

EDA for Lending Club Case study

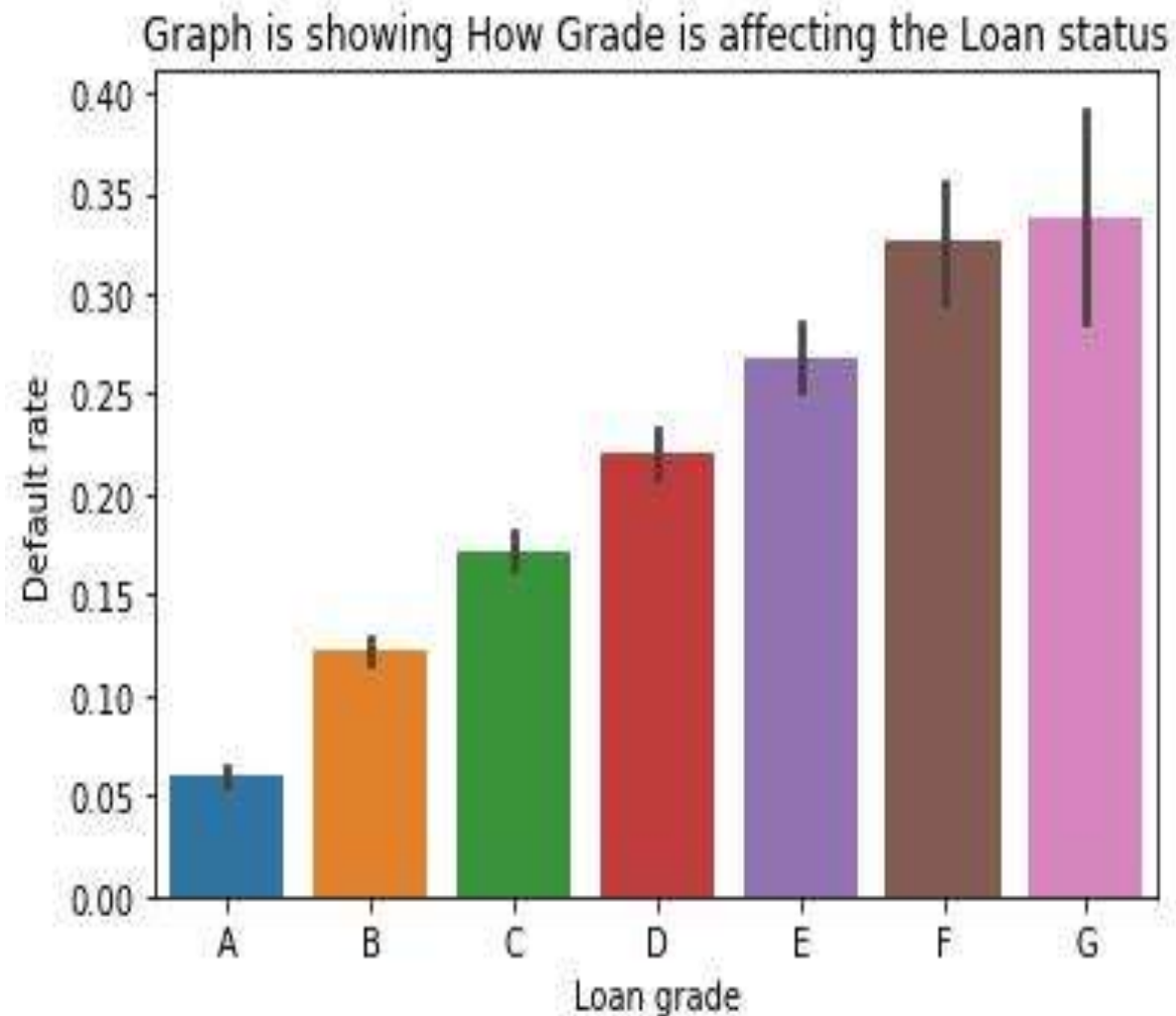
Problem statement

Using the available dataset, find driver variables for loan default.
Give recommendations on how to reduce loan default rate by identifying these drivers.

Recommendation 1

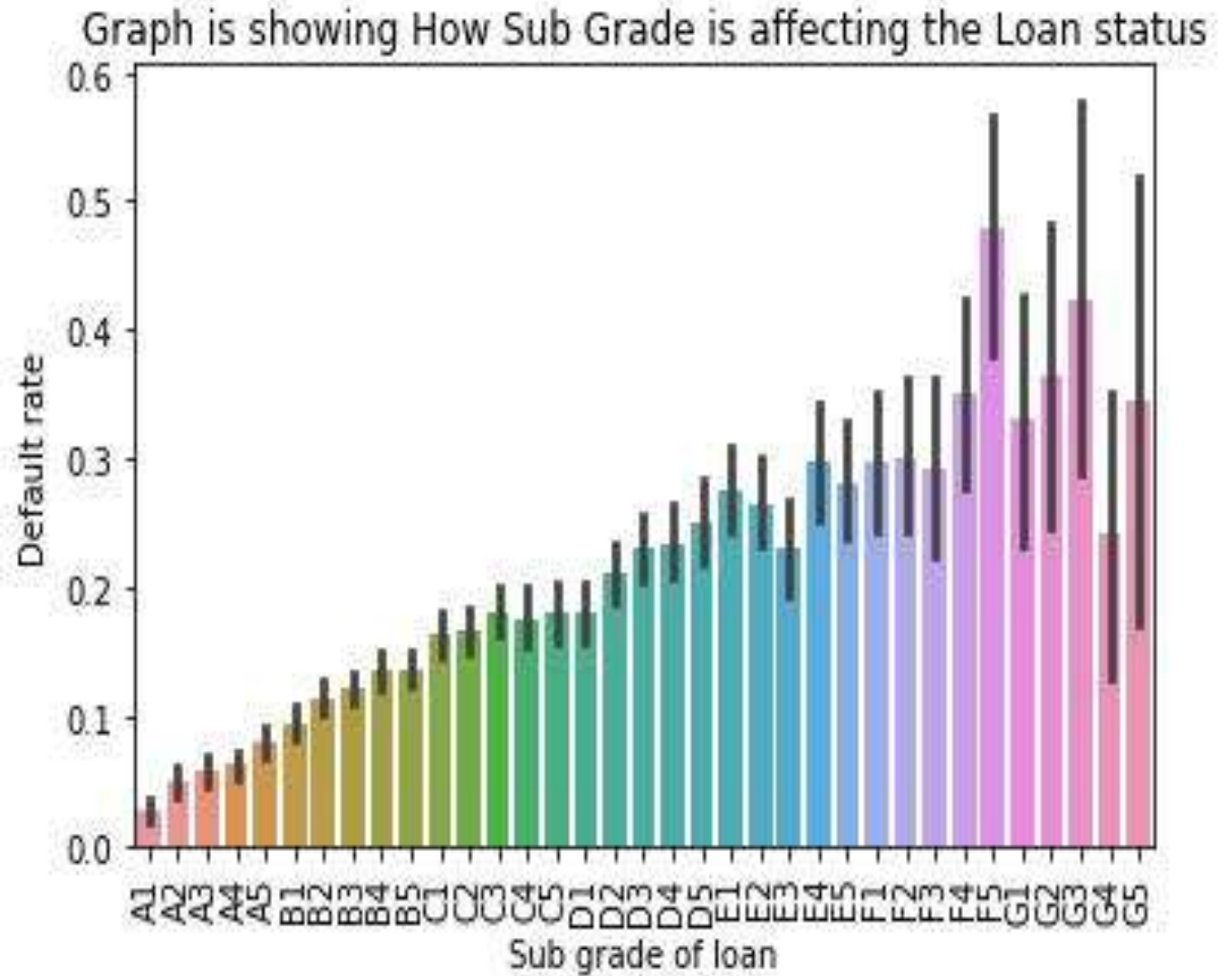
Higher risk grades (above E) should be avoided as they have higher chance of defaulting.

Moving from grade E to B reduce default rate by 12%. Grades F and G strictly to be avoided as default rate is above 30%.



Recommendation 2

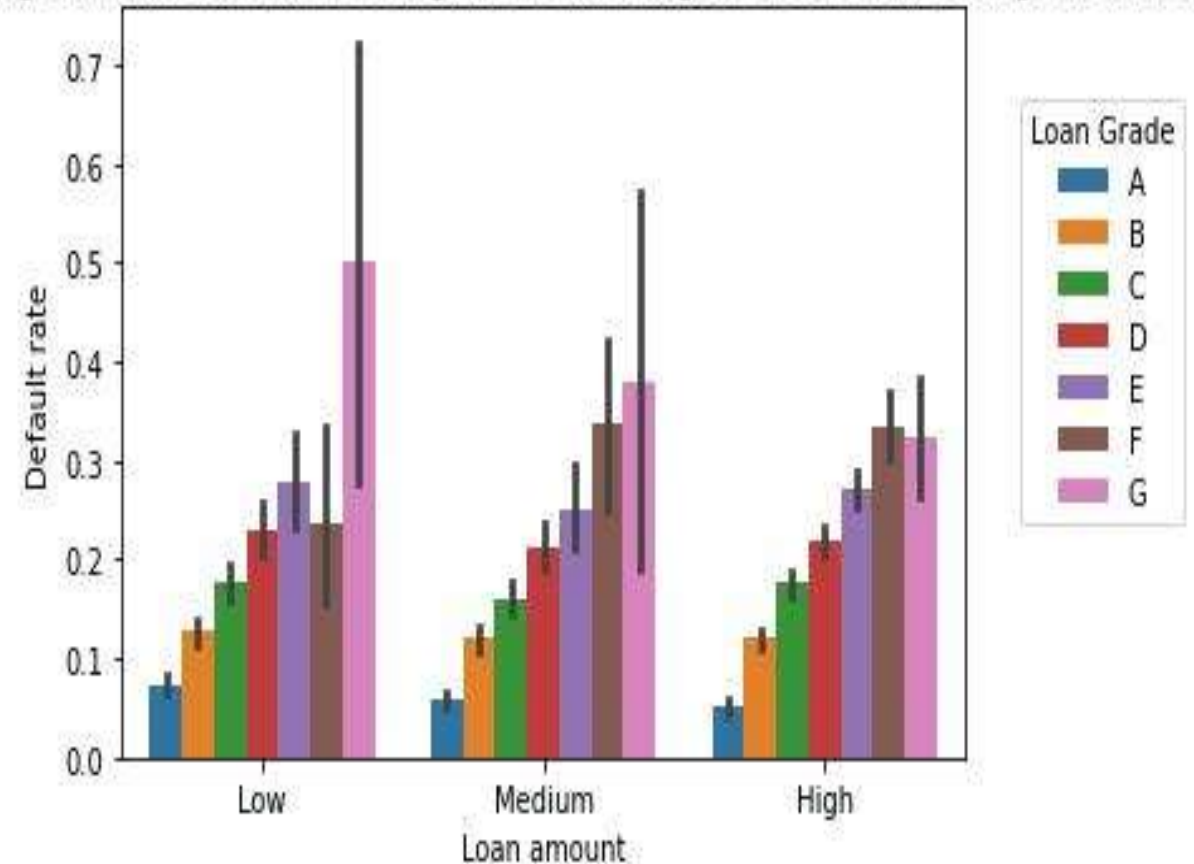
Within a grade, low risk subgrade should be preferred. For example, moving from D4 to D1 reduce default rate by 5%.



Recommendation 3

High loan amounts (more than 35k) in risky grades should be strictly avoided as they have one of the highest rate of default. For example, high loan amounts to grade F result in default rate of more than 30%.

Graph is showing Loan Amount bin & Loan grade is affecting the Loan status using bivariate analysis

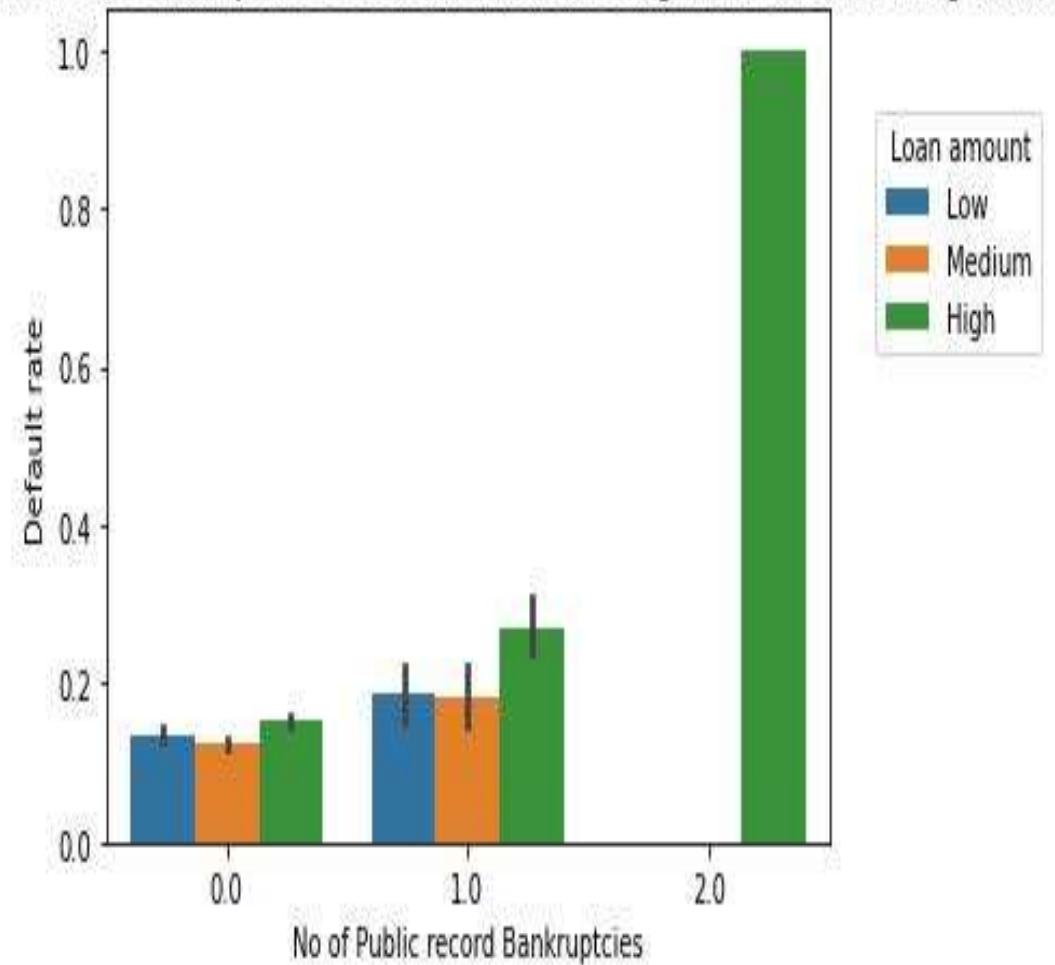


Recommendation 4

High loan amounts (>35k) should preferably not be given to people with multiple public bankruptcies as this combination leads to one of the highest default rates.

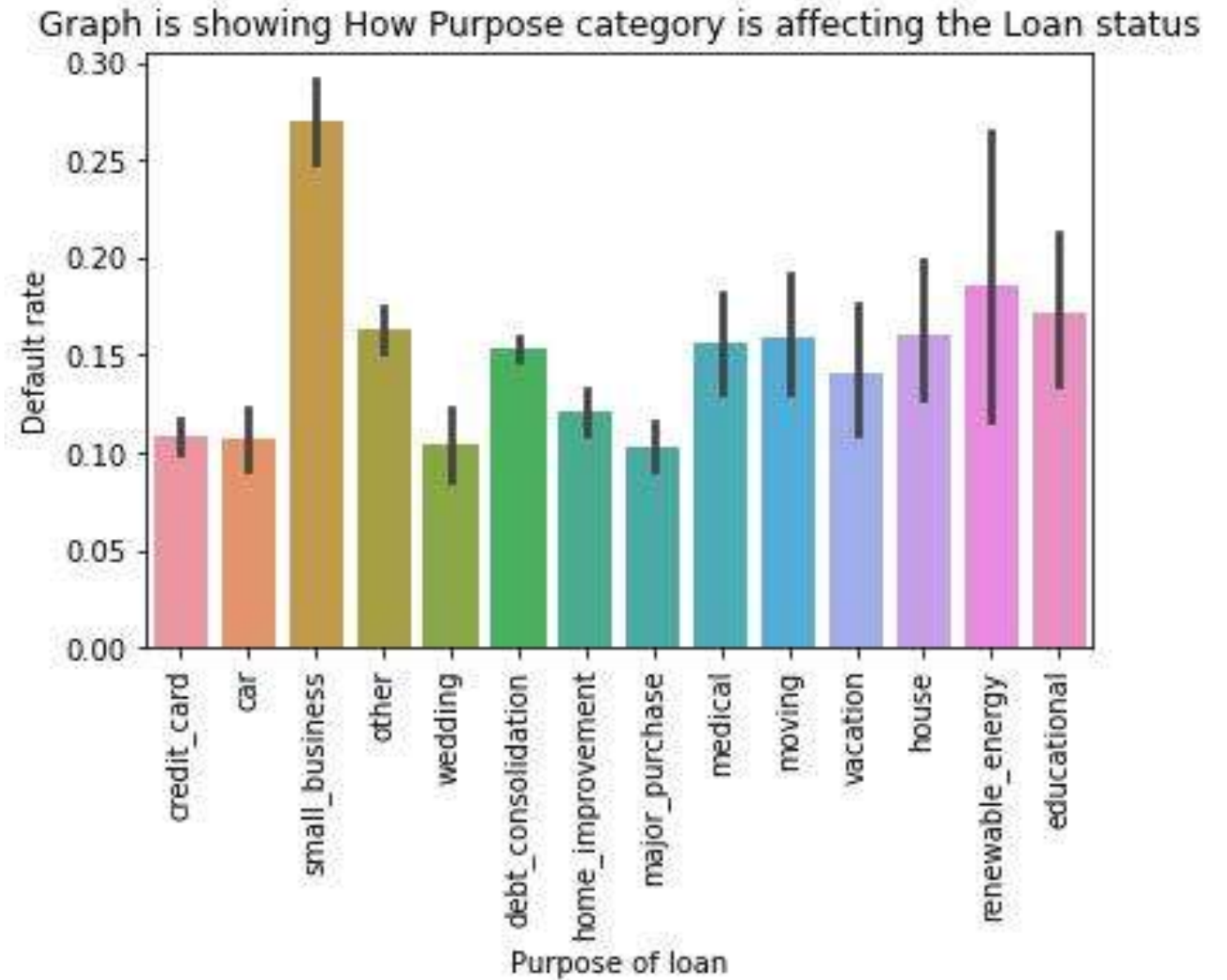
For example, high loan amounts to people with one public bankruptcy gave close to 30% default rate while all those with two public bankruptcies defaulted.

Graph is showing Public record Bankruptcies & Loan amount is affecting the Loan status using bivariate analysis



Recommendation 5

Among purposes, small business loans should be restricted (>25% default rate) and promote low defaulting purposes like credit card and car (close to 10% default rate)



Among purpose, high loan amounts(>35k) should be restricted in small business loans categories default rate is close to 30%.

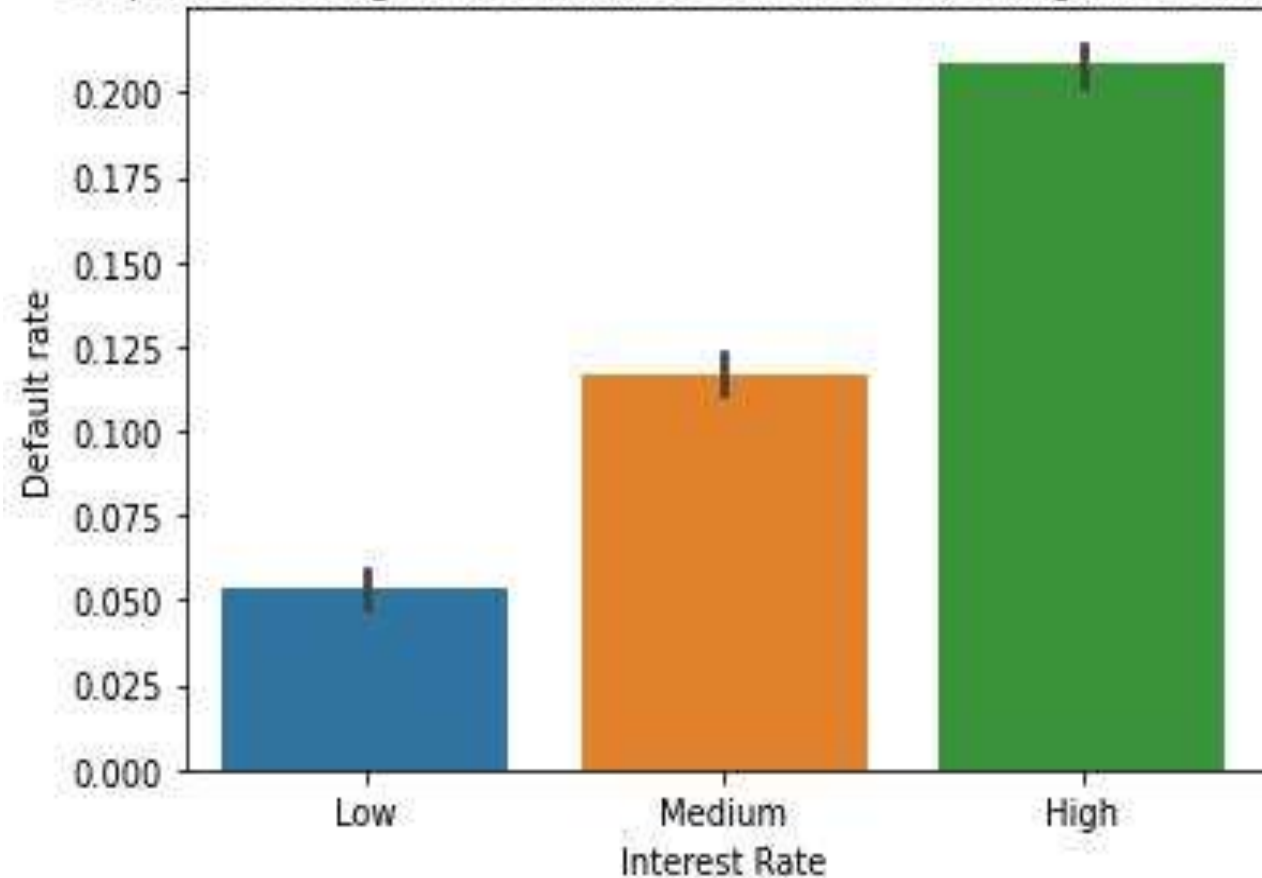
The chart illustrates the default rate for various loan purposes across three loan amount categories. The y-axis represents the Default rate, ranging from 0.00 to 0.35. The x-axis shows the Loan amount categories: Low, Medium, and High. The legend lists 15 loan purposes: credit_card, car, small_business, other, wedding, debt_consolidation, home_improvement, major_purchase, medical, moving, vacation, house, renewable_energy, and educational. Each bar represents the default rate for a specific purpose and loan amount, with error bars indicating variability.

Recommendation 7

Loans at higher interest rate have higher chance of defaulting. Interest rate till 12% is acceptable but anything above 12% should be restricted as it results in a default rate of 20%.

But this can reduce profits from interest receipts hence as a tradeoff medium interest rate of 8-12% can be suggested which has a considerably lower default rate.

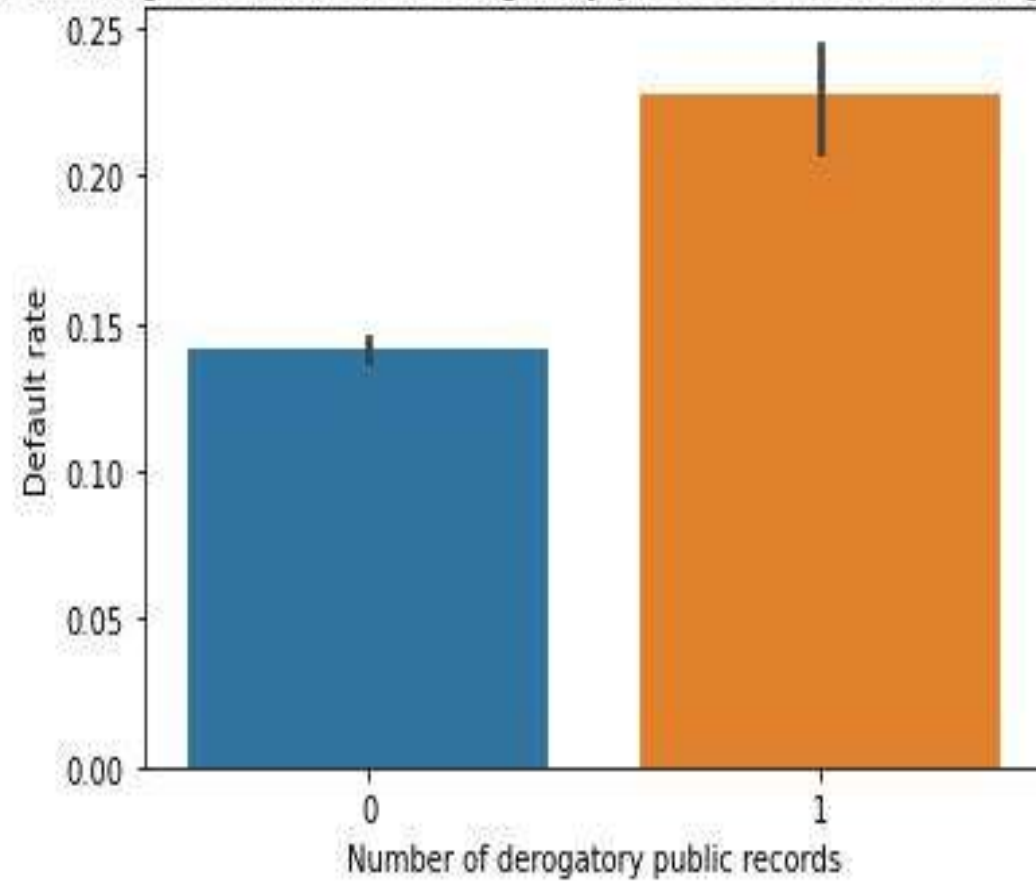
Graph is showing How Loan Interest rate is affecting the Loan status



Recommendation 8

People with zero derogatory public record should be preferred and those with even one maybe avoided as their default rate is 22%.

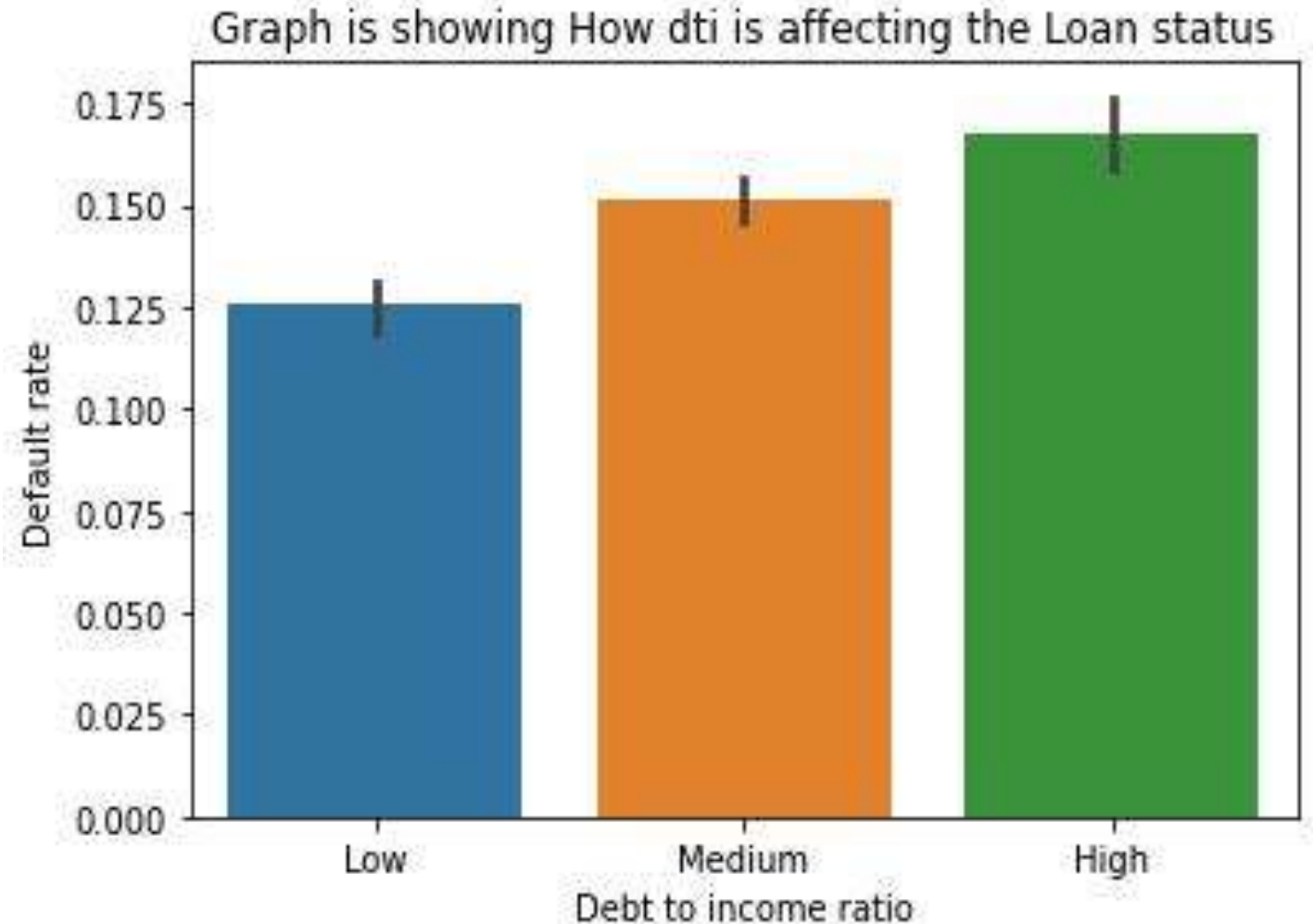
Graph is showing how number of derogatory public records is affecting the Loan status



Recommendation 9

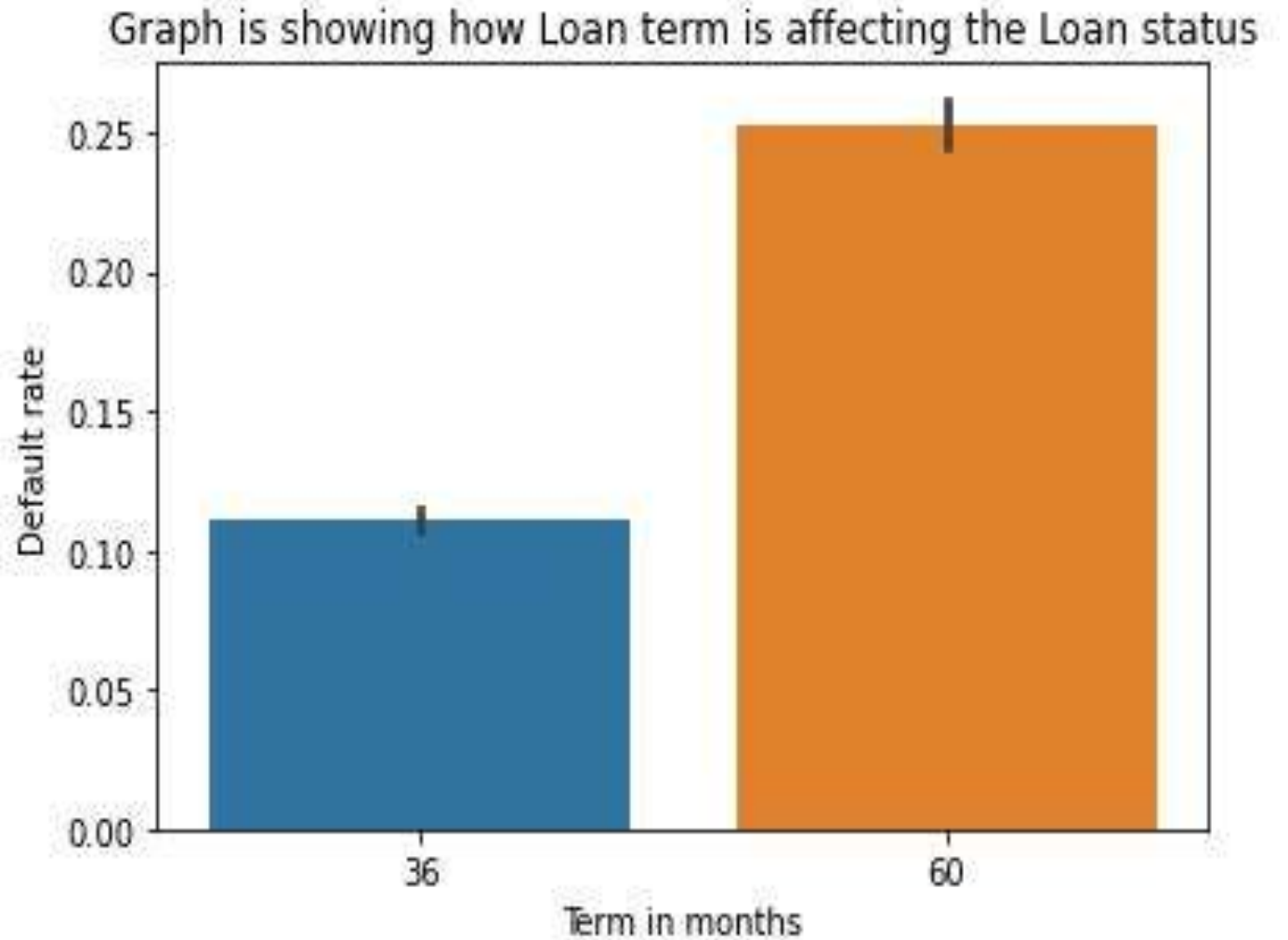
Borrowers with higher debt to income ratio are more likely to default (about 17%)

Hence loans be approved only for people with low debt to income in range less than 10% debt to income ratio.



Recommendation 10

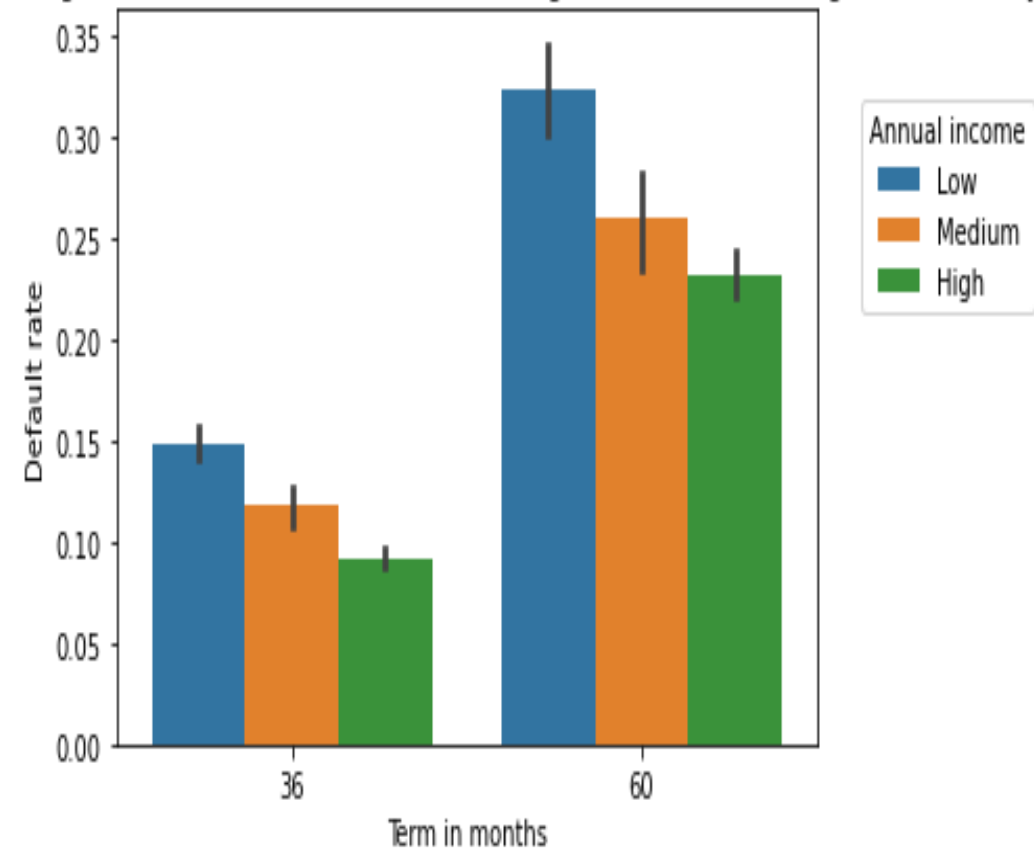
Loans at short term(3 years) should be preferred over longer term. For loans at higher term ,default rate is almost 15% more than those of shorter term.



Recommendation 11

Longer term loans (5 years) should be avoided also for borrowers with lower annual income of less than 40k as they result in default rate of 32%.

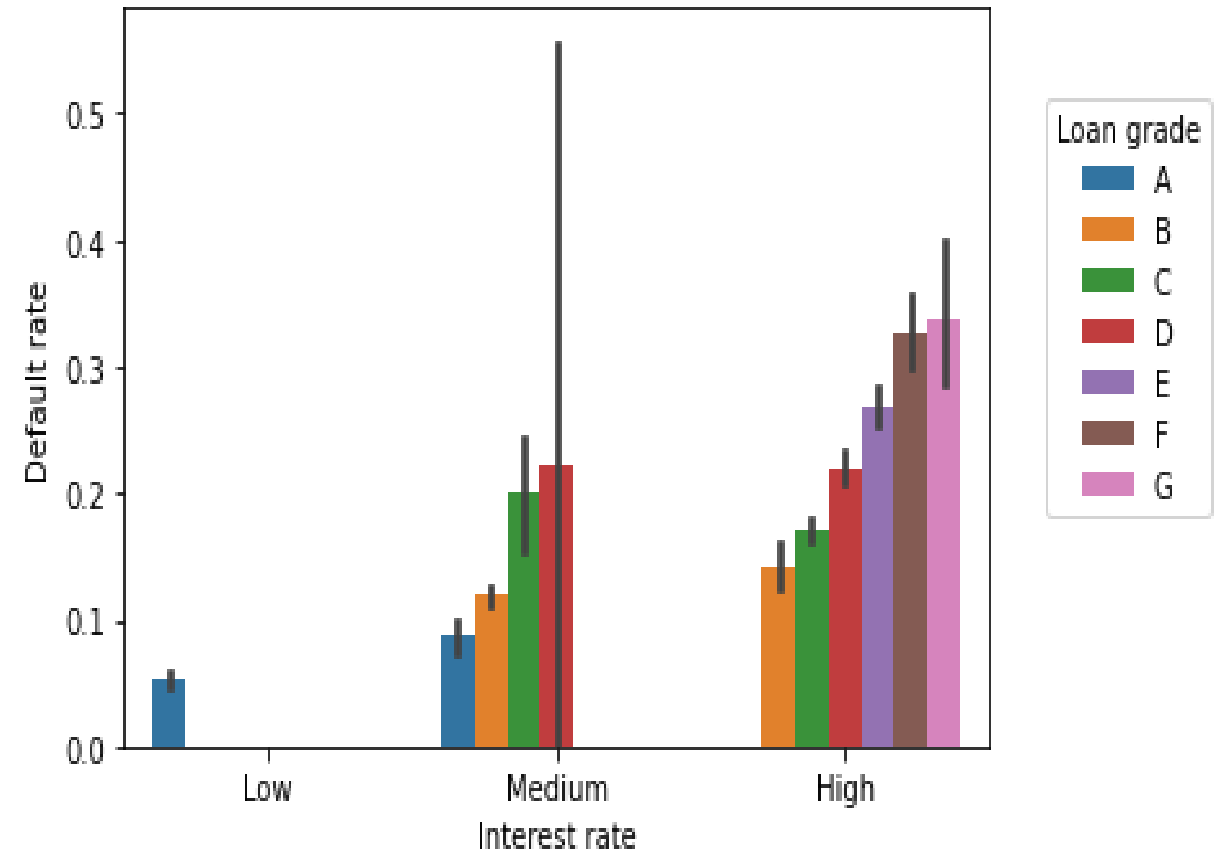
Graph is showing Term & Annual income bin is affecting the Loan status using bivariate analysis



Recommendation 12

Lower risk grade have been given low or medium interest rate (<12%) which leads to less than 10% default. Hence this practice should be continued.

Graph is showing Interest rate bin & Grade is affecting the Loan status using bivariate analysis

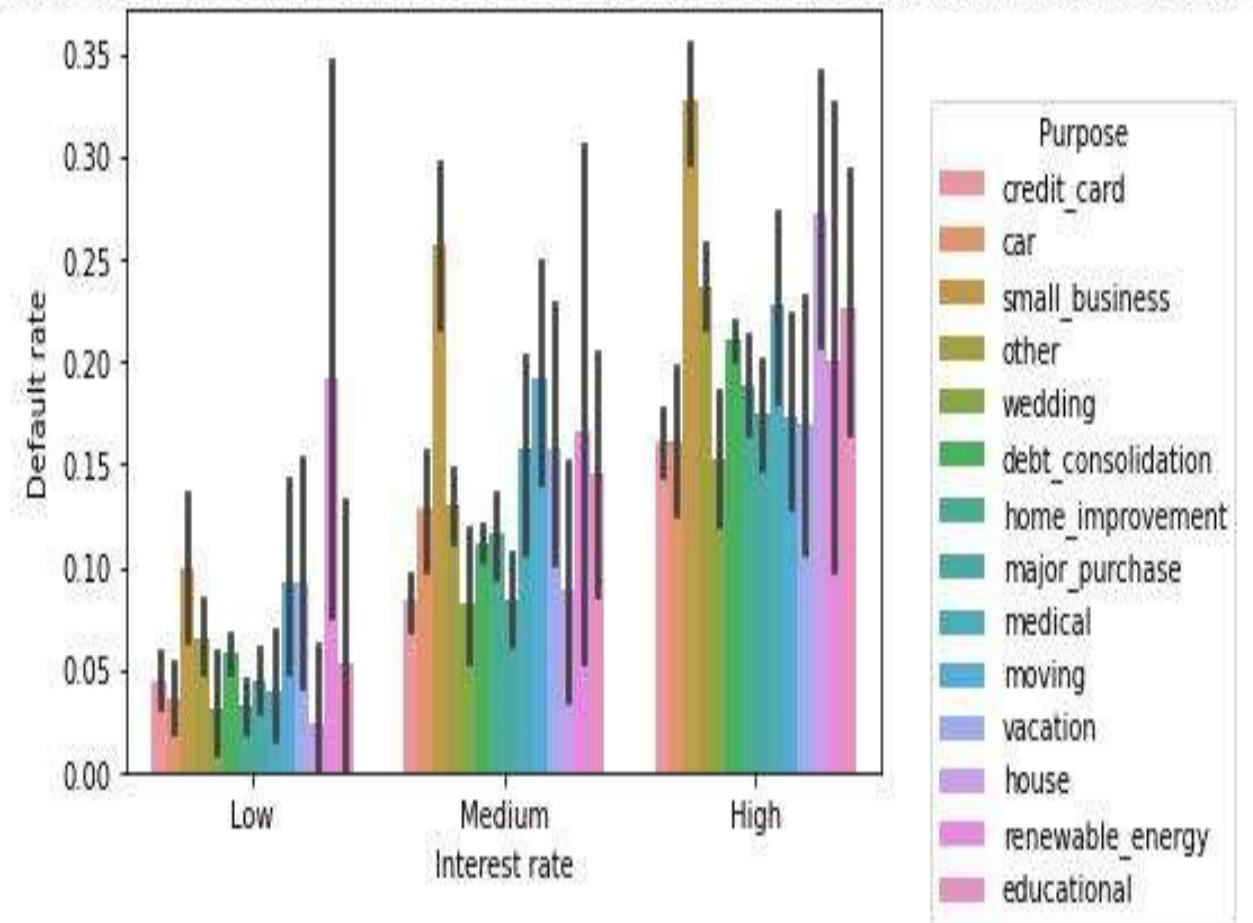


Recommendation 13

Purposes like credit card and wedding can be charged at medium interest rate (8-12 %) can increase business as default rate is less than 10%.

If priority is to reduce default rate over higher interest payment then we can charge low interest rate (<8%) as default rate is less than 5% for these categories at low interest rate.

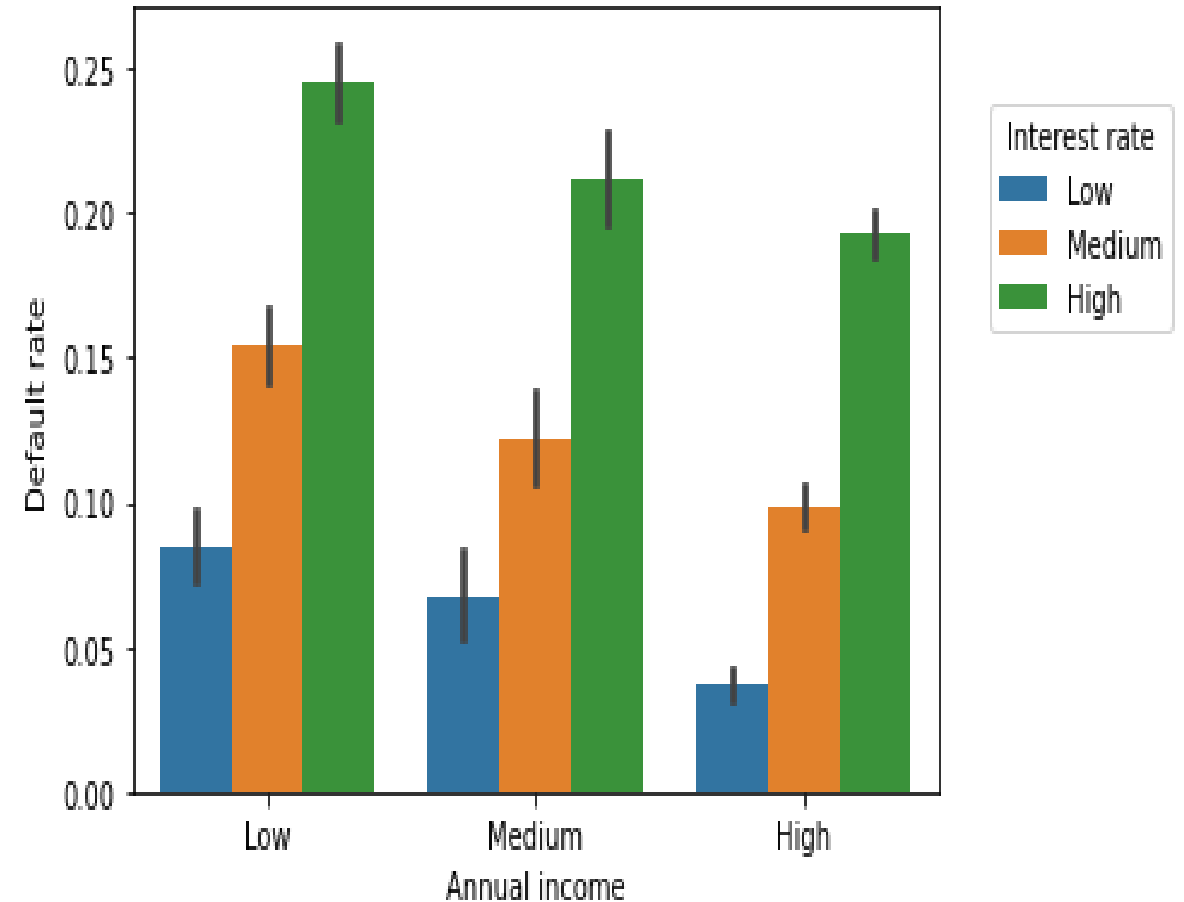
Graph is showing How Loan purpose & Loan Interest Rate is affecting the Loan status using bivariate analysis



Recommendation 14

Borrowers with high annual income (>5 lakh) can be charged at lower interest rate (<8%) as default rate is close to 3% only.

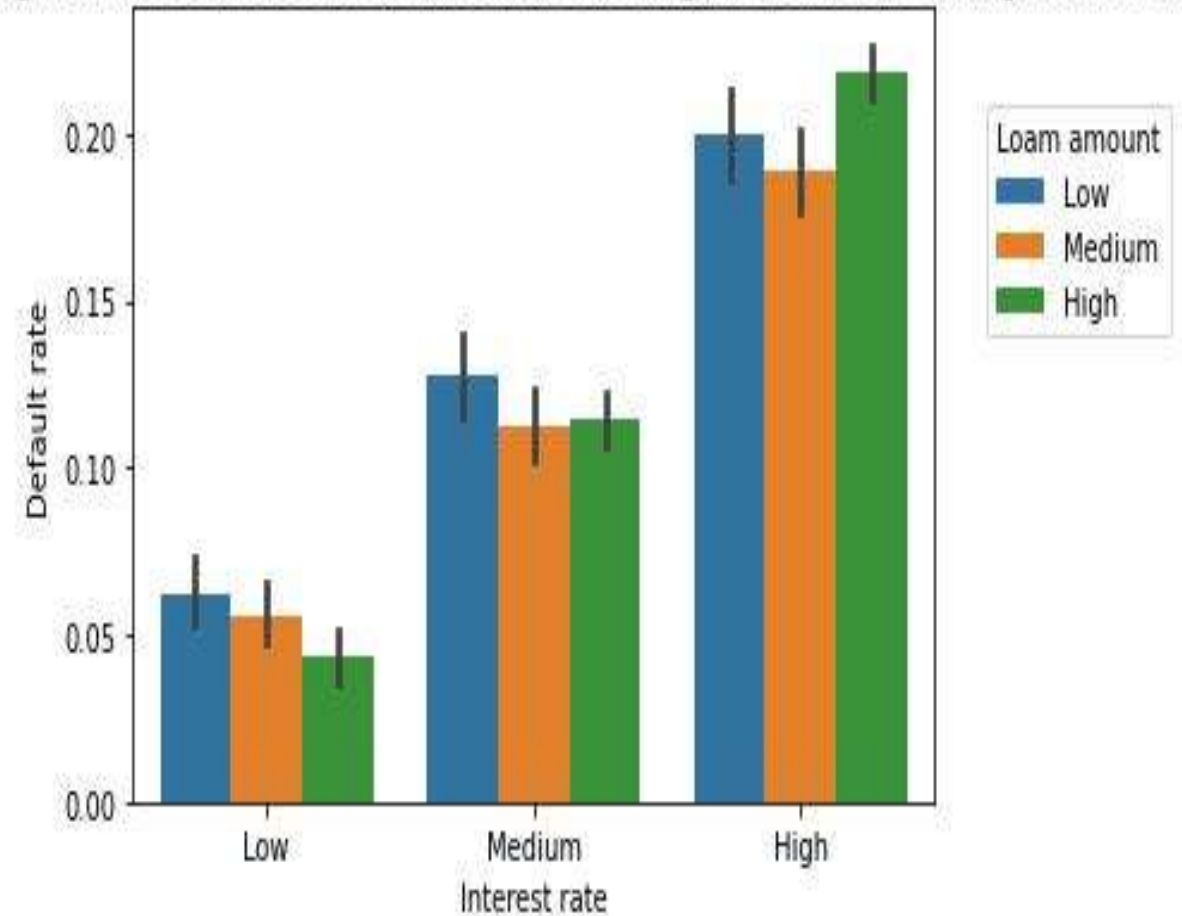
Graph is showing Annual income bin & Interest rate is affecting the Loan status using bivariate analysis



Recommendation 15

To reduce default rate high loan amounts (>35k) should be given at low interest rate (<8%) as default rate is low and less than 5%.

Graph is showing how Interest Rate & Loan Amount is affecting the Loan status using bivariate analysis



Thank You