FICO Credit Score Algorithm

Group 14

What is FICO?

- Fico is short for Fair Isaac and Co.
- It is the most widely used credit score.
- The Fair Isaac Company developed custom software back in the 1980s that helped other companies determine a credit risk based on a number derived from a person's credit history.
- This number soon became a standard that was adopted by the main credit bureaus: Experian,TransUnion, and Equifax.

The Score

- The FICO score ranges between 300 and 850.
- That FICO score is calculated by a mathematical equation that evaluates many types of information from your credit report, at that agency.
- By comparing this information to the patterns in hundreds of thousands of past credit reports, the FICO Score estimates your level of future credit risk.
- In general, a FICO score above 650 indicates that the individual has a very good credit history.
- People with scores below 620 will often find it substantially more difficult to obtain financing at a favorable rate.

Why is it important?

- Your credit score will follow you for your entire life and if you are ever trying to borrow money, the lender is going to look at your credit score to determine whether or not to lend money to you.
- Not only does your credit score determine whether or not you’ll receive financing, it also determines how much it will cost you to borrow that money.

Some History...

- Concept of credit scoring common practice
- Move towards quantifying credit scores
  - Russia
  - information asymmetry

Early Scorecards

- Developed in the late 1950s
- Simple sheet of cardboard
- Designed from an odds-based prediction of risk
- Help decide if a prospective applicant should be granted credit, according to the person’s responses to a series of set questions

Application Scorecard

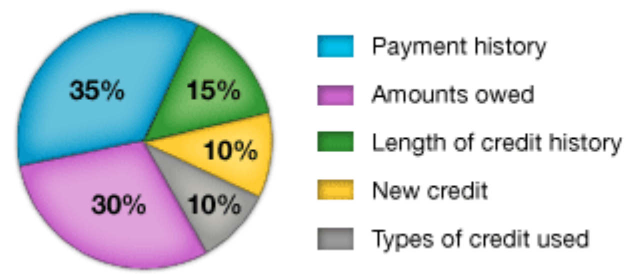
- Score
  - characteristics
- Risk factor
  - past indicative of future
- Limitations
  - not stabilized
  - dependent on sample/population/demographics

Problems

- “Good” and “Bad” was flexible
- limitations in organization
  - fairly intensive manual labor
  - incidents of destroyed records, incomplete documents, etc
  - organization structure shift from paper > electronic data entry

What is measured

- Only the information that the credit bureau has provided is used
- Payment history
- New credit
- Length of your credit history
- Amounts owed on each line of credit/loan
- Types of credit used (loans, credit cards, etc.)
- The scores between the 3 credit bureaus can vary slightly due to which credit bureau is sending the data.



What isn’t measured

- Race, color, religion, national origin, sex, and marital status
- Age
- Salary, occupation, title, employer, date employed, or employment history
  - Lenders may consider it but it is not included in the FICO score
- Where you live
- Any interest rate being charged on a particular credit card or other account

- Any items reported as child/family support obligations or rental agreements
- Certain types of inquires for your credit report
  - Consumer-initiated inquiries, promotional inquiries, administrative inquiries, or request marked as from employers are not counted
- Any information not found in your credit report
- Any information that is not proven to be predictive of future credit performance
- Whether or not you are participating in credit counseling of any kind.

What are the implications?

- What does this mean for people like you and me?

Real People Talking About the Effects

- “I genuinely wanted to help with the mortgage to show that I was an equal financial partner in my marriage. I didn’t want my husband to feel like he was taking care of me, or that I wasn’t contributing to our shared lifestyle. While my husband insists there’s no resentment whatsoever (and I believe him fully when he says it), I feel like somehow I didn’t earn the house we live in—like I’ve cheated the system to get a house I didn’t deserve.”[2]
- Her credit score was 680
- Her and her husband both just got raises at work, and had two salaries
- She never had any red flags and no late payments

People are just numbers?

- “According to the Fair Isaac Corp., the inventors of the modern credit score, credit scores are important enough in calculating the terms of a loan that it is possible to estimate an individual's interest rate and monthly mortgage payment based only on her score.”[1]
- People just being reduced to numbers?
    - Credit Score, income, number of credit cards, number of missed payments, etc.
- Any room for justification?

How does your credit get used?

- Your credit report reveals many aspects of your borrowing activities.
- All pieces of information should be considered in relationship to other pieces of information.
- The ability to quickly, fairly and consistently consider all this information is what makes credit scoring so useful.
- Lenders and other businesses use the information in your credit report to evaluate your applications for credit, loans, insurance, or renting a home.

Consequences of having bad credit

- Consequences: Companies, lenders may not trust you enough to loan money to, etc
  - Can affect the difficulty in purchasing certain things
  - May have to put a bigger down payment for buying cars or appartments, etc
  - Interest rate may be higher
  - May not receive the loan that you want to get

How to improve your credit

- Questions to consider when improving your credit:
  - Have you paid your bills on time?
  - Are you maxed out?
  - How long have you had your credit?
  - Have you applied for new credit lately?
  - How many credit accounts do you have and what kind of accounts are they?

What does it mean that our lives are reduced to numbers?

- Due to the importance of credit scores, it forces individuals to use lines of credit even if they don’t need to.
- Having no credit is almost as bad as having bad credit
- Encourages people to live beyond their means
- To build a good credit score an individual has to utilize the multiple types of credit (revolving, installment, etc.)

- Purchasing anything from homes/apartments to cars to cell phones rely in some way on your credit score as well as small business loans.
- Can also prevent you from getting jobs.
- Your credit score dictates many facets of your life and a number becomes the sole relevant attribute of your character to any potential lender.

[redacted]

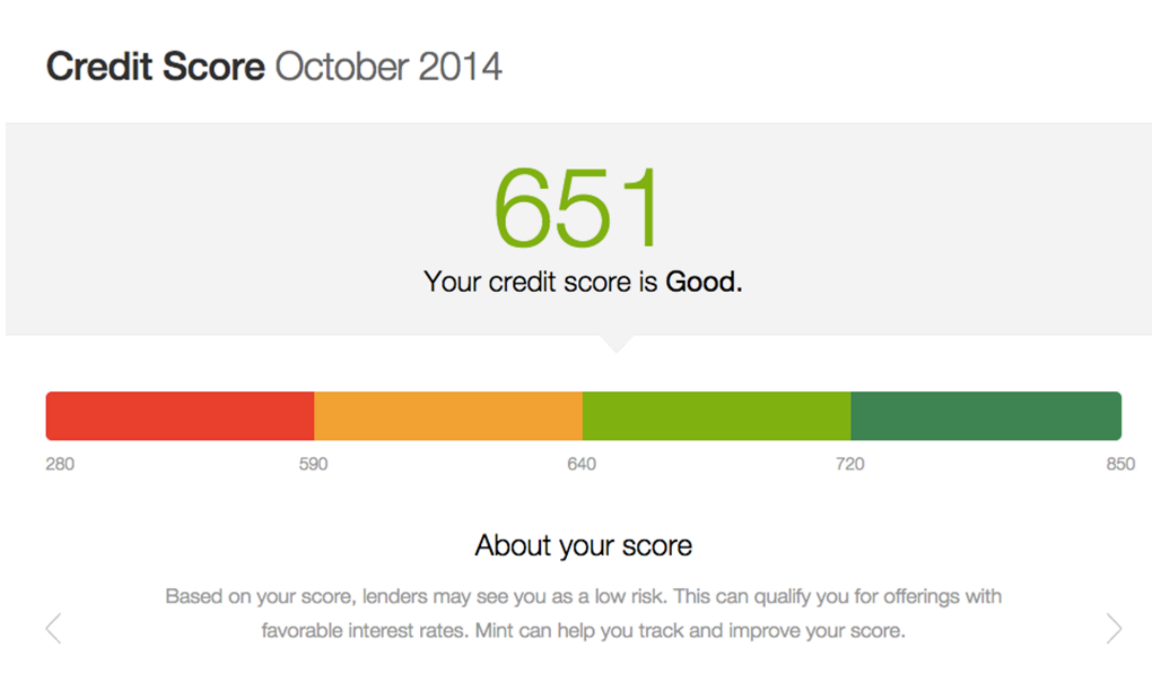
How do they calculate your credit score?

CREDIT SCORE

What your credit score is based on:
35% payment history (How reliable you are. Late payments hurt you.)
30% amounts owed (How much you owe and how much credit you have available, or your credit utilization rate.)
15% length of history (How long you've had credit.)
10% new credit (Older accounts are better because they show you're reliable.)
10% types of credit (For example, credit cards, student loans. Varied is better.)

My own credit score

Using a personal finance tool called Mint



[redacted]

Pretty good

But what does it mean?

If I got a mortgage

I would pay approximately $40,000 more than someone with a credit score in the best range.

On a $200,000 30-year mortgage, if your FICO score is . . .	. . . your APR* (interest rate) will be . . .	. . . with interest, you'll pay a total of . . .
760–850 (best range)	4.384%	$359,867
700–759	4.606%	$369,364
680–699	4.783%	$377,021
660–679	4.997%	$386,381
640–659	5.427%	$405,515
620–639 (worst range)	5.973%	$430,427

Live Demo

FACO Credit Score

(Algorithm Bias)

https://www.dropbox.com/s/3bgv4dgb02jpx30/faco.py?dl=0

Sources

- [1]How Important Is Your Credit Score for Mortgage Loans? http://homeguides.sfgate.com/important-credit-score-mortgage-loans-7580.html
- [2]http://www.learnvest.com/2014/03/how-my-credit-score-almost-cost-me-my-dream-house/
- FICO Credit Score http://www.myfico.com/CreditEducation/WhatsInYourScore.aspx
- 10 Side Effects of Bad Credit http://credit.about.com/od/creditrepair/tp/bad-credit-side-effects.htm#
- A Bad Credit Score Affects A Lot More Than Credit http://www.forbes.com/sites/heatherstruck/2011/07/20/credit-score-fico-can-hurt-you/