Lesson 23: Car Sales Dashboard in Power BI.

This outlines KPIs, DAX, visuals, modeling, and publishing so you can build a professional final project.

🎯 Objective

Design a Car Sales Dashboard to analyze sales performance (pricing vs MMR, car conditions, brand trends, seller contributions). Showcase data transformation, DAX, modeling, and interactive visuals.

📊 Key KPIs (DAX Measures)

```
-- Core KPIs
Total Sales Revenue := SUM ( CarSales[sellingprice] )
Total Cars Sold := COUNT ( CarSales[VIN] )
Avg Selling Price := AVERAGE ( CarSales[sellingprice] )
Avg Condition := AVERAGE ( CarSales[condition] )
Avg Odometer := AVERAGE ( CarSales[odometer] )

-- Price difference vs MMR
Price vs MMR % :=
DIVIDE ( SUM ( CarSales[sellingprice] ) - SUM ( CarSales[mmr] ),
        SUM ( CarSales[mmr] ) )

-- Cars sold above MMR
Cars Above MMR % :=
DIVIDE (
   CALCULATE ( COUNTROWS ( CarSales ), CarSales[sellingprice] > CarSales[mmr] ),
   [Total Cars Sold]
)

-- Avg Selling Price by Make
Avg Selling Price by Make :=
AVERAGEX ( VALUES ( CarSales[make] ), [Avg Selling Price] )

-- Monthly Sales
Monthly Sales := SUM ( CarSales[sellingprice] )

-- Top 5 Brands (visual filter with RANKX)
Brand Rank :=
RANKX ( ALL ( CarSales[make] ), CALCULATE ( COUNT ( CarSales[VIN] ) ), , DESC, DENSE )

-- Avg Condition by Body Type
```

```
Avg Condition by Body :=
AVERAGEX ( VALUES ( CarSales[body] ), [Avg Condition] )

-- Sales by Transmission
Sales by Transmission :=
CALCULATE ( [Total Cars Sold], VALUES ( CarSales[transmission] ) )

-- Price Variance from MMR
Price Deviation :=
AVERAGE ( CarSales[sellingprice] - CarSales[mmr] )
```

⏱️ Time Intelligence

Date Table (recommended via CALENDARAUTO() or from saledate):

```
Date = CALENDARAUTO()

Sale Year = YEAR ( CarSales[saledate] )
Sale Month = FORMAT ( CarSales[saledate], "MMM" )
Sale Quarter = "Q" & FORMAT ( CarSales[saledate], "Q" )
```

Monthly Sales Trend Visual

```
Sales by Month := SUM ( CarSales[sellingprice] )
```

Use Date slicer to filter dashboard dynamically.

🎨 Visual Layout (per requirements)

Visual Type	Purpose
KPI Tiles	Total Sales, Cars Sold, Avg Price, Avg Condition
Line Chart	Sales Trend by Month/Quarter
Bar Chart	Top 5 Brands by Sales Volume (filter with Brand Rank = 1–5)
Pie/Donut	Share by Body Type or Transmission
Matrix/Table	Make & Model → Sales, Avg Price, Condition
Map	Sales by State
Decomposition Tree	Drill down Make → Model → Year
Treemap	Seller contribution (Revenue)

🎛️ Interactivity Features

Slicers: Make, Model, Year, Body, Transmission, Color, State, Seller.

Drill-through: from Make to Model details page.

Tooltips: custom tooltips with Condition, Odometer, Sale Date.

Cross-filtering: enable across visuals.

Report Page Tooltips: extra detail on hover (e.g., Avg Odometer, Training hours analogy).

Bookmarks: Brand view vs Model view toggles.

🛠 Data Modeling & Transformations

Power Query:

Remove rows with missing make, model, or sellingprice.

Fix data types:

Numeric → sellingprice, mmr, odometer, condition.

Date → saledate.

Create Calculated Columns:

Sale Month (from saledate).

Price Category = IF(sellingprice < 10k, “Low”, IF(<30k, “Medium”, “High”)).

Star schema:

Fact table: CarSales.

Date dimension.

Optional lookup: Make, Body, Transmission.

📤 Export & Sharing Features

Bookmarks for custom report states.

Page Navigation (buttons for Brand View, Seller View, etc.).

Professional formatting: consistent theme, titles, company logo.

Scheduled refresh in Service.

App publishing for stakeholders.

Mobile view optimization for KPI-first layout.

⚡ Bonus Features

What-If Parameter → MMR margin ±5%, ±10%.

Use slicer parameter to simulate pricing sensitivity.

RANKX → Rank best-selling models within each brand.

Classification column:

```
Price Category =
SWITCH (
    TRUE(),
    CarSales[sellingprice] > CarSales[mmr]*1.1, "Overpriced",
    CarSales[sellingprice] < CarSales[mmr]*0.9, "Underpriced",
    "Fair"
)
```

✅ Expected Outcome

A professional, interactive Car Sales Dashboard with:

KPI summaries at the top.

Sales trend line for monthly/quarterly view.

Top 5 brands & seller contribution insights.

Map of sales distribution.

Drillthrough into brand → model → year details.

Price fairness analysis (vs MMR).