Credit Risk Analysis

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AGENDA OVERVIEW

Background

The company is a financial technology (Fintech) platform that connects investors (lenders) with borrowers, enabling peer-to-peer lending outside the traditional banking system. The company facilitates loans where investors provide capital and borrowers repay with interest, generating profit for both investors and the company.

Problem Statement

- With the rise in loan demand, assessing borrower risk and loan performance has become increasingly important.
- The dataset, spanning 2007–2014 and including the 2008 financial crisis, poses potential risk implications.
- Analyzing this data can uncover repayment behaviors, default trends, and key factors influencing credit risk

Objective

- Identify key factors influencing borrower behavior and repayment capacity
- Distinguish between good and bad loans through data analysis
- Propose strategies to enhance lending decisions and reduce defaults

METHODOLOGY

Loan Classification:

- ❑ **Good loan:**
  - Fully Paid
  - Charge off, default, late (recovery rate > 70%)
  - Current (Loan seasoning >40%)
- ❑ **Bad loan:**
  - Charge off, default, late (recovery rate <40%)
- ❑ **Neutral:** Else

Key dimensions:

- ❑ Credit profiles
- ❑ Debt management pattern
- ❑ Income and financial stability
- ❑ Loan structure and terms

ANALYSIS FRAMEWORK

Overview

- Loan Contribution
- Bad Loan Contribution and Rate Trend

Debt Management Pattern

- Loan Purpose

Financial Capacity

- Income
- Average Debt to Income Ratio (DTI)

Loan Structure

- Interest Rate
- Term & Average Amount

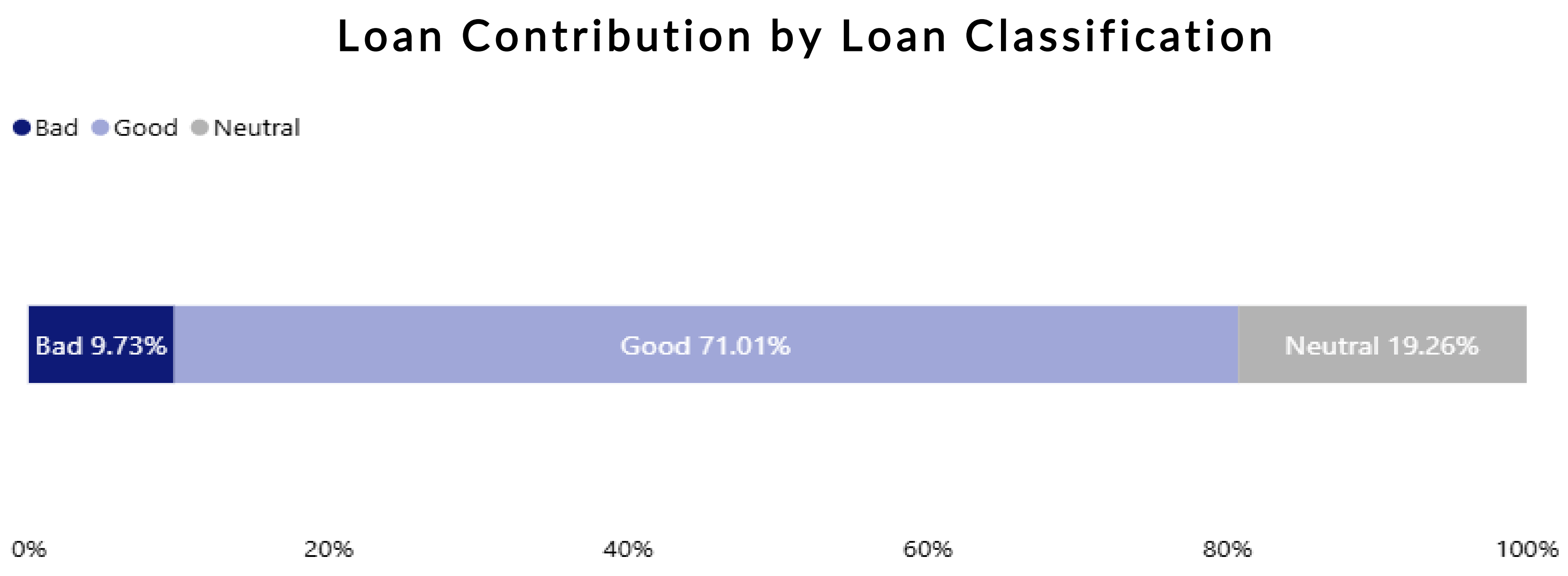
Credit Profile

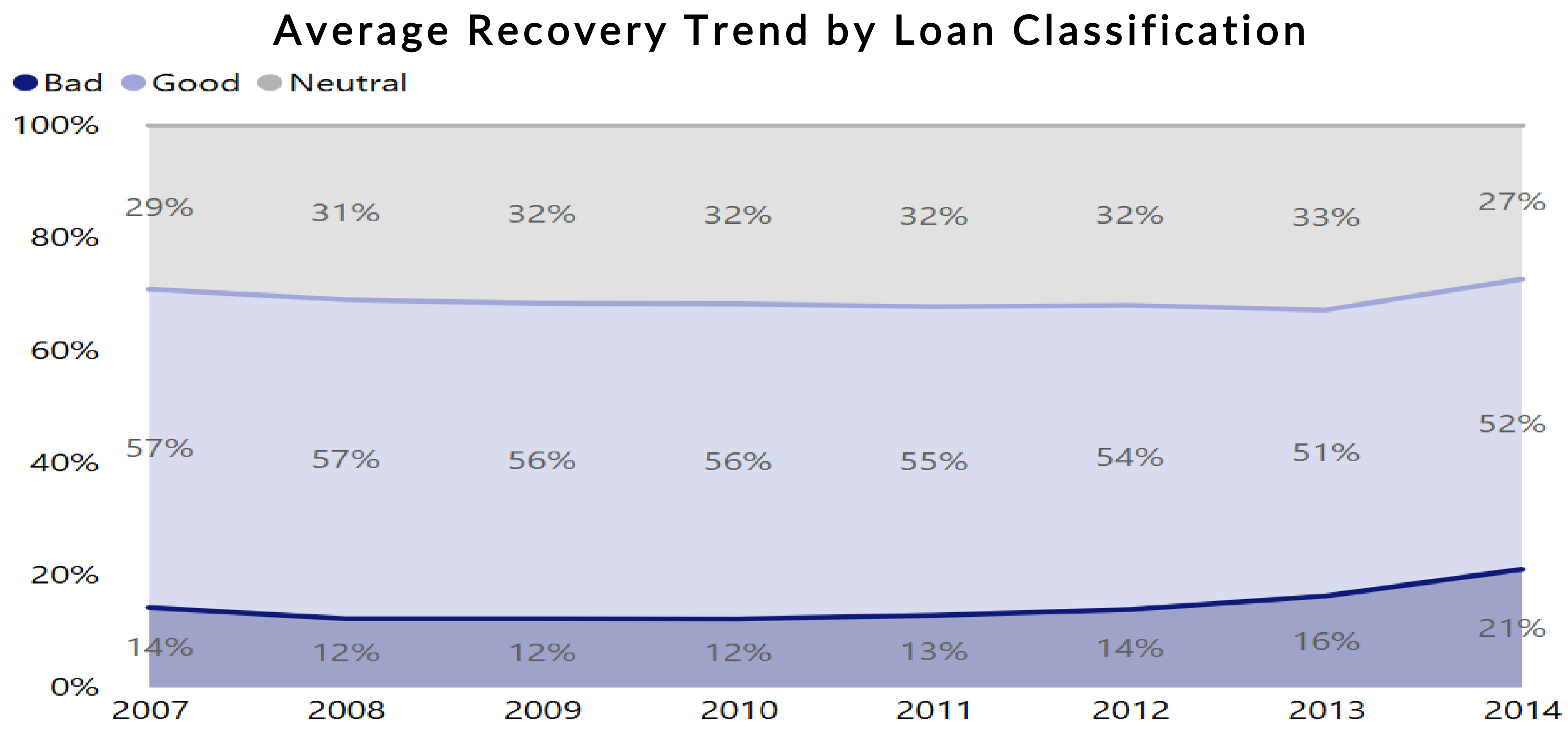
- Credit Grade
- Credit Tenure

Low-performing loans increased despite Good loans making up the majority of the portfolio

Most of the loan was contributed by Good Loan ~71%, followed by Neutral ~19% and nearly **10%** **Bad Loan**

Bad loans rose by **7%** from 2007 to 2014—especially in the later years—while Good loans slightly declined





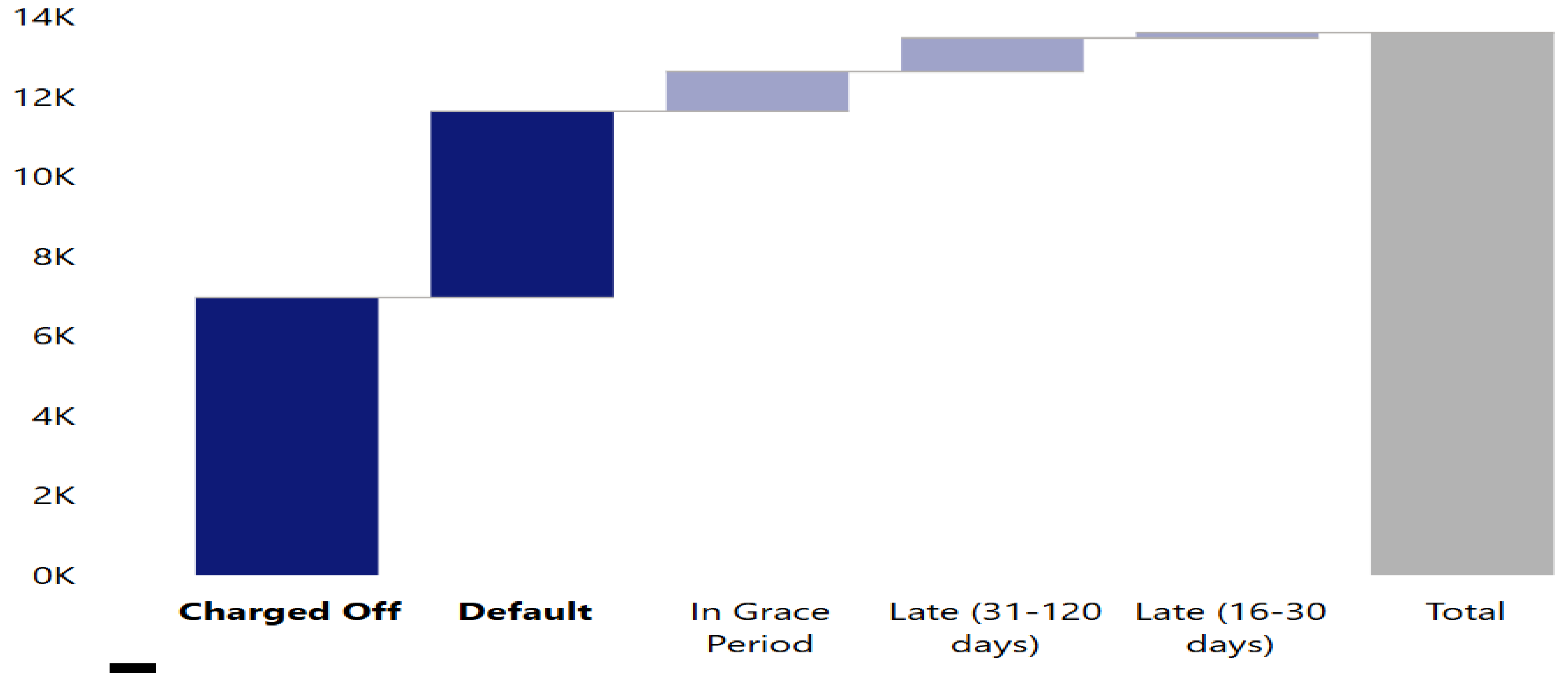
ANALYSIS – Overview – Bad Loan Contribution & Rate Trend

Loan volume grew with a fluctuating bad rate (6-12%), and the greatest risk comes from the most delinquent accounts.

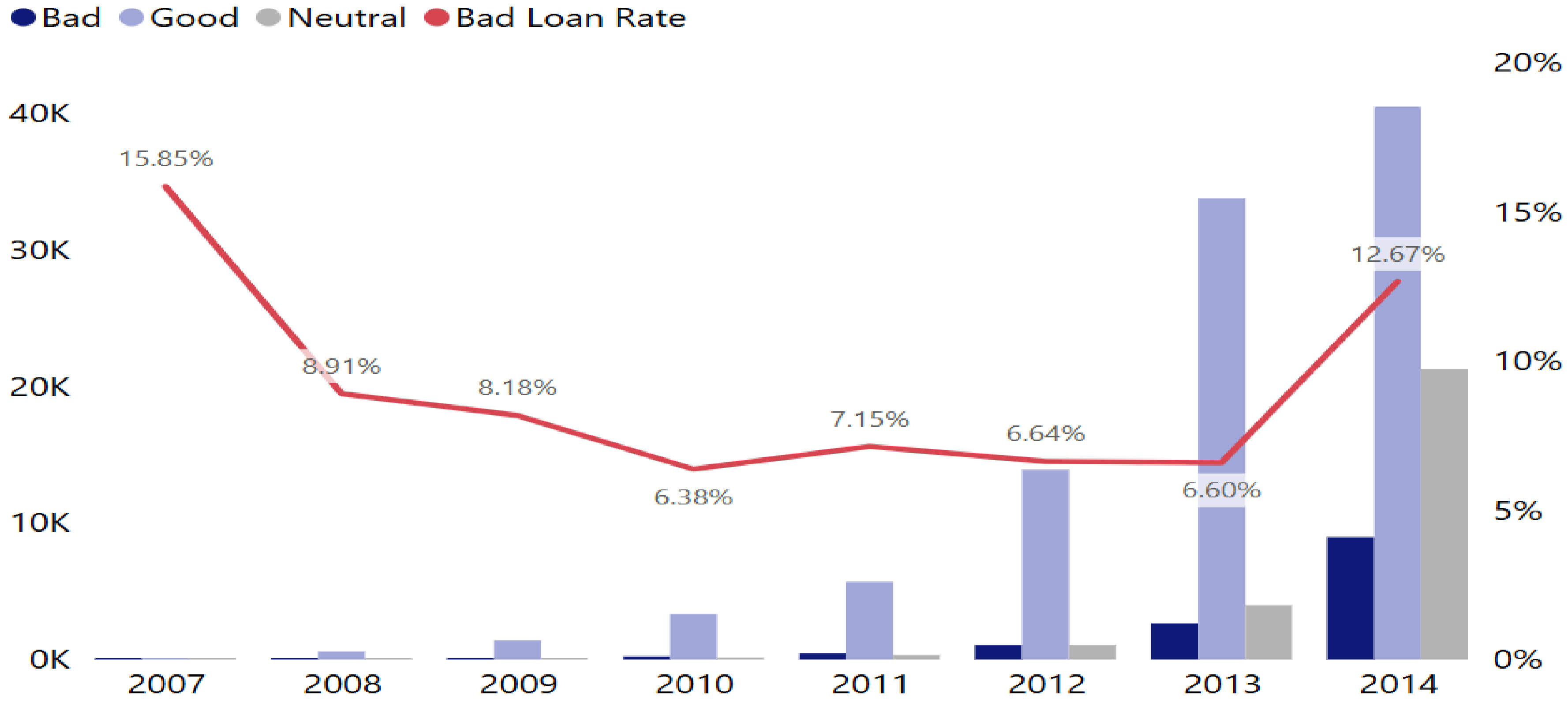
The **Charged Off** and **Default** statuses together make up 11.7K, which is over 85% of the total loan

- Loan volume **peaked in 2014** at over 40K,
- The bad rate fell sharply from 2007 to 2010, then stabilized until 2013. **In 2014**, the rate **strongly increased (+6.07%)** to 12.67%.

Bad Loan Contribution by Loan Status



Bad Loan Rate Trend

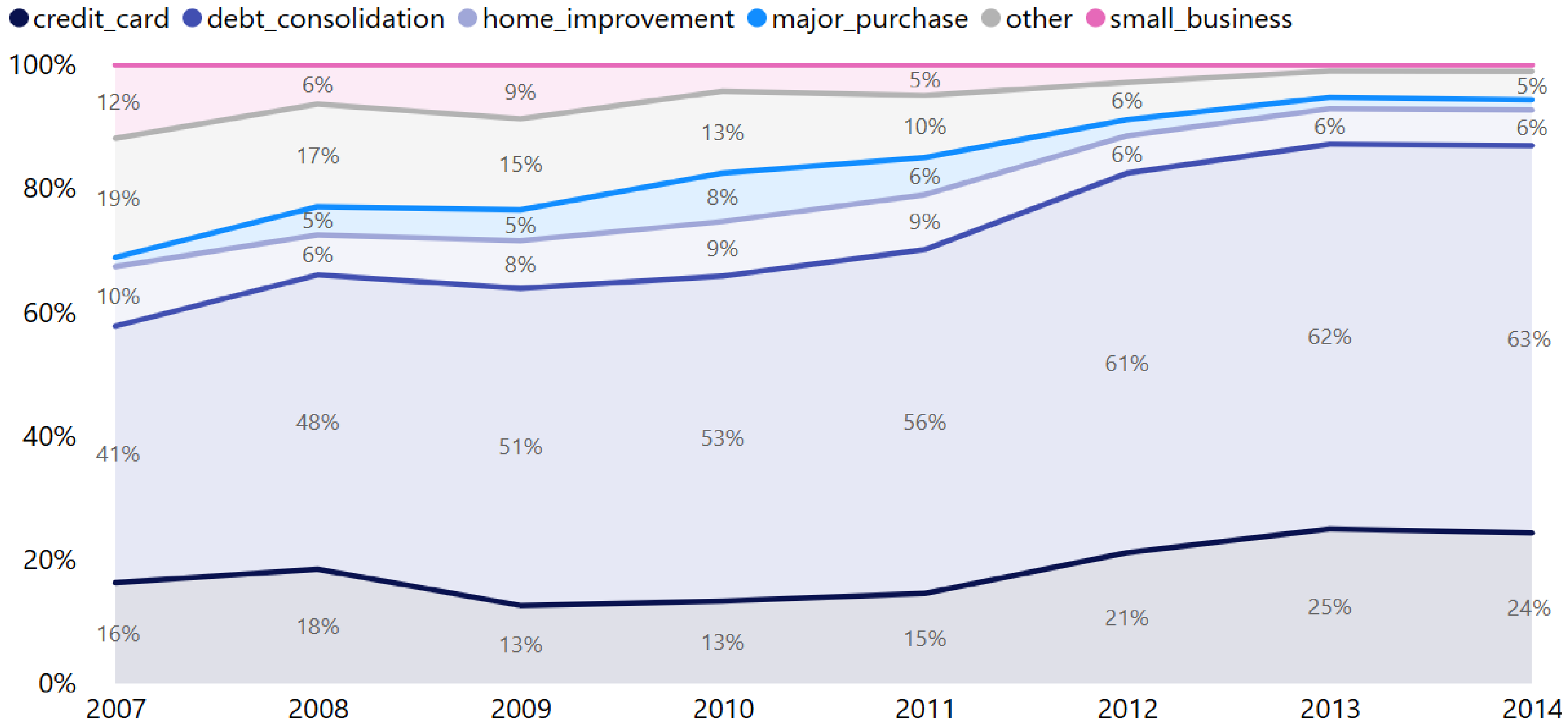


ANALYSIS – Debt Management Pattern – Loan Purpose

The significant growth of loans for debt-related purposes and Small Business loans is the riskiest.

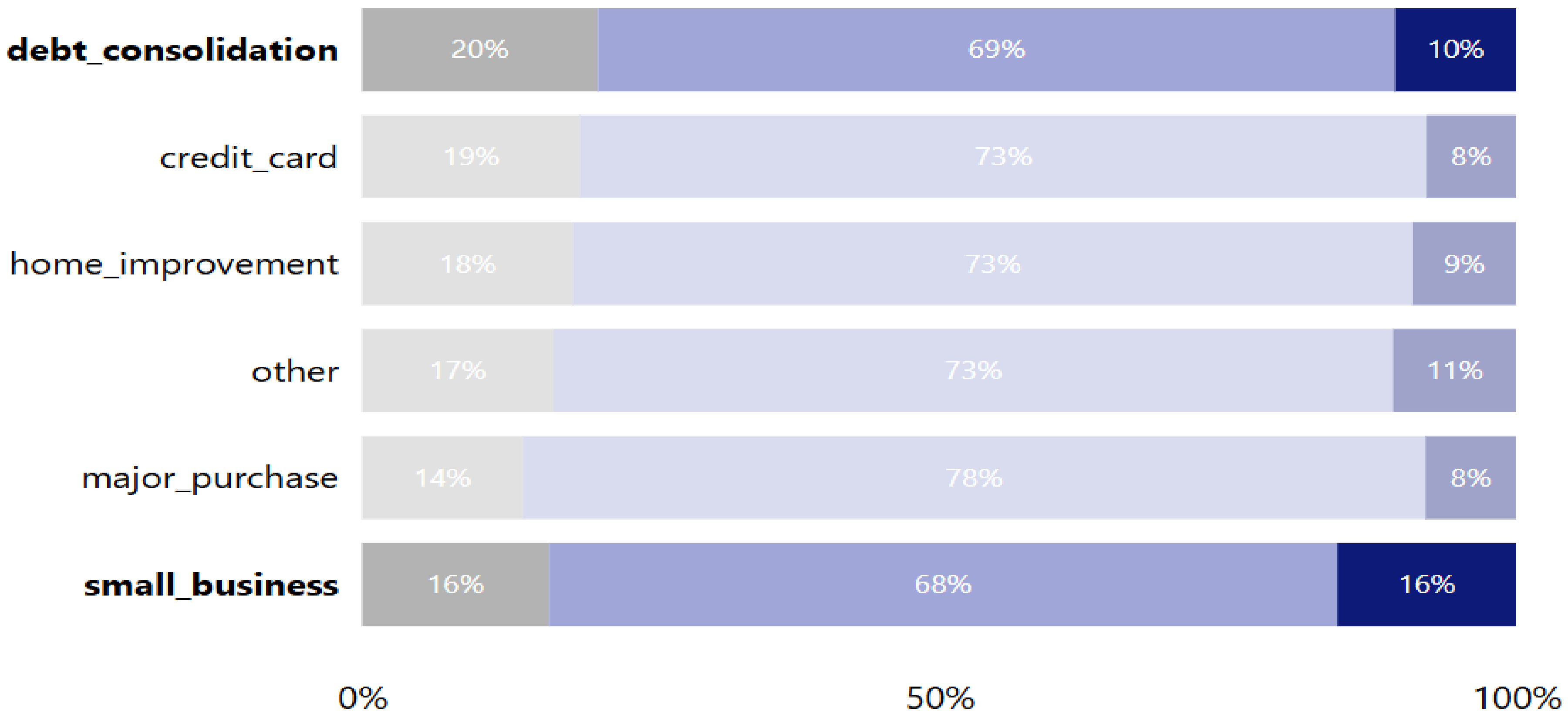
Debt Consolidation and **Credit Cards** became the dominant categories, **increasing** to **63%** and **24%** respectively, while other purposes declined.

Trends in Loan Purposes



Small Business had the **highest percentage** of bad loans **~16%,** followed by Debt Consolidation loans ~10%

Loan Classification by Purpose

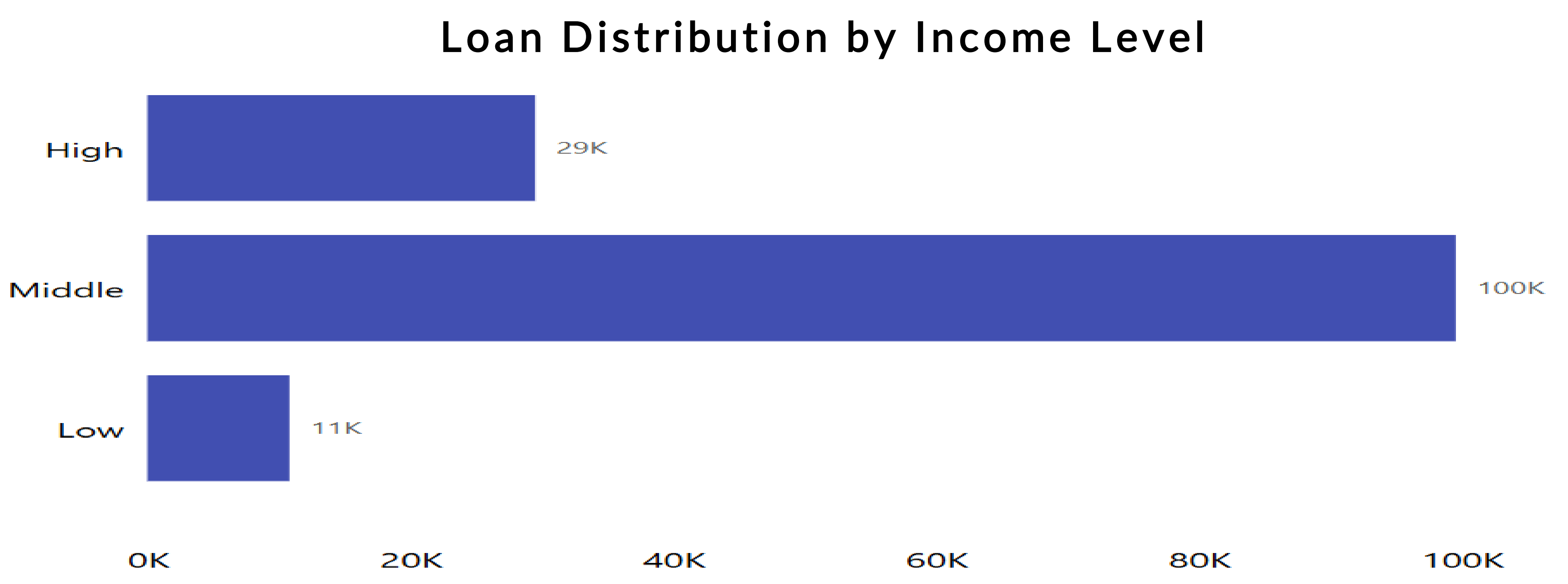


ANALYSIS – Financial Capacity – Income

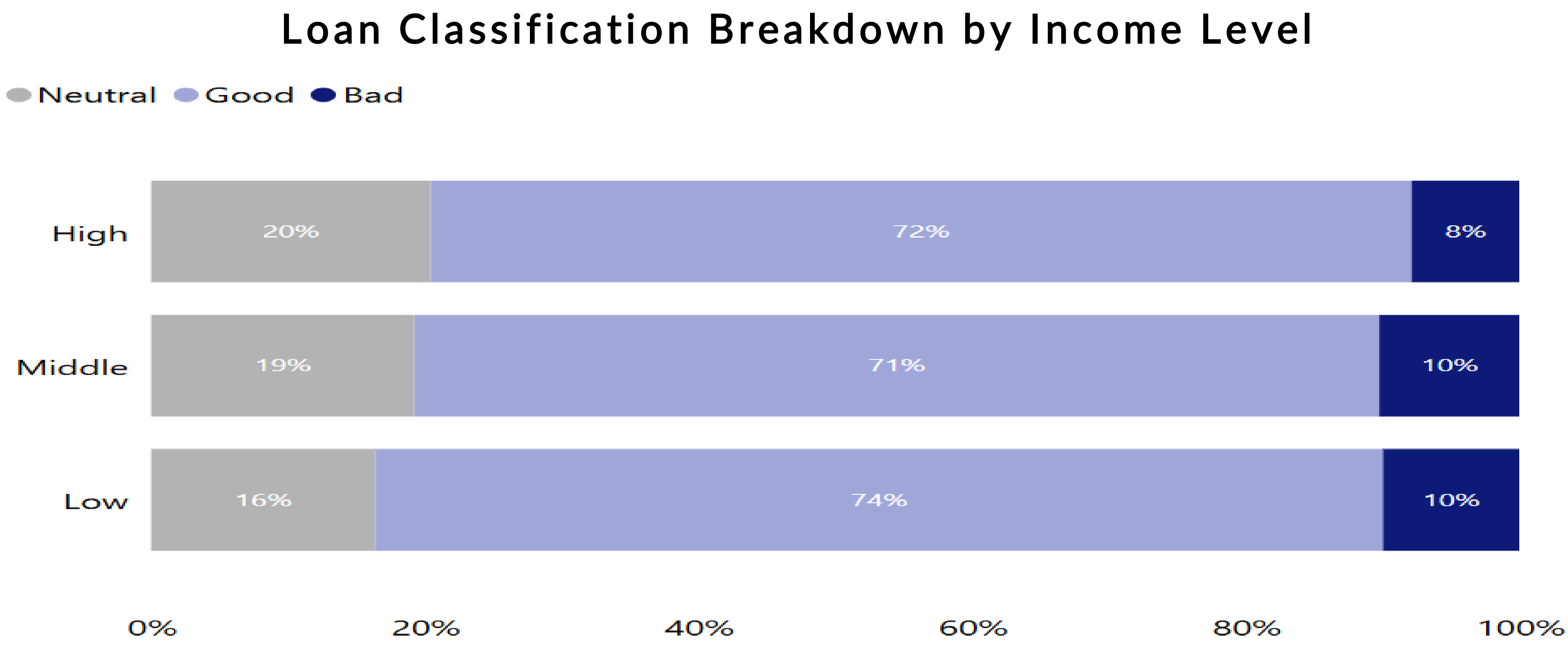
Income's influence on loan performance. A lower Income shows a higher risk.

Most loans go to the middle-income segment, followed by high-income earners, with low-income individuals receiving the least

The **low and middle-income groups** share a similar **bad loan rate** of **10%**; the high-income group has a better performance record with a lower bad loan rate of 8%.



Income Level: Low < $31.000
Middle < $95.000
High >= $95.000



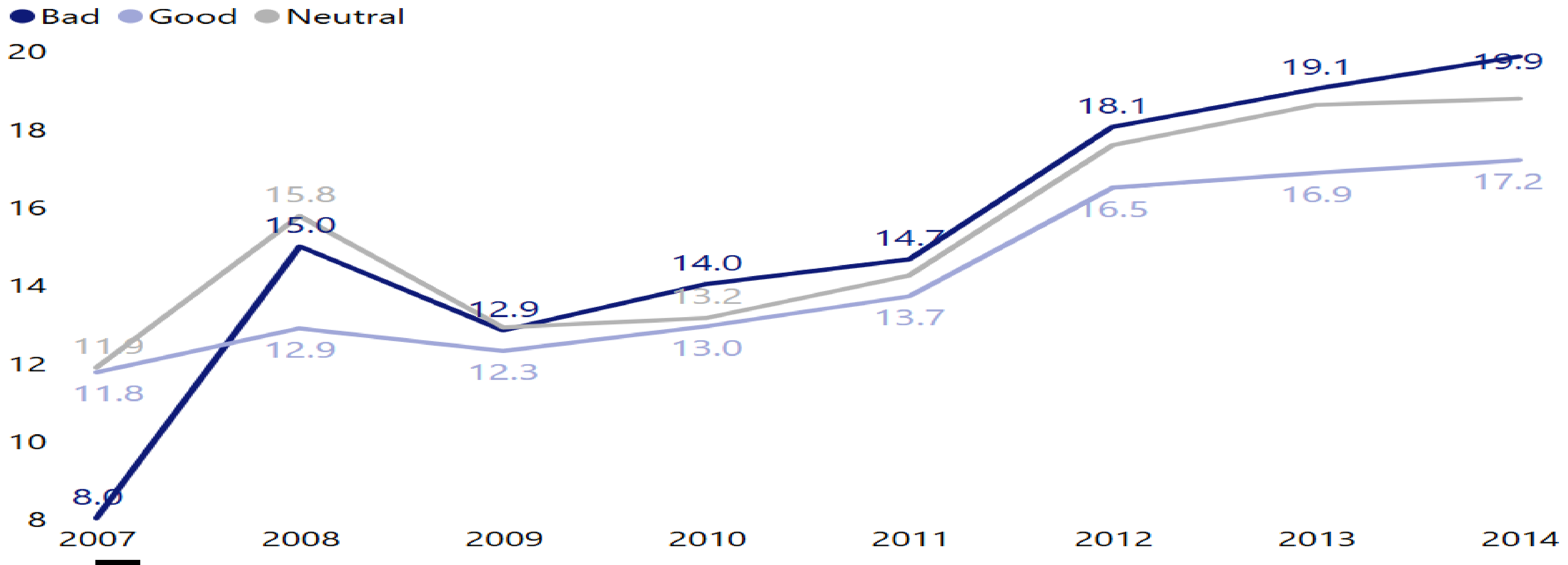
ANALYSIS – Financial Capacity – Average Debt to Income Ratio (DIT)

DTI ratios have risen across all loan types, and higher DTI is linked to a greater risk of default.

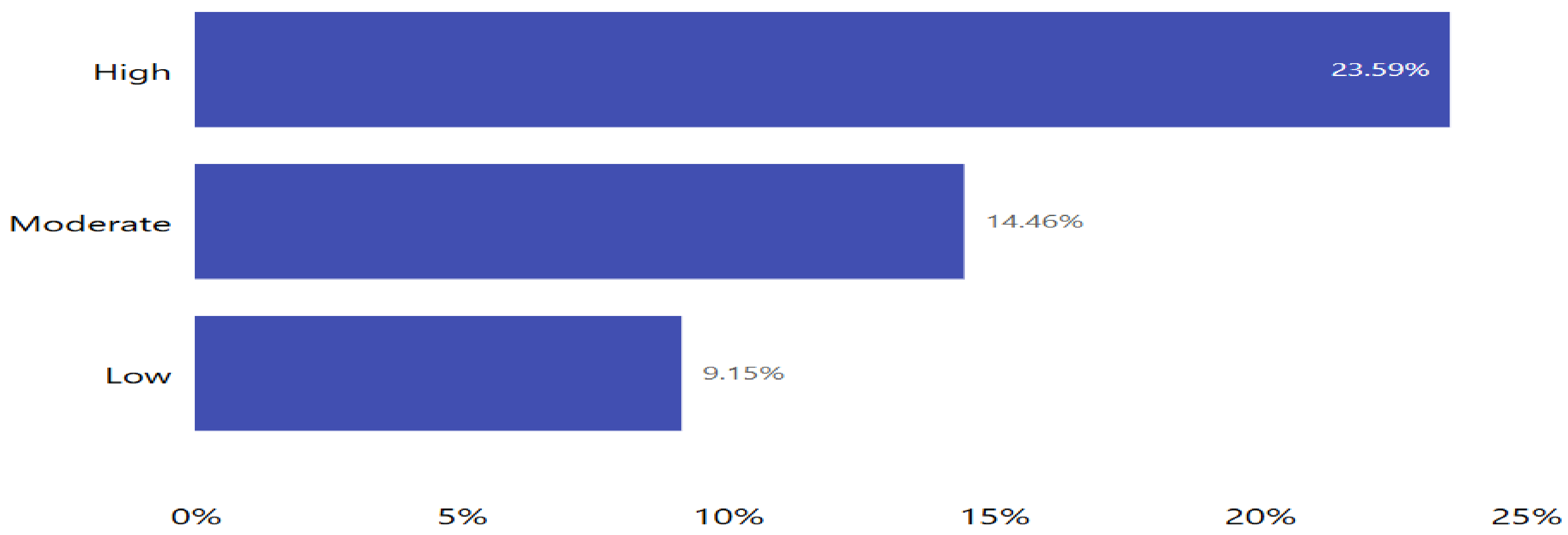
Since 2009, **Bad loans** have climbed **+7%** from 12.9% to 19.9% **Good loans** **+~5%** from 12.3% to 17.2%, and **Neutral loans** **+~7%** from 11.9% to 18.8%

Borrowers with **high DTI** have a **23.59%** **bad loan rate**—over twice the 9.15% rate of low-DTI borrowers

Debt-to-Income Ratio Trends by Loan Classification



Bad Loan Rate by Debt-to-Income Category



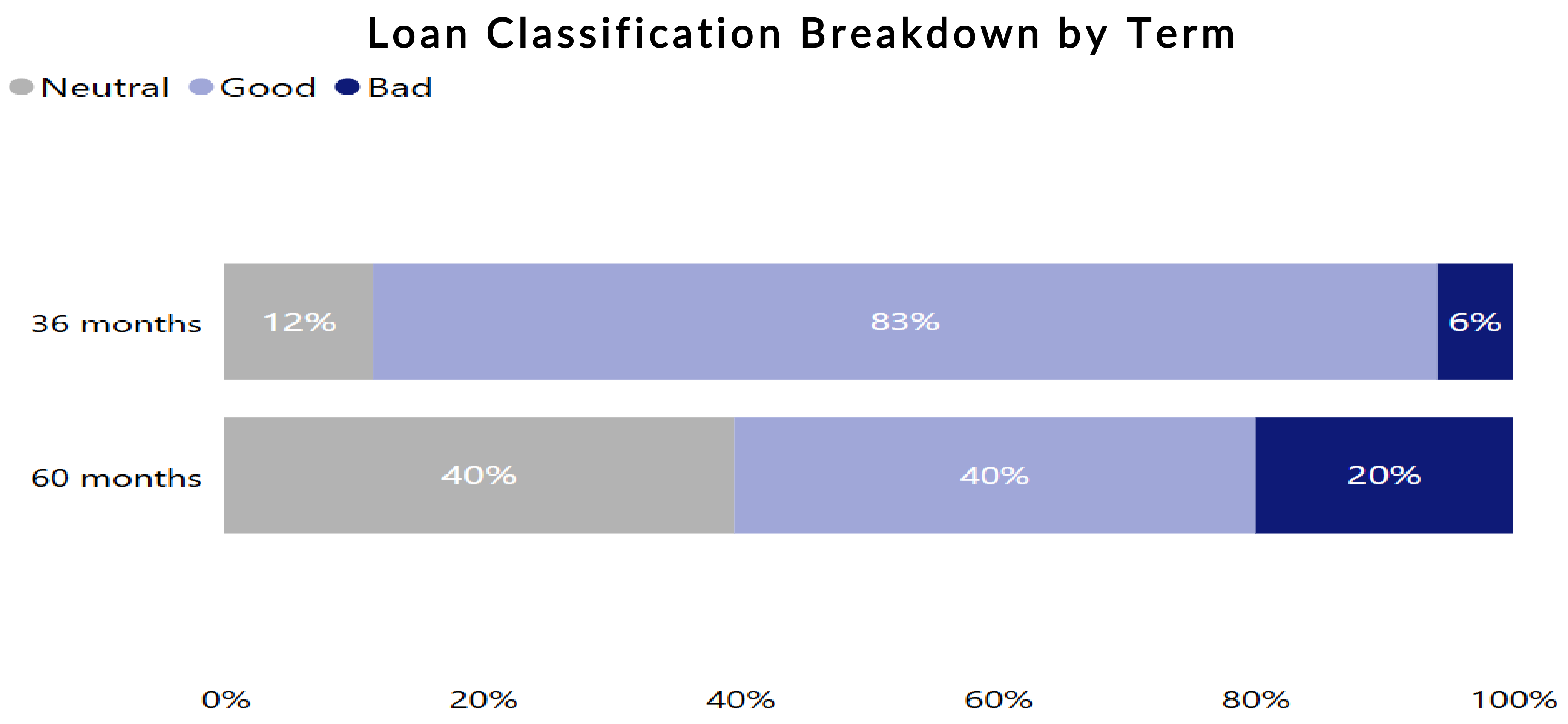
DIT Level: Low <28%
Moderate <36%
High >= 36%

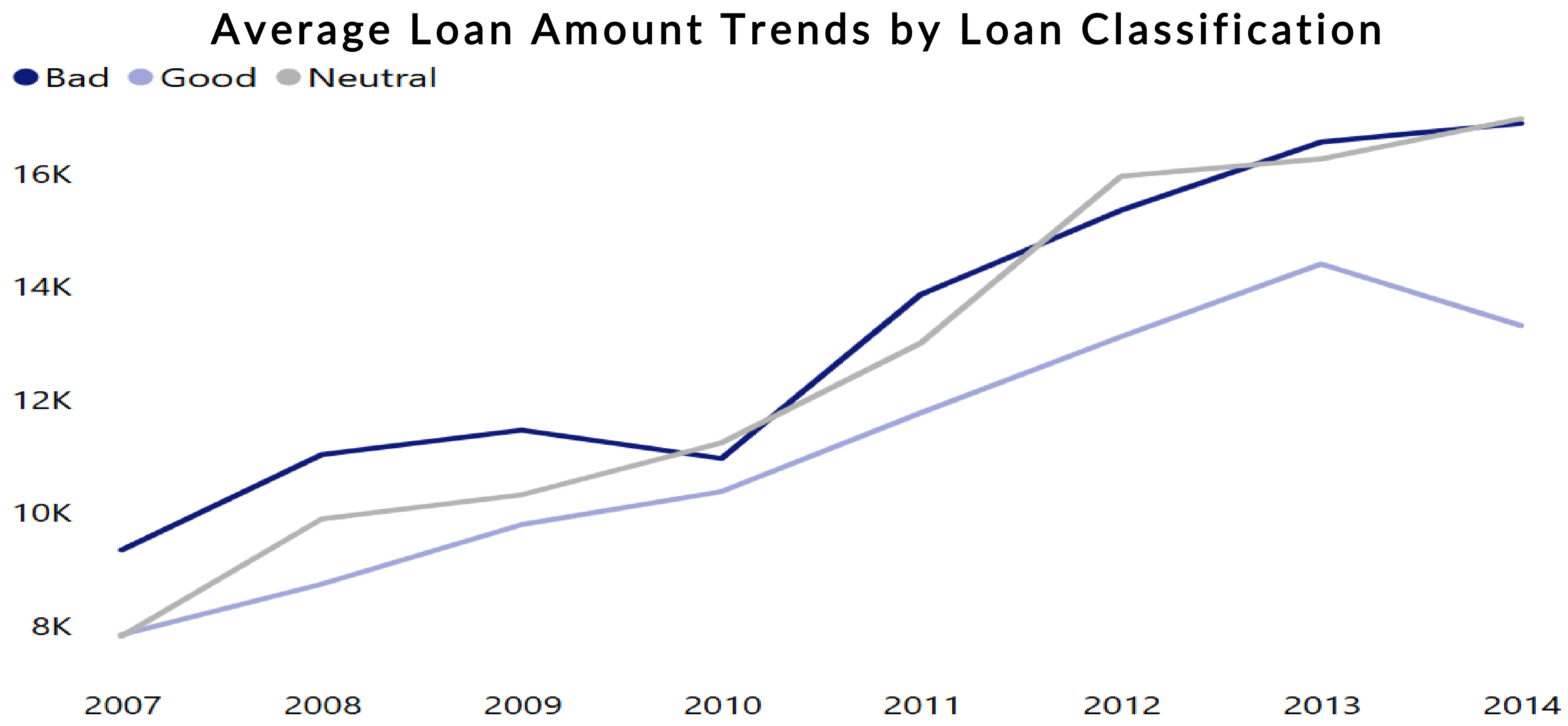
ANALYSIS – Loan Structure – Term & Average Amount

longer terms carry substantially greater risk, and larger loans are associated higher risk

36-month loans have **6% Bad loans** and 83% Good loans, whereas **60-month** loans rise to **20% Bad loans** and 40% Good loans

Since 2010, average loan amounts have risen, with Neutral and **Bad loans generally surpassing Good loans** from 2011 onward.





ANALYSIS – Loan Structure – Interest Rate

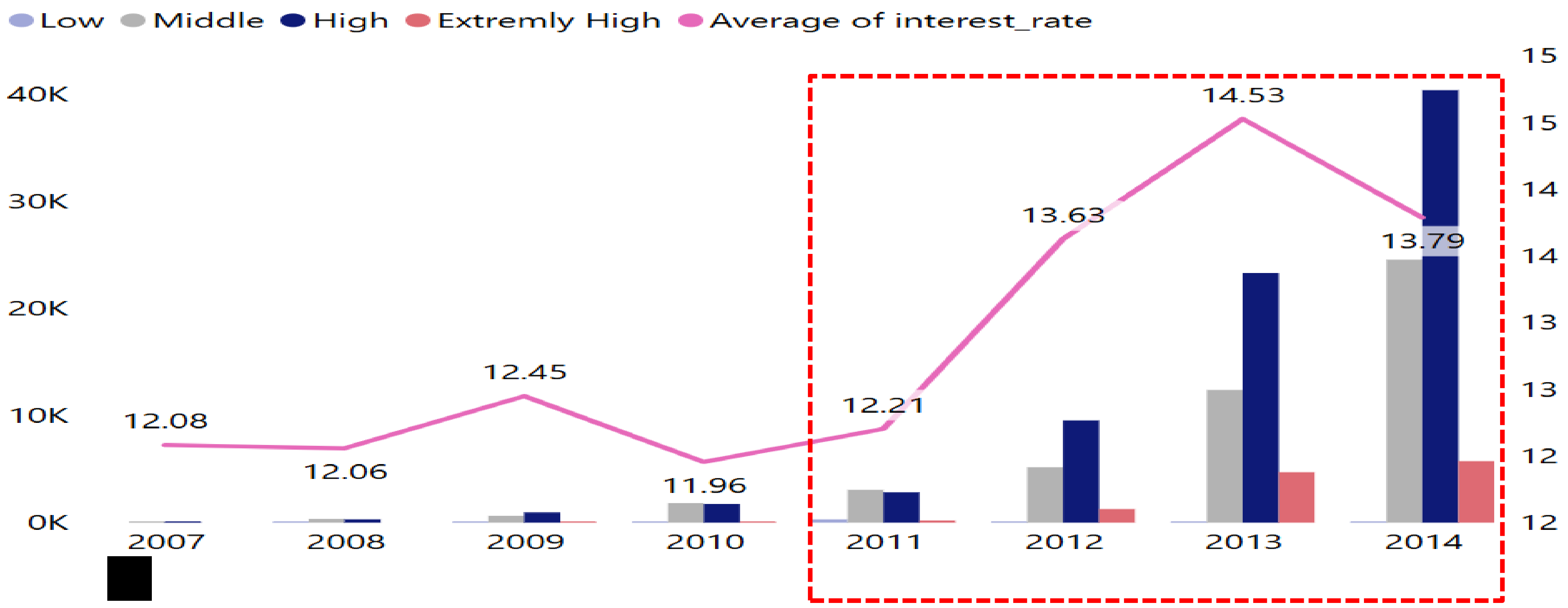
The average interest rate fluctuated between 12-14.5%. The higher interest rate leads to higher-risk borrowers with a higher bad loan rate (~18%)

The average interest rate started rising from 2011, reached a **peak in 2013** (14.53%), and a slight decrease of ~1% in 2014 (13.79%)

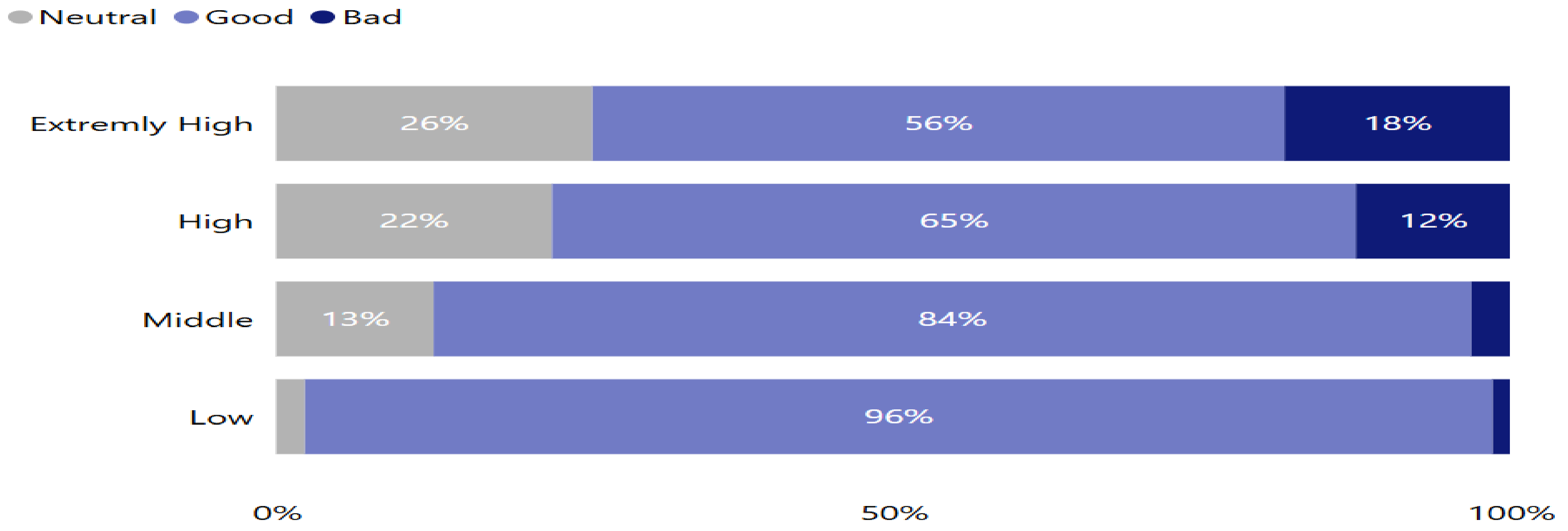
Loans concentrated in **High and Middle interest rate** levels, and the **Extremely High interest rate loans** had notable **growth since 2012**.

Bad loan rates rise sharply with higher interest, ~0.5% at low rates, 2% at medium, 12% at high, and 18% at **extremely high** levels.

Average Interest Rate Trend and Breakdown by Level



Average Interest Rate Breakdown by Loan Classification



Interest Rate Level: Low: 3-6%
Middle: 7-12%
High: 13-20%
Extremely High: >20%

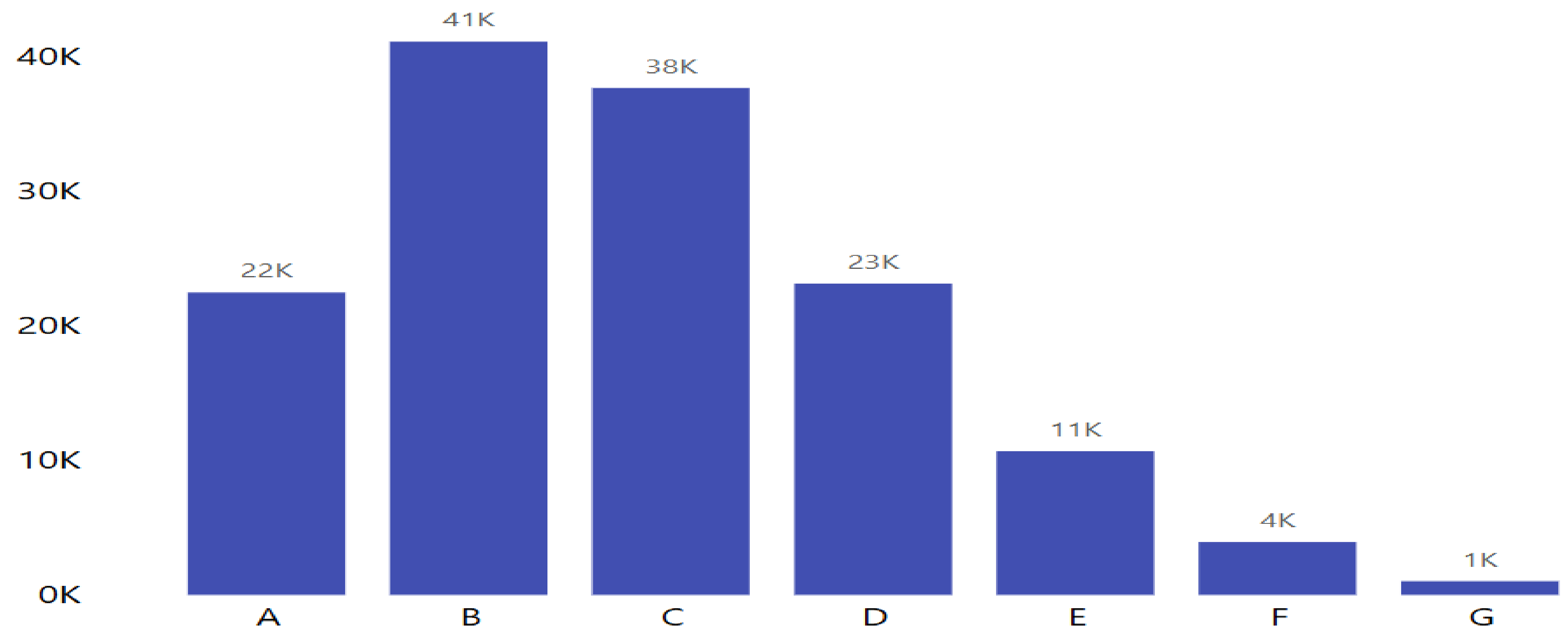
ANALYSIS – Credit Profile – Credit Grade

Grades D–G have the most bad loans, signaling high default risk

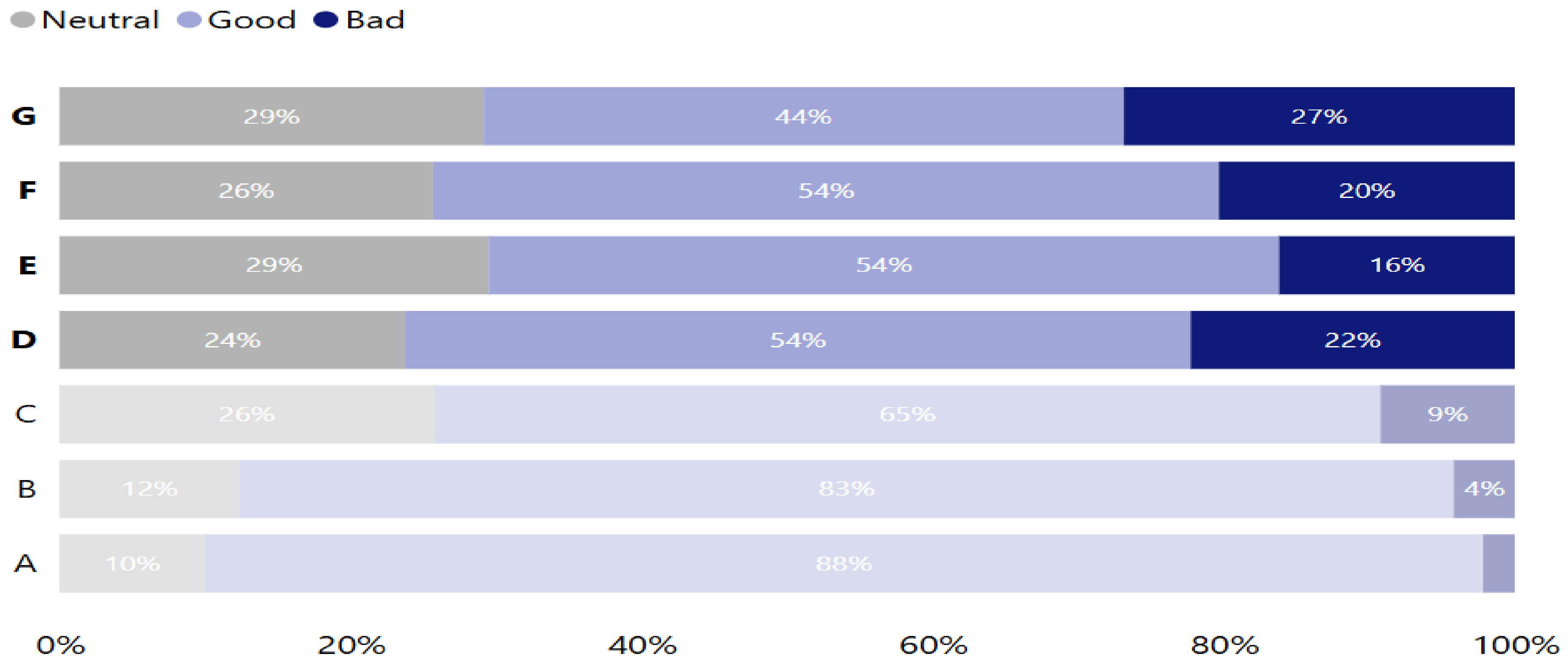
Lending targets average-credit customers, with most loans at B (41k) and C (38k), nearly double A and D; numbers then decline steadily from D (23k) to G (1k).

Bad loans rise sharply as credit grade declines: A (2%) and B (4%) are very low, while **E–G** reach 16–27%, showing higher default risk.

Loan Distribution by Credit Grade



Loan Distribution Across Credit Grades and Loan Classification



Interest Rate Level: Low <= 6%
Middle <= 12%
High <= 20%
Extremely High > 20

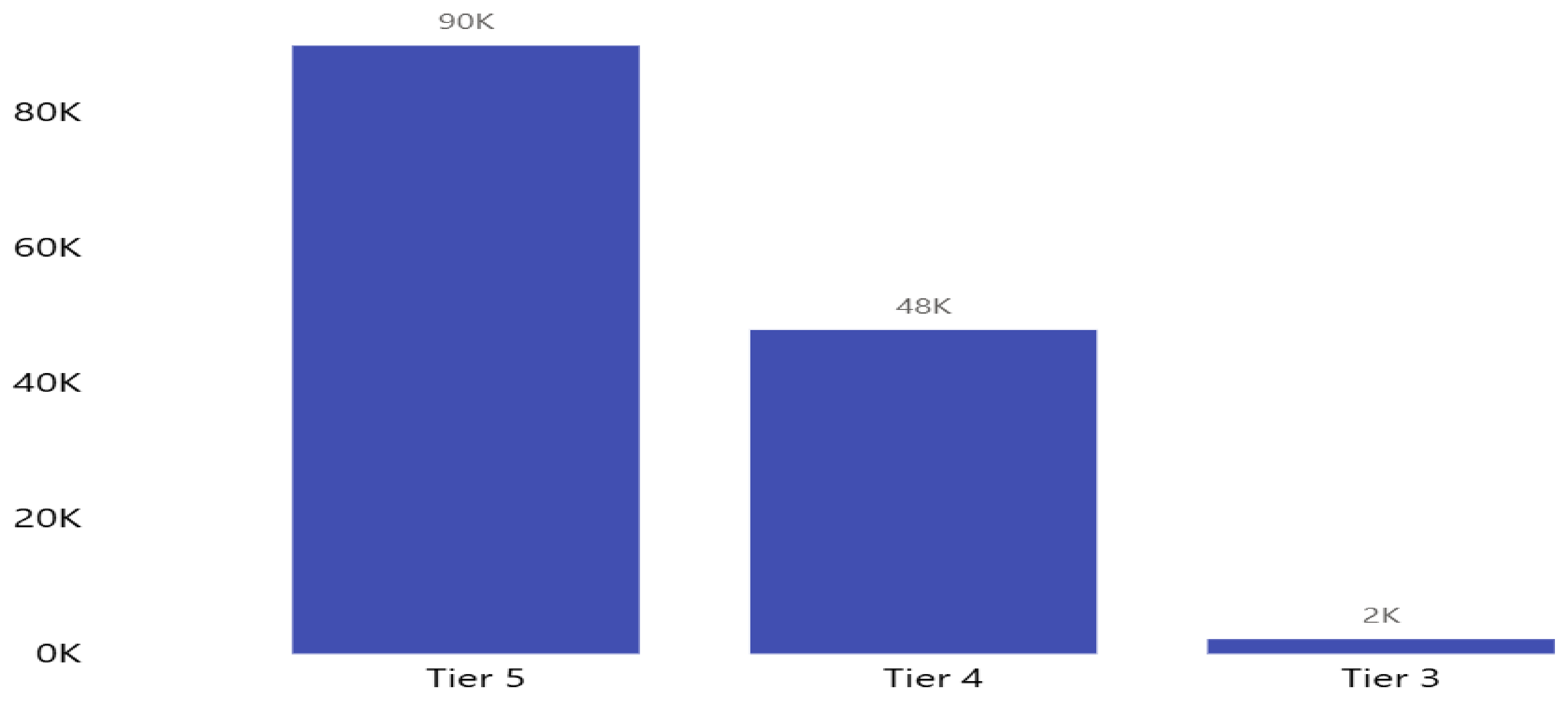
ANALYSIS – Credit Profile – Credit Tenure

Borrowers with longer credit histories are more active and lower-risk.

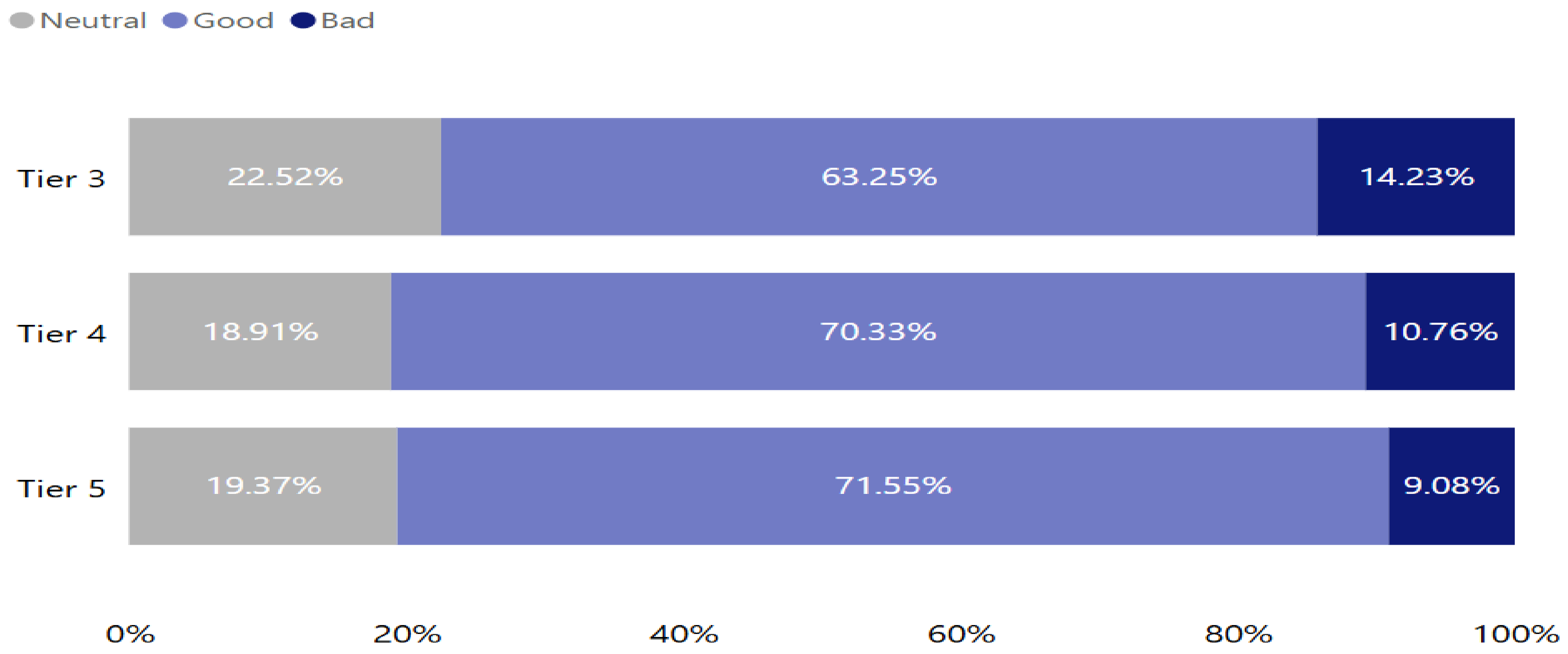
The majority of loan volume **(~68%)** comes from customers in **Tier 5** with a long credit history, which is more than twice the contribution from **Tier 4** customers with an established credit history **(~30%)**

Good loans increase with longer credit history, from 63.3% (Tier 3) to 71.6% (Tier 5), **while Bad loans decrease** from 14.2% to 9.1%.

Loan Distribution by Credit Tenure



Loan Breakdown by Credit Tenure and Loan Classification



Length Credit History: Tier 1: <1 year
Tier 2: 1-3 years
Tier 3: 3-7 years
Tier 4: 7-15 years
Tier 5: >15 years

KEY RISK FACTORS

- Delinquent accounts
- Debt-related and Small business loans
- Low income / high Debt-to-income ratio
- Long/large loans
- High interest rates
- Grades D–G / short credit histories

How to minimize risk?

RECOMMENDATION

Pre-lending

Lending

Post-lending

Risk Assessment. Identify extremely risky borrowers

- Customer Assessment (KYC & Anti-Money Laundering)
- Creditworthiness Evaluation
- Loan Suitability Assessment
- Behavioral & Transaction Analysis
- Early Risk Indicator Detection
- Decision Rules & Risk-Based Approval

Risk-Based Structuring

- Loan Pricing & Structuring (fit to risk level)
- Credit Limit & Repayment Planning
- Ongoing Monitoring Setup
- Customer Engagement & Education

Risk Monitoring & Control

- Repayment Monitoring & Early Warning
- Customer Engagement & Reminder Systems
- Loan Restructuring & Collection Strategies
- Portfolio Review & Diversification

Timmerman Industries

THANK YOU

30th August, 2025