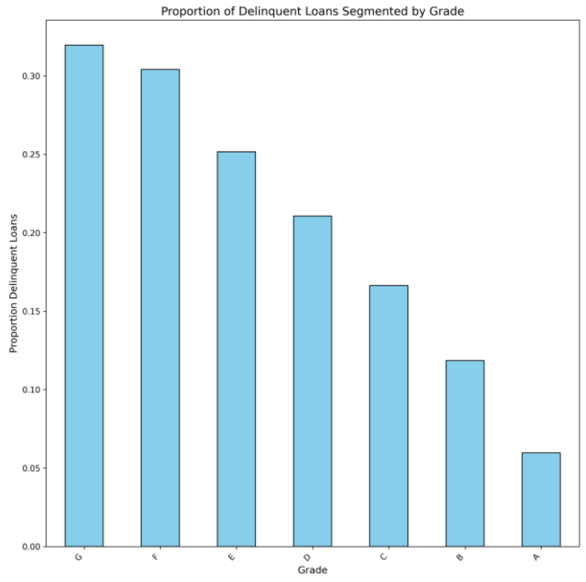
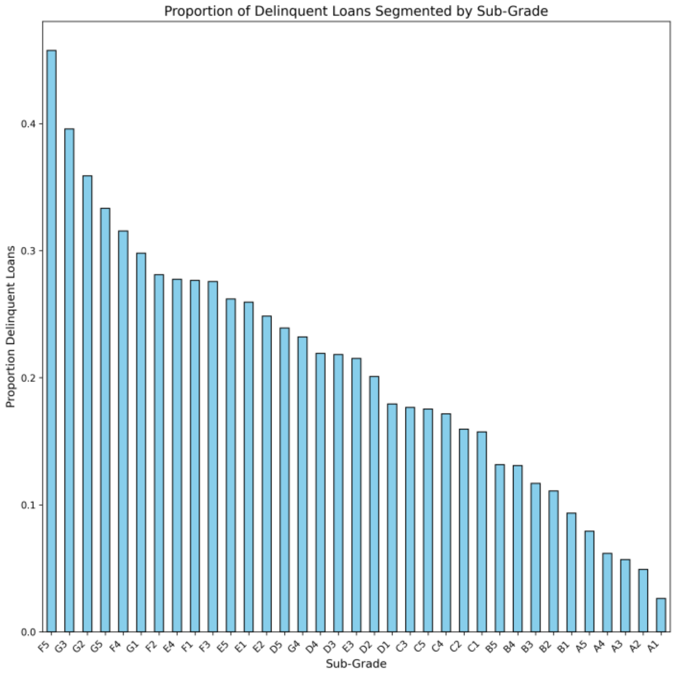
PREDICTING LOAN DEFAULTS

A CASE STUDY BY PARTH ATHLEY & NISHTHA MISHRA

GRADE

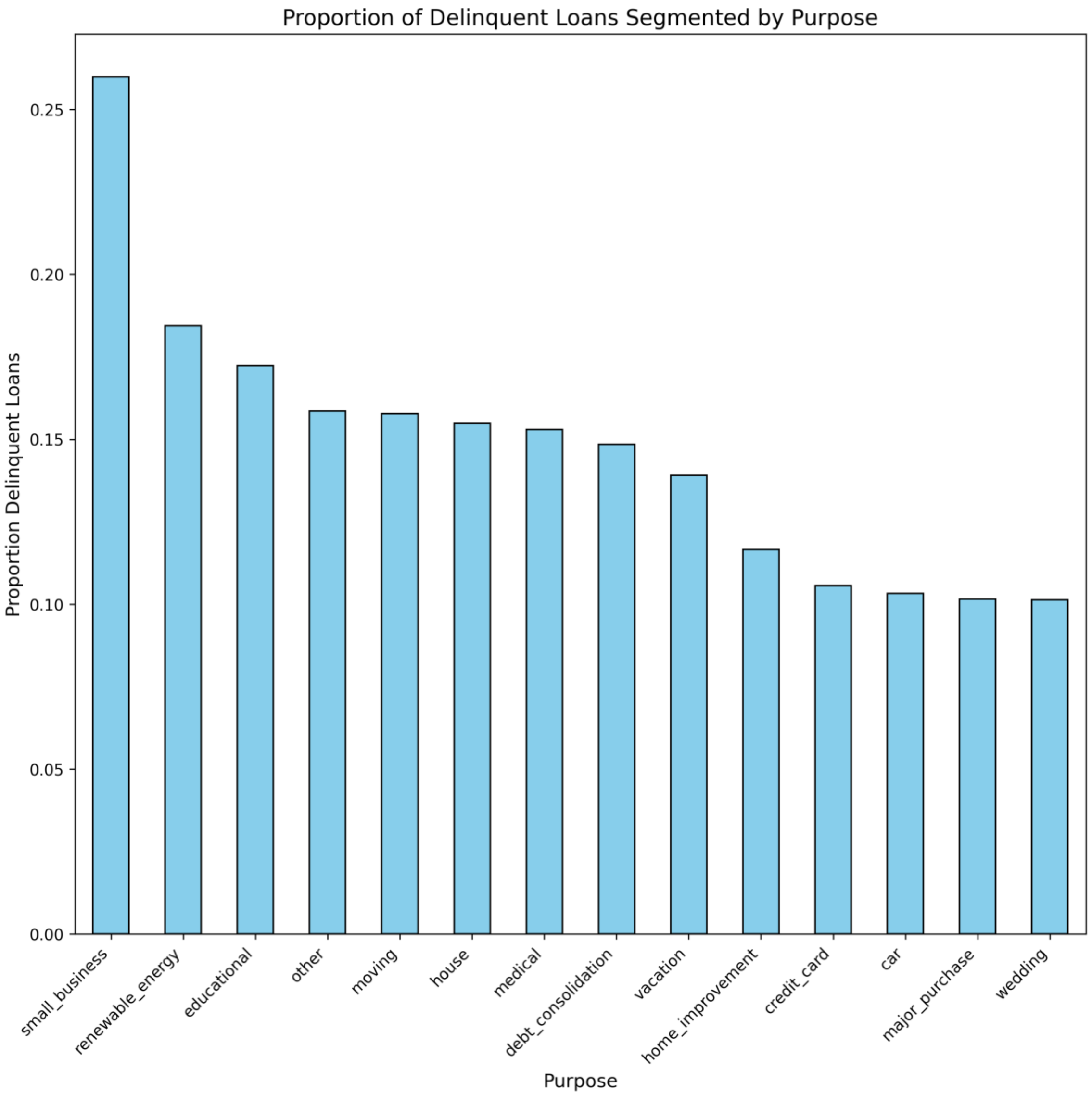
- Over 30% of loans graded G or F end in default
- Surprisingly, 46% of loans with an F5 sub-grade end in default, higher than any of the G-grade loans, making F5 the riskiest subgrade.
- This suggests that many loans that should have been graded G are meeting the threshold of F enough to get a F5 sub-grade. The criteria for assigning sub-grades should be revisited.





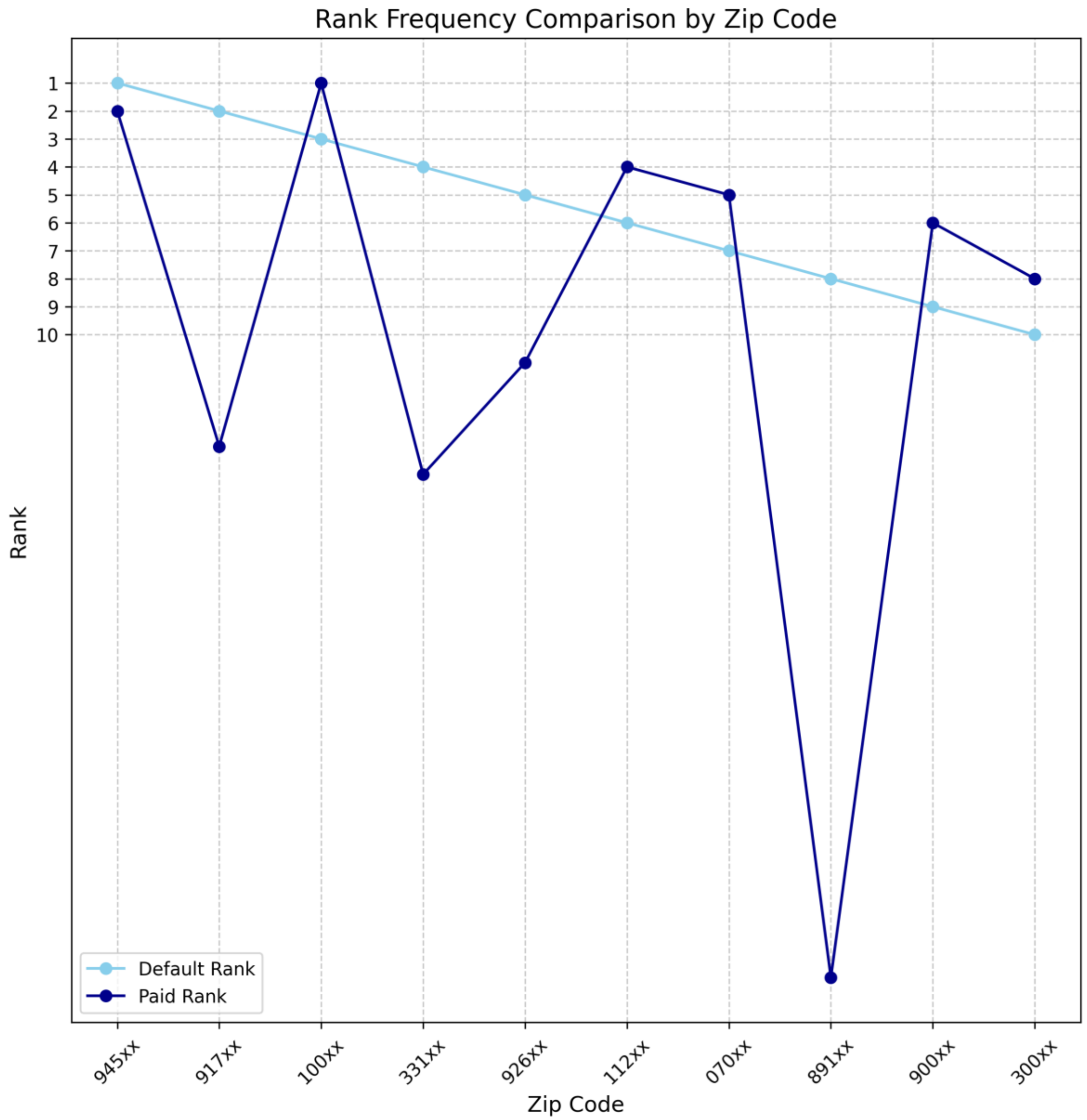
PURPOSE

- 26% of all loans taken for Small Businesses end in default, making it by far the riskiest. Most of these loans are graded A-D.
- Renewable Energy, Educational, Other, Moving, House, and Medical loans all have a default rate above 15%.



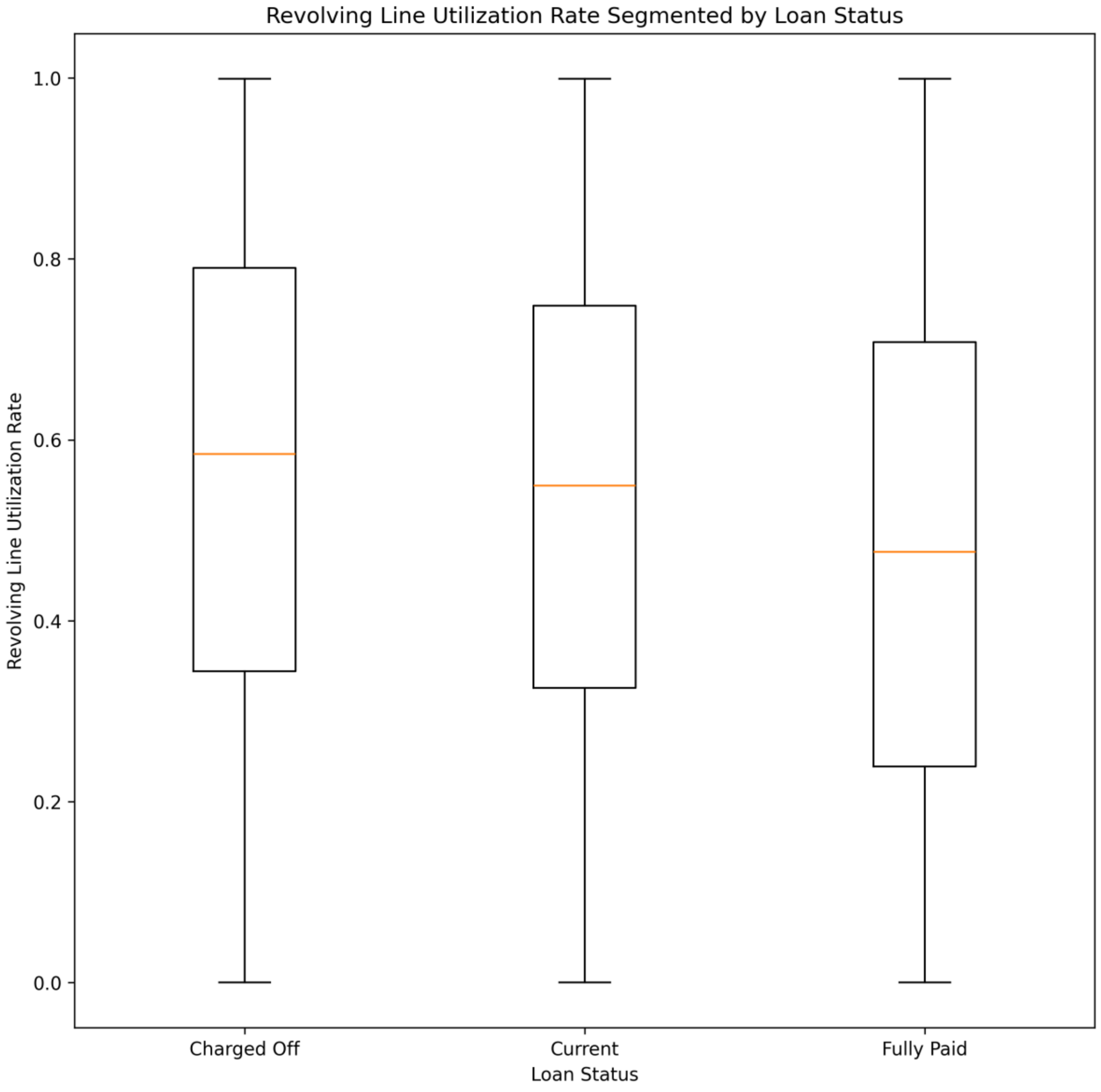
ZIP CODES

- Zip Codes are ranked according their frequency per loan status.
- Some zipcodes rank high in both cohorts, probably because they are the most heavily populated.
- So we look at the delta between the two ranks.
- Zipcodes beginning with 917, 331, 926 and especially 891 contain a higher proportion of defaulters, compared to other zipcodes like 945 and 100.
- These zipcodes have a far greater frequency amongst deliquents, as shown by the difference in rank_def and rank_paid.
- We don't look at ranks below 10 because the sample size becomes too small.



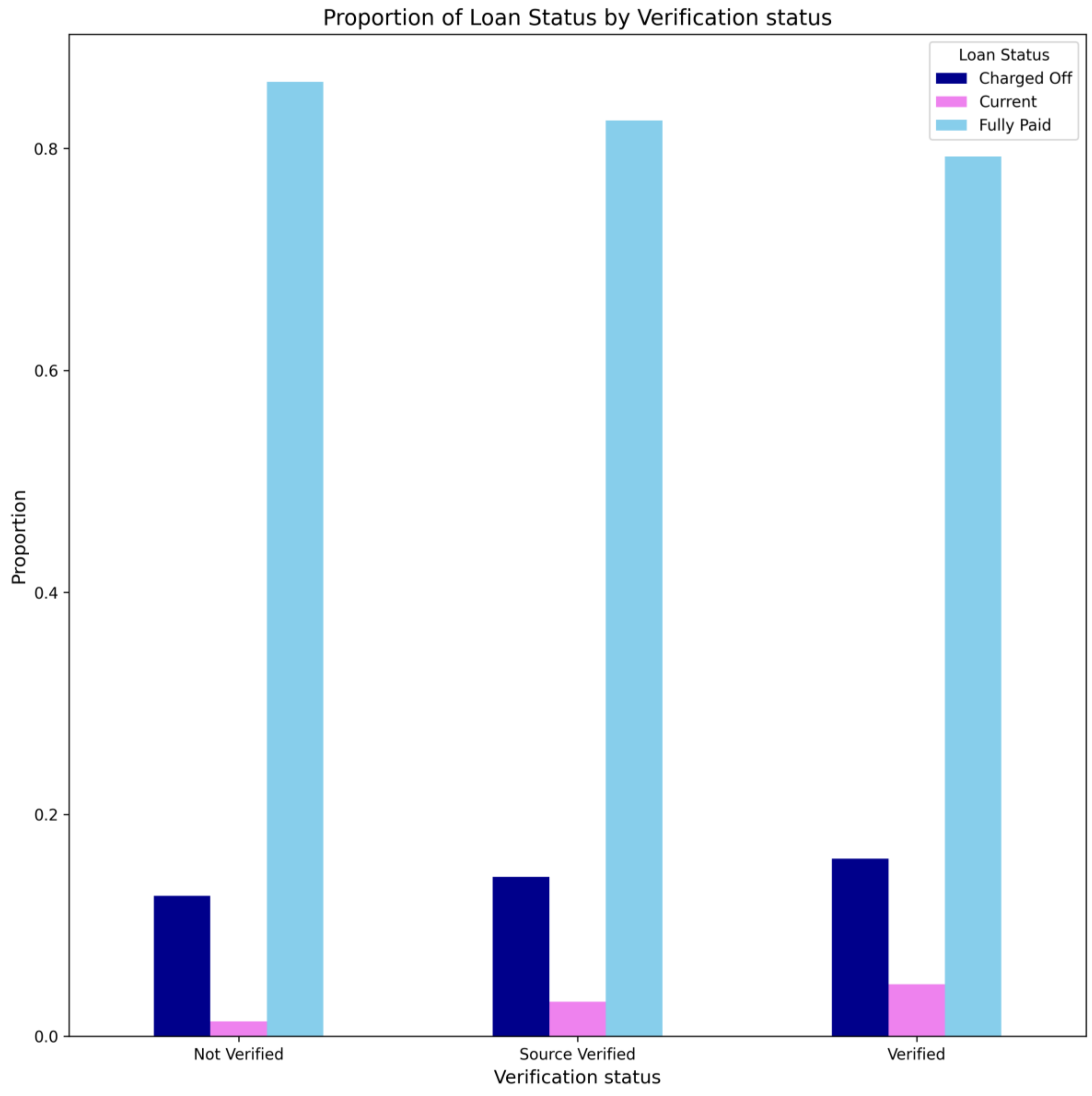
REVOLVING LINE UTIL RATE

- All quartiles for the 'Charged Off' cohort are higher than those of the 'Fully Paid' cohort.
- A higher utilization rate suggests a greater reliance on credit, which would increase delinquency risk



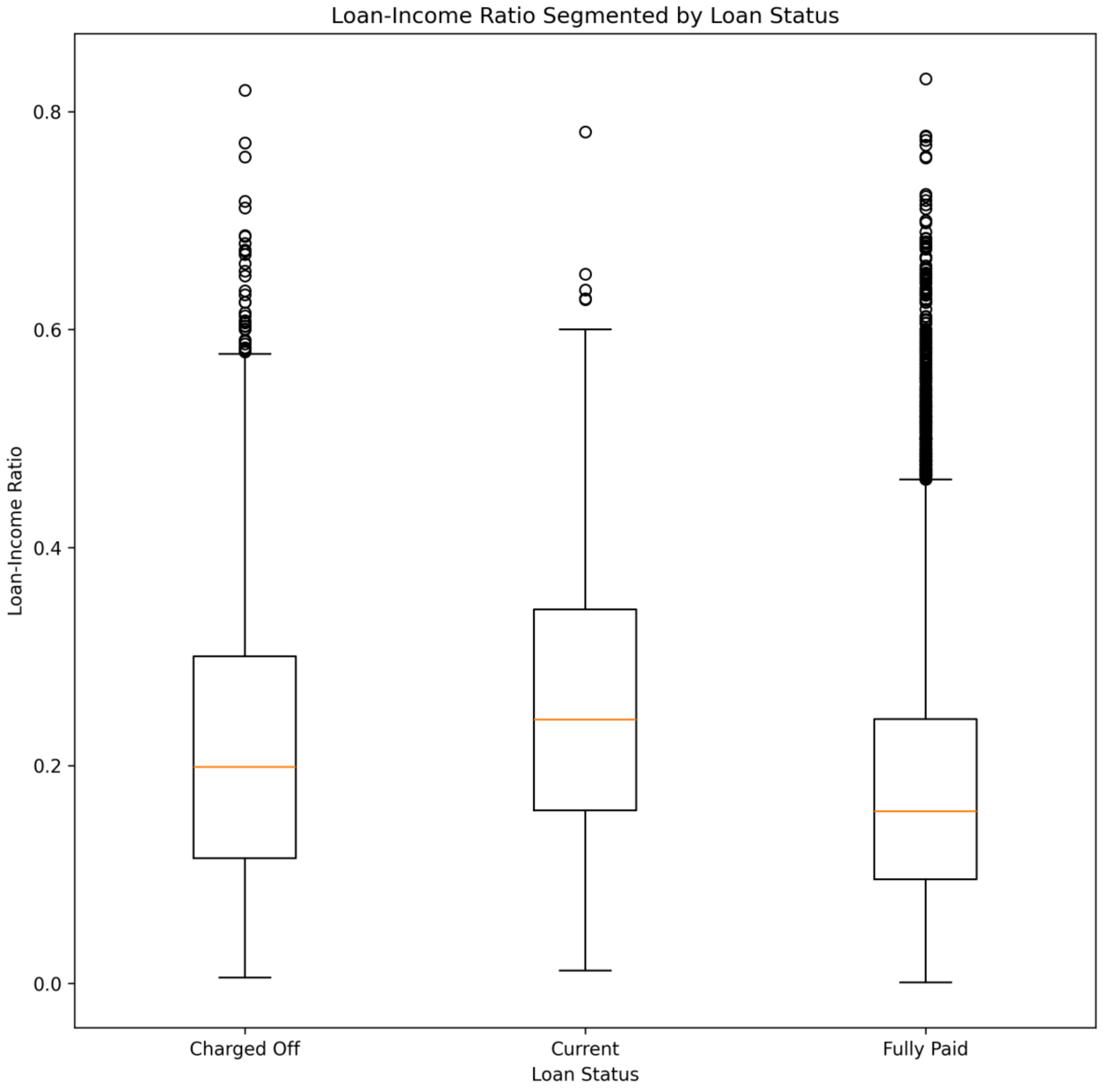
INCOME VERIFICATION

- Both Verified and Source Verified have a higher default rate than Not Verified status.
- This could be because the lender places too much of an emphasis on verification, leading them to take a greater risk on borrowers with verified incomes. This risk is not justified.
- One way of reducing defaults would be to decrease the importance of verification in their decision matrix.



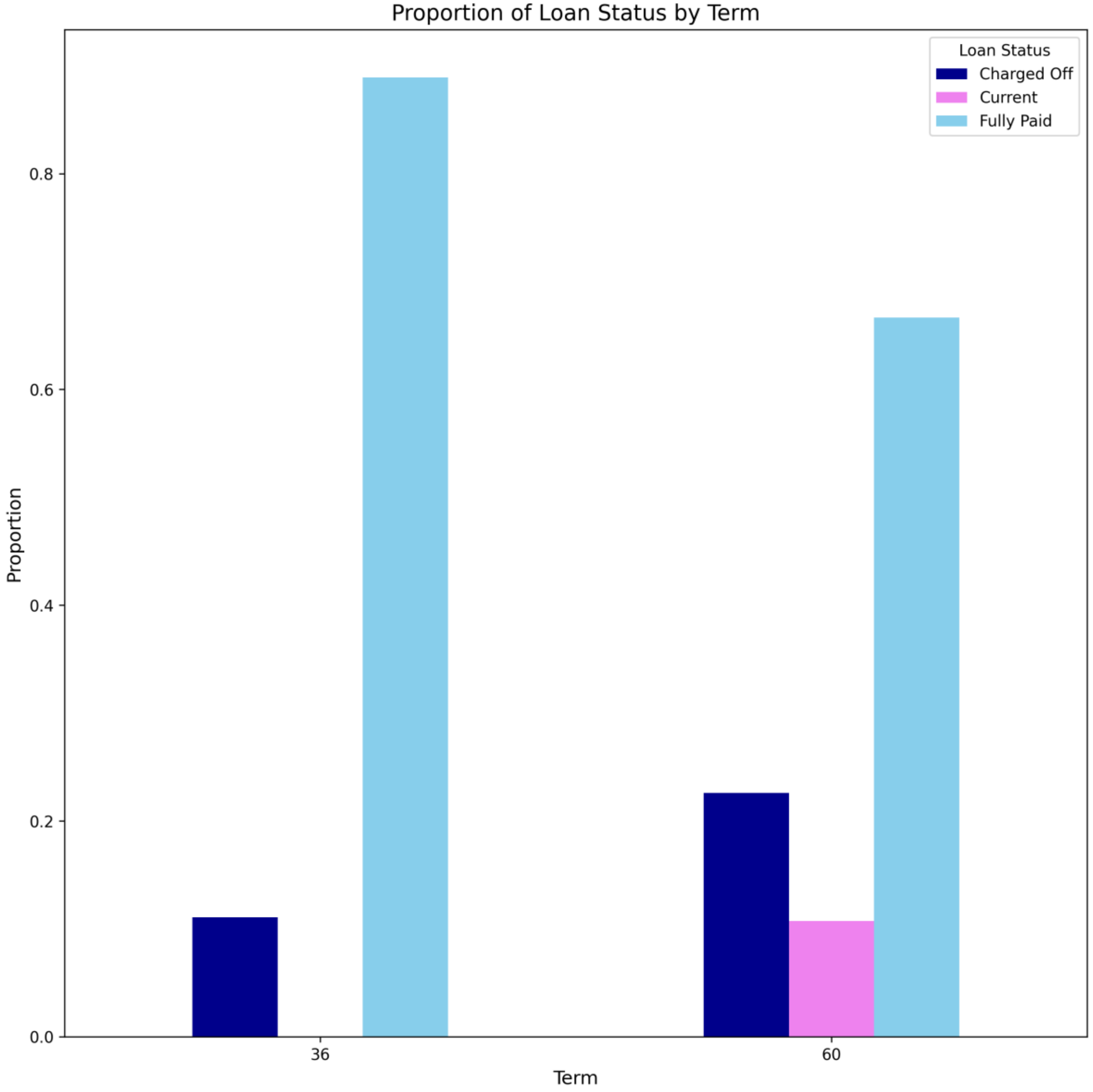
LOAN-TO-INCOME RATIO

- All quartiles for the 'Charged Off' cohort are higher than those of the 'Fully Paid' cohort.
- This suggest that a high loan-to-income ratio is a delinquency risk.



TERM

- Loans with 60 month terms are twice as likely to end in default as loans with 36 month terms.
- The rate of successfully repaid loans drops from 88% to 66%



RECOMMENDATIONS

- Loans for small businesses are extremely risky. 1 out of 4 end in default.
- While G grade loans are definitionally risky, almost half of all F5 loans end in default. It is recommended to revise the criteria for assigning subgrades.
- We recommend strictest scrutiny towards borrowers living in zip codes starting with 891xx. Some scrutiny towards 331xx, 917xx, and 926xx.
- A 60 month term, a high revolving utilization rate, and a high loan-to-income ratio are all warning signs.
- We recommend de-emphasizing Income Verification Status in the decision matrix, as currently it is leading lender to take on undue risk.