Udacity-Data-Visualization: Prosper Loan

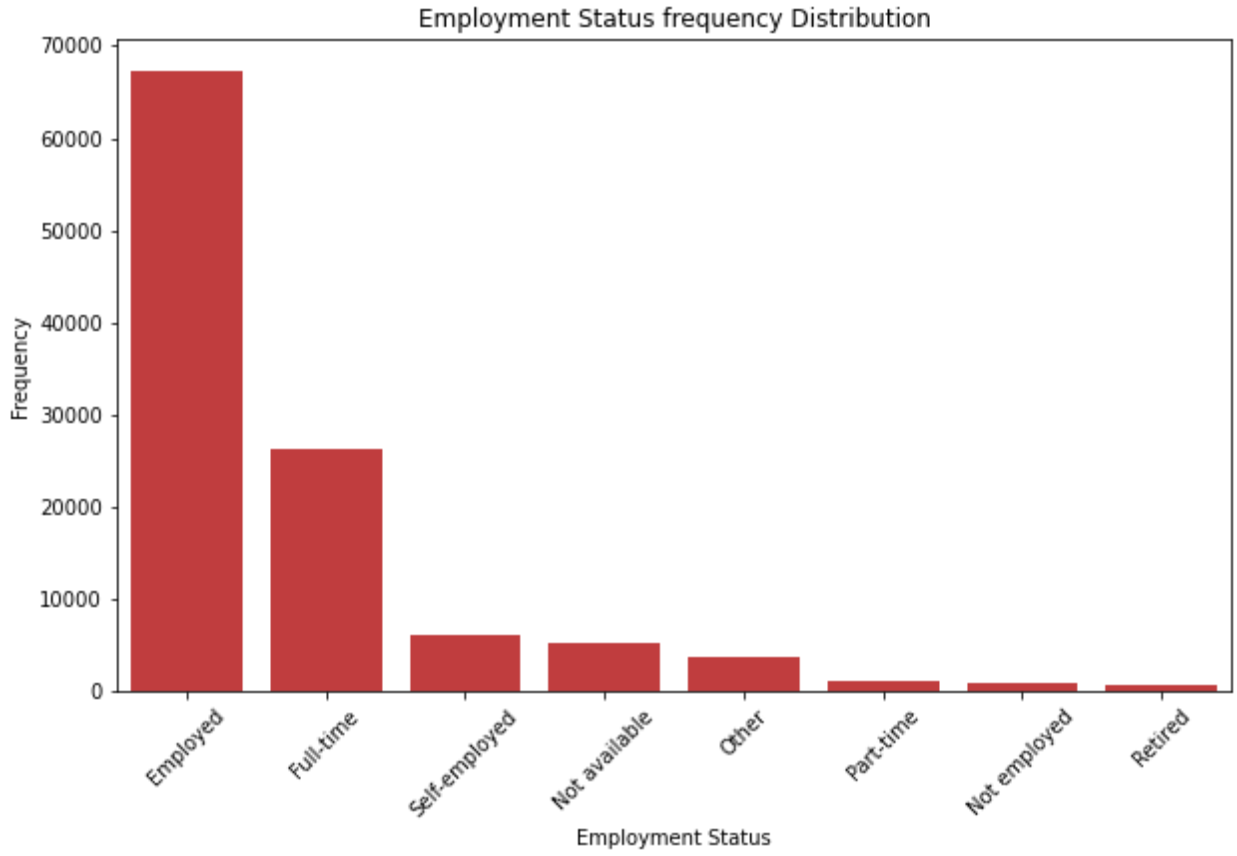
Prosper is a P2P lending platform that allows investors to choose among personal loans to invest in. They do that by considering a number of factors, which include a custom calculated Prosper Score that represents the risk for each loan. The higher the score, the lower the risk, and the lower the interest rates paid by the borrower to the investors.

Univariate Exploration

I will start by looking at the main variable of interest: BorrowerRate.

Employment Status:

The employment status of the borrower at the time they posted the listing. The plot shows that it is rare that unemployed individual can obtain a loan from Prosper.

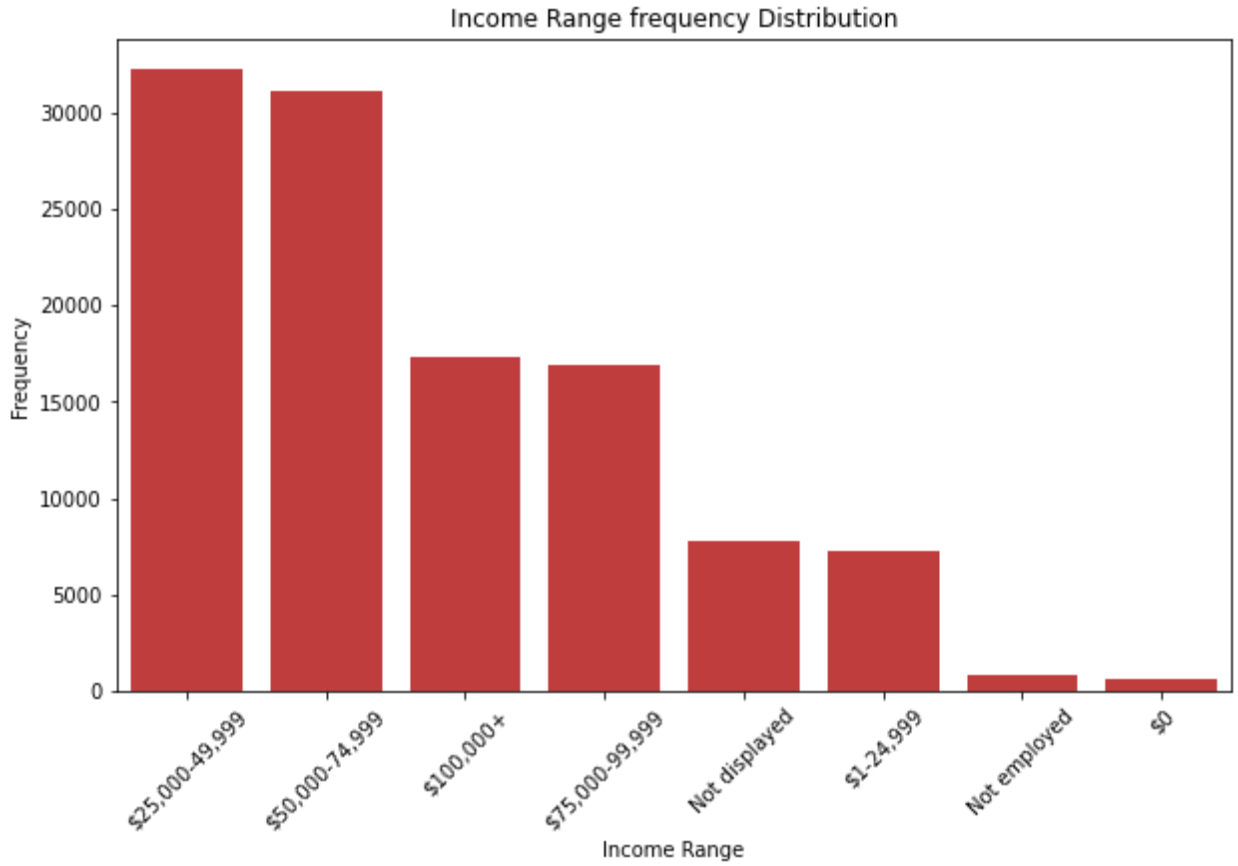


Income Range:

The income range of the borrower at the time the listing was created. The plot shows that most individual who has a loan has an income range from 25k to 75k.

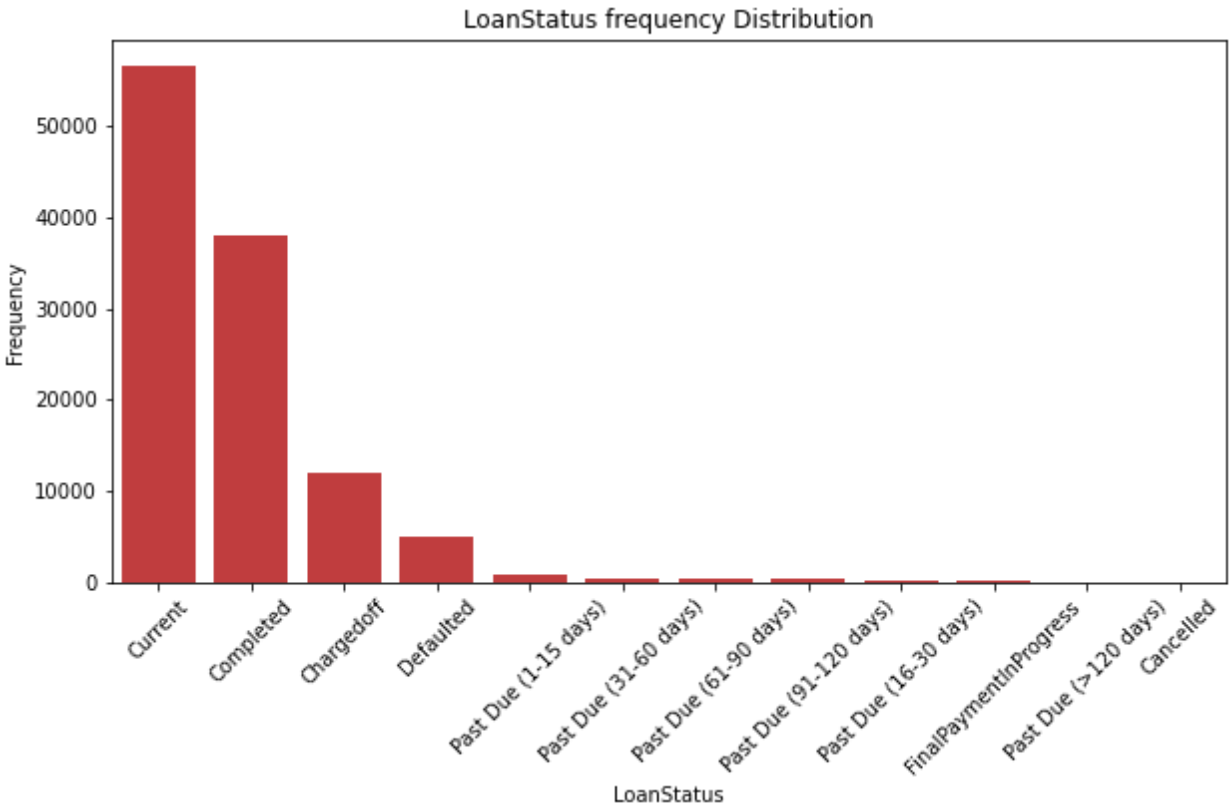
key insights conveyed by the explanatory presentation

The key insight we observed here is that being unemployed is difficult to obtain a loan from Prosper.



Loan Status:

The current status of the loan: Cancelled, Chargedoff, Completed, Current, Defaulted, FinalPaymentInProgress, PastDue. The PastDue status will be accompanied by a delinquency bucket. The plot shows that more than 50,000 individuals has a loan with Prosper.



Prosper Score:

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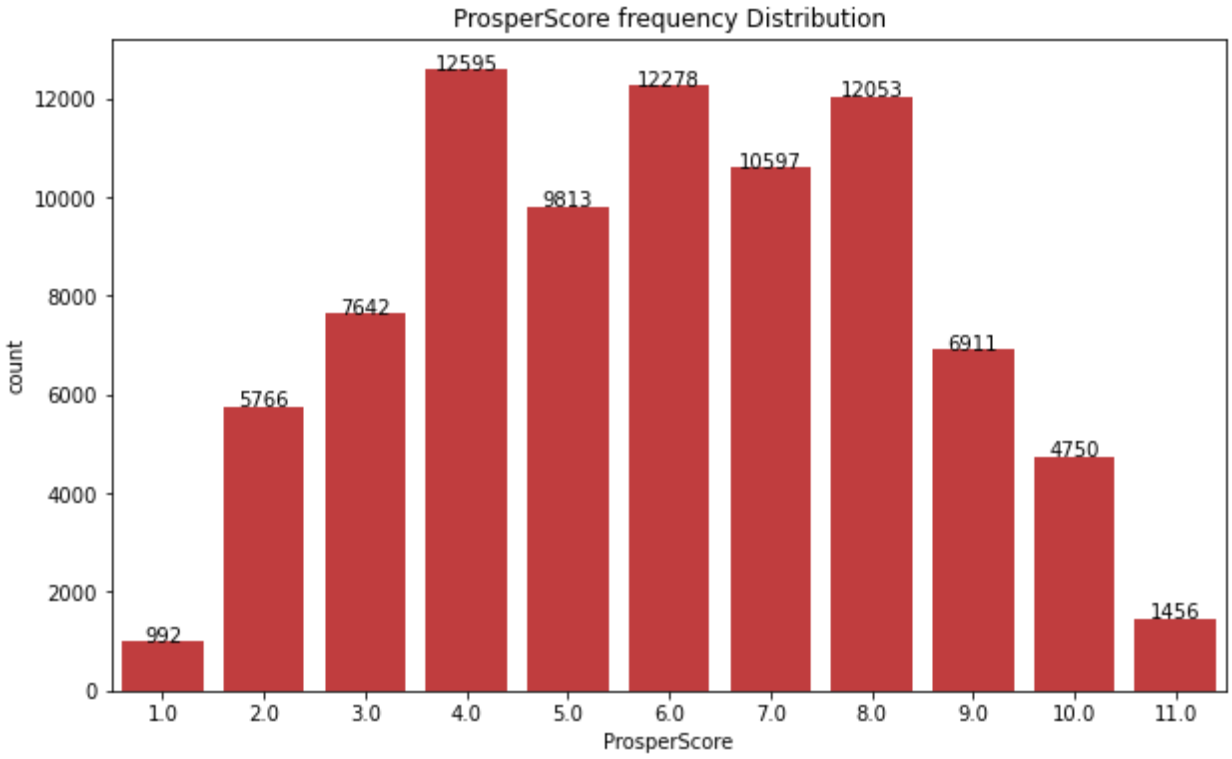

Borrower APR:

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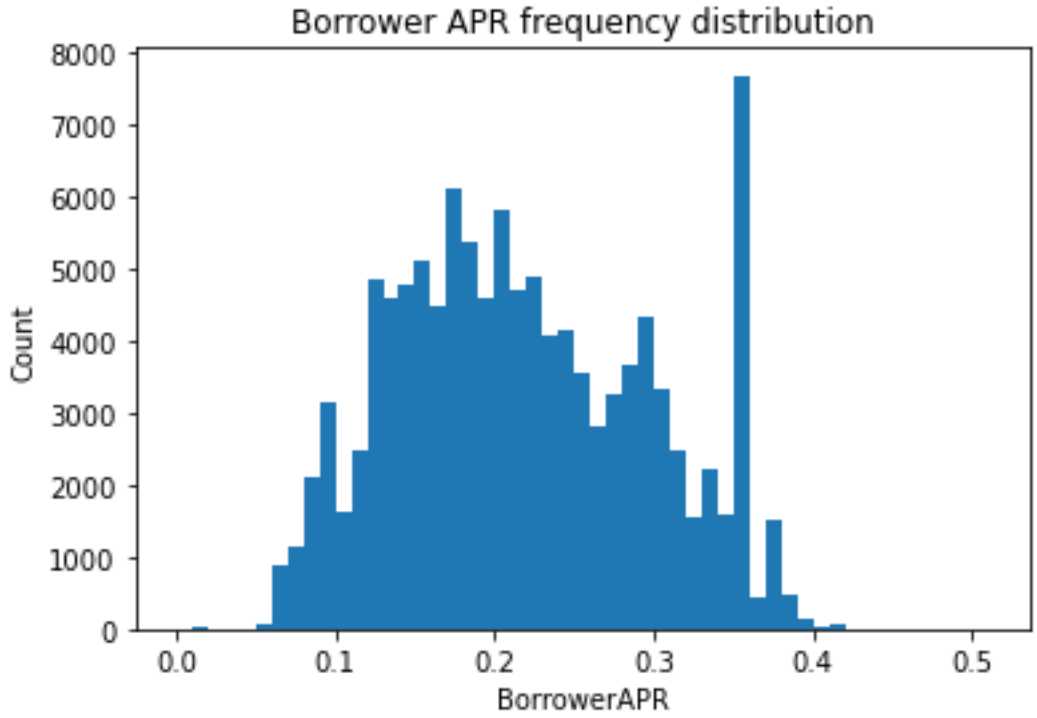

BorrowerRate:

The Borrower's interest rate for this loan.

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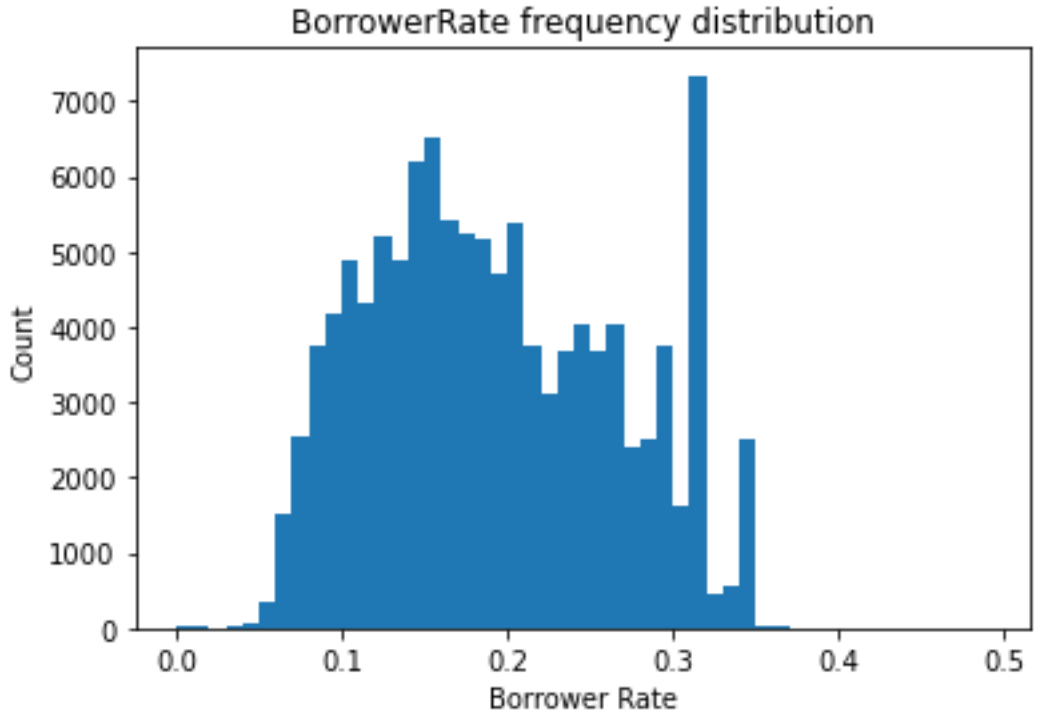

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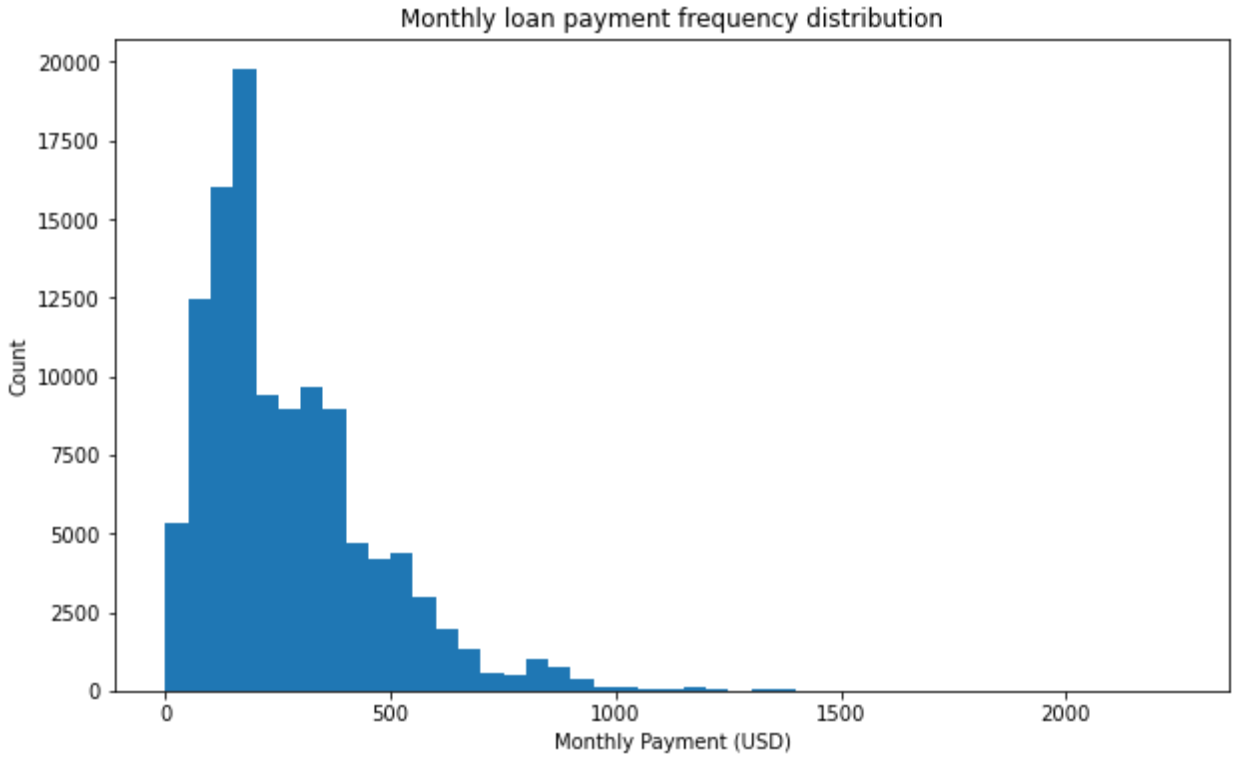

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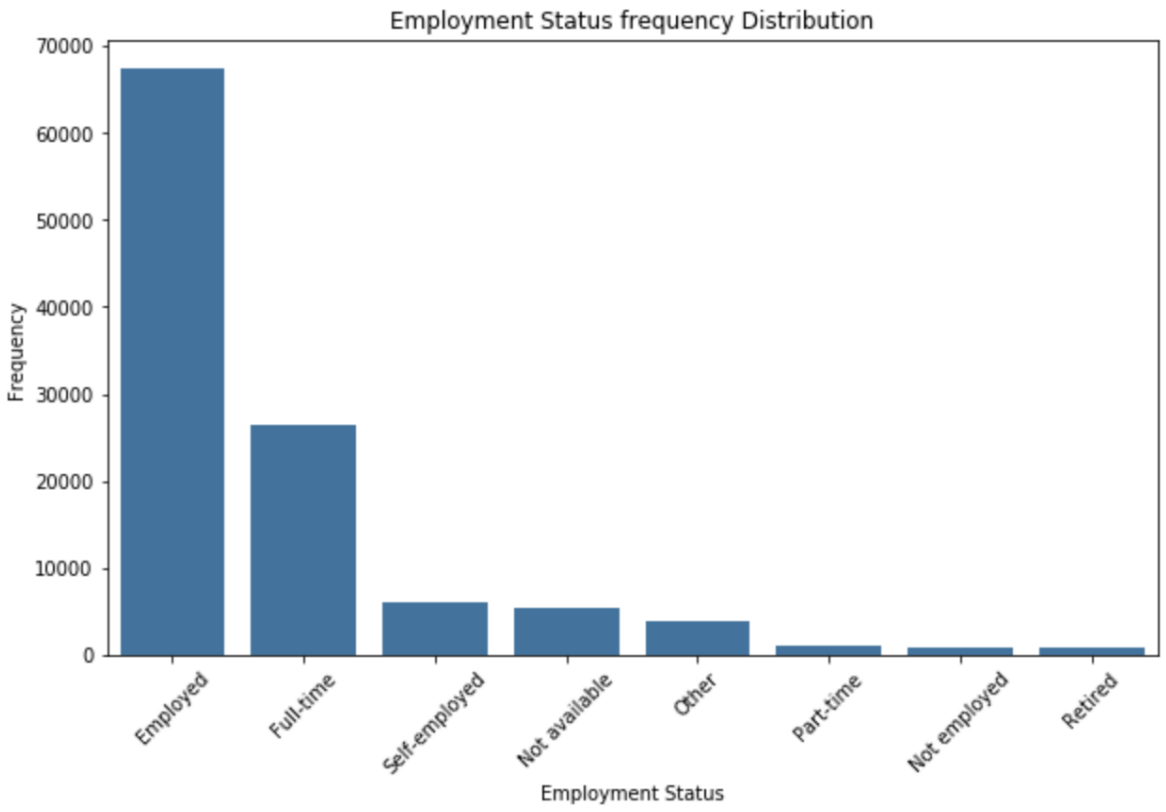

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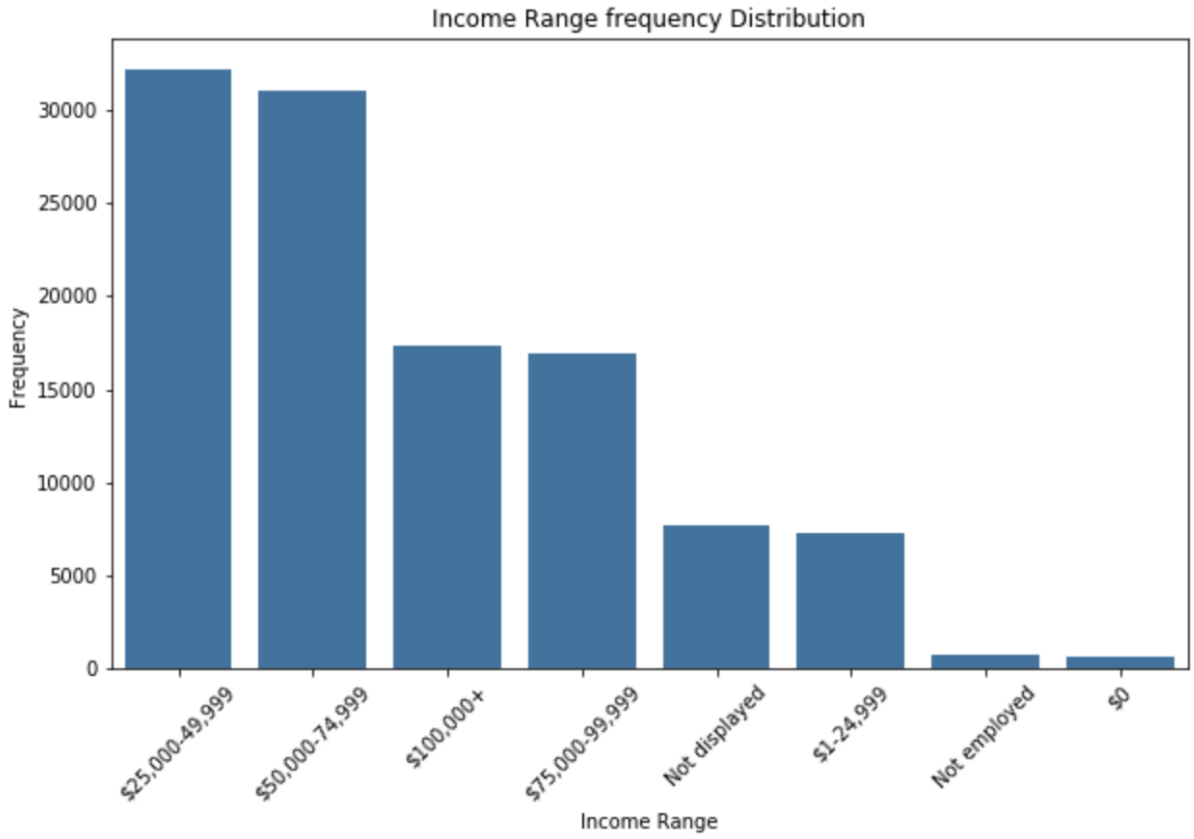

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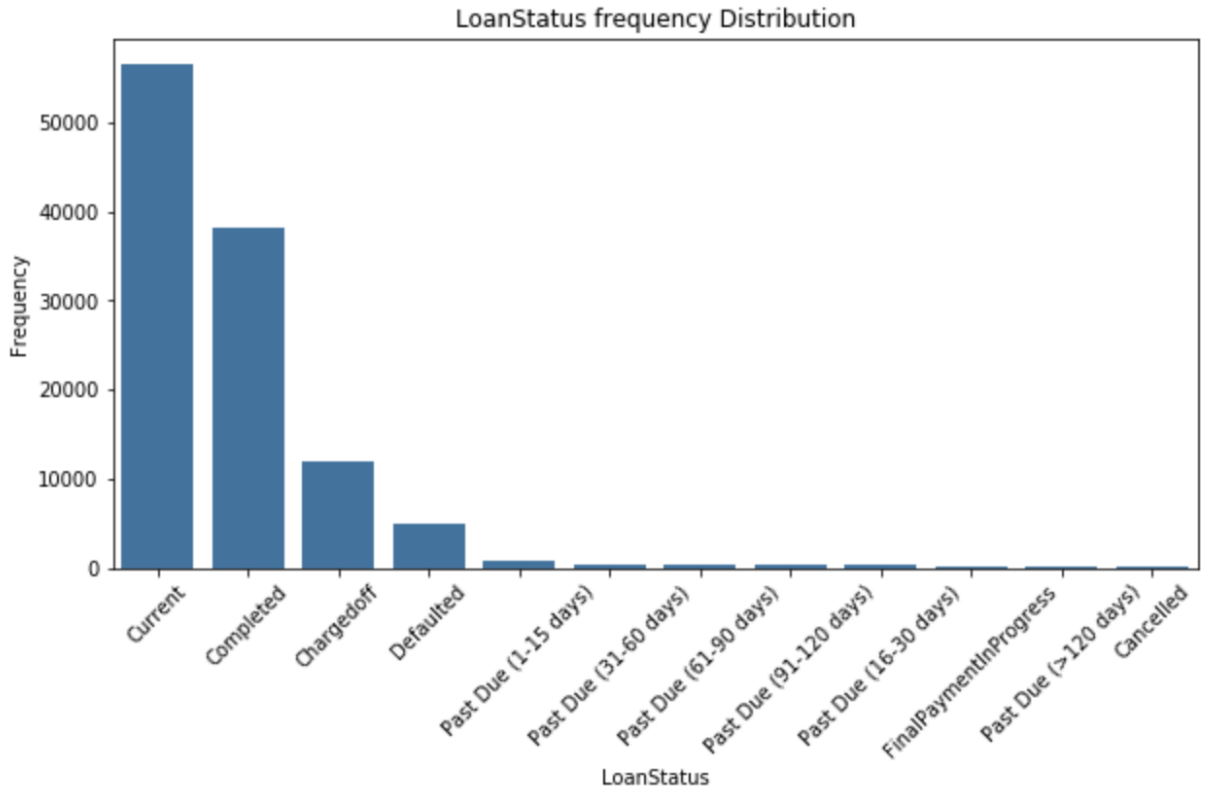

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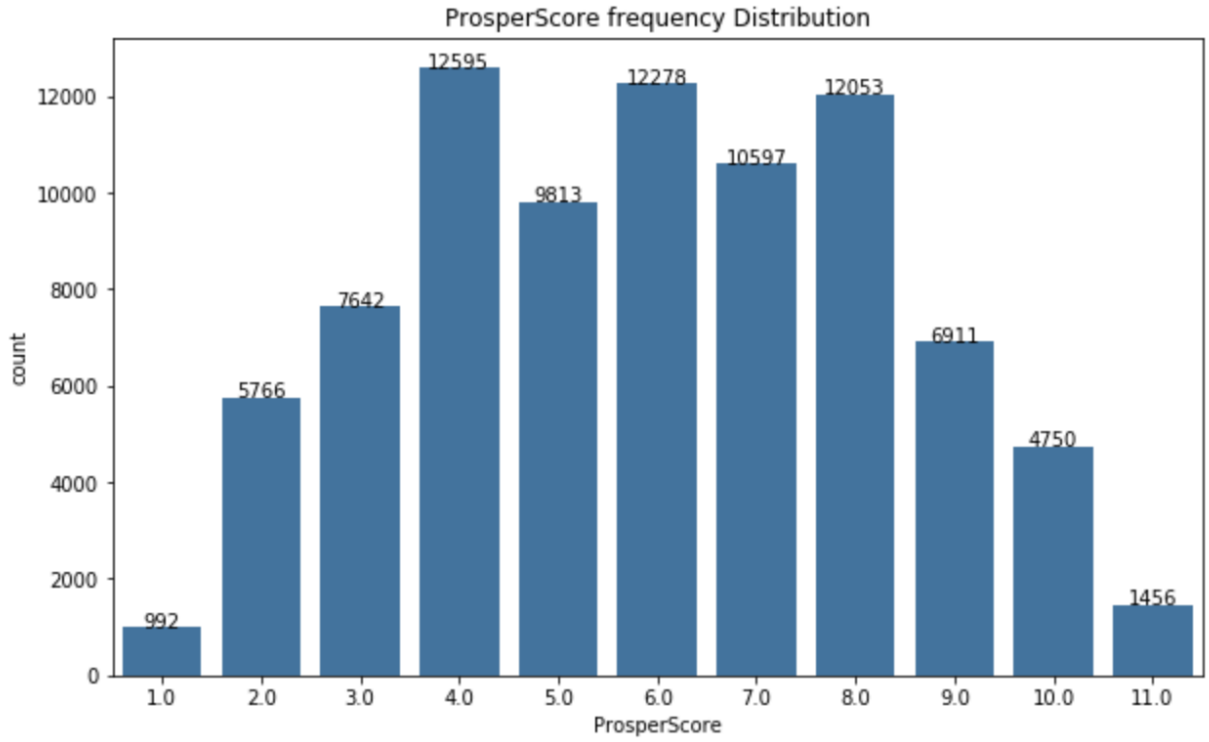

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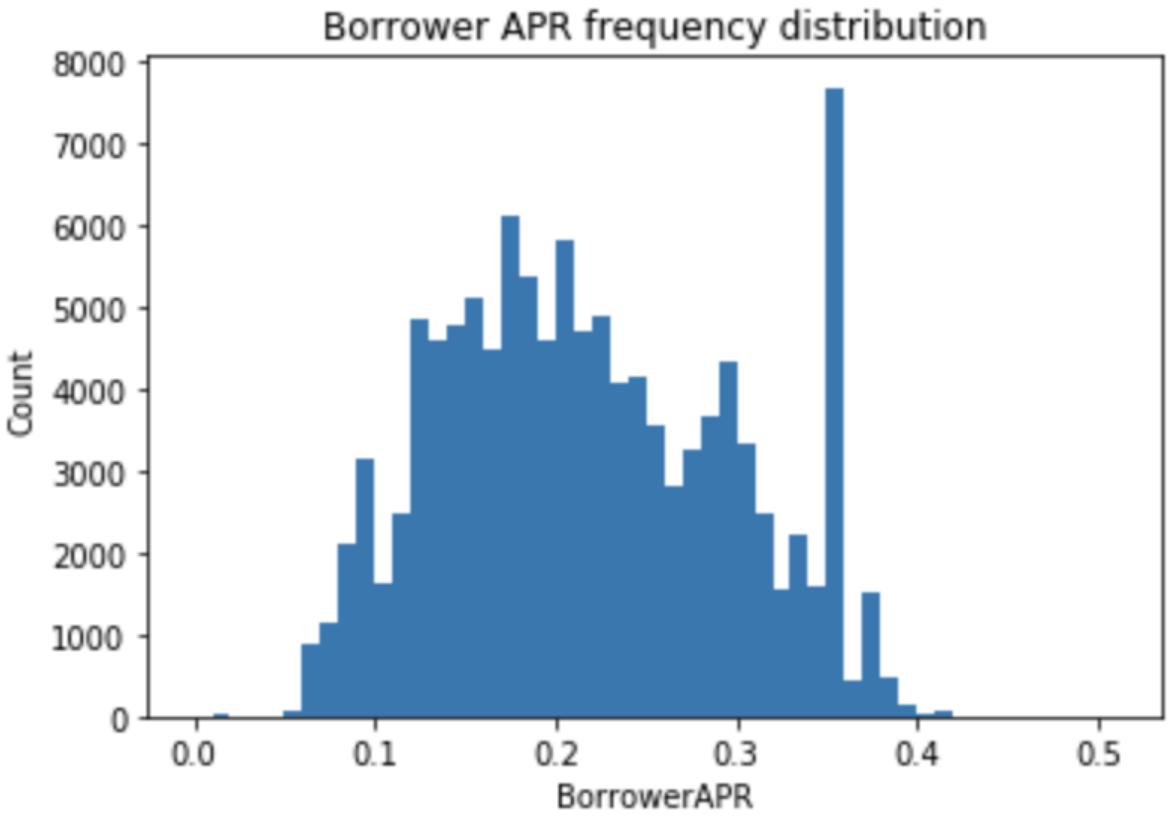

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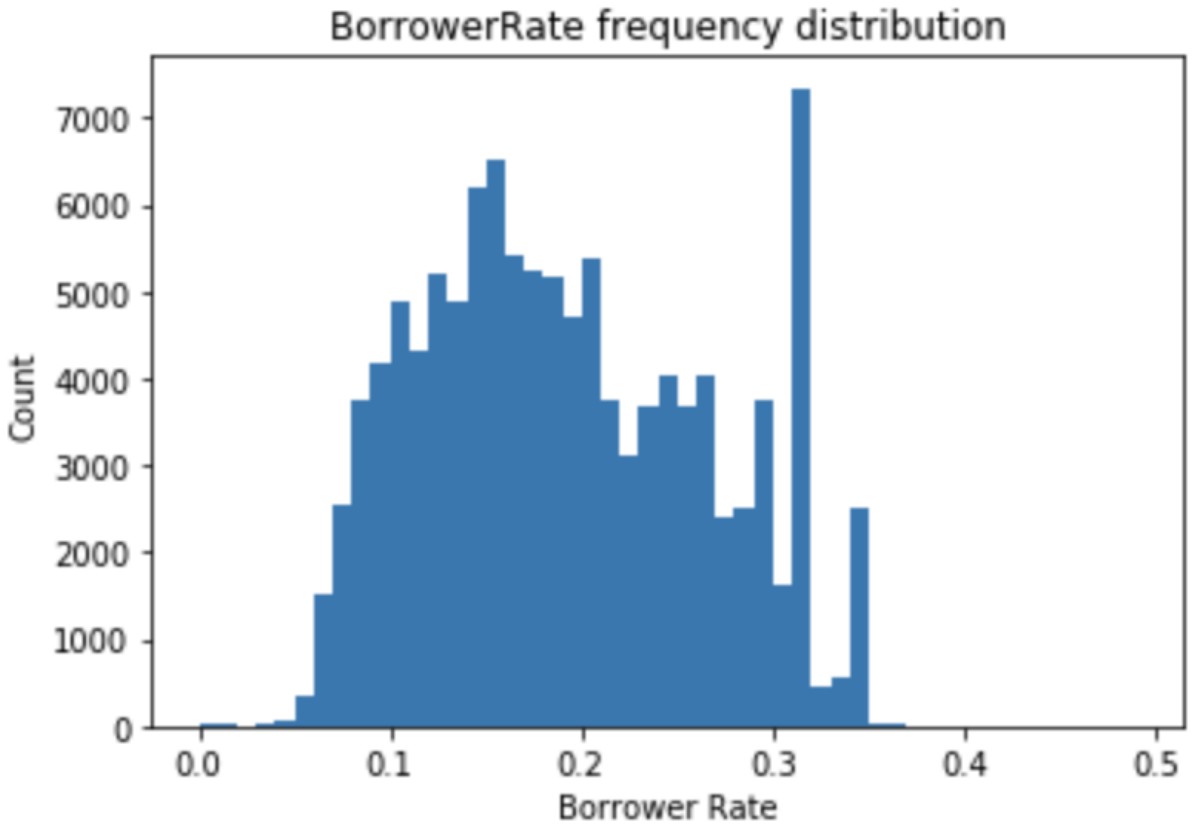

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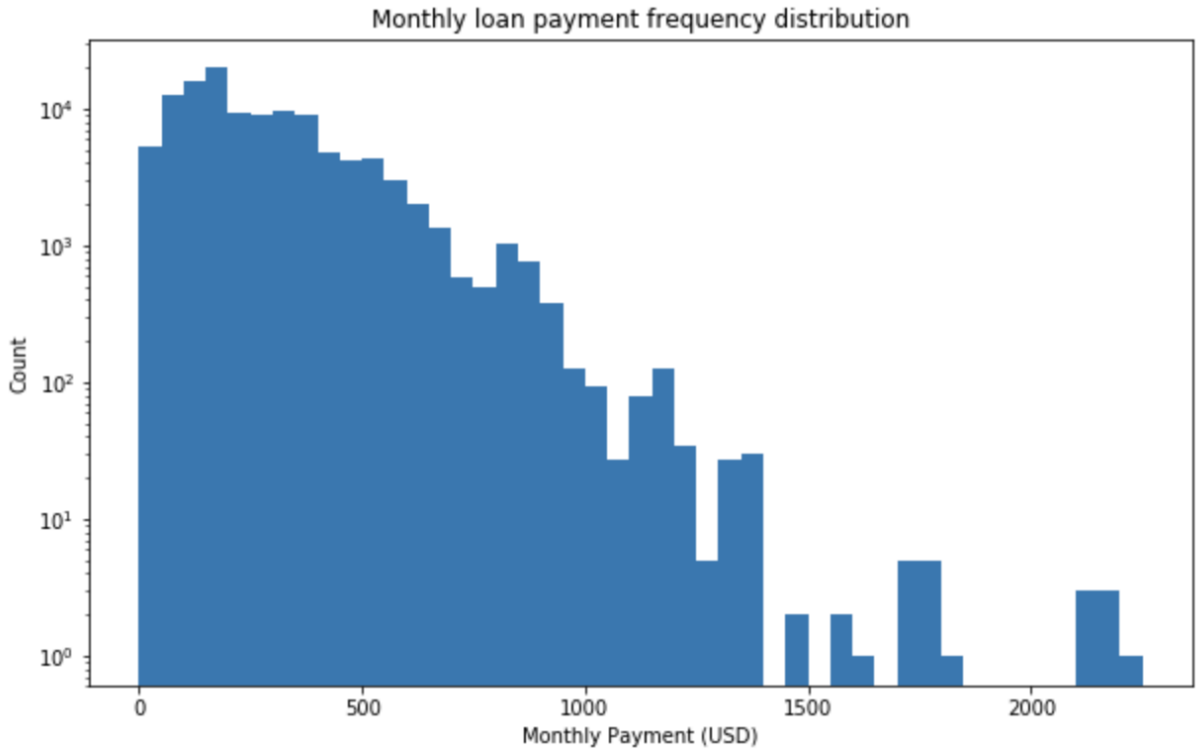
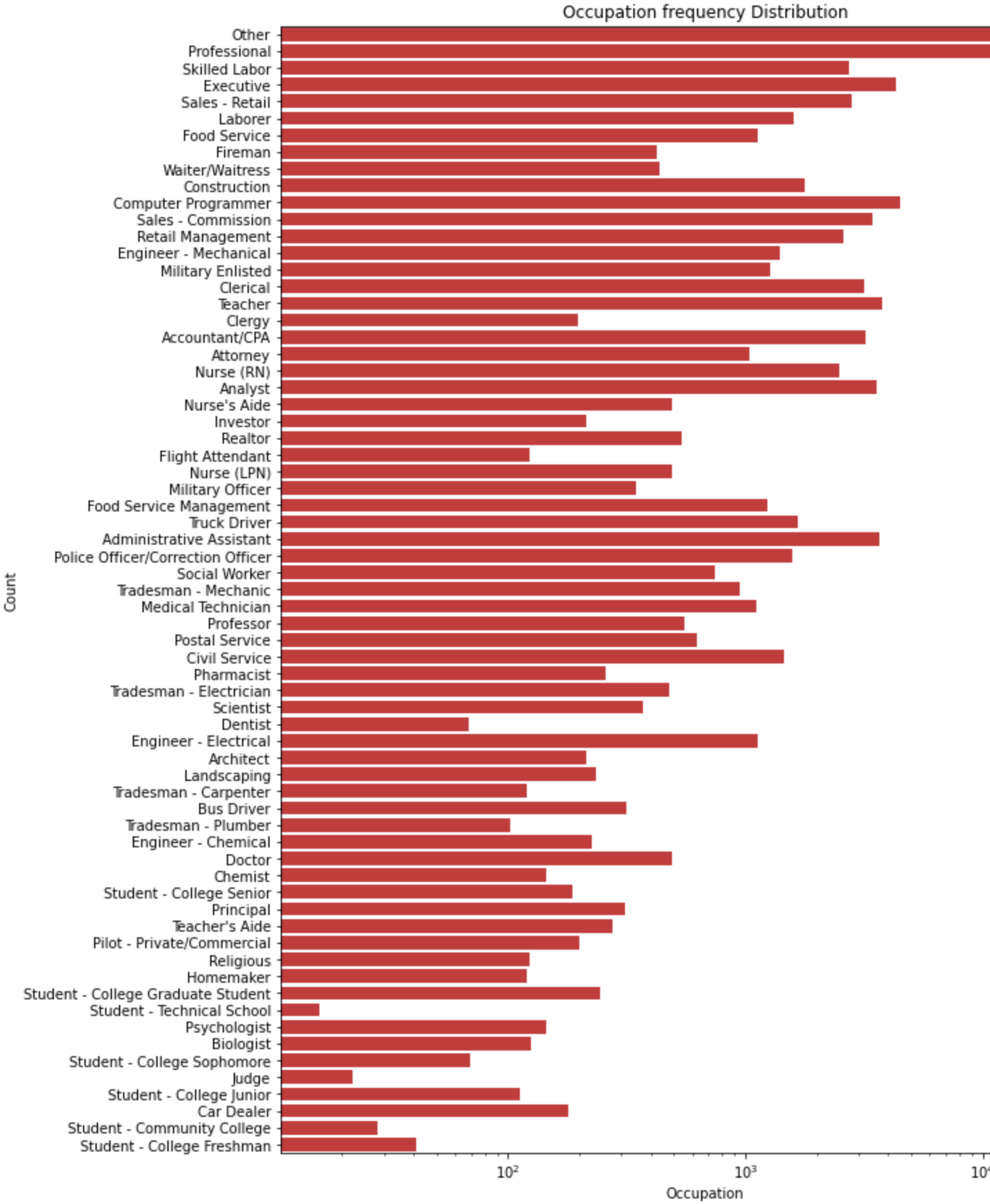


Occupation

The Occupation selected by the Borrower at the time they created the listing.


Occupation frequency Distribution
Other
Professional
Skilled Labor
Executive
Sales - Retail
Laborer
Food Service
Fireman
Waiter/Waitress
Construction
Computer Programmer
Sales - Commission
Retail Management
Engineer - Mechanical
Military Enlisted
Clerical
Teacher
Clergy
Accountant/CPA
Attorney
Nurse (RN)
Analyst
Nurse's Aide
Investor
Realtor
Flight Attendant
Nurse (LPN)
Military Officer
Food Service Management
Truck Driver
Administrative Assistant
Police Officer/Correction Officer
Social Worker
Tradesman - Mechanic
Medical Technician
Professor
Postal Service
Civil Service
Pharmacist
Tradesman - Electrician
Scientist
Dentist
Engineer - Electrical
Architect
Landscaping
Tradesman - Carpenter
Bus Driver
Tradesman - Plumber
Engineer - Chemical
Doctor
Chemist
Student - College Senior
Principal
Teacher's Aide
Pilot - Private/Commercial
Religious
Homemaker
Student - College Graduate Student
Student - Technical School
Psychologist
Biologist
Student - College Sophomore
Judge
Student - College Junior
Car Dealer
Student - Community College
Student - College Freshman
Count
10^2
10^3
Occupation

Univariate Analysis summary

The main investigation interest is in the borrower's rate, both APR and rate. I learn from both plots range 0.1 - 0.4 while the APR plot is shifted more to the right of the rate. It is because APR is borrower's rate plus a late fee.

Another interesting variable is Prosper score. The plot found that most borrower's has score range from 4 - 8.

Other interesting variables include occupations, which we know that executive, computer programmer, Teacher and Adminstrative Assistant have the highest frequency, monthly loan payment and employment status.

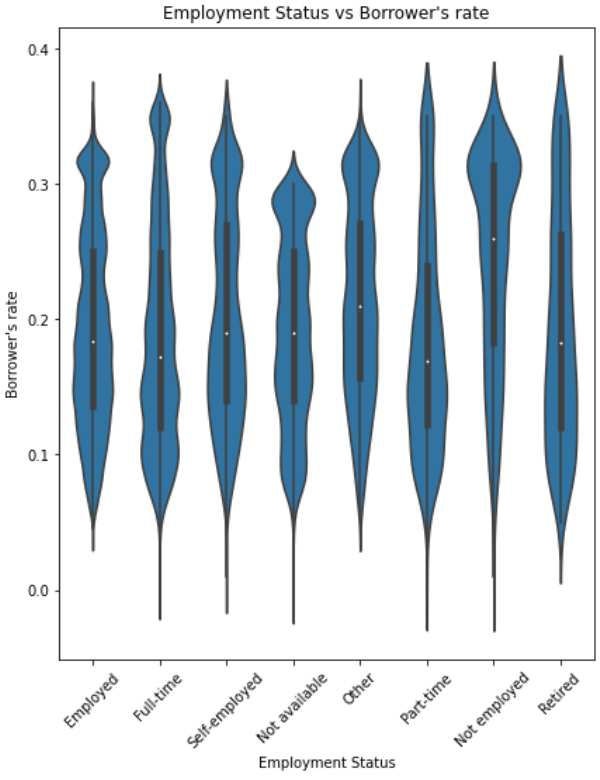
It will definitely be very interesting to plot a bivariate plots of borrower rate against Prosper Rate, borrower rate against occupation.

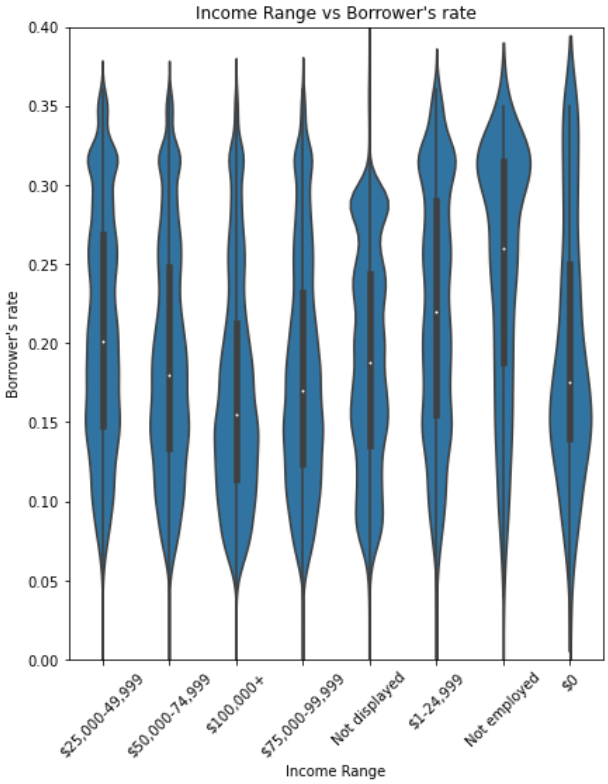
Bivariate Exploration

Borrower vs. Employment status

and

Borrower vs. Income Range

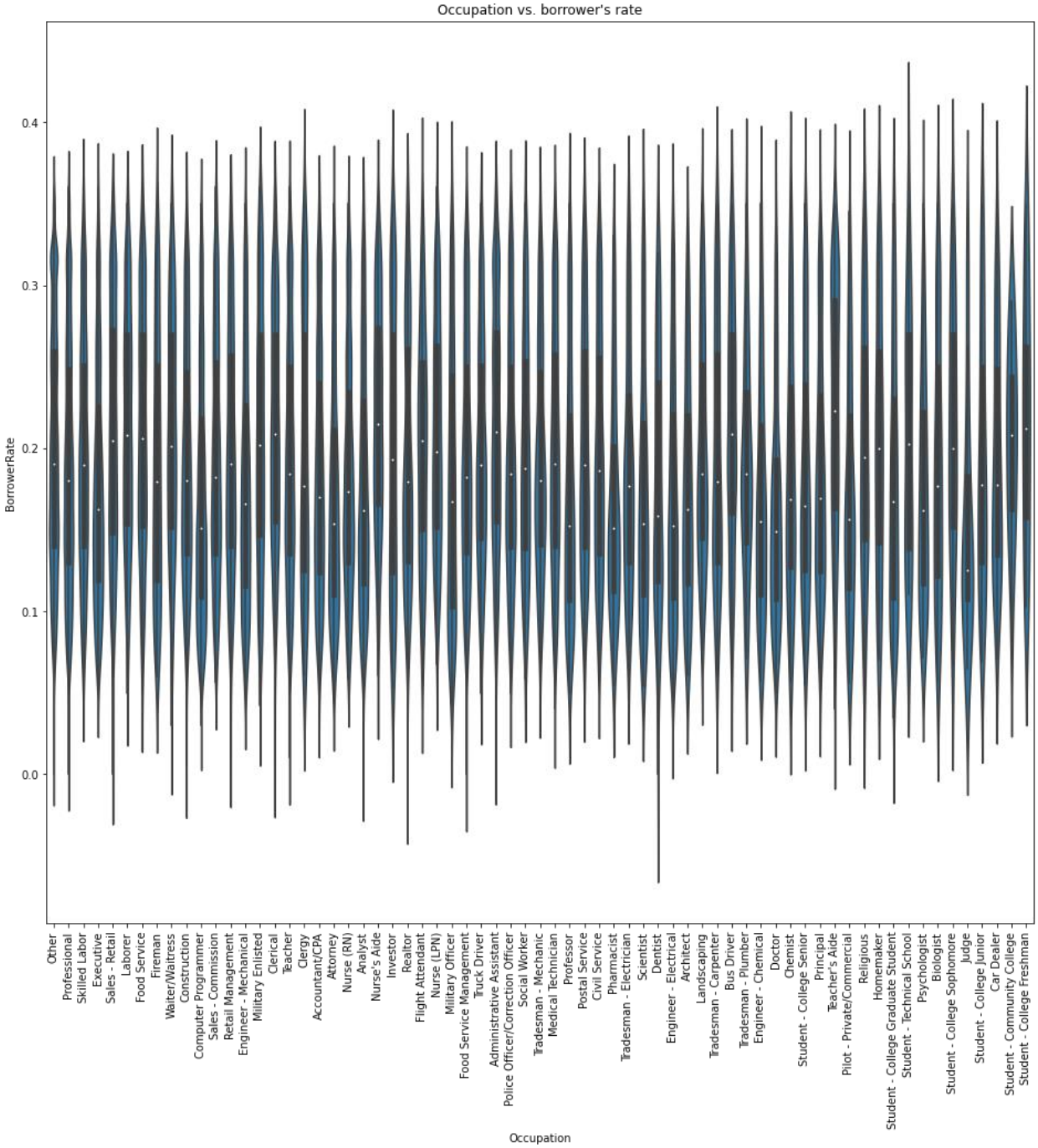




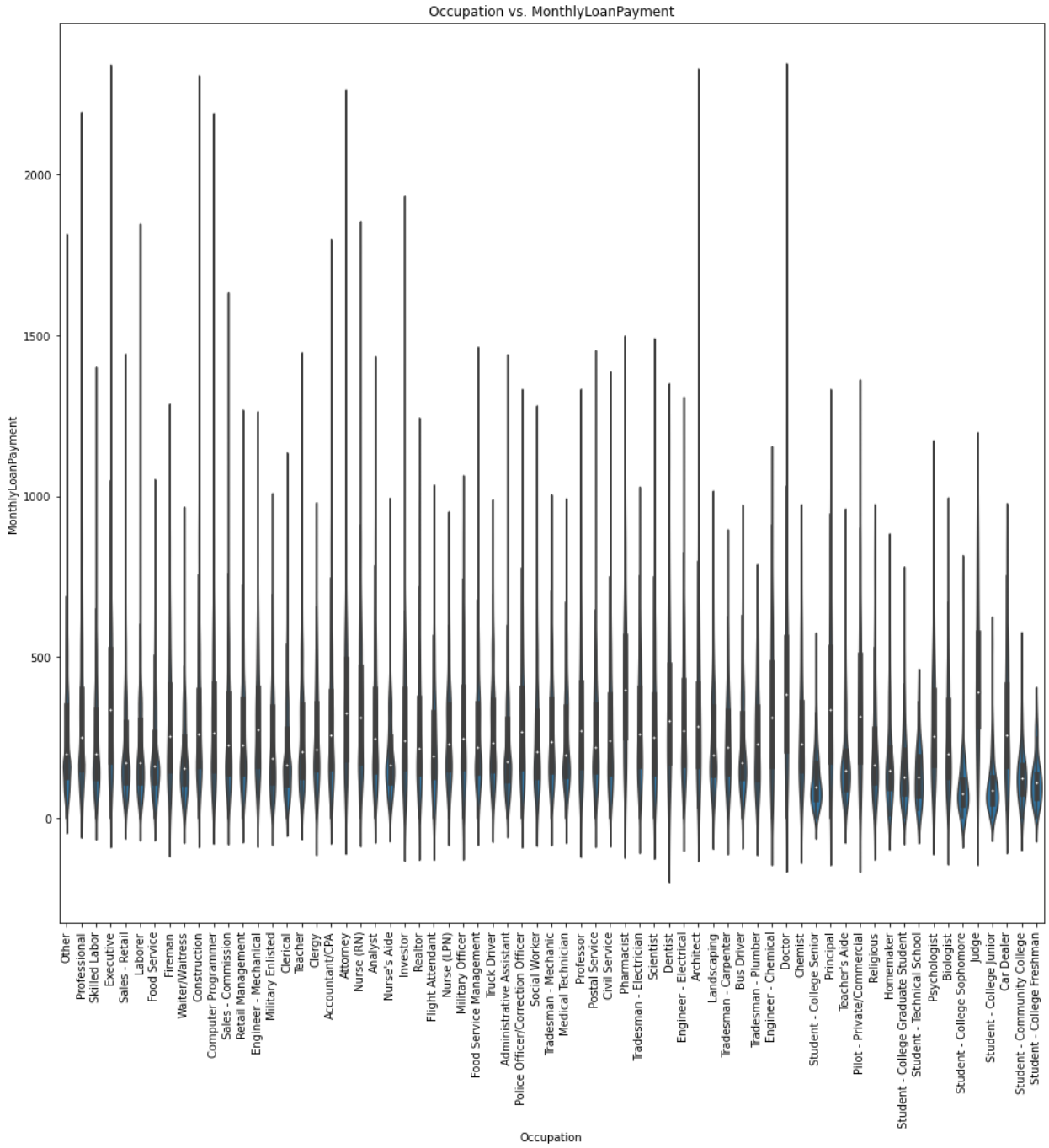
Occupation against borrower's rate

key insights conveyed by the explanatory presentation

The plot shows that it seems like occupation is a factor in the borrower's rate. The plot shows that occupation with lower average salary such as clerical, nurse's aid, bus driver and teacher's aide, have higher median rate than other occupations.



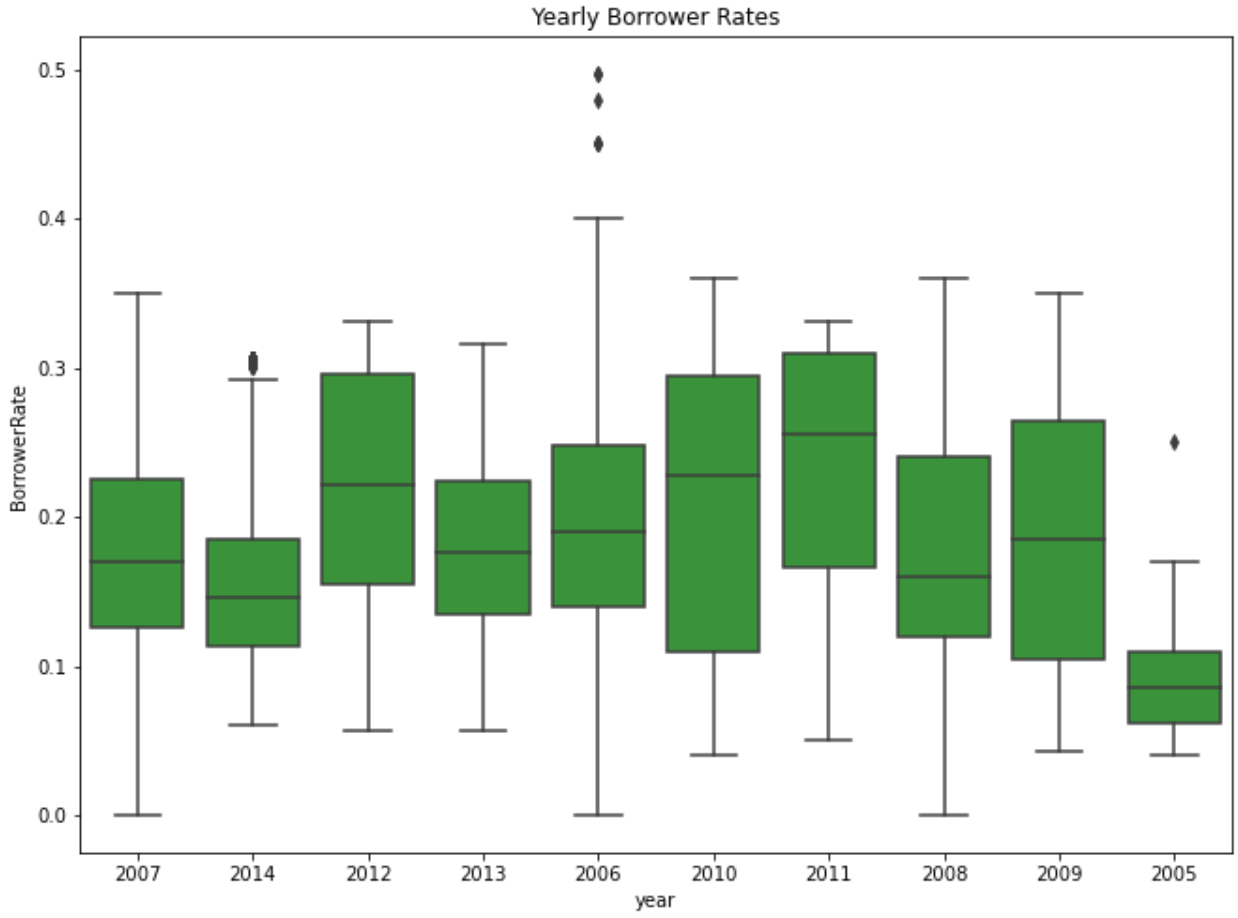
Occupation against Monthly loan payment



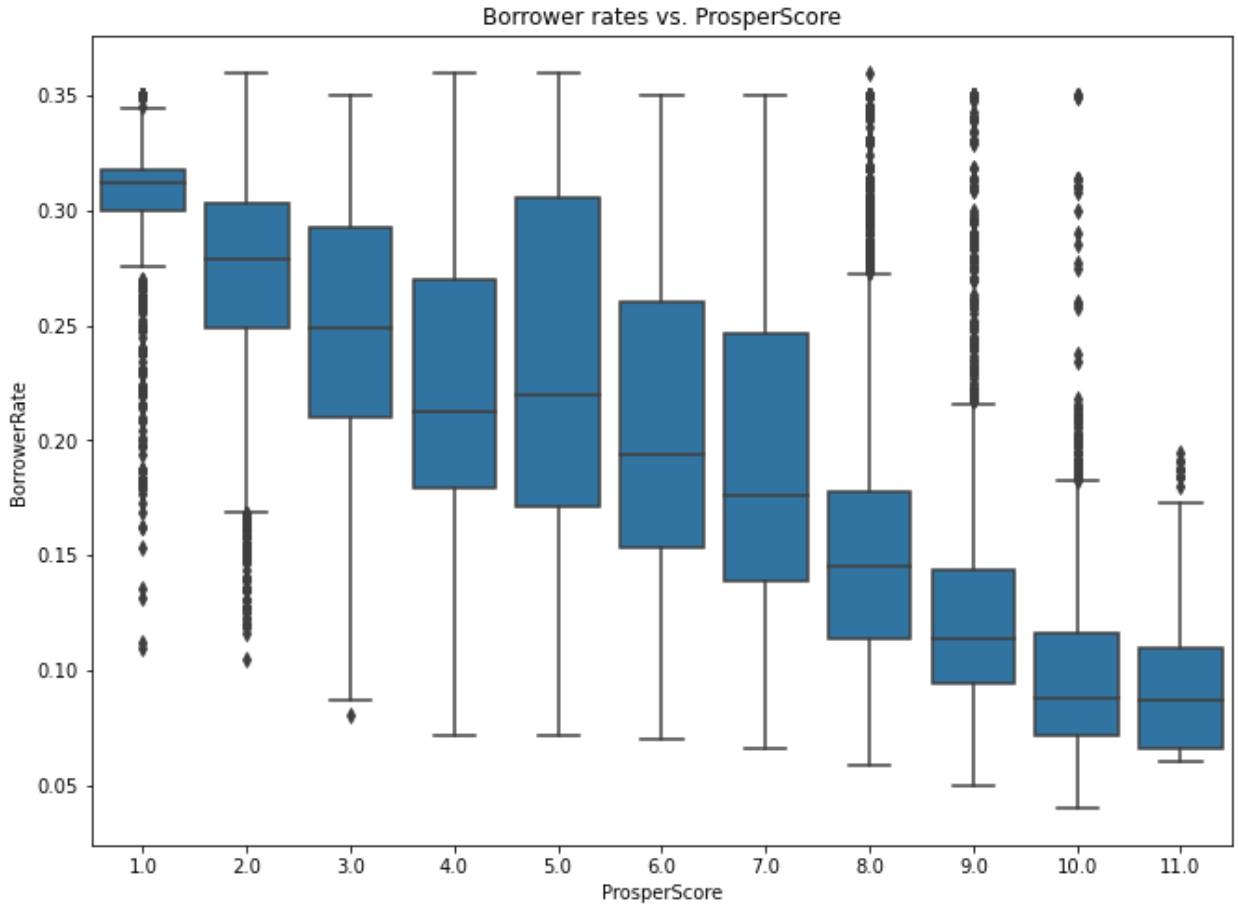
Yearly Borrower Rates

key insights conveyed by the explanatory presentation

It is interesting to see that rate goes up high after 2008 until 2001. And since then, the rate is steadily coming down until 2014.



Borrower rates vs. ProsperScore



Bivariate Analysis

I have created a new column named year to capture the year of the loan created. And I plot a graph of borrower rate by year and I discover interesting insight that borrower rate has been decreasing still 2011.

The plot of borrower's rate against occupation shows that computer programmer, judge are two occupations that stand out to have lower median rate. Then I plot monthly loan payment against occupation and it shows that computer programmer, doctor and attorney have higher monthly payment.

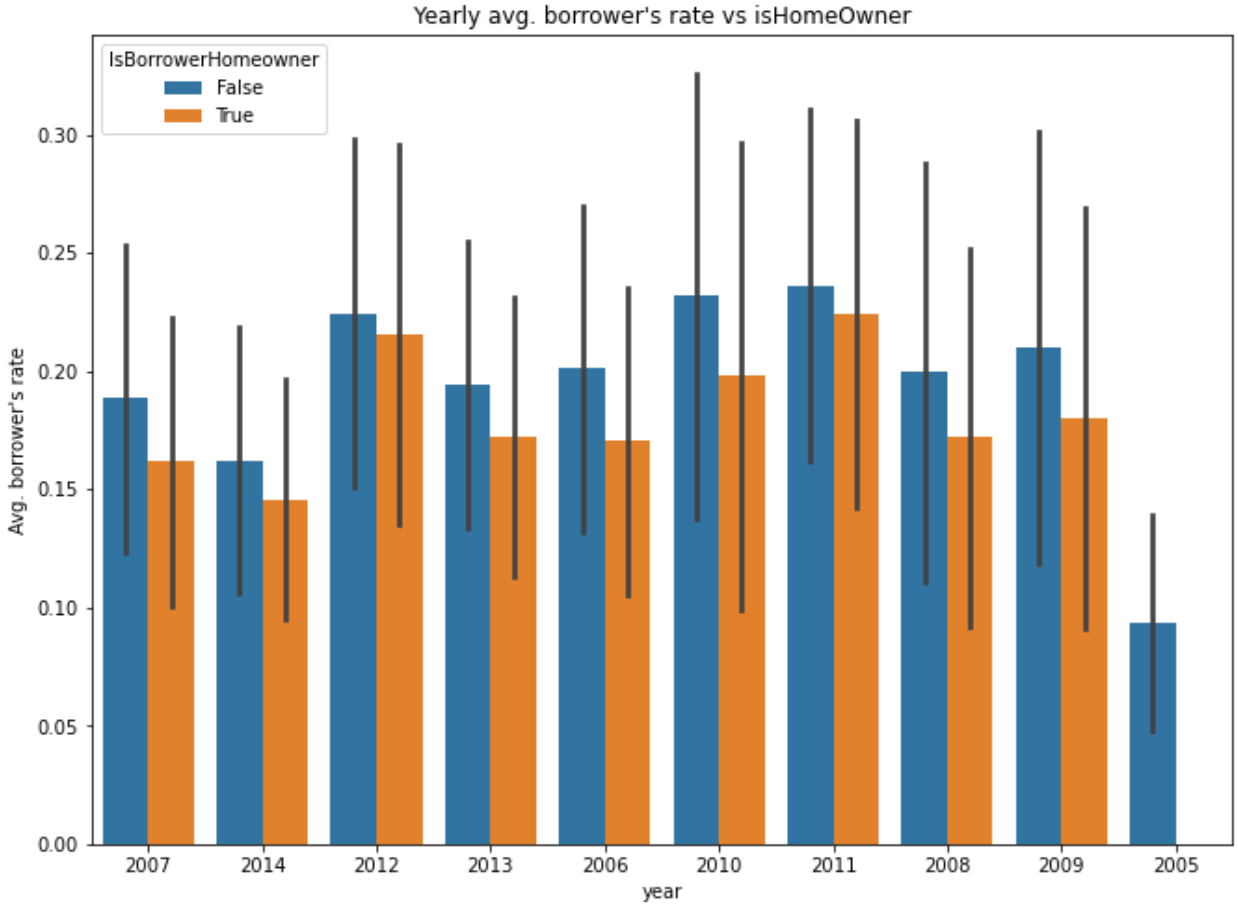
The boxplot of borrower's rate against ProsperScore really gives a strong insight into a trend. The higher the prosperScore, the lower the borrower's rate. At 1.0 score, the rate is concentrated at 3 - 3.5%. While the score will the most signifcant range is score 4.0 and 5.0. It has strong indication that prosperScore is one of the determining factor when evaluvating the borrower's rate.

Multivariate Exploration

Yearly Borrower rate vs. isHomeOwner

key insights conveyed by the explanatory presentation

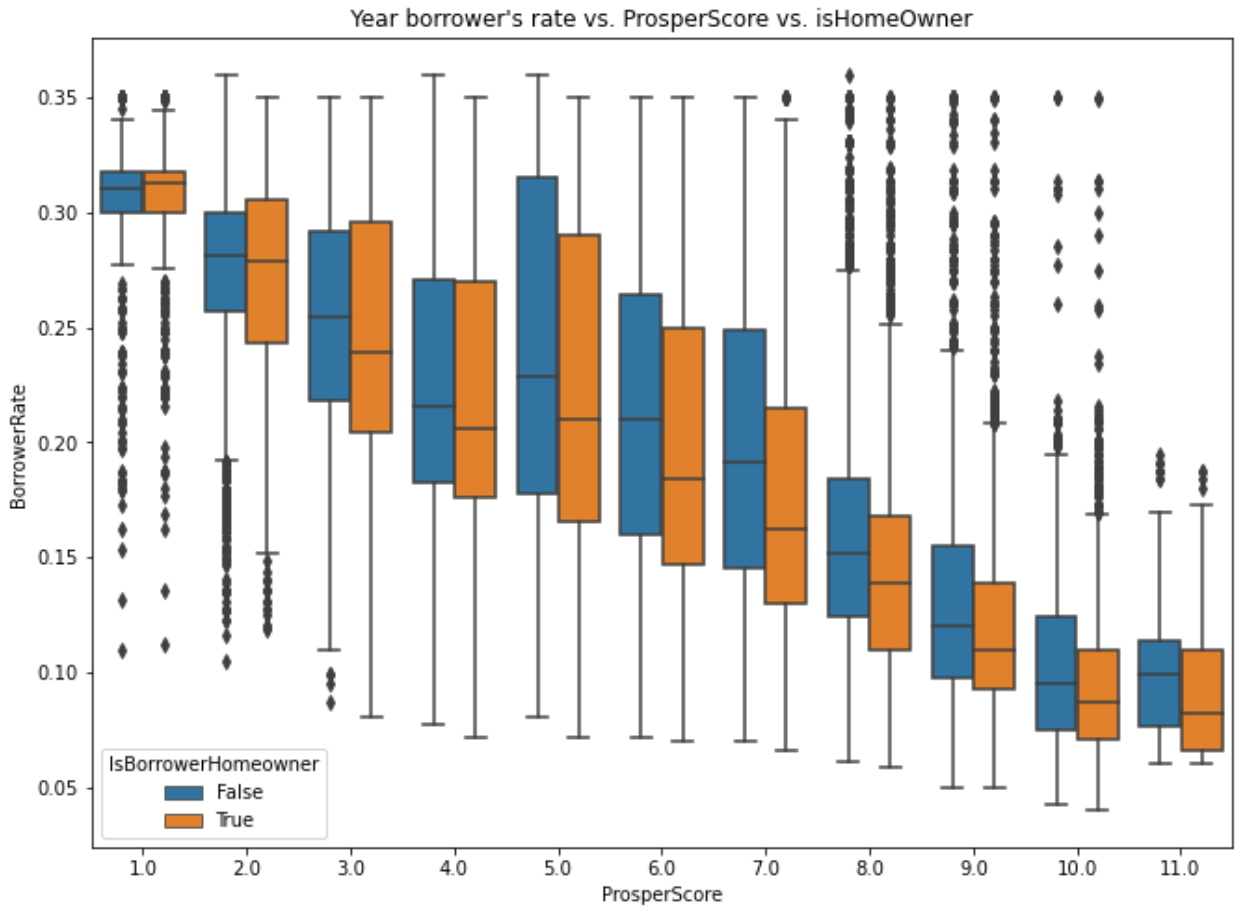
According to the plot, it does seem like homeowners have a slightly lower rate that non-homeowner.



Year borrower's rate vs. ProsperScore vs. isHomeOwner

key insights conveyed by the explanatory presentation

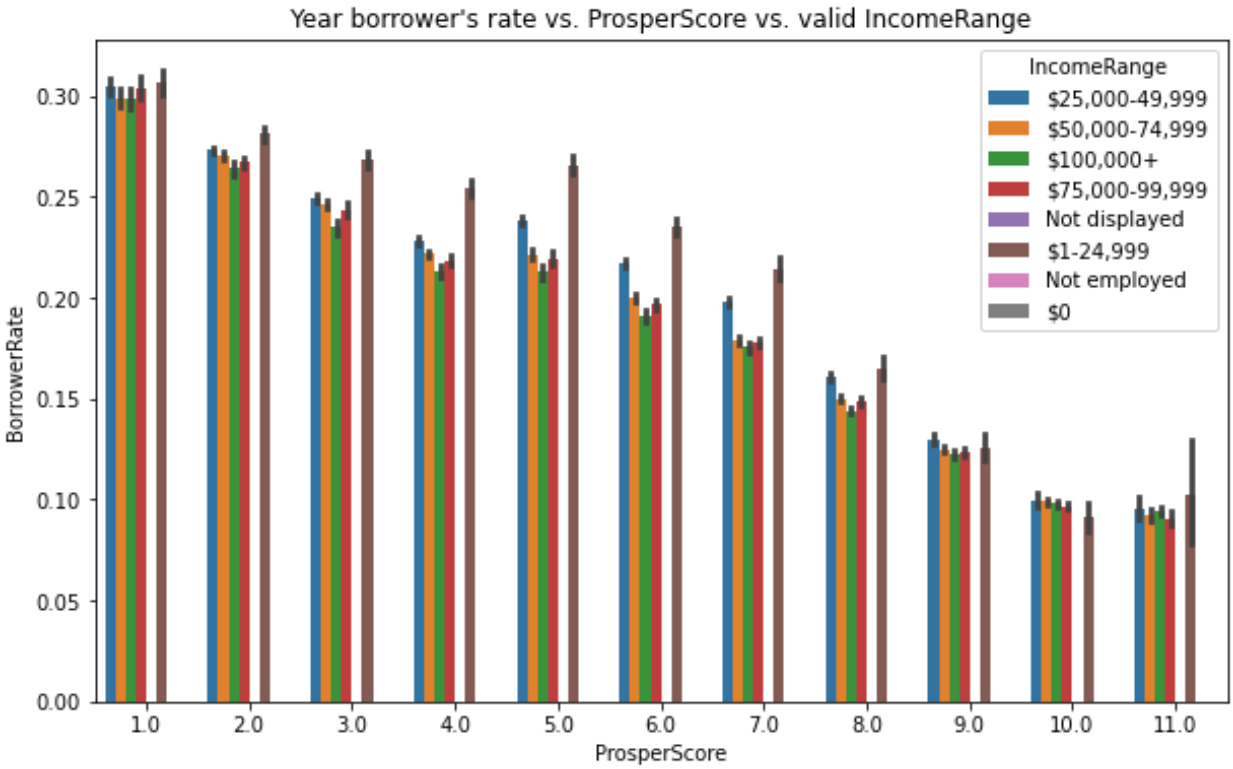
The trend here is similar to (Yearly Borrower rate vs. isHomeOwner) graph. I notice that for score 5 or above, the homeowners have lower rate and for scores below 5, homeowners have similar or higher borrowing rate as non-homeowners.



Year borrower's rate vs. ProsperScore vs. IncomeRange

key insights conveyed by the explanatory presentation

This plot gives a clear indication that the higher the income, the lower the rate will be. As for those unemployed, the rate will be significantly higher than those who are employed.



Multivariate Analysis

The plot of avg. yearly borrower's rate vs isHomeowner shows that homeowners have lower rate than non-homeowners, and this is true for every year recorded in the dataset. Then, I plot avg. borrower's rate vs. prosper score vs. isHomeowner, I notice that for score 5 or above, homeowners have lower rate, and for scores below 5, homeowners have similar or higher borrowing rate. I plot a ProsperScore vs. Borrower's rate vs. income range, and it gives a clear indication that the higher the income, the lower the rate will be. As for those unemployed, the rate will be signficantly higher than those who are employed.