

Lending Club Casestudy

Lending Club is an online lending marketplace, facilitating personal loans and business loans which allows borrowers to shop loans at competitive rates.

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Problem Statement:

Analyse the given loan data of Lending Club, to understand the driving factors behind loan default.
Default of a loan means failure to repay a loan according to the agreed terms.

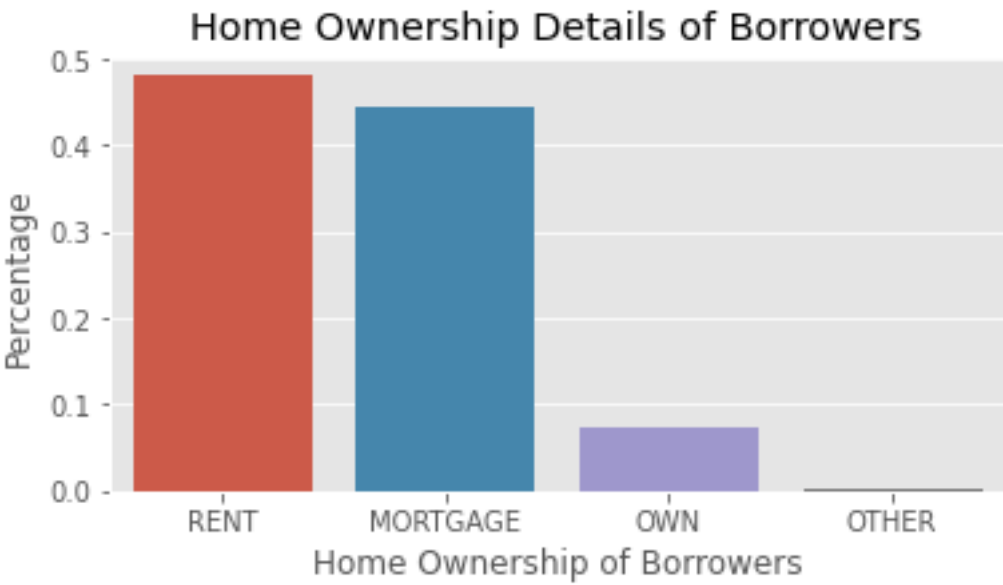
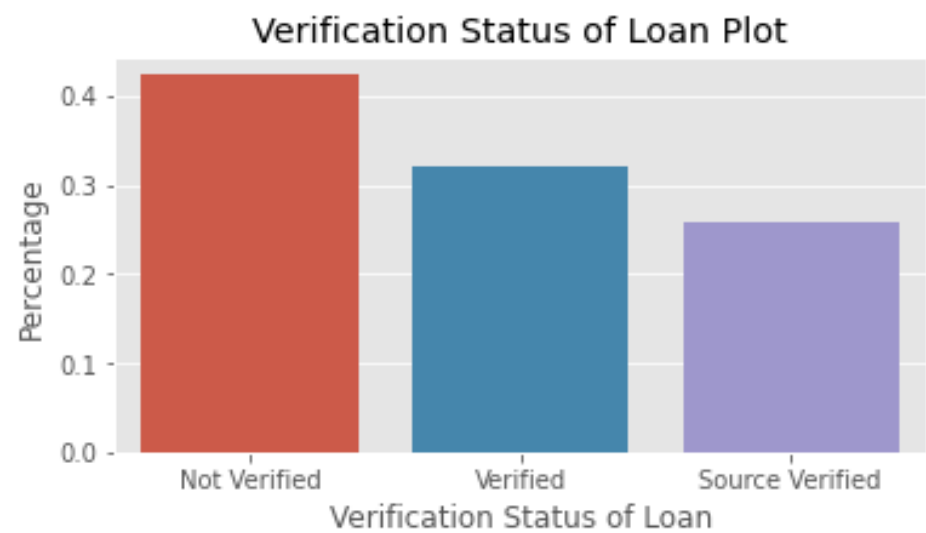
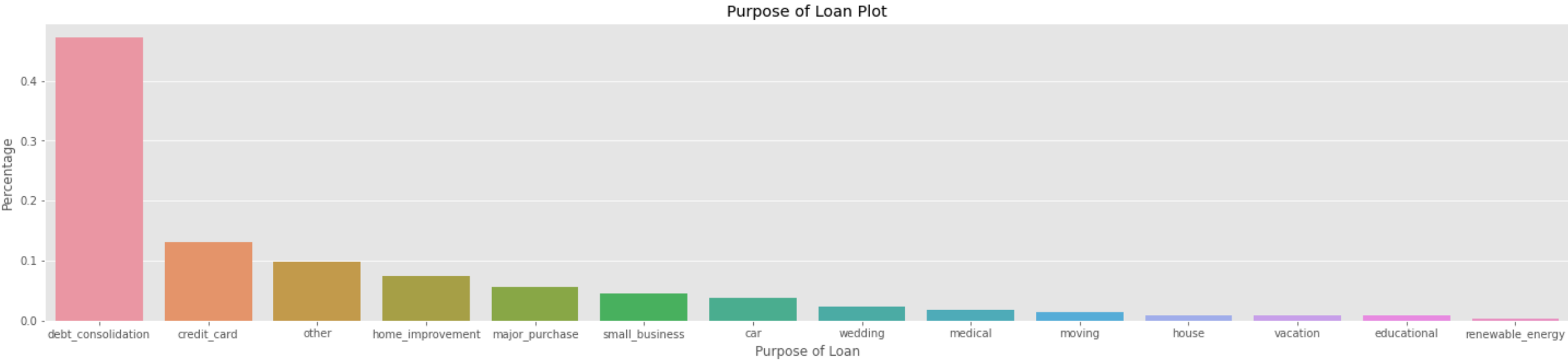
The company can utilise this knowledge for its portfolio and risk assessment.

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.

Solution approach :

- Perform a high-level analysis of the loan data sheet to get an overview of the data description of columns provided, deduce the columns that might be prominent to loan attributes like Loan Interest rate, Loan term, Borrowers Credit etc.
- Load data and view the data structures, data types, date formats, total number of records/columns etc.
- Clean the data for Null values , Uniques values, drop unnecessary columns, Unwanted spaces/symbols in column values etc.
- Format Date columns to aid the analysis.
- Derive additional columns to aid our analysis .
- Perform EDA(Exploratory data analysis) methods like Univariate/Segmented Univariate and Bivariate analysis using plots to deduce the patterns and insights of why borrowers default on loans.
- Use these data insights to arrive at the conclusion of borrows defaulting on a loan. Recommend preventive measures to Lending Club to mitigate this loan default risk.

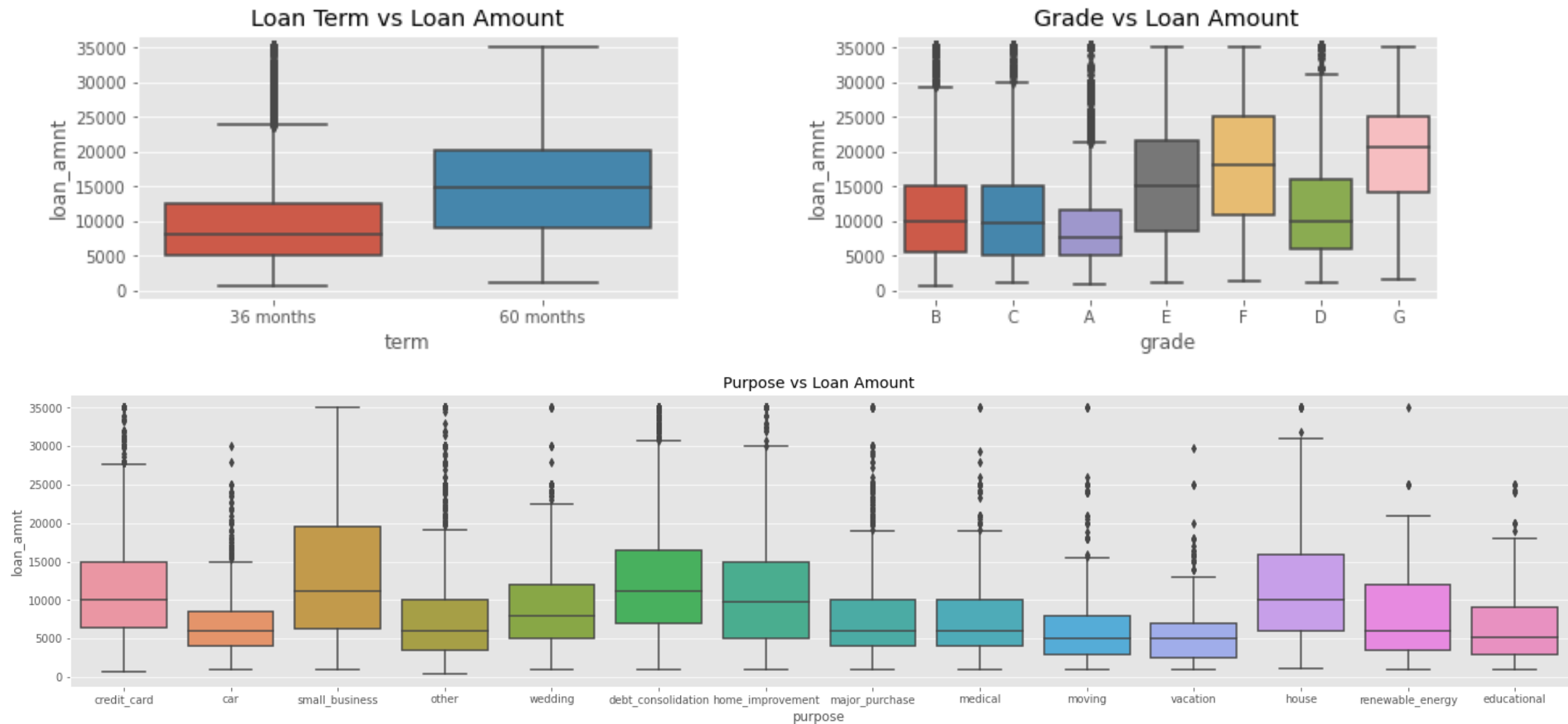
Data Analysis : Generic



Insights from the plots above:

- Borrowers mostly got the loan for consolidating their debts.
- Most of the Loans issued by Lending club are Not-Verified which means not all details of the borrowers documentation is not verified.
- Most of the borrowers have Rental and Mortgage home ownership, very few with own houses got loans.

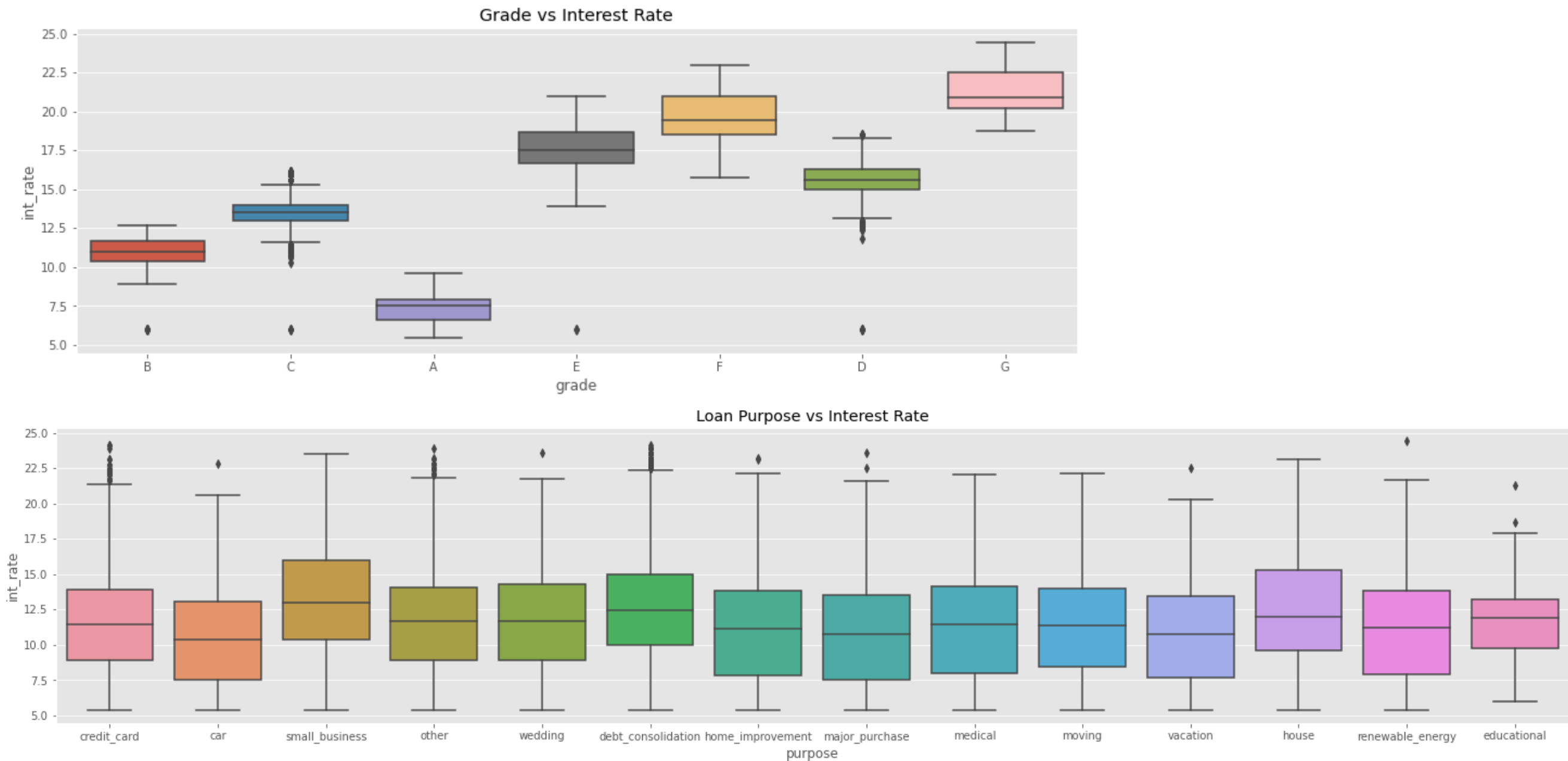
Data Analysis : Loan amount aspect



Insights from the plots above:

- Loan term of 60 Months have average loan amount of \$15K and have the maximum loan amount issued.
- Grade G, E, F have more Loan amount issued, this is more risk since low grade loan have borrowers with low credit history and low repayment capacity.
- Small Business loan purpose is having high loan amount issued.

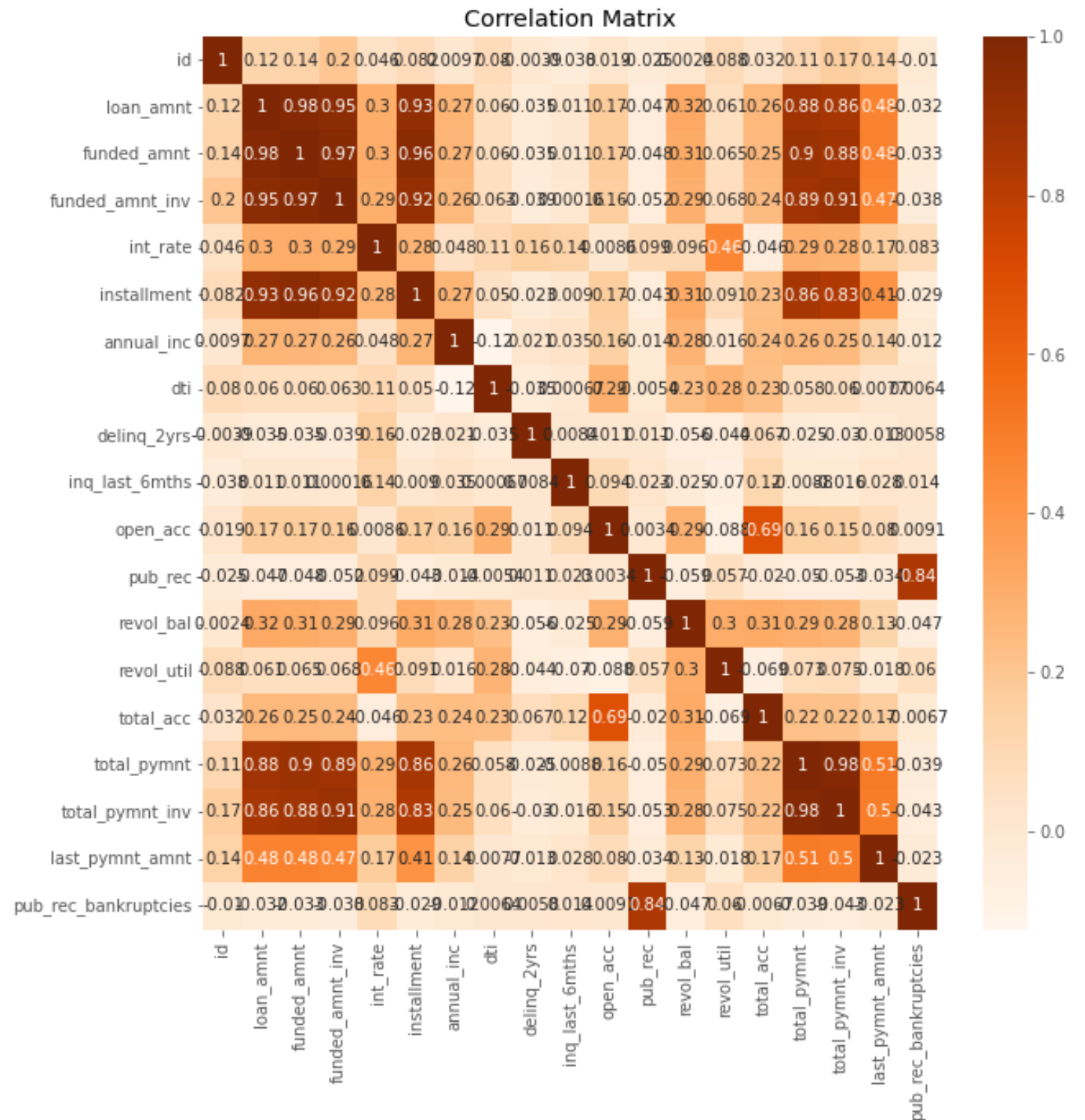
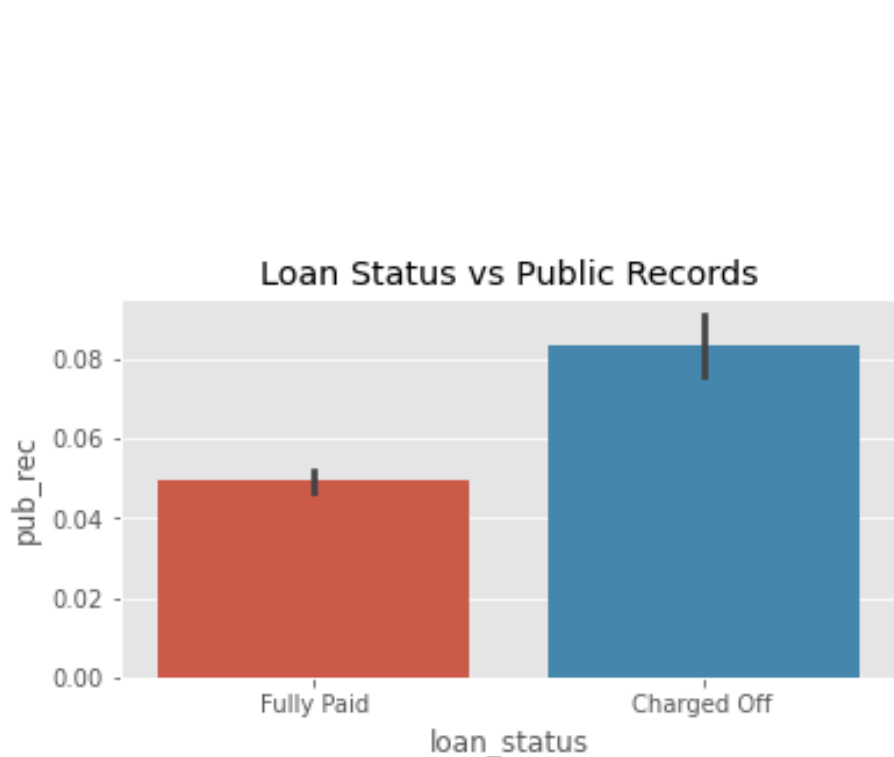
Data Analysis : Loan Interest rate aspect



Insights from the plots above:

- Lesser Loan grades have higher interest rates.
- Most of the borrowers with loans for Small Business purpose have high Interest rates

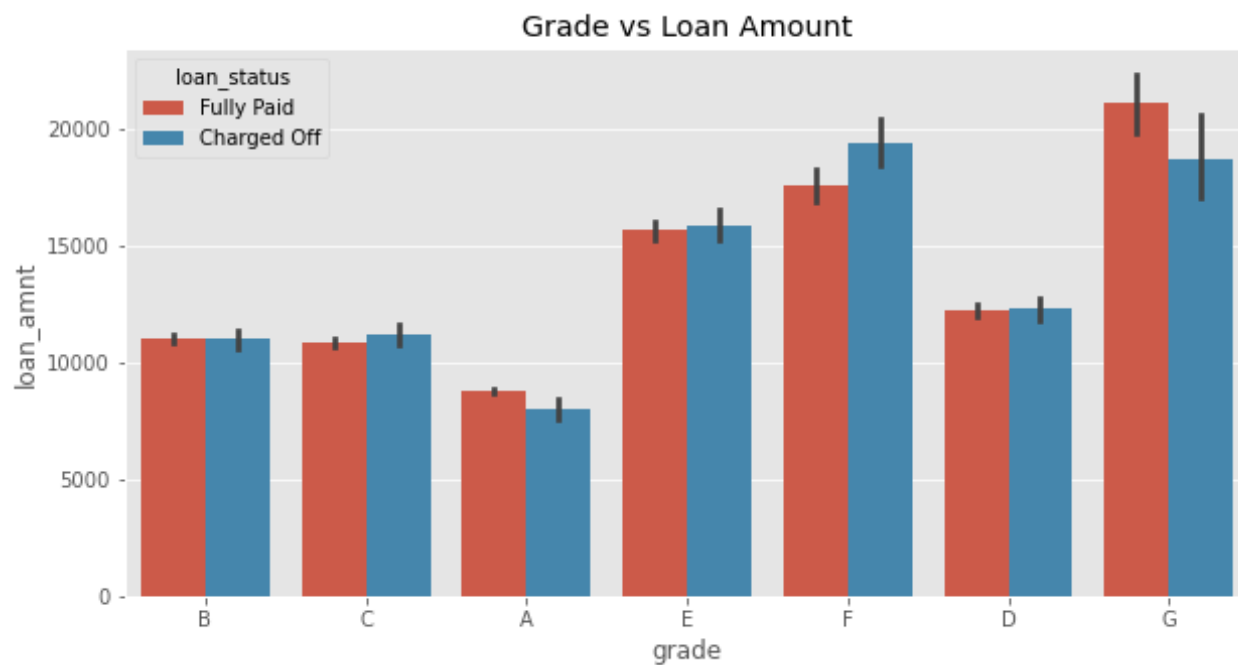
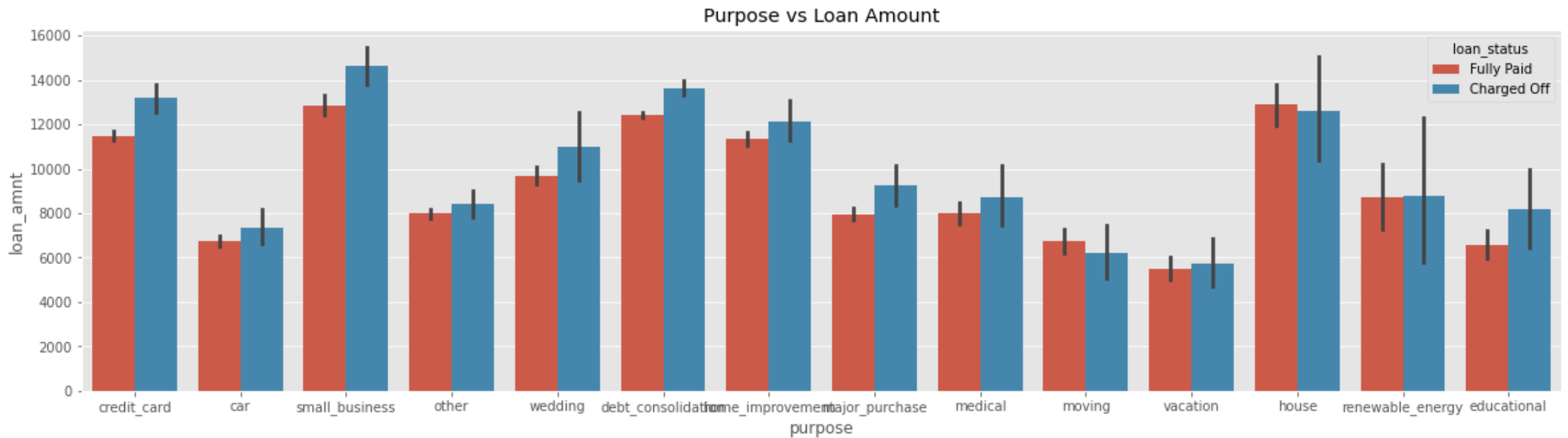
Data Analysis : Public records aspect



Insights from the plots above:

- Borrowers who have public records are more likely to get defaulted.
- Public Records is highly correlated with bankruptcies (See Pub_rec vs Pub_rec_bankruptcies in the Heat map above).

Data Analysis : Loan status aspect



Insights from the plots above:

- Most of the borrowers obtained loans for Small Business purpose have high loan amount issued and the default rate is also high.
- Lesser Loan grades have higher interest rate and the default rate is also high.

Conclusion:

Loan Grade:

- Low grade loan category G, E, F have loans issued with high loan amount and high interest rate.
Usually Low grade loans are associated with borrowers having low credit history and low repayment capacity.

Recommendation: Lending Club can minimise the disbursement of low grade loans.

Loan Purpose:

- Loans issued for Small Business purpose have higher loan amount and higher interest rate, there is a definite risk of default for this purpose.

Recommendation: Lending Club can minimise the disbursement of loans for Small business purpose and add additional verification process to mitigate the default risk.

Public Record:

- Borrowers with public records are likely to default and also likely to declare bankruptcy.

Recommendation: Lending Club can avoid issuing loans to applicants who have Public records in their credit history.