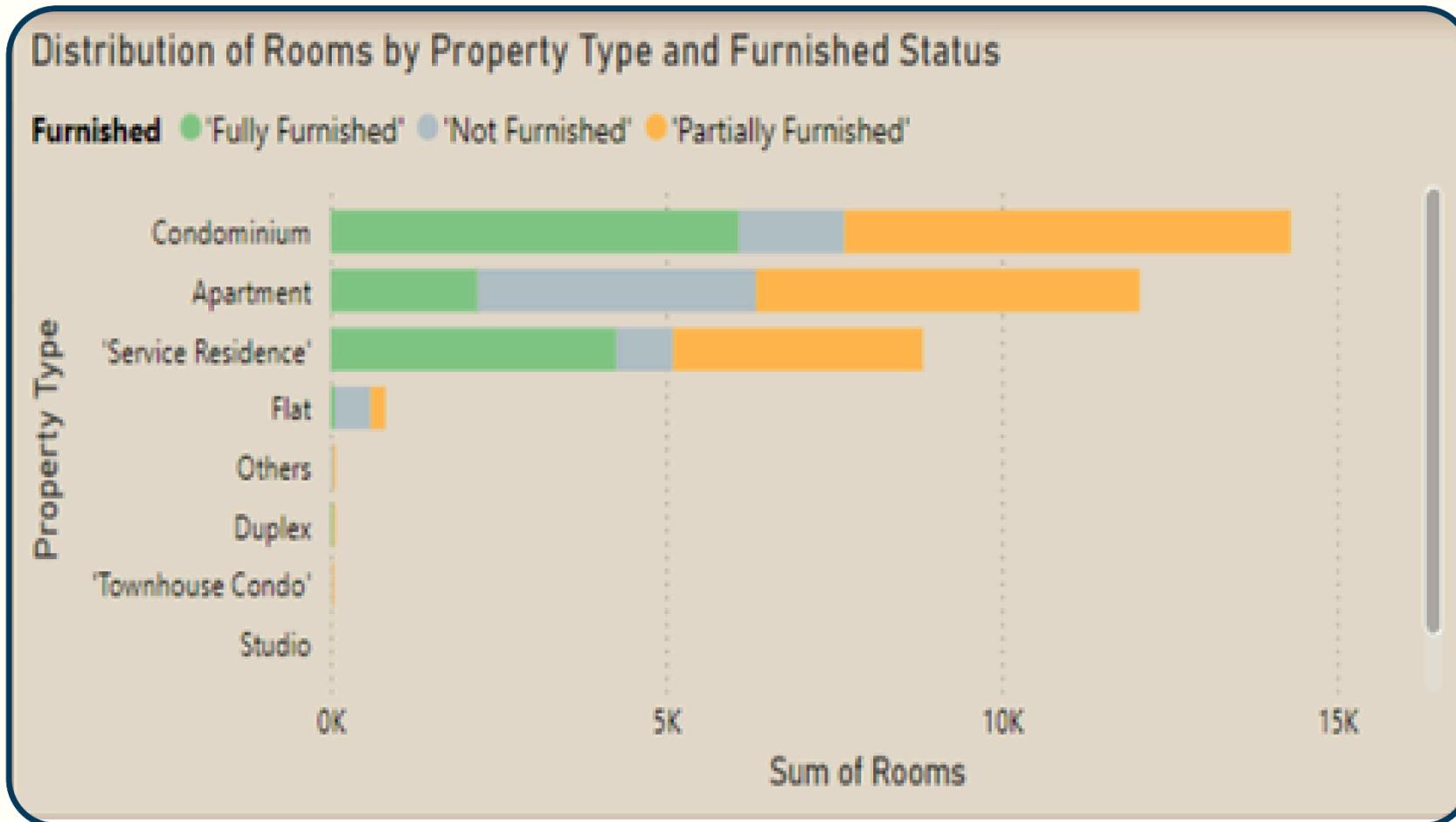
Rental Furnishing Distribution



# BASIC VISUALIZATION DESIGN

- “Partially Furnished” accommodations are the most popular furnishing type, especially in condominiums and serviced apartments.
- Condominiums , apartments and serviced residences dominate the overall room count in the market.
- “Not Furnished” rooms are the least preferred across all property types, particularly in smaller accommodations.
- Renters prioritize partially furnished accommodations, indicating that property furnishing plays a critical role in meeting market demand.
- Condominiums and apartments are key drivers of the rental market due to their popularity and availability.

## Stacked Bar Chart



# BASIC VISUALIZATION DESIGN

## Affordability Focus:

- Medium-Low and Medium categories dominate, making up 76.5% of total properties.
- Reflects high demand for affordable rentals in the region.

## Limited High-End Options:

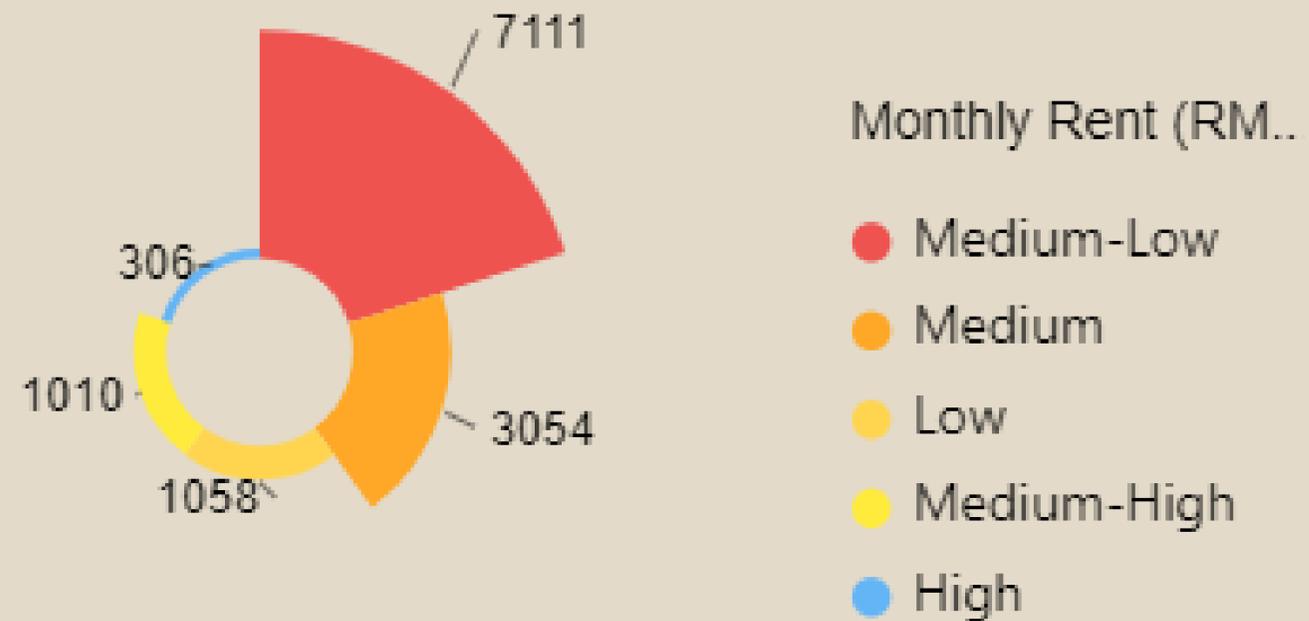
- Medium-High and High categories account for only 9.9%, indicating fewer premium properties available.

## Market Trends:

- The distribution highlights rental affordability trends, aligned with economic realities and housing demand in Kuala Lumpur and Selangor.

## Aster Plot

Distribution of Property Types by Monthly Rent Categories



# Analysis and Findings



## CHAPTER 5

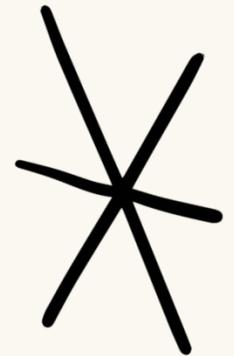
5.2 Research Question 1

5.3 Research Question 2

5.4 Research Question 3

5.5 Research Question 4

5.6 Research Question 5



# 5.1 DATA STORYTELLING

Research Question 1: How does the completion year of properties influence their categorization into different monthly rent ranges?



## Key insights:

### (2018-2023) Newer Properties

- Fall into Medium-High and High rent categories.
- Higher demand: modern amenities, construction standards

### (2015-2017) Mid-Range Properties

- Fall into Medium-Low rent category
- High demand, dominate rental market, affordable pricing + modern features

### (2009-2014) Older Properties

- Fall into Medium-Low and Low rent categories.
- Less competitive, outdated features and reduced value over time

## Data Highlights:

- 2018-2023: **High** rent categories due to modern and premium features.
- 2015-2017: **Mid-range** housing projects dominate with moderate pricing with decent features.
- 2009-2014: **Lower** rent categories due to outdated and aging infrastructure.
- **Strategic locations** property may increase demand from renters.

## Conclusion:

Different completion year may provides different properties features (location, amenities) that could affect monthly rent ranges, with newer properties commanding higher rents and mid-range housing dominating the market.

# 5.2 DATA STORYTELLING

Research Question 2: How does properties average number of rooms and completion year in Kuala Lumpur and Selangor affect the Monthly Rent?

## Key Insights:

### High Rent Properties

- Generally smaller, starting at an average of 2.67 rooms in 2009–2011 and increasing to 2.96 by 2020–2023
- a demand for compact, luxury units.

### Low Rent Properties

- Larger in size, beginning at 2.71 rooms and peaking at 3.03 rooms by 2020–2023
- appealing to lower-income tenants in suburban areas.

### Medium Rent Properties

- Shows stability with room sizes increasing from 2.61 to 2.88 rooms over the same period
- targeting middle-income tenants.

### Medium-High Rent Properties

- Demonstrates growth from 2.60 to 3.00 rooms,
- rising demand for moderately priced yet spacious properties.

### Medium-Low Rent Properties

- Experiences fluctuations in room size, starting at 2.85 rooms, peaking at 2.96, and dropping to 2.79 by 2020–2023
- reflecting changing tenant preferences.

## Data Highlights

- The average number of rooms for High Rent properties has shown a gradual increase over the years.
- Low Rent properties consistently offer larger room sizes compared to other categories.
- Medium and Medium-High Rent categories exhibit a consistent upward trend in room sizes.
- The Medium-Low Rent category's variability suggests a dynamic market influenced by diverse tenant needs.

## Conclusion

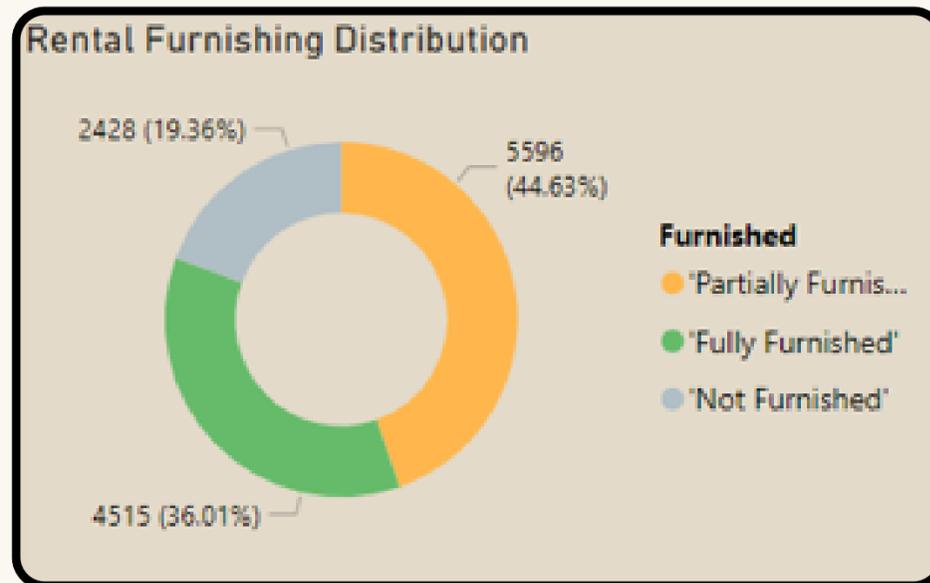
The analysis highlights a clear link between room size and rental pricing in Kuala Lumpur and Selangor. Smaller, premium properties in prime locations command higher rents, while larger homes cater to families or low-income tenants. Medium rent categories show stable demand for spacious, affordable homes, while fluctuations in Medium-Low Rent properties reflect changing tenant preferences.

Distribution of Rooms by Completion Year and Monthly Rent (RM/month)



## 5.3 DATA STORYTELLING

Research Question 3: What is the percentage of properties are fully furnished, partly furnished, or not furnished in Kuala Lumpur and Selangor?



### Key Insights:

- The rental market in Kuala Lumpur and Selangor caters to diverse tenant needs with a focus on furnished properties.
- **Partially Furnished** properties, offering a balance between essentials and customization, and attracting a broad range of tenants seeking flexibility without sacrificing key furnishings.
- **Fully Furnished** properties target tenants that seeking convenience, particularly professionals, students, and short-term renters.
- **Not Furnished** properties cater to renters that prioritizing affordability and creative control over their living space.



### Data Highlights:

- Partially Furnished: Represents **44.63%** of the market.
- Fully Furnished: Accounts for **36.01%** of properties.
- Unfurnished: Comprises **19.36%** of the market

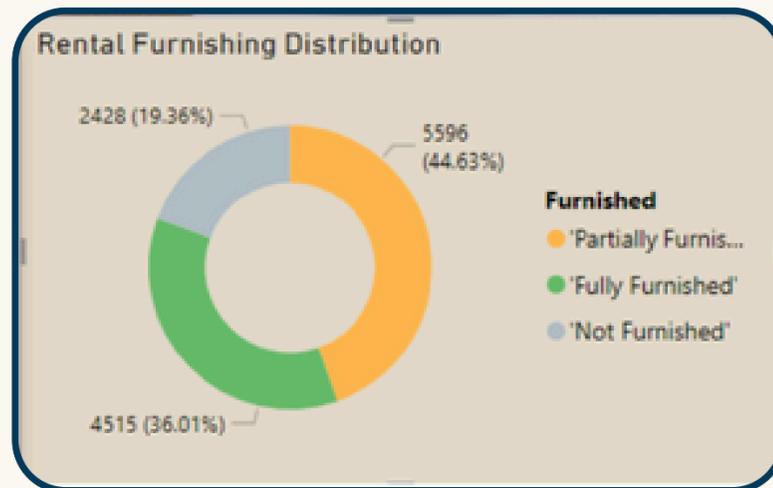


### Conclusion:

- The rental market in Kuala Lumpur and Selangor is largely dominated by furnished properties, with over **80%** falling into the fully or partially furnished categories. This flexibility meets the diverse needs of tenants, offering a balance of affordability, convenience, and customization.

## 5.4 DATA STORYTELLING

Research Question 4: How do furnishing options change for different property types in Kuala Lumpur and Selangor?



### Key insights:

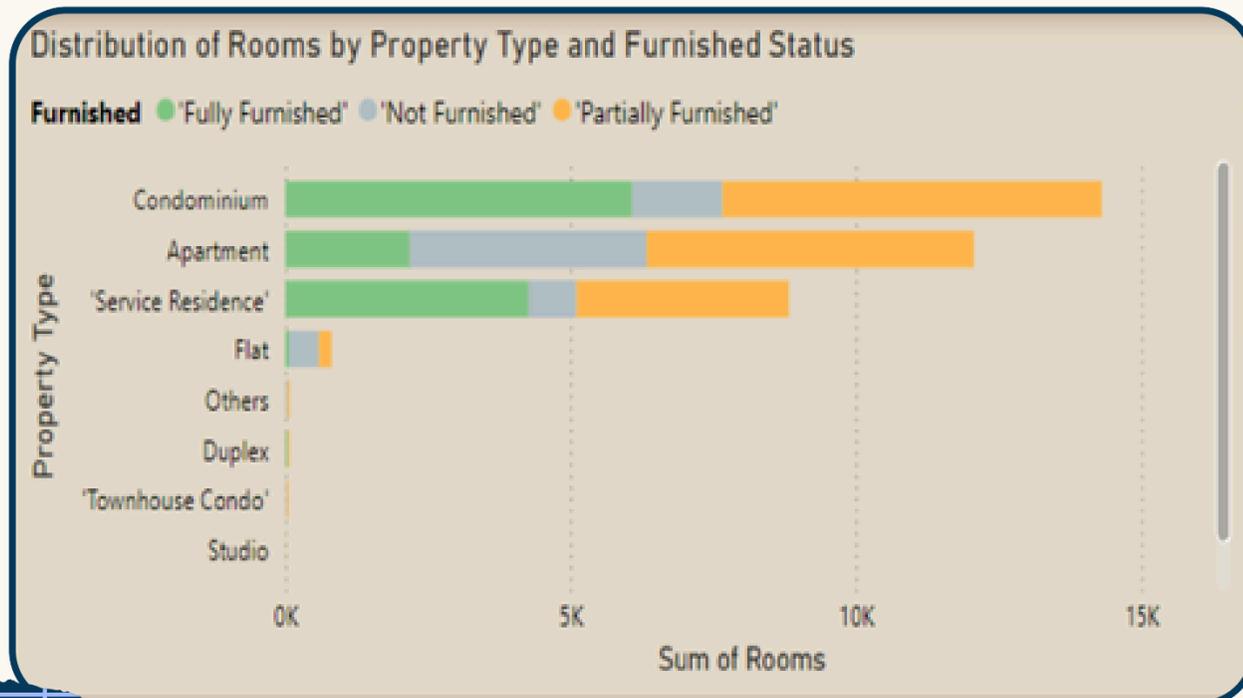
- More tenants prefer **partially furnished properties** over fully furnished or unfurnished options.
- High-end properties like condominiums predominantly offer **partially furnished** units, while service residences focus on **fully furnished** options.
- Apartments provide a balanced mix of **partially furnished** and unfurnished options, appealing to a broader tenant base.
- Flats and low-cost housing prioritize affordability with a higher share of unfurnished units.
- Studios and duplexes are often **furnished**, catering to young professionals and expats.

### Data Highlights:

- **44.63%** of rental properties are **partially furnished**.
- **36.01%** of properties are **fully furnished**.
- **19.36%** of properties are unfurnished.
- High-end properties (e.g., condominiums) are mostly partially furnished.
- Flats and low-cost housing have the highest share of unfurnished units.
- Studios and duplexes are primarily furnished, catering to niche markets like young professionals and expats.

### Conclusion:

Furnishing preferences vary by property type, with high-end properties offering more partially furnished options, while affordable housing emphasizes cost savings with unfurnished units. Tailoring rental options to tenant needs is key in Kuala Lumpur and Selangor.



## 5.5 DATA STORYTELLING

Research Question 5: What do the rental price ranges show about the affordability of properties in Kuala Lumpur and Selangor?

### Key Insight:

- The rental market in Kuala Lumpur and Selangor is primarily focused on **affordability**, with most properties catering to low- and middle-income renters.
- **"Medium-Low"** (7,111 units) and **"Medium"** (3,054 units) rent categories dominate, providing a wide range of accessible options.
- Premium segments (**"Medium-High"** and **"High"**) are limited, with only 1,010 and 306 units, indicating a smaller focus on higher-end rentals.

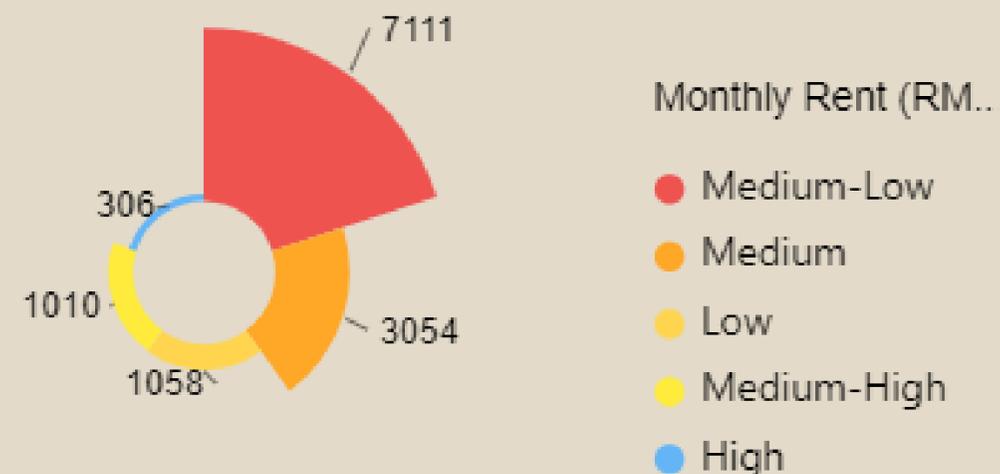
### Data Highlights:

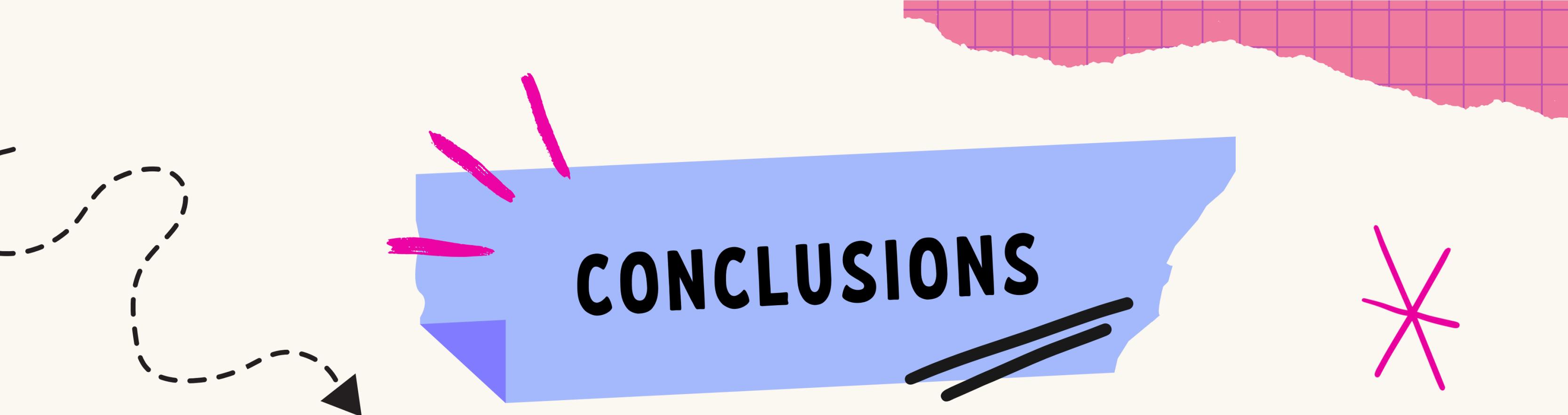
- **Affordable Options:** Majority of properties fall within budget-friendly categories.
- **Limited Premium Supply:** High-end rentals make up a small market share.
- **Market Focus:** Emphasis on meeting the needs of renters with moderate budgets.

### Conclusion:

- The rental market effectively supports affordability, benefiting low- and middle-income groups, but has limited premium housing options.

Distribution of Property Types by Monthly Rent Categories





# CONCLUSIONS

## CONCLUSION 1

**Furnishing Status:** Most rental homes are partially furnished, making them suitable for many tenants. Fully furnished and unfurnished options are available for those on a budget.

## CONCLUSION 2

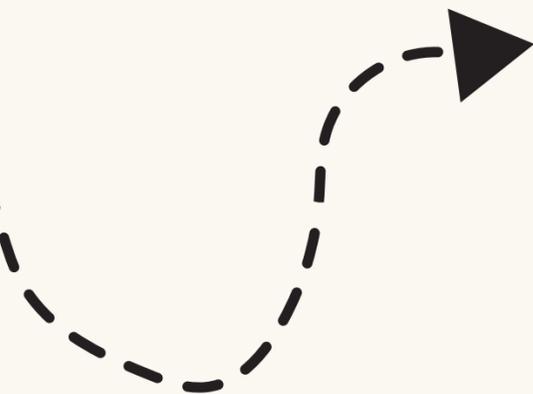
**Completion Year & Rental Trends:** Older properties (before 2015) are more affordable, while newer ones have higher rental prices, attracting different groups of renters.

## CONCLUSION 3

**Balanced Development:** Increasing affordable rental homes and partially furnished options can help more people find housing that suits their needs.



# THANK YOU!



**MAAF JIKA PRESENTATION KAMI KURANG SEMPURNA,  
KERANA YANG SEMPURNA ITU HANYALAH KITA BERDUA  
YANG PERNAH BERSAMA :')**

