Lending Club Case Study

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Objective

This case study's goal is to apply the EDA technique to a real-world issue, comprehend the insights, and then communicate the results in a presentation that puts the needs of the organization first.

Benefits of the case study:

- Provides an overview of the use of EDA to actual business challenges.
- It Promote the development of a fundamental grasp of risk analytics in finance and banking.
- How the information is utilized to reduce financial loss when lending money to customers.
- It enhances our comprehension of data visualization and helps us choose the right charts for real-world data.

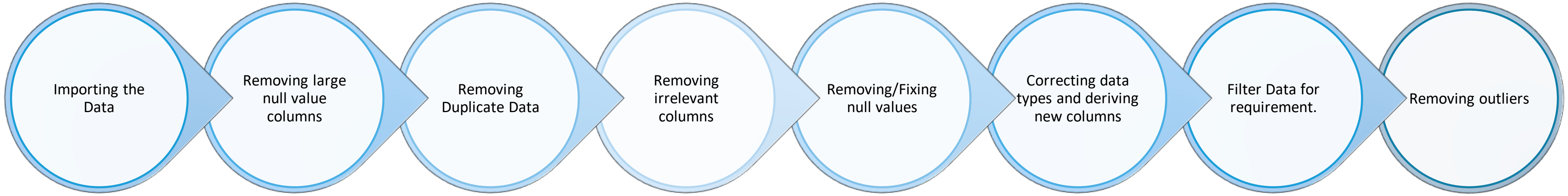
Business Understanding

Every time they receive a loan application, the company's goal is to decide whether to approve or deny it based on a number of factors.

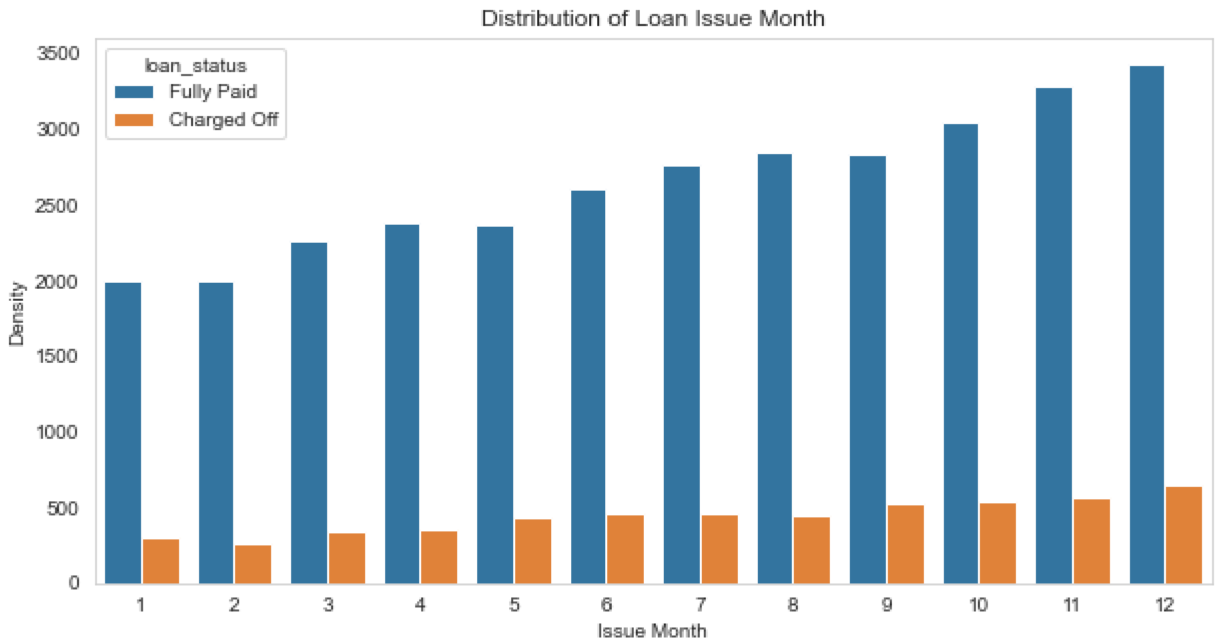
Dataset Details:

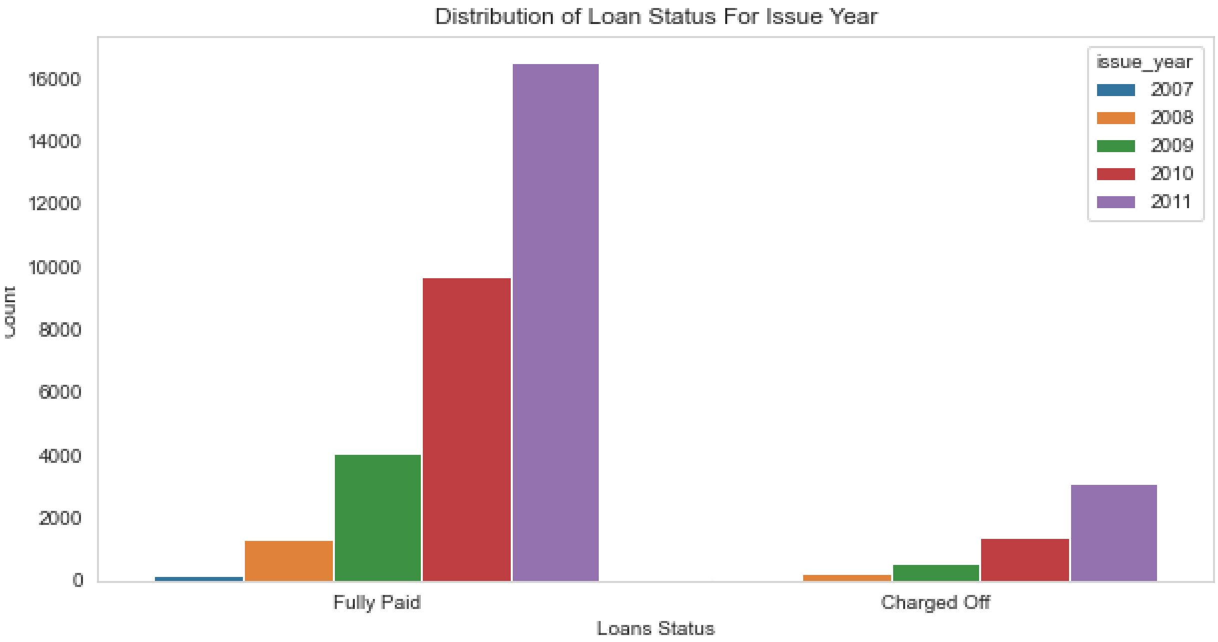
The information regarding previous loan applicants and whether or not they "defaulted" is provided below. Not the refused loans, but the authorized ones are the ones with specifics in the data. The debt has three statuses: fully paid off, current, and charged off.

Data Clean-up and preparation process:



Loan Trend over years

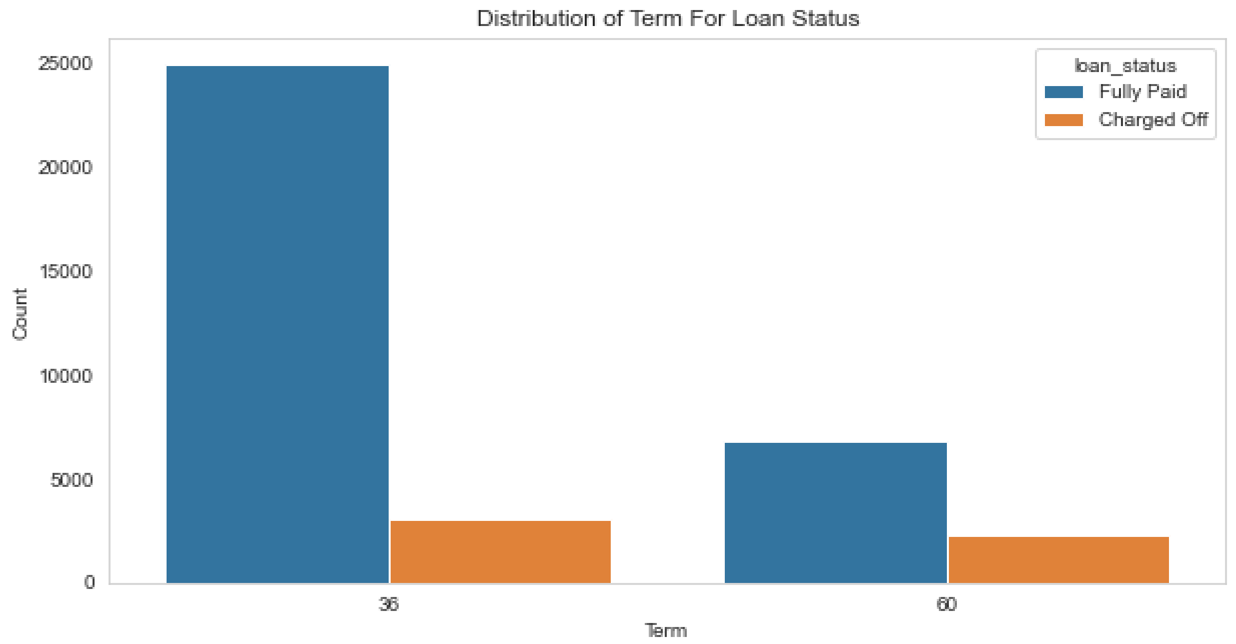


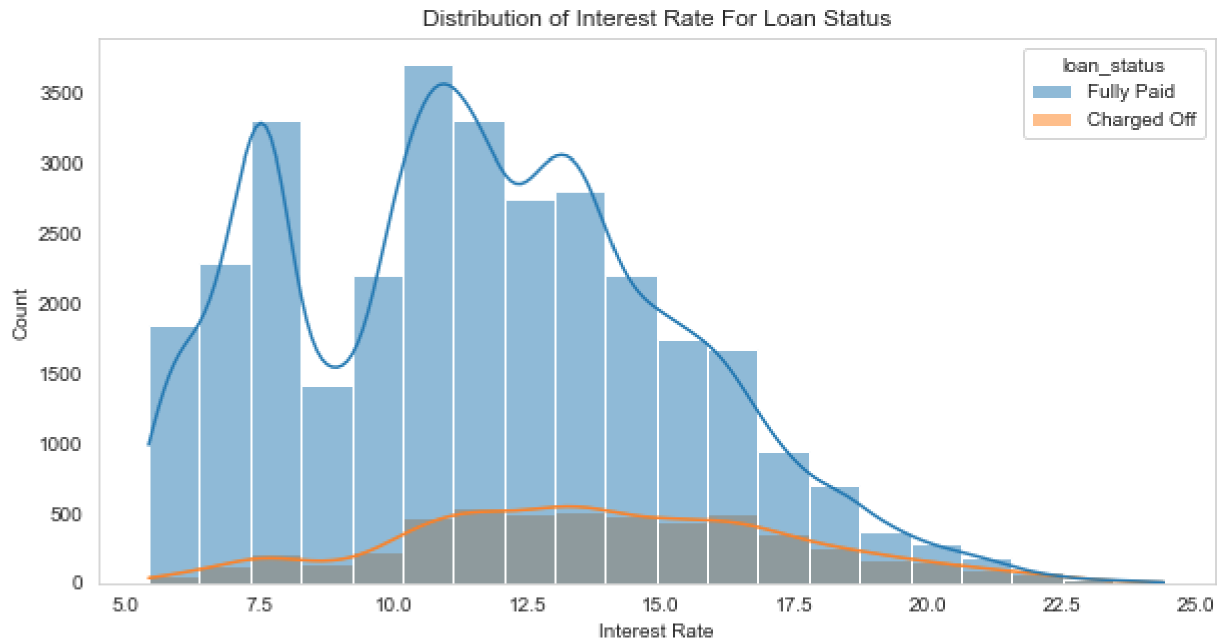


Loans taken out have been steadily rising throughout the year, with a lower percentage of defaults in the quarters of April, August, and December and a higher percentage later in the year.

The amount of loans taken out is growing exponentially with each year that goes by, which suggests that the DTI ratio is rising significantly and the default rate is falling.

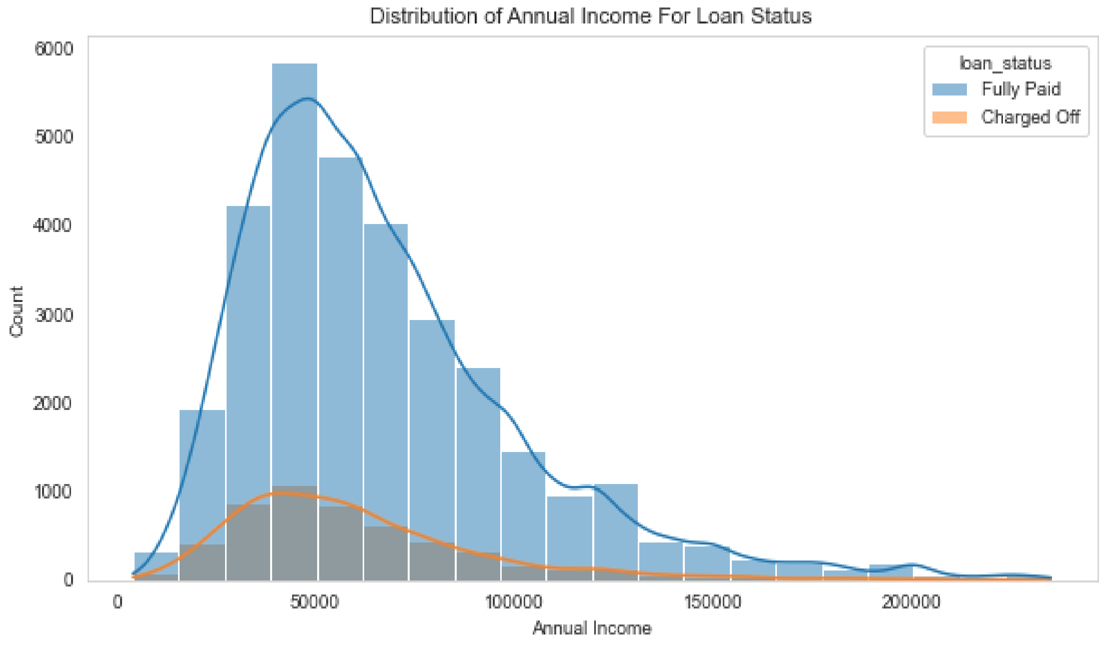
Term and Interest Rate

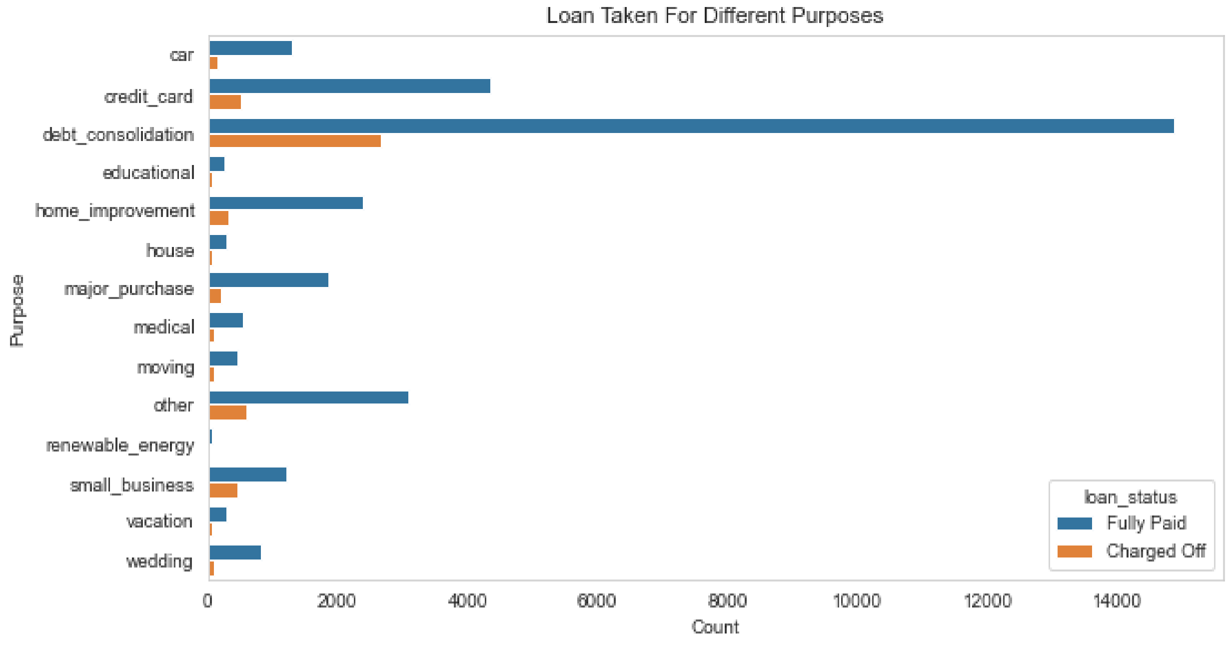




- **Loan Term:** Loans taken out for a 36-month period have a lower default rate and are much longer than 60 months.
- **Interest Rate:** The number of loans taken out changes with interest rates, peaking in the 5–15 range and then gradually declining, while the likelihood of defaulting rises as interest rates rise.

Annual Income & Purpose

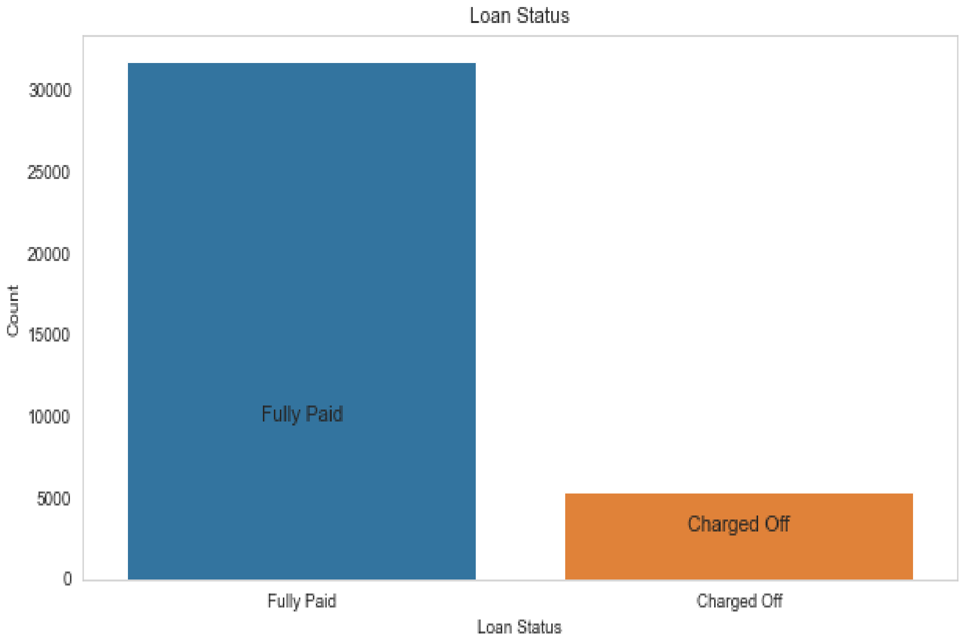


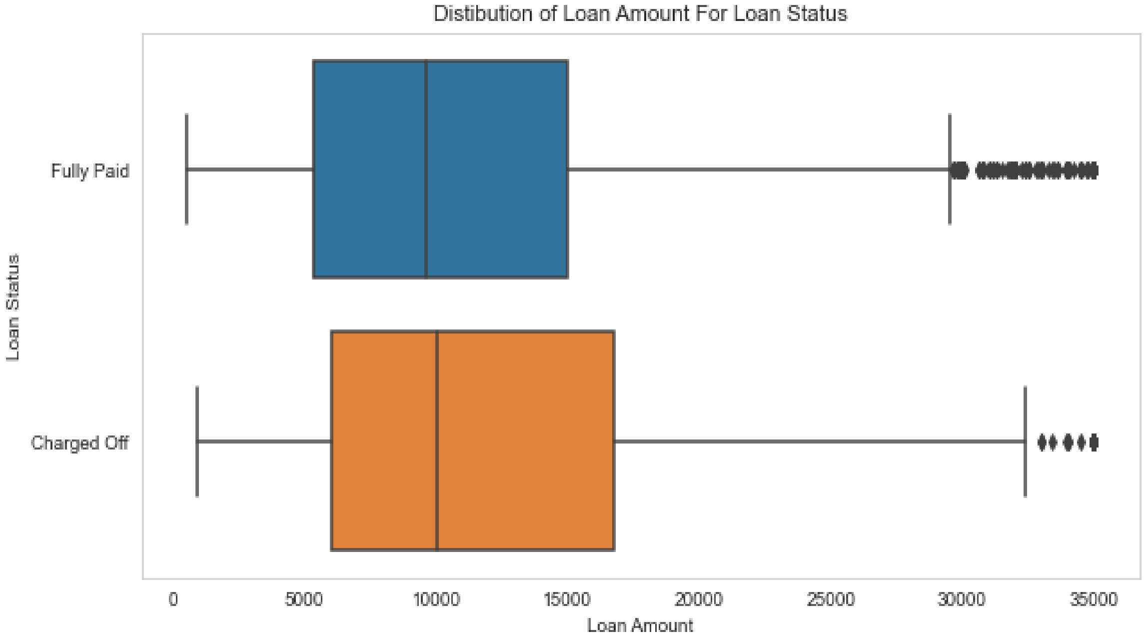


- **Annual Income :** The majority of consumers earn less than 50K annually, and those with incomes below that threshold are more likely to experience default.

- **Purpose:** The primary purpose of loans is debt consolidation, then credit card payment. While debt consolidation has the largest percentage of fully paid loans, it also has the highest percentage of defaulted loans.

Loan Status and Amount

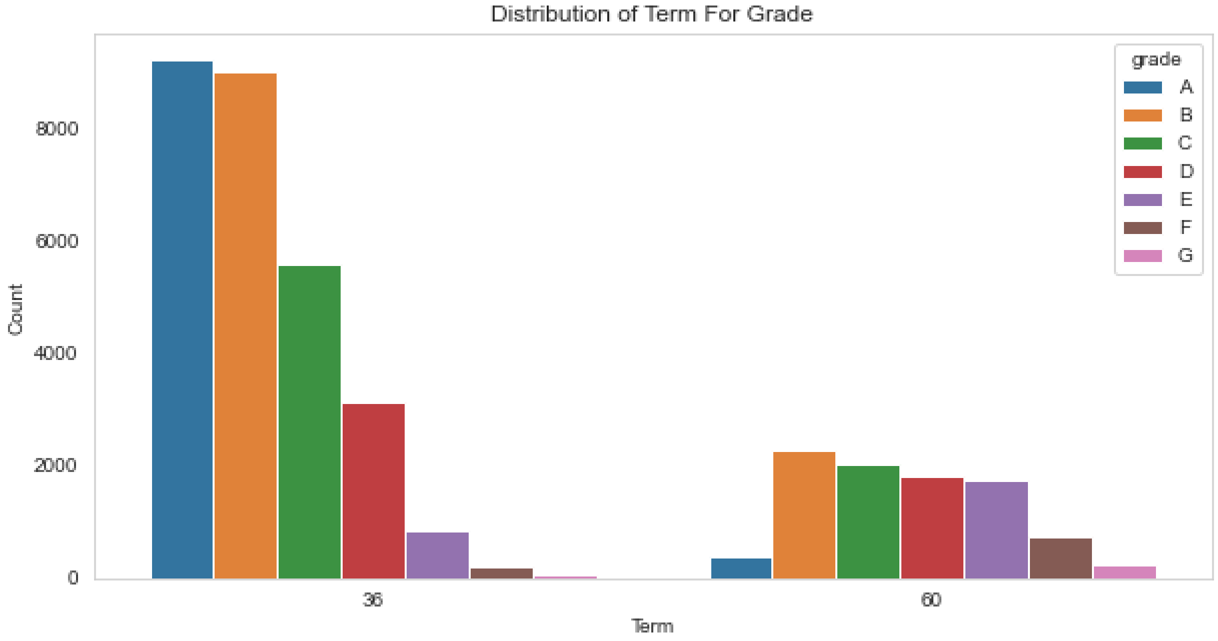


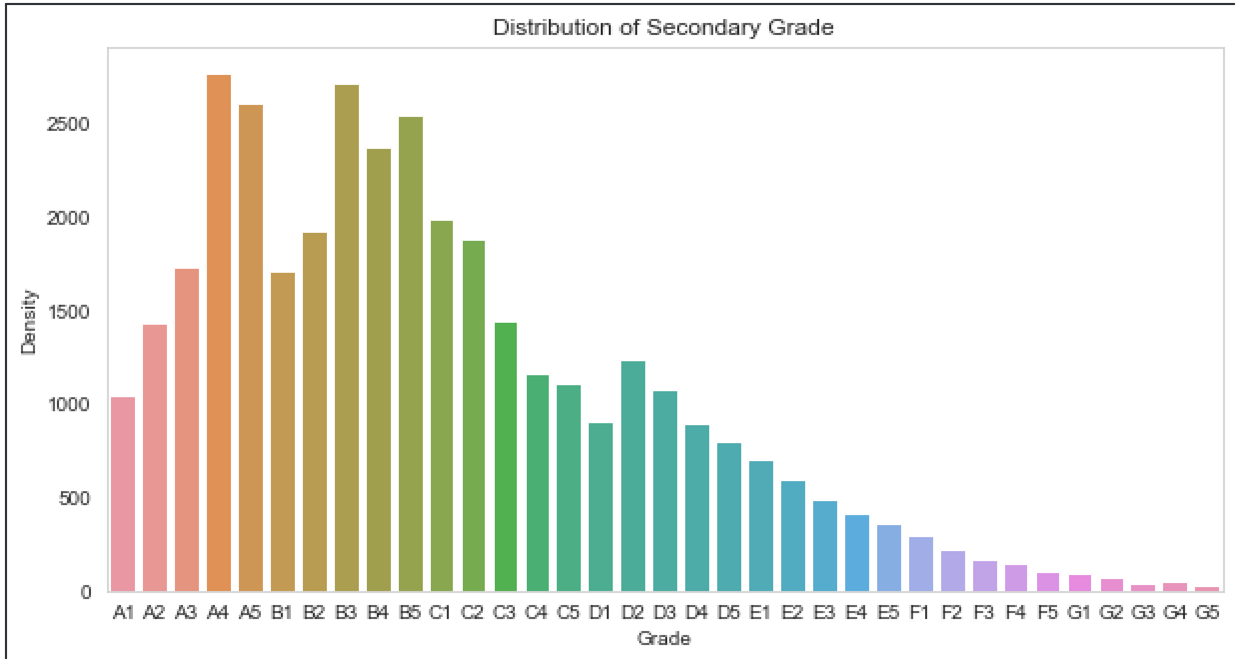


- **Loan Status:** 14.5% of all loans have been charged off, which is a far lesser percentage than the total.

- **Loan Amount:** With a median of 10,000, it ranges from 500 to 35,000. Most loans are for tiny amounts, and very few consumers have taken out huge ones. The bigger the debt, the greater the likelihood that we will fail.

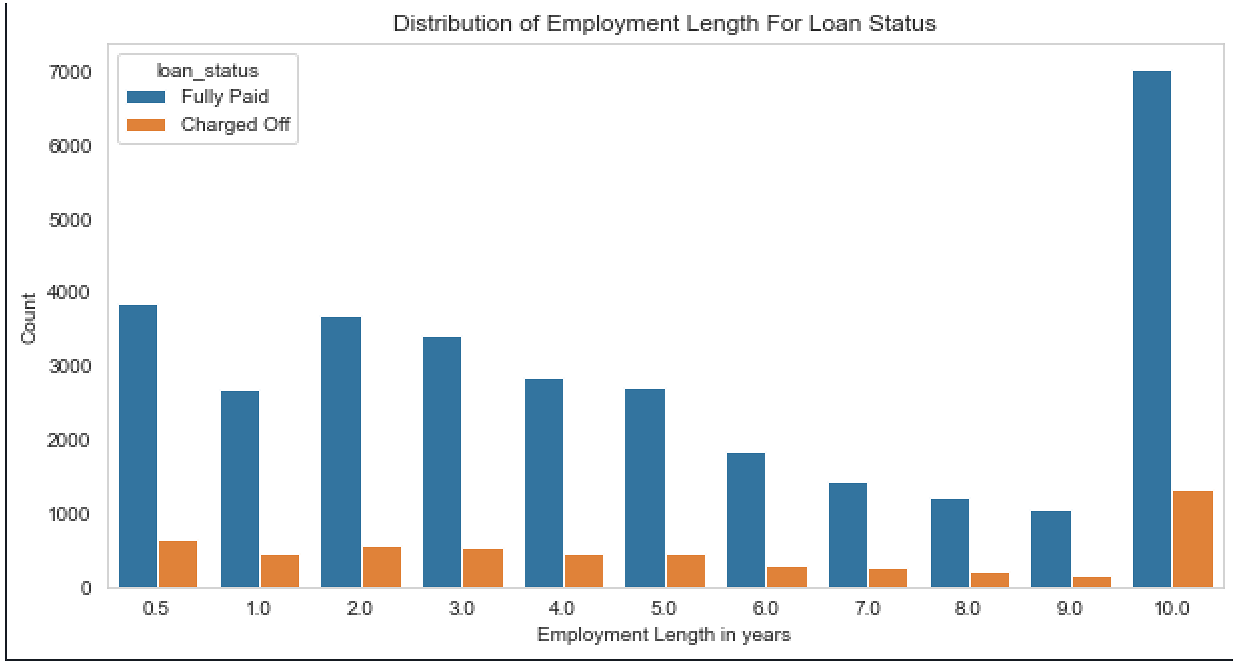
Grade and Sub-Grade

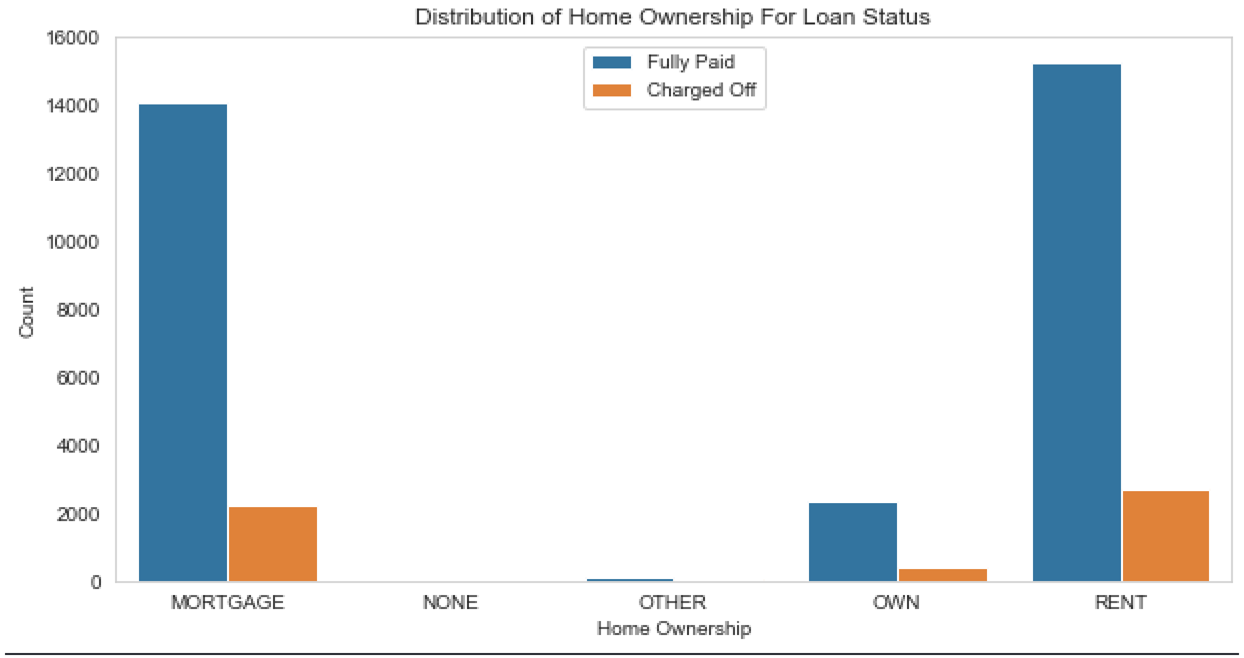




- **Grade:** Due to their low risk and hence low default likelihood, the majority of the granted loans have higher grades. There are more low-quality, high-risk 60-year term loans than otherwise.
- **Sub Grade:** This further highlights that loans within a grade tend to be more heavily weighted toward lower subgrades.

Employment Length & Homeownership

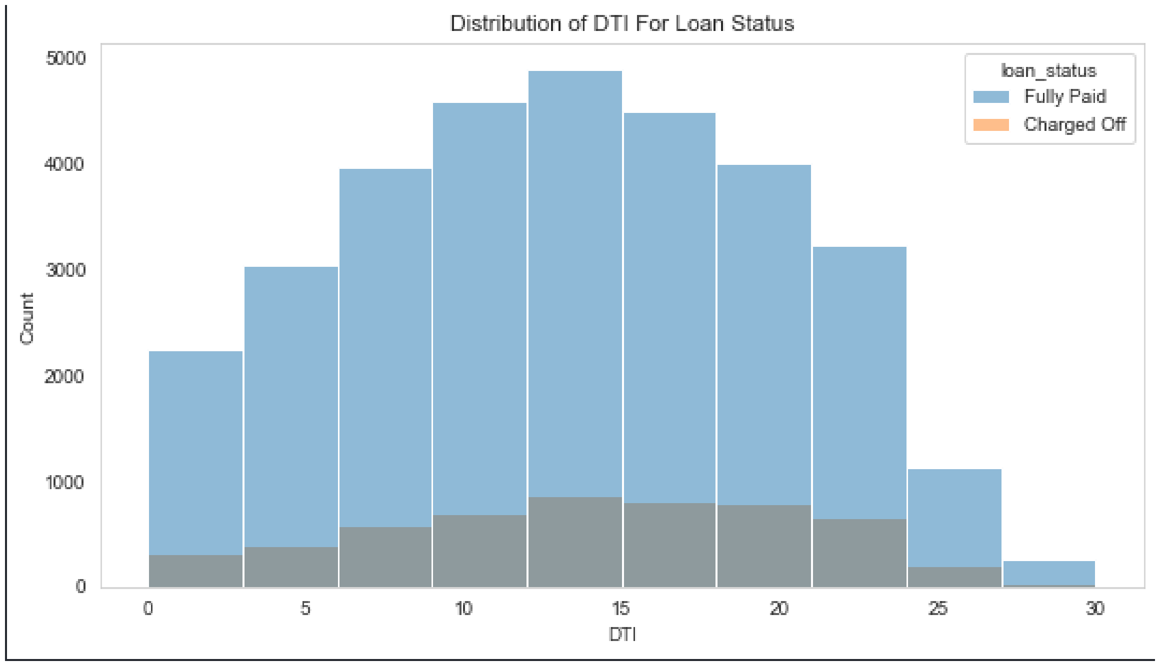


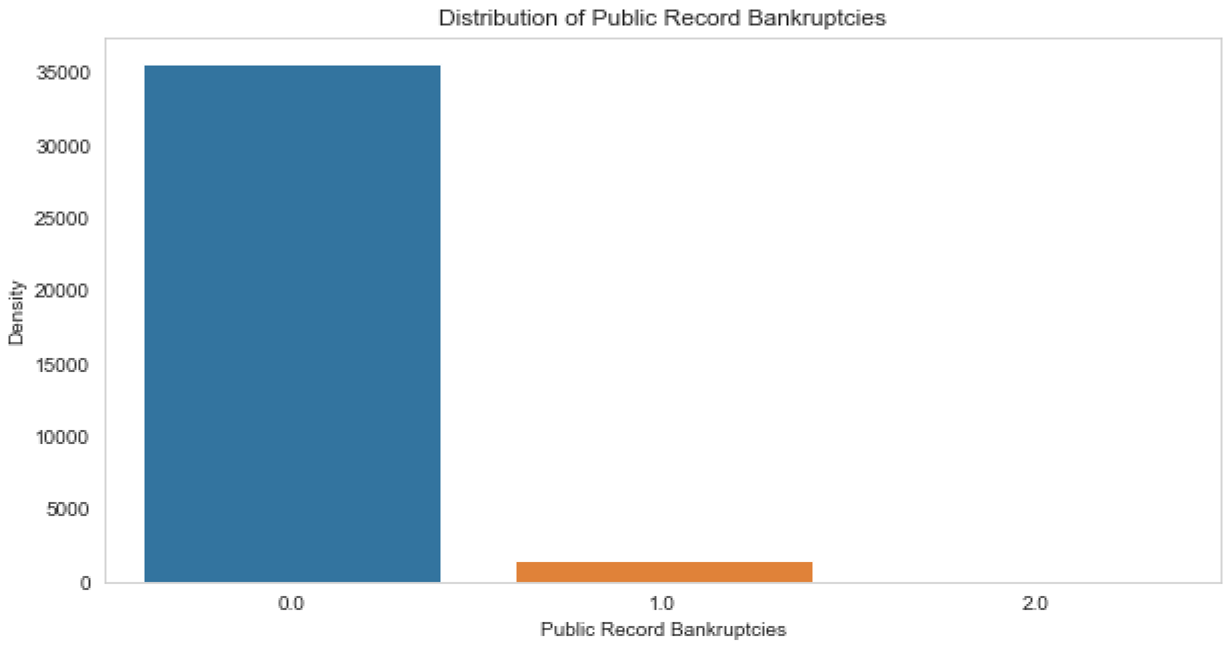


- **Employment Length:** With the biggest number of delinquent loans, the majority of clients have more than ten years of experience.

- **Home Ownership:** The majority of consumers are not property owners, and thus are more likely to default on their rent or mortgage.

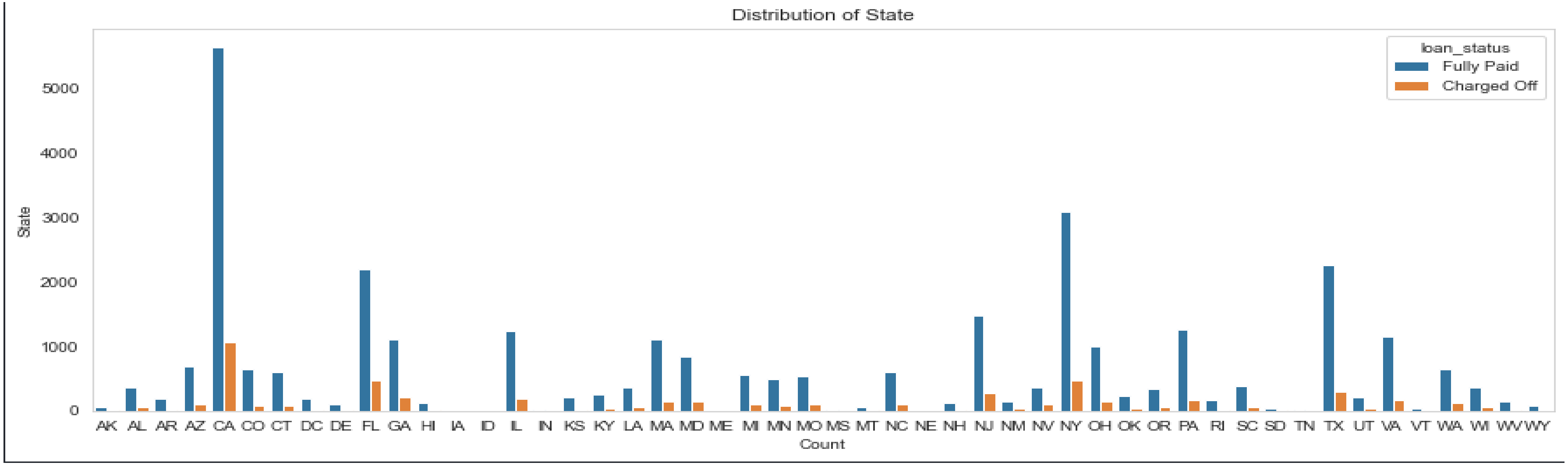
DTI ratio & Bankruptcy





- **DTI:** Lending to clients that have a high debt to income ratio can be extremely dangerous, as seen by the vast percentage of clients who do.
- **Public Recorded Bankruptcy:** The vast majority of clients don't appear to have filed for bankruptcy.

Location Based



Large urban areas, such as California, New York, Texas, and Florida, have a higher percentage of loans that default but also have a lower default rate.

Recommendations

A significant determinant that can be utilized to forecast the likelihood of default and prevent credit loss is:

1. DTI
2. Grades
3. Verification Status
4. Annual income