

LENDING CLUB CASE STUDY

GROUP MEMBERS :

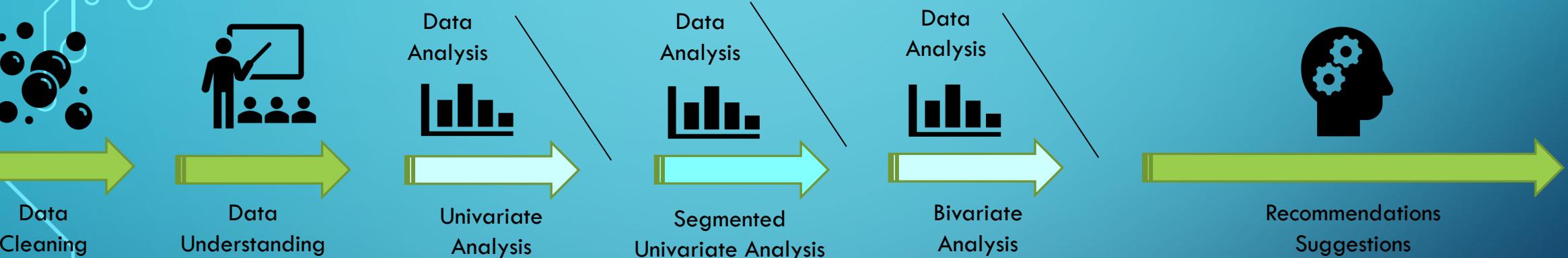
S KARTHIK SRIHARSHA

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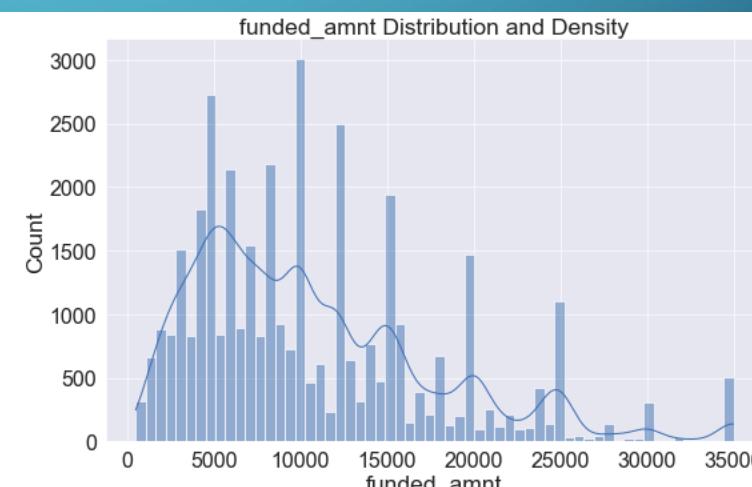
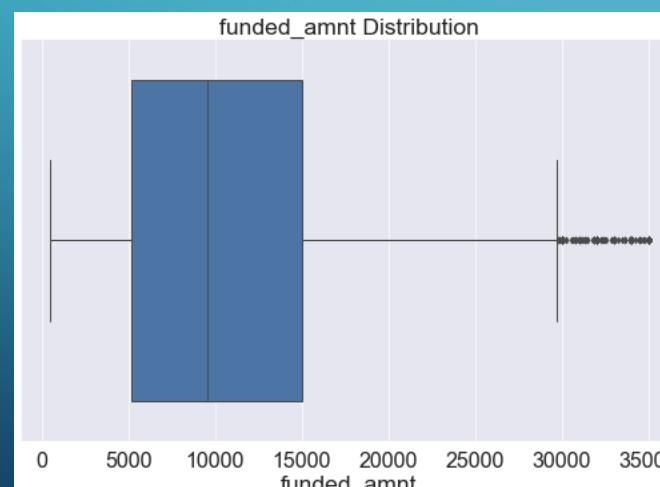
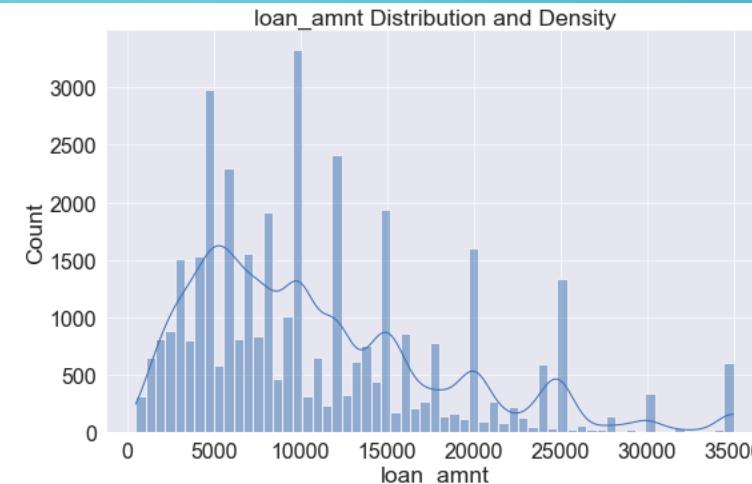
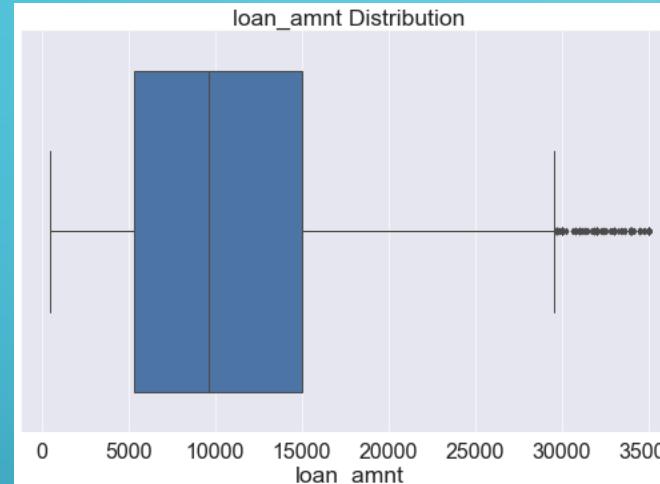
ABSTRACT

- Lending club is the largest online loan marketplace, facilitating personal loans, business loans, and financing of medical procedures.
- Borrowers/Customers can access easily loans at lower interest rates through quick online interface.
- The objective of exploratory data analysis is to use the information of the past loan applicants and concur if they've defaulted or not.

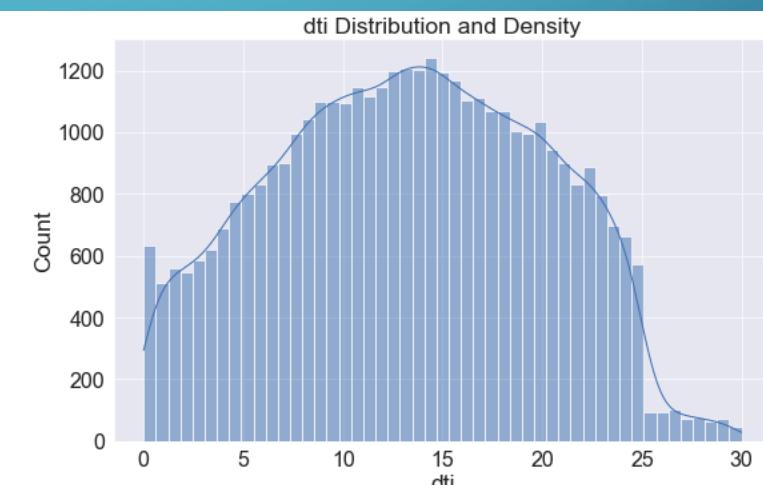
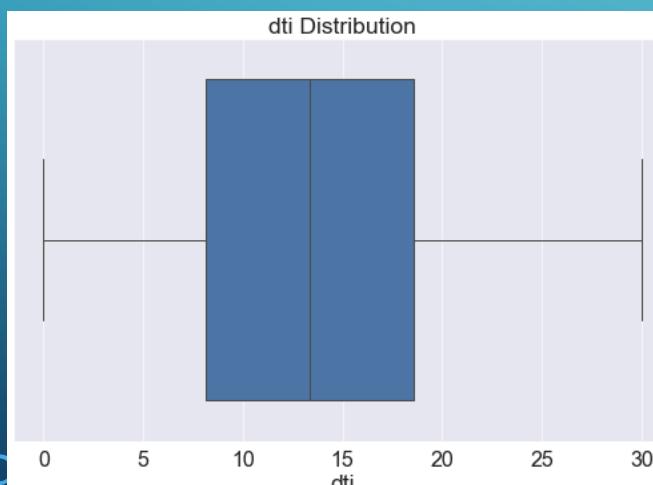
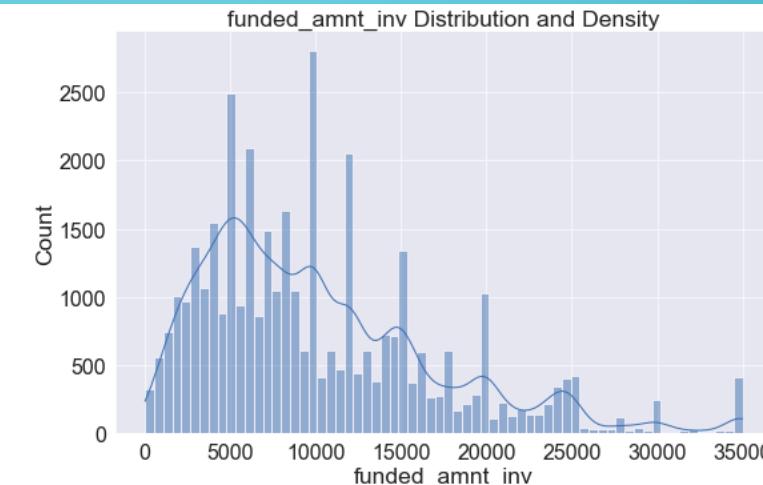
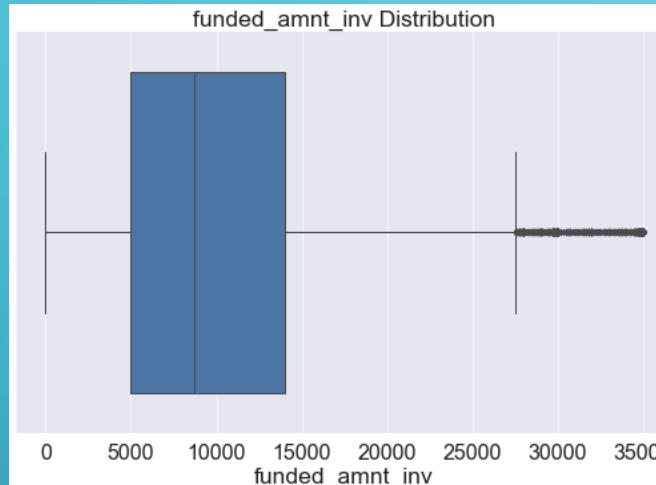
EDA APPROACH METHODOLOGY



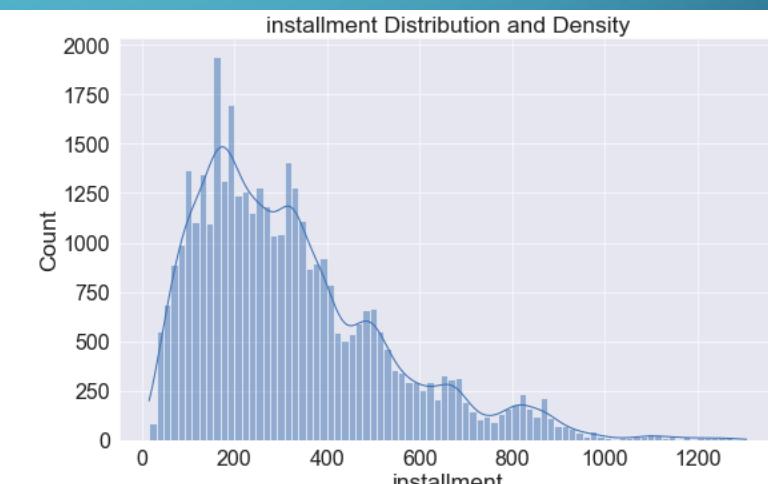
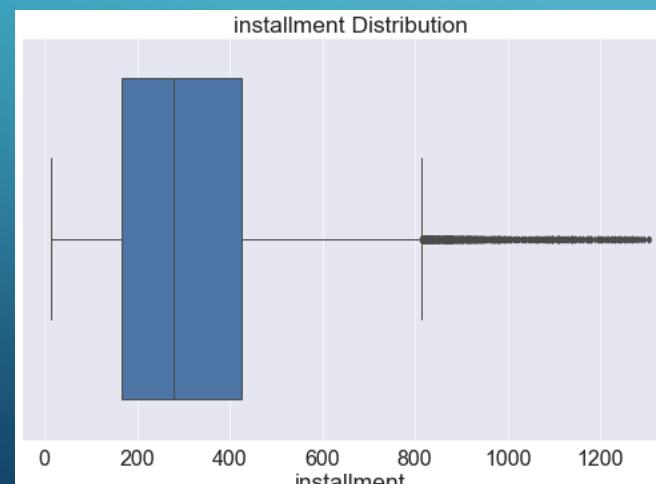
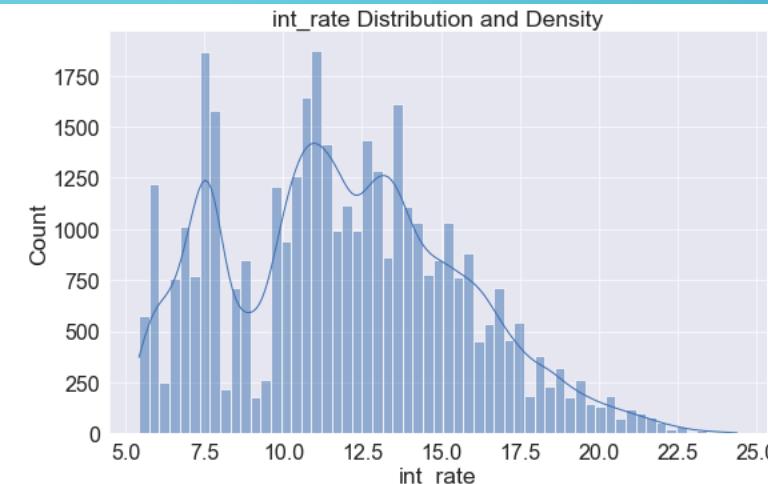
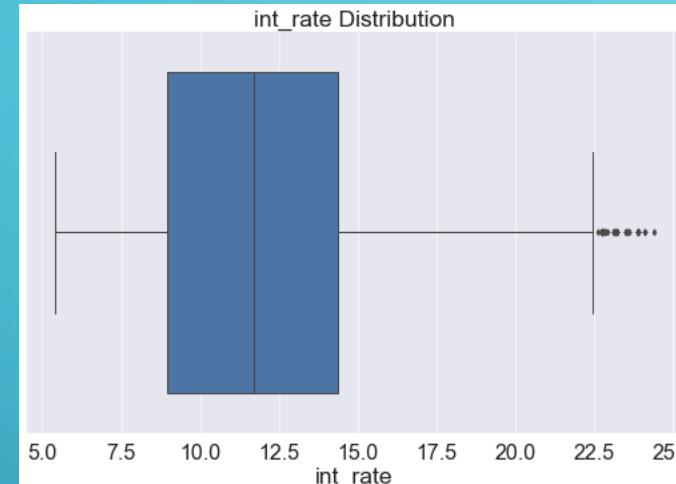
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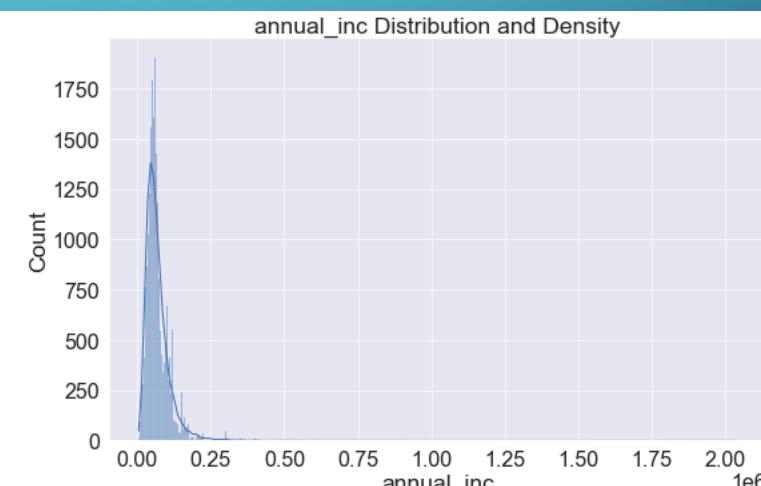
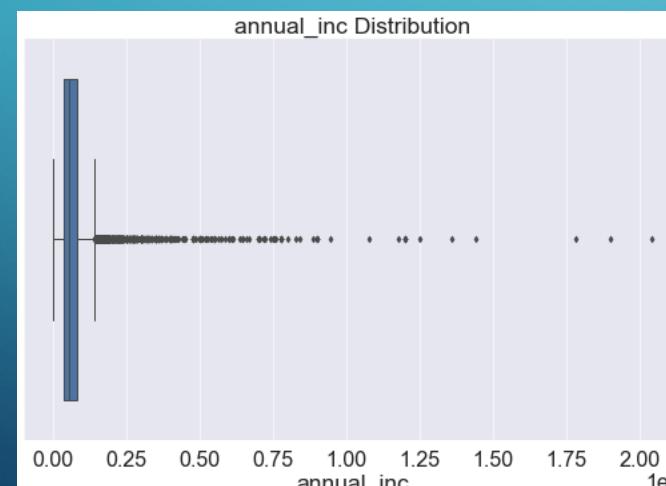
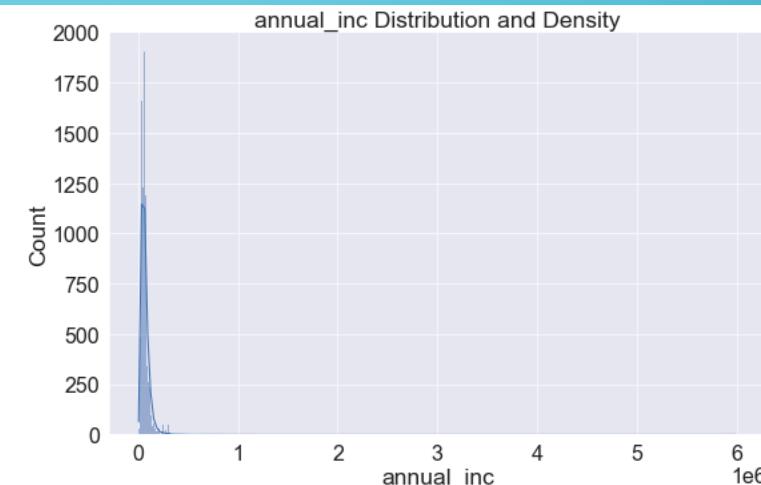
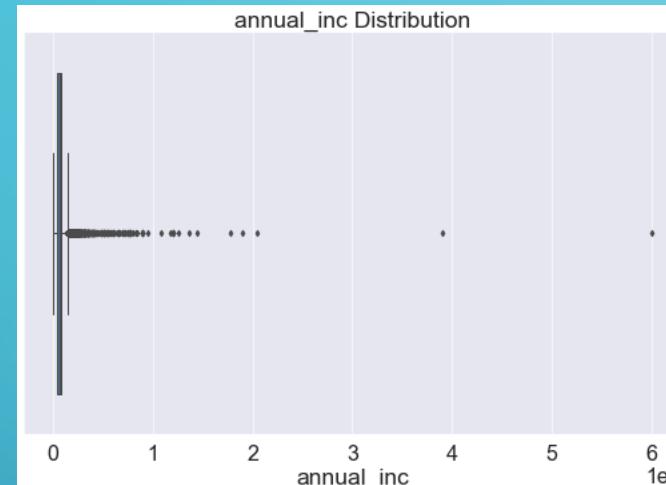
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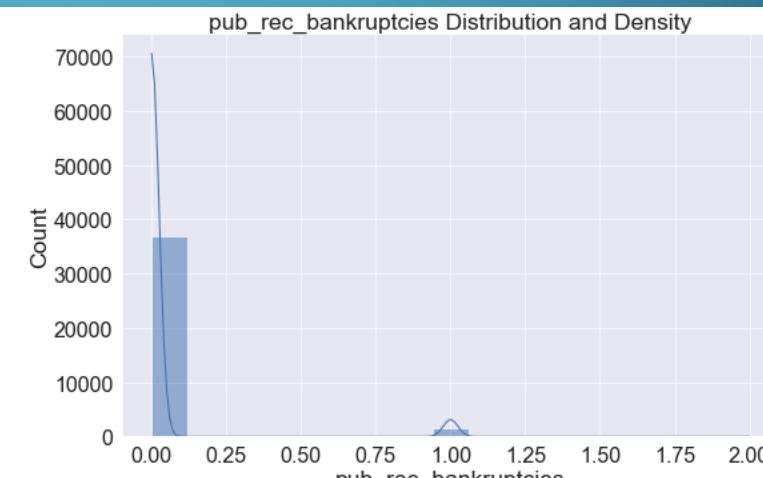
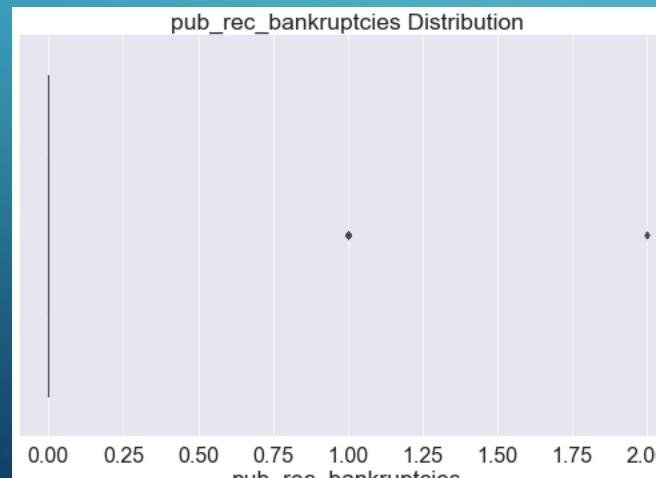
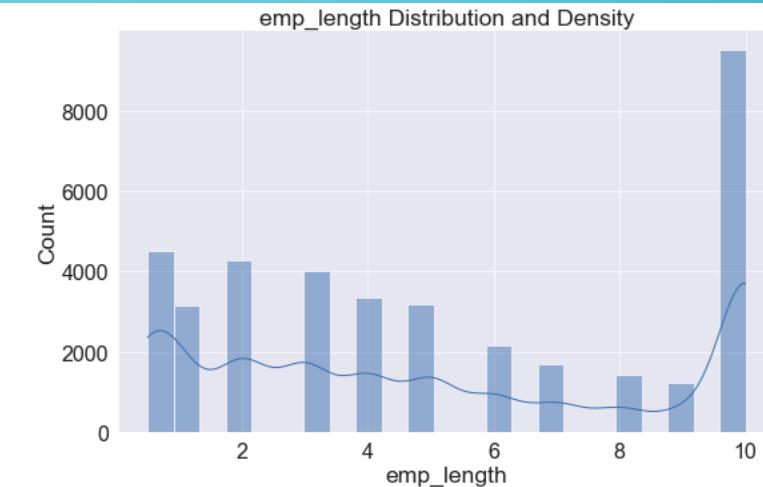
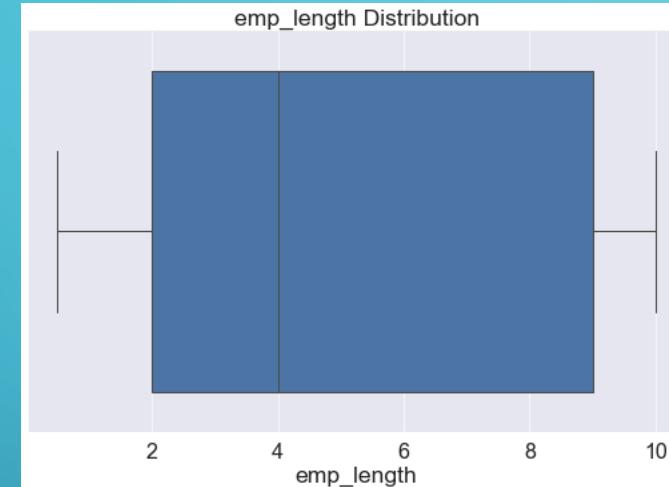
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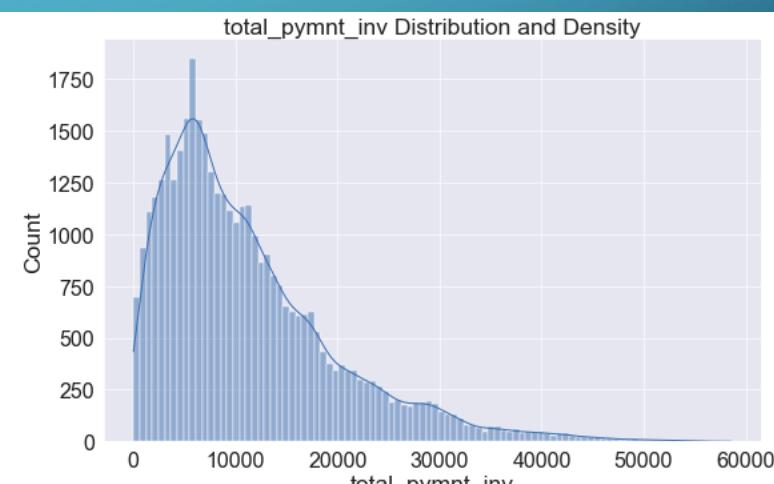
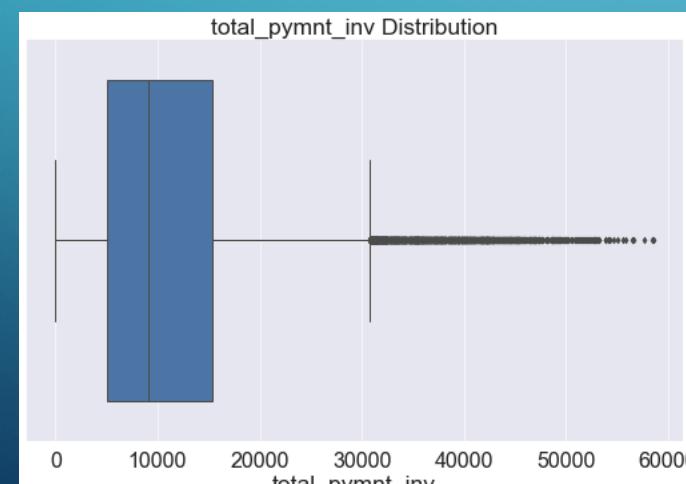
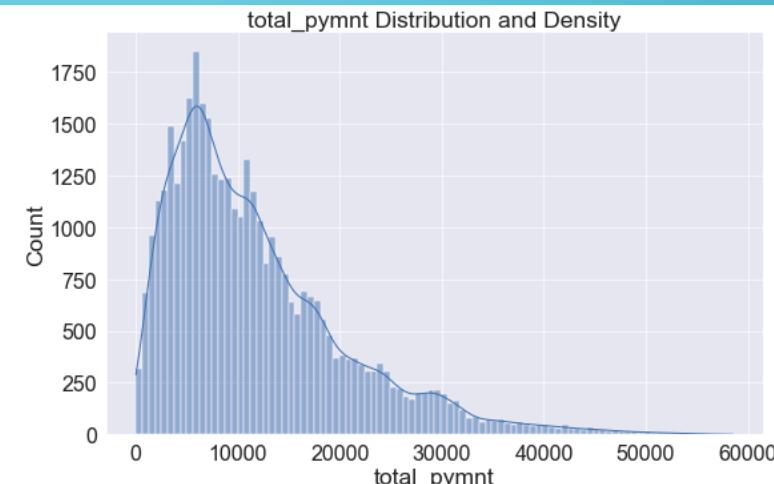
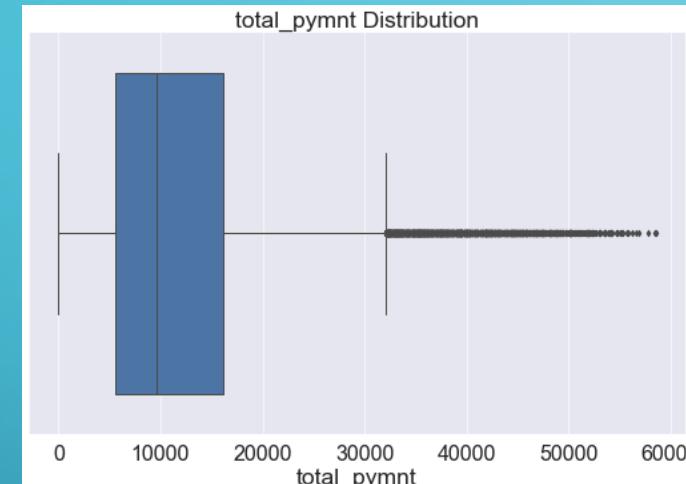
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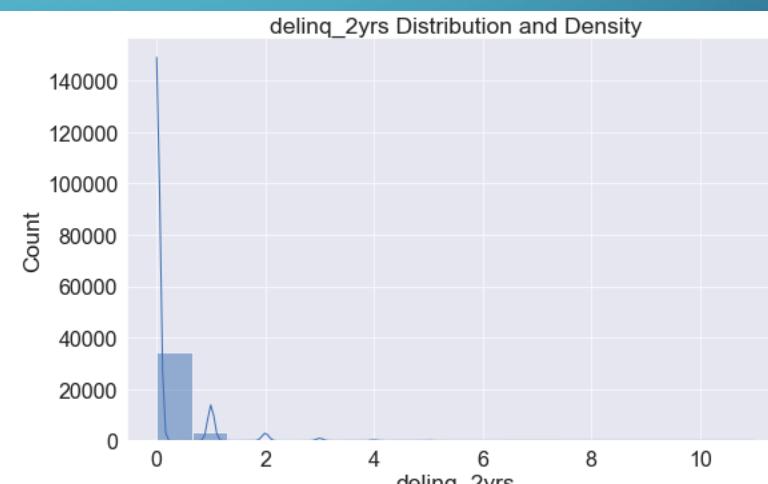
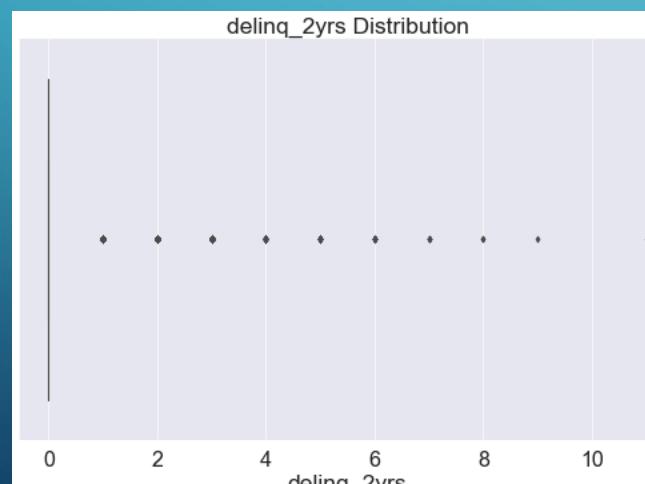
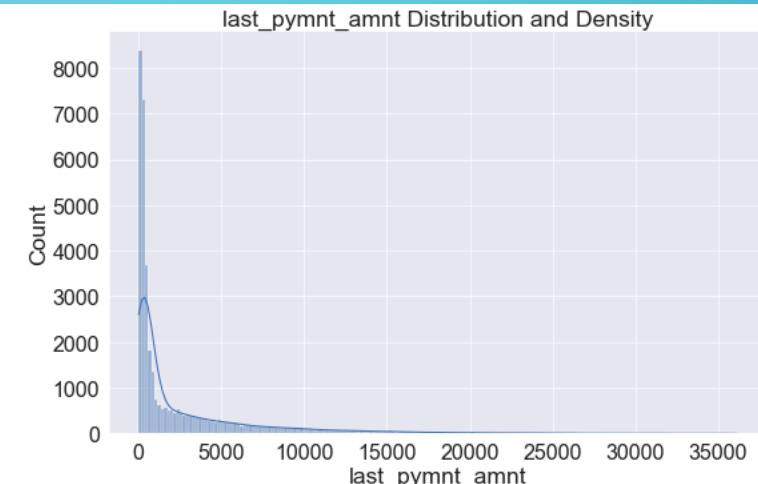
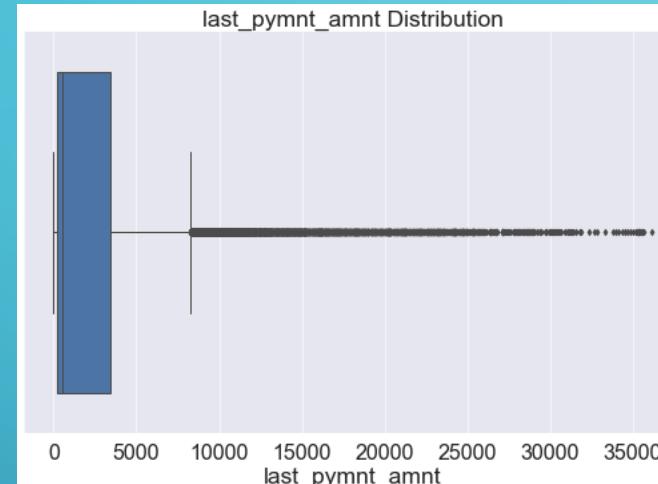
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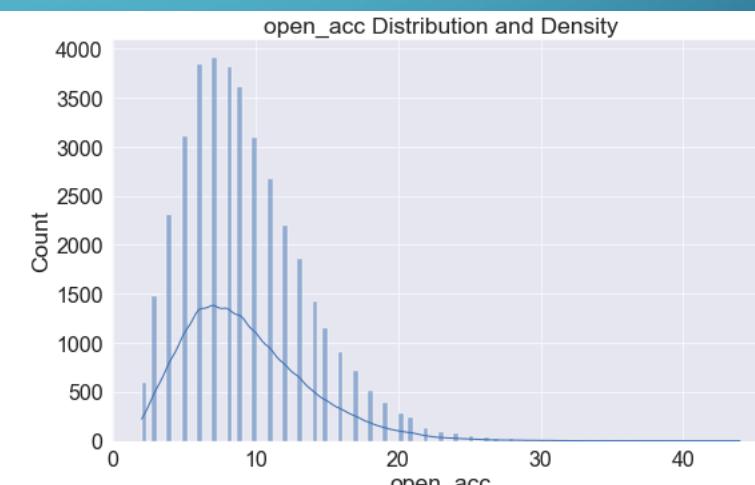
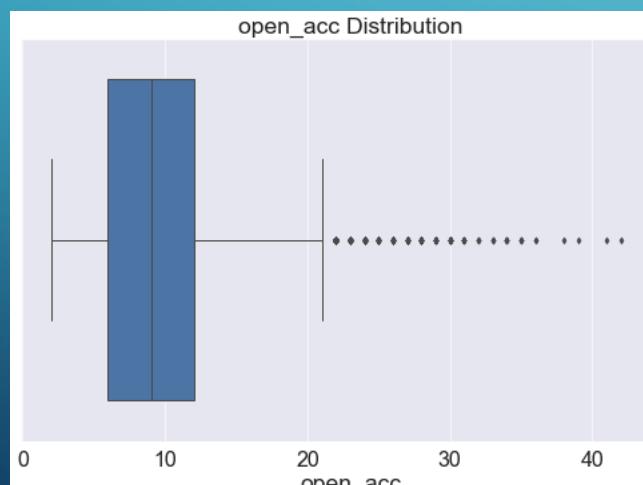
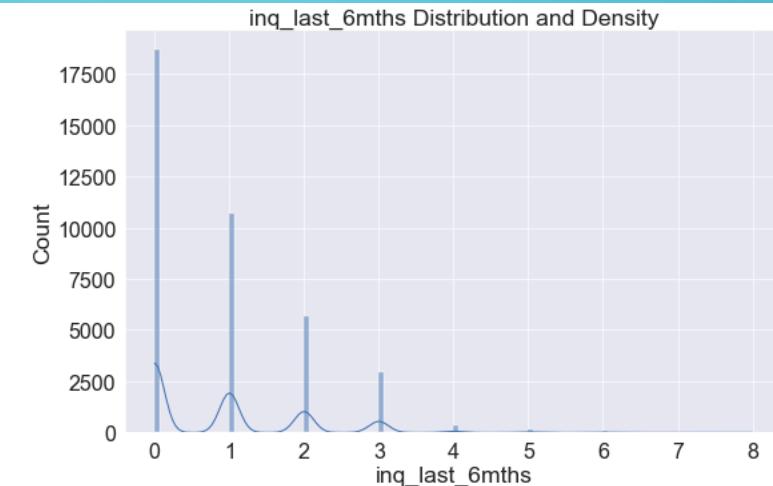
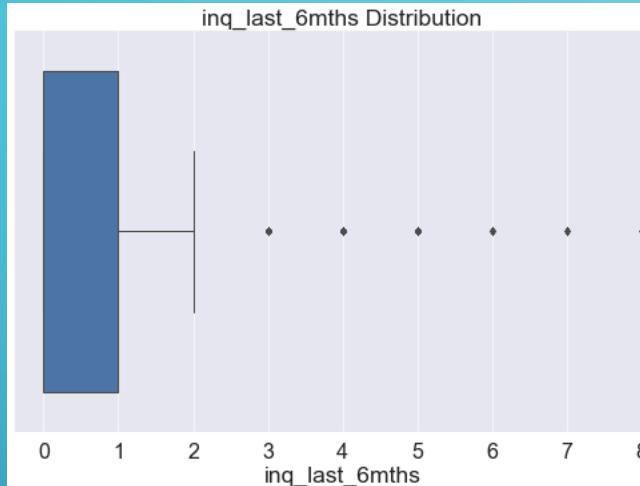
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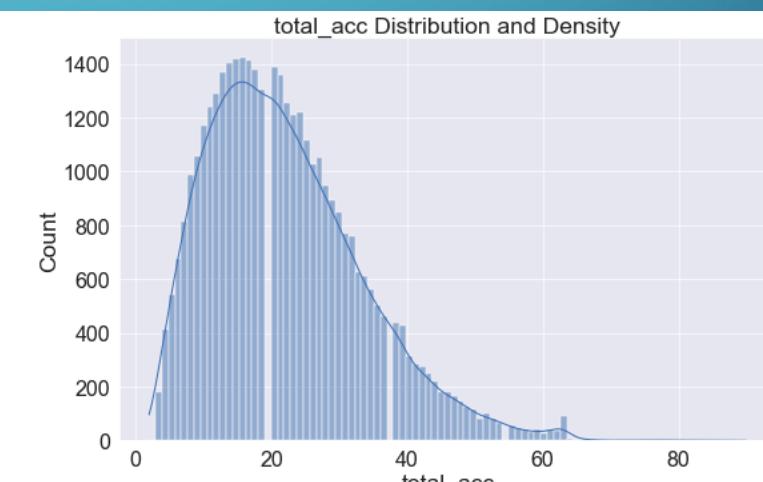
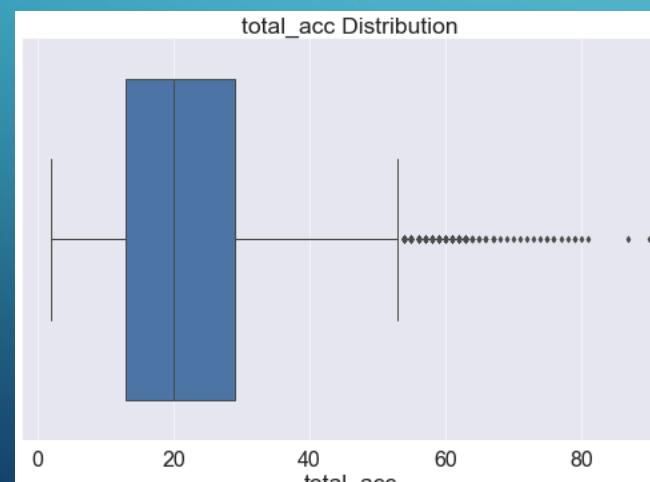
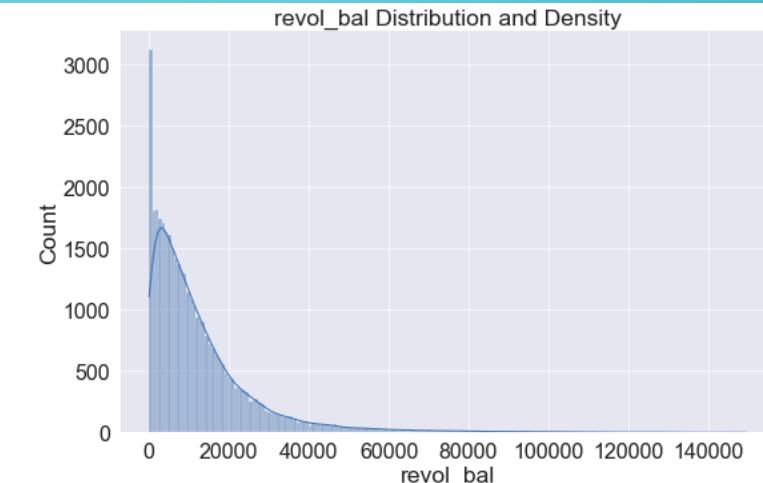
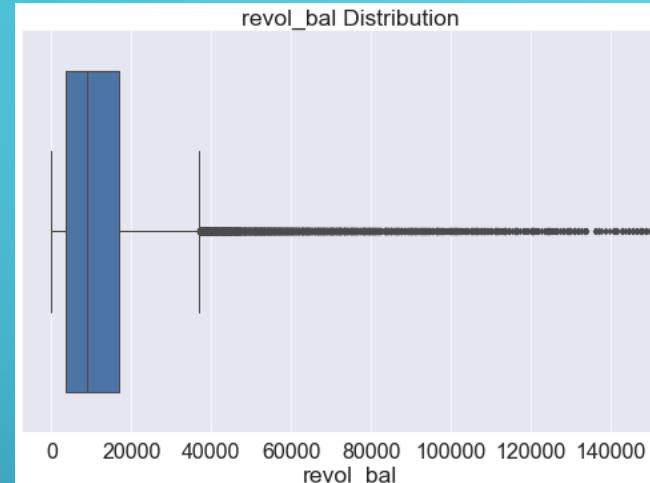
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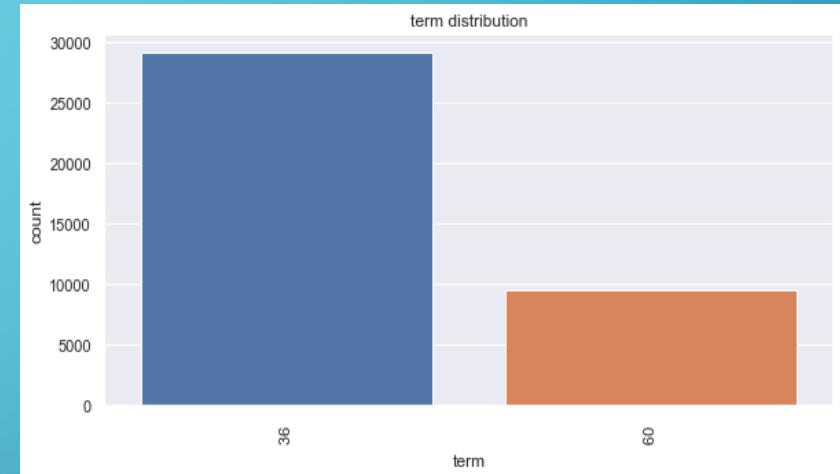
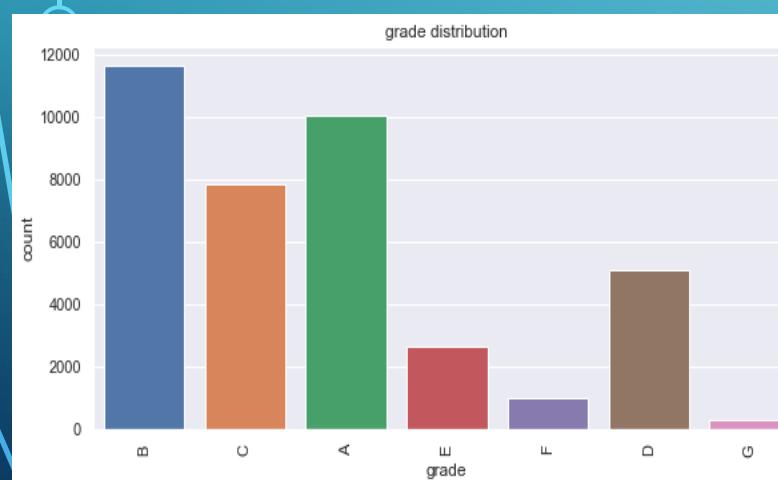
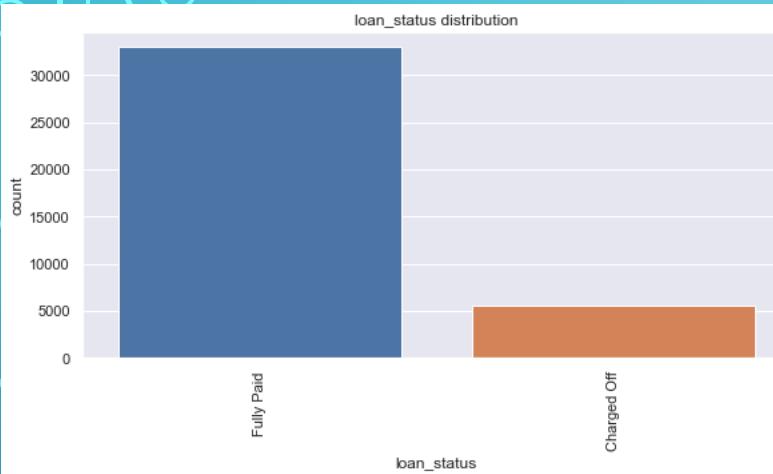
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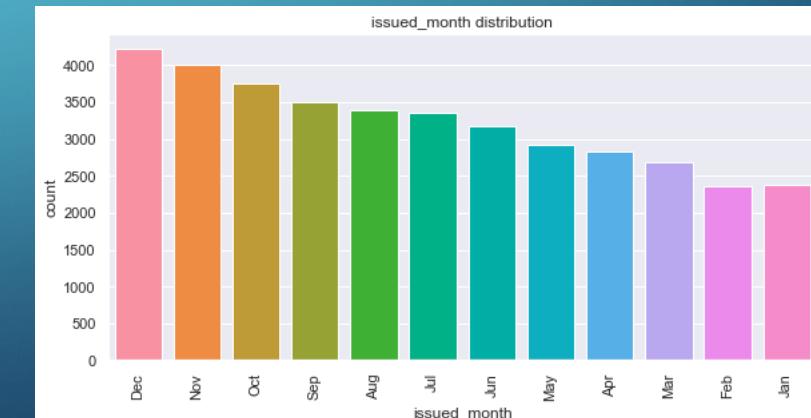
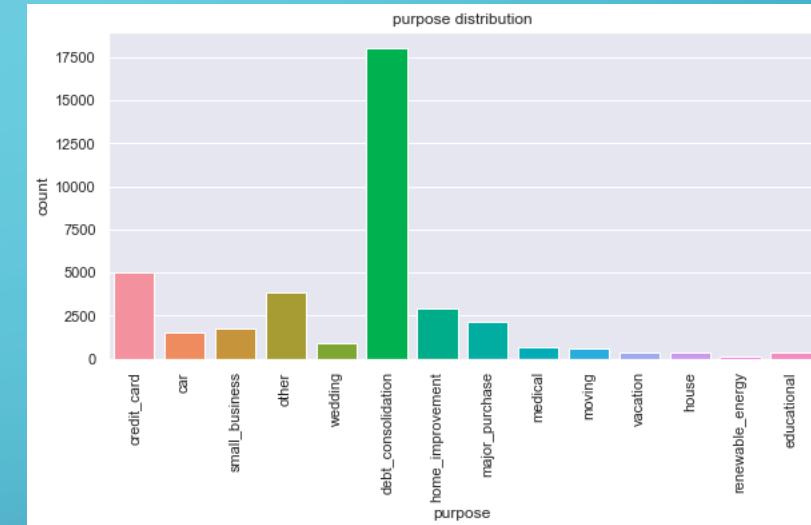
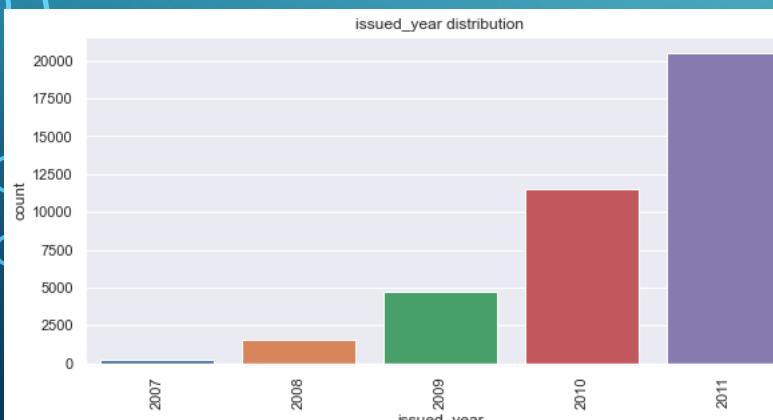
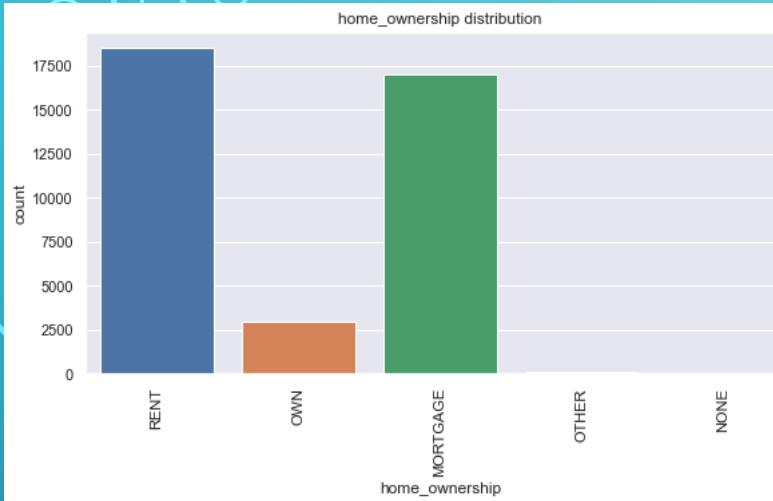
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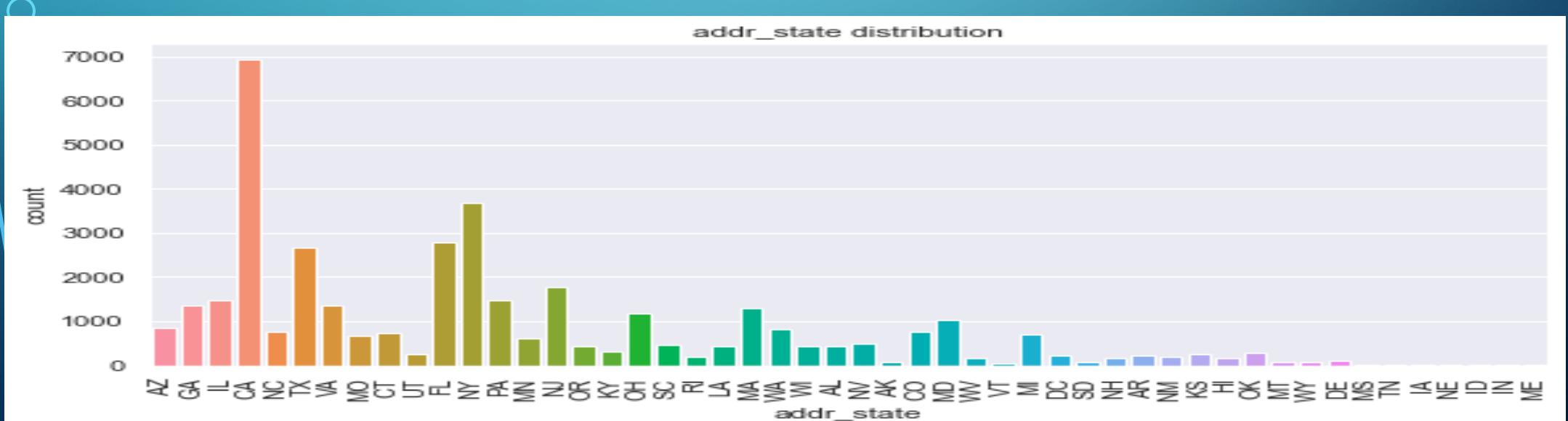
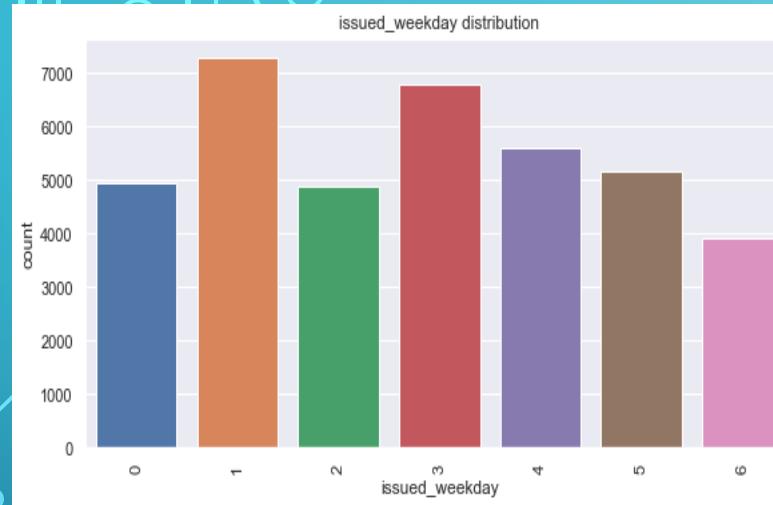
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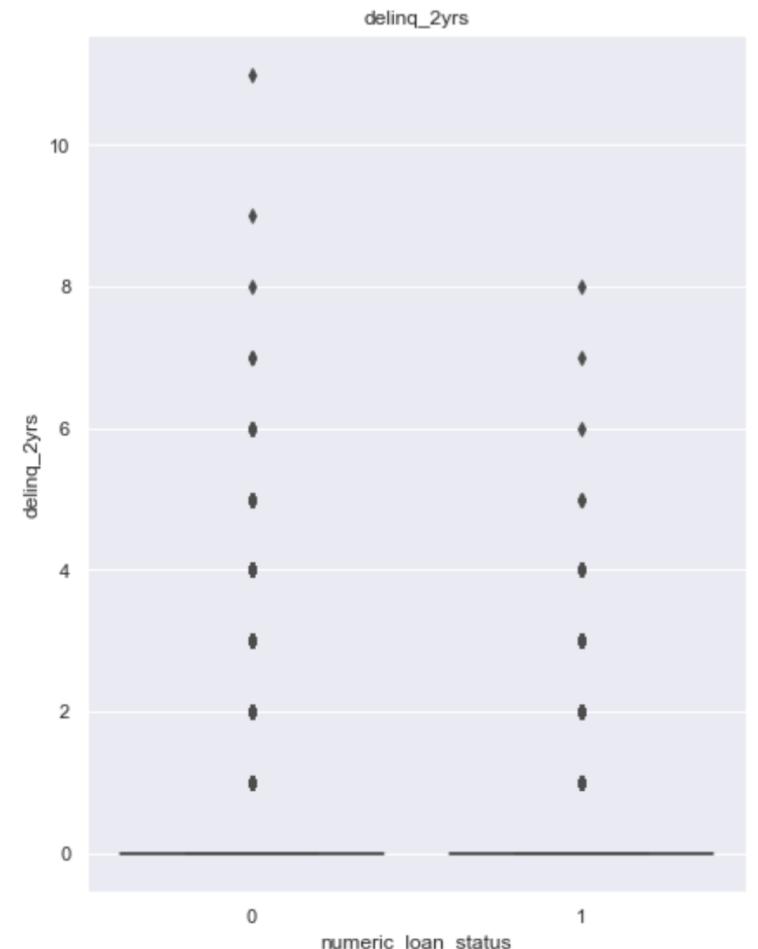
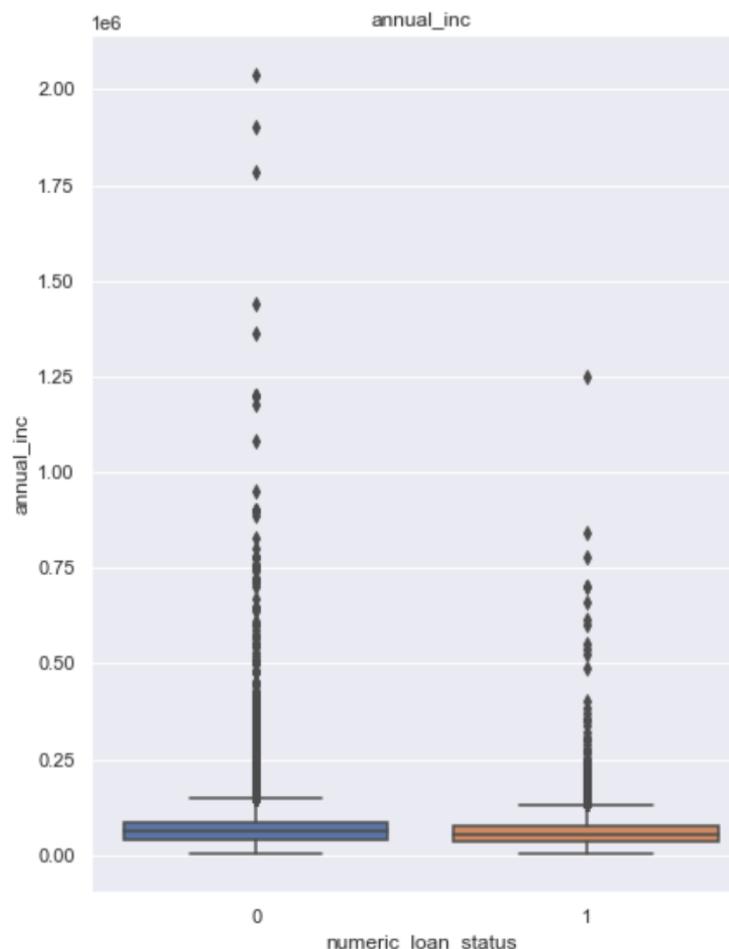
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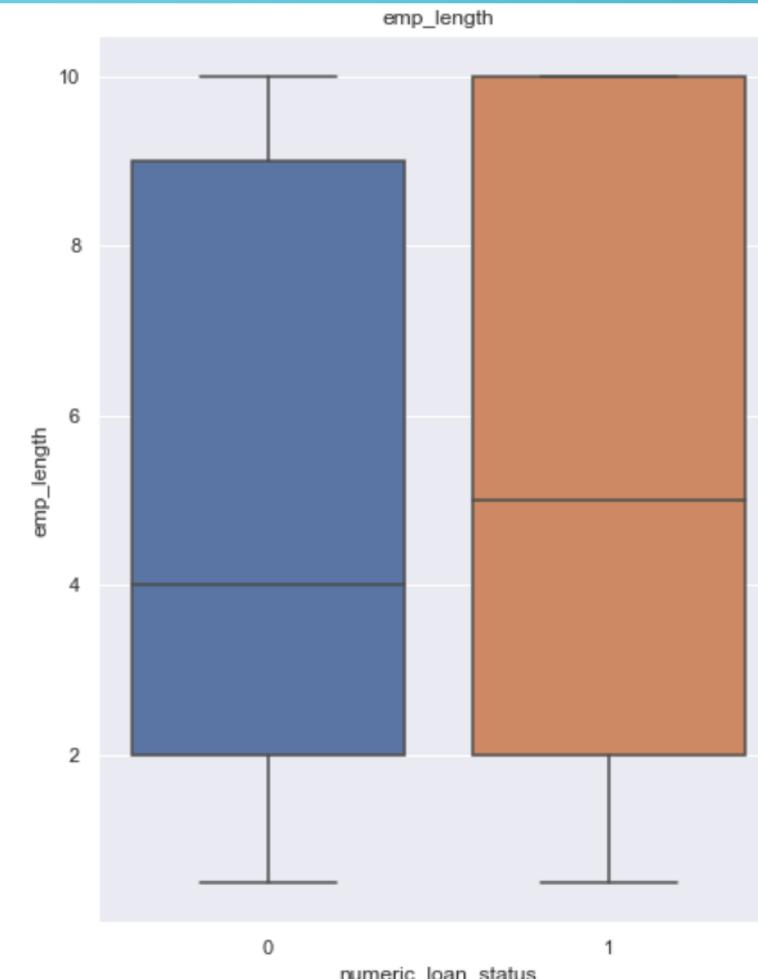
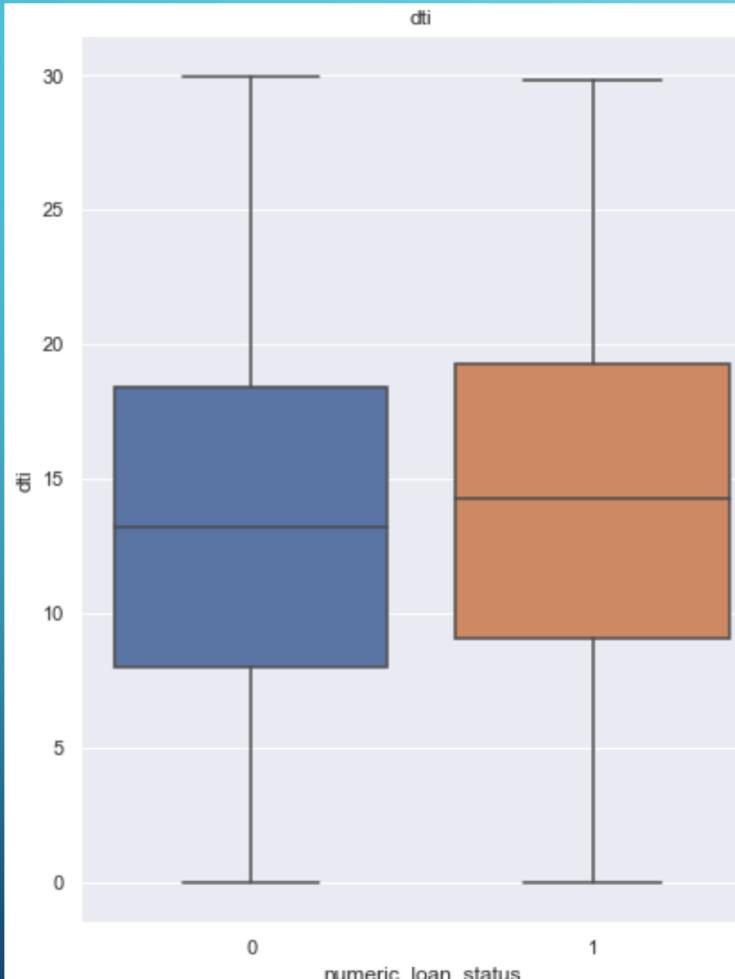
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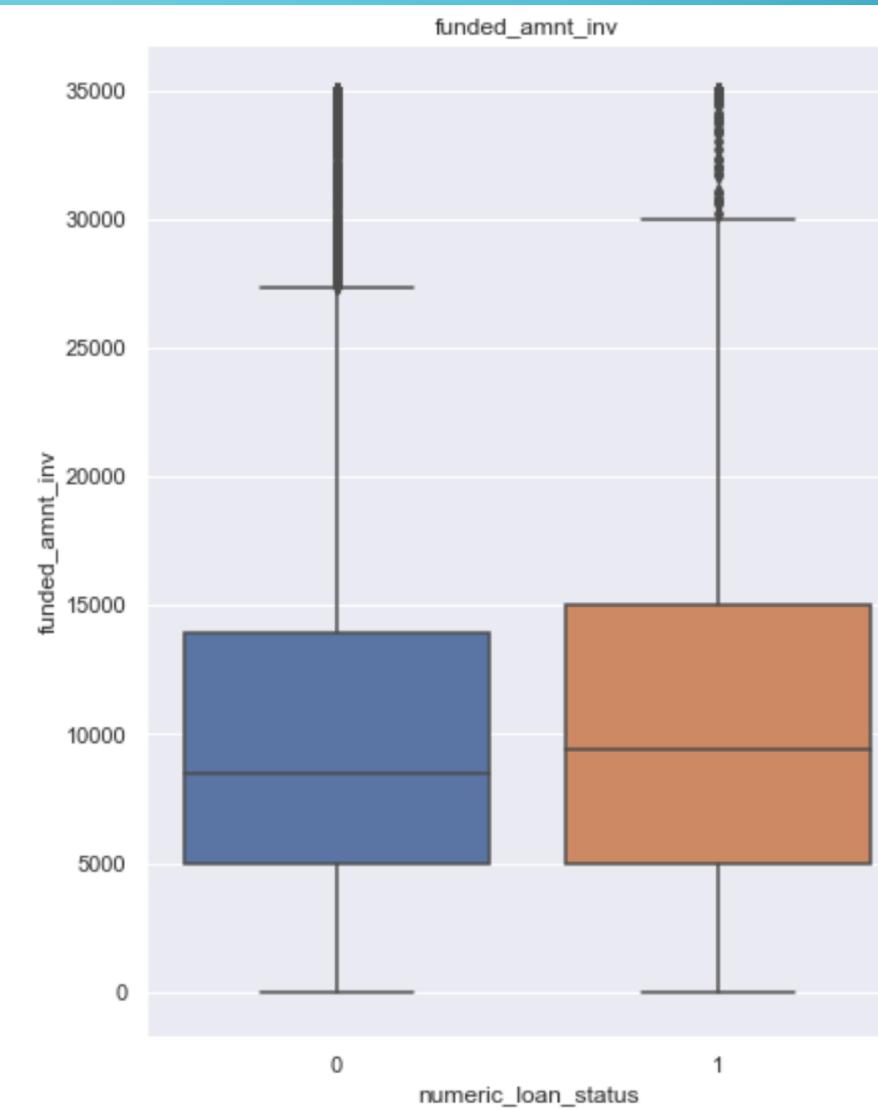
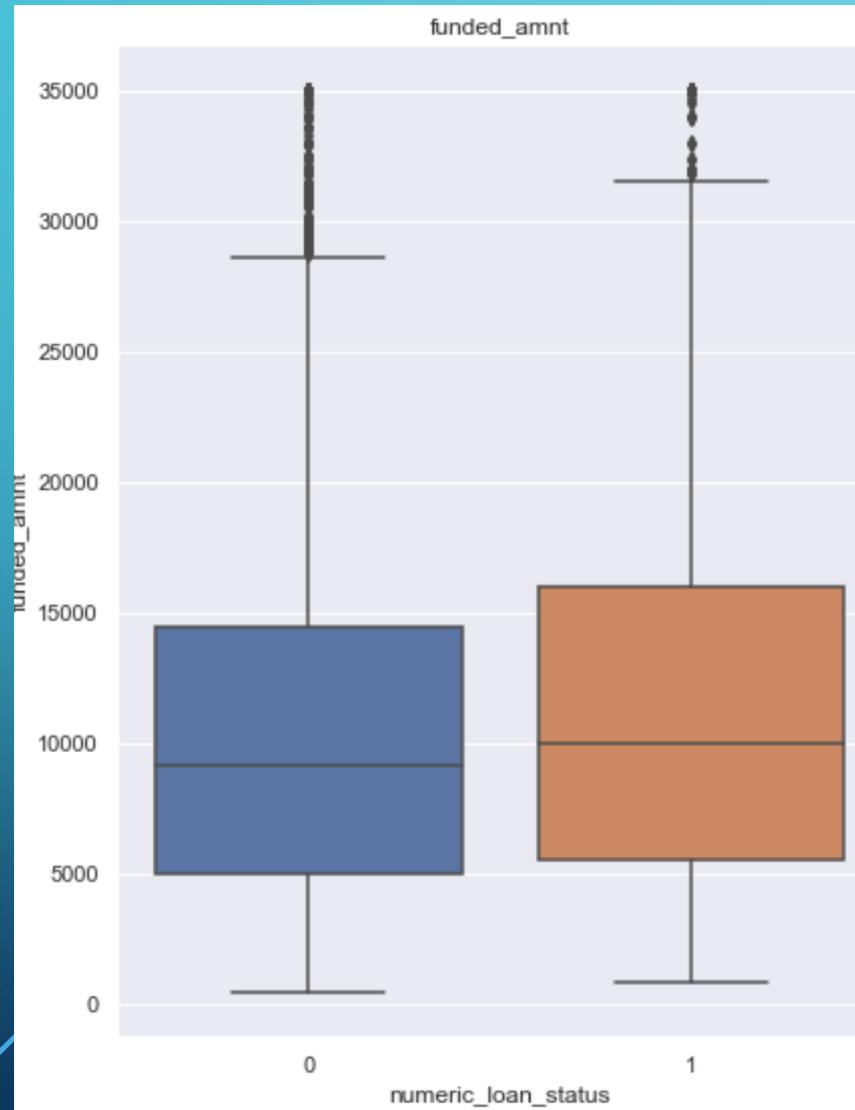
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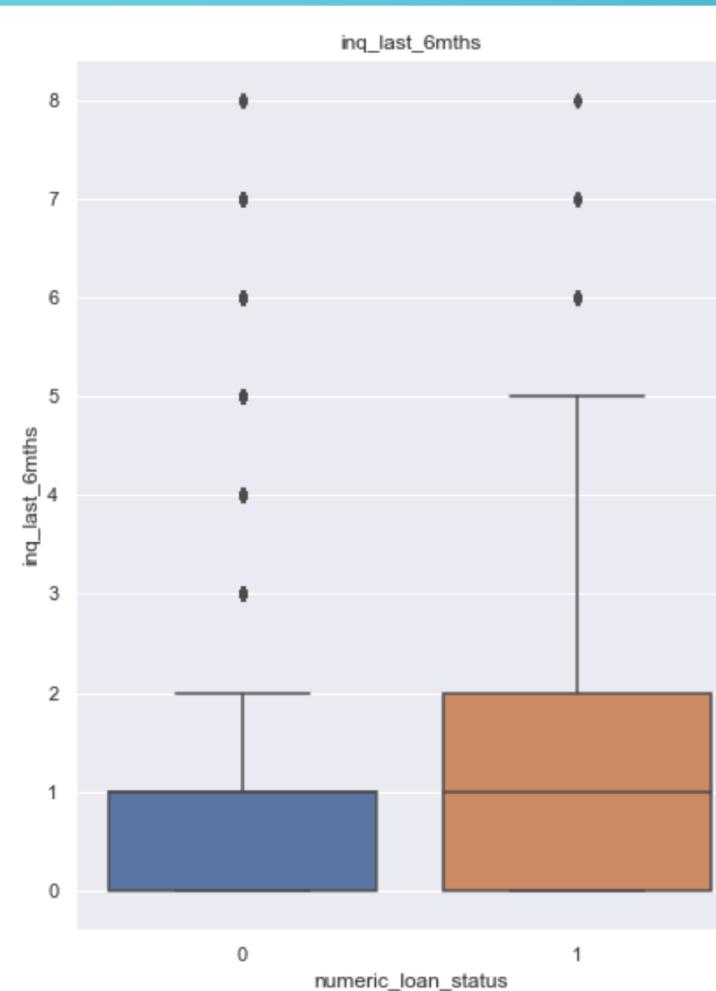
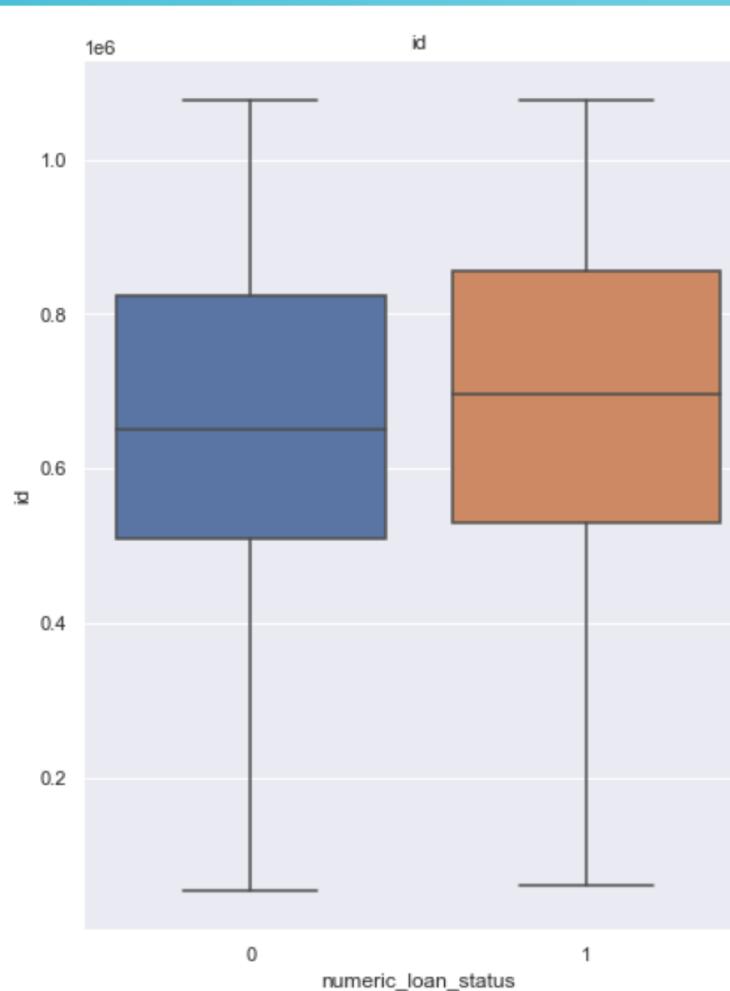
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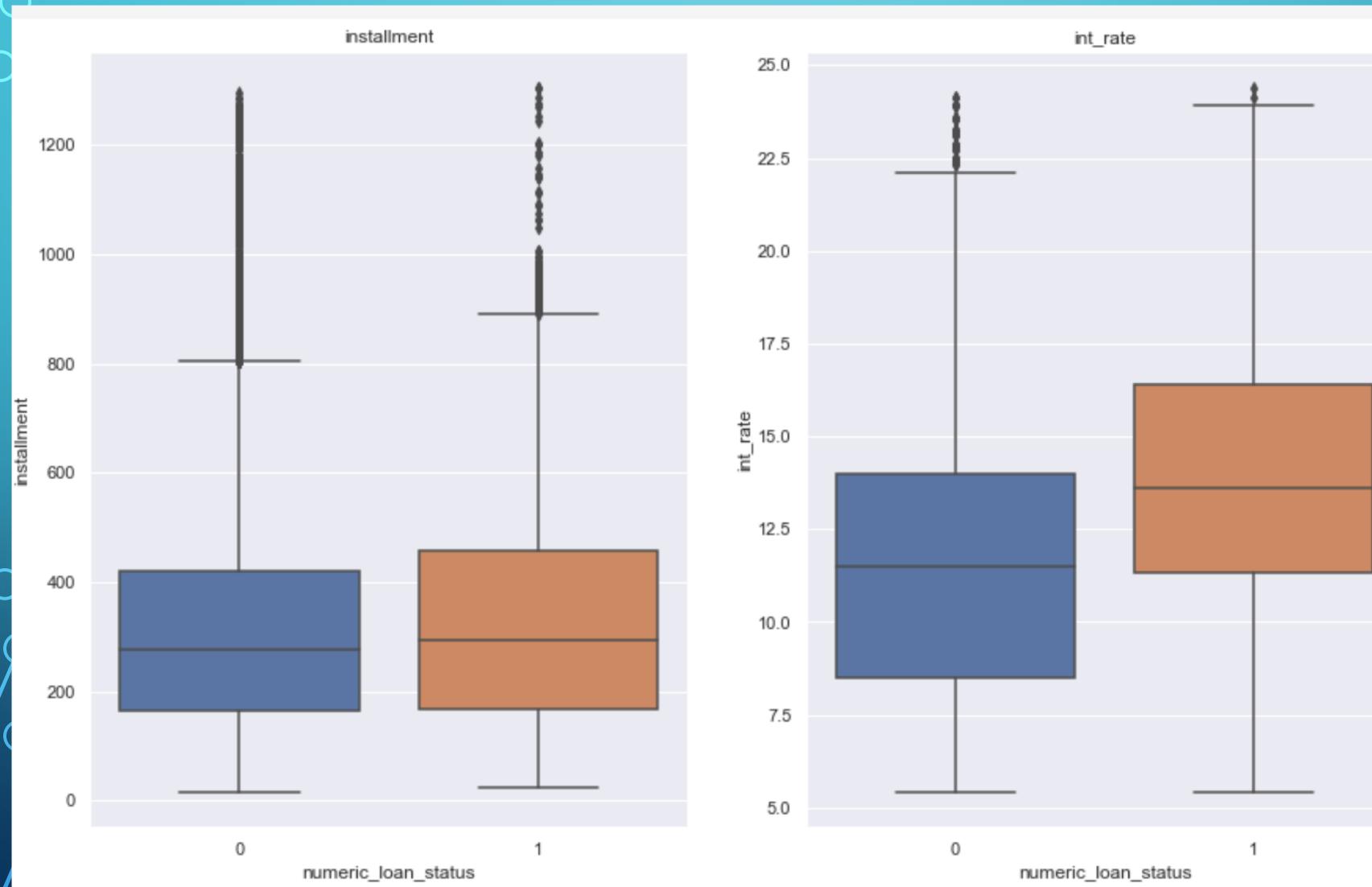
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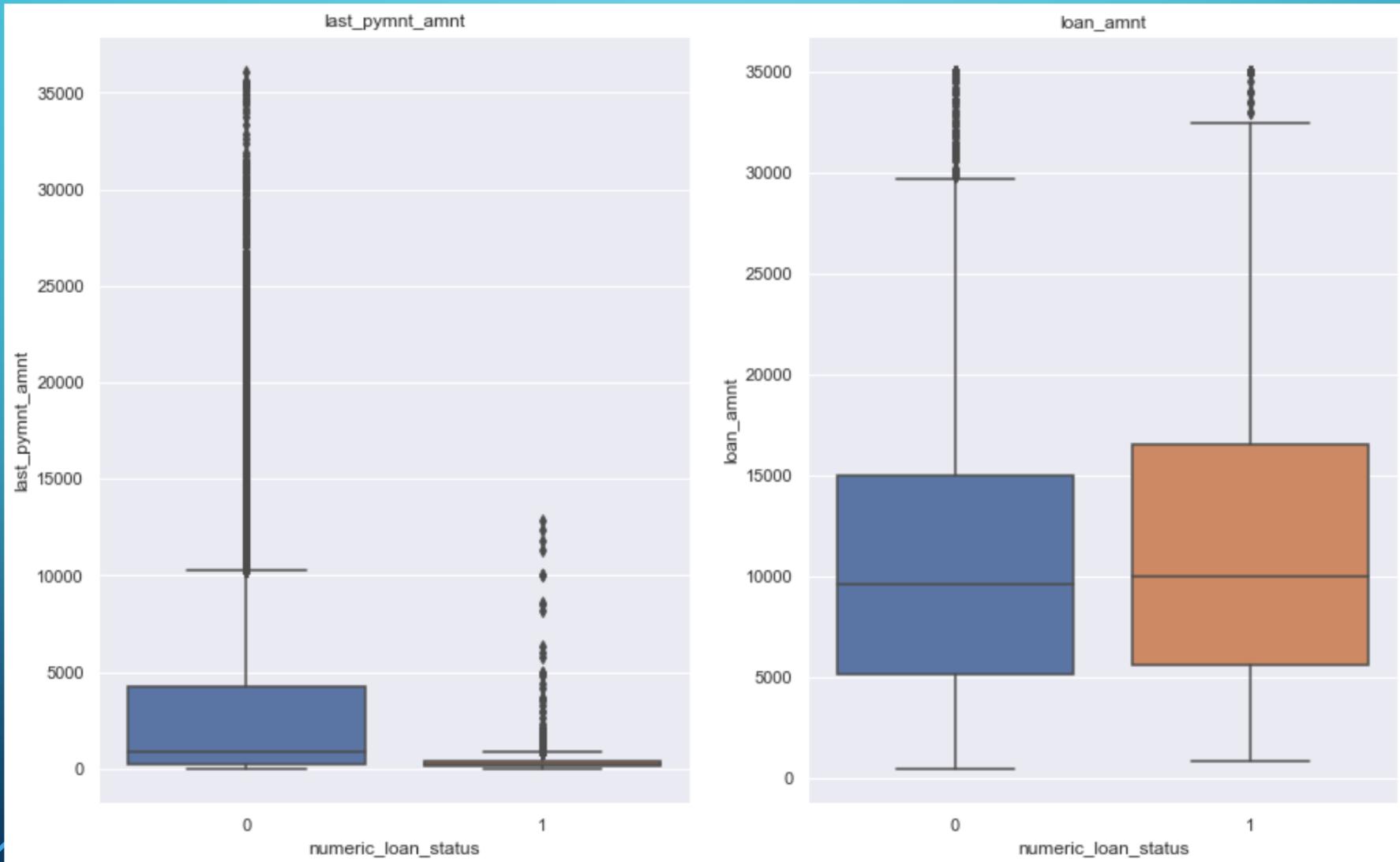
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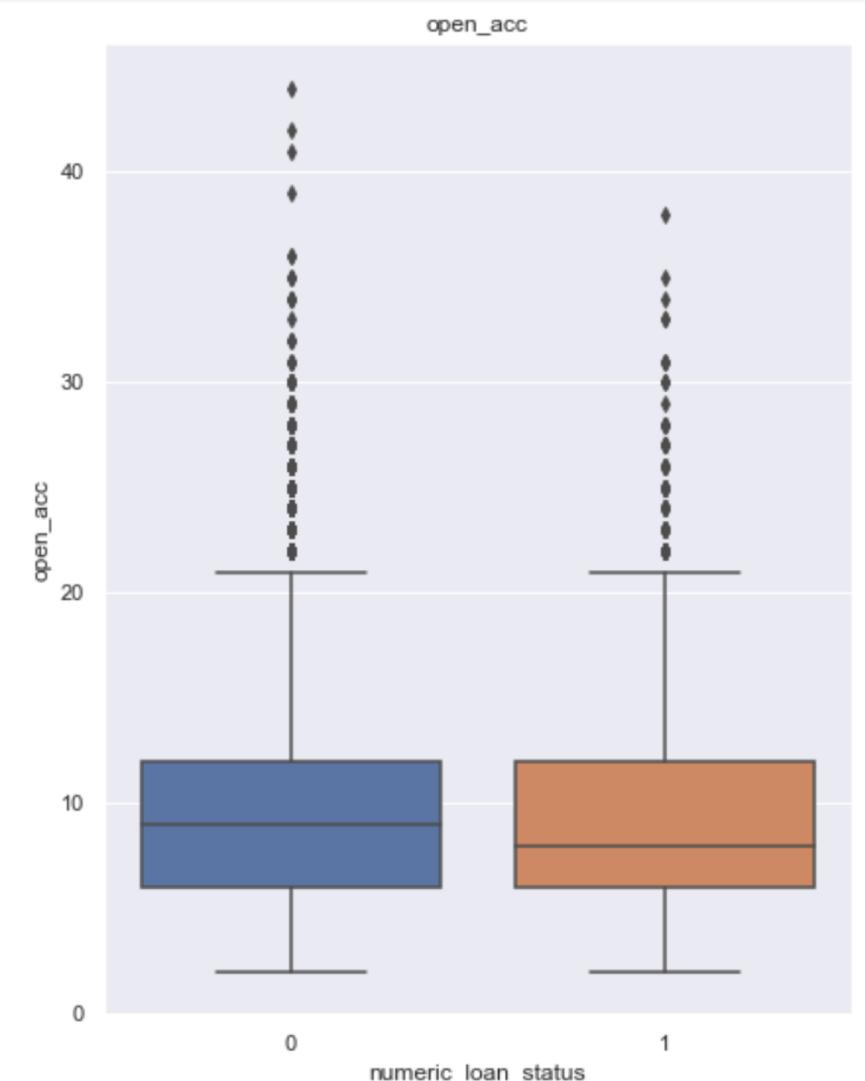
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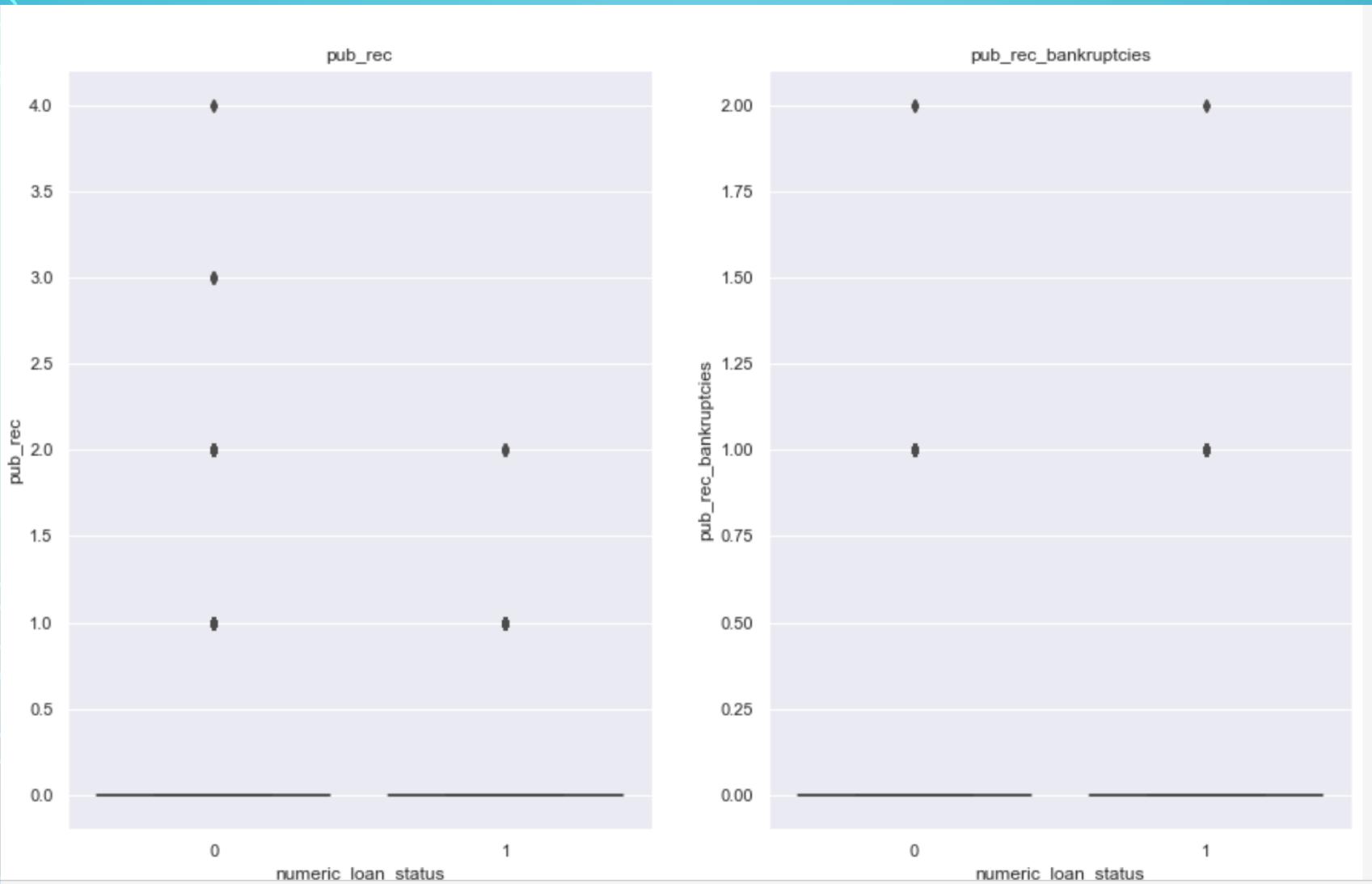
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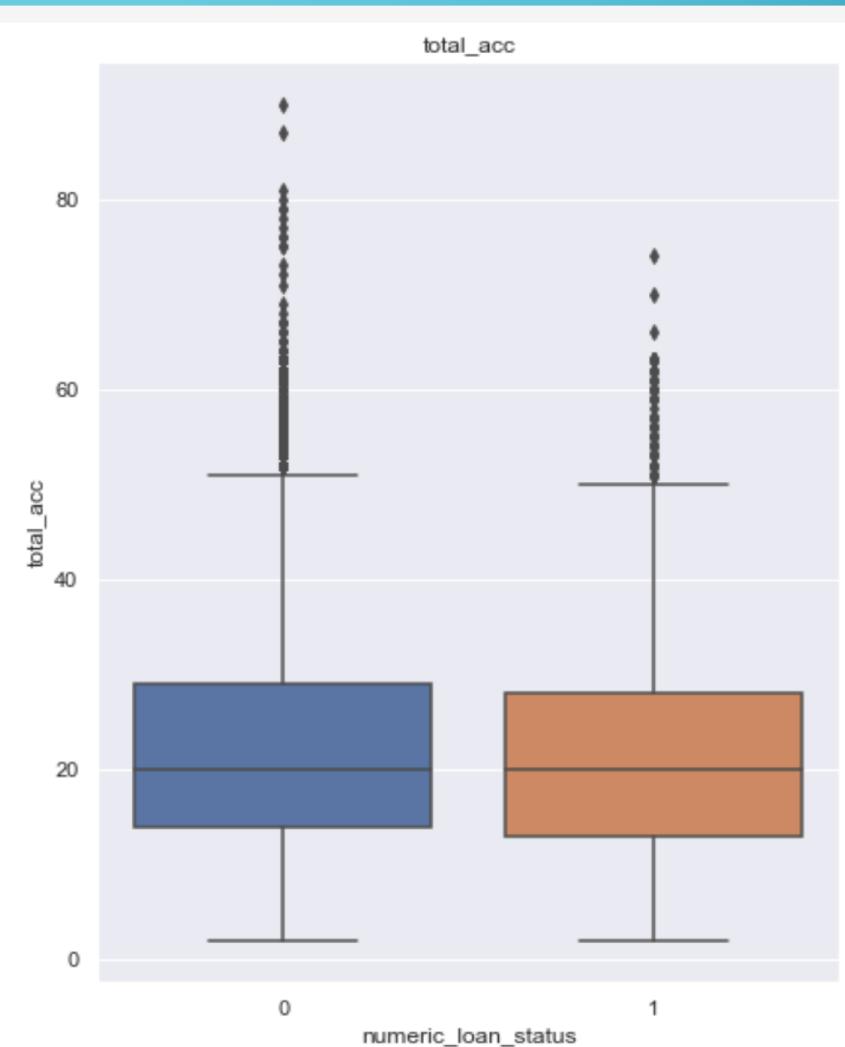
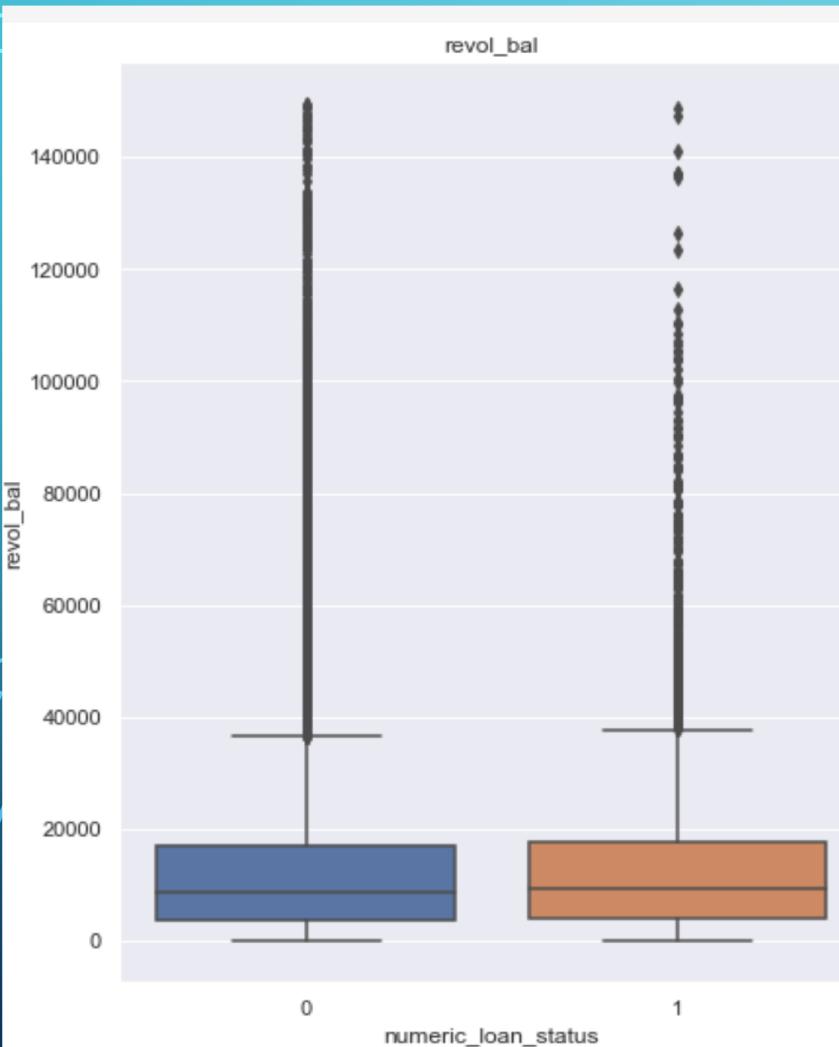
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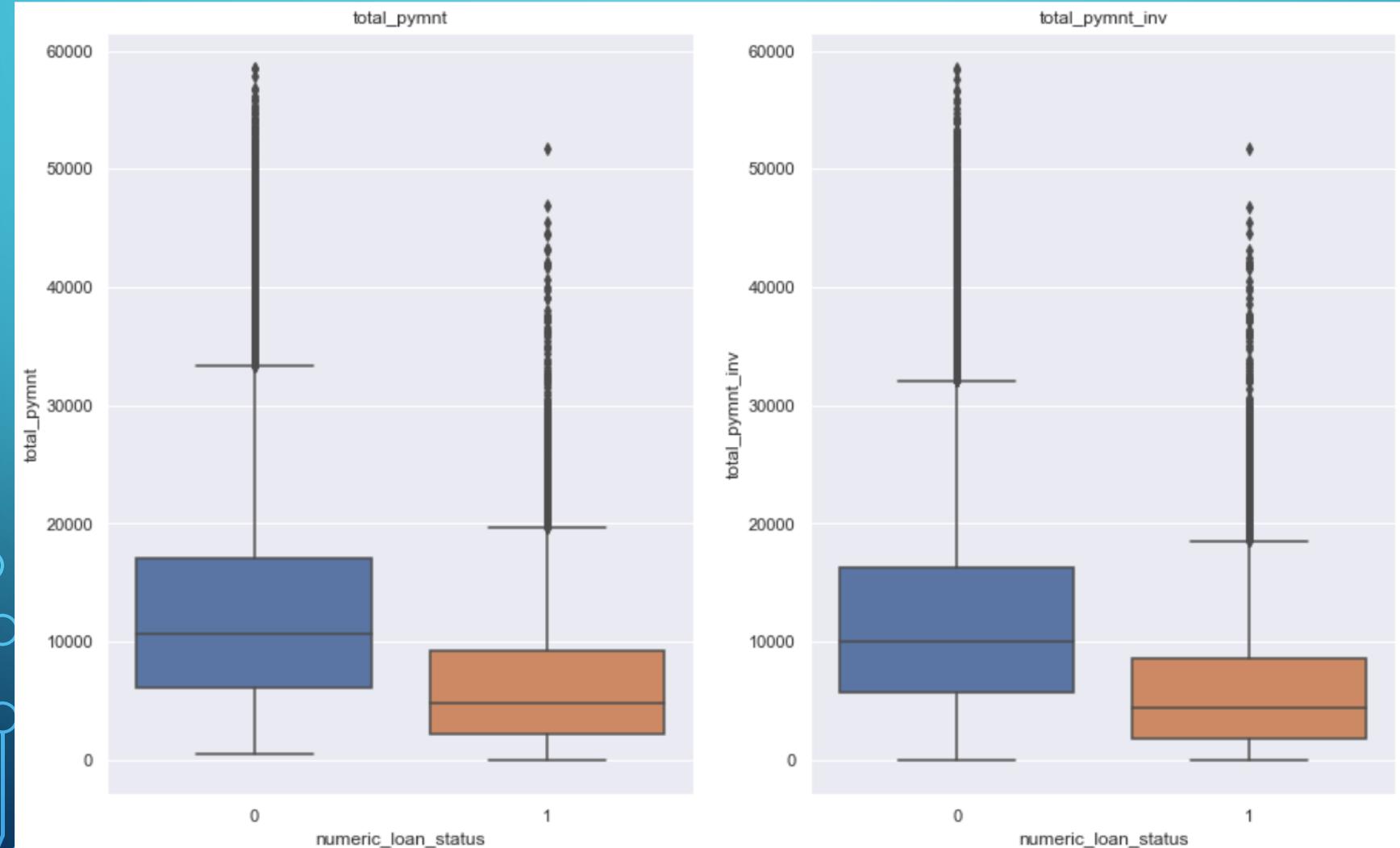
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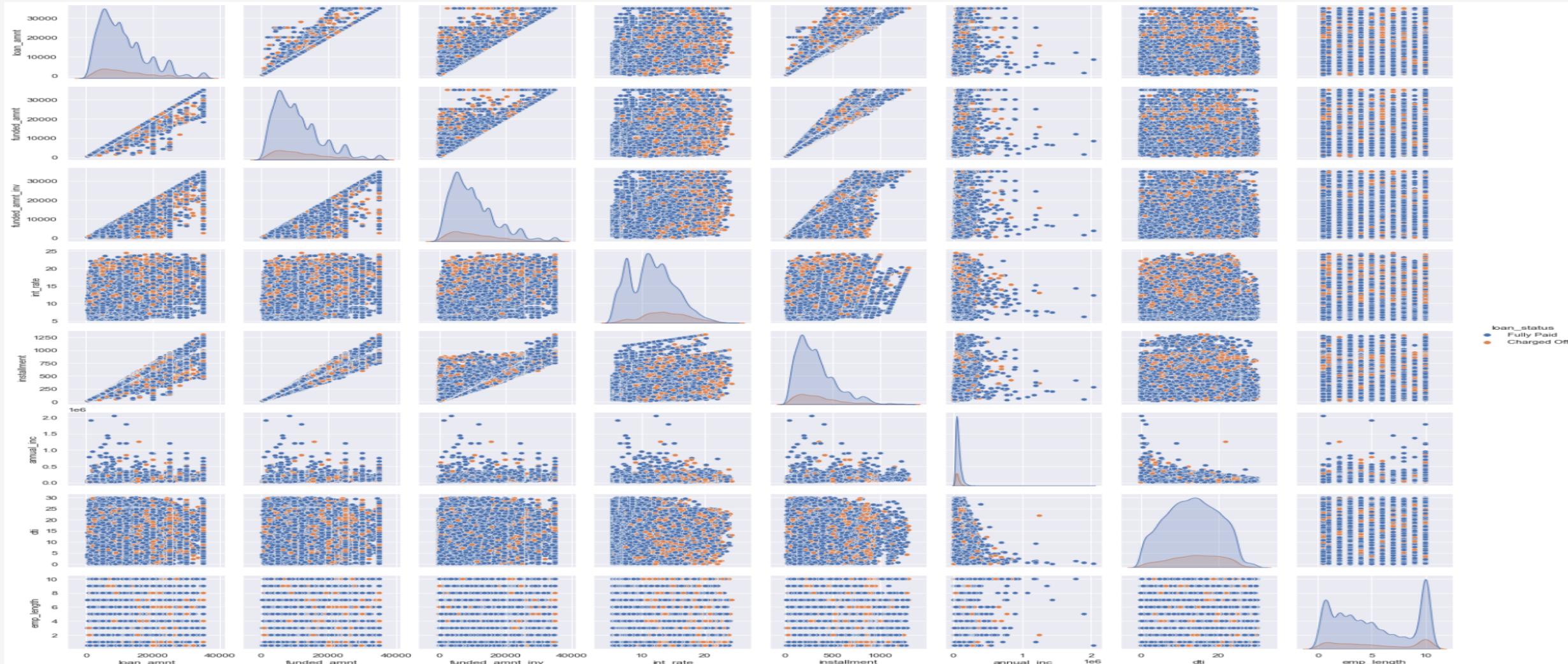
ANALYSIS

- Annual_Income vs Numeric_Loan_Status -> The median seems similar and good number of outliers visible comparatively.
- Delinq_2yrs vs Numeric_Loan_Status -> They share similar plotting and nothing concrete.
- DTI vs Numeric_Loan_Status -> The debt to income levels are significantly close in terms of the median ranges except a slightly higher DTI is observable for charge offs
- Employee_Length vs Numeric_Loan_Status -> There is significant difference in terms of median ranges and its quite high for charge-offs
- Funded_Amount/Funded_Amount_Inv vs Numeric_Loan_Status -> For both cases, outliers are observed. The medians are very close. Higher Funded_Amount/Funded_Amount is observed in case of charge-offs.
- Id vs Numeric_Loan_Status -> N/A
- Inq_last_6mths vs Numeric_Loan_Status -> N/A

- Installment vs Numeric_Loan_Status -> Outliers are observed for both. The medians are significantly close and higher value is observed for charged-off.
- Int_Rate vs Numeric_Loan_Status -> The median for defaulters in terms of interest rate is higher. There is higher probability of defaulters when the ROI is greater than 14%.
- Last_Payment_Amount vs Numeric_Loan_Status & Loan_Amount vs Numeric_Loan_Status
>
We find similar number of defaulters as fully paid based on loan amount except that there is a slightly higher default above 15K. The threshold is slightly lower for amount funded by investors if looking at actual disbursements vs. defaults and this stands at 14K approximately.
- Open_Account vs Numeric_Loan_Status -> We find the median of open-account non-defaulters to be higher compared to open-account of defaulters. But the highest values are similar.

- Pub_Records vs Numeric_Loan_Status -> Cannot draw concrete information.
- Public_Record_Bankruptcies vs Numeric_Loan_Status-> If multiple bankruptcies observed for customer, most probably they will default.
- Revol_Balance vs Numeric_Loan_Status -> Median, Highest values are similar.
- Total_Account vs Numeric_Loan_Status -> Median seems to be same or similar but the Total_Account for non-defaulters seems to slightly higher compared to defaulters.
- Total_Payment vs Numeric_Loan_Status -> The lowest, median, highest value significantly is higher for non-defaulters Total_Payment/Total_Payment_Investor compared to defaulters.
- Total_Payment_Investor vs Numeric_Loan_Status -> The lowest, median, highest value significantly is higher for non-defaulters Total_Payment/Total_Payment_Investor compared to defaulters.

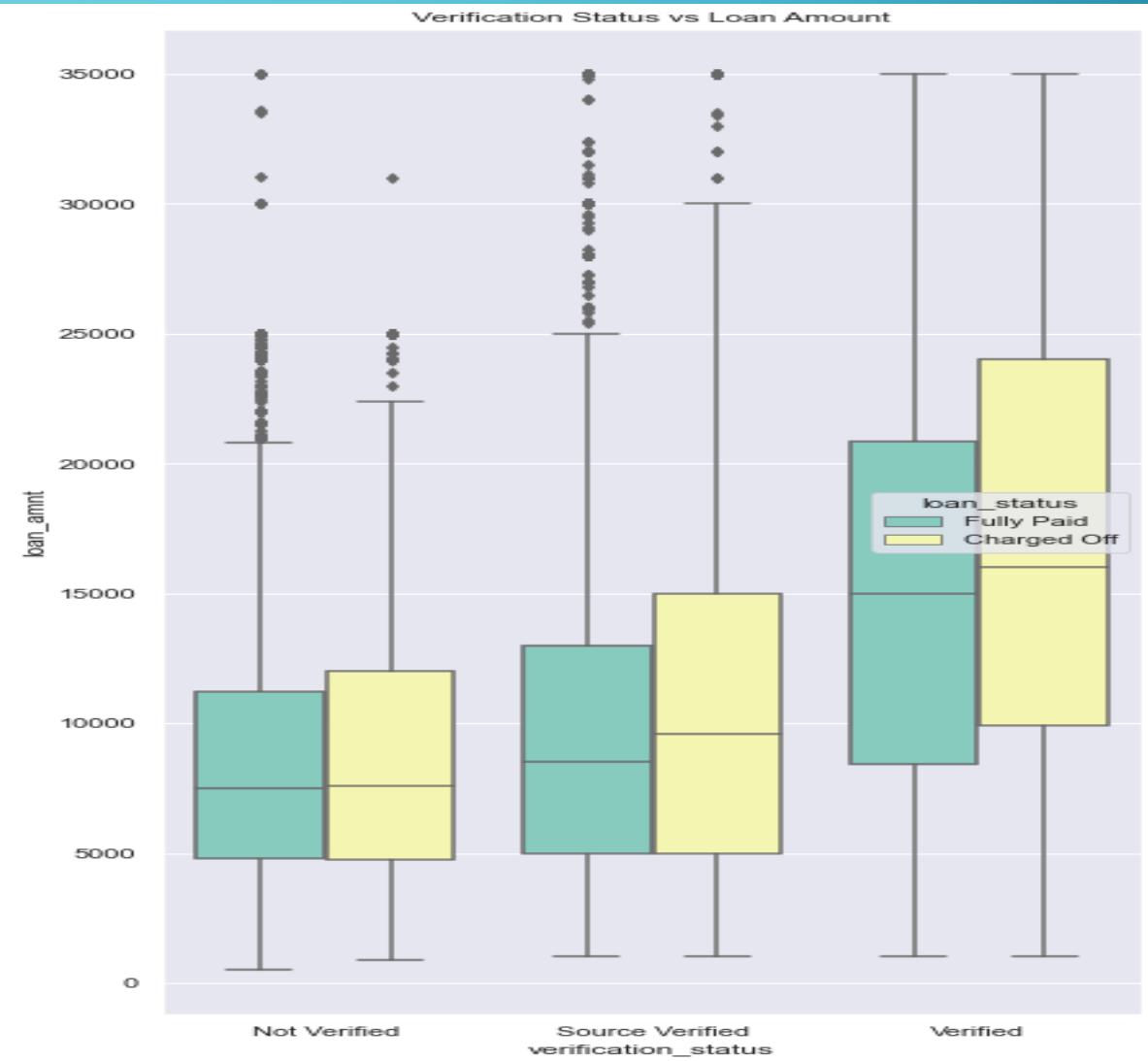
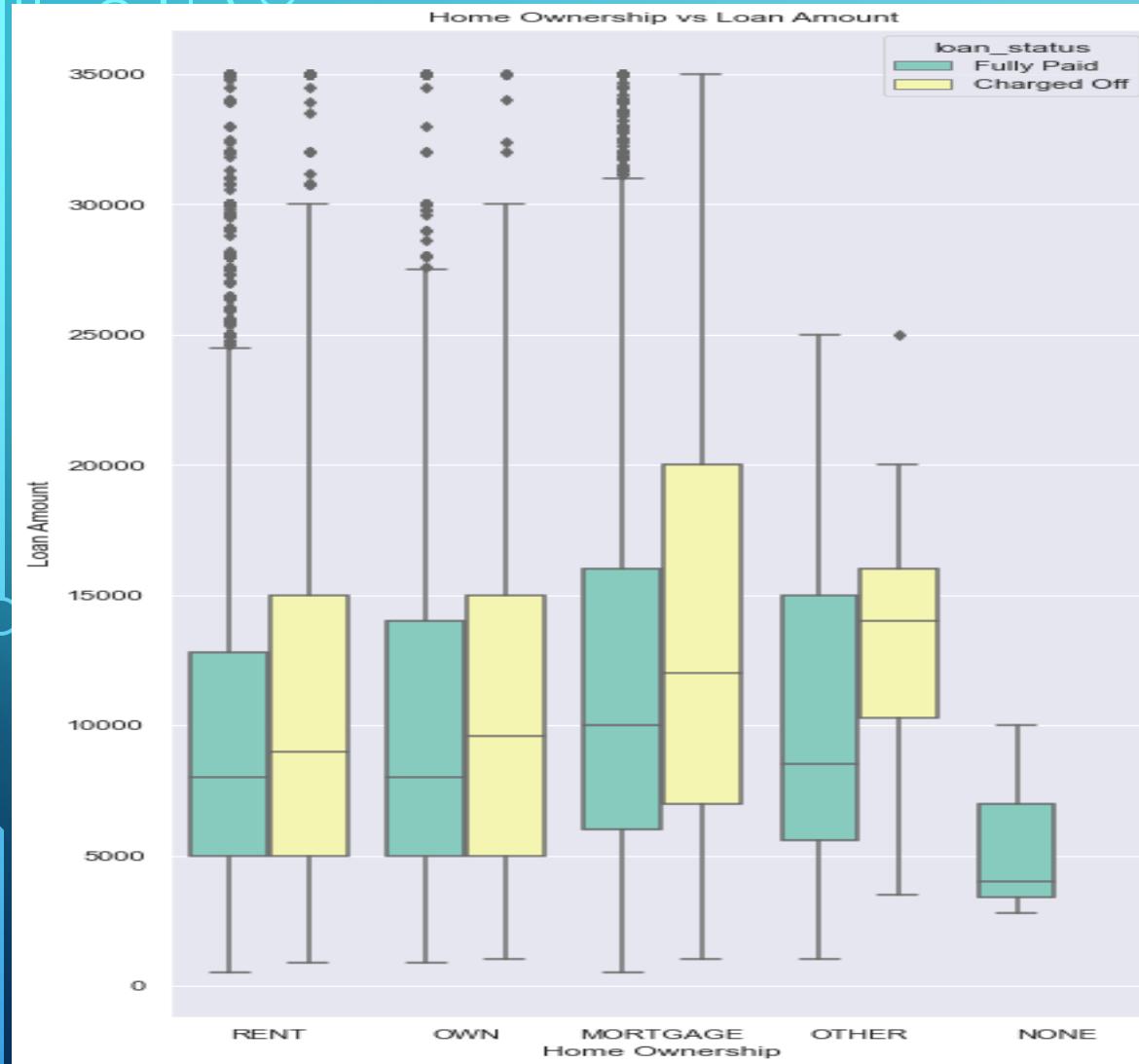
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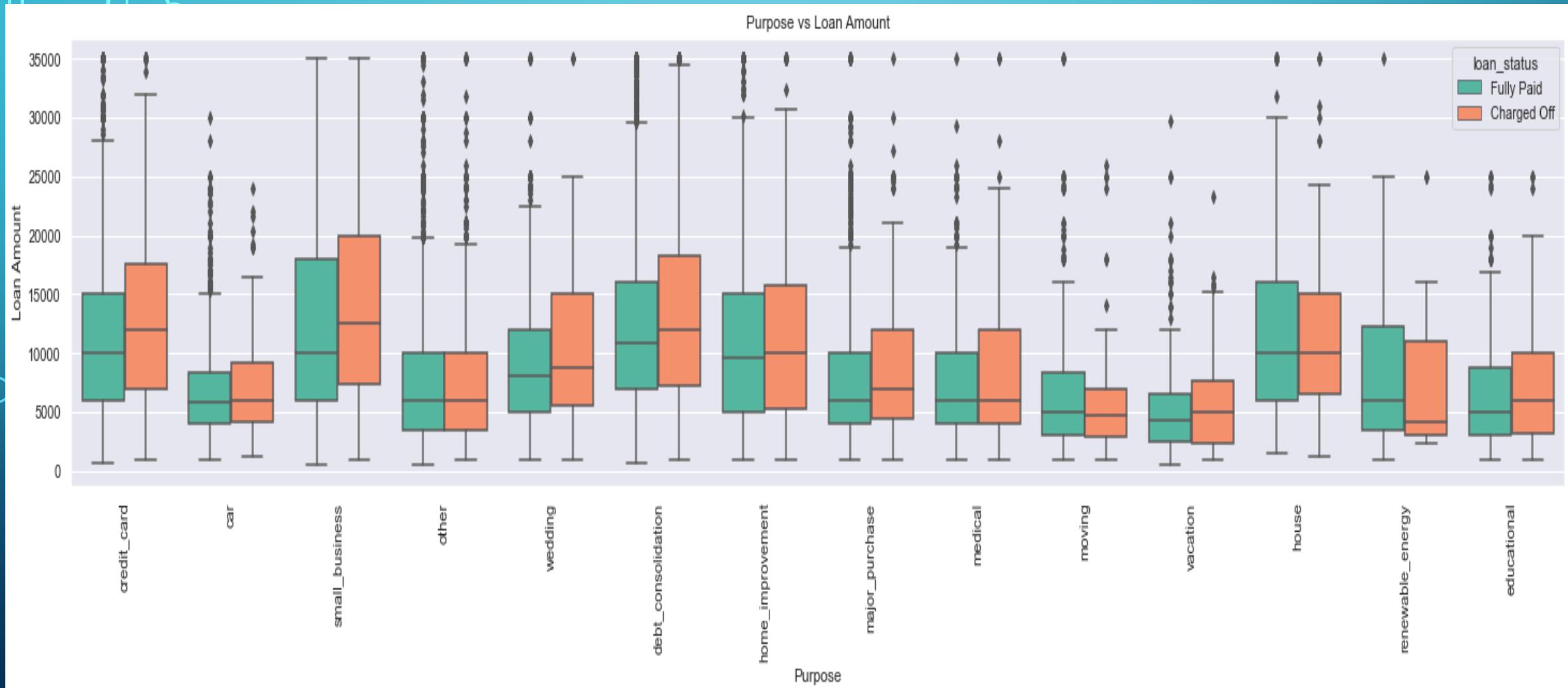
ANALYSIS

1. Loan Amount vs Investors Funding - Not all loan amounts are funded by investors
2. Loan Amount vs. Interest Rate - No clear pattern observed in the pair plot for default rate. However, in the interest rate KDE we can observe the area of default is larger when the interest rate goes up.
3. Loan Amount vs. Installment - Where the loan amount and installment is high, we don't observe many charge offs.
4. Lower interest rate with lower annual incomes have a lower default same is the case with lower interest rate and lower DTI.
5. As the loan amount increases, there is an increase in installment. Lesser defaults observed for higher installments.
6. Low annual income and high interest rates mean higher defaults

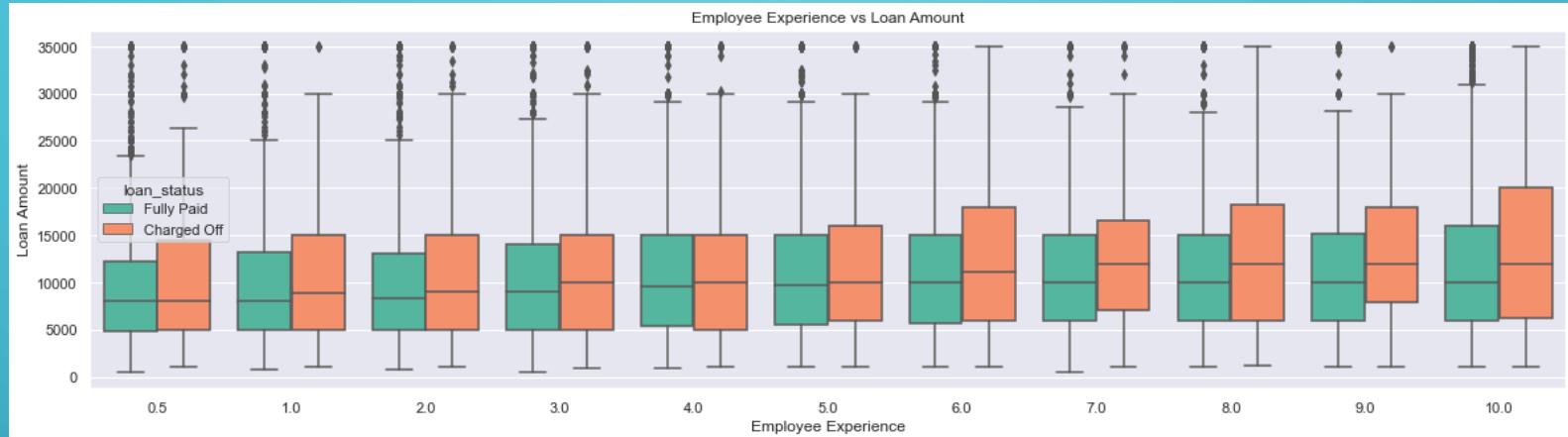
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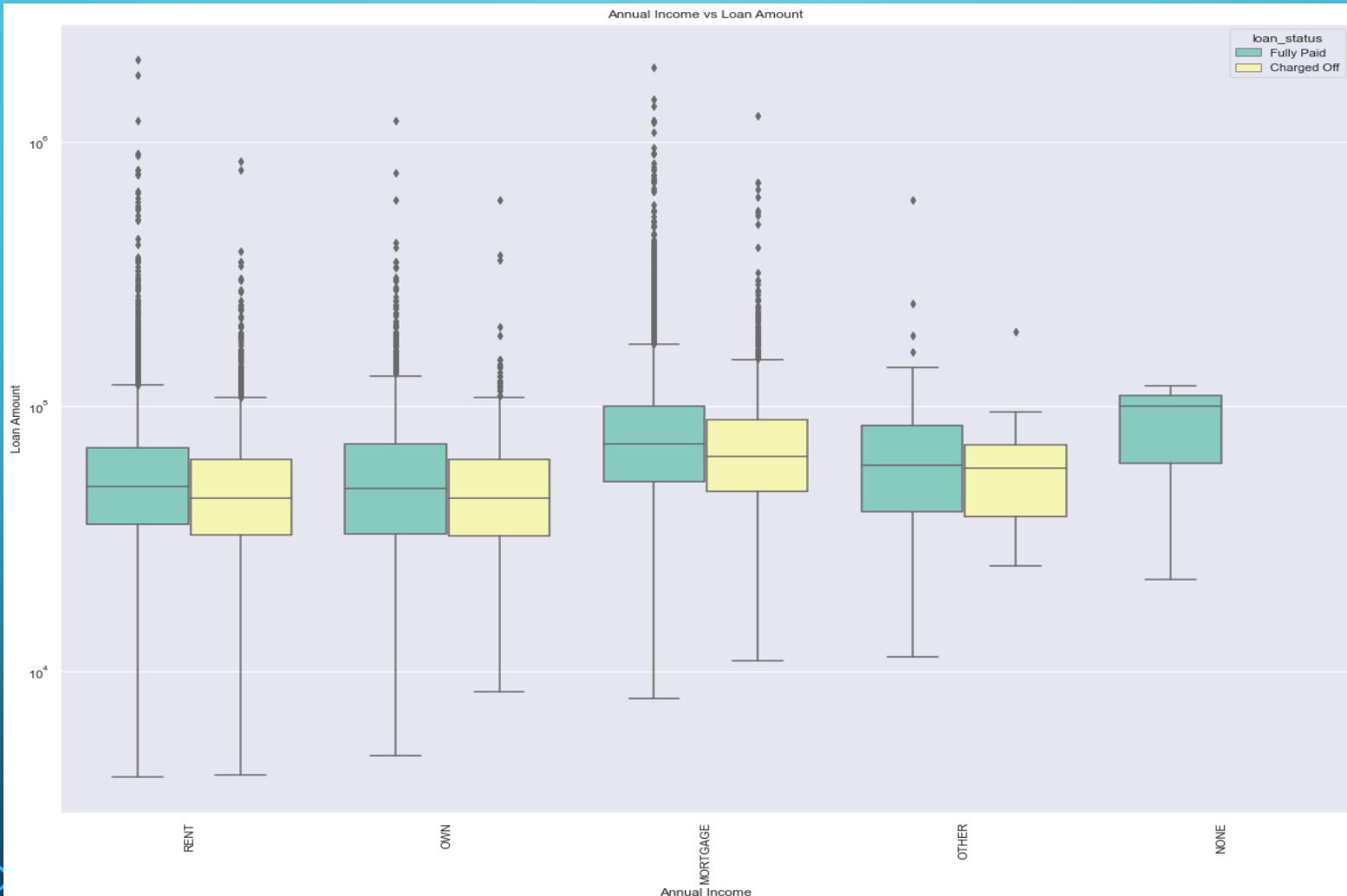
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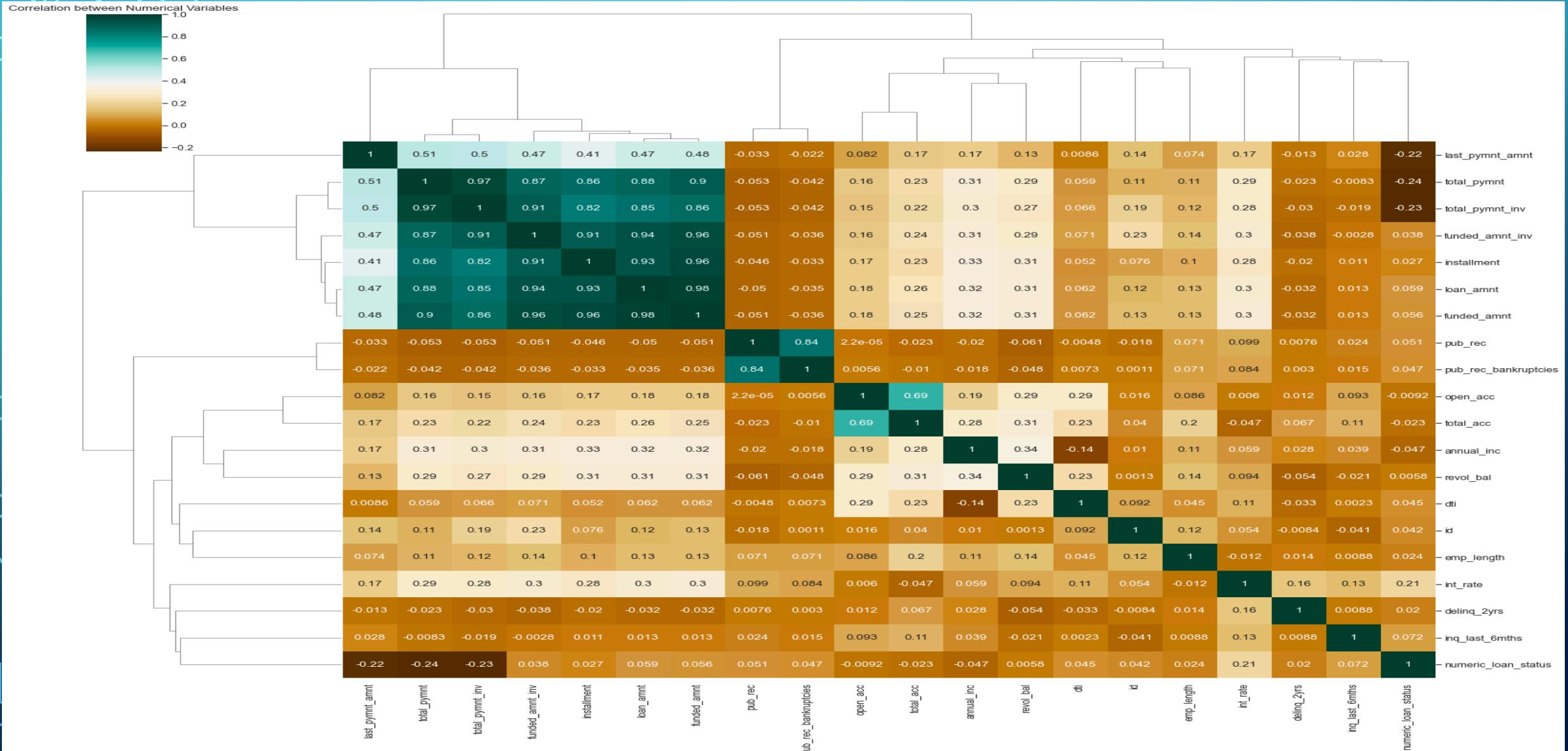
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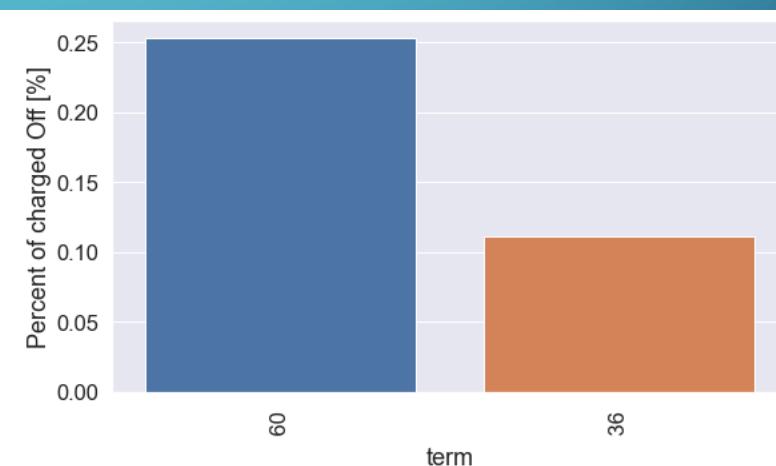
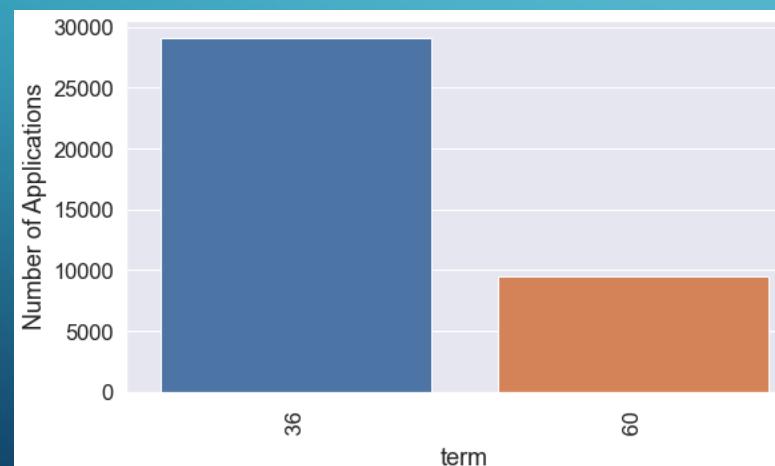
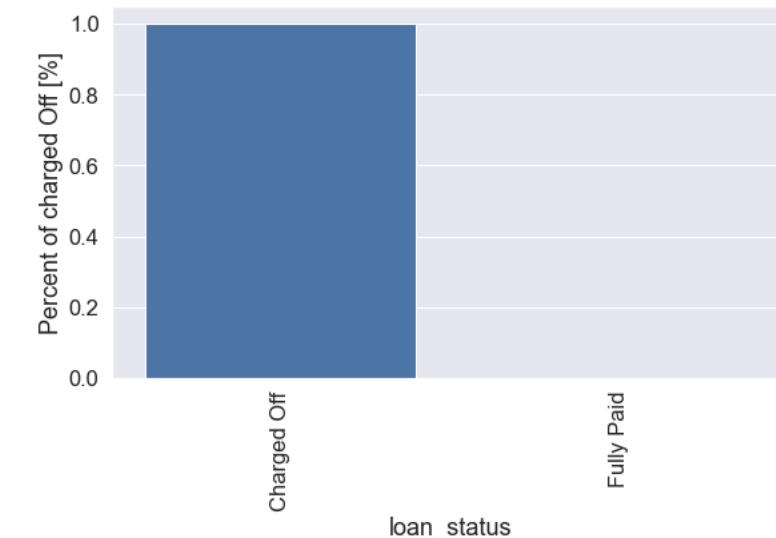
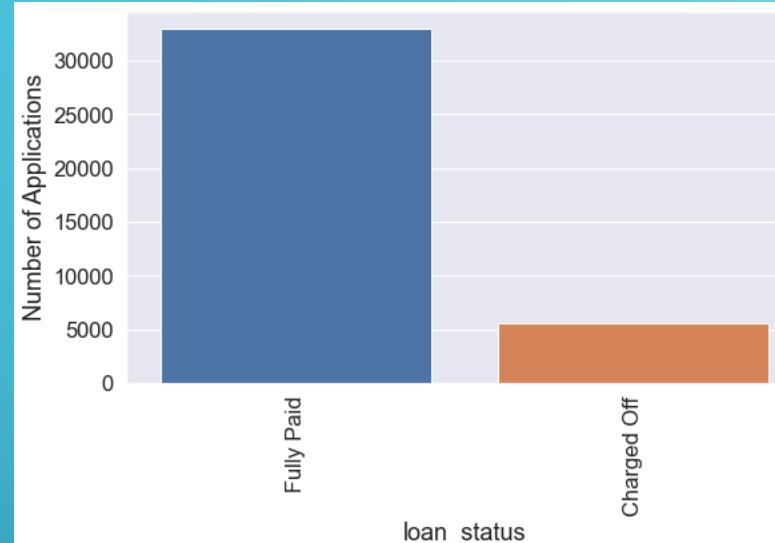
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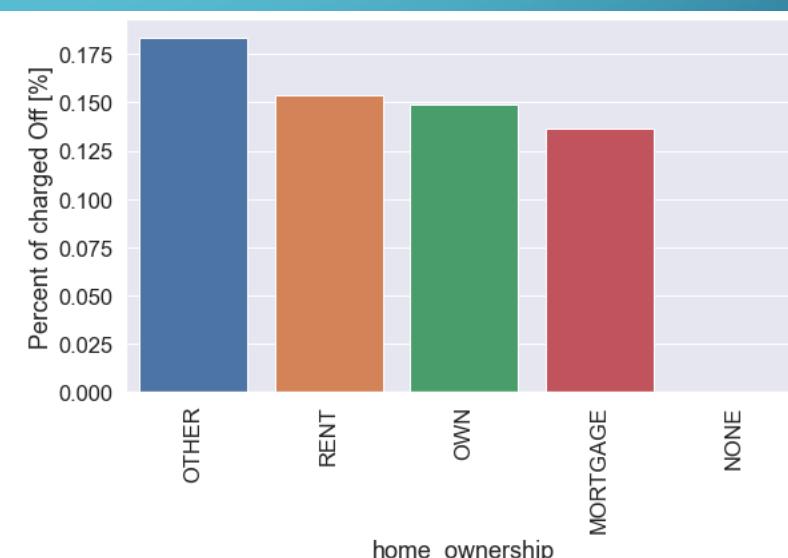
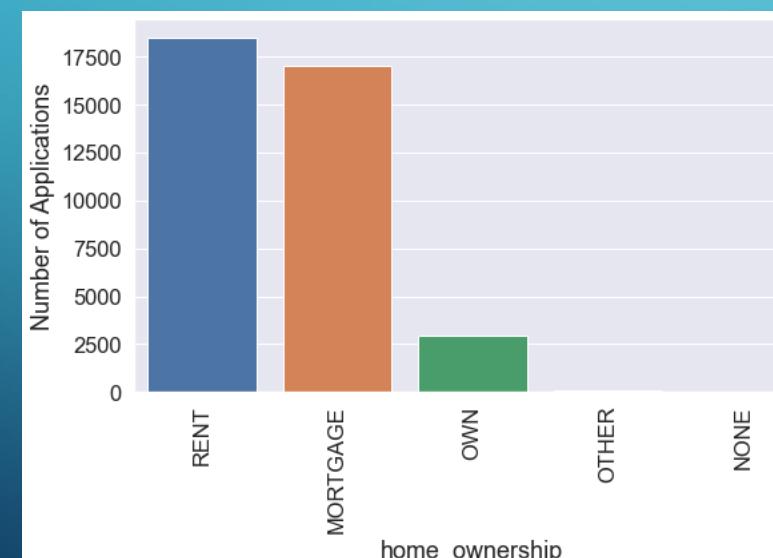
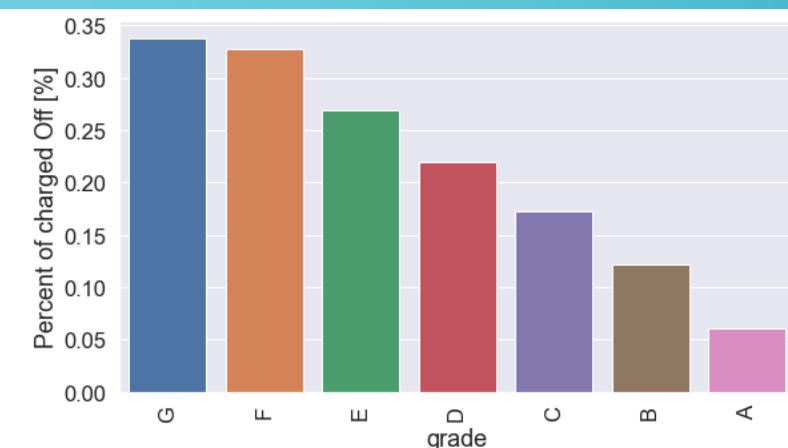
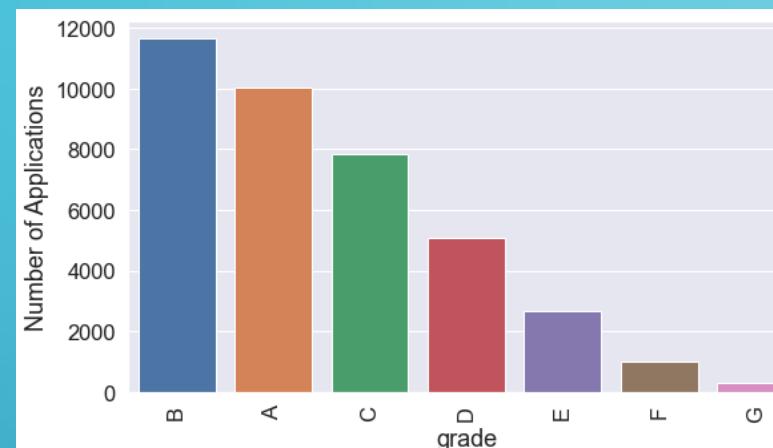
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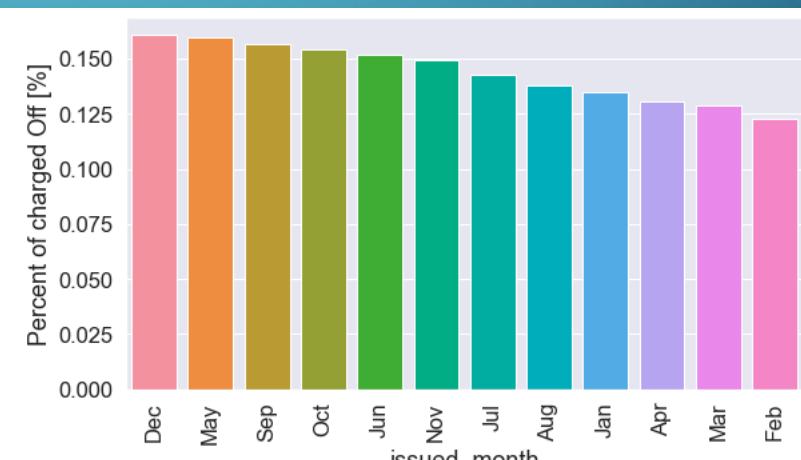
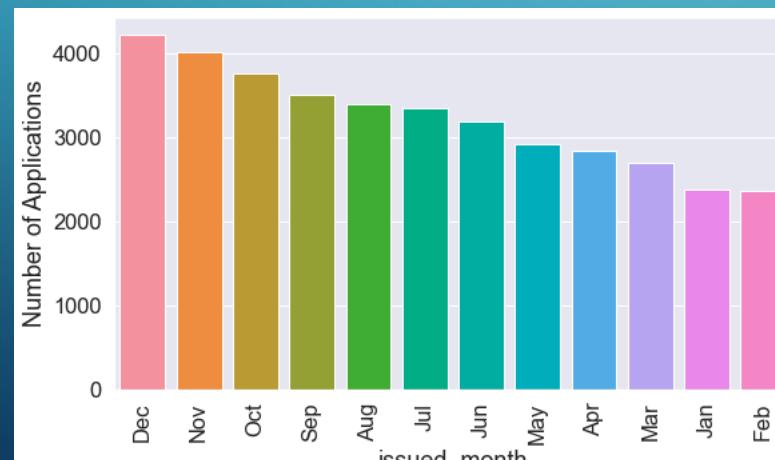
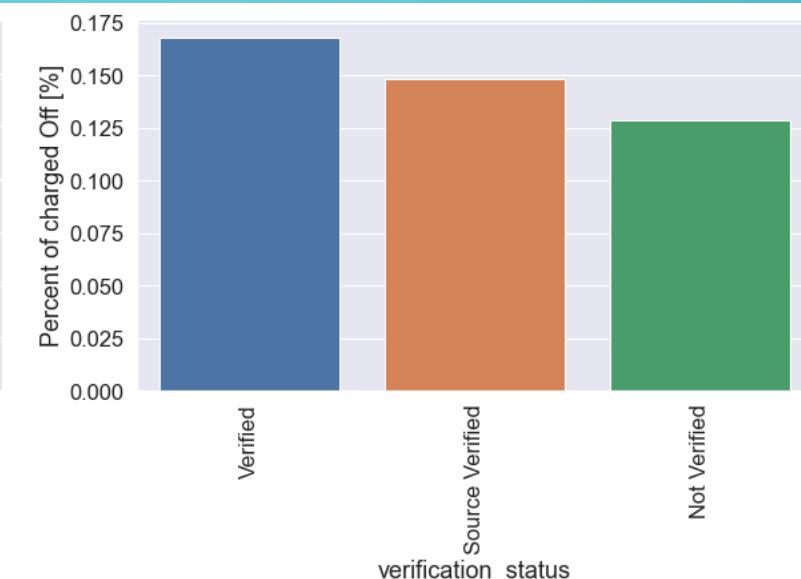
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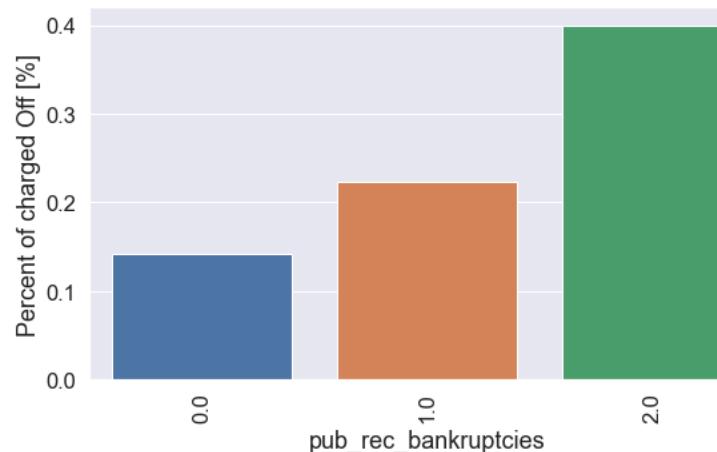
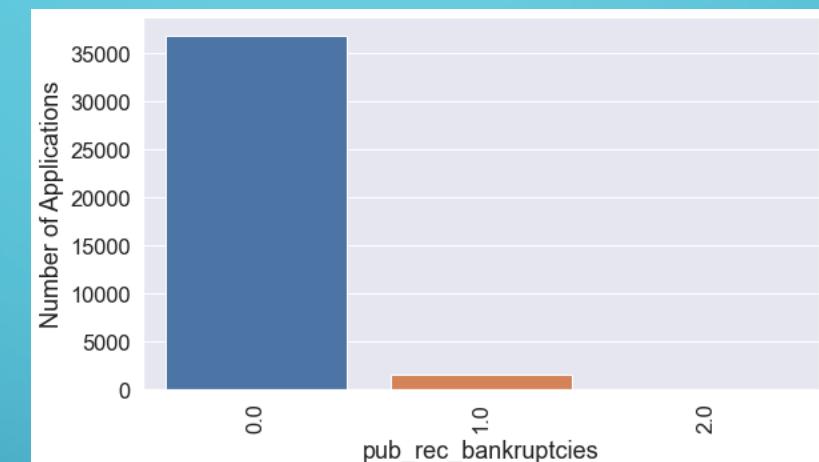
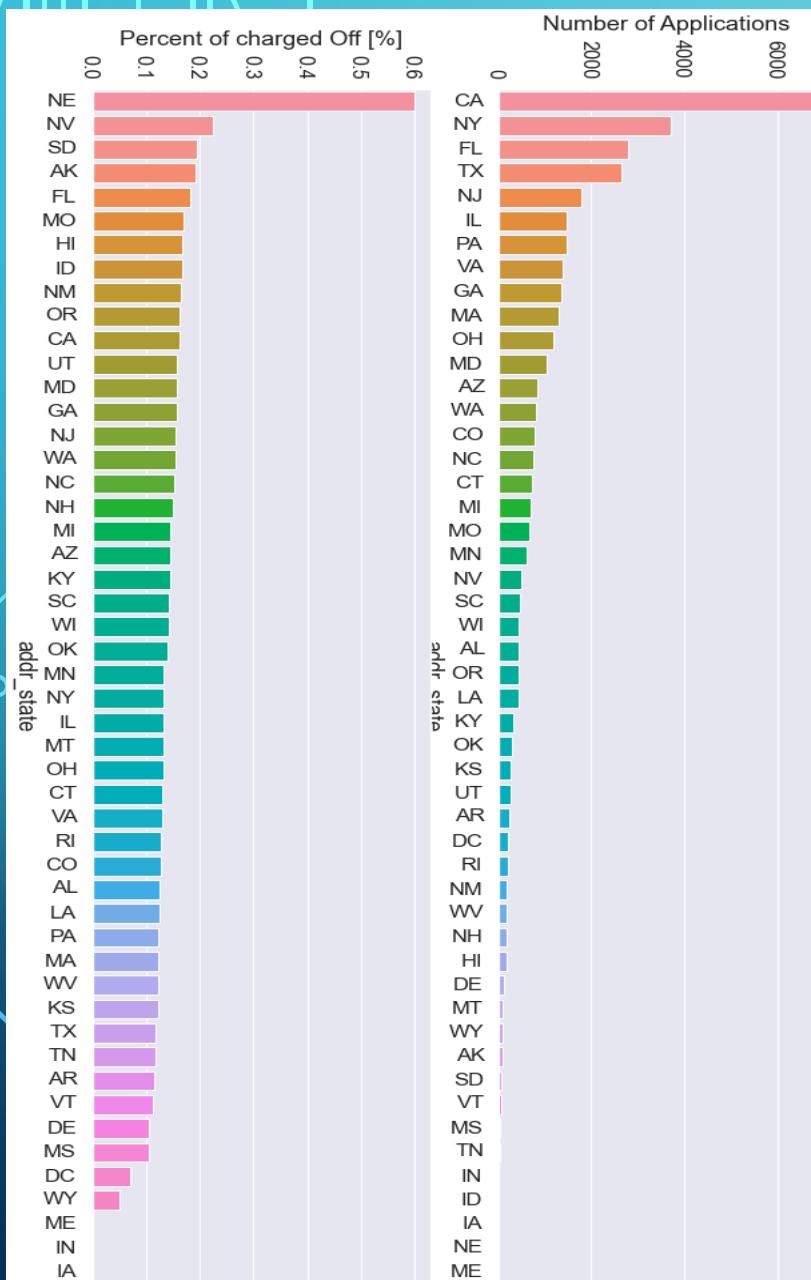
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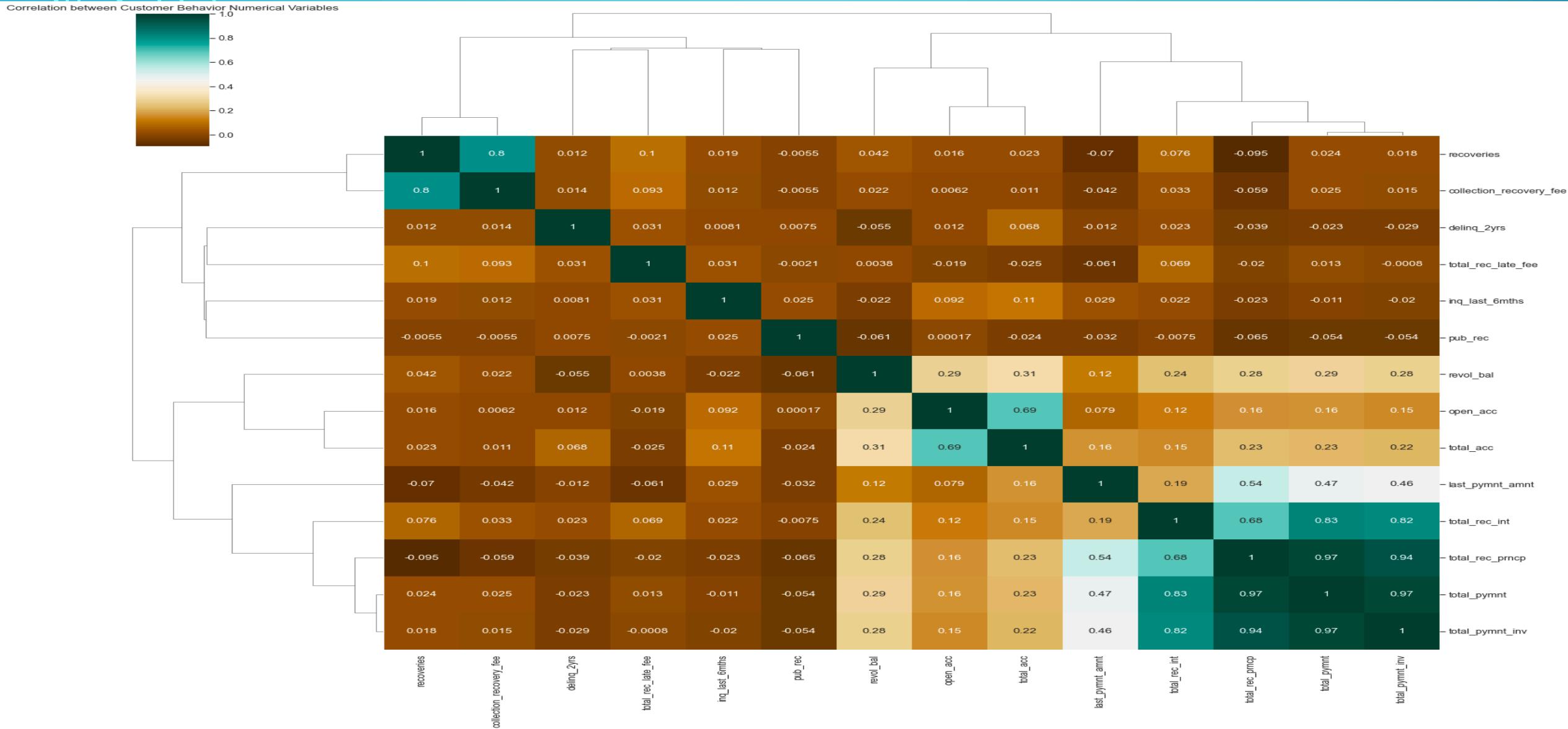
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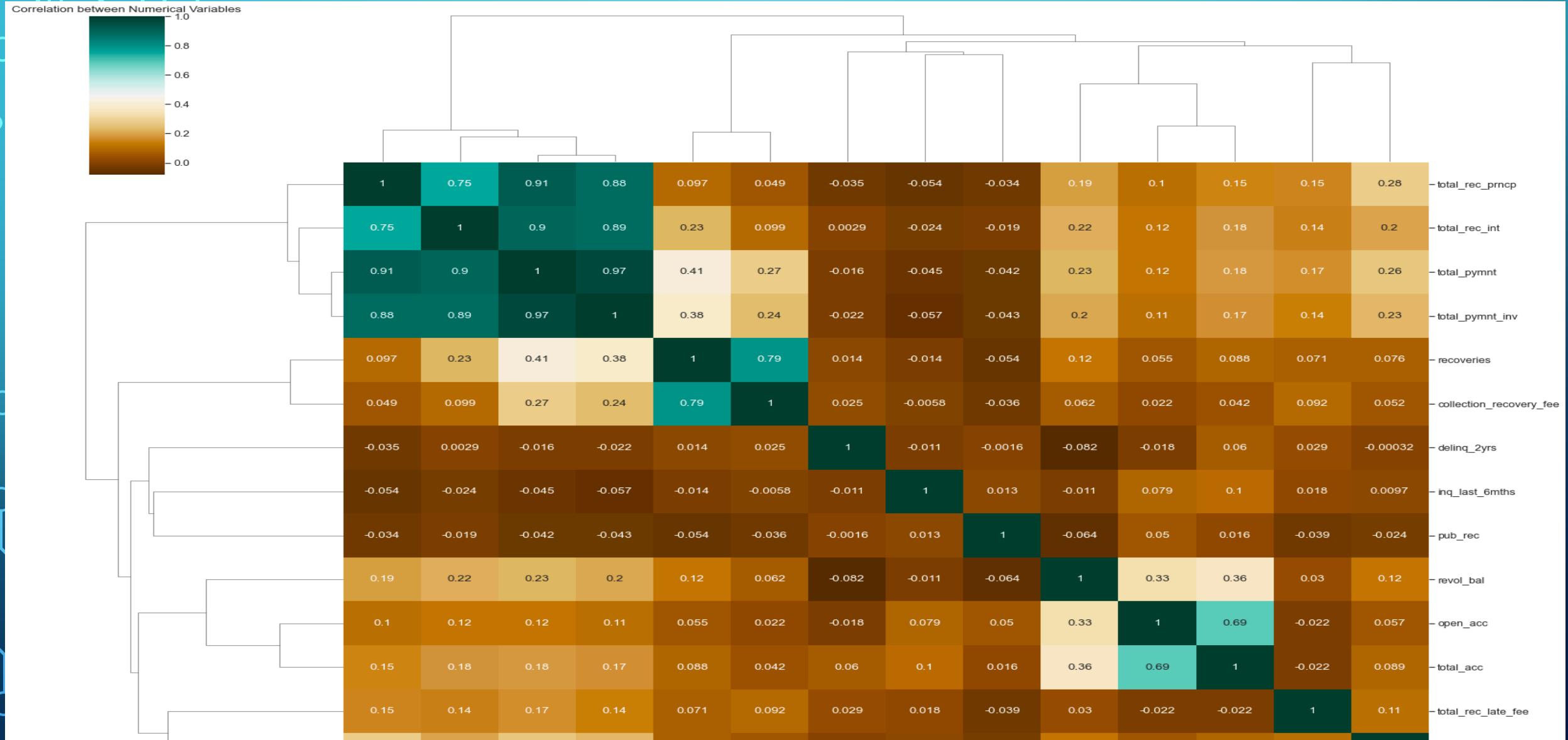
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ANALYSIS



ANALYSIS



Conclusions and Recommendations

Probable Major Factors influencing charge-off(s)

- Loan Amount
- Interest Rate
- Public Record of Bankruptcies
- Verification Status - Unverified.
- Home Ownership Status - Mortgaged, Rent, Others
- Grade of the Employee [Here - Sub-grade was discarded but if structured and considered that would also add some meaningful insights in further breakdown]
- Annual Income of the Customer
- Applications from Top States understanding their demographic influence on loan applications viz defaulting.
- Purpose of loan application.

Conclusions and Recommendations

- Revisit the focus on high-level-grade applicants who will not default much.
- Deep scrutiny of applicants on basis of purpose, area (state-zip-code), employment, bankruptcy details.
- Loan amounts causing more defaulting should be avoided and teams should envision better capping capabilities on request loan amount.
- Loan Payment terms also should include repayment terms such as 48 months or user friendly repayment terms.
- Full scrutiny and clear background verification is must in loan dispersal and loan investors.
- Expand the loan horizons to cater different needs of customers based on purpose whose experience is greater than 1 but less than 10.
- Seasonal Spending causing defaulting should be analysed further to take appropriate actions.