OMKAR DESHPANDE

AND

NIKUNJ SANGHI

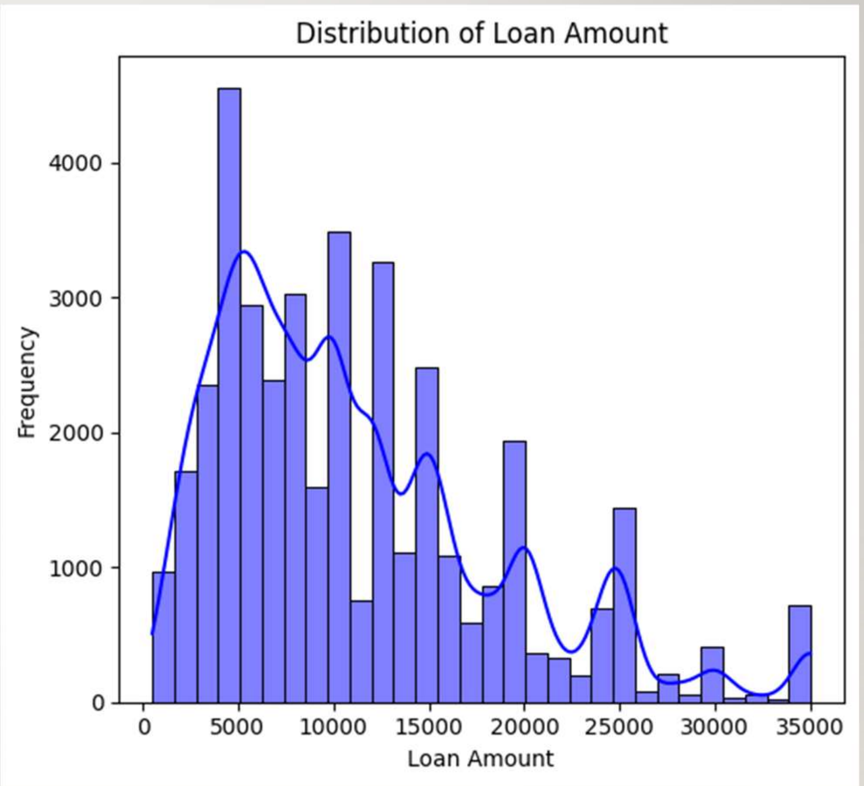
LENDING CLUB CASE STUDY

OVERIVEW

The case study analyses a dataset of loans to investigate the factors linked to loan status. The dataset contains information such as loan amount, interest rate, loan term, annual income, debt-to-income ratio, employment length, home ownership, loan purpose, and other features. The main objective is to recognize trends and patterns impacting whether a loan is fully paid, charged off, or active.

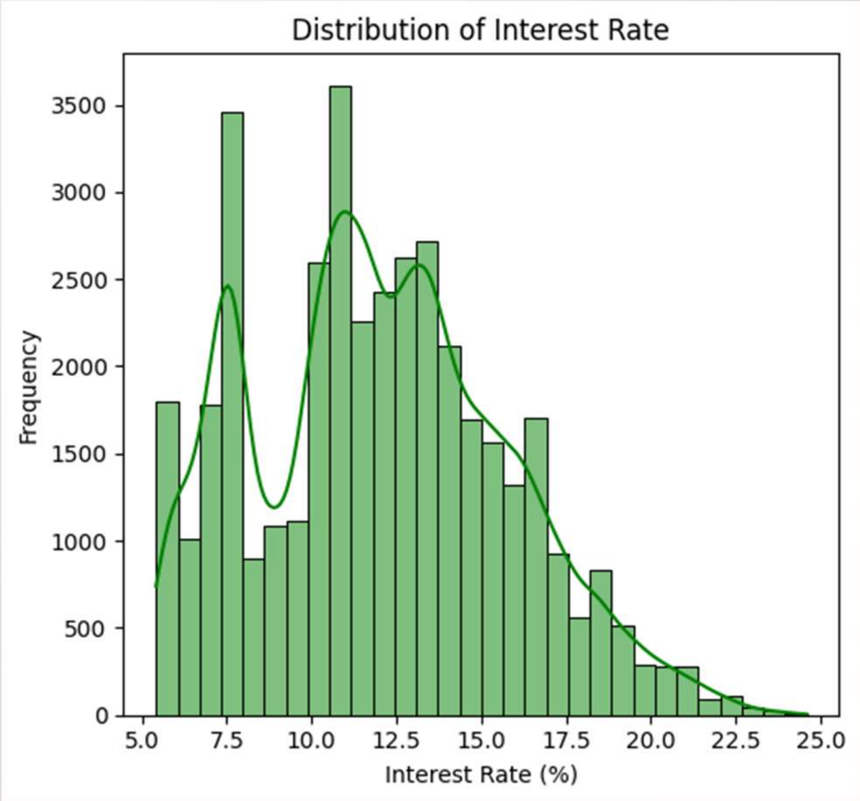
UNIVARIATE ANALYSIS: DISTRIBUTION OF LOAN AMOUNT

- Observations
  - Most loans fall between $5,500 and $15,000, with a mean significantly influenced by higher value loans.
  - Minimum loan amount: $500, Maximum: $35,000
- Insight
  - Larger loans are often more challenging for borrowers to repay.
- Recommendation
  - Be cautious when approving larger loans to avoid potential defaults.



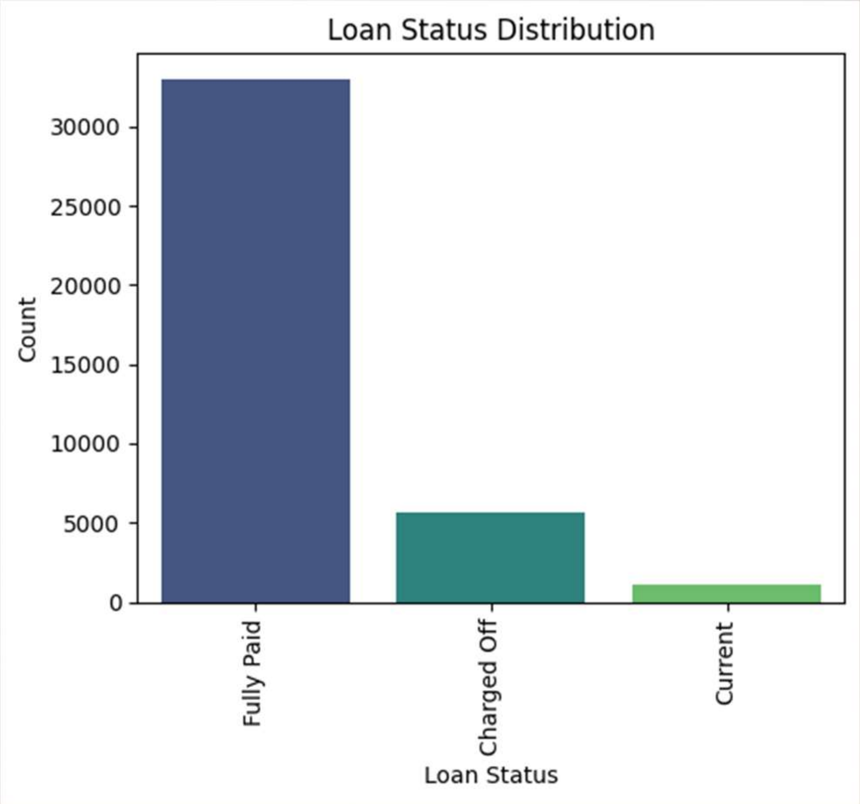
UNIVARIATE ANALYSIS: DISTRIBUTION OF INTEREST RATE

- Observations
  - The average interest rate is 12%, but some loans have rates as high as 24.6%.
- Insight
  - Higher interest rates are linked to a higher chance of the loan not being repaid.
- Recommendation
  - Offer lower interest rates to borrowers more likely to repay to encourage successful loan repayment.



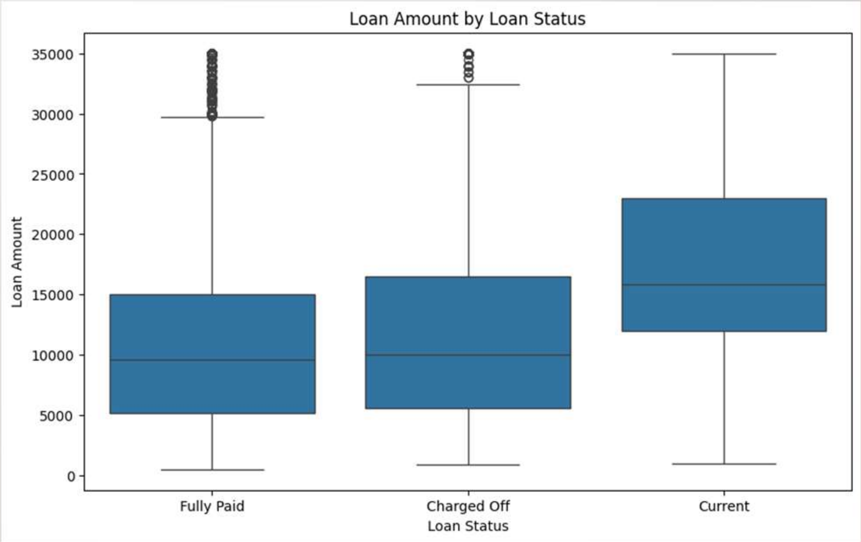
UNIVARIATE ANALYSIS: DISTRIBUTION OF LOAN STATUS

- Observations
  - Most loans (about 83%) are fully repaid, but 14% end up in default.
- Insight
  - The majority of loans are fully paid, with a notable percentage charged off.
  - The small proportion of current loans might suggest that most loans are either completed or defaulted on
- Recommendation
  - Refine loan approval criteria to reduce the number of defaults.



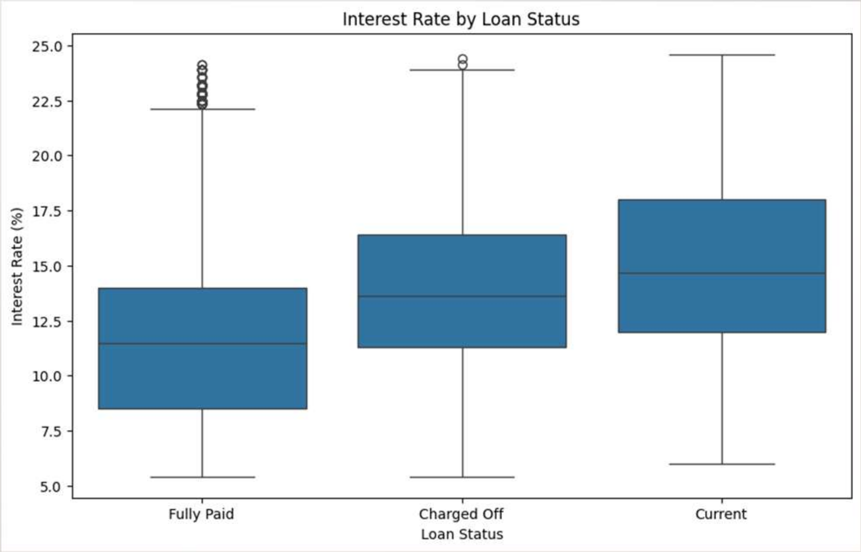
SEGMENTED UNIVARIATE ANALYSIS: LOAN AMOUNT BY LOAN STATUS

- Observations
  - Charged-off loans have a slightly higher mean loan amount compared to fully paid loans, while current loans have the highest average loan amount.
  - Fully Paid loans have the lowest mean and median loan amounts compared to other statuses.
  - The loan amount range (min to max) is similar across all loan statuses.
- Insight
  - Borrowers with larger loan amounts are more likely to default, but they are more likely to keep loans current.
  - Loan amount alone may not be the primary determinant of loan status.
- Recommendation
  - Implement stricter credit checks and risk assessments for larger loan amounts to reduce default rates.
  - Promote smaller loan amounts to new borrowers to increase repayment rates.



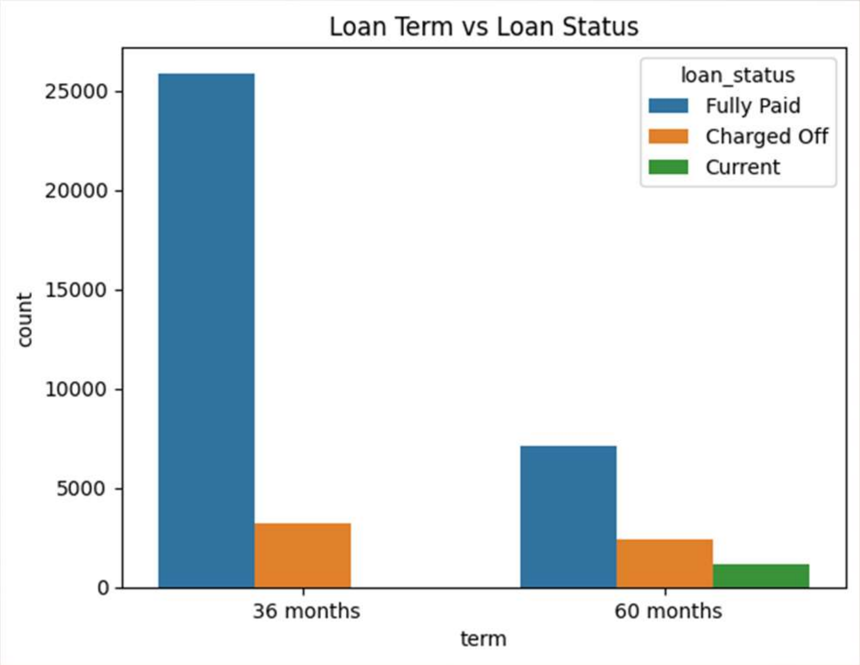
SEGMENTED UNIVARIATE ANALYSIS: INTEREST RATE BY LOAN STATUS

- Observations
  - The average interest rate for "Current" loans is the highest at 15.03%, followed by "Charged Off" loans at 13.82%, and "Fully Paid" loans at 11.61%
  - The interest rates for "Current" and "Charged Off" loans are generally higher, as seen in the 25th, 50th, and 75th percentiles, compared to "Fully Paid" loans.
- Insight
  - Loans with higher interest rates are more likely to be in the "Charged Off" or "Current" status, indicating a potential risk of nonrepayment as rates increase.
- Recommendation
  - For loans with higher interest rates, implement additional risk management strategies, such as closer monitoring or requiring collateral, to minimize the likelihood of loans being charged off.
  - Consider offering lower interest rates to lower risk borrowers to encourage timely repayments and reduce the risk of defaults.



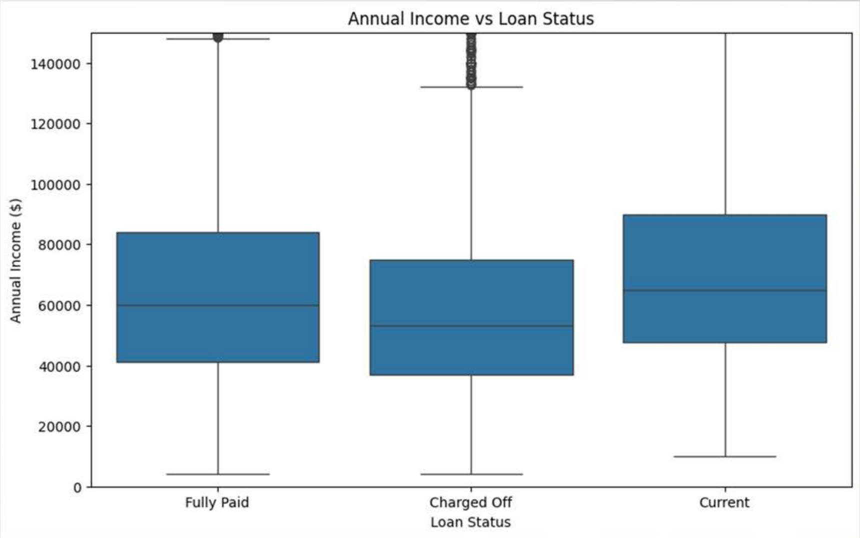
BIVARIATE ANALYSIS: LOAN TERM VS LOAN STATUS

- Observations
  - Loans with a 36month term have a significantly higher count of "Fully Paid" loans compared to those with a 60month term
  - There are no "Current" loans in the 36month term category.
  - The 60month term has a substantial number of both "Charged Off" and "Current" loans.
- Insight
  - Shorter-term loans are more likely to be fully repaid.
- Recommendation
  - Consider promoting shorter-term loans to enhance repayment rates.
  - Implement stricter credit evaluations for 60month loans to reduce default risk.



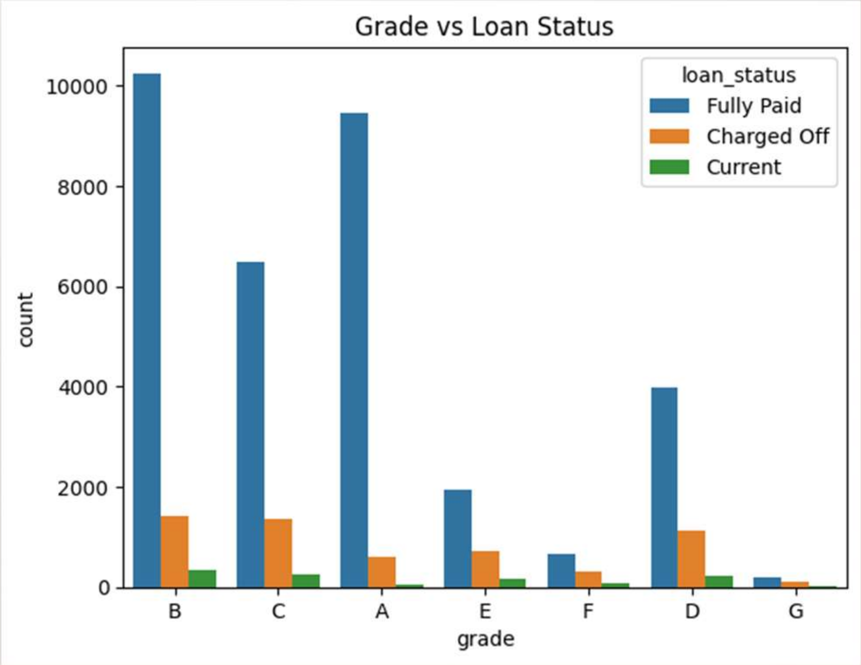
BIVARIATE ANALYSIS: ANNUAL INCOME VS LOAN STATUS

- Observations
  - The mean annual income is highest for "Current" loans, followed by "Fully Paid" and "Charged Off" loans.
  - The maximum income value is highest for "Fully Paid" loans, suggesting that high-income individuals are more likely to fully repay their loans.
  - The 25th percentile income for "Charged Off" loans is lower than that for "Current" and "Fully Paid" loans.
- Insight
  - Higher income is associated with maintaining loan status or paying off loans fully.
- Recommendation
  - Implement additional support or lower risk strategies for borrowers with lower incomes.
  - Consider offering premium loan products or higher credit limits to high-income borrowers.



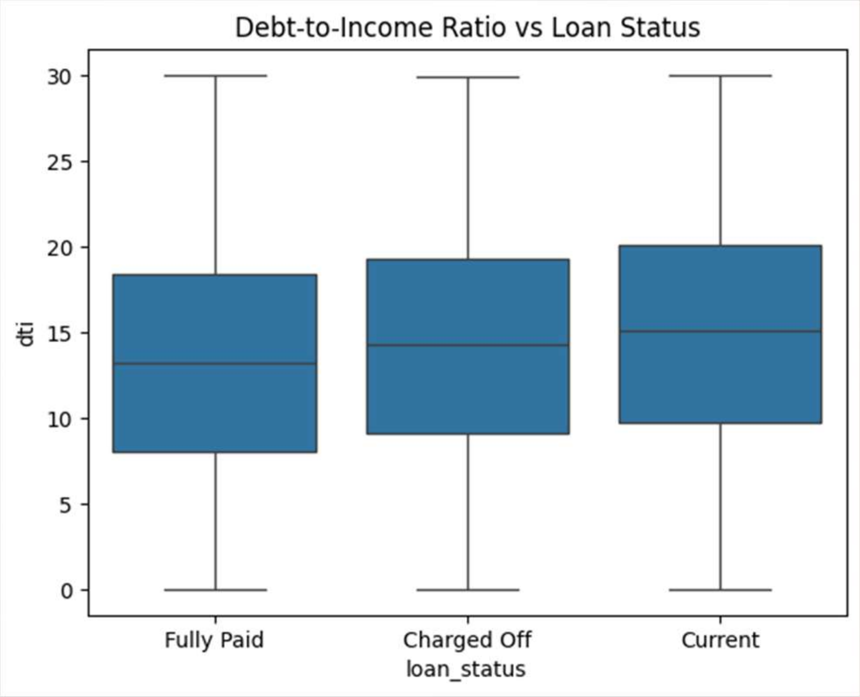
BIVARIATE ANALYSIS: GRADE VS LOAN STATUS

- Observations
  - Grade A loans have a comparatively higher number of "Fully Paid" loans and a lower number of "Charged Off" loans.
  - Grade B has the highest count of "Charged Off" loans as well as “Fully Paid” compared to other grades.
  - As loan grades decrease from A to G, the count of "Charged Off" loans generally increases, and the count of "Fully Paid" loans decreases..
- Insight
  - Despite being a higher grade, B loans show a significant risk of default.
  - Lower grade loans are more prone to default and less likely to be fully repaid.
- Recommendation
  - Prioritize issuing loans to borrowers with higher grades (A and B) to minimize default risk.
  - Reassess the criteria for assigning Grade B or adjust interest rates to reflect the higher risk.



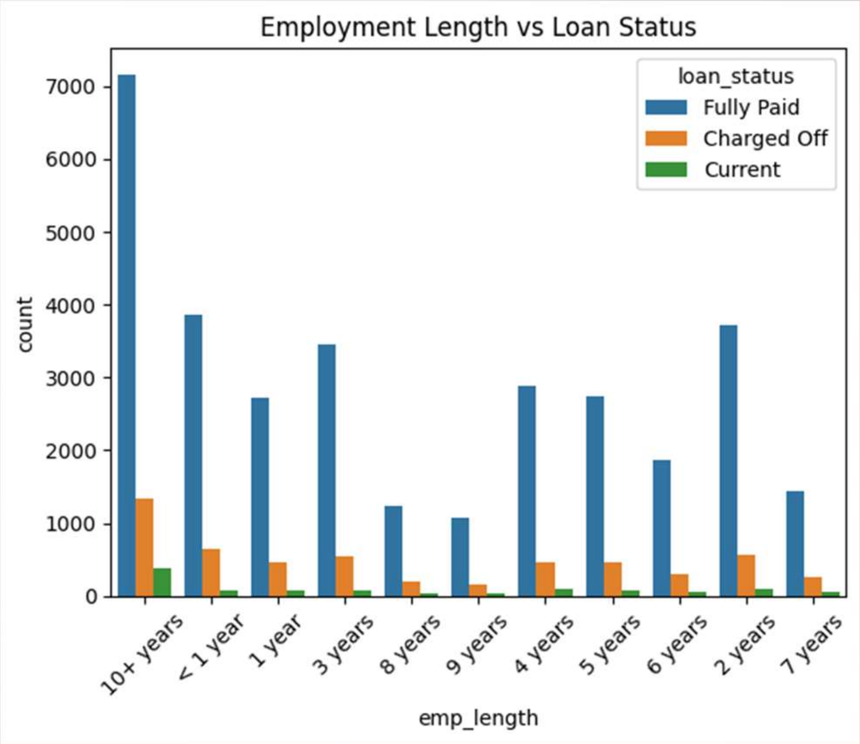
BIVARIATE ANALYSIS: DEBT TO INCOME RATIO VS LOAN STATUS

- Observations
  - The mean debt-to-income ratio is highest for "Current" loans, followed by "Charged Off" and "Fully Paid" loans..
  - The 25th percentile debt-to-income ratio for "Charged Off" loans is lower than that for "Current" and "Fully Paid" loans.
  - The maximum debt-to-income ratio is highest for "Fully Paid" loans, indicating that some fully repaid loans have very high ratios.
- Insight
  - High debt-to-income ratios do not always result in loan default.
  - Lower debt-to-income ratios are more common among borrowers who default.
- Recommendation
  - Consider implementing flexible repayment plans for high debt-to-income ratio loans to improve repayment success.
  - Review and adjust debt-to-income ratio thresholds for loan approval to balance risk and loan issuance.



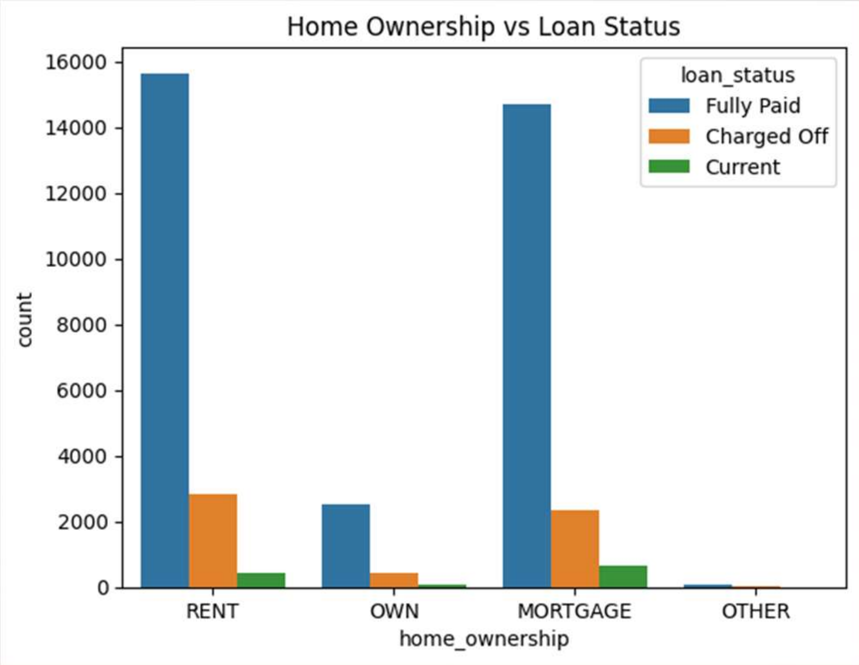
EMPLOYMENT LENGTH VS LOAN STATUS

- Observations
  - "10+ years" employment length has the highest count of "Fully Paid" loans
  - "1 year" and "< 1 year" employment lengths show higher counts of "Charged Off" loans compared to other employment durations.
  - Employment lengths of 2 to 5 years have relatively balanced counts across "Charged Off," "Current," and "Fully Paid" statuses.
  - The count of "Fully Paid" loans generally decreases with employment length below 10 years.
- Insight
  - Longer employment duration is associated with better repayment outcomes.
  - While long employment is associated with better repayment rates, extremely long durations might not significantly improve outcomes further.
- Recommendation
  - Implement stricter evaluation criteria for borrowers with shorter employment histories to mitigate default risk.



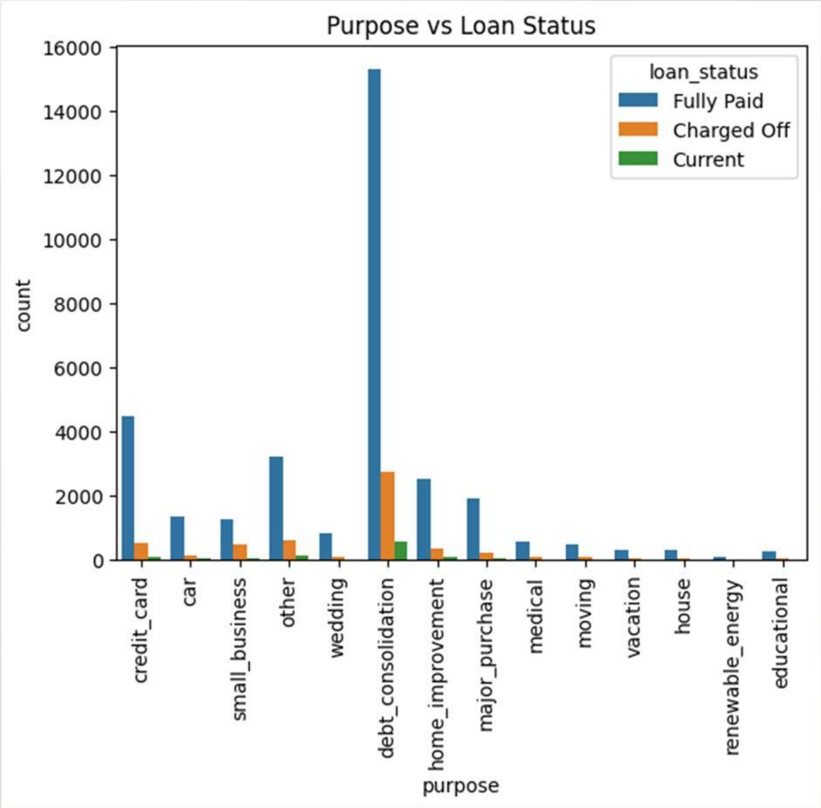
HOME OWNERSHIP VS LOAN STATUS

- Observations
    - "MORTGAGE" home ownership status has a slightly higher count of "Fully Paid" loans and a slightly lower count of "Charged Off" loans.
    - "RENT" has a large number of both "Charged Off" and "Fully Paid" loans.
    - "OWN" home ownership status has a relatively high count of "Charged Off" loans compared to "MORTGAGE" and "RENT.".
- Insight
    - Borrowers with mortgages are more likely to fully repay their loans.
    - Renters show a high number of both loan outcomes, indicating mixed repayment behavior.
    - While owning a home is generally associated with better repayment, it’s not as strong as having a mortgage.
- Recommendation
    - Assess additional factors beyond home ownership to better evaluate loan risk for borrowers who own their homes.
    - Implement risk mitigation strategies for renters, considering their higher default variability.
    - Target or prioritize borrowers with mortgage status for new loan offerings to improve repayment rates.



PURPOSE VS LOAN STATUS

- Observations
  - "Debt consolidation" has the highest counts across all loan statuses, particularly for "Fully Paid" and "Charged Off" loans.
  - "Credit card" and "Other" purposes also have high counts for both "Charged Off" and "Fully Paid" loans.
  - "Educational" loans have a low count but show a higher proportion of "Charged Off" loans relative to "Fully Paid."
- Insight
  - Debt consolidation is a common loan purpose but carries a significant risk of default.
  - Loans for credit card payments and miscellaneous purposes show mixed repayment outcomes..
  - Educational loans may be more prone to default, potentially due to borrowers' financial instability..
- Recommendation
  - Offer tailored financial counseling or monitoring for debt consolidation loans to reduce default rates.
  - Implement stricter approval criteria or higher interest rates for these categories to mitigate risk.
  - Educational loans may be more prone to default, potentially due to borrowers' financial instability.



CONCLUSION

- Shorter loan terms (36 months) have higher rates of full repayment
- Higher income and longer-employed borrowers are more likely to repay loans fully
- Lower income borrowers and renters are at greater risk of default
- Tailoring loan products based on the amount, term length, and home ownership status can improve repayment rates
- Monitoring and adjusting lending criteria based on debt-to-income ratios can help in better risk management
- Offering additional support for riskier loan purposes can mitigate default risks

RECOMMENDATIONS

- Offer shorter loan terms (e.g., 36 months) with higher rates to cater to borrowers who prefer to repay their loans quickly.
- Implement stricter criteria for income and employment status to favor higher-income and longer-employed individuals with favorable loan terms.
- Create loan products tailored to borrowers' financial profiles, including income level, loan amount, term length, and home ownership status.
- Continuously monitor and adjust lending criteria based on debt-to-income ratios to assess borrower's ability to manage new debt.
- Provide additional support or safety nets for borrowers taking out loans for higher-risk purposes.
- Use advanced analytics to predict default risk more accurately and adjust lending strategies accordingly.