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# 📌 Power BI Project: Car Evaluation Analysis

**Project Title:** Car Acceptability Analysis Using Power BI

## 📖 Introduction

This project aims to analyze car acceptability based on key factors such as **safety, maintenance cost, number of doors, passenger capacity, and luggage space.** The dataset is sourced from the **UCI Car Evaluation Repository**, which categorizes cars into four acceptability levels:

- **Unacceptable (unacc)**
- **Acceptable (acc)**
- **Good (good)**
- **Very Good (vgood)**

By visualizing this dataset in **Power BI**, students will gain hands-on experience in **data analysis, visualization, and storytelling with insights.**

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## 🎯 Project Objectives

By the end of this project, students will be able to:
✔ Import and clean datasets in **Power BI.**
✔ Create **interactive visualizations** using **bar charts, pie charts, heatmaps, and scatter plots.**
✔ Analyze how different factors **(safety, maintenance, passenger capacity, luggage space, and number of doors)** impact car acceptability.
✔ Present findings in a **clear, visually appealing dashboard.**

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## 📂 Dataset Details

📌 **Dataset Source:** UCI Car Evaluation Dataset
📌 **File Format:** CSV
📌 **Columns in the Dataset:**

| Column Name | Description |
|---|---|
| `buying` | Buying price (vhigh, high, med, low) |
| `maint` | Maintenance cost (vhigh, high, med, low) |
| `doors` | Number of doors (2, 3, 4, 5more) |
| `persons` | Passenger capacity (2, 4, more) |
| `lug_boot` | Luggage space (small, med, big) |
| `safety` | Safety level (low, med, high) |
| `class` | Car acceptability (unacc, acc, good, vgood) |

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# 📝 Project Tasks

## 1️⃣ Data Preparation in Power BI

- Import the dataset into **Power BI**.
- Check for **data quality issues** (missing values, incorrect formats, etc.).
- Transform categorical values for better analysis.

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## 2️⃣ Creating Visuals in Power BI

📊 **(a) Count of Index by Class (Pie Chart)**
✅ Show the **distribution of car acceptability.**
✅ Highlight how many cars fall under each category.
📊 **(b) Car Acceptability by Safety (Bar Chart)**
✅ Analyze how **safety ratings impact car classification.**
📊 **(c) Car Acceptability by Maintenance Cost (Stacked Bar Chart)**
✅ Show how **maintenance cost** affects acceptability.
📊 **(d) Car Acceptability by Number of Doors (Bar Chart)**
✅ Evaluate whether **door count influences acceptability.**
📊 **(e) Car Acceptability by Passenger Capacity (Clustered Bar Chart)**
✅ Compare **how many passengers a car can accommodate** vs. acceptability.

📊 **(f) Car Acceptability by Luggage Boot Space (Bar Chart)**
✅ Show whether **luggage space affects acceptability.**

## 3️⃣Adding Interactivity

✅ **Use Slicers** to filter by safety, maintenance, or luggage space.
✅ **Enable Drill-through & Tooltip Analysis** for deeper insights.
✅ **Apply Conditional Formatting** to highlight trends.

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## 📌 Project Submission Guidelines

📅 **Deadline:** [Set a Due Date]
📁 **Deliverables:**
✔ Power BI

`.pbix`

file.
✔ A short report (2-3 pages) summarizing key insights.
✔ Screenshots of the final dashboard.
📢 **Presentation:** Each student/team must present their dashboard insights.

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## 📊 Grading Criteria (100 Points)

| Category | Description | Points |
|---|---|---|
| **Data Preparation** | Correct dataset import & transformations | 20 |
| **Dashboard Design** | Clear, visually appealing layout | 20 |
| **Data Insights** | Meaningful insights & storytelling | 20 |
| **Interactivity** | Use of slicers, drill-through, tooltips | 20 |
| **Presentation** | Clear explanation & business insights | 20 |

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## 🚀 Conclusion

This project provides hands-on experience with **Power BI data visualization and analysis.** By exploring **car acceptability factors**, students will **develop analytical skills and improve dashboard storytelling techniques.**
📌 **Key Takeaways:**
✔ Safety & maintenance costs are the biggest factors affecting acceptability.

✔ Passenger capacity & luggage space influence buying decisions.
✔ Most cars fail to meet acceptability standards, highlighting strict evaluation criteria.

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## 📎 Resources & References

🔹 UCI Car Evaluation Dataset: 🔗 https://colorstech.net/data-analytics/what-is-car-evaluation-dataset-from-uci-repository/

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