Lending Club Case Study

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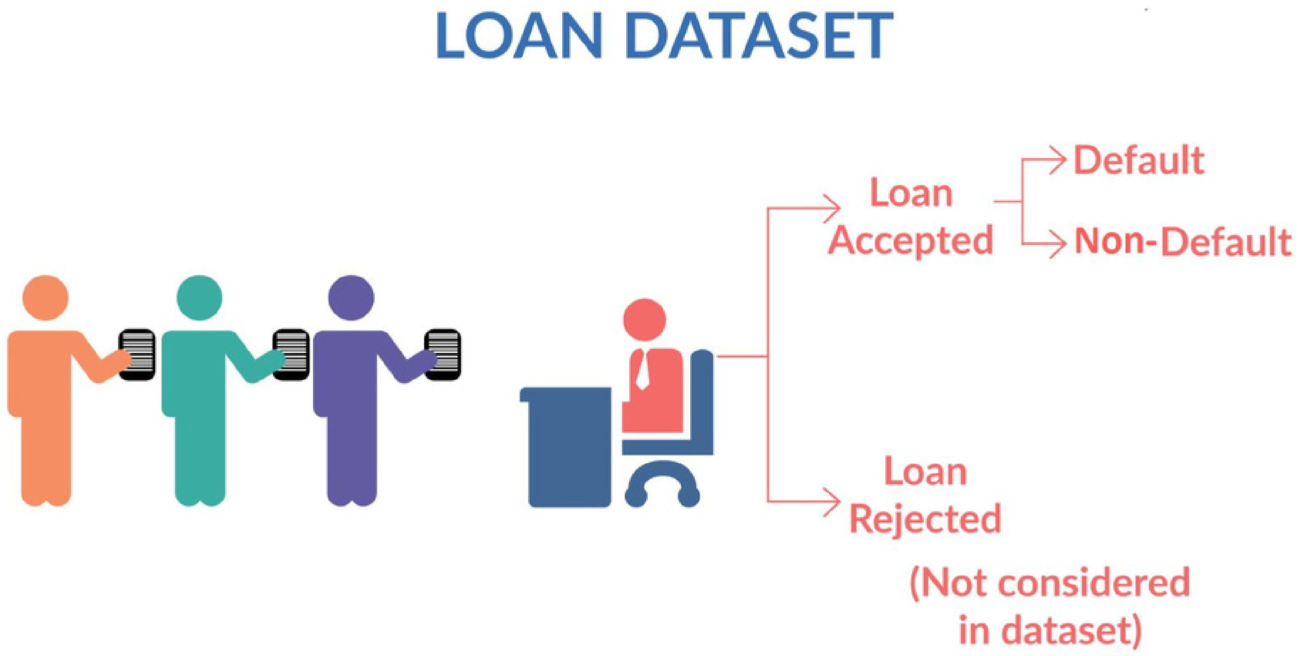
Problem Statement

- Lending Club is a finance company that lends money to people who live in cities.
- They provide different kinds of loans like personal loans, business loans, and loans for medical expenses.
- People can quickly get loans with lower interest rates through their website.
- Some people pay back all their loans, while others don't and end up in trouble.
- Lending Club is trying to figure out why some loans aren't getting paid back and how to stop that from happening.

Summarized Dataset



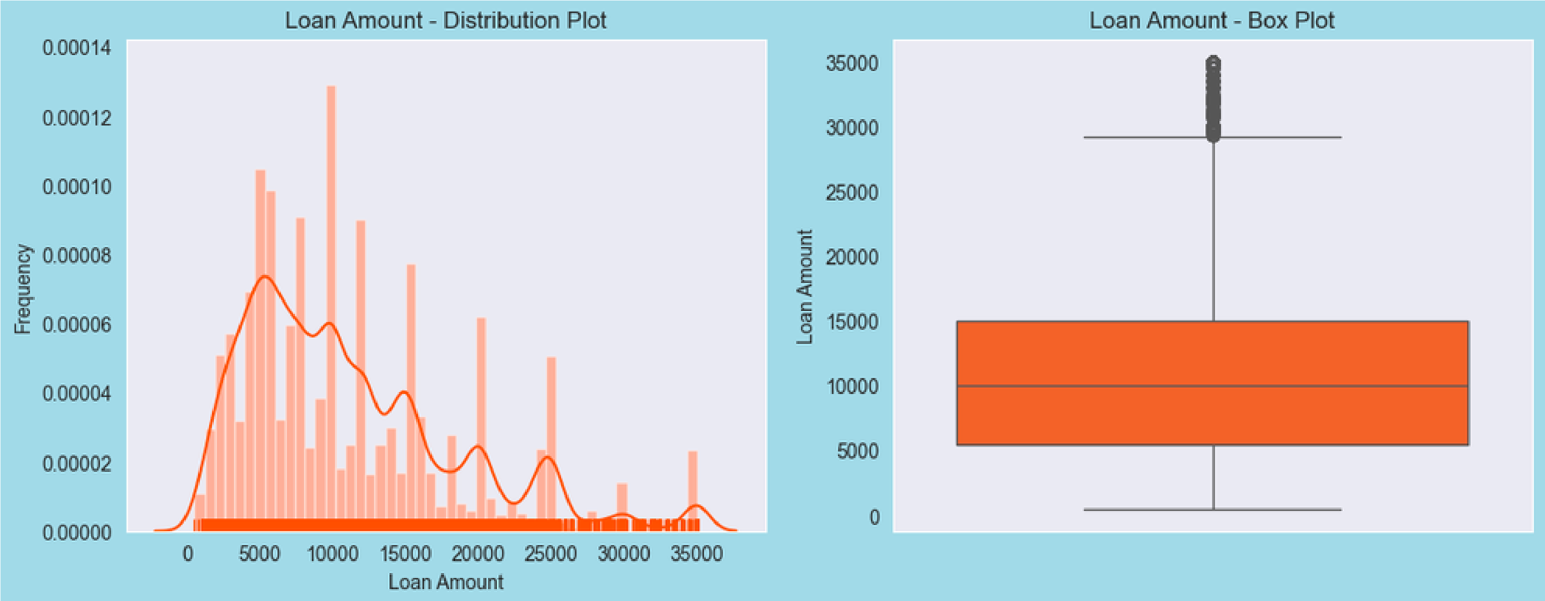
EDA Steps

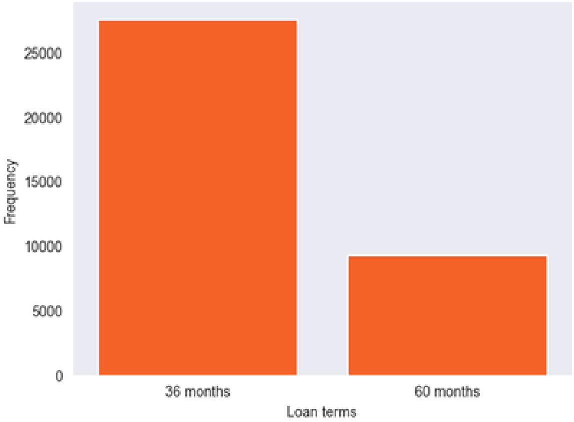
1. Loading data and Overview
2. Data cleaning and standardisation
   a. Remove Columns With Null values
   b. Remove Unique Value Columns
   c. Remove Non Contributing Columns
   d. Fixing data types
   e. Deriving more columns for analysis
3. Analysis
   a. Univariate Analysis
   b Segmented Univariate Analysis
   c. Bivariate Analysis
4. Conclusion

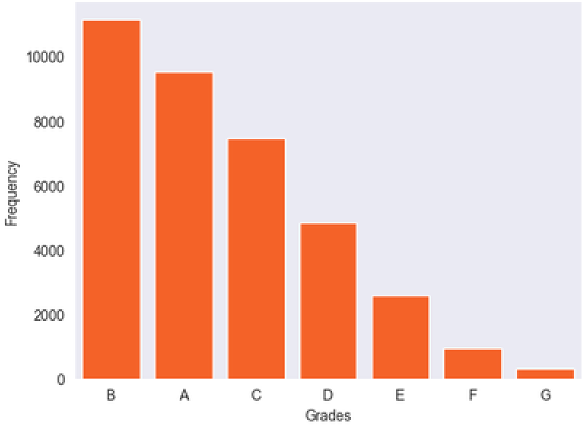
Univariate Analysis

- 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.

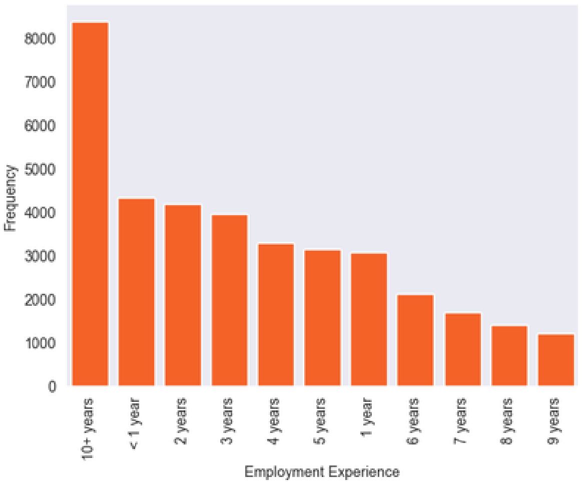
Univariate Graphs




Frequency
0
5000
10000
15000
20000
25000
36 months
60 months
Loan terms


Frequency
0
2000
4000
6000
8000
10000
B
A
C
D
E
F
G
Grades


Frequency
0
2500
5000
7500
10000
12500
15000
17500
RENT
MORTGAGE
OWN
OTHER
Home ownership status

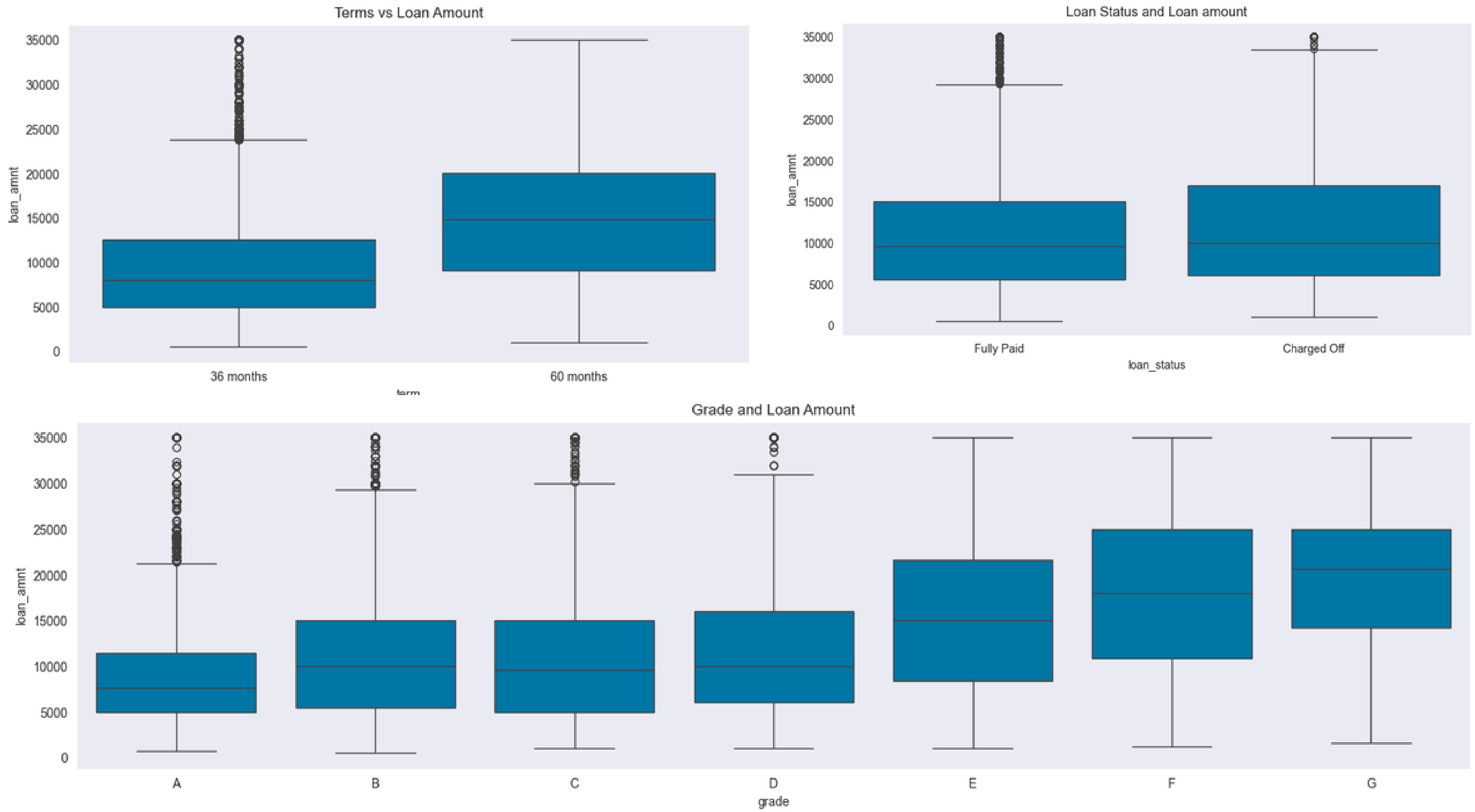

Frequency
0
1000
2000
3000
4000
5000
6000
7000
8000
10+ years
< 1 year
2 years
3 years
4 years
5 years
1 year
6 years
7 years
8 years
9 years
Employment Experience


Frequency
0
2500
5000
7500
10000
12500
15000
17500
RENT
MORTGAGE
OWN
OTHER
Home ownership status

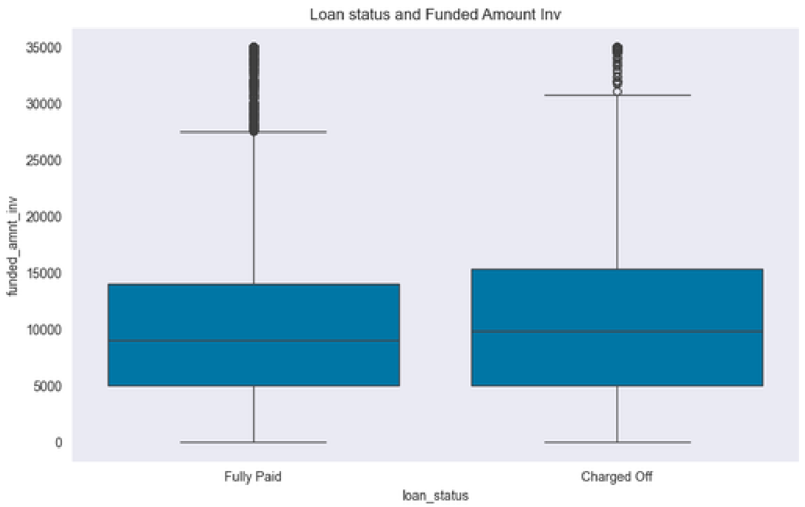

Frequency
0
2000
4000
6000
8000
10000
12000
14000
16000
Not Verified
Verified
Source Verified
Borrower Verification Status

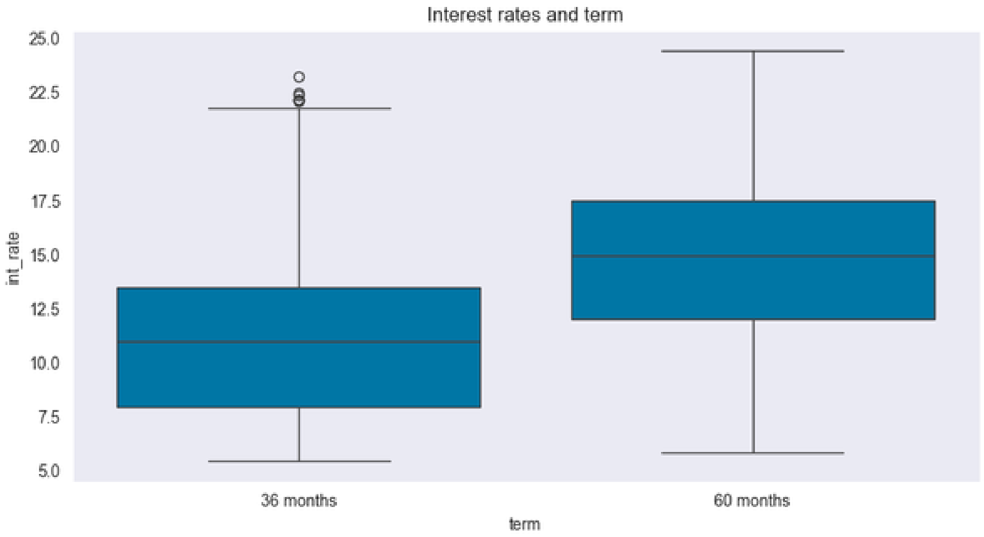
Segmented Univariate Analysis

- 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.



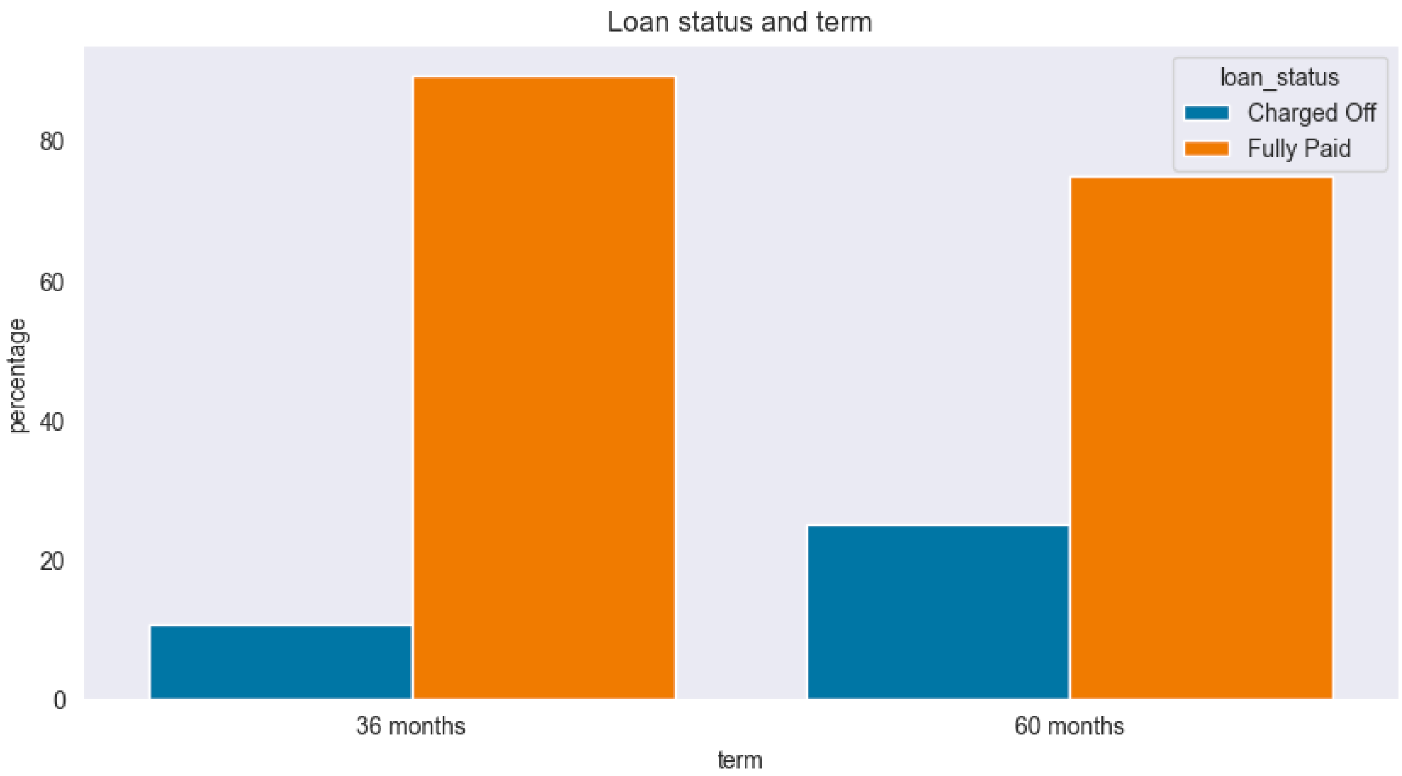
Terms vs Loan Amount
loan_amnt
35000
30000
25000
20000
15000
10000
5000
0
36 months
60 months
term
Loan Status and Loan amount
loan_amnt
35000
30000
25000
20000
15000
10000
5000
0
Fully Paid
Charged Off
loan_status
Grade and Loan Amount
loan_amnt
35000
30000
25000
20000
15000
10000
5000
0
A
B
C
D
E
F
G
grade

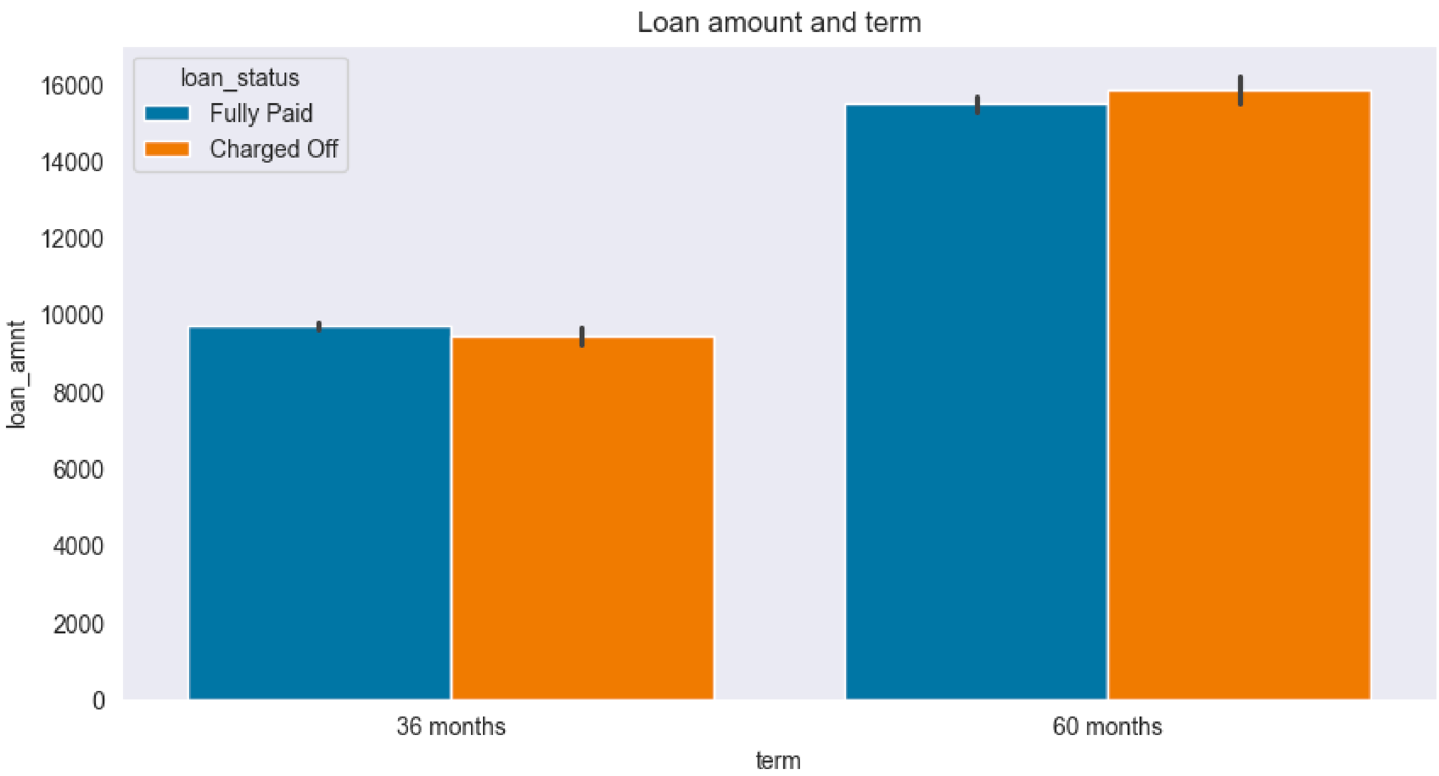

Loan status and Funded Amount Inv
35000
30000
25000
20000
15000
10000
5000
0
funded_amnt_inv
Fully Paid
Charged Off
loan_status

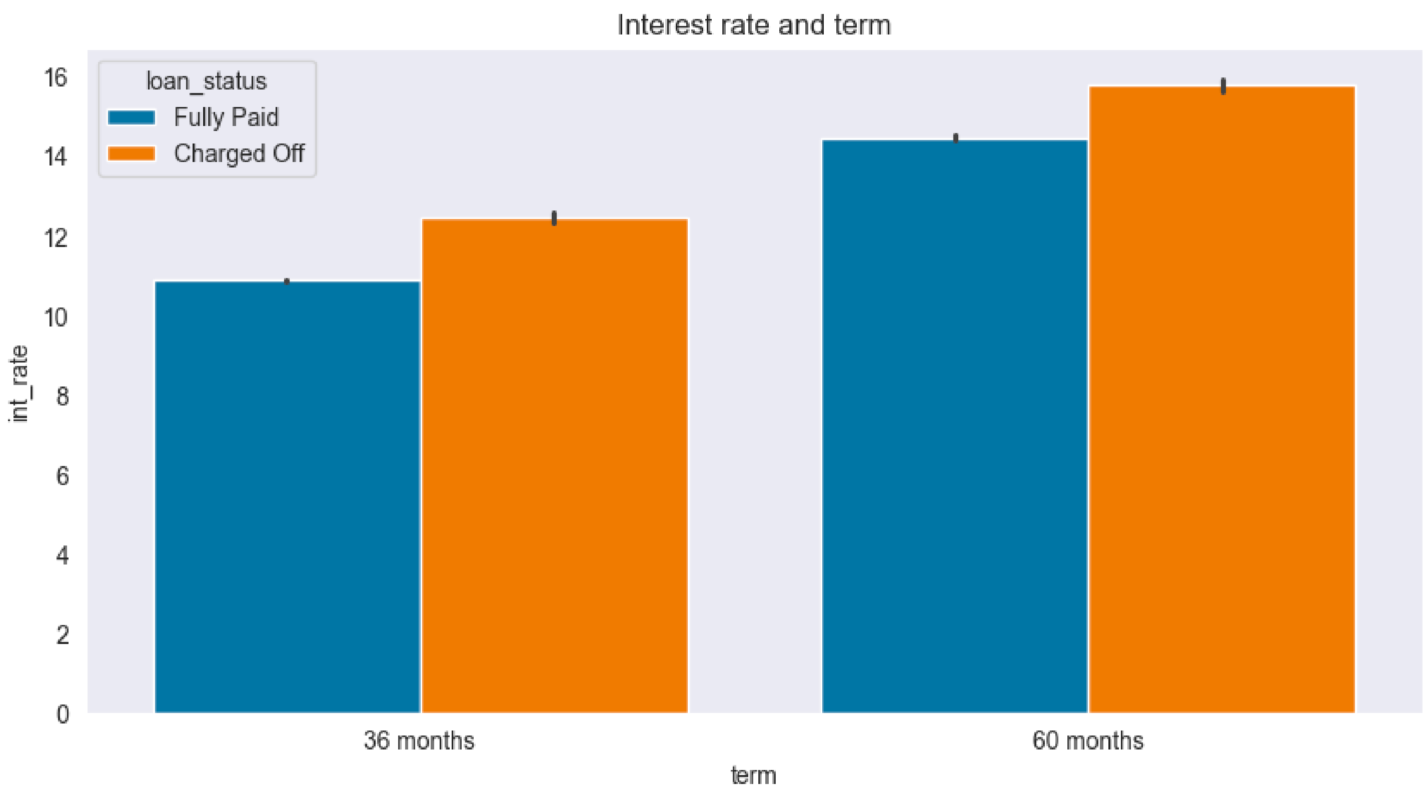

Interest rates and term
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
int_rate
36 months
60 months
term

Bivariate Analysis

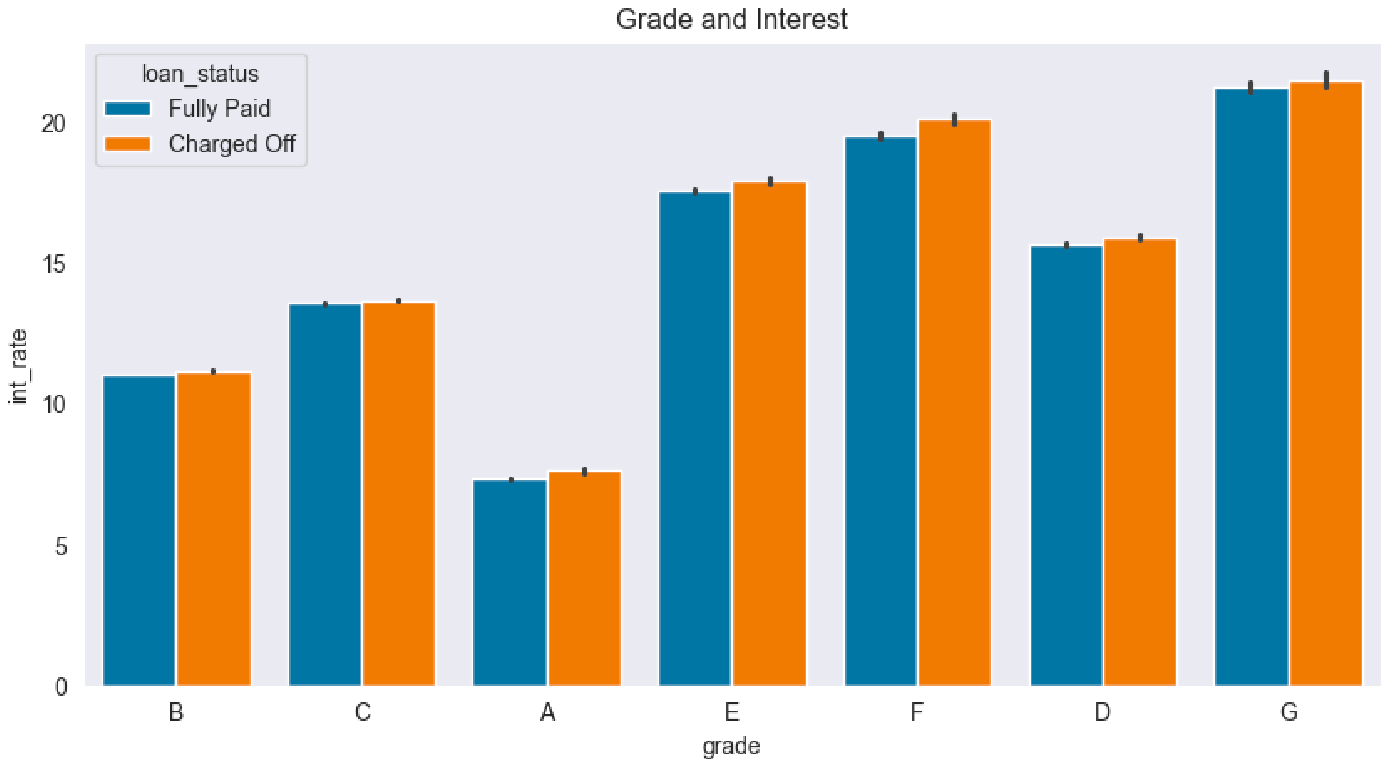
- Higher tenure i.e 60 months term results in high default rate.
- Higher tenure i.e 60 months term got more loan amount than 36 months term borrowers.
- Interest rate is higher for longer tenure i.e 60 months tenure.
- Interest is also increasing as the borrowers grades are decreasing.
- Default rate 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
80
60
40
20
0
36 months
60 months
term

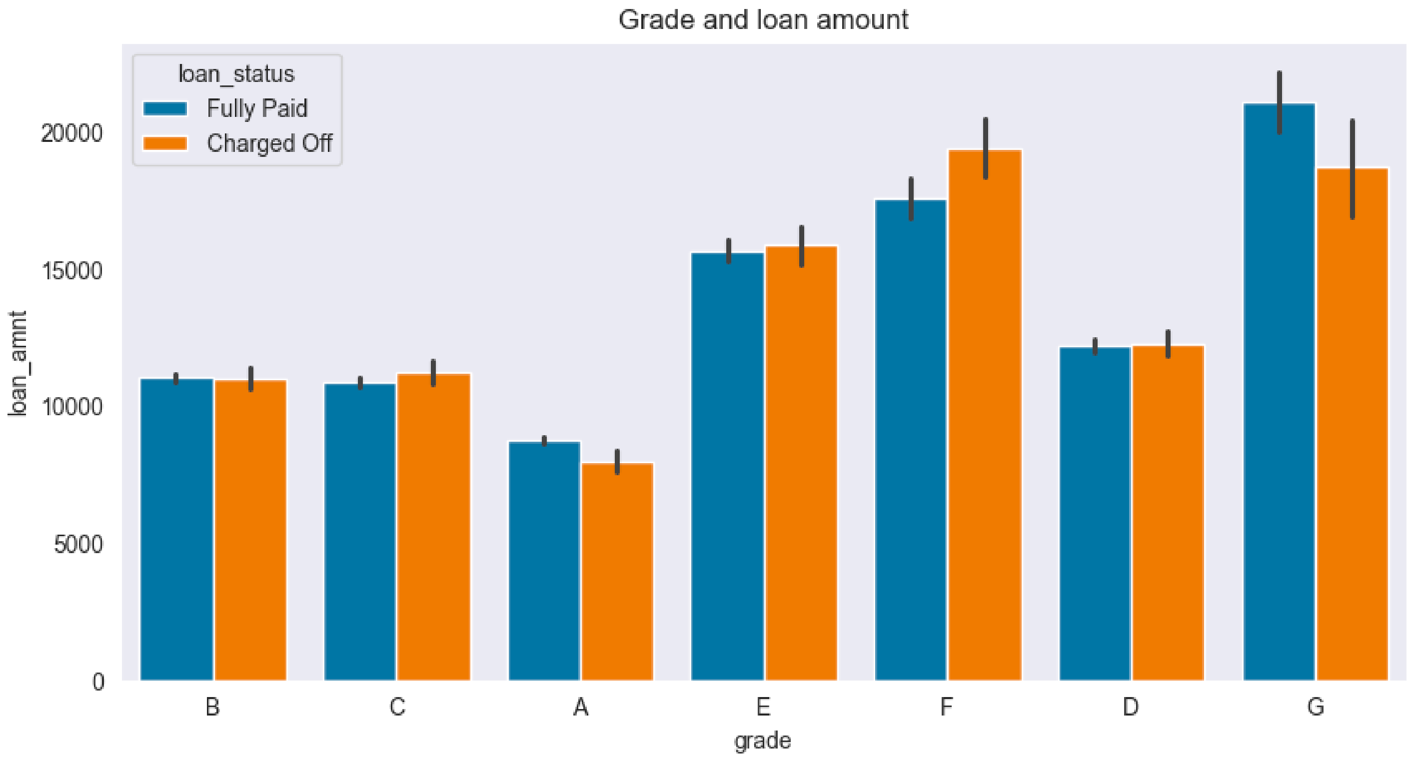

Loan amount and term
loan_status
Fully Paid
Charged Off
loan_amnt
0
2000
4000
6000
8000
10000
12000
14000
16000
36 months
60 months
term

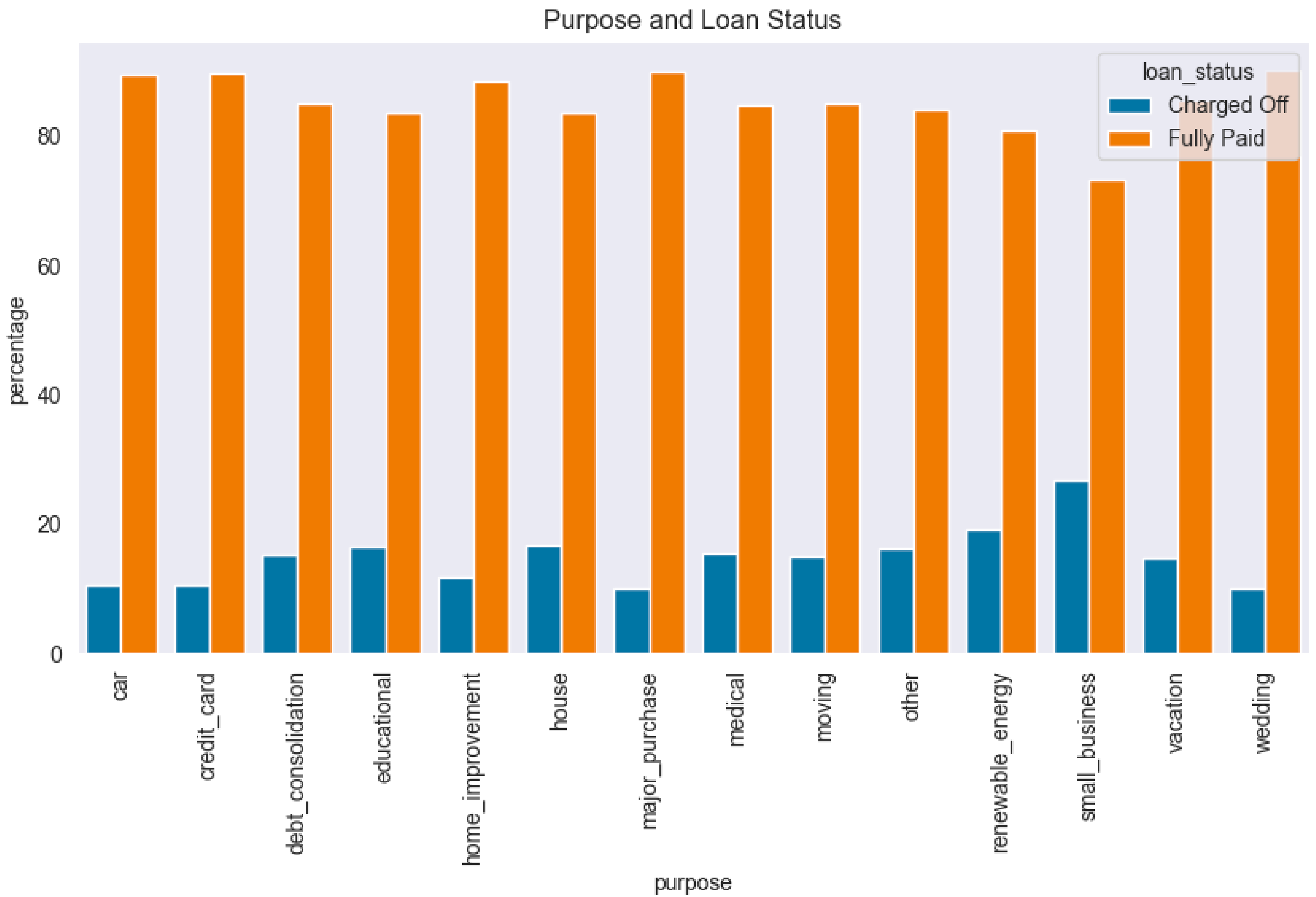


Interest rate and term
loan_status
Fully Paid
Charged Off
int_rate
0
2
4
6
8
10
12
14
16
36 months
60 months
term



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


Grade and loan amount
loan_status
Fully Paid
Charged Off
loan_amnt
0
5000
10000
15000
20000
B
C
A
E
F
D
G
grade


Purpose and Loan Status
loan_status
Charged Off
Fully Paid
percentage
0
20
40
60
80
car
credit_card
debt_consolidation
educational
home_improvement
house
major_purchase
medical
moving
other
renewable_energy
small_business
vacation
wedding
purpose

Conclusion

- A mix of having a large loan amount, high interest rate, and low credit grades leads to more borrowers unable to repay their loans.
- People taking out loans for small businesses are more likely to end up in default.
- Borrowers with a history of public bankruptcy records tend to default, even when they have lower interest rates.
- To reduce defaults, Lending Club should be cautious about providing high loan amounts to borrowers with lower credit grades.
- Lending Club can consider introducing a collateral system with lower interest rates for small business owners, helping them grow their businesses while also having a backup plan for loan recovery in case of default.

- Lending Club should avoid granting loans to borrowers with more than one bankruptcy record since they are at high risk of default, regardless of the loan amount or interest rate.
- It's wise for Lending Club not to provide the full loan amount in a single application but rather split it into multiple top-ups and release the funds gradually to borrowers. This approach can help prevent defaults, and in the rare event of a default, the potential loss can be better managed.