

LENDING CLUB ANALYSIS

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BATCH: ML-69

Understanding Data using Univariate Analysis

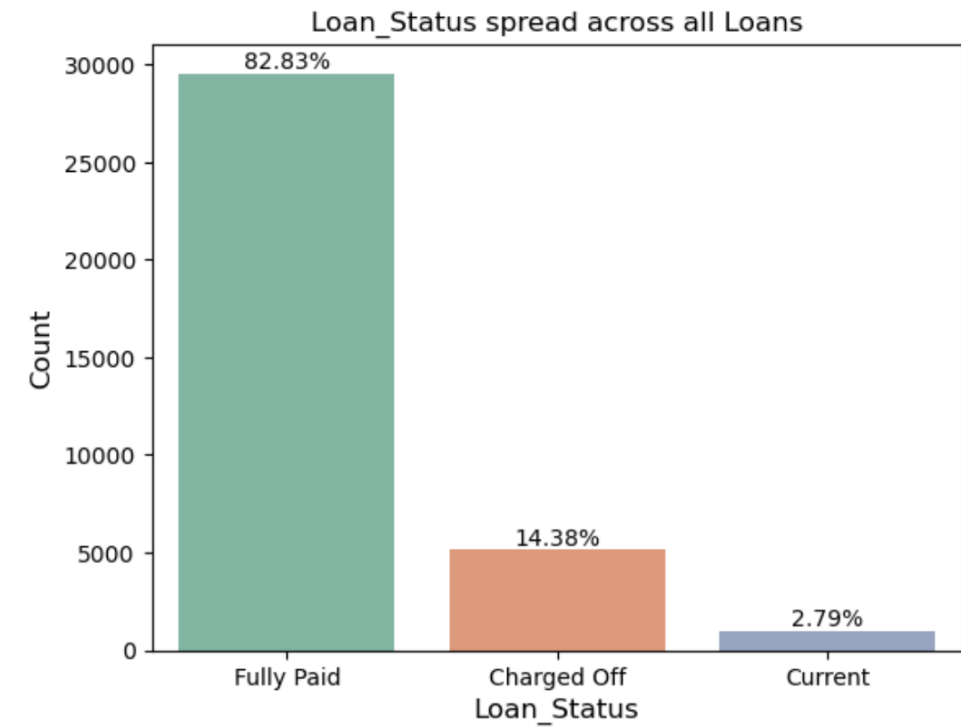
The objective of this analysis is to understand data, how it is spread and identify the approach for further analysis. Some of the columns which were analyzed were,

Term: Duration of the loan tenure.

Interest Rate: What is the spread of interest rate across all approved loans?

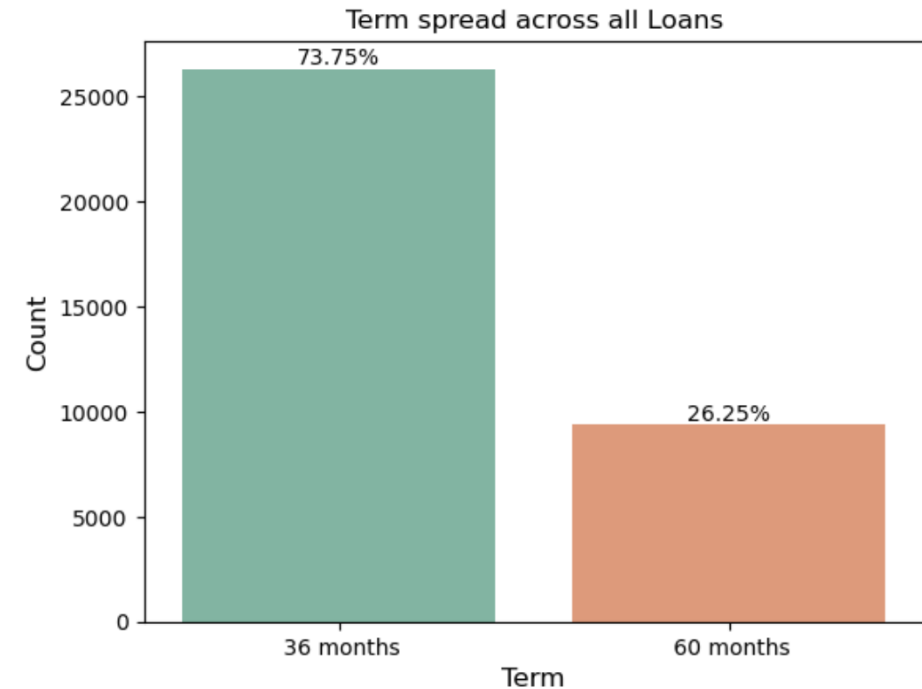
Understanding Loan Status: What is the spread of loans across different statuses?

- Almost 83% of the loans are fully paid.
- 14% of all loan accounts are Charged Off.
There are 5129 such accounts.
- Less than 3% of all records are active.



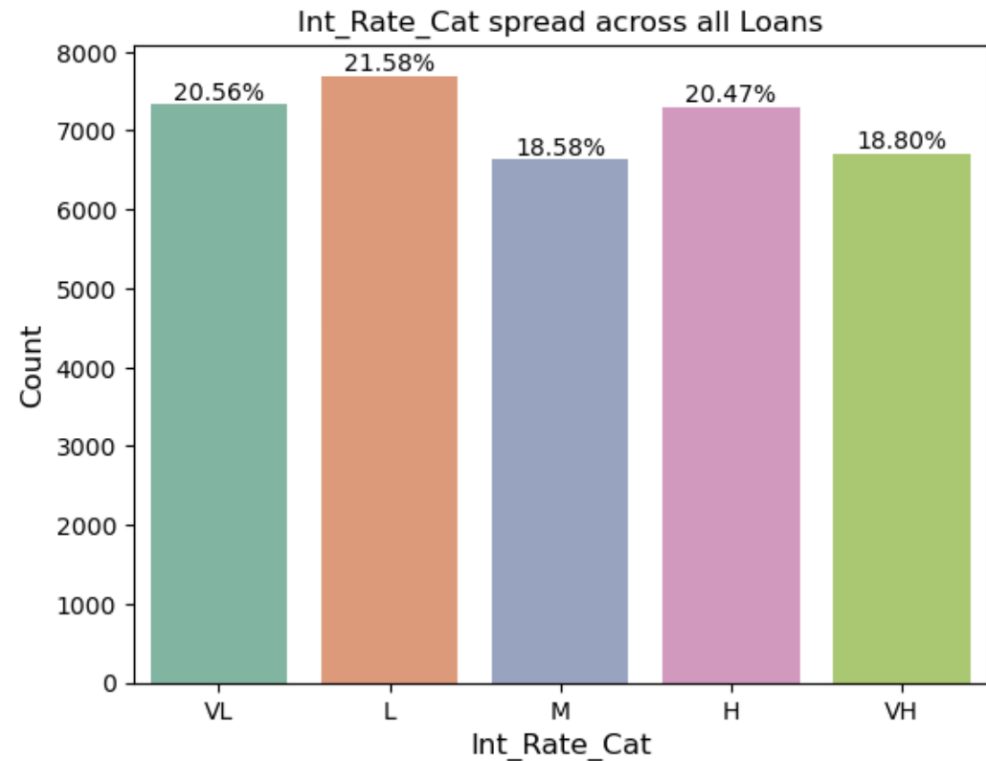
Loan Term: What percent of loans records are/were in 3 years and 5 years term?

- Significant portion of loans are in 36 months term. Around 74%
- Only 26% of total approved loans had 60 months tenure.



Interest Rate: Are there any disparities in interest rates?

- After categorizing interest rates from “VERY LOW” to “VERY HIGH” based on different quartiles, the spread look significantly even.
- Loans given is lower interest rates are slightly higher (20.5% and 21.5%) than other categories.



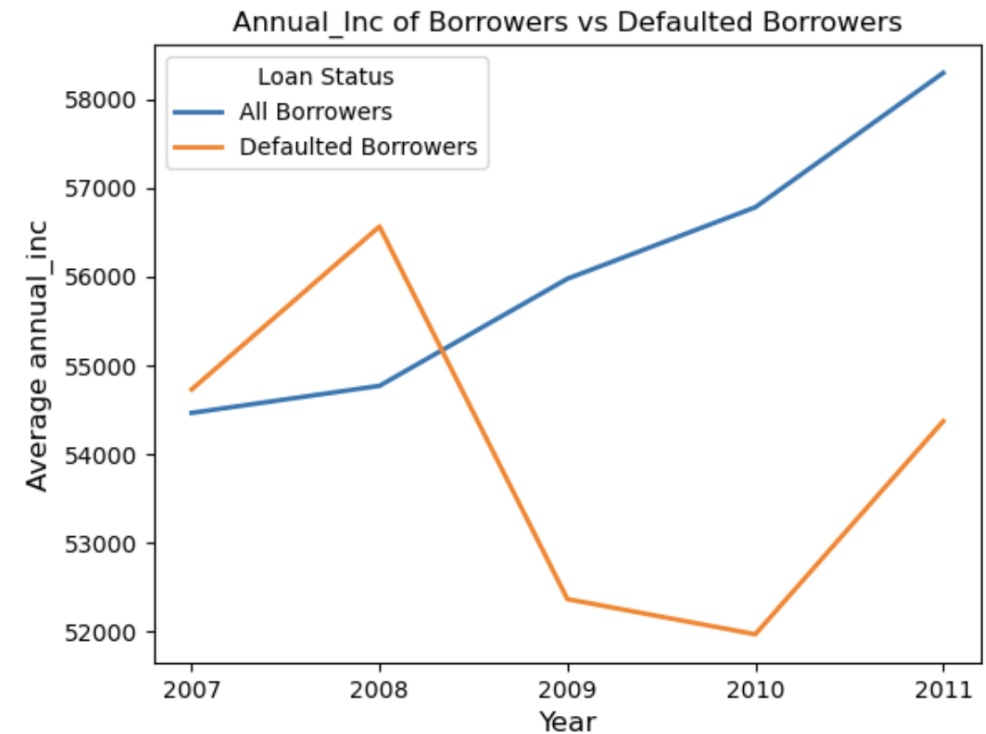
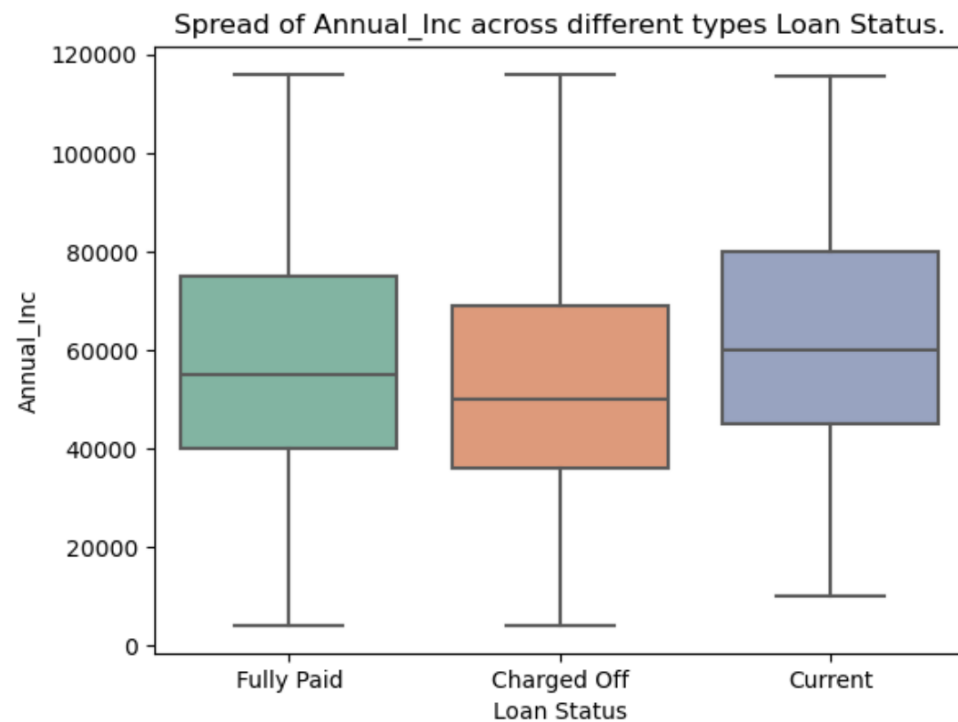
Analyzing Data using Bivariate Analysis

Analysis has been performed by categorizing columns in two categories.

- Borrower's Attributes, such as
 - Annual Income
 - Home Ownership
 - Employee Length, etc. and
- Loan Attributes,
 - Loan Amount
 - Loan Term etc.

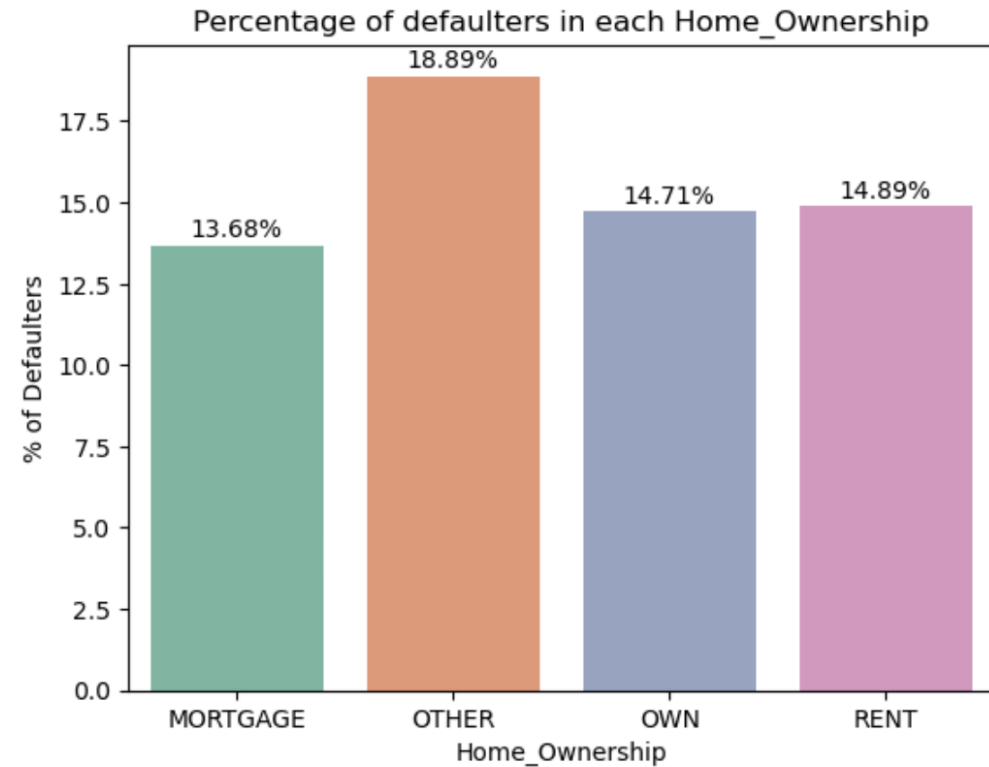
Analyzing Annual Income

- Average annual income of borrowers defaulting the loan is lower than Loans which are fully paid and currently running.
- Analyzing historical data shows a slump starting from 2009 onwards.



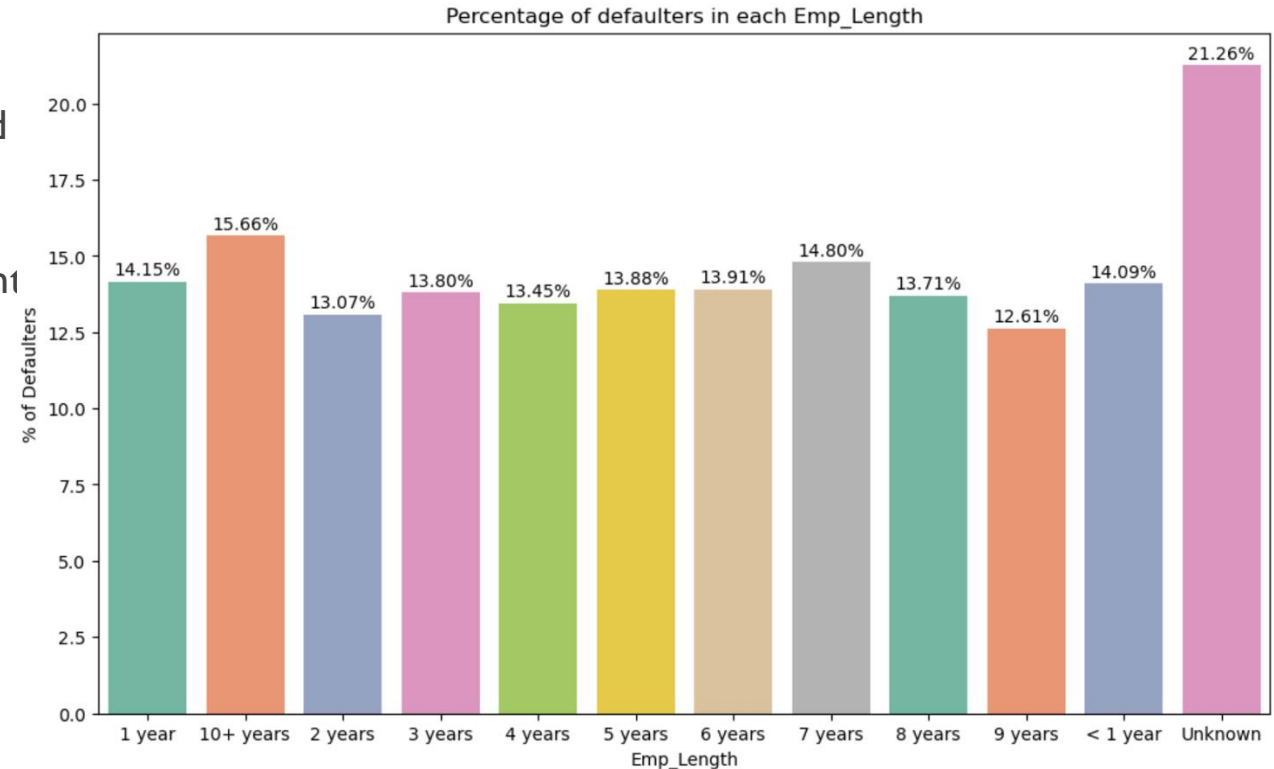
Analyzing Home Ownership

- Strong correlation between borrowers defaulting the loan and with home ownership status set to Others.
- Surprisingly, less than 14% of customers with Mortgage default the loan.



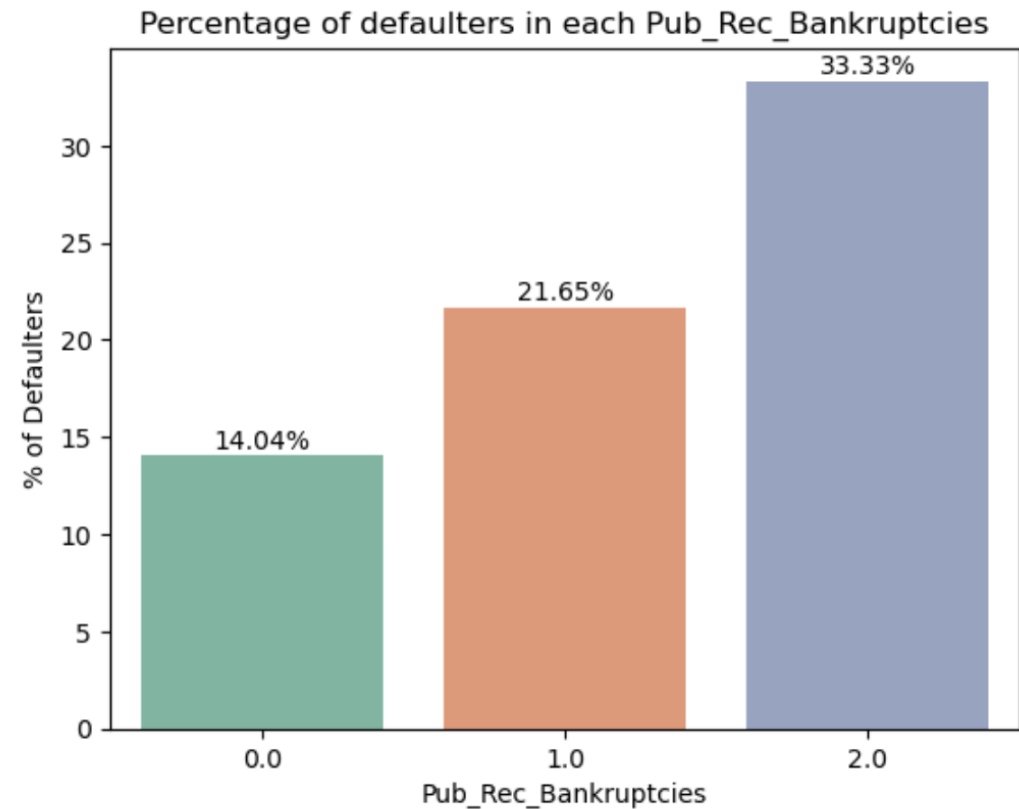
Analyzing Employment Length

- 21% of borrowers who didn't have employment duration information tend to default the loan.
- Borrowers with employment history tend to better with minor improvement as the number of years of experience increases.



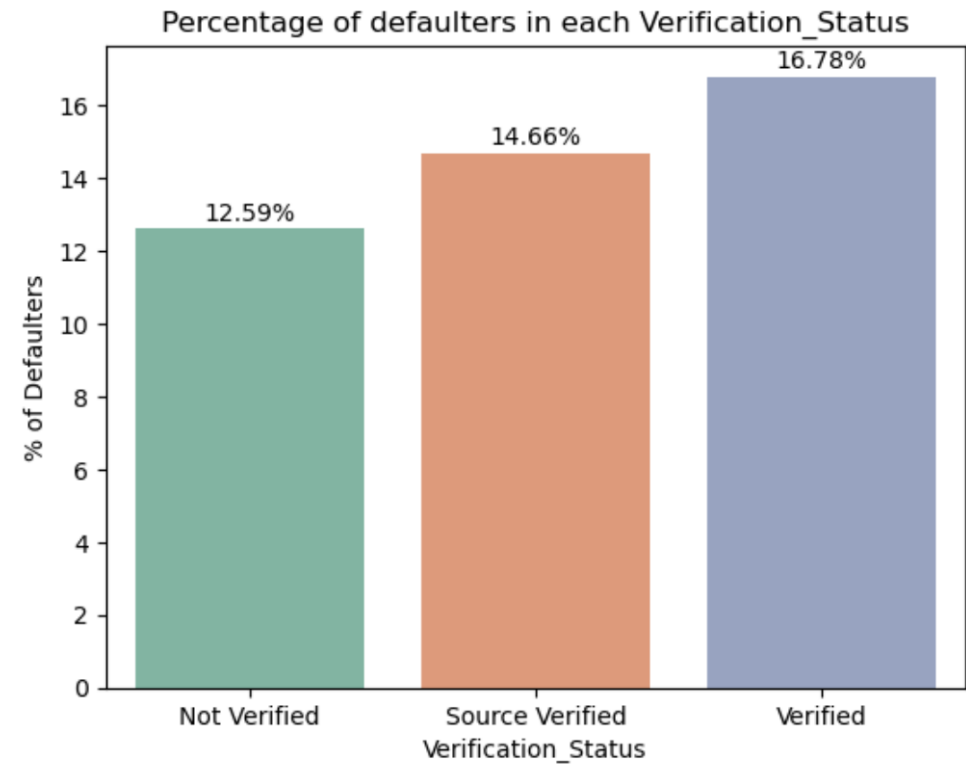
Analyzing Bankruptcy Record

- There is a strong correlation between borrower's bankruptcy record and chances of defaulting the loan.
- 33% of the borrower with 2 bankruptcy failed to repay the loan.
- Only 14% borrowers defaulted the loan who didn't had any bankruptcy record.



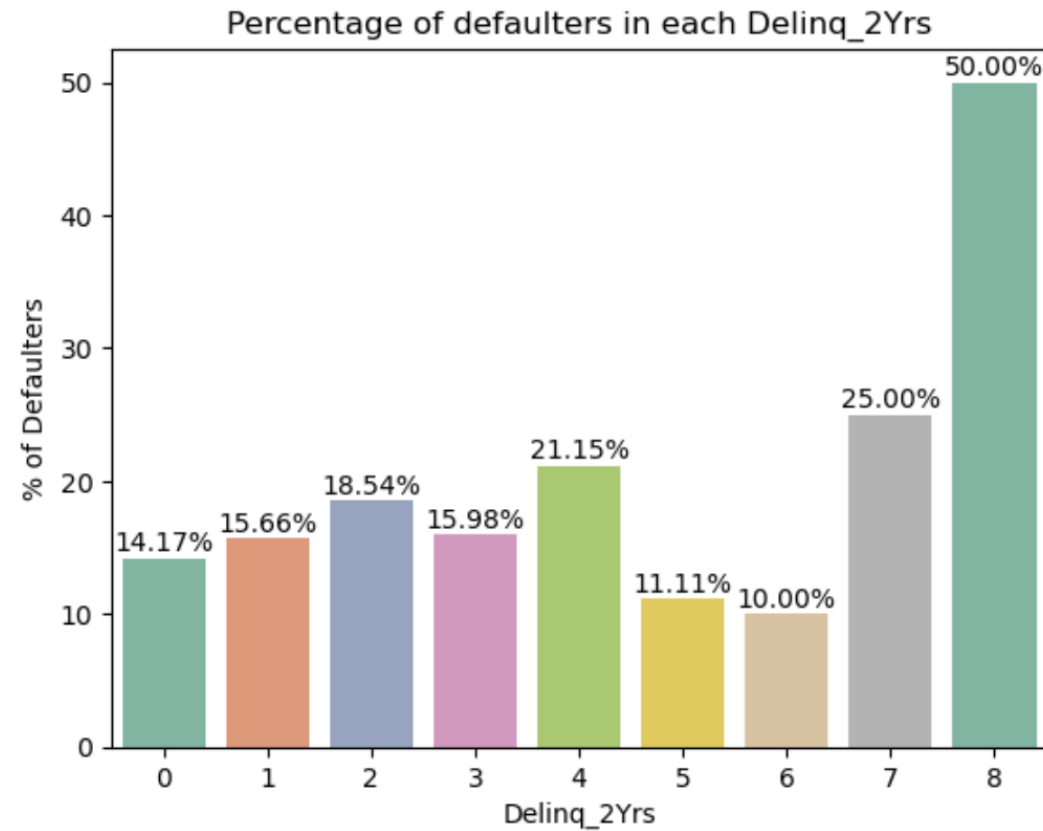
Analyzing Verification Status

- This is a surprise, 17% of all the verified borrower have defaulted the loan. .
- The ratio falls to less than 13% for non verified borrowers.
- The ratio have slightly improved to less than 15% when bank has done the verification.



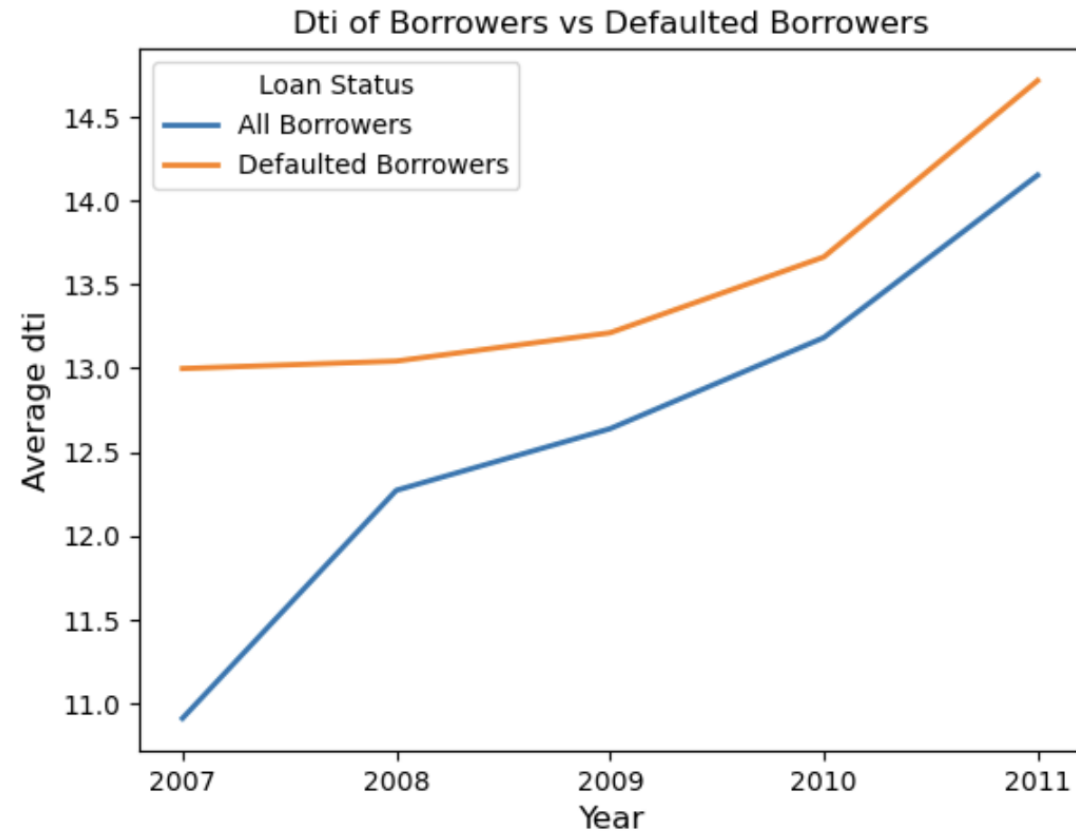
Analyzing Delinquency in last 2 years

- 50% of the borrowers who had 8 delinquencies in last 2 years have defaulted.
- The graph shows some correlation between the number of delinquencies and chances of defaulting on a loan. Though there is an anomaly in between.



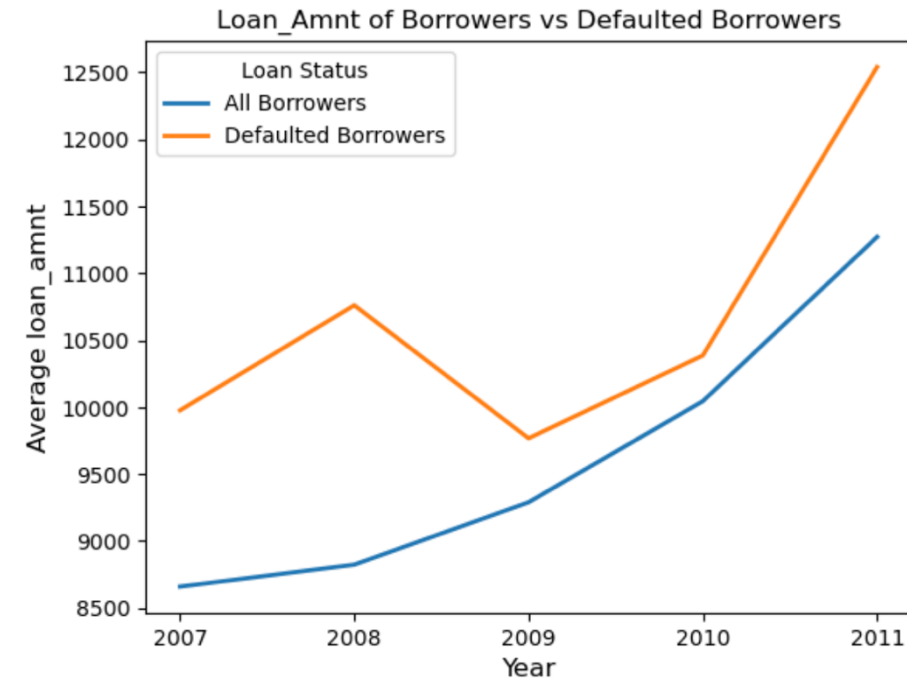
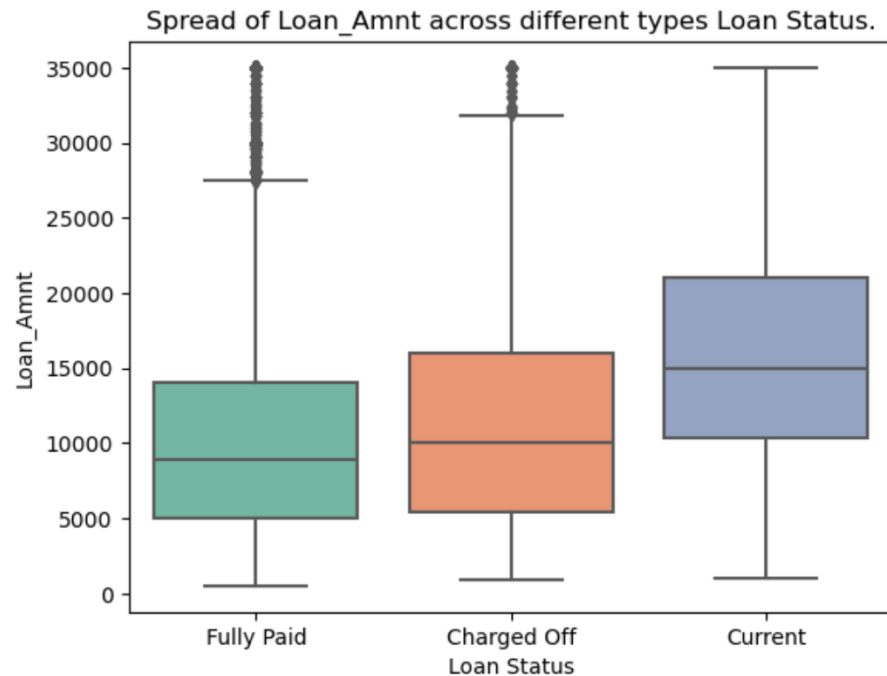
Analyzing Debt to Interest Ratio

- There is a strong correlation between DTI and chances of defaulting loan.
- DTI ratio has increased from 11% to 12.5% between year 2007 and 2008.
- DTI ratio for all the borrowers are increasing.



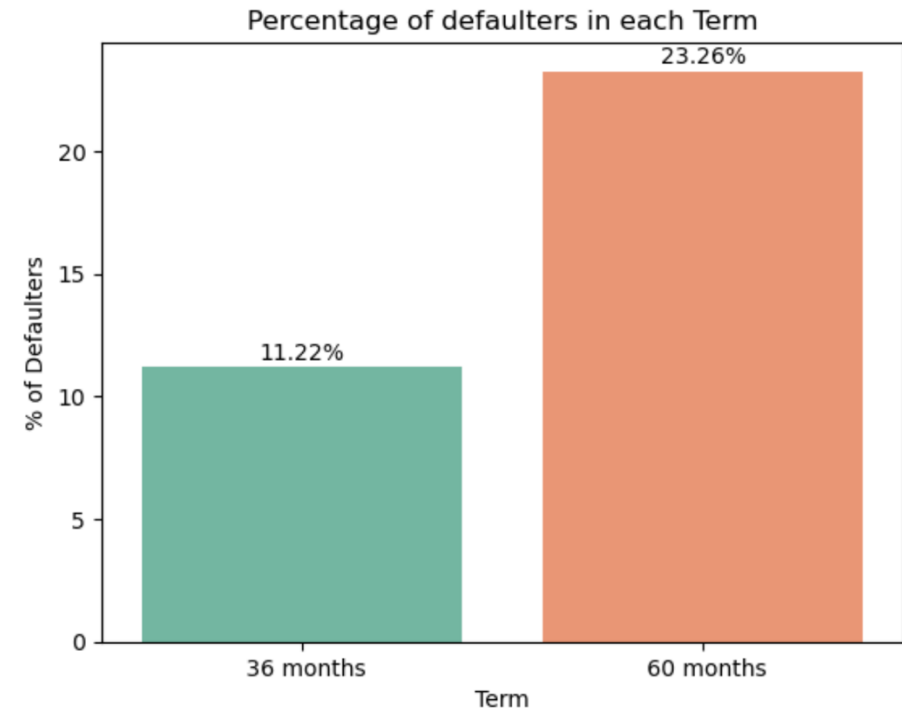
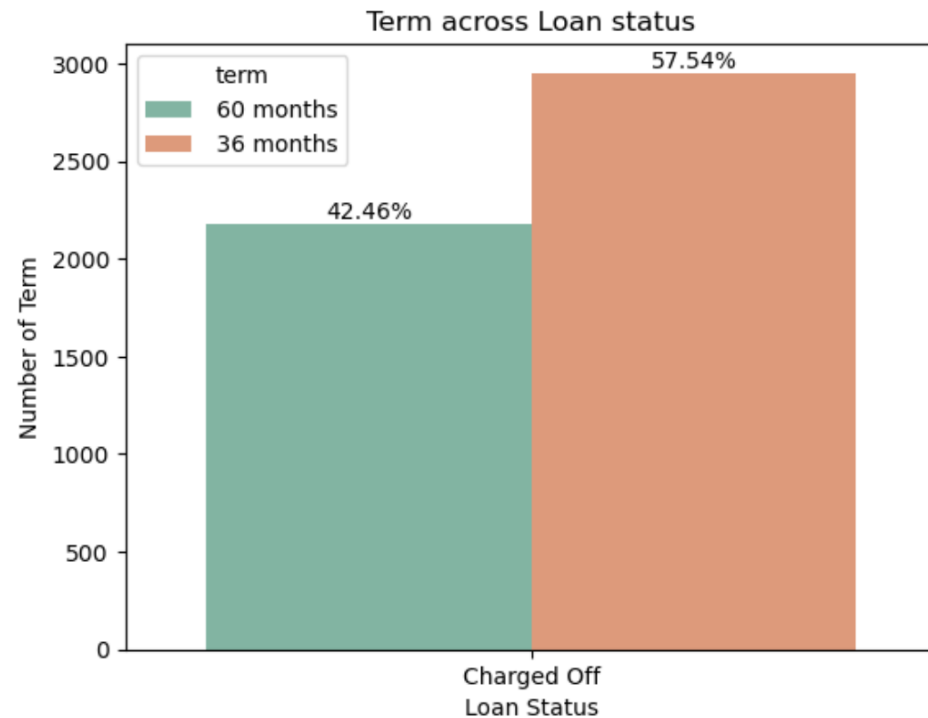
Analyzing Loan Amount

- Loans with higher loan amount have increased risk of defaulting.
- Most of the active loans have higher loan amount.
- There was significant difference between average loan amount and average defaulting loan amount till 2008.
- This gap narrowed down in 2009 and 2010 but started the increase again.
- Average loan amount is increasing. Started from \$8600 now around \$11200.



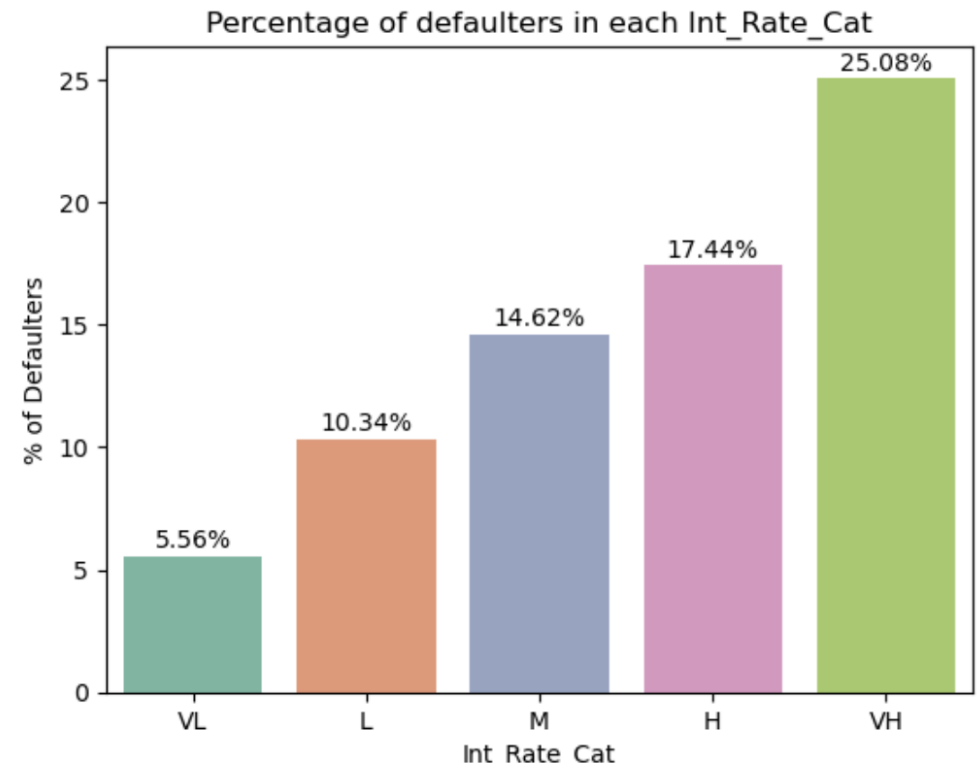
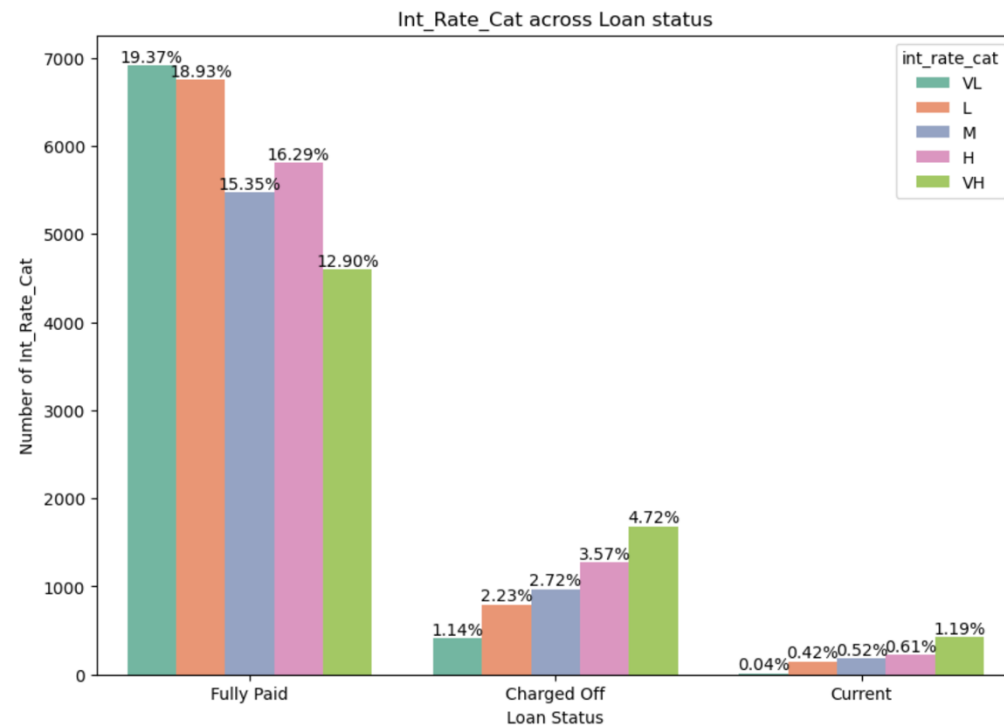
Analyzing Loan Term

- Around 58% of all defaulted loans, had 36 months term, but we know around 74% of all the loans are 36 months.
- Analyzing it further we found, 23% of all 60 months term loan ended up defaulting.
- This number was only 11% if the loan tenure was 36 months



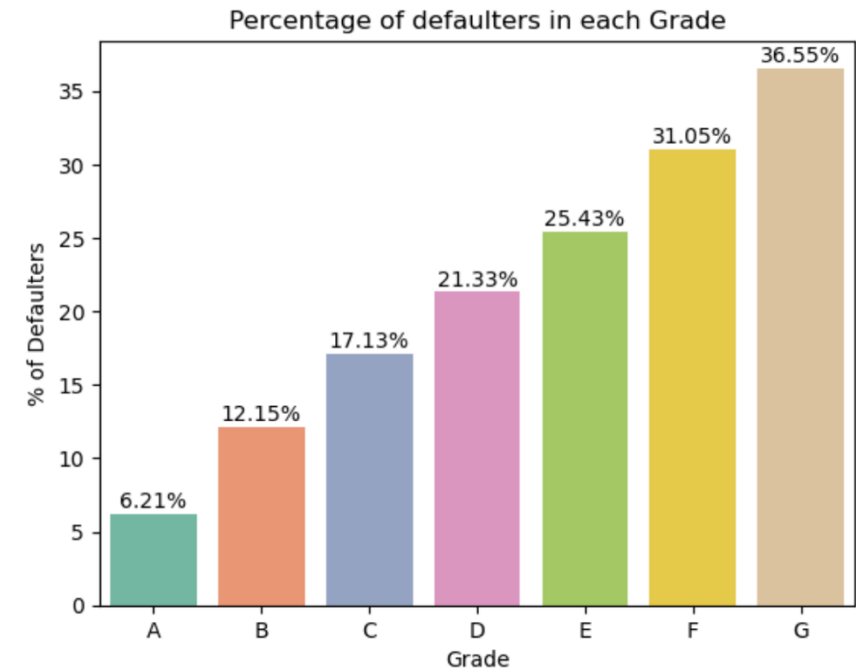
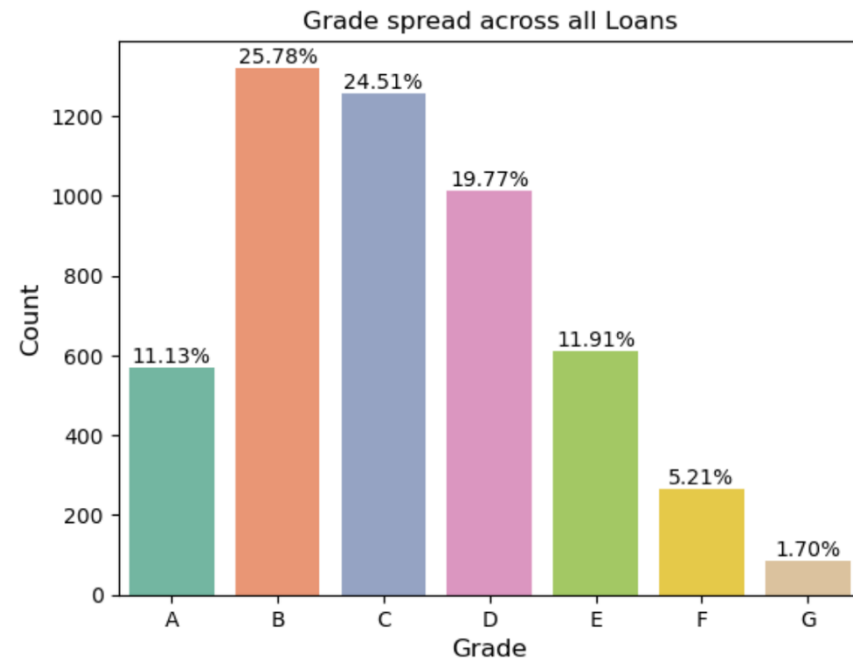
Analyzing Interest Rate

- There is a strong correlation between loan's interest rate and defaulting.
- More than 25% of the borrowers with Very High (>15%) have defaulted their loan.



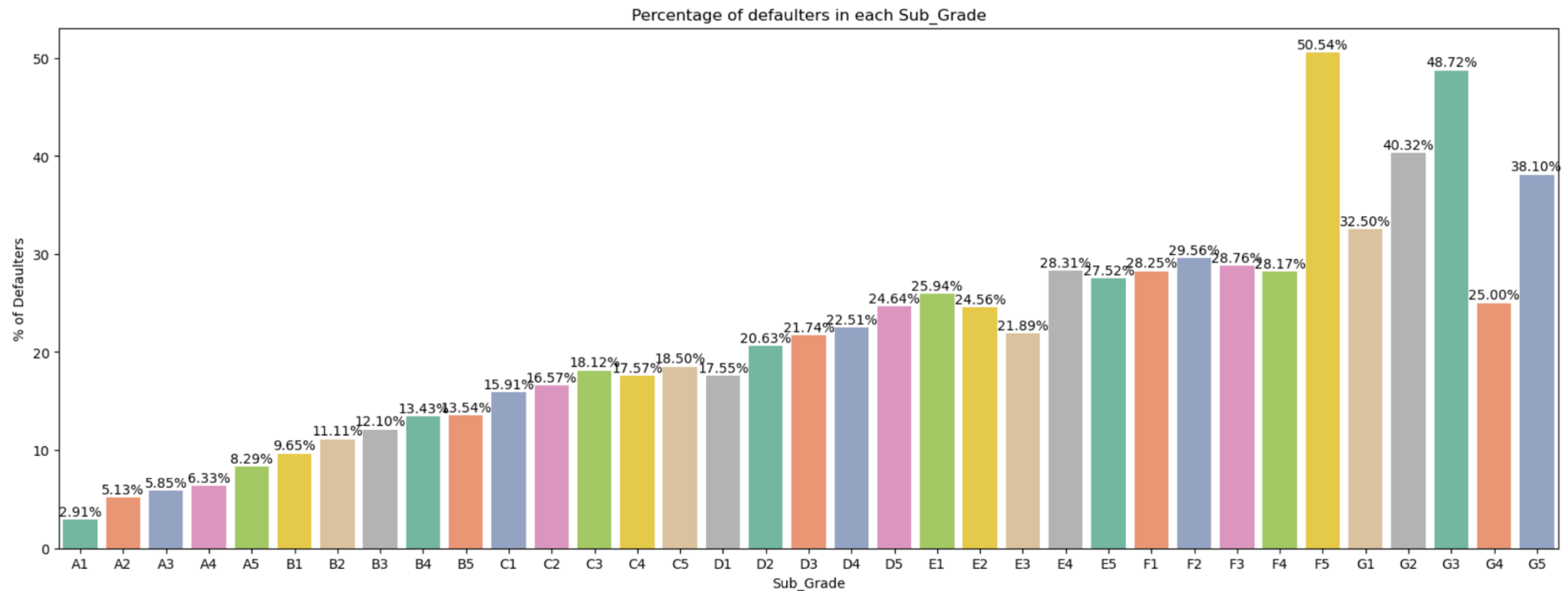
Analyzing Grade

- Majority of all loans are in Grade B, C and D
- More 36% for loans given in Grade G tend to default.
- Whereas, only 6% of the loans in Grade A defaults.



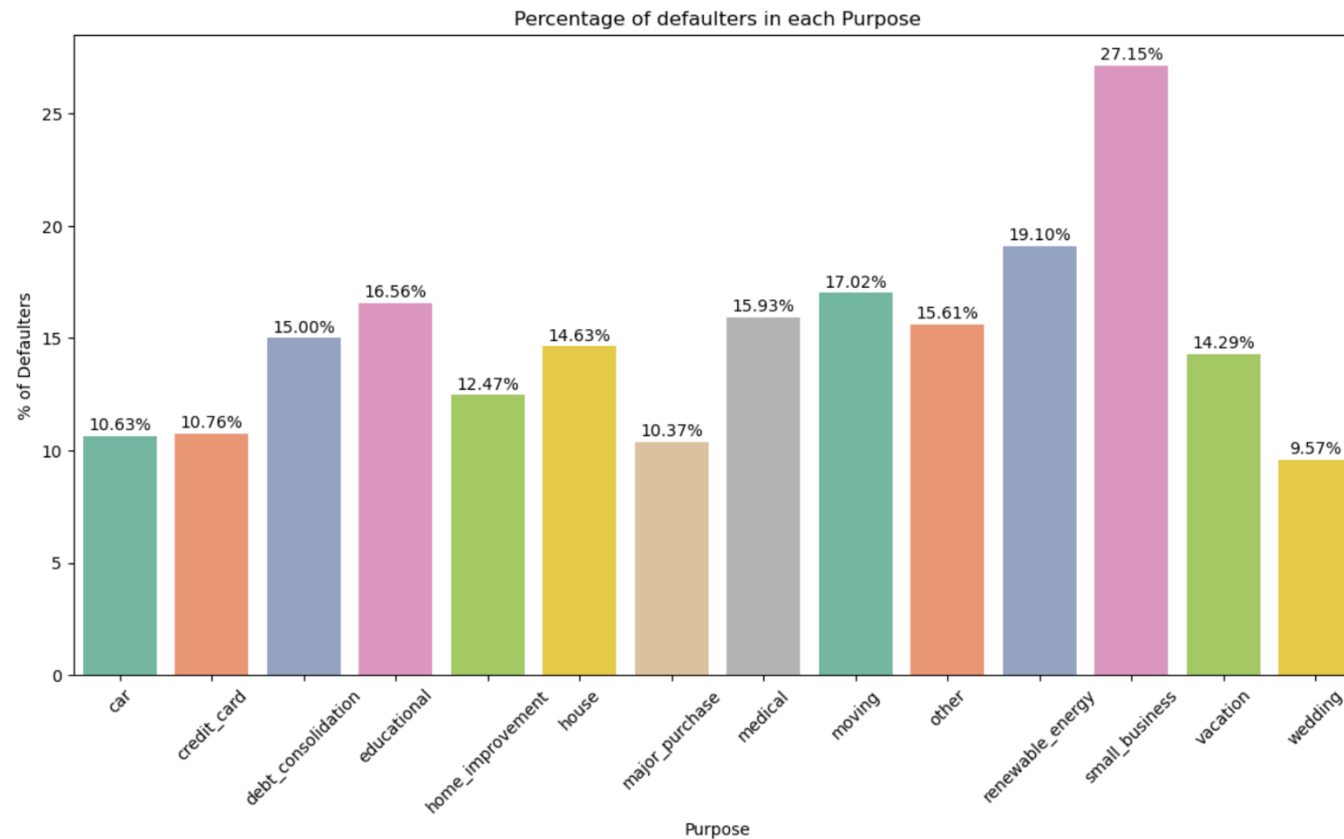
Analyzing Sub Grade

- Sub-grades also show similar trends ag grade level.
- But analyzing closely, sub-grade F5 and G3 tend to default around 50% of the time.
- Grades till B5 are relatively safer than general default rate (14%).



Analyzing Purpose

- 27% of all the loans taken for Small Businesses tend to default.
- Only 10% of all the loans taken for weddings only defaults .



Recommendations.

- Borrower with higher annual income above 57K is relatively safe.
- Business should discourage approving loans for borrower without valid home ownership information.
- Business should encourage approving loans for borrowers, who are employed.
- Business should be cautious with borrowers with Bankruptcy record.
- Business should careful before approving loan to borrower with an history of delinquency.
- Debt to Interest ratio has increased in recent years, business should identify current DTI ratio and flag applicants who don't meet the threshold.
- Loans with 36 months term are safer than 60 month. Business to push for the shorter-term loan.
- Business should pursue loans in A and B category, in all other categories chance to default is higher than base defaulting percentage (14%)
- Loans in sub grade F5 and G3 have a very high chance of defaulting. Business is advised to refrain from granting these loans. All subcategories from E4 to G5 are highly risky and should be dealt with caution.
- Business should be careful when giving loans for Small Business. Other risky areas are Renewable Energy, Moving, Education and Medical.