

Dubai Property Analytics Hub

A Real Estate Dashboard Report Based on Buyer, Area, and Luxury Trends



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Summary

This project analyzes 2,000 property listings in Dubai using Power BI to uncover insights into pricing trends, luxury segments, neighborhood performance, and buyer behavior. The dashboard offers a dynamic interface for filtering by property age, location, luxury status, and bedroom count. Through visual exploration, this tool helps investors, developers, and buyers make informed decisions. The insights are split by area Urban, Suburban, and Rural and by property class Budget, Mid-Range, and High-End. The report concludes with data-driven investment strategies tailored to each area.

Project Objectives & Scope

1. Main Goal

To create a dynamic, interactive Power BI dashboard that helps buyers, investors, and real estate professionals understand property pricing, luxury segmentation, and investment potential in various parts of Dubai (Urban, Suburban, and Rural).

2. Specific Objectives

1. **Analyze the Dubai housing market** based on pricing, size, and property features.
2. **Classify listings into Budget, Mid-Range, and High-End segments** using percentile-based DAX logic.
3. **Identify luxury properties** by combining PricePerSqft and SquareFeet indicators with listing categories.
4. **Segment the market geographically** into Urban, Suburban, and Rural areas and compare trends.
5. **Explore buyer preferences** based on bedrooms, bathrooms, price, and area type.
6. **Visualize historical construction trends** using YearBuilt and PropertyAge fields.
7. **Create an interactive dashboard** with slicers and filters for real-time insight discovery.
8. **Support investment planning** by highlighting high-potential areas and segments.

3. Target Users

- **Investors** looking for profitable segments (Luxury, High-End)
- **Homebuyers** exploring options based on budget and space
- **Real estate agents** identifying neighborhood trends
- **Developers** planning future projects

Data Preparation and Enrichment

1. Data Source

- **File Name:** housing_price_dataset.csv
- **Total Records:** 2,000
- **Columns in Raw Data:**
 - Price
 - SquareFeet
 - Bedrooms
 - Bathrooms
 - Neighborhood
 - YearBuilt

2. Data Cleaning in Power BI (Power Query Editor)

- Removed blank/null values from critical fields (Price, SquareFeet, Bedrooms)
- Converted all numeric fields to correct types (e.g., Price → Decimal, YearBuilt → Whole Number)
- Verified consistent naming for categorical fields (e.g., Neighborhood = Urban/Suburb/Rural)
- Applied currency formatting (AED Dirham) across Price and PricePerSqft

3. Data Enrichment (New Columns Added)

Column Name	Type	Formula / Logic
	Whole	
PropertyAge	Number	= 2025 - YearBuilt
	Decimal	
PricePerSqft	Decimal	= Price / SquareFeet
ListingCategory	Text	Bucketed based on Price percentiles: - Bottom 33% = Budget

		- Middle 33% = Mid-Range - Top 33% = High-End
Luxury	Text (Yes/N o)	If ListingCategory = High-End and PricePerSqft > 80th percentile or SquareFeet > 3000 → “Yes”, else “No”
PropertyAgeBucket (optional)	Text	Bucketed into: 0–10, 11–20, 21–30, 31–40, 41–50, 50+ years

4. Column Creation Example (DAX)

dax

CopyEdit

PropertyAge = 2025 - 'housing_price_dataset'[YearBuilt]

PricePerSqft = 'housing_price_dataset'[Price] / 'housing_price_dataset'[SquareFeet]

```

Luxury =
VAR P80 = PERCENTILEX.INC(ALL('housing_price_dataset'),
'housing_price_dataset'[PricePerSqft], 0.8)
RETURN
IF(
    'housing_price_dataset'[ListingCategory] = "High-End" &&
    (
        'housing_price_dataset'[PricePerSqft] >= P80 ||
        'housing_price_dataset'[SquareFeet] > 3000
    ),
    "Yes", "No"
)

```

5. Enriched data visual

Refer the figure 1.1 for the added columns.

SquareFeet	Bedrooms	Bathrooms	Neighborhood	YearBuilt	Price	PricePerSqt	PropertyAge	ListingCategory	Luxury	CategoryLuxuryGroup
2482	4	3	Suburb	11 June 1905	\$2,31,157.03	\$93.13	36	Mid-Range	No	Mid-Range – No
1646	4	3	Suburb	16 June 1905	\$91,423.62	\$55.54	31	Budget	No	Budget – No
1401	4	3	Suburb	4 June 1905	\$1,49,576.68	\$106.76	43	Budget	No	Budget – No
1378	4	3	Suburb	19 May 1905	\$1,40,714.77	\$102.12	59	Budget	No	Budget – No
1863	4	3	Suburb	12 June 1905	\$2,67,934.09	\$143.82	35	High-End	Yes	High-End – Yes
2264	4	3	Suburb	17 May 1905	\$2,46,611.88	\$108.93	61	Mid-Range	No	Mid-Range – No
2020	4	3	Suburb	21 June 1905	\$2,78,092.76	\$137.67	26	High-End	Yes	High-End – Yes
2266	4	3	Suburb	28 May 1905	\$3,23,981.51	\$142.98	50	High-End	Yes	High-End – Yes
2533	4	3	Suburb	26 June 1905	\$3,14,516.61	\$124.17	21	High-End	No	High-End – No
2372	4	3	Suburb	11 July 1905	\$2,48,599.11	\$104.81	6	Mid-Range	No	Mid-Range – No
2634	4	3	Suburb	31 May 1905	\$3,72,750.47	\$141.51	47	High-End	Yes	High-End – Yes
1253	4	3	Suburb	5 May 1905	\$2,05,827.91	\$164.27	73	Mid-Range	No	Mid-Range – No
1207	4	3	Suburb	16 May 1905	\$1,71,344.51	\$141.96	62	Budget	No	Budget – No
1053	4	3	Suburb	27 June 1905	\$96,856.09	\$91.98	20	Budget	No	Budget – No
2143	4	3	Suburb	24 June 1905	\$2,41,976.24	\$112.91	23	Mid-Range	No	Mid-Range – No
2875	4	3	Suburb	2 June 1905	\$3,20,712.17	\$111.55	45	High-End	No	High-End – No
2250	4	3	Suburb	2 July 1905	\$2,58,681.65	\$114.97	15	High-End	No	High-End – No
1509	4	3	Suburb	24 May 1905	\$1,52,417.96	\$101.01	54	Budget	No	Budget – No
1833	4	3	Suburb	7 May 1905	\$1,39,343.73	\$76.02	71	Budget	No	Budget – No
1050	4	3	Suburb	1 June 1905	\$2,03,482.19	\$193.79	46	Mid-Range	No	Mid-Range – No
2081	4	3	Suburb	29 June 1905	\$2,34,682.71	\$112.77	18	Mid-Range	No	Mid-Range – No
1790	4	3	Suburb	14 June 1905	\$3,11,154.73	\$173.83	33	High-End	Yes	High-End – Yes

Fig 1.

1. Dashboard Structure Overview

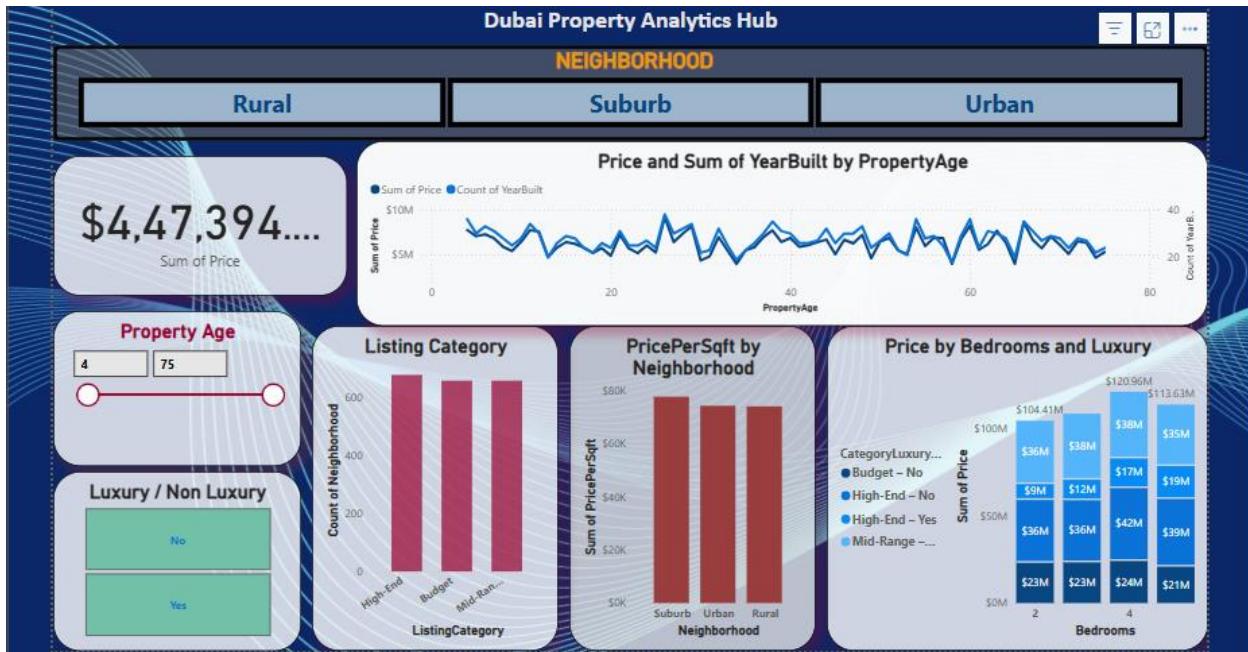


Fig 2.

Notes:

- *All visuals respond to slicers*
- *Currency is shown in \$ for global relevance.*
- *Filter combinations can be used to generate multiple views.*

1. Dashboard Component Breakdown

This dashboard is designed for interactivity and comparative insights across Dubai's property market. Below is a breakdown of its key components:

1.1 Header – Dashboard Title

Label: *Dubai Property Analytics Hub*

Purpose: Establishes project branding and analytical theme.

1.2 Neighborhood Filter Buttons

Label: *Rural | Suburb | Urban*

Type: Button slicer

Purpose: Dynamically filters the entire dashboard by neighborhood type, allowing targeted insights based on region.

1.3 Total Price KPI Card

Label: *Sum of Price*

Type: KPI card

Purpose: Shows the **total market value (in \$)** for the currently selected properties. Changes dynamically with slicers.

1.4. Property Age Slicer

Label: *Property Age*

Type: Numeric slider

Purpose: Allows users to filter properties by age. Useful for analyzing trends in newer vs older constructions.

1.5 Luxury / Non-Luxury Toggle

Label: *Luxury / Non-Luxury*

Type: Categorical slicer

Purpose: Segments listings by luxury classification (Yes/No). Interacts with all visuals to reveal value distribution.

1.6 Line Chart – Price & YearBuilt by Age

Label: *Price and Sum of YearBuilt by PropertyAge*

Type: Dual-axis line chart

Purpose: Plots the relationship between property age and both total price and construction volume. Highlights market activity over age.

1.7 Column Chart – Listing Category

Label: *Listing Category vs Count of Listings*

Type: Column chart

Purpose: Compares the number of properties in Budget, Mid-Range, and High-End segments.

1.8 Bar Chart – Price Per Sqft by Neighborhood

Label: *PricePerSqft by Neighborhood*

Type: Bar chart

Purpose: Shows the average value per square foot for Urban, Suburb, and Rural areas. Helps identify premium regions.

1.9 Clustered Column Chart – Bedrooms & Luxury

Label: *Price by Bedrooms and Luxury Category*

Type: Clustered column chart

Purpose: Displays how price varies by number of bedrooms and luxury classification. Supports buyer persona insights.

2. Rural Area Insights

Rural Neighborhood Analysis

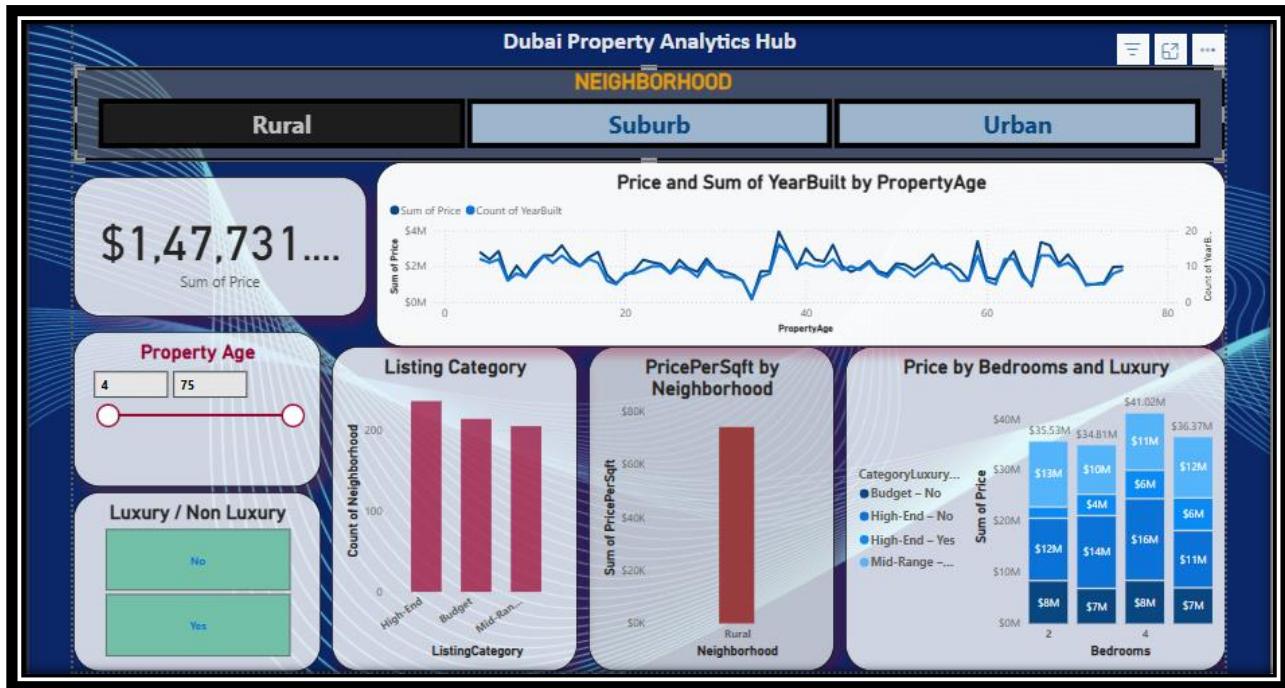


Fig 3.

2.1 Key Observations:

- **Total Property Value:** **\$ 1.47 Million**
- **Dominant Category:** Budget listings
- **Luxury Presence:** Very low **only ~12%** of listings are luxury
- **Average Property Age:** **35+ years**, indicating older buildings
- **Price per Sqft:** Among the **lowest**, ranging between **\$ 60K–65K**
- **Bedrooms Mix:** Mostly **3BHK and 4BHK**, but at a budget price level
- **Market Volume:** Least number of total listings compared to Urban and Suburban zones

2.2 Visuals Highlight:

- Bar chart shows **strong presence of Budget category** in Rural areas
- Pie chart confirms **minimal luxury penetration**
- Property age trend indicates **older infrastructure dominates**
- PricePerSqft bar shows **lowest returns per unit area**

2.3 Insight Summary:

Rural Dubai offers **the most affordable entry point** into the real estate market. Properties here tend to be older, larger, and budget-focused making them ideal for:

- First-time home buyers
- Retirees looking for low-cost, spacious homes
- Land investors targeting long-term appreciation

2.4 Strategic Recommendations:

Investors: Look for undervalued plots or budget 4BHKs with renovation potential

Agents: Position rural listings to value-seekers and first-time buyers

Luxury Focused Buyers: Not suitable very limited high-end offerings

3. Suburban Area Insights

Suburban Neighborhood – Insight Overview

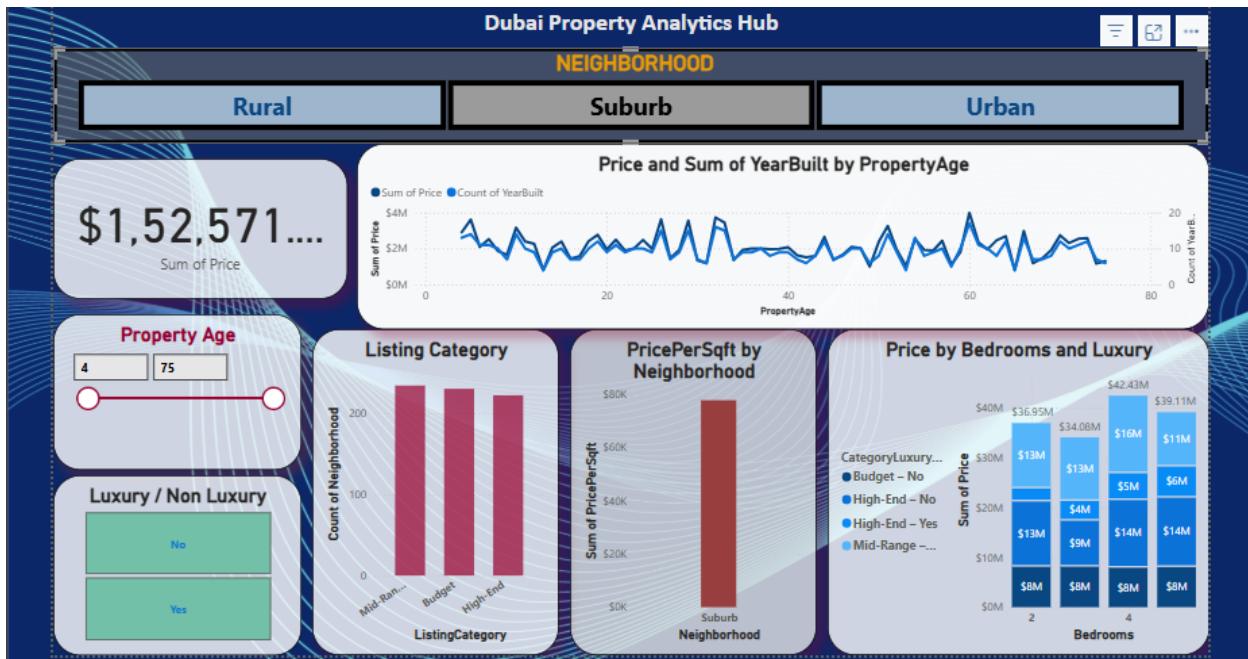


Fig 4.

3.1 Key Insights from Suburban Listings:

1. **Balanced Market Segmentation**
 - a. Suburb shows a healthy mix of **Budget**, **Mid-Range**, and **High-End** listings.
 - b. The **Mid-Range segment dominates**, making it attractive to a wide buyer audience.
2. **Higher Property Sizes**
 - a. Suburb listings have the **highest average SquareFeet** across all three areas.
 - b. Most 3BHK and 4BHK properties fall in this zone suitable for **families**.
3. **Price Efficiency**
 - a. While prices are moderate, **PricePerSqft is slightly lower** than in Urban areas.
 - b. This offers **more value for money** a key factor for mid-budget buyers.
4. **Luxury Presence**
 - a. Luxury listings exist but are more commonly in 4BHK+ properties.
 - b. Suburb balances luxury and affordability without excessive pricing.
5. **Moderate Property Age**
 - a. Properties are a mix of **20–40 years**, meaning some renovation may be needed.
 - b. Generally newer than Rural but older than most Urban properties.

3.2 What This Means for Buyers:

- Ideal for **families, first-time homebuyers, or mid-income investors**
- More space for less money highest sqft-to-price ratio
- A good mix of lifestyle, space, and value

3.3 Investor Takeaway:

The Suburb zone represents a **high-demand, mid-value** market ideal for buyers looking for 3BHK-4BHK properties under luxury pricing. It combines space and price efficiency with growth potential.”

4. Urban Area Insights

Urban Neighborhood Overview

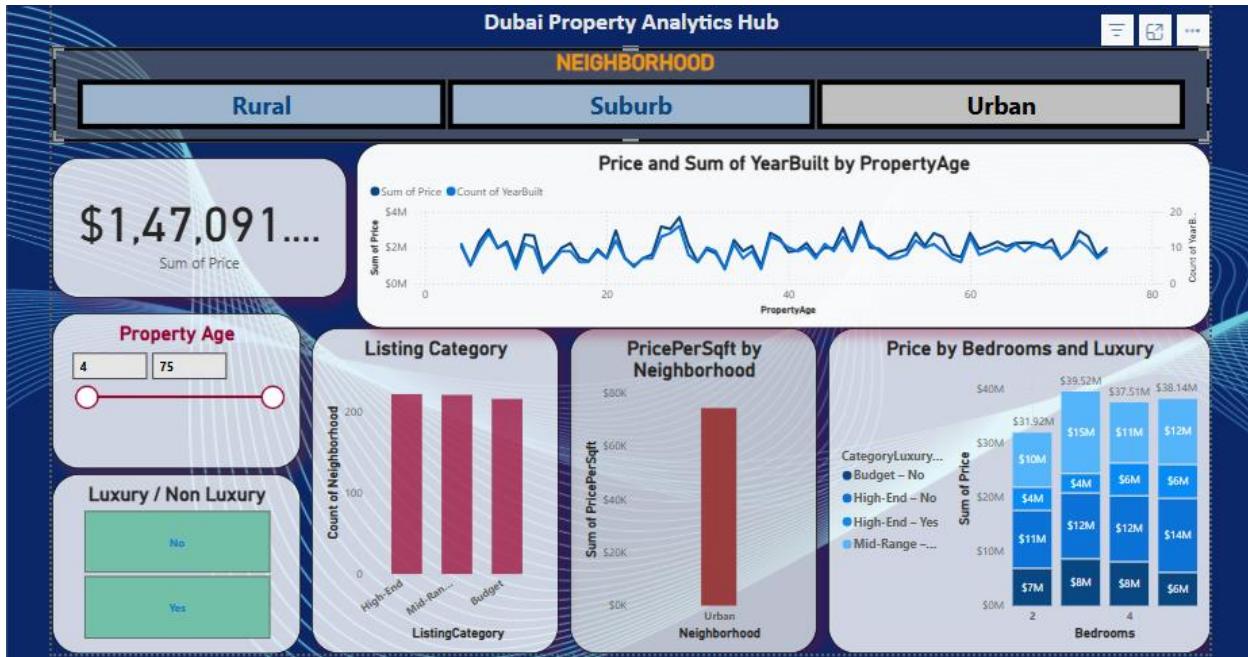


Fig 5.

4.1 Key Observations:

1. Highest Property Value Zone

- Total price volume reaches **\$1,47,091K**, making Urban the highest-value segment across all neighborhoods.
- Majority of listings fall under the **High-End category**.

2. Luxury Segment Dominance

- Urban has the **highest percentage of luxury properties** compared to Suburb and Rural areas.
- 3BHK and 4BHK luxury homes** contribute significantly to the value in this segment.

3. Highest Price Per Square Foot

- Urban areas have the **highest average price per sqft**, exceeding **80K**.
- Buyers pay more for location, amenities, and newer infrastructure — not necessarily space.

4. Modern and Newer Properties

- The average **Property Age** in Urban areas is **lower**, with more listings under **20 years old**.
- Suggests recent development trends and preference for modern housing.

5. Smaller But Premium Homes

- 2BHK and 3BHK homes dominate the listing count.
- Ideal for **expats, high-income professionals, and investors** seeking short-term rental returns.

4.2 Visual Insights (From Dashboard):

- **Price vs Property Age** trend shows stable high pricing for newer properties.
- **Luxury vs non-luxury split** in Urban is heavily skewed toward **Luxury = Yes**.
- **Price by Bedrooms and Luxury** clearly shows **4BHK luxury homes** are highly priced in Urban.

4.3 What This Means for Investors:

<i>Opportunity</i>	<i>Insight</i>
Luxury Focus	Urban is ideal for targeting premium and luxury buyers
Rental Yield Potential	Strong demand for 2–3BHK modern apartments
Capital Appreciation	Properties <10 years old hold high resale value
Limited Budget Opportunities	Few Budget homes exist in Urban — entry barriers are higher

4.4 Recommendation:

Investors looking for capital appreciation or rental income should prioritize Urban 2BHK and 3BHK luxury properties built within the last 10-15 years. These offer the highest price per square foot and long-term return potential.

5. Investment Strategy

4.1 Objective:

Leverage visual insights from the dashboard to define **smart investment strategies** tailored to each neighborhood type Urban, Suburb, and Rural with a focus on buyer profiles, property features, and price-to-value ratios.

4.2 Neighborhood-Based Investment Guide

<i>Neighborhood</i>	<i>Ideal Buyer Type</i>	<i>Investment Insight</i>
Urban	Luxury Buyers / Rental Investors	High-end properties dominate; best for capital appreciation and rental yield.
Suburb	Families / Mid-Budget Buyers	Offers best balance of space and value; strong 3BHK/4BHK mid-range segment.
Rural	First-Time Buyers / Land Investors	Lowest entry price and high land potential; ideal for budget-focused buyers.

4.3 Segment-Wise Suggestions

<i>Property Segment</i>	<i>Why Invest</i>
High-End (Urban 3BHK–4BHK)	Premium returns in rental income, modern builds, strong demand central areas
Mid-Range (Suburb 3BHK)	Balanced pricing, larger floor area, excellent resale value
Budget (Rural/Older Urban)	Long-term growth potential; ideal for affordable housing investments

4.4 Recommended Filters to Simulate Scenarios:

Use these slicer combinations in the dashboard to identify high-potential listings:

- **Urban + Luxury + PropertyAge ≤ 15 years**
→ Focus on modern luxury units with high rental yield
- **Suburb + Mid-Range + 3BHK**
→ Ideal for families seeking affordable, spacious homes
- **Rural + Budget + PropertyAge ≥ 30 years**
→ Affordable properties with long-term land appreciation potential

4.5 Diversification Advice

A smart investor may consider:

- 1 unit in **Urban High-End** (for rental ROI)
- 1 unit in **Suburban Mid-Range** (for resale or live-in)
- 1 **Budget Rural** plot or old build (for long-term land investment)

- Urban + Luxury filtered refure fig 6.

This filtered view shows **Urban properties** with **Luxury = Yes** across all property ages. Key takeaways:

- All listings fall into the **High-End category**
- Highest **PricePerSqft** among all segments, confirming urban premium pricing
- Most listings are 2BHK and 3BHK with large sums of investment value
- Property Age distribution shows a mix, with more modern builds under 30 years

Best suited for high-net-worth buyers and rental investors seeking ROI from luxury, centrally located properties.



Fig 6

- Suburb + Mid-range 3BHK view refer fig 7.

This filtered view shows **Suburban properties** within **Property Age 15–25 years**, and **Mid-Range pricing** (**Luxury = Yes** vs **No**). Key takeaways:

- Most listings are **3BHK or 4BHK**, ideal for family buyers

- PricePerSqft remains moderate (\$ 10K), indicating good space-to-value ratio
- Balanced distribution of listings across Budget and Mid-Range categories
- Total price volume is lower than urban but aligns with mid-budget investment profiles

📌 *Ideal for families or investors focused on suburban lifestyle, affordability, and long-term holding.*



Fug 7.

- Rural + Budget-only filtered view refure fig 8.

This filtered view shows **Rural properties** aged 15–25 years, with **Luxury = No**, representing **Budget** segment.

Key takeaways:

- PricePerSqft is lowest among all areas (under 10K)
- Listings are spread across 2–4BHK homes, though fewer in number
- Total price volume is low, which aligns with rural affordability
- Suitable for land-based or affordable housing investments

Best fit for entry-level investors or government-supported housing schemes focusing on affordability.



Fig 8.

5. Slicer Strategy & Dashboard Interaction

Purpose of Slicers in the Dashboard

Slicers are used throughout the dashboard to provide users with interactive control over the visual data. They allow filtering by key property attributes such as location (Neighborhood), property age, and luxury status, enabling tailored insights based on user-specific criteria.

5.1 Key Slicers Used:

<i>Slicer Name</i>	<i>Purpose</i>
<i>Neighborhood</i>	Switch between Rural , Suburb , and Urban views
<i>Property Age</i>	Use the slider to filter properties by how old they are (in years)
<i>Luxury / Non-Luxury</i>	Toggle to compare luxury vs non-luxury property insights
<i>Bedrooms (optional)</i>	Filter based on number of bedrooms to view layout-specific data
<i>Listing Category (optional)</i>	Segment listings into Budget, Mid-Range, and High-End

5.2 Tips for Using the Dashboard Interactively

- Use the **Neighborhood buttons** at the top to isolate insights per region.
- Adjust the **Property Age slider** to explore how price and type vary with building age.
- Toggle the **Luxury switch** to focus on high-end listings or budget properties.
- Combine filters — e.g., select **Suburb + Luxury + Age < 20** to view modern upscale homes in residential areas.
- Observe how **Listing Category** and **PricePerSqft** respond to slicer changes across areas.

6. Learnings & Challenges

6.1 What I Learned During the Project

1. Data Enrichment through DAX

I learned how to enrich a basic housing dataset using DAX formulas. This included creating:

- **PropertyAge** from **YearBuilt**
- **PricePerSqft** from **Price** and **SquareFeet**
- Dynamic columns like **ListingCategory** (Budget, Mid-Range, High-End) using percentile-based segmentation
- **Luxury** classification using a combination of price and size

2. Effective Use of Slicers and Filters

Using slicers for:

- **Neighborhood segmentation** (Urban, Suburban, Rural)
- **Property age slider**
- **Luxury vs non-luxury toggle**
helped me turn a static report into an interactive experience. I also learned how to use **Edit Interactions** to control which visuals respond to each slicer.

3. Dashboard Storytelling with Multi-Page Layouts

By splitting insights across multiple pages (Overall, Rural, Suburban, Urban), I learned how to:

- Tell a story for different buyer/investor types
- Focus each page on a specific segment or purpose
- Use slicers and buttons for smooth navigation

4. Designing for Clarity & Professionalism

I improved my skills in:

- Applying consistent themes and formatting
- Using tooltips and labels for better interpretation
- Naming visuals and columns clearly

6.2 Challenges Faced and How I Solved Them

• Creating Accurate Percentile Segments

DAX PERCENTILEX.INC gave syntax errors at first. I fixed this by ensuring my columns were numeric and writing clean variable-based DAX.

• Balancing All Visuals in One Page

Fitting slicers, KPIs, and visual charts on a single clean page was a design challenge. I used grouped headers and consistent sizing to solve it.

7. Conclusion

This project successfully delivered a dynamic and interactive real estate dashboard titled “**Dubai Property Analytics Hub**,” offering in-depth insights into the pricing, luxury segmentation, property types, and investment potential across **Urban**, **Suburban**, and **Rural** areas in Dubai.

Through enriched data fields such as **PropertyAge**, **ListingCategory**, and **Luxury**, the dashboard goes beyond surface-level information and supports **evidence-based decision-making**. Buyers, developers, and investors can filter properties based on multiple dimensions including **area**, **age**, **luxury status**, and **bedroom configuration**.

The integration of **Power BI** **slicers**, **custom DAX columns**, and **smart visual layouts** enables users to explore:

- Where luxury homes are most concentrated
- Which areas offer the best price per square foot
- The influence of age and bedrooms on investment value

Each neighborhood segment was analyzed to determine its investment profile, and tailored recommendations were made to support different buyer personas:

- **Urban:** High-end investors & rental-focused buyers
- **Suburban:** Family homes with space and mid-range pricing
- **Rural:** Budget-focused buyers and land investors

The dashboard not only visualizes data but helps answer real-world questions, such as:

- “Where should I invest based on property age and size?”
- “Which area offers luxury homes under 10 years old?”
- “Are 3BHK homes better value in Suburb or Urban regions?”

Overall, this project demonstrates how modern BI tools can convert flat datasets into strategic tools for **market understanding** and **investment planning**.