Lending Club Investments

Problem statement

LendingClub is the first peer-to-peer lending network to register with the Securities and Exchange Commission (SEC). The LendingClub platform connects borrowers to investors and facilitates the payment of loans ranging from $1,000 to $40,000. The details of how this marketplace works are available on LendingClub's website [1]. The basic idea is that borrowers apply for a loan on the LendingClub Marketplace. Investors can review the loan applications, along with risk analysis provided by LendingClub, to determine how much of the loan request they are willing to fund. When the loan is fully funded, the borrower will receive the loan. Investors can also choose to have loans selected manually or automatically via a specified strategy. Loan details such as grade or subgrade, loan purpose, interest rate, and borrower information can all be used to evaluate a loan for possible investment.

As part of this marketplace, LendingClub makes a significant amount of the loan data that is available to investors available online. Investors can make their own investment decisions and strategies based on the information provided by LendingClub.

As with other types of loan and investment platforms, Lending Club is the site of possible discrimination or unfair lending practices. Note that Lending Club is an "Equal Housing Lender" (logo displayed in the bottom of each page of the website) which means that "the bank makes loans without regard to race, color, religion, national origin, sex, handicap, or familial status." [4] Such policies in the past have failed to stop discrimination, most publicly against loan applicants of color, especially African American applicants. Racial discrimination has continued in new forms following the federal Fair Housing Act; investors have adapted their approach to fit within the guidelines of the law while maintaining results with damaging and immoral effects on communities of color" [3]. Other systems do not explicitly discriminate against minorities but enable practices such as refusing loans from specific zip codes that in effect harm minority applicants.

With this in mind, your models should also address the issue of discrimination in loans and investments, and proactive checks should consider potential unintended consequences of a given strategy or model. Some concepts you may find useful in addressing fairness are Statistical Parity, Conditional Parity, and Predictive Equality.

Project goal: Propose, build, and evaluate a data-driven model to power your investment strategy as if you were working as a data scientist advising a LendingClub investor. Your model should consider fairness and interpretability without substantial losses to efficacy.

Data resources

The data from LendingClub is freely available online via [2]. The data is updated quarterly, and is split into two sets:

1. **Loan Data**
   These files contain complete loan data for all loans issued through the time period stated, including the current loan status (Current, Late, Fully Paid, etc.) and latest payment information. The file containing loan data through the "present" contains complete loan data for all loans issued through the previous completed calendar quarter.

2. **Declined Loan Data**
   These files contain the list and details of all loan applications that did not meet Lending Club's credit underwriting policy.

High-level project goals

1. Create a model (or models) to power your investment strategy.

2. Using your model(s), *explain* your strategy. What are the key variables driving your investment decisions?

3. Using your investment strategy, how what kind of return are you expecting?

4. Evaluate the predictive quality of your model(s).

5. Address the ethical implications of your model along the lines of fairness and discrimination. What are possible unintended effects of your model? What types of loan recipients would be advantaged or disadvantaged in your model? Are there ways you can quantify the fairness or disparities produced by your model?

References

1. LendingClub

2. LendingClub Data Download

3. For People of Color Banks are Shutting the Door to Homeownership

4. FDIC Equal Housing Lender