Lending Club Case Study

Aman Khurana

Chetanbhai Ranpariya

Objective

The case study's objective is to demonstrate the practical application of Exploratory Data Analysis (EDA) in a real business context. Alongside implementing learned EDA techniques, participants will gain insight into risk analytics within the banking and financial services sector.

The study emphasizes understanding how data is leveraged to mitigate the risk of financial loss when lending to customers.

Overall, it aims to provide a hands-on experience in using EDA for effective risk management in a business setting.

Business Objective

The company, identified as the largest online loan marketplace, offers personal loans, business loans, and medical procedure financing through a user-friendly online platform with lower interest rates. However, similar to other lending companies, dealing with loans to "risky" applicants poses a significant financial risk, termed as credit loss. Credit loss refers to the money lost when borrowers default on their payments. In this context, customers labelled as 'charged-off' are considered defaulters.

The case study's primary objective is to employ Exploratory Data Analysis (EDA) to identify risky loan applicants. By understanding the driving factors or variables strongly indicative of loan default, the company aims to reduce credit loss. This knowledge can be utilized for portfolio management and risk assessment, enabling more informed decision-making in the lending process.

Dataset

The dataset provided contains information about past loan applicants and whether they 'defaulted' or not. The aim is to identify patterns which indicate if a person is likely to default, which may be used for taking actions such as denying the loan, reducing the amount of loan, lending (to risky applicants) at a higher interest rate, etc.

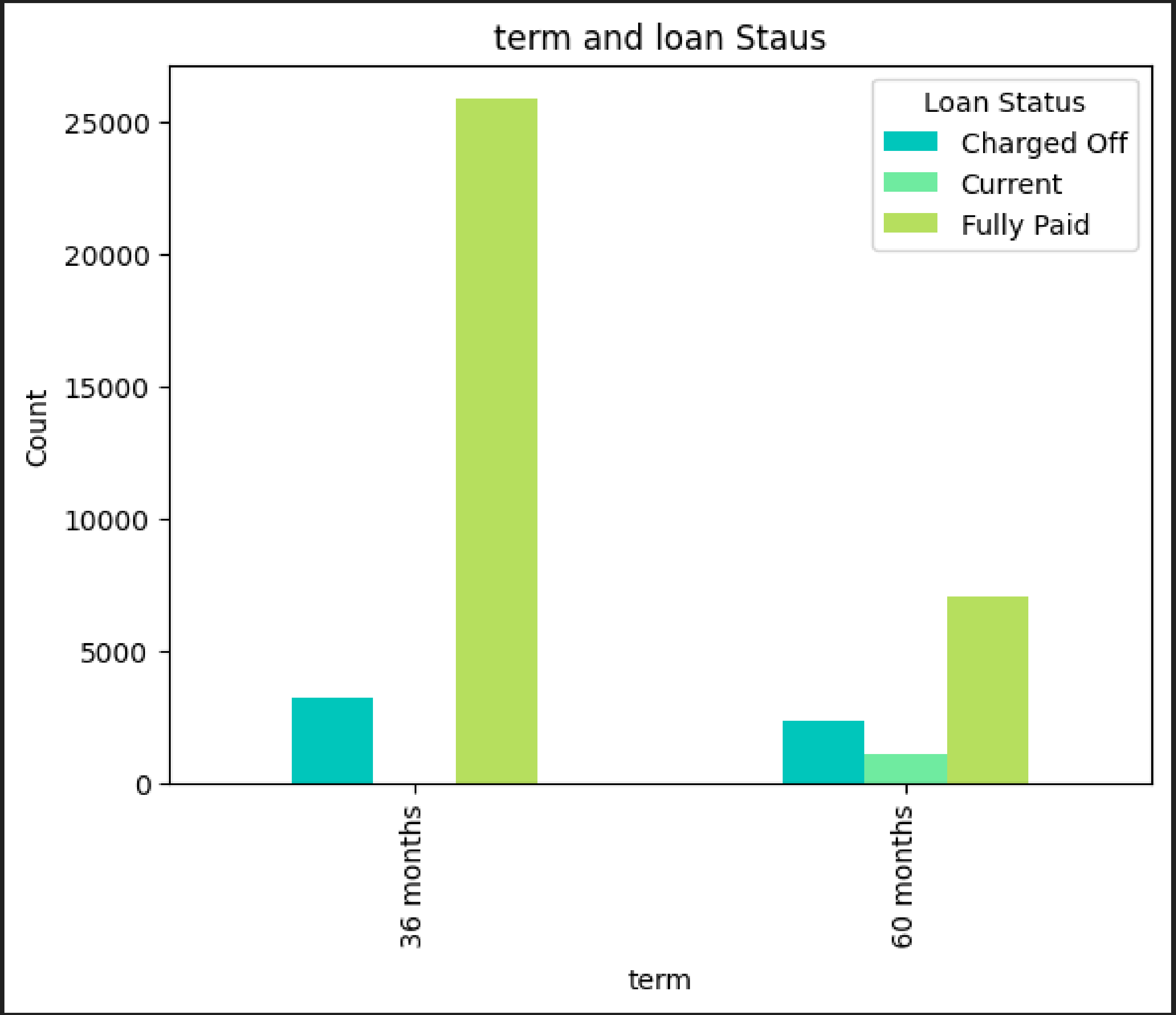
Data Clean-up and Preparation

A series of steps to be performed on the dataset for it to be ready for the analysis.

Acquire the data → Load the data → Remove null values → Remove duplicate values → Adjust/fix missing values → Remove outliers → Correct data formats → Derive new data → Filter the data

Loan Term

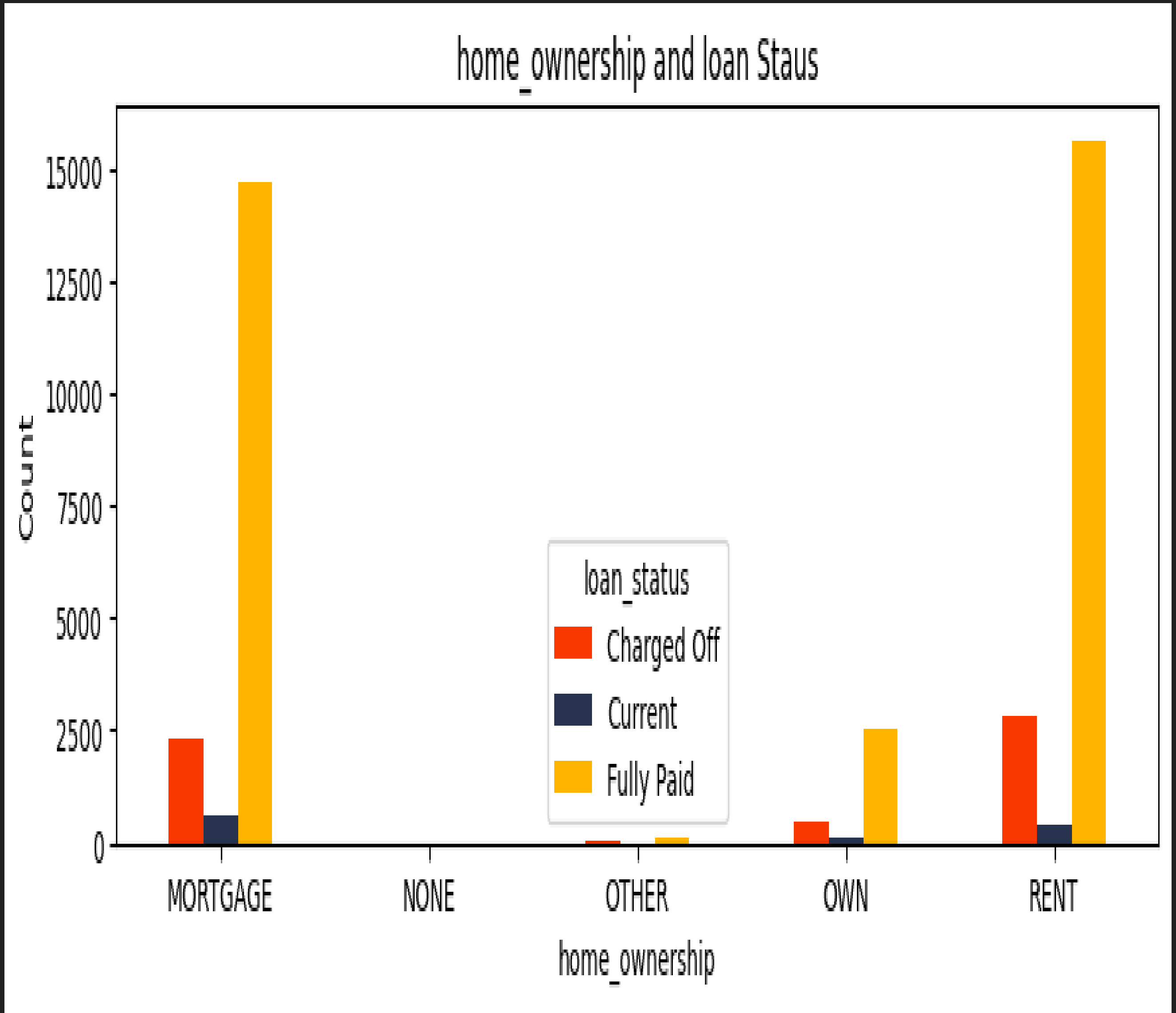
The graph distinctly indicates that loans with shorter terms are less likely to be charged off.



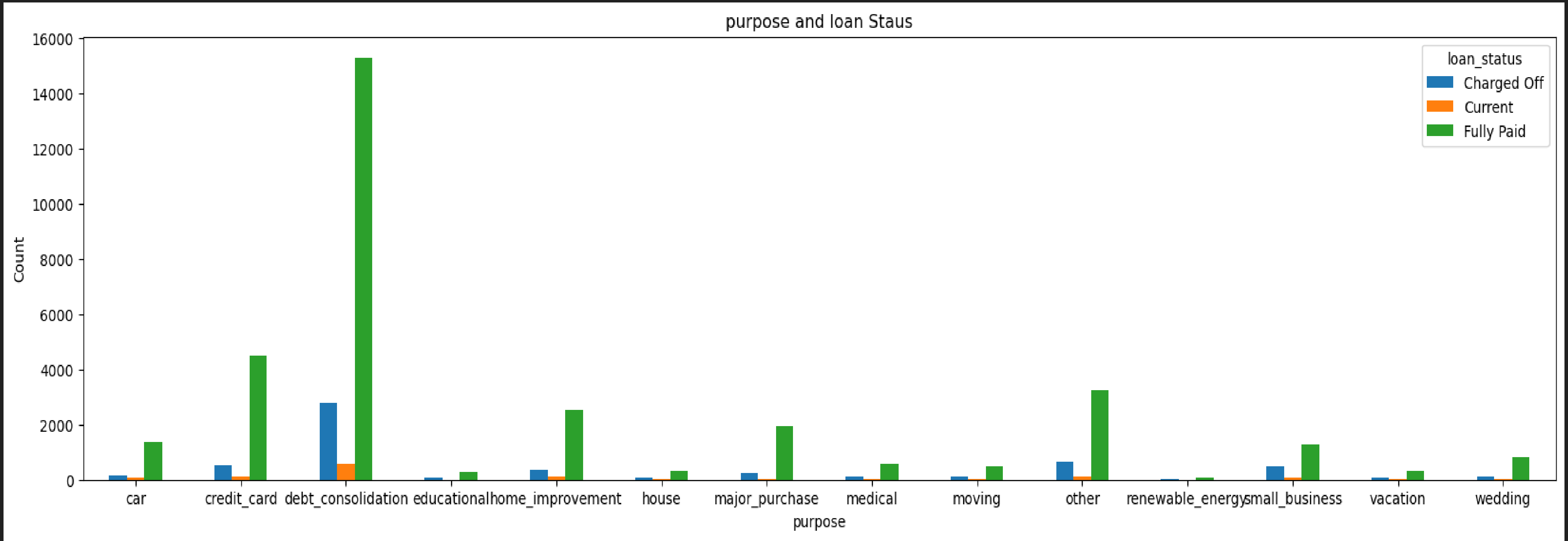
Home ownership

While the graph lacks a definitive indication to draw a clear conclusion, it is evident that a higher number of loans are extended to individuals with MORTGAGE and RENT as their home ownership status.

Notably, those with RENT exhibit a lower likelihood of repaying the loan.



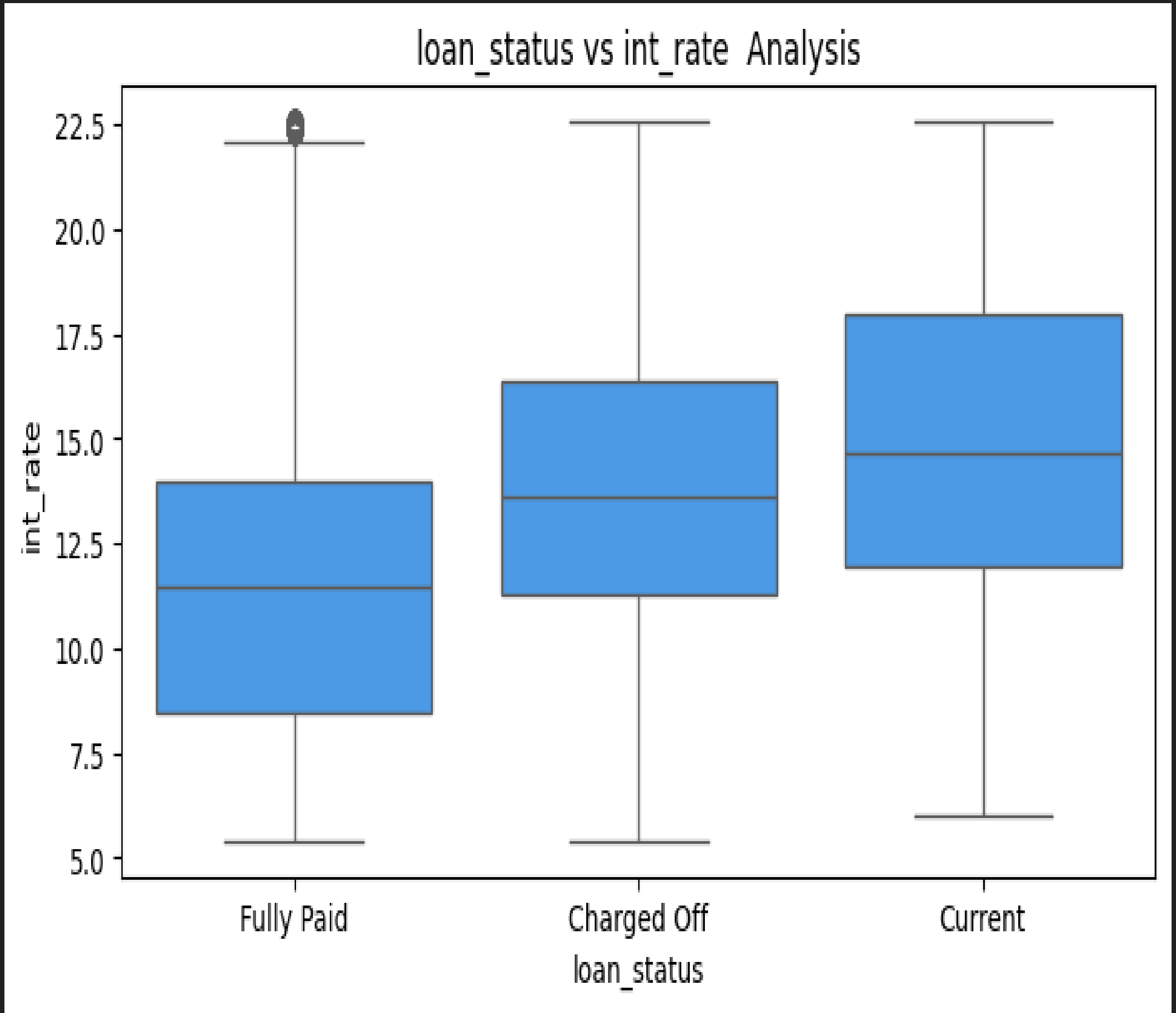
Purpose of Loan



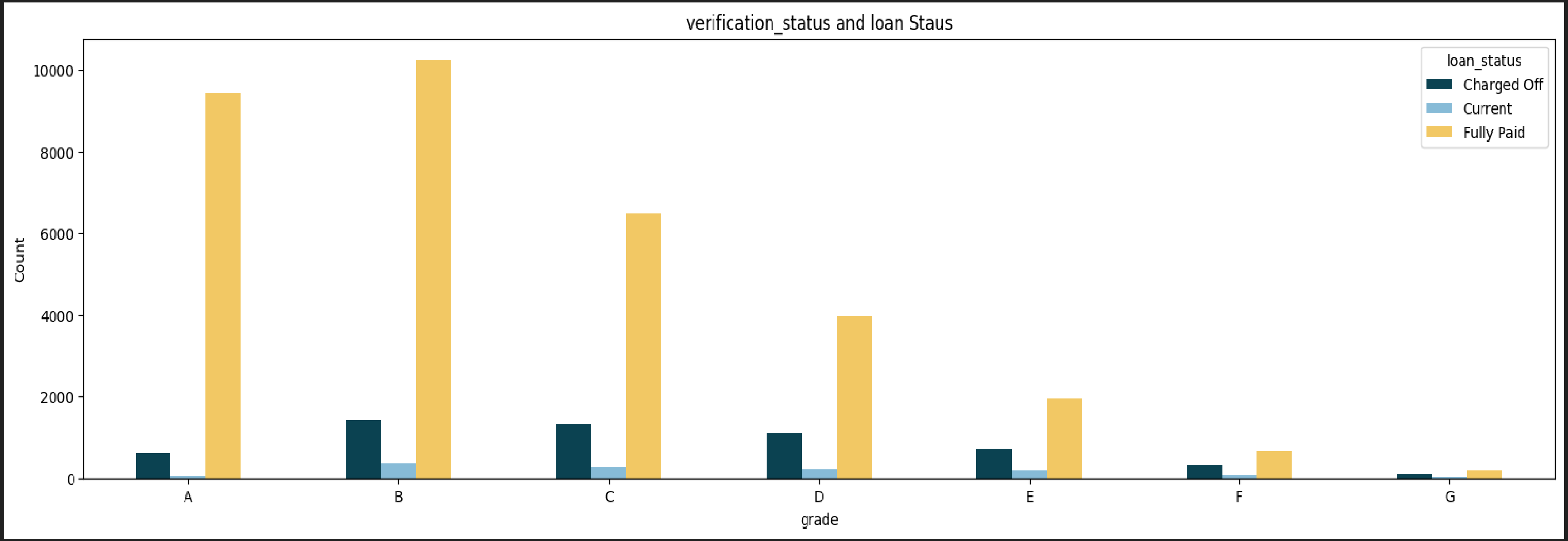
From the above graph and numbers, it is likely that loan taken from purpose of small business and renewable energy are at very high risk.

Interest rate

From the above graph and numbers, it is likely that charged off loan has high interest in comparison to fully paid loans.

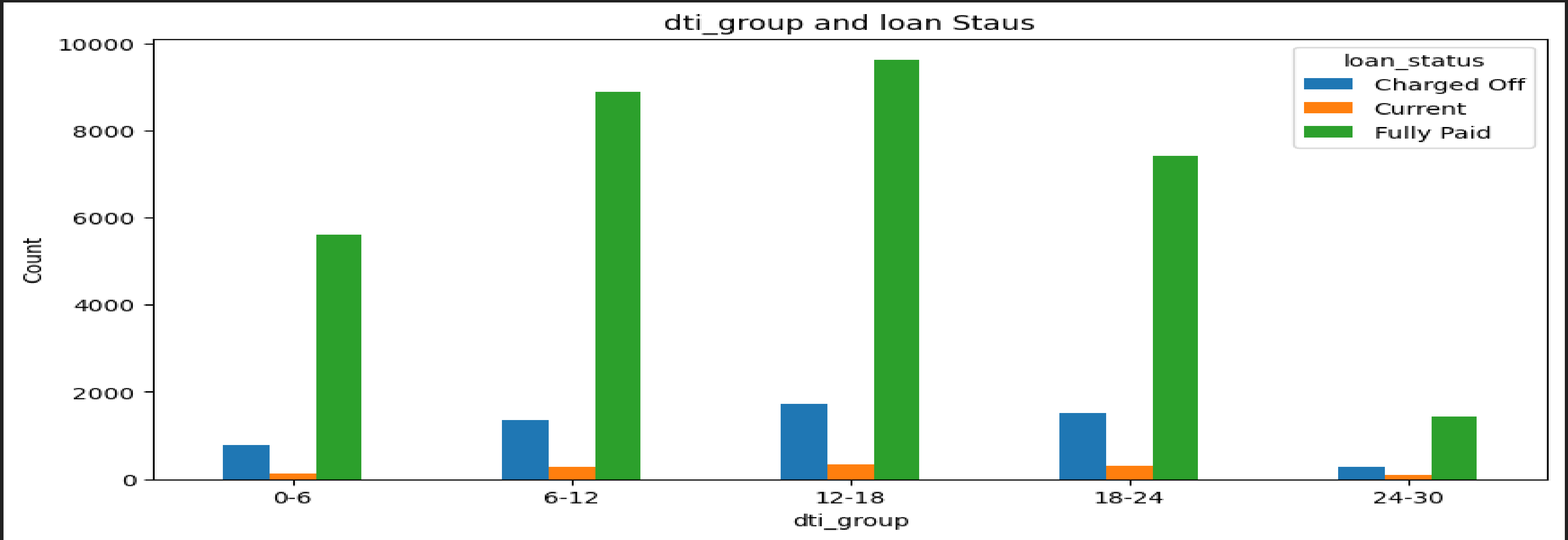


Grades



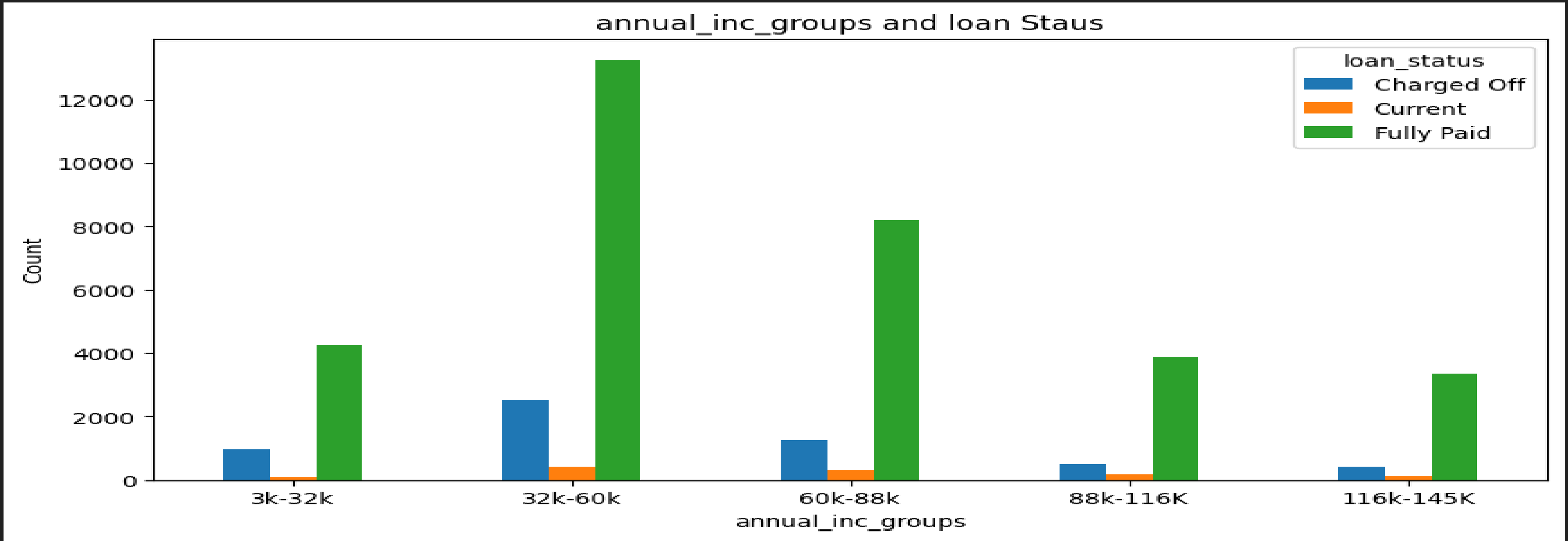
Loan belongs to D,E, F and G grades are very risky.

Debt-to-income ratio



Loan belongs to D,E, F and G grades are very risky.

Annual income



Individual with annual income lower than 60K exhibits higher risk of defaulting.

Recommendations

- Loans should be offered with shorter teams to decrease the chance of defaulting.
- Individuals with rented house should be avoided for the loan.
- Loan taken from purpose of small business and renewable energy are at very high risk.
- Loan belongs to D,E, F and G grades are very risky.
- Charged off loan has high interest in comparison to fully paid loans.
- Individuals with a higher debt-to-income ratio should be given priority for the loan.
- Individuals with income lower than 60K should be considered carefully.

Driving Factors

- Debt-to-income ratio
- Grades
- Annual Income
- Home-ownership
- Interest rate

Thank you