Telecom customer churn (EDA) Python Project

The Telecom Customer Churn dataset is widely used to analyze customer attrition in the telecommunications industry. It contains various features that help in understanding the factors contributing to customer churn..

Goals of the Project:

- Understand Customer Churn.
- Perform feature engineering to derive useful insights.
- Visualize data distributions and trends with various plot types.
- Summarize key findings that can aid in business decision-making

Materials and Methods

The dataset for telecom customer churn analysis is typically sourced from telecom companies' databases, public datasets like Kaggle, IBM, or proprietary sources. The dataset includes customer demographics, account details, service usage, and churn status.

- **General Part**

- **Libraries Import**: Pandas, NumPy, Seaborn, Matplotlib,pandas
- **Dataset Exploration**: Handling missing values.
- Encoding categorical variables.
- Feature scaling and transformation.
- Splitting data into training and testing sets.
- **Feature Engineering**: Handling Missing Values, Handling Missing Values, Creating New Features
- **Visualization in Pandas**: Distribution analysis, relationships between variables, and time-based trends.

Project Outcome & Insights

The project performs **Exploratory Data Analysis (EDA)** on an **e-commerce dataset** to gain meaningful insights into **sales performance, customer behavior, and shipping efficiency**. Below are the key outcomes:

1 • **Customer Behavior & Churn Patterns**

- Long-tenure customers are less likely to churn.
- Customers who engage frequently with support or promotions tend to stay longer.
- Sudden drops in usage are strong churn indicators.

- **Financial Impact of Churn**

- Cost of acquiring new customers is higher than retaining existing ones.
- High churn among premium customers can significantly impact revenue.

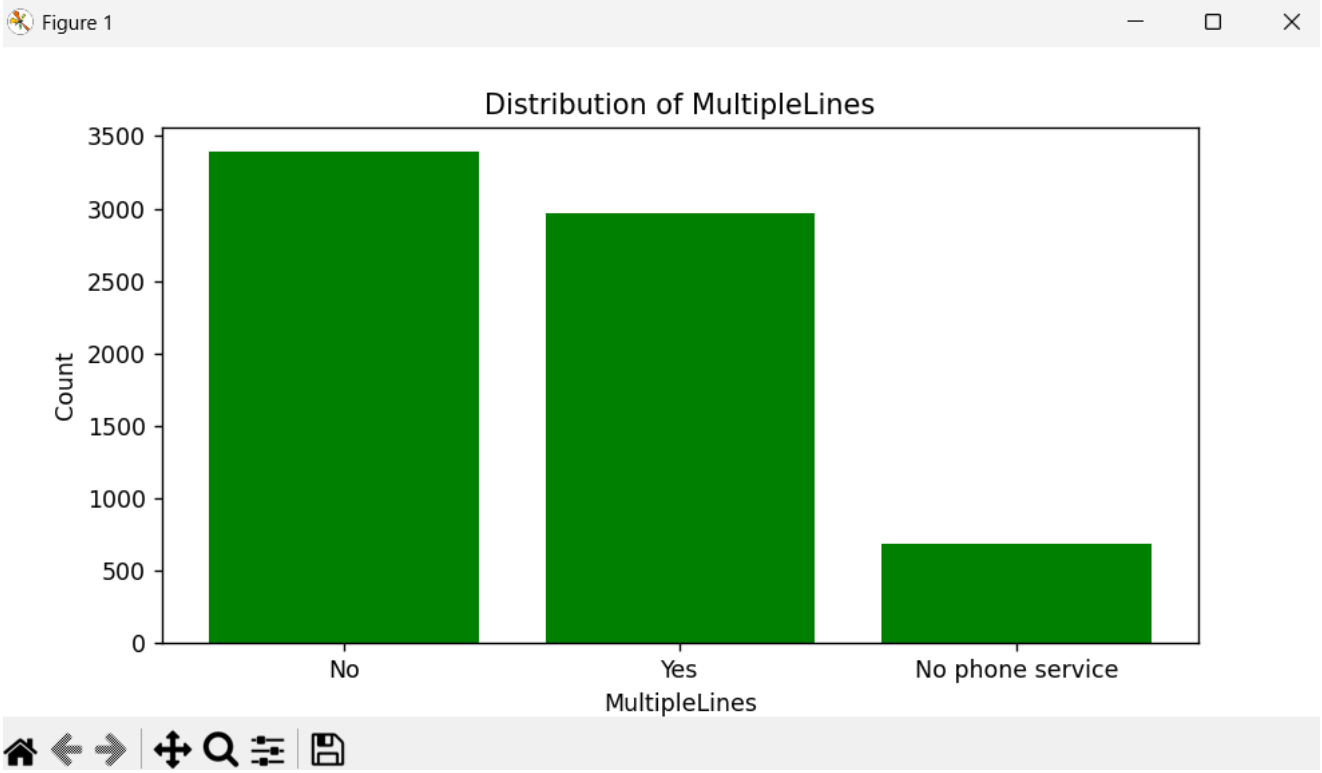
- **Predictive Signals**

  - Features like **customer complaints, inactivity periods, and reduced purchase frequency** are early warning signs of churn.
  - Customers who fail to adopt new features or upgrades are more likely to churn.

- **Product & Service Gaps**

  - Poor onboarding experiences or complex interfaces increase churn rates.
  - Competitor comparisons often reveal gaps in pricing or feature sets.

Project Outcomes:



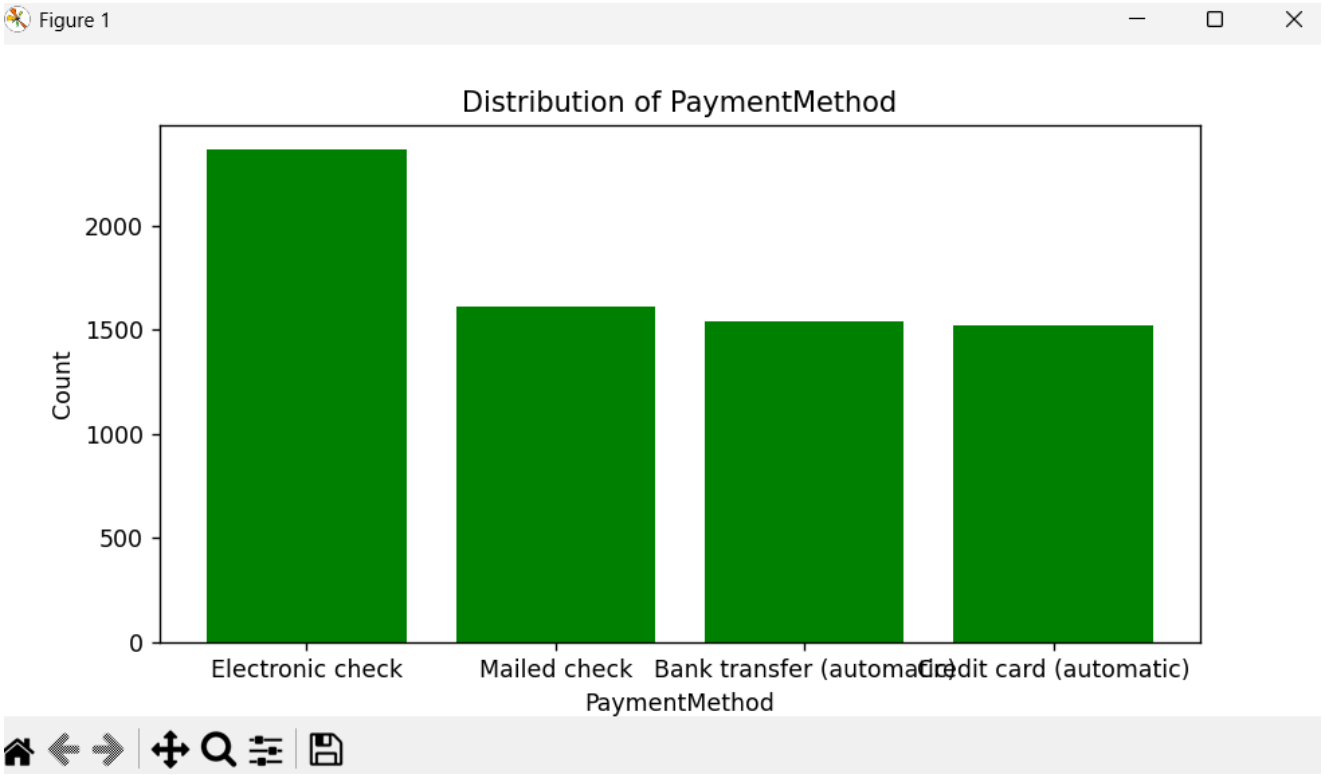
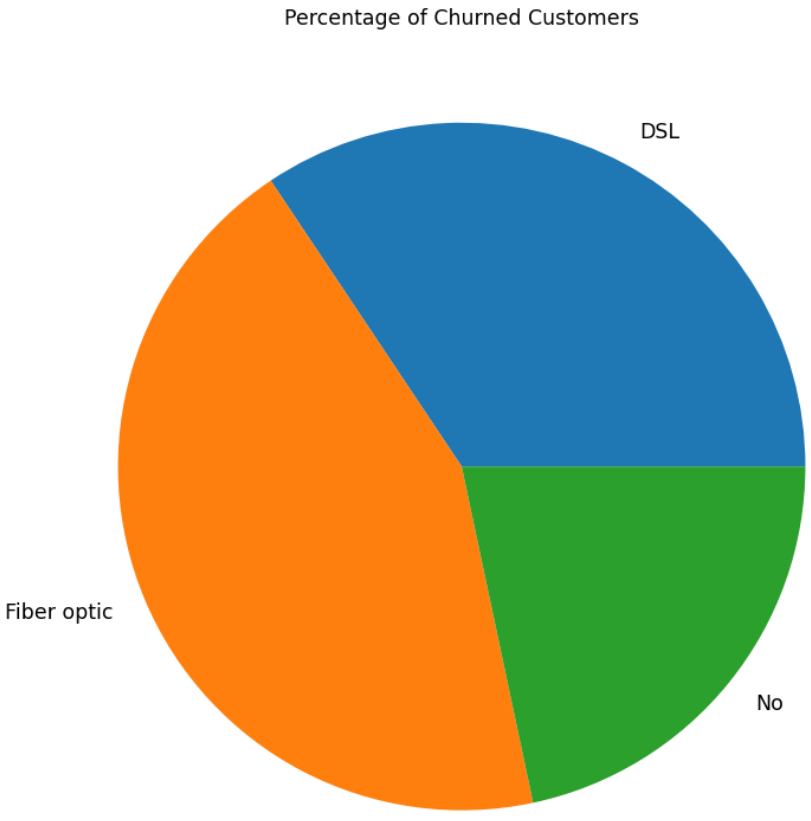


Figure 1
Distribution of PaymentMethod
Count
2000
1500
1000
500
0
Electronic check
Mailed check
Bank transfer (automatic)
Credit card (automatic)
PaymentMethod


Percentage of Churned Customers
DSL
Fiber optic
No

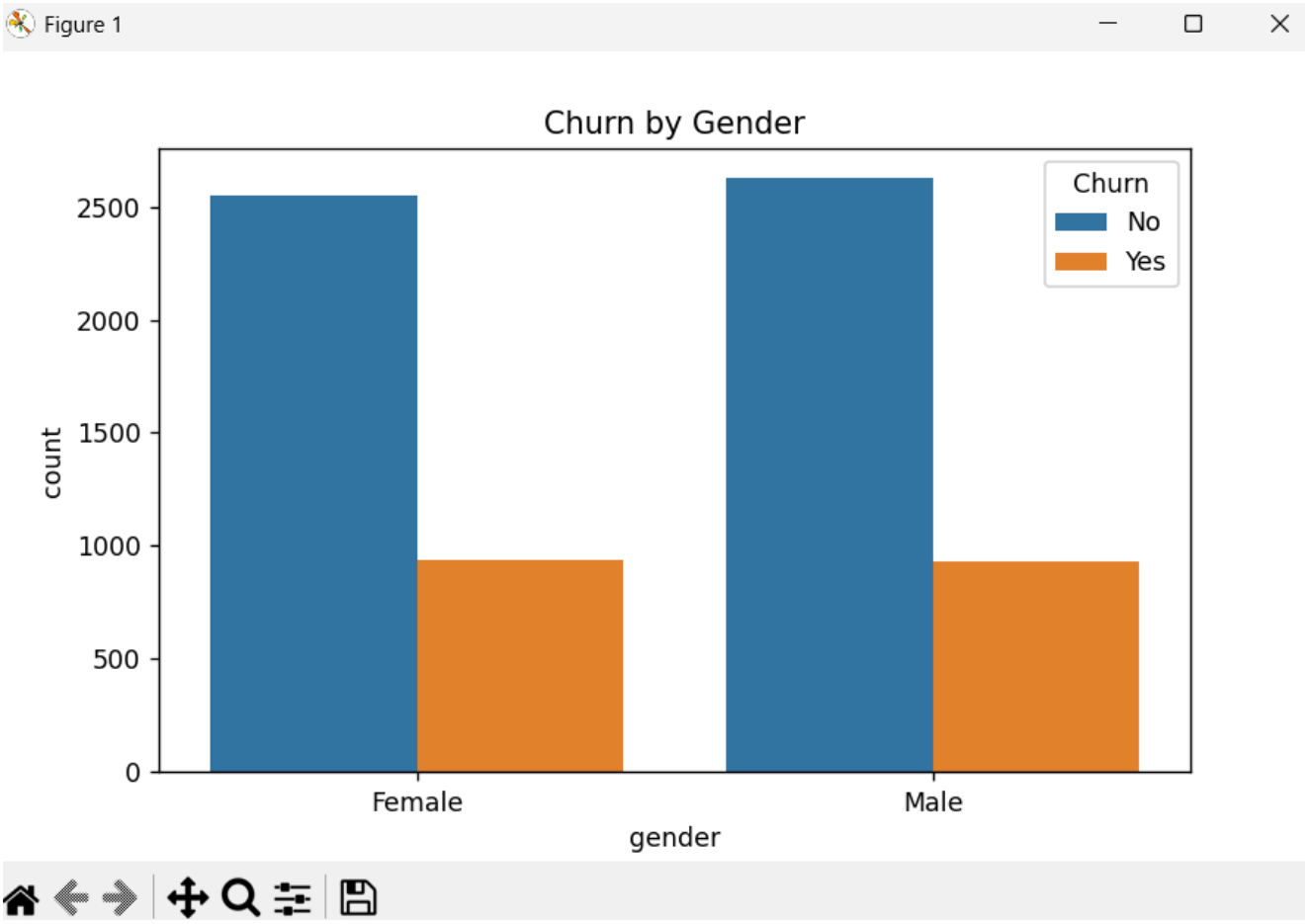


Figure 1
Churn by Gender
Churn
No
Yes
2500
2000
1500
1000
500
0
count
Female
Male
gender

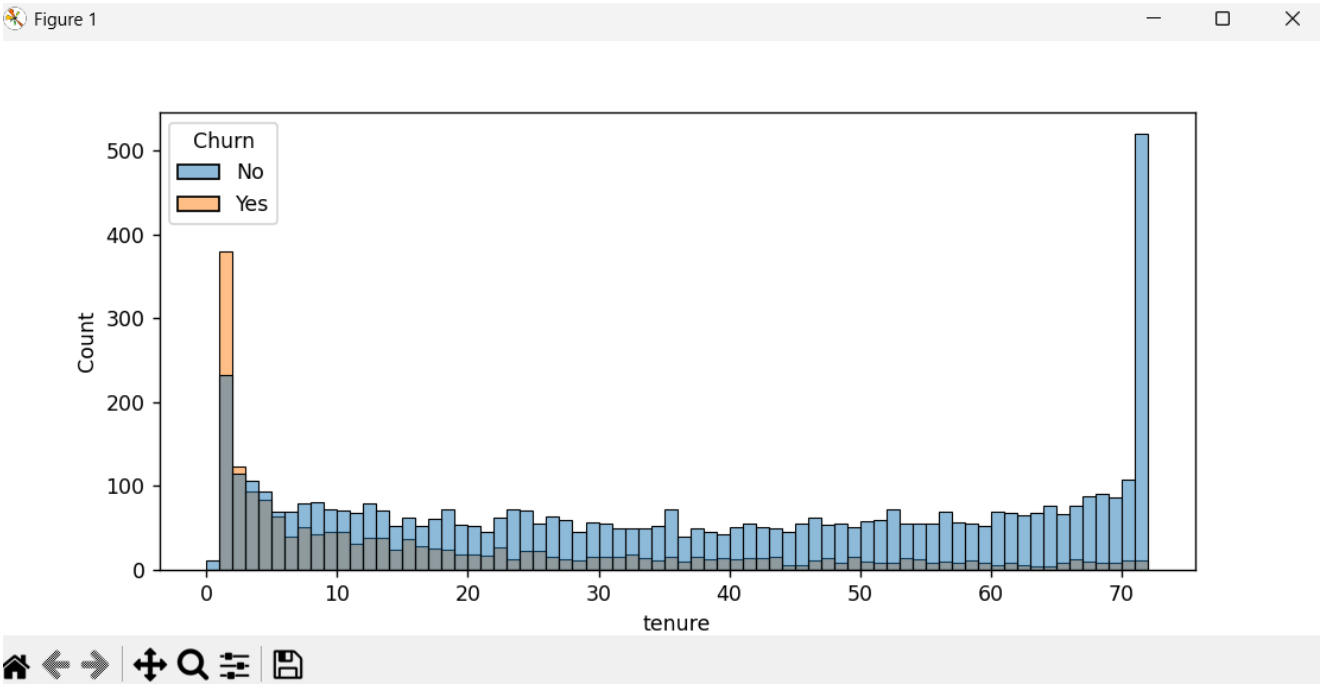


Figure 1
Churn
No
Yes
500
400
300
200
100
0
Count
0
10
20
30
40
50
60
70
tenure

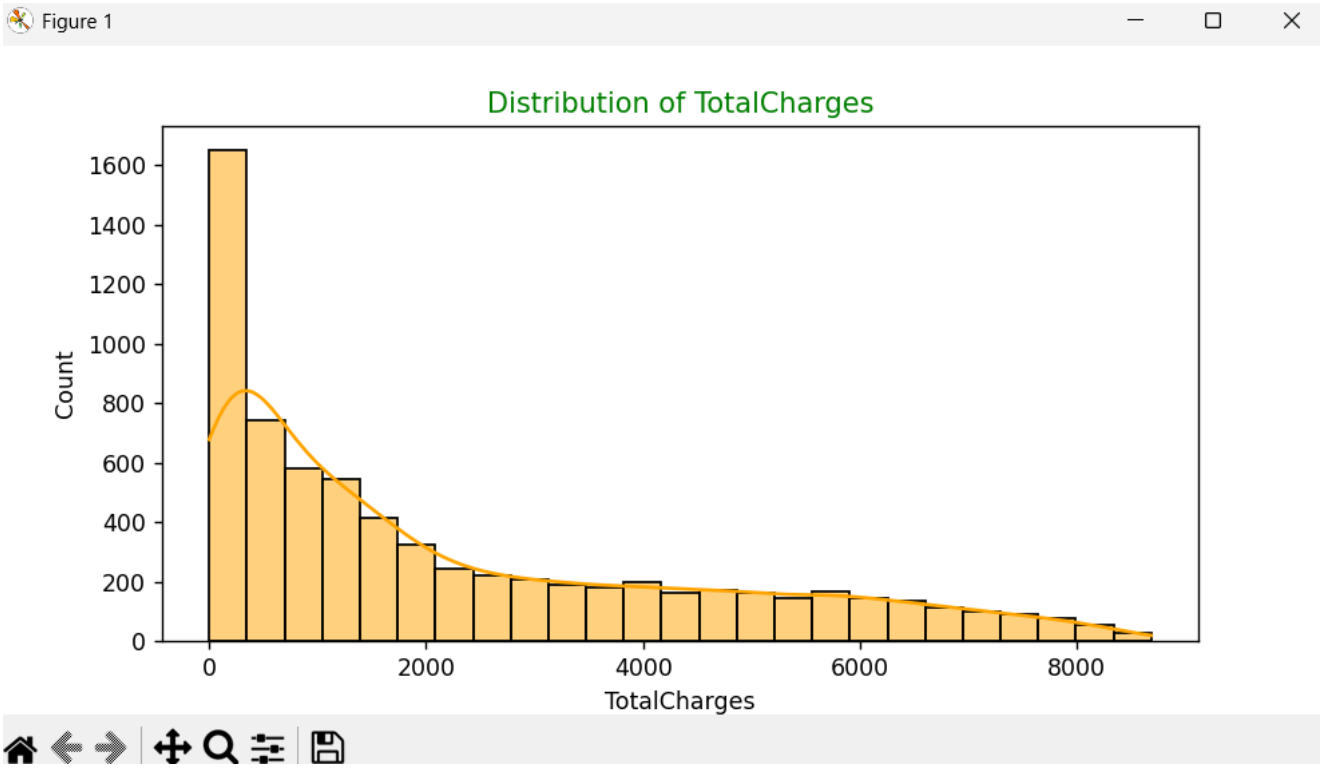


Figure 1
Distribution of TotalCharges
Count
1600
1400
1200
1000
800
600
400
200
0
0
2000
4000
6000
8000
TotalCharges