

LENDING CLUB CASE STUDY

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PROBLEM STATEMENT

Problem

- You are working for a consumer finance company that provides various types of loans to urban customers. When the company receives a loan application, it faces a critical decision-making process regarding whether to approve or reject the loan. This decision involves two main risks:
 - If the loan is denied to a customer who would have repaid it, the company loses a business opportunity.
 - If the loan is granted to someone who later defaults, the company may face financial losses.

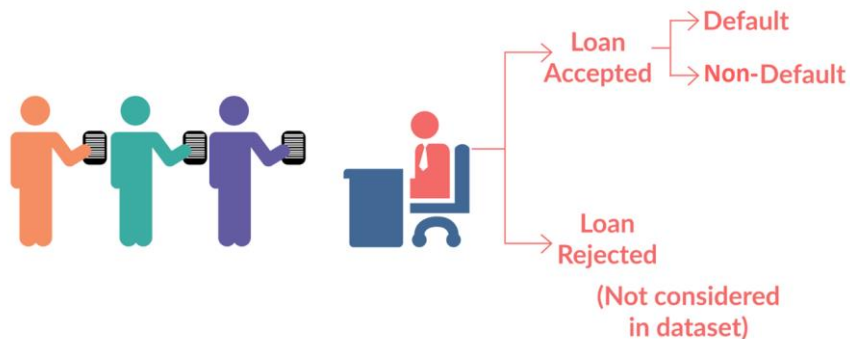
Objective

- The goal is to use exploratory data analysis (EDA) to better understand how different consumer and loan-related factors affect the likelihood of loan default.

Constraints

When a customer applies for a loan, the company makes one of two decisions:

1. Loan Approved: If the loan is granted, there are three potential outcomes:
 - Fully Paid: The borrower has completely repaid both the principal and the interest.
 - Current: The borrower is actively making payments, and the loan tenure is still ongoing. These loans are not categorized as defaults.
 - Charged-off: The borrower has defaulted by not making timely payments over an extended period.
1. Loan Rejected: If the company rejects the loan application, no financial transactions take place with the applicant, and therefore, no transactional data for these individuals is available in the dataset.

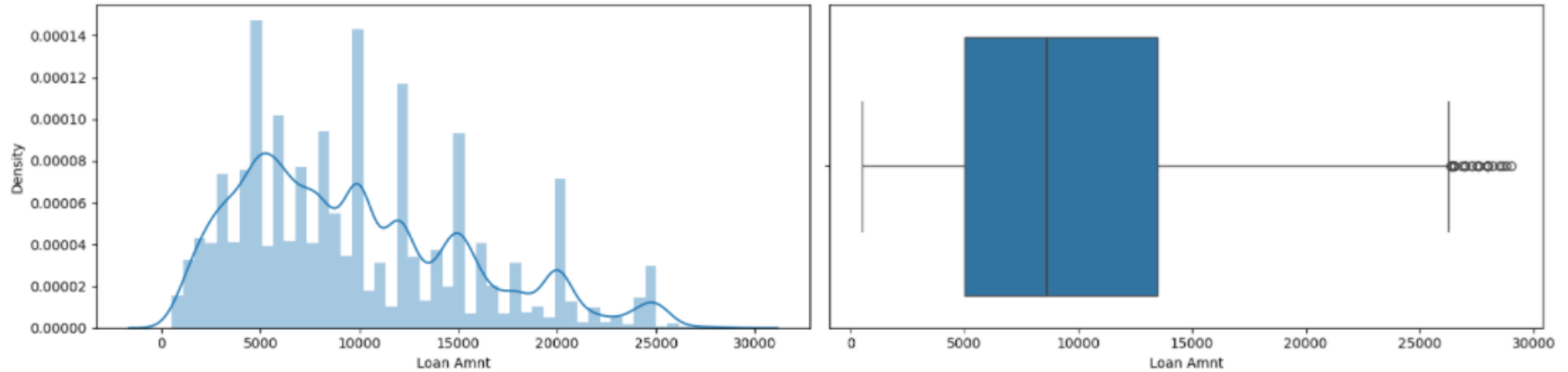


Analysis Steps

- **Understanding Data**
 - Studying and validating the data given.
 - Identify the target variable.
 - Identify the important columns in dataset that may contribute in analysis
- **Data Cleaning**
 - Cleaning missing values.
 - Removing Redundant columns
 - Removing rows with all zero.
 - Convert the values to proper datatype such as float,int etc.
- **Data Analysis**
 - Univariate Analysis
 - Bivariate Analysis
 - Correlation Analysis
- **Conclusions**

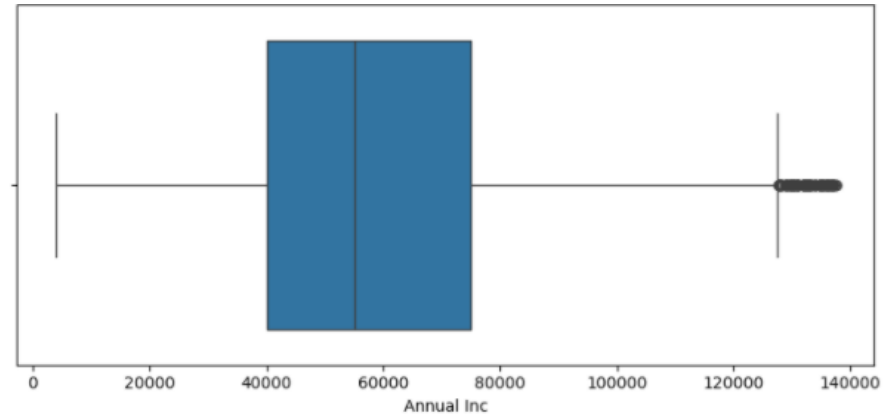
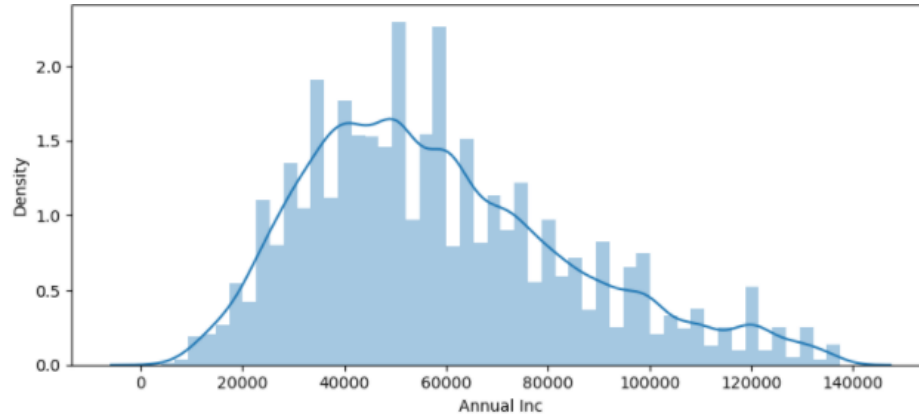
Univariate Analysis

Loan Amount



- Loan amounts were mostly between 5000 to 14000

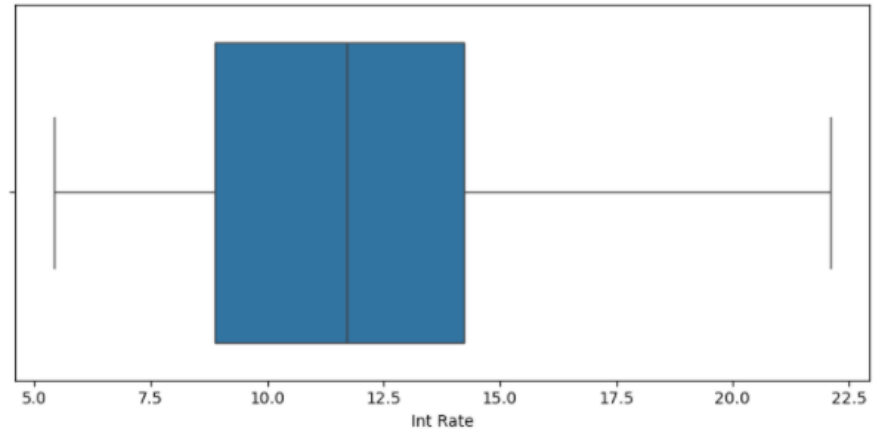
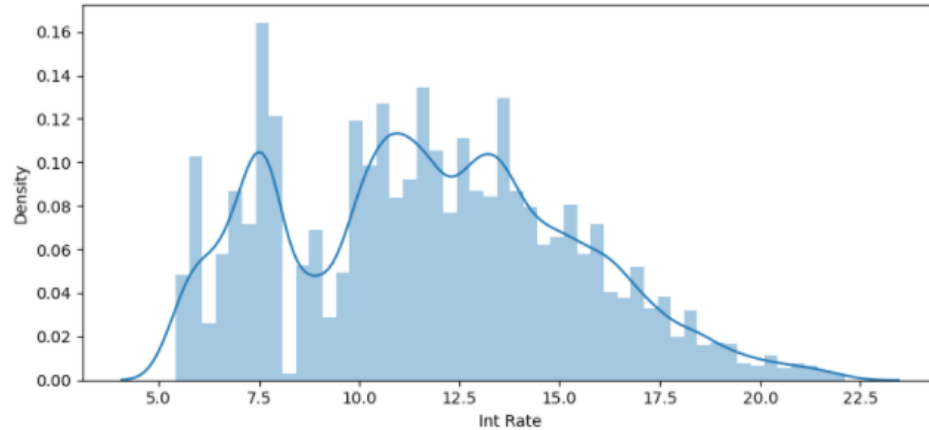
Annual Income



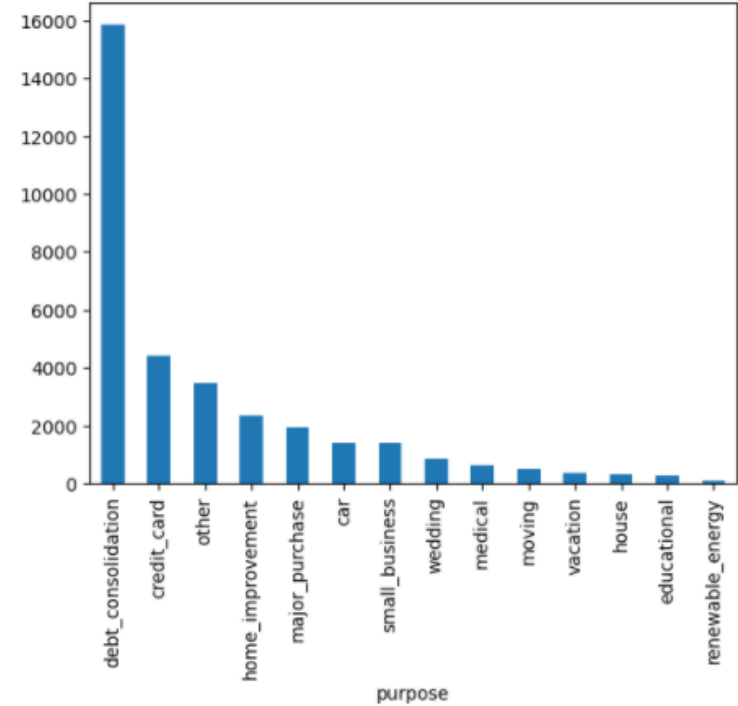
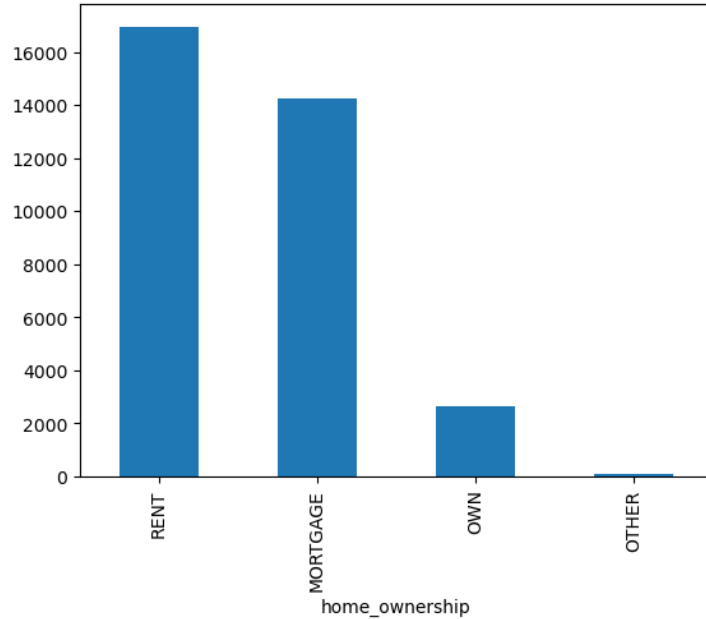
- For most of the employee, the annual income was between 40000 to 75000

Interest Rate

Interest rates were between 9.5% to 13%.



Univarients Analysis



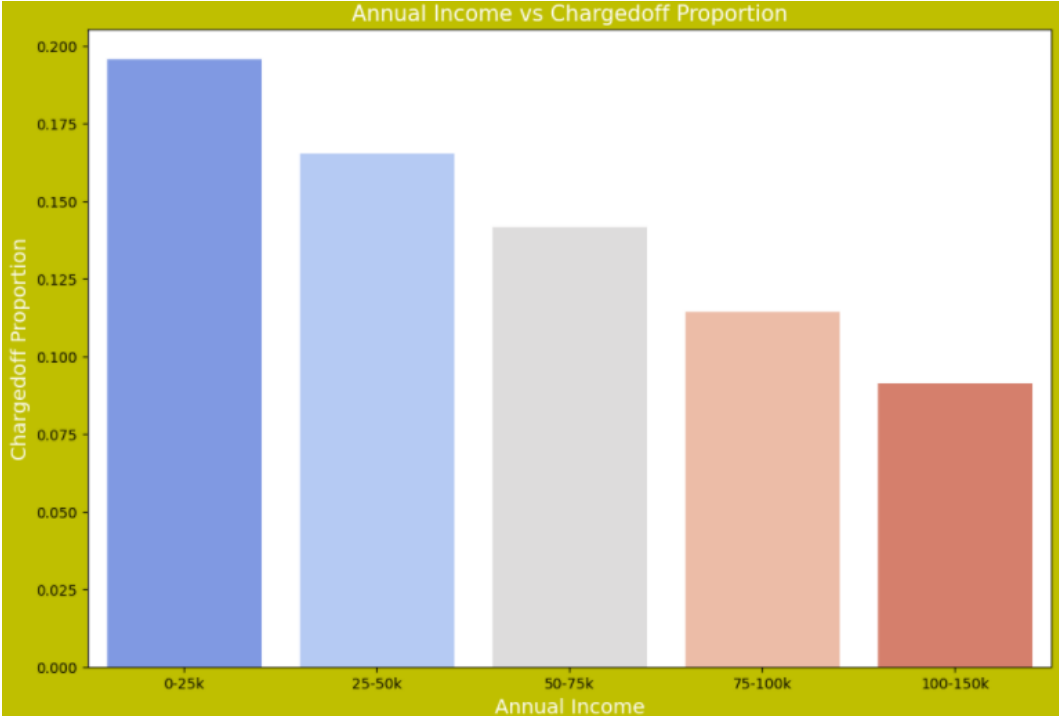
- Most of the people live in rented or mortgaged facility
- Most of the loans were taken for debt consolidation

Bivariate Analysis

Annual income vs Chargedoff Proportions

loan_status	annual_inc_b	Charged Off	Fully Paid	Total	Chargedoff_Proportion
0	0-25k	434	1783	2217	0.195760
1	25-50k	1940	9794	11734	0.165332
2	50-75k	1592	9647	11239	0.141650
3	75-100k	640	4954	5594	0.114408
4	100-150k	286	2850	3136	0.091199

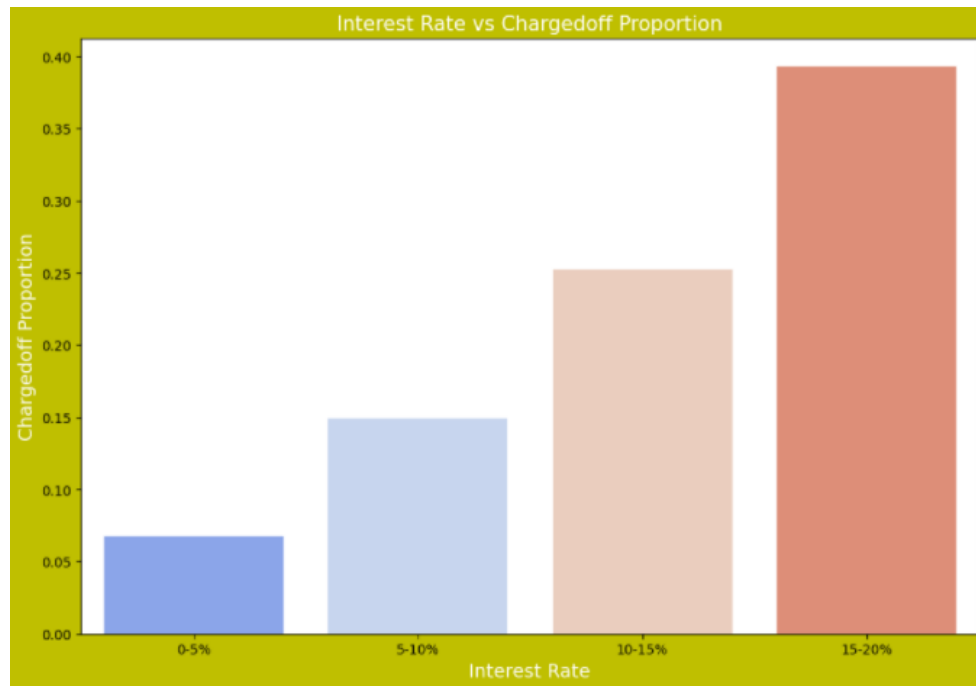
Low income group people were likely to charge off the loan.



Interest Rate vs Chargedoff Proportion

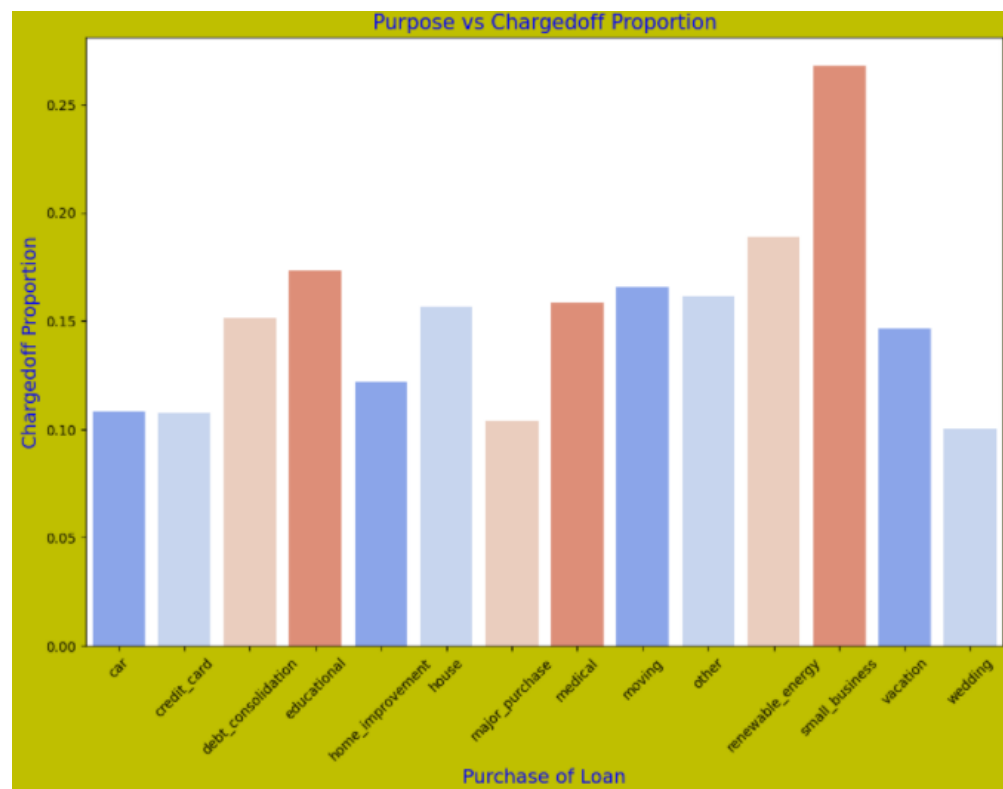
loan_status	int_rate_b	Charged Off	Fully Paid	Total	Chargedoff_Proportion
3	15-20%	178	275	453	0.392936
2	10-15%	1522	4511	6033	0.252279
1	5-10%	2444	13907	16351	0.149471
0	0-5%	748	10335	11083	0.067491

High interest rates loans were more likely to charged off.



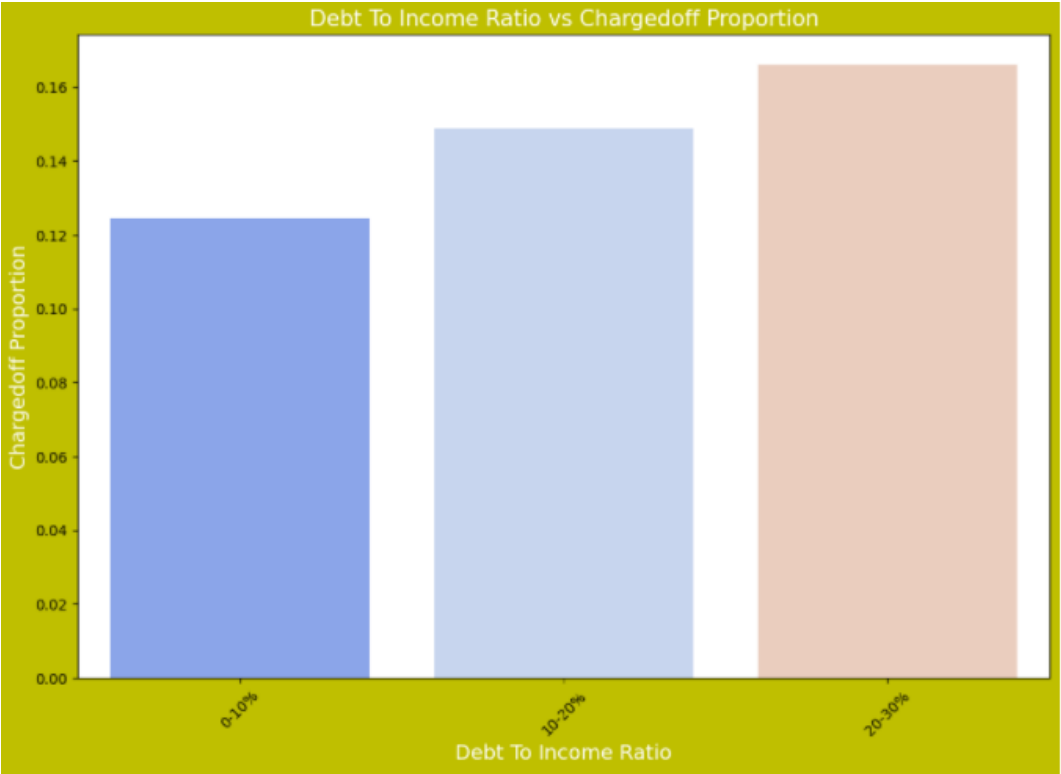
Purpose vs Chargedoff Proportion

loan_status	purpose	Charged Off	Fully Paid	Total	Chargedoff_Proportion
11	small_business	373	1021	1394	0.267575
10	renewable_energy	17	73	90	0.188889
3	educational	49	234	283	0.173145
8	moving	87	438	525	0.165714
9	other	563	2920	3483	0.161642
7	medical	99	527	626	0.158147
5	house	48	259	307	0.156352
2	debt_consolidation	2398	13446	15844	0.151351
12	vacation	52	303	355	0.146479
4	home_improvement	288	2072	2360	0.122034
0	car	153	1263	1416	0.108051
1	credit_card	476	3951	4427	0.107522
6	major_purchase	204	1759	1963	0.103923
13	wedding	85	762	847	0.100354

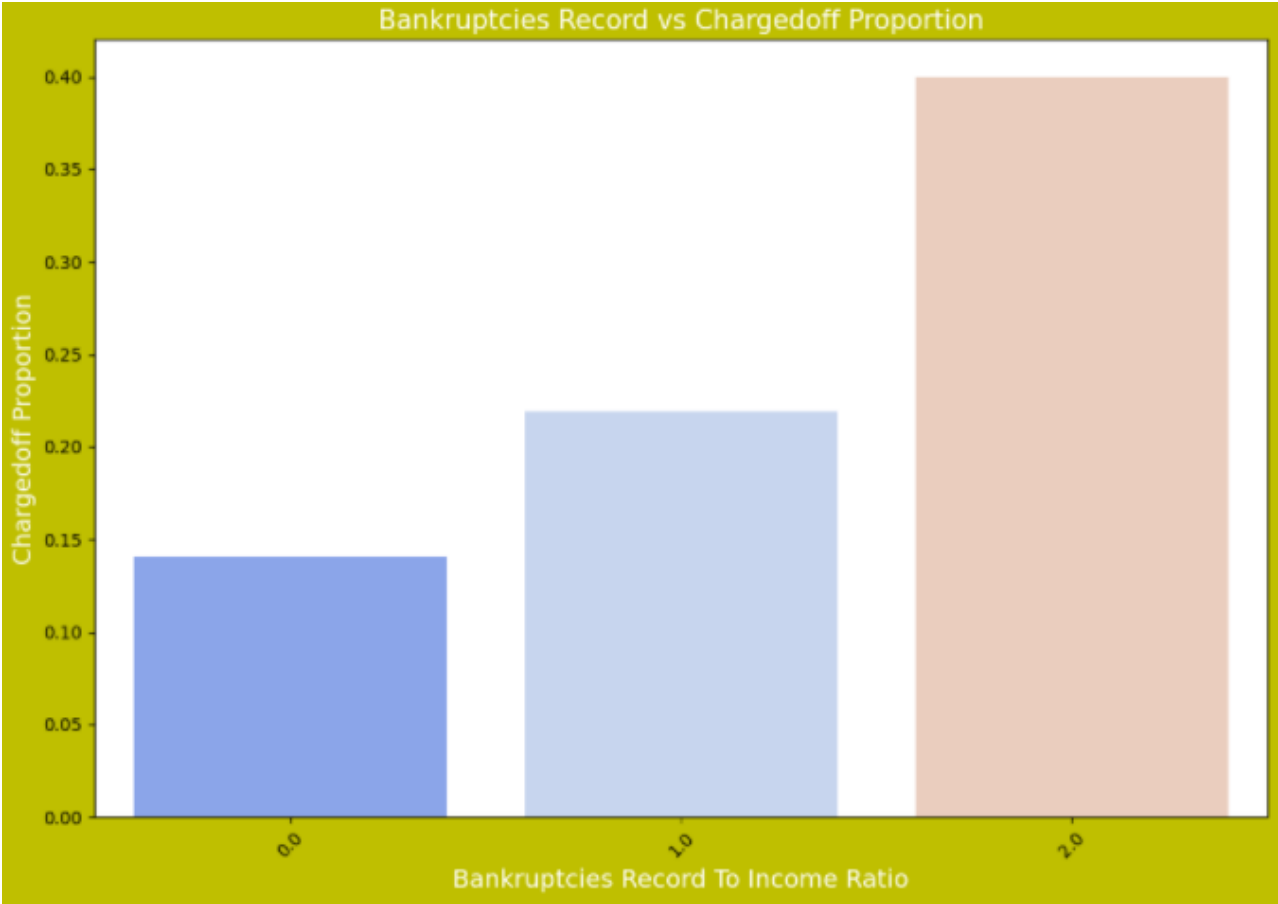


Debt To Income Ratio vs Chargedoff Proportion

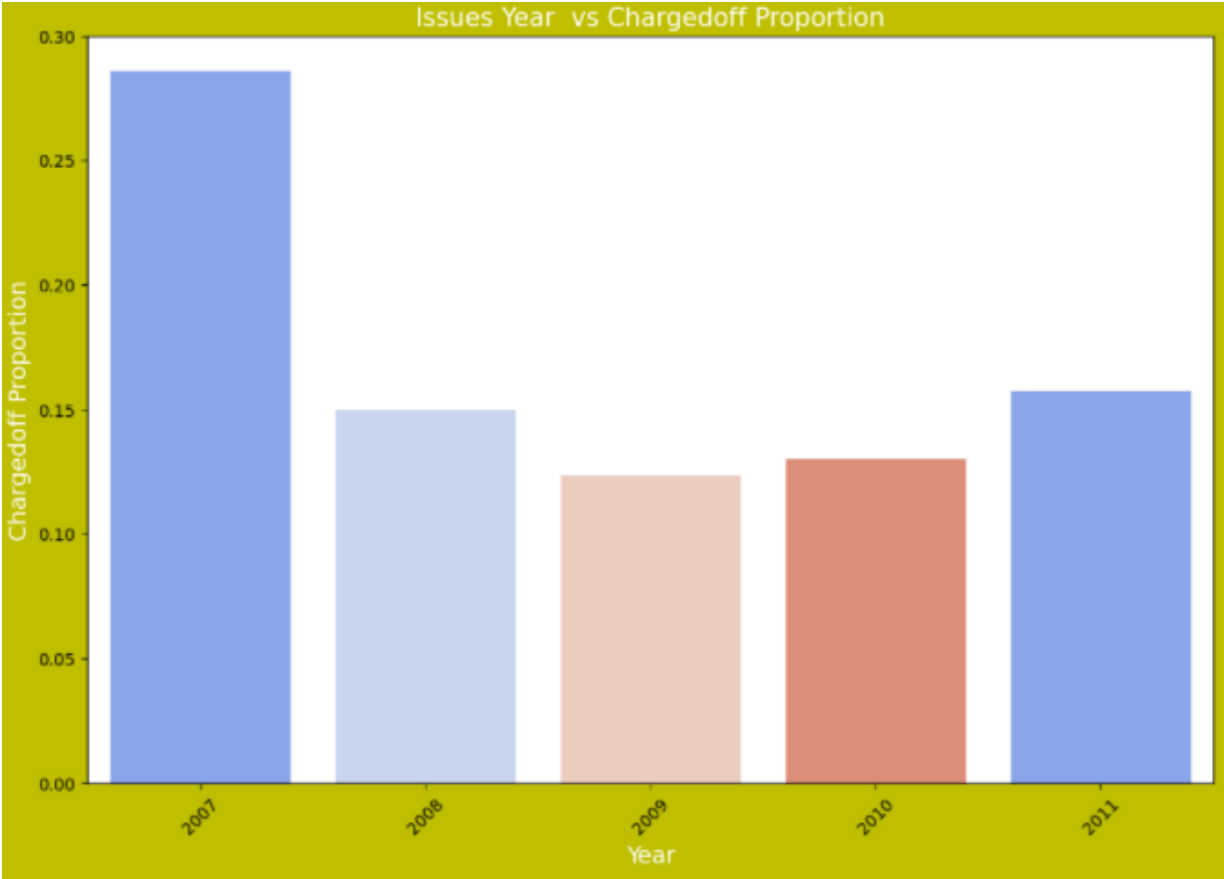
loan_status	dti_b	Charged Off	Fully Paid	Total	Chargedoff_Proportion
2	20-30%	1098	5517	6615	0.165986
1	10-20%	2430	13910	16340	0.148715
0	0-10%	1364	9601	10965	0.124396



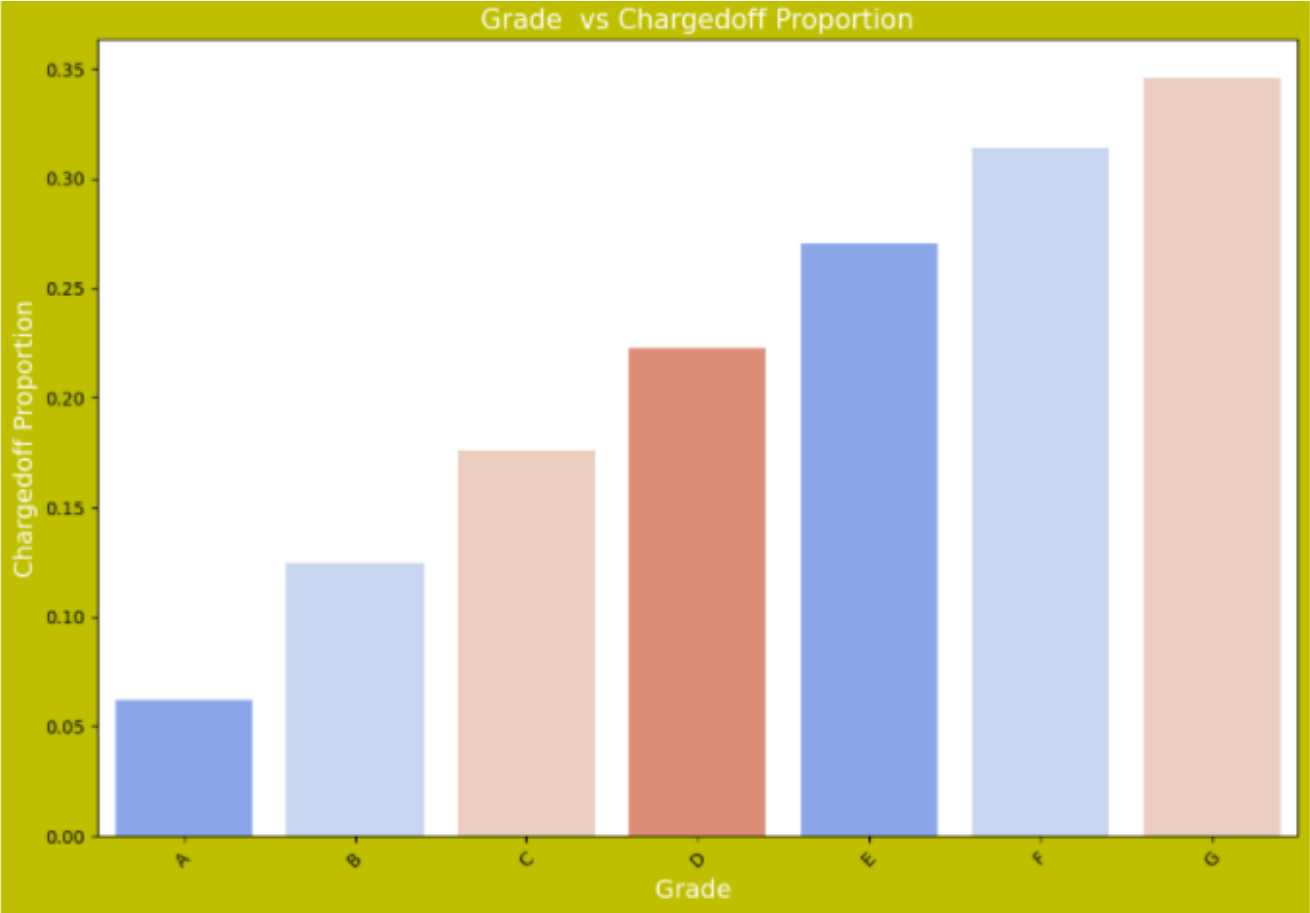
Bankruptcies Record vs Chargedoff Proportion



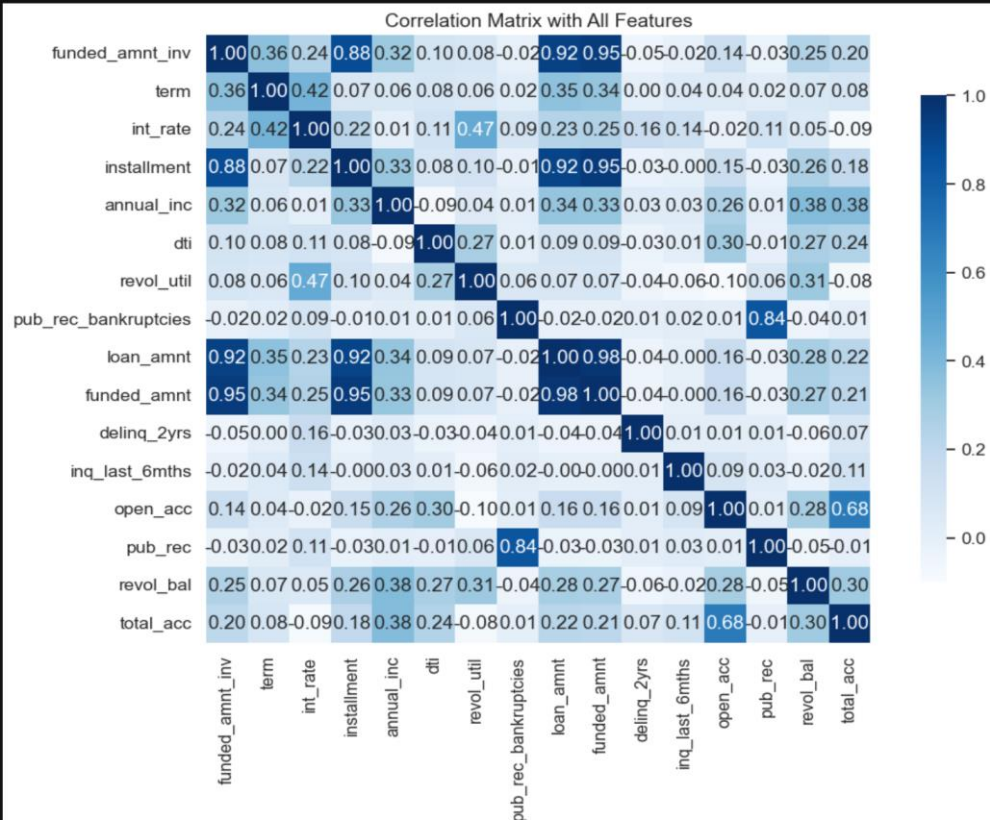
Issues Year vs Chargedoff Proportion



Grade vs Chargedoff Proportion



Correlations



THANK YOU