## **🧠 Power BI Dashboarding Assignment**

### **✨ Project Title: *"Dubai Real Estate Intelligence Dashboard"***

### **🎯 Objective:**

Design a professional, interactive Power BI dashboard using Dubai housing data to provide actionable insights for investors, agents, and policymakers.

### **📁 Dataset Summary:**

Dataset fields (as previewed):

* location
* price
* bedrooms
* bathrooms
* size (sqft)
* property\_type
* developer
* year\_built (if available)
* furnishing\_status (if available)

### **🛠️ Task Instructions:**

#### **🧼 Part 1: Data Preparation (Using Power Query)**

1. Clean missing or incorrect values.
2. Remove duplicates.
3. Convert data types (e.g., numeric for price/size, categorical for type/location).
4. Create the following calculated columns:
   * price\_per\_sqft = price / size
   * property\_age = 2025 - year\_built (if applicable)
   * listing\_category = High-End / Mid-Range / Budget (based on price quantiles)

### **📊 Part 2: Dashboard Requirements**

Create **at least 1 page** of interactive dashboard visuals with the following sections:

#### **📌 Section 1: Key Metrics (KPI Cards)**

* Total Listings
* Average Price
* Average Size (sqft)
* Highest Priced Property
* Avg. Price per Sqft

#### **📌 Section 2: Visual Analytics**

|  |  |
| --- | --- |
| **Visual** | **Description** |
| **Map** | Show average price per location. Bubble or Filled Map. |
| **Bar Chart** | Price by property type |
| **Stacked Column Chart** | Count of listings by bedrooms, colored by property\_type |
| **Line Chart** | Price trend over time (if time data is present or can be simulated) |
| **Tree Map** | Listings by developer and property\_type |
| **Filter Slicers** | Furnishing status, property type, number of bedrooms, price range |

### **🧩 Part 3: Interactivity & Storytelling**

* Add **slicers** for dynamic filtering (e.g., bedrooms, locations, developers).
* Use **tooltips** to enrich visuals (e.g., show price per sqft).
* Implement **drill-through** or **bookmark** for detail views (optional).
* Include **insight cards** or callout textboxes (e.g., “Downtown Dubai has highest avg. price”).

### **📝 Deliverables:**

1. .pbix Power BI file with completed dashboard.
2. A 1-slide summary (can be in PowerPoint or inside Power BI) explaining:
   * Business questions answered.
   * Key takeaways from the data.
   * Suggested actions for a real estate investor or agent.

### **✅ Evaluation Criteria:**

|  |  |
| --- | --- |
| **Criteria** | **Weight** |
| Data Cleaning & Modeling | 20% |
| Visual Design & Layout | 20% |
| Insightfulness of Visuals | 25% |
| Interactivity (filters, drill-through, bookmarks) | 20% |
| Presentation/Storytelling | 15% |

**SAMPLE**

### **✅ Dataset Summary**

|  |  |
| --- | --- |
| **Column** | **Description** |
| SquareFeet | Size of the property (in sqft) |
| Bedrooms | Number of bedrooms |
| Bathrooms | Number of bathrooms |
| Neighborhood | Area type (Rural, Suburb, Urban) |
| YearBuilt | Year the property was built |
| Price | Selling price of the property |

### **🧠 Calculated Fields to Add**

We'll enrich the dataset with:

1. **Price per Sqft** = Price / SquareFeet
2. **Property Age** = 2025 - YearBuilt
3. **Listing Category** = based on price quantiles (Budget, Mid-Range, High-End)

Let me generate that enriched dataset now.

Enriched Dubai Housing Data

|  |  |  |  |
| --- | --- | --- | --- |
| **SquareFeet** | **Bedrooms** | **Bathrooms** | **Neighborhood** |
| 2126 | 4 | 1 | Rural |
| 2459 | 3 | 2 | Rural |
| 1860 | 2 | 1 | Suburb |
| 2294 | 2 | 1 | Urban |
| 2130 | 5 | 2 | Suburb |
| 2095 | 2 | 3 | Suburb |

The dataset has been successfully enriched with the following new columns:

* PricePerSqft: Price per square foot
* PropertyAge: Age of the property as of 2025
* ListingCategory: Categorized as Budget, Mid-Range, or High-End based on price

### **🚀 Next Steps for Power BI Dashboard:**

You can now import this enriched CSV into Power BI and build the following visuals:

### **🧩 Recommended Dashboard Layout:**

#### **1. KPI Cards**

* Total Listings
* Average Price
* Avg. Price per Sqft
* Oldest Property
* Most Expensive Property

#### **2. Charts**

* **Bar Chart**: Count of listings by Neighborhood and ListingCategory
* **Pie Chart**: Distribution of ListingCategory
* **Box Plot**: Price distribution by Neighborhood
* **Map** *(optional)*: Plot if lat/lon is available
* **Histogram**: Property Age
* **Scatter Plot**: SquareFeet vs Price colored by ListingCategory

#### **3. Slicers for Interactivity**

* Bedrooms
* Bathrooms
* Neighborhood
* ListingCategory
* Price Range

Here’s a cleaned **summary of your dataset (House.xlsx)** 👇

**📊 Dataset Overview**

* **Rows:** 50,000
* **Columns:** SquareFeet, Bedrooms, Bathrooms, Neighborhood, YearBuilt, Price
* **Missing Values:** None ✅
* **Year Range:** 1950 – 2021
* **Price Range:** -36,588 → 492,195 (⚠️ negative prices may need cleaning)
* **Neighborhoods:** Rural, Suburb, Urban
* **Bedrooms Range:** 2 – 5
* **Bathrooms Range:** 1 – 3
* **Square Feet Range:** 1,000 – 2,999

**🔑 Insights for Storytelling**

You can now build a narrative around:

1. **Market Growth by YearBuilt** → How property prices evolved over decades.
2. **Neighborhood Comparison** → Rural vs Suburb vs Urban pricing.
3. **Property Size & Bedrooms** → Impact of size/bedrooms on pricing.
4. **Top/Bottom Pricing** → Spot anomalies (negative or very high prices).
5. **Forecasting Future Prices** → Using Power BI what-if scenarios.

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