

Lending Club Loan Analysis

SUBMISSION

Objective

- Lending Club is largest online marketplace, facilitating personal, business loans and financing for medical procedures.
- Our Objective as Data Scientist at LC, *perform EDA on historical data* of loans and *understand* how *consumer and loan attributes influence tendency of loans*.
 - Input : Historical loans data from Lending Club Database
 - Expected Output :
 - Major consumer and loan attributes influencing defaults
 - Give *actionable suggestions* to *reduce percentage of defaults*(Current ~14%). *Setup guideline* for new loans so data driven decision can be taken.

Approach

Observe each feature individually for spread in default/non default segments.

Document key features driving loan defaults.
Actionable suggestions for improvement.

Data Understanding & Cleaning

Univariate/Segmented Analysis

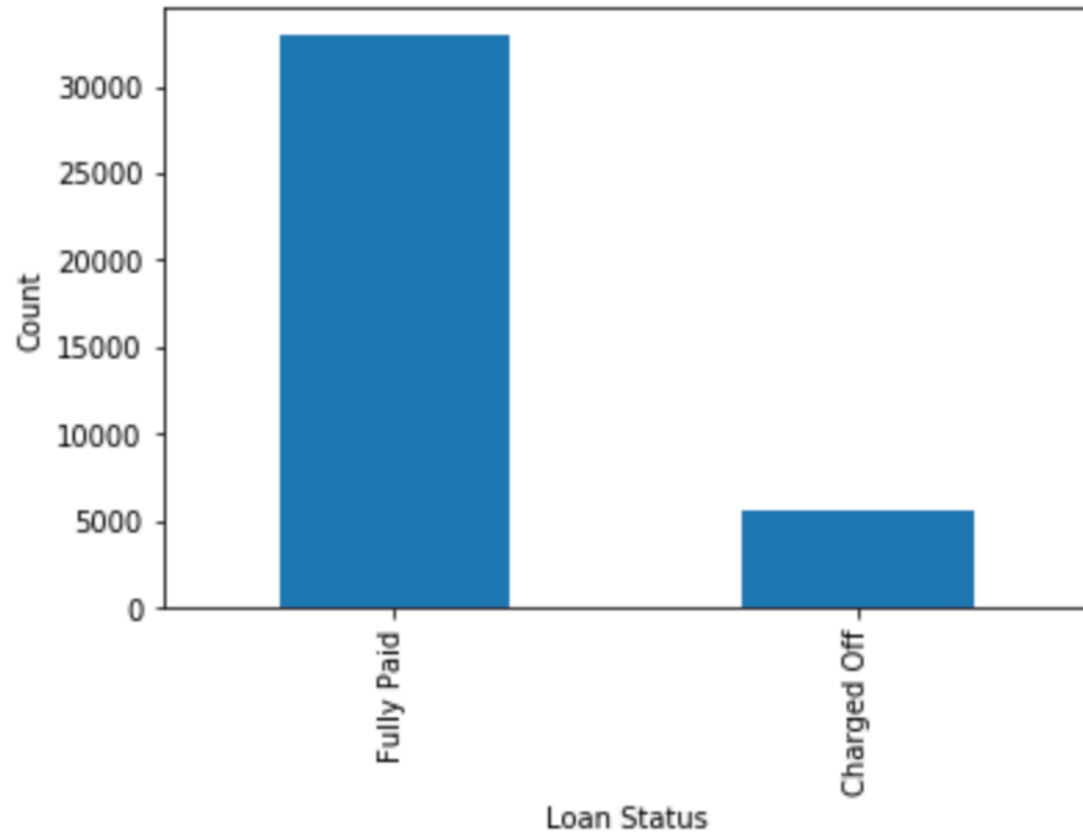
Bi-variate Analysis

Summarising Analysis

Remove features with large NA.
Format data to suitable format.
Remove features based on domain knowledge.

Observe 2 features combined impact in default/non default segments.

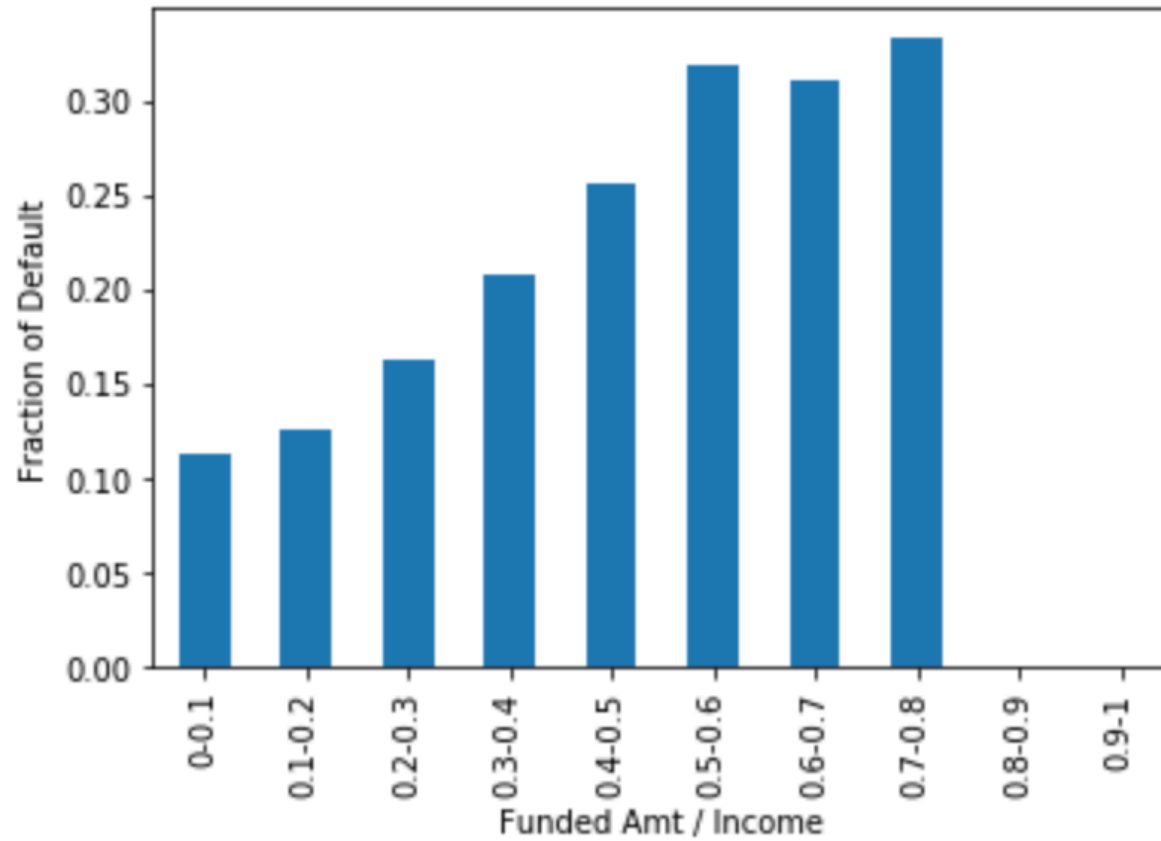
Analysis: Overall Loan Status



Approx 14% loans defaulted.

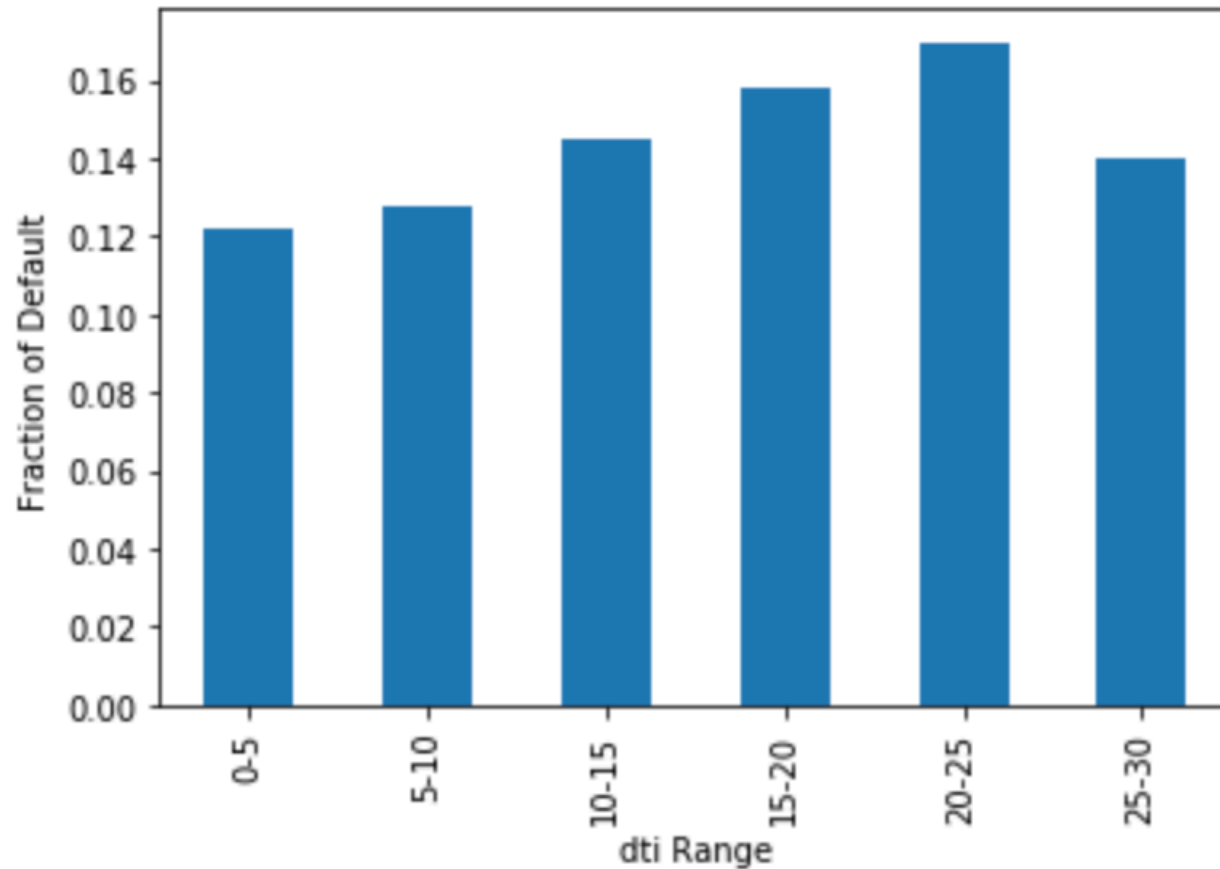
Goal is to provide suggestions to reduce % default

Analysis: Funded Amt/Income impact



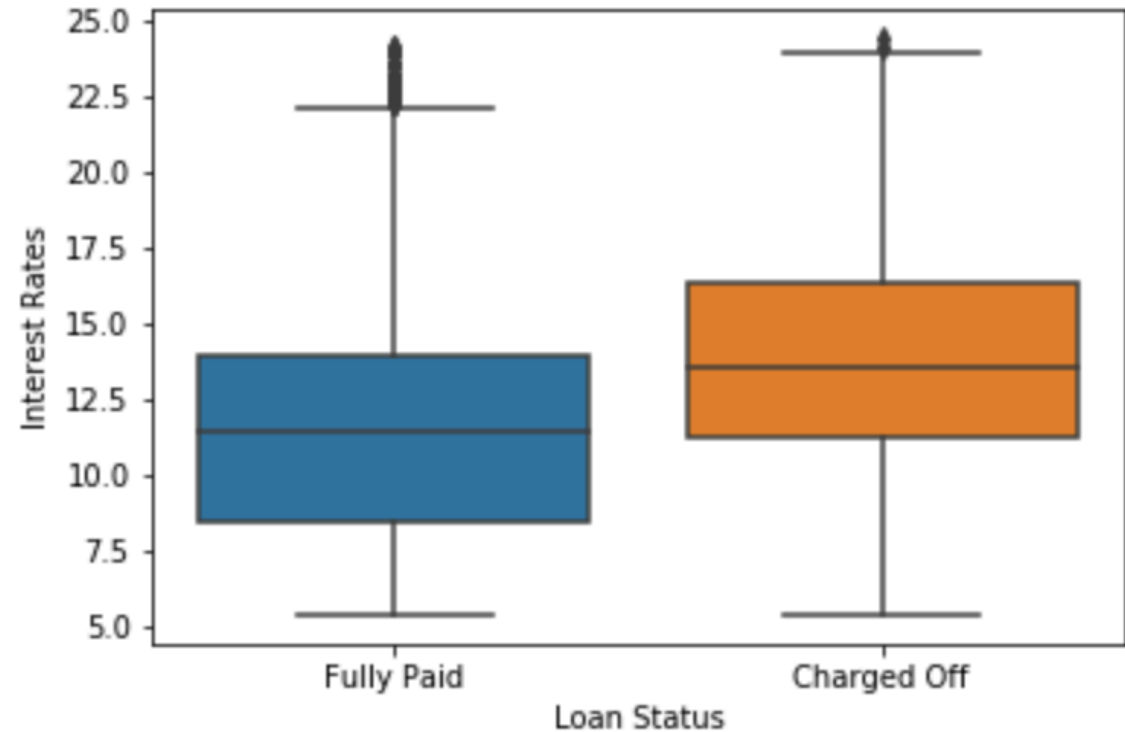
% of default increases beyond average with >30% funded Amt to income ratio.

Analysis: dti impact



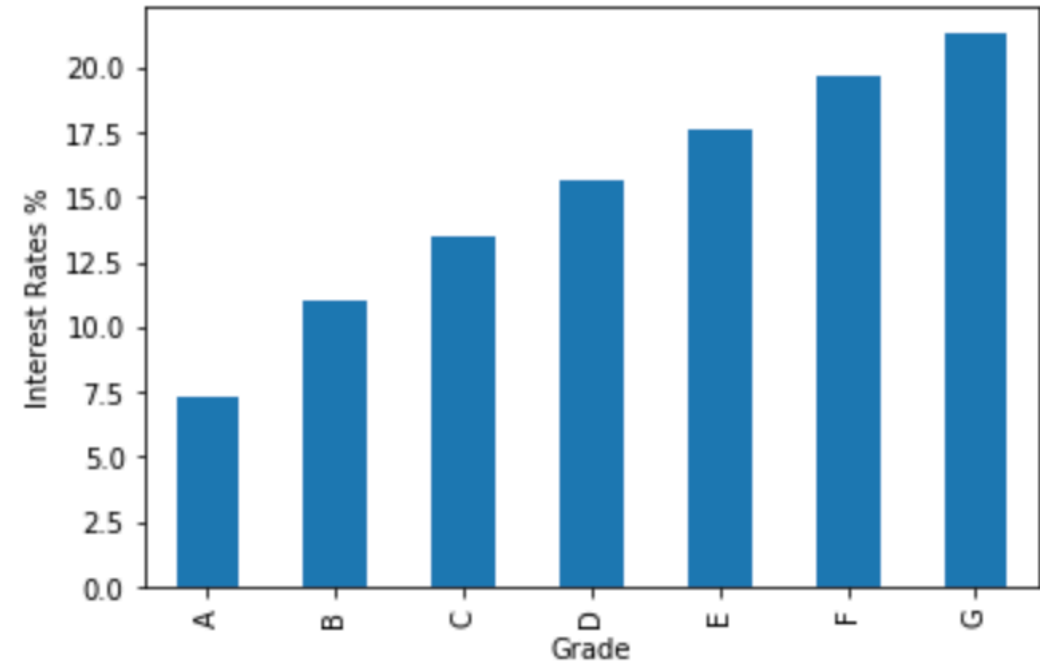
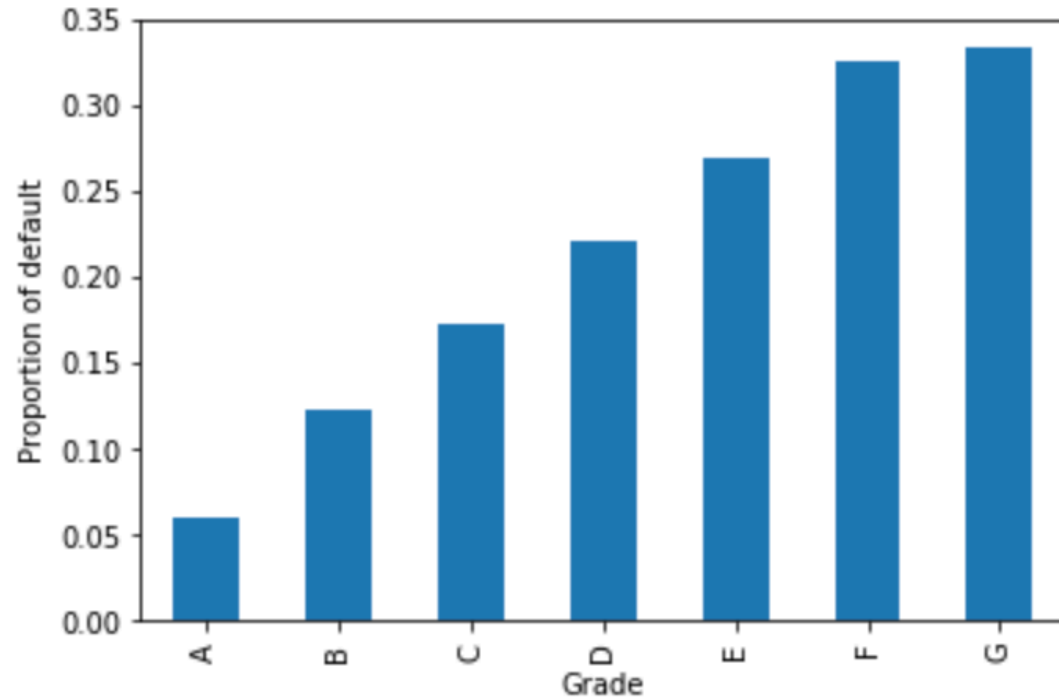
% of default increases
beyond average
with >20 dti

Analysis: Interest rate impact



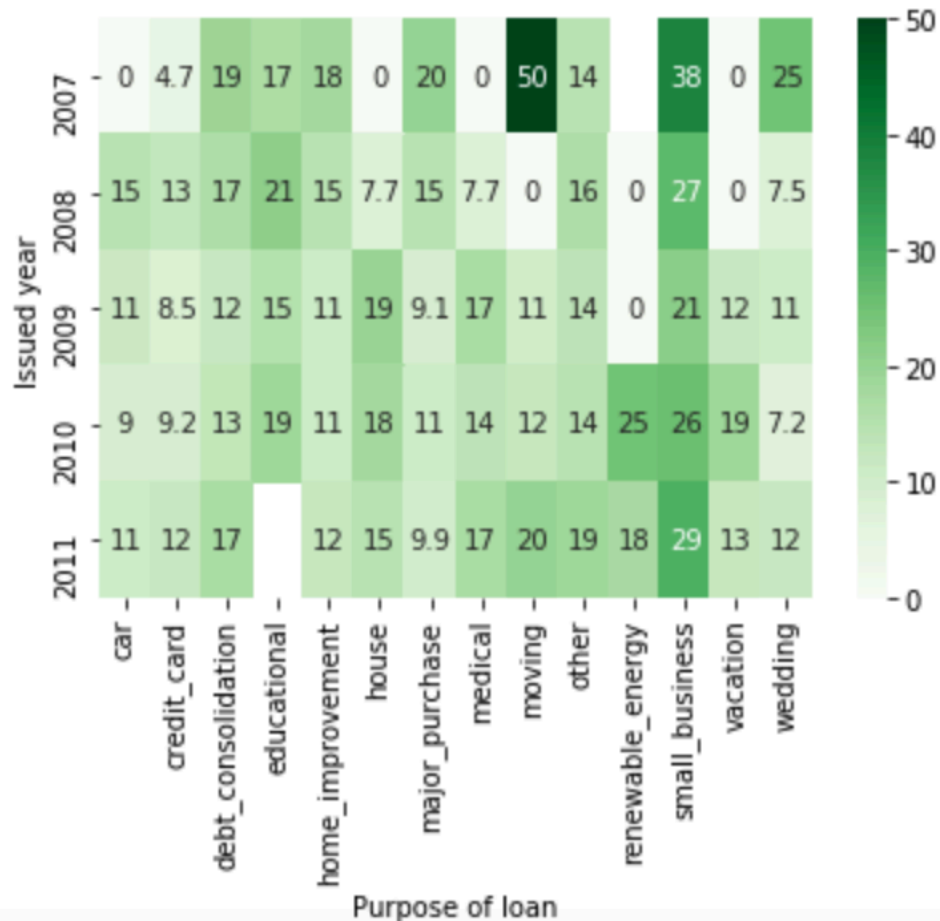
Higher interest rates causes more default

Analysis: Loan grade impact



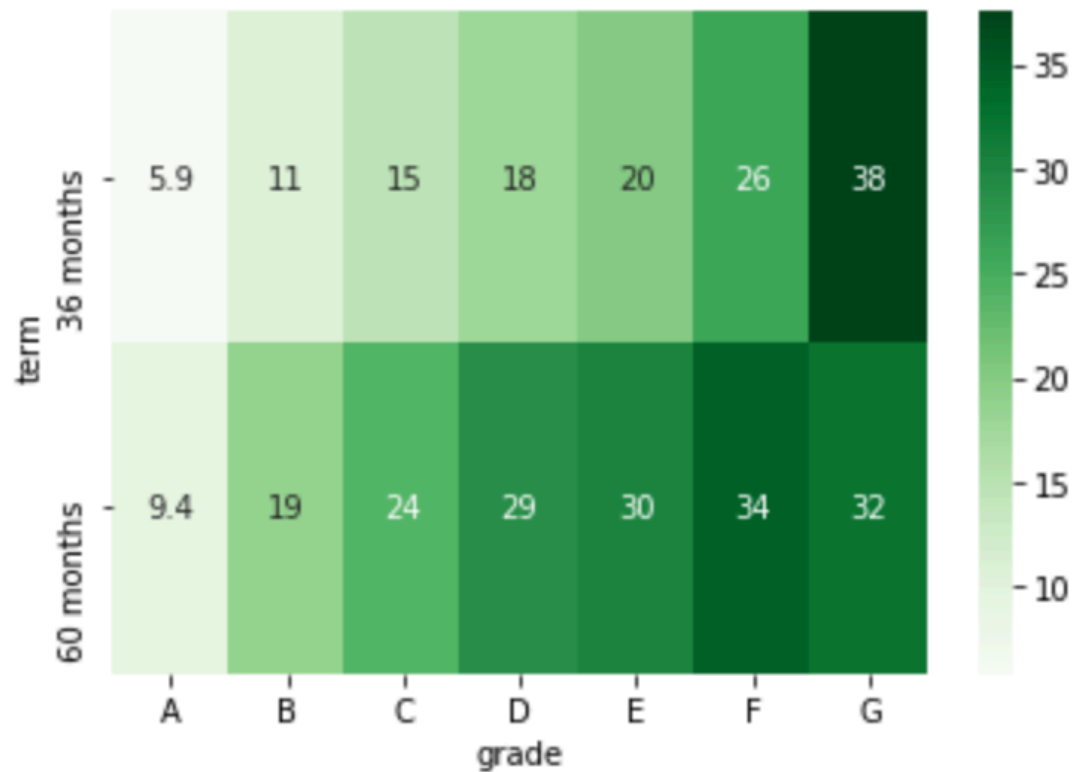
LC charging higher interest rates for low grade loans.
 Proportion of default increases for low grade loans so
 Grading system working!!!
 However Reducing Funding Amount is
 better strategy
 for low grade loans.

Analysis: Purpose vs Default Count



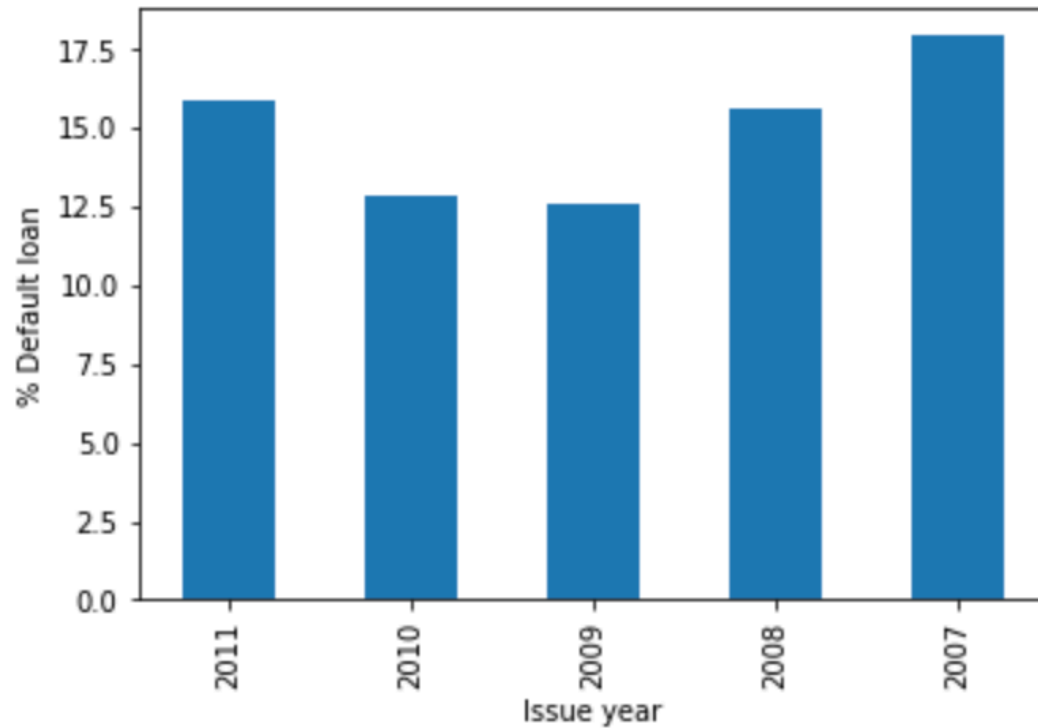
Small business loans defaulted more consistently throughout years.
Need more focus on evaluation of business Current health/future growth while approving.

Analysis: Term/Grade vs Default Count



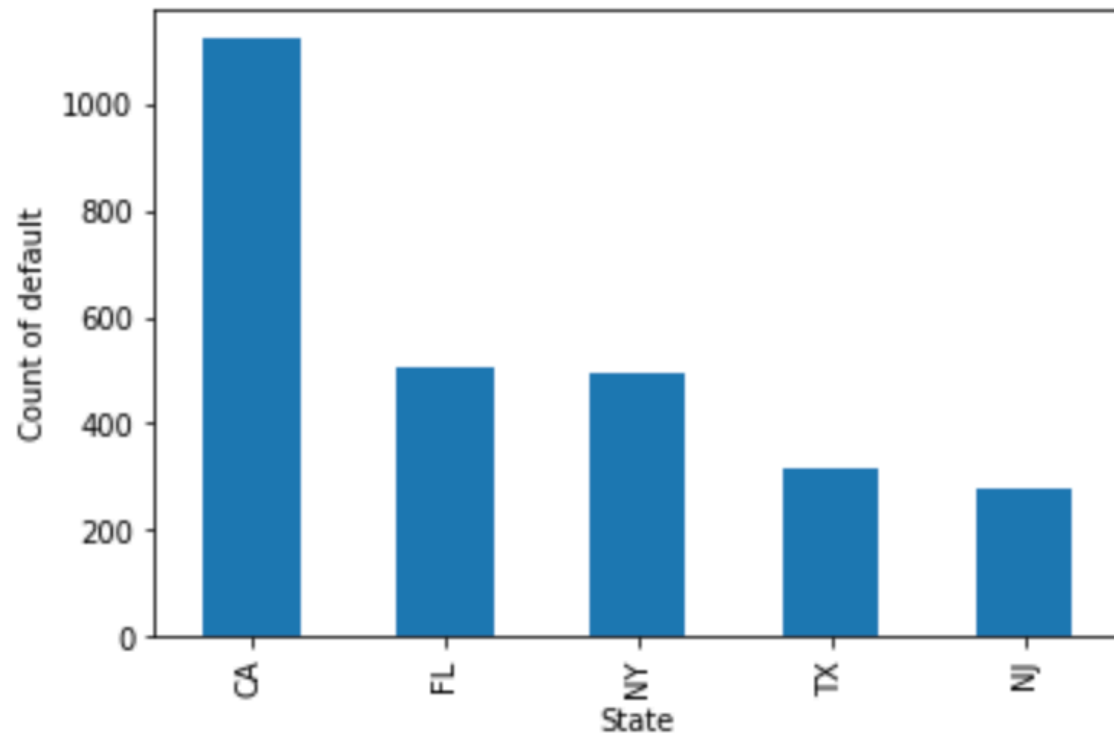
Low grade long term loans
defaulted most.
Offer short term
reduced fund amount
to low grade loans

Analysis: Issue year vs Loan



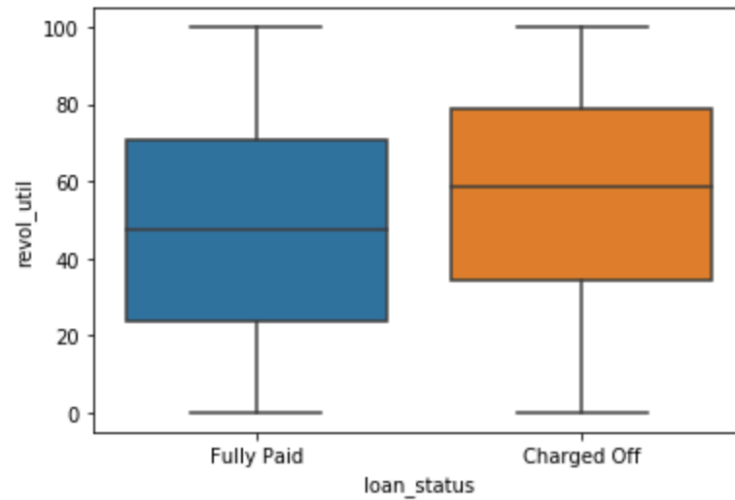
Loans issued just before 2008 financial crisis defaulted most.
Need more focus while Issuing loans based on global market condition

Analysis: State vs Default Loan

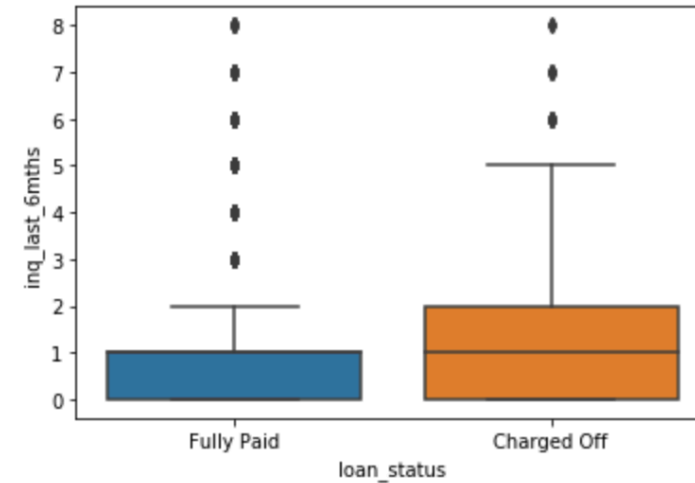


CA/FL/NY has most defaults.

Analysis: Other features vs Default Loan



Higher revolving utilisation shows trend



Higher hard loan inquiries reflect borrower financial state hence Possibility of default

Actionable Suggestions



Reduce loans with >30% loan Amt to Annual Income ratio.

Reduce funding amount if dti>20.

Reducing funding amount is better than increasing interest rates.

Give short term reduced fund amount to low grade loans.

Spend more efforts while screening loans for Small businesses.

Spend more efforts on screening loans based on market conditions.

More screening for loans with bad records.