Artificial Intelligence and Algorithmic Lending Have the Potential to Reduce Discrimination in Mortgage Lending

Non-bank lenders and the racial homeownership gap

Kevin B. Kimble, Esq.
Founder and CEO
Financial Services Innovation Coalition

William Michael Cunningham
Economist
Creative Investment Research

Abstract

It is widely accepted that the key ingredient to accumulating wealth in the U.S. is homeownership. Unfortunately, racial discrimination in the housing and lending industry has limited the ability of minority populations, particularly African Americans, to participate in this traditional means of wealth-building.

While the traditional housing finance system has a long history of discriminatory actions against African Americans and other minorities, the creation and deployment of technologies that remove much of the human element has been a path toward reducing discrimination in the system.

But, the question remains, can evolving artificial intelligence (AI) and algorithmic lending help address the systemic challenges of discrimination in the housing sector by shrinking and potentially eliminating racial bias in mortgage lending?

As the use of artificial intelligence grows across the U.S. mortgage industry, the technology has been rightly subjected to increased scrutiny. Its use of biased data has continued to result in prejudiced outputs, especially as it relates to African Americans.

This paper will review the intersection of the historical discrimination in housing in the U.S. and algorithmic lending. While studies have shown that AI and algorithmic lending reduce racial disparities, disparate treatment still exists.

Based on the evidence provided, this paper demonstrates 1) the obstacles mortgage lenders face in creating non-biased underwriting, 2) the progress in eliminating those biases, and 3) the path forward to continuing to reduce bias in algorithmic lending.

AI and Algorithmic Lending Has the Potential to Reduce Discrimination in Mortgage Lending

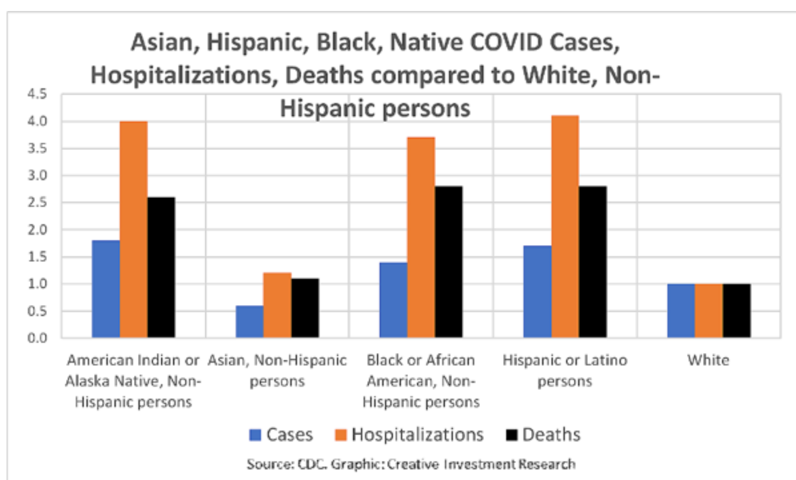
It is stunning, yet telling, that amid the current COVID-19 inspired recession, housing prices and values are growing by 14.4% year over year to a median value of $333,942.[1]

Housing Market Overview		
Median Sale Price	# of Homes Sold	National Avg. 30- Year Fixed Mortgage Rate
$333,942	**647,740**	**2.90%**
+14.4% year- over-year	+21.7% year- over-year	-0.7% year-over- year

People have been forced to retreat into their homes, thereby elevating the value of the asset. This confirms the importance of housing and reinforces that homeownership is still the number one source of wealth for most Americans.

Assets by wealth percentile group in 2020: Q2					
Wealth component (Tr US $)	Top 1%	90-99%	50-90%	Bottom 50%	Total
Real Estate	4.50	9.30	13.34	3.62	30.76
Consumer Durables	0.76	1.27	2.44	1.36	5.83
Pension Entitlements	14.04	9.58	3.00	0.16	26.78
Private Business	1.50	13.34	12.06	0.81	27.71
Other Assets	6.59	4.01	1.63	0.20	12.43
From: Federal Reserve, Distribution of Household Wealth in the U.S. since 1989					

In a pandemic, homeownership may have critical added value since the ability to isolate successfully may be related to single family home occupancy. The communal basis – including close proximity – of most rental housing tends to expose residents to more opportunities to be exposed to COVID-19, as do group homes and intergenerational living. This elevated level of exposure may be a factor in observed rates of COVID-19 cases, hospitalizations and deaths in minority communities.



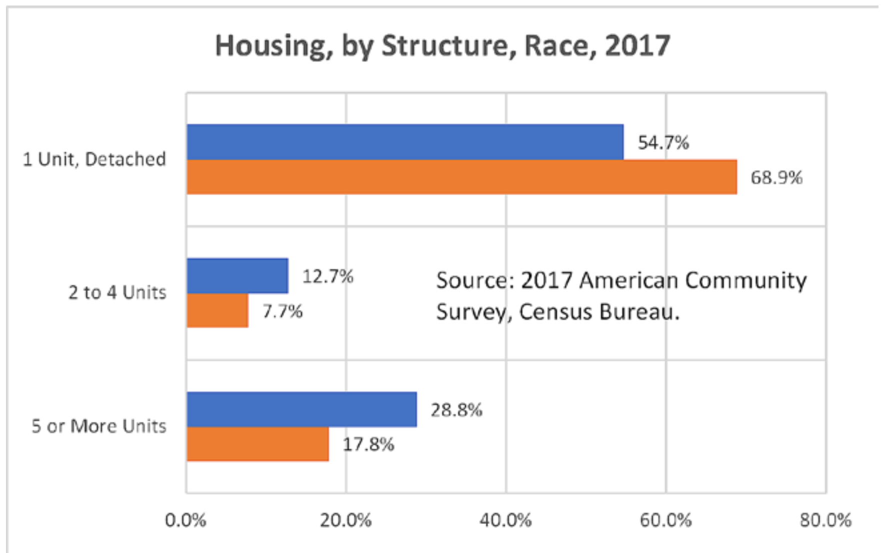
1"Single-family existing home prices rose in all measured metro areas in the third quarter. 65% of metro areas had double-digit price gains. The monthly mortgage payment on a typical single-family home rose to $1,059 and the family income needed to afford a home rose to $50,819." Metro Home Prices Increase in All Areas in Third Quarter of 2020. National Association of Realtors. https://www.nar.realtor/newsroom/metro-home-prices-increase-in-all-areas-in-third- quarter-of-2020

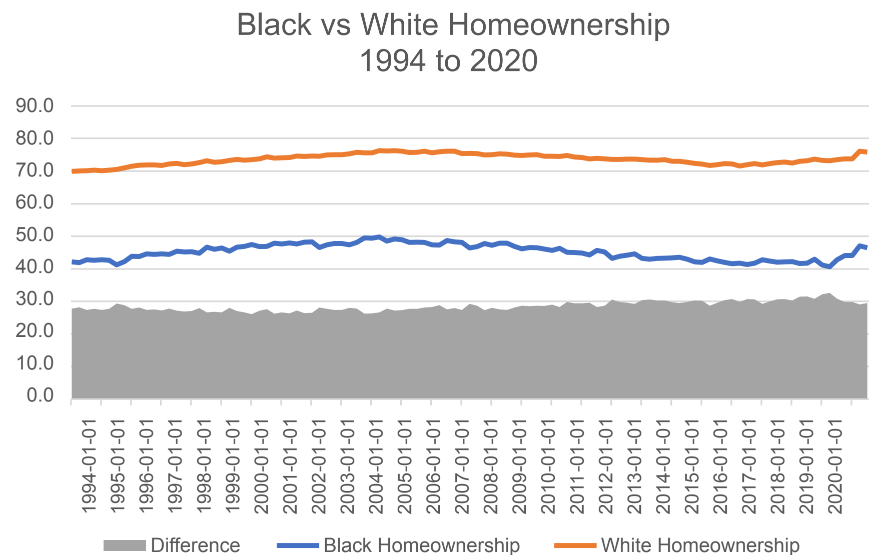
Unfortunately, for many minorities, particularly African Americans, the current crisis will only exacerbate housing and wealth gaps. Black homeownership dropped to historic lows in 2018 and conventional, traditional banking institutions have proven themselves unable to implement fair, legally compliant, and inclusive lending policies.

This is evidenced by the slew of minority-based housing programs generated by traditional banking institutions such as Citibank and Wells Fargo.[2]

However we note that special minority homeownership programs such as these are
an admission that these banks cannot make standard bank loans work for minorities, confirming institutional bias.

We believe non-bank lenders may provide an opportunity to address the racial homeownership gap. This contention is, however, subject to verification. It is incumbent on these entities and policymakers to ensure that these new and innovative lenders do not fall into the same discriminatory lending patterns exhibited by traditional banks.[3]





Mortgage lending discrimination occurs when financial institutions, required capital suppliers in the home purchase transaction process, use ethnic (racial) factors to determine a borrower's creditworthiness. These factors are established by Fannie Mae, Freddie Mac, and Ginnie Mae – government-sponsored enterprises (GSEs) which guarantee over 90 percent of mortgages in the U.S.[4]

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2. "Citi Launches More Than $1 Billion in Strategic Initiatives to Help Close the Racial Wealth Gap" September 23, 2020. https://www.citigroup.com/citi/news/2020/200923a.htm and Troy McMullin, "Bank programs seek to widen the path to Black homeownership" The Washington Post, October 29, 2020. https://www.washingtonpost.com/realestate/bank- programs-aim-to-widen-the-path-to-minority-homeownership/2020/10/28/ff5edcfa-12f7-11eb-ad6f- 36c93e6e94fb_story.html

3. Quillian, L., Lee, J.J. & Honoré, B. Racial Discrimination in the U.S. Housing and Mortgage Lending Markets: A Quantitative Review of Trends, 1976–2016. Race Soc Probl 12, 13–28, 2020. https://doi.org/10.1007/s12552-019-09276-x

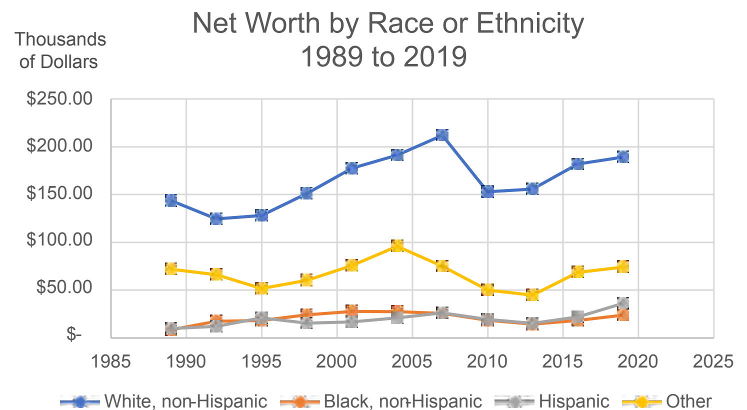
4. https://www.pennymacusa.com/blog/understanding-the-roles-of-fannie-mae-and-freddie-mac

For Whites, the use of racial factors generally results in an overestimation of creditworthiness. For Blacks, the opposite is true. Racial discrimination in mortgage lending is one of the key factors contributing to the persistent racial wealth gap, the difference between Black and White wealth, or net worth, in the U.S. today.

Net worth by race or ethnicity (Thousands of Dollars)	White, non- Hispanic	Black, non- Hispanic	Hispanic	Other
1989	$ 143.56	$ 8.55	$ 9.94	$ 72.00
1992	$ 124.60	$ 17.70	$ 12.14	$ 66.41
1995	$ 128.20	$ 18.23	$ 20.87	$ 51.88
1998	$ 150.96	$ 24.38	$ 15.46	$ 60.40
2001	$ 177.50	$ 27.87	$ 16.90	$ 75.82
2004	$ 191.11	$ 27.66	$ 20.80	$ 96.12
2007	$ 211.73	$ 25.92	$ 26.05	$ 75.18
2010	$ 152.88	$ 18.73	$ 19.50	$ 50.31
2013	$ 155.83	$ 14.36	$ 15.15	$ 44.98
2016	$ 181.87	$ 18.24	$ 22.04	$ 68.73
2019	$ 189.10	$ 24.10	$ 36.05	$ 74.50

Source: Board of Governors of the Federal Reserve System. Survey of Consumer Finances, 1989 - 2019.

Laws and regulations designed to limit mortgage lending discrimination have been implemented, but to date, been largely ineffective[5] in the face of regulatory capture[6], consistent and determined bigotry, and shifting public attitudes about the need to reduce the economic impact of racism.
Using artificial intelligence and algorithmic-based underwriting and lending systems, lenders have made gains in implementing fairer practices, but as the numbers demonstrate, more needs to be done. A recent study[7] demonstrated that AI-based systems reduced racial bias by 40% and show no discrimination in rejection rates.



One of the significant issues that will undoubtedly remain is the pervasive and persistent impact of institutionalized, systemically racist lending policies of the last 400 years. Because loan underwriting is based on credit and payment history, any credit analysis system that uses data from the past will have an embedded racial bias.

5. Wells Fargo, the third-largest bank in the United States, acknowledged that it improperly foreclosed on 545 distressed home-owners after they asked for help with their mortgages. See: Time to clean house at Wells Fargo, American Banker Newspaper, November 20, 2018. https://www.americanbanker.com/opinion/time-to-clean-house-at-wells-fargo

6. "Regulatory capture is an economic theory that says regulatory agencies may come to be dominated by the industries or interests they are charged with regulating. The result is that an agency, charged with acting in the public interest, instead acts in ways that benefit the industry it is supposed to be regulating." https://www.investopedia.com/terms/r/regulatory- capture.asp

7. Bartlett, Robert, Adair Morse, Richard Stanton, and Nancy Wallace, "Consumer-lending discrimination in the FinTech era" (No. w25943) National Bureau of Economic Research, 2019.

Legacy of Discrimination in the US Housing Market

A recent article by Axios documents the discriminatory underpinnings of the U.S. housing market[8], noting that the government had partnered with the private sector for decades to prevent Black Americans and immigrants from owning homes. The article notes, "While explicit rules regulating where people of color live were outlawed in 1968, the legacy of racial segregation in undervalued neighborhoods still reverberates throughout the country."

Federal and state governments created policies to maintain and intensify segregation, while the business community supported the ongoing discrimination by using racial criteria to make decisions about lending, property valuation, and rental rates.[9]

This discrimination was enforced in two ways: racial covenants and redlining. Racial covenants were started in the 1920s when realtors and developers wrote language into deeds to prevent anyone who was not White from buying property. Redlining began in the 1930s when the Federal Home Owners' Loan Corp. created "residential security maps" based on lenders, developers, and appraisers' evaluations. The lowest rated, "hazardous" areas, were outlined in red. The maps reinforced racial and income segregation deterred investment in non-White communities and depressed home values.

The National Association of Realtors recently issued a public apology for its past actions. An excerpt from the Realtor Code of Ethics 1924-1950 read: "A Realtor should never be instrumental in introducing into a neighborhood a character of property or occupancy, members of any race or nationality, or any individuals whose presence will clearly be detrimental to property values in that neighborhood."

Moreover, while the redline maps are gone, the inequality they helped create has endured. This has limited African Americans' ability to build wealth through the value of a home, resulting in generations upon generations of economic loss through lack of inheritance.

8. "Hard Truths Deep Dive: Race and housing in America" Axios AM, December 19, 2020. https://www.axios.com/hard- truths-deep-dive-housing-america-1d5309d2-700f-4050-b1cb-5a115d7a9a3b.html

9. Beryl Satter, "Family Properties: Race, Real Estate, and the Exploitation of Black Urban America" 1st Edition

Analysis of the Impact of Technology on the U.S. Consumer and Mortgage Finance System

Technology has consistently led to the growth of consumer finance in the United States. Following WWII, increases in household income and wealth, as well as demand for many banking products increased. "Innovation" in the financial services sector led to advances including the development of electronic banking, direct deposits, and automated teller machines (ATMs). It also led to further reductions in the cost of providing transactional services. This, in turn, increased consumer utilization of credit and debit cards, mutual funds, and different forms of mortgages.

> ***The failure of traditional banks to efficiently and effectively meet the needs of all sectors of the economy paved the way for the introduction of non-bank lenders. These entities used technology to lower costs, cheaply market their products, and improve product delivery.***

While many have claimed that this "increasing variety of products accompanied broadening access," we disagree. The financial crisis of 2008-2009 led to a 52% decline in Black homeownership, a decline from which the Black community has still not recovered. This inexorably led to a precipitous decline in Black wealth: "Between 2005 and 2009, the median net worth of black households dropped by 53 percent, while White household net worth dropped by 17 percent."[10]

While "innovations" meant that more White people "could get mortgages and purchase homes, more people could invest in low-cost portfolios through mutual funds and exchange-traded funds," this broadening of financial service product offerings did not increase income and wealth in the Black community. In fact, "financial innovation" was used to lower Black wealth: "During the housing crisis, Black households faced foreclosure at twice the rate of their White neighbors, largely because Black homeowners were targeted with subprime loans."[11] The failure of traditional banks to efficiently and effectively meet the needs of all sectors of the economy paved the way for the introduction of non-bank lenders. These entities used technology to lower costs, cheaply market their products, and improve product delivery.

In 2013, non-bank lenders accounted for fewer than 40% of all loans, but by May 2019, these lenders[12] wrote nearly two-thirds of all new mortgages. Loans originated by non-bank lenders comprise 86% of all loans backed by the Federal Housing Administration (FHA), part of the Department of Housing and Urban Development (HUD), the Department of Veterans Affairs, and the Department of Agriculture.[13] These loans are more likely to go to first-time homebuyers and Black and Latino households than loans backed by Fannie Mae and Freddie Mac.

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10. Rebecca Tippett, Avis Jones-DeWeever, Maya Rockeymoore, Darrick Hamilton, and William Darity, Beyond Broke: Why Closing the Racial Wealth Gap Is a Priority for National Economic Security, Center for Global Policy Solutions, May 2014. 11 Troy McMullen, "The 'heartbreaking' decrease in black homeownership: Racism and rollbacks in government policies are taking their toll." The Washington Post. February 28, 2019. https://www.washingtonpost.com/news/business/wp/2019/02/28/feature/the-heartbreaking-decrease-in-black- homeownership/

11. Troy McMullen, "The 'heartbreaking' decrease in black homeownership: Racism and rollbacks in government policies are taking their toll." The Washington Post. February 28, 2019. https://www.washingtonpost.com/news/business/wp/2019/02/28/feature/the-heartbreaking-decrease-in-black- homeownership/

12. "Nonbank banks are financial institutions that do not offer both lending and depositing services. Nonbank banks..engage in credit card operations or other lending services, provided they do not also accept deposits. Many nonbank banks or non-banking financial companies offer mortgage services, such as first-time home loans and refinancing options. Some mortgage-centric nonbank banks provide streamlined loans and some may consider lending to customers with fair-to-good credit. Nonbank banks may offer loans but do not provide deposit services, like checking or savings accounts." https://www.investopedia.com/terms/n/nonbank- banks.asp

13. "5 reasons nonbank mortgage lenders look to break new ground" National Mortgage News. https://www.nationalmortgagenews.com/list/5-reasons-nonbank-mortgage-lenders-look-to-break-new-ground

Brief History of Banking and Finance in the U.S.

To understand the importance of non-bank mortgage lenders, a quick review of the history of banking, finance, and mortgage lending in the U.S. may be useful.

The National Bank Act, passed in 1863, was intended to create a national banking system, float federal war loans, and establish a national currency. Congress passed the act to help resolve the financial crisis that emerged during the early days of the Civil War. Before this time, banknotes (paper bills issued by state banks) accounted for most of the currency in circulation.

At its inception, the U.S. banking system was created to promote interstate commerce. Banks, especially national banks, were not concerned with average consumers' financial needs. Out of this lack of inclusion for underserved consumers, the U.S. financial system over time developed more egalitarian options, such as thrifts, savings and loans, credit unions, and industrial loan companies.

Credit Unions

The first credit union in the United States was created in 1908 in New Hampshire, because banks were unwilling to lend to most poor laborers, who then turned to corrupt moneylenders and loan sharks. With the help of the Credit Union National Extension Bureau and advocates, states began passing credit union legislation in the 1920s.

Savings and Loans

The savings and loan association became a strong force in the early 20th century through mortgage lending and further assisting their members with basic saving and investing outlets, typically through passbook savings accounts and term certificates of deposit.

Modern technological advances and changes in private finance have provided yet another opportunity for major steps forward in the financial industry. These changes have allowed for a significant growth in the non-bank finance sector. From personal loans to auto finance, non-banks add tremendous value, opportunity, and competition in the financial markets. This opportunity is no more evident than in the housing finance industry.

Growth of the Non-Bank / Non-Depository Mortgage Industry

Insolvency in thrifts in the early 1980s and the savings and loan crisis of the late 1980s contributed significantly to the decline in bank market share. These events ended the dominance of deposit-taking portfolio lenders in the mortgage markets, leaving mortgage lending largely to growing regional banks and a growing number of non-banks.

In 2016, the country's three biggest banks, Wells Fargo, JP Morgan-Chase, and Bank of America, accounted for just 15% of mortgages loans made to low-income borrowers, a significant dip from 2010, when they accounted for 32% of all mortgage loan originated for borrowers with lower incomes.[14]

14 Neil Bhutta, Steven Laufer, and Daniel R. Ringo, "The Decline in Lending to Lower-Income Borrowers by the Biggest Banks" Board of Governors of the Federal Reserve System", Sept. 28, 2017. https://www.federalreserve.gov/econres/notes/feds-notes/the-decline-in-lending-to-lower-income-borrowers-by-the- biggest-banks-20170928.htm

Since the financial crisis of 2008, the percentage of non-bank mortgages has risen from 19% to 48% in 2017[15].

The ability of non-banks to leverage digital technology has allowed them to meet customers' efficiency and convenience demands. Without having to adhere to incumbent bank regulations, non-banks have attracted traditionally underserved individuals. With lower required down payments and fewer approval criteria, non-bank lenders have served a greater and more diverse customer base.

It has been demonstrated that AI has made progress in reducing bias in mortgage lending. It is our belief that the technology, if managed properly, can be a strong force for good.

Historically, traditional banks have had trouble serving the banking needs of working-class individuals in America. This has led to a long history of new types of institutions coming into existence. From the creation of credit unions, thrifts, to savings and loans, the financial services system has tried to adapt to customers' needs left out of the traditional banking system. Non-bank institutions are the newest example of innovation in the financial sector, and they have proven to be resilient and dynamic.

FinTech Lending and Discrimination

As previously noted, a recent study estimated a 40% reduction in discriminatory pricing in the largest consumer-lending market for FinTech lenders vs traditional banks.[16] The same study, however, found that "Fintech lenders charge otherwise-equivalent Latinx/African American borrowers 7.9 (3.6) bps higher rates for purchase (refinance) mortgages, costing $765M yearly. FinTech17[17] firms are unable to eliminate impermissible discrimination, possibly because algorithms extract rents in weaker competitive environments and profile borrowers on low-shopping behavior. Yet algorithmic lenders do reduce rate disparities by more than a third and show no discrimination in rejection rates."

Another recent study of 5,200 customers from Oracle's Digital Demand in Retail Banking paper found that 40% of consumers believe non-banks are a better lending option than traditional banks. The potential exists for algorithmic lenders to lower overall lending discrimination, but this would require broadening the lending system to fully accommodate them.

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15 Dana George, "What you should know about Non-Bank Mortgage Lenders" The Motley Fool, Sept. 23, 2020. https://www.fool.com/the-ascent/mortgages/articles/what-you-should-know-about-non-bank-mortgage-lenders/

16. Sian Townsend, "AI Can Make Bank Loans More Fair" November 6, 2020. https://hbr.org/2020/11/ai-can-make-bank-loans-more-fair

17. FinTech, or Financial technology refers to all techniques, skills, methods, and processes used in the production of goods or services used in accomplishment of finance related objectives. These tend to be computer and network-based technology services that "compete with traditional methods in the delivery of financial services."

Conclusions

AI/Algorithmic Lending has the Potential to Reduce Discrimination

While AI/Algorithmic Lending has the potential to reduce racial discrimination in the allocation of financial resources in lending, there are still many unanswered questions. It has been demonstrated that AI has made progress in reducing bias in mortgage lending. It is our belief that the technology, if managed properly, can be a strong force for good. While we recognize that it is not a perfect solution, we also realize that all tools must be honed and continuously maintained or improved to bring about better results.

GSE Reform

GSEs play a crucial role in the mortgage industry. These quasi-government entities purchase large quantities of home loans to keep funds circulating throughout the home mortgage economy. [18] While AI and algorithmic lending have proven effective in reducing discrimination, their full potential cannot be realized until the GSEs modify the qualifying factors for the conventional home loans they are willing to buy or insure.

Any limited credit analysis system that uses data from the past will have an embedded racial bias. Because current GSE loan underwriting guidelines are largely based on credit history, debt-to-income ratio, and borrower income, they inherently include bias. What is notably missing from this formula are factors that could benefit first-time homeowners, such as rent or utilities payment history.

18. https://www.moneygeek.com/mortgage/fannie-mae-freddie-mac/

Citations

Peter Hamilton, “The Future of Money” (University of Miami), Creative Investment Research. March 31, 2019. https://www.impactinvesting.online/2019/03/futureofmoney.html

Satter, Beryl, “Family Properties: Race, Real Estate, and the Exploitation of Black Urban America” 1st Edition

Sam Fleming and Joe Rennison, “US non-bank mortgage lenders come under scrutiny.” Financial Times, April 9, 2019. https://www.ft.com/content/d9329ee4-5549-11e9-91f9-b6515a54c5b1

You Suk Kim, Steven M. Laufer, Karen Pence, Richard Stanton, and Nancy Wallace, “Mapping the boom in nonbank mortgage lending—and understanding the risks”Brookings, September 10, 2018. https://www.brookings.edu/blog/up- front/2018/09/10/mapping-the-boom-in-nonbank-mortgage-lending-and-understanding-the- risks/

National Association of Realtors, “Metro Home Prices Increase in All Areas in Third Quarter of 2020.” https://www.nar.realtor/newsroom/metro-home-prices-increase-in-all-areas-in-third- quarter-of-2020

Quillian, L., Lee, J.J. & Honoré, B., “Racial Discrimination in the U.S. Housing and Mortgage Lending Markets: A Quantitative Review of Trends”, 1976–2016. Race Soc Probl 12, 13–28, 2020. https://doi.org/10.1007/s12552-019-09276-x

Fuster, Andreas, Paul Goldsmith-Pinkham, Tarun Ramadorai, and Ansgar Walther, “Predictably unequal? The Effects of Machine Learning on Credit Markets” October 1, 2020.

Board of Governors of the Federal Reserve System, “Survey of Consumer Finances, 1989 - 2019.” https://www.federalreserve.gov/econres/scf/dataviz/scf/table/#series:Net_Worth;demographic:racecl4;population:all;units:median

William Michael Cunningham, “Time to clean house at Wells Fargo”, American Banker Newspaper, November 20, 2018. https://www.americanbanker.com/opinion/time-to-clean-house-at-wells- fargo

“Regulatory capture” https://www.investopedia.com/terms/r/regulatory- capture.asp#

Bartlett, Robert, Adair Morse, Richard Stanton, and Nancy Wallace, “Consumer-lending discrimination in the FinTech era” (No. w25943), National Bureau of Economic Research, 2019.

Definition of Nonbank banks https://www.investopedia.com/terms/n/nonbank- banks.asp

Economic Research Division. Federal Reserve Bank of St. Louis, NHWAHORUSQ156N Homeownership Rate for the United States: Non-Hispanic White Alone, Percent, Quarterly, Not Seasonally Adjusted

Economic Research Division. Federal Reserve Bank of St. Louis, BOAAAHORUSQ156N Homeownership Rate for the United States: Black or African American Alone, Percent, Quarterly, Not Seasonally Adjusted

Lee, Randy T., Amanda D. Perez, C. Malik Boykin, and Rodolfo Mendoza-Denton. “On the prevalence of racial discrimination in the United States.” PloS one 14, no. 1 (2019): e0210698.

Bhutta, Neil, and Aurel Hizmo. “Do minorities pay more for mortgages?.” 2020.

Perry, Vanessa Gail. “A loan at last? Race and racism in mortgage lending.” In Race in the Marketplace, pp. 173-192. Palgrave Macmillan, Cham, 2019.

Christopher E. Herbert, Daniel T. McCue, and Rocio Sanchez-Moyano, “Is Homeownership Still an Effective Means of Building Wealth for Low-income and Minority Households? (Was it Ever?)” Harvard University, Joint Center for Housing Studies. September 2013.

“Fannie Mae and Freddie Mac: Understanding Government-Sponsored Loans” https://www.moneygeek.com/mortgage/fannie-mae-freddie-mac/

“Understanding Fannie Mae and Freddie Mac” https://www.pennymacusa.com/blog/understanding-the-roles-of-fannie-mae-and-freddie-mac

ECONOMIC RESEARCH DIVISION			
FEDERAL RESERVE BANK OF ST. LOUIS			
NHWAHORUSQ156N	Homeownership Rate for the United States: Non-Hispanic White Alone, Percent, Quarterly, Not Seasonally Adjusted		
BOAAAHORUSQ156N	Homeownership Rate for the United States: Black or African American Alone, Percent, Quarterly, Not Seasonally Adjusted		
OBSERVATION_DATE	Black Homeownership	White Homeownership	Difference
1994-01-01	42.1	69.8	27.7
1994-04-01	41.8	69.9	28.1
1994-07-01	42.7	70.0	27.3
1994-10-01	42.6	70.2	27.6
1995-01-01	42.7	70.0	27.3
1995-04-01	42.6	70.2	27.6
1995-07-01	41.2	70.4	29.2
1995-10-01	42.2	70.9	28.7
1996-01-01	43.8	71.4	27.6
1996-04-01	43.7	71.7	28.0
1996-07-01	44.5	71.8	27.3
1996-10-01	44.4	71.8	27.4
1997-01-01	44.5	71.6	27.1
1997-04-01	44.4	72.1	27.7
1997-07-01	45.3	72.3	27.0
1997-10-01	45.1	71.9	26.8
1998-01-01	45.2	72.1	26.9
1998-04-01	44.7	72.5	27.8
1998-07-01	46.6	73.1	26.5
1998-10-01	45.9	72.6	26.7
1999-01-01	46.3	72.8	26.5
1999-04-01	45.3	73.2	27.9
1999-07-01	46.6	73.5	26.9
1999-10-01	46.8	73.3	26.5
2000-01-01	47.4	73.4	26.0
2000-04-01	46.7	73.7	27.0
2000-07-01	46.8	74.3	27.5
2000-10-01	47.8	73.9	26.1
2001-01-01	47.5	74.0	26.5
2001-04-01	47.9	74.1	26.2
2001-07-01	47.5	74.6	27.1
2001-10-01	48.1	74.4	26.3
2002-01-01	48.2	74.6	26.4
2002-04-01	46.5	74.5	28.0

OBSERVATION_DATE	Black Homeownership	White Homeownership	Difference
2002-07-01	47.3	74.9	27.6
2002-10-01	47.7	75.0	27.3
2003-01-01	47.7	75.0	27.3
2003-04-01	47.3	75.2	27.9
2003-07-01	48.0	75.7	27.7
2003-10-01	49.4	75.5	26.1
2004-01-01	49.3	75.5	26.2
2004-04-01	49.7	76.2	26.5
2004-07-01	48.4	76.1	27.7
2004-10-01	49.1	76.2	27.1
2005-01-01	48.8	76.0	27.2
2005-04-01	48.0	75.6	27.6
2005-07-01	48.1	75.7	27.6
2005-10-01	48.0	76.0	28.0
2006-01-01	47.3	75.5	28.2
2006-04-01	47.2	75.9	28.7
2006-07-01	48.6	76.0	27.4
2006-10-01	48.2	76.0	27.8
2007-01-01	48.0	75.3	27.3
2007-04-01	46.3	75.4	29.1
2007-07-01	46.7	75.3	28.6
2007-10-01	47.7	74.9	27.2
2008-01-01	47.1	75.0	27.9
2008-04-01	47.8	75.2	27.4
2008-07-01	47.8	75.1	27.3
2008-10-01	46.8	74.8	28.0
2009-01-01	46.1	74.7	28.6
2009-04-01	46.5	74.9	28.4
2009-07-01	46.4	75.0	28.6
2009-10-01	46.0	74.5	28.5
2010-01-01	45.6	74.5	28.9
2010-04-01	46.2	74.4	28.2
2010-07-01	45.0	74.7	29.7
2010-10-01	44.9	74.2	29.3
2011-01-01	44.8	74.1	29.3
2011-04-01	44.2	73.7	29.5
2011-07-01	45.6	73.8	28.2
2011-10-01	45.1	73.7	28.6
2012-01-01	43.1	73.5	30.4

OBSERVATION_DATE	Black Homeownership	White Homeownership	Difference
2012-04-01	43.8	73.5	29.7
2012-07-01	44.1	73.6	29.5
2012-10-01	44.5	73.6	29.1
2013-01-01	43.1	73.4	30.3
2013-04-01	42.9	73.3	30.4
2013-07-01	43.1	73.3	30.2
2013-10-01	43.2	73.4	30.2
2014-01-01	43.3	72.9	29.6
2014-04-01	43.5	72.9	29.4
2014-07-01	42.9	72.6	29.7
2014-10-01	42.1	72.3	30.2
2015-01-01	41.9	72.0	30.1
2015-04-01	43.0	71.6	28.6
2015-07-01	42.4	71.9	29.5
2015-10-01	41.9	72.2	30.3
2016-01-01	41.5	72.1	30.6
2016-04-01	41.7	71.5	29.8
2016-07-01	41.3	71.9	30.6
2016-10-01	41.7	72.2	30.5
2017-01-01	42.7	71.8	29.1
2017-04-01	42.3	72.2	29.9
2017-07-01	42.0	72.5	30.5
2017-10-01	42.1	72.7	30.6
2018-01-01	42.2	72.4	30.2
2018-04-01	41.6	72.9	31.3
2018-07-01	41.7	73.1	31.4
2018-10-01	42.9	73.6	30.7
2019-01-01	41.1	73.2	32.1
2019-04-01	40.6	73.1	32.5
2019-07-01	42.7	73.4	30.7
2019-10-01	44.0	73.7	29.7
2020-01-01	44.0	73.7	29.7
2020-04-01	47.0	76.0	29.0
2020-07-01	46.4	75.8	29.4

YEAR	CATEGORY	NET WORTH (in Thousands of Dollars)
1989	White, non- Hispanic	$ 143.56
1989	Black, non- Hispanic	$ 8.55
1989	Hispanic	$ 9.94
1989	Other	$ 72.00
1992	White, non- Hispanic	$ 124.60
1992	Black, non- Hispanic	$ 17.70
1992	Hispanic	$ 12.14
1992	Other	$ 66.41
1995	White, non- Hispanic	$ 128.20
1995	Black, non- Hispanic	$ 18.23
1995	Hispanic	$ 20.87
1995	Other	$ 51.88
1998	White, non- Hispanic	$ 150.96
1998	Black, non- Hispanic	$ 24.38
1998	Hispanic	$ 15.46
1998	Other	$ 60.40
2001	White, non- Hispanic	$ 177.50
2001	Black, non-Hispanic	$ 27.87
2001	Hispanic	$ 16.90
2001	Other	$ 75.82
2004	White, non- Hispanic	$ 191.11
2004	Black, non- Hispanic	$ 27.66
2004	Hispanic	$ 20.80
2004	Other	$ 96.12
2007	White, non- Hispanic	$ 211.73
2007	Black, non- Hispanic	$ 25.92
2007	Hispanic	$ 26.05
2007	Other	$ 75.18
2010	White, non- Hispanic	$ 152.88
2010	Black, non- Hispanic	$ 18.73
2010	Hispanic	$ 19.50
2010	Other	$ 50.31
2013	White, non- Hispanic	$ 155.83
2013	Black, non- Hispanic	$ 14.36
2013	Hispanic	$ 15.15
2013	Other	$ 44.98
2016	White, non- Hispanic	$ 181.87
2016	Black, non- Hispanic	$ 18.24
2016	Hispanic	$ 22.04
2016	Other	$ 68.73
2019	White, non- Hispanic	$ 189.10
2019	Black, non- Hispanic	$ 24.10
2019	Hispanic	$ 36.05
2019	Other	$ 74.50

METRO AREA	BLACK HOMEOWNERSHIP RATE (2018)	WHITE HOMEOWNERSHIP RATE (2018)	MEDIAN HOME SALE PRICE (2018)
Washington, D.C.	51%	72%	$399,000
Birmingham, AL	50%	78%	$199,900
Richmond, VA	49%	75%	$246,500
Philadelphia, PA	48%	76%	$229,000
New Orleans, LA	47%	73%	$215,000
Atlanta, GA	47%	75%	$236,511
Memphis, TN	46%	75%	$177,000
Baltimore, MD	46%	77%	$270,000
Miami, FL	45%	74%	$275,000
Raleigh, NC	45%	74%	$282,500
Virginia Beach, VA	44%	72%	$229,900
Charlotte, NC	44%	75%	$242,000
Orlando, FL	44%	70%	$244,000
Jacksonville, FL	44%	72%	$227,000
San Antonio, TX	44%	71%	$223,458
Hartford, CT	43%	77%	$219,500
Austin, TX	43%	65%	$309,000
Nashville, TN	43%	72%	$286,000
Riverside, CA	42%	71%	$360,000
Houston, TX	42%	72%	$236,990
Detroit, MI	42%	78%	$177,000
St. Louis, MO	40%	77%	$177,333
Chicago, IL	40%	75%	$240,000
Denver, CO	38%	70%	$405,000
Tampa, FL	38%	71%	$224,990
Kansas City, MO	37%	72%	$210,000
Louisville, KY	37%	74%	$187,000
Dallas-Ft. Worth, TX	37%	69%	$269,900
Indianapolis, IN	36%	73%	$178,000
Cleveland, OH	36%	75%	$145,714
Oklahoma City, OK	36%	70%	$170,000
Tucson, AZ	36%	69%	$210,000
Pittsburgh, PA	35%	74%	$165,100
Columbus, OH	34%	69%	$203,000
Sacramento, CA	33%	67%	$395,000
Grand Rapids, MI	33%	78%	$195,000
Phoenix, AZ	33%	70%	$262,500

METRO AREA	BLACK HOMEOWNERSHIP RATE (2018)	WHITE HOMEOWNERSHIP RATE (2018)	MEDIAN HOME SALE PRICE (2018)
Los Angeles, CA	33%	58%	$645,000
Boston, MA	33%	69%	$455,000
San Francisco, CA	33%	61%	$900,000
Cincinnati, OH	33%	73%	$175,000
Seattle, WA	32%	65%	$479,500
Portland, OR	32%	66%	$391,000
Rochester, NY	32%	74%	$144,000
Providence, RI	32%	68%	$267,500
New York, NY	32%	67%	$403,000
Buffalo, NY	32%	73%	$149,900
San Jose, CA	31%	65%	$1,175,000
San Diego, CA	30%	61%	$569,995
Las Vegas, NV	29%	62%	$270,500
Salt Lake City, UT	28%	72%	$315,000
Milwaukee, WI	27%	70%	$206,000
Minneapolis, MN	25%	76%	$265,000