Lending Club Case Study

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Abstract

❏ Lending club 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.

❏ The objective of analysis is to use the information about past loan applicants and find whether they 'defaulted' or not.
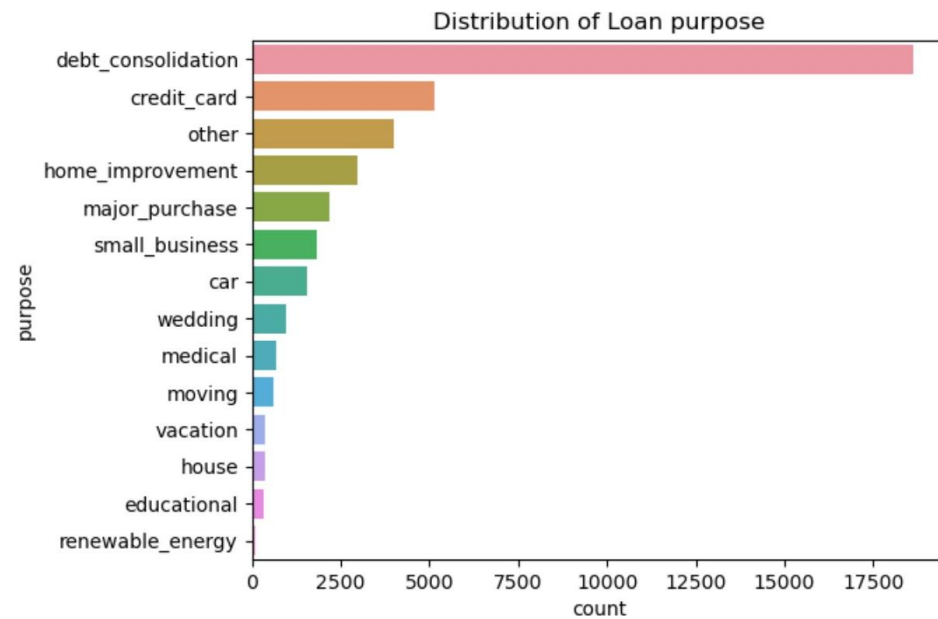
Analysis
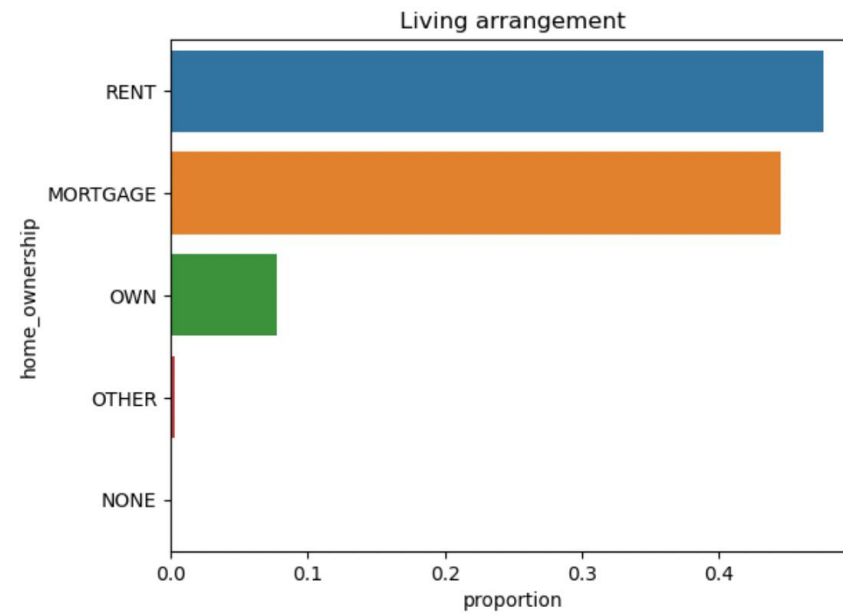
Observation:

It is evident that most of the loan borrowers have either rented a house or have morgage on their house.
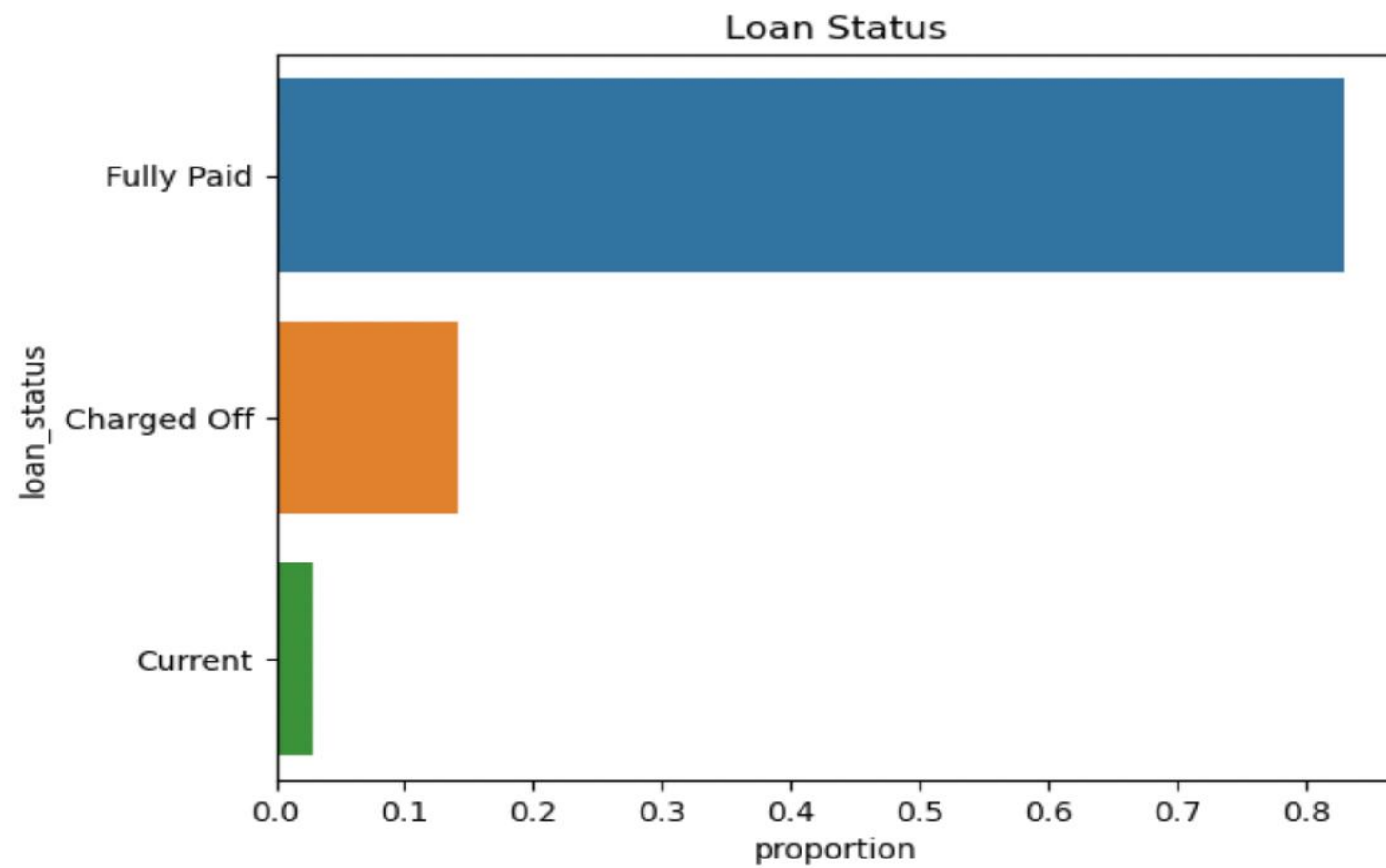
Observation:

Most of the loan disbursed by the bank has been paid back completely.
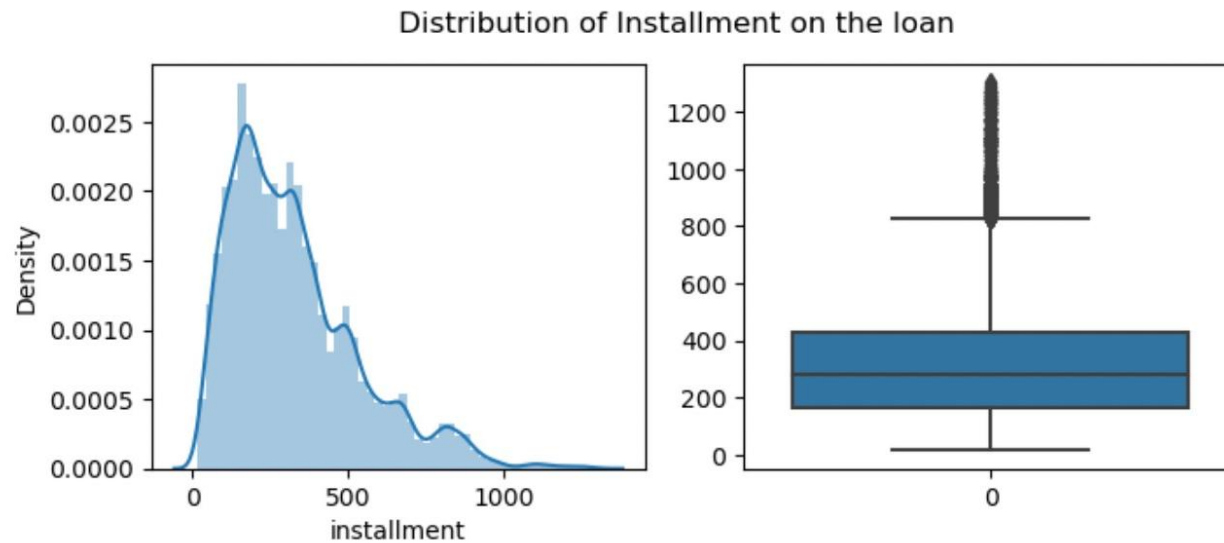
Purpose Vs Loan Status

Distribution of Loan purpose

Observation:

It can be interpreted from the plot above that the top 3 reasons of burrowing the loan are 'debt_consolidation', 'credit card' payments & 'other' expenses

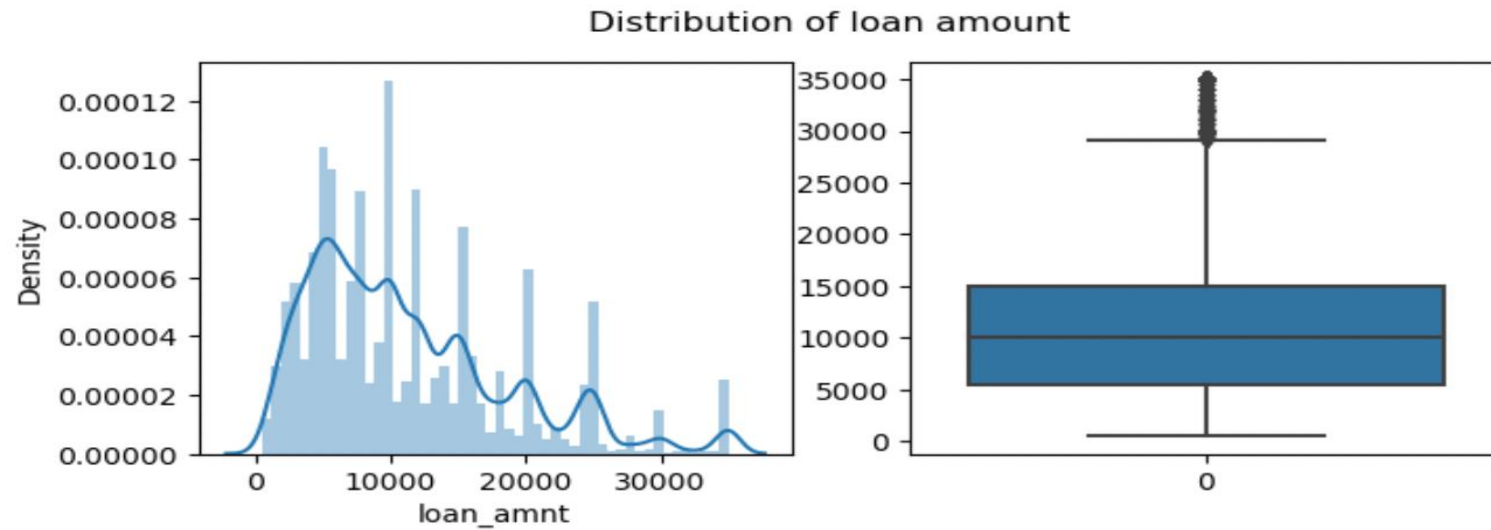# Installment vs Interest rate

Distribution of Installment on the loan

Observation:

It seems that most of the loan have the installment in the same range, more can be found in bivariate analysis of observing intallment against loan or interest rate

Distribution of loan amount among the Borrowers

Distribution of loan amount

Observation:

It can be seen in the above plot that # loans ditributed are on the side with lower amount of the loan indicating that the bank is more likely to provide the loan to the borrowers who are less likely to default while the # of loans distributed is significantly less where the loan amount is high and the interest rate is high as well. This reduces the loss that the bank may have to bear in case of a charge off as higher interest on higher amount of loan can lean to quicker recovery of the principal amount disbursed.

Interest rate Vs Borrowers

Distribution of Interest Rate
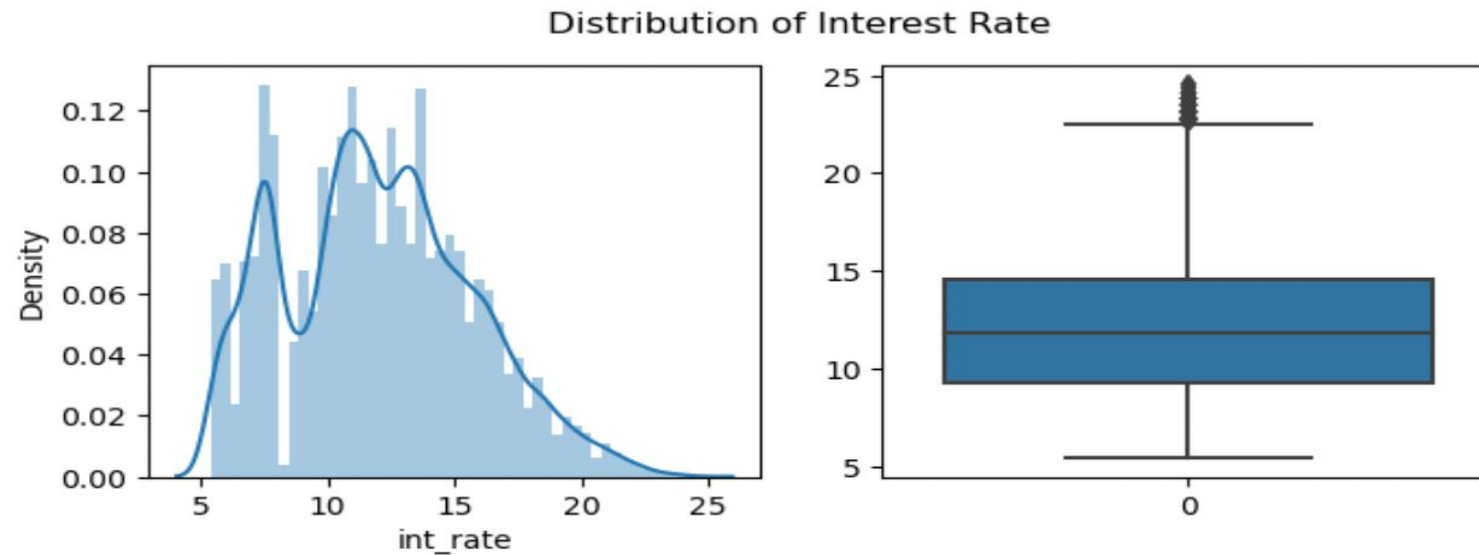
Observation:

It seems that the interest rate for most of the people falls in the category of the average loan interest with some being on the lower side indicating that they have a good credit score/track record of paying back the borrowed amount while some being on the higher side showing they can default the loan and run away with the money
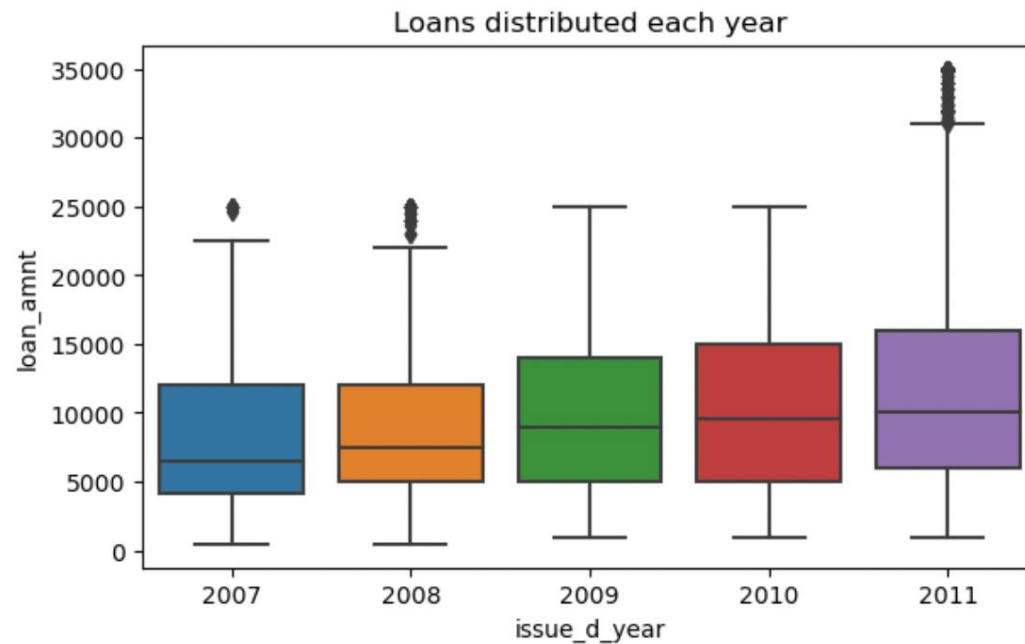
Distribution of Annual Income
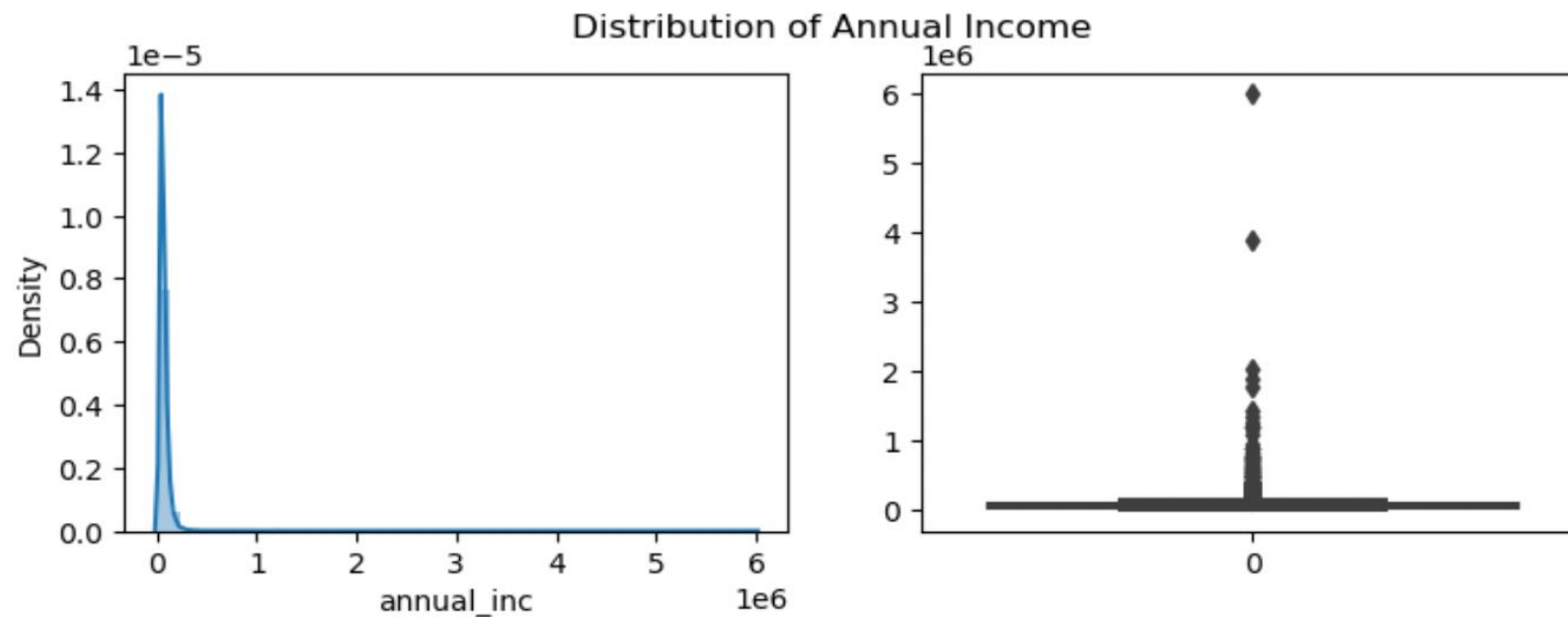
Observation:

It can be observed that most of the income are in the lower bracket with some being the outliers in the upper percentile
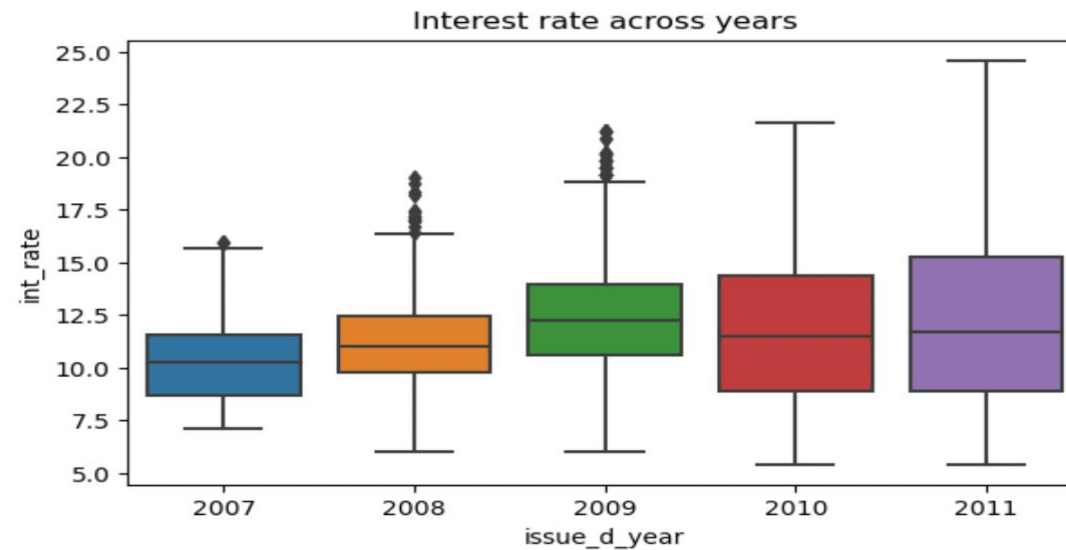
Loan Amount Distributed across the years

Observation:

Number of loans distributed show a gradual increase from 2007 to 2011

Interest rate across the years

Interest rate across years

Observation:

Following can be observed from the plot above:

1. Loans distributed in 2007 & 2008 have lower interest rates between 10-11%
2. Mean interest rate increases year on year from 2007 to 2009 and then decrease from 2010 - 2011
3. Interest rates are closer to the mean for the # of loans distributed in 2007, 2008, & 2009 while the interest rates in 2010 & 2011 are further spread from the mean.

Interest rate Vs Term plan
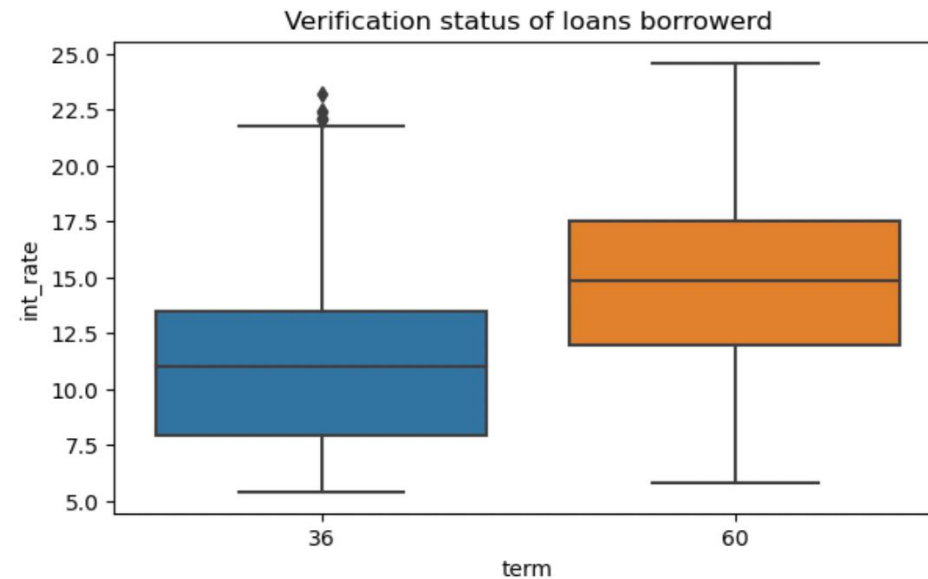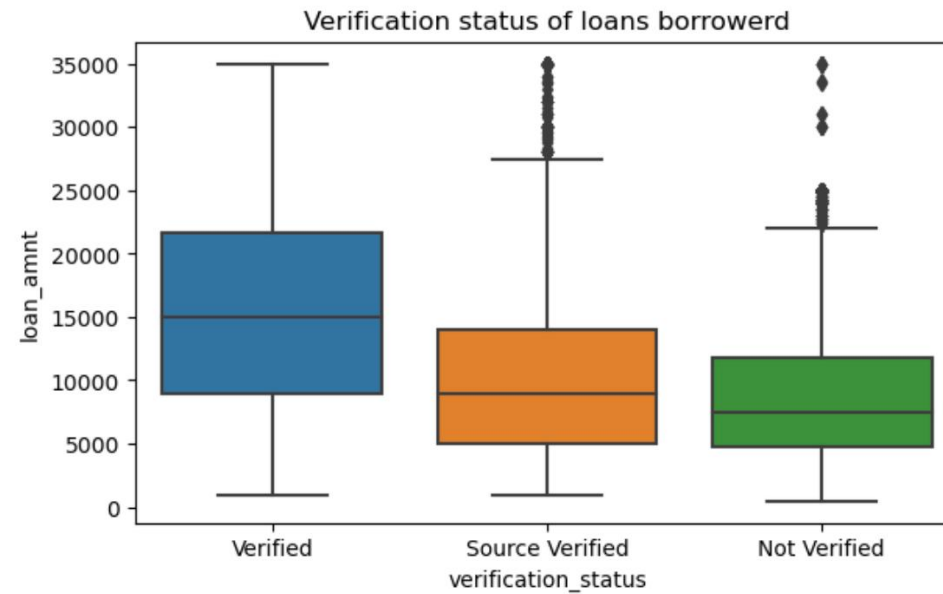

Observation:

Mean interest rate is as high as 15% as compared with higher tenure loans of tenure with 60 months as compared to loans with lower tenure of 36 months having mean interest rate of 11%

Verification Status of all the borrowers
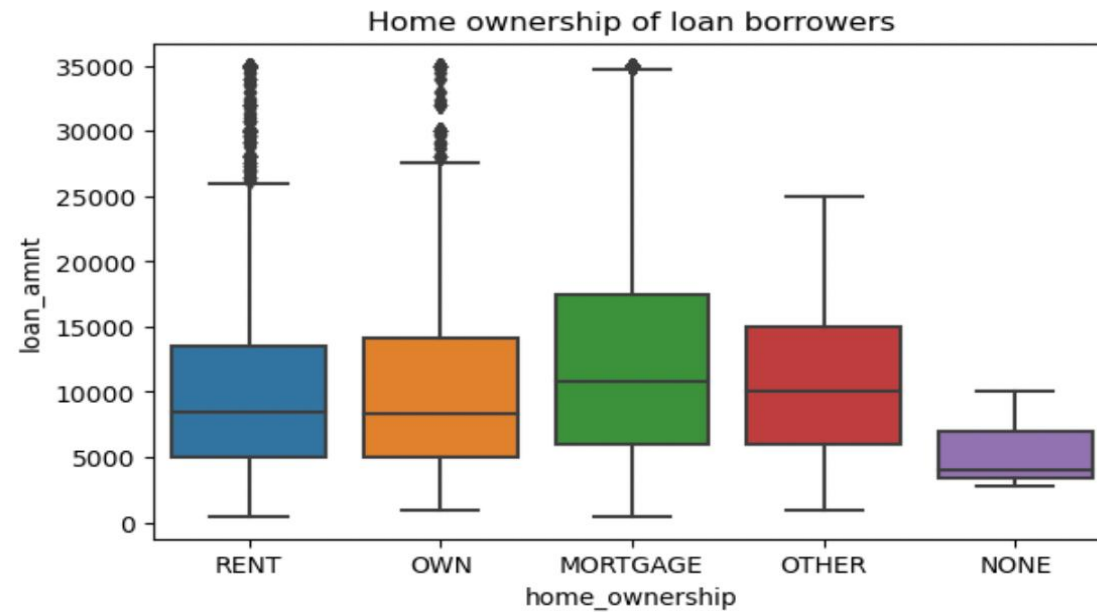

Observation:

Most of the loan borrowed have been verified. Additonally, the median of loan disbursed is higher for the verified loans.

Home Ownership Vs Loan Amount

Home ownership of loan borrowers

Observation:

Most of the borrowers are from the Mortgage owned homes. Additionally, the median loan amount is higher for the borrowers with mortgage owned homes.

Term of loan amount
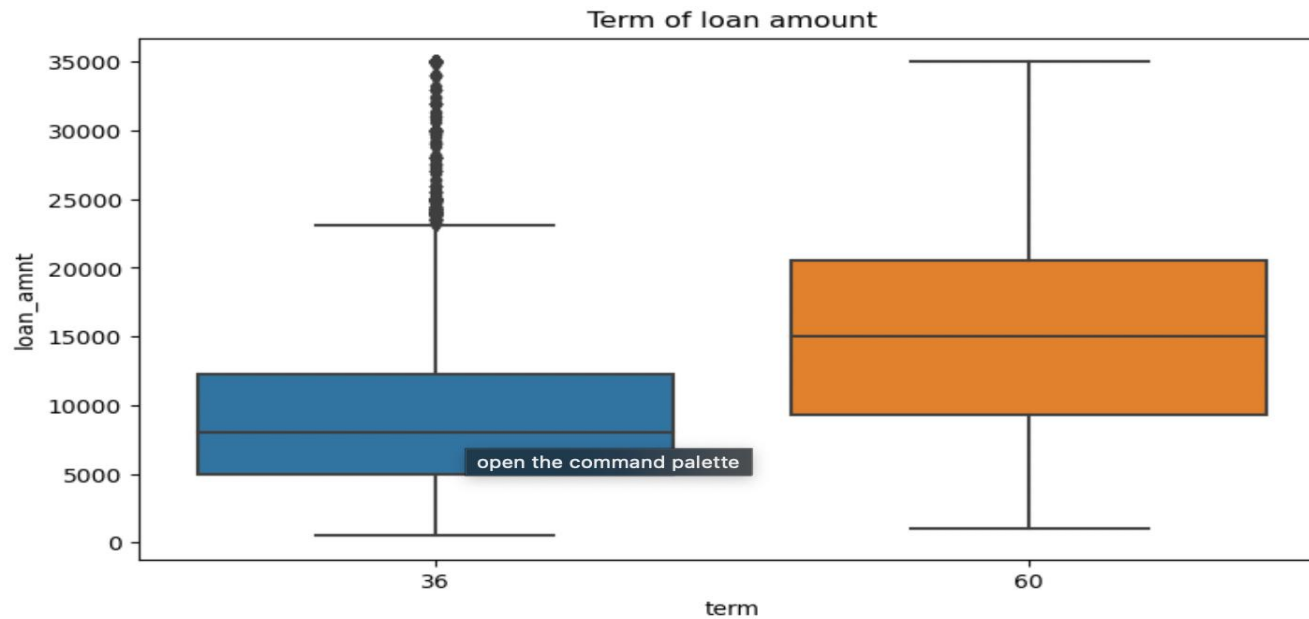
Observation:

Following can be interpreted from the plot above:

1. Loan with lower amount have a tenure of 36 months but there are loan of huge sum that are an outlier in this category meaning that there are loan with sum > 20000 having tenure of 36 moths
2. Loan with higher amount have a tenure of 60 months

Purpose Vs Loan Status(charged off)

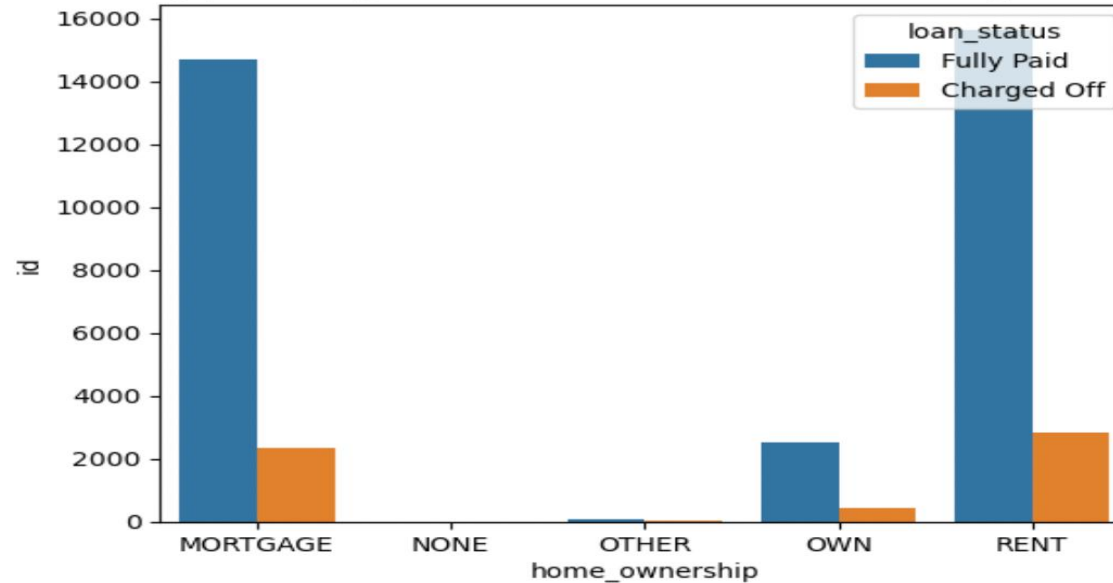# of people who fully paid/charged off the borrowed across different types of living arrangements

Observations:

Following can be observed from the plot above:

1. Lesser number of loans have been disbursed for the poeple who own a house and are least likely to default a loan (not considering the 'OTHER' category)
2. People with Mortgage on their house are less likely to default on the borrowed loan as compared to people who have live in a rented house

Borrowed Loan Vs Term

# of people who fully paid/charged off the borrowed loan per term
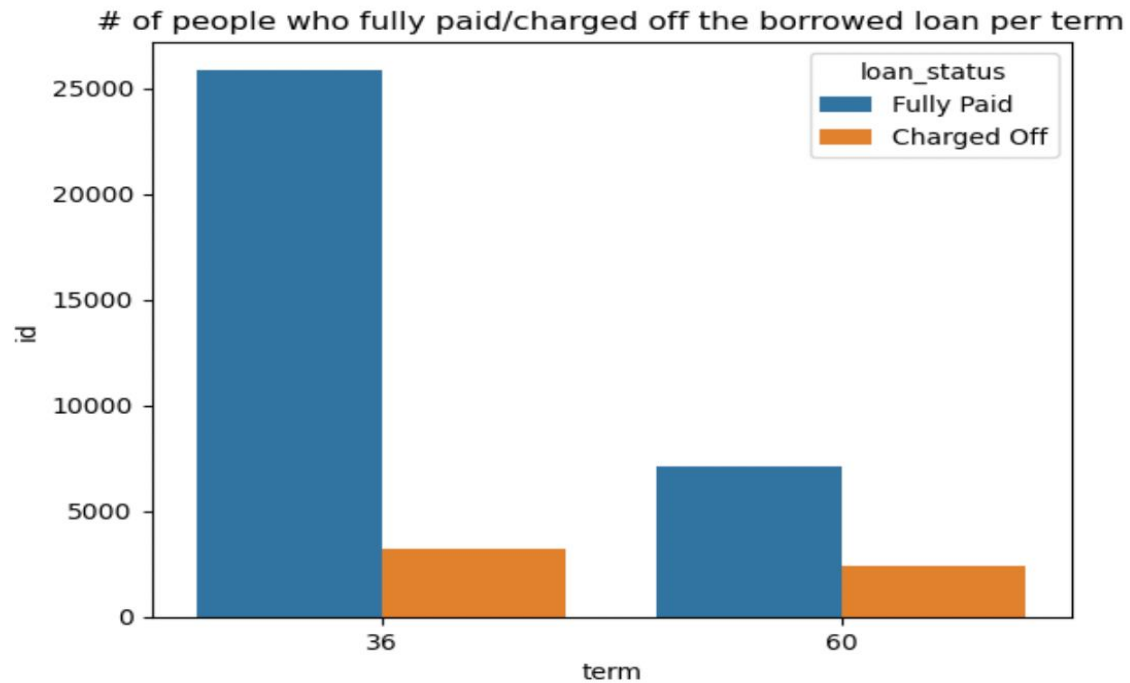
Observations

People with lesser term of the loan have a higher tendecy to fully pay back the borrowed loan. OR People who intend to fully back the loan ususally borrow the loan for a shorter term.

Borrowed Loan Vs Years

of people who fully paid/charged off the borrowed loan per year
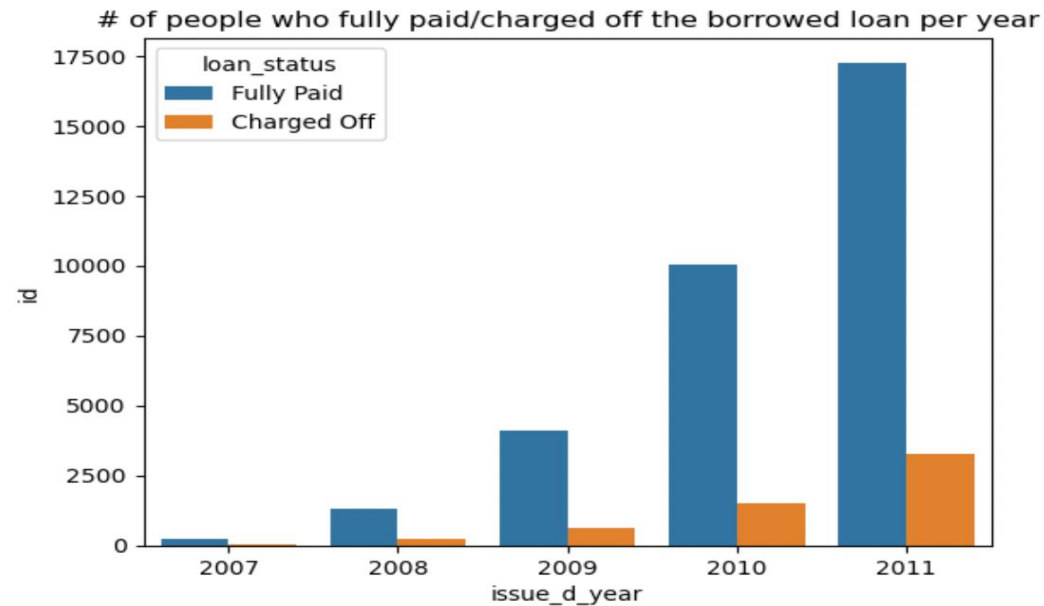
Observations:

Following can be interpreted from the plot above:

1. no. of loans distributed by the bank grows year of year
2. no. people who are fully paying back the borrowed sum also grows per year significantly
3. slight jump is observed for 2010 & 2011 in the # of borrowers that are defaulting and not paying back the borrowed

Observations

Strong Correlations:

- Loan amount, investor amount and funding amount are strongly correlated.

- Annual income is negatively correlated with the debt-to-income ratio(DTI).

Income and DTI:

- Lower annual income is associated with higher DTI, indicating a financial strain.

Income and Employment:

- There is a positive correlation between annual income and employment years, suggesting that income tends to increase with work experience.

Observations

Loan Amounts and Interest Rates:

- Most loan amounts fall in the range of $5,000 to $15,000

- Most interest rates are in the range of 10% to 15%

Annual Income Distribution:

- Borrowers annual incomes are primarily in the range of $40,000 to $80,000.

Observations

Loan status:

• Approximately 14% of loans were charged off.

Loan Purpose:

• Debt consolidation and paying credit card bills are the most common loan purposes.

• These purposes also have a relatively high number of charged-off loans.

Home Ownership:

• Most borrowers either rent or have mortgaged their homes.

• These categories also have a relatively high number of charged-off loans.

Observations

Loan Term:

- Loan with a 60 month term have a higher percentage of applicants and charged off compared to 36-month loan term.

Income and Default Risk:

- Higher income ranges, especially $80,000 and above, have lower chances of loan default.

Loan purpose and Default Risk:

- Small business applicants have a higher likelihood of loan default.

- Renewable energy loans have a comparatively lower default rate.

Observations

Employment and Default Risk:

- Borrowers with no work experience or less than 1 year of experience have a higher chance of default.

Loan purpose and Loan Amount:

- Loans for small business purposes tend to have higher median, 75th percentile and 95th perecentile loan amounts.

Loan Term and Interest Rate:

- Loans with longer terms(eg.; 60 months) generally have higher interest rates.

Conclusions

Loan status:

- Approximately 14% of loans were charged off.

- The number of loan applications has been increasing over the time.

Factors to be noted:

- Loan term impacts default rates, with longer-term loans having higher default rates.

- Higher income ranges are associated with lower default risk.

- Loan purpose, grade, interest rate and employment history significantly affect default risk.