



Beating the Club:

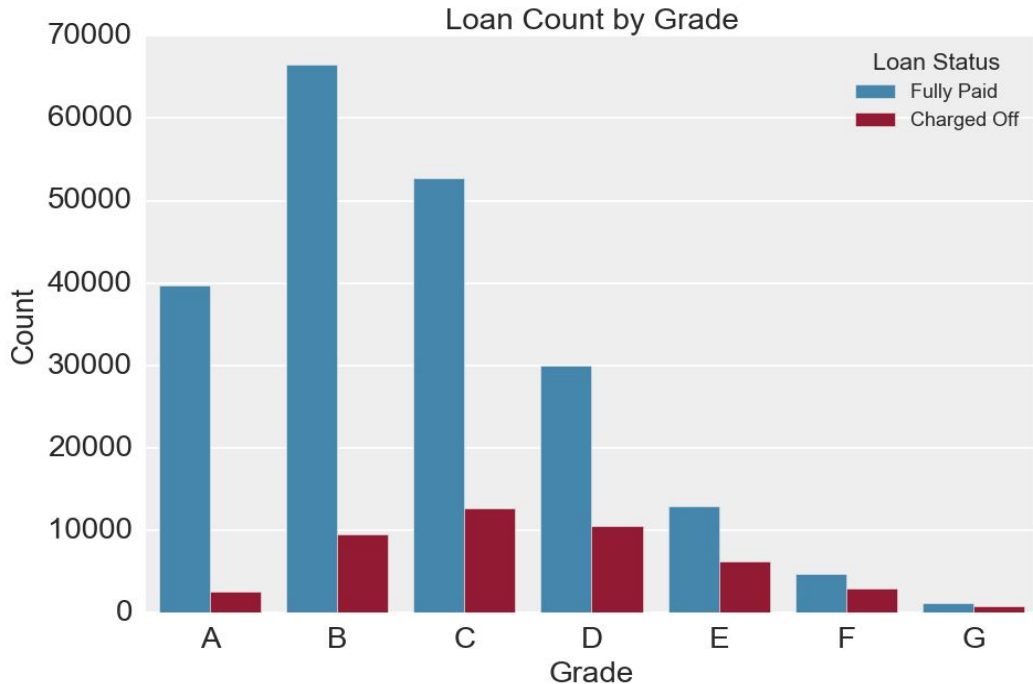
Let's Getting Rich by Classifying Good Loans

Aaron Beyer



What is Lending Club?

- Crowdfunding Loans
- Lower interest rates for Borrowers, good returns for Lenders
- Loans are given grades by risk which determines interest rates



Amount Requested **\$6,000**
Loan Purpose **Debt consolidation**
Loan Grade **E2**
Interest Rate **23.99%**
Loan Length **3 years (36 payments)**
Monthly Payment **\$235.37 / month**

Review Status **Approved** 
Funding Received **\$4,900 (81.67% funded)**
Investors **39 people funded this loan**
Listing Expires in **18d 19h (5/28/17 10:08 AM)**

Note Status **In Funding**
Loan Submitted on **4/13/17 10:08 AM**

■ **Member_113842365's Profile** (all information not verified unless noted with an "**")

Home Ownership **OWN**
Job Title **general manager**
Length of Employment **10+ years**

Gross Income **\$6,250 / month**
Debt-to-Income (DTI) **8.21%**
Location **338xx**

■ **Member_113842365's Credit History** (as reported by credit bureau on 4/13/17)

Credit Score Range: **665-669**
Earliest Credit Line **01/1995**
Open Credit Lines **16**
Total Credit Lines **25**
Revolving Credit Balance **\$5,702.00**
Revolving Line Utilization **32.40%**
Inquiries in the Last 6 Months **3**
Accounts Now Delinquent **0**

Delinquent Amount **\$0.00**
Delinquencies (Last 2 yrs) **1**
Months Since Last Delinquency **22**
Public Records On File **0**
Months Since Last Record **n/a**
Months Since Last Major Derogatory **22**
Collections Excluding Medical **0**

■ **Loan Description**

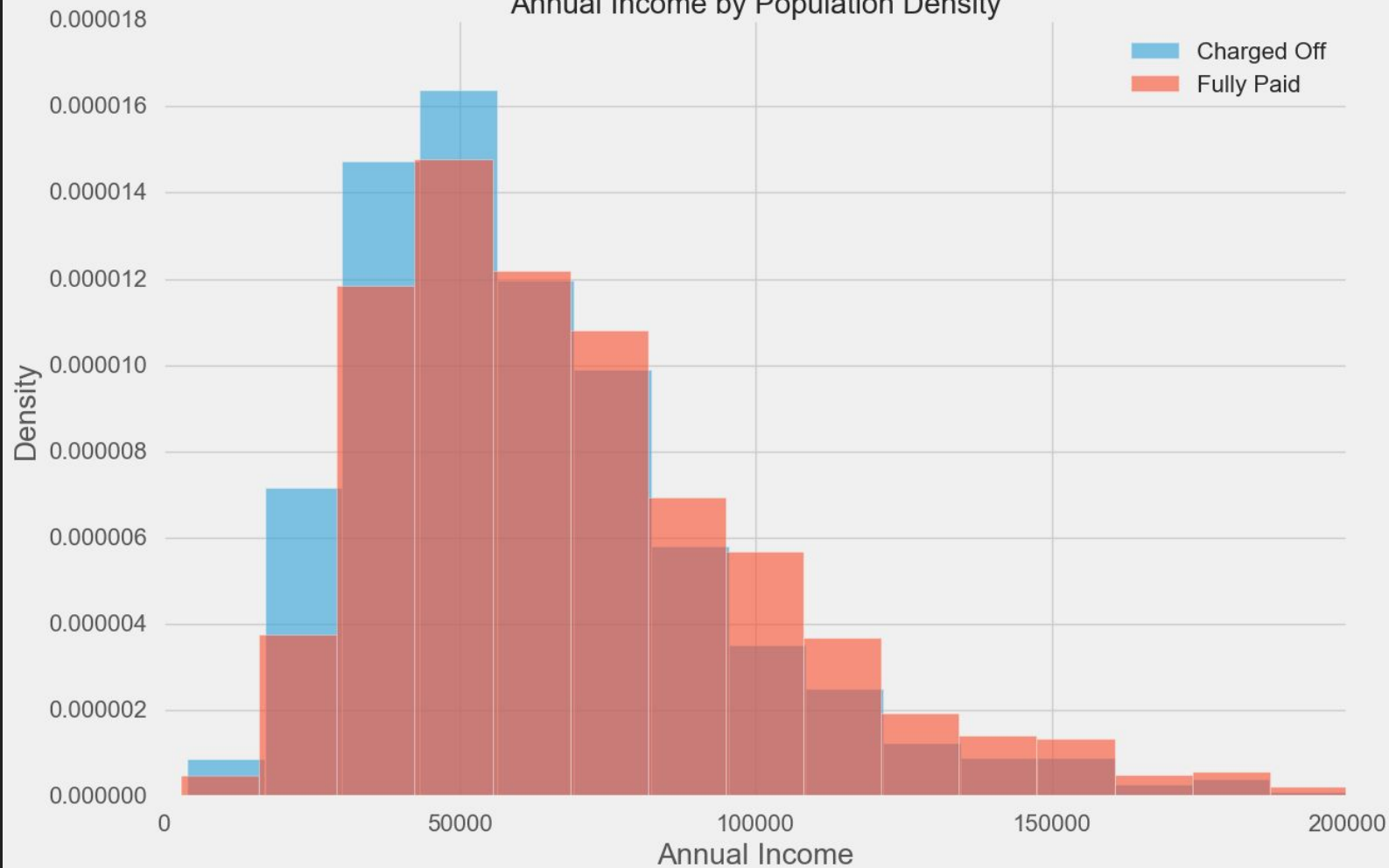
Data



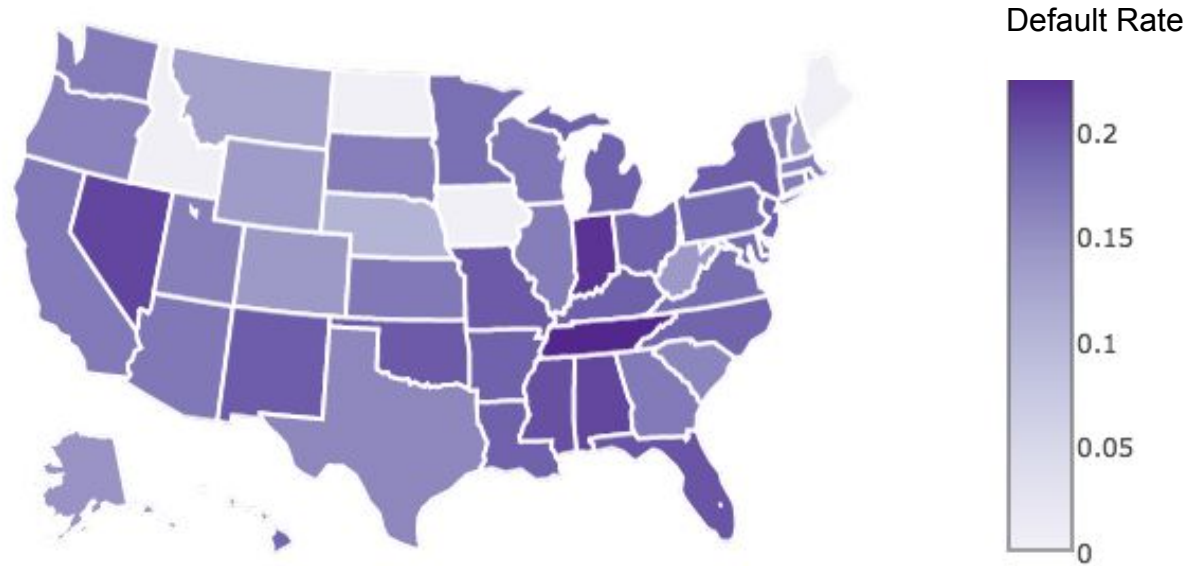
- 200,000 rows of fully paid and defaulted Lending Club loan data (2007-2015) from Kaggle
- Reason for loan, demographic information, debt-to-income ratio, etc.
- Engineered two columns: “if description” and “years of having credit”



Annual Income by Population Density

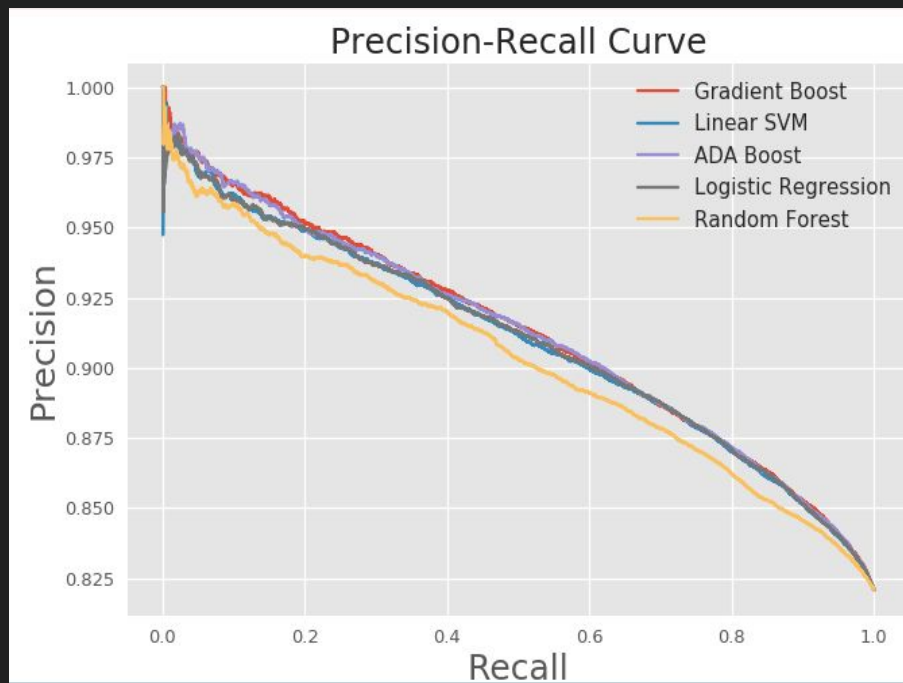
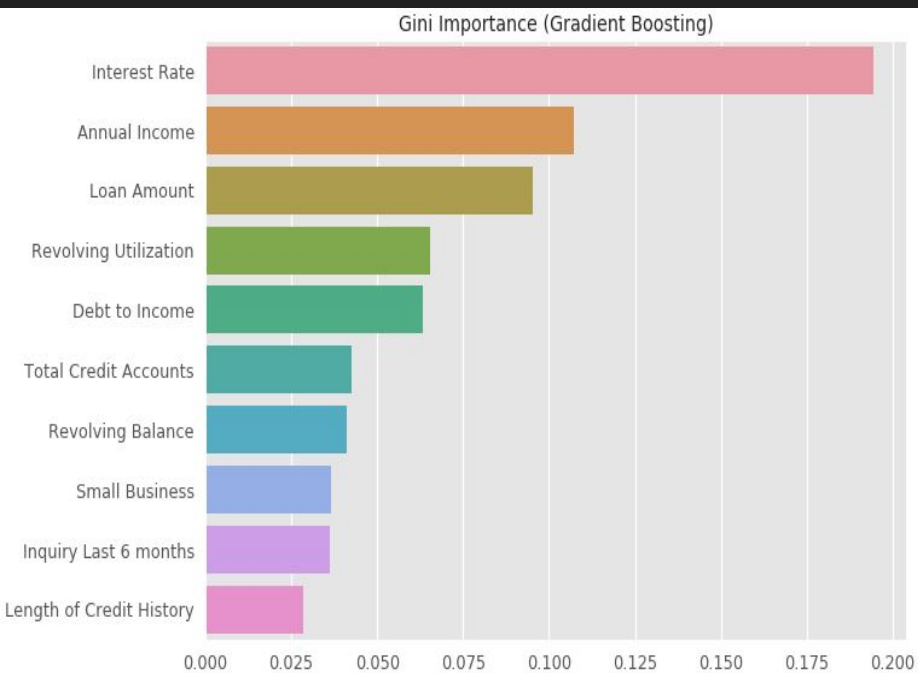


Loan Default Rates by State



Modeling

- Initially used GridSearchCV on unbalanced data.
 - Got accuracy of .82, and “Fully Paid” precision of .82.
- Downsampled “Fully Paid” data to equal that of Defaulted
 - Got accuracy of .65, and “Fully Paid” precision of .91



Future Improvements

- Analyze description and employment title text
- Focus more on riskier loans
- Get other (newer) years
- Try model on other crowdfunding loan data