PRESENTATION ON LOAN EDA CASE STUDY

Purpose:

- Credit risk analysis will help the company to make a decision for loan approval based on the applicant's profile. Which controls loss of business to the company and avoid financial loss for the company.

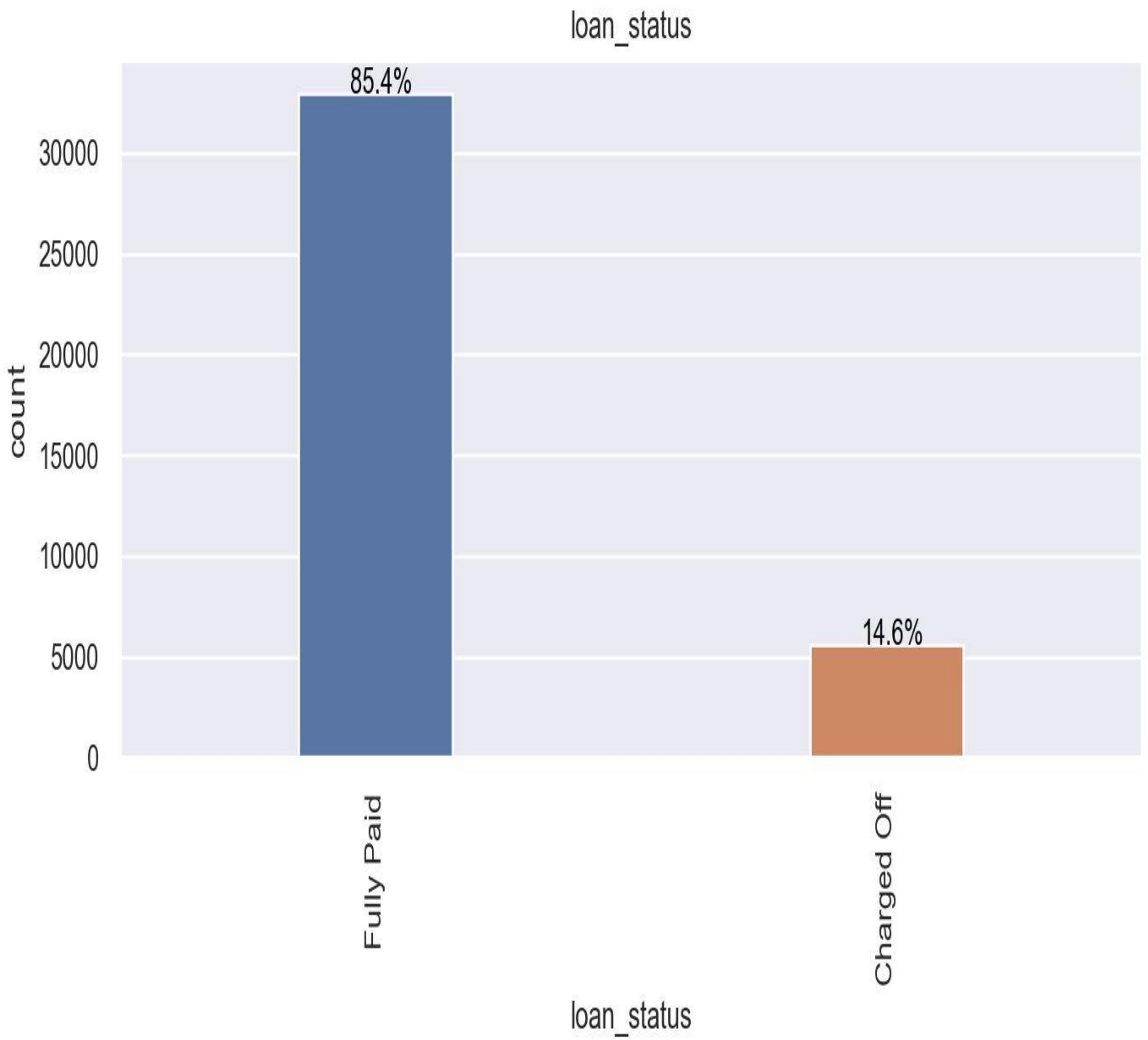
The following are the steps involved in the exploratory data analysis process:

1. Data sourcing.
2. Data review and data cleaning.
3. Fixing the null value.
    1. Dropping the columns having 100% missing values
    2. Dropping columns with high percentage of missing values.
4. Filter the data.
    1. Dropping the post-loan data columns and unwanted columns
    2. Sub-setting loan-status columns either are charge off and fully paid.
5. Data analysis:
    1. Univariate analysis
    2. Bivariate analysis
    3. Multivariate analysis
6. Recommendations.

Univariate Analysis

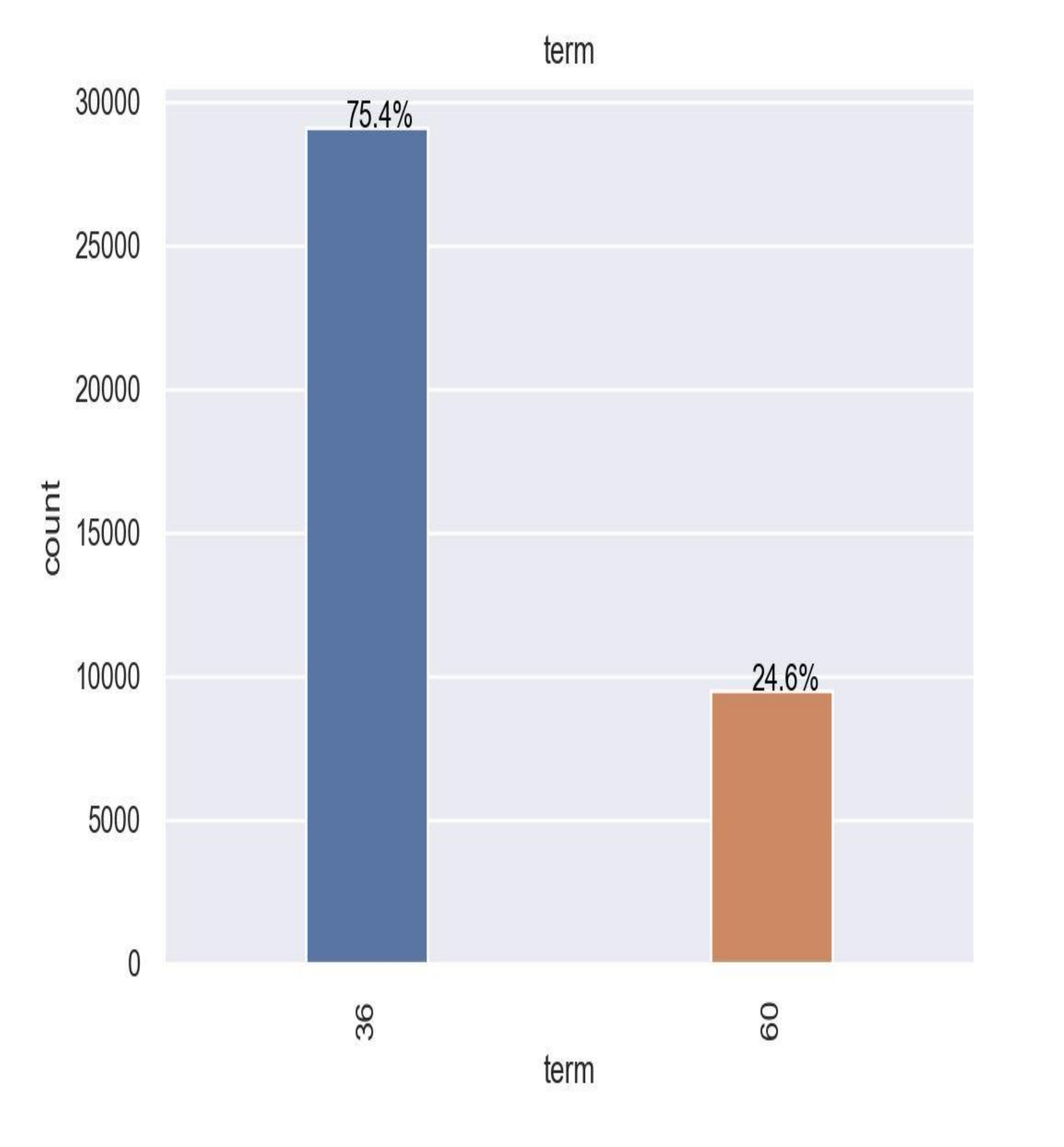
Analysis of loan status :

Out of all the applicants, only 14.6% have been charged off.



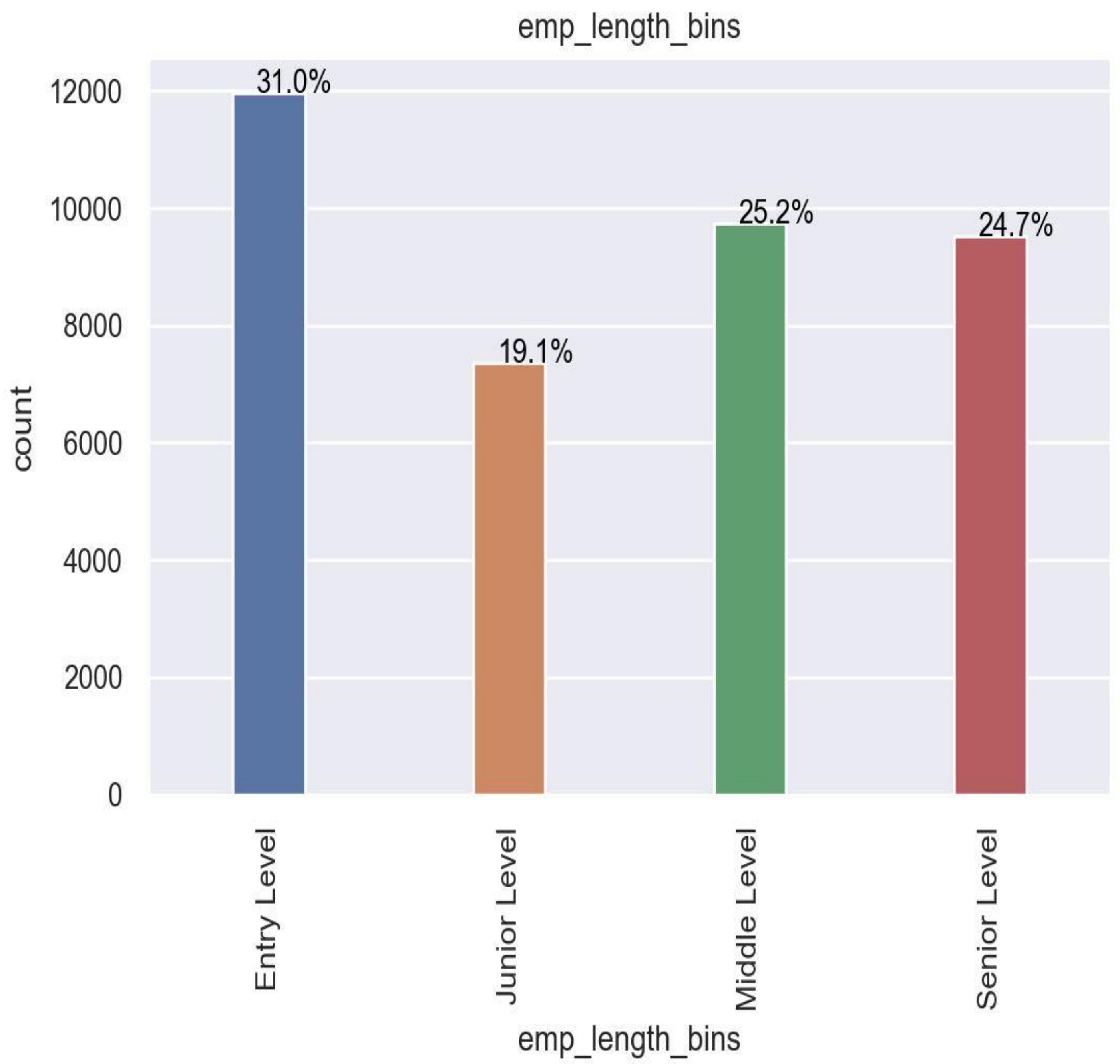
Analysis of terms:

The majority of loan applicants prefer **short-term loans**(36 months) and long-term loans (60 months) roughly accounts only 25% of total of applications.



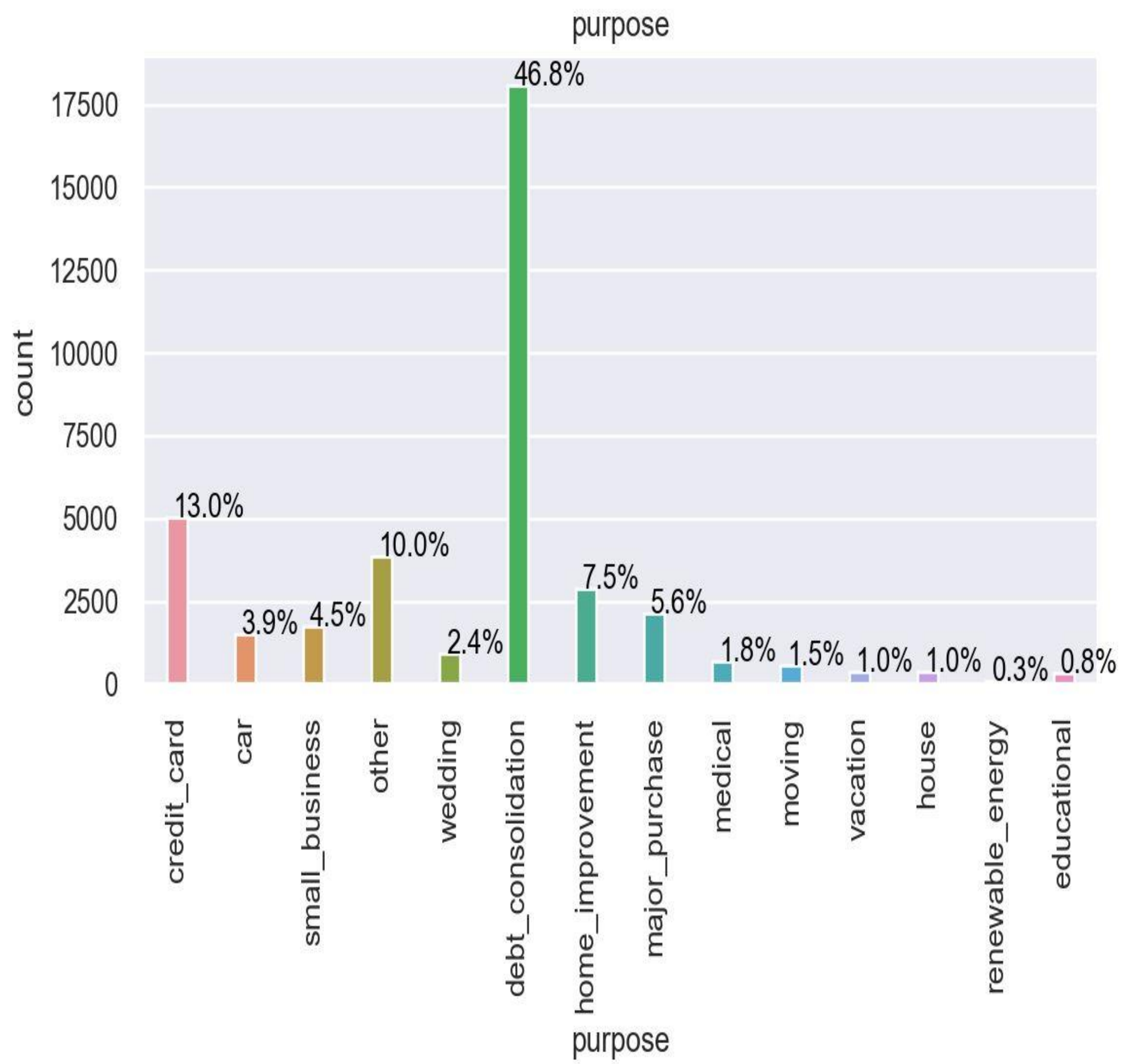
Analysis of employment length:

We categorized employee experience into four groups. Typically, **junior employees** with 0.5-2 years of experience have the highest percentage of loan applications, followed by middle and senior level employees.



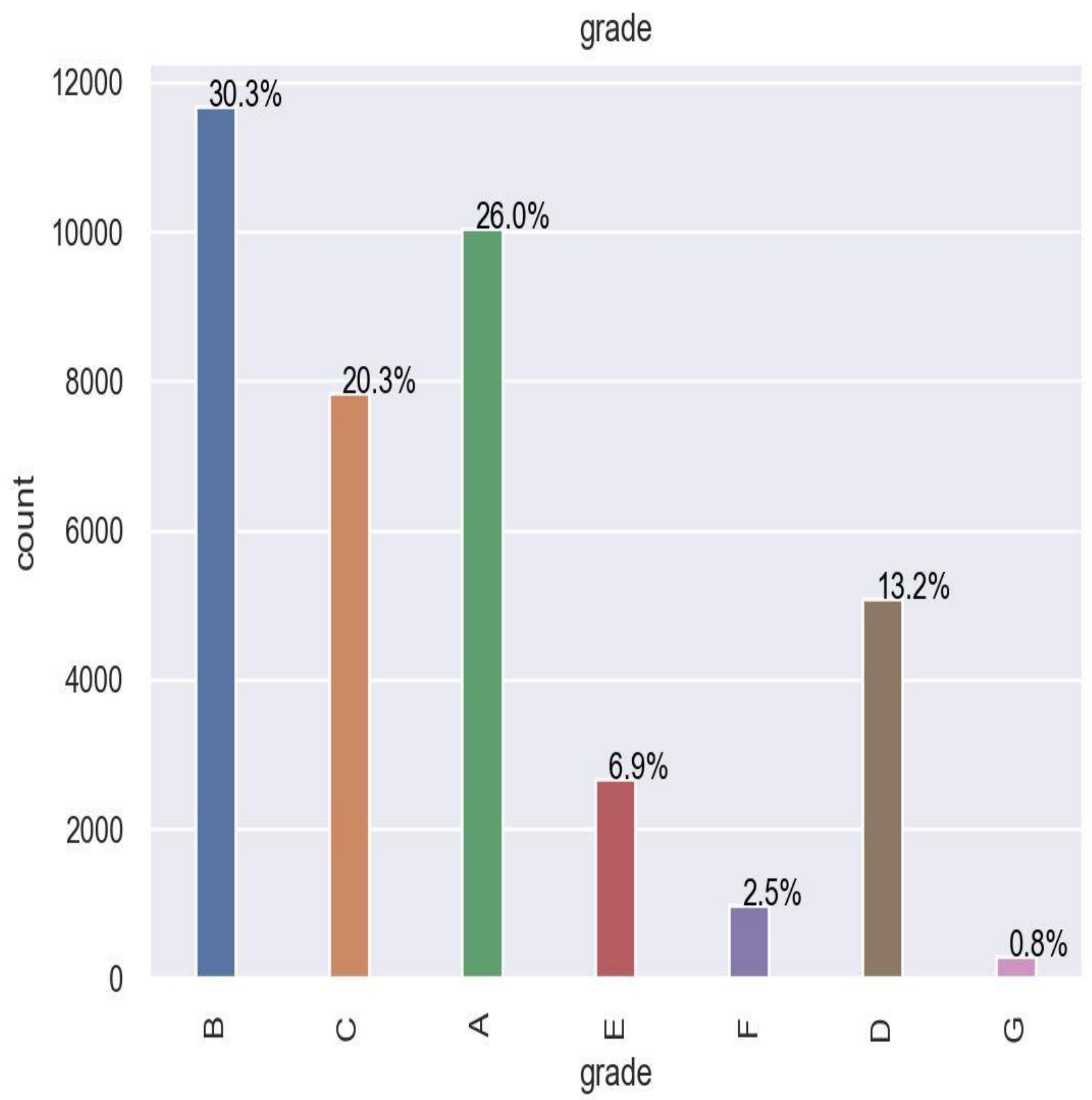
Analysis of purpose:

A significant portion of loans, approximately 60%, have been utilized for the purpose of **debt consolidation(including credit)** and to tackle existing debt.



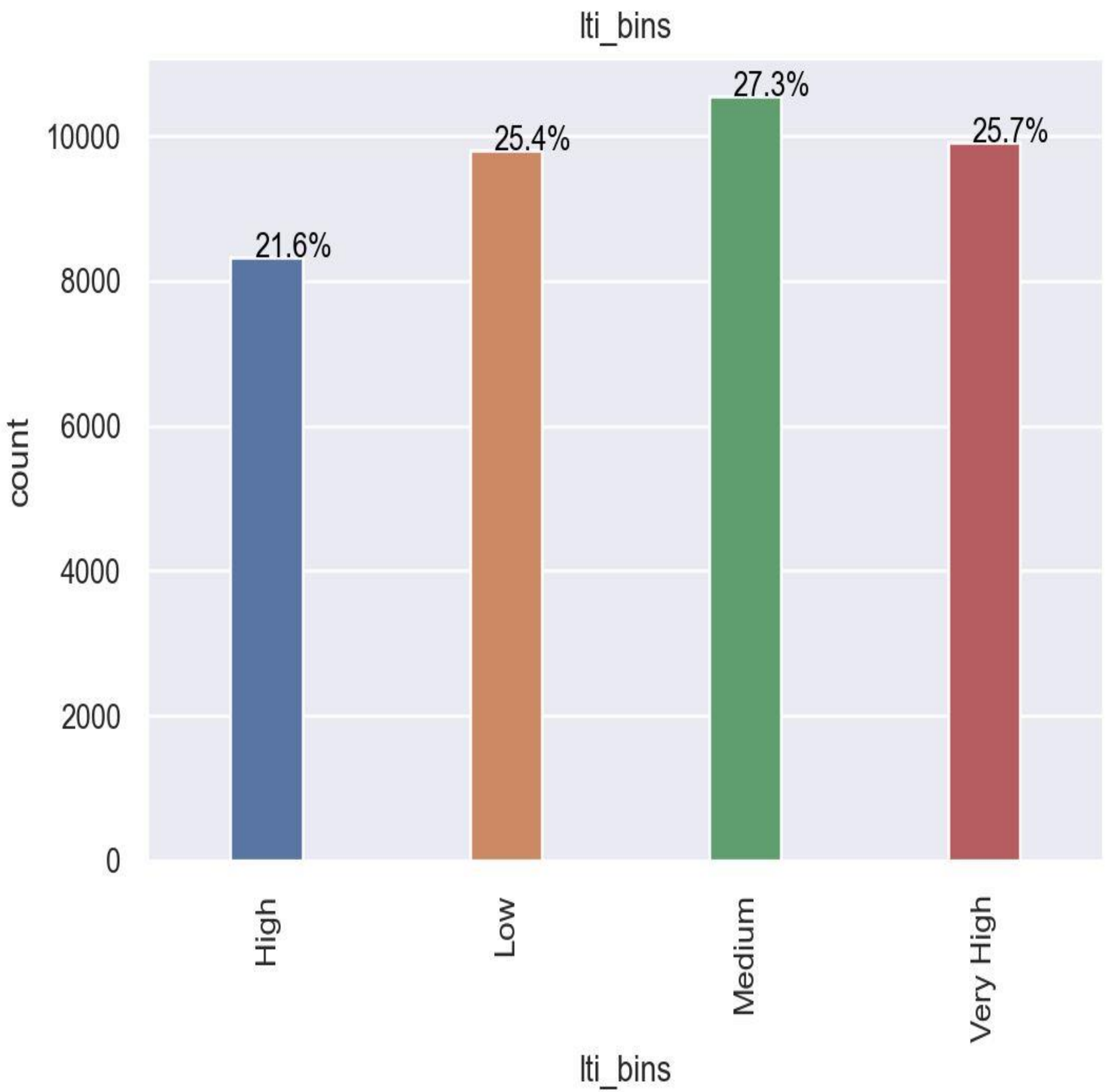
Analysis of grade:

In general, most of the loan accounts comprise the **top 3 grades (A,B,C)** spanning about 75% of loans given. Top-quality loan applicants are relatively fewer than the B-grade applicants.



Analysis of loan to income ratio:

The loan to income ratio has been categorized into four distinct categories. The majority of loan applicants fall into the **medium category(lti = 10-16)**, with the high category following closely behind.



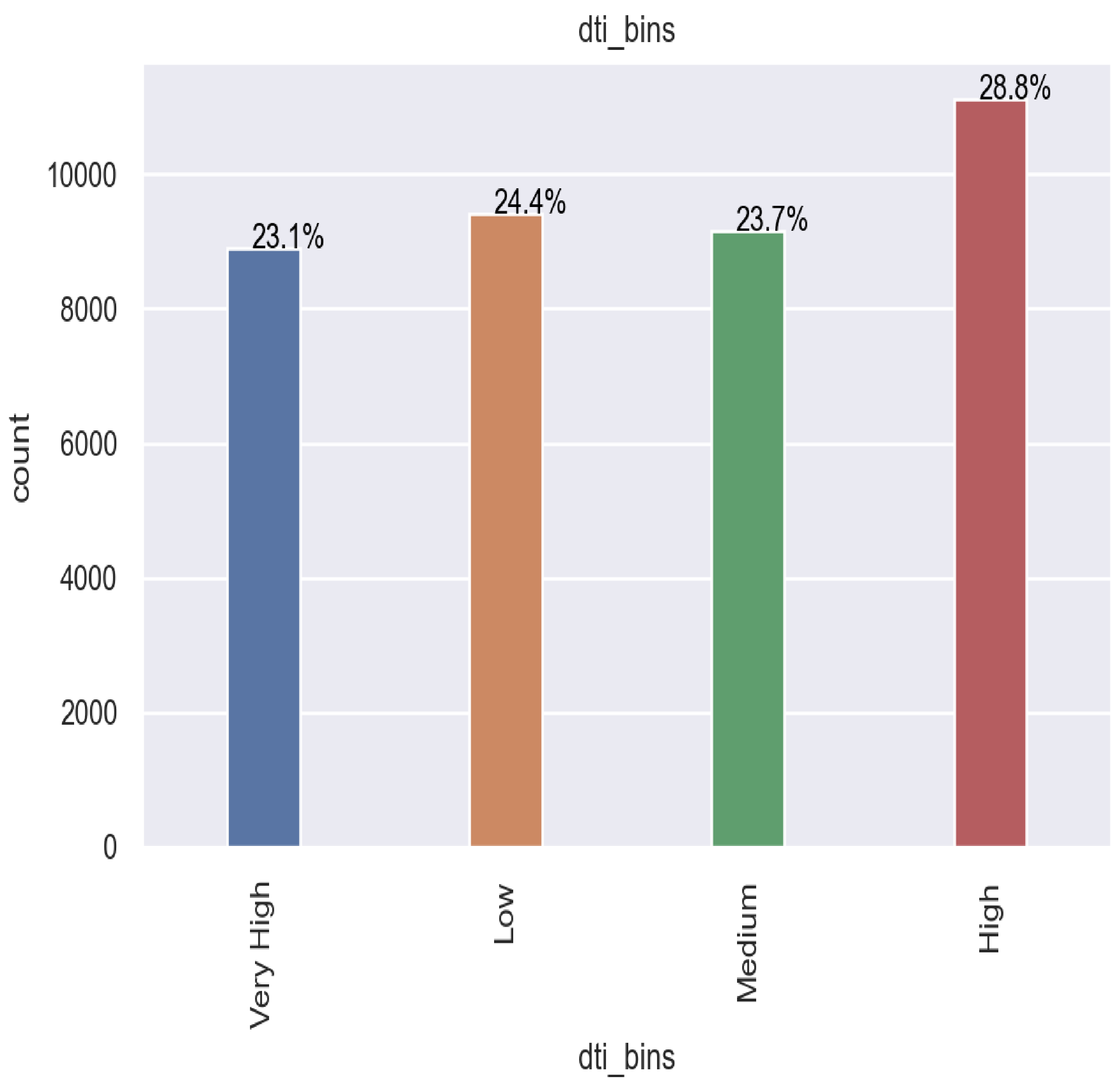
Analysis of debt to income ratio:

We segmented the DTI into 4 categories

The **high category(dti = 13-18)** has the

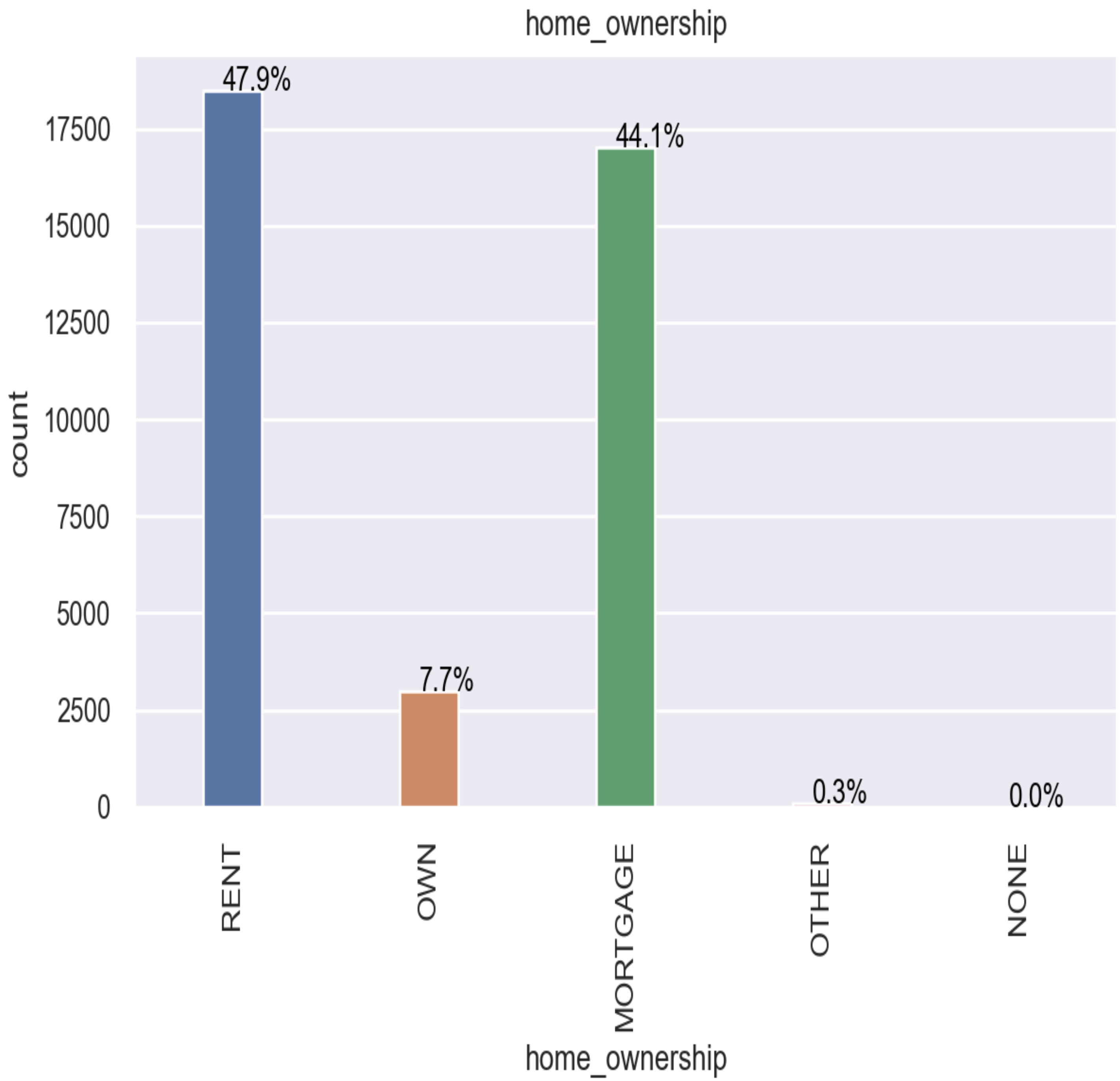
largest number of applicants, followed by the

low category.



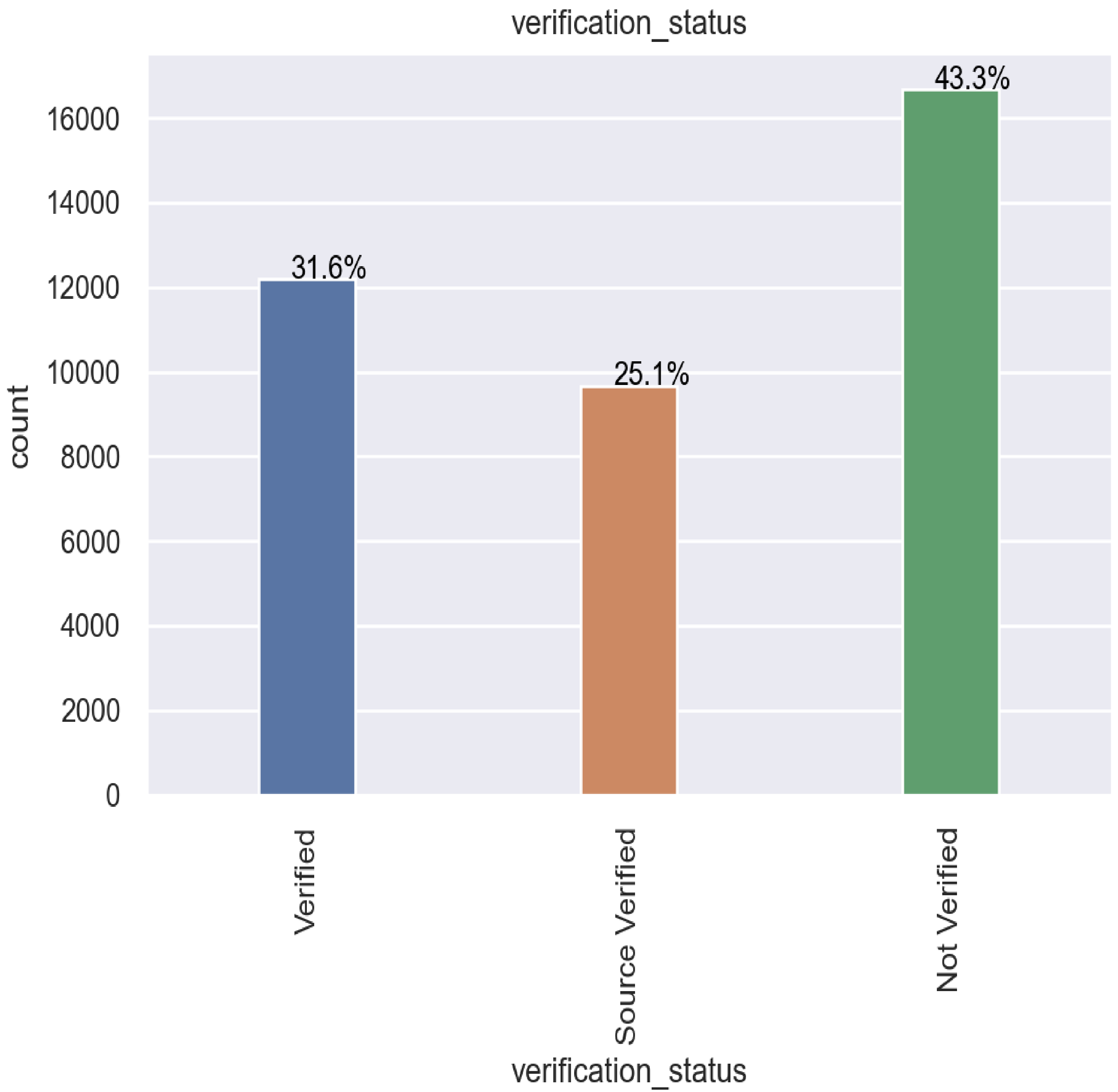
Analysis of ownership:

Based on the data we have, it seems that the majority of loan applicants, approximately 90%, are either currently paying off a **mortgage or are renting** their homes. Only a small percentage, around 7%, are actually homeowners.



Analysis of verification status:

A large chunk of the loan applications appear to be in the **unverified status** and represents the risk of posing data quality and reliability of loan data to accurately evaluate members' ability to pay up the loan.



Analysis of loan amount:

The **₹10,000** mark represents the **media**

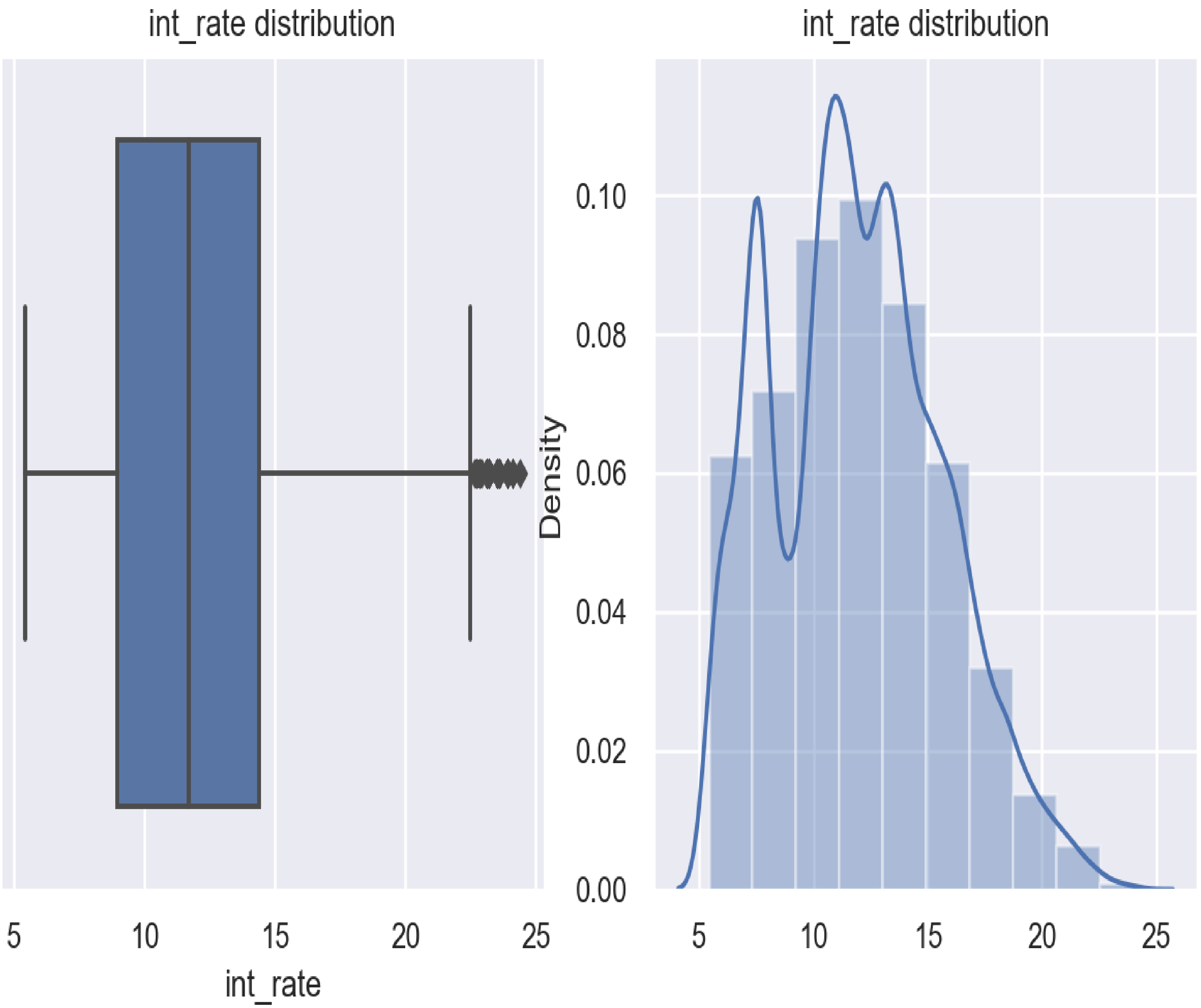
loan amount application. Notably, 75% of th

applications have values less than or equal t

₹15,000.

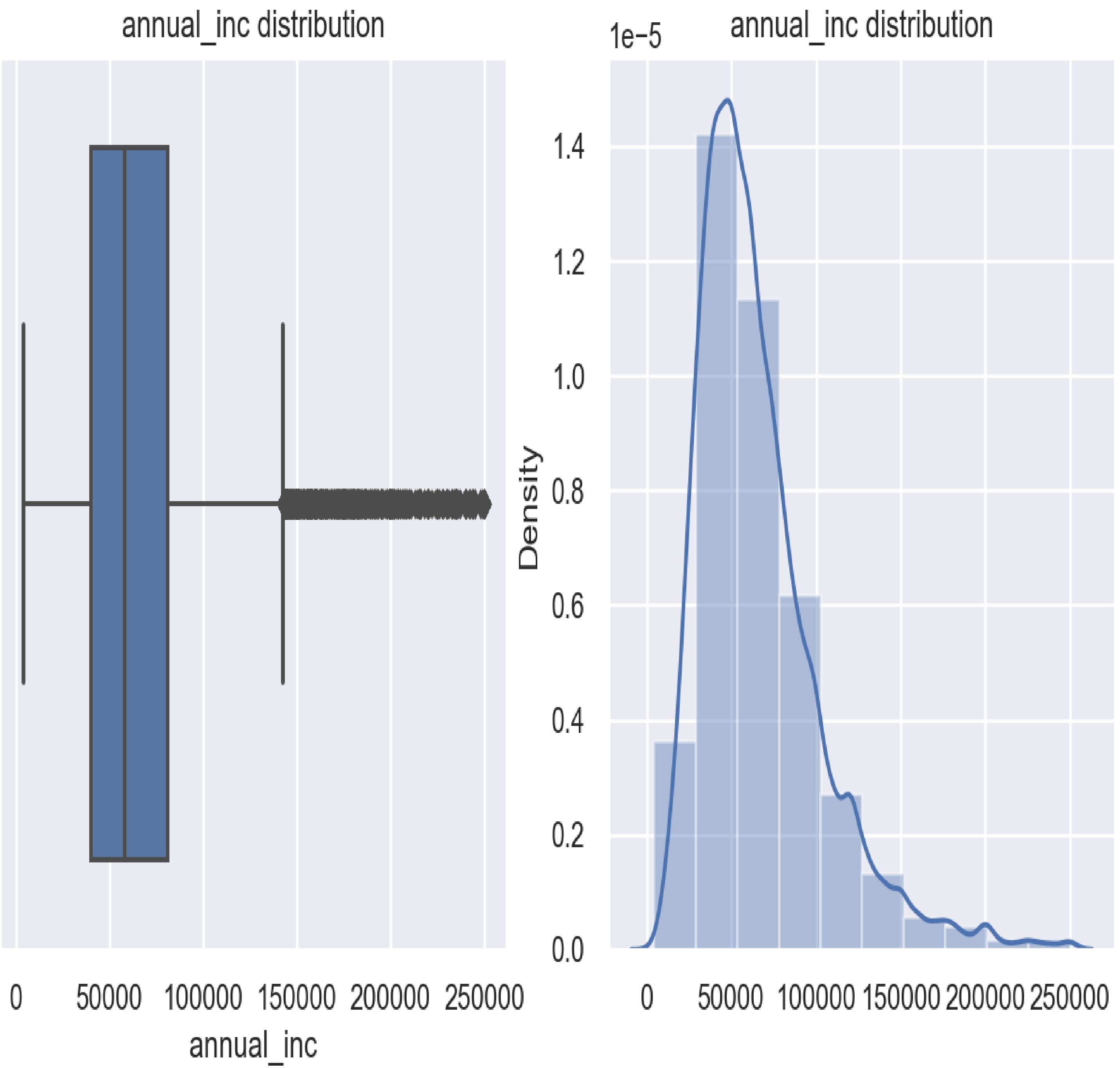
Analysis of interest rate:

The **median interest rate** for a loan application is approximately **11.5%,** while 75% of the value is around 14.5%. However, there are outliers that go beyond the 22.5% threshold.



Analysis of annual income :

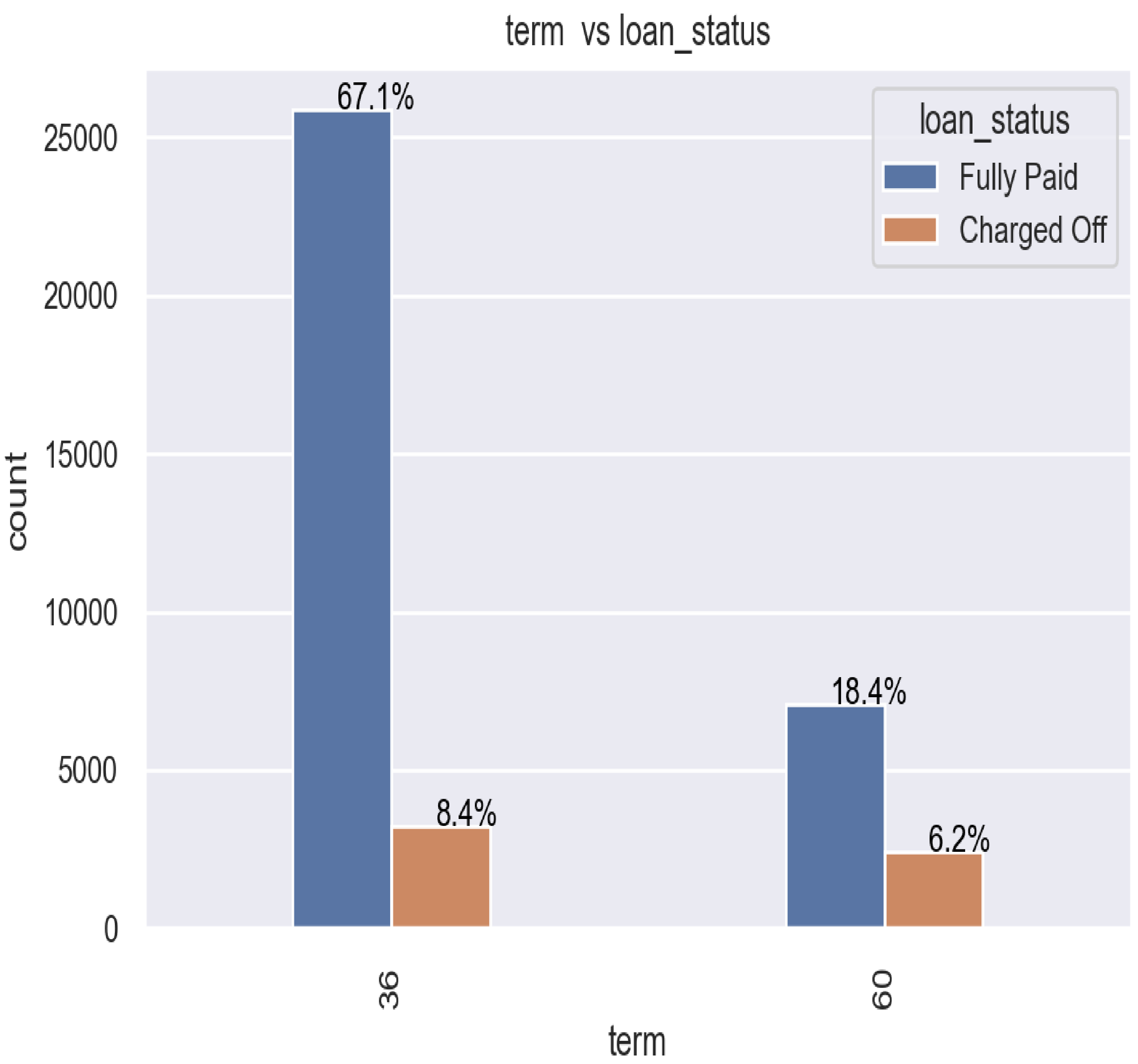
It is worth noting that the majority of applicants fall within the annual income bracket of**₹50,000 to ₹75,000**. However, there are a significant number of outliers who exceed the ₹150,000 threshold.



Bivariate Analysis

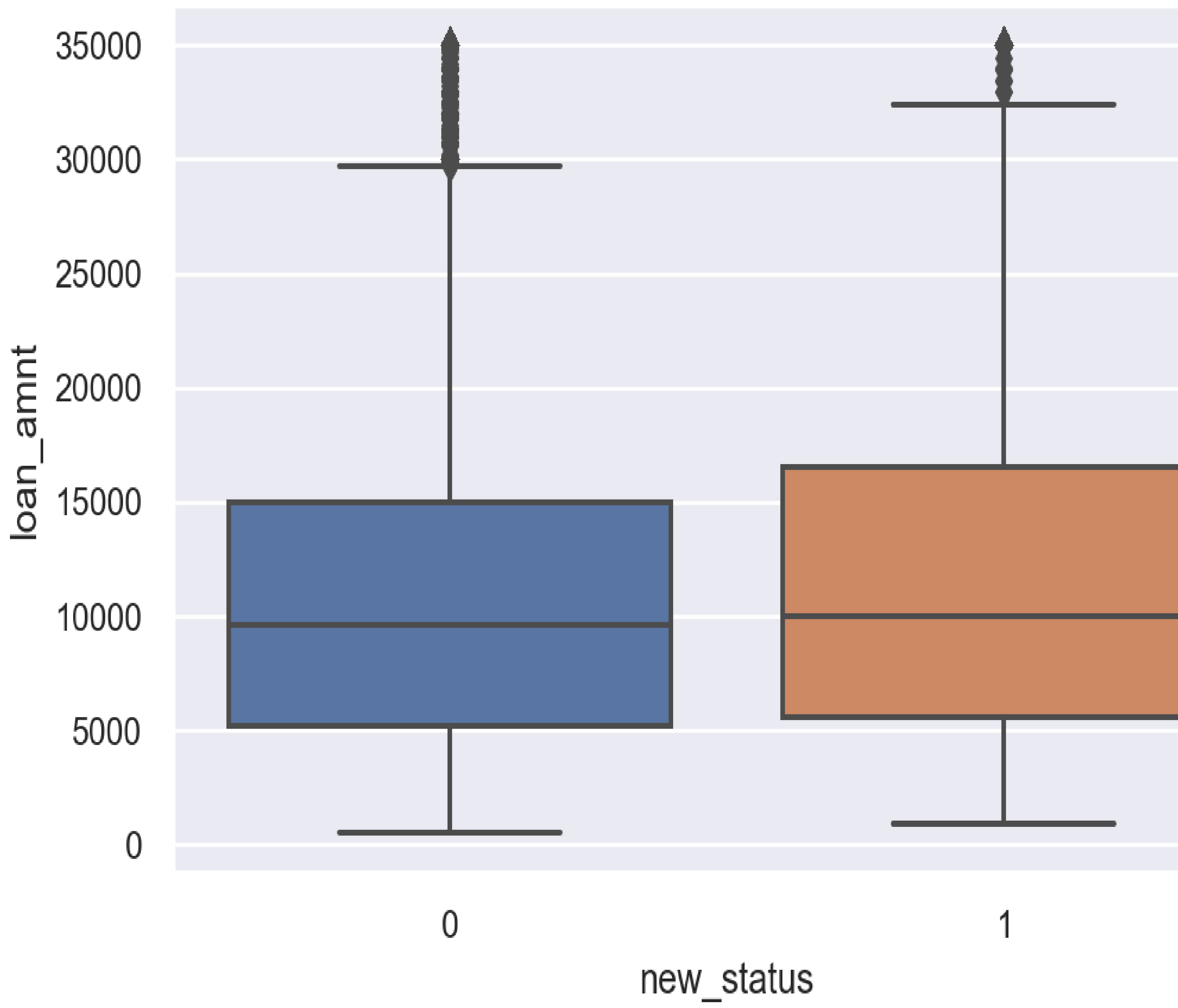
Analysis of term vs loan status:

The number of loan defaulters increases as the loan duration extends. The highest default rate of 8.4% is observed among those with a 36-month loan duration



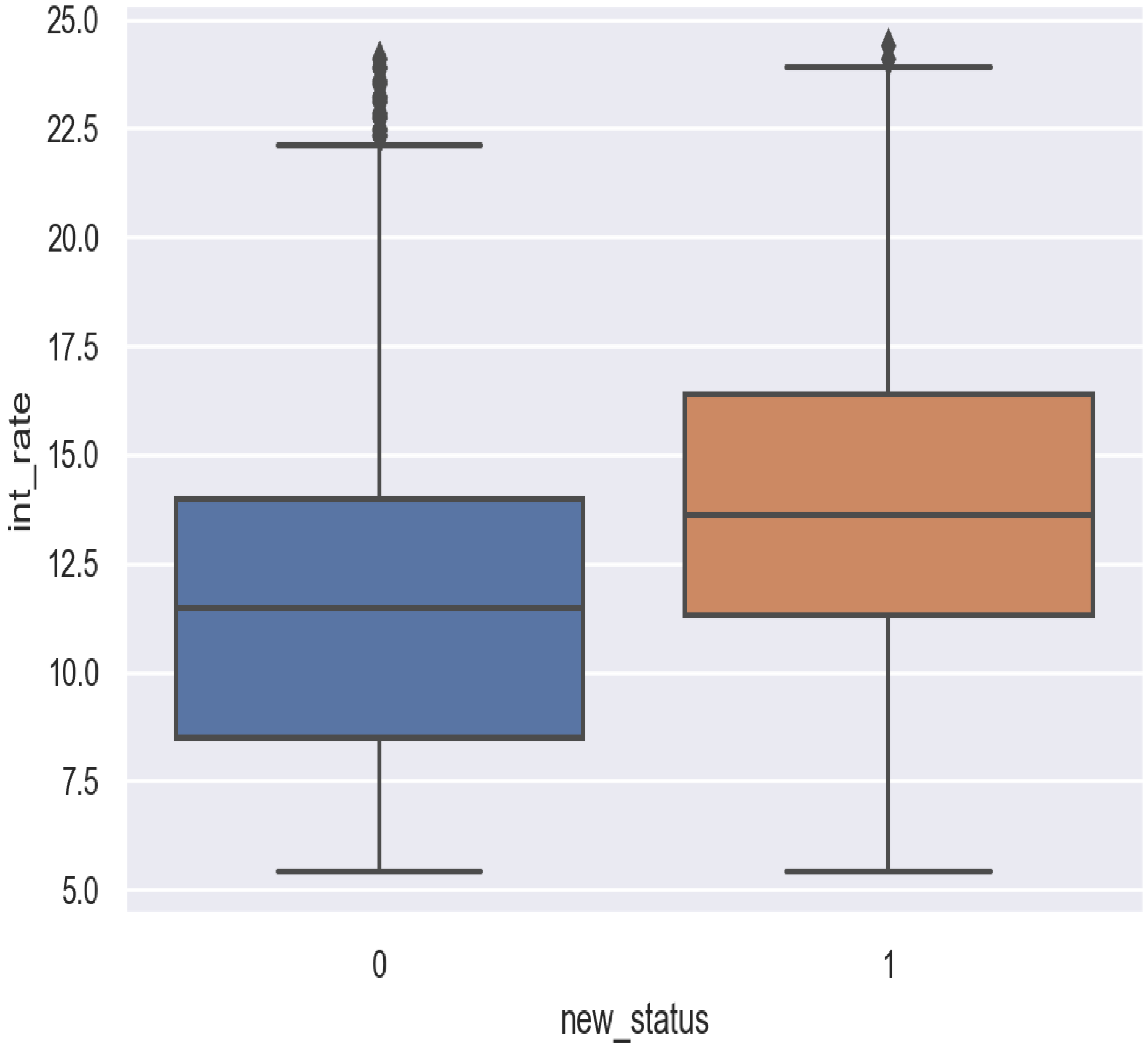
Analysis of loan amount vs loan status:

Applicants tend to default as the loan amount increases. The highest rate of default is at a loan amount of 15000 and above.



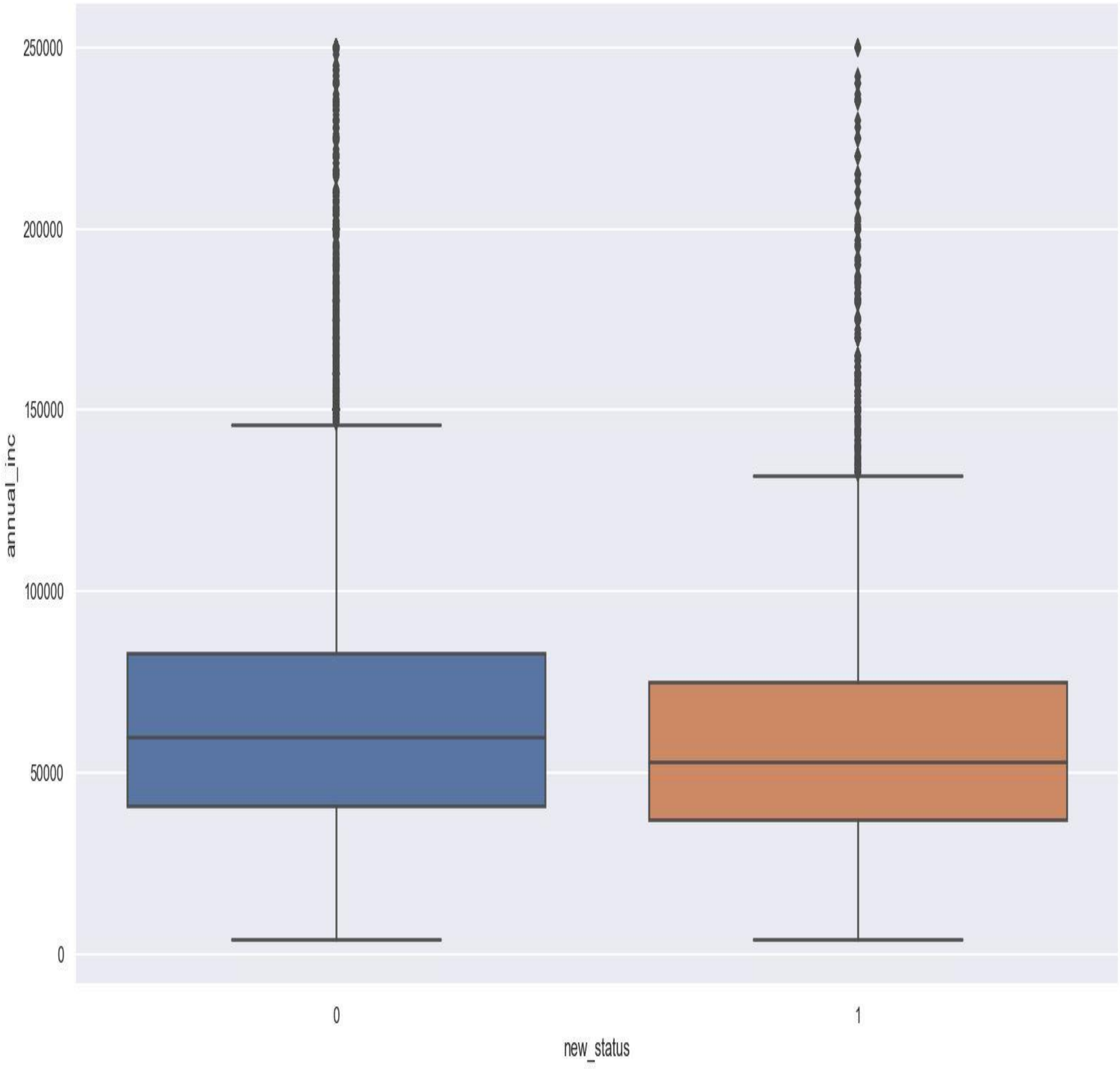
Analysis of interest rate vs loan status:

The median interest rate for defaulters is higher, indicating an elevated chance of default at rates above 14%. if the interest rate falls within the range of 8.5% and 11.5%,here exists a high likelihood that applicants will not default in the future.



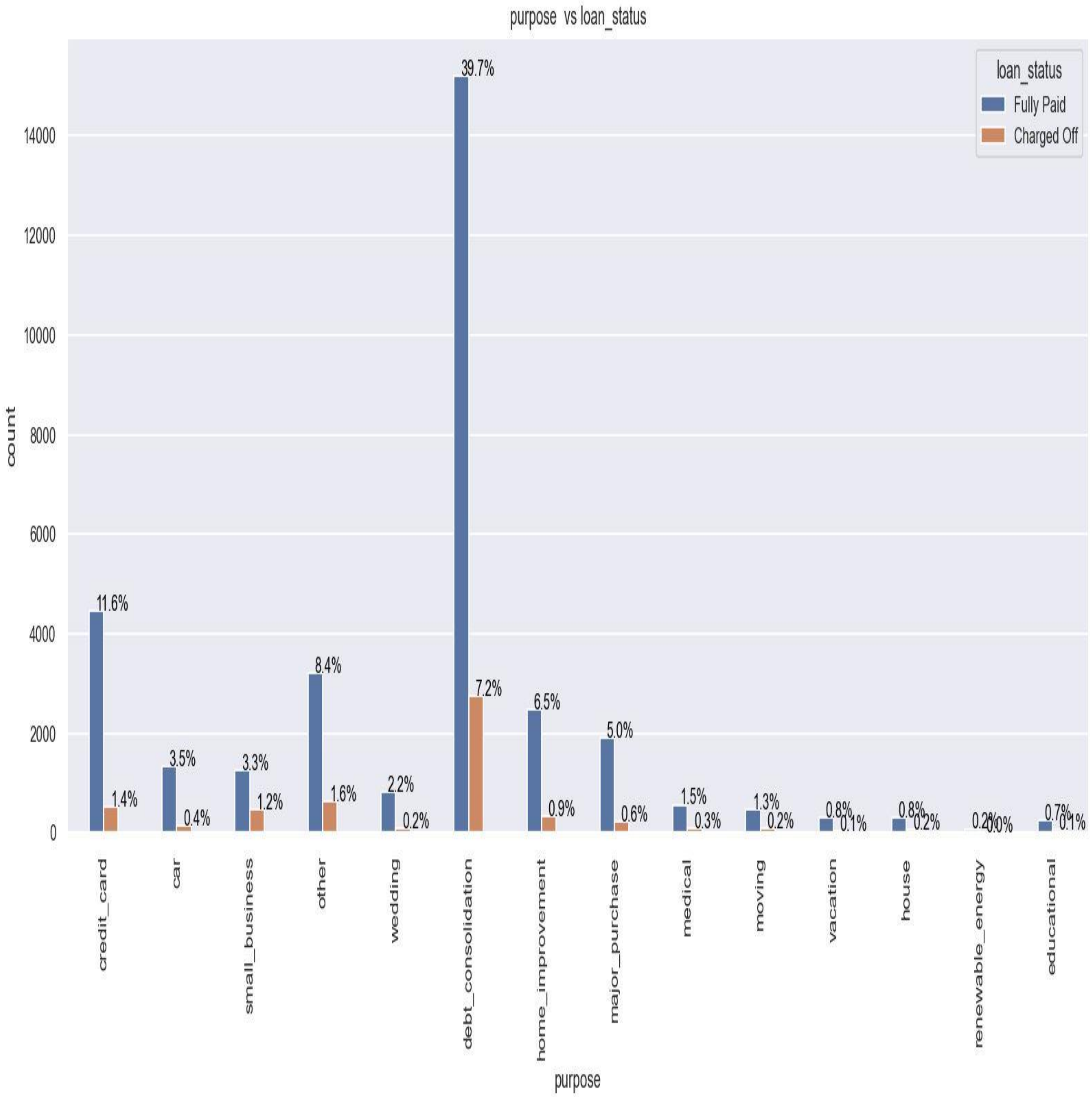
Analysis of annual vs loan status:

Applicants annual income increases the percentage of default decreases. If the applicants annual income is in low category(less than 45000) then there is chance of applicants being default in future.



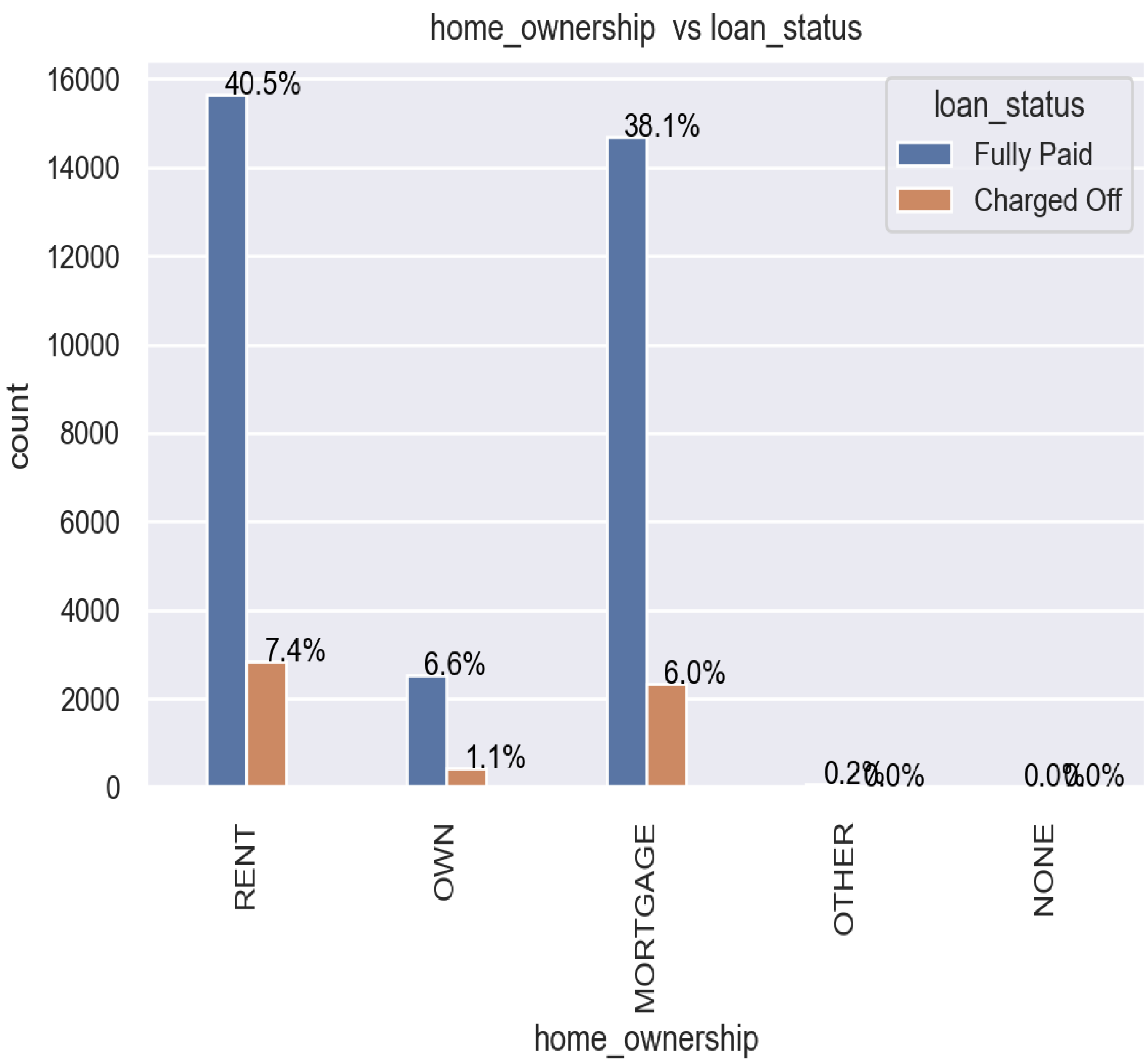
Analysis of purpose vs loan status:

The percentage of defaulters is significantly higher among those who have applied for debt consolidation and small business loans.



Analysis of ownership vs loan status:

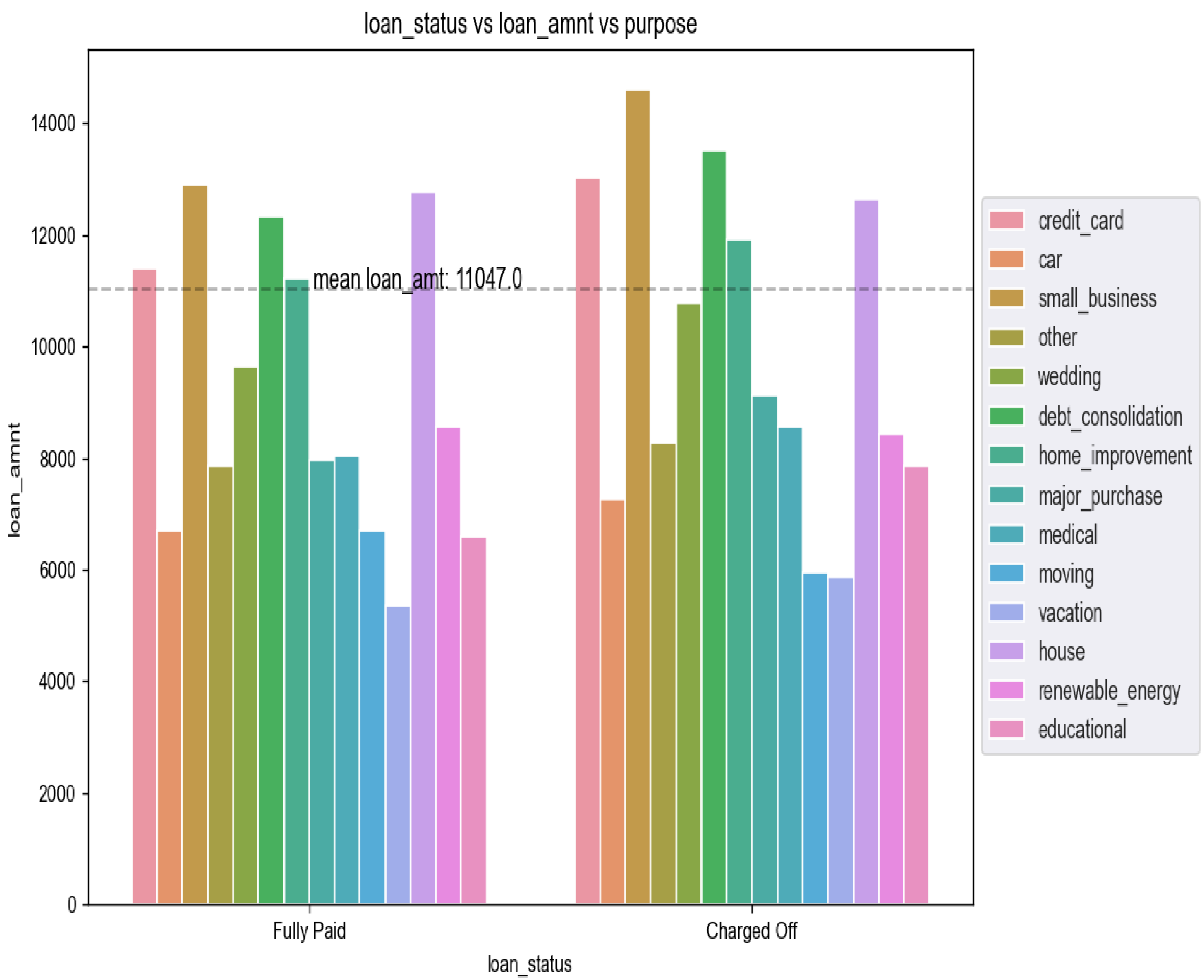
Based on home ownership, rent and mortgage applicants are like to be defaulters compared to owners.



Multivariate Analysis

Analysis of loan status vs loan amount vs purpose:

Applicants who apply for loans for credit cards, small businesses, debt consolidation, or a house are more likely to default if their loan amount is above the mean of Rs 12,000.

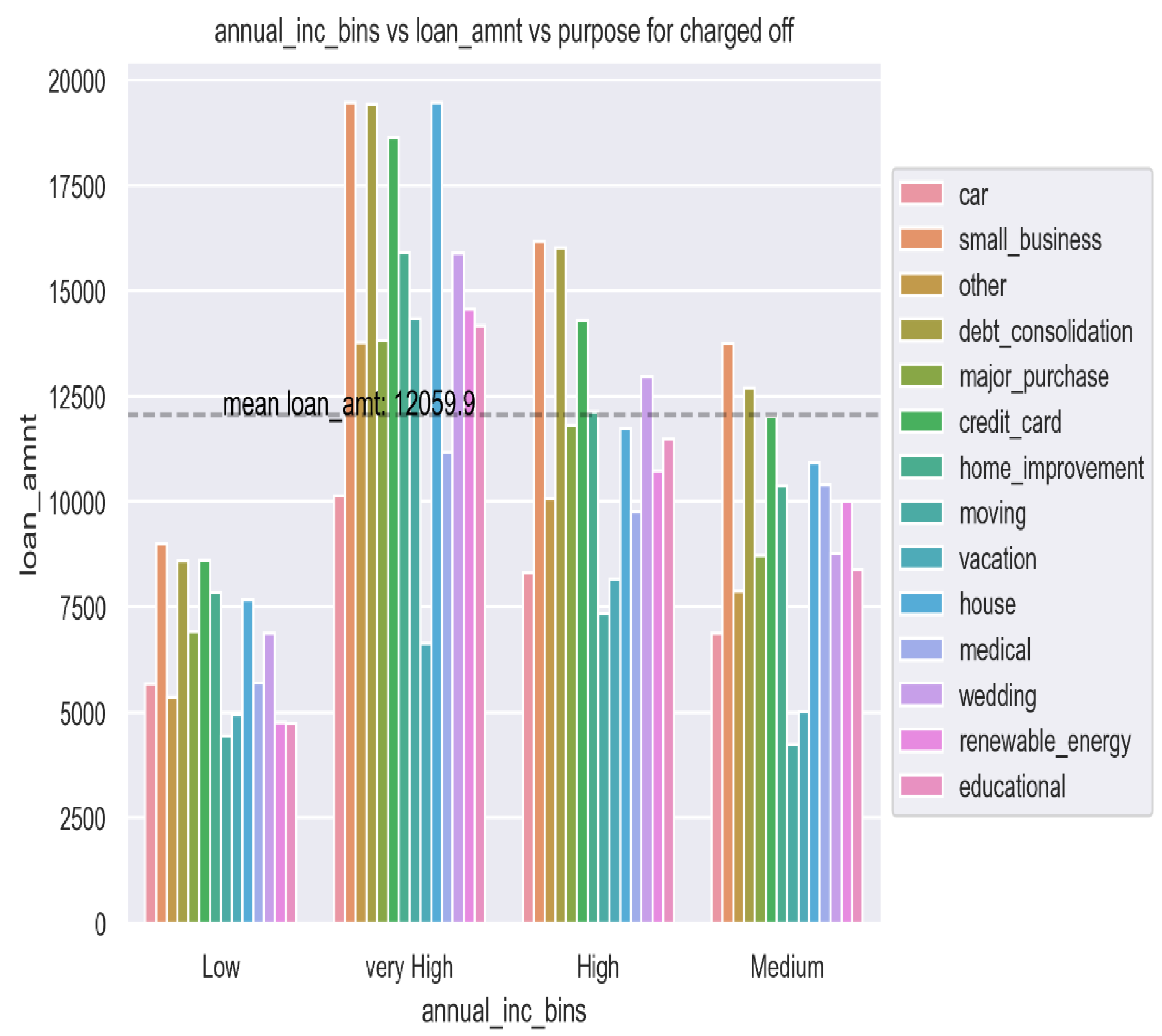


Analysis of annual income vs loan amount vs purpose for charged off:

1.The category with the highest annual income() experiences the highest default rate compared to other categories.

2.The high-income category mainly applies for loans for small businesses, debt-consolidation, credit cards, houses, weddings, and home improvements.

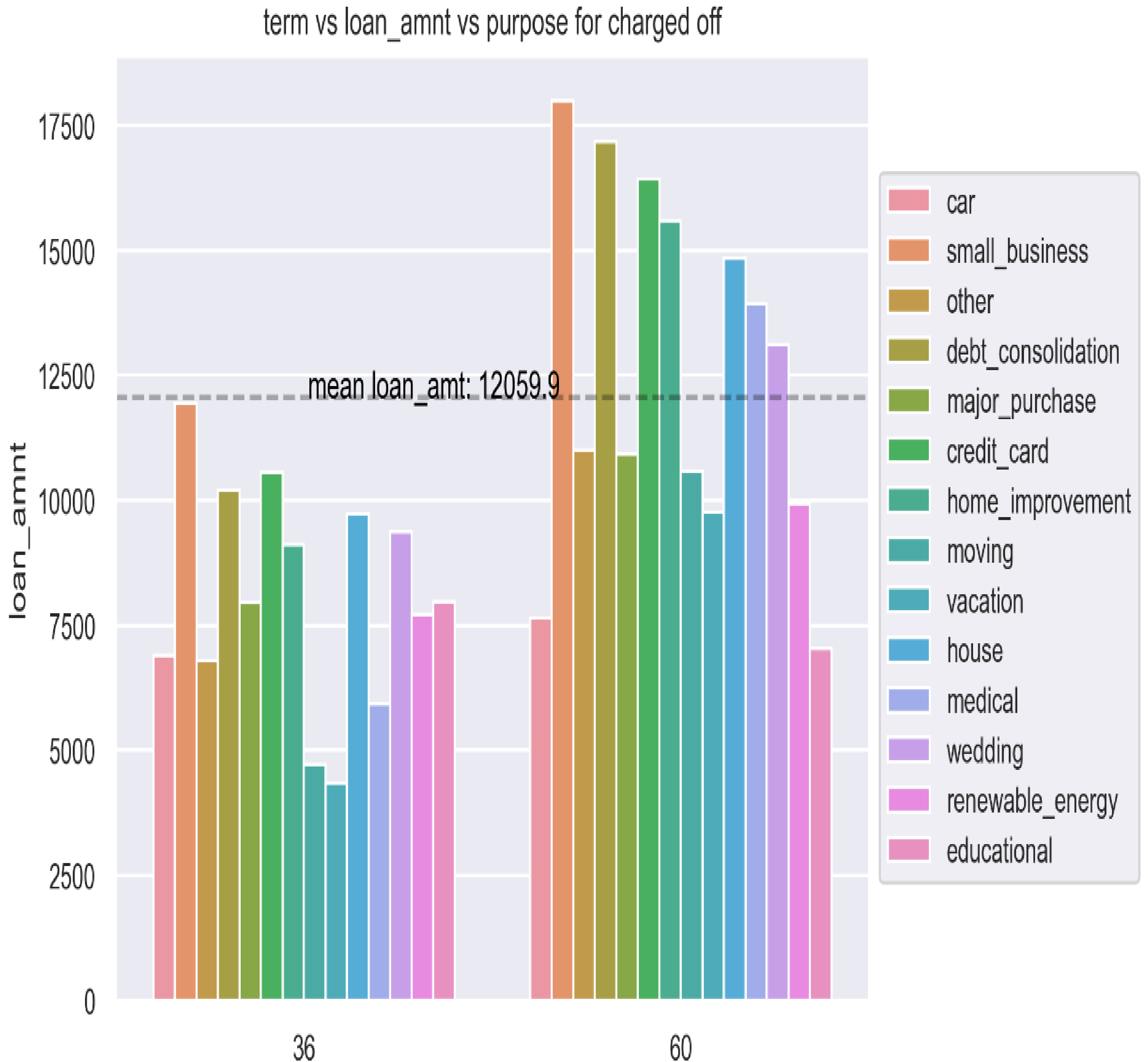
3.They are more likely to defaulters.



Analysis of term vs loan amount vs purpose for charged off:

1.Applicants who apply for loans for small businesses, debt consolidation, credit cards, home improvements, medical expenses, or weddings are more likely to default if their loan amount exceeds the average of Rs 12,100 and has a duration of 60 months.

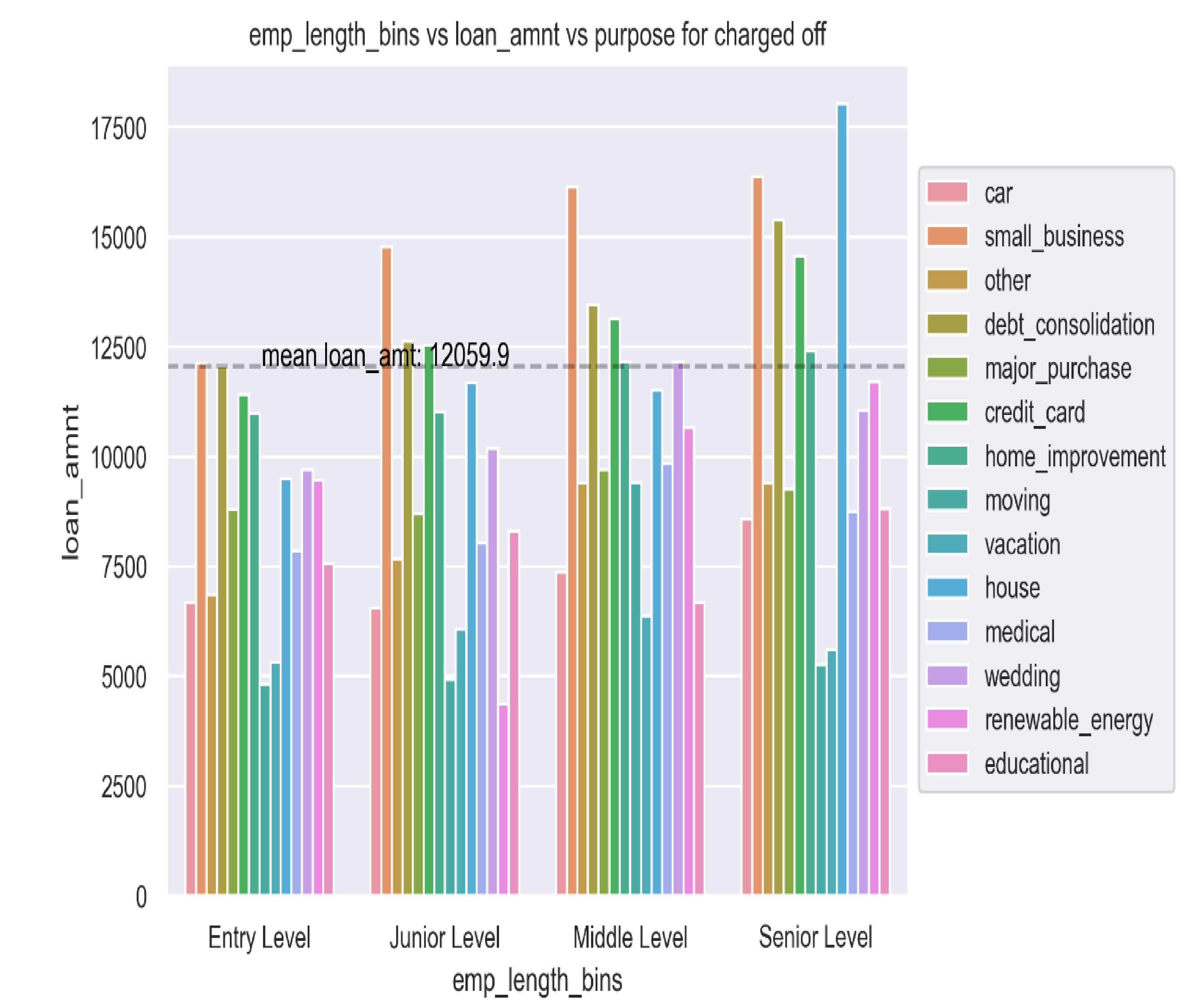
2. There are more defaulters in loans with a duration of 60 months than in those with a duration of 30 months.



Analysis of employee length vs loan amount vs purpose for charged off:

1. The category with highest high experience level (senior level) experience highest default rate compare to all.

2. The senior level employee category mainly applies for small business, debt consolidation, houses. they are more likely to defaulters.



The major factors that influence charge-offs are

1.interest rate,
2.loan amount,
3.annual income,
4.verification status,
5.home ownership status,
6.loan grade, term, and
7.purpose.

Recommendations:

1. limit the loan amount to 15,000 beyond this range where charge off is higher.
2. limit the interest rate to 14.5 % beyond this range where charge off is higher.
3. Ensure verification is complete for all loans disbursed.
4. Try to avoid loans beyond 12,000 for debit consolidation, credit card where charge off is high.
5. focus on the employee who has 1.5 years to 8 years of experience where the charge-off is low.
6. focus on loan for car and education which has low default rate.