# BANK LOAN ANALYSIS

PostgreSQL

# CONTENT

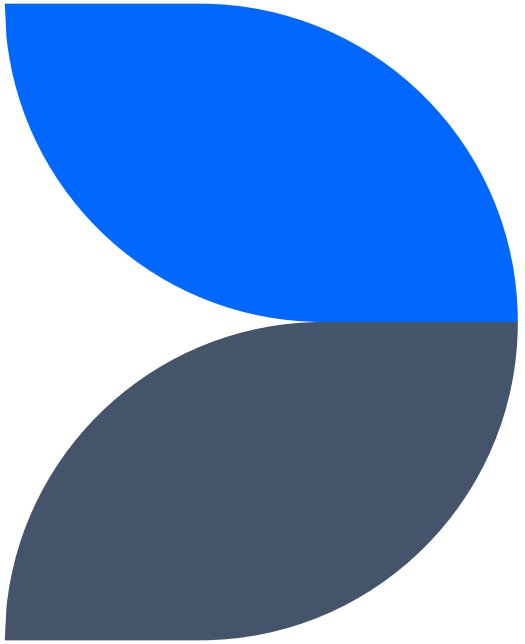
# PROJECT OBJECTIVE

To achieve our goal, we'll conduct a thorough analysis of loan data, examining interest rates, loan amounts, and repayment histories. By identifying patterns and trends, we'll gain insights into the bank's decision-making and risk management. We'll use advanced data analysis techniques to present our findings in a clear and understandable way, helping stakeholders make informed decisions.

To protect sensitive financial information and comply with regulations, we'll implement strong data security measures. By prioritizing data accuracy and confidentiality, we'll build trust with customers and strengthen the bank's reputation. Ultimately, our aim is to use data analytics to improve efficiency, reduce risks, and drive sustainable growth in the competitive financial market.

# PostgreSQL

Data Analysis



# Total Loan Application with MTD and PMTD

Query | Query History

```sql
-- Total Loan Application

SELECT COUNT(id) AS total_loan_applications
FROM bank_loan;
```

| | total_loan_applications bigint |
|---|---|
| 1 | 38576 |

```sql
-- Month to Date (MTD) Loan Applications

SELECT COUNT(id) AS mtd_loan_applications
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 12;
```

| | mtd_loan_applications bigint |
|---|---|
| 1 | 4314 |

```sql
-- Previous Month to Date (MTD) Loan Applications

SELECT COUNT(id) AS pmtd_loan_applications
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 11;
```

| | pmtd_loan_applications bigint |
|---|---|
| 1 | 4035 |

# Total Funded Amount with MTD and PMTD

```sql
-- Total Funded Amount

SELECT SUM(loan_amount) AS total_funded_amount
FROM bank_loan;
```

| | total_funded_amount<br>numeric |
|---|---|
| 1 | 435757075.00 |

```sql
-- MTD Total Funded Amount

SELECT SUM(loan_amount) AS mtd_total_funded_amount
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 12;
```

| | mtd_total_funded_amount<br>numeric |
|---|---|
| 1 | 53981425.00 |

```sql
-- PMTD Total Funded Amount

SELECT SUM(loan_amount) AS pmtd_total_funded_amount
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 11;
```

| | pmtd_total_funded_amount<br>numeric |
|---|---|
| 1 | 47754825.00 |

# Total Amount Received with MTD and PMTD

```sql
-- Total Amount Received

SELECT SUM(total_payment) AS total_amount_recv
FROM bank_loan;
```

| | total_amount_recv numeric |
|---|---|
| 1 | 473070933.00 |

```sql
-- MTD Total Amount Received

SELECT SUM(total_payment) AS mtd_total_amount_recv
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 12;
```

| | mtd_total_amount_recv numeric |
|---|---|
| 1 | 58074380.00 |

```sql
-- PMTD Total Amount Received

SELECT SUM(total_payment) AS pmtd_total_amount_recv
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 11;
```

| | pmtd_total_amount_recv numeric |
|---|---|
| 1 | 50132030.00 |

# Average Interest Rate with MTD and PMTD

```sql
-- Average Interest Rate

SELECT ROUND(AVG(int_rate)*100, 2) AS avg_int_rate
FROM bank_loan;
```

| | avg_int_rate numeric |
|---|---|
| 1 | 12.04 |

```sql
-- MTD Average Interest Rate

SELECT ROUND(AVG(int_rate)*100, 2) AS mtd_avg_int_rate
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 12;
```

| | mtd_avg_int_rate numeric |
|---|---|
| 1 | 12.39 |

```sql
-- PMTD Average Interest Rate

SELECT ROUND(AVG(int_rate)*100, 2) AS pmtd_avg_int_rate
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 11;
```

| | pmtd_avg_int_rate numeric |
|---|---|
| 1 | 11.97 |

# Average Debt to Income Ratio with MTD and PMTD

```sql
-- Average Debt to Income Ratio

SELECT ROUND(AVG(dti)*100, 2) AS avg_dti
FROM bank_loan;
```

| | avg_dti numeric |
|---|---|
| 1 | 13.33 |

```sql
-- MTD Average Debt to Income Ratio

SELECT ROUND(AVG(dti)*100, 2) AS mtd_avg_dti
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 12;
```

| | mtd_avg_dti numeric |
|---|---|
| 1 | 13.68 |

```sql
-- PMTD Average Debt to Income Ratio

SELECT ROUND(AVG(dti)*100, 2) AS pmtd_avg_dti
FROM bank_loan
WHERE EXTRACT(MONTH FROM issue_date) = 11;
```

| | pmtd_avg_dti numeric |
|---|---|
| 1 | 13.32 |

# Good Loan Percentage and Application

```sql
-- Good Loan Percentage

SELECT (COUNT(CASE WHEN loan_status = 'Fully Paid' OR loan_status = 'Current' THEN id END)*100) / COUNT(id)
AS good_loan_percentage
FROM bank_loan;
```

```sql
-- Good Loan Application

SELECT COUNT(id) AS good_loan_application
FROM bank_loan
WHERE loan_status = 'Fully Paid' OR loan_status = 'Current';
```

| | good_loan_percentage<br>bigint |
|---|---|
| 1 | 86 |

| | good_loan_application<br>bigint |
|---|---|
| 1 | 33243 |

# Good Loan Funded Amount and Received Amount

```sql
-- Good Loan Funded Amount

SELECT SUM(loan_amount) AS good_loan_amt_funded
FROM bank_loan
WHERE loan_status = 'Fully Paid' OR loan_status = 'Current';
```

```sql
-- Good Loan Received Amount

SELECT SUM(total_payment) AS good_loan_amt_received
FROM bank_loan
WHERE loan_status = 'Fully Paid' OR loan_status = 'Current';
```

| | good_loan_amt_funded<br>numeric |
|---|---|
| 1 | 370224850.00 |

| | good_loan_amt_received<br>numeric |
|---|---|
| 1 | 435786170.00 |

# Bad Loan Percentage and Application

```sql
-- Bad Loan Percentage

SELECT (COUNT(CASE WHEN loan_status = 'Charged Off' THEN id END)*100) / COUNT(id)
AS bad_loan_percentage
FROM bank_loan;
```

```sql
-- Bad Loan Application

SELECT COUNT(id) AS bad_loan_application
FROM bank_loan
WHERE loan_status = 'Charged Off';
```

| | bad_loan_percentage<br>bigint |
|---|---|
| 1 | 13 |

| | bad_loan_application<br>bigint |
|---|---|
| 1 | 5333 |

# Bad Loan Funded Amount and Received Amount

```sql
-- Bad Loan Funded Amount

SELECT SUM(loan_amount) AS badd_loan_amt_funded
FROM bank_loan
WHERE loan_status = 'Charged Off';
```

| | badd_loan_amt_funded<br>numeric |
|---|---|
| 1 | 65532225.00 |

```sql
-- Bad Loan Received Amount

SELECT SUM(total_payment) AS badd_loan_amt_received
FROM bank_loan
WHERE loan_status = 'Charged Off';
```

| | badd_loan_amt_received<br>numeric |
|---|---|
| 1 | 37284763.00 |

# Loan Status Analysis

```sql
-- Loan Status Analysis

SELECT
    loan_status,
    COUNT(id) AS loan_count,
    SUM(total_payment) AS total_amount_received,
    SUM(loan_amount) AS total_fund_amount,
    ROUND(AVG(int_rate * 100), 2) AS interest_rate,
    ROUND(AVG(dti * 100), 2) AS DTI
From
    bank_loan
GROUP BY
    loan_status;
```

| | loan_status<br>character varying (50) | loan_count<br>bigint | total_amount_received<br>numeric | total_fund_amount<br>numeric | interest_rate<br>numeric | dti<br>numeric |
|---|---|---|---|---|---|---|
| 1 | Current | 1098 | 24199914.00 | 18866500.00 | 15.05 | 14.74 |
| 2 | Fully Paid | 32145 | 411586256.00 | 351358350.00 | 11.63 | 13.17 |
| 3 | Charged Off | 5333 | 37284763.00 | 65532225.00 | 13.86 | 14.01 |

# MTD Loan Status Analysis

```sql
-- MTD Loan Status Analysis

SELECT
    loan_status,
    SUM(total_payment) AS mtd_total_amount_received,
    SUM(loan_amount) AS mtd_total_fund_amount
FROM
    bank_loan
WHERE
    EXTRACT(MONTH FROM issue_date) = 12
GROUP BY
    loan_status;
```

| | loan_status<br>character varying (50) | mtd_total_amount_received<br>numeric | mtd_total_fund_amount<br>numeric |
|---|---|---|---|
| 1 | Charged Off | 5324211.00 | 8732775.00 |
| 2 | Current | 4934318.00 | 3946625.00 |
| 3 | Fully Paid | 47815851.00 | 41302025.00 |

# Monthly Trend Analysis

```sql
-- Monthly Trend Analysis

SELECT
    EXTRACT(MONTH FROM issue_date) AS month_number,
    TO_CHAR(issue_date, 'Month') AS month_name,
    COUNT(id) AS total_loan_applications,
    SUM(loan_amount) AS total_fund_amount,
    SUM(total_payment) AS total_amount_received
FROM
    bank_loan
GROUP BY
    EXTRACT(MONTH FROM issue_date),
    TO_CHAR(issue_date, 'Month')
ORDER BY
    EXTRACT(MONTH FROM issue_date);
```

| | month_number numeric | month_name text | total_loan_applications bigint | total_fund_amount numeric | total_amount_received numeric |
|---|---|---|---|---|---|
| 1 | 1 | January | 2332 | 25031650.00 | 27578836.00 |
| 2 | 2 | February | 2279 | 24647825.00 | 27717745.00 |
| 3 | 3 | March | 2627 | 28875700.00 | 32264400.00 |
| 4 | 4 | April | 2755 | 29800800.00 | 32495533.00 |
| 5 | 5 | May | 2911 | 31738350.00 | 33750523.00 |
| 6 | 6 | June | 3184 | 34161475.00 | 36164533.00 |
| 7 | 7 | July | 3366 | 35813900.00 | 38827220.00 |
| 8 | 8 | August | 3441 | 38149600.00 | 42682218.00 |
| 9 | 9 | September | 3536 | 40907725.00 | 43983948.00 |
| 10 | 10 | October | 3796 | 44893800.00 | 49399567.00 |
| 11 | 11 | November | 4035 | 47754825.00 | 50132030.00 |
| 12 | 12 | December | 4314 | 53981425.00 | 58074380.00 |

# State-wise Analysis

```sql
-- State-wise Analysis

SELECT
    address_state AS state_name,
    COUNT(id) AS total_loan_applications,
    SUM(loan_amount) AS total_fund_amount,
    SUM(total_payment) AS total_amount_received
FROM bank_loan
GROUP BY address_state
ORDER BY address_state;
```

| | state_name<br>character varying (50) | total_loan_applications<br>bigint | total_fund_amount<br>numeric | total_amount_received<br>numeric |
|---|---|---|---|---|
| 1 | AK | 78 | 1031800.00 | 1108570.00 |
| 2 | AL | 432 | 4949225.00 | 5492272.00 |
| 3 | AR | 236 | 2529700.00 | 2777875.00 |
| 4 | AZ | 833 | 9206000.00 | 10041986.00 |
| 5 | CA | 6894 | 78484125.00 | 83901234.00 |
| 6 | CO | 770 | 8976000.00 | 9845810.00 |
| 7 | CT | 730 | 8435575.00 | 9357612.00 |
| 8 | DC | 214 | 2652350.00 | 2921854.00 |
| 9 | DE | 110 | 1138100.00 | 1269136.00 |
| 10 | FL | 2773 | 30046125.00 | 31601905.00 |
| 11 | GA | 1355 | 15480325.00 | 16728040.00 |
| 12 | HI | 170 | 1850525.00 | 2080184.00 |
| 13 | IA | 5 | 56450.00 | 64482.00 |
| 14 | ID | 6 | 59750.00 | 65329.00 |
| 15 | IL | 1486 | 17124225.00 | 18875941.00 |
| 16 | IN | 9 | 86225.00 | 85521.00 |
| 17 | KS | 260 | 2872325.00 | 3247394.00 |
| 18 | KY | 320 | 3504100.00 | 3792530.00 |
| 19 | LA | 426 | 4498900.00 | 5001160.00 |
| 20 | MA | 1310 | 15051000.00 | 16676279.00 |

# Term-wise Analysis

```sql
-- Term-wise Analysis

SELECT
    term,
    COUNT(id) AS total_loan_applications,
    SUM(loan_amount) AS total_fund_amount,
    SUM(total_payment) AS total_amount_received
FROM bank_loan
GROUP BY term
ORDER BY term;
```

| | term<br>character varying (20) | total_loan_applications<br>bigint | total_fund_amount<br>numeric | total_amount_received<br>numeric |
|---|---|---|---|---|
| 1 | 36 months | 28237 | 273041225.00 | 294709458.00 |
| 2 | 60 months | 10339 | 162715850.00 | 178361475.00 |

# Employee Length-wise Analysis

```sql
-- Employee length-wise Analysis

SELECT
    emp_length,
    COUNT(id) AS total_loan_applications,
    SUM(loan_amount) AS total_fund_amount,
    SUM(total_payment) AS total_amount_received
FROM bank_loan
GROUP BY emp_length
ORDER BY emp_length;
```

| | emp_length<br>character varying (50) | total_loan_applications<br>bigint | total_fund_amount<br>numeric | total_amount_received<br>numeric |
|---|---|---|---|---|
| 1 | < 1 year | 4575 | 44210625.00 | 47545011.00 |
| 2 | 1 year | 3229 | 32883125.00 | 35498348.00 |
| 3 | 10+ years | 8870 | 116115950.00 | 125871616.00 |
| 4 | 2 years | 4382 | 44967975.00 | 49206961.00 |
| 5 | 3 years | 4088 | 43937850.00 | 47551832.00 |
| 6 | 4 years | 3428 | 37600375.00 | 40964850.00 |
| 7 | 5 years | 3273 | 36973625.00 | 40397571.00 |
| 8 | 6 years | 2228 | 25612650.00 | 27908658.00 |
| 9 | 7 years | 1772 | 20811725.00 | 22584136.00 |
| 10 | 8 years | 1476 | 17558950.00 | 19025777.00 |
| 11 | 9 years | 1255 | 15084225.00 | 16516173.00 |

# Purpose-wise Analysis

```sql
-- Purpose-wise Analysis

SELECT
    purpose,
    COUNT(id) AS total_loan_applications,
    SUM(loan_amount) AS total_fund_amount,
    SUM(total_payment) AS total_amount_received
FROM bank_loan
GROUP BY purpose
ORDER BY purpose;
```

| | purpose<br>character varying (255) | total_loan_applications<br>bigint | total_fund_amount<br>numeric | total_amount_received<br>numeric |
|---|---|---|---|---|
| 1 | car | 1497 | 10223575.00 | 11324914.00 |
| 2 | credit card | 4998 | 58885175.00 | 65214084.00 |
| 3 | Debt consolidation | 18214 | 232459675.00 | 253801871.00 |
| 4 | educational | 315 | 2161650.00 | 2248380.00 |
| 5 | home improvement | 2876 | 33350775.00 | 36380930.00 |
| 6 | house | 366 | 4824925.00 | 5185538.00 |
| 7 | major purchase | 2110 | 17251600.00 | 18676927.00 |
| 8 | medical | 667 | 5533225.00 | 5851372.00 |
| 9 | moving | 559 | 3748125.00 | 3999899.00 |
| 10 | other | 3824 | 31155750.00 | 33289676.00 |
| 11 | renewable_energy | 94 | 845750.00 | 898931.00 |
| 12 | small business | 1776 | 24123100.00 | 23814817.00 |
| 13 | vacation | 352 | 1967950.00 | 2116738.00 |
| 14 | wedding | 928 | 9225800.00 | 10266856.00 |

# Home Ownership-wise Analysis

```sql
-- Home ownership-wise Analysis

SELECT
    home_ownership,
    COUNT(id) AS total_loan_applications,
    SUM(loan_amount) AS total_fund_amount,
    SUM(total_payment) AS total_amount_received
FROM bank_loan
GROUP BY home_ownership
ORDER BY home_ownership;
```

| | home_ownership<br>character varying (50) | total_loan_applications<br>bigint | total_fund_amount<br>numeric | total_amount_received<br>numeric |
|---|---|---|---|---|
| 1 | MORTGAGE | 17198 | 219329150.00 | 238474438.00 |
| 2 | NONE | 3 | 16800.00 | 19053.00 |
| 3 | OTHER | 98 | 1044975.00 | 1025257.00 |
| 4 | OWN | 2838 | 29597675.00 | 31729129.00 |
| 5 | RENT | 18439 | 185768475.00 | 201823056.00 |

# SOFTWARE USED

PostgreSQL

PgAdmin 4

Microsoft Powerpoint

# Thank you

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