**Bike Sales India Dataset: Q&A Explanations for Understanding with Visualizations**

**1. Average Price of Bikes**

* **Purpose**: Know the general pricing of bikes in the market.
* **Insight**: The average tells what most bikes are approximately priced at.

**2. Distribution of Bike Prices (Histogram)**

* **Purpose**: Understand how prices are spread across listings.
* **Insight**: Shows if the market is skewed toward cheaper or premium bikes.

**3. Average Daily Distance by State (Boxplot)**

* **Purpose**: Compare average usage by region.
* **Insight**: Helps understand riding behavior per state, detect outliers.

**4. Most Popular Bike Brands (Bar Chart)**

* **Purpose**: Identify top-selling brands.
* **Insight**: Popular brands may be more trusted or accessible.

**5. Correlation Between Engine Capacity and Mileage**

* **Purpose**: See if there's a relationship between performance and efficiency.
* **Insight**: Usually negative; bigger engines = lower mileage.

**6. Heatmap of Numeric Feature Correlations**

* **Purpose**: Overview of all numeric relationships.
* **Insight**: Helps detect which features influence each other.

**7. Resale Depreciation (%) Distribution**

* **Purpose**: See how much value is lost over time.
* **Insight**: Buyers can predict depreciation before purchase.

**8. Fuel Type Distribution (Count Plot)**

* **Purpose**: See fuel preferences.
* **Insight**: Petrol likely dominates, but electric may be rising.

**9. Resale Price by Seller Type (Boxplot)**

* **Purpose**: Understand pricing differences between dealers and individuals.
* **Insight**: Helps buyers choose more economical sellers.

**10. Average Mileage by Fuel Type (Bar Chart)**

* **Purpose**: Compare fuel efficiency.
* **Insight**: Electric or hybrid bikes may offer better mileage.

**11. Bike Price by City Tier (Violin Plot)**

* **Purpose**: Compare pricing by urban level.
* **Insight**: Tier 1 cities may have premium pricing.

**12. Average Price by Year of Manufacture**

* **Purpose**: Track pricing trends over production years.
* **Insight**: Can indicate market changes or inflation.

**13. Count of Bikes by Owner Type**

* **Purpose**: Know the ownership history distribution.
* **Insight**: First-hand bikes are likely more in demand.

**14. Mileage vs Resale Price (Scatterplot)**

* **Purpose**: See if efficiency impacts resale.
* **Insight**: High mileage may lead to better resale, especially for fuel-saving bikes.

**15. Resale Price vs Insurance Status**

* **Purpose**: Determine the effect of active insurance.
* **Insight**: Insured bikes often fetch higher resale prices.

**16. Engine Capacity by Brand (Bar Plot)**

* **Purpose**: Identify performance level per brand.
* **Insight**: Shows which brands target high-power segments.

**17. Bike Registrations Over the Years (Bar Chart)**

* **Purpose**: Track yearly market activity.
* **Insight**: Reveals buying patterns or event impacts like COVID.

**18. Original vs Resale Price (Line Plot)**

* **Purpose**: Compare initial vs final value.
* **Insight**: Shows depreciation model-wise or brand-wise.

**19. Top 10 High Mileage Bikes (Horizontal Bar Chart)**

* **Purpose**: Identify most fuel-efficient models.
* **Insight**: Great for budget-conscious buyers.

|  | **Bike Model** | **Mileage (km/l)** |
| --- | --- | --- |
| 1 | Passion Pro | 99.48 |
| 2 | Platina 110 | 99.24 |
| 3 | Classic 350 | 99.08 |
| 4 | Pulsar 150 | 98.66 |
| 5 | Avenger 220 | 97.13 |
| 6 | Unicorn | 93.85 |
| 7 | Splendor Plus | 92.08 |
| 8 | Dominar 400 | 89.98 |
| 9 | 390 Adventure | 89.76 |
| 10 | Apache RTR 160 | 86.93 |