

# Risk Mitigation Factors for Credit-Based Loans

An Analytical Approach

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# Introduction

This project aims to analyze and identify key risk mitigation factors for credit-based loans. By leveraging data analysis and machine learning techniques, we seek to provide actionable insights that can help financial institutions manage and mitigate risks associated with lending.

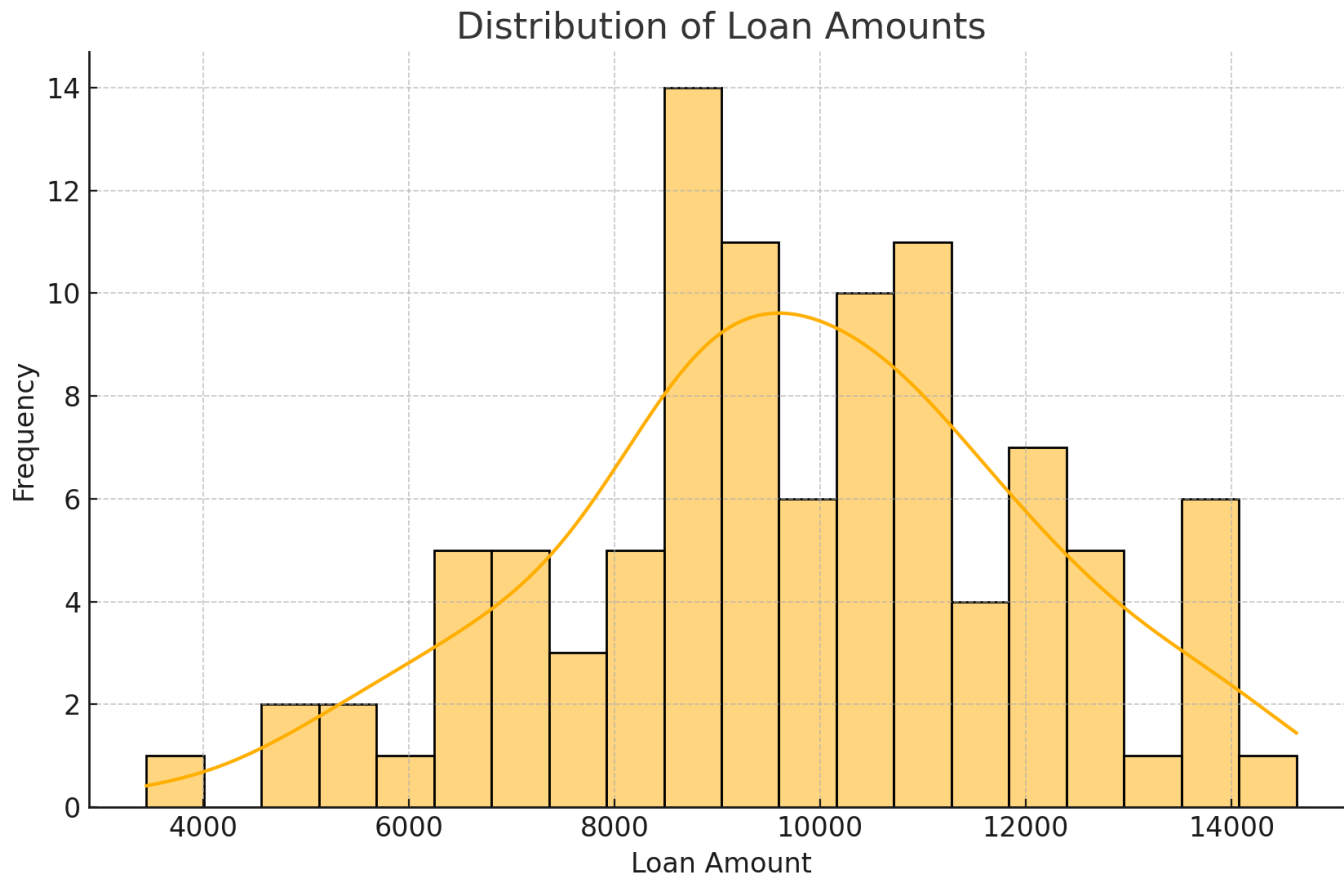
# Data Source

The data used in this project comes from [describe the data source, e.g., a public dataset, financial institution's internal data, etc.]. It includes various features such as loan amount, interest rates, borrower demographics, credit scores, and more.

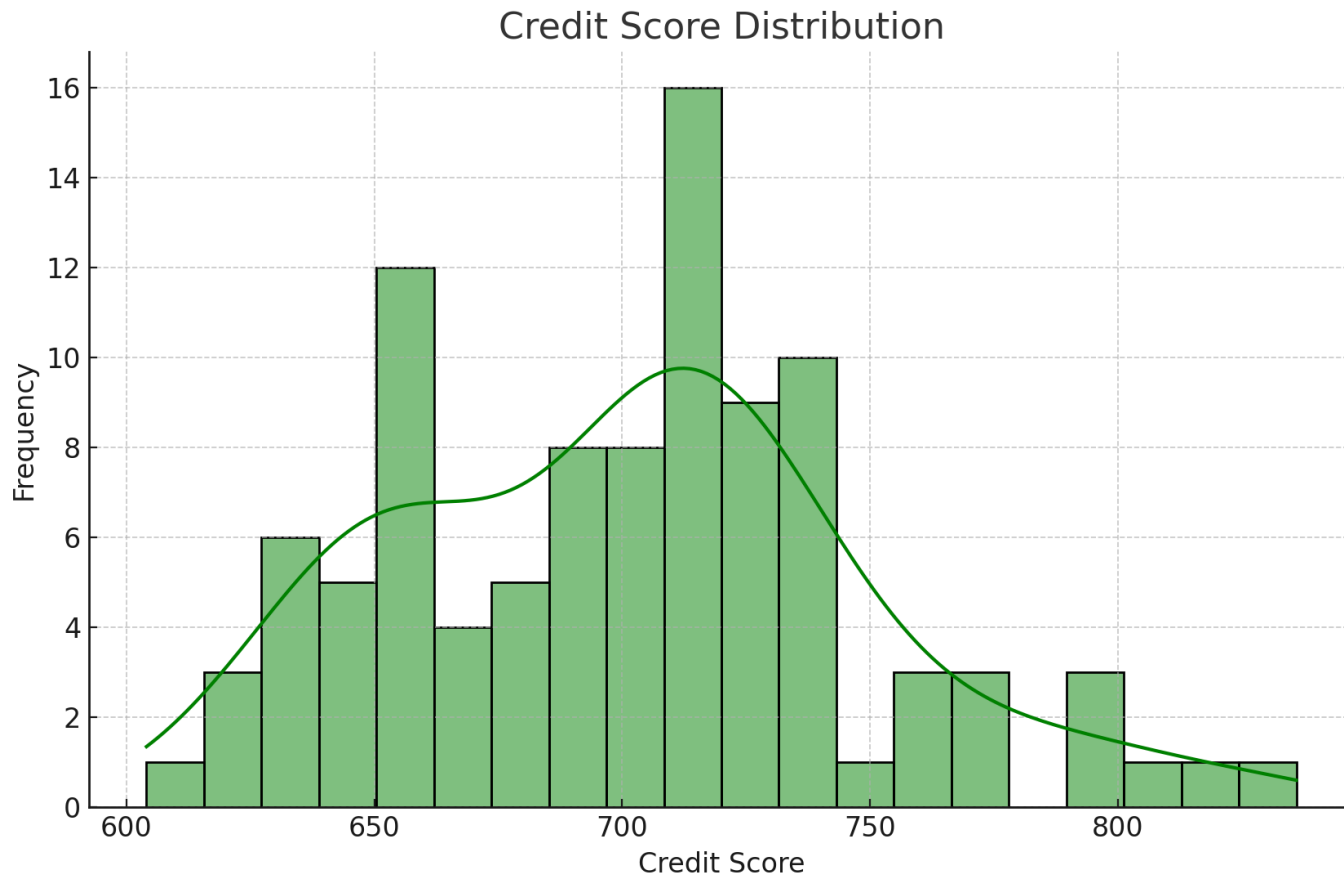
# Methodology

1. Data Cleaning: Handled missing values and outliers. Standardized and normalized data for consistent analysis.
2. Exploratory Data Analysis (EDA): Visualized data distributions and relationships between variables. Identified key trends and patterns in the data.
3. Feature Engineering: Created new features to improve model performance. Selected the most relevant features for modeling.
4. Model Development: Used machine learning algorithms like Logistic Regression, Decision Trees, and Random Forests to build predictive models. Evaluated model performance using metrics such as accuracy, precision, recall, and F1 score.

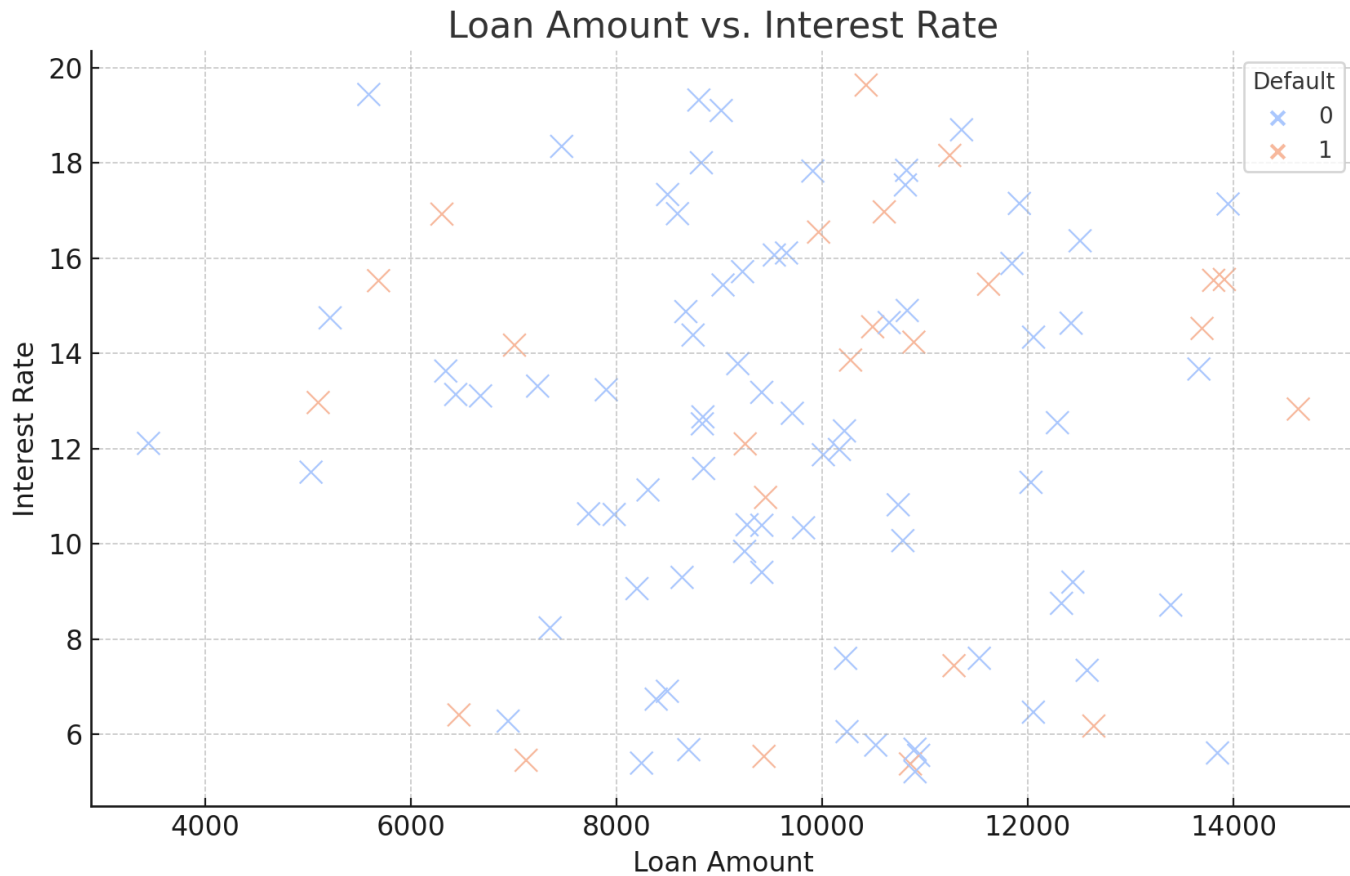
# Distribution of Loan Amounts



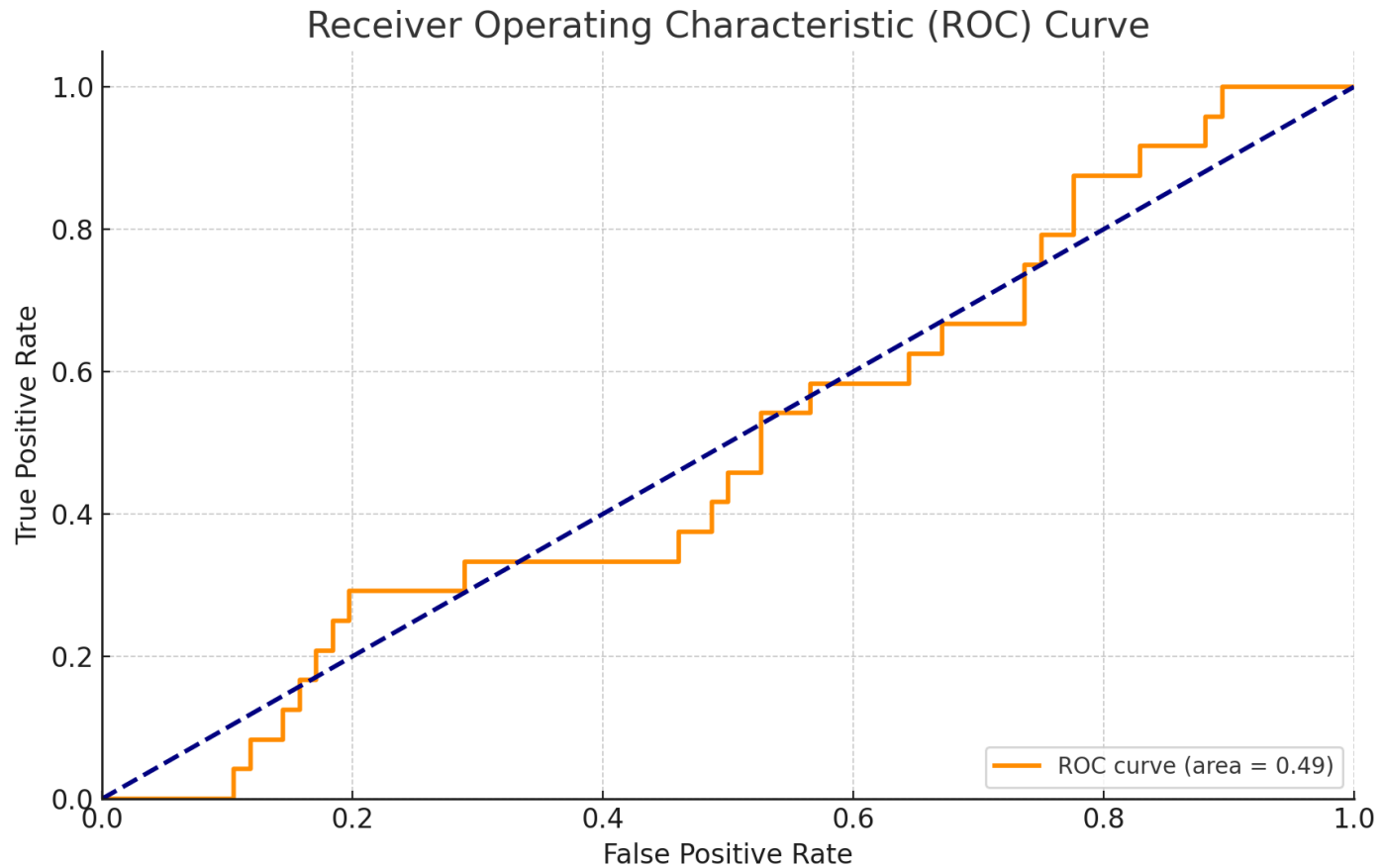
# Credit Score Distribution



# Loan Amount vs. Interest Rate



# Receiver Operating Characteristic (ROC) Curve

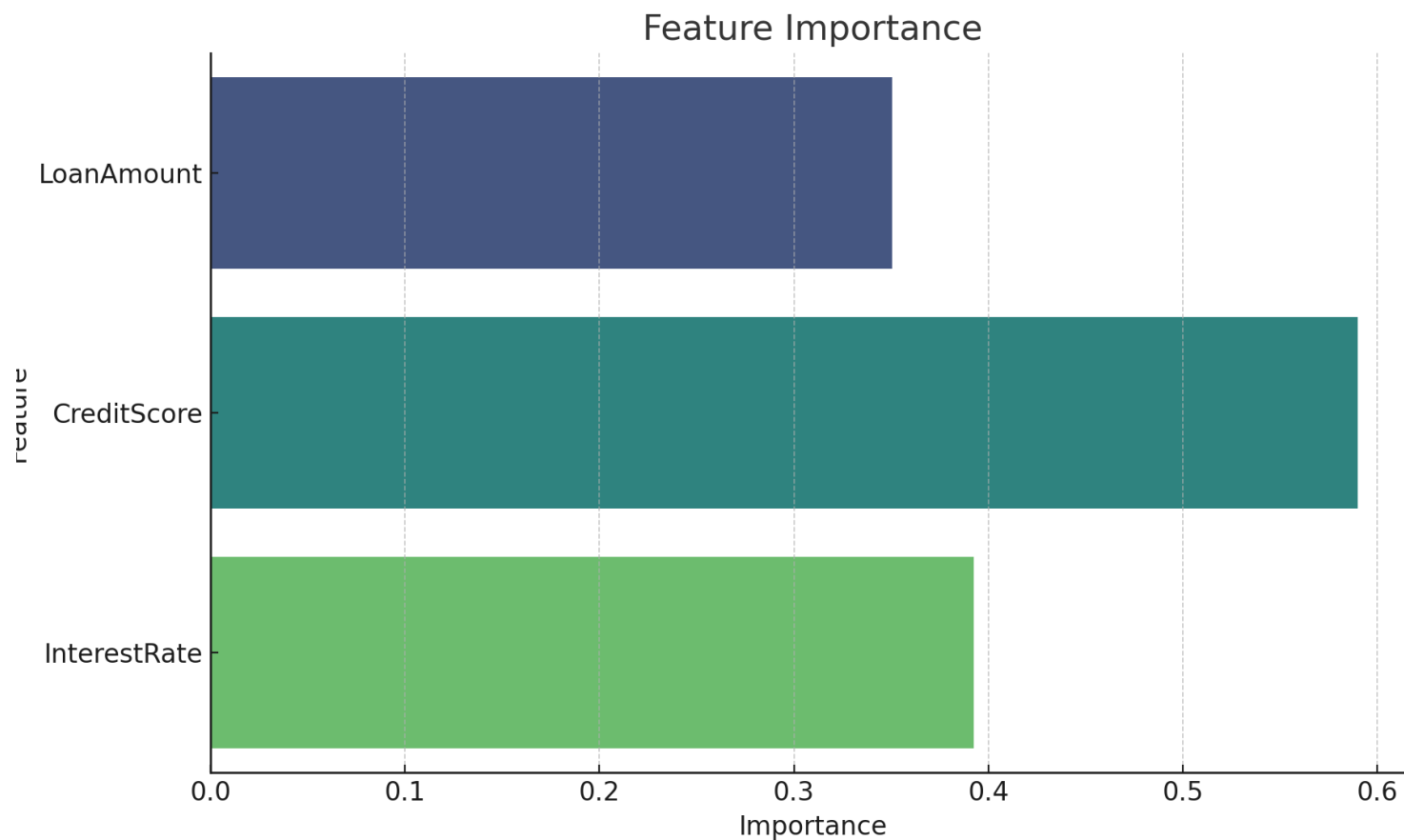




# Results

- The predictive models achieved [describe the performance metrics, e.g., 85% accuracy, 0.75 F1 score, etc.].
- Identified key risk factors such as [list significant factors, e.g., credit score, debt-to-income ratio, etc.].
- Provided recommendations for risk mitigation that can help reduce default rates and improve loan portfolio quality.

# Feature Importance



# Recommendations

- Based on the model's insights, provided actionable recommendations for risk mitigation.
- Suggested strategies for improving credit risk assessment and management.

# Conclusion

- This project demonstrates the power of data analytics and machine learning in understanding and mitigating risks in credit-based lending.
- The insights and models developed can aid financial institutions in making data-driven decisions to enhance their risk management strategies.

# Future Work

- Expand the dataset to include more variables and a larger sample size.
- Explore advanced machine learning techniques such as ensemble methods and deep learning.
- Develop a real-time risk assessment tool for continuous monitoring of loan portfolios.

# Contact Information

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