LENDING CLUB CASE STUDY

CONTRIBUTED BY

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PROBLEM STATEMENT

Risk analytics in banking and financial services and understand how data is used to minimise the risk of losing money while lending to customers.

Business Understanding

You work for a consumer finance company which specialises in lending various types of loans to urban customers. When the company receives a loan application, the company has to make a decision for loan approval based on the applicant's profile.

TWO TYPES OF RISKS ARE ASSOCIATED WITH THE BANK'S DECISION:

- 1. If the applicant is likely to repay the loan, then not approving the loan results in a loss of business to the company

- 2. If the applicant is not likely to repay the loan, i.e. he/she is likely to default, then approving the loan may lead to a financial loss for the company
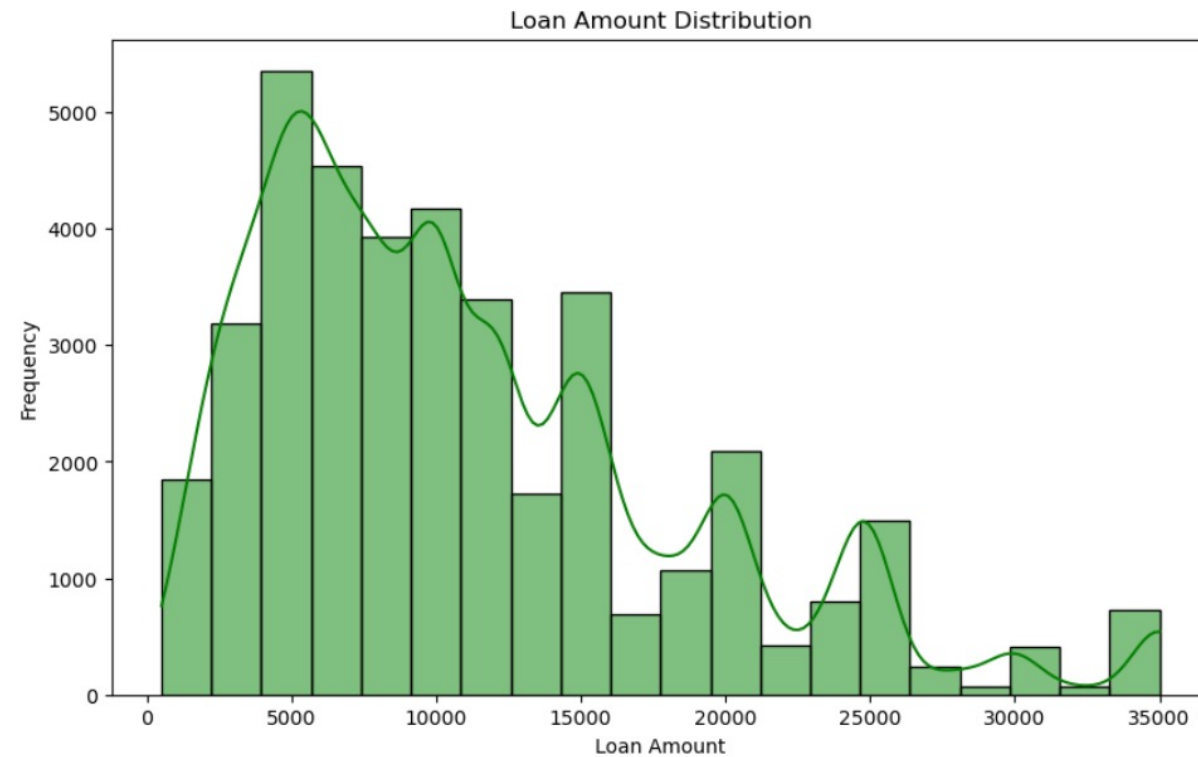
# UNIVARIATE ANALYSIS

INTEREST RATE DISTRIBUTION
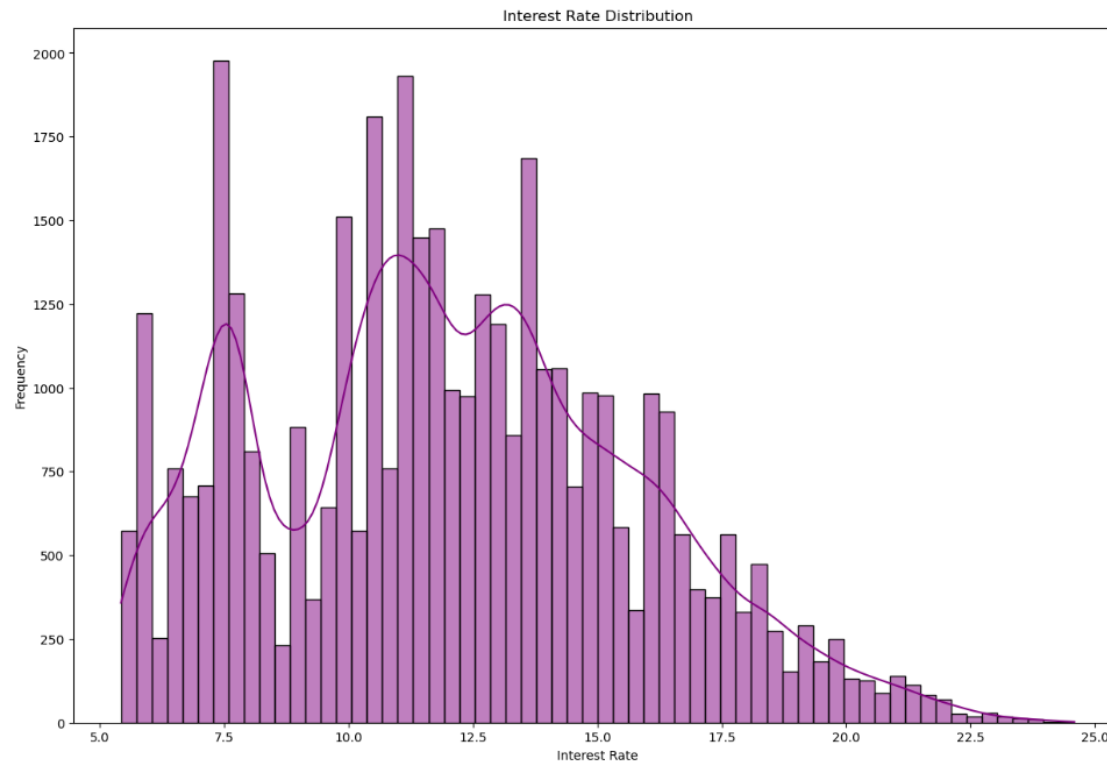
In a sea of loans, interest rates ranged widely. Most clustered around 10-15%, but outliers reached for the sky. Stability, a distant dream.

LOAN AMOUNT DISTRIBUTION

Loan amounts varied, forming peaks and valleys. 10K, 20K, 30K Financial dreams and realities found their place in the histogram's dance.
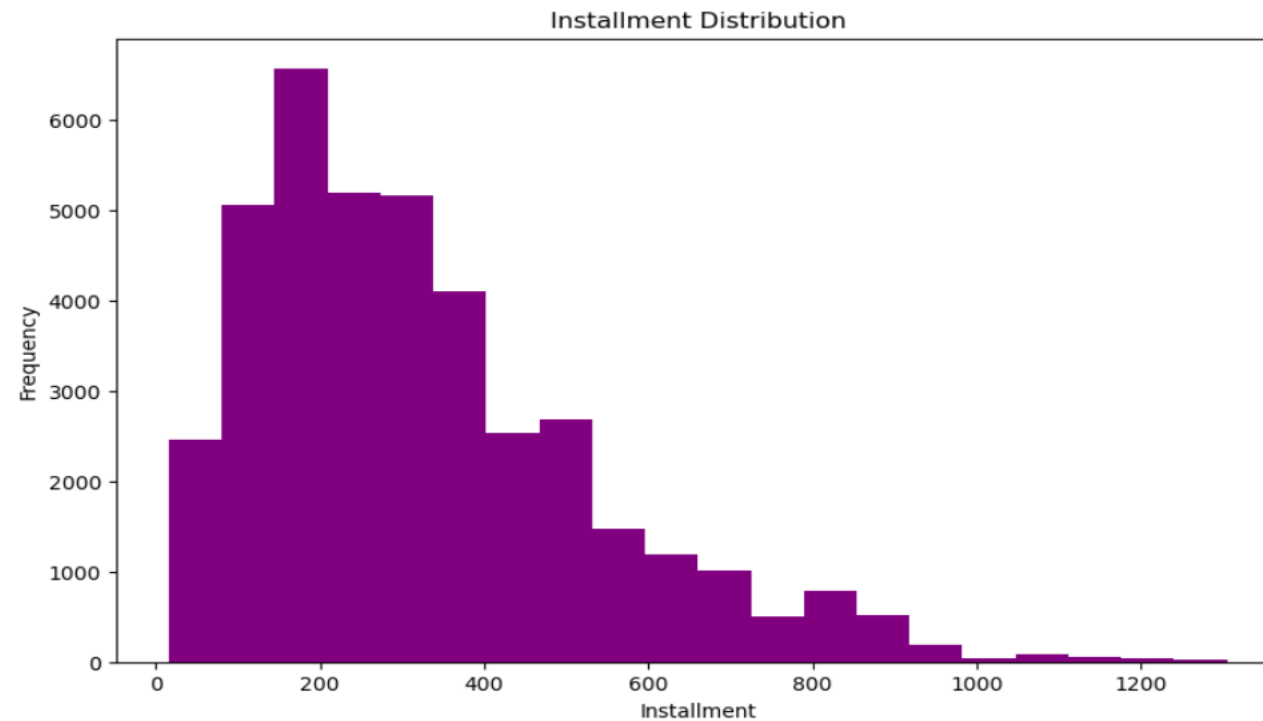
BOX PLOT FOR FUNDED_AMNT

Funded Amount Distribution
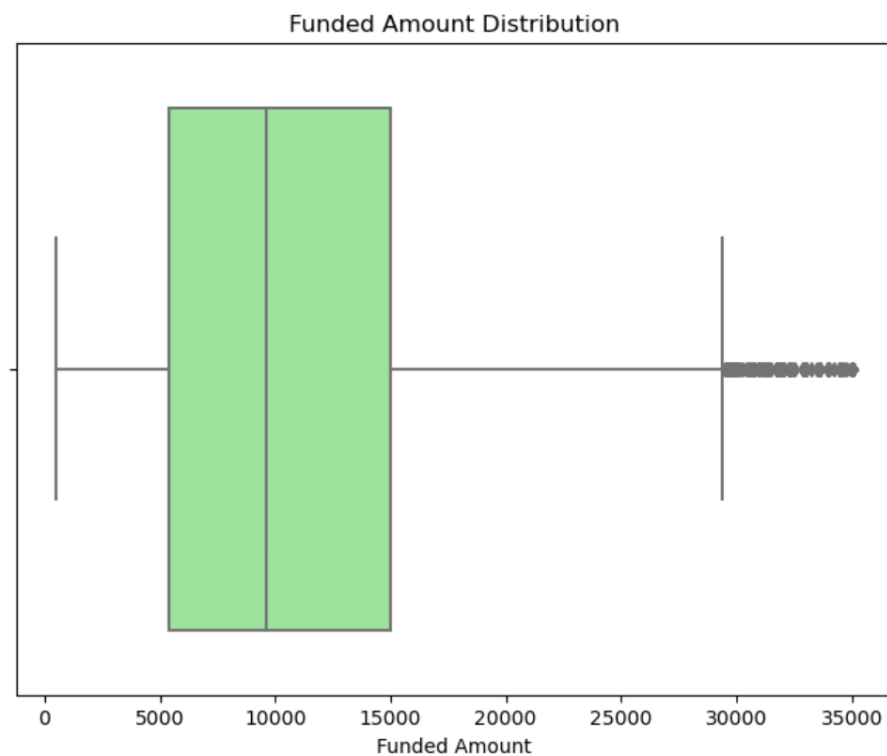
The funded amounts had their stories too. Some thrived while others struggled. The box plot whispered the secrets of financial support.
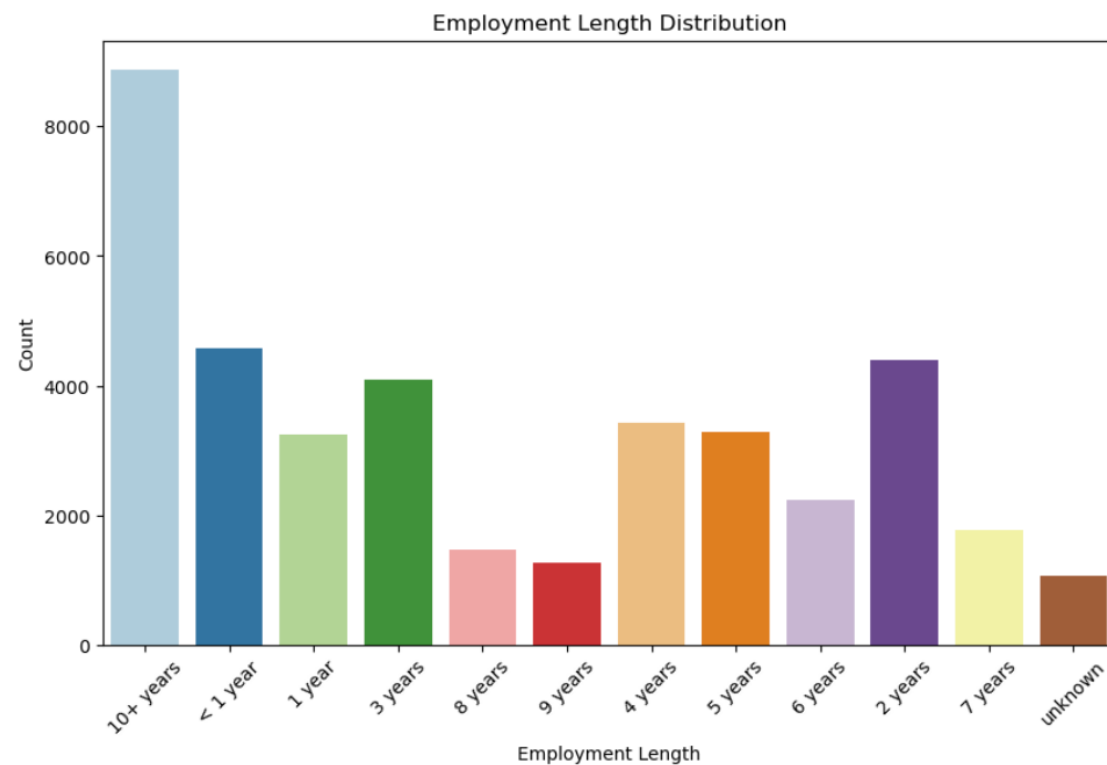
BAR CHART FOR TERM
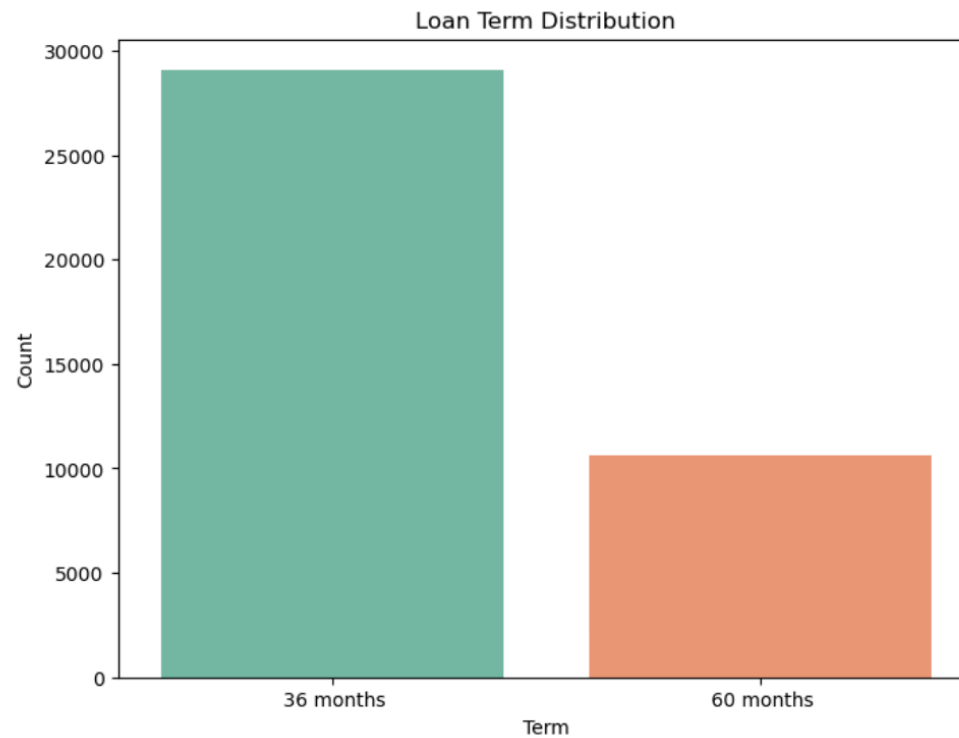
Terms danced in a bar chart waltz. Short or long, loans told their tales. The borrowers' choices revealed in vibrant bars.
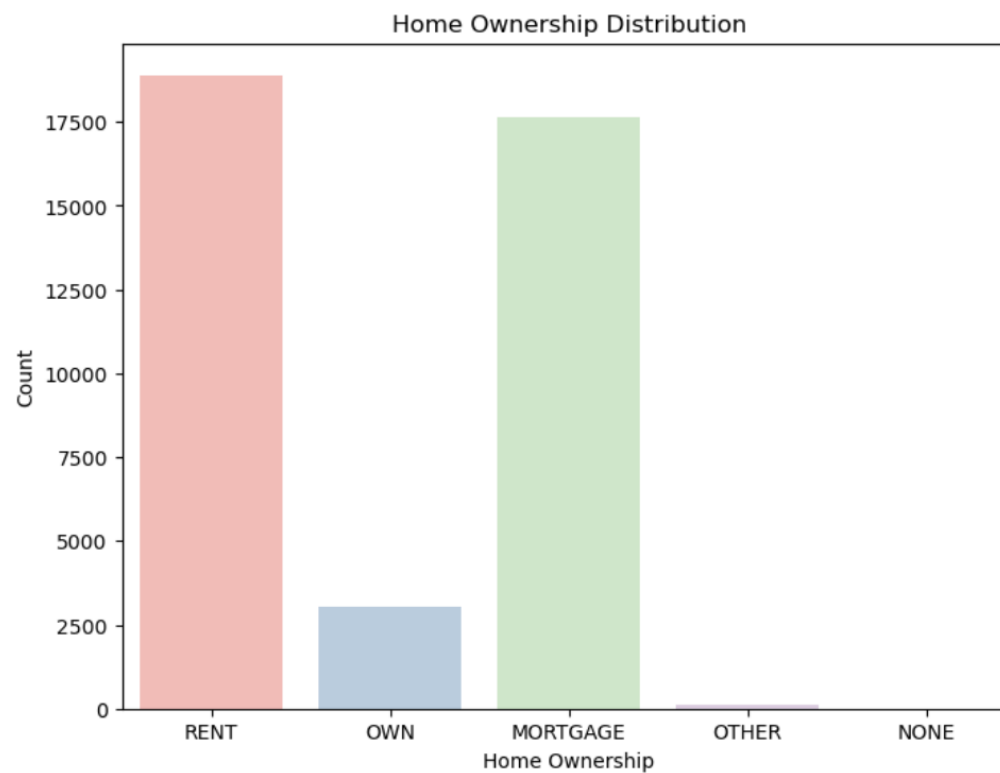
HISTOGRAM FOR INSTALLMENT

Story: Installment payments echoed in a purple histogram. Peaks and valleys of financial commitments formed a visual symphony.
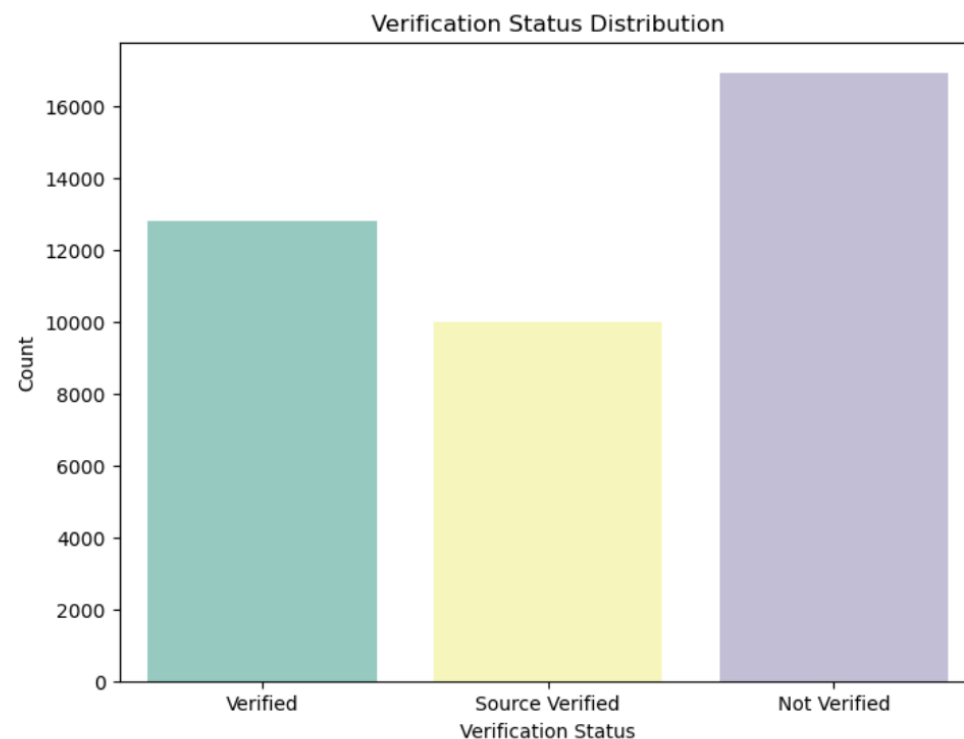
BAR CHART FOR EMP_LENGTH

Employment lengths came to life. Fresh beginnings to experienced hands, their counts painted a career mosaic in shades of blue
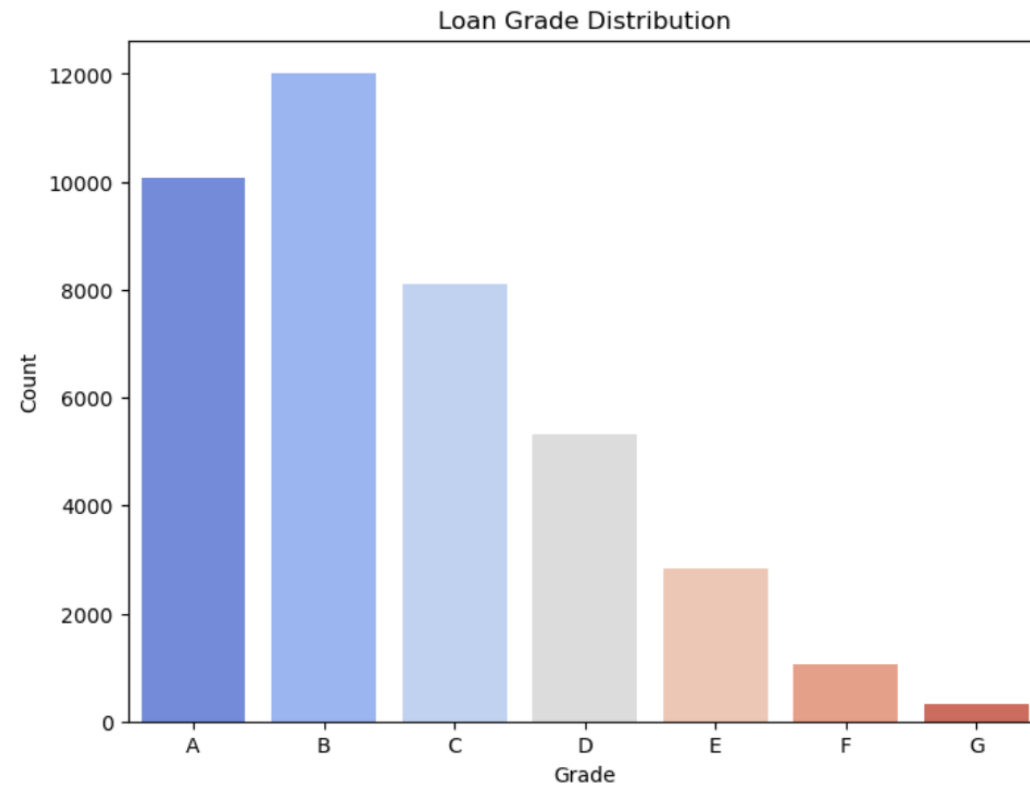
BAR CHART FOR HOME_OWNERSHIP

Homes owned, counted and displayed. From mortgages to rentals, the bar chart told tales of property and responsibility.
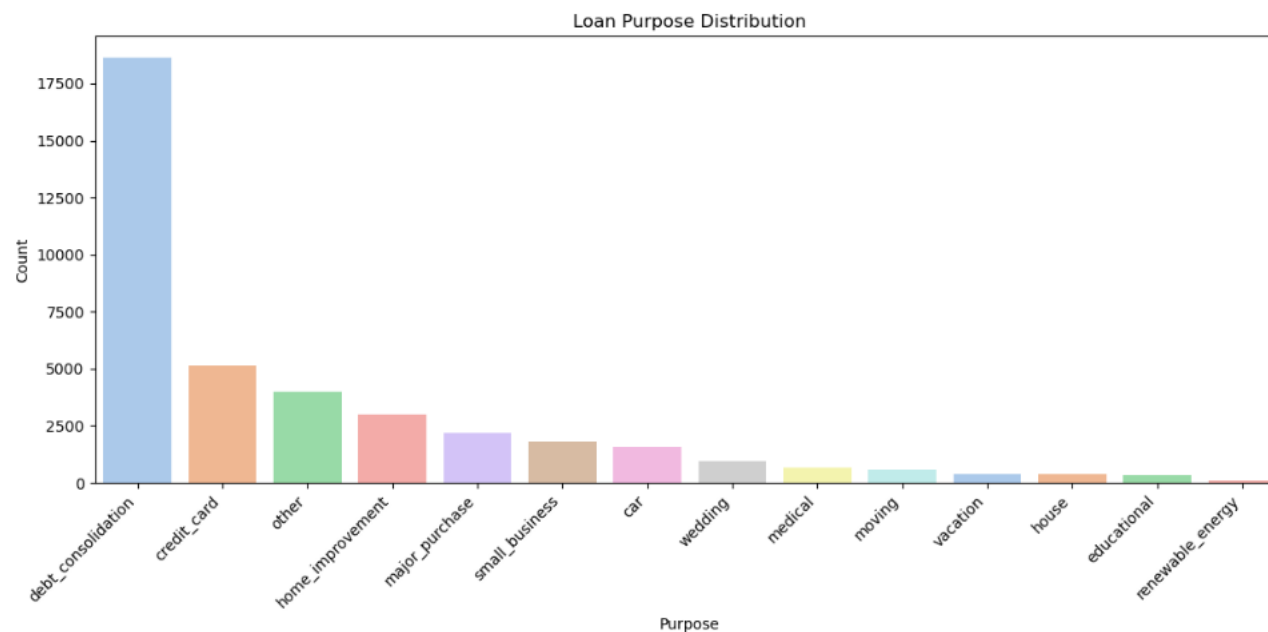
BAR CHART FOR VERIFICATION_STATUS

Verification statuses paraded, colors of trust in a bar chart dance. From verified to not, their counts painted a picture of transparency.
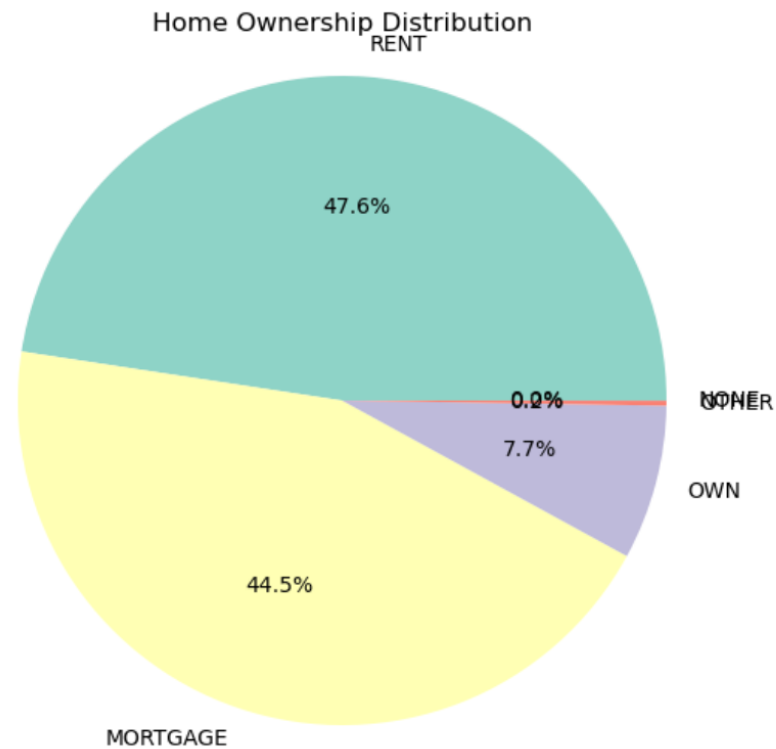
LOAN GRADE DISTRIBUTION

Grades marked loans' journeys. A bar chart in cool shades revealed the diversity of borrowers' financial prowess.

LOAN PURPOSE DISTRIBUTION

Loan purposes whispered in a bar chart melody. From debt consolidation to vacations, financial dreams varied in hues.
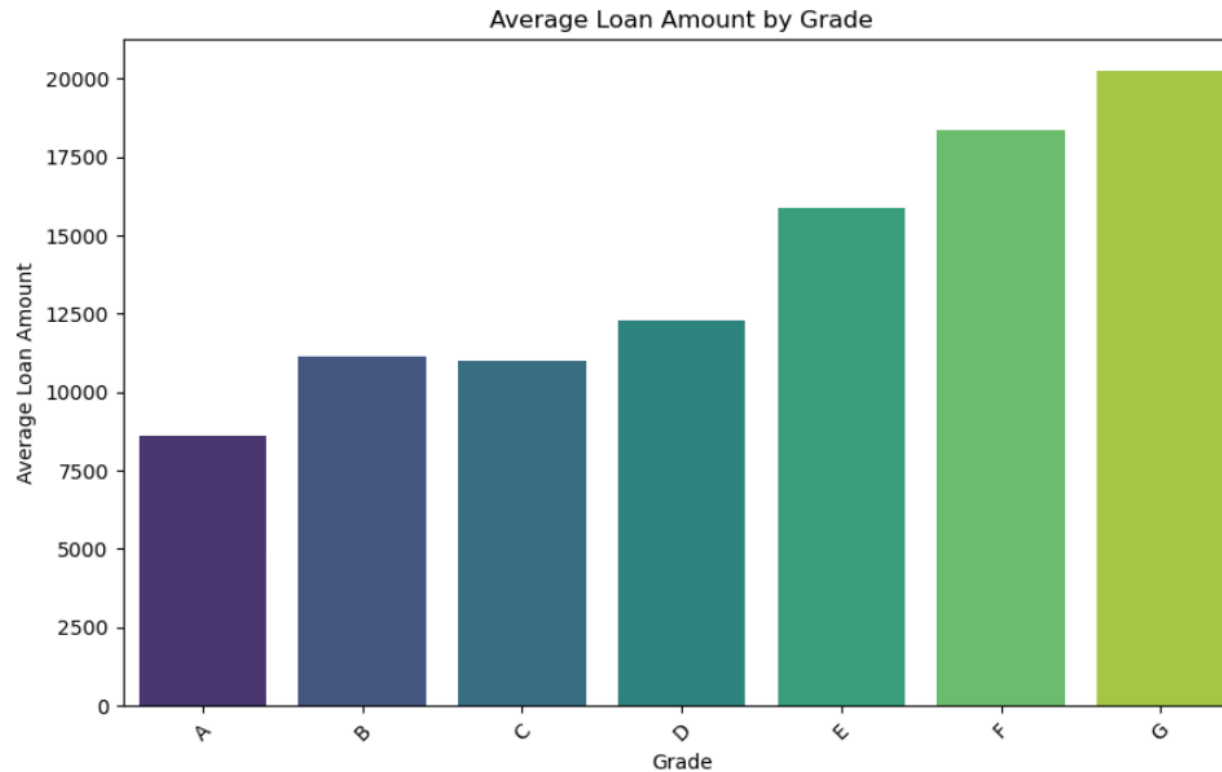
HOME OWNERSHIP DISTRIBUTION

Homeownership claimed its slice. A pie chart displayed the shares of roofs over heads in percentages.
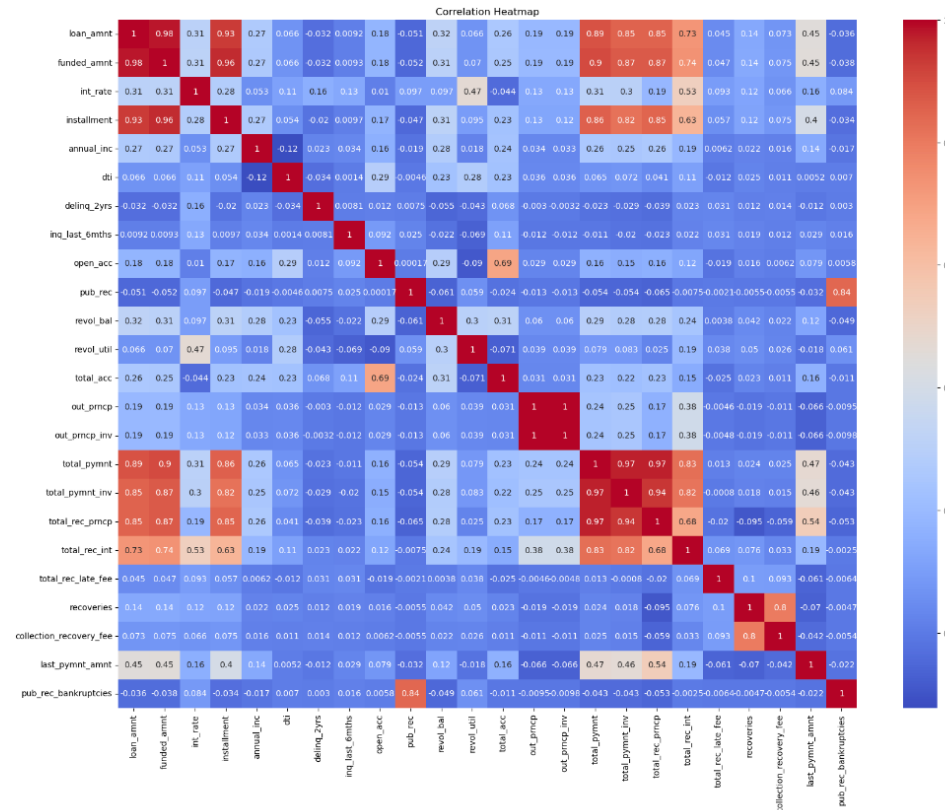
BIVARIATE ANALYSIS

GRADES

Grades told a story of financial hope. As grades climbed, so did average loan amounts. A colorful bar chart charted the path to financial dreams.

# HEATMAP OF CORRELATION MATRIX

A heatwave of correlations revealed secrets beneath the data's surface. Variables whispered in warm hues, their stories interwoven in the matrix's glow.

# STACKED AREA PLOT FOR LOAN STATUS DISTRIBUTION BASED ON BANKRUPTCY HISTORY
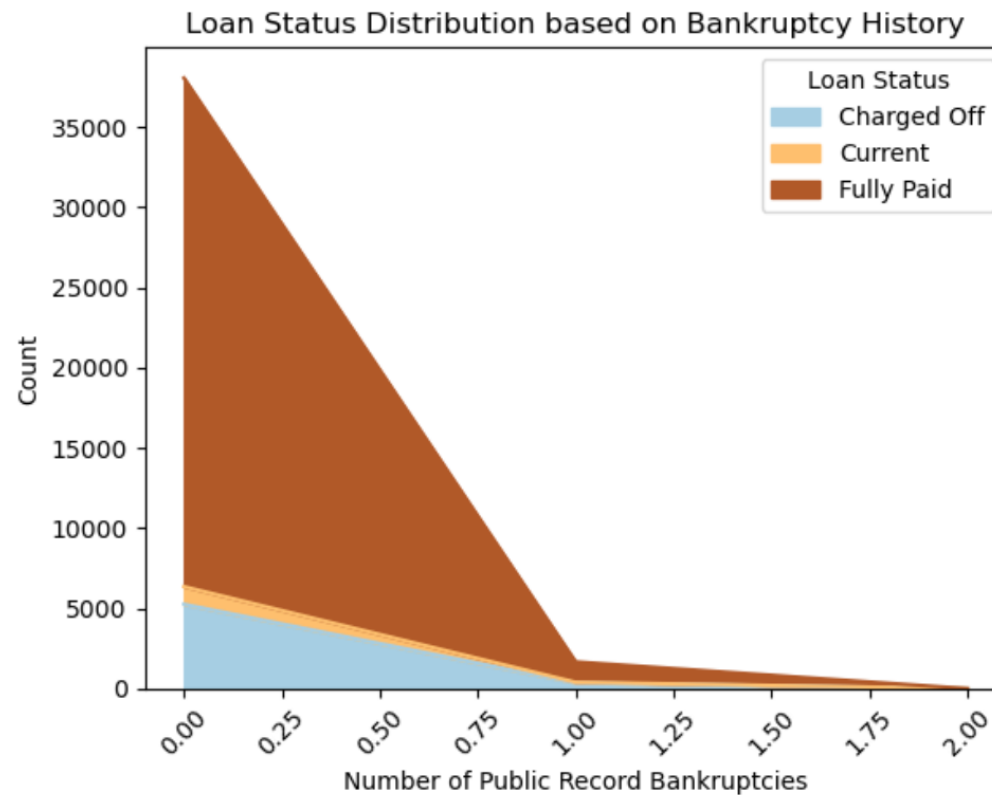
Public record bankruptcies, a chapter in the loan story. Stacked areas weaved a narrative of financial struggles, a dance of loans and credit histories.

BAR PLOT FOR MEDIAN TOTAL PAYMENT BY STATE
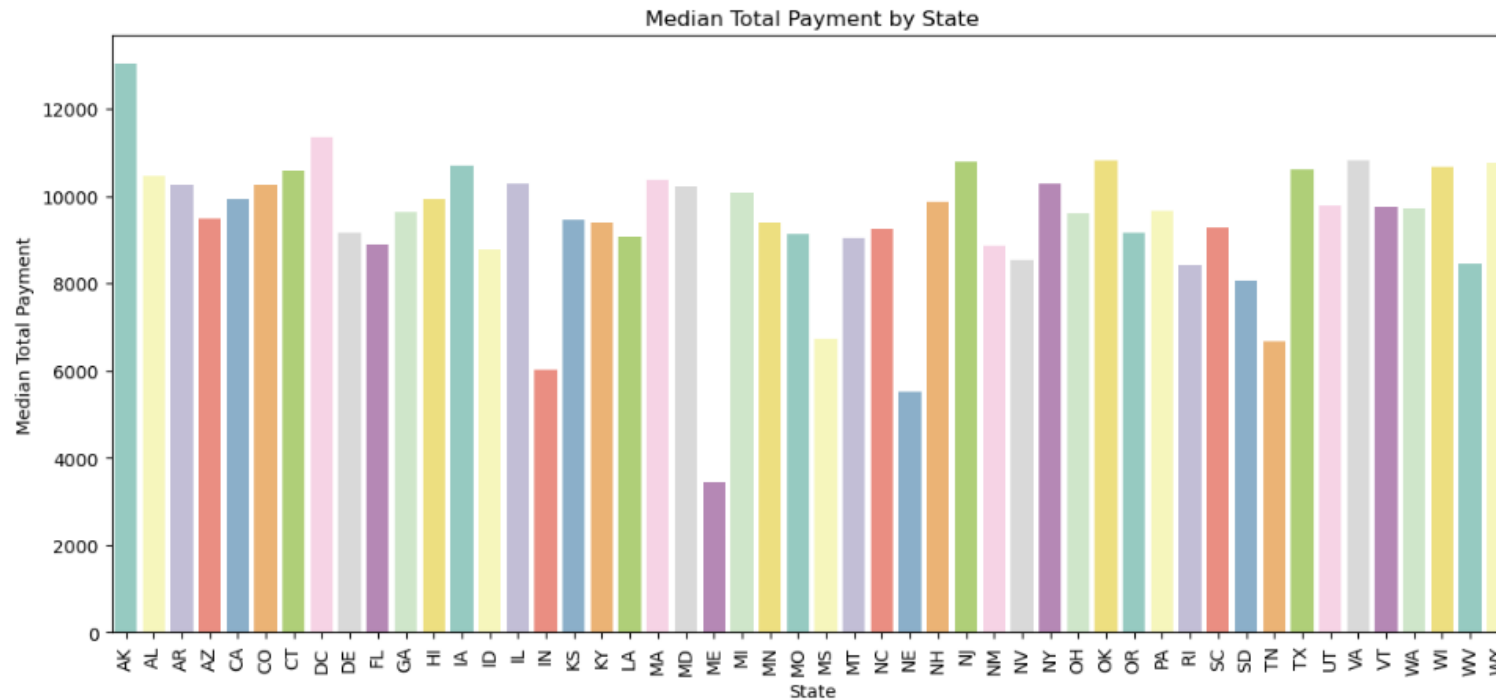
States held their own in payments, a median tale. A bar plot painted a portrait of financial prosperity, with each state contributing its shade.

LOAN STATUS OVER TIME
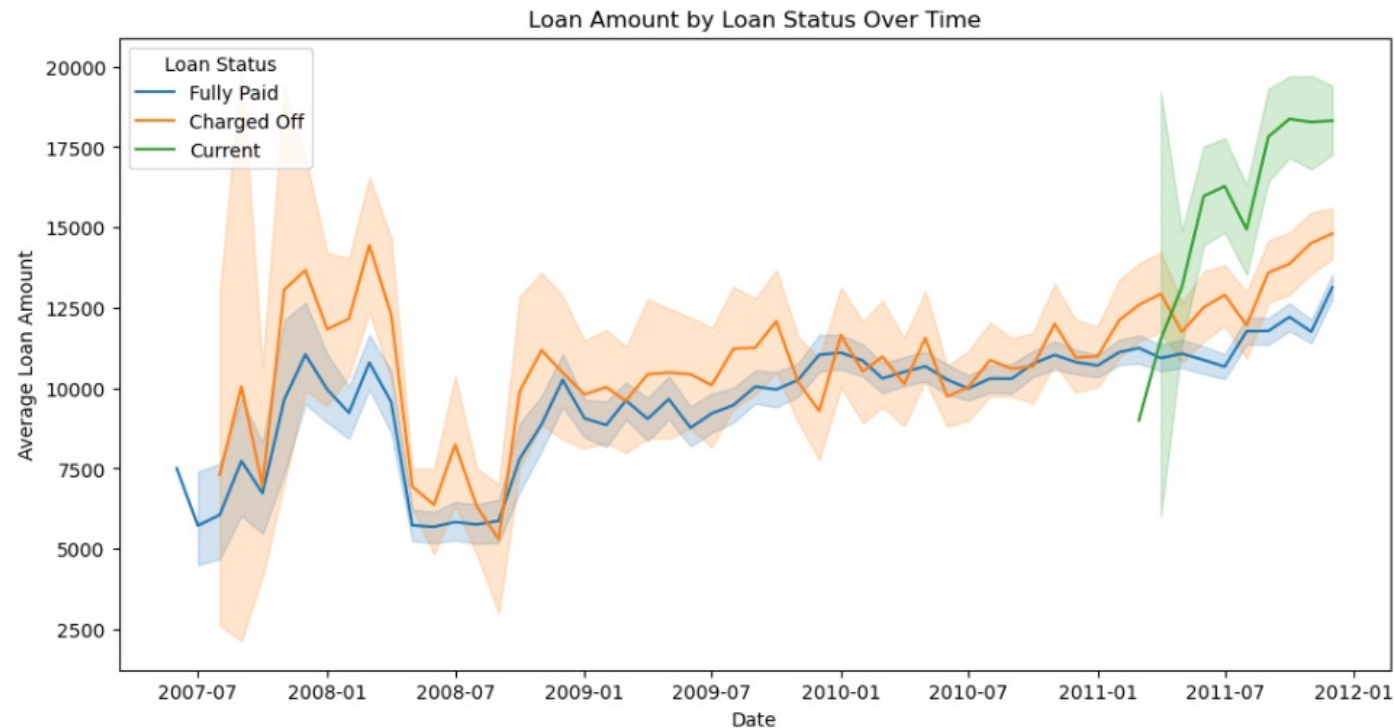
Loans live, evolve, and tell their tales over time. See the average loan amount's journey, split by loan status, in this time-traveling plot.

VALUABLE FEATURES FOR PORTFOLIO AND RISK ASSESSMENT OF THE COMPANY.

- funded_amnt: The initial loan amount funded by investors is a key factor. Higher loan amounts may pose higher default risk.

- installment: Monthly loan payments are crucial. Higher installments relative to income can strain borrowers, increasing default risk.

- total_pymnt: The total payment received indicates whether borrowers have met their obligations, impacting default assessment.

- total_pymnt_inv: Similar to total payment, this metric considers investor contributions, revealing the overall repayment performance.

- total_rec_prncp: The total principal received signifies how much of the loan amount has been repaid, influencing default predictions.

- total_rec_int: Total interest received reflects a borrower's commitment to loan repayment, affecting default assessments.

- last_pymnt_amnt: The latest payment amount indicates the borrower's current financial stability and potential for default.

- revol_bal: A high revolving balance may indicate financial stress, affecting the ability to repay loans and increasing default risk.

- int_rate: Interest rates impact affordability. Higher rates can strain borrowers, elevating the likelihood of default.

- annual_inc: Borrower income plays a critical role. Lower income levels relative to loan amount can raise default risk.

THANK YOU