

LENDING CLUB CASE STUDY

By: Zeba Firdows & Suman Ghosh

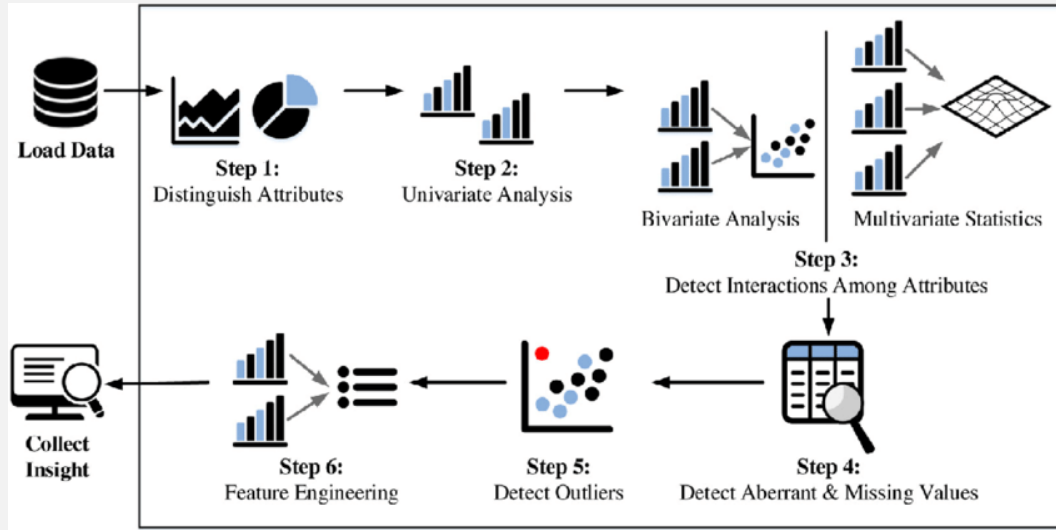
BUSINESS OBJECTIVE

- Lending club, Founded In 2006, Is A Peer-To-Peer Lending Platform Based In San Francisco. It Connects Borrowers With Individual Investors, Offering Personal And Business Loans. Borrowers Apply Online, And Lending club Assesses Their Creditworthiness. Investors Can Fund Loans And Earn Interest, While Borrowers Access Financing. The Company Has Played A Role In Reshaping The Lending Landscape.
- This company is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures. Borrowers can easily access lower interest rate loans through a fast online interface
- If one. Is able to identify these risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss. Identification of such applicants using EDA is the aim of this case study.

BUSINESS GOAL

- 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....
- 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....
- In other words, the company wants to understand the **driving factors (or driver variables)** behind loan default, i.e. the variables which are strong indicators of default. The company can utilise this knowledge for its portfolio and risk assessment.

THE ANALYSIS IS DIVIDED INTO 3 PARTS

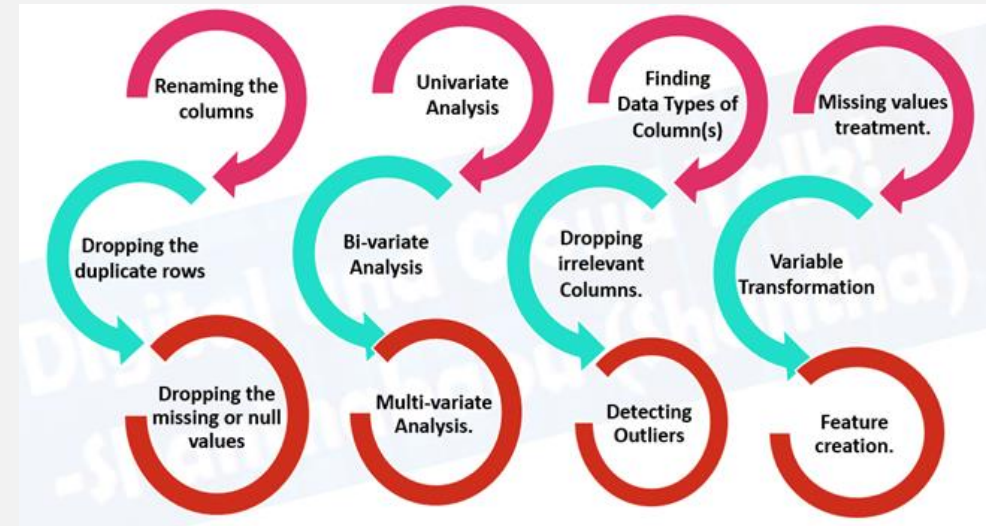


Data Understanding

- Data Preparation
- Outlier Detection

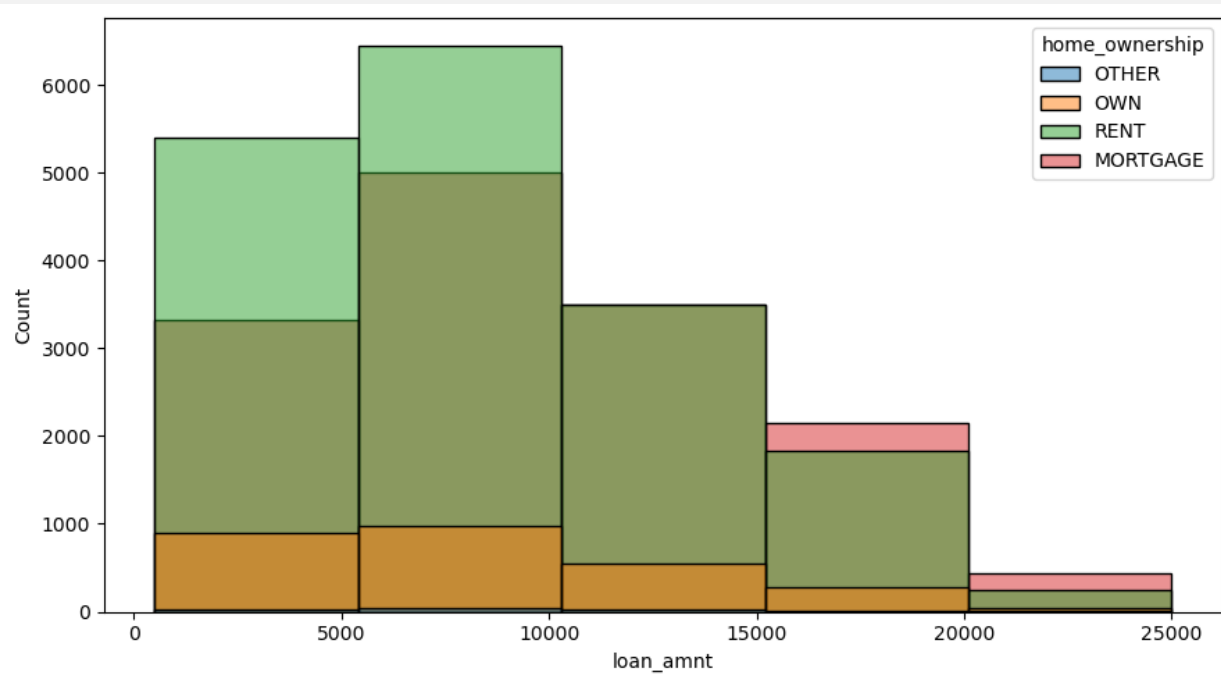
Exploratory Data Analysis (EDA)

- Data Visualization
- Descriptive Statistics
- Missing Values Handling



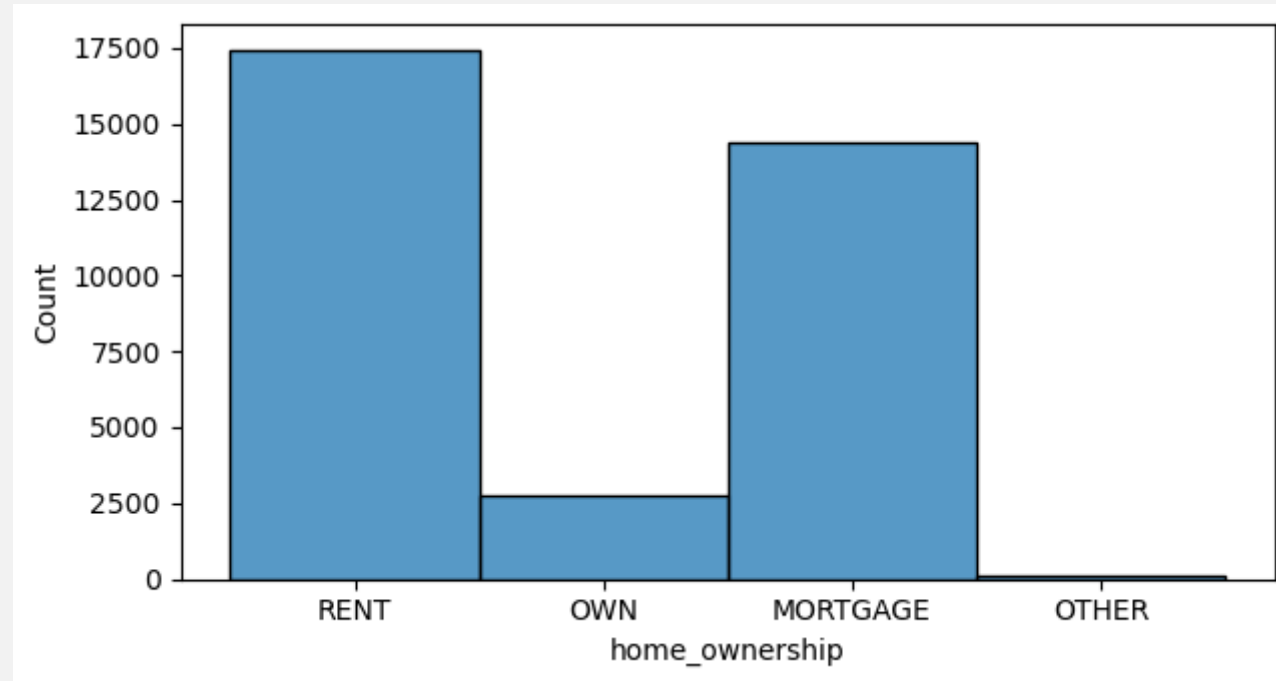
- **Data Profiling**
- **Data Cleaning**
- **Feature Selection**
- **Advanced Visualization**

LOAN AMOUNT & HOME OWNERSHIP



Loan Amount

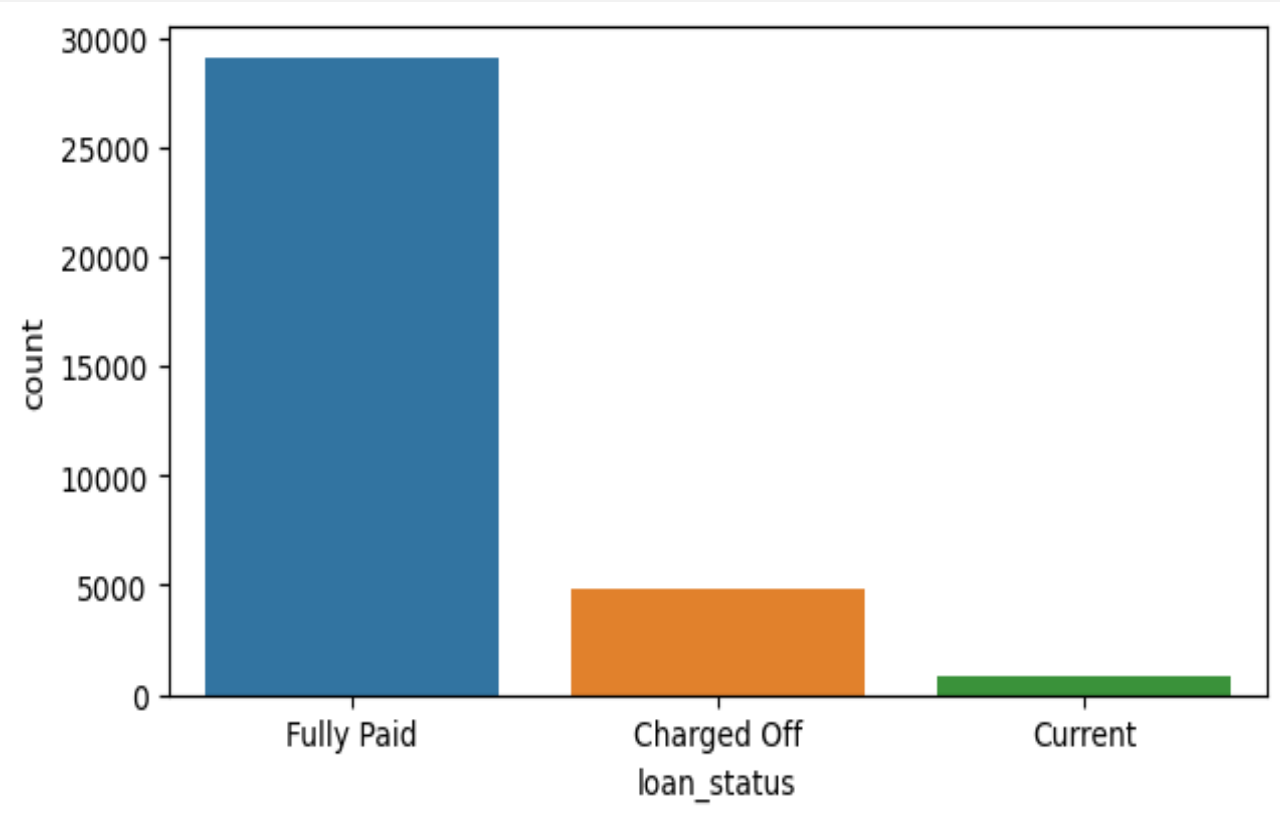
From The Above Graph We Observed That The Maximum Loan Amount Is 25000 Majority Of The People Taken The Loan Up To 10000 Majority Peoples Are From Rent



Home Ownership

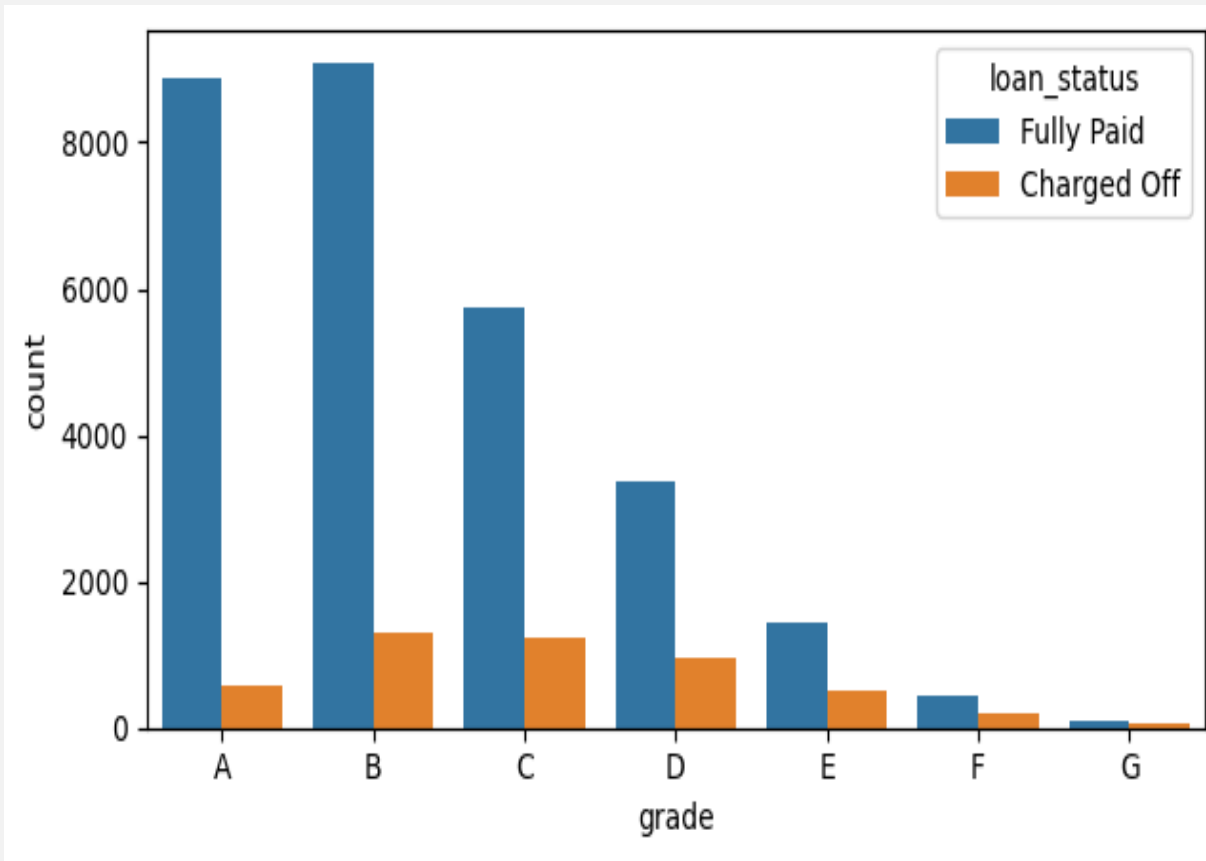
From The Above Plot Rent And Mortgage People Are High And Own And Other Less & 17500 Peoples Are From Rent And Mortgage

LOAN STATUS



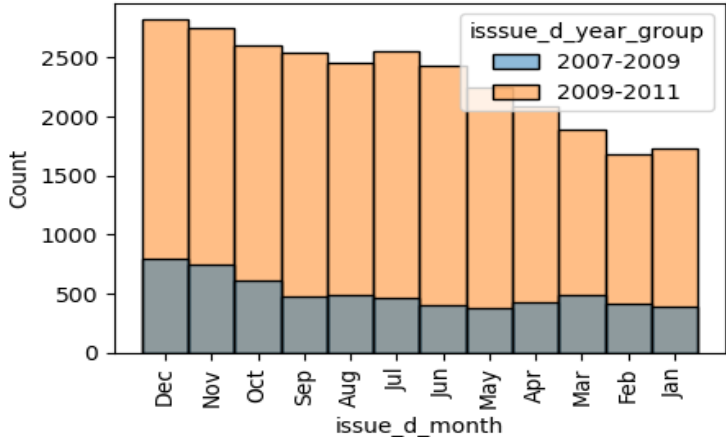
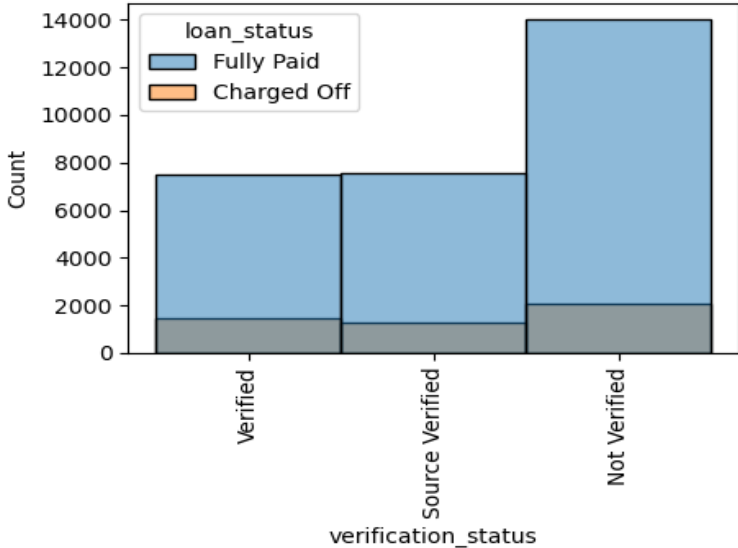
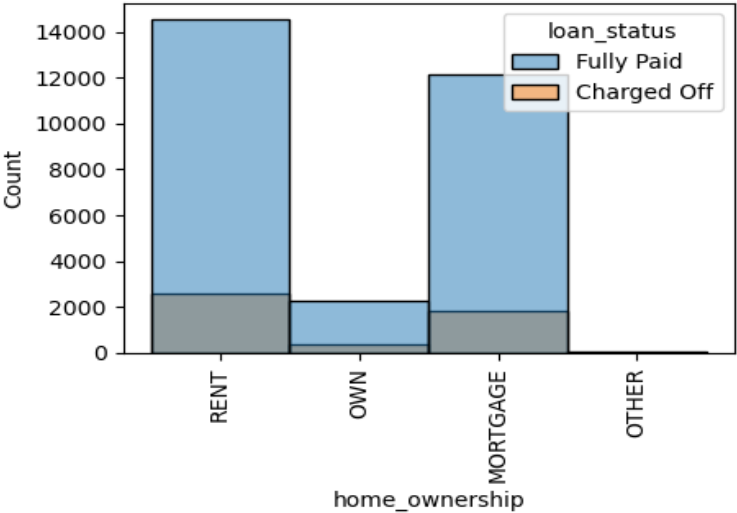
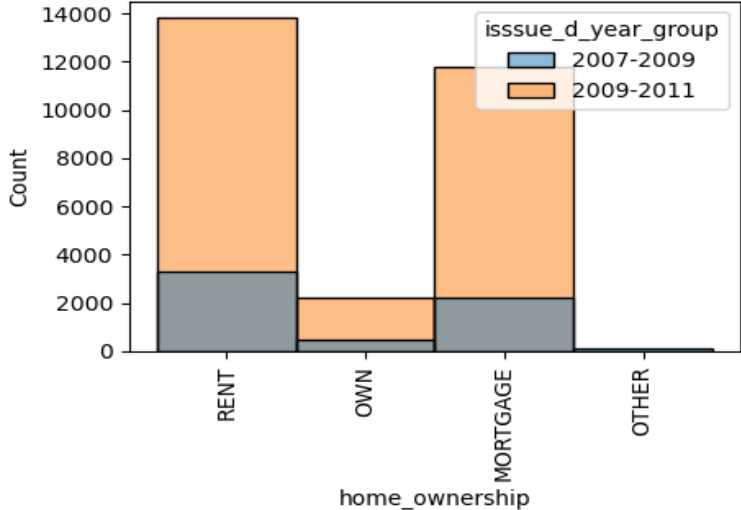
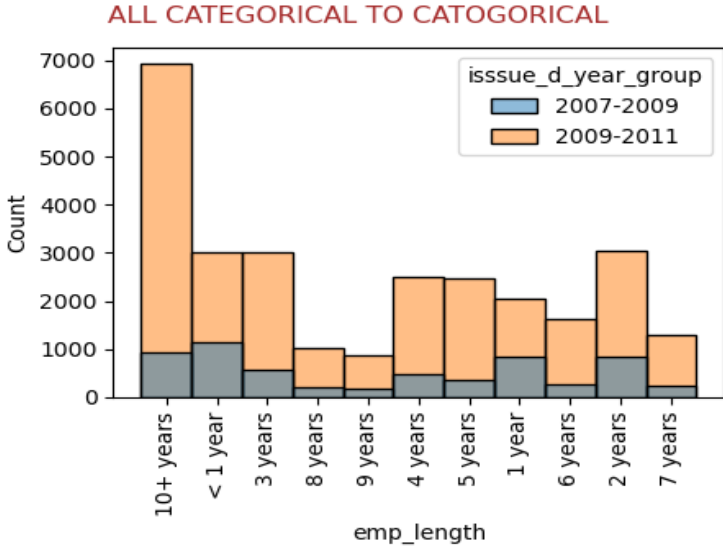
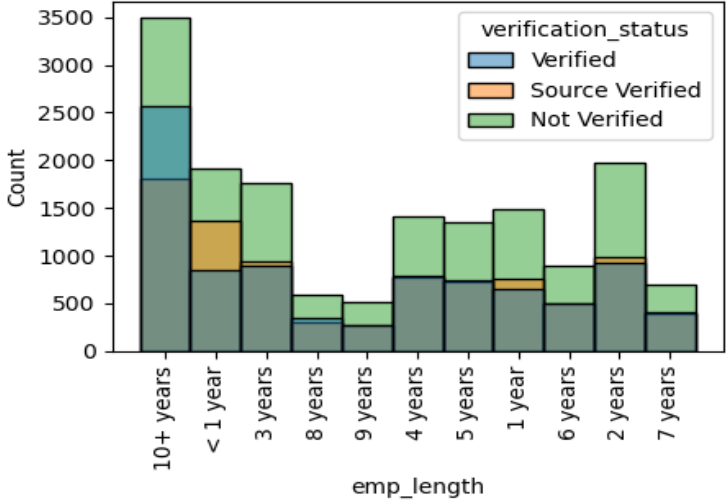
- In Loan Status We Have 3 Groups
 - Fully Paid
 - Charged Off
 - Current
- From The Above Plot Most Of The Applicants Are Fully Paid Where As Remaining Are Very Less Current Status Is Very Less
- Loan Status Also Plays Important Role To Find The Loan Applicants Is Default Is Or Not

GRADE

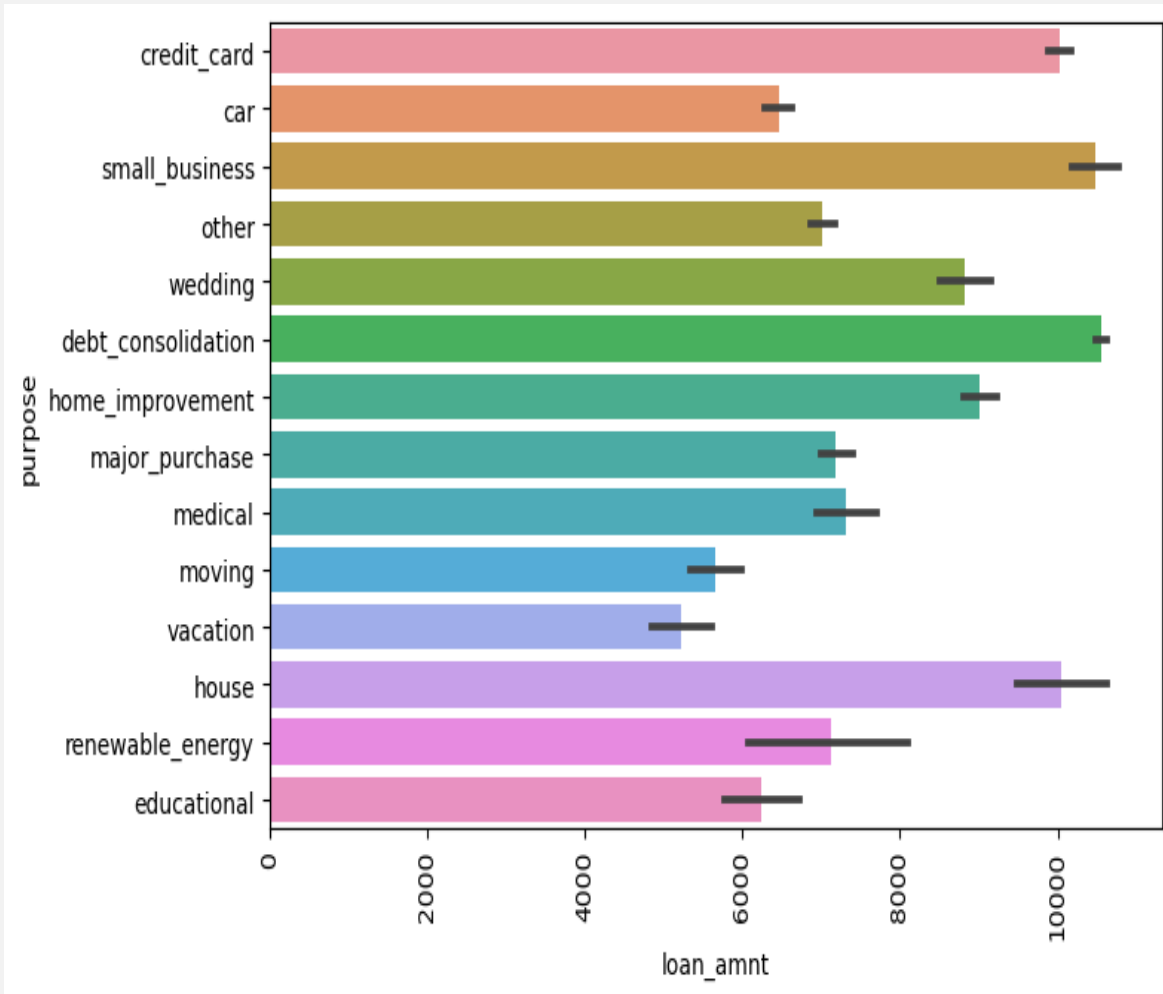


This Plot Explains That While Paying The Loan, Individuals' Grades Have Been Calculated According To The Payment Of The Loan. A Grades Indicate That The Majority Of Them Have Fully Paid, And There Are Very Few Charged Off. In F And G Grades, There May Be A Chance Of Default."

EMP_LENGTH & HOME_OWNERSHIP & ISSUE_D_YEAR & VERIFICATION_STATUS



PURPOSE AND LOAN AMOUNT



- From The Above Plot There Are Only Few Members Who Has Taken The Loan Amount Up To 10000 They Are:

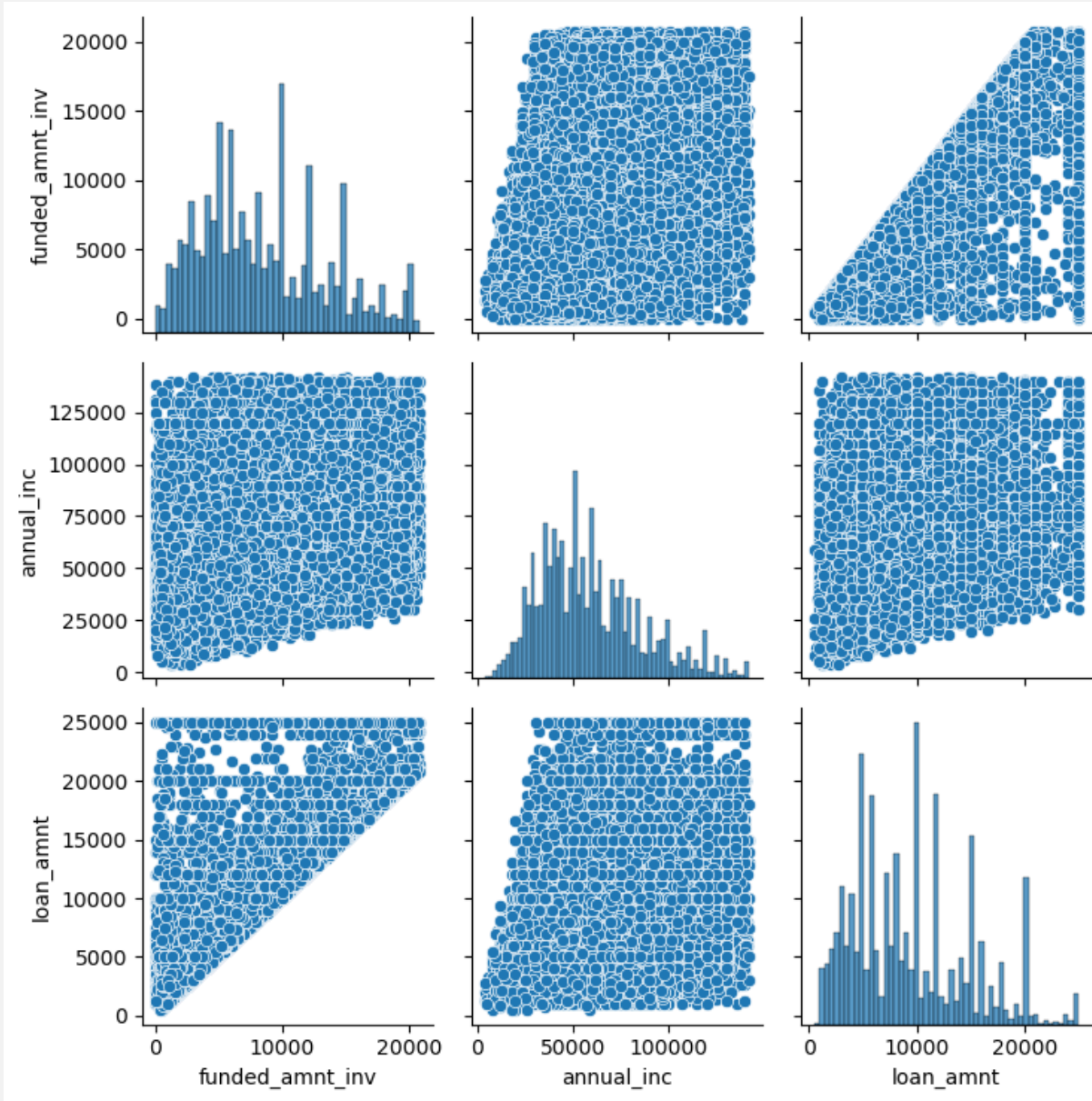
- Credit_Card
- Small_Business
- House
- Debt_Consolidation

- Some Of Them Are Taken Very Less Loan Amount Depending Upon Them

Here Are List of Purpose

- Car
- Other
- Wedding
- Home Improvement
- Medical
- Moving etc.....

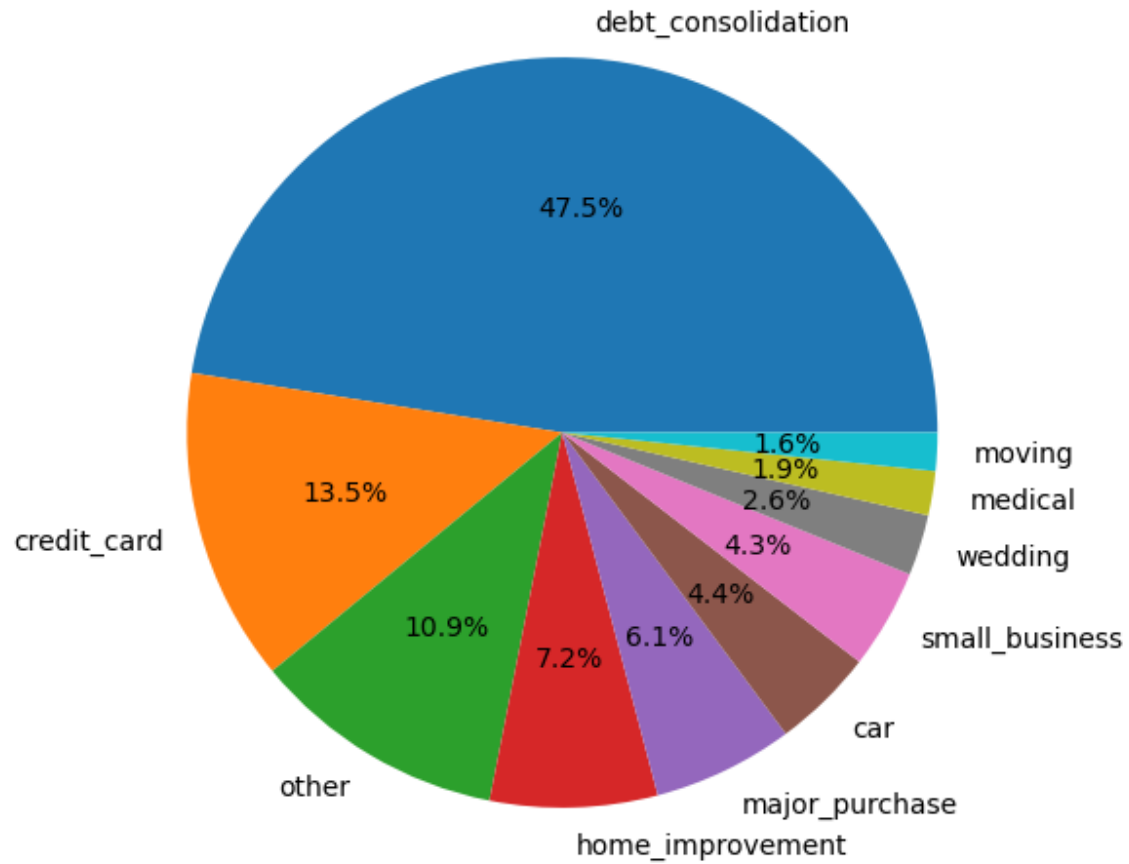
MULTIVARIATE ANALYSIS



This plot explains about the pair relation ship between the variables

- `Funded_amnt_inv`
- `Annual_inc`
- `Loan_amnt`

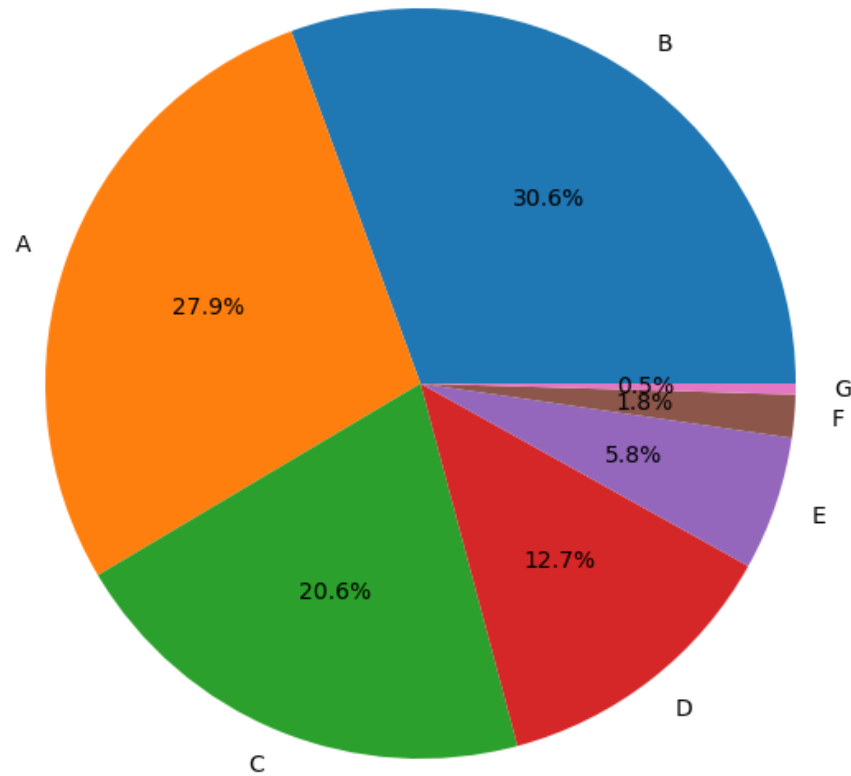
PURPOSE ON WHICH MAXIMUM LOAN IS TAKEN



- Important Features

- Debt_consolidation
- Credit_card
- Other
- Home_improvement

RANKING OF GRADE HOW THEY ARE PERFORMING

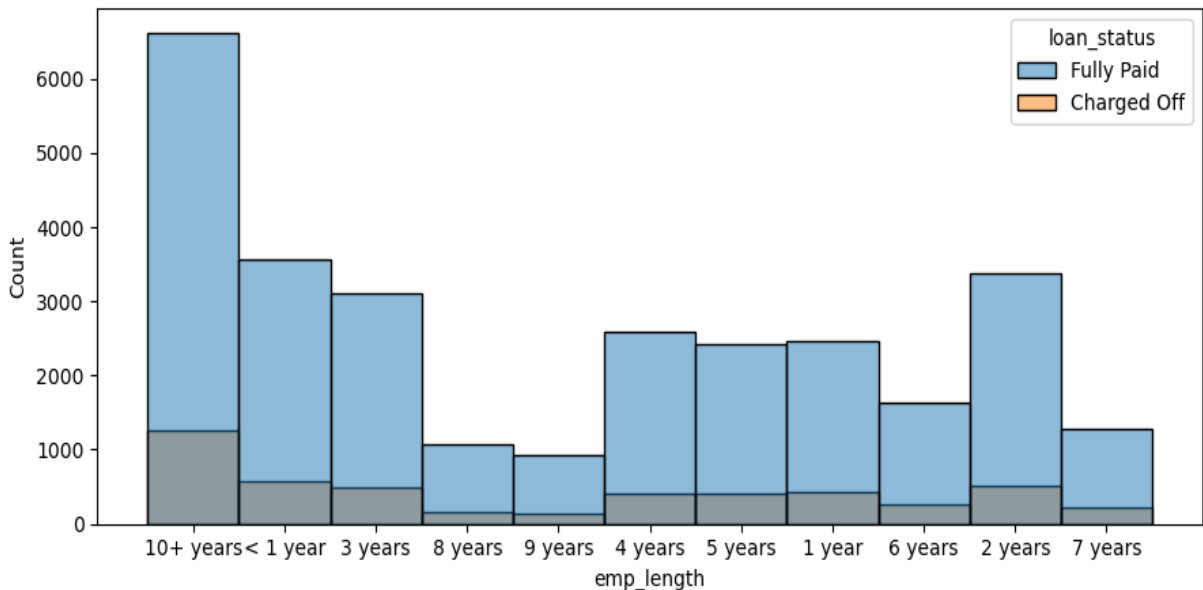
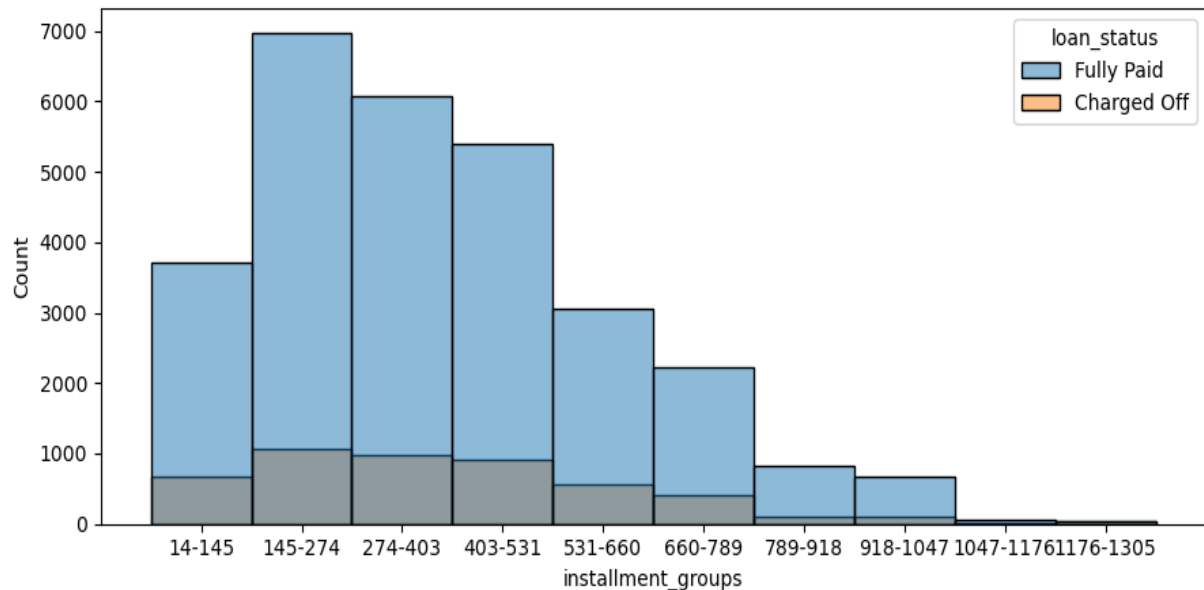
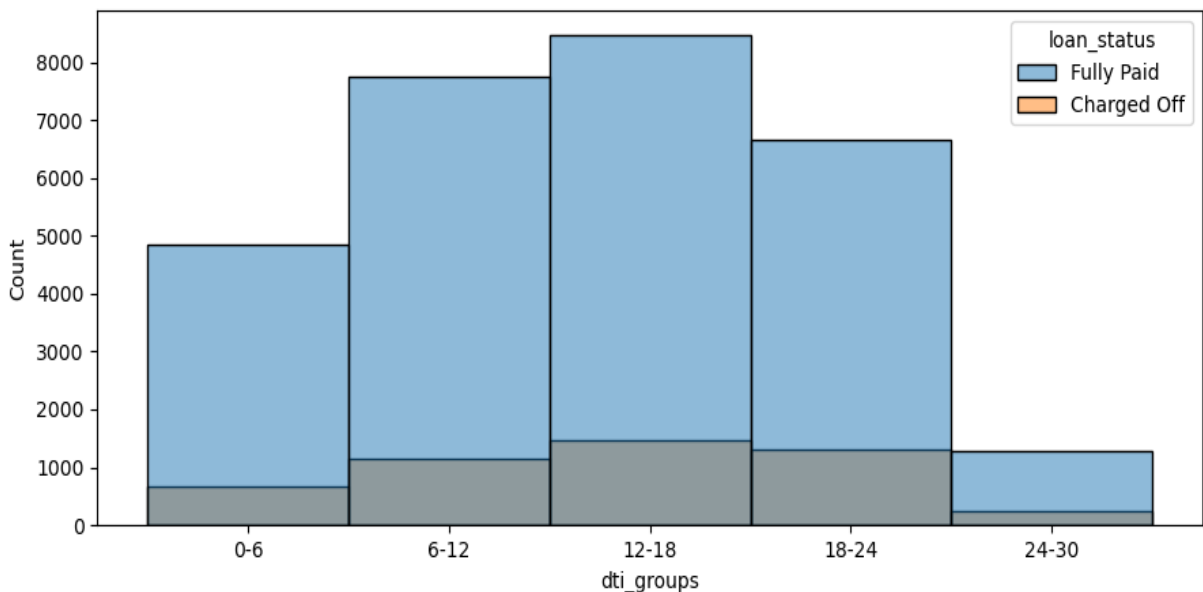
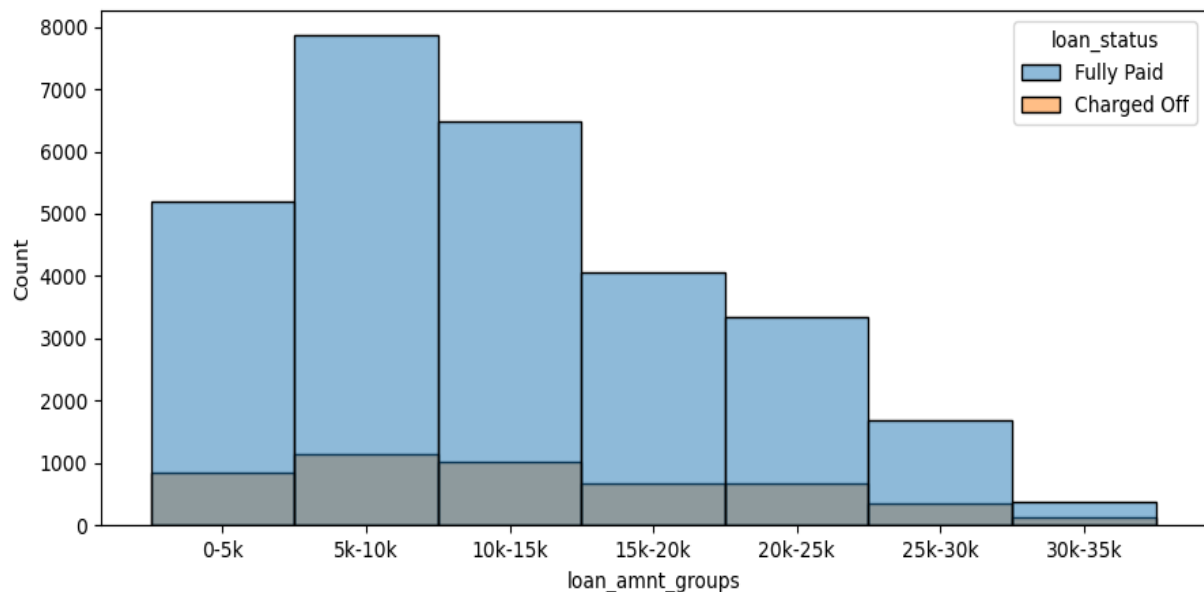


**Top 4 Grades Which Play Major Role
Which Prevent From Default The Loan
They Are:**

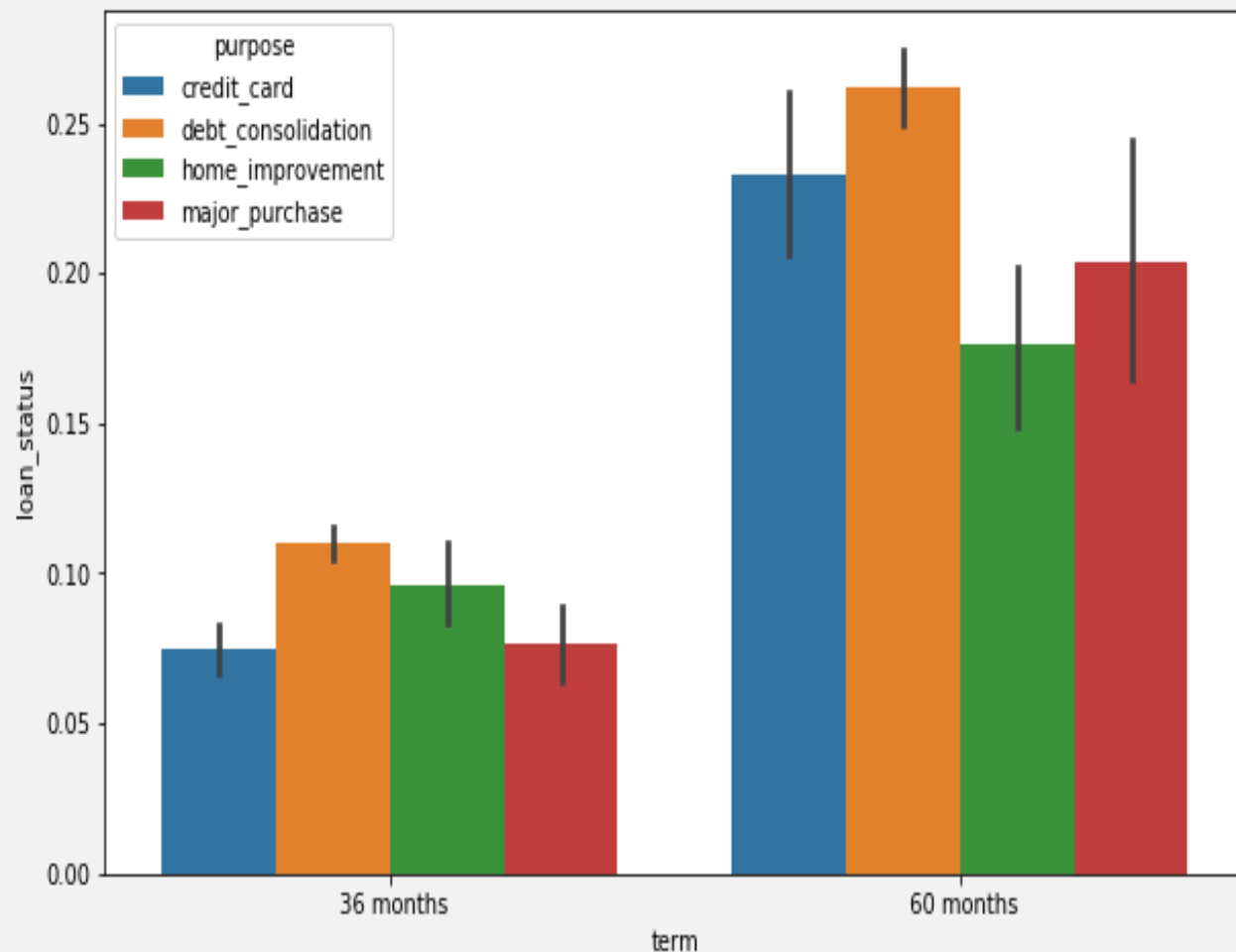
- **A**
- **B**
- **C**
- **D**

The Grade E Also Important But Very Less F And G May Effect To Our Analysis In Which There Are High Chance To Get Those Who Taken Loan May Go In Default Section

LOAN AMOUNT INSTALLMENT GROUPS & DTI_GROUPS



TERM AND PURPOSE



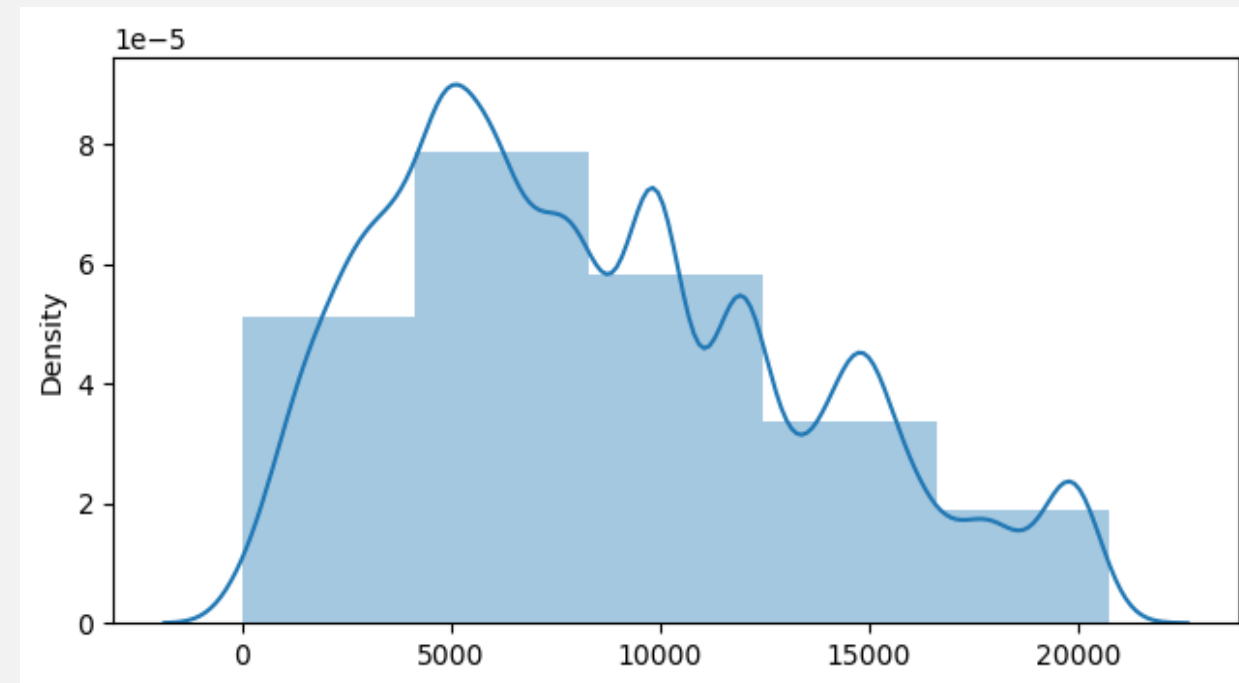
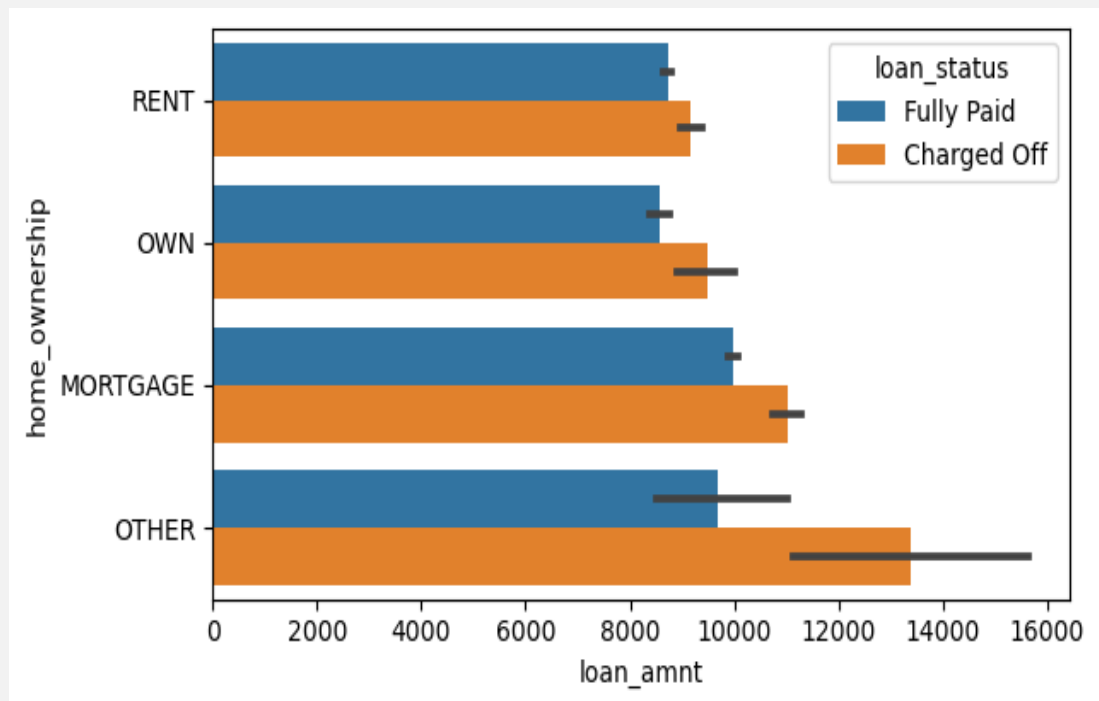
- From the above Histogram we observed that we have visualized the data among term & loan status including the purpose of the loan
- The term of the loan has 36 months and 60 months
- From the 36 months the debt_consolidation is high then home_improvement then credit card
- From the 60 months the debt_consolidation is high then credit_card in this term the major_purpose is increased 15 % as compared to to 36 month

FUNDED AMOUNT & LOAN AMOUNT

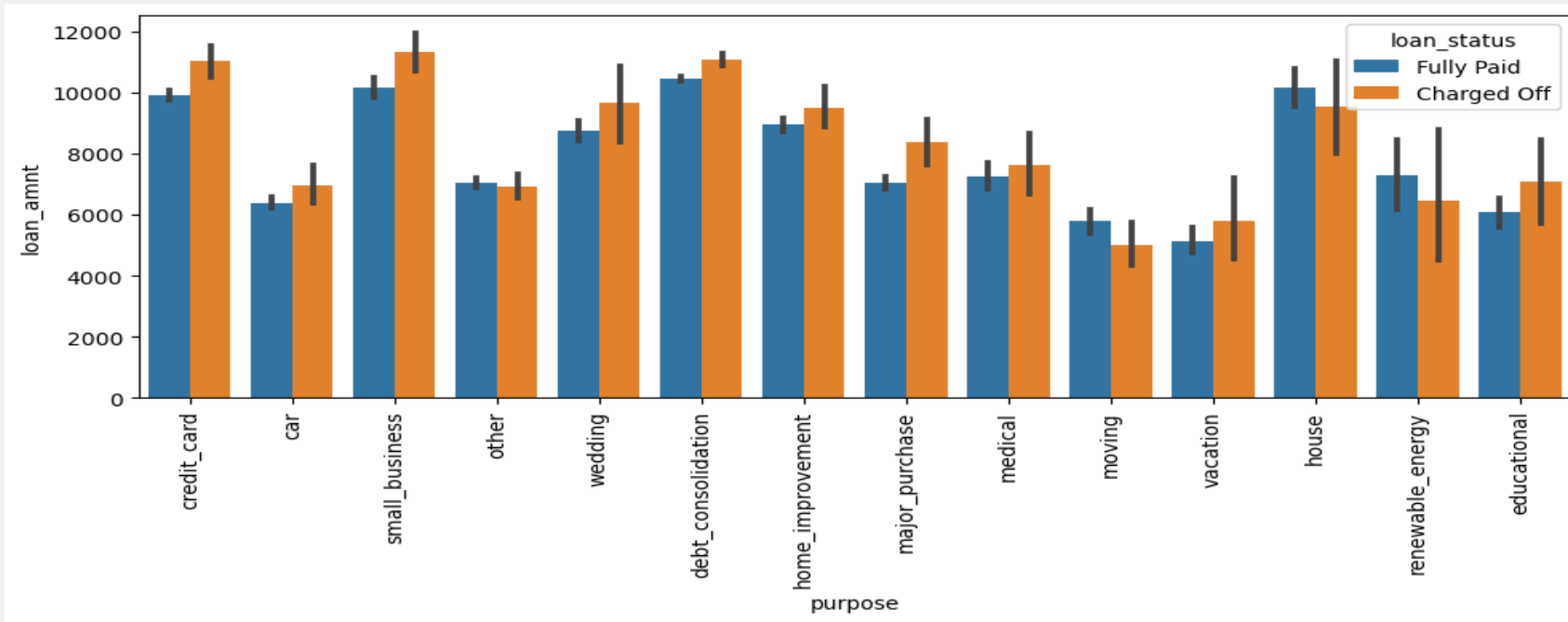
From the above one is funded amount and another one is loan amount

The funded amount is slightly right skewed and the average shows 5000 and there is slightly increasing and decreasing from 10000 to 20000

Where as from another plot the loan if up to 16000. mainly all them are maintaing equally



PURPOSE AND LOAN AMOUNT



As They Have Taken The Loan Fully Paid Is More But The Problem The In All The Cases In Which The Loan Is Taken Charged Of Is More Where Ever You Observe The Charged Off Is More There Might Be Chance Of Getting Default

RECOMMENDATIONS:

- Reduce The Interest Rate And Check The Background Verification Of Those Who Have Applied For Loan Should Have Good Cibil Score & Monthly Income He/She Should Be Verified.
- Decrease The Loan Amount For Which Those Who Have Rent Mortgage House
- Give The Loan For Only 36 Months
- We Notice That Out Of All The Data There Are Less Number Of Charged Off
- Most Of The Taken House Who Have Rent House And Mortgage House
- To Consider Most Of The Loans Are Fully Paid
- If We Compare To Loan Amount Vs Purpose Most Of The Cases There Are Equally Paid And Charged Off
- Those Who Have High Annual Income They Have Taken Loan
- Overall Less Charged Off
- For One Column Data Loan Status And Purpose Then We See That Debt Consolidation Has Fully Paid And Charged Off Is Very Less
- Low Annual Income Has Low Funded Amount