**Diwali Sales Analysis — Summary**

**Executive Summary**

This project performs a comprehensive **Exploratory Data Analysis (EDA)** on Diwali sales data to uncover **customer purchasing patterns** and derive actionable business insights.  
Using Python’s **data handling, preprocessing, and visualization** libraries, the analysis focuses on demographic trends, product preferences, and regional sales performance to support data-driven decision-making for targeted marketing campaigns.

**Skills Demonstrated :**

**1. Data Handling & Preprocessing**

* Imported datasets with **pandas** and handled encoding issues (unicode\_escape).
* Removed irrelevant columns and cleaned null values using drop and dropna.
* Inspected data structure (shape, info()) and prepared it for analysis.

**2. Exploratory Data Analysis (EDA)**

* Performed **grouping, filtering, and aggregation** to uncover patterns.
* Calculated totals, percentages, and segmented data for deeper insights.

**3. Data Visualization**

* Created **bar plots, count plots, and comparative charts** using matplotlib & seaborn.
* Customized plot styles, sorted categories, and labeled charts for better storytelling.

**4. Business Insight Extraction**

* Converted numerical trends into **marketing strategies** and **customer segmentation plans**.
* Identified high-value customer demographics, profitable product categories, and strong sales regions.

**Key Findings from Analysis**

* **Gender:** Majority of buyers are **female** with higher average purchase amounts than males.
* **Age Group:** **26–35 years females** dominate purchase activity.
* **Geographic Trends:** **Uttar Pradesh, Maharashtra, and Karnataka** contribute the most to total orders and revenue.
* **Marital Status:** **Married women** have stronger purchasing power than unmarried customers.
* **Occupation:** **IT, Healthcare, and Aviation** professionals form the top buying segment.
* **Product Categories:** Highest sales come from **Food, Clothing, and Electronics**.

**Analysis Summary**

The analysis shows that **targeted marketing** towards **married women aged 26–35** from **Uttar Pradesh, Maharashtra, and Karnataka**, working in **IT, Healthcare, or Aviation**, can significantly boost sales.  
Promotional campaigns focusing on **Food, Clothing, and Electronics** during festive seasons are likely to yield the highest returns.  
By leveraging **demographic segmentation** and **region-specific offers**, businesses can enhance customer engagement and maximize revenue during high-demand events like Diwali.