

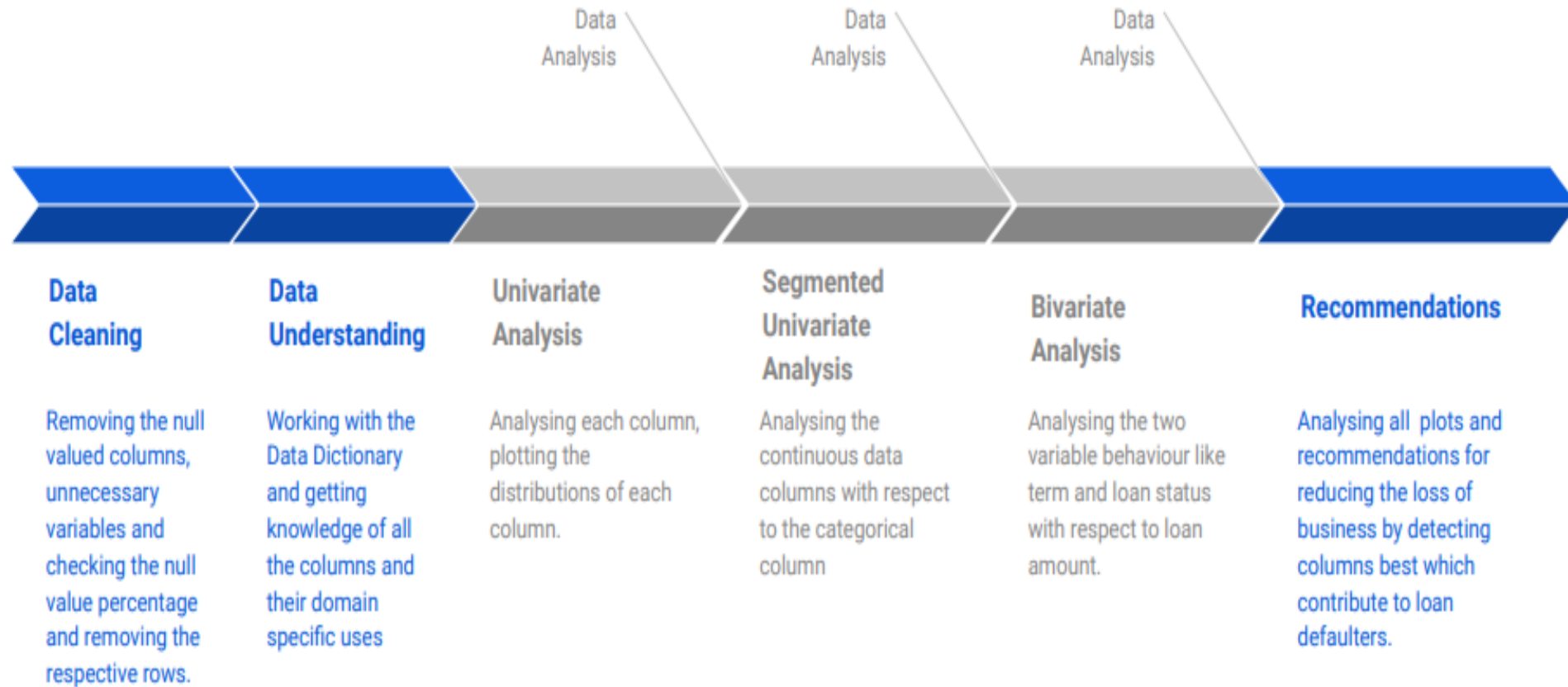
Lending Club Case Study

Submitted
by
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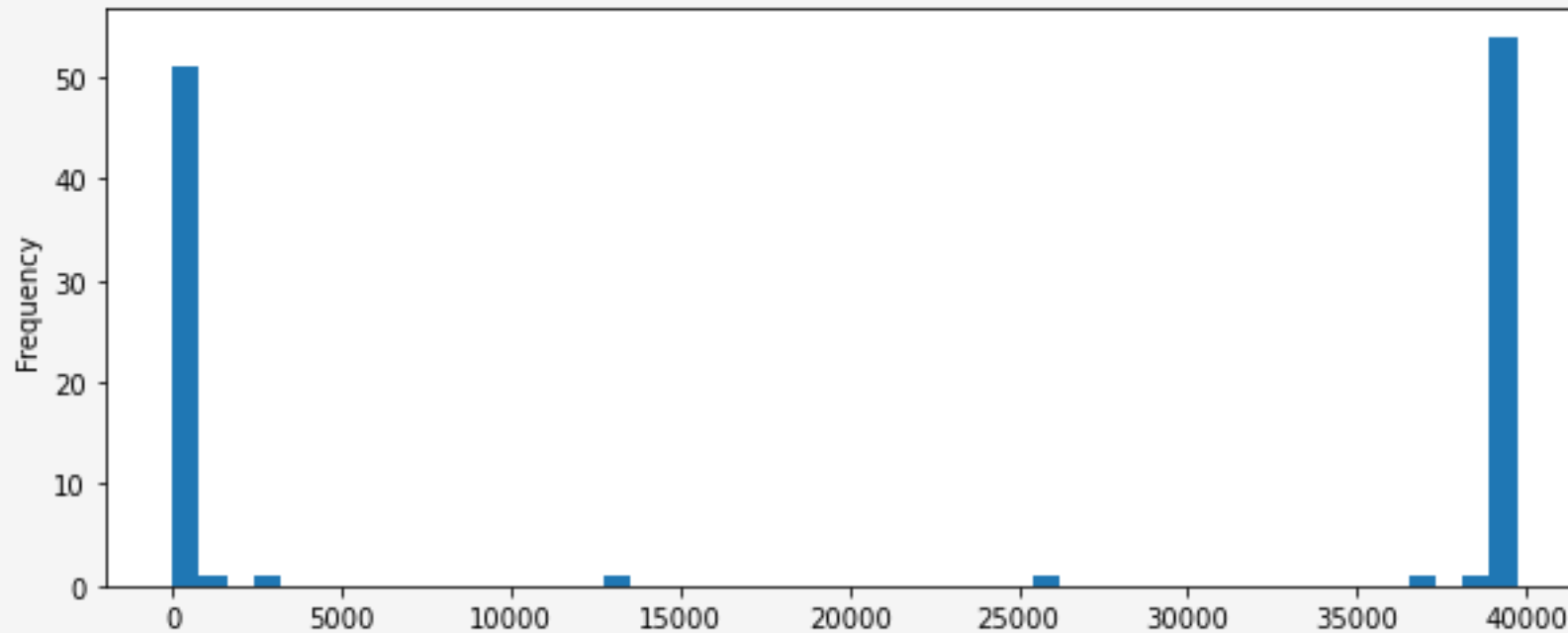
Abstract

- Lending club is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures.
- Borrowers can easily access lower interest rate loans through a fast online interface.
- The objective of analysis is to use the information about past loan applicants and identify the risky loan applicants, then such loans can be reduced thereby cutting down the amount of credit loss.
- Lending Club (a peer-to-peer lending company) wants to understand the driving factors behind loan default.
- The company can utilize this knowledge for its portfolio and risk assessment.

Problem solving methodology

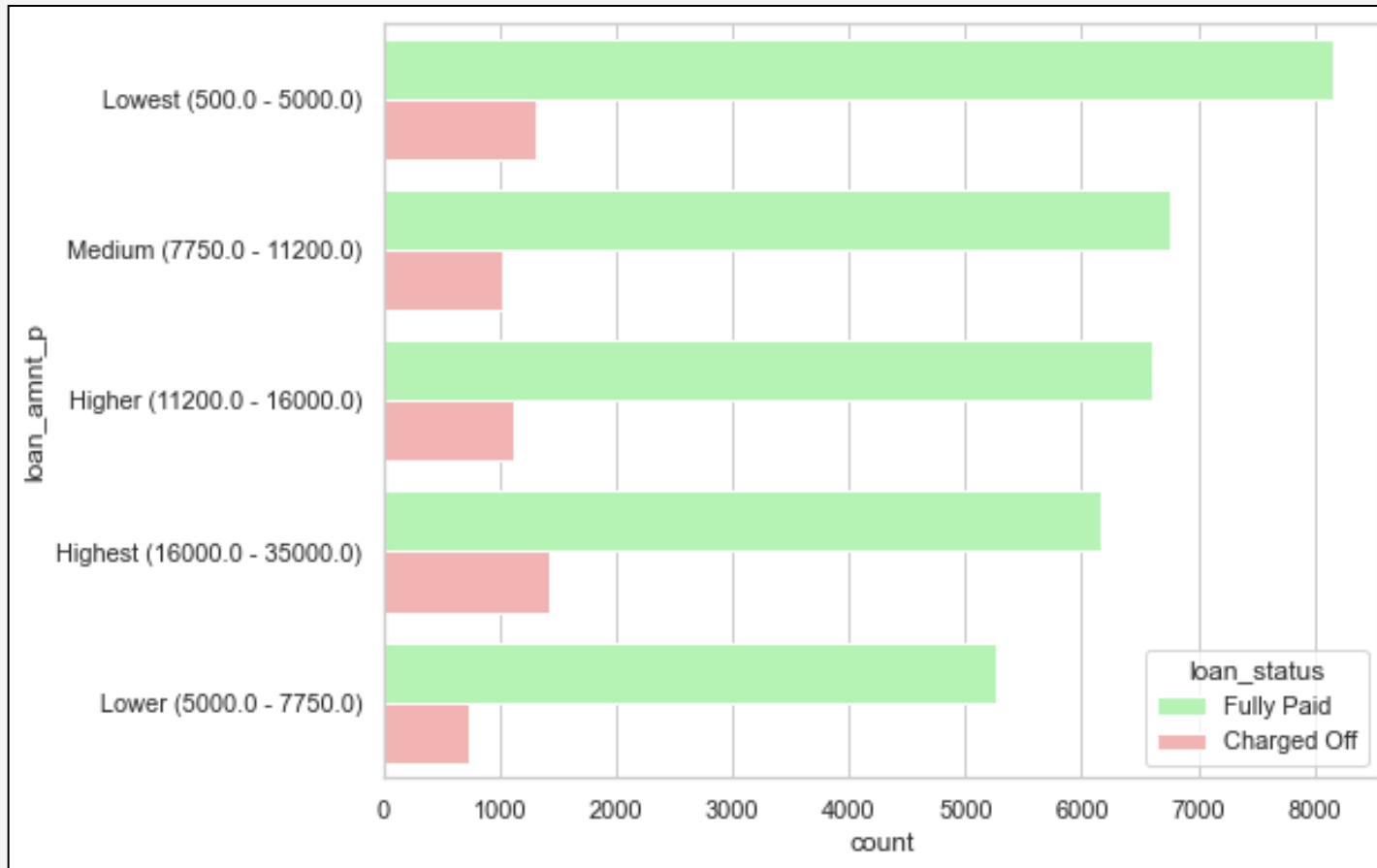


Data Cleaning



- In the above figure, X-axis contains number of NULL values and Y-axis contains number of columns. We can clearly see that there is a huge spike towards the 40K mark. The total records in our data is 39,717.
- We would obviously not need the columns that have all NULLs. Also, we see there are few columns above 10K mark, but let us analyze those before dropping.

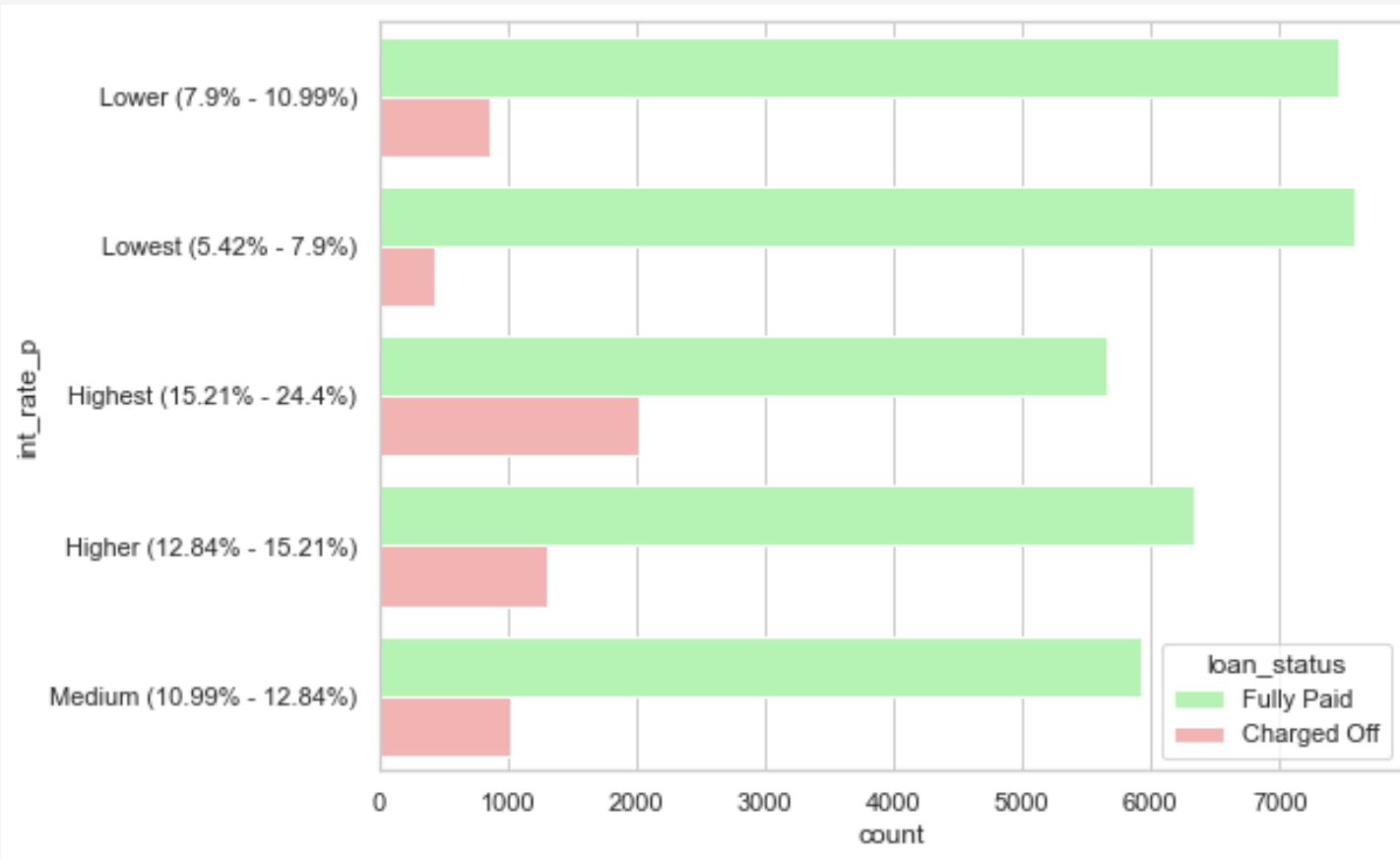
Loan Amount Analysis



Observation :

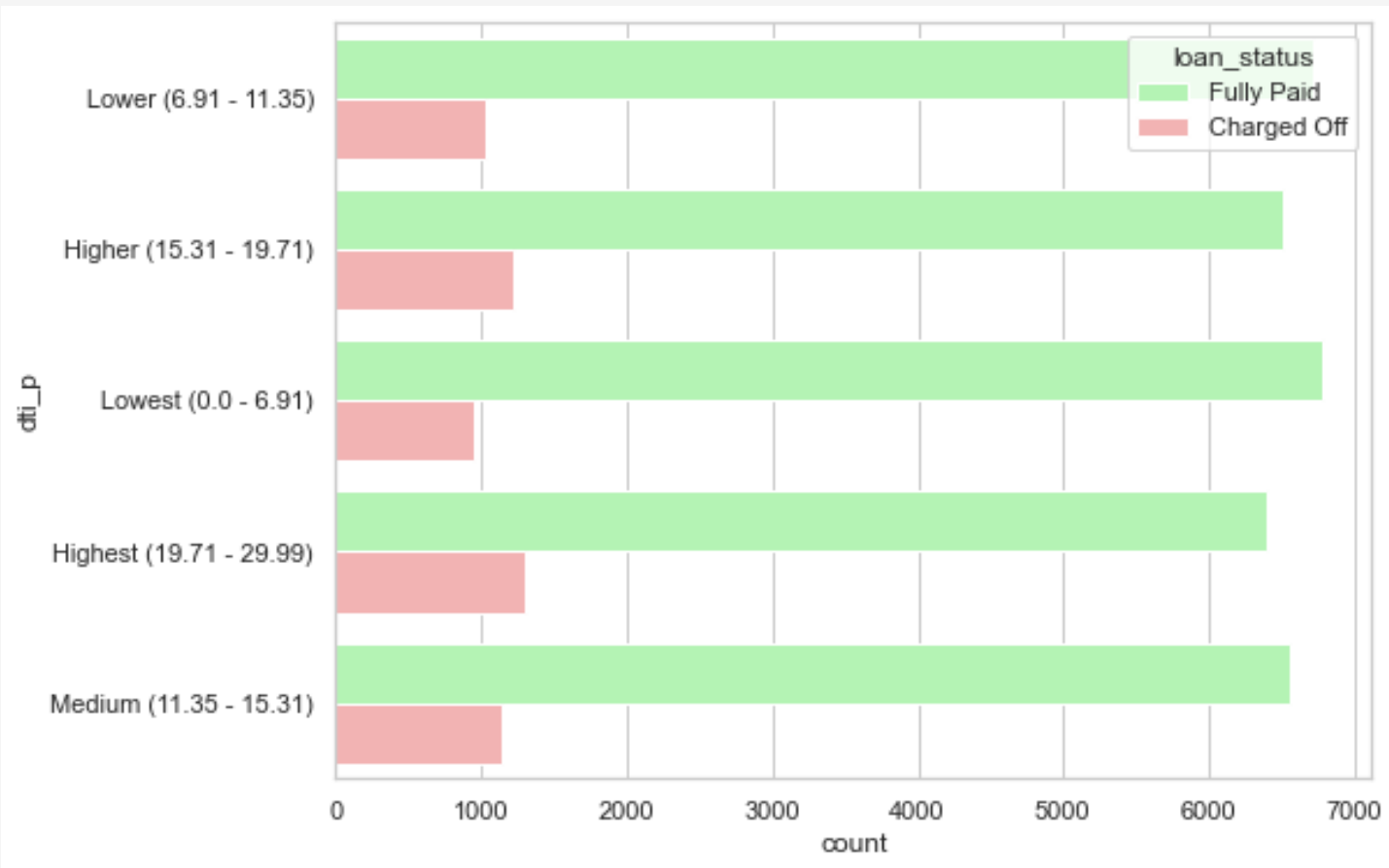
- Higher the loan amount, greater the chance of the loan getting default.

Interest Rate Analysis / Correlation



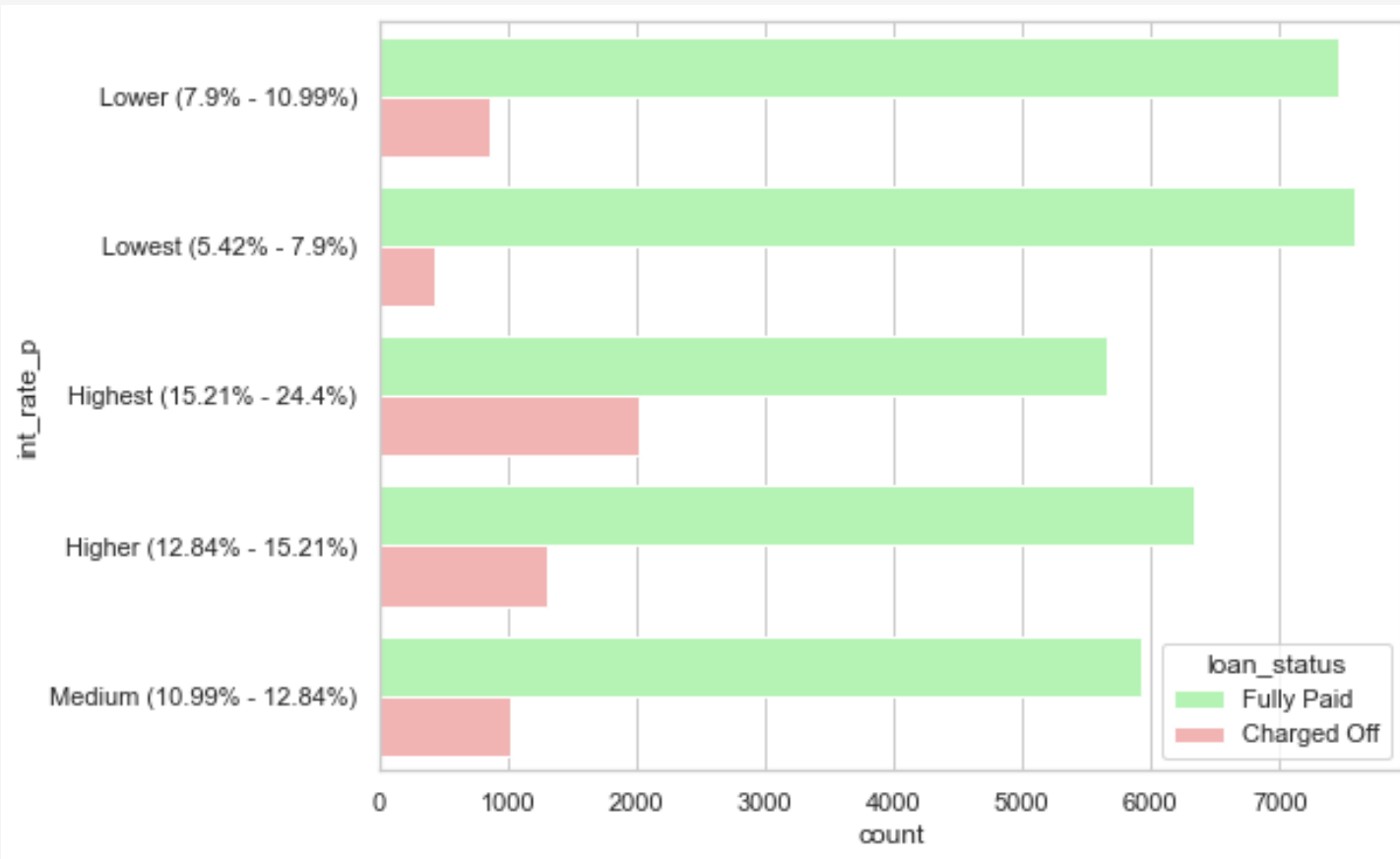
- Higher the interest rate, greater the chance of the loan getting default.

Debt to Income Ratio



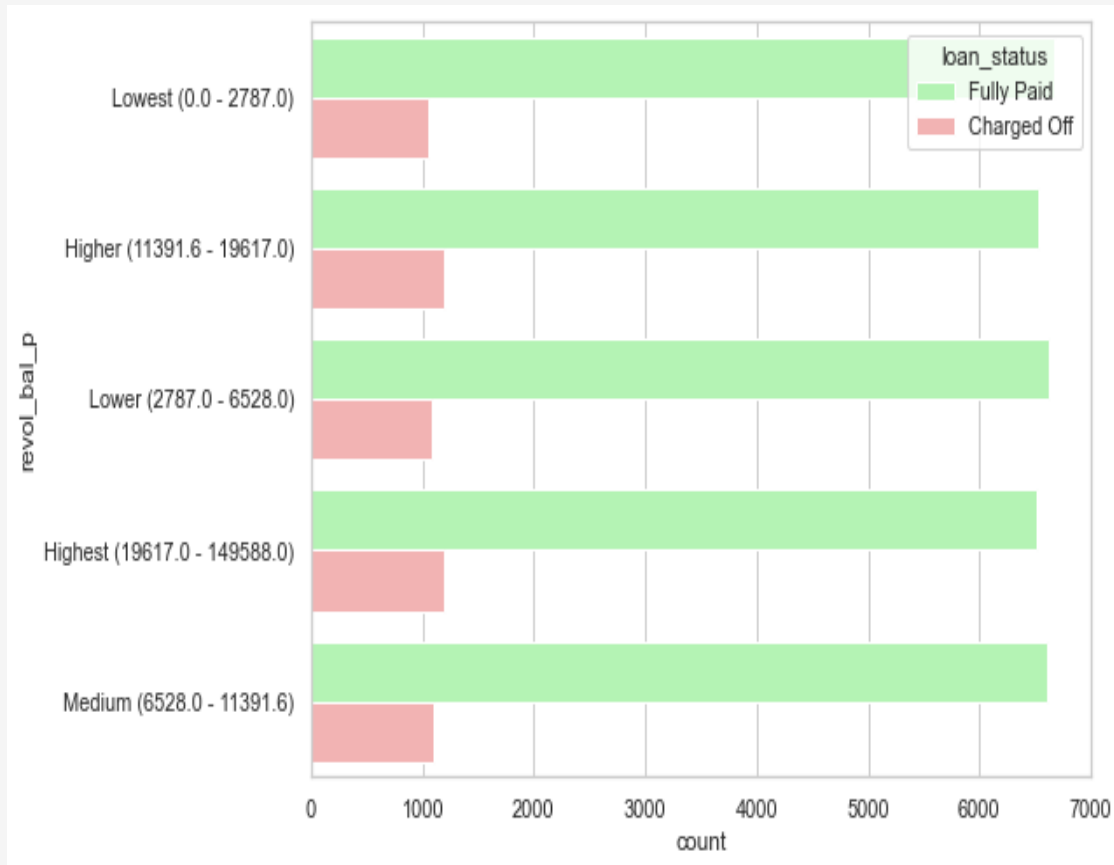
- Higher debt to income ratio will lead to higher default

Interest Rate Analysis / Correlation

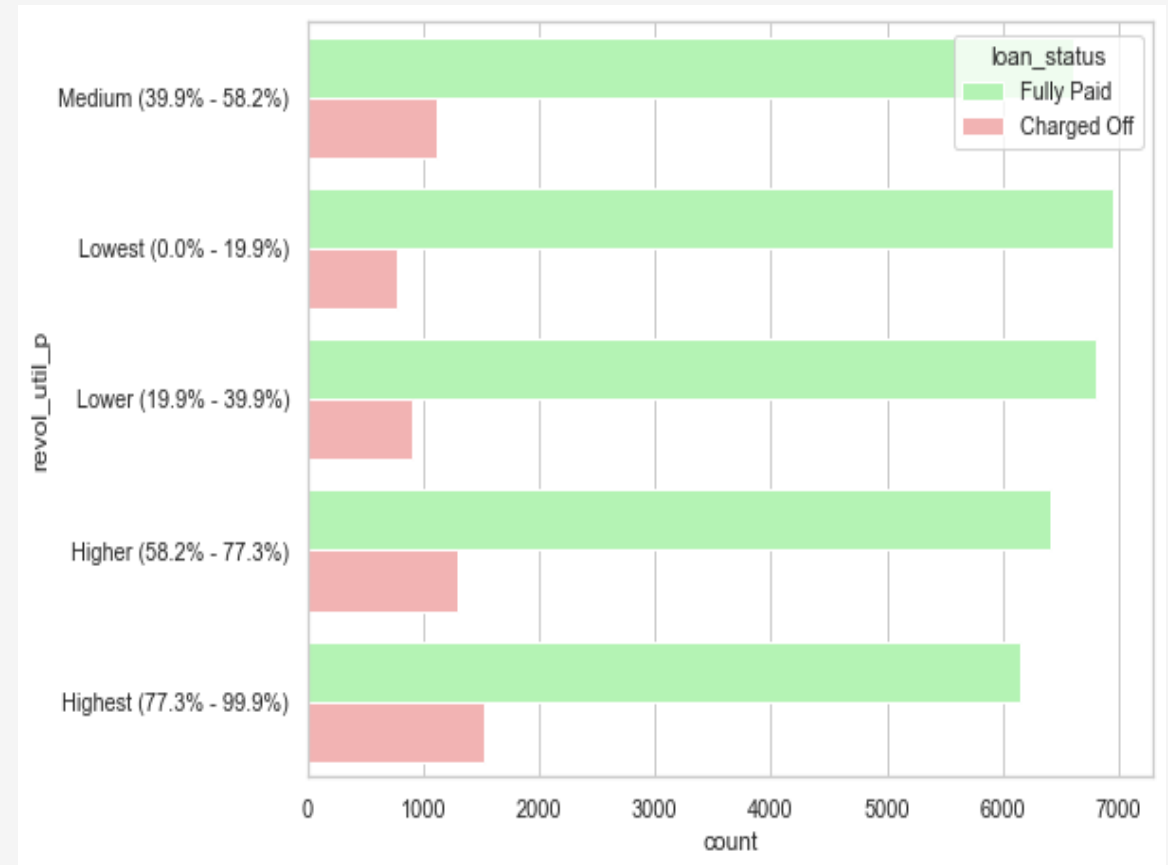


- Higher the interest rate, greater the chance of the loan getting default.

Revolving Balance / Revolving line Analysis



- Higher the revolving Balance, Higher the change of getting loan defaulted



- This data shows that the revolving line utilization rate has a large impact to the default percentage. When this increases, the charged off percentage rises.

Factors impacting loan defaults

Minor Impact

- Higher loan amount (above 16K)
- Higher installment amount (above 327)
- Lower annual income (below 37K)
- Higher debt to income ratio (above 15%)
- Applicant's address state (NV, SD, AK, FL, etc.)
- Loan issue month (Dec, May, Sep)

Heavy impact

- Higher interest rate (above 13%)
- Higher revolving line utilization rate (above 58%)
- Repayment term (5 years)
- Loan grade & sub-grade (D to G)
- Missing employment record
- Loan purpose (small business, renewable energy, educational)
- Derogatory public records (1 or 2)
- Public bankruptcy records (1 or 2)

Combined impact

- High loan amount & interest rate for lower income group
- High installment and longer repayment term
- Home ownership (other) and loan purpose (car, moving or small business)
- Residential state and loan purpose
- Income group and loan purpose

Conclusions

- Lending club should reduce exposure or increase interest rate for Higher revolving line utilization rate (above 58%)
- Lending club should reduce the high interest loans for 60 months tenure, they are prone to loan default.
- Grades are good metric for detecting defaulters. Lending club should examine more information from borrowers before issuing loans to Low grade (G to A).
- Lending Club should control their number of loan issues to borrowers who are from CA, FL and NY to make profits.
- Small business loans have defaulted more. Lending club should reduce loan exposure to them.
- Borrowers with mortgage home ownership are taking higher loans and defaulting the approved loans. Lending club should stop giving loans to this category when loan amount requested is more than 12000.
- People with more number of public derogatory records are having more chance of filing a bankruptcy.
- Lending club should make sure there are no public derogatory records for borrower