

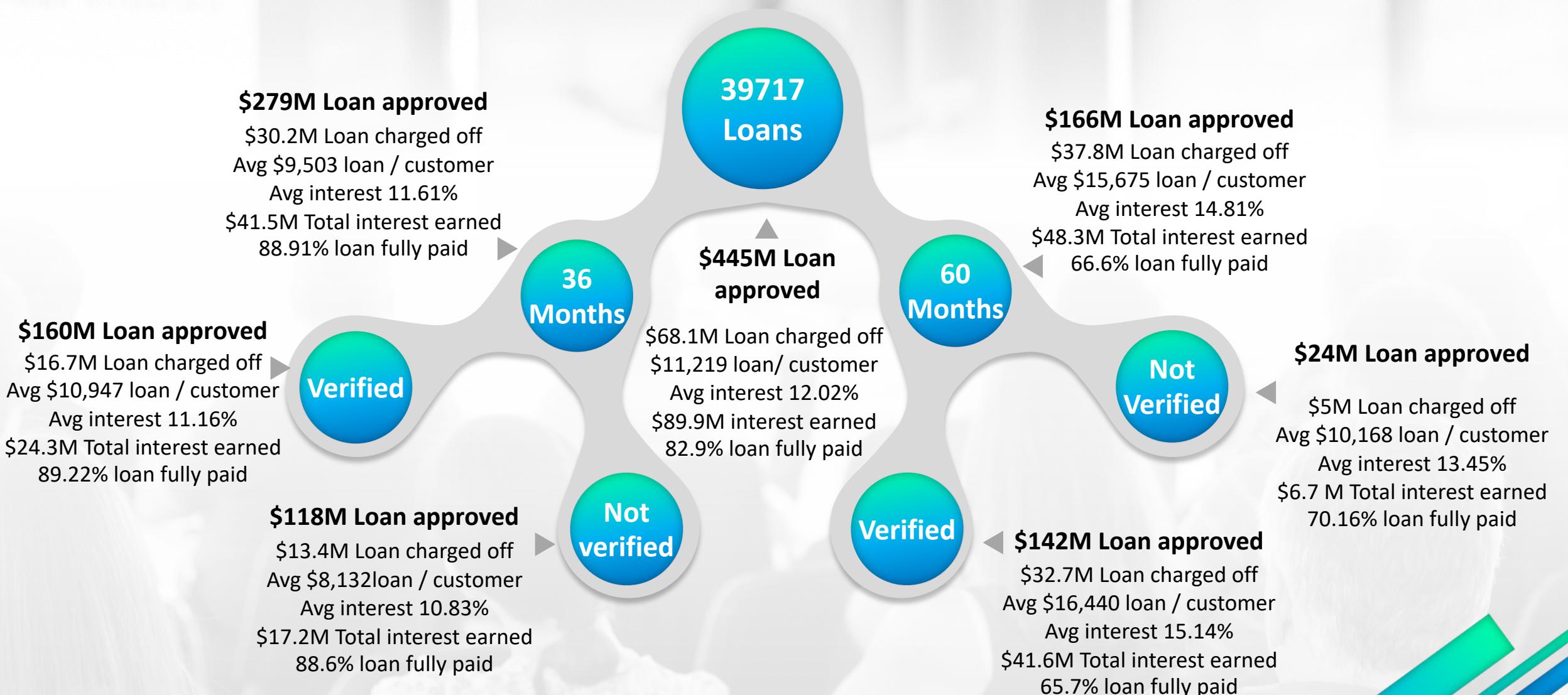
Lending Club Case Study

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Date: 08 May 2024

Lending Club

Loan Portfolio



Lending Club Case Study

Exploratory Data Analysis

Exploratory Data Analysis

Univariate and multivariate analysis and to determine if there is any trend in default rate of loan among the applicant from particular state or grade of loan?

Inferential statistical analysis

To determine if there is any difference in default rate of loan based on Debt-to-Income ratio?

Exploratory Data Analysis

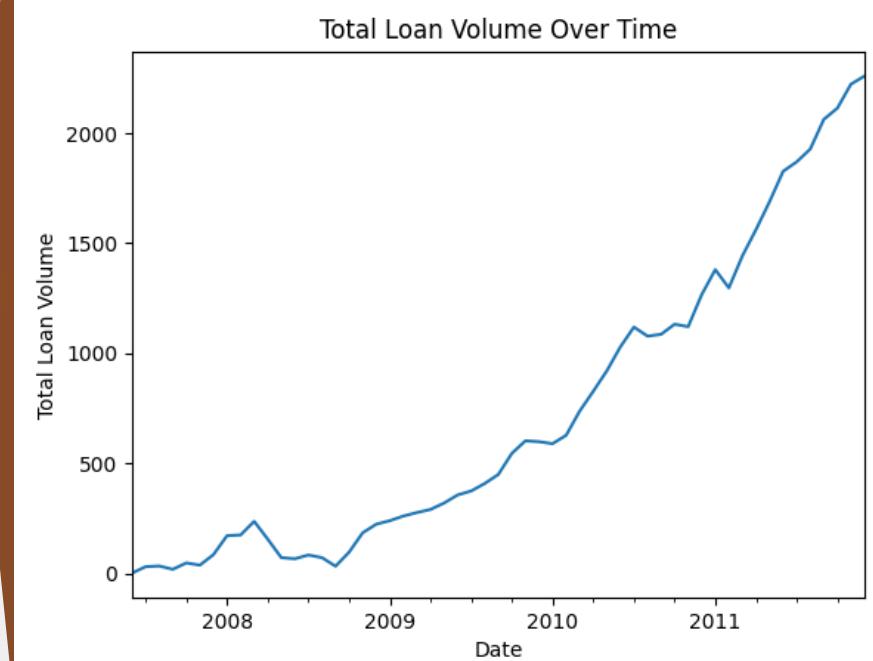
To determine if business is profitable or not?

Inferential statistical analysis

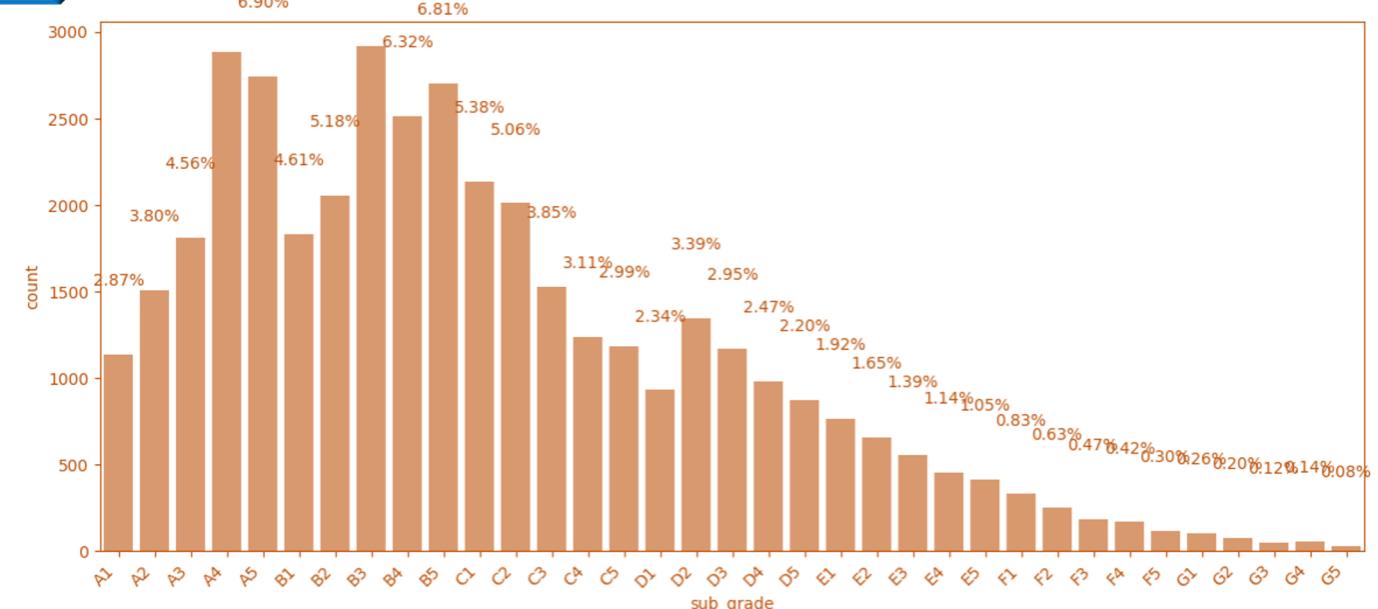
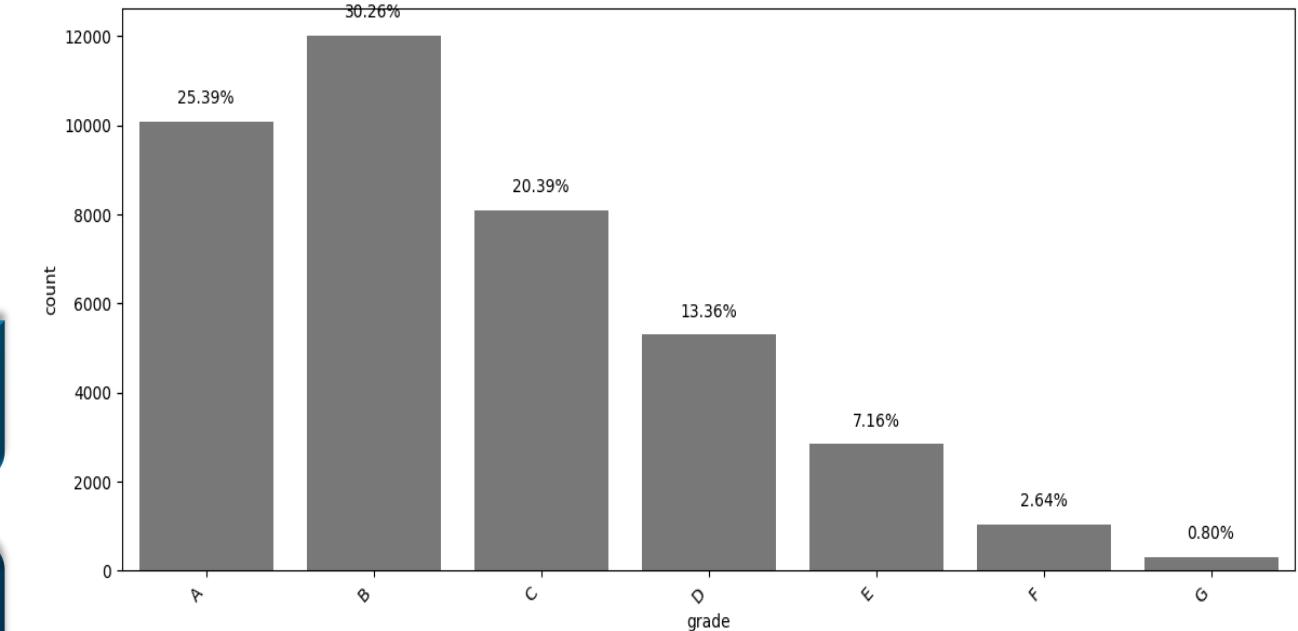
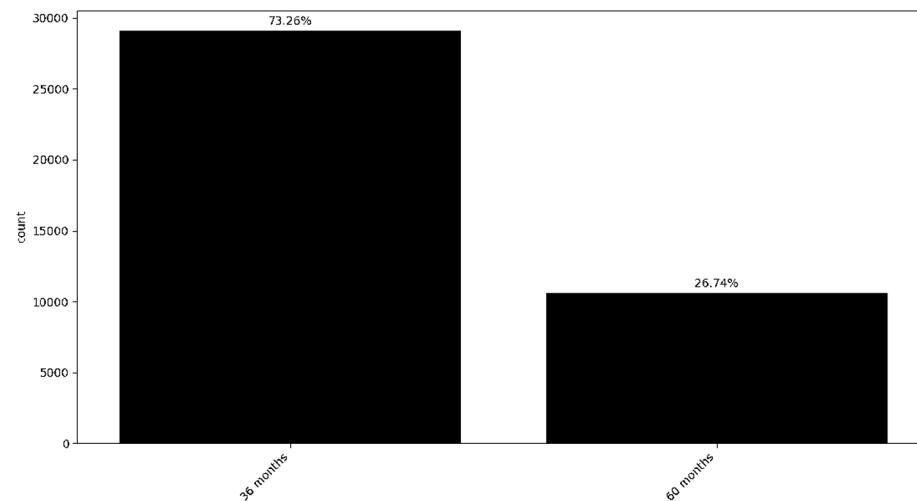
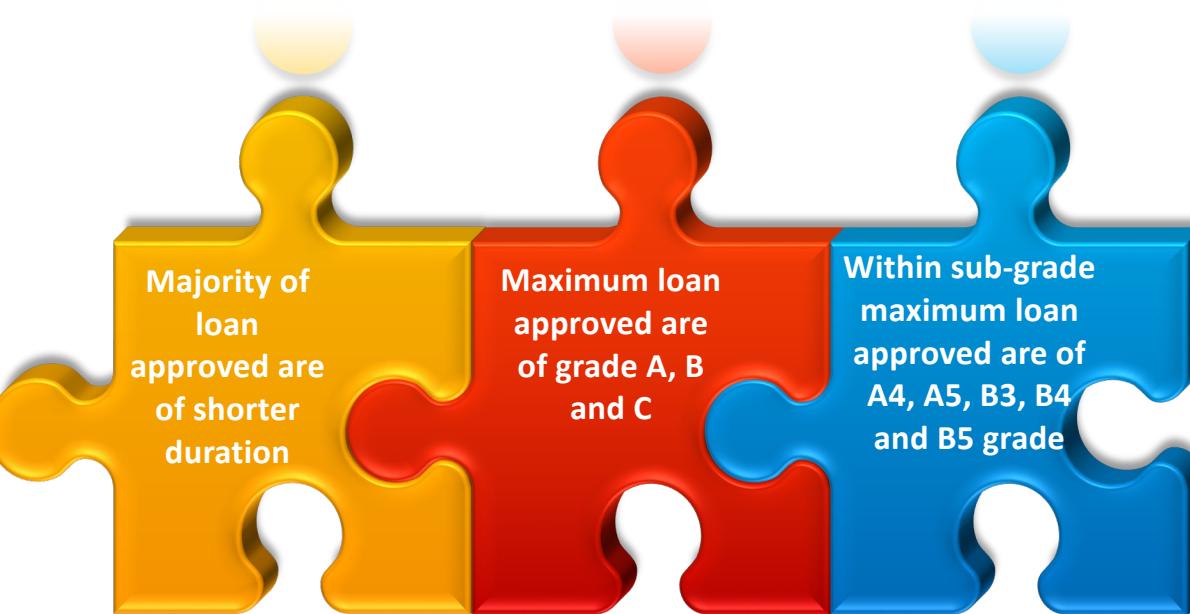
To determine if there is any difference in default rate of loan that are verified / source verified vs. unverified loans>

Exploratory Data Analysis

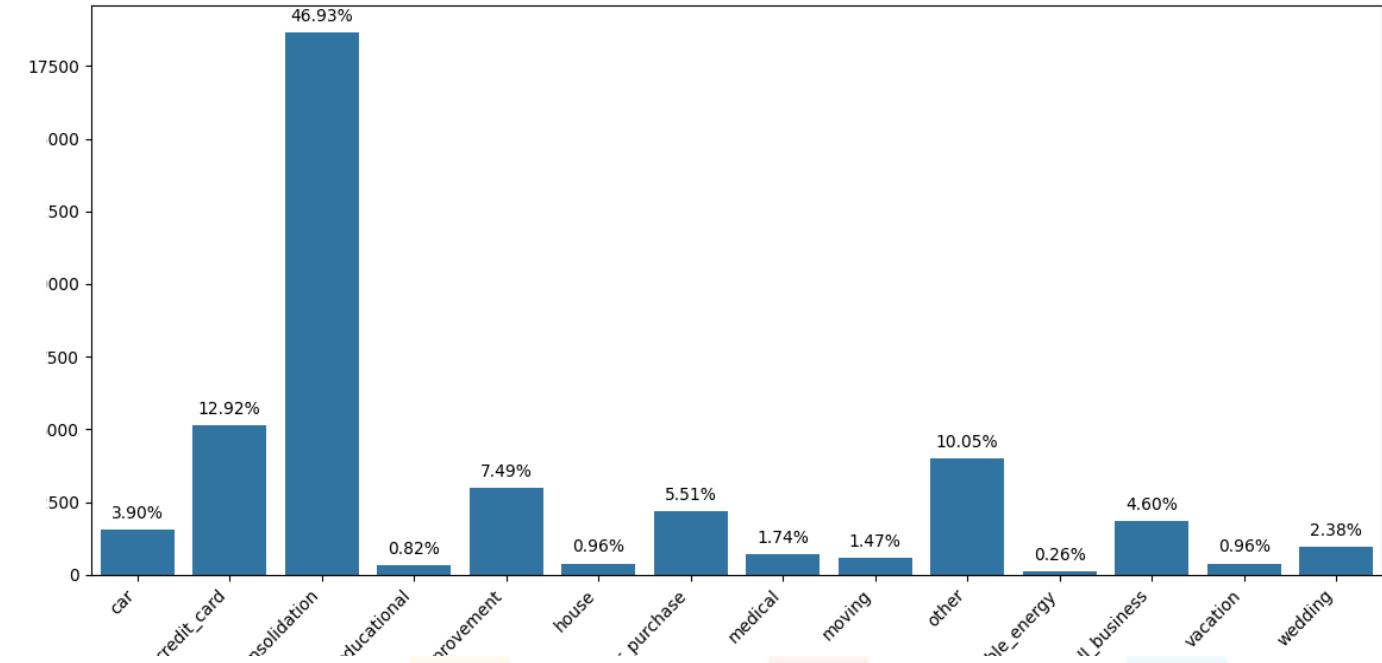
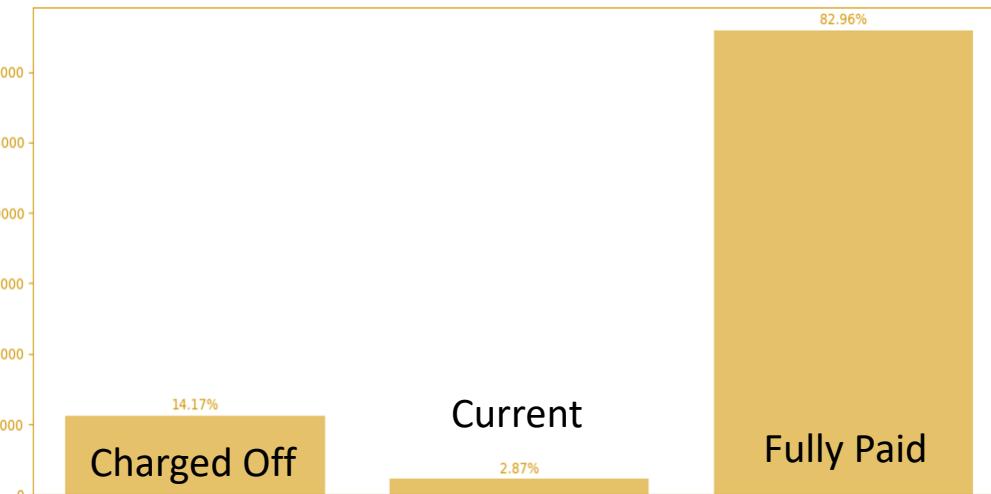
To determine difference in interest rate of loan that are fully paid vs loans that are charged off.



Univariate EDA

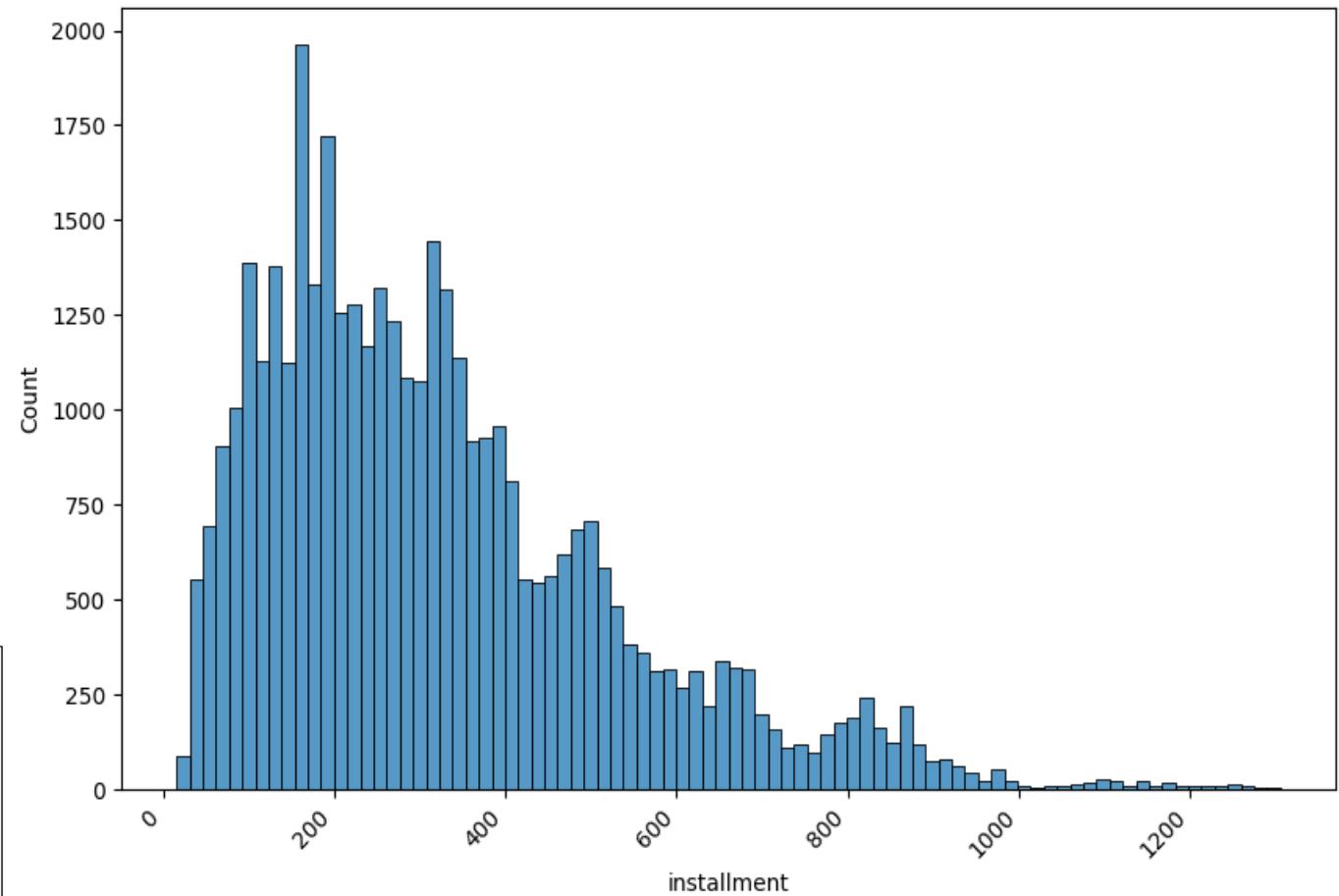
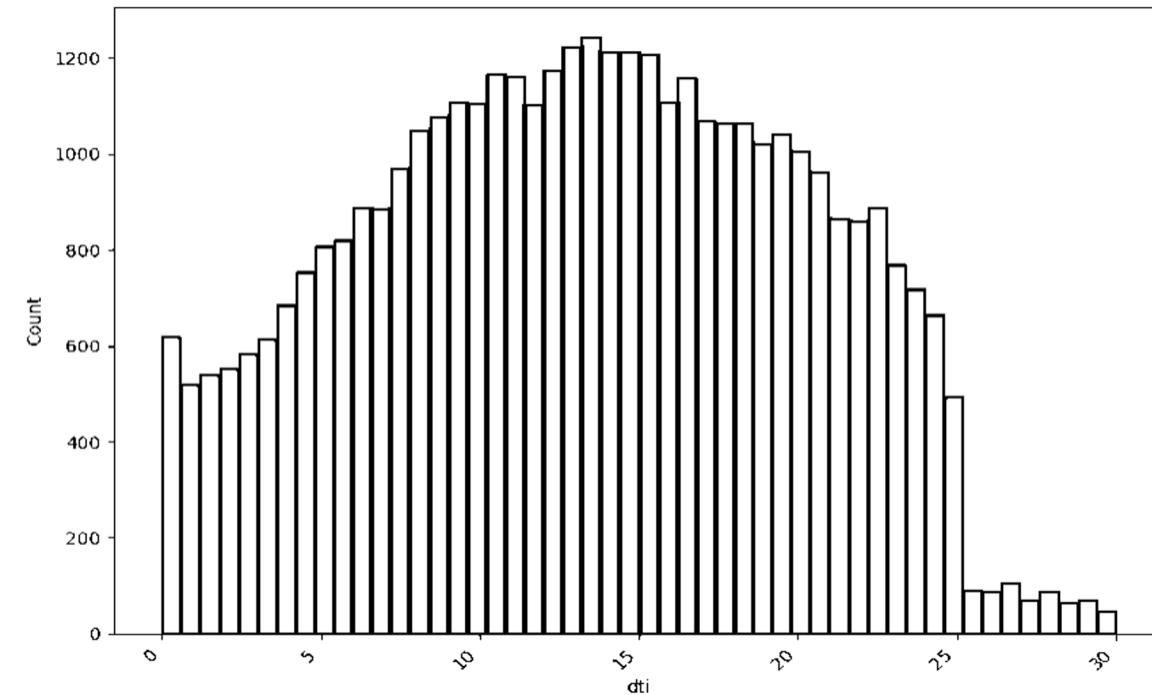


Univariate EDA



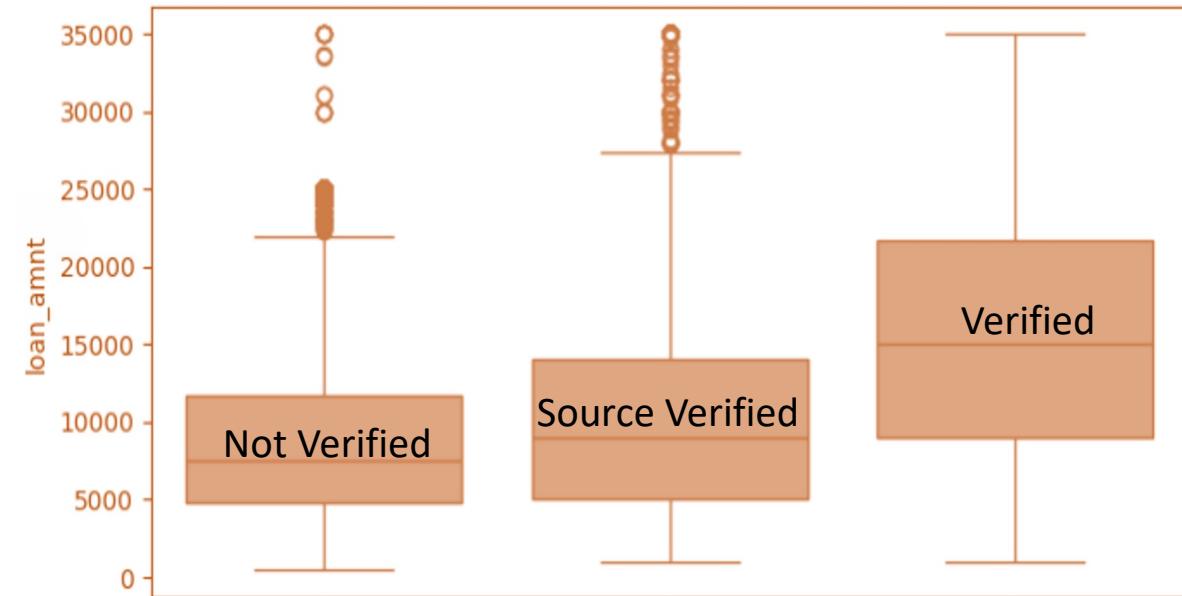
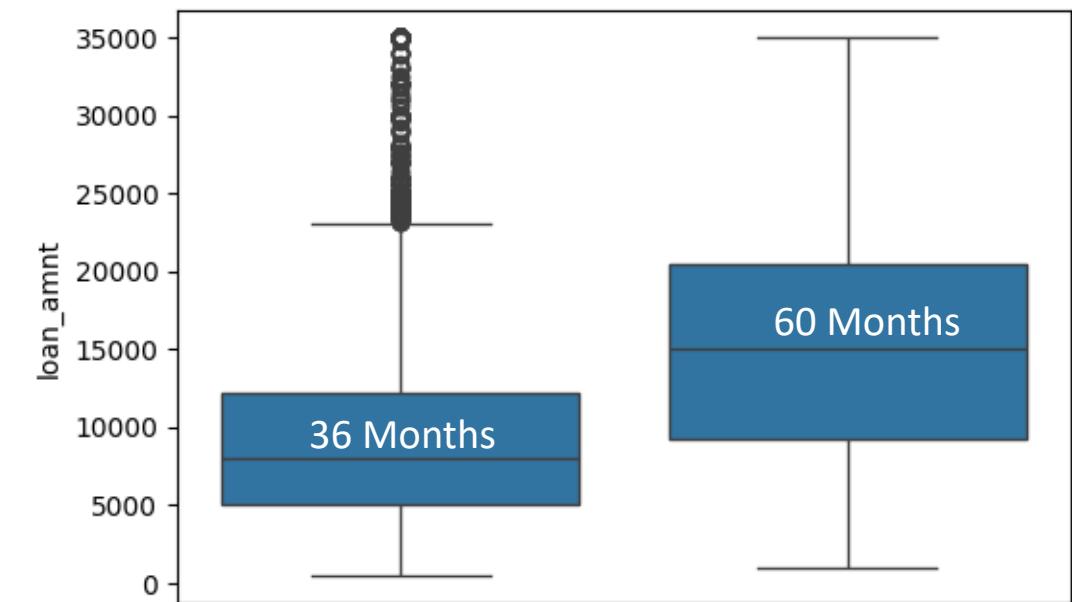
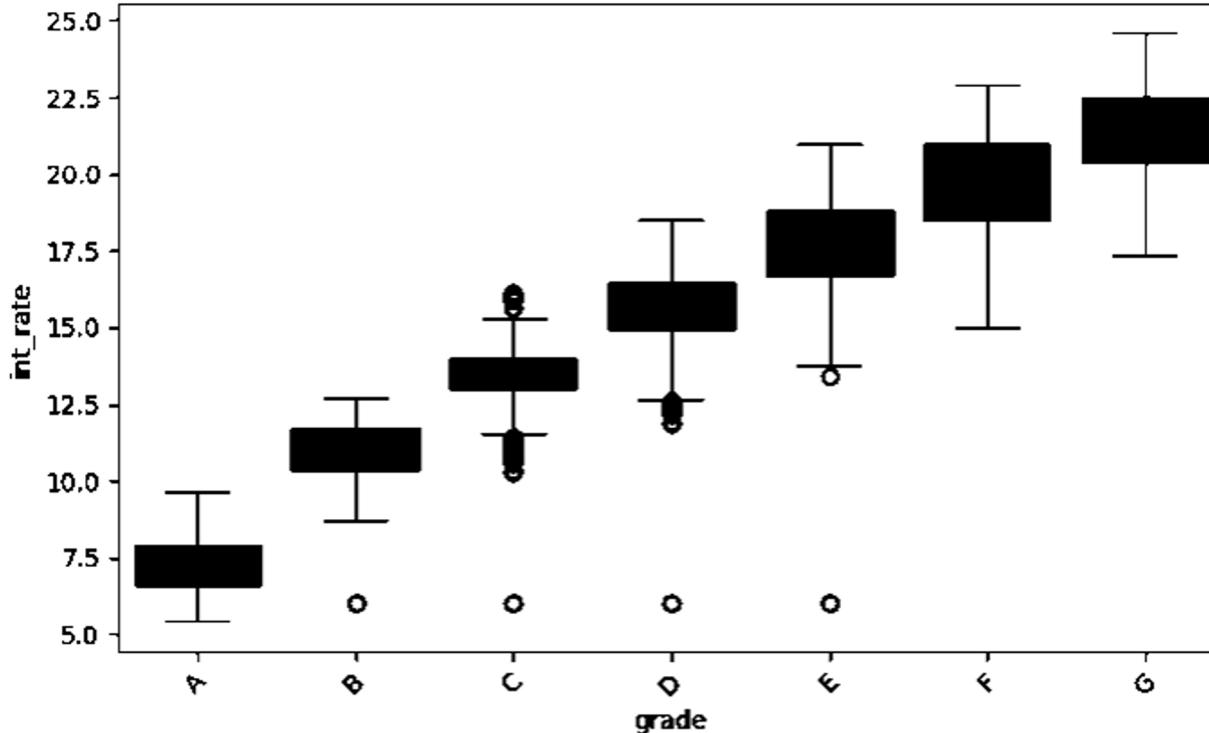
Univariate EDA

Maximum loan
approved
at DTI ratio of 10-20



Maximum loans are
paid within
200-400 installments

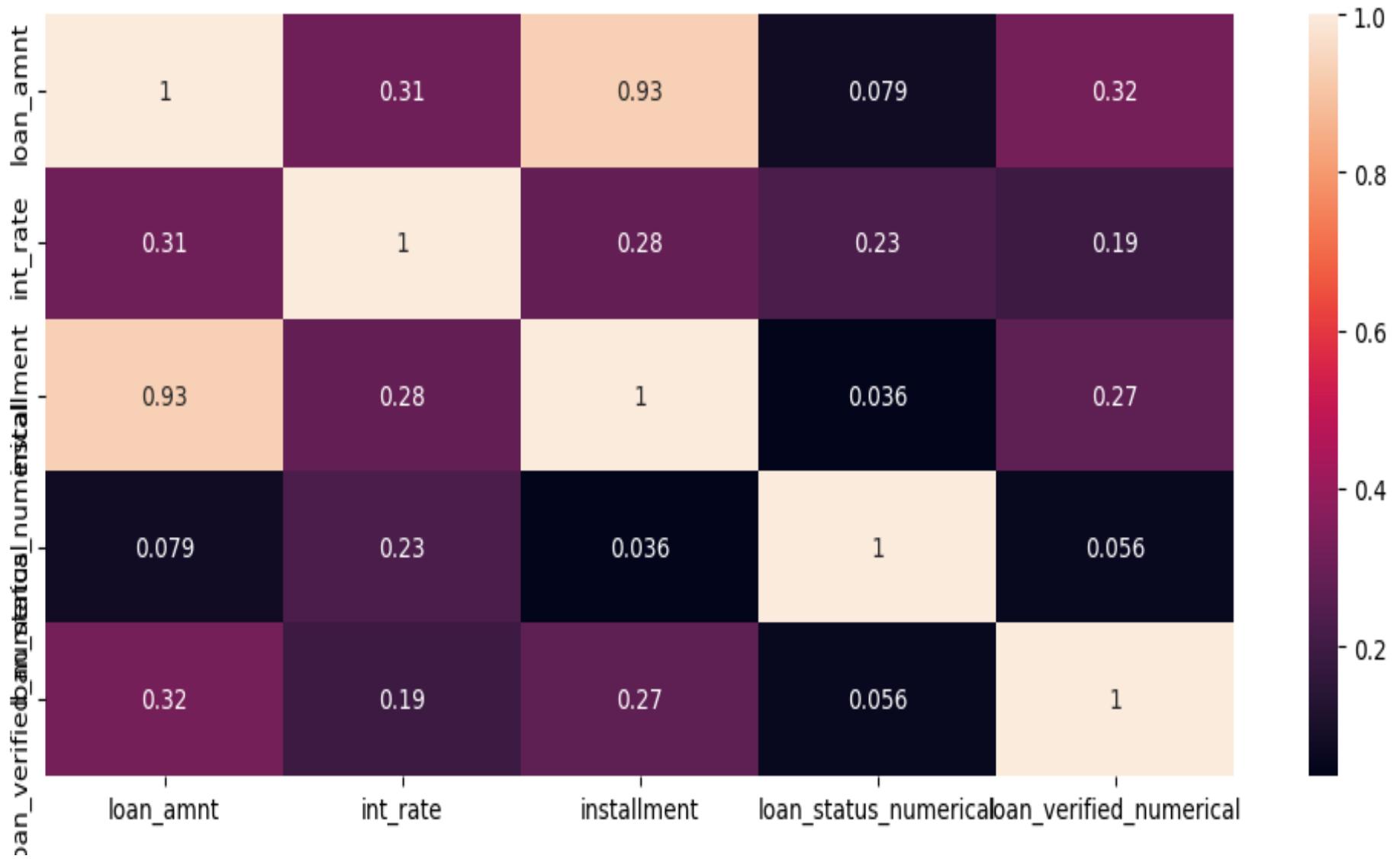
Multivariate EDA



Multivariate EDA

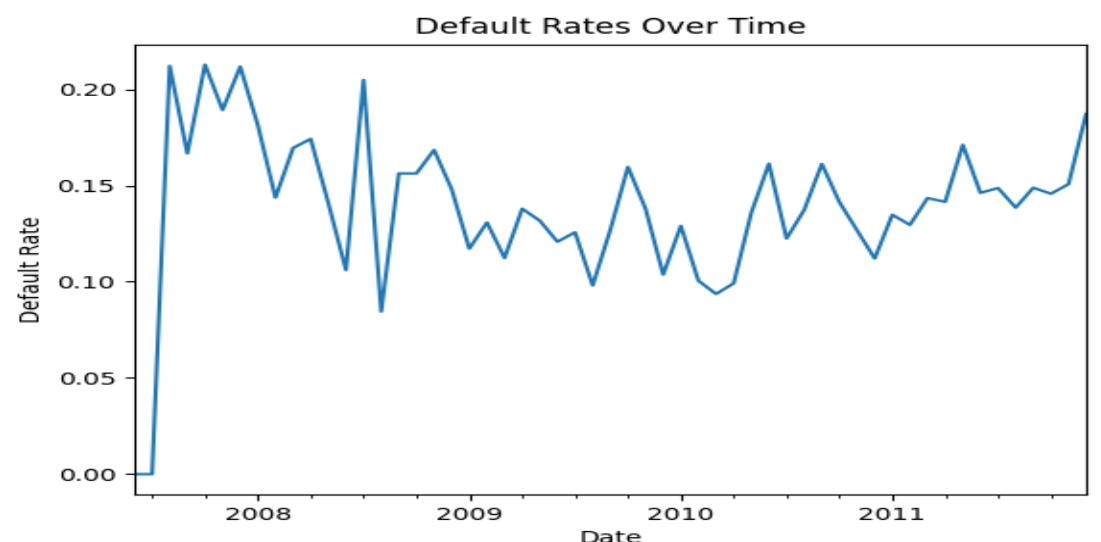
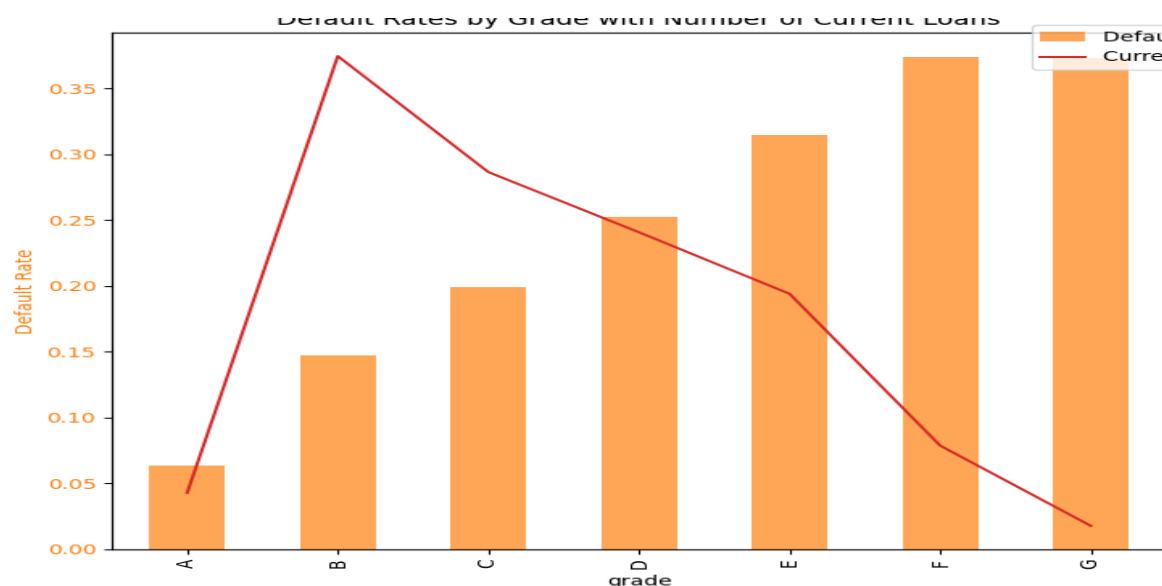
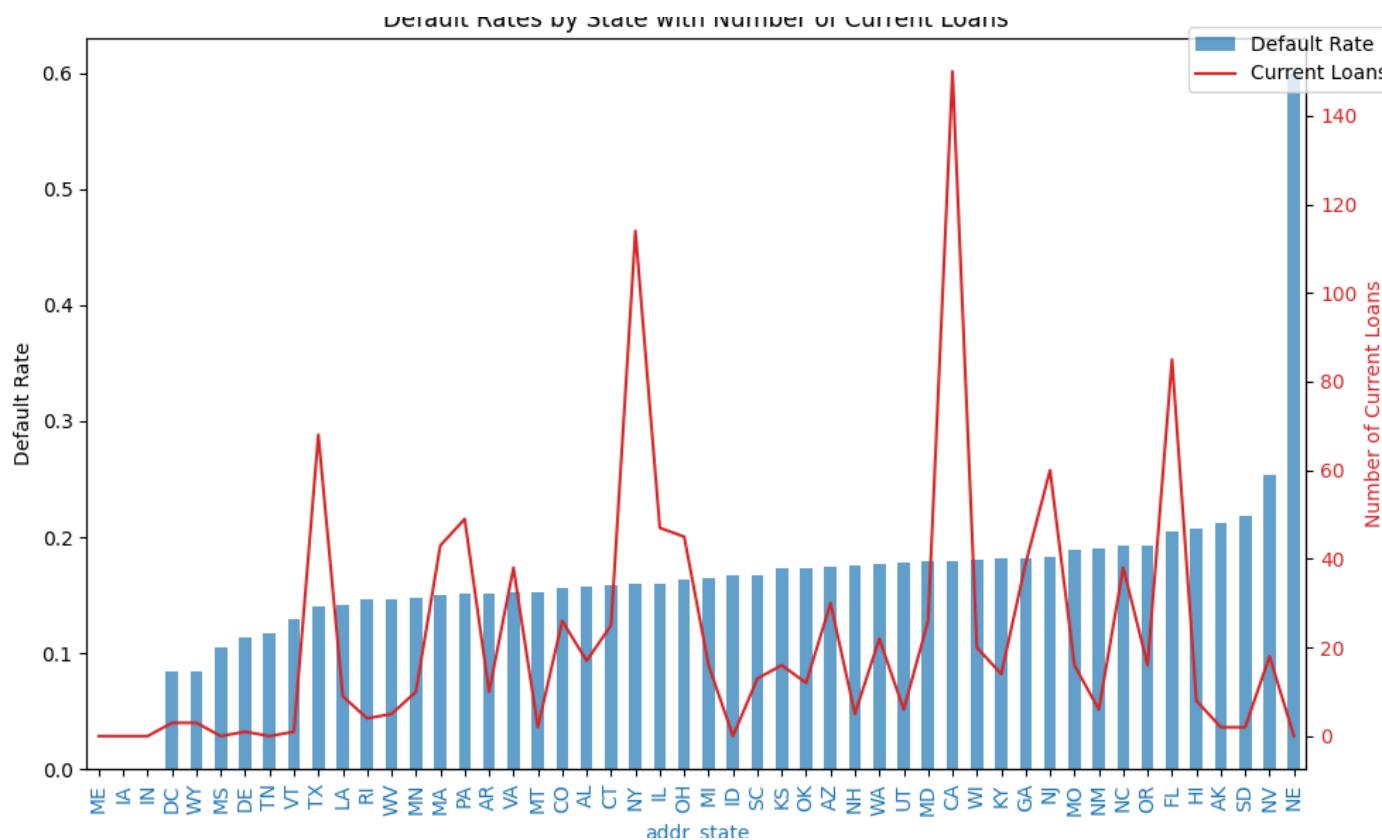


Loan amount is strongly correlated to total installments and interest
Rate of loan
Interest rate is strongly correlated to all parameter of analysis



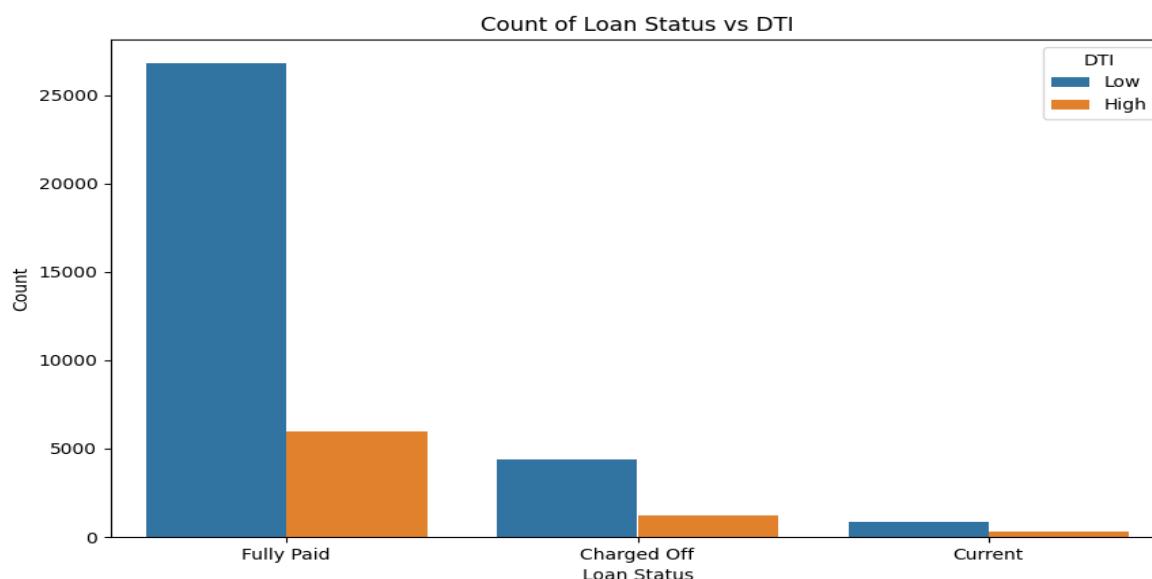
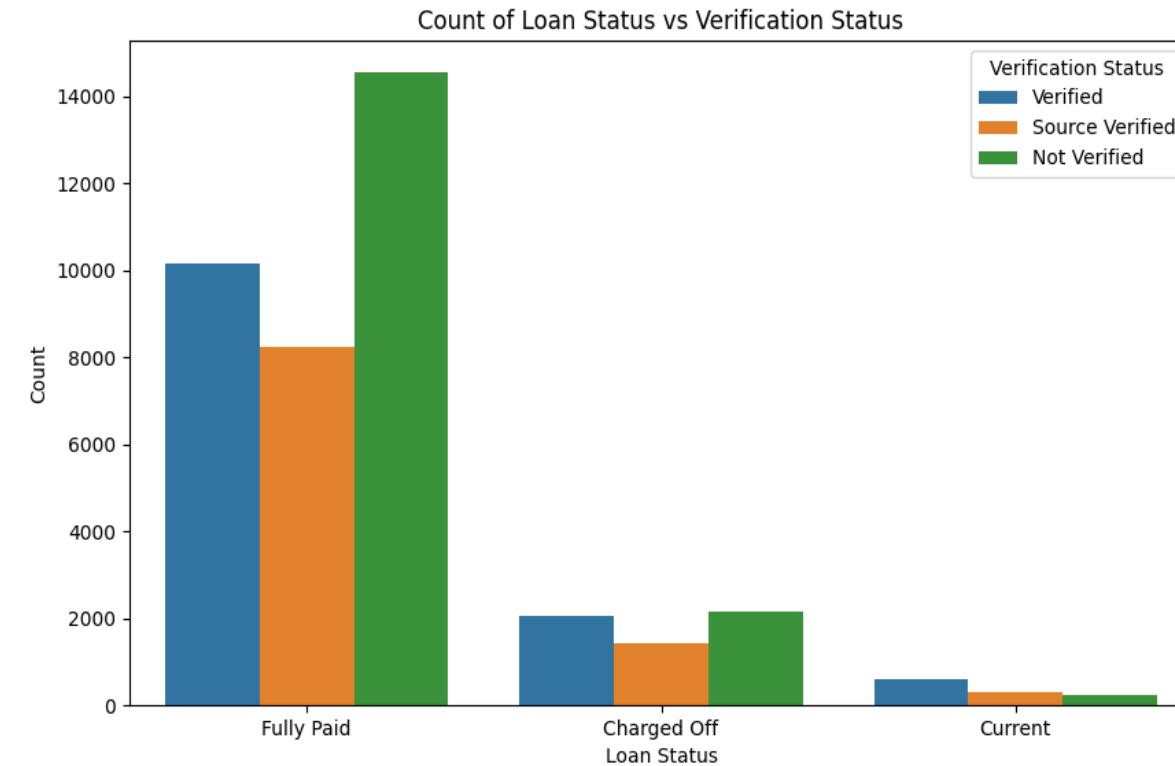
Multivariate EDA

- Address state of NE and NV has highest default rate.
- Loan with grade E, F and G has highest default rate.
- Number of active current loan are less in address state of NV and NE
- Number of active current loan with grade F and G are less.
- Default rate is within range of 0.1-0.2



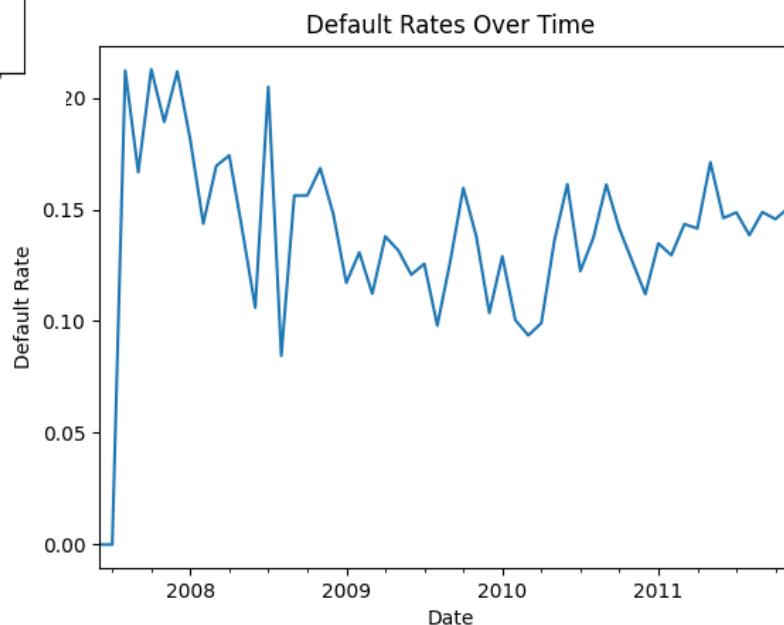
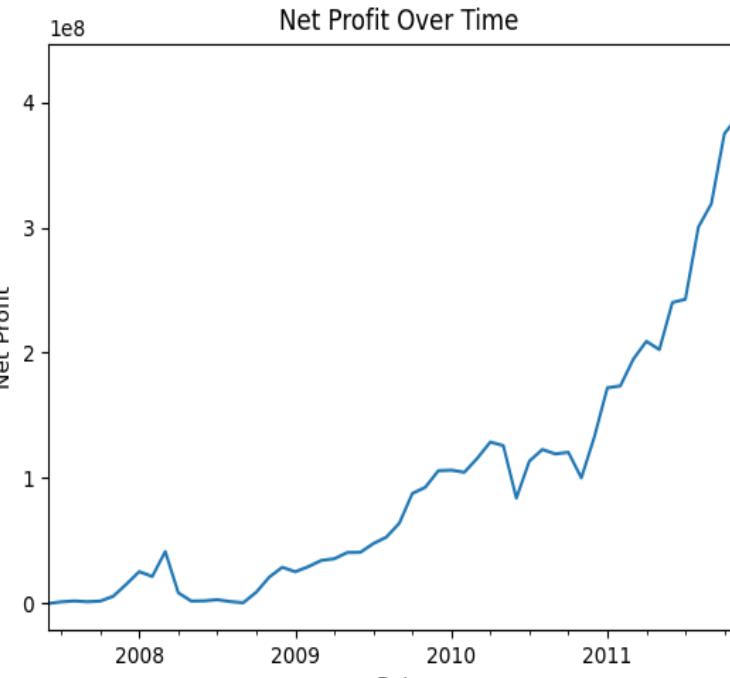
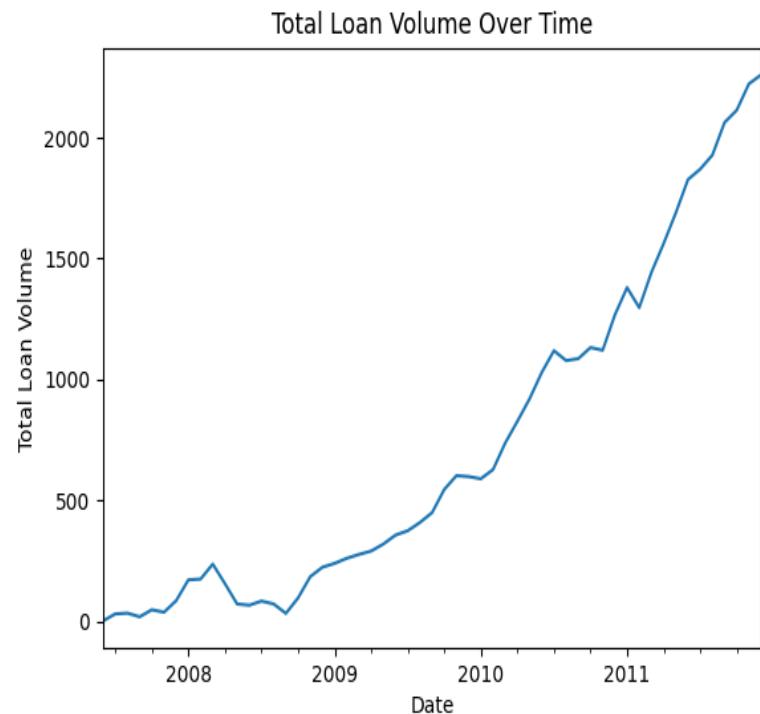
Inferential Statistics

- Verified Default Rate: 0.1528776978417266
- Unverified Default Rate: 0.12658826310501745
- t-statistic: 11.0787035624913
- p-value: 1.7522724340247096e-28
- Confidence Level: 0.95
- Confidence Interval (95.0%): (9.697329608071676, 12.460077516910925)
- Alpha value: 0.050000000000000044
- There is a significant difference in default rates between verified and unverified loans at 95.0 % confidence level.
- The probability of a difference in default rates is statistically significant.



- High DTI Default Rate: 0.16085969830463223
- Low DTI Default Rate: 0.1372183950847142
- t-statistic: 6.58977870776619
- p-value: 4.459799209712588e-11
- Confidence Level: 0.95 Confidence Interval (95.0%): (5.2070276160296105, 7.972529799502769)
- Alpha value: 0.050000000000000044
- There is a significant difference in default rates between high DTI and low DTI loans at 95.0 % confidence level.
- The probability of a difference in default rates is statistically significant.

Is business profitable?



One-sample t-test results for net profit:

- Mean net profit: 137748.61
- t-statistic: 145.77258982483914
- p-value: 0.0
- The net profit is significantly different from zero.