

Exploratory Data Analysis for Lending Club

Identifying Key Factors Contributing to Loan Default

Performed by

J Yeshaswini & Suresh Narayan

Introduction

Objective

- To understand the key factors leading to loan defaults.
- To assist in decision-making for loan approvals/rejections.

Context

The company faces two major risks:

- Loss of business from not approving a loan for a creditworthy applicant.
- Financial loss from approving a loan for a high-risk applicant.

Business Understanding

Company Overview

A consumer finance company specializing in urban loans.

Decision Dilemma

Balancing risk vs. reward in loan approvals.

Data Overview

Dataset

Loan application data from Lending Club.

Features Analyzed

Interest Rate, Revolving Line Utilization Rate, Repayment Term, Loan Grade, Employment Record, Loan Purpose, Derogatory Public Records, Bankruptcy Records.

Analysis Objective

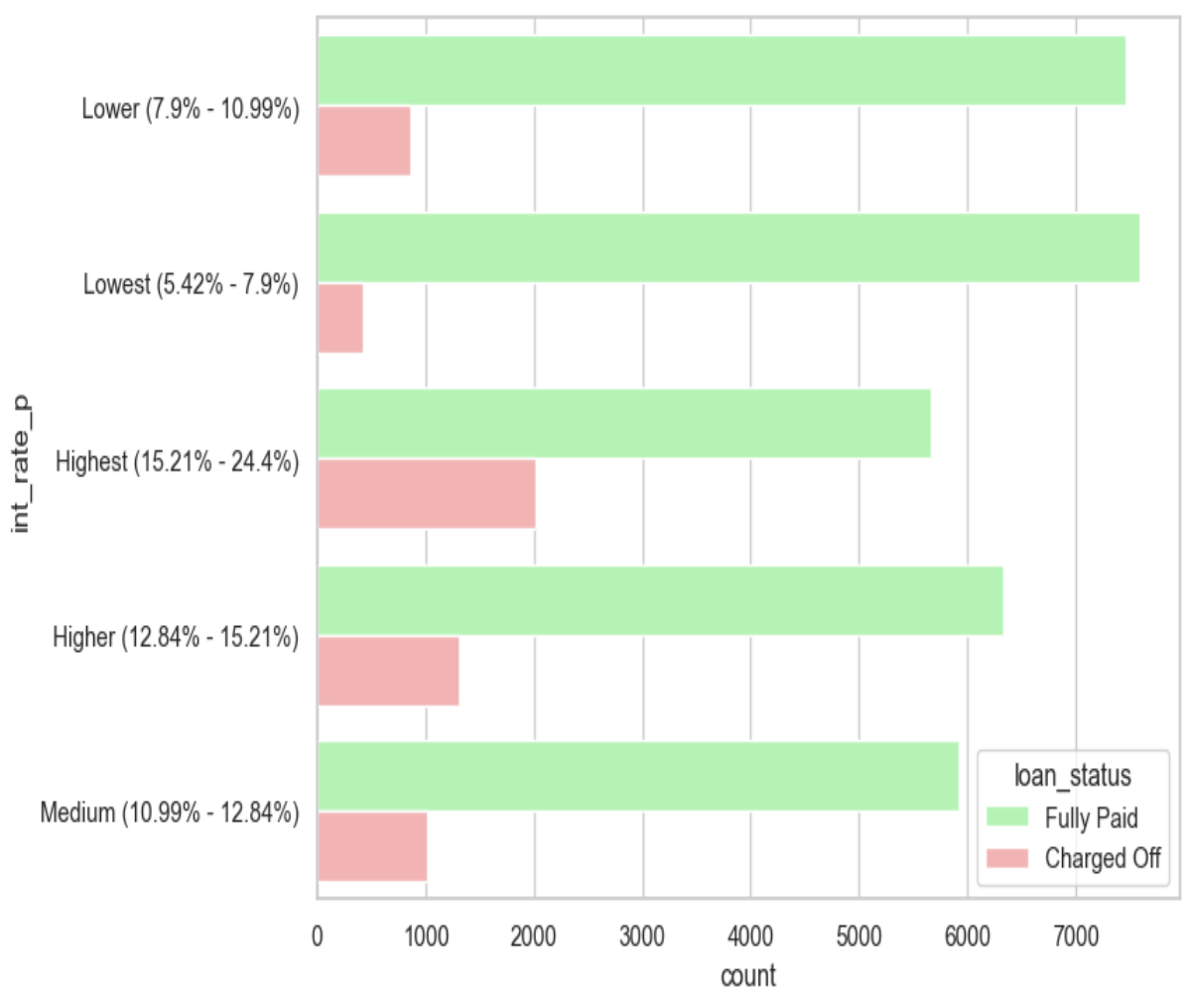
Goal

- To identify factors that increase the likelihood of loan default.
- To inform future lending strategies and risk management.

Key Findings Overview

The most critical factors influencing loan default include high interest rates, high revolving line utilization rates, long repayment terms, lower loan grades, missing employment records, and specific loan purposes. Additionally, larger loan amounts, higher installment payments, lower annual incomes, and higher debt-to-income ratios also contribute to default risk. Certain combinations of these factors, such as high loan amounts with high interest rates or high installments with longer terms, further amplify the risk.

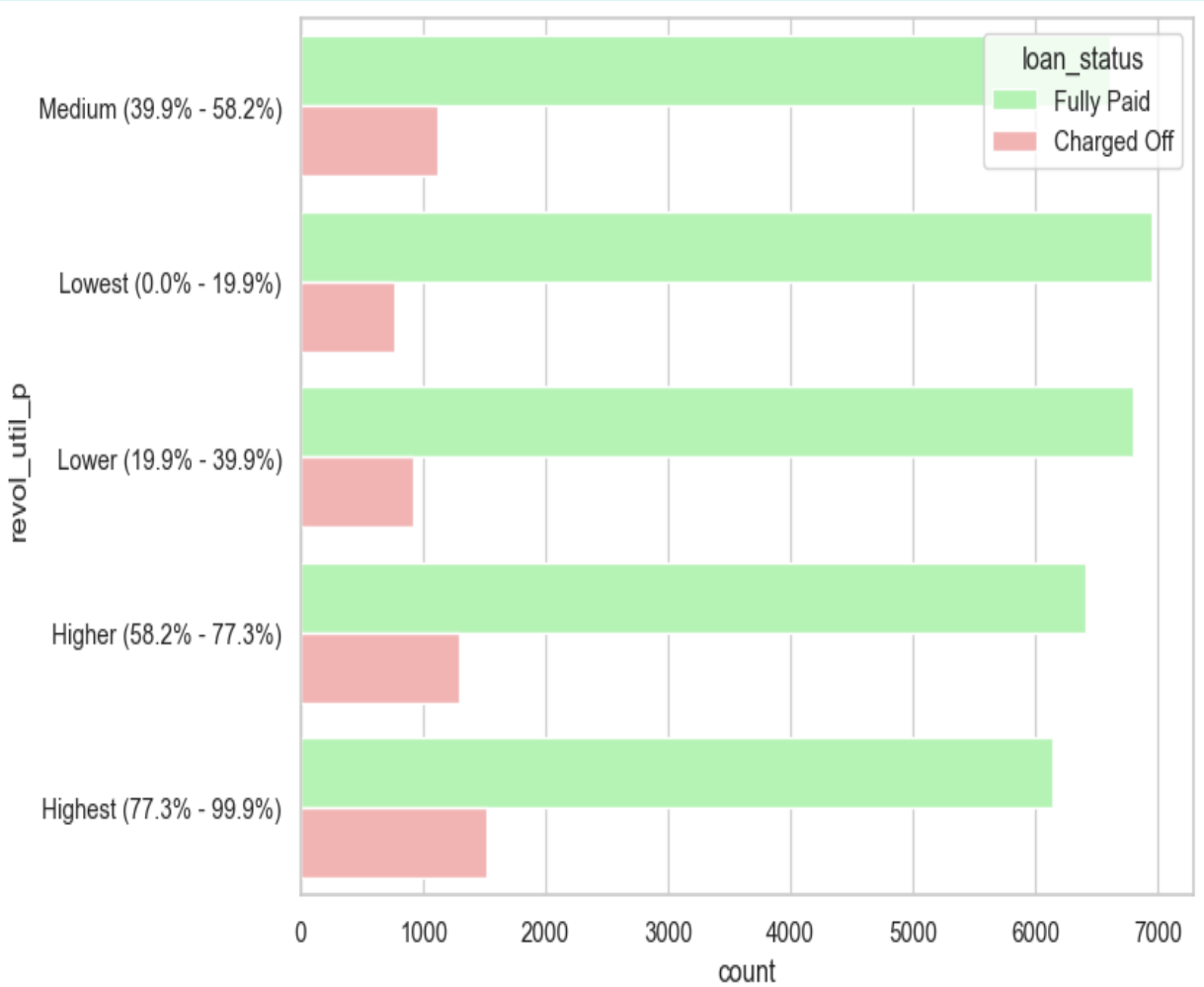
Interest Rate Analysis



Insight

Higher Interest Rates (>13%) are strongly correlated with increased default rates.

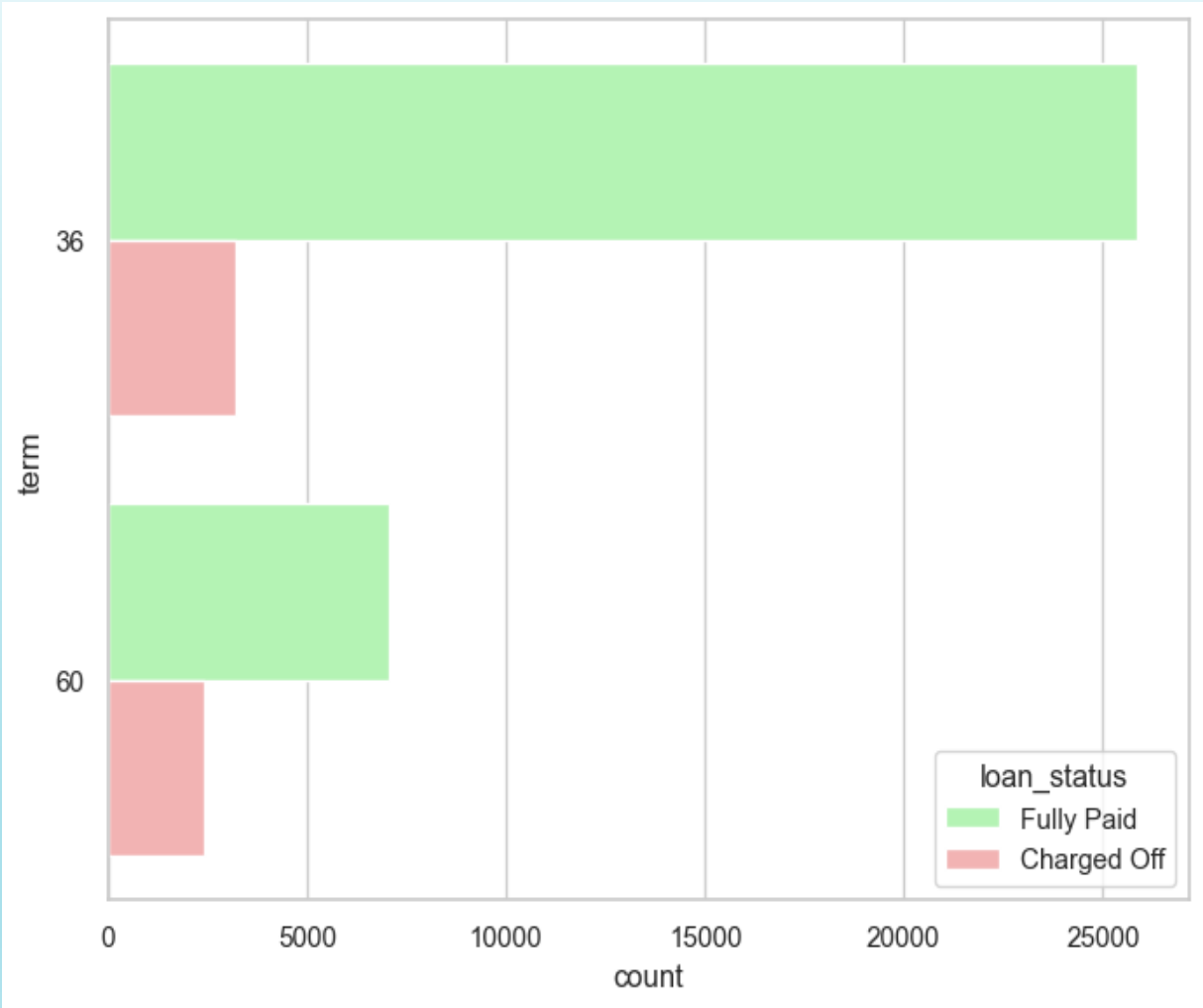
Revolving Line Utilization Rate



Insight

Utilization Rates above 58% are associated with higher default risks.

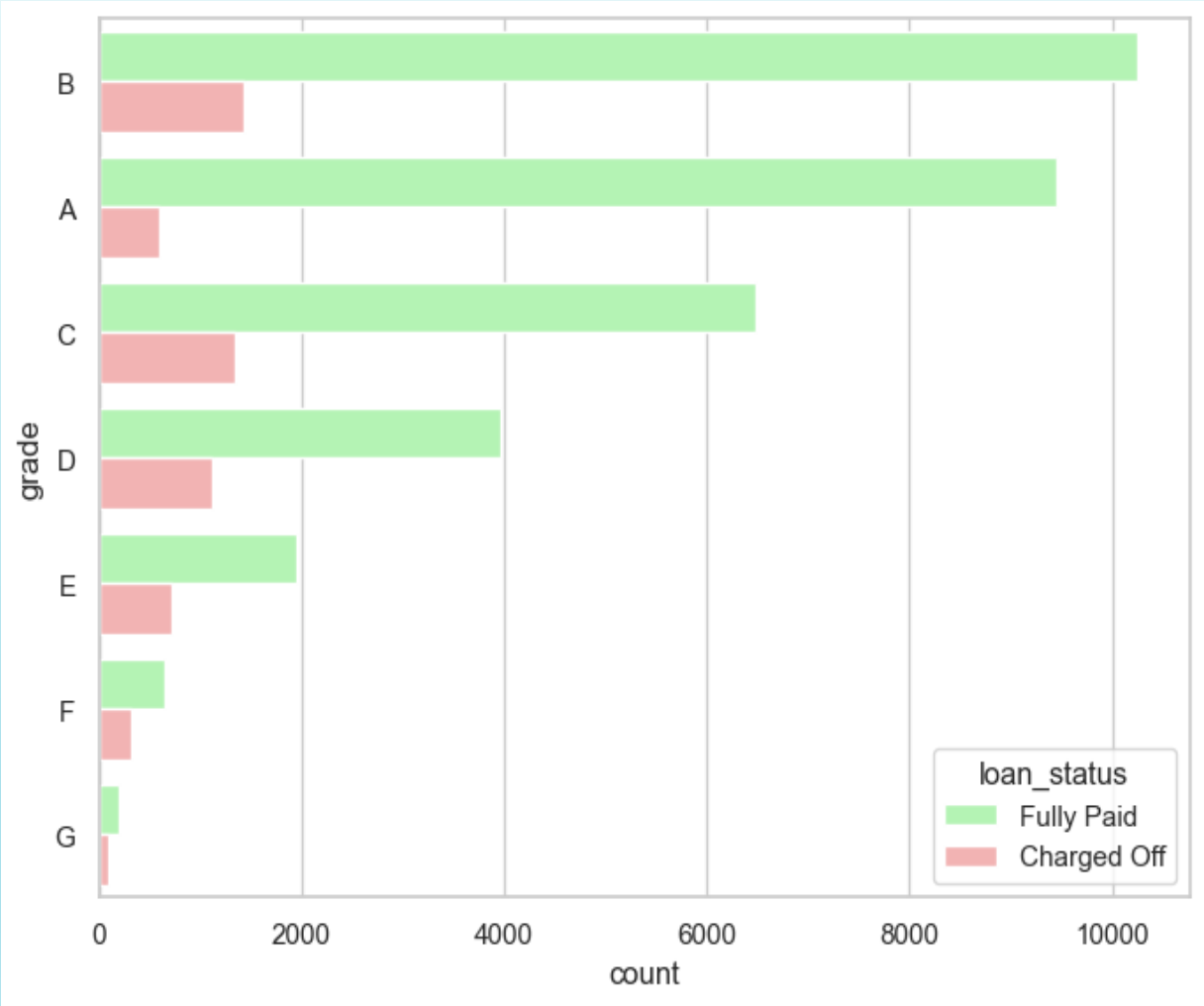
Repayment Term Analysis



Insight

5-Year Loans show a higher likelihood of default compared to shorter terms.

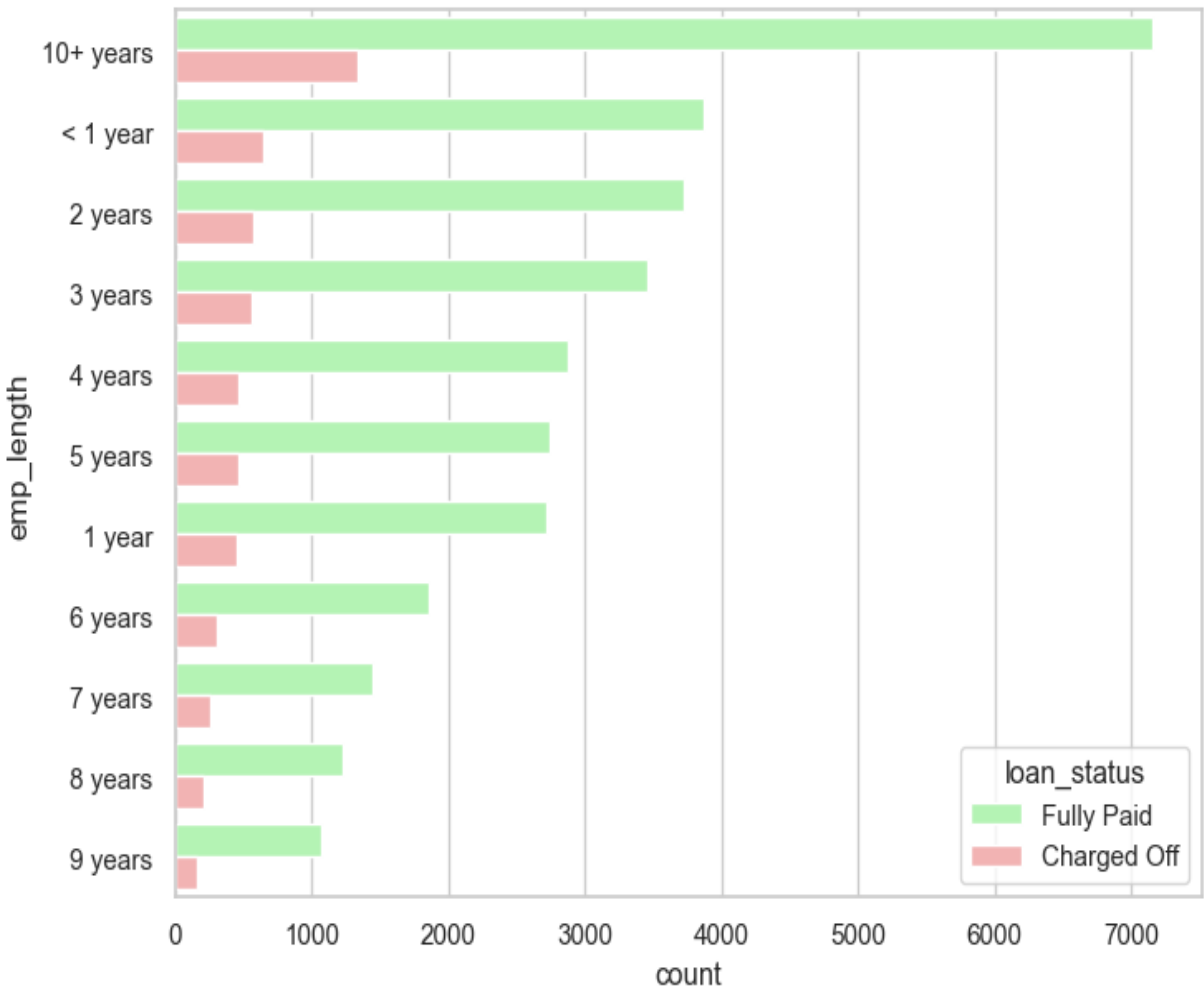
Loan Grade & Sub-Grade



Insight

Loans with grades **D-G** have a notably higher default rate.

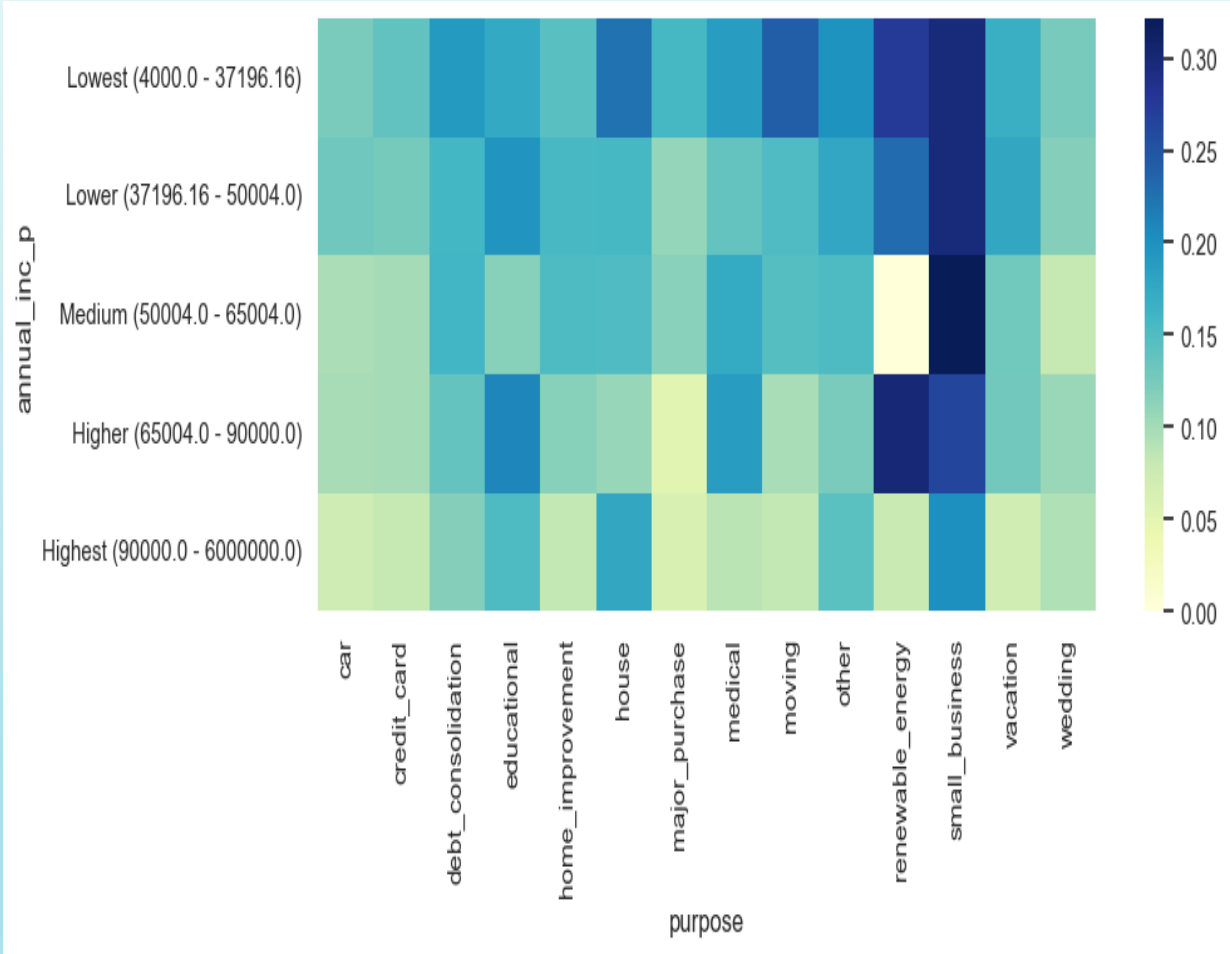
Missing Employment Record



Insight

Absence of Employment Record significantly increases default risk.

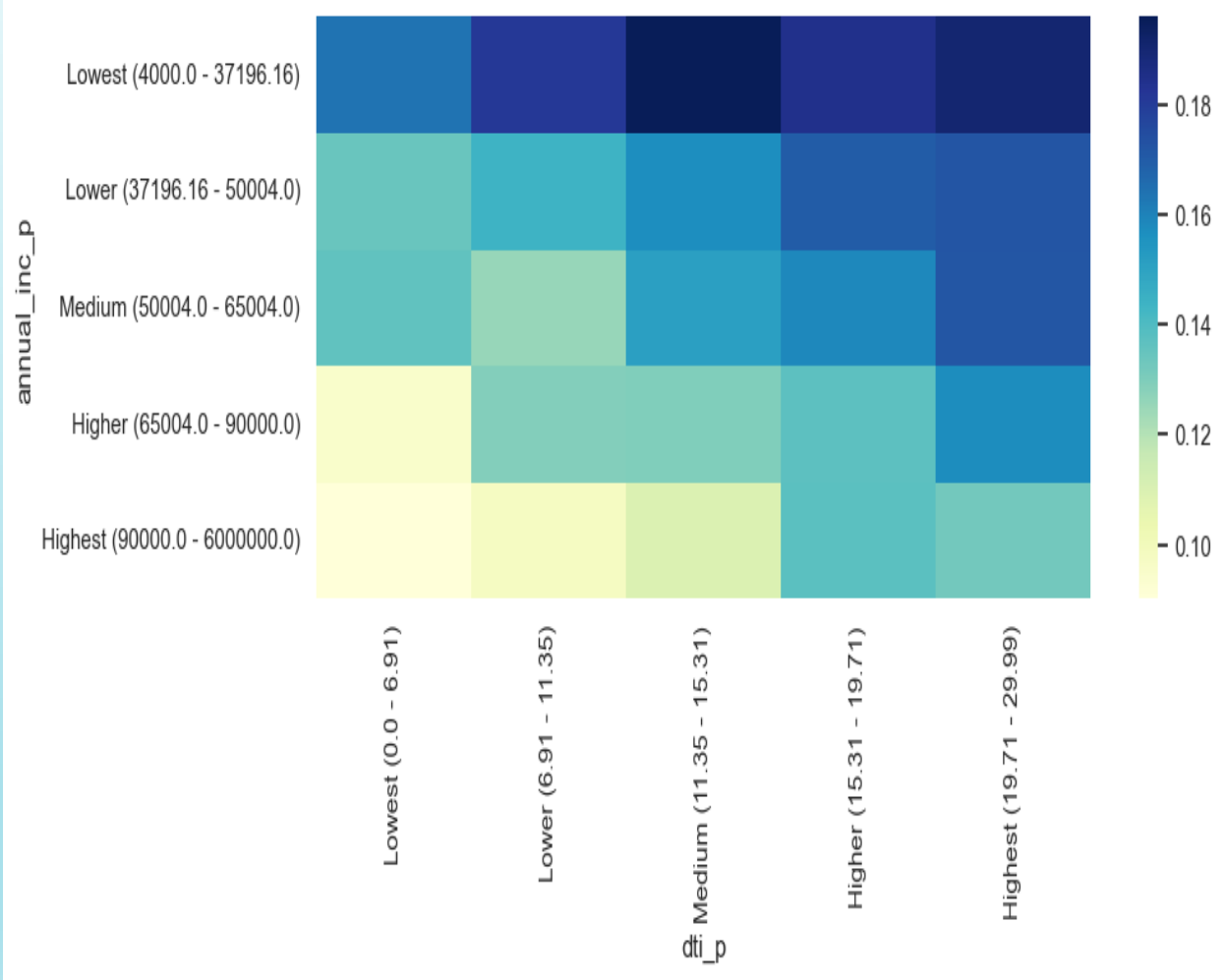
Loan Purpose Analysis



Insight

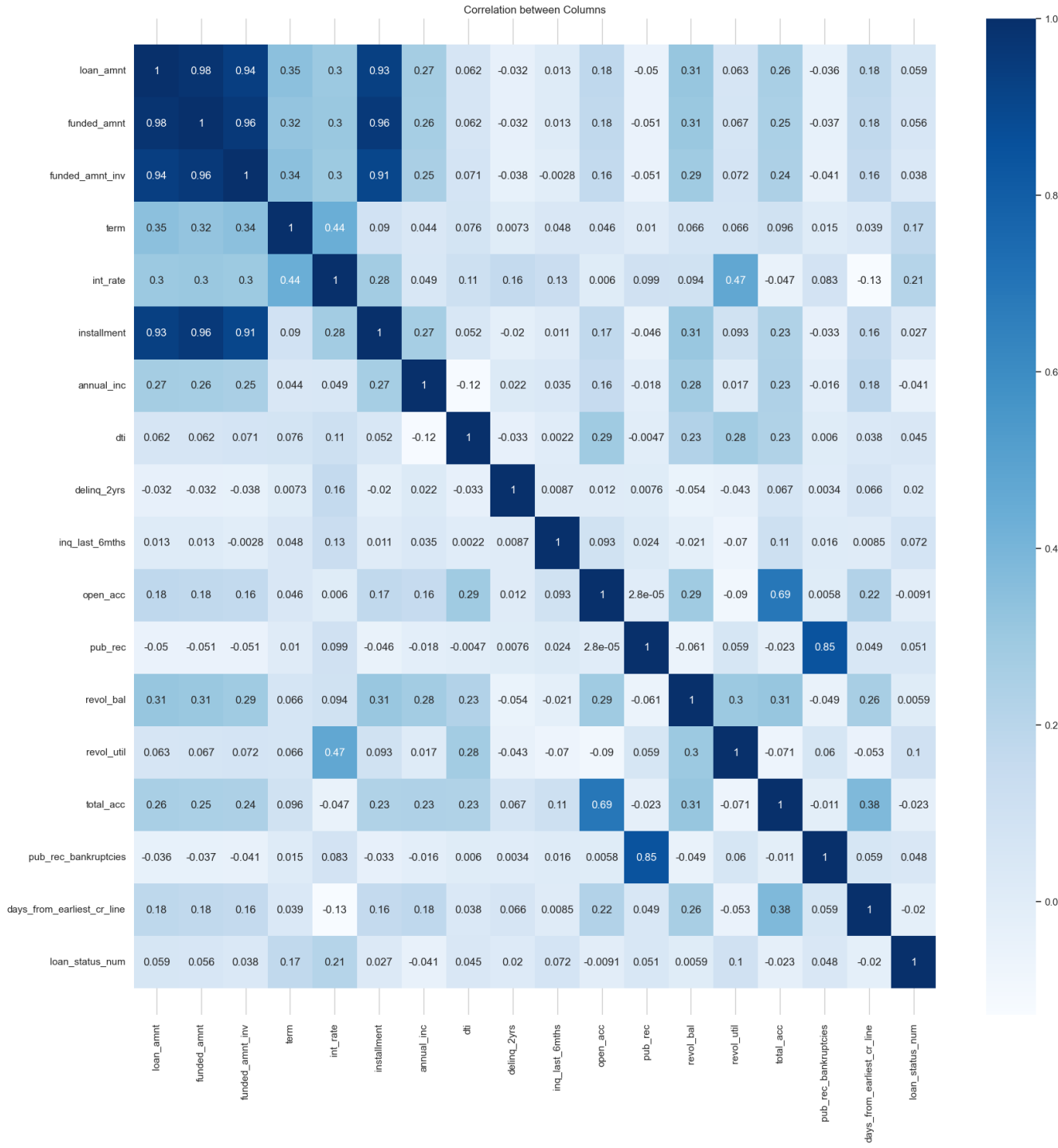
Specific loan purposes (e.g., small business, renewable energy) are linked with higher default rates.

Debt to Income ratio and Annual Income



Insight

Lower income bracket and higher DTI bracket borrowers are highly likely to default



Conclusion & Recommendations

Critical Factors:

High interest rates, high revolving utilization rates, long repayment terms, lower loan grades, and missing employment records are the key drivers of loan default.

Actionable Recommendations:

- Adjust approval criteria to mitigate high-risk factors.
- Develop targeted risk management strategies based on identified pattern