Lending Club Case Study

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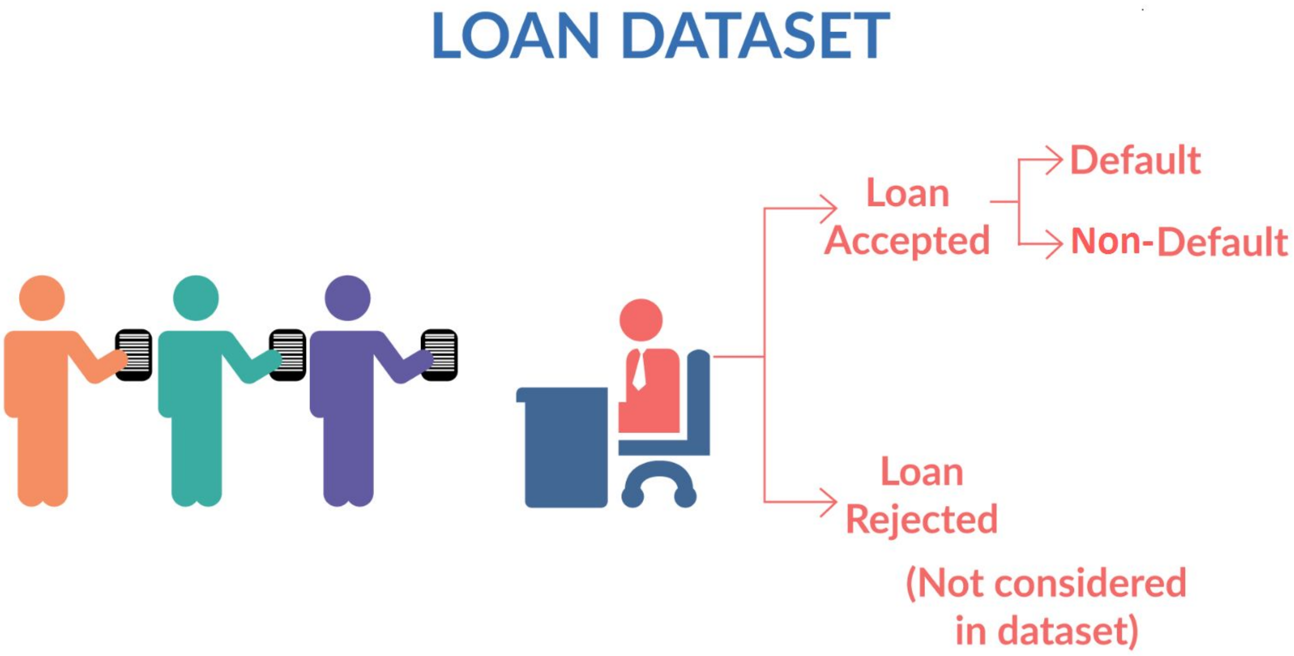
Problem Statement

- Lending club is a consumer finance company which specialises in lending various types of loans to urban customers.
- It offers different types of loan products such as personal loans, business loans, and financing of medical procedures.
- Borrowers can easily access lower interest rate loans through a fast online interface.
- There are borrowed who pays their loan fully and borrowers who doesnt pay and gets default.
- Lending club wants to understand the driving factors behind the loans getting default and steps to reduce it.

Summarized Dataset



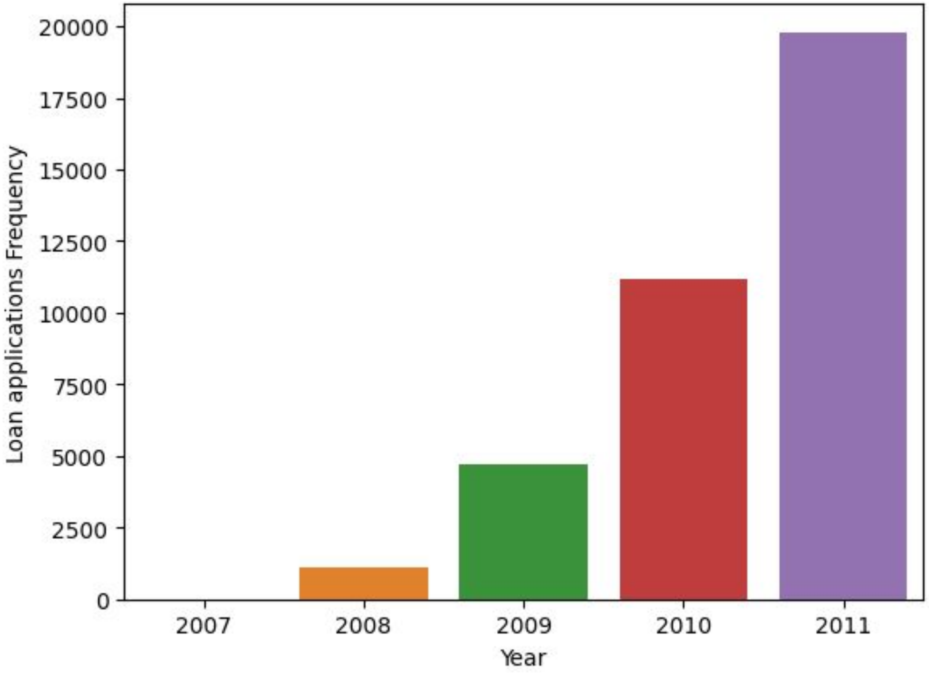
Steps to perform EDA

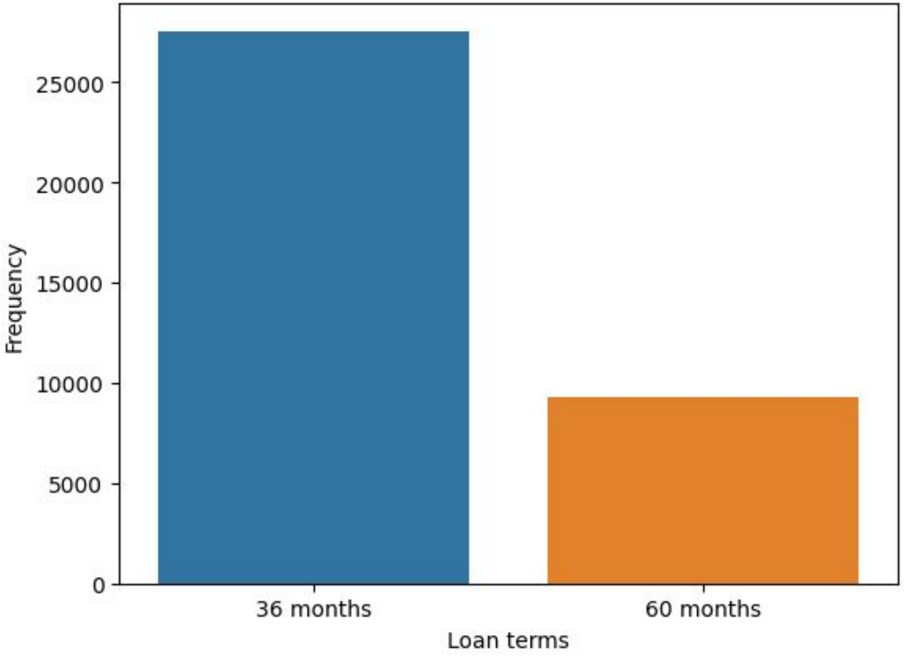
1. Importing data
2. Data cleaning and evolution
   a. Cleaning null values
   b. Removing not needed columns
   c. Fixing data types
   d. Deriving more columns for analysis
3. Analysis
   a. Univariate Analysis
   b. Segmented Univariate Analysis
   c. Bivariate Analysis
4. Conclusion

Univariate Analysis

- Lending club growth has increased year by year with almost a double rate.
- Majority of the loan terms are for 36 months - approximately 75% of borrowers opted for this term.
- Majority of the borrowers have paid their loans with around 15% defaulted it.
- Borrowers with not verified sources have gotten more loan amounts.
- The median of the loan amount taken by the borrowers is 10000 while there are some outliers.

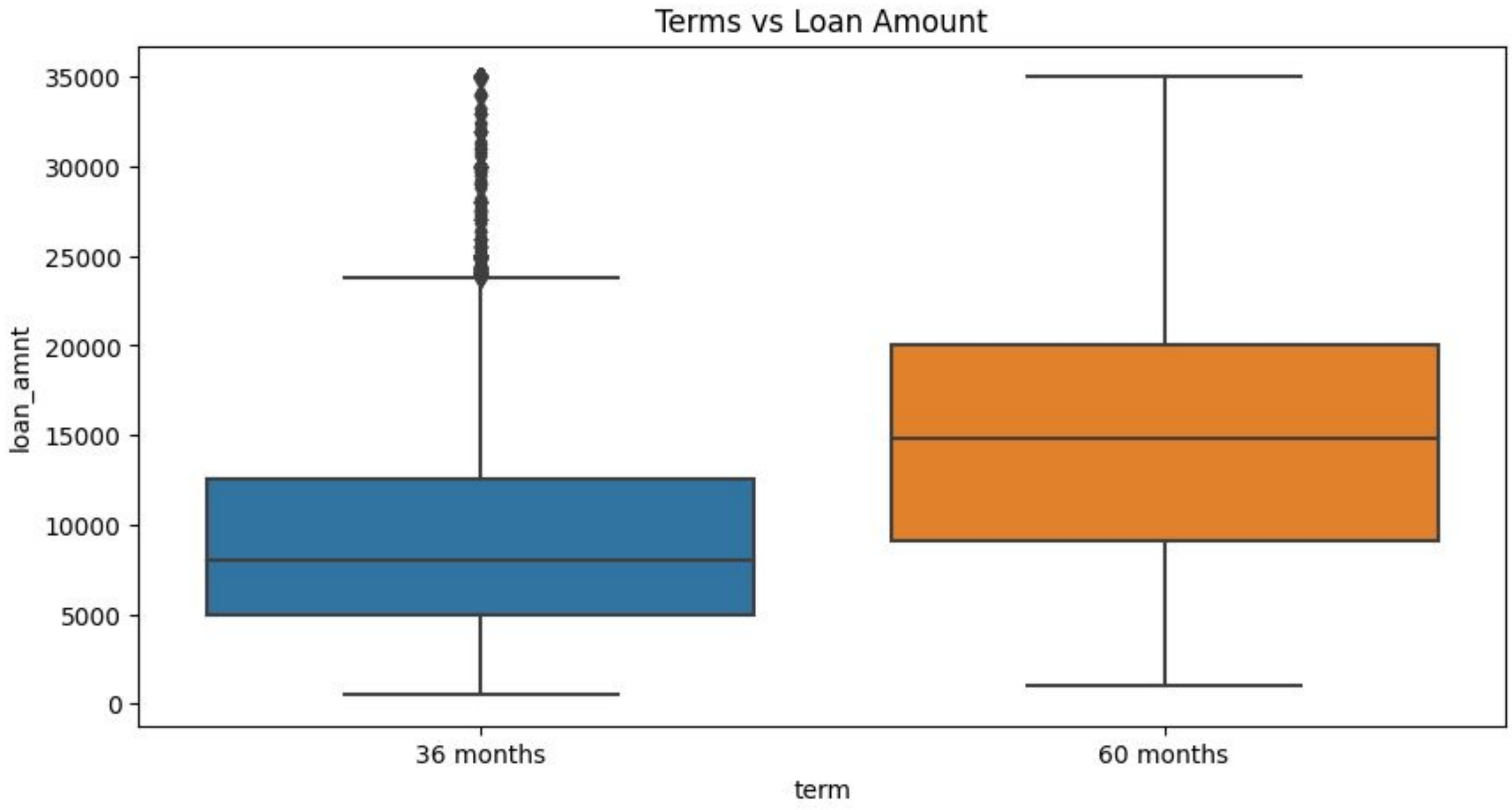
Univariate Graphs

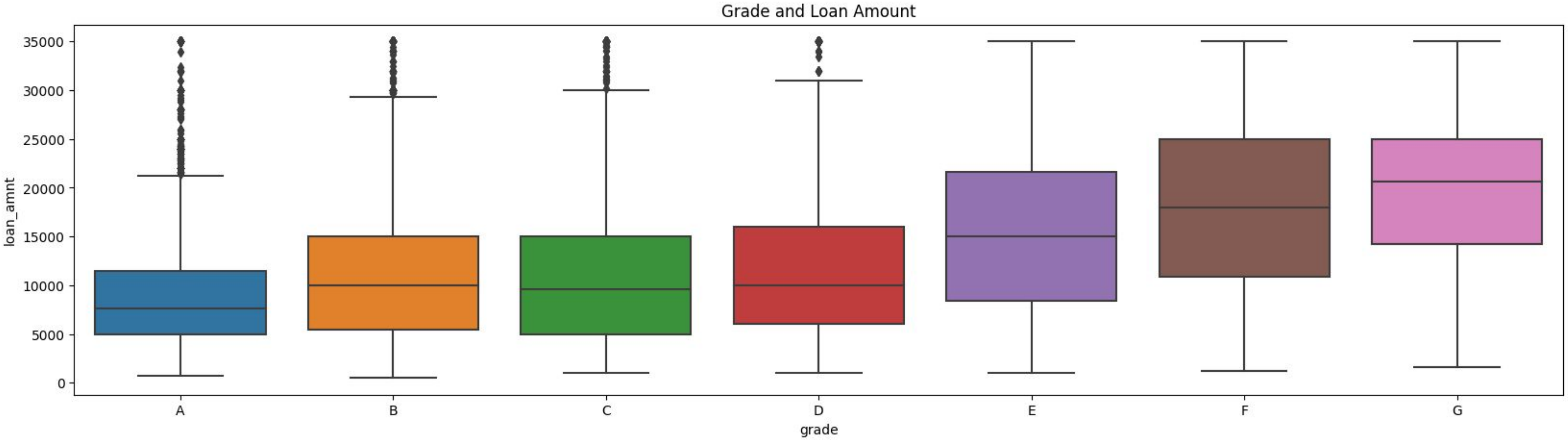




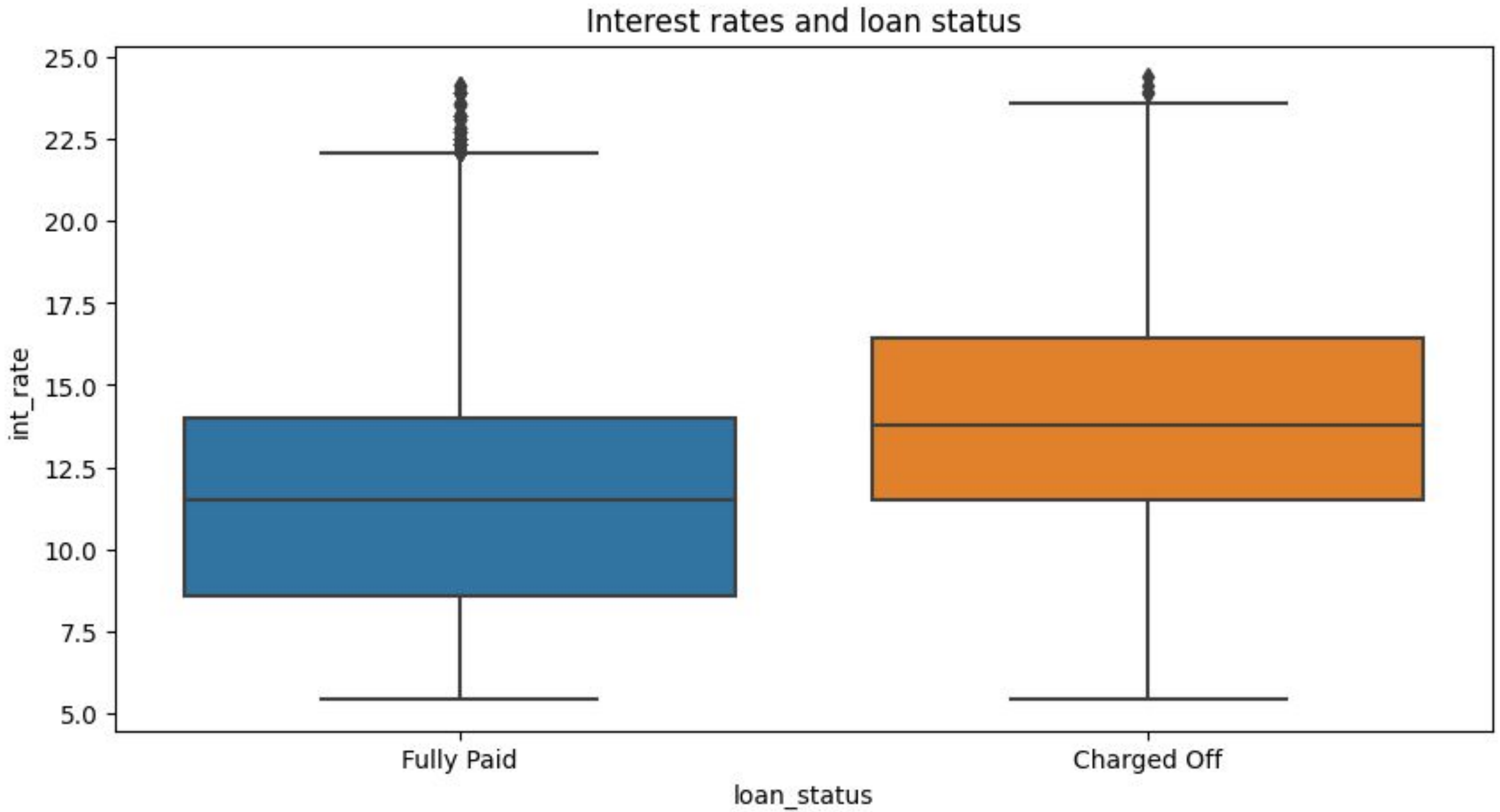
Segmented Univariate Analysis

- Borrowers with 60 months loan term have defaulted more than borrowers with 36 months.
- Borrowers with lower grades are getting more loan amount than borrowers with high grade.
- Higher interest rates resulting in more default than lower interest rates.


Terms vs Loan Amount
35000
30000
25000
20000
15000
10000
5000
0
loan_amnt
36 months
60 months
term



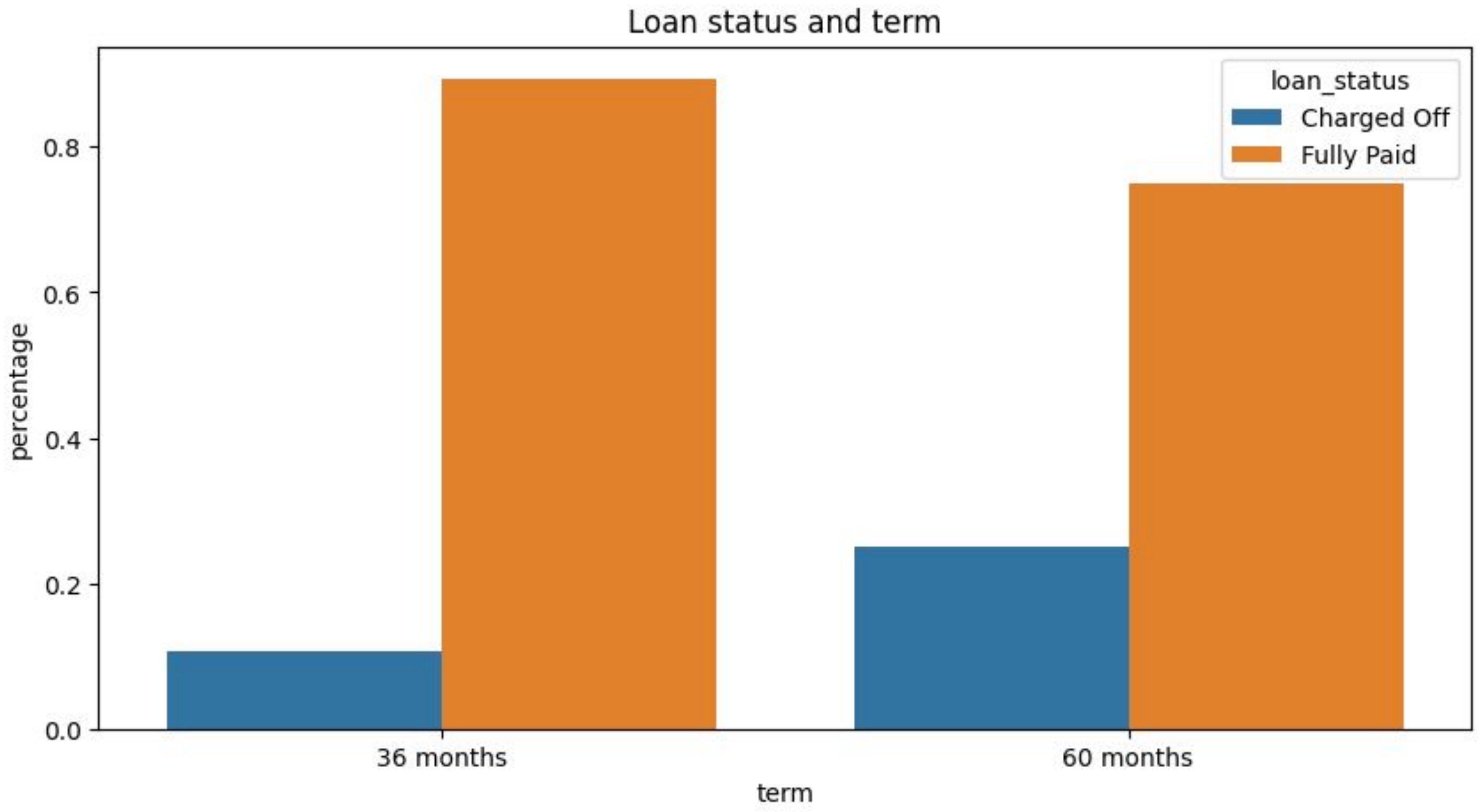
Grade and Loan Amount
35000
30000
25000
20000
15000
10000
5000
0
loan_amnt
A
B
C
D
E
F
G
grade

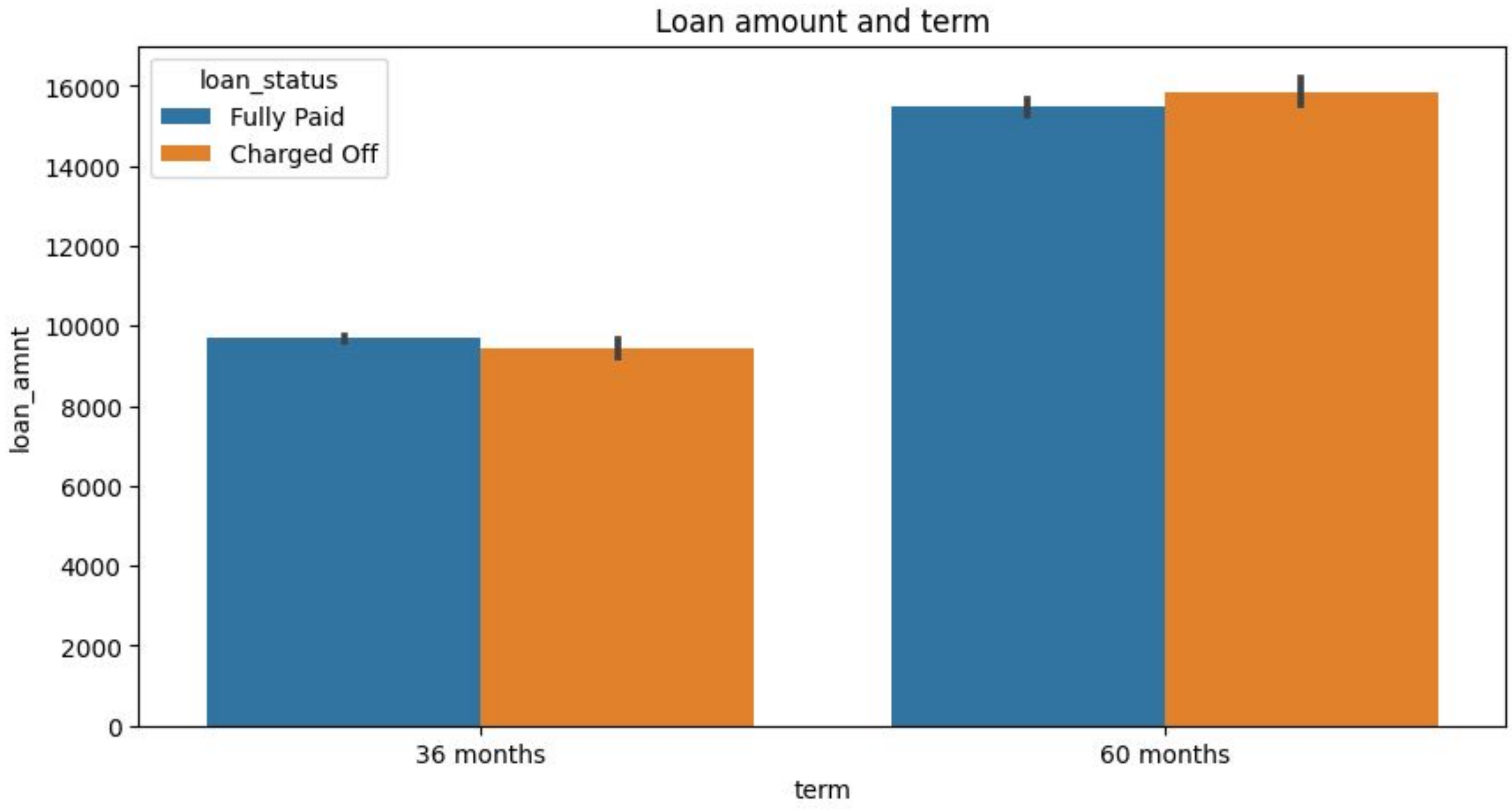


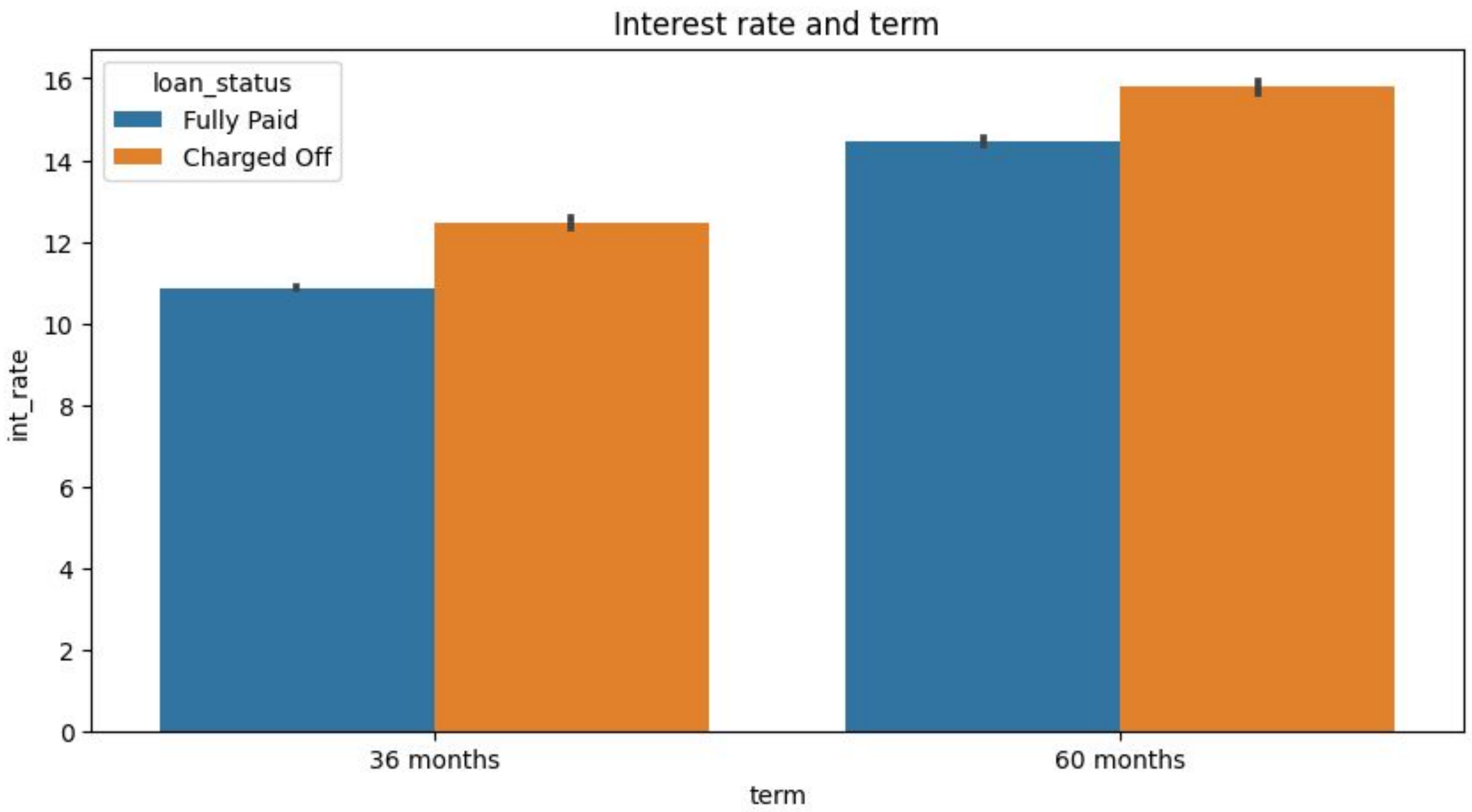
Interest rates and loan status
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
int_rate
Fully Paid
Charged Off
loan_status

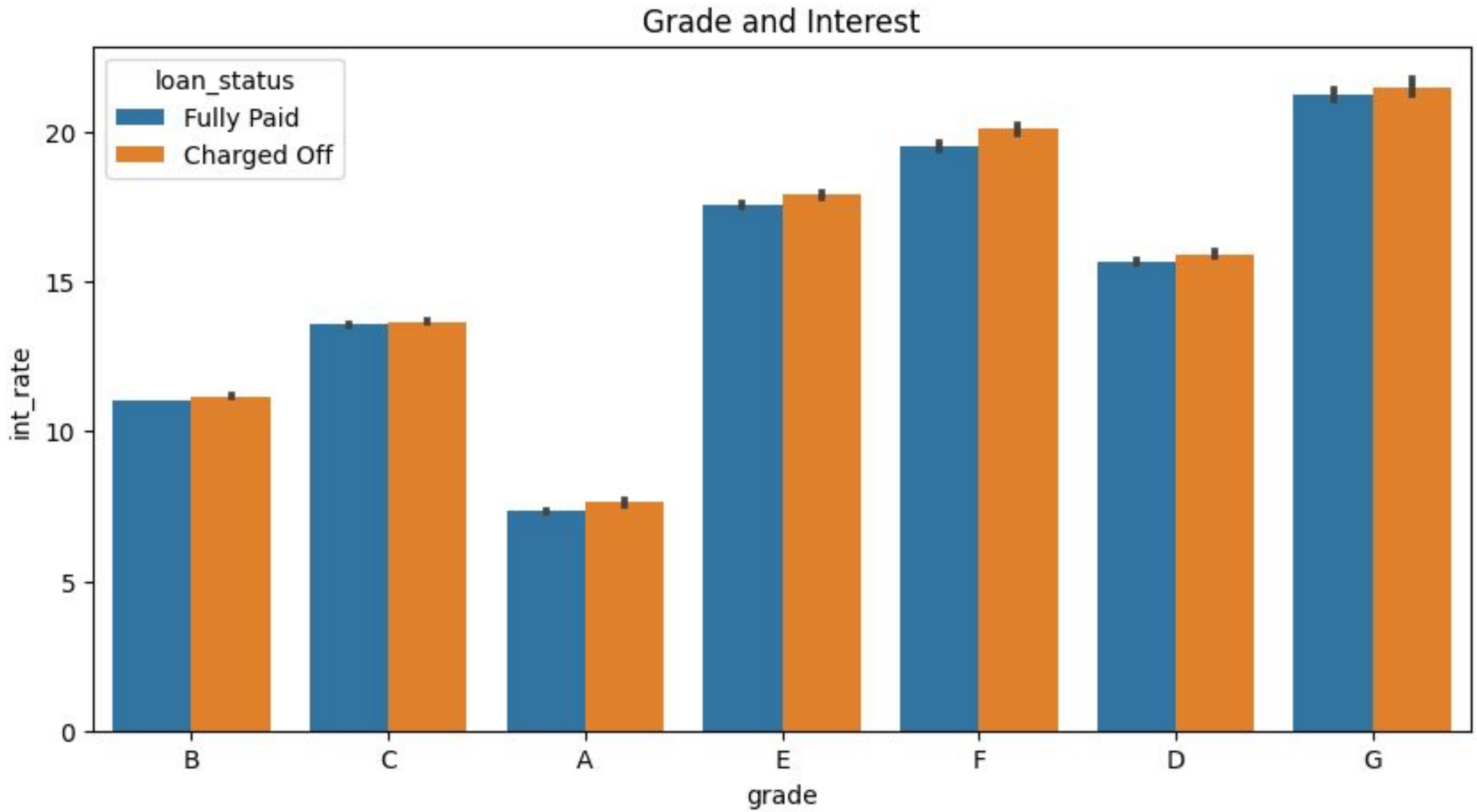
Bivariate Analysis

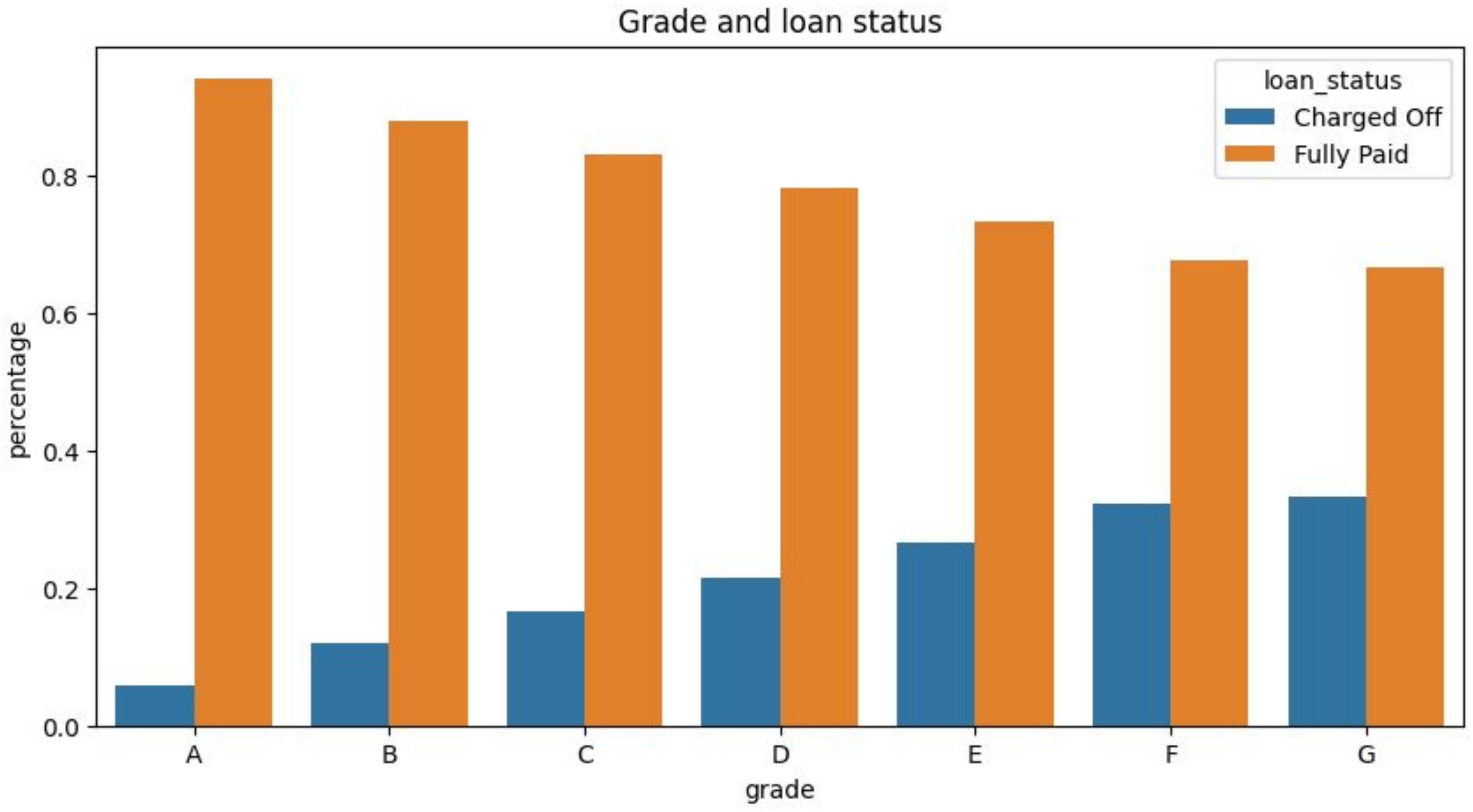
- Higher tenure i.e 60 months term results in high default rate.
- Higher tenure i.e 60 months term got more loan amount than 36 months term borrowers.
- Interest rate is higher for longer tenure i.e 60 months tenure.
- Interest is also increasing as the borrowers grades are decreasing.
- Default rate is increasing exponentially as the grades are lowering.
- Borrowers with purpose as ‘small business’ have defaulted more than other category.


Loan status and term
loan_status
Charged Off
Fully Paid
percentage
0.0
0.2
0.4
0.6
0.8
36 months
60 months
term

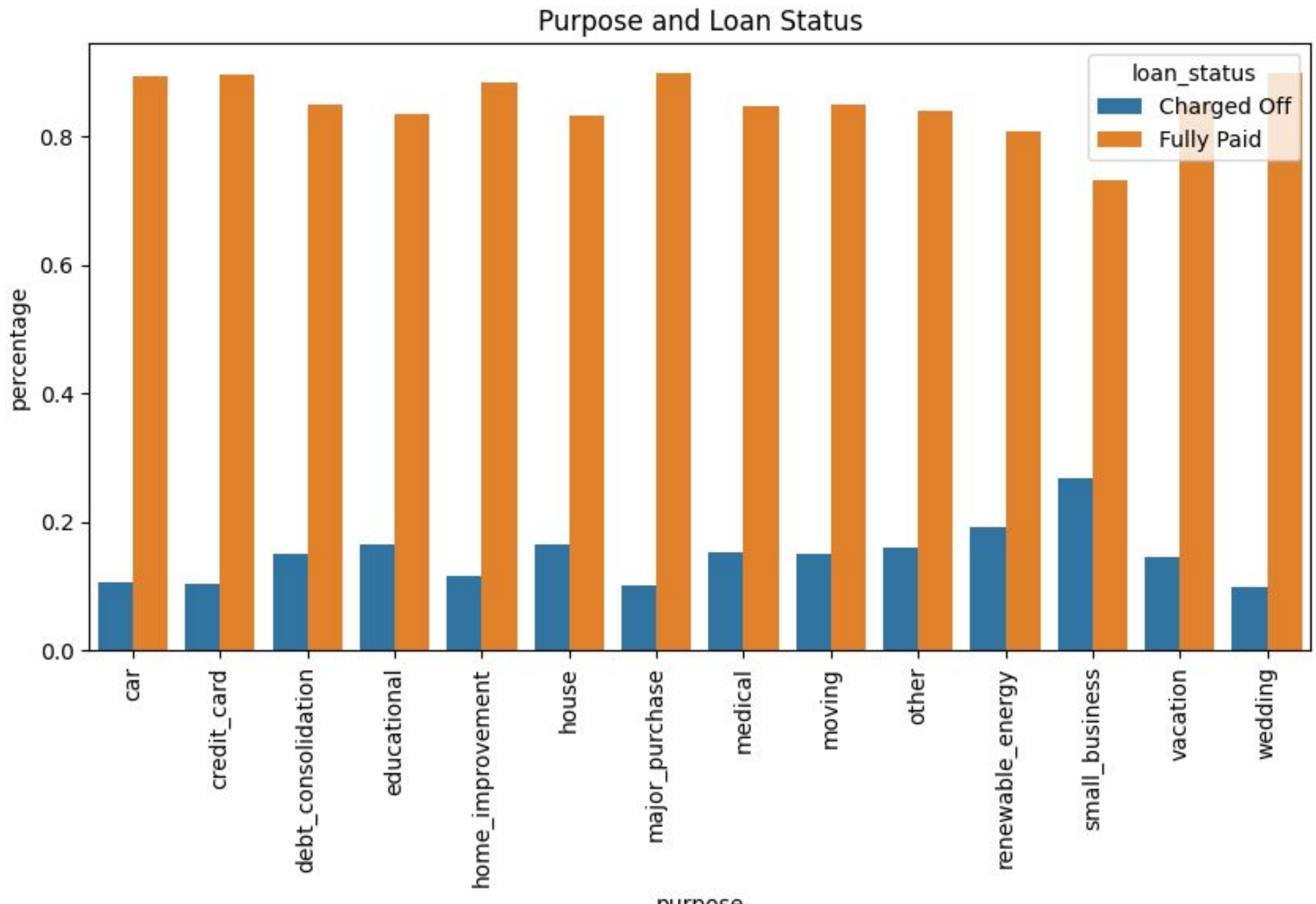

Loan amount and term
loan_status
Fully Paid
Charged Off
loan_amnt
0
2000
4000
6000
8000
10000
12000
14000
16000
36 months
60 months
term


Interest rate and term
loan_status
Fully Paid
Charged Off
int_rate
0
2
4
6
8
10
12
14
16
36 months
60 months
term


Grade and Interest
loan_status
Fully Paid
Charged Off
0
5
10
15
20
int_rate
B
C
A
E
F
D
G
grade



Grade and loan status
loan_status
Charged Off
Fully Paid
percentage
0.0
0.2
0.4
0.6
0.8
A
B
C
D
E
F
G
grade


Purpose and Loan Status
loan_status
Charged Off
Fully Paid
percentage
0.0
0.2
0.4
0.6
0.8
car
credit_card
debt_consolidation
educational
home_improvement
house
major_purchase
medical
moving
other
renewable_energy
small_business
vacation
wedding
purpose

Conclusion

- Combination of high loan amount, high interest rate, low grades results in more defaulted borrowers.
- Borrowers with taking a loan for small business are more prone to getting default.
- Borrowers with public bankruptcies records are tends to getting default regardless of lower interest rates.
- Lending club should avoid giving high loan amounts to borrowers with lower grades to reduce the numbers.
- Lending club should work on collateral scheme with lower interest for small business owners to help them scale business as well as have loan recovery collateral in the case of default.

- Lending club should not give loans to any borrowers with more than 1 bankruptcies records as they are prone to getting default regardless of the lower loan amount or lower interest rate.
- Lending club should not exceed the loan amount in one loan application instead break it into multiple top ups and release the funds in phases to the borrowers to avoid getting defaulted and if such scenario comes the loss can be managed.
- With this I conclude this case study.