4-2022

Bias in Mortgage Approval Algorithms

Carter Steckbeck '22

Bias in Mortgage Approval Algorithms

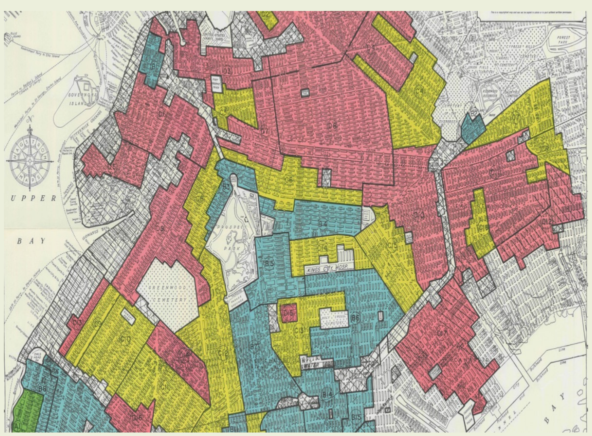
Carter Steckbeck • April 26th, 2022 • Math 498

Introduction

For the mortgage approval process, individuals must send in applications with their information such as race, sex, income, and credit score, amongst other information. In recent years, financial institutions are using machine learning algorithms for the mortgage approval process. Utilizing hundreds of complex variables, they decide whether an applicant gets approved. Recent studies have shown that people of color are disproportionately denied at higher rates for mortgages compared to White individuals.

History

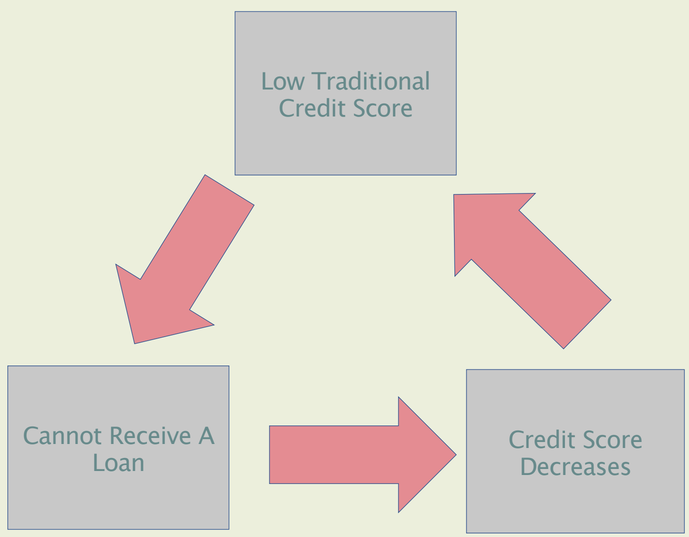
Throughout the history of the United States, racial discrimination has always existed in the mortgage lending process. In 1934, the Federal Housing administration was created with the idea of facilitating home financing. However, the FHA explicitly discriminated against people of color, citing that it was ”hazardous” to mortgage loans in predominantly Black areas. The term “redlining” was created to reflect the red lines banks would draw on maps to section out predominantly-Black neighborhoods. These sections would be classified as dangerous and individuals from these areas were rejected for loans.



Map of Redlining in Brooklyn, New York circa 1938

Analysis

With the development of Computer Science, algorithms were created to speed up the mortgage approval process. However, the methods that financial institutions use in their algorithms are problematic. When looking at applicants with the same qualifications, lenders were 40% more likely to turn down Latino applicants, 50% more likely to deny Asian/Pacific Islander applicants, and 80% more likely to reject African American applicants. The algorithm largely takes into account ”traditional credit”, which is thought to be more beneficial to White individuals as opposed to people of color. Traditional credit refers to the amount of debt an individual has and whether they make payments on time, such as credit card accounts and other loans. People of color historically do not have high traditional credit scores and consequently get rejected at a higher rate. A toxic cycle ensues where people of color have low traditional credit scores, which causes them to not be approved for loans and decreases their credit scores.



Fixing the Issue

- There are a couple of solutions that can be instituted to help/solve the bias in mortgage approval algorithms:
  - Ban the use of race in the approval process of getting a mortgage
  - Stopping the use of machine learning algorithms until they can approve candidates in a non-racially biased manner
  - Tweak the variables used in the algorithms that could potentially put a higher weight on race (traditional credit)
  - Consider other payment variables, such as rent, utilities, cellphone bills, etc.
- Although solutions exist, the efficiency of using algorithm as opposed to human approval outweigh the negatives for financial institutions
- Change must be instituted at the state/federal level for bias to be remedied significantly

References/Sources

Little, Becky. “What Is 'Redlining'?” *History.com*, A&E Television Networks, 20 Oct. 2020, https://www.history.com/news/housing-segregation-new-deal-program.

Associated Press. *The Secret Bias Hidden in Mortgage-Approval Algorithms*. 25 Aug. 2021, https://www.usnews.com/news/us/articles/2021-08-25/the-secret-bias-hidden-in-mortgage-approval-algorithms.

Quillian, Lincoln, et al. “Racial Discrimination in the U.S. Housing and Mortgage Lending Markets: A Quantitative Review of Trends, 1976–2016.” *Ebook Library Libgen.ggfwzs.net*, Jan. 2020, https://libgen.ggfwzs.net/book/80583410/632661.