

Abstract geometric lines in the top left corner, consisting of several overlapping, irregular polygons and lines in a light beige color, creating a modern, minimalist design.

LOAN RISK ANALYSIS

Bala Sai Ram Ankem

BACKGROUND

This company is the largest online marketplace facilitating personal loans, and the financing of medical procedures. Borrowers can easily access lower interest rate loans through a fast online interface.

BUSINESS UNDERSTANDING

When a company receives a loan application, it has to decide whether to approve or reject it 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., they are likely to default, then approving the loan may lead to financial loss for the company.

The company wants to understand the driving factors (or driver variables) behind loan default, i.e., the variables which are strong indicators of default. The company can utilise this knowledge for its portfolio and risk assessment.

DATA UNDERSTANDING

TYPES OF VARIABLES

- Customer (applicant) demographic
- Loan related information and characteristics
- Customer behavior (if loan is granted)

Customer demographic
Employment Length
Employment title
Annual income
Zip code
Description

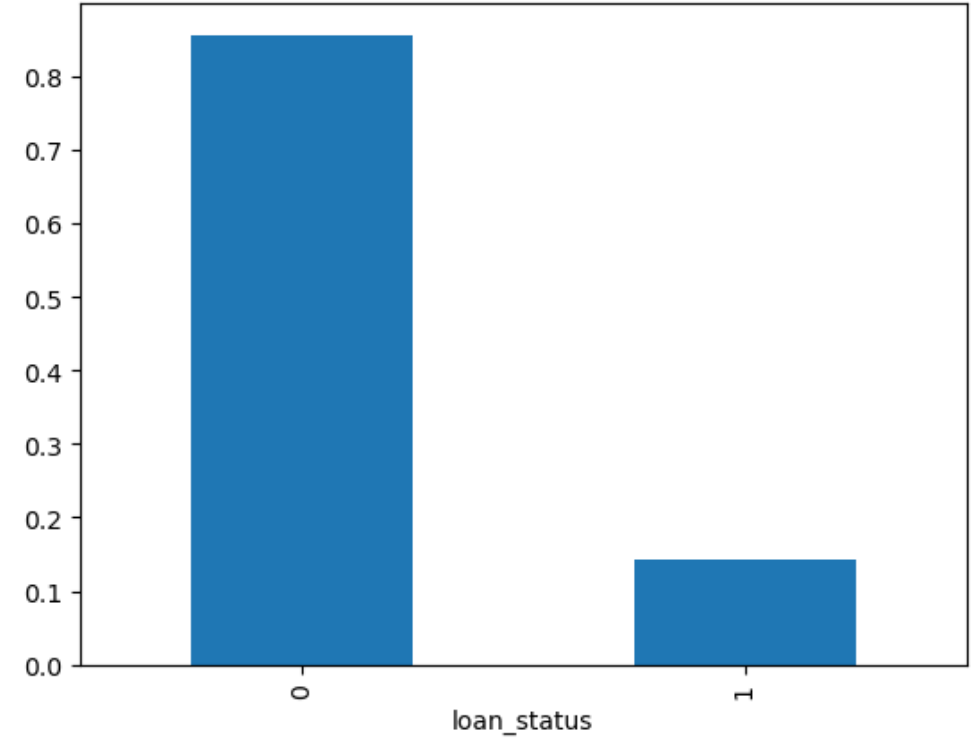
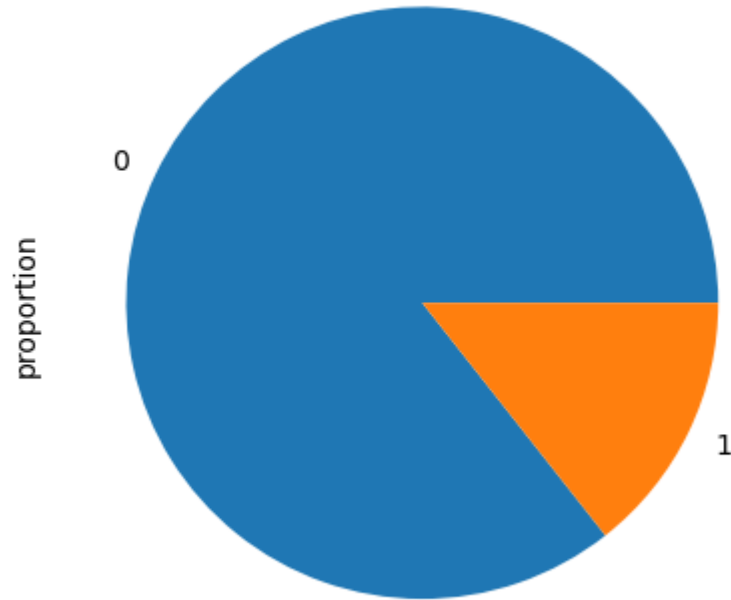
Loan information & Characteristics
Loan amount
Funded amount
Interest rate
Loan status
Loan grade

Customer behaviour
Delinquency year -2
Earliest credit line
recoveries
Application type
Loan purpose



DATA ANALYSIS

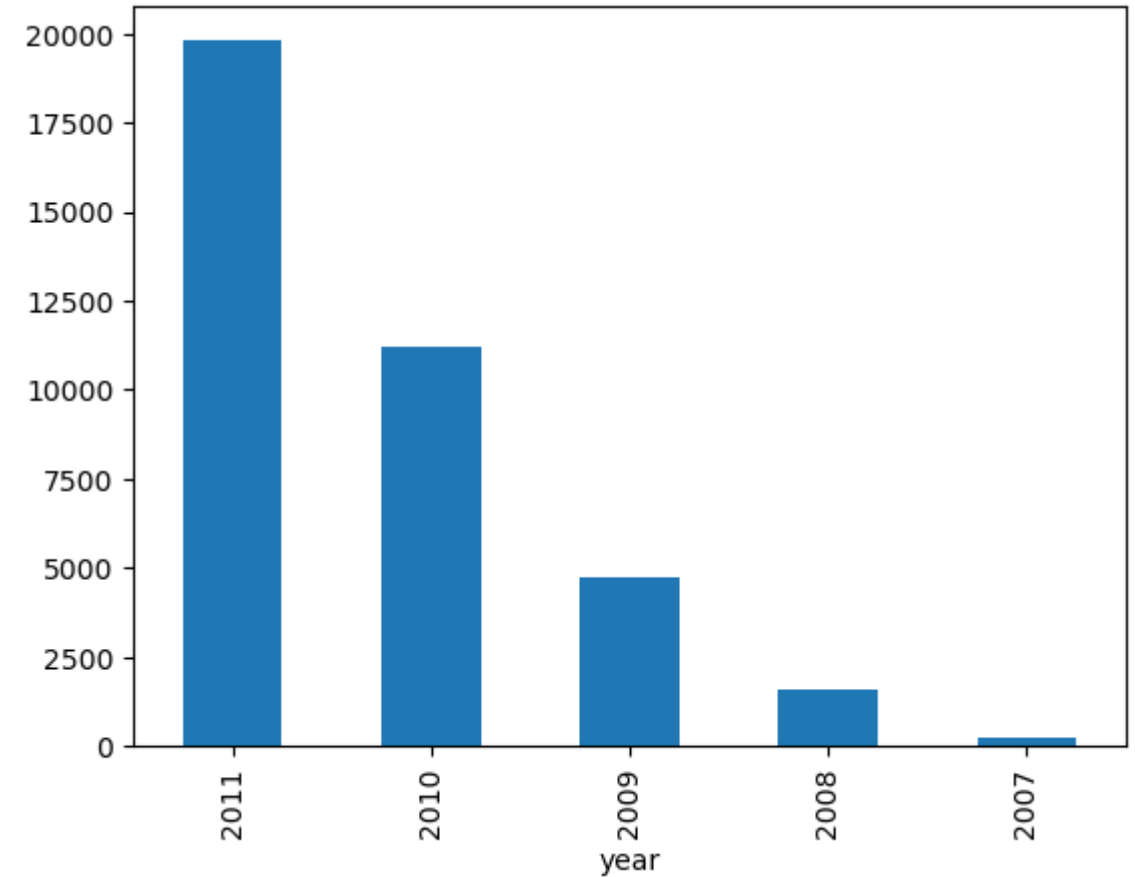
DEFAULT RATE



The overall default rate is 14%

YEAR WISE DISTRIBUTION

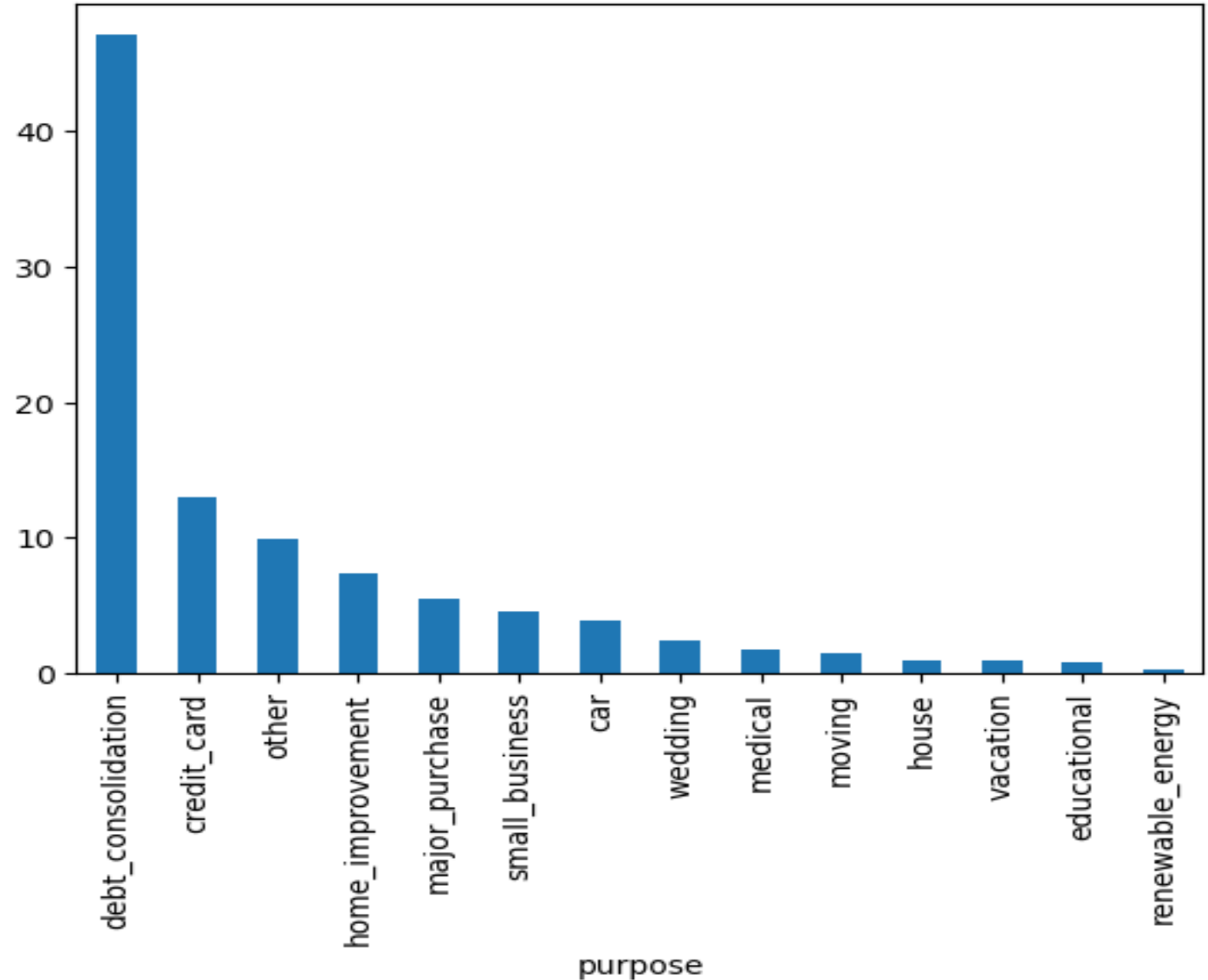
Year	Percent of loans
2007	0.66%
2008	4.16%
2009	12.56%
2010	29.86%
2011	52.75%



The number of loans approved increased from 2007 to 2011

DISTRIBUTION OVER LOAN PURPOSE

- Debt consolidation has the highest number of loans at 47%.
- Followed by:
 - Credit card – 13%
 - Home improvement – 7.5%
 - Major purchase – 5.5%

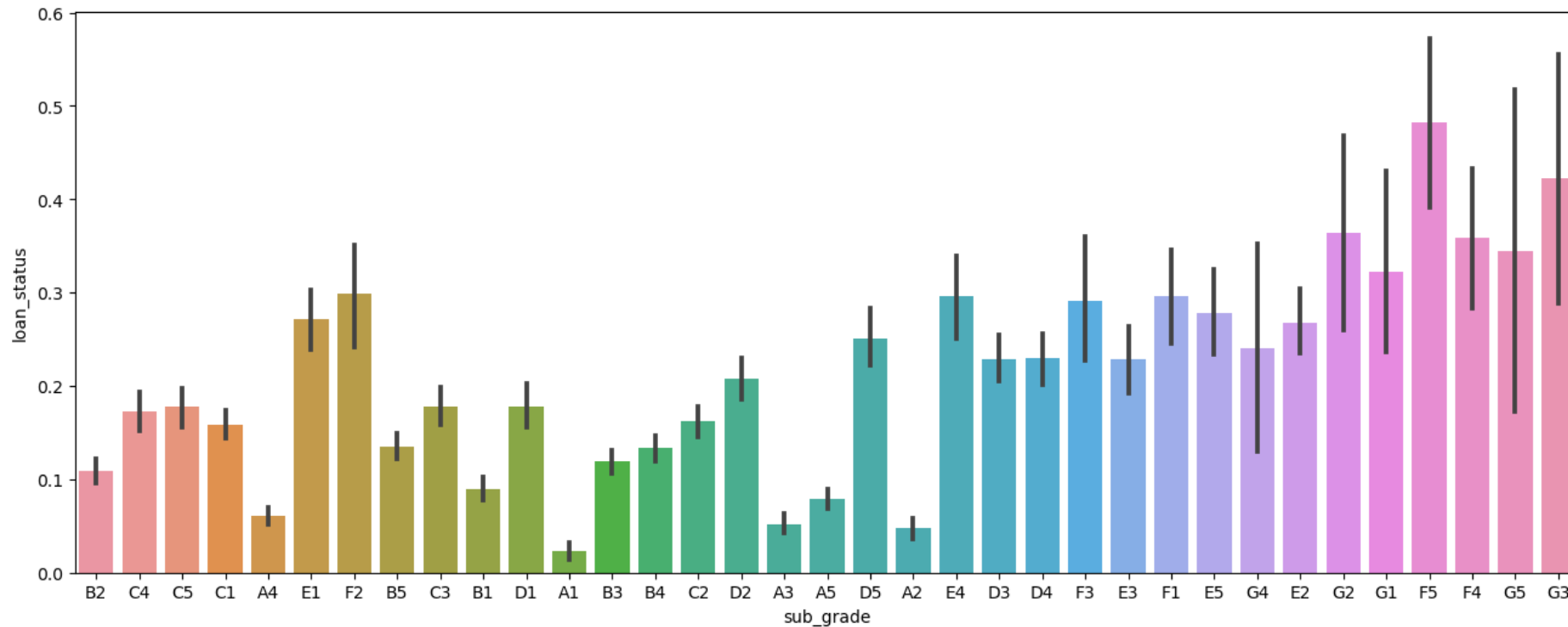
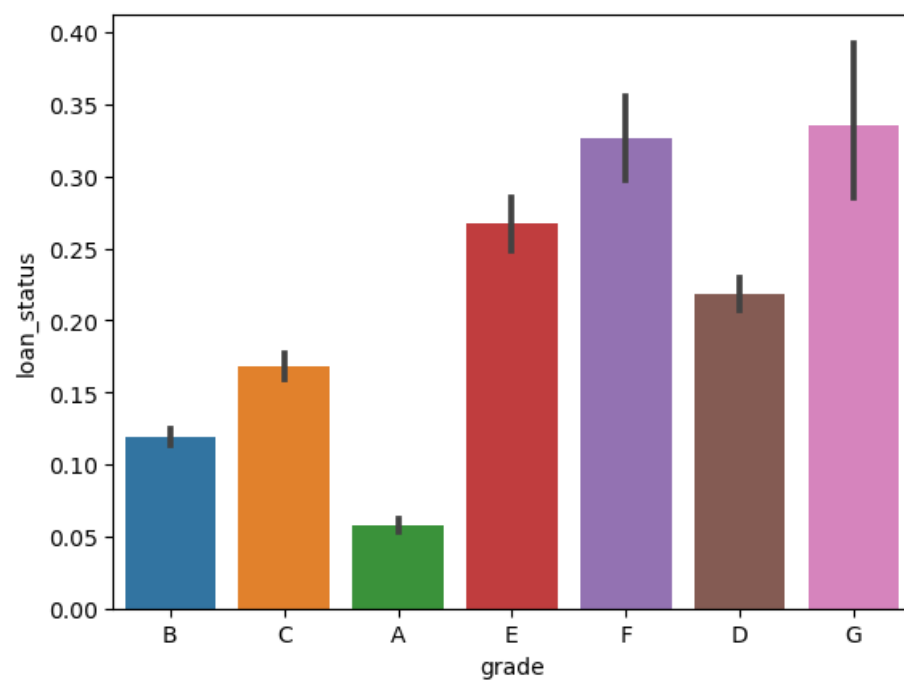




CONTRIBUTING VARIABLES

GRADE / SUB-GRADE

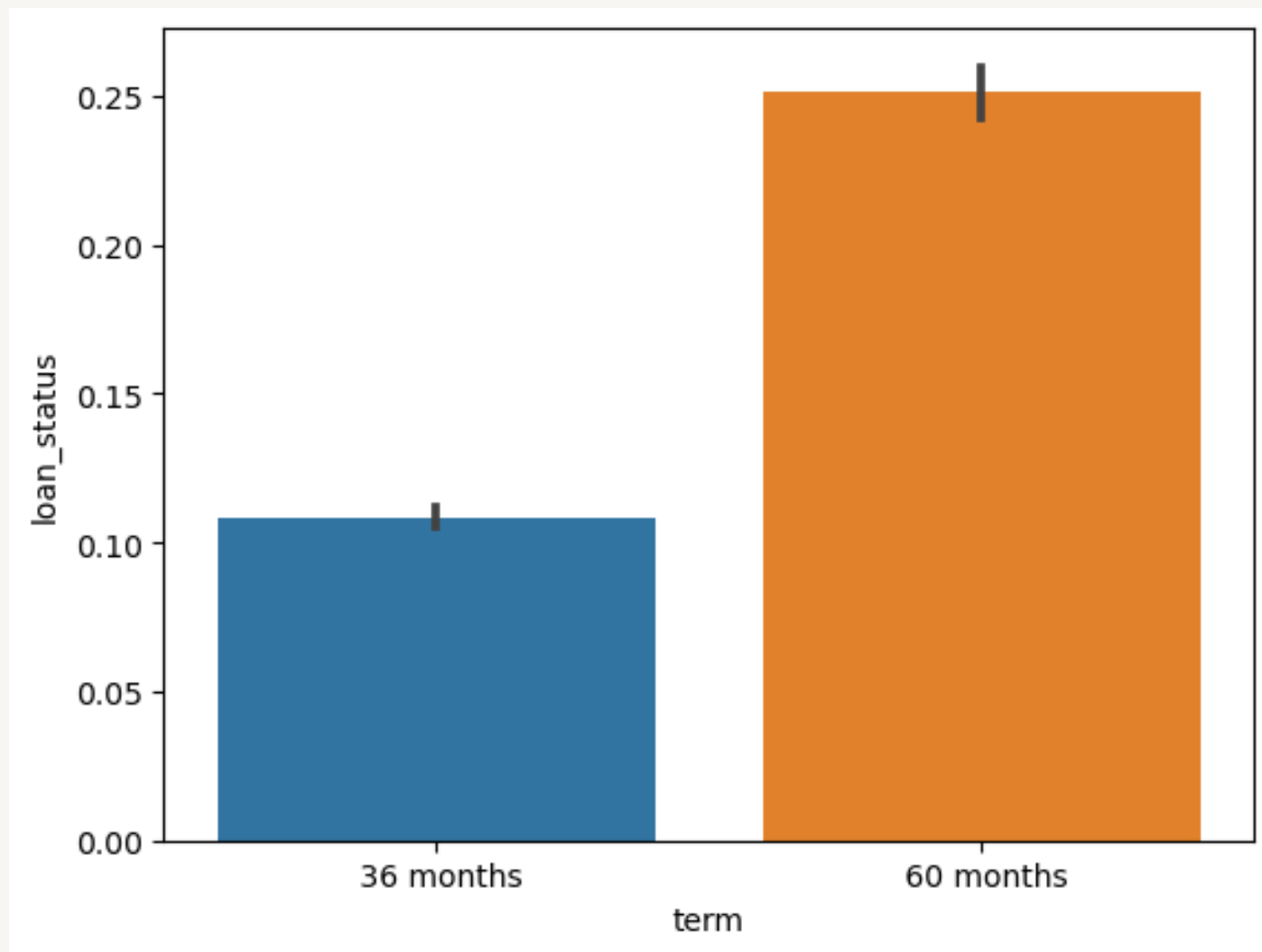
- The default rate increases from grade A to G and follows the same pattern in the sub grades.



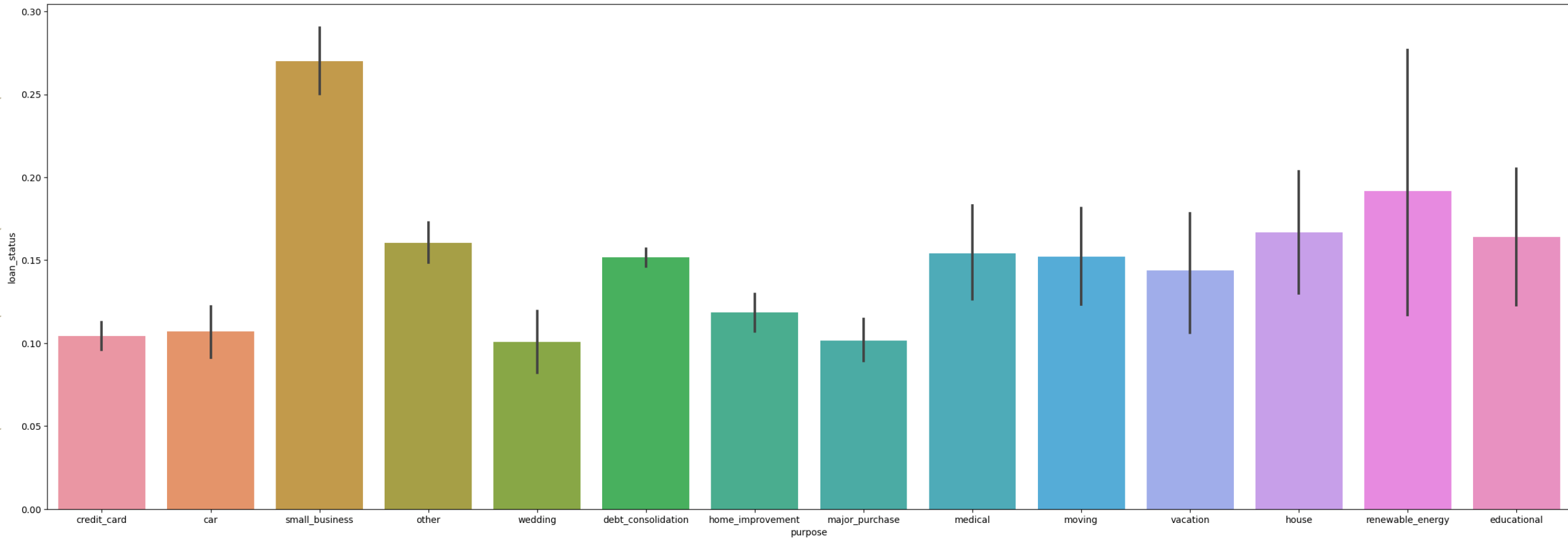
TERM

- The longer term has a higher default rate.

Default rate (60 months) > default rate (36 months)



LOAN PURPOSE

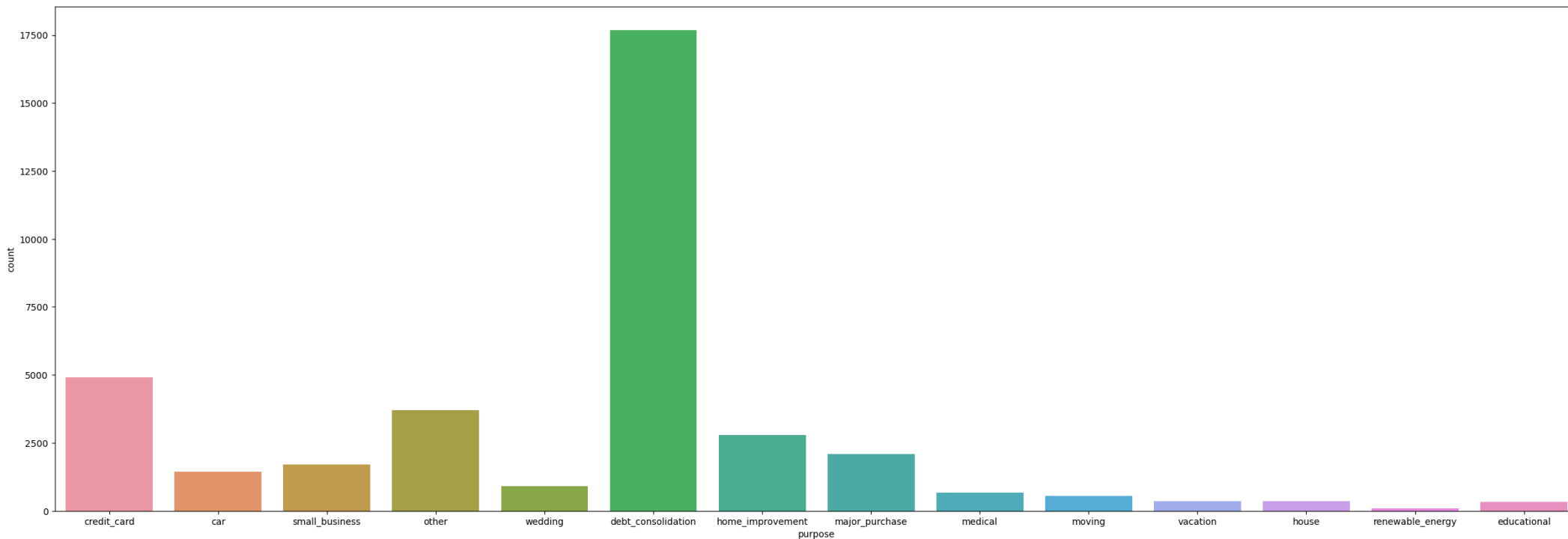
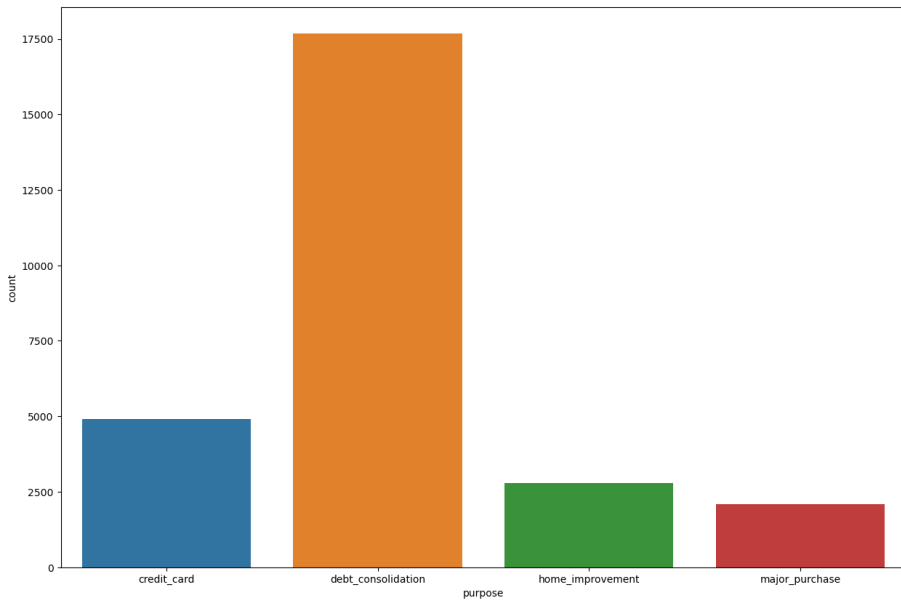


Small purpose loans, renewable energy and education loans have the highest default rates

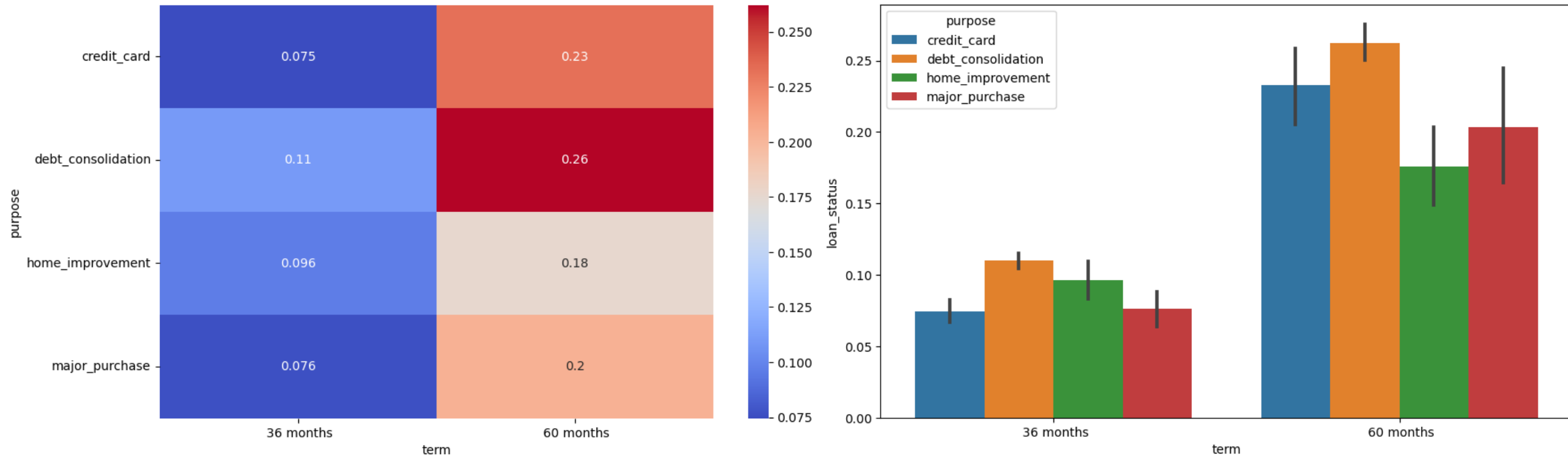
LOAN PURPOSE

But on further analysis the number of loans granted for different purposes is a lot larger for

- Debt consolidation
- Credit card
- Home improvement
- Major purchase

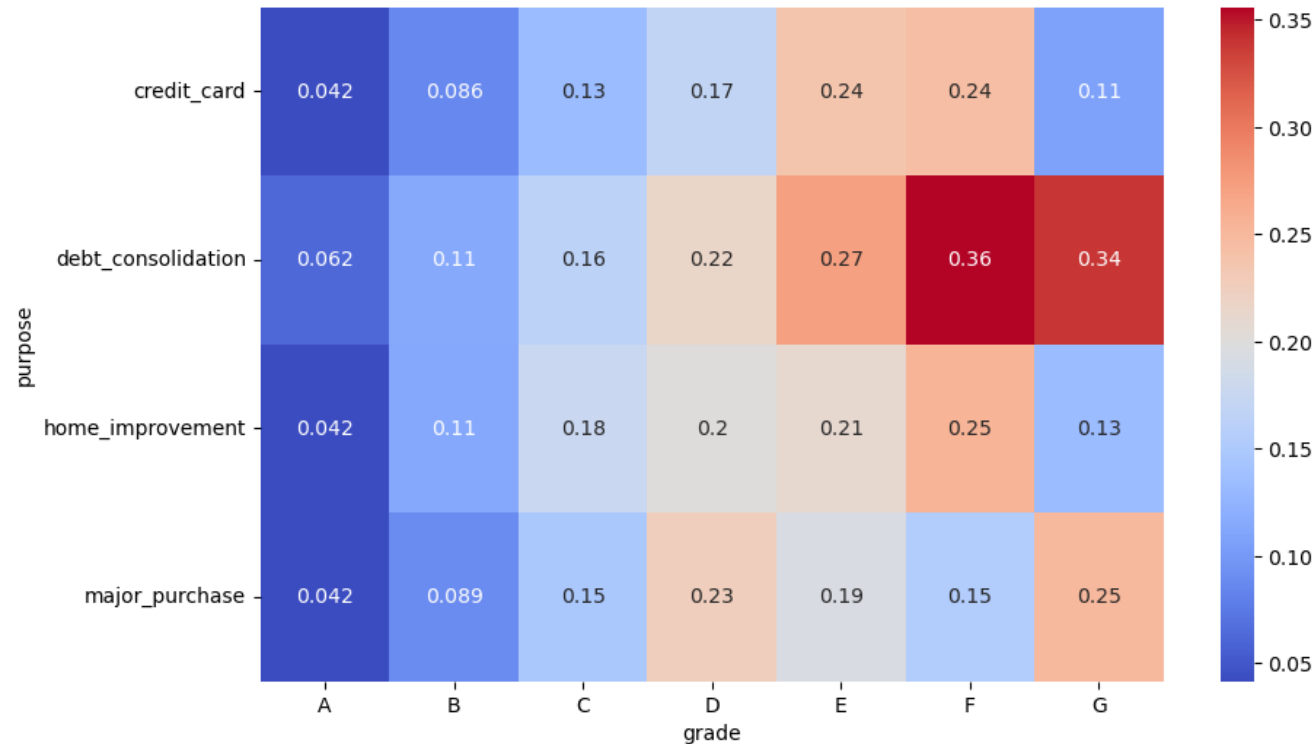


LOAN PURPOSE VS TERM

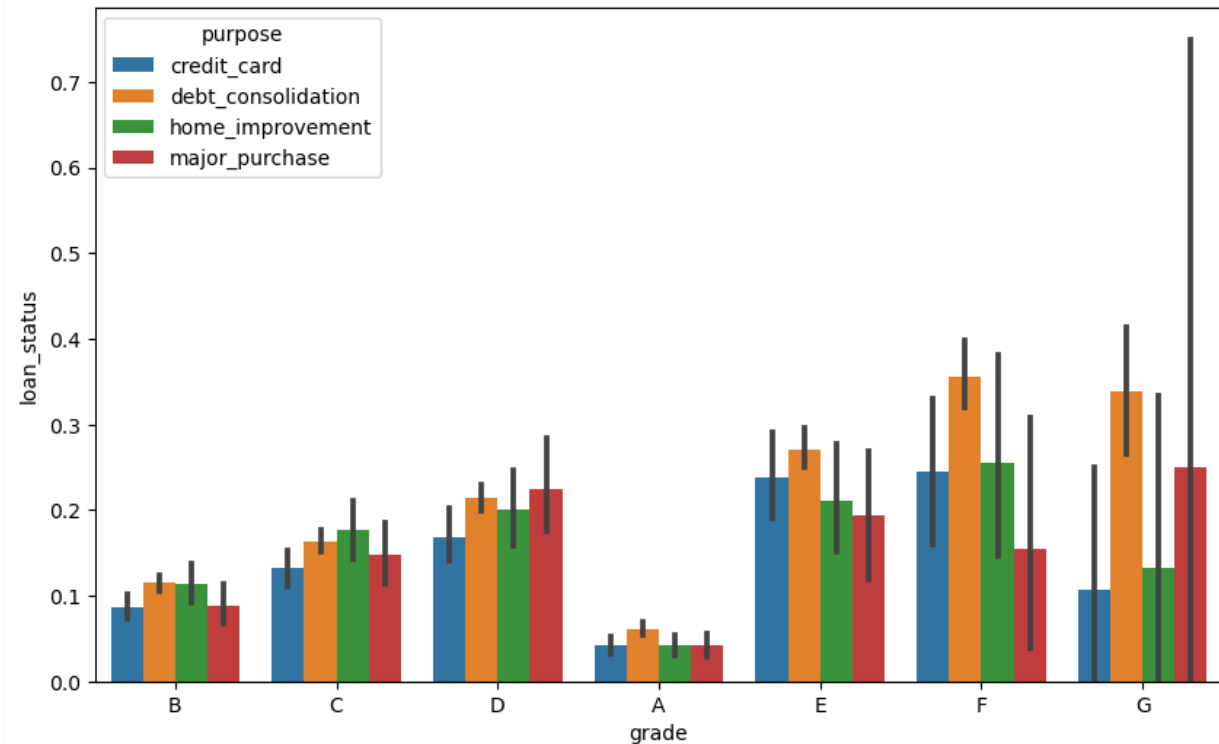


- In both the terms, **debt consolidation** has the higher default rate.
- **60 months** – **debt consolidation** has the highest default rate among all combinations.

LOAN PURPOSE VS GRADE

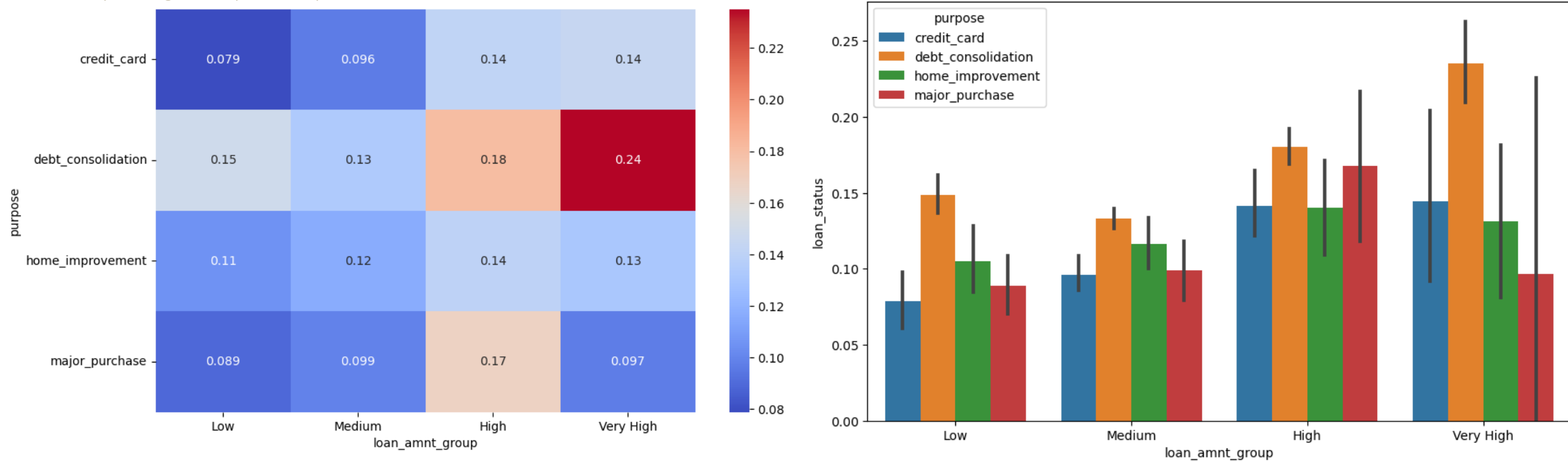


- In the higher grades (E,F,G) **Debt consolidation** has a higher default rate.
- In the lower grades (B,C,D) **Home improvement**, **major purchase** seem to have a relatively higher default rate.
- Grade A is the exception which has **Debt consolidation** has a higher default rate.



- The default rate increases as we move from grade A to G.
- **Debt consolidation** has the higher default rate in general.
- **Grade F – Debt Consolidation** has the highest default rate of all the combinations.

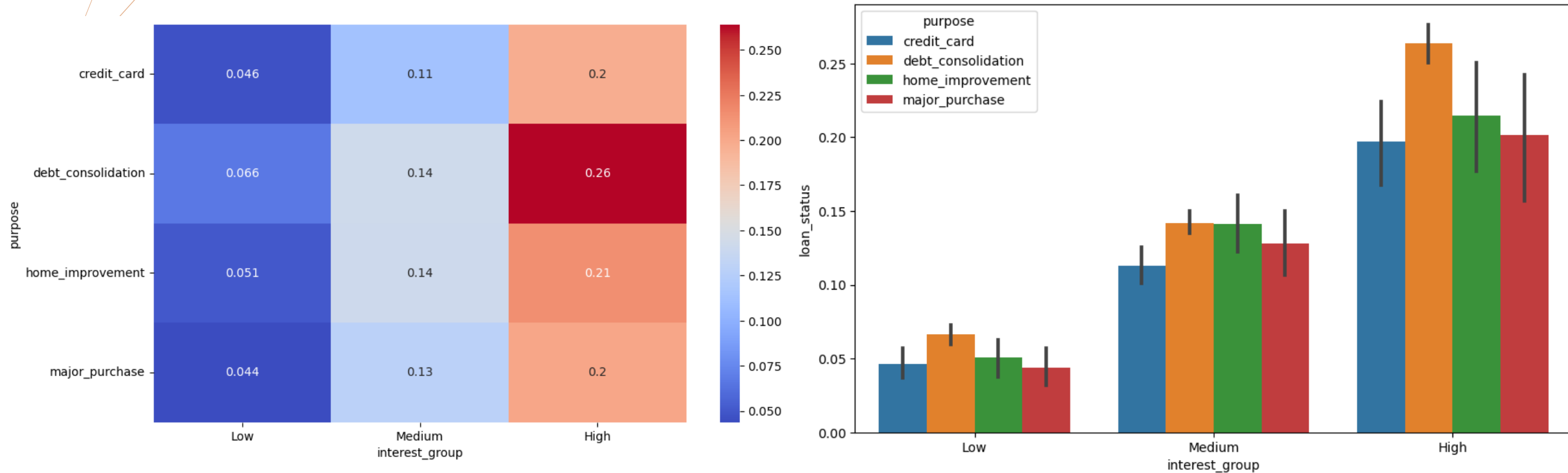
LOAN PURPOSE VS LOAN AMOUNT



The loan amount also follows the **debt consolidation** having higher default rate.

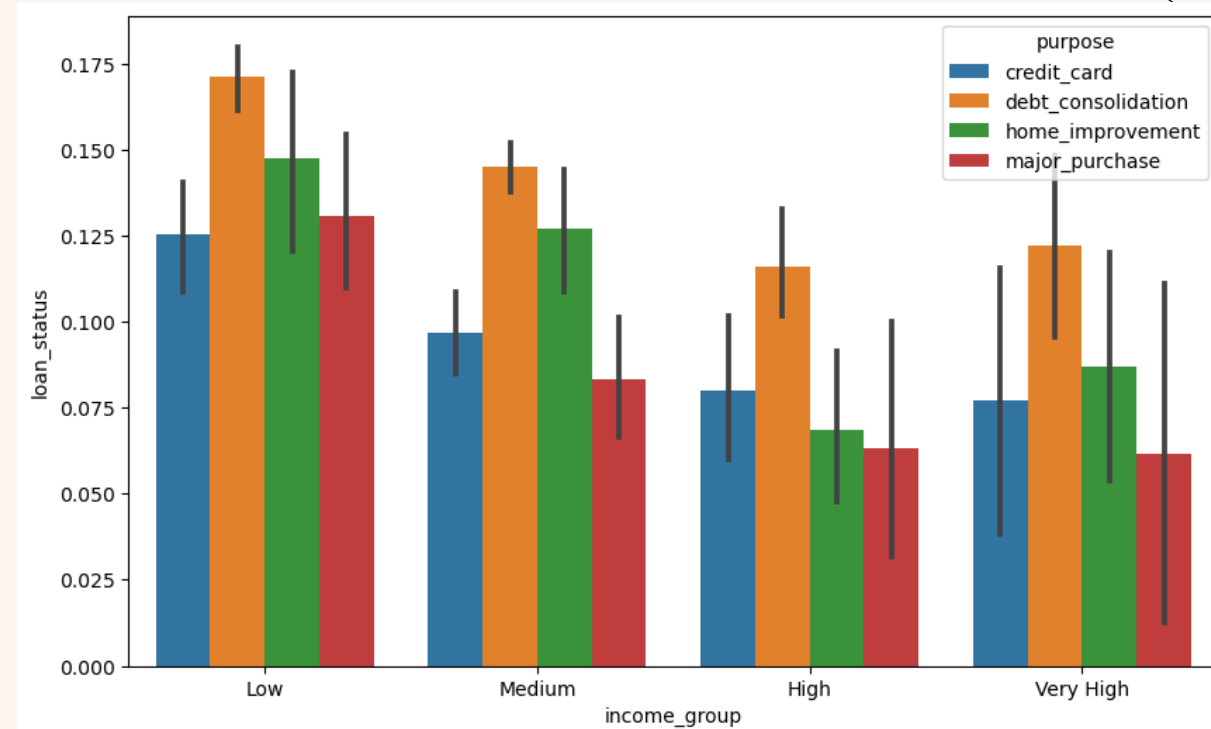
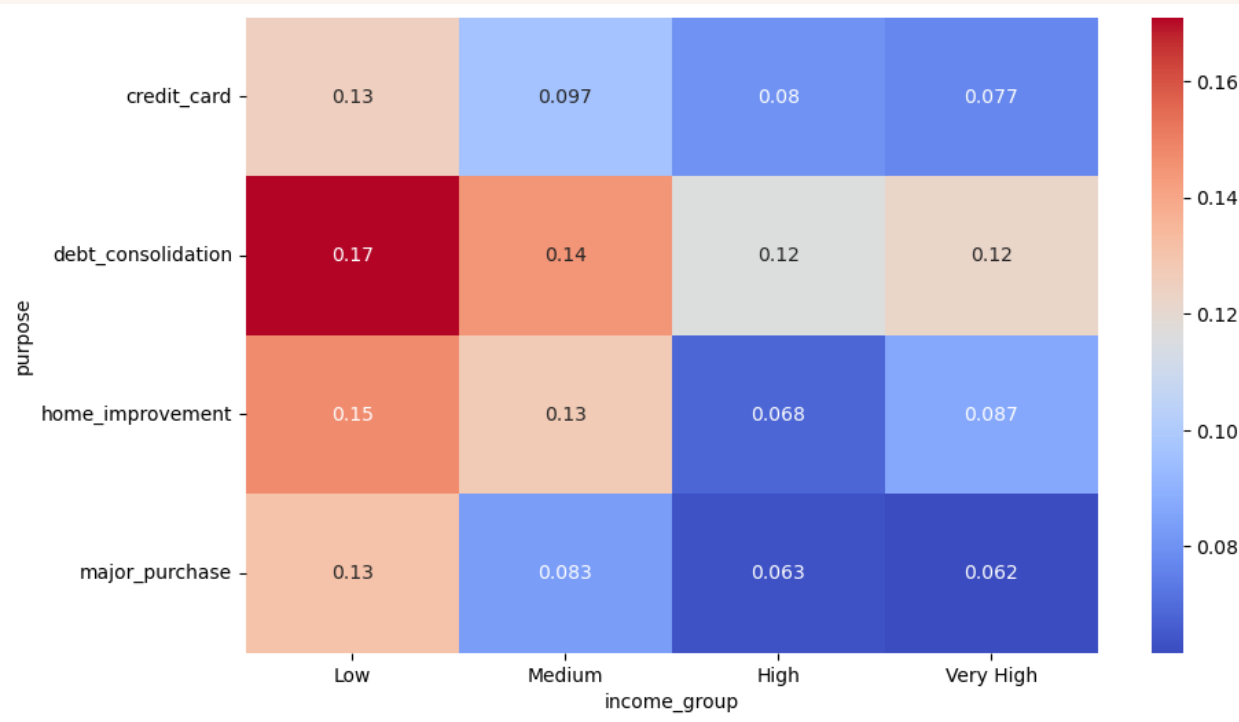
In general, the default rate increases from **low** to **very high** loan amounts.

LOAN PURPOSE VS INTEREST RATE



- Lower interest rates have lower default rates for all loan purposes.
- Debt consolidation still has the higher default rate for all interest rates
- Default rate increases drastically from low to high interest rate.
- **Debt consolidation – High interest rate** has the highest default rate of all the combinations.

LOAN PURPOSE VS ANNUAL INCOME



- There is a decrease in default rates from low to high income for all loan purposes.
- As usual, **Debt consolidation** has the higher default rates among all loan purposes.
- **Low income – debt consolidation** has the highest default rate among all combinations



CONCLUSIONS/ OBSERVATIONS

MOST CONTRIBUTING VARIABLES

The following variables have the most affect on the default rate :

- Grade
- Term
- Interest rate
- Loan amount
- Loan purpose

The **loan purpose** can be considered as a key variable cause it has influence on other variables.

Loan purpose the top fore categories with highest default rates are:

- Debt consolidation
- Credit card
- Home improvement
- Major purchases

MOST CONTRIBUTING VARIABLES

Grade
G
F
E
D

Term
60 months
36 months

Default rates

Loan amount
Very High (>25000)
High (15000 to 25000)
Low (0 to 5000)
Medium (5000 to 15000)

Interest rate
High (> 15%)
Medium (10% to 15%)
Low (0% to 10%)

Two thin orange lines intersecting on the left side of the slide. One line is horizontal, and the other is diagonal, crossing it.

SUMMARY

- Loan purpose, Grade, Term, Interest rate, Loan amount have the most affect on the risk factor of the loan being defaulted.

Example:

- A combination of

Loan purpose of debt consolidation + grade G + 60 months term + High Interest rate (>15%) + very High loan amount (>25000)

Has the highest default rate and the highest risk of the applicant defaulting the loan.