

CREDIT RISK ANALYSIS AND OPTIMIZATION OF LENDING DECISIONS

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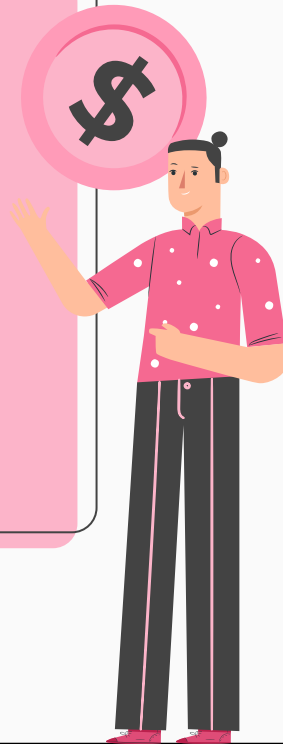
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EXECUTIVE SUMMARY

- **Objective:** Identify patterns in high-risk loans and optimize credit assessment processes to minimize financial losses.
- **Key Insights:**
 - High interest rates (>20%) and short credit history correlate with default risks.
 - Borrowers with limited credit accounts or low credit limits are high-risk.
- **Outcome:** Strategic recommendations to prioritize safe borrowers, cap interest rates, and enforce credit restrictions.

INTRODUCTION

- **Problem:** Rising defaults necessitate understanding risk factors in lending.
- **Dataset:** Analysis using public dataset from Kaggle: [Loan - Credit Risk & Population Stability](#). This dataset includes 66,4824 rows with 142 attributes,
- **Audience:**
 - Loan officers & risk managers: For refining credit assessment processes.
 - Financial decision-makers: To align lending strategies with risk mitigation.
- **Scope:**
 - Risk categories, delinquency, credit utilization, and financial profiles.
 - Actionable thresholds (e.g., interest rates, credit limits).



METHODOLOGY

DATA COLLECTING

Understanding Data, Feature Selection, Filtering Feature

STATISTICAL RELATIONSHIP TESTING

Interest Rate, Length of Credit History, The Relationship Between The Number of Active Credit Accounts and The Risk of Default, Total Balance and Credit Limit

DATA PREPROCESSING

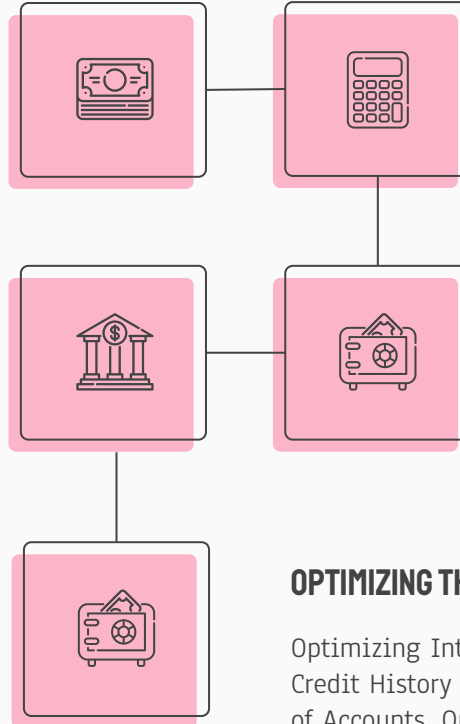
Search for Missing Value, Handling for Missing Value, Search for Duplicate Value, Handling for Duplicate Value

EXPLORATORY DATA ANALYSIS (EDA)

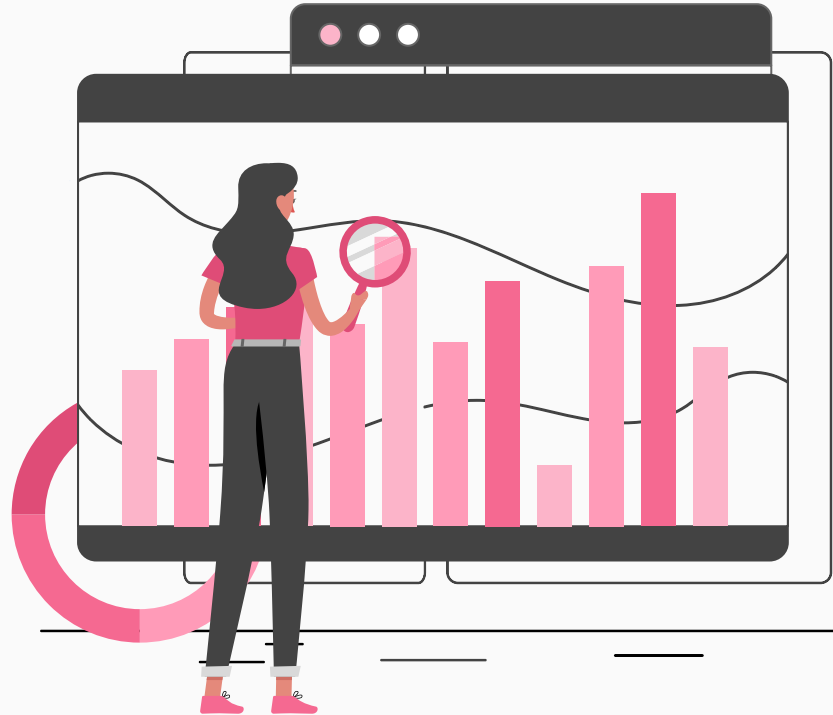
Delinquency & Default Risk, Credit Utilization & Debt Burden, Creditworthiness & Loan Terms, Credit History Age, Credit Account Metrics, Total Balance & Credit Limit

OPTIMIZING THE CREDIT ASSESSMENT PROCESS

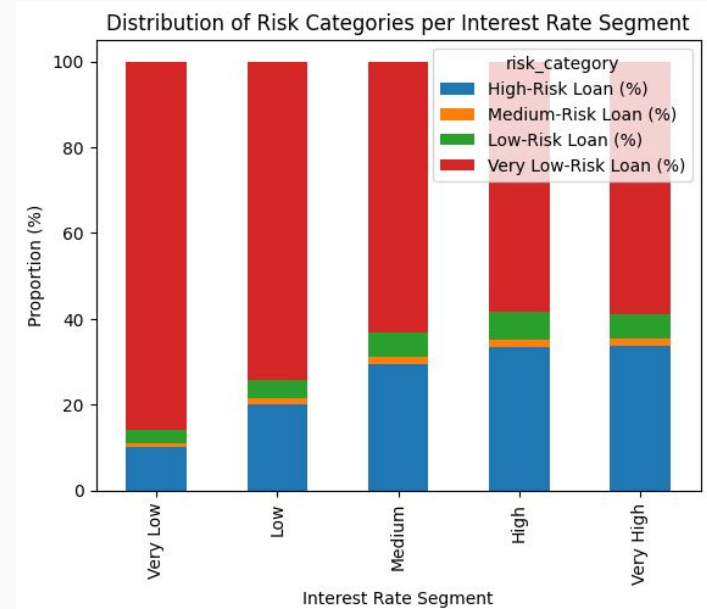
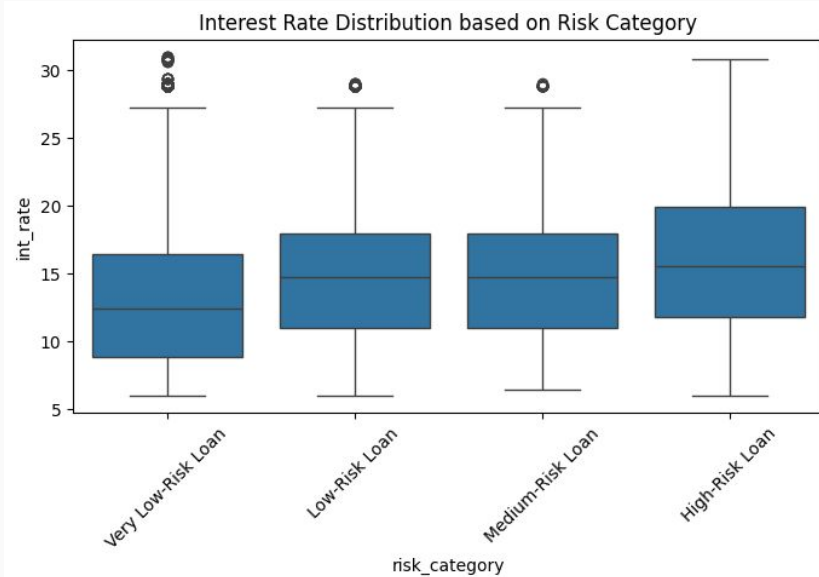
Optimizing Interest Rate, Optimizing Credit History Age, Optimizing Number of Accounts, Optimizing Total Balance and Credit Limit



FINDINGS & IMPACT



HIGH INTEREST RATES INCREASE RISK



HIGH INTEREST RATES INCREASE RISK - FINDINGS AND IMPACT

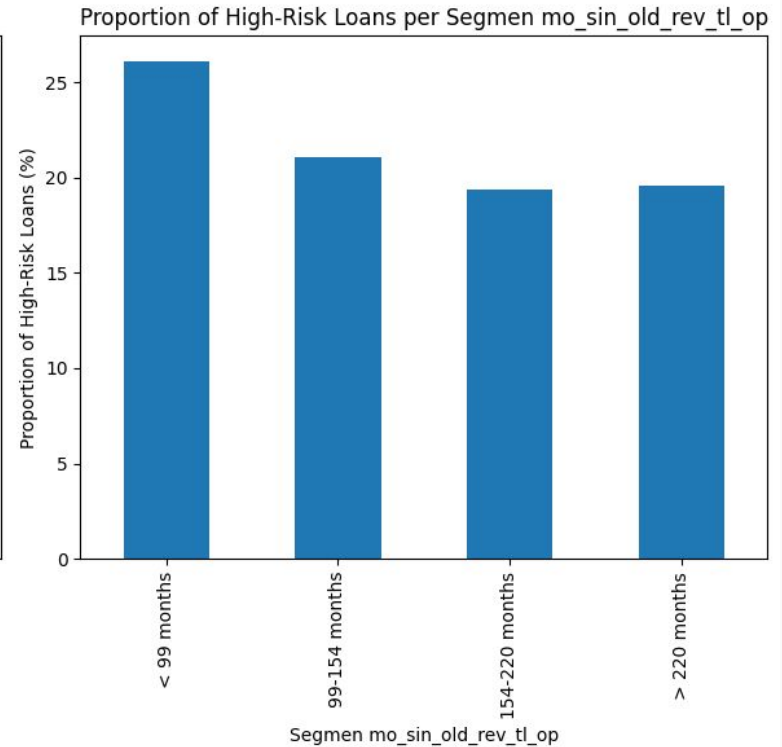
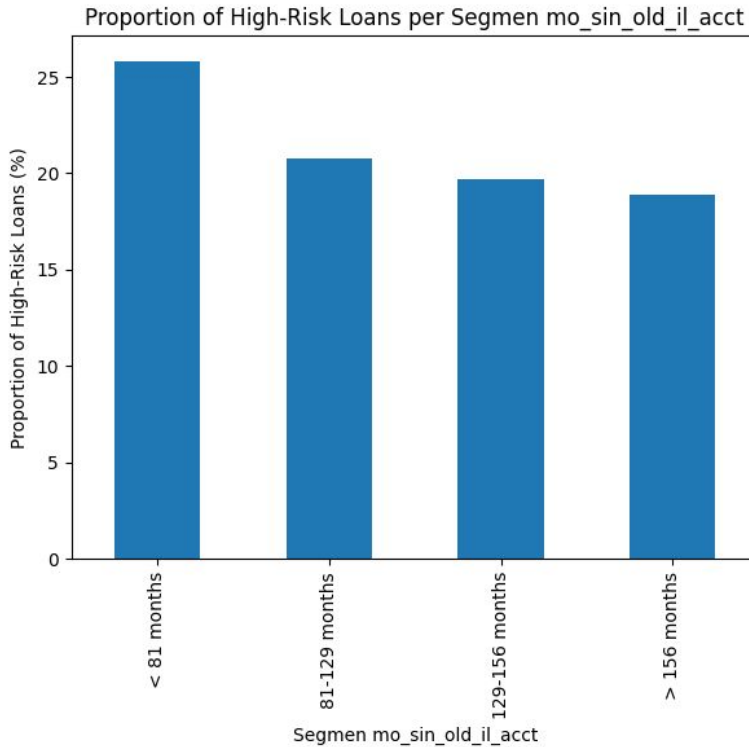
FINDING:

- Borrowers with **interest rates >20%** are classified as high-risk.
- Example: Loans with rates above 20% show **significantly higher default rates**.

IMPACT & RECOMMENDATION:

- **Cap interest rates at $\leq 20\%$** to reduce exposure.
- **Outcome:** Mitigates defaults while maintaining profitability.

SHORT CREDIT HISTORY = HIGH RISK



SHORT CREDIT HISTORY = HIGH RISK - FINDINGS AND IMPACT

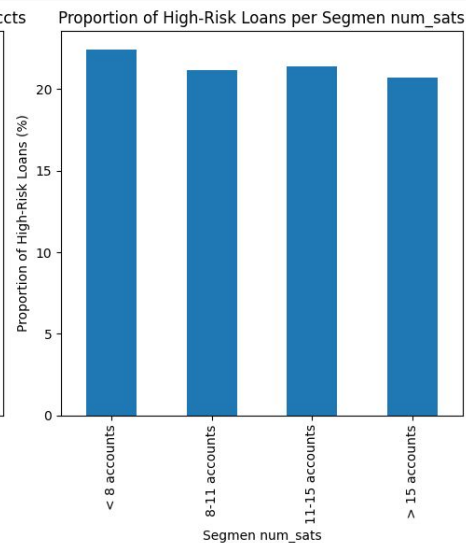
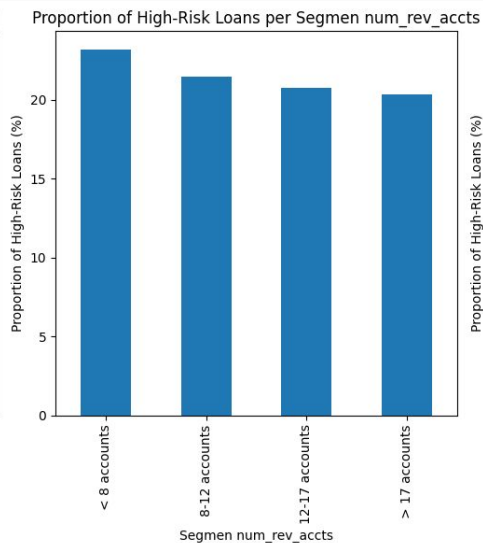
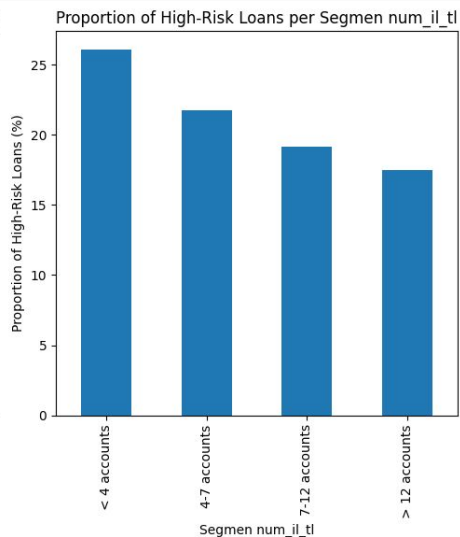
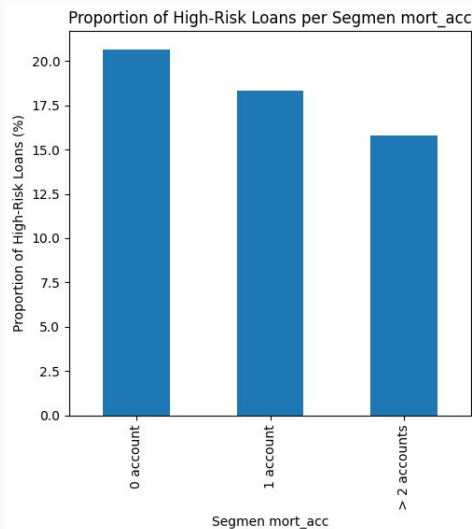
FINDING:

- Borrowers with **credit history <3 years** (e.g., first account opened ≤ 3 years ago) exhibit higher risk.
- Example: Those with **<13 years** for installment loans or **<18 years** for revolving credit.

IMPACT & RECOMMENDATION:

- **Prioritize borrowers with >13–18 years of credit history.**
- **Outcome:** Reduces risk by leveraging experienced borrowers..

LOW ACCOUNT DIVERSITY INDICATES VULNERABILITY



LOW ACCOUNT DIVERSITY INDICATES VULNERABILITY - FINDINGS AND IMPACT

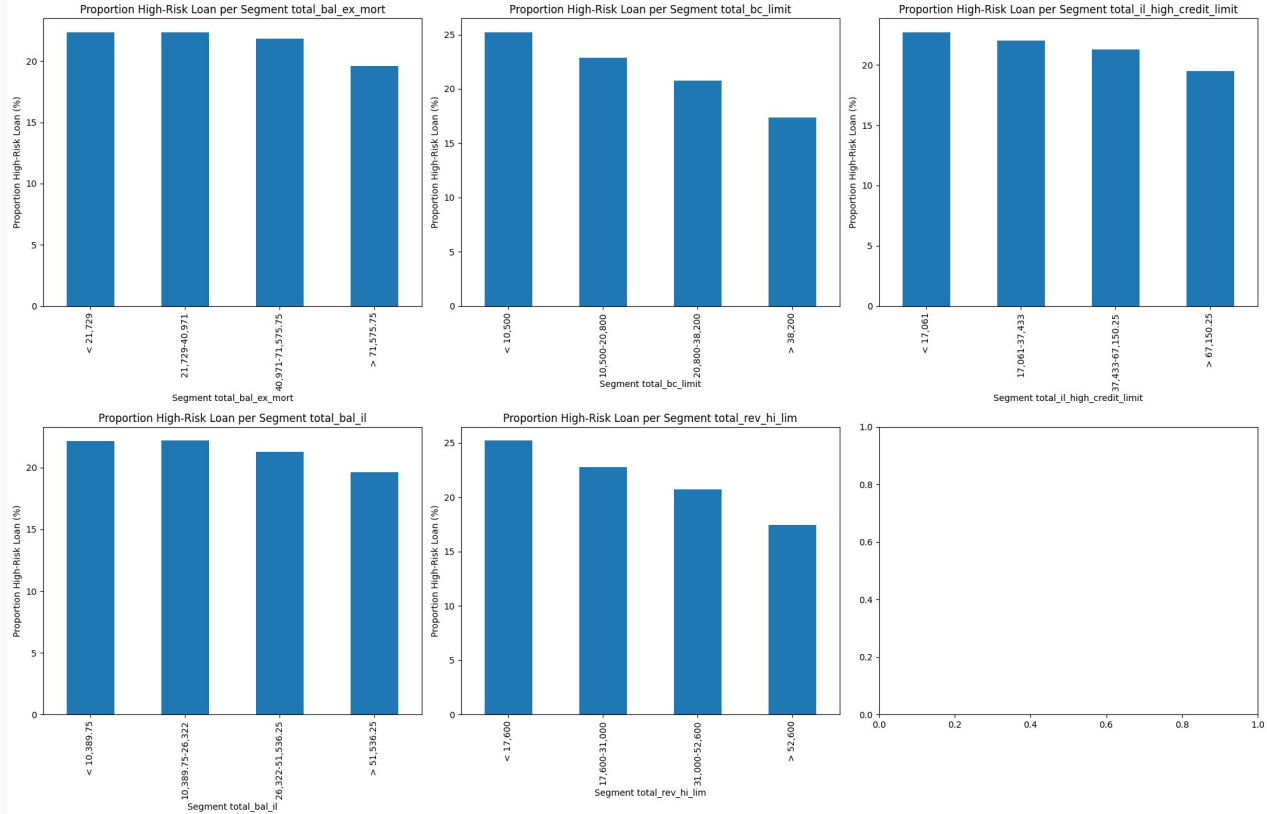
FINDING:

- High-risk borrowers lack:
 - **Mortgage accounts** (none).
 - **Installment loans** (<4).
 - **Revolving accounts** (<8).

IMPACT & RECOMMENDATION:

- **Restrict loans** to borrowers with:
 - 2 mortgages, >12 installment loans, >17 revolving accounts.
- **Outcome:** Strengthens portfolio diversification.

FINANCIAL PROFILE OF HIGH-RISK BORROWERS



FINANCIAL PROFILE OF HIGH-RISK BORROWERS - FINDINGS AND IMPACT

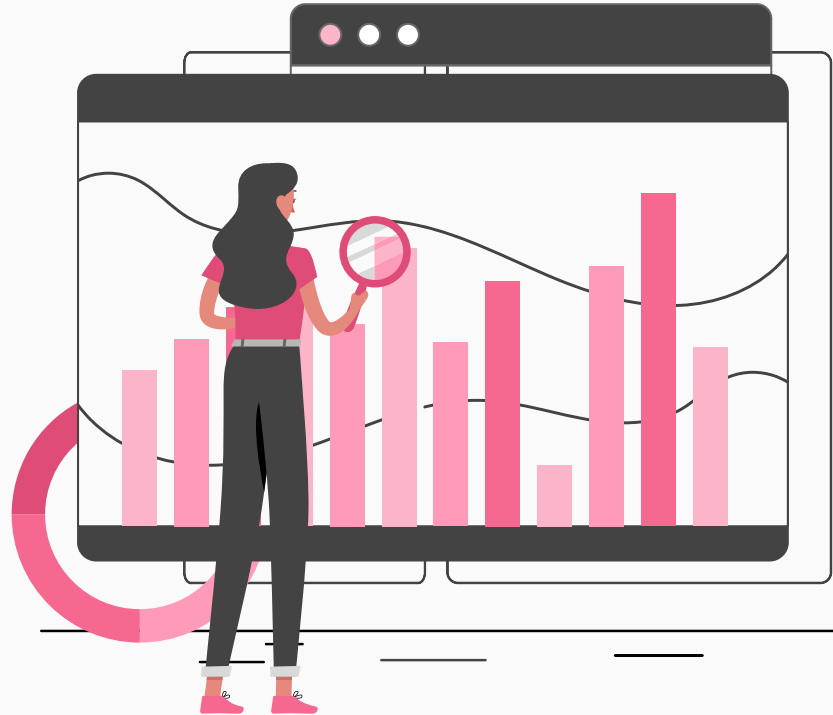
FINDING:

- High-risk borrowers have:
 - **Low balances:** Average total balance below safe thresholds
 - **Small credit limits:**
 - Bank card limits <**10,500** currency units.
 - Revolving limits <**17,600** currency units.

IMPACT & RECOMMENDATION:

- **Allocate credit** to borrowers with:
 - Bank card limits >**38,200** or revolving limits >**52,600**.
- **Outcome:** Improves portfolio stability and profitability.

DISCUSSION AND CONCLUSION



KEY TAKEAWAYS:

- **Risk Thresholds:** Quantitative metrics (e.g., 20% interest rate, 10,500 credit limit) define actionable policies.
- **Trade-offs:** Balancing inclusivity (e.g., new borrowers) vs. risk reduction.

LIMITATIONS:

- Data limited to 2019–2020 (pre-pandemic).
- Recommendations need testing in real-world scenarios.

SUMMARY:

- **Critical Levers:** Interest rates, credit history, account diversity, and financial profiles.
- **Action Plan:** Implement rate caps, credit restrictions, and prioritization of stable borrowers.

NEXT STEPS:

- Pilot policies and monitor default rates.
- Update analysis with post-2020 data.

DISCLAIMER

This report is still being refined, your feedback means a lot!

Full Project



https://taufikhidayah.my.id/project_2

Data Source



<https://www.kaggle.com/datasets/beatafaron/loan-credit-risk-and-population-stability>

Analysis code



https://taufikhidayah.my.id/code_2

THANKS

Does anyone have any questions?

contact@taufikhidayah.my.id

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