

1. Distribution of payment methods

This data visualization helps in analyzing the distribution of different payment methods based on the number of transactions. By visually comparing the heights of the bars, users can quickly determine which payment methods are most frequently used.

Key Uses of This Visualization:

✔ **Identify Popular Payment Methods** – Helps businesses understand customer preferences. ✔ **Detect Trends Over Time** – Can be used to track changes in payment preferences across different periods. ✔ **Optimize Financial Strategies** – Businesses can adjust their payment options to meet customer demand. ✔ **Improve Decision-Making** – Supports data-driven decisions on which payment methods to promote or invest in.

2. Top 10 customers by revenue

This data visualization is used to display the **top 10 customers by revenue**. It helps in identifying which customers generate the most revenue for a business, allowing for **targeted marketing, customer relationship management, and strategic decision-making**.

🔍 Key Insights from the Visualization

✓ **Identifies High-Value Customers** – Helps businesses focus on their most profitable customers. ✓ **Optimizes Sales & Marketing Efforts** – Enables personalized promotions and loyalty programs. ✓ **Improves Resource Allocation** – Businesses can prioritize services for their top revenue-generating customers. ✓ **Supports Data-Driven Decisions** – Ensures the company invests in customer retention and acquisition efficiently.

3. Total transaction amount density plot

This data visualization is a **density plot** that represents the distribution of **total transaction amounts**. It's useful for understanding the frequency and spread of transaction amounts within a dataset.

🔍 Key Uses of This Visualization

✓ **Identifies Common Transaction Ranges** – Peaks in the density curve indicate transaction amounts that occur frequently. ✓ **Detects Anomalies or Outliers** – If the curve has unexpected spikes or long tails, it may indicate unusual transaction behavior. ✓ **Supports Financial Analysis** – Helps businesses analyze purchasing patterns and optimize pricing strategies. ✓ **Improves**

Decision-Making – Insights from the distribution can guide marketing strategies, risk assessment, and revenue forecasting.

What This Chart Shows

- The curve peaks around the **200-300 transaction amount range**, indicating that most transactions fall within this range.
- The density gradually decreases for **higher transaction amounts** (1000–1500), meaning fewer transactions occur at those values.

By examining this distribution, businesses can **better understand customer spending habits and optimize their financial strategies**.

4. Time Series Analysis: Trend of Transaction Amounts Over Time

This data visualization is a **scatter plot with a connected line**, showing **total transaction amounts over time**. The **X-axis represents the date** (ranging from April 2023 to April 2025), while the **Y-axis represents transaction amounts** (ranging from 0 to 12,000).

Key Uses of This Visualization

✓ **Identifies transaction trends** – Helps spot patterns in how transaction amounts change over time. ✓ **Detects peaks and dips** – Shows fluctuations that might indicate seasonal effects or market shifts. ✓ **Supports financial forecasting** – Helps businesses predict future transaction behaviors based on past trends. ✓ **Improves decision-making** – Allows companies to analyze periods of high and low activity to optimize financial strategies.

What This Chart Shows

- The plot reveals **high variability in transaction amounts**, with numerous peaks and troughs.
- Some periods show **sharp spikes**, indicating **sudden increases in transactions** (possibly due to promotions or special events).
- The **general trend** can help businesses analyze spending behaviors and optimize operations accordingly.

5. Relationship Analysis: Transaction Amount by Payment Method (Box Plot)

This data visualization is a **box plot** that helps analyze the **distribution of transaction amounts across different payment methods**. Each payment method—**Credit Card, Debit Card, PayPal, Cryptocurrency, and Bank Transfer**—has its own box plot, displaying key statistical measures:

How This Visualization is Useful

✓ **Identifies Transaction Patterns** – Helps compare payment methods based on transaction amounts. ✓ **Detects Variability & Outliers** – The spread of each box

shows how transaction amounts fluctuate for each method. ✓ **Highlights Median & Quartiles** – Shows central tendencies, allowing businesses to understand typical transaction amounts. ✓ **Supports Financial Decision-Making** – Helps optimize payment processing strategies based on consumer behavior.



What This Box Plot Reveals

- The **median line** inside each box represents the middle transaction amount for that payment method.
- The **box length** (interquartile range) indicates transaction variability—longer boxes mean higher variation.
- The **whiskers & outliers** show extreme transactions, highlighting unusual spending behaviors.

Data exploration is a crucial step in data analysis, where analysts examine datasets to uncover patterns, outliers, and relationships before formal modeling. It involves techniques like **descriptive analysis**, **visual analysis**, and **statistical analysis** to understand the structure and quality of data