Lending Club Case Study

Submitted by

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Problem Statement

- Lending Club, a consumer finance marketplace offering diverse loans to urban customers, faces challenges in managing its loan approval process. The company aims to minimize **credit losses**, which arise when borrowers fail to repay their loans, particularly those categorized as "Charged-Off."

- The primary objective is to reduce defaults by addressing two key scenarios:

1. **Retaining Profitable Customers**: Identify applicants likely to repay loans to ensure consistent business growth.

2. **Mitigating Risks**: Avoid approving loans for high-risk applicants who may default, causing financial losses.

3. **Form approaches for attracting new customers by lending policy**

- Through **Exploratory Data Analysis (EDA)**, this case study seeks to uncover the driving factors behind loan defaults and provide actionable insights for better risk assessment and portfolio management.

Univariate Analysis: Loan Amount

- The majority of loans fall between 5,000 and 15,000, with the highest concentration around 10,000. This insight provides a clear understanding of typical loan amounts and customer borrowing trends.

- 20,000 and 25,000 present an opportunity window for exploring


Univariate Analysis: Loan Amount
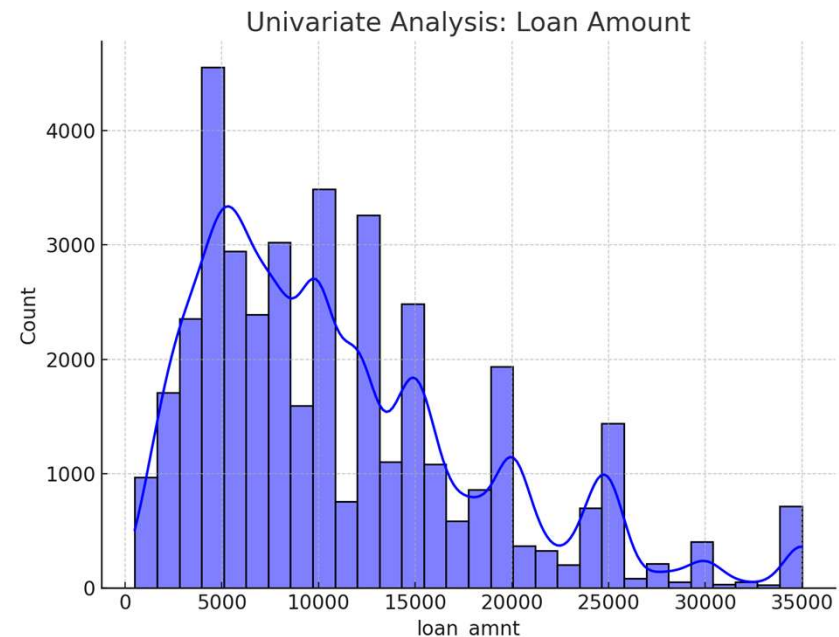
Loan Status Count

- "While a majority of loans are categorized as 'Fully Paid,' a significant portion falls under the 'Charged Off' category, indicating a clear area of concern. The prevalence of 'Charged Off' loans highlights the necessity for a comprehensive analysis to uncover the underlying factors driving loan defaults.

- By examining borrower demographics, financial stability, and loan-specific variables, Lending Club can identify patterns and predictors of default. This insight is critical not only for minimizing financial losses but also for improving the loan approval process to strike a balance between risk and business growth.

- The 5000 segment also represents the highest amount of charged off hence a time based alert or EMI paid amount alert needs to be programmed

Loan Status Count
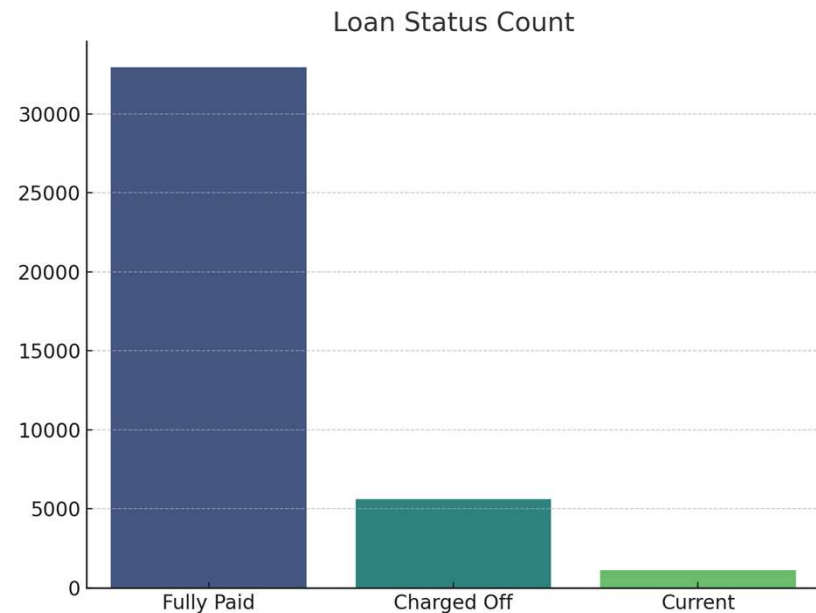
Interest Rate Distribution

- Interest rates are primarily concentrated between 10% and 20%, reflecting the standard pricing for most loans. However, loans with higher interest rates often correlate with increased risk, as they are generally assigned to borrowers with lower creditworthiness or higher chances of default.

- Understanding the distribution of interest rates is crucial for evaluating the effectiveness of risk pricing strategies. It helps Lending Club balance the trade-off between profitability and risk exposure. By analyzing the factors that influence interest rate assignments, such as borrower profiles, loan purpose, and repayment capacity, the company can refine its underwriting policies.

- The interest rate sweet spot for best returns falls between 12,000 and 17,500 . Median value plus /minus 3,000 would be an opportunity spot to exploit.

- Better interest rate offers may result in higher borrowing and by policy lower rates at lesser borrowing for lower amounts having a better outcomes overall


Interest Rate Distribution
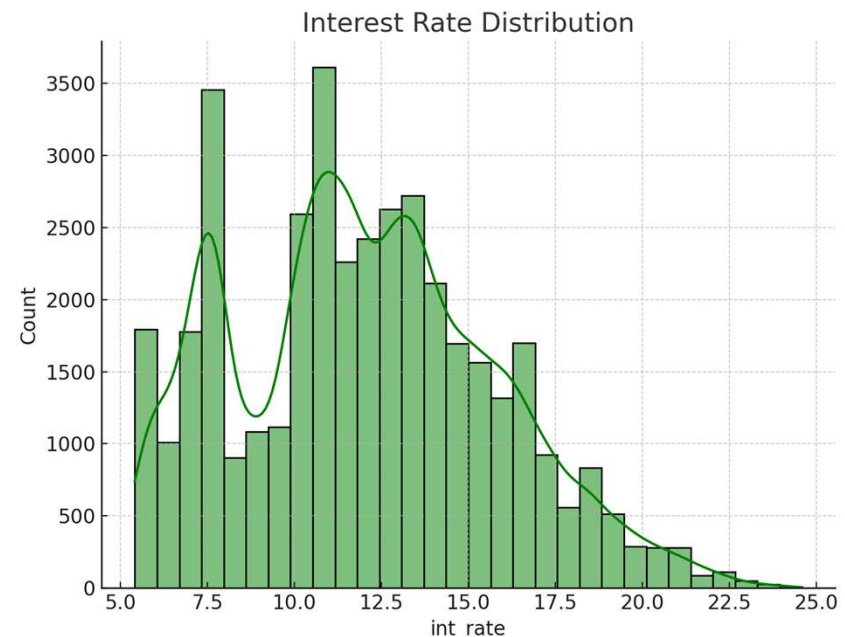
Loan Amount vs. Loan Status

- Defaults are observed across all loan amounts, with higher loan amounts exhibiting greater variability. This indicates that while loan amounts influence default risk, they are not the sole determining factor. Borrowers requesting larger loans may face unique financial challenges, increasing the probability of default.

- Analyzing loan amounts in conjunction with other variables, such as borrower credit profiles and repayment behavior, is crucial for accurately assessing risk. This insight can guide Lending Club in developing more nuanced approval criteria and loan structuring strategies to minimize defaults while catering to diverse customer needs

- **X AXIS VARIABLE PL MENTION**


Loan Amount vs. Loan Status

Loan Status focusing on Debt Consolidation

- Debt consolidation is a major reason for loan applications, with most loans being fully paid. However, a significant portion of these loans falls under the 'Charged Off' category, indicating a higher risk of default in this segment.

- This suggests that borrowers seeking loans for debt consolidation may face financial instability, making them more prone to default. Lending Club should consider implementing stricter risk assessment protocols, such as detailed credit evaluations and tailored interest rates, for debt consolidation loans. These measures can help mitigate risks while ensuring continued support for borrowers in need of financial restructuring.

- Impact of moratorium on restructured loans for a 2 quarter period needs to be done but augment it by increase in interest rates by 50bps.

Debt Consolidation Risk vs. Loan Status
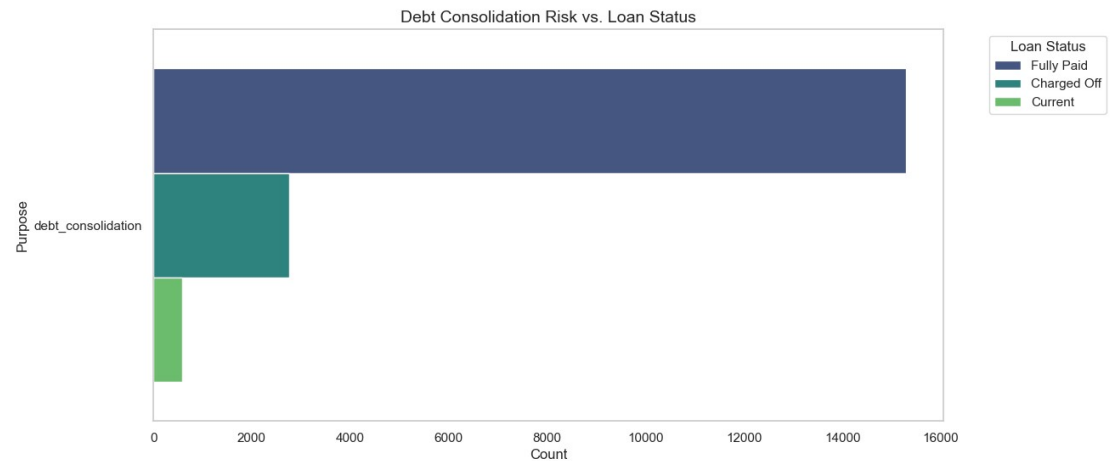
Home Ownership vs. Loan Status

"Home ownership status significantly impacts loan repayment outcomes. Borrowers who rent or have mortgages represent the largest segments, with most loans being fully paid. However, 'Charged Off' loans are also more prevalent among these groups compared to those who own their homes outright.
This indicates that financial obligations associated with renting or mortgages might increase the likelihood of default. LendingClub should consider incorporating home ownership status into their risk assessment models to better evaluate repayment capabilities. Tailored loan products and support for renters and mortgage holders can help mitigate default risks while addressing customer needs
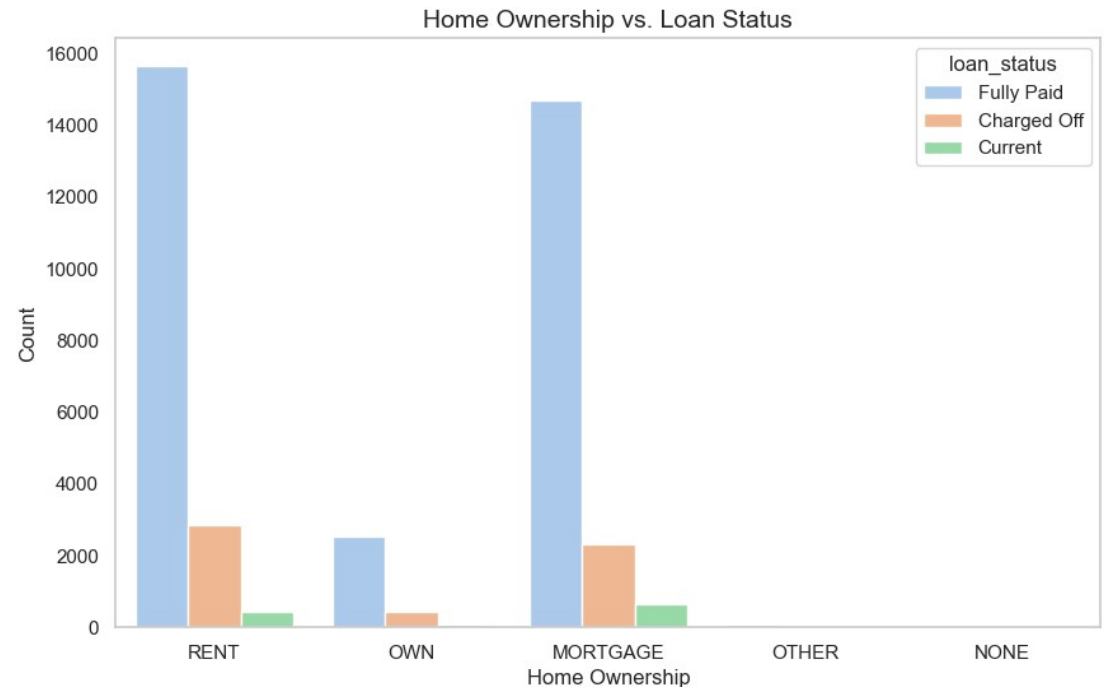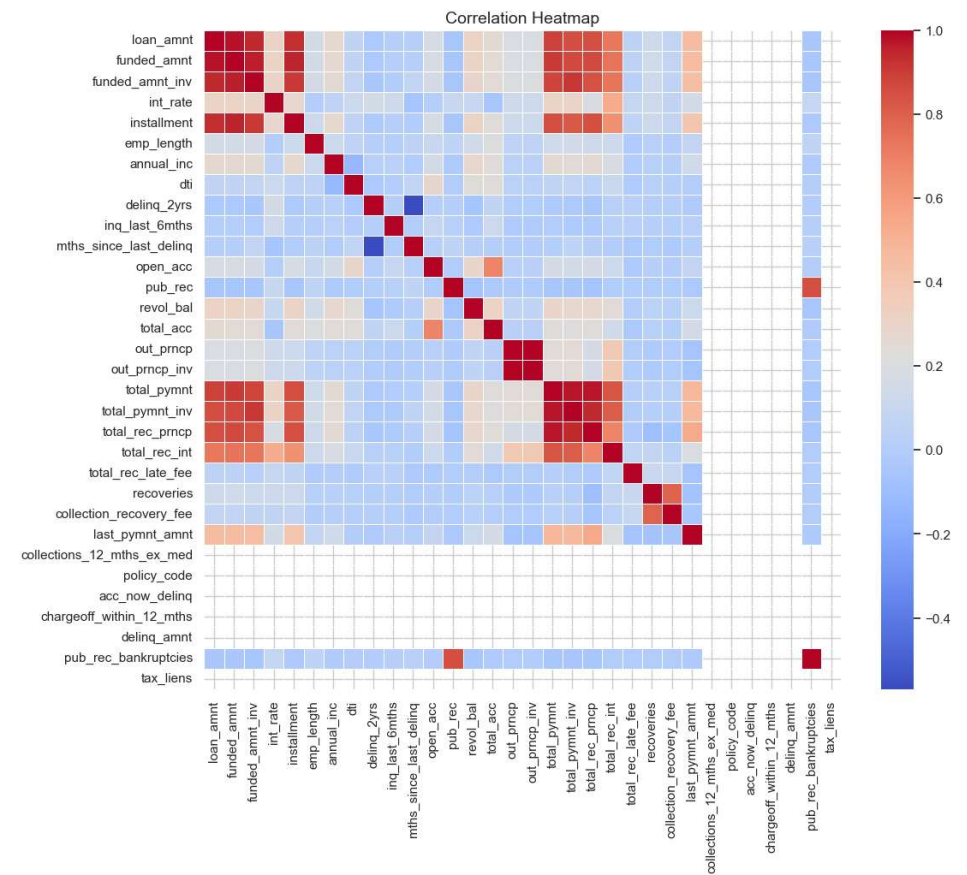
Default Rate by Employment Length

- The default rate remains relatively consistent across different employment lengths, ranging between 12% and 15%. Interestingly, even borrowers with longer employment tenures, such as 10+ years, exhibit similar default rates to those with shorter or no employment history.

- This suggests that employment length alone may not be a strong predictor of loan default. Lending Club should consider combining employment length with other factors, such as income stability and debt-to-income ratio, to create a more comprehensive risk assessment model. This approach can improve the accuracy of predicting borrower default risk and enhance decision-making processes.

- Value of home mortgage and annual insurance charges vis a vis 401k needs to be added as a evaluation parameter.
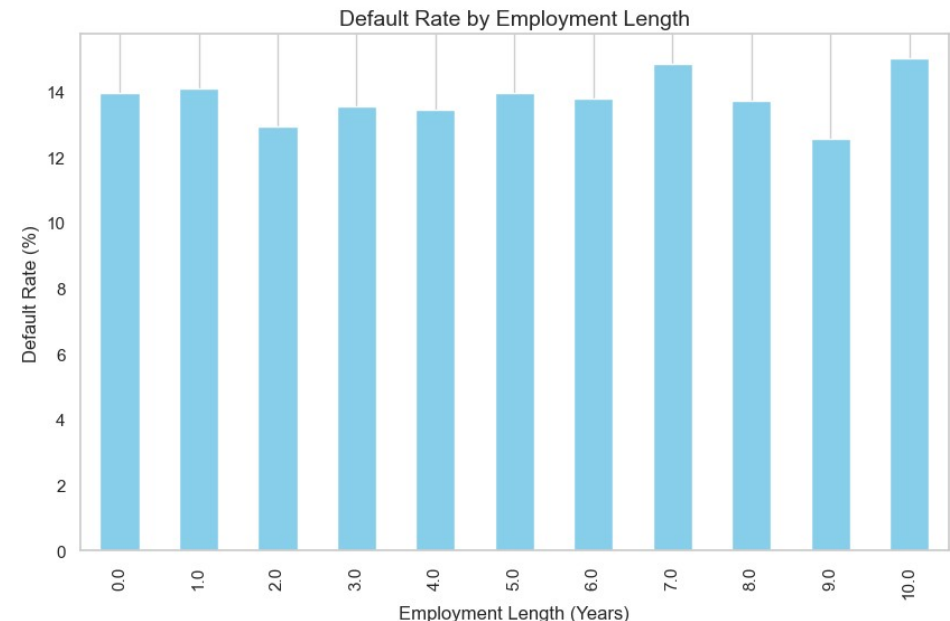
Correlation Heatmap

- Strong correlations exist between 'loan_amnt,' 'funded_amnt,' and 'installment.' Moderate correlations with 'int_rate' indicate its role in default prediction.

- Heat Map provides 4 zones for policy assessment and risk assessment by duration. for no of people

- To be correlated along with default rates and interest rates and observations size . %value needs to be established at varying correlation rates

Correlation Heatmap

Conclusion

- The analysis highlights critical factors influencing loan defaults, such as interest rates, loan amounts, employment length, and loan purposes. These insights can guide risk-based pricing and improve credit evaluation processes.