

# Lending Club Case Study

Members –

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# Introduction

As an online lending platform, Lending Club helps people get money for anything from personal to commercial loans and even medical operations.

The purpose of this assignment is to undertake analysis of data and offer insight into the underlying causes of loan default. Also known as identifying strong traits that are more likely to default.

## Aim

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The aim is to find patterns that suggest a borrower's likelihood of defaulting can be used to refuse the loan, reduce the loan amount, or lend at a higher interest rate.



## Overview

- Data analysis performed –
  - 1) Univariate
  - 2) Bivariate
  - 3) Segmented Univariate
- Load accepted?
  - ✓ Default
  - ✓ Not – default
- Loan rejected? – Not considered

# Data Pre-processing

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Importing important libraries.

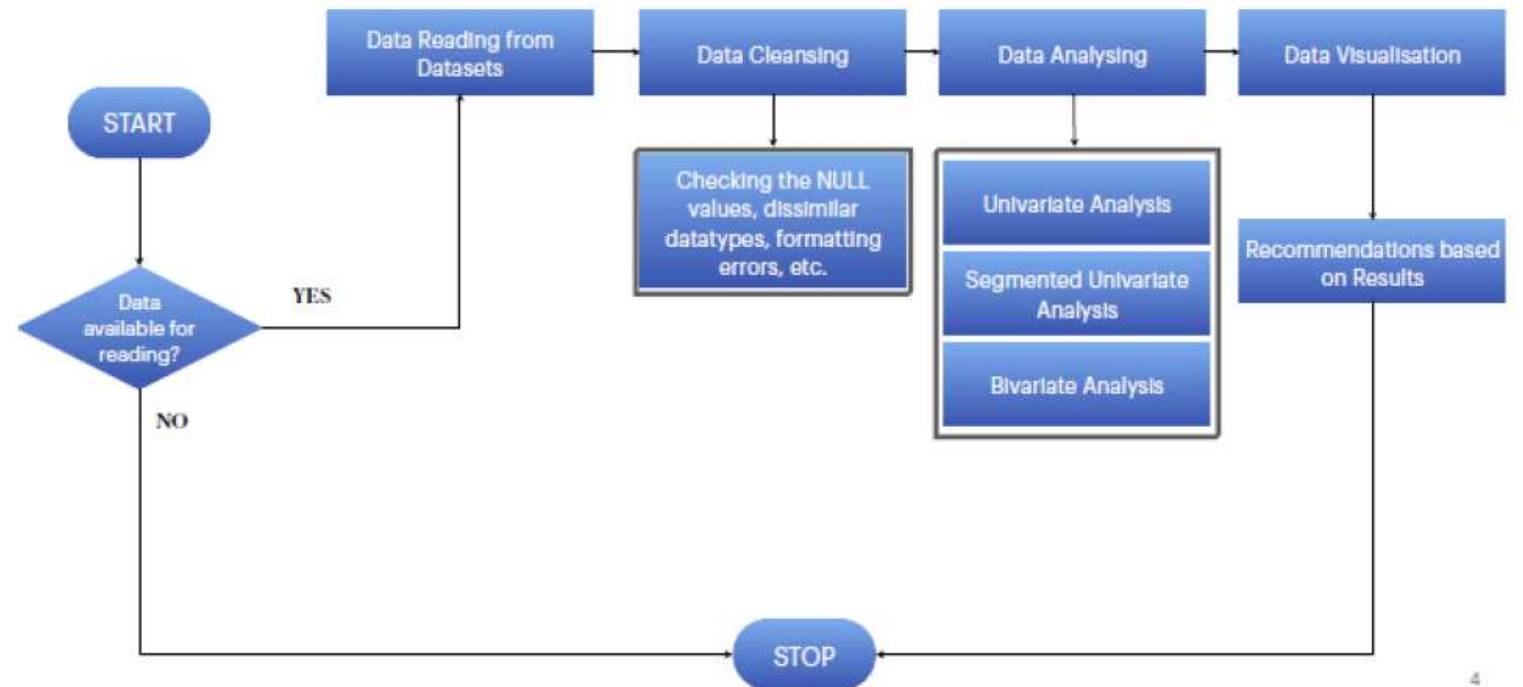
Cleaning the data of any NULL values and replacing it with 0.

The values may well be generalized by converting the datatypes.

Data representation conversion will take place.

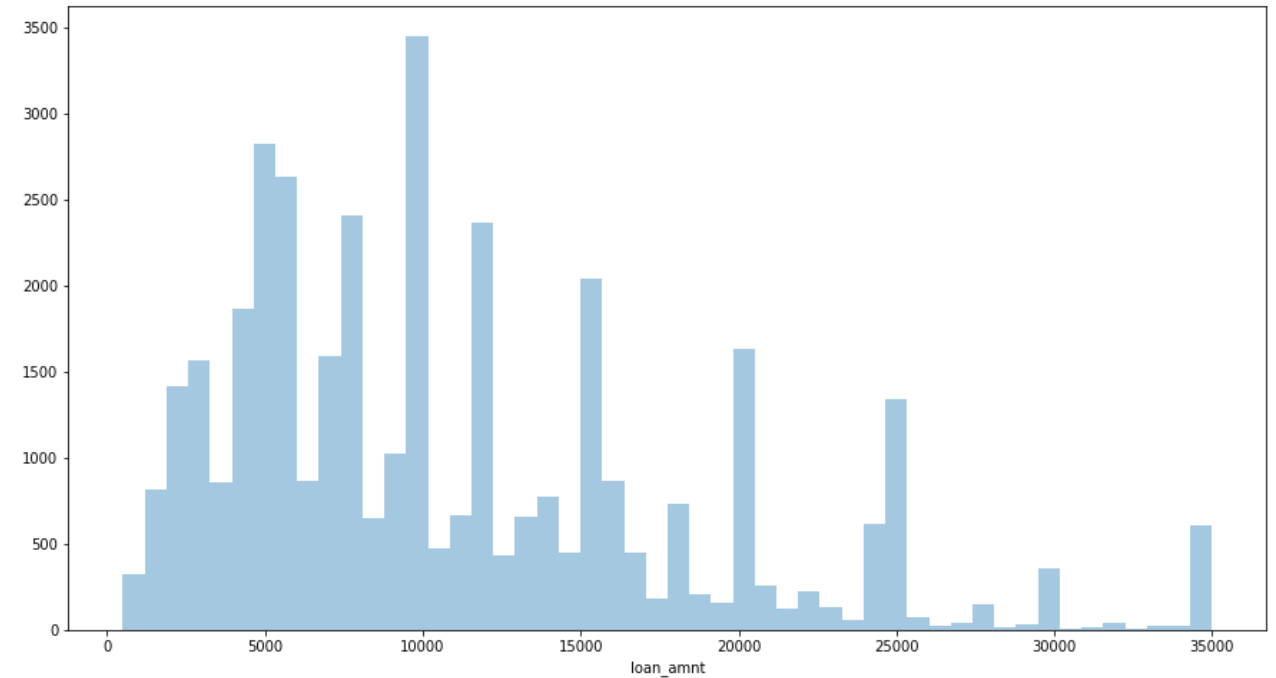
For analysis and visualization purposes, generate a final dataset.

# Methodology



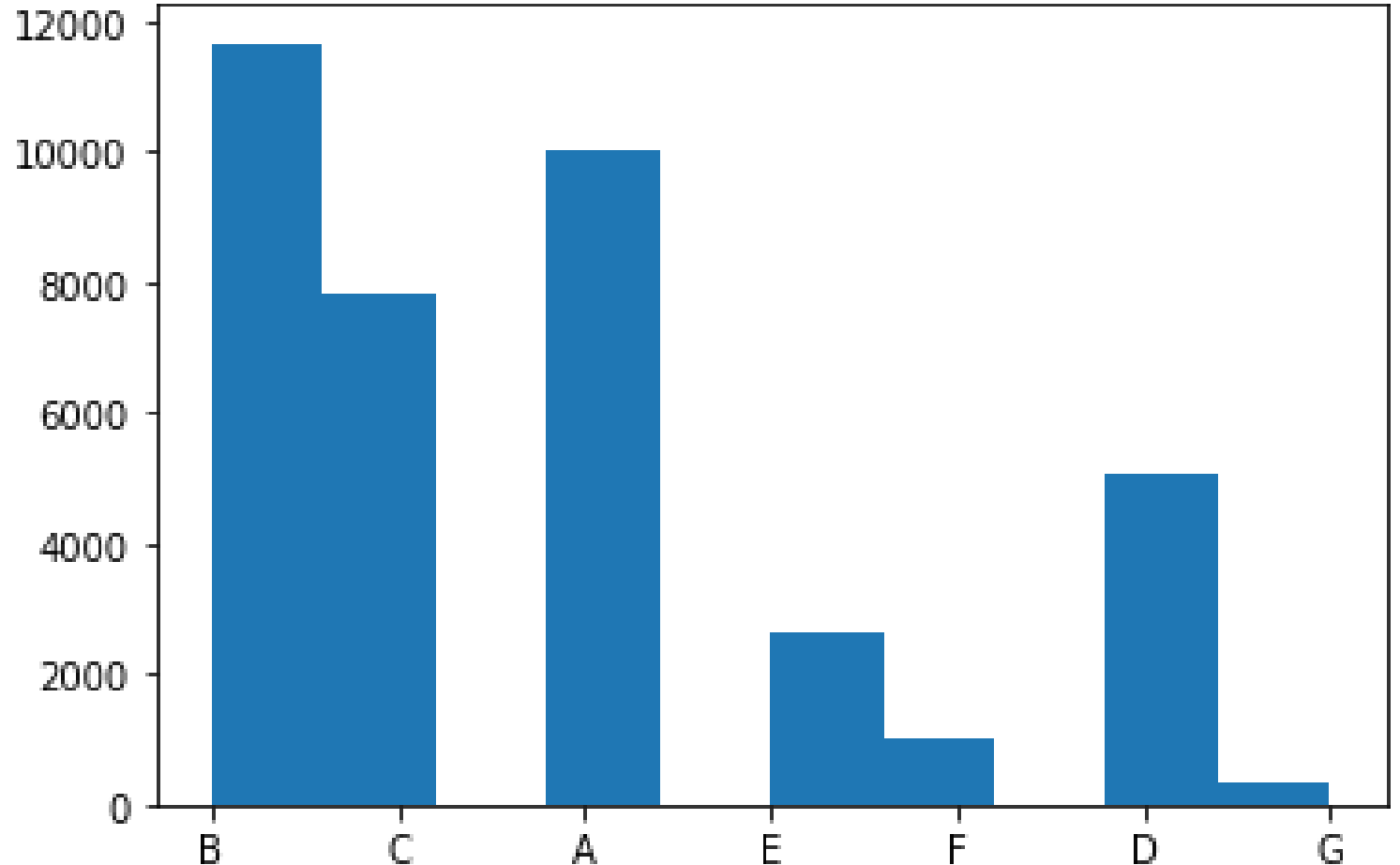
# Univariate Analysis

Finding Loan amount and creating Bins For Loan Amount.



# Histogram for checking mode value and grade

Grade B is associated with maximum applicants.

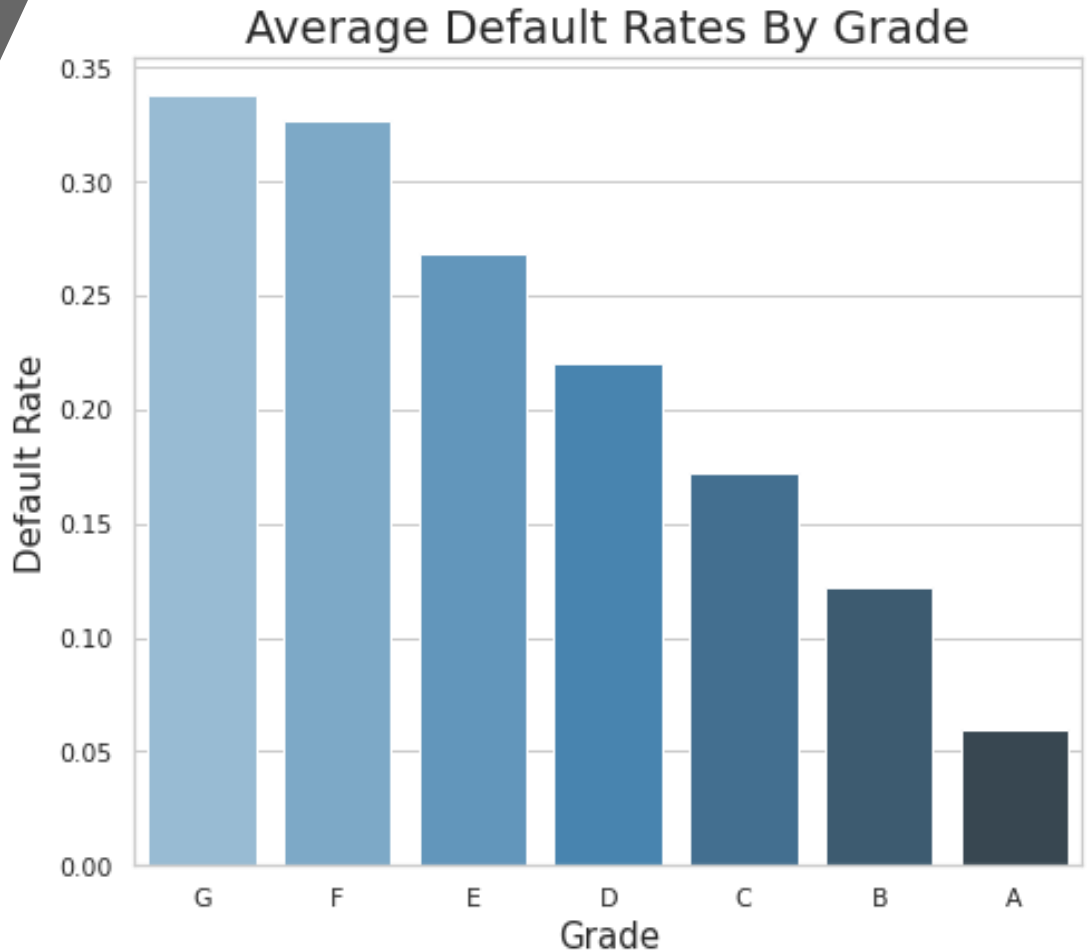




# Segmented Univariate Analysis

## Top Defaulters by Grade –

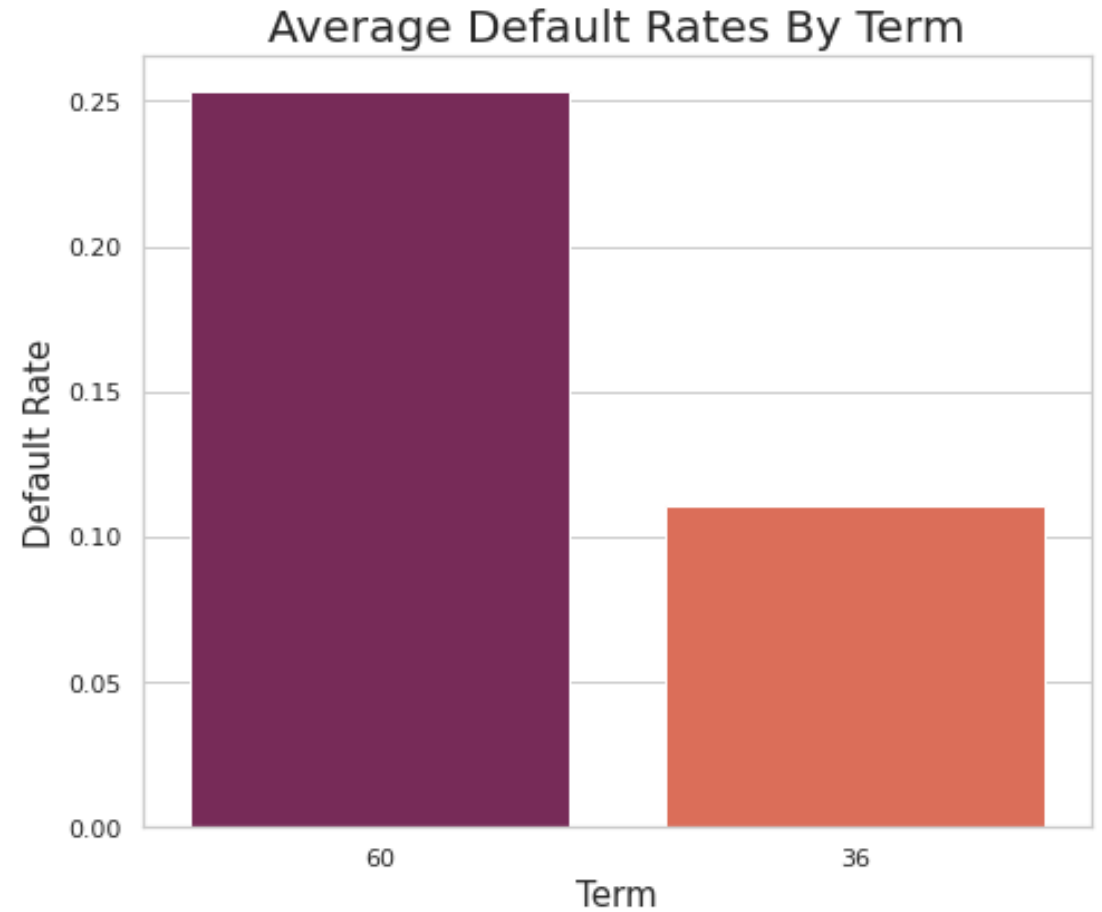
Higher grades have been linked to a rise in the number of people who default. Grades in the G, F, E, and D grading scales have been shown to be very hazardous and should be avoided at all costs.



# Defaulters by Term

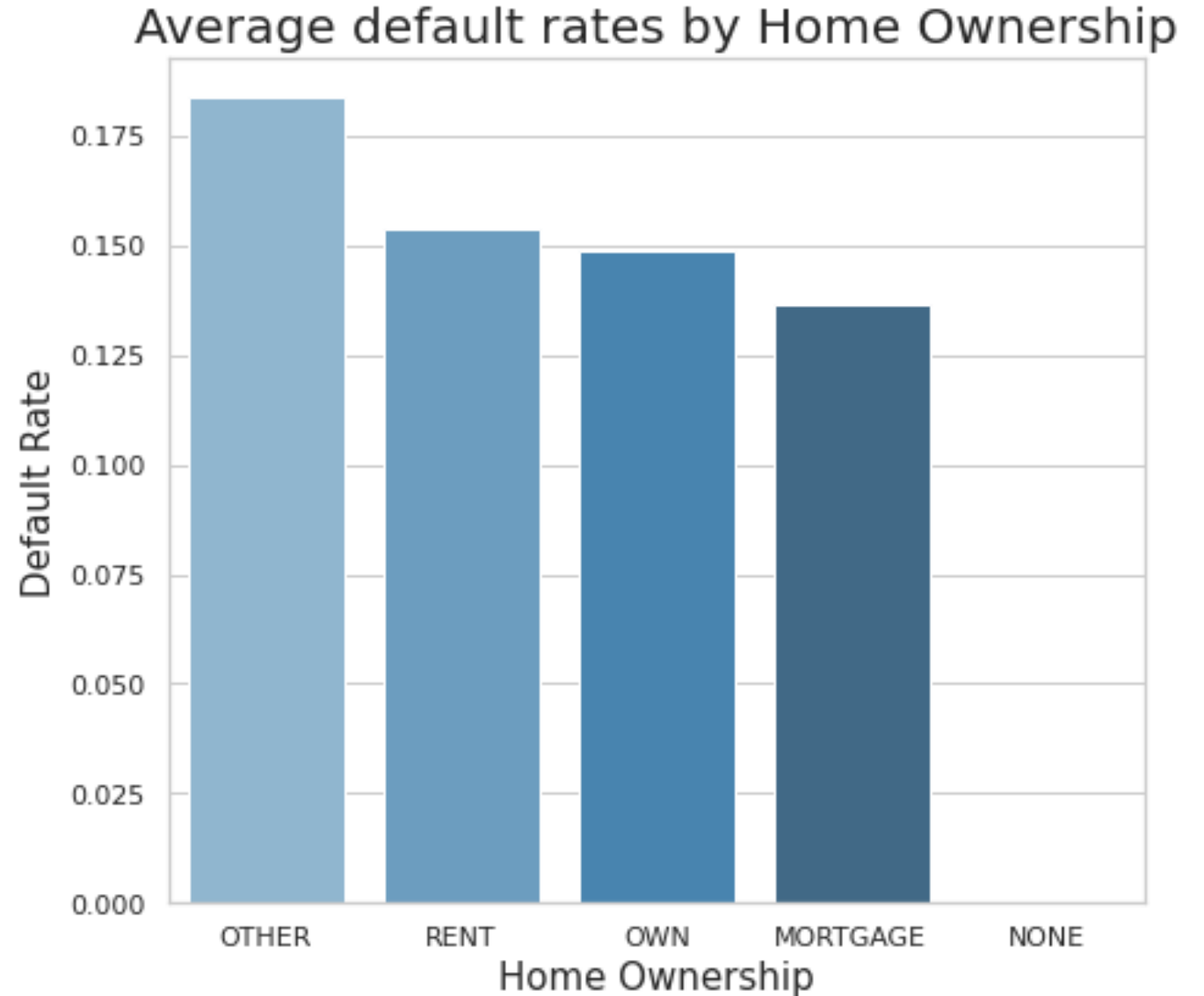
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Higher default rates are being seen on loans having a period of 60 months or more. We'll look at the riskiest types of loans in more detail by examining them according to their intended use.

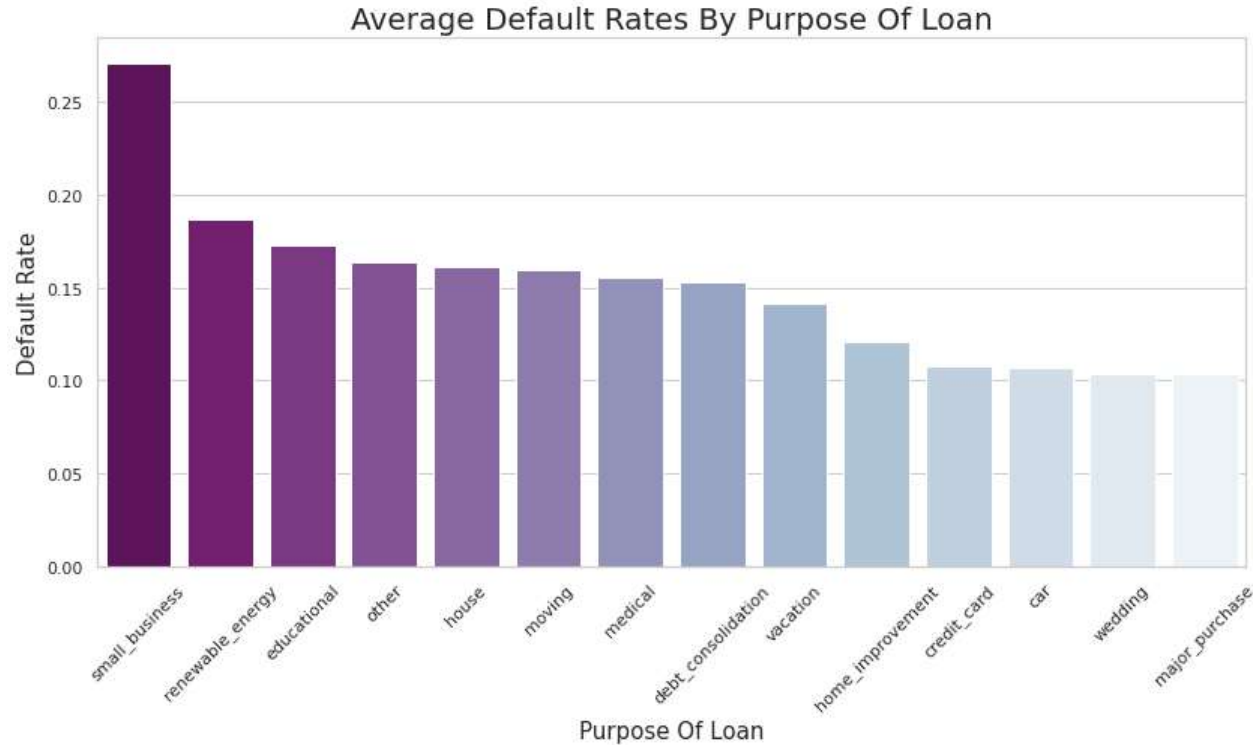


# Defaulters by Home Ownership

Loans that are taken by people marked as "Other" have highest risk associated with them.



# Defaulters by Loan purpose

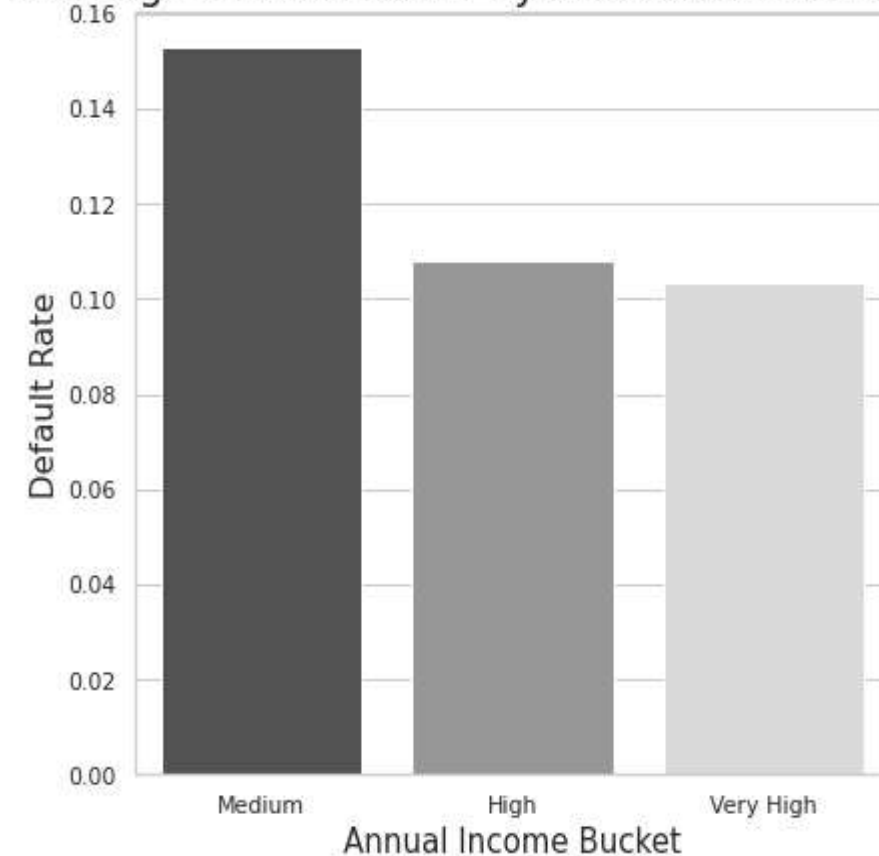


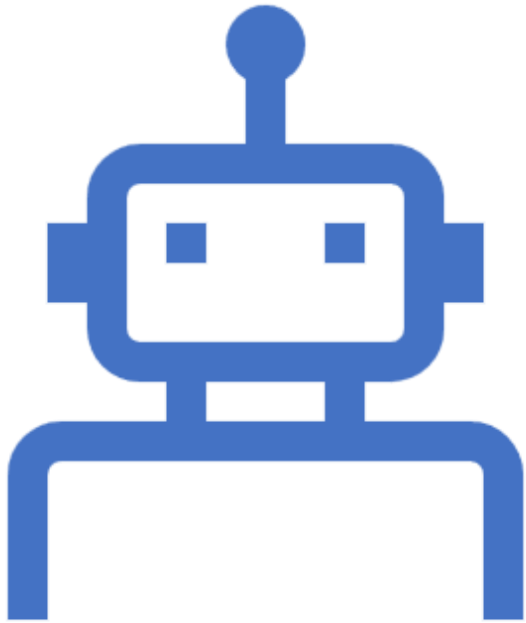
Riskiest category is small businesses which is followed by renewable energy and then educational. This will further be analyzed.

# Defaulters by Annual Income

Those with an annual income in the moderate and high range have the greatest default rates. In bivariate analysis, we can examine whether this is since they requested larger loan amounts.

Average Default Rates By Annual Income Bucket



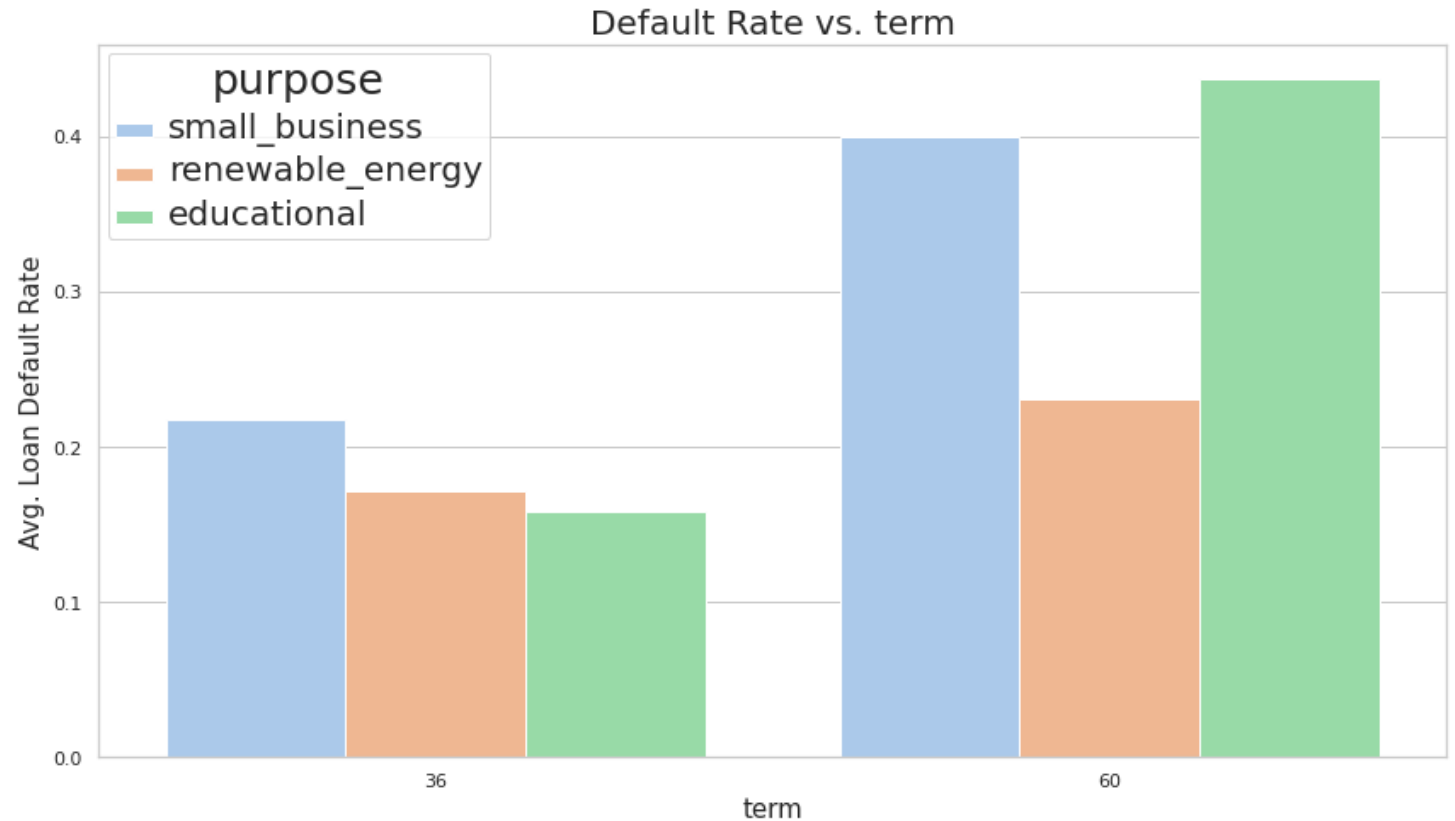


## Bivariate Analysis

We would like to concentrate our investigation on the top three loan purposes with the greatest default rate - 'small\_business', 'renewable\_energy', 'educational'.

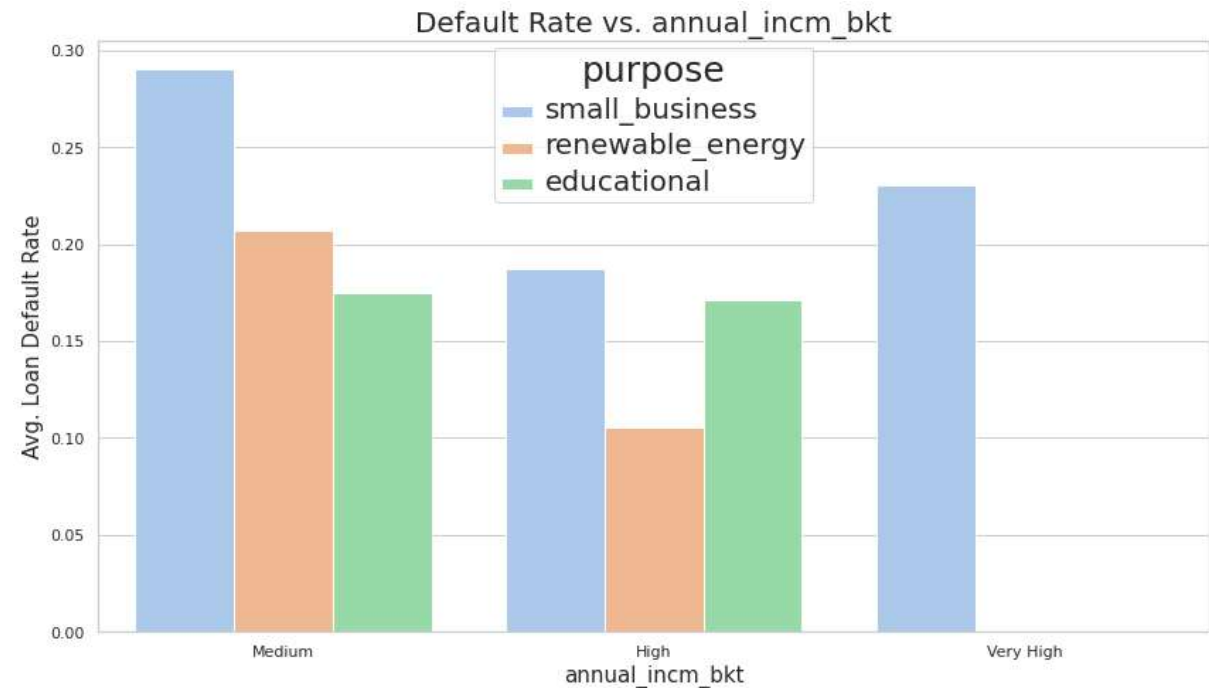
# Default Rate vs. Term

Lending Club should discontinue lending long-term loans to small businesses, and educational purposes with 60 months term, since more than a third of these borrowers have defaulted on their payments.



# Default Rate vs. annual\_incm\_bkt

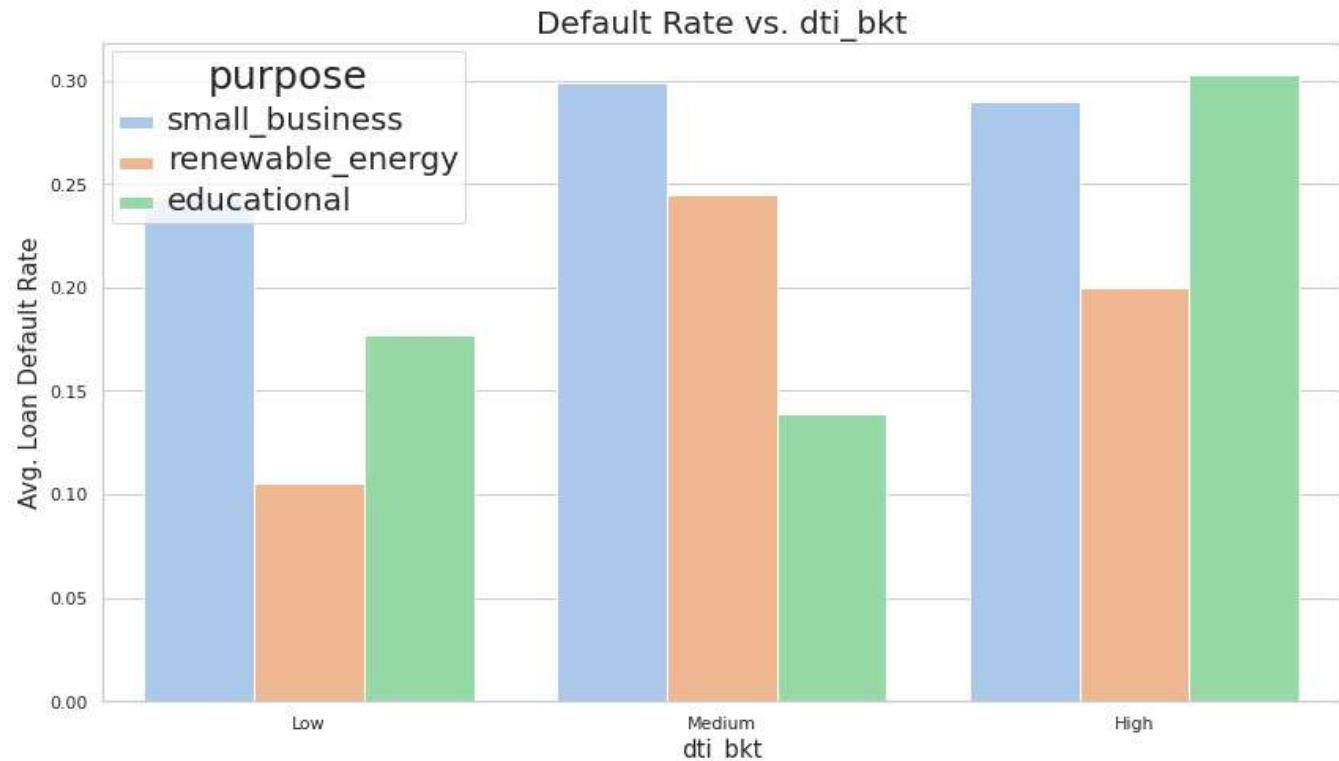
- Here, small business categories are defaulting the most at annual income bucket followed by renewable energy in medium annual income bucket.
- In very high risk, only small business is defaulting. LC should look into this.



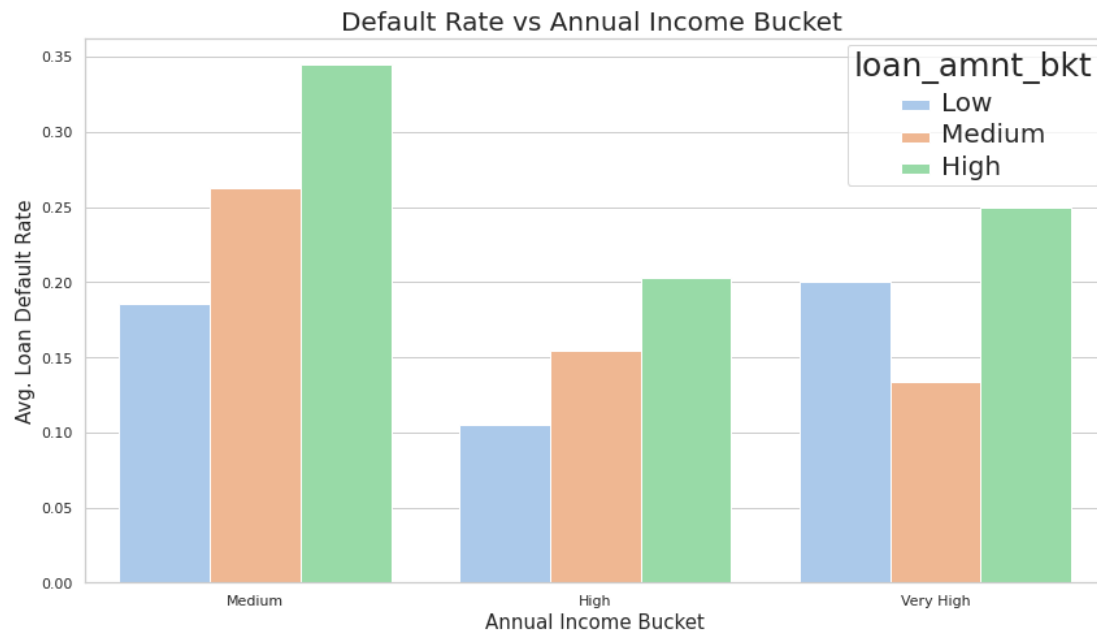


# Default Rate vs. dti\_bkt

- Small businesses and educational categories are defaulting highest at the DTI - high. At medium DTI, small business and renewable energy is defaulting the most.



# Default Rate vs. Annual Income Bucket



- It was seen from above that at annual income bucket people with medium income are at very high risk.

# Conclusion



Small business with high interest rate are defaulting at 100%. LC should avoid doing this and do not give loans to small business.



Small businesses and educational categories are defaulting highest at the DTI - high. At medium DTI, small business and renewable energy is defaulting the most.



We discovered that persons with a medium yearly income are more likely to fail on their loans after doing a segmented univariate study. People with a median annual income are more likely to request for larger loans, which increases the risk of their defaulting. LC should put a halt to these loans.



Small business loans with a large loan amount and renewable energy with a low loan amount must not be granted since more than 30% and 25% of them default, respectively.



Thank you