Bank Loan Analysis

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Benefits of Analysis-

1. **Informed Decision Making** : Analyzing bank loan data helps in making smarter decisions about loan approval criteria, risk assessment, and portfolio management.
2. **Improved Efficiency** : By identifying bottlenecks and streamlining processes, analyzing loan data speeds up loan processing and enhances customer satisfaction.
3. **Enhanced Customer Understanding** : Examining loan data provides insights into borrowing behavior, allowing for personalized loan offers and targeted marketing strategies.
4. **Risk Mitigation** : Data analysis identifies factors contributing to loan defaults, enabling proactive risk management strategies to be implemented.
5. **Competitive Advantage** : Utilizing loan data effectively allows for the development of more competitive loan products and services, giving institutions an edge over competitors.

Data Sources And Data Preparation

Diverse Data Sources

For analysis two datasets are available, the first dataset focuses on loan origination details and borrower demographics, including loan amounts, employment information, income, and loan status. This dataset provides insights into the characteristics of loan applicants. The second dataset, emphasizes borrower credit history, repayment behavior. It includes credit delinquencies, inquiries, revolving balances, total payments received. This dataset offers a understanding of borrower creditworthiness, loan utilization, repayment patterns, and overall loan performance over time.

Data Cleaning and Preparation

Data cleaning and preparation are essential for accurate analysis. This involves detecting and rectifying inconsistencies, managing missing values, and structuring raw data for meaningful insights. By ensuring data accuracy and reliability, this process sets the stage for effective analysis and informed decision-making.

Creating Visualizations And Dashboards

1. Data Visualization - Transforming raw data into compelling visual representations is essential for conveying complex information in a simplified and impactful manner.

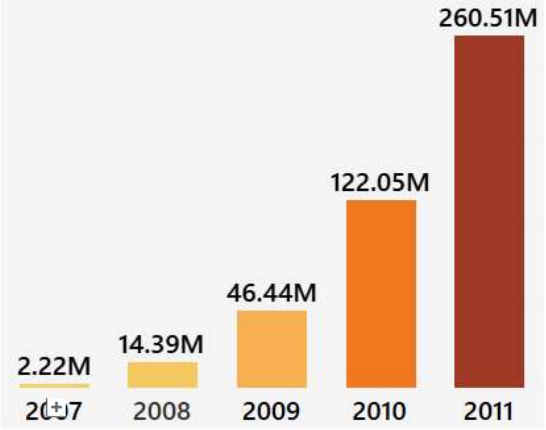
2. Dashboard Design - Creating interactive dashboards with the help of Power BI that provide at-a-glance insights and facilitate informed decision-making for stakeholders.

Tableau Dashboard

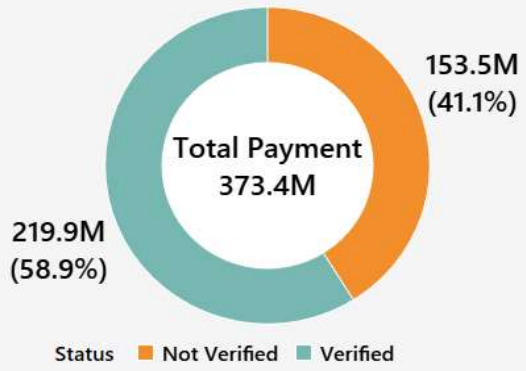
Bank Loan Analysis

Total Loan Amount	No. of Loan Applications	Avg. Int Rate
445.60M	39.72K	12.02%

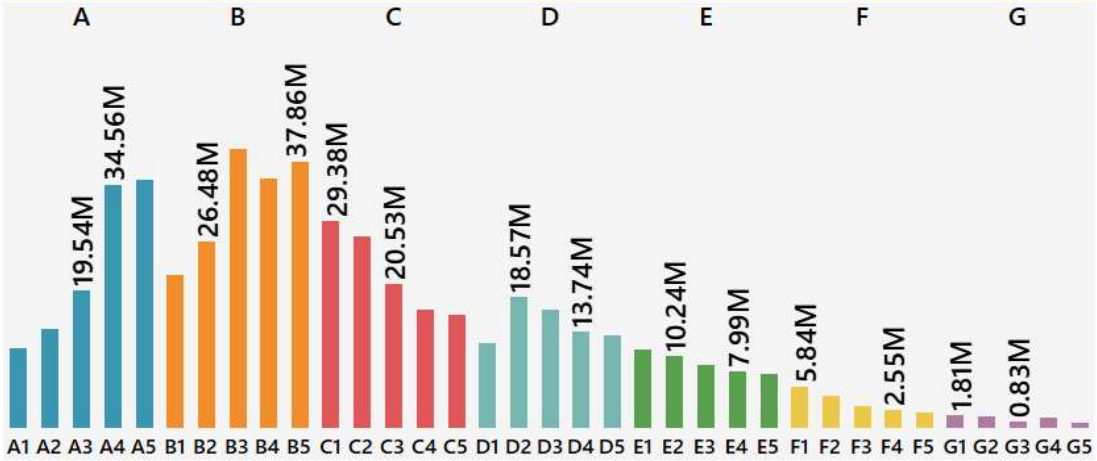
Year wise Loan Amount Stats



Payment by Verification Status



Grade and Sub-Grade wise Revol Balance

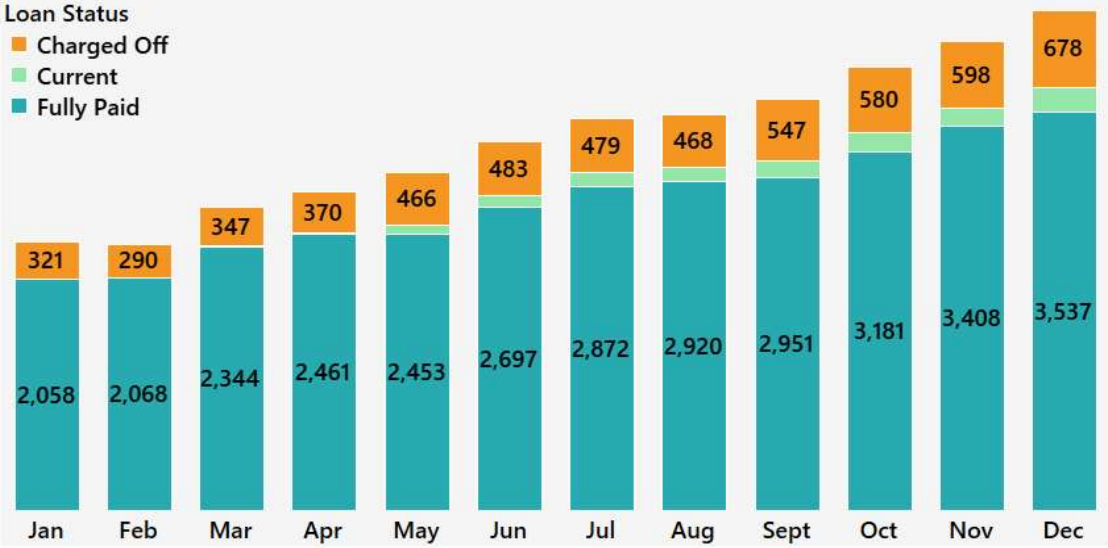


Grade
(All)
A
B
C
D
E
F
G

Home Ownership vs Last Payment Date Stats

	2008	2009	2010	2011	2012	2013	2014	2015	2016
NONE			2	1					
OTHER		12	16	34	35			1	
OWN	11	39	185	422	700	703	673	160	160
MORTGAGE	56	229	706	2,131	3,786	4,254	4,172	1,207	1,104
RENT	70	279	939	2,408	4,383	4,501	4,424	1,063	780

Loan Status Distribution Across States and Months



State
(All)
AK
AL
AR
AZ
CA
CO
CT
DC
DE
FL
GA
HI
IA
ID
IL
IN

KPIs and Conclusion -

The following are the KPIs we have created-

1. Total Loaned Amount, Total Loans Issued , Avg. Interest Rate
2. Year wise Loan Amount Statistics
3. Total Payment for Verified Status Vs Total Payment for Non Verified Status
4. Grade and Subgrade wise Revol Balance
5. State wise Month wise Loan Status
6. Home Ownership vs Last Payment Date Stats

KPI 1 : Total Loaned Amount, Total Loans Issued , Avg. Interest Rate

Total Loan Amount	No. of Loan Applications	Avg. Int Rate
445.60M	39.72K	12.02%

Insights-

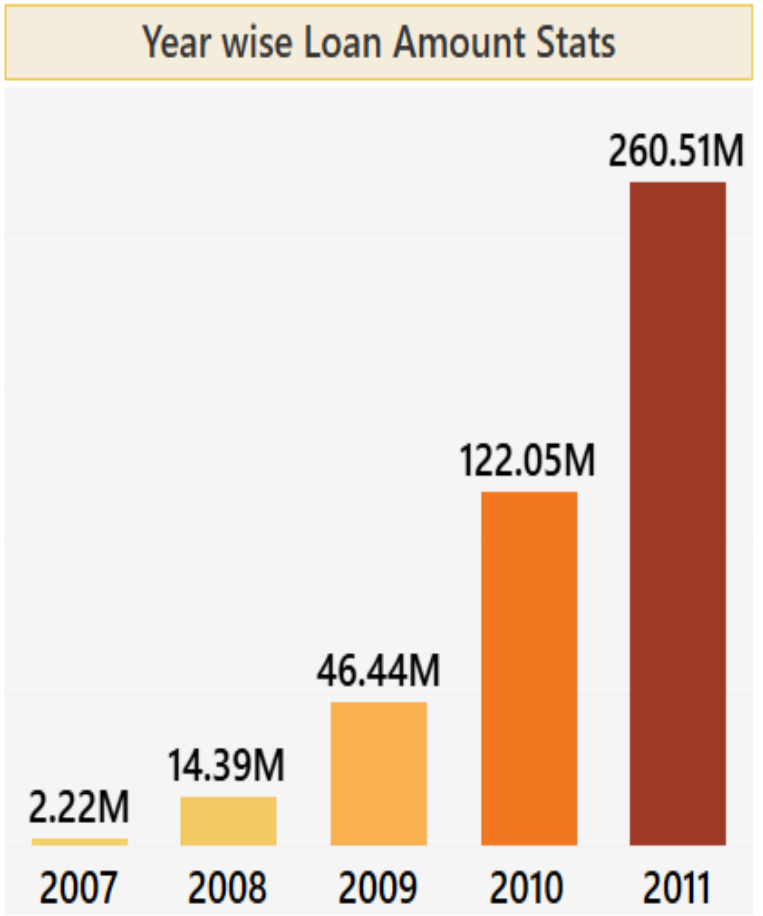
1. The total loaned amount of 445 million spread across 39 thousand loans indicates a diverse portfolio with varying loan sizes. This suggests that the lending institution caters to a broad range of borrowers, from individuals seeking smaller loans to larger entities requiring substantial financing.

2. Higher interest rates typically reflect higher perceived risk, which could be due to factors such as borrower creditworthiness, loan duration, and prevailing market conditions.

3. With a total loaned amount of 445 million, the lending institution has established a significant presence in the lending market. This indicates successful outreach efforts and effective marketing strategies to attract borrowers.

KPI 2 : Year wise Loan Amount Statistics

1. **Increasing Trend** – From 2.22M in 2007 to 260.51M in 2011, suggests a growing demand for loans during this period.
2. **Economic Conditions** - The surge in loan amounts could indicate various economic factors such as, during economic downturns, businesses and individuals may require more loans to sustain operations or manage expenses.
3. **Lending Policies** – The increase in loan amounts might also reflect changes in lending policies or practices of financial institutions. It could be a result of relaxed lending standards .



Recommendations-

1. **Risk Management** - Implement robust risk management practices to assess and mitigate the risks associated with increased lending activities.
2. **Regulatory Oversight** - Ensure regulatory oversight to prevent excessive risk-taking and maintain the stability of the financial system.
3. **Customer Education** - Educate borrowers about responsible borrowing practices to prevent over-leveraging and mitigate the risk of default.

KPI 3 : Total Payment for Verified Status Vs Total Payment for Non Verified Status

Insights:

1. **Payment Reliability** - Verified status payment has higher percentage(58.88%) with 219.89M.

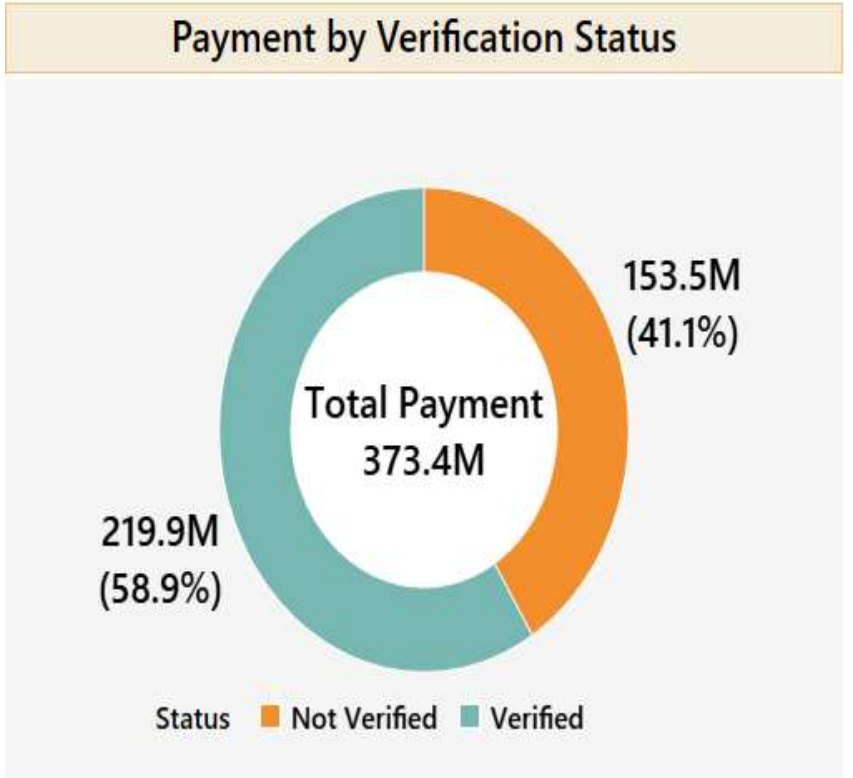
2. **Borrower Behavior** - Borrowers may actively seek verification status as it could improve their access to larger loan amounts, indicating a preference for demonstrating financial credibility.

Recommendations:

1. **Streamline Verification** - Enhance verification processes to ensure accuracy and efficiency, reducing the burden on borrowers while maintaining rigorous checks to validate financial information.

2. **Targeted Education** - Provide targeted educational materials to borrowers, emphasizing the benefits of verification status in accessing favorable loan terms and improving overall financial health.

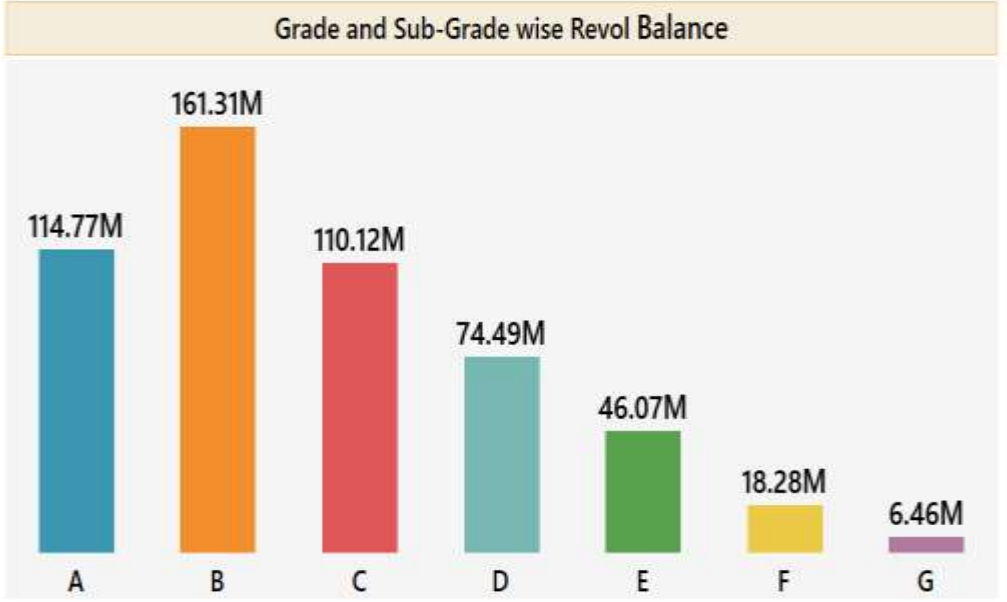
3. **Continuous Monitoring** - Implement real-time monitoring systems to track payment behavior and identify potential risks early, allowing for timely intervention and risk mitigation strategies tailored to both verified and non-verified borrowers.



KPI 4 : Grade and Subgrade wise Revol Balance

1. The total loan amount for Grade B is $161M (30.35%), which is the highest among all grades.

2. Overall, the analysis of grade and subgrade wise loan amounts provides an understanding of the distribution of loan amounts across different risk level categories. Higher-grade customers tend to have higher loan amounts, while lower-grade customers have relatively lower loan amounts.

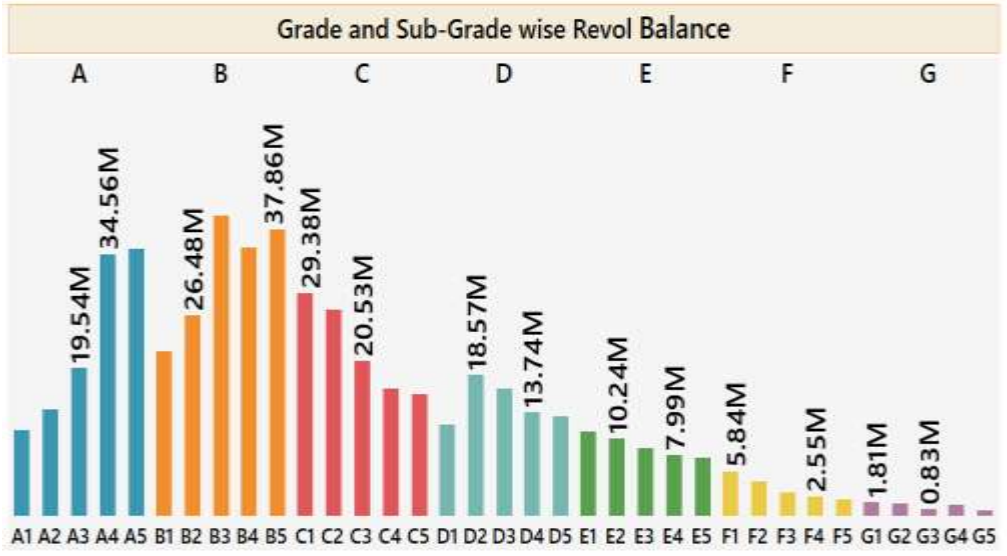


Recommendations:

1. Strengthen Risk Management - Implement robust risk assessment and monitoring procedures, especially for higher-risk loan segments, to mitigate the potential for defaults and losses.

2. Optimize Pricing Strategies - Tailor pricing strategies based on risk levels, adjusting interest rates and terms to reflect the risk associated with each grade and sub-grade.

3. Enhance Customer Education - Educate borrowers about responsible borrowing practices and the importance of maintaining good credit standing to reduce the likelihood of defaults and improve overall portfolio performance.



KPI 5 : State wise Month wise Loan Status

Insights:

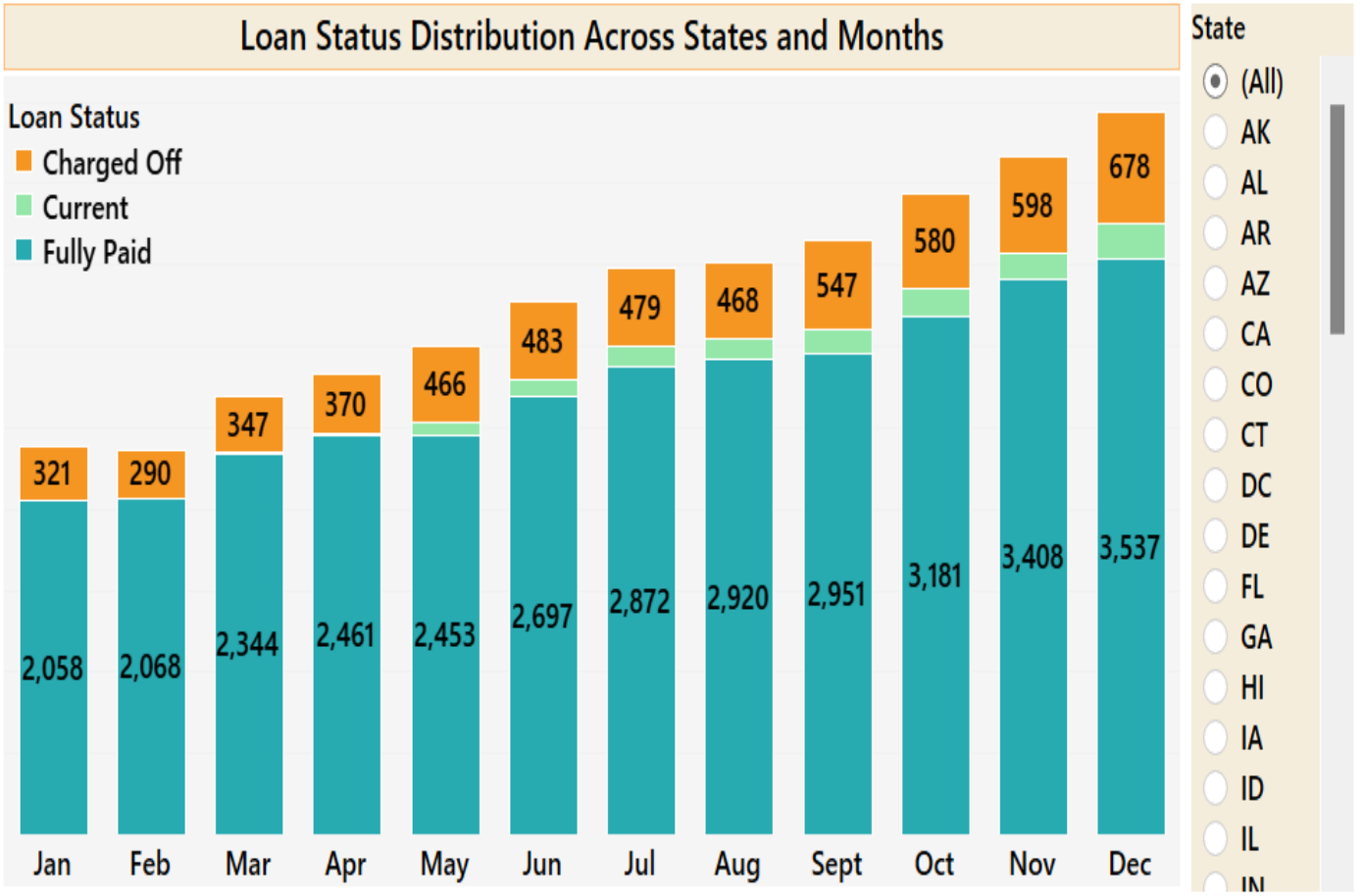
1. Regional Distribution - California (CA) has the highest number of loans (7,099) , followed by New York (NY) with 3,812 loans and Texas (TX) with 2,727 loans. This indicates that these states have a relatively higher demand for loans.

2. Economic Influence - States such as CA, NY, and TX, known for their strong economies and diverse industries, likely attract more borrowers seeking loans for various purposes.

Recommendation-

1. Targeted Marketing- Focus marketing efforts on states with high loan counts to capitalize on existing demand and attract potential borrowers effectively.

2. Localized Strategies- Tailor loan products and services to meet the specific needs and preferences of borrowers in each state, considering factors like local economic conditions and demographics.



KPI 6 : Home Ownership vs Last Payment Date Stats

Insights:

1. **Homeownership Trends** - The majority of borrowers have mortgages, with a consistent increase in the count of mortgage holders over the years, peaking in 2014 before gradually declining.

2. **Stability of Ownership Types** - While mortgage holders dominate, there are smaller counts for other homeownership types such as Own and Rent. The counts for these categories show fluctuations but generally remain stable over the years.

Recommendations:

1. **Targeted Loan Products** - Tailor loan products to accommodate the diverse homeownership types, providing options suitable for mortgage holders as well as those who rent or own their homes outright.

2. **Retention Strategies** - Implement retention strategies to maintain and strengthen relationships with existing mortgage holders, ensuring continued customer satisfaction and loyalty.

3. **Market Analysis** - Conduct market analysis to identify opportunities for growth in homeownership types other than mortgages, such as rental properties or owned homes, and develop targeted strategies to attract borrowers from these segments.

Home Ownership vs Last Payment Date Stats

	2008	2009	2010	2011	2012	2013	2014	2015	2016
NONE			2	1					
OTHER		12	16	34	35			1	
OWN	11	39	185	422	700	703	673	160	160
MORTGAGE	56	229	706	2,131	3,786	4,254	4,172	1,207	1,104
RENT	70	279	939	2,408	4,383	4,501	4,424	1,063	780

Insights and Recommendations -

INSIGHTS:

1. **Loan Growth Trends:** There has been a consistent increase in loan amounts issued over the years, indicating growing demand for credit or expansion in lending activities from 2007 to 2011.

2. **Risk Segmentation**: Loans are segmented based on risk profiles, with higher loan amounts associated with lower-risk grades ('A' and 'B') and smaller balances for higher-risk grades ('D' to 'G').

3. **Verification Status Impact:** Verified loans tend to have higher total payment compared to non-verified loans, suggesting a correlation between verification status and payment reliability.

4. **Regional Distribution:** Certain states, particularly those with major metropolitan areas and strong economies like California, New York, and Texas, exhibit higher loan counts, indicating higher loan activity and economic influence.

5. **Homeownership Trends**: The majority of borrowers have mortgages, with consistent growth in mortgage holders over the years.

6. **Last Payment Date:** The data includes the last payment date for each homeownership type, providing insights into the latest activity related to loan payments and borrower behavior.

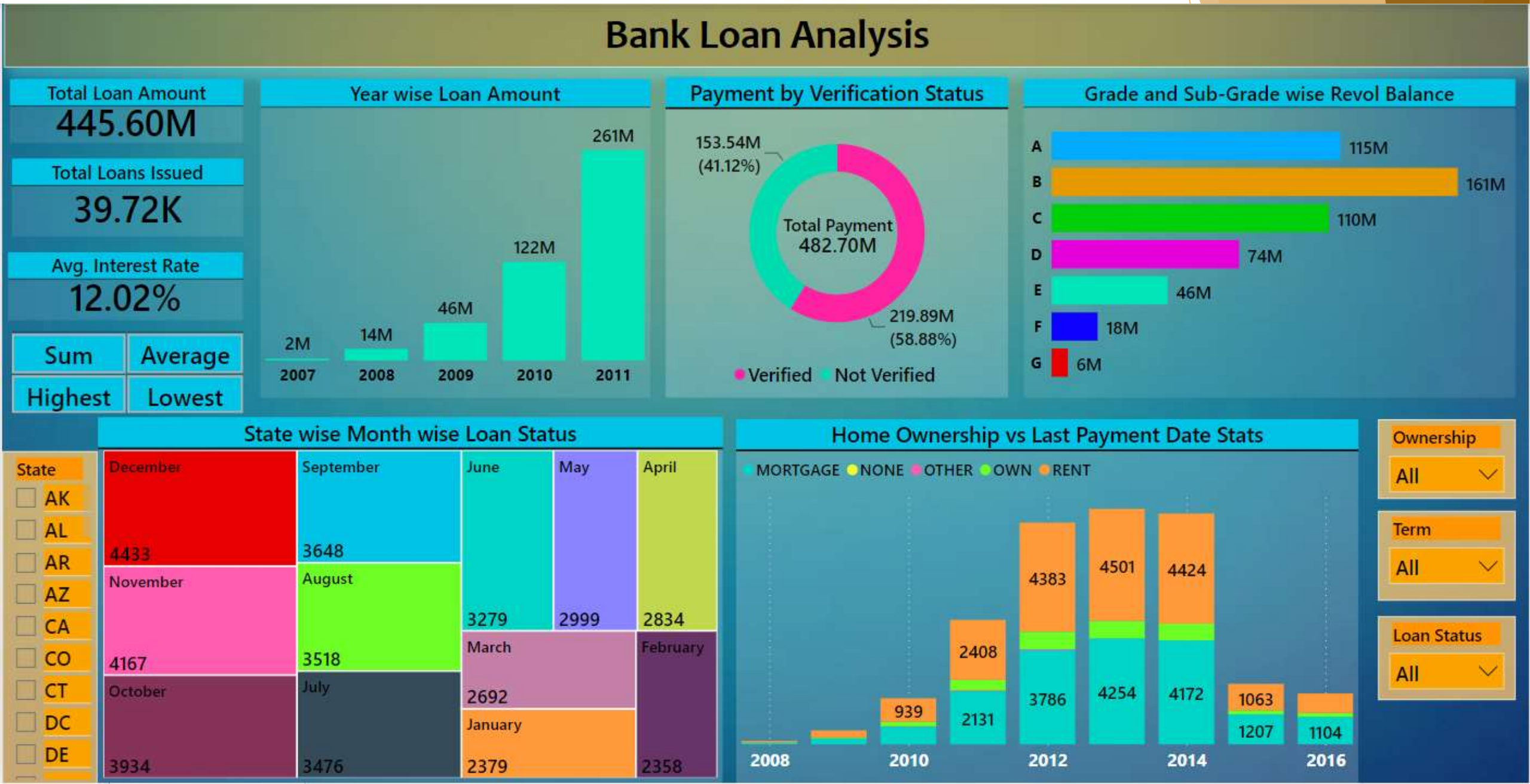
7. **Market Dynamics:** Various factors such as economic conditions, regulatory environment, and borrower preferences influence lending activities and loan performance over time.

RECOMMENDATIONS-

1. **Diversify Loan Portfolio:** Ensure diversification across different risk segments and loan types to spread risk effectively and capture opportunities in diverse market segments.
2. **Strengthen Risk Management**: Implement robust risk assessment and monitoring procedures, especially for higher-risk loan segments, to mitigate the potential for defaults and losses.
3. **Enhance Verification Procedures:** Strengthen verification processes to ensure accuracy and reliability of borrower information, reducing the risk of default and enhancing lender confidence.
4. **Localized Strategies:** Tailor loan products and marketing strategies to meet the specific needs and preferences of borrowers in different regions, considering factors like local economic conditions and demographics.
5. **Retention Strategies:** Develop retention strategies to maintain and strengthen relationships with existing borrowers, ensuring continued customer satisfaction and loyalty, especially among mortgage holders.
6. **Market Analysis:** Conduct regular market analysis to identify emerging trends, opportunities, and risks in the lending landscape, allowing for timely adjustments to lending strategies and product offerings.
7. **Compliance and Regulation:** Stay updated on regulatory requirements and ensure compliance with state and federal regulations governing lending practices to mitigate legal risks and maintain trust with borrowers and investors.

Now , Here are Dashboard's using MS-Excel And Power BI -

Power BI Dashboard



Excel Dashboard

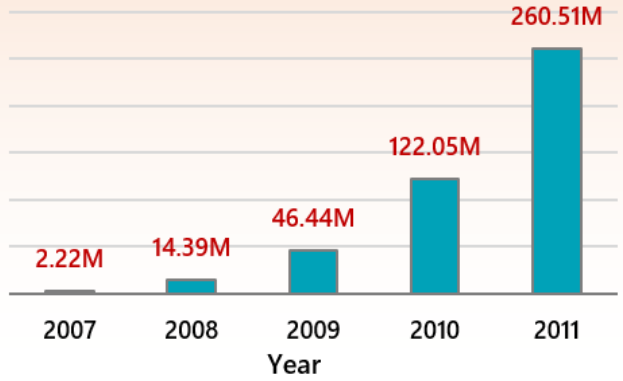
Bank Loan Analysis

Total Loan Applications
39.72K

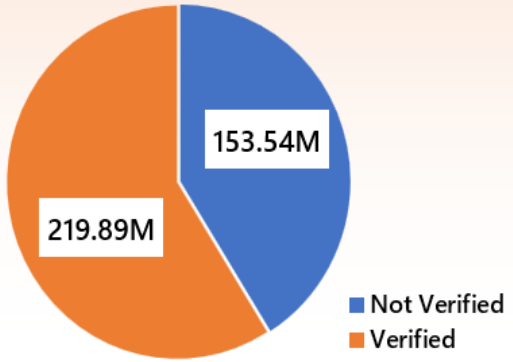
Total Funded Amount
445.60M

Avg. Funded Amt/ Emp
11.22K

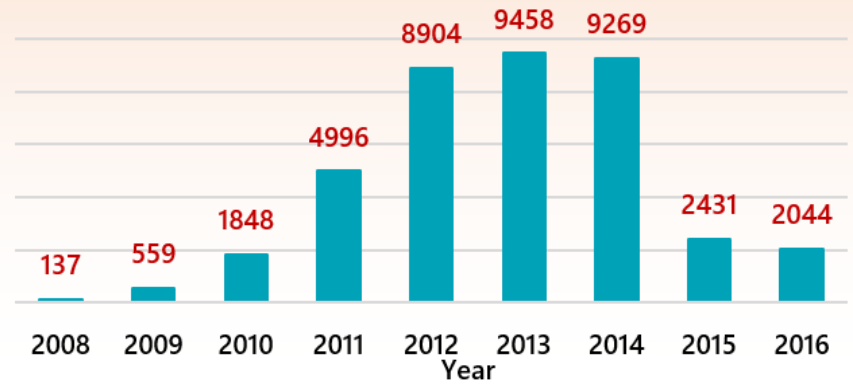
Year Wise Loan Amount



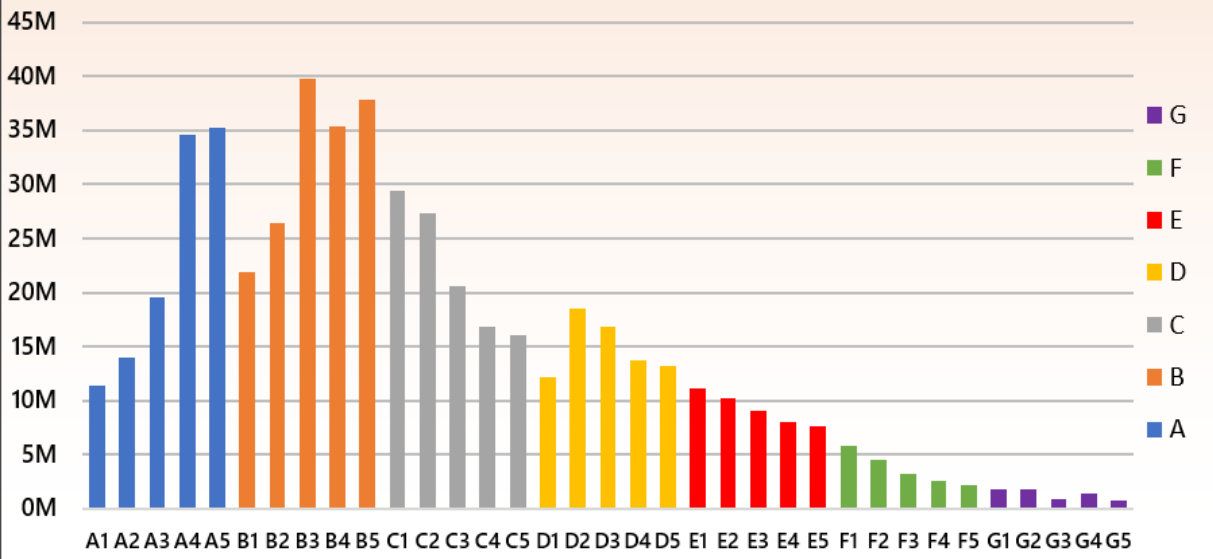
Total Payment by Verification Status



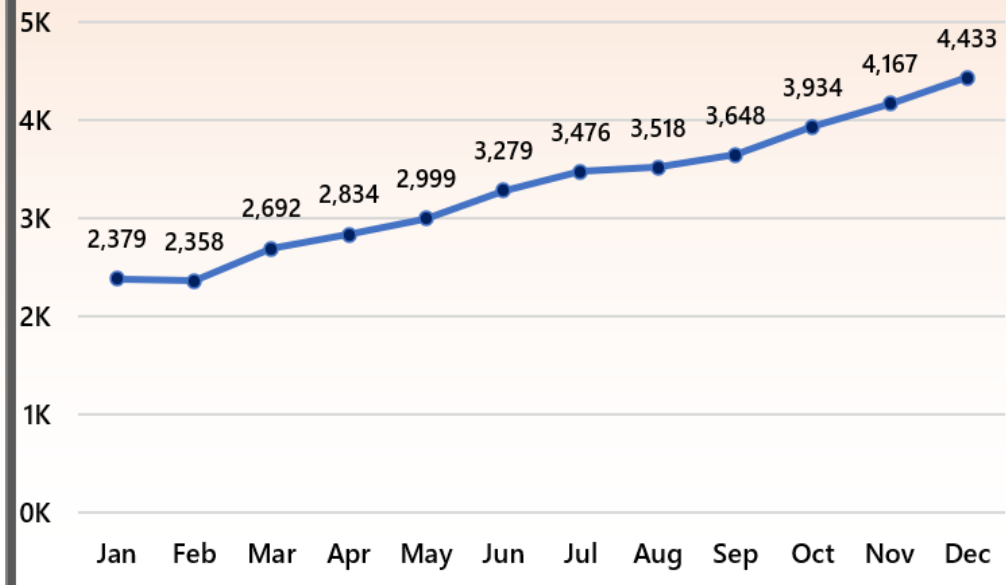
Home Ownership vs Last Payment Date Stats



Grade and Sub Grade wise Revolving Balance



State Wise Month wise Loan Status



Home Own...
MORTGAGE
NONE
OTHER

State
AK
AL
AR

Loan Status
Current
Fully Paid

Thank You