

LENDING CLUB CASE STUDY SUBMISSION

Group Members:

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Lending Club Case Study

Lending Club is a consumer finance company which specialises in lending various types of loans to urban customers. When the company receives a loan application, the company must decide for loan approval based on the applicant's profile.

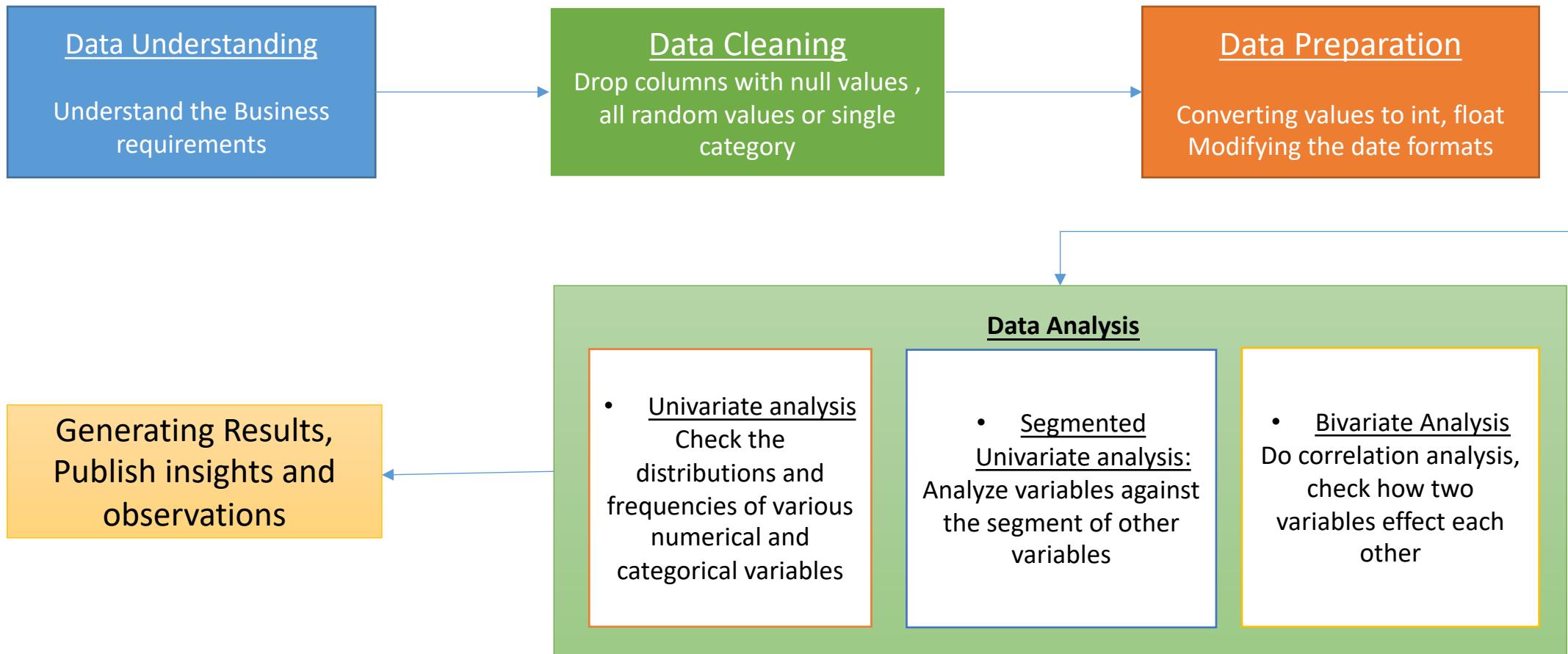
Business Objective :

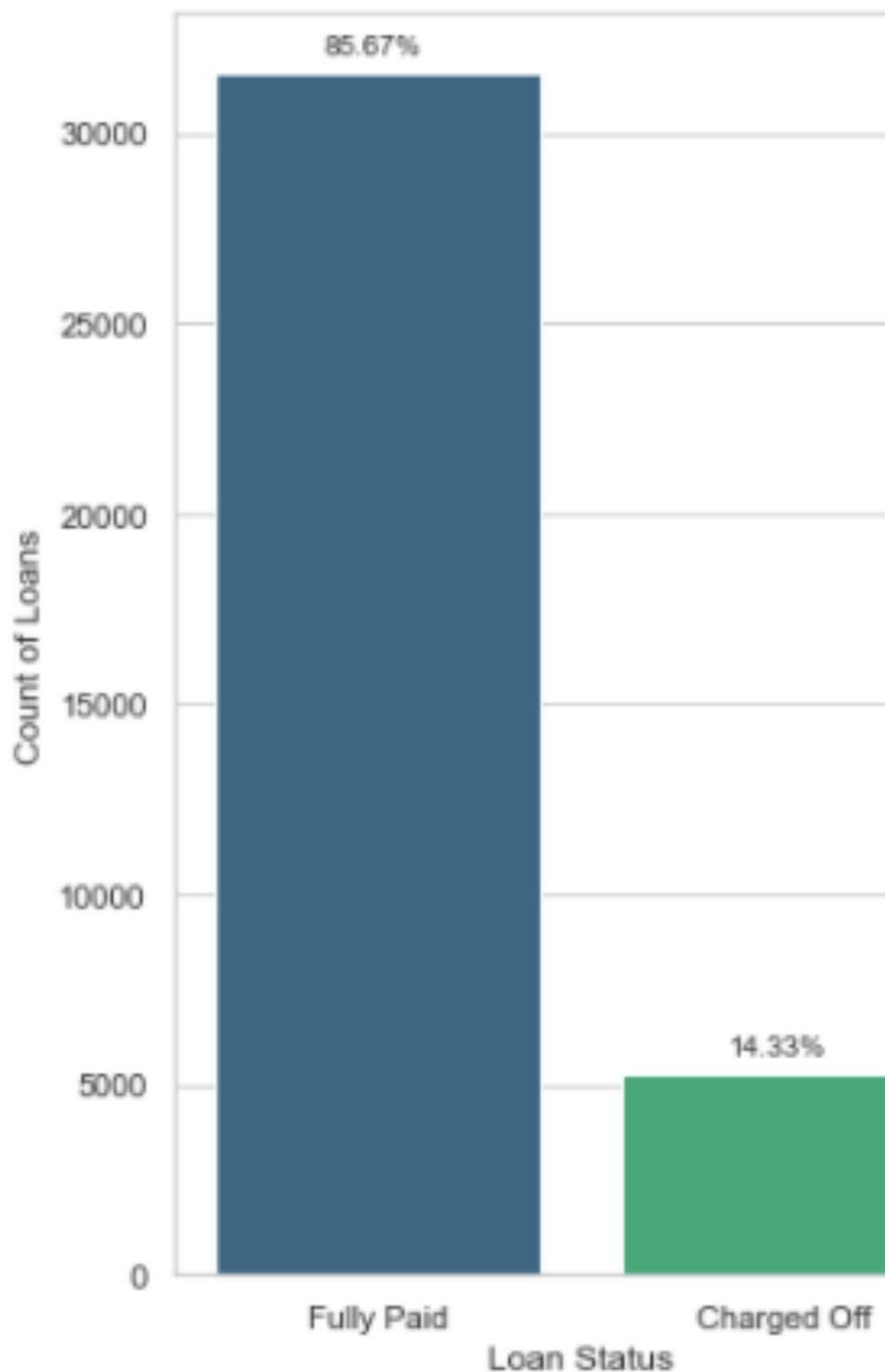
- Understanding the driving factors behind loan default.
- Utilize this knowledge for its portfolio and risk assessment.

Goals of Data Analysis :

1. Identify patterns which indicate if a person is likely to default.
2. Understand the types of variables and their significance in Loan approval process.
3. Univariate segmented and Bivariate analysis to identify the driving factors.

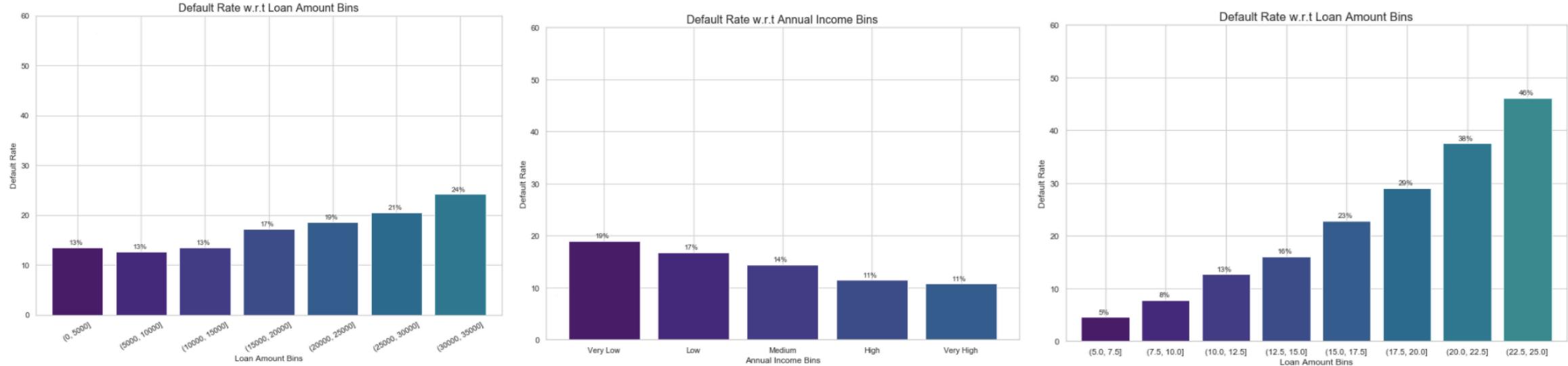
Problem solving methodology





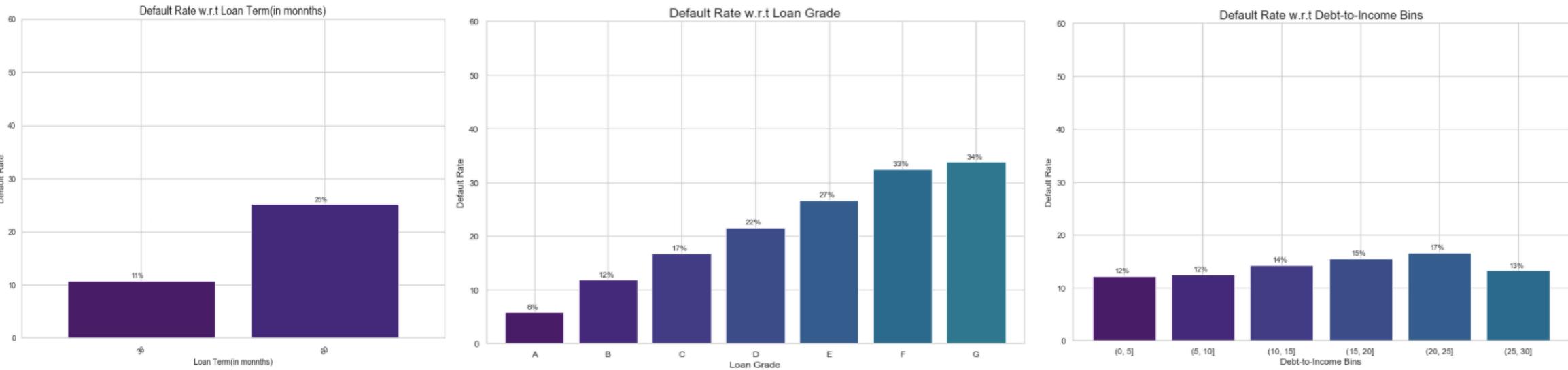
Analysis

- **Loan Status:**
 - Approximately 14% of the total loans are Charged off.
- **Loan Amount :**
 - Loan amount ranges from \$500 - \$35000
- **Interest Rate**
 - Interest Rate Ranges from 5%-25%



Univariate Analysis

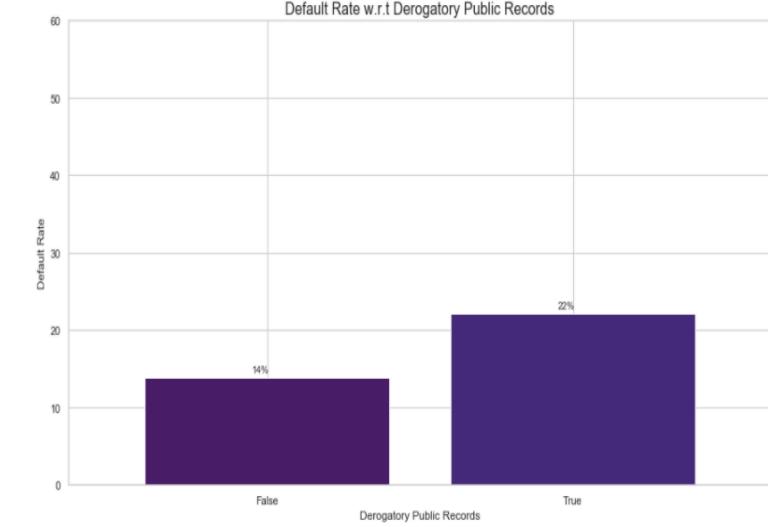
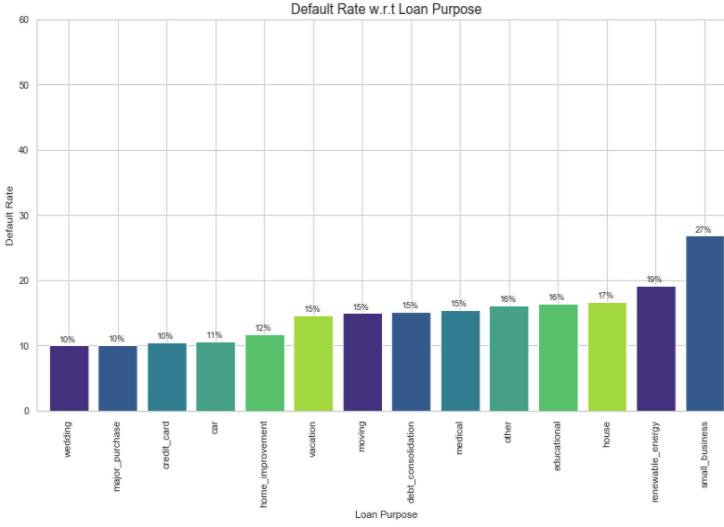
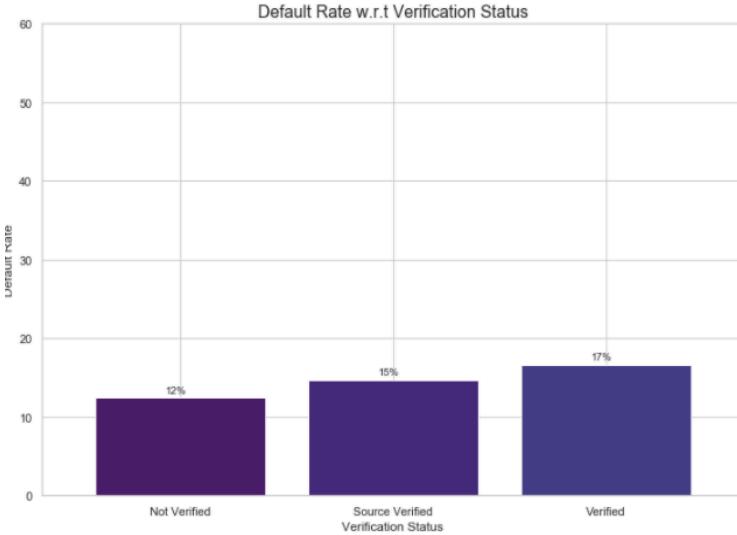
- **Loan Amount**
 - We can see that loans above 15000 have a default rate of more than 19%.
- **Loan Funded Amount**
 - If the Loan Funded amount by Lending Club is less than Loan amount, then there is high chance of default(around 18%).
- **Loan Interest Rate**
 - If interest rate is more than 15%, then the default rate goes above 23%.
- **Loan instalment**
 - Loan installment above 1800 has 18 % default rate.
- **Annual Income**
 - If the annual income is less than 45k, then default rate goes up by more than 17%



Univariate Analysis

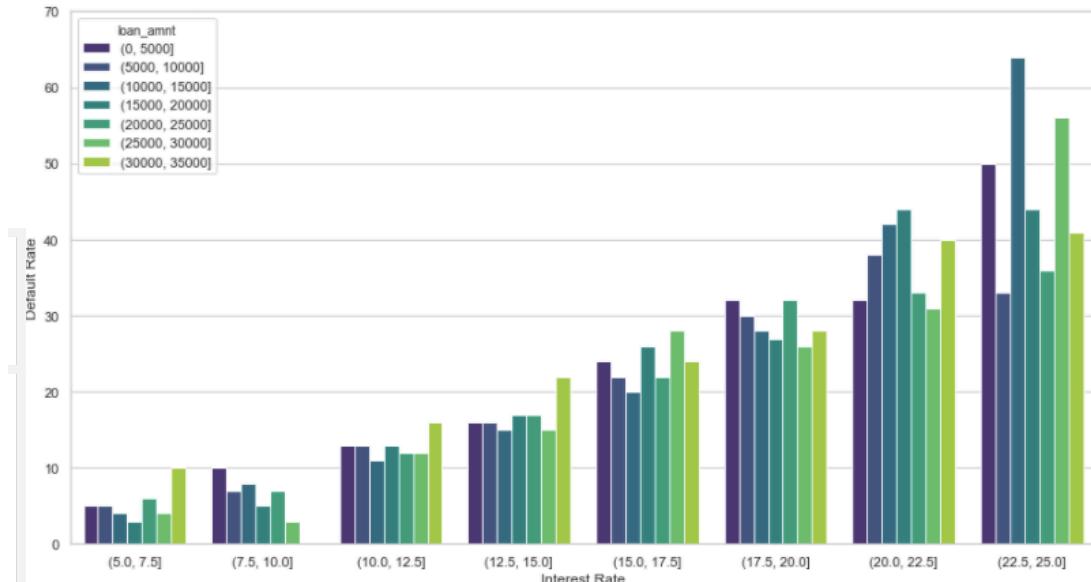
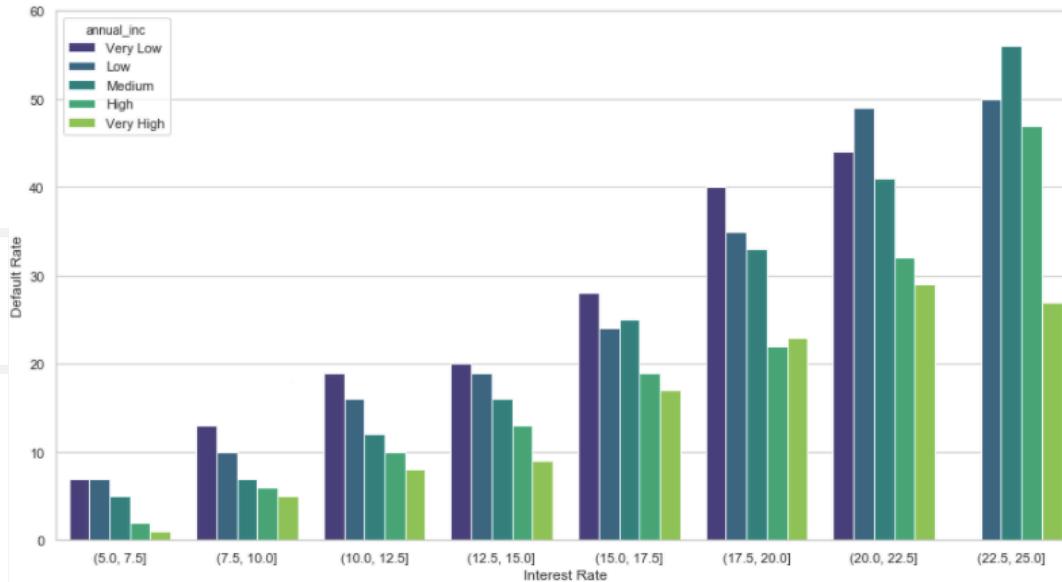
- **DTI**
 - With higher DTI, the default rate goes up.
- **Loan Term**
 - Loan with 5 years term are more likely to default. The default rate goes as high as 25%.
- **Loan Grade**
 - Loan grades with C and lower grade are more likely to default. The default rate is more than 17% in C and lower grades.
- **Loan Sub grade**
 - Loan grades with C2 and lower grade have a default rate of more than 17%.
- **Employee Length**
 - Experience of more than 10 years are more likely to default.

Univariate Analysis



- **Verification Status**
 - Status “Verified” has a high default rate of around 17%.
- **Purpose**
 - Loans taken for small business, renewable energy and house are more likely to default.
- **Address State**
 - Loans originating from the state including Nevada, Alaska, Tennessee, South Dakota, Florida, Hawaii, New Mexico, Oregon have high default rate.
- **Inquiry Rate**
 - If the number of inquiries is more than 2 in the past 6 months, then the default is more than 17%.
- **Derogatory Public Records:**
 - If the person has any public derogatory records, the default rate goes up by 22%.
- **Public Records Bankruptcies**
 - If a person has public records bankruptcies in his file, then the default rate goes above 22%.

Bivariate Analysis



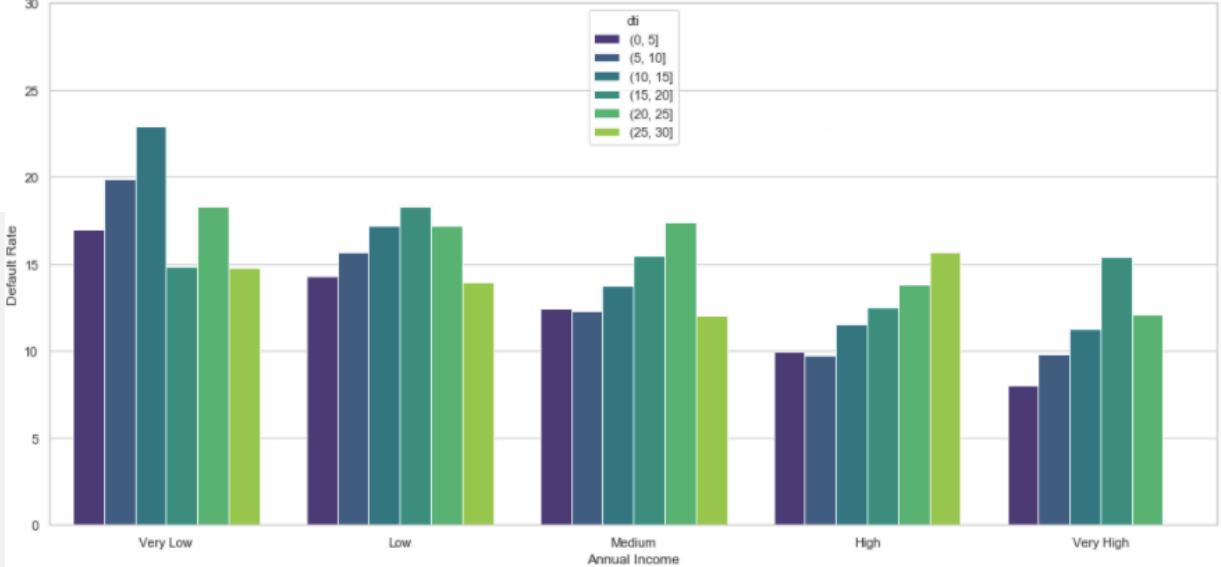
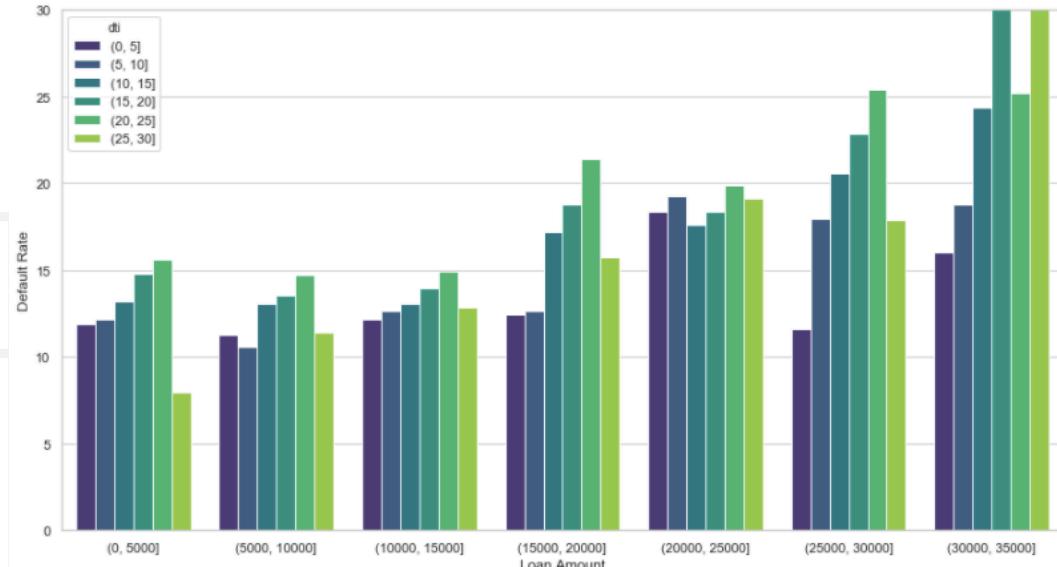
- **Loan Amount vs Interest Rate**

1. Interest rate higher than 15% - Default rate is high
2. Interest rate between 12.5-15% - Loan amount should not be greater than 15k
3. It is ok to give loans at rate below 12.5%

- **Annual Income vs Interest Rate**

1. While it is ok to give loan with lower interest rate, below is our recommendation for interest rate and annual income:
2. Income less than 24k - Interest rate below 10%
3. Income less than 45k- Interest rate below 12.5 %
4. Income less than 76k- Interest rate below 15%

Bivariate Analysis



- **Annual Income vs DTI**

1. Very Low income group - High risk for any DTI value
2. Low income group - High risk if DTI is greater than 10
3. Medium income group - High risk for DTI above 20
4. High and above income groups are relatively at lower risk due to DTI

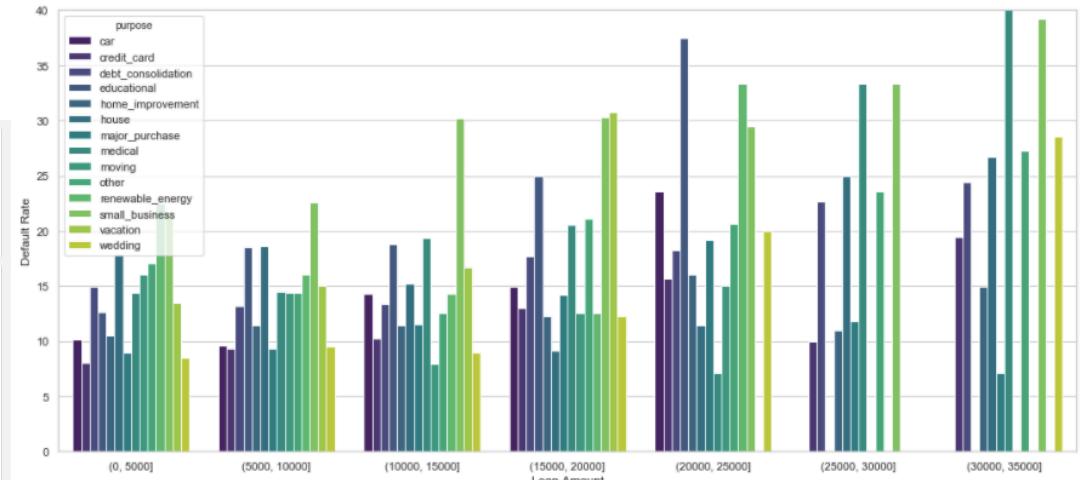
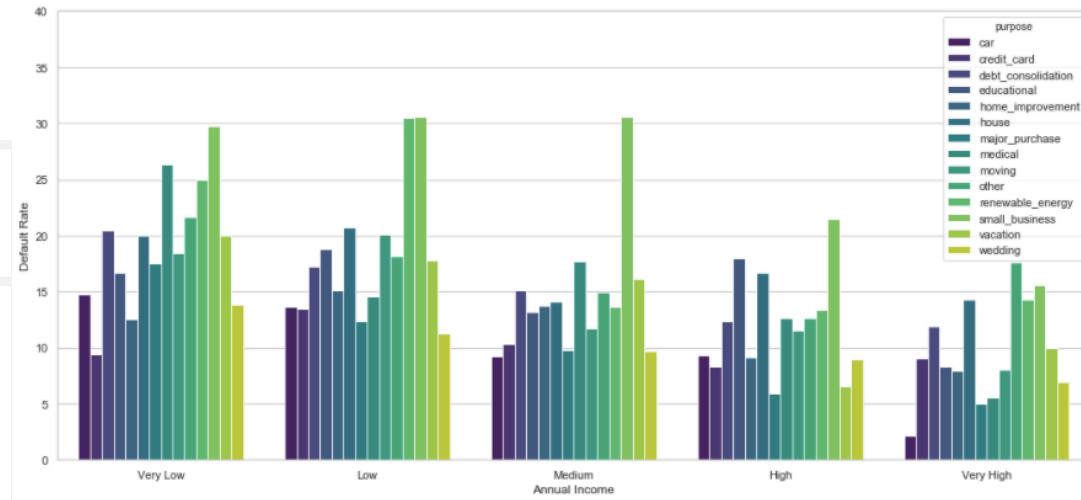
- **Loan Amount vs DTI**

1. For loan amount higher than 15000 and dti greater than 10, then defaault rate is very high.
2. We should advise the client to avoid loans with amount greater than 15k and dti higher than 10.

- **Interest Rate and DTI**

1. For interest greater than 12.5 and DTI greater than 20, the default rate is very high.

Bivariate Analysis



- **Annual Income vs Purpose**
 1. Medium income group : Loans are very risky if given for small business or Medical
 2. High income group : Loans are risky to give for small business
- **Loan Amount vs Purpose**
 1. Loan amount >10k - Purpose should not be small business, educational, medical
 2. For loan amount >15k - Purpose should not be Debt consolidation, Other
 3. For loan amount >20k - Purpose should not be Renewable energy
 4. For loan amount >25k - Purpose should not be house, wedding

Recommendations



1. If the annual income is lower to 76k, we should keep the loan amount less than 15k.
2. Loan should be given for smaller duration (3 years)
3. Interest rate should be lower than 12,5%, if high, then keep the loan amount below 15k.
4. Increase giving Loans with loan grade A,B and subgrades C1 and C2 (apart from A1-A5,B1-B5).
5. Avoid giving loans with high Debt-to-income ratio(more than 20), if high, then decrease the loan amount<15k
6. Avoid giving loans if there are any derogatory public record or Bankruptcies
7. Avoid giving high loan amounts(>10-15k) for Small Business, Renewable energy and house.
8. Loan instalment amount should be les than 1800.
9. Avoid loans where funding amount is less than loan amount.