All Queries Documented

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Component: Trend Identification and Analysis

Query : Popular Car Makes and Models

```
SELECT
   Manufacturer,
   Varient,
   COUNT(*) AS total_listings
FROM used_cars
GROUP BY Manufacturer, Varient
ORDER BY total_listings DESC;
```

Explanation:
This query identifies the most frequently listed car make and model combinations in the dataset. By grouping the data by Manufacturer and Varient, and counting occurrences, we determine which models dominate the used car market.

Insight:
Toyota Corolla emerges as the most popular model with 14,107 listings, followed by Honda Civic and Honda City. The results indicate that Japanese brands dominate the used car market, suggesting strong resale value, brand trust, and consistent demand in the secondary market.

Query: Pricing Trends Over Time (Year-wise Price Analysis)

```
SELECT
   Model AS year,
   COUNT(*) AS total_cars,
   ROUND(AVG(`Price(INR)`),0) AS avg_price,
   MIN(`Price(INR)`) AS min_price,
   MAX(`Price(INR)`) AS max_price
FROM used_cars
GROUP BY Model
ORDER BY year DESC;
```

Explanation:
This query analyzes resale pricing trends across manufacturing years.
By grouping cars based on the year of manufacture (Model column), it calculates:

- Total number of cars listed per year
- Average resale price
- Minimum resale price
- Maximum resale price

This helps identify how vehicle age influences pricing patterns in the used car market.

Insight:

- **2023 models have the highest average price (₹10,648,160)**, reflecting premium resale value for newer vehicles.
- The highest listing volumes appear between **2018–2022**, indicating strong resale turnover for cars aged 2–5 years.
- Older cars (2005 and earlier) show significantly lower average prices, confirming depreciation over time.
- Certain vintage years show occasional price spikes due to collector or rarity value.

Overall, the analysis confirms a **clear inverse relationship between vehicle age and resale price**, with newer cars commanding significantly higher market value.

Query: Regional Price Analysis

```
SELECT
   `India Locations`,
   COUNT(*) AS total_cars,
   ROUND(AVG(`Price(INR)`),0) AS avg_price
FROM used_cars
GROUP BY `India Locations`
ORDER BY avg_price DESC;
```

Explanation:
This query analyzes geographical pricing differences in the used car market.

- Groups the dataset by city (`India Locations`)
- Calculates total listings per city
- Computes the average resale price for each city

This helps identify premium markets, mid-range markets, and price-sensitive regions.

Insight:

1. **Premium Pricing Cities**
    - Chandausi (₹10.2M avg)
    - Lachhmangarh (₹7.2M avg)
    - Chilakaluripet (₹6.23M avg)
2. However, these cities have *very low listing counts* (1–14 cars), meaning the average price is likely skewed by a few high-end vehicles.
3. **High-Volume Premium Markets**
    - **Delhi (22,649 listings | ₹5.62M avg)**
    - **Mahbubnagar (14,780 listings | ₹5.61M avg)**
    - **Mumbai (18,167 listings | ₹5.20M avg)**
4. These results are statistically stronger due to high volume and indicate:
    - Strong purchasing power
    - Higher presence of premium segments
    - Urban demand for newer vehicles
5. **Mid-Tier Markets**
   Cities like Bangalore, Chennai, Hyderabad show moderate-to-high average prices between ₹3.7M–₹4.4M.
6. **Lower-Priced Markets**
   Smaller cities such as Yavatmal (₹180K), Vrindavan (₹475K), and Venkatagiri (₹550K) show significantly lower pricing levels, reflecting lower purchasing power and older vehicle inventory.

Market Conclusion:
There is a **clear regional price disparity** in India's used car market.

- Metro cities = Higher resale values
- Tier-2 cities = Moderate pricing
- Small towns = Lower pricing

This indicates that geography significantly influences resale valuation, demand intensity, and vehicle segment mix.

Query: Fuel Type Distribution and Pricing Analysis

```
SELECT
   `Fuel Type`,
   COUNT(*) AS total_cars,
   ROUND(AVG(`Price(INR)`),0) AS avg_price
FROM used_cars
GROUP BY `Fuel Type`
ORDER BY total_cars DESC;
```

Explanation:
This query evaluates how the used car market is distributed across different fuel types.
It groups the dataset by `Fuel Type`, counts the total number of listings in each category, and calculates the average resale price. The results are sorted in descending order based on total listings to identify the dominant fuel segment.
This helps in understanding:

- Which fuel type dominates the secondary market
- How pricing varies across fuel categories
- Market positioning of alternative fuel vehicles

Insight:

- **Petrol** dominates the market with **84,996 listings**, making it the most common fuel type in the used car segment.
- **Diesel** and **Hybrid** vehicles have significantly lower volumes but command higher average prices.
- **Electric vehicles** have the highest average price (₹41.8M) but very low volume (219 listings), indicating a niche premium segment.
- **CNG and LPG** vehicles represent budget-focused segments with lower average resale values.

Market Interpretation:
The Indian used car market is strongly **petrol-driven in volume**, indicating mass-market demand. However, premium fuel segments like **Diesel, Hybrid, and Electric** show higher average prices, suggesting:

- Strong resale value in premium segments
- Growing but still limited EV penetration
- Clear price segmentation across fuel types

Query: Transmission Type Analysis

```
SELECT
   Transmission,
   COUNT(*) AS total_cars,
   ROUND(AVG(`Price(INR)`),0) AS avg_price
FROM used_cars
GROUP BY Transmission
ORDER BY total_cars DESC;
```

Explanation:
This query analyzes the distribution of used cars based on transmission type.
It groups the dataset by `Transmission` (Automatic vs Manual), counts the total listings in each category, and calculates the average resale price. The results are sorted by total listings to identify which transmission type is more dominant in the market.
This helps in understanding:

- Buyer preference trends (Automatic vs Manual)
- Price differences between transmission types
- Market positioning of automatic vehicles

Insight:

- **Automatic cars** dominate the used car market with **56,776 listings**, significantly higher than Manual.
- The **average price of Automatic cars (₹6.53M)** is much higher than Manual cars (₹1.80M).
- Manual cars, although fewer in price, are positioned more toward the budget segment.

Market Interpretation:
The data suggests a clear shift toward **Automatic vehicles**, indicating:

- Growing urban preference for convenience
- Higher pricing power in automatic segment
- Manual cars remaining strong in cost-sensitive buyer segments

This reflects modernization in consumer behavior and increasing demand for comfort-driven vehicles.

Query: Mileage Range vs Pricing Analysis

```
SELECT
  CASE
    WHEN `Distance Travelled` < 20000 THEN '0-20k'
    WHEN `Distance Travelled` BETWEEN 20000 AND 50000 THEN '20k-50k'
    WHEN `Distance Travelled` BETWEEN 50001 AND 100000 THEN '50k-100k'
    ELSE '100k+'
  END AS mileage_range,
  COUNT(*) AS total_cars,
  ROUND(AVG(`Price(INR)`),0) AS avg_price
FROM used_cars
GROUP BY mileage_range
ORDER BY avg_price DESC;
```

Explanation:
This query segments cars into mileage buckets based on distance travelled. It then calculates the total listings and average price for each mileage category.
This helps analyze how vehicle usage (wear and tear) impacts resale pricing.

Mileage Range	Total Cars	Avg Price (₹)
0–20k	17,666	7,263,183
20k–50k	17,273	6,093,514
50k–100k	30,344	4,026,356
100k+	29,632	2,833,358

Key Observations:

- Price decreases consistently as mileage increases.
- Cars under 20k km command the highest premium.
- The majority of listings fall in 50k–100k range, indicating mid-usage vehicles dominate supply.
- High-mileage cars (100k+) experience significant depreciation.

This confirms a strong inverse relationship between mileage and resale price.