

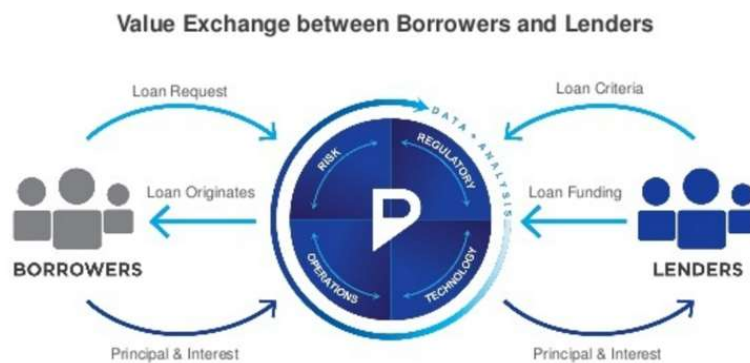
Online Peer-to-Peer Loan Business Analysis

-Rishabh Rawat

Peer-to-Peer Loans

The practice of lending money to individuals or businesses through online services that match lenders with borrowers. Peer-to-peer lending companies attempt to operate with lower overhead and provide their services more cheaply than traditional financial institutions. As a result, lenders can earn higher returns, while borrowers can borrow money at lower interest rates.

How peer-to-peer lending works



About

Prosper is a peer-to-peer lending platform that aims to connect people who need money with those people who have the money to invest.

- Prosper was founded in 2005 as the first peer-to-peer lending marketplace in the United States. Since then, Prosper has facilitated more than \$21 billion in loans to more than 1,230,000 people.
- Through Prosper, people can invest in each other in a way that is financially and socially rewarding. Borrowers apply online for a fixed-rate, fixed-term loan between \$2,000 and \$40,000. Individuals and institutions can invest in loans and earn attractive returns. Prosper handles all loan servicing on behalf of the matched borrowers and investors.
- Prosper Marketplace is backed by leading investors including Sequoia Capital, Francisco Partners, Institutional Venture Partners, and Credit Suisse NEXT Fund.

Summary

In peer-to-peer lending, there are three main stakeholders: borrowers, lenders and the company itself. In my Tableau story, I plan to explore the relationship between these parties.

First, I performed a time series analysis ranging from the year 2007 – 2014 about the number of loans taken by borrowers, the number of their loans, and how their ProsperScore got affected in this duration.

The main purposes of this project are to summarize the characteristics of variables that can affect the loan status and to get some ideas about the relationships among multiple variables using summary statistics and data visualizations.

DATASET

The Prosper loan data set contains 113,937 loans with 81 variables on each loan, including loan amount, borrower rate (or interest rate), borrower occupation, current loan status, borrower income, and many others.

Time Frame- 2007 to 2014

Exploratory Data Analysis- R Language

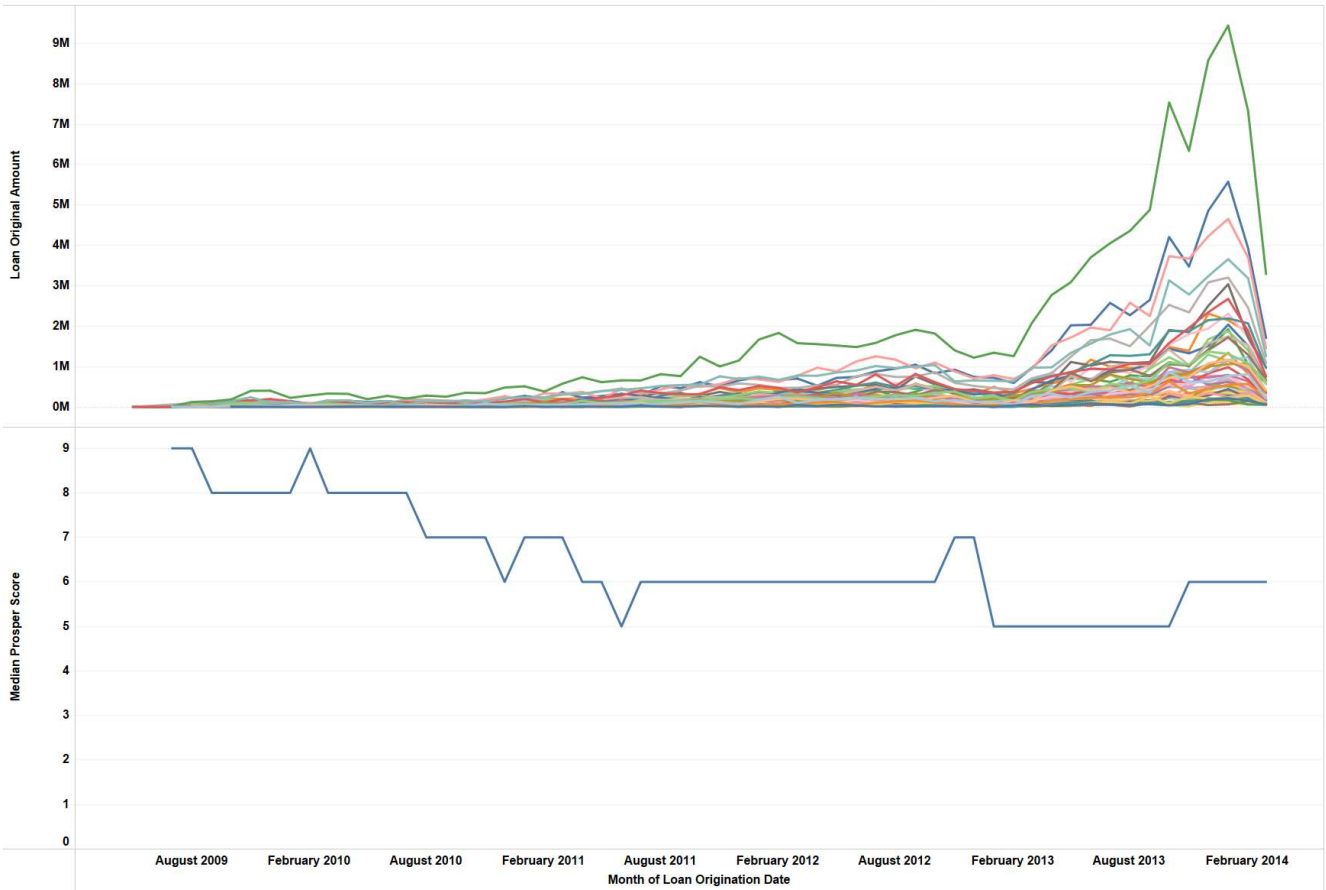
Visualization- Tableau

- <https://www.kaggle.com/datasets/justjun0321/prosperloandata>

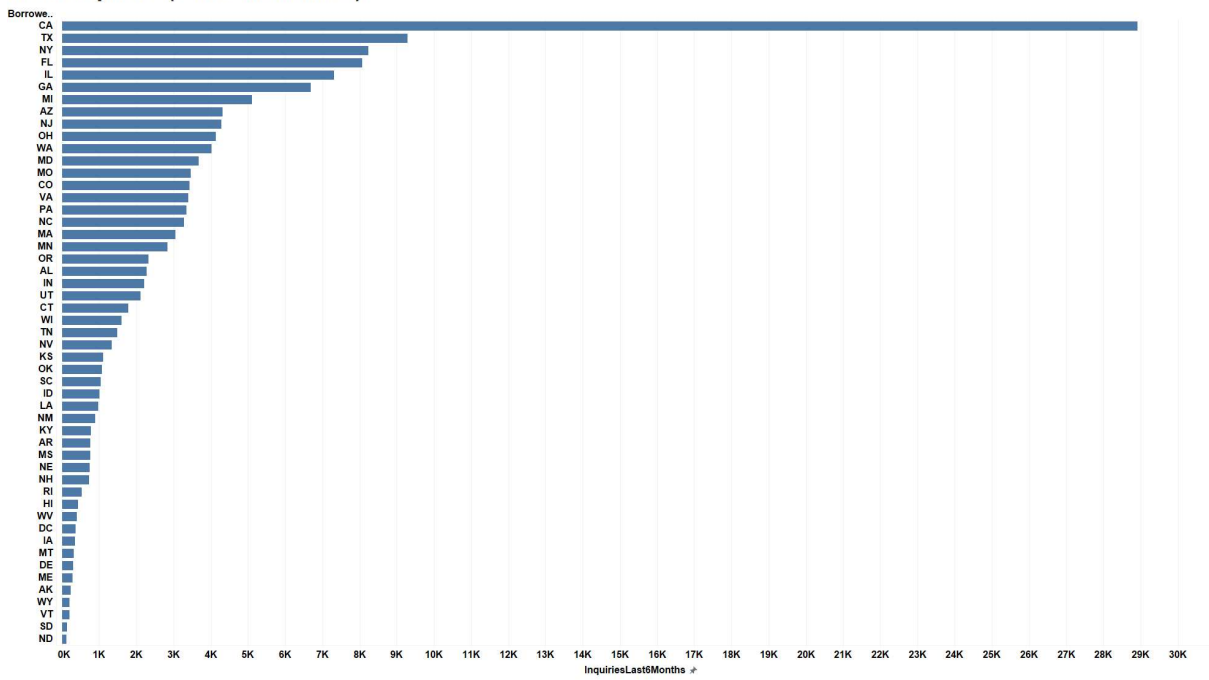
- ✓ What is the reason for borrowers to take a loan?
- ✓ What are the overall loan trends in the time period?
- ✓ What are the reasons for defaults?
- ✓ What are the default rates in different US states?
- ✓ I will compare the following-
 - Income Vs Default Rate
 - Credit Score Vs Default Rate
 - Income Vs Credit Score
 - Occupation Vs Default Rate
- ✓ What is the Default Rate of College Students?

✓ What are the overall loan trends in the time period?

Number of Loans Increased Over time While the Median Borrower ProsperScore Decreased



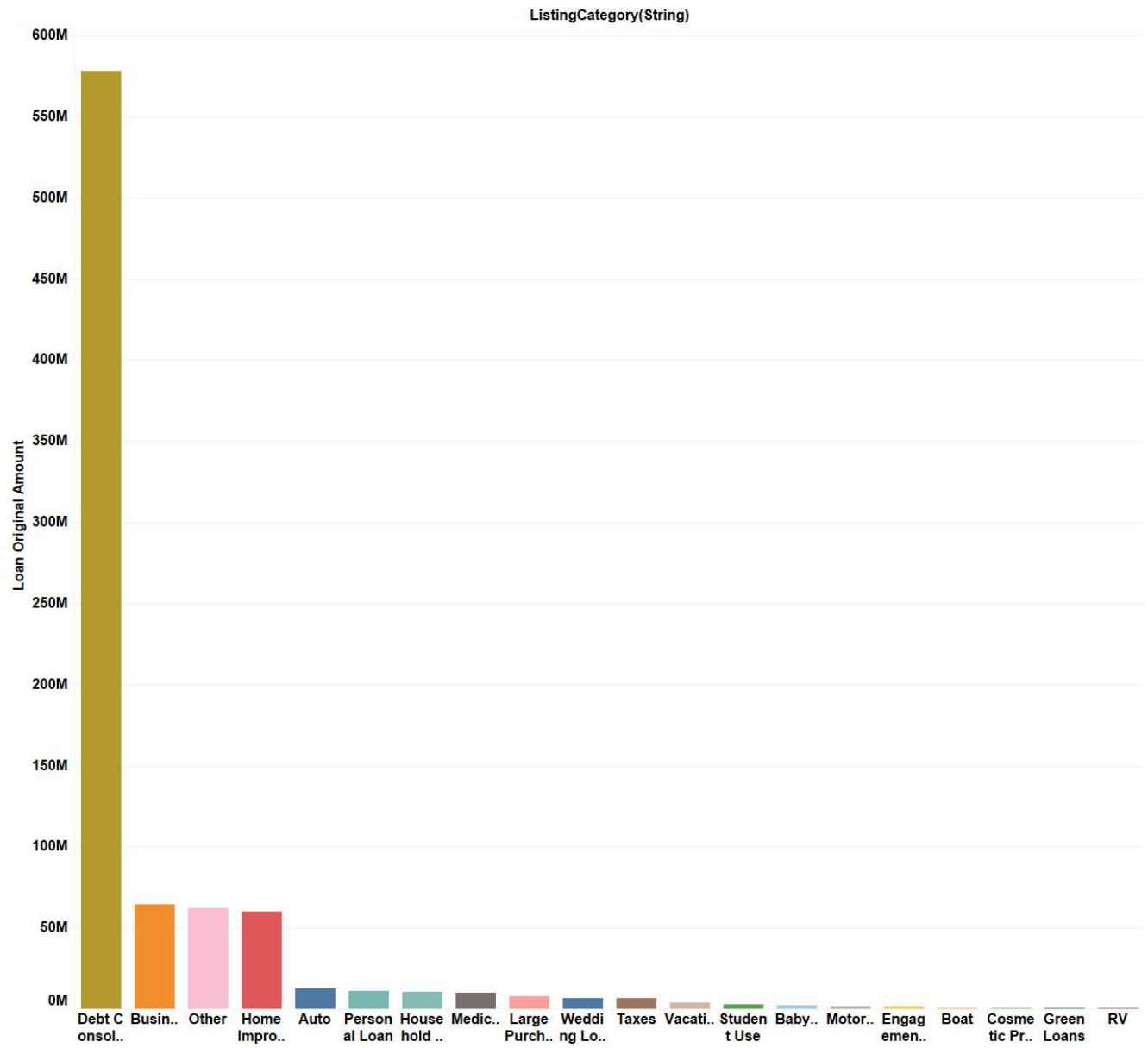
New Enquiries (Last six months)



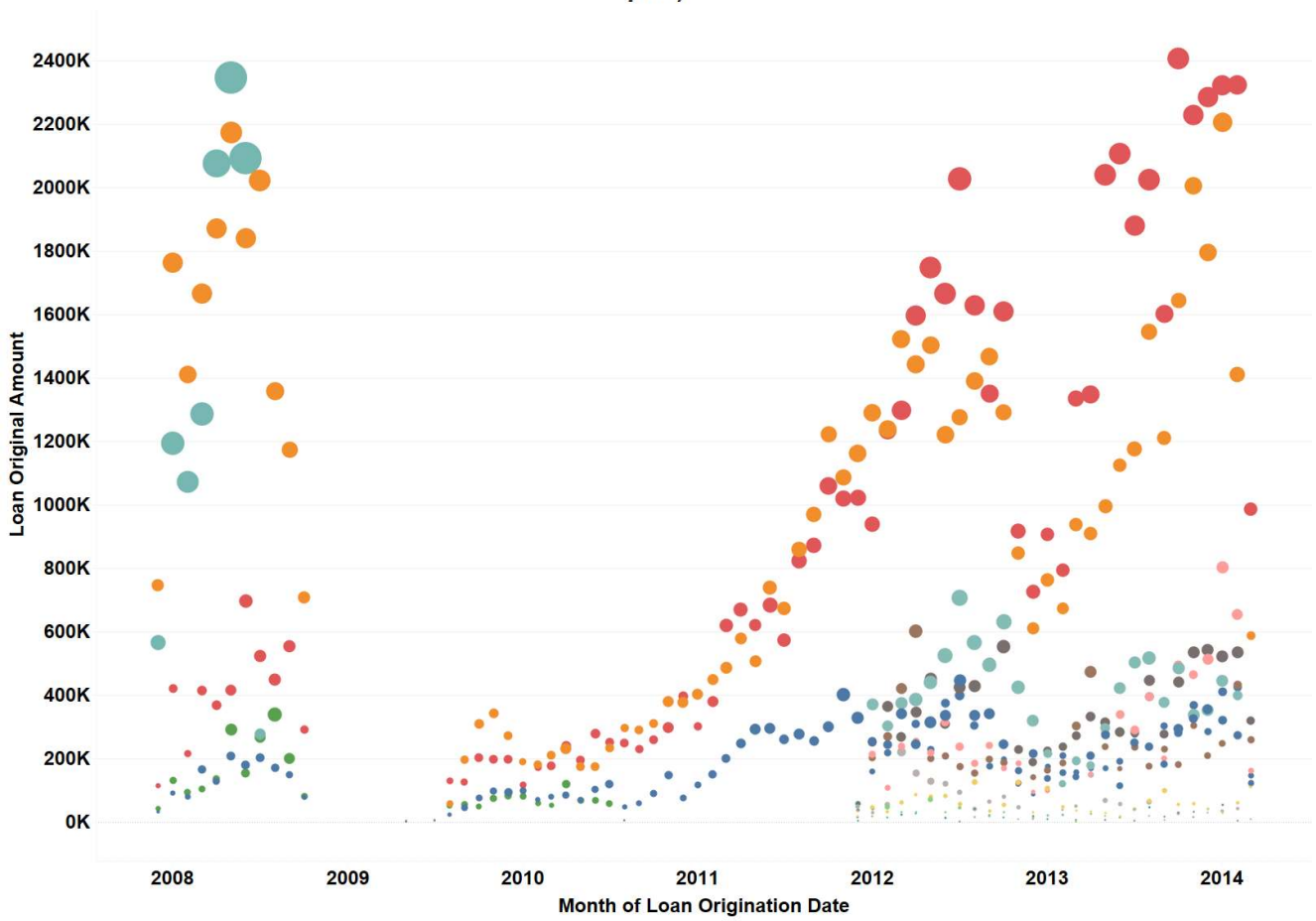
Since 2009, the online personal loan business has increased steadily and climbed up quickly Since 2013 and then dropped down at the beginning of 2014. However, the borrower credit score has went down over time. California has the highest number of new enquiries.

What are the different loan categories and how are the funds allocated in each catagory?

Breakdown of Loan Catagories



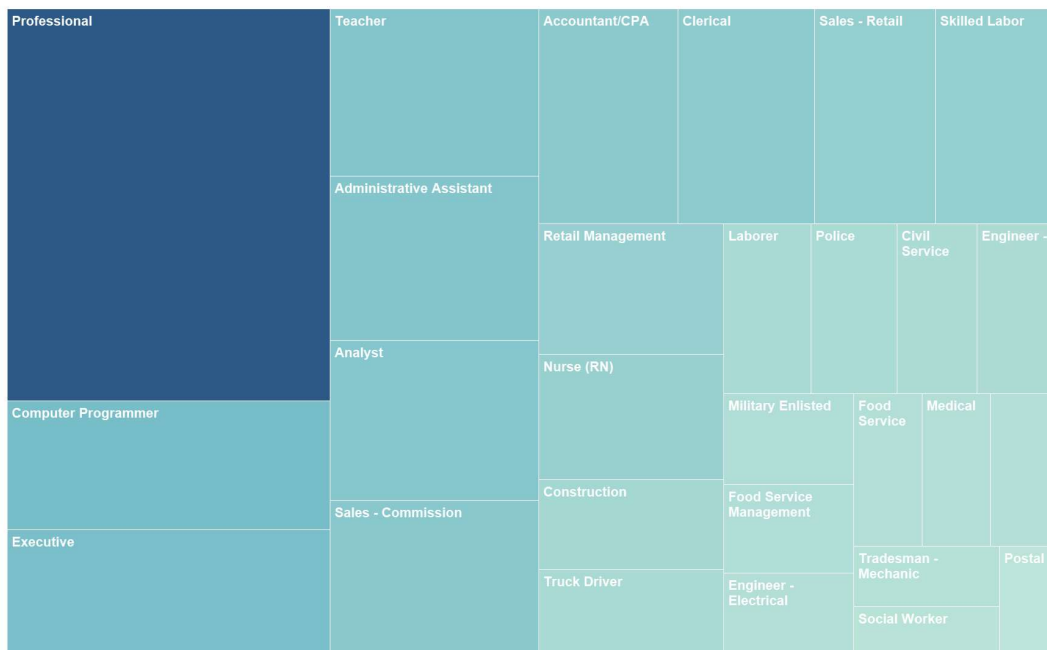
Prosper Loan Types excluding Debt Consolidation (with Personal and Home Loans comprising most part)



Mostly, people take loans for debt consolidation and the sum amounts to nearly 575M. But apart from the debt consolidation, the home improvement and business loan sales are the most. Auto loans have seen steady growth over time.

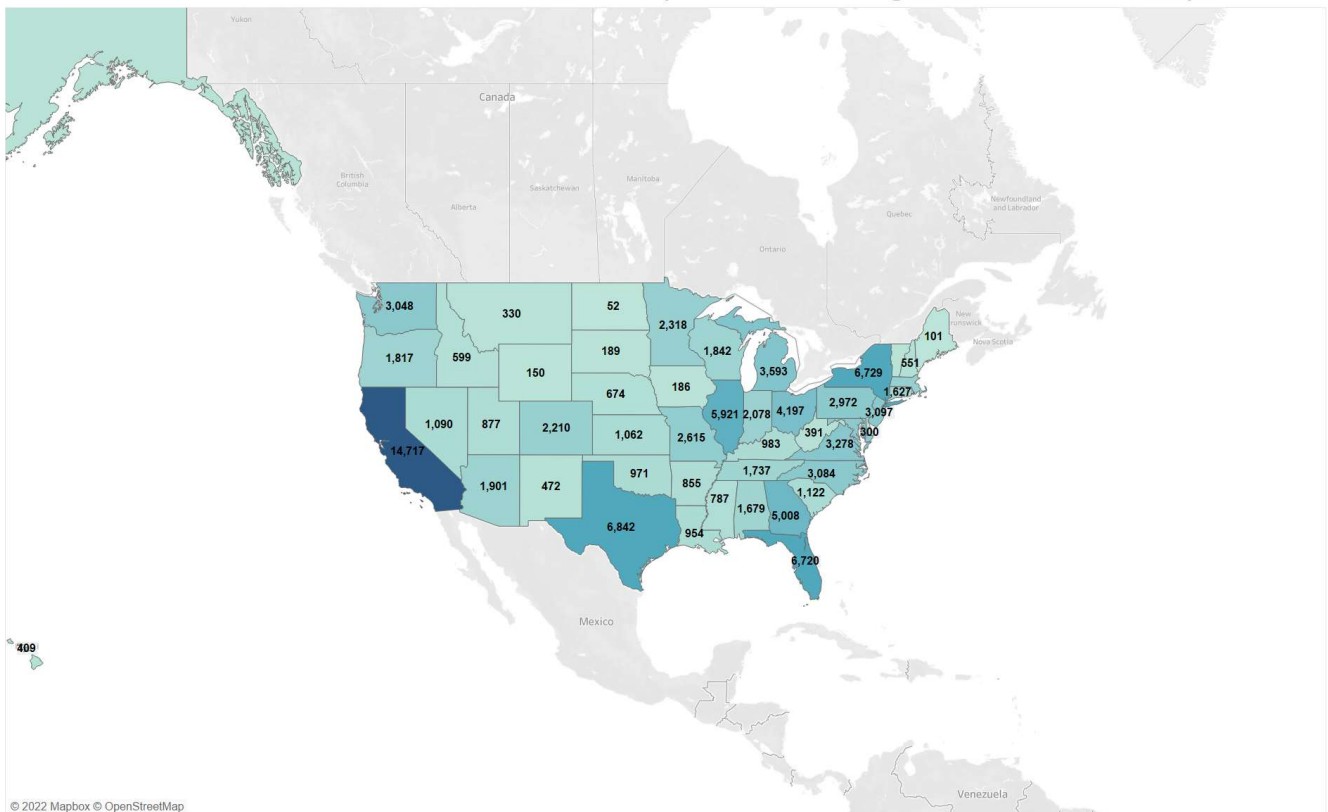
Q What are the typical borrowers of Prosper Loan?

Borrowers



Q Which state has the highest loans disbursed?

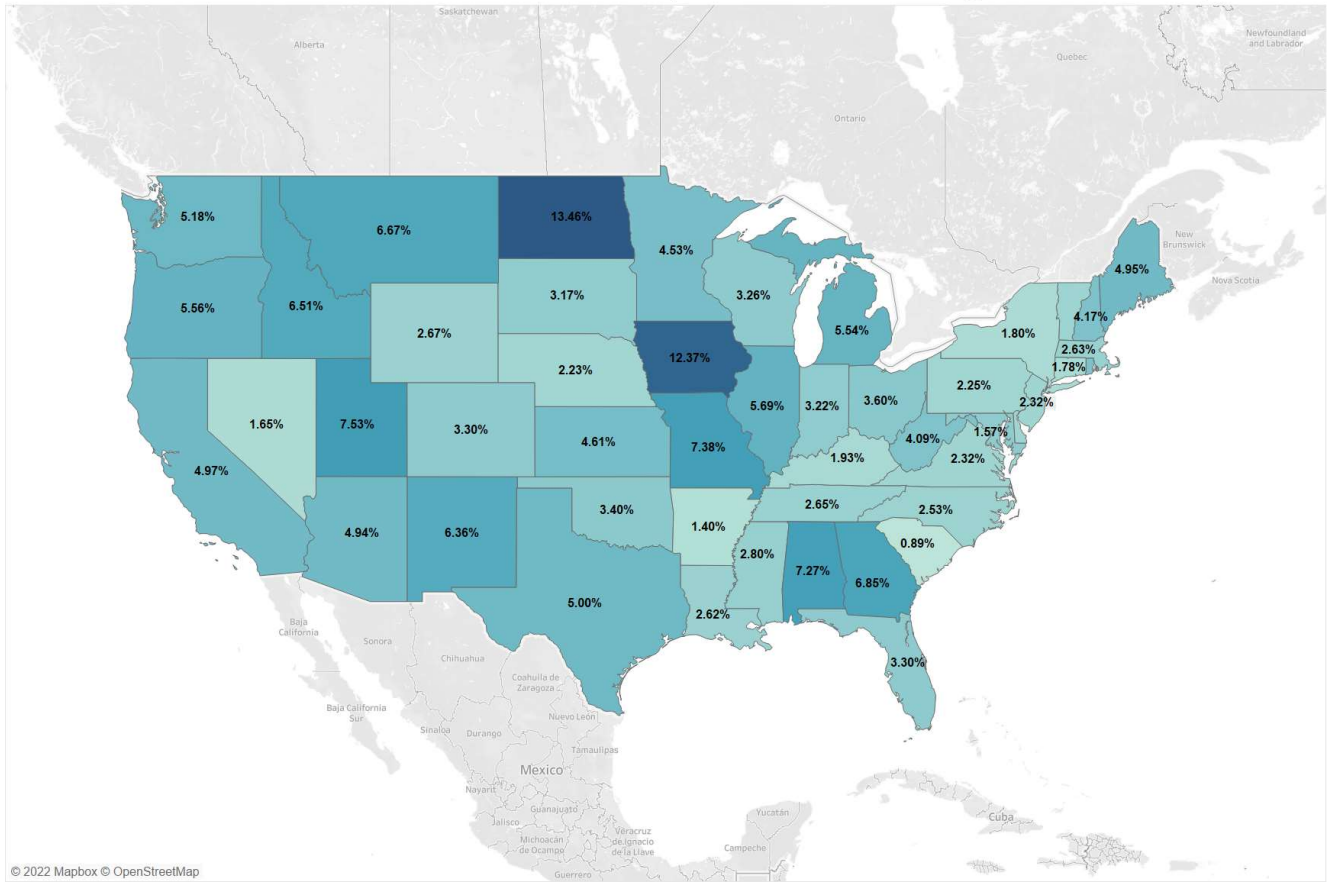
Loans Disbursed in different US states (California has highest loans disbursed)



The major business state for prosper loans is California where nearly 14700 loans are disbursed.

Q Which states has the highest default rates?

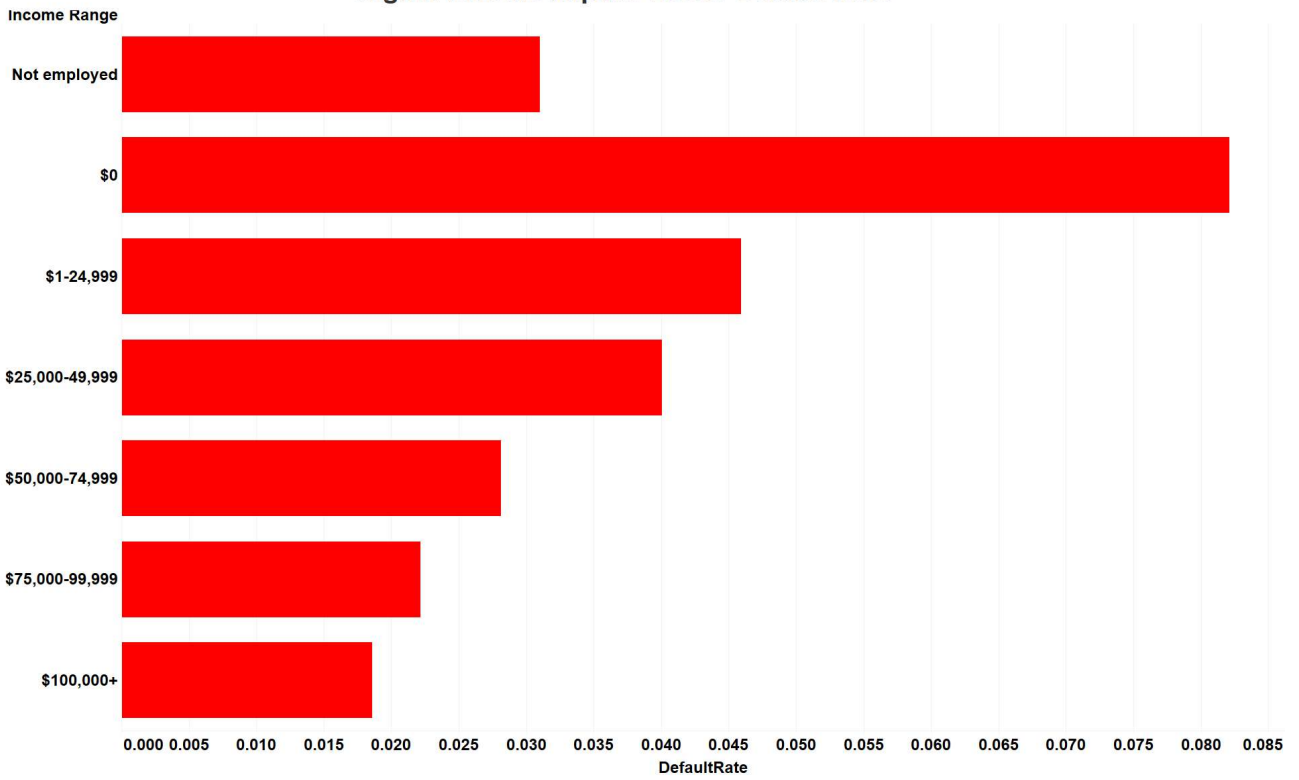
Defaulter Rates in different US states (North Dakota has highest defaulters)



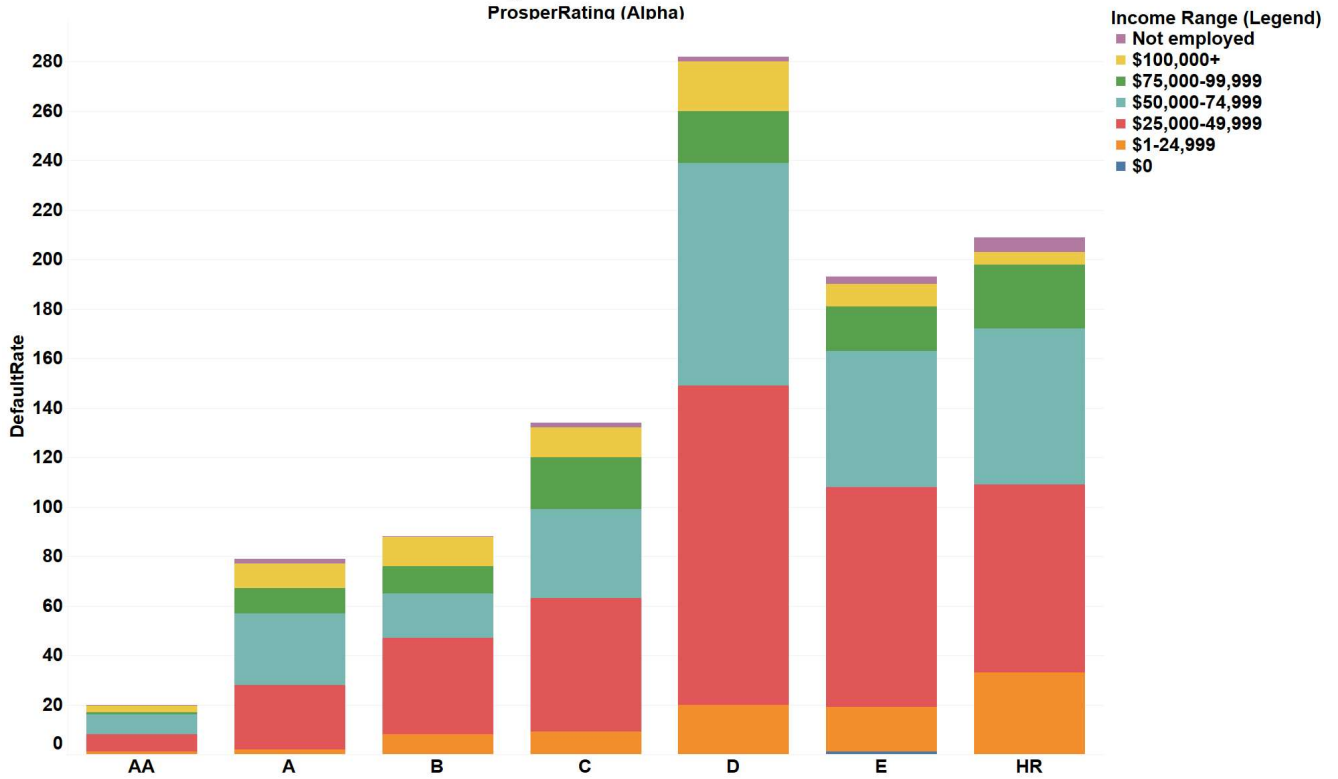
North Dakota has the highest default percentage.

Q What's the typical income range of prosper loan customers?

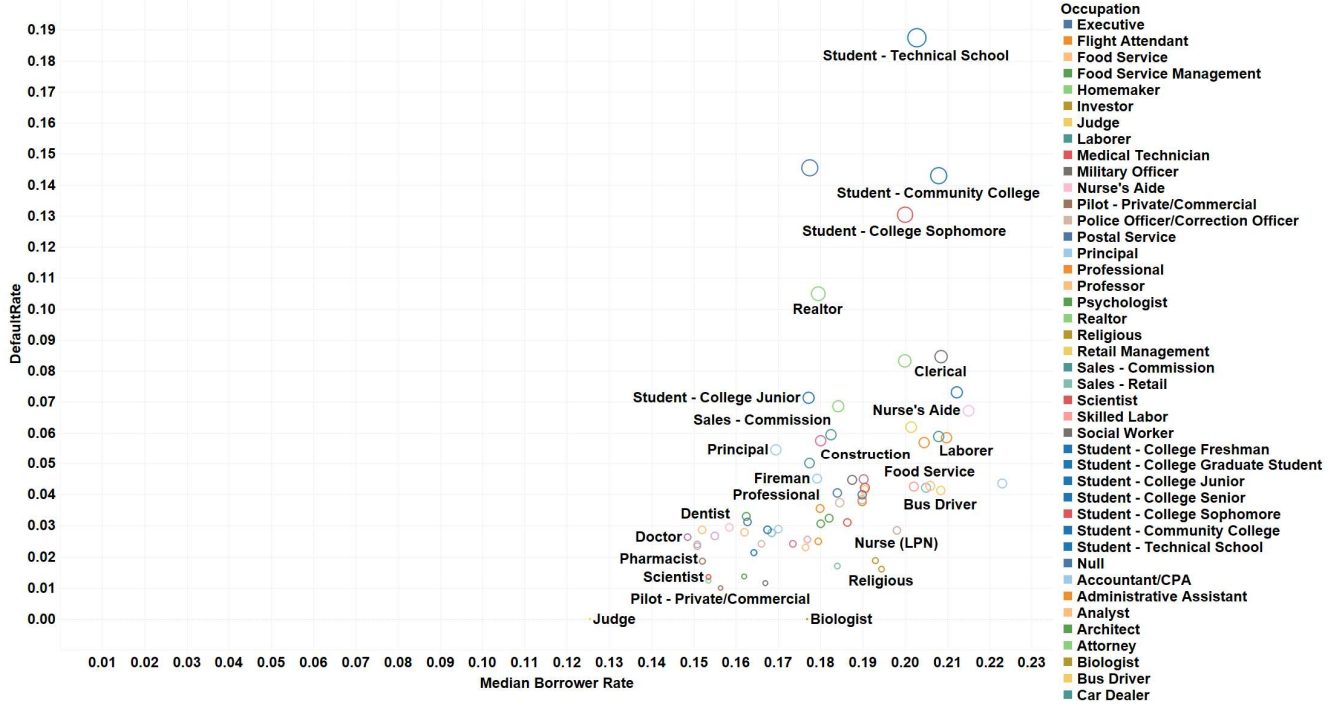
Higher Income Implies Lower Default Rate



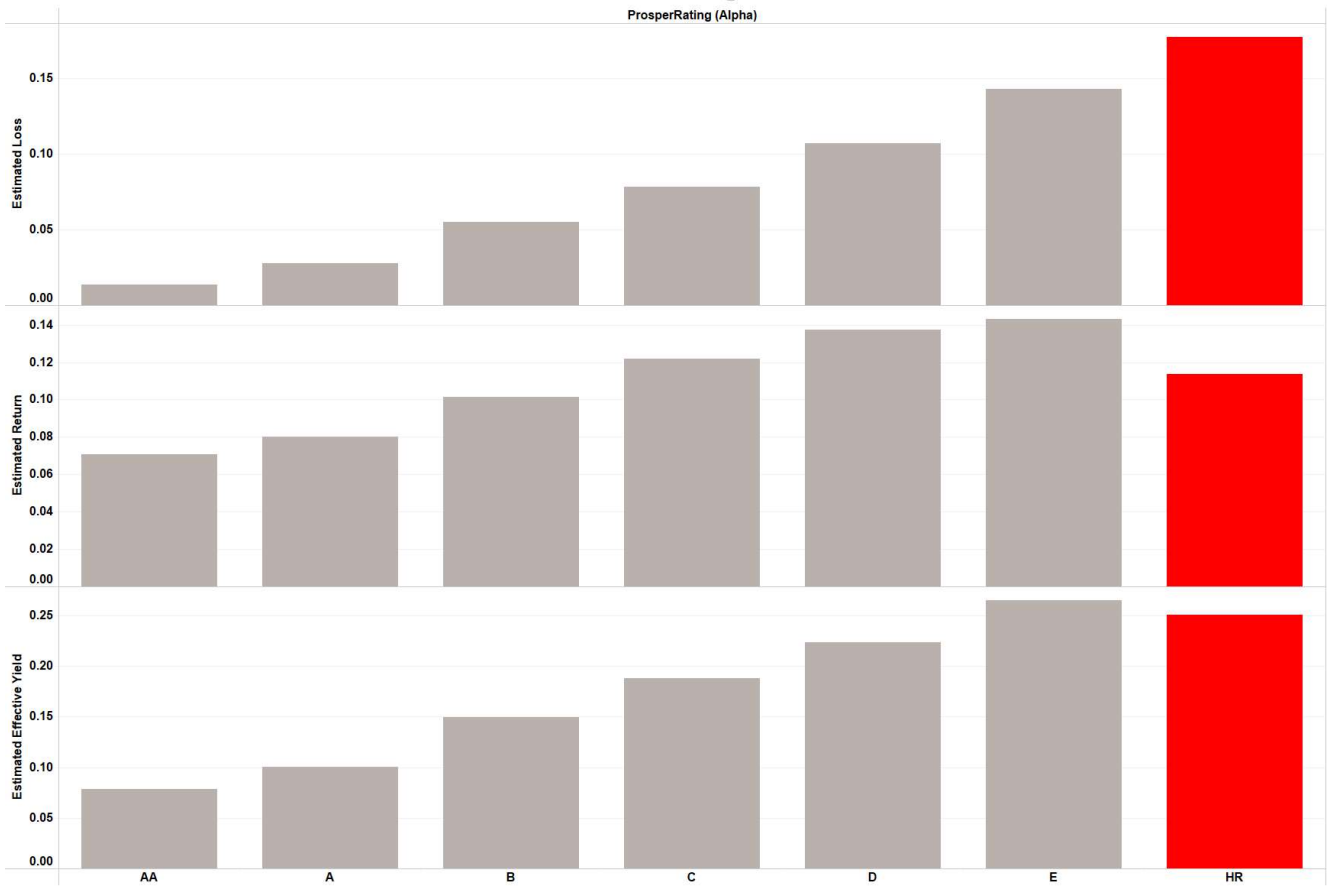
Better Credit Rating means Lower Default Rate
ProsperRating (Alpha)



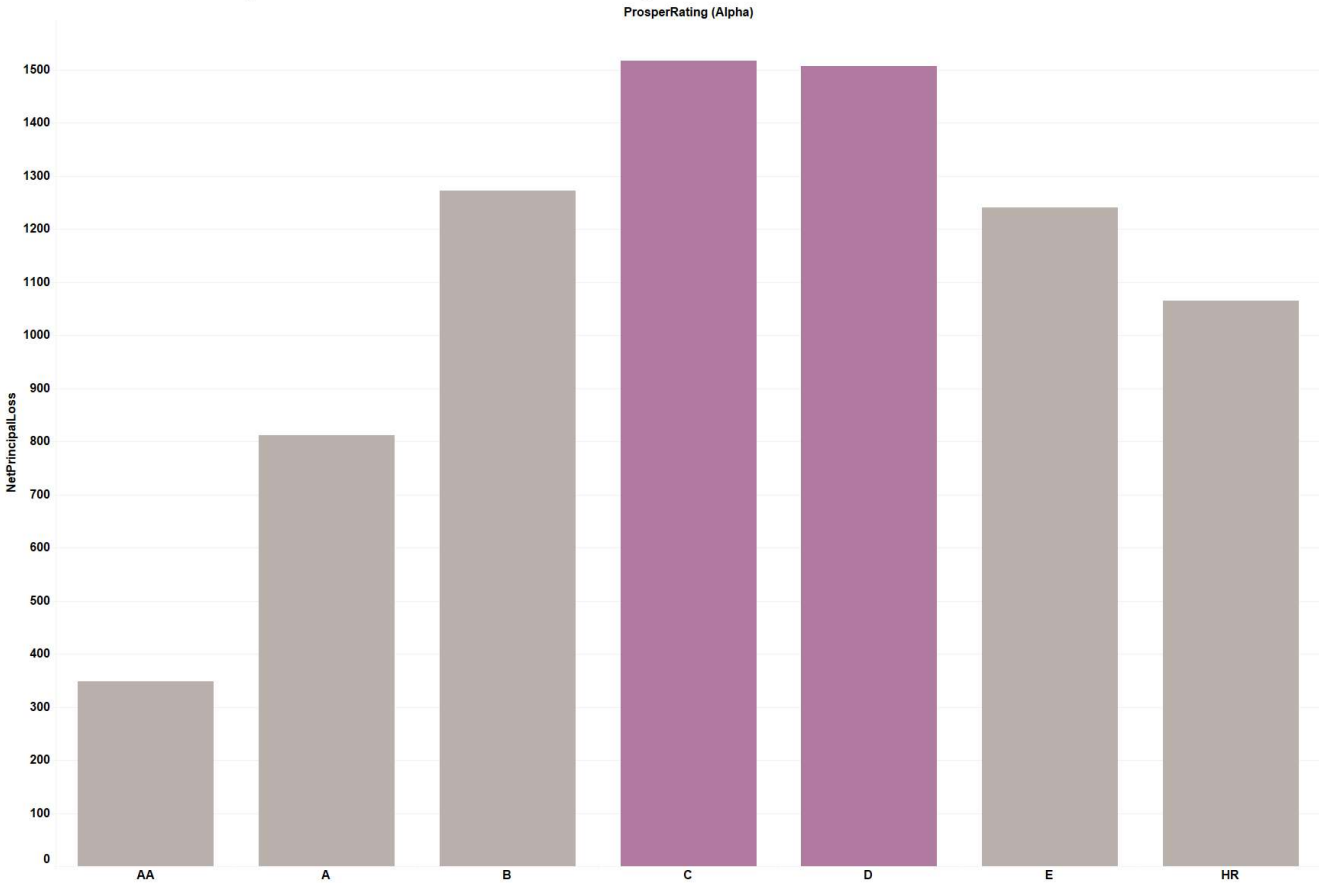
Higher Borrow Rate implies Higher Default Rate



Estimated Returns and Losses for Different Rating Loans

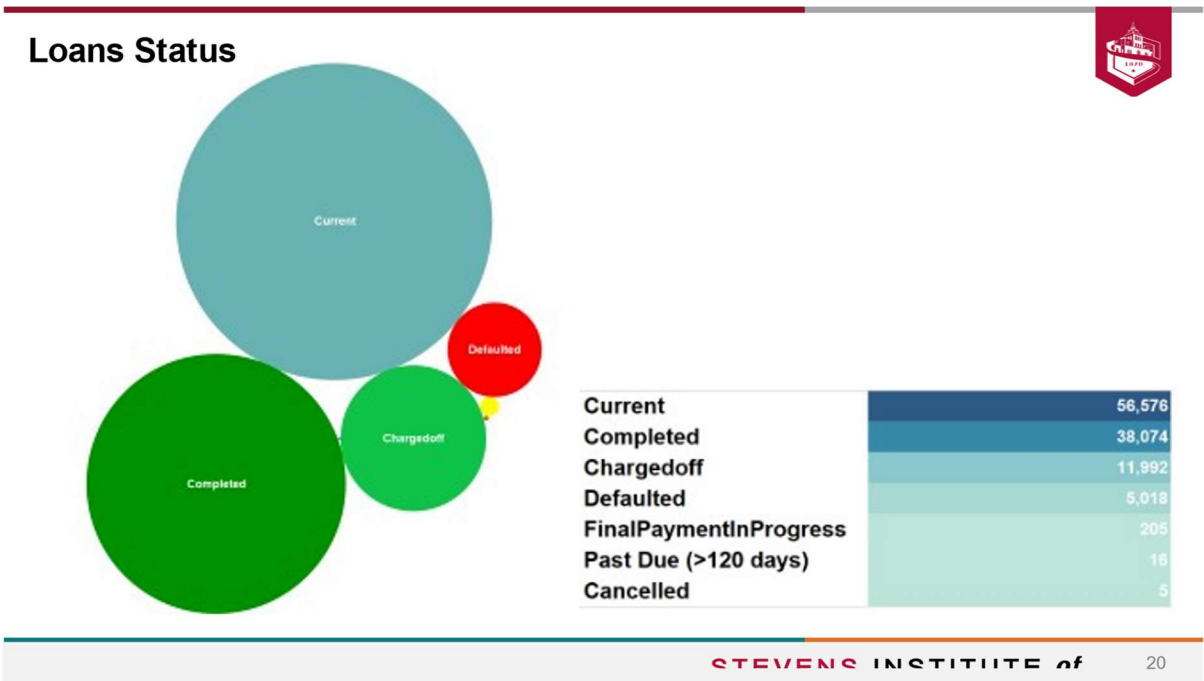


Actual Net Principal Loss for Different Rating Loans



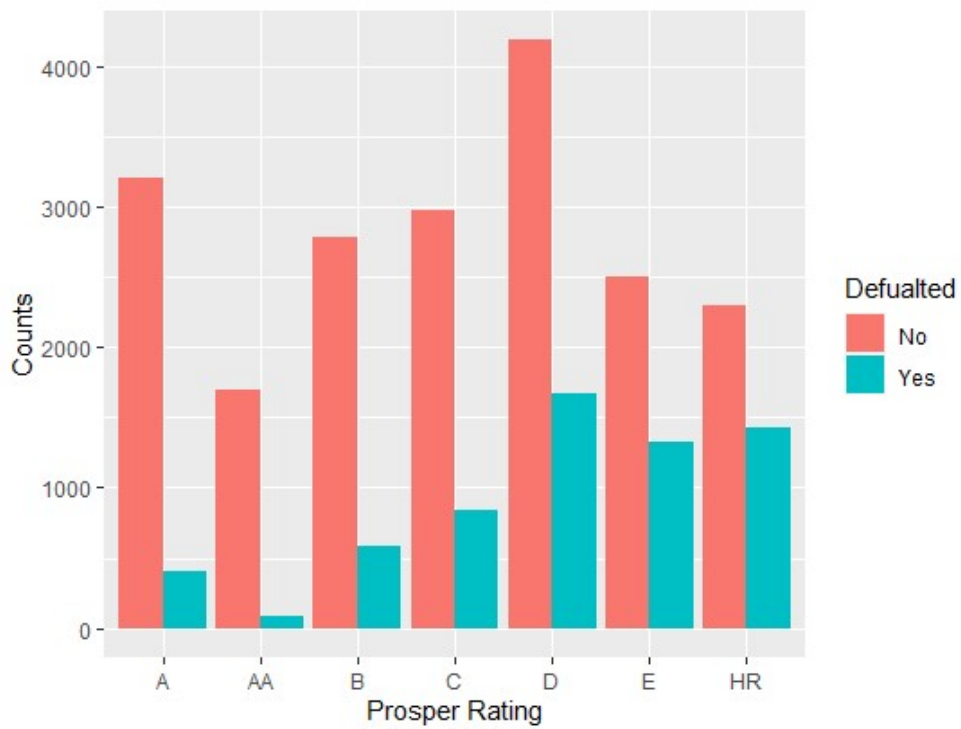
The Prosper Rating is a good indicator and the general principle is: that a higher return means higher risk. However, loans with rating HR have the highest risk but don't have the highest estimated return and loans with C&D have higher actual principal loss than E&HR. So it's not worth investing in C&D loans.

What is the overall status of loans?

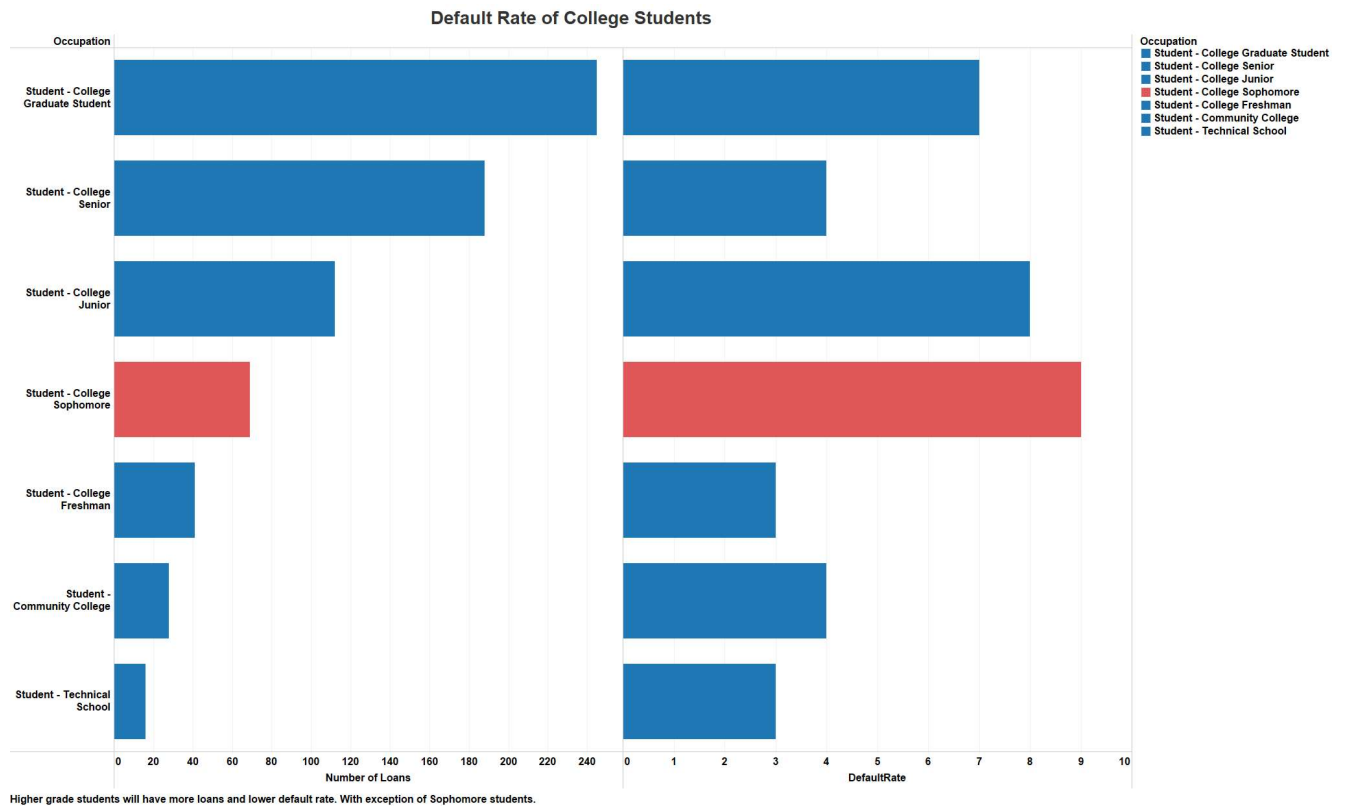


Prosper loans have 56,576 current loans and 38,074 completed loans with nearly 5000 defaults.

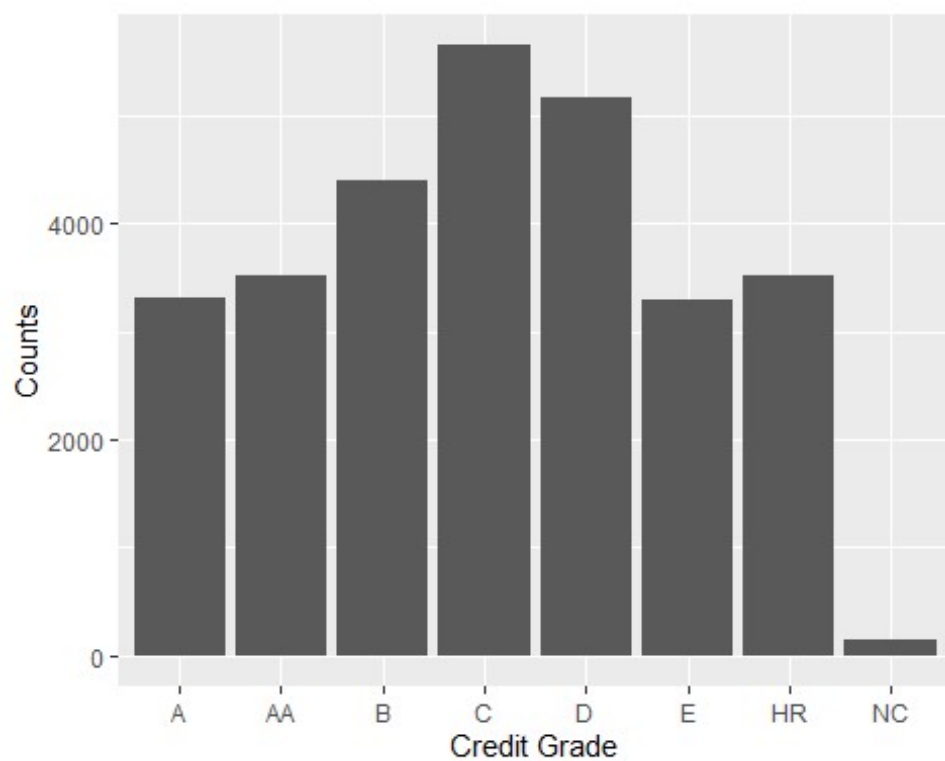
Q What are the defaults for various Prosper Ratings?



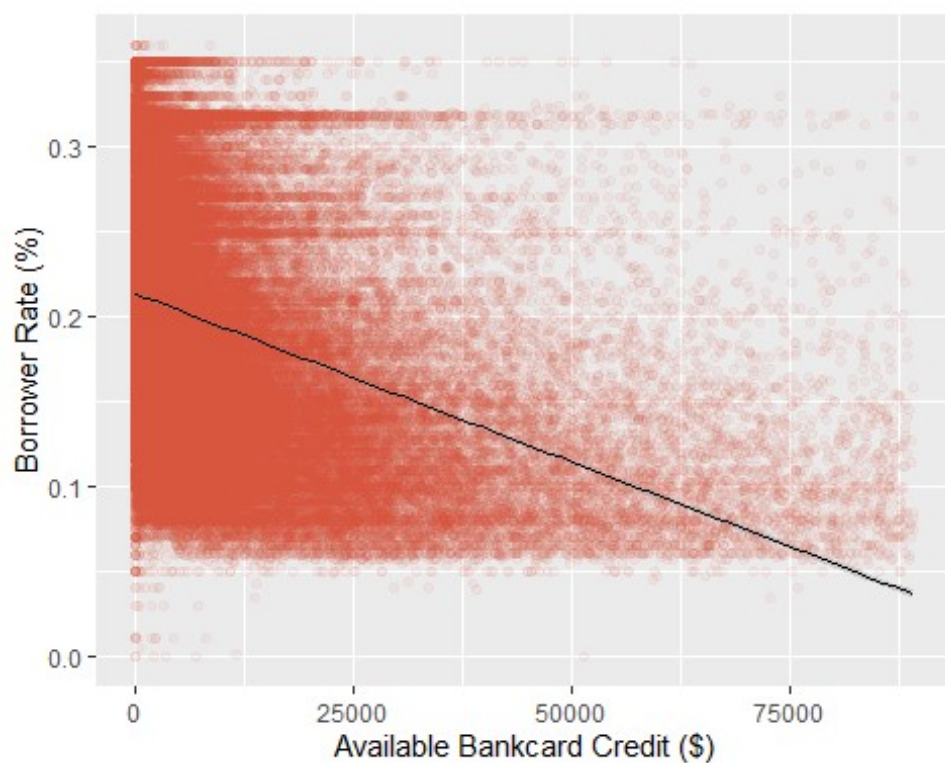
Q What are the loans and default rates among college students?



Higher grade students will have more loans and lower default rate. With exception of Sophomore students.



Most loans are categorized as C and D grade loans.



Available Bank card Credit is total available credit via bank card. It can be an indicator of a borrower's credit history. A reasonable guess is that a higher available bank card credit will lower your interest rate. This guess is proved to be true from the following plot. The points are clustered at the bottom left corner when a borrower has a relatively low credit amount (<25,000) the probabilities of getting low and high-interest rates are similar. However, when the borrower's credit amount is high (>50,000), he/she is more likely to get a lower interest rate.

Conclusions-

- The Prosper loan business has increased steadily over the time
- Most loans are debt consolidation followed by Home improvements and business loans
- Typical customers of Prosper loans are Professionals, computer programmers, executives, and teachers
- The major business state for prosper loans is California where nearly 14700 loans are disbursed.
- North Dakota has the highest default percentage
- A higher borrower rate means higher risk and high default rates
- Higher grade students will have more loans and lower default rate. With exception of Sophomore students.
- Most loans are categorized as C and D rating loans
- When the borrower's credit amount is high (>50,000), he/she is more likely to get a lower interest rate