Dashboard 3: Loan Performance and Risk Analysis

Executive Summary:

This report presents a comprehensive analysis of loan performance and associated risk factors within our portfolio. Key performance indicators (KPIs) and risk metrics are visualized to aid in strategic decision-making and risk management.

Analysis Overview:

- **Total Loans**: Our current portfolio consists of 77,000 loans.
- **High-Risk Loan Percentage**: A mere 0.11% of the total loans are categorized as high-risk.
- **Total Default Rate**: The default rate stands at 47.98%, highlighting significant risk.
- **Average Interest of Defaulted Loans**: The average interest rate for defaulted loans is 46%.

Bar Chart: Total Number of Loans by Loan Type

The bar chart titled **"TotalLoans by UseOfLoan"** visually represents the total number of loans across different categories of loan usage (denoted by `UseOfLoan`). The Y-axis indicates the total number of loans in thousands (K), and the X-axis shows the various loan usage codes, ranging from `-1` to `8`.

Here's the breakdown of the chart:

- **-1** has the highest total loans, with approximately **44,000** loans. (This category is undefined in the description you provided.)
- **7 (Other)** has around **9,000** loans.
- **2 (Home improvement)** has about **8,000** loans.
- **0 (Loan consolidation)** has approximately **6,000** loans.
- The remaining categories, including **6 (Vehicle)**, **8 (Health)**, **3 (Business)**, and others, have fewer loans ranging from **3,000** down to **1,000**.

The chart shows a clear concentration of loans in the category `-1`, followed by the `Other` and `Home improvement` categories, with a steep drop in the number of loans in other categories.

Pie Chart: High-Risk vs. Low-Risk Loans

The pie chart titled "High-Risk vs. Low-Risk Loans" provides a comparison between two categories of loans: High-Risk and Low-Risk.

- The Low-Risk category makes up the majority, accounting for 44.52K loans, which represents 57.56% of the total.
- The High-Risk category accounts for approximately 32.8K loans, though the percentage is partially obscured in the image (likely around 42.44%).

The visual representation emphasizes that more loans fall under the Low-Risk category compared to the High-Risk category.

Line Chart: Default Rate Over Time

The line chart titled **"Default Rate by Year and CreditScoreRange"** tracks the default rates of loans across different credit score ranges from **2009 to 2019**.

Key Observations:

1. **300-500 (Blue)**:
   - Shows a gradual increase in default rates, peaking in 2017 at around **72%**. It slightly declines after that, reaching **46%** in 2019.
2. **501-700 (Orange)**:
   - The default rate also increases over time, with a peak at **47%** in 2016 and gradually dropping to **32%** by 2019.
3. **701+ (Purple)**:
   - Has the lowest default rate throughout the period. It rises to **11%** in 2013 but remains relatively stable afterward, peaking at **9%** in 2017 before declining to around **6%** in 2019.
4. **Not Available (Pink)**:
   - Follows a similar trend as the lower credit score categories, peaking at **68%** in 2017 and then reducing to **44%** in 2019.

General Trend:

- There is a significant rise in default rates across all categories from around **2012 to 2017**, after which there is a gradual decline through to 2019.
- Loans with credit scores in the **300-500** range and **Not Available** have the highest default rates, while loans in the **701+** range consistently have the lowest.

Scatter Plot: Loan Amount vs. Default Rate by Risk Category

Key Observations Summary:

- Many loans default at 100%, especially for loan amounts between 30 and 40.
- There are some loans with lower default rates (0-50%) across different loan amounts, but they are much fewer in number.
- Risk category color differentiation seems missing or ineffective, limiting the ability to analyze risk category impacts visually.

- No clear linear relationship between loan amount and default rate is immediately apparent, though clustering is seen at higher loan amounts with full defaults.

Matrix of Key Risk Factors

4. Observations:

- **High-Risk customers**: A majority of the debt-to-income sum is concentrated in the **High-Risk** category, particularly for customers with **Credit Scores of -1.0** (likely indicating default or unscorable customers) and **1,000** credit scores.
- **Low-Risk customers**: The sum for Low-Risk customers is generally lower than for High-Risk, with substantial values for credit scores of **800** and **1,000**.
- **Credit scores of -1.0**: This category has the largest sum of debt-to-income for High-Risk customers, possibly representing those who defaulted or were unable to be scored.

Purpose:

The table breaks down how different **credit score ranges** and **risk categories** (High vs Low Risk) impact the **sum of debt-to-income ratios**. This breakdown can help in identifying which credit score groups contribute the most to overall debt and how risk is distributed across these groups. This can be useful for risk management and financial assessment.

Dashboard Overview