Exploratory da
analysis

SUBMITTED BY :

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GRAMENER CASE STUDY

Introduction :

Solving this case study will give you an idea about how real business problems are solved using EDA. In this case study, apart from applying the techniques you have learnt in EDA, you will also develop a basic understanding of risk analytics in banking and financial services and understand how data is used to minimise the risk of losing money while lending to customers.

Business Understanding :

You work for a consumer finance company which specialises in lending various types of loans to urban customers. When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile. Two types of risks are associated with the bank's decision:

- If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company
- If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company

Problem Statement :

To understand how consumer attributes and loan attributes influence the tendency of default.

Problem Summary

When a person applies for a loan, there are two types of decisions that could be taken by the company:

- Loan accepted: If the company approves the loan, there are 3 possible scenarios described below:

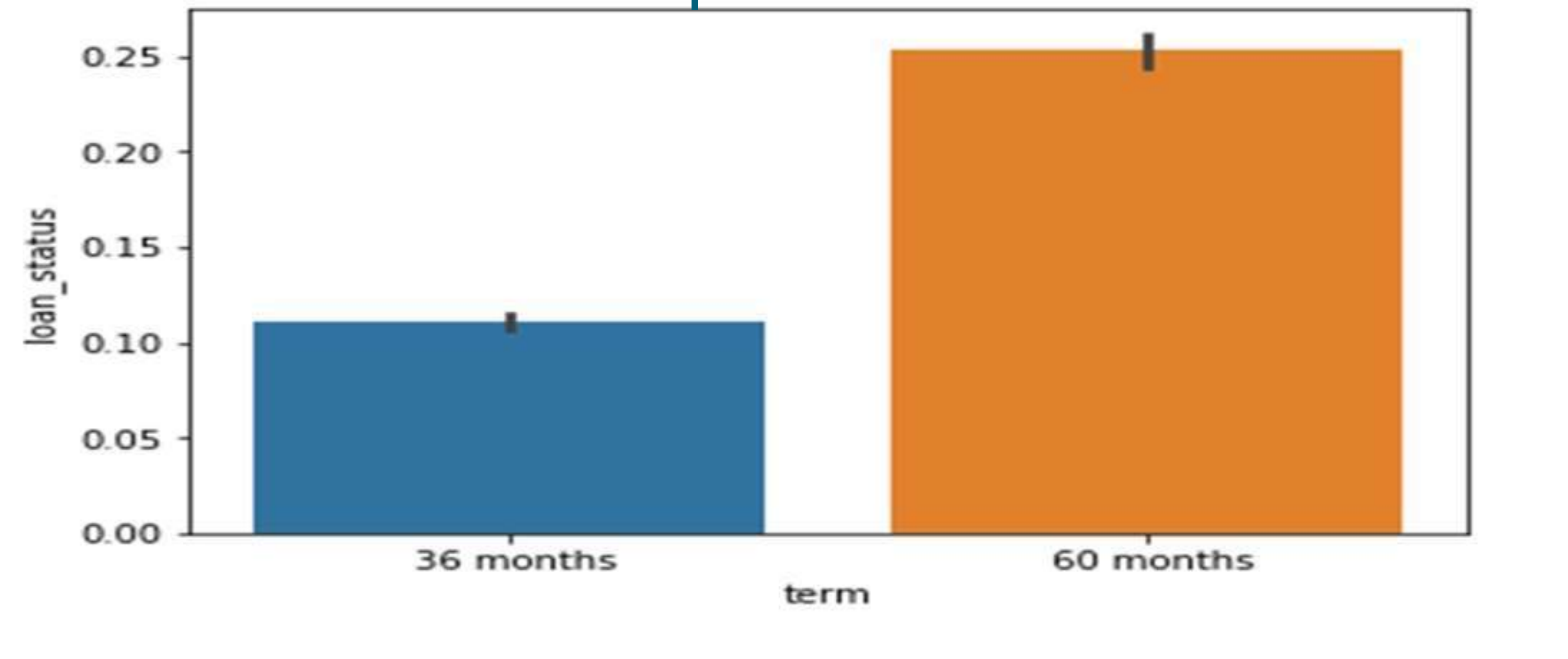
  Fully paid: Applicant has fully paid the loan (the principal and the interest rate).

  Current: Applicant is in the process of paying the instalments, i.e. the tenure of the loan is not yet completed. These candidates are not labelled as 'defaulted'.

  Charged-off: Applicant has not paid the instalments in due time for a long period of time, i.e. he/she has defaulted on the loan.

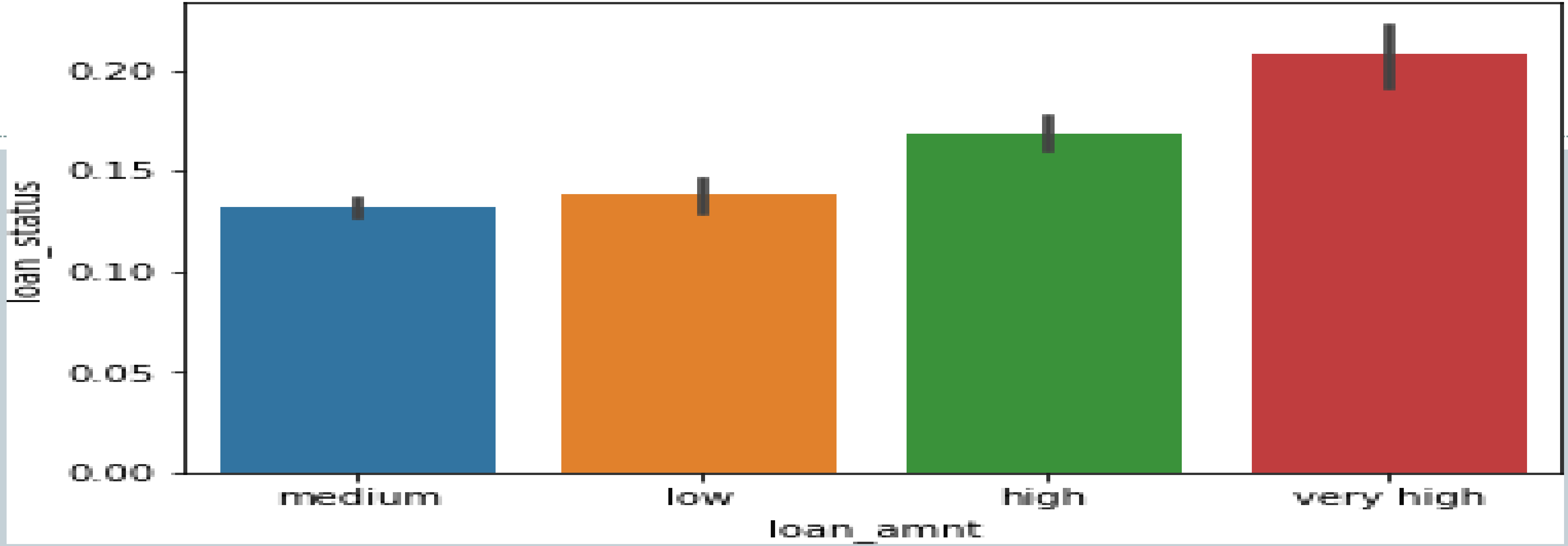
- Loan rejected: The company had rejected the loan (because the candidate does not meet their requirements etc.). Since the loan was rejected, there is no transactional history of those applicants with the company and so this data is not available with the company (and thus in this dataset).

Term vs Default Relationship



Observation: Customers who opt for a shorter loan term, specifically a 36-month tenure, tend to exhibit a more favorable payment record compared to those who choose longer loan periods.

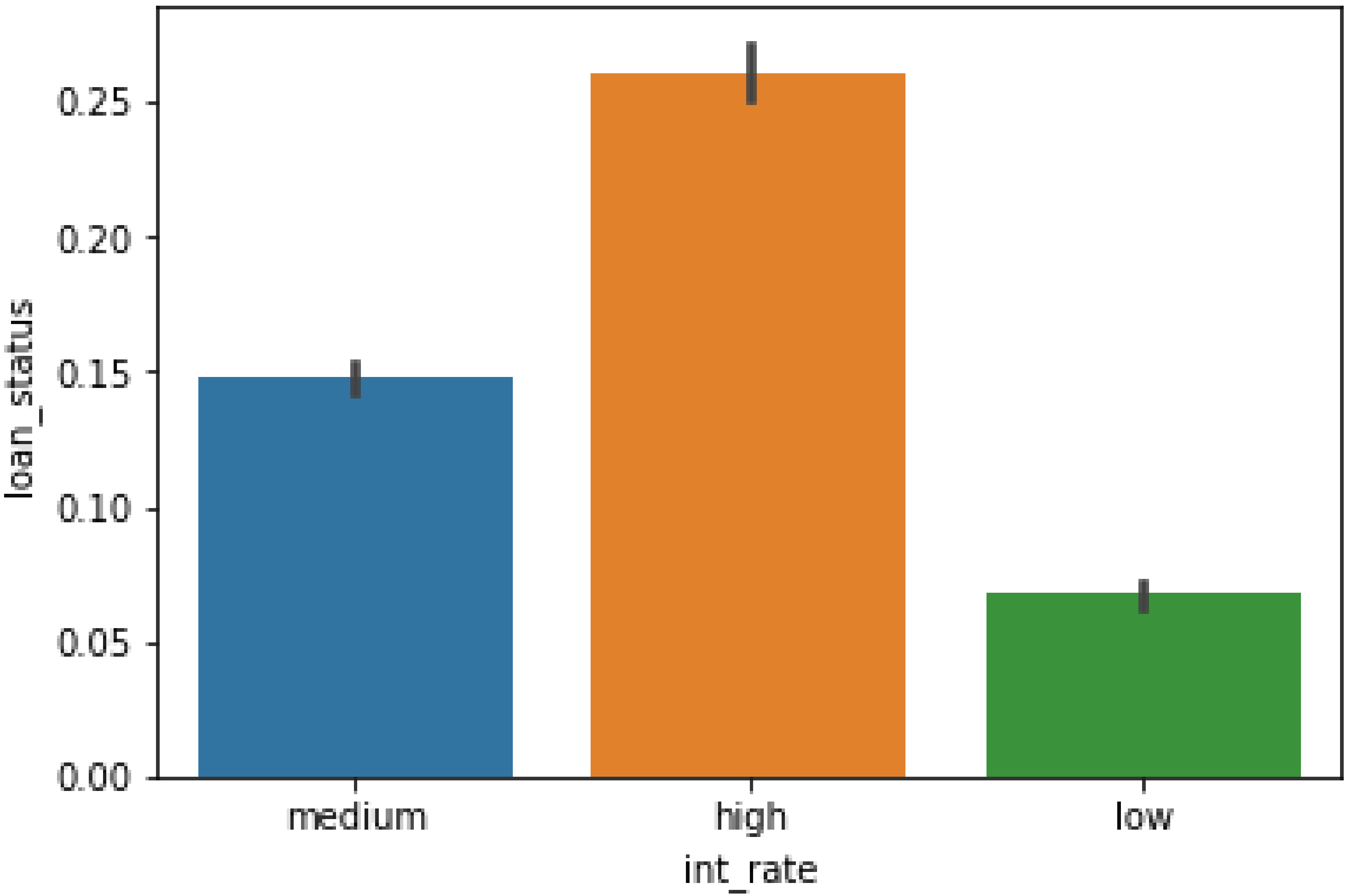
Default Rate Vs Loan Amount



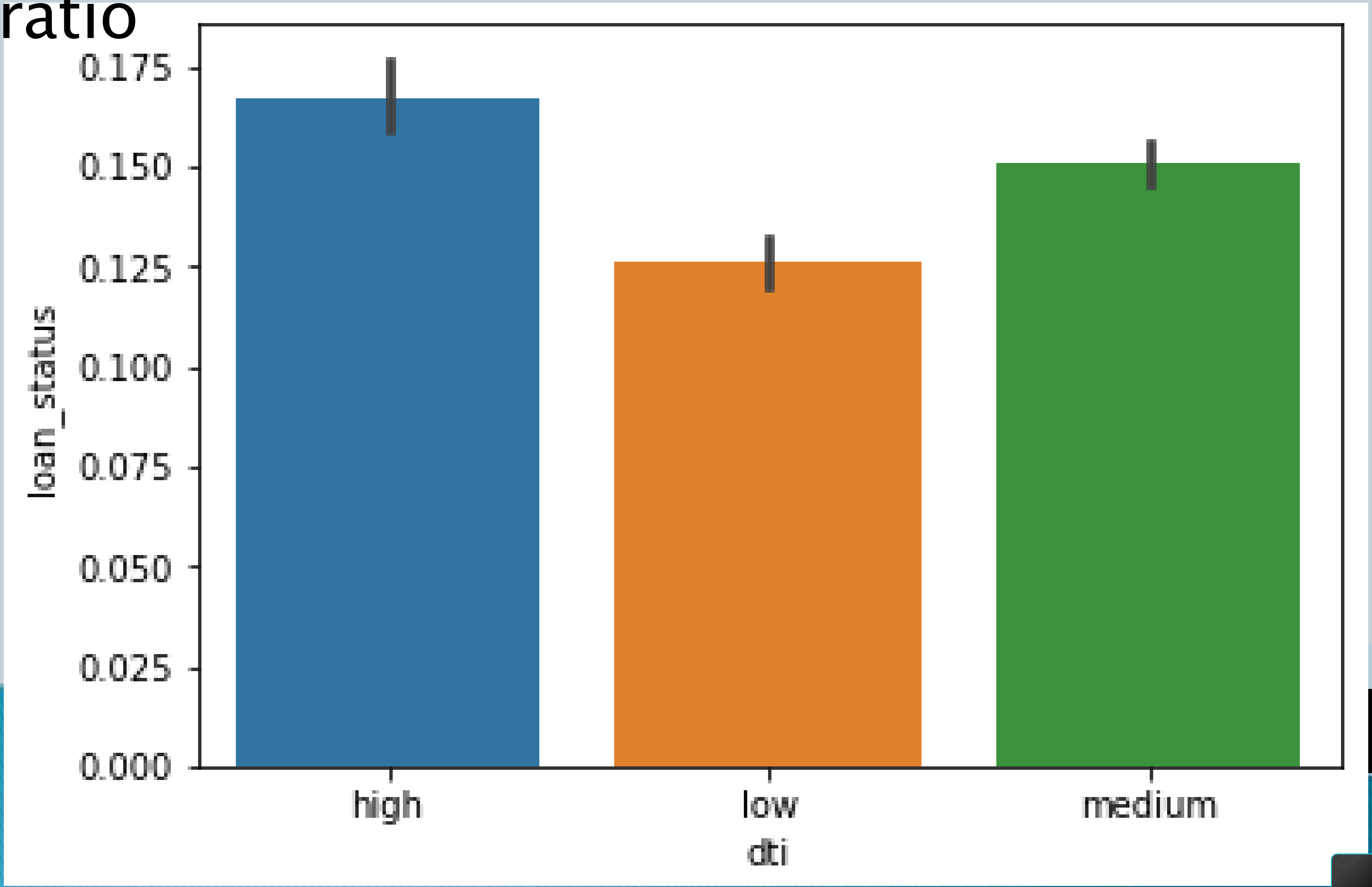
FINDING: THERE IS AN OBSERVABLE TREND WHERE A HIGHER LOAN AMOUNT

Default Rate vs Interest Rate

<u>Finding</u> :
Higher interest rates tend to give more defaulters

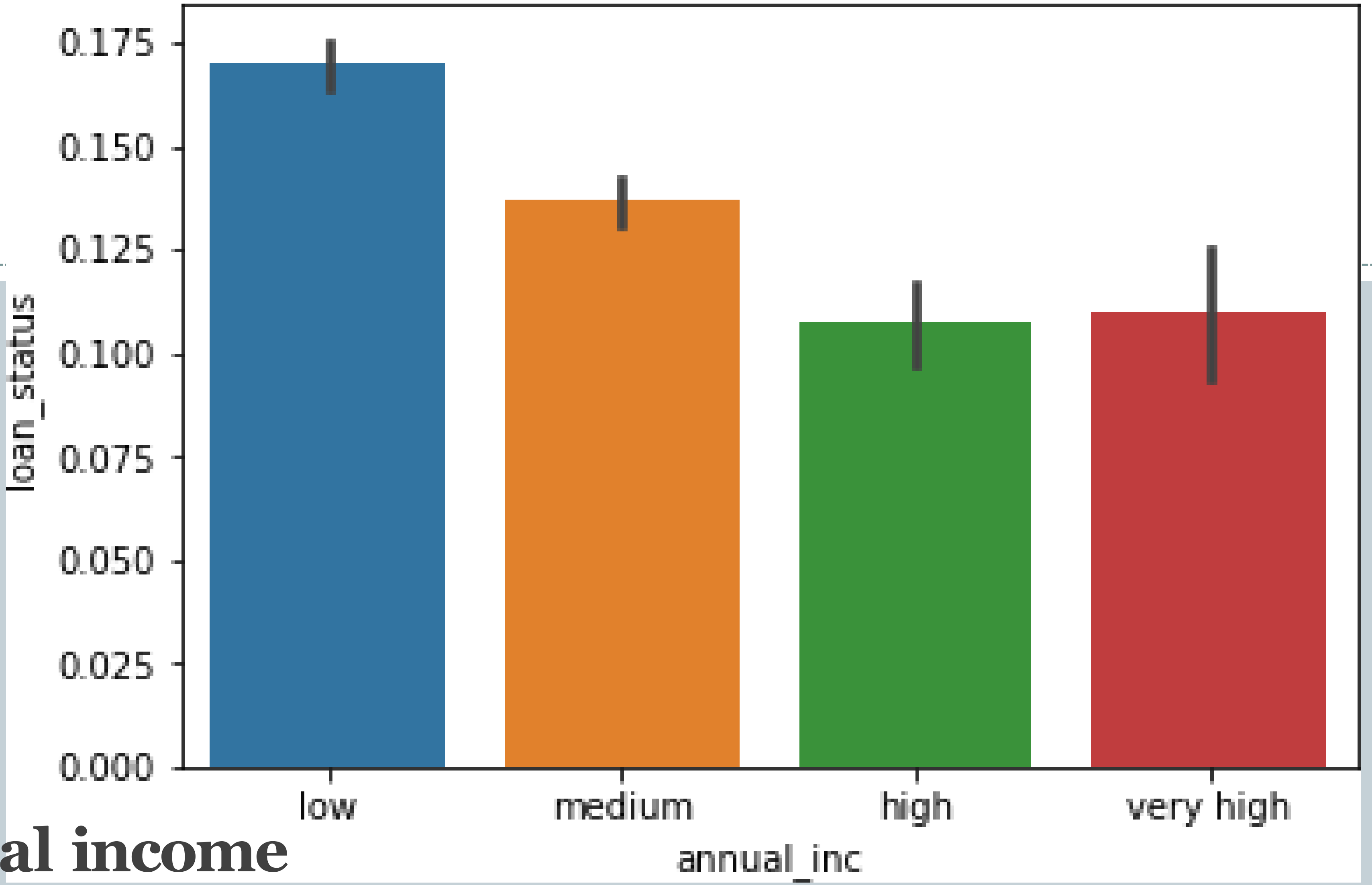


Defaulter rate Vs Depth to income ratio



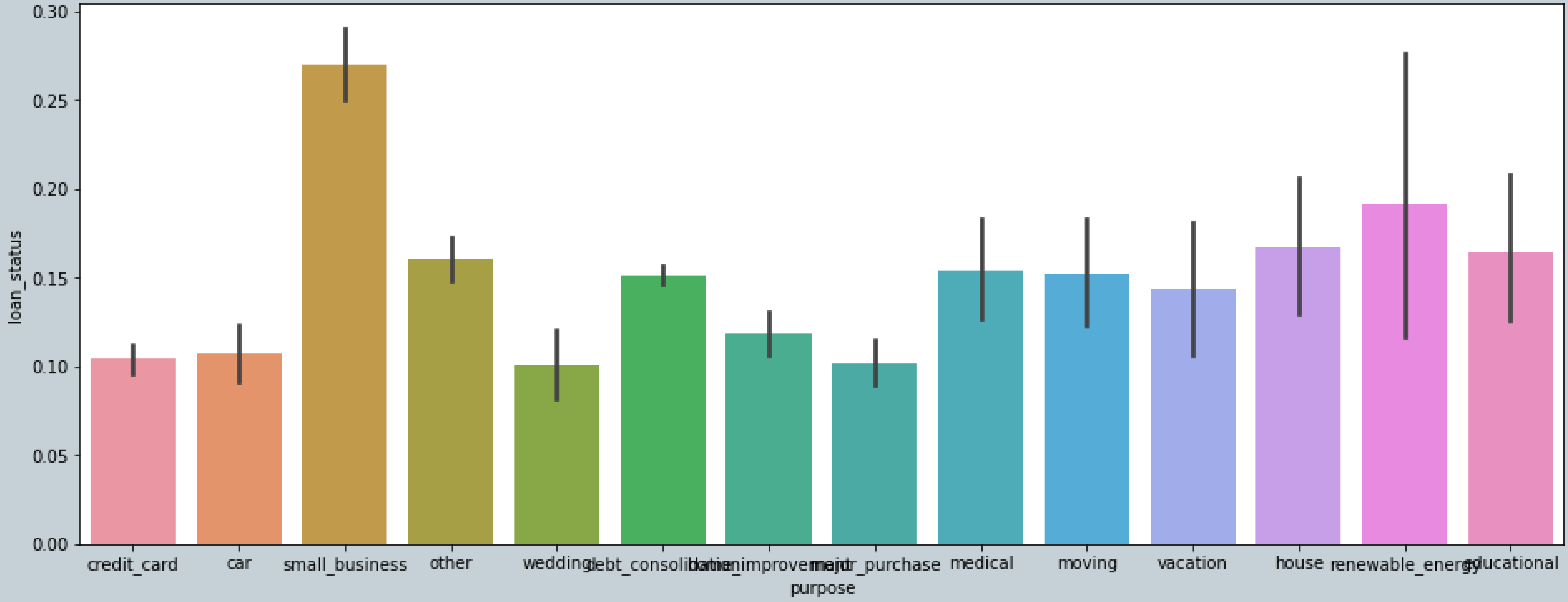
Finding : **high debt to income ratio translates into higher default rates**

Default rate vs Annual Income



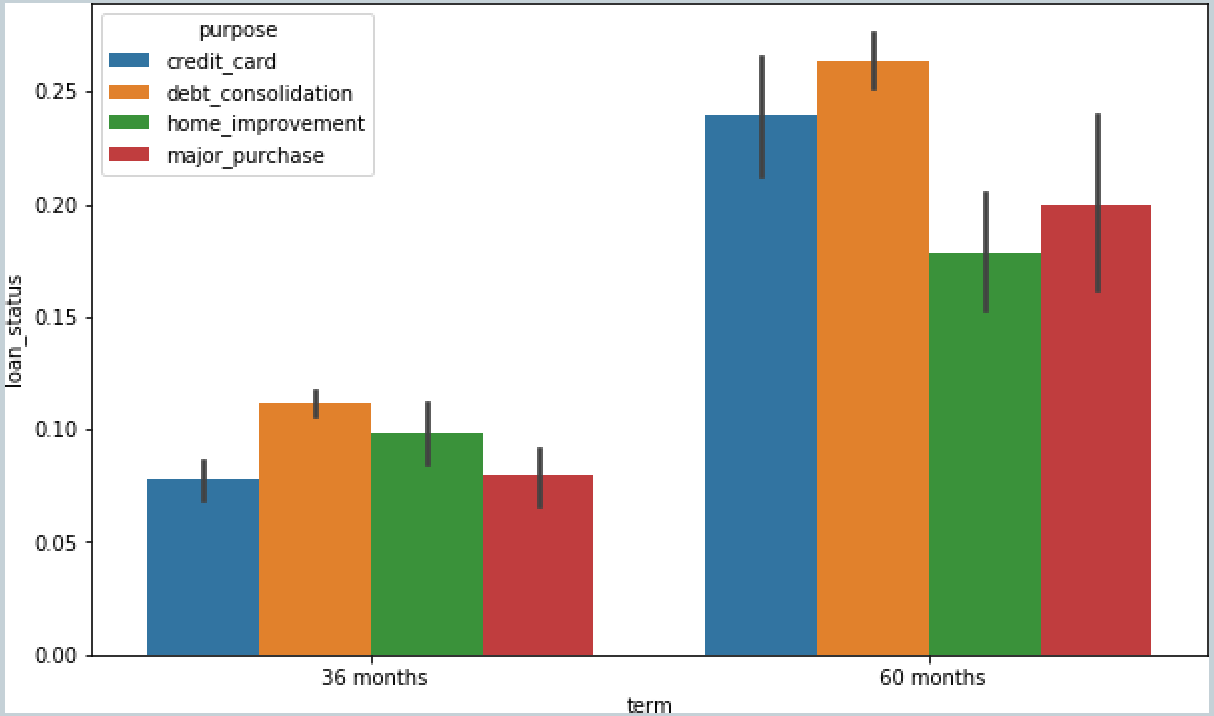
Finding:- Low annual income tends to more default rate.

Default Rate vs Purpose of loan



Finding:-small business loans default the most. The top 4 types of loans based on purpose: consolidation, credit card, home improvement and major purchase.

Comparing Defaulter Rate vs Term with purpose as segmentation variable



<u>Finding</u>:-In general, debt consolidation loans have the highest default rates.

Conclusion

- The organization could consider extending the loan term beyond 36 months, up to a maximum of 60 months, to enhance profitability. However, this strategic decision introduces a potential residual risk of a slight increase in default rates.To mitigate this risk, the organization should implement a structured system of incentives and penalties based on the likelihood of repayment, differentiating between customers with varying levels of default risk..
- Recommendation:The organization should adopt a cautious approach when providing loans for debt consolidation. If such loans are offered, it's advisable to request collateral and apply higher interest rates compared to loans for other purposes..