Bank Loan Performance & Risk Analysis Report

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1. Executive Summary

This report provides a comprehensive analysis of the bank's lending activities, covering 38,576 loan applications with a total funded value of $435.8 Million. The primary goal was to assess the bank's portfolio health by distinguishing between "Good Loans" (repaid) and "Bad Loans" (defaulted).

Key Findings:

1. **Financial Health: The bank is profitable. We lent $435.8M and have received $473.1M in payments, indicating a healthy return.**
2. **Risk Overview: The portfolio is stable with 86.2% Good Loans (fully paid or current). The Bad Loan rate is 13.8%, which is within manageable limits but requires monitoring.**
3. **Lending Trends: There is a clear seasonal surge in lending. Applications increase significantly towards the end of the year, peaking in December.**
4. **Borrower Profile: Most loans are taken for "Debt Consolidation" by people living in Rented or Mortgaged homes. Long-term (60-month) loans carry higher risk than short-term (36-month) loans.**

Key Recommendations: We recommend tightening approval criteria for "Debt Consolidation" loans in the high-risk "Charged Off" category. Additionally, marketing strategies should focus on the low-risk "Home Improvement" segment to diversify the portfolio.

2. Introduction: A Multi-Tool Architecture

To ensure 100% data accuracy and demonstrate technical versatility, this project was executed using a full-stack data analysis approach. The same dataset was processed through four stages:

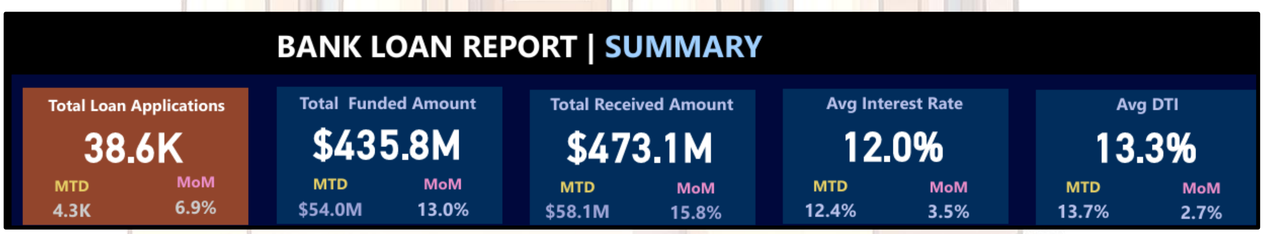
1. SQL: Used for backend data verification, calculating KPIs (Good vs. Bad loans), and testing data integrity.
2. Python: Used for data cleaning and exploratory analysis to find correlations between interest rates and loan status.
3. Excel: Used to create a quick-view dashboard for operational checking.

4. Power BI: Used to build the final, interactive executive dashboard for visual storytelling.

3. Key Performance Indicators (KPIs) Overview

These headline numbers define the bank's current standing:

- Total Loan Applications: 38.6K
  - *(Total number of people who approached us for money.)*
- Total Funded Amount: $435.8 Million
  - *(The total amount of money the bank gave out.)*
- Total Received Amount: $473.1 Million
  - *(The total money the bank got back, including interest.)*
- Average Interest Rate: 12.0%
  - *(The average cost of borrowing for a customer.)*
- Average DTI (Debt-to-Income): 13.3%
  - *(On average, our borrowers spend 13.3% of their monthly income on paying off debts. This is a healthy ratio.)*



4. Risk Analysis: Good vs. Bad Loans

This is the most critical part of the analysis. We segmented loans based on their repayment status.

The Good Loans (Healthy Business)

- Status: Fully Paid or Current.

- Share: 86.2% of all loans are "Good".
- Financial Impact: These loans generated $370.2M in funding and returned $435.8M, driving the bank's profit.

The Bad Loans (Losses)

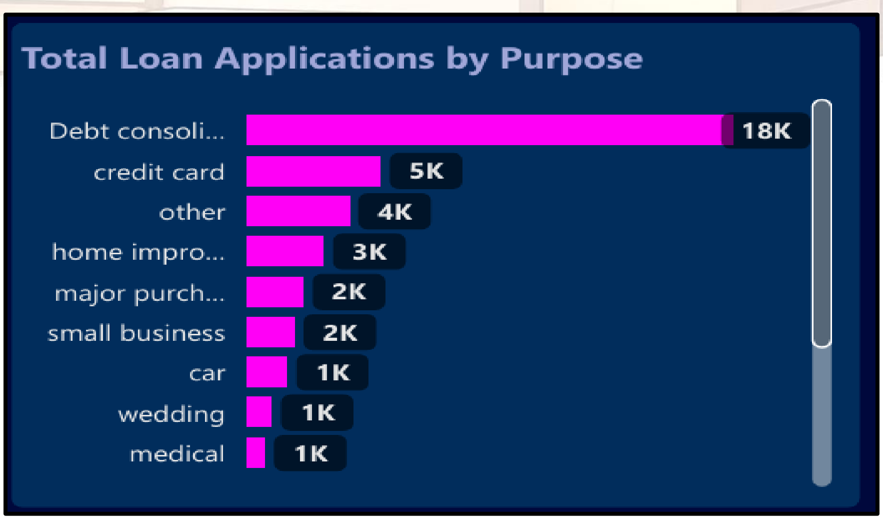
- Status: Charged Off (Defaulted).
- Share: 13.8% of loans went "Bad".
- Financial Impact: We funded $65.5M in bad loans but only recovered $37.3M.

This represents a direct loss that needs to be minimized.

5. Deep Dive Findings

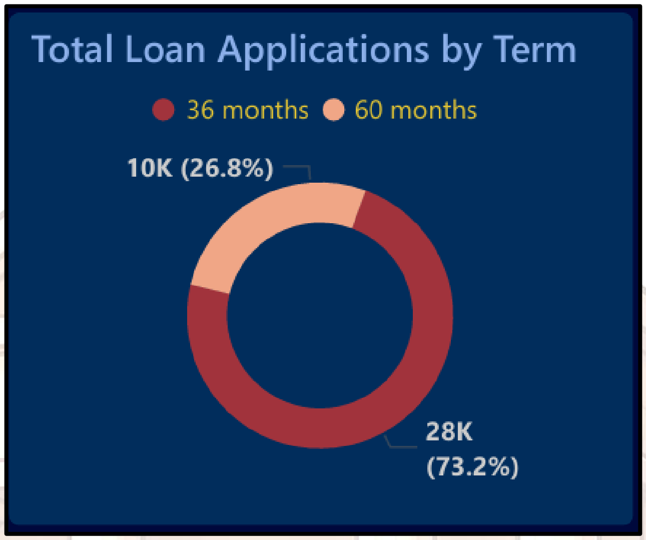
Finding 1: Loan Purpose (Why do they borrow?)

- Debt Consolidation is the #1 reason for borrowing. While it brings high volume, it also carries significant risk because these borrowers are already in debt.
- Credit Card repayment is the second most common reason.



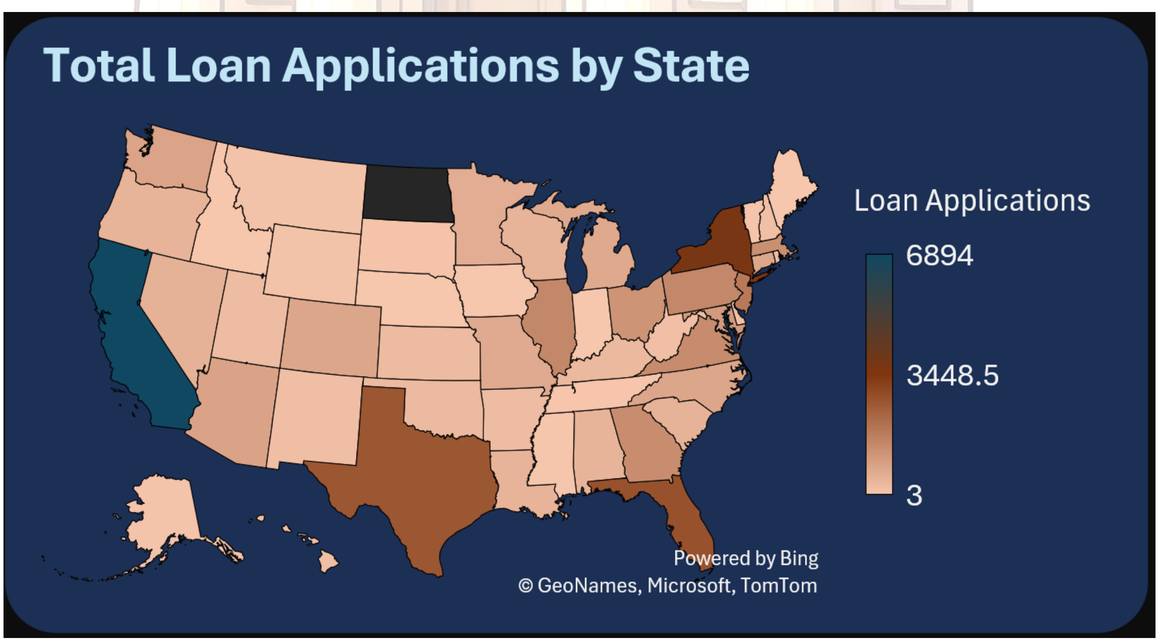
Finding 2: Term Analysis (Duration)

- 36 Months (Short Term): These loans are safer and paid back faster.
- 60 Months (Long Term): These loans have higher interest rates but also a higher chance of becoming "Bad Loans".



Finding 3: Geographical Hotspots

California (CA) is the largest market by far, followed by New York (NY) and Florida (FL). Any economic change in California will heavily impact our total revenue.



6. Actionable Recommendations (Detailed Strategy)

Based on the deep-dive analysis across SQL, Python, and Power BI, we propose a 4-point strategic plan to improve portfolio health:

1. Targeted Risk Mitigation for "Debt Consolidation":
   - Observation: "Debt Consolidation" accounts for the majority of loan applications but carries inherent risk.
   - Action: Implement stricter DTI (Debt-to-Income) thresholds (e.g., max 12%) specifically for applicants seeking 60-month terms for debt consolidation. This combination (Long Term + High Debt) is a primary driver of "Bad Loans".

2. Revise Interest Rate Strategy by Grade:
   - Observation: Lower-grade loans (F & G) have higher default rates despite higher interest rates.
   - Action: The current premium on interest rates for Grades F and G may not be covering the cost of default. We recommend capping exposure to these grades to a maximum of 5% of the total portfolio to limit potential "Charged Off" losses.

3. Capitalize on Seasonal Demand (The "December Surge"):
   - Observation: Loan applications spike significantly in December (Seasonal Trend).
   - Action: The bank must ensure high liquidity (cash availability) and increase staffing in the underwriting department during Q4 (October-December) to process this surge efficiently without compromising on background checks.

4. Geographical Diversification:
   - Observation: The portfolio is heavily concentrated in California (CA), New York (NY), and Florida (FL).
   - Action: A localized economic downturn in any of these states could severely impact revenue. We recommend launching marketing campaigns in under-penetrated but stable markets like Texas (TX) and Illinois (IL) to balance the risk exposure.

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7. Conclusion

This end-to-end project demonstrates a robust analysis of the bank's lending activities using a Full-Stack Data approach (SQL, Excel, Python, Power BI).

The verdict is clear: The bank is fundamentally healthy and profitable. We have successfully recovered $473.1 Million against a funded amount of $435.8 Million, securing a net positive cash flow. The 86.2% Good Loan rate proves that the core lending criteria are working effectively.

However, the 13.8% Bad Loan rate represents a $65.5 Million funded amount that is at risk or lost. While this is within industry norms, it is the single biggest area for profit optimization.

By shifting focus from "Volume" (more loans) to "Quality" (better loans)—specifically by tightening controls on long-term debt consolidation loans—the bank can realistically aim to reduce the Bad Loan rate to under 10% in the next fiscal year, directly adding millions to the bottom line.

End of the Report