LENDING CLUB CASE STUDY

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Lending Club Case Study

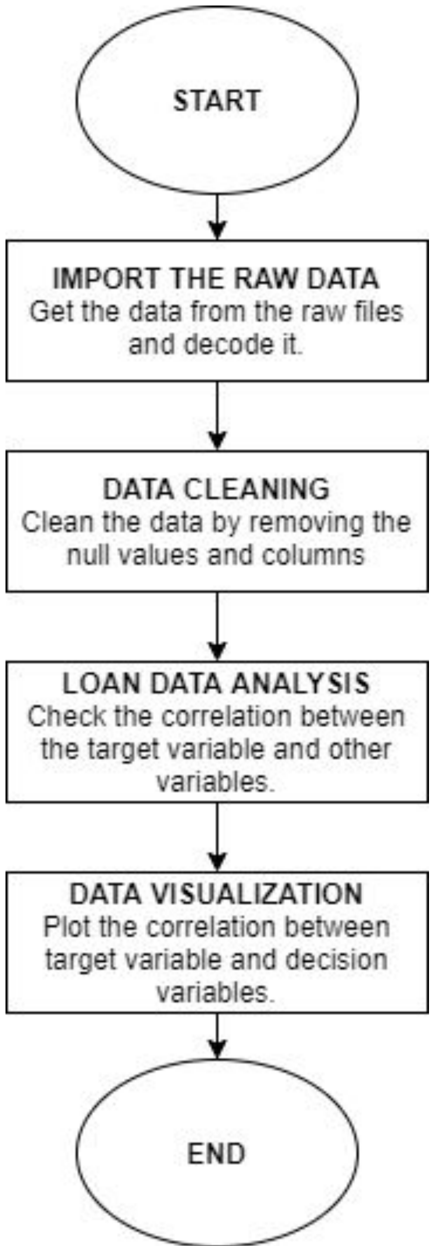
Upon receiving a loan application, a company is required to evaluate the applicant's profile in order to make an informed decision regarding loan approval. The bank's decision is influenced by two distinct risks:

- Failing to approve the loan for an applicant who is capable of repayment will result in a loss of business for the company.
- Approving the loan for an applicant who is unlikely to repay, thus defaulting on the loan, may cause a financial loss for the company.

Business Objective:

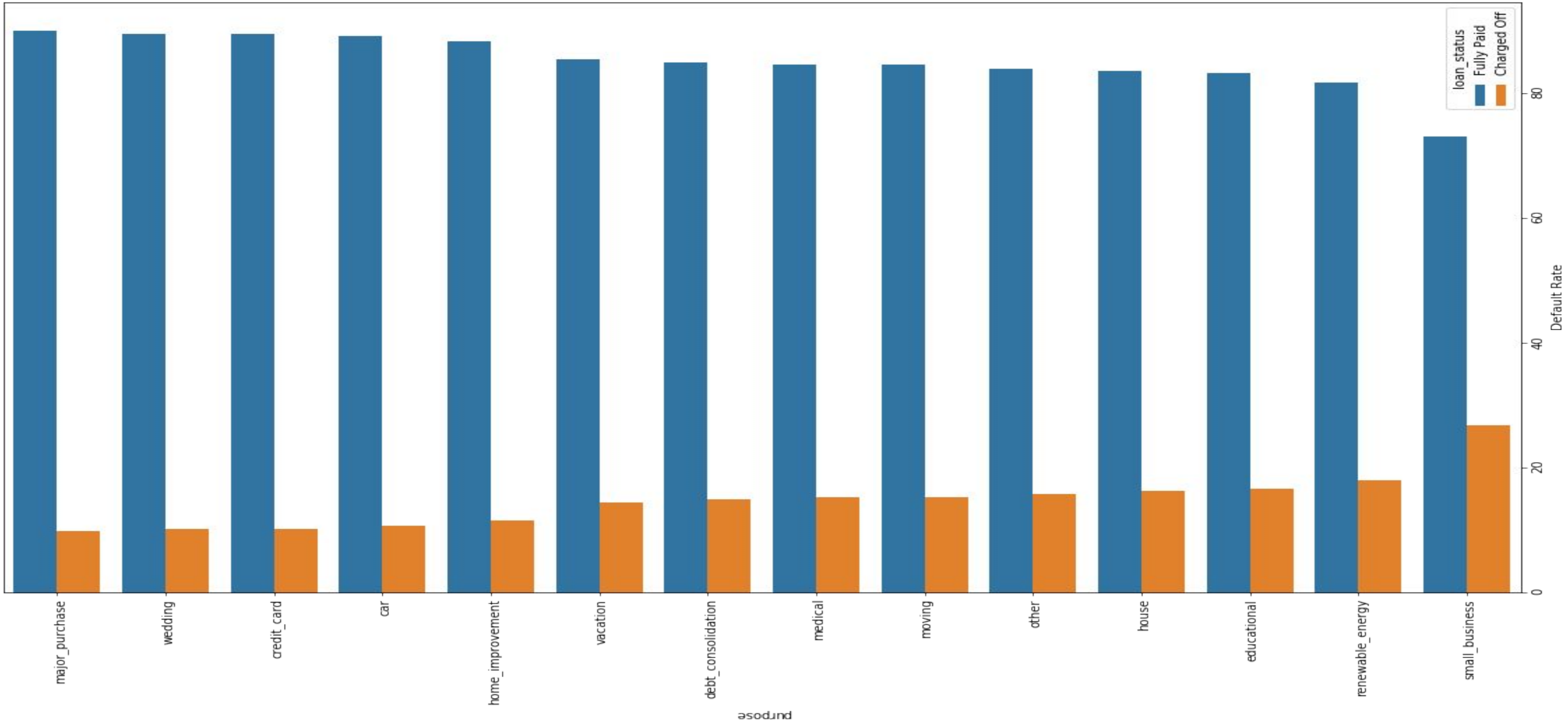
The primary aim is to identify the key determinants of loan defaults, which will provide valuable insights for portfolio management and risk assessment. It is imperative for the company to gain a comprehensive understanding of the factors that contribute to loan defaults.

Problem Solving Methodology



Correlation Analysis

Lending Analysis (Purpose vs Default rate)



Lending Analysis (Purpose vs Default rate)

- On plotting the purpose of taking the loan against the default rate (as seen in the previous slide), we see that default rates are most when it lend to the small business.

- It can also be seen that changes of the fully being paid are more when the loan is issued for the major purchases.

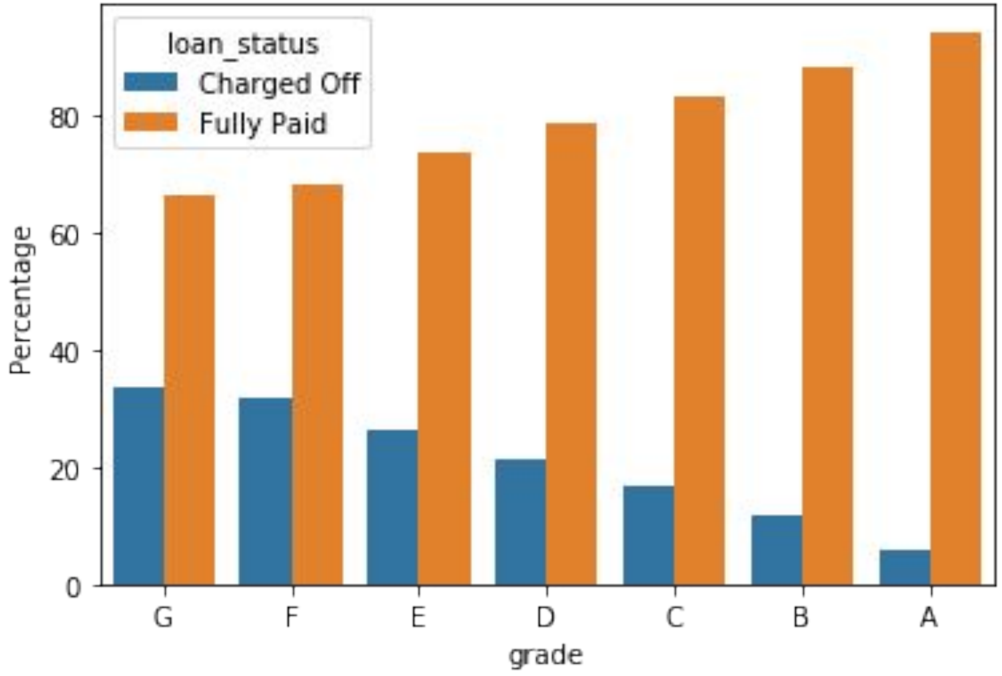
Lending Analysis (Term vs Default)

Term	Loan status	Count
36	Charged off	2899
60	Charged off	2232

- On studying the table displaying the term vs default, we can see that lesser loans defaulted when the term of the loan was 60 instead of 36.

- Thus one of the recommendations here can be that company should provide the loans for the longer term.

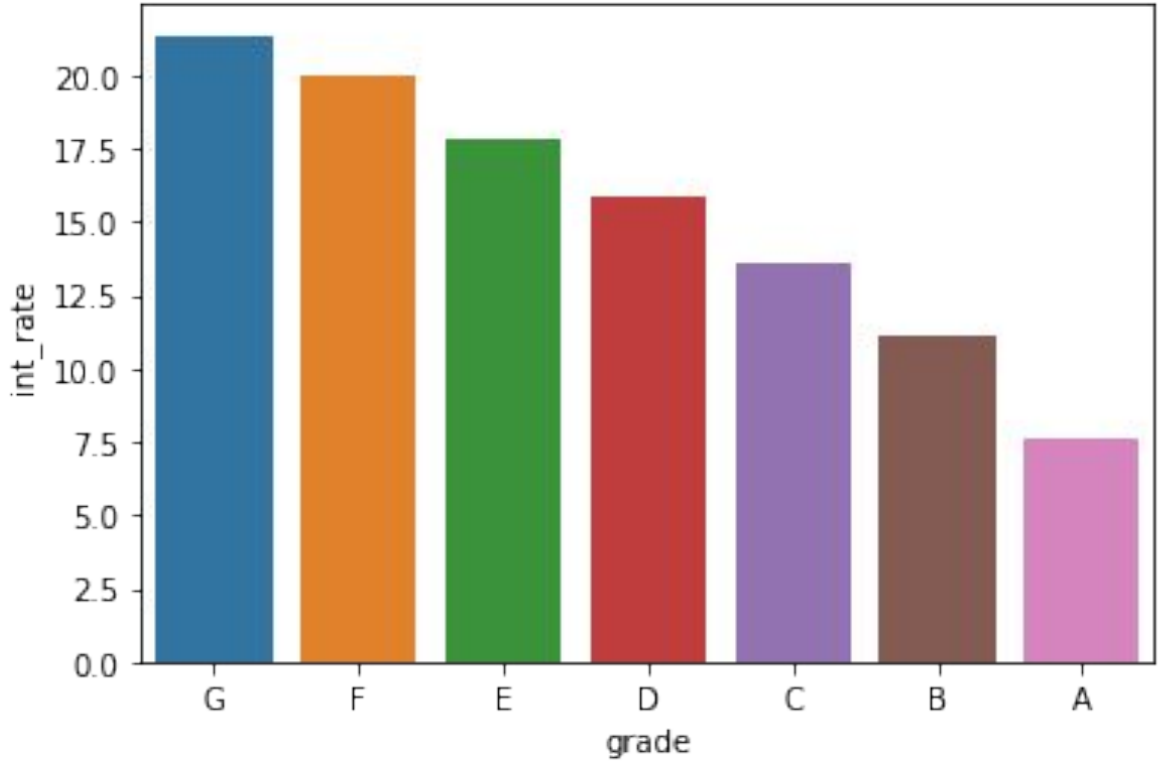
Lending Analysis (Grade vs Default rate)



	Grade	Loan Status	Percentage
12	G	Charged Off	33.68056
13	G	Fully Paid	66.31944
10	F	Charged Off	31.8872
11	F	Fully Paid	68.1128
8	E	Charged Off	26.45085
9	E	Fully Paid	73.54915
6	D	Charged Off	21.38247
7	D	Fully Paid	78.61753
4	C	Charged Off	16.59223
5	C	Fully Paid	83.40777
2	B	Charged Off	11.82766
3	B	Fully Paid	88.17234
0	A	Charged Off	5.653253
1	A	Fully Paid	94.34675

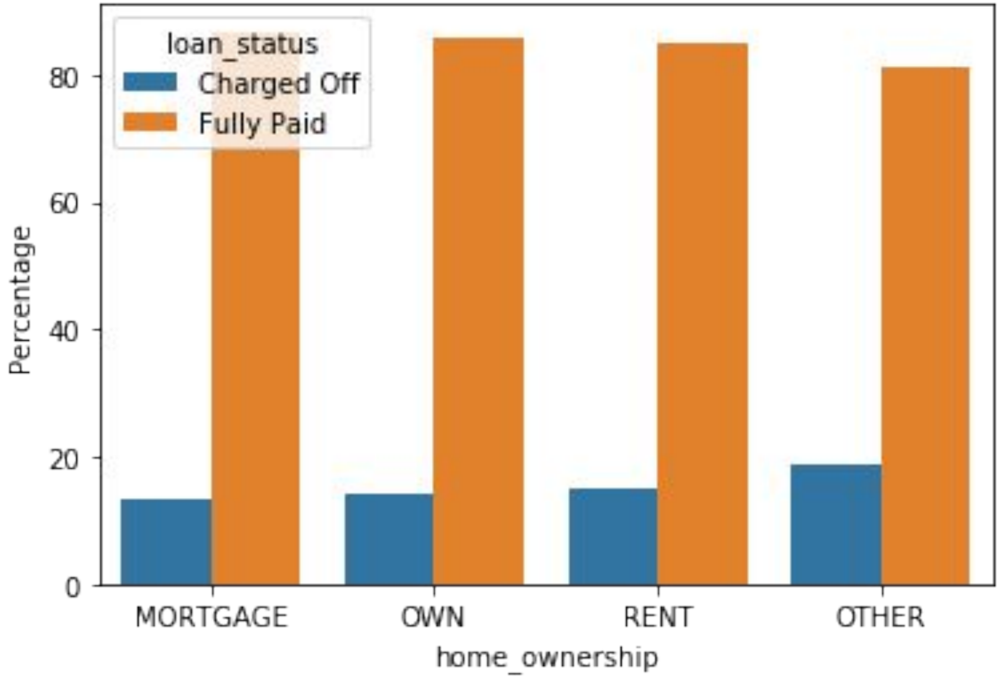
We can see the grade A loans are full paid. Hence we the company could issue more grade A since the risk on these loans are less. However as we see in the next slide, the interest rates on these loans are less.

Lending Analysis (Grade vs Interest rate)



We can see from the plot that interest rate on the Grade A loans are very less compared and it gradually increases the grade of the loan degrades.

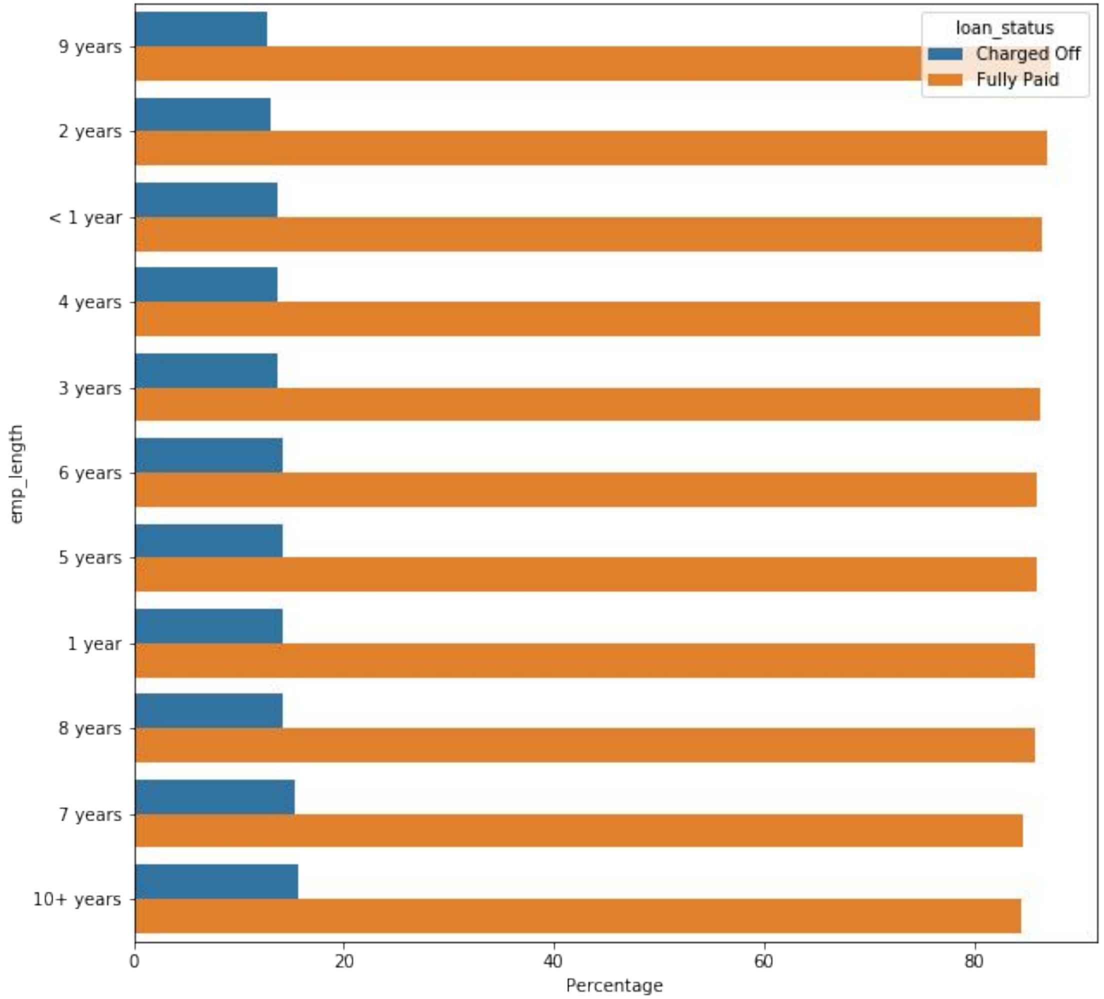
Lending Analysis (Home ownership vs Default rate)



	Home Ownership	Loan Status	Percentage
0	MORTGAGE	Charged Off	13.277774
4	OWN	Charged Off	14.141414
6	RENT	Charged Off	15.023421
2	OTHER	Charged Off	18.75
3	OTHER	Fully Paid	81.25
7	RENT	Fully Paid	84.976579
5	OWN	Fully Paid	85.858586
1	MORTGAGE	Fully Paid	86.722226

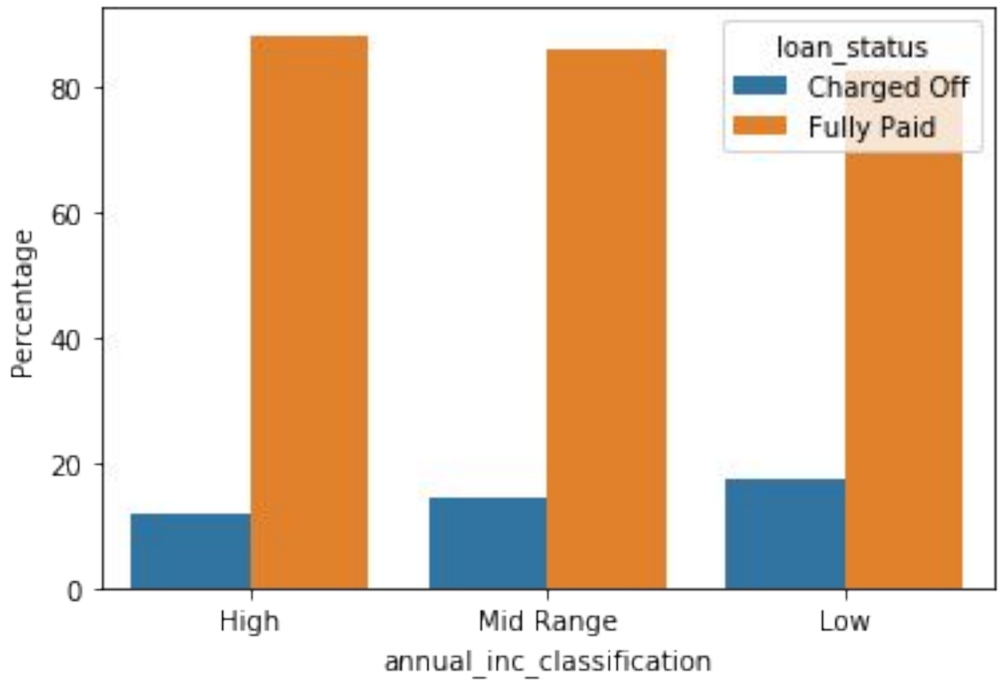
From the plot we can see that there is no correlation between home ownership and the default rate.

Lending Analysis (Employee experience vs Default rate)



From the plot above, we can see the number of the experience of the employee doesn't have any effect on the default rates.

Lending Analysis (Income classification vs Interest rate)



From the plot above, we can see that when the income is high the number of the default cases are lesser.

Conclusion

Based on the examination, it can be inferred that the following factors significantly influence the likelihood of loan defaults:

1. Categorization of annual income
2. Loan term
3. Loan grade
4. Loan purpose

Furthermore, the study suggests that the lending company should strive to maintain a balanced distribution of loan grades within its portfolio. While Grade A loans are less risky, the company cannot solely rely on them since they yield lower interest rates. On the other hand, Grade G loans have higher interest rates but are more prone to default. Thus, a balance between these loan grades is recommended.