Lending Case Study

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Nirav Kapoor

Overview

This case study tries to explain the dependency of different behavioural points over the loan status. I.e whether the loan will be Fully paid or charged off.

<u>Behavioural Points:</u>

1. Loan Amount.
2. Term/Duration for which the loan taken.
3. Interest rate, how the interest rate affects the loan status.
4. Grade of a loan issued.
5. Annual income of the customer.
6. Reason or purpose for which the loan is taken.
7. Employment duration of a customer. From how long customer is doing a job.

8. Month and Year of the issued loan.

9. Home Ownership, type of home the customer live. Rented, Own or Mortgage.

Process

Data Understanding

Understand the given dataset. What is the relevance or meaning of different given columns.

Data Cleaning

Cleaning of data involves:

1. Remove the columns that only contains the NA values.

2. Remove the columns that has more than 50% NA values.

3. Remove columns that has more than 50% empty values.

4. Standardise Precision

5. Fixing rows and columns.

6. Remove Outliers

7. Remove those rows where Funded amount by investors is less than the Loan amount applied by the customer.

8. Remove irrelevant Data.

9. Convert the Interest Rate column to numeric value.

Data Analysis

Analyse the data drawing the pictorial representation of different behavioural points against the loan status

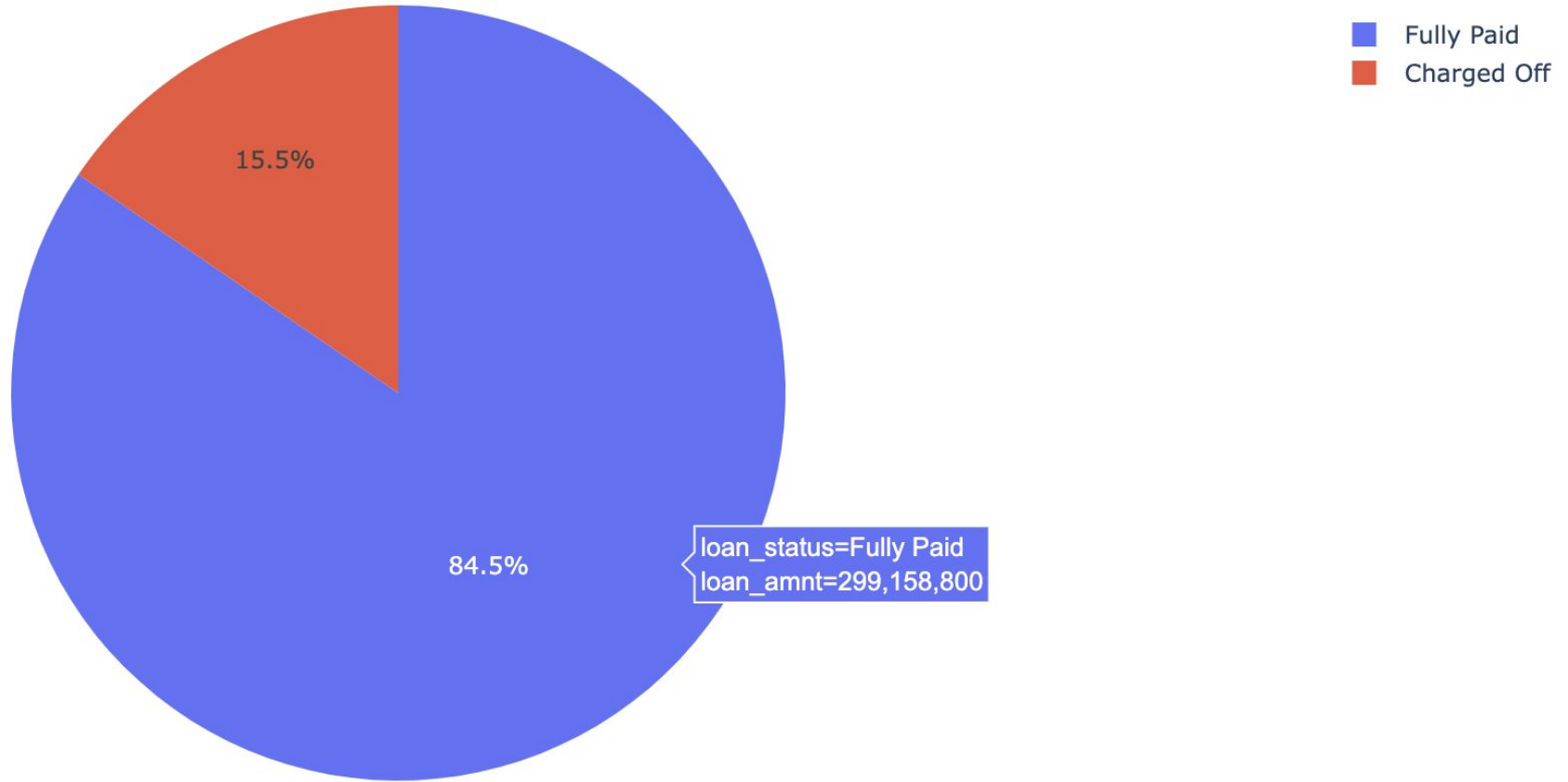# Count distribution of Fully Paid vs Charged Off
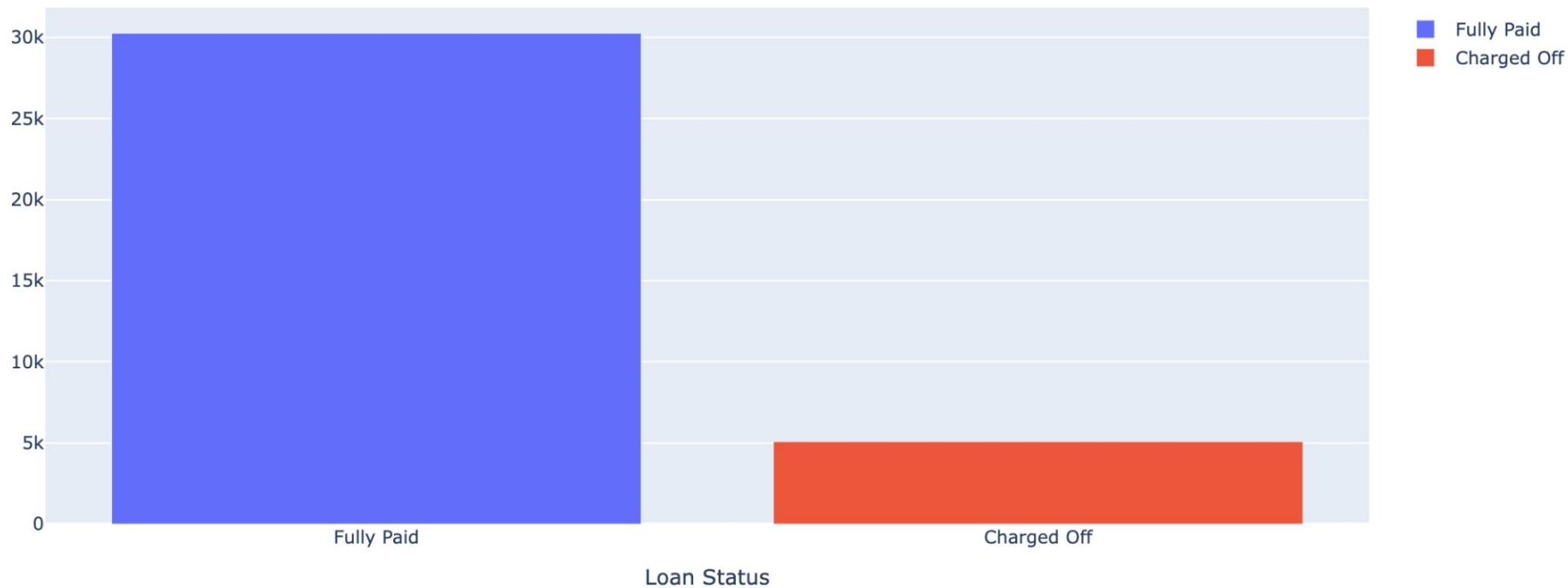
Analysis

Findings

- ~5000 Loans issued are Charged off loan. It means those loan will be not paid back to lending company.
- ~30K Loans issued are paid back by the customers.
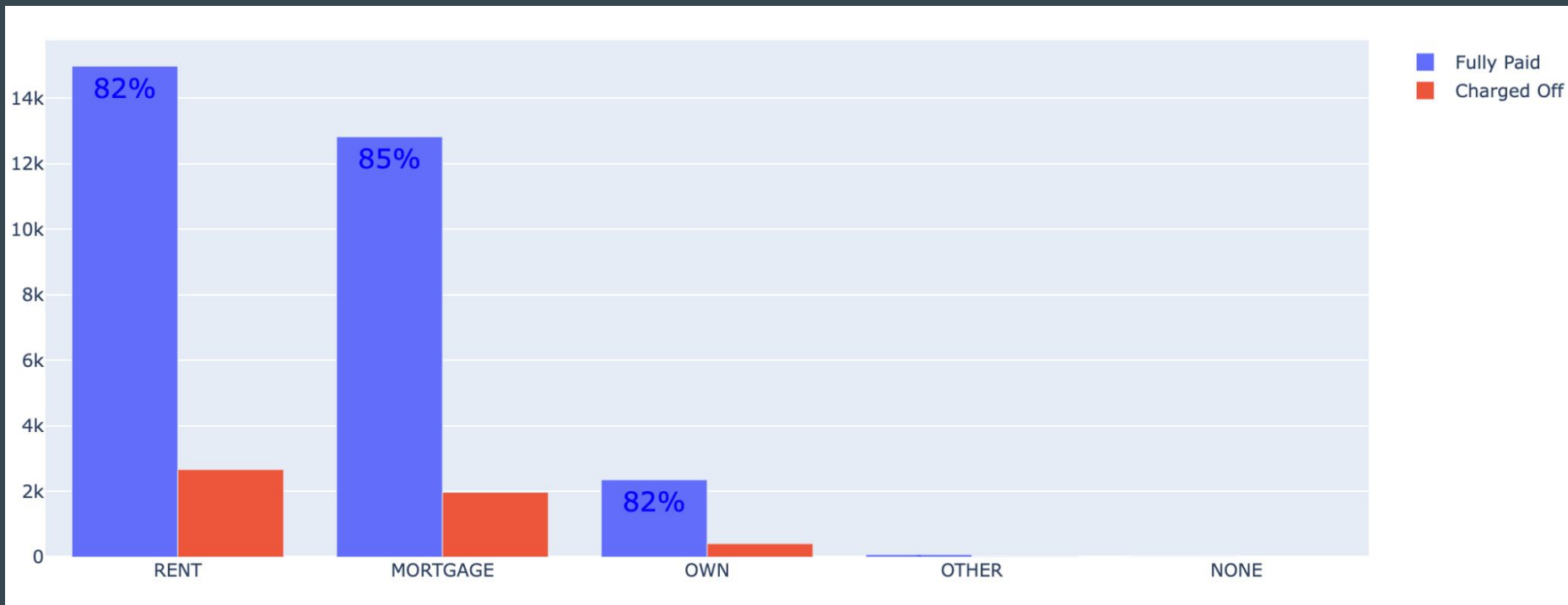
Percentage distribution of Loan status

Analysis

Findings

- 84.5% of the total loan issued are the Fully paid Loan.
- Total Amount of Fully Paid loan is 299.1588M
- 15.5 % of the total loan issued is the Charged off.
- 54.75M will be the loss for the lending company.
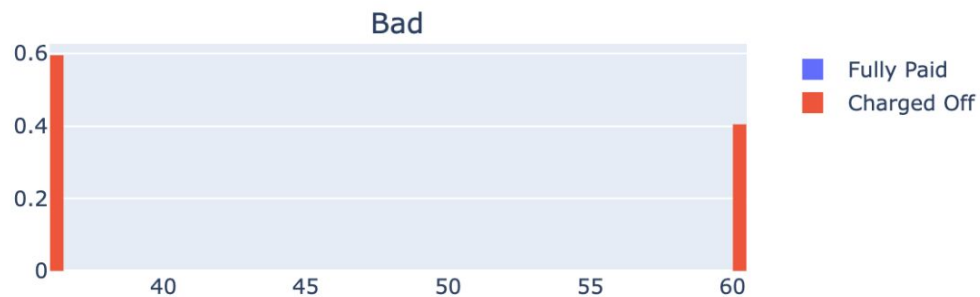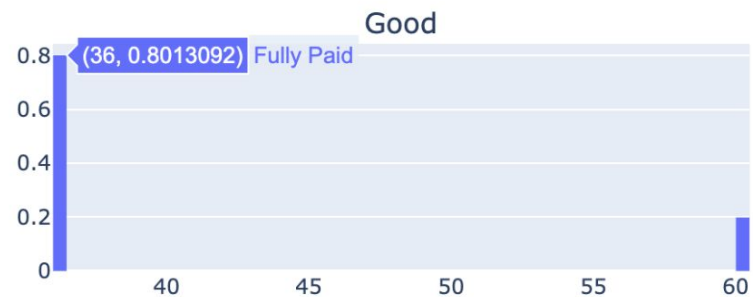
Home Ownership distribution

Analysis

Findings

- Customers whose houses are mortgage have more percentage of Fully Paid loan in comparison to those who has Rented, Owned or other type of houses.
- Customers who either has own or rented houses have same percentage (82%) of loans getting fully paid.
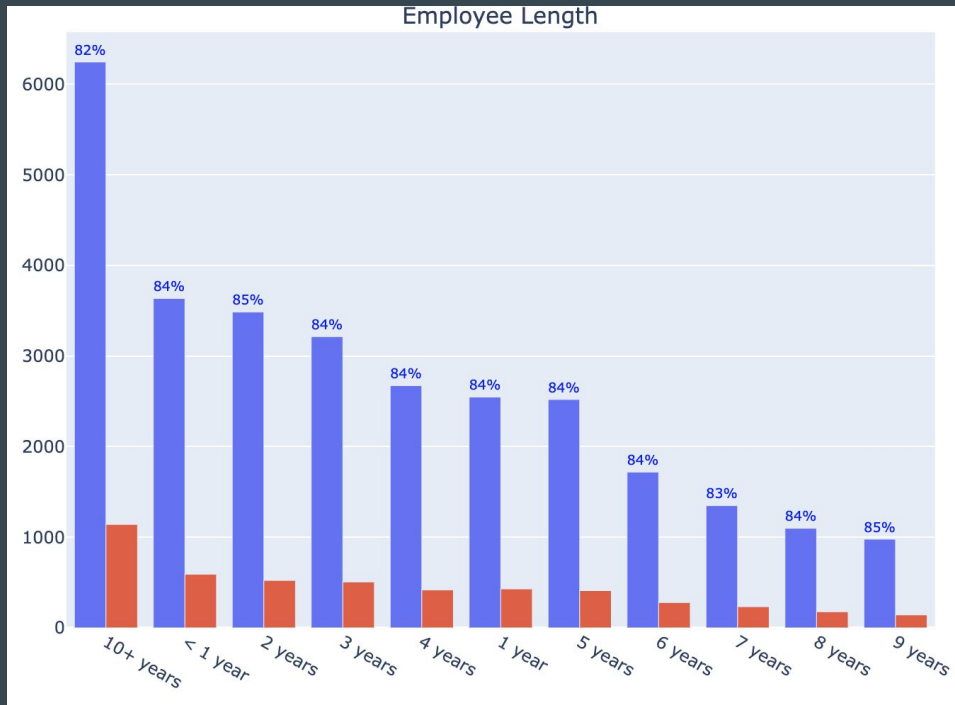
Term distribution of loan

Analysis

Findings

- Loan issued for 36 months are more Fully paid in comparison to charged off.
- Whereas loan issued for 60 months are more charged off.
- It will be better for lending company to issue short term loan.

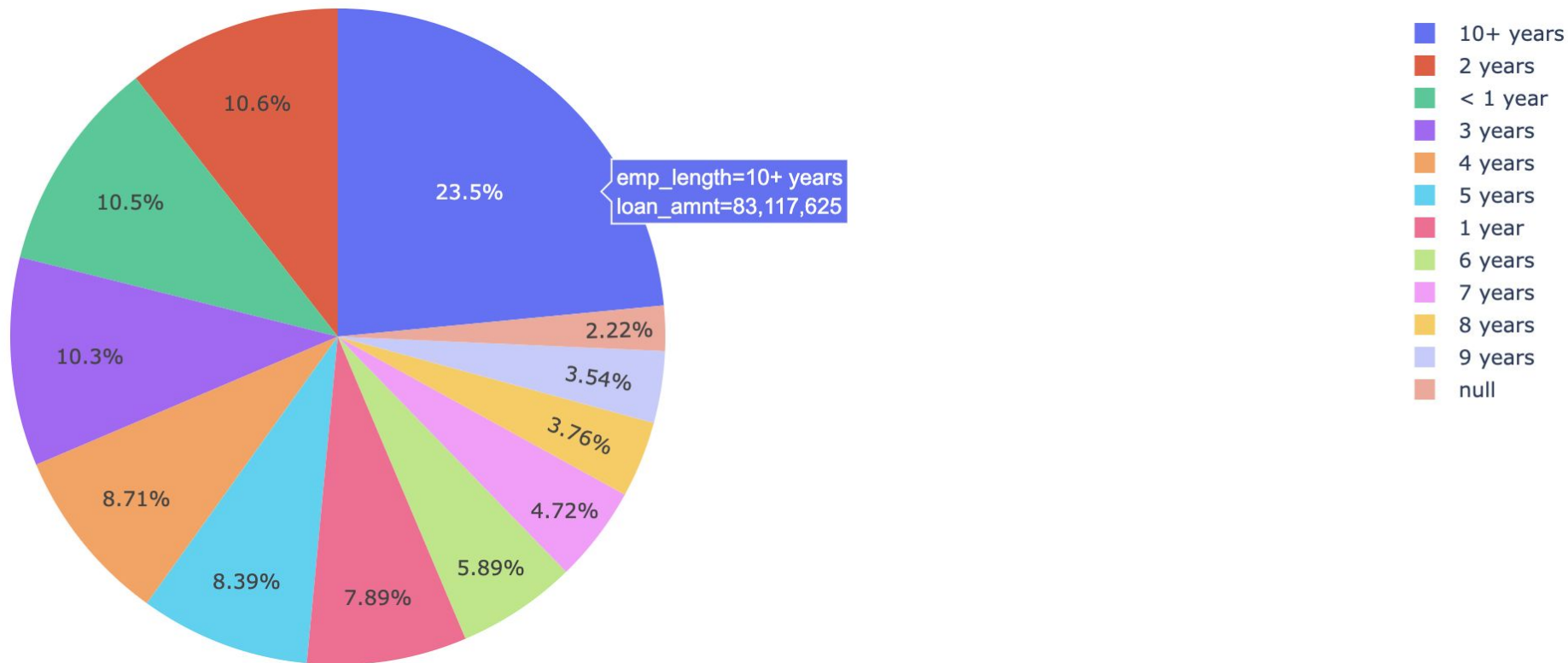# Customer's Employment Length distribution

Analysis

Findings

- Loan given to the customers with 2yrs of experience has 85% of the loan getting fully paid.
- 18% of the loan given to 10+ yrs of experienced employment customer are charged off. 10+yrs of employment customer has high percentage of loan getting charged off.
- 10yr and 1 yr experienced customers were given the maximum loan amount of ~27K, which is charged off. Lending company should be extra precautious for giving loan to 10+ and 1yr customer with very high loan amount.

Percentage of employment issued the loan

Legend:
- 10+ years
- 2 years
- < 1 year
- 3 years
- 4 years
- 5 years
- 1 year
- 6 years
- 7 years
- 8 years
- 9 years
- null

Slice labels:
- 23.5% (10+ years)
- 10.6%
- 10.5%
- 10.3%
- 8.71%
- 8.39%
- 7.89%
- 5.89%
- 4.72%
- 3.76%
- 3.54%
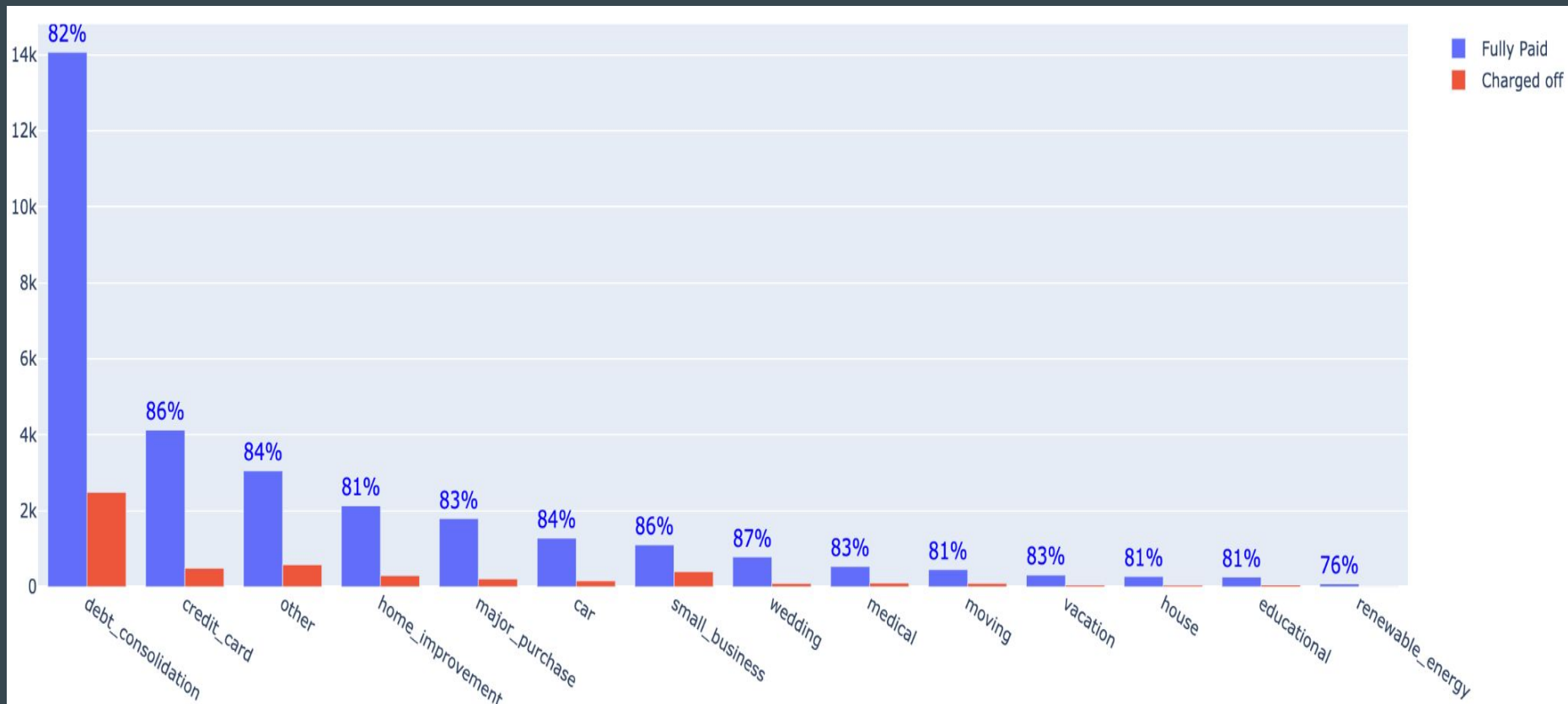- 2.22%

emp_length=10+ years
loan_amnt=83,117,625

Analysis

Findings

- 23.5% of the total loans were issued to the customer with employment of 10+ yrs
- 10.5% of loans are issued to customers having less than 1 yr of experience.

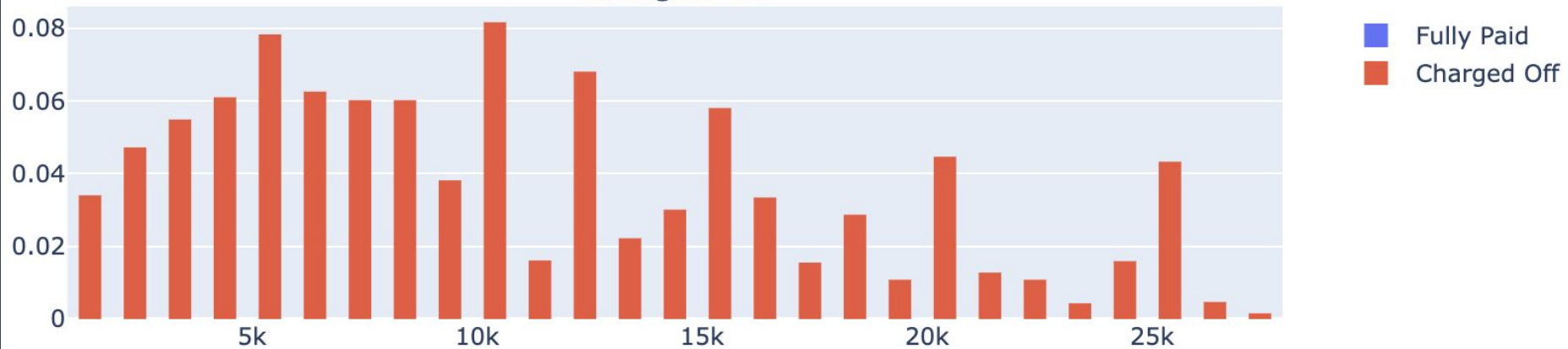# Purpose of loan distribution

Analysis

Findings

- Loan given for wedding has highest percentage of Fully paid status - 87%
- Loan given for renewable energy has highest percentage of Charged off status among the other purposes. - 24%

Loan Amount Distribution

Charged Off

Analysis

Findings

- Loan amount beyond 25K are only charged off loan.
- Loan amount of ~25K is more charged off in comparison to fully paid.
- Till 10K loan amount, more customers has fully paid the amount in comparison to charged off.

Interest Rate Distribution

Analysis

Findings

- Loan given with the interest range between 9 - 11.5% are more fully paid in comparison to charged off.
- Loan given with the interest range between 13.42 - 15.41 % are more charged off in comparison to fully paid.
- Loan issued with more than 13.42% of interest rate are more charged off in comparison to fully paid.

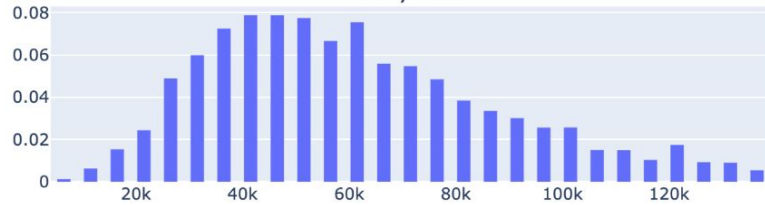# Loan Grade distribution
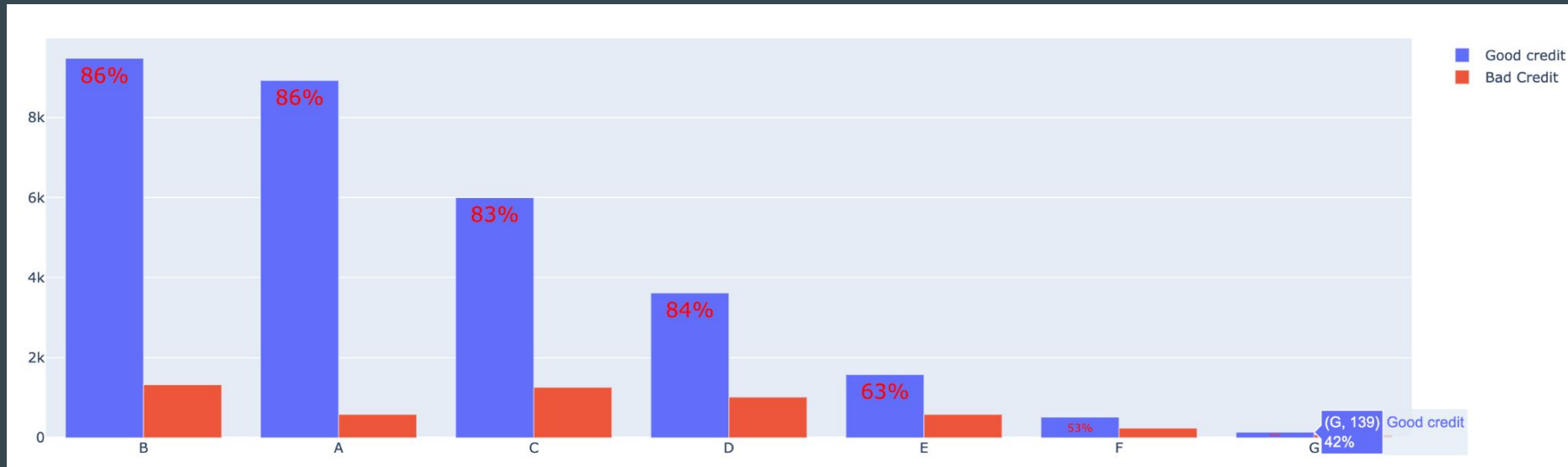
Analysis

Findings

- Loan of G grade has lowest Full paid percentage. Only 42% of G grade loans are fully paid.
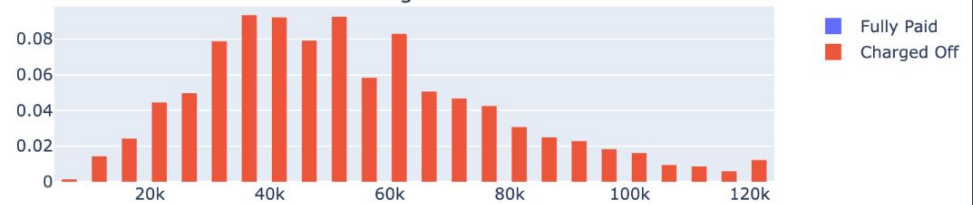- Loan of Grade A and B has highest Fully paid percentage of 86%.
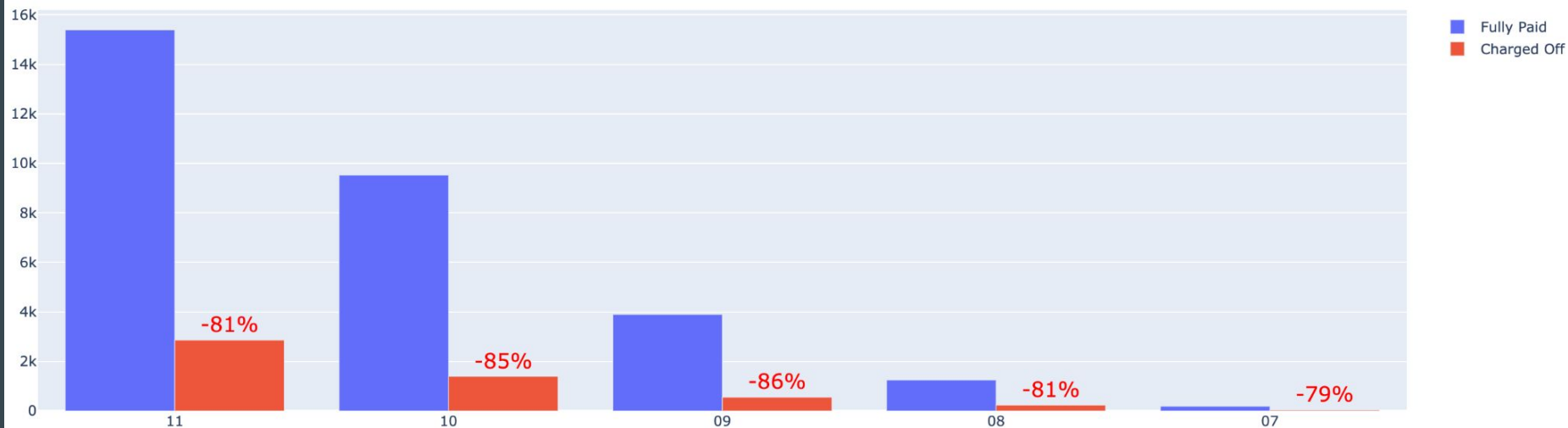
Annual Income distribution

Analysis

Findings

- Percentage of customer having annual income more than 60K has done more Fully paid of loan in comparison to charged off.
- Annual income more than 124K, has 100% success rate of doing the fully payment of loan.
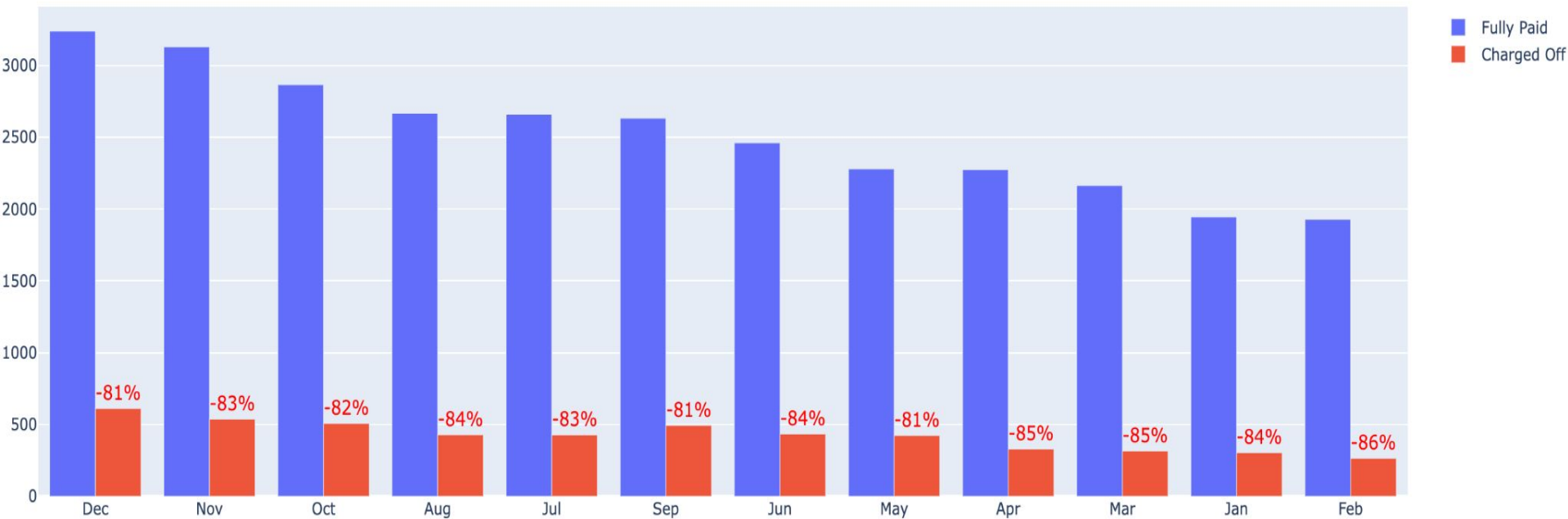
Year of Loan issued distribution

Year Distribuition

Legend:
- Fully Paid (blue)
- Charged Off (orange)

Data labels (Charged Off): -81%, -85%, -86%, -81%, -79%

X-axis: 11, 10, 09, 08, 07

Analysis

Findings

- Loans issued in year 2009, are 86% Fully paid loans

- Year 2007 was the worst year among others.

Month of Loan issued distribution

Analysis

Findings

- Sep and Dec month are having lowest success rate among others. 81% loan issues in these months were Fully paid

The Team

Nirav Kapoor