POWER BI CAPSTONE PROJECT

Bank Loan Performance Analysis

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Introduction

In today's data-driven world, understanding the impact of borrower details and loan characteristics on loan performance is crucial for banking institutions. This project aims to:

- **Objective:** Explore the relationship between borrower behavior (employment length, income, debt-to-income ratio) and loan characteristics (amount, term, interest rate).
- **Key Factors:** Analyze critical factors influencing loan performance.
- **Analysis:** Examine loan statuses such as fully paid, charged off, and late payments to identify patterns.
- **Outcome:** Provide actionable insights to optimize lending strategies, mitigate credit risk, and enhance overall portfolio performance.

Dataset Overview

The dataset contains over 800,000+ rows and is divided into two main sheets:

- **Loan Details:** Comprehensive information about each loan.

- **Borrower Details:** Detailed information about the borrowers.

This rich dataset enables a thorough analysis of the interplay between borrower behavior and loan characteristics to derive meaningful insights into loan performance.

Data Modelling
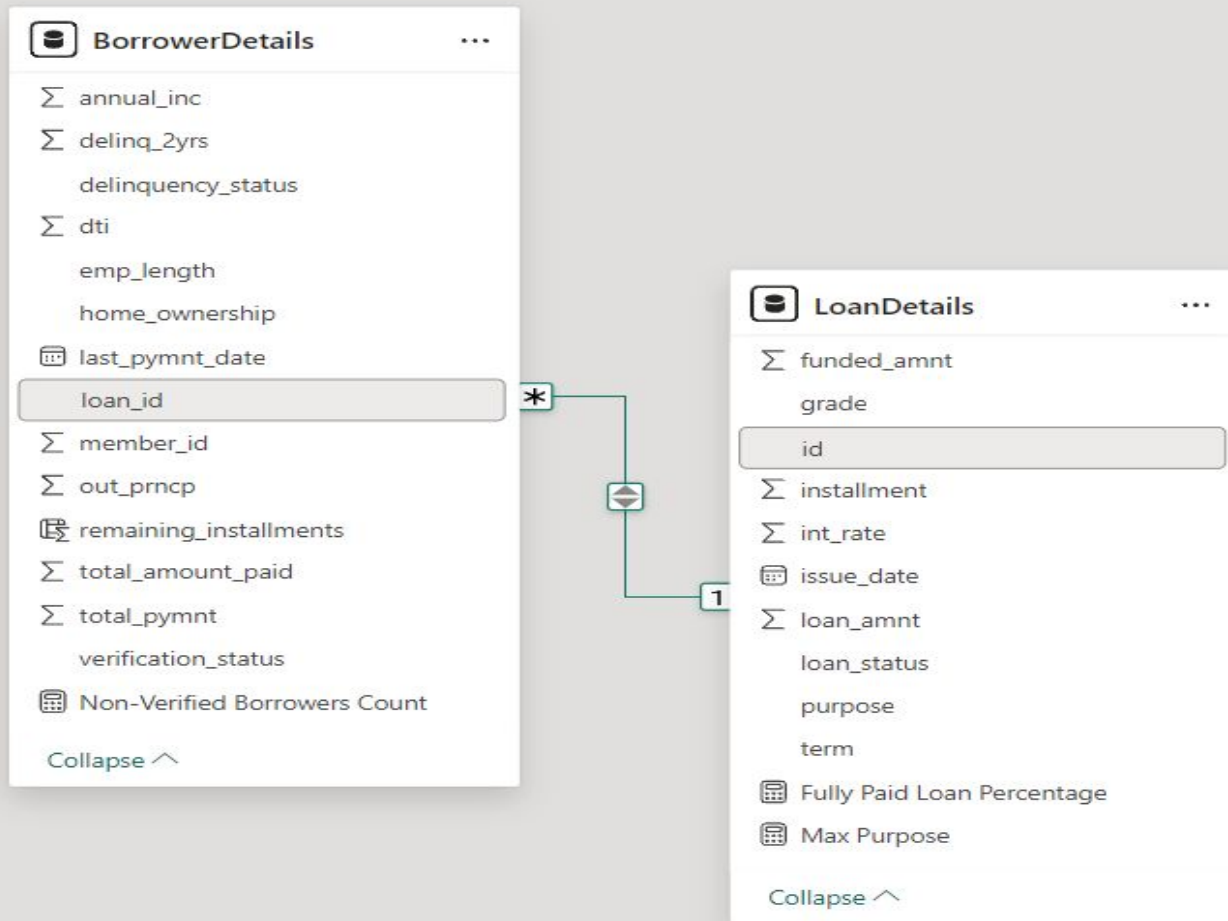
Loan Performance Analysis Report

LOAN PERFORMANCE ANALYSIS

Month: All
Quarter: All
Year: All

Go to Borrower Report

Total Funding
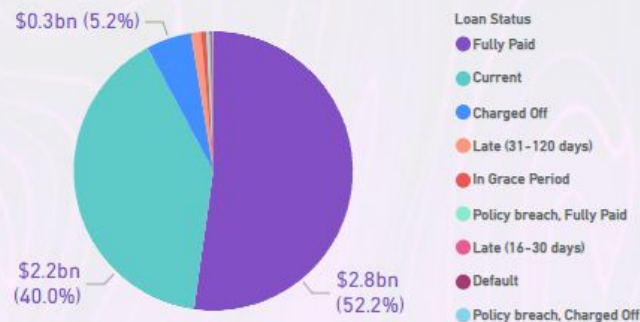$6.6bn

Total Loans
466.2K

Fully Paid Loan %
40%
0%   100%

Average Interest Rate
36 months
12.64

60 months
16.96

Total Payments by Loan Status

$0.3bn (5.2%)
$2.2bn (40.0%)
$2.8bn (52.2%)

Loan Status
- Fully Paid
- Current
- Charged Off
- Late (31-120 days)
- In Grace Period
- Policy breach, Fully Paid
- Late (16-30 days)
- Default
- Policy breach, Charged Off

Average Loan Amount by Purpose

Small Business
Debt Consolidation
House
Credit Card
Home Imp...
Renewable E...
Other
Medical
Major ...
Car
Educational
Vacation
Weddi...
Movi...
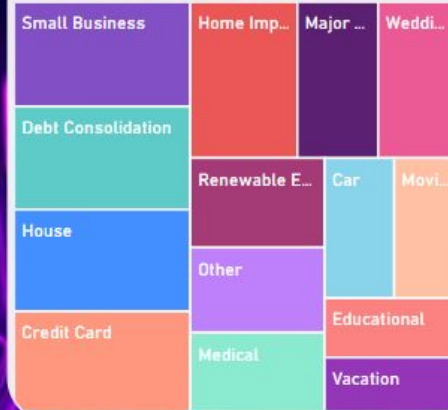
Annual Installment Total

$0.1bn
$0.0bn
2014   2016   2018   2020

Quarterly Installment Total

$60M
$40M
Qtr 1   Qtr 2   Qtr 3   Qtr 4

Max Amount Paid by Loan Status
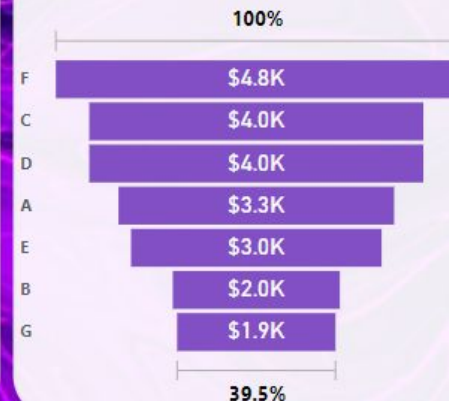
$58K $52K $49K $48K $46K $39K $39K $39K $34K

Fully Paid | Current | In Grace Period | Late (31-120 days) | Charged Off | Policy breach, Charged Off | Late (16-30 days) | Policy breach, Fully Paid | Default

Minimum Income by Grade
100%

F $4.8K
C $4.0K
D $4.0K
A $3.3K
E $3.0K
B $2.0K
G $1.9K

39.5%

Loan Performance Analysis Report Summary

- **Loan Performance:** A <u>significant portion of loans are fully paid</u>, indicating generally <u>positive performance</u>. However, there's still a considerable amount of current loans and a small percentage of charged-off loans.

- **Interest Rate Structure:** The company offers loans with different term lengths, with <u>longer-term loans</u> (60 months) having <u>higher interest rates than shorter-term loans</u> (36 months).

- **Loan Purposes:** <u>Small business loans appear to have the highest average loan amount</u>, followed by home improvement and major purchases. This suggests a <u>focus on both business and personal lending</u>.

Loan Performance Analysis Report Summary (Conti.)

- **Growth Trends:** Both <u>annual and quarterly installment</u> totals display <u>upward trends</u>, suggesting <u>consistent growth in the loan portfolio</u> over time.
- **Lending Strategy:** The lender gives borrowers grades from A to G, like grades in school. Lower the grades higher the interest. <u>The lender gives loans to people with different incomes, not just high earners</u>. Lower the grades higher the interest

Borrower Profile Analysis Report

BORROWER PROFILE ANALYSIS

Purpose All

Grade All

Year All

Yearly Payments & Loans

$875.60M !

Goal: $903.85M (-3.12%)

Average DTI

Delinquent
17.16

Not Delinquent
17.23

Average Annual Income

$73.3K

Non-Verified Borrowers

148.1K

Loan Amount by Home Ownership

home_ownership	Sum of loan_amnt ▼
Mortgage	$37,69,746.5K
Rent	$23,35,977.2K
Own	$5,62,627.6K
Other	$1,967.5K
None	$648.8K
Any	$5.0K
Total	**$66,74,456.0K**

Avg Outstanding Principal by Verification Status

18.4%

43.7%

37.9%

Verification Status
- Source Verified
- Verified
- Not Verified
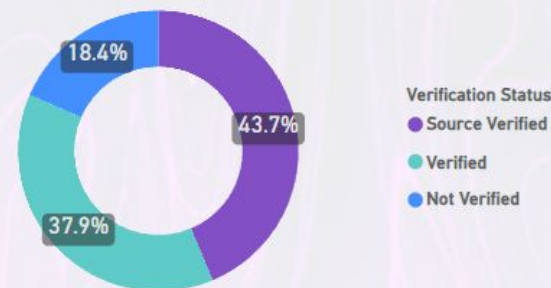
Delinquencies by Home Ownership

- Mortgage: 77K
- Rent: 44K
- Own: 12K
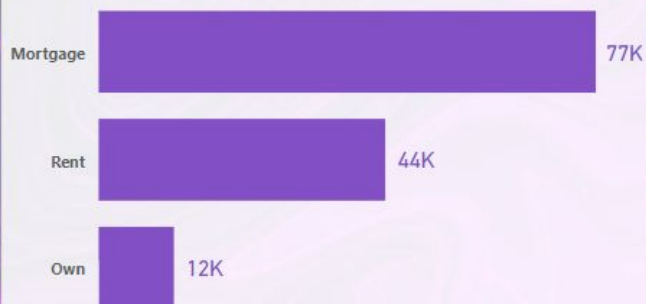
Max Installments by Employment Yr

- 6 years
- 3 years
- 4 years
- 1 year
- 5 years
- < 1 year
- 9 ye...
- 0 ye...
- 2 years
- 10+ years
- 7 years
- 8 years

Funding & Payments by Year

- Sum of funded_amnt
- Sum of total_amount_paid

$3bn

$2bn

$1bn

$0bn

2014   2016   2018   2020

Year

Borrower Profile Analysis Report Summary

- **Loan Performance:** <u>Yearly payments and loans are falling short of the goal</u>, indicating some challenges in meeting targets. There's a <u>significant number of non-verified borrowers,</u> which <u>could pose potential risks</u>.

- **Borrower Profile:** <u>Average income of borrowers is moderate</u>, suggesting a diverse range of income levels among loan recipients. <u>Mortgage holders make up the largest portion</u> of loans, <u>followed by renters</u>, indicating <u>a focus on both homeowners and non-homeowners</u>.

- **Delinquency Patterns:** <u>Delinquency rates are highest among mortgage holders</u>, followed by renters. Interestingly, the <u>DTI ratios for delinquent and non-delinquent loans are very close</u>, suggesting f<u>actors beyond DTI influence delinquency</u>.

Borrower Profile Analysis Report Summary (Conti.)

- **Loan Verification:** While the <u>majority of loans are either source verified or verified</u>, a <u>significant portion remains unverified</u>. This mix of verification statuses <u>suggests a balanced approach to loan approval processes</u>.

- **Employment and Loan Terms:** Loan installment periods vary with employment duration, with <u>long-term employment (5+ years) common</u>, but shorter-term employment also represented.

- **Funding and Payment Trends:** The loan portfolio has <u>experienced fluctuations over time</u>, with a <u>notable peak followed by a decline and gradual recovery</u>. This pattern could reflect changes in economic conditions or shifts in lending strategies.

THANK YOU

-I attached my .pbix file along with this presentation for reference