

# The Secret Bias Hidden in Mortgage-Approval Algorithms

By [Emmanuel Martinez](#) and [Lauren Kirchner](#) August 25, 2021 06:50 ET

Even accounting for factors lenders said would explain disparities, people of color are denied mortgages at significantly higher rates than White people

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The new four-bedroom house in Charlotte, N.C., was Crystal Marie and Eskias McDaniels's personal American dream, the reason they had moved to this Southern town from pricey Los Angeles a few years ago. A lush, long lawn, 2,700 square feet of living space, a neighborhood pool and playground for their son, Nazret. All for \$375,000.

Prequalifying for the mortgage was a breeze. They said they had saved much more than they would need for the down payment, had very good credit—scores of 805 and 725—and earned roughly six figures each, she in marketing at a utility company and Eskias representing a pharmaceutical company. The monthly mortgage payment was less than they'd paid for rent in Los Angeles for years.

They were scheduled to sign the mortgage documents on Aug. 23, 2019—a Friday—and were so excited to move in they booked movers for the same day.

The Wednesday before the big day, the loan officer called Crystal Marie, and everything changed, she said: The deal wasn't going to close.



Crystal Marie McDaniels Nell Redmond/AP Photo

The loan officer told the couple that he had submitted the application internally to the underwriting department for approval a dozen, 15, maybe 17 times, getting a ‘no’ each time. The couple had spent \$6,000 in fees and deposits—all nonrefundable.

“It seemed like it was getting rejected by an algorithm,” she said, “and then there was a person who could step in and decide to override that or not.”

She was told she didn’t qualify because she was a contractor, not a full-time employee—even though her boss told the lender she was not at risk of losing her job. Her co-workers were contractors, too, and they had mortgages.

Crystal Marie’s co-workers are White. She and Eskias are Black.

“I think it would be really naive for someone like myself to not consider that race played a role in the process,” she said.

An investigation by The Markup has found that lenders in 2019 were more likely to deny home loans to people of color than to White people with similar financial characteristics—even when we controlled for newly available

financial factors that the mortgage industry for years has [said would explain](#) racial disparities in lending.

Holding 17 different factors steady in a complex statistical analysis of more than two million conventional mortgage applications for home purchases, we found that lenders were 40 percent more likely to turn down Latino applicants for loans, 50 percent more likely to deny Asian/Pacific Islander applicants, and 70 percent more likely to deny Native American applicants than similar White applicants. Lenders were 80 percent more likely to reject Black applicants than similar White applicants. These are national rates.

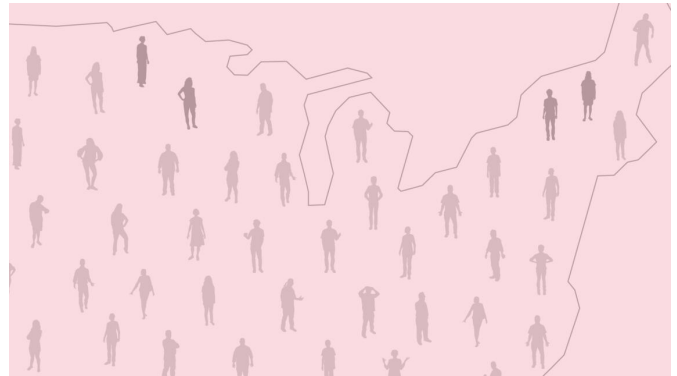
In every case, the prospective borrowers of color looked almost exactly the same on paper as the White applicants, except for their race.

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## Applicants of color denied at higher rates

To illustrate the odds of denial that our analysis revealed, we calculated how many people of each race/ethnic group would likely be denied if **100 similarly qualified applicants from each group applied for mortgages in**

5 White applicants denied



[Show Your Work](#) Denied

### [How We Investigated Racial Disparities in Federal Mortgage Data](#)

[Even after including factors the mortgage industry said explain differences, lenders are still more likely to deny people of color than White people under similar financial circumstances](#)

aGqOc

7 Latino applicants denied

dQZKAbl

7 Asian/Pacific Islander applicants denied

XViEuna

8 Native American applicants denied

asCNKQcg

9 Black applicants denied

BAPEjEoEZ

The [industry](#) had [criticized](#) previous similar analyses for not including financial factors they said would explain disparities in lending rates but were not public at the time: debts as a percentage of income, how much of the property's assessed worth the person is asking to borrow, and the applicant's credit score.

The first two are now public in the Home Mortgage Disclosure Act data. Including these financial data points in our analysis not only failed to eliminate racial disparities in loan denials, it highlighted new, devastating ones.

We found that lenders gave fewer loans to Black applicants than White applicants even when their incomes were high—\$100,000 a year or more—and had the same debt ratios. In fact, high-earning Black applicants with *less* debt were rejected more often than high-earning White applicants who have *more* debt.

“Lenders used to tell us, ‘It’s because you don’t have the lending profiles; the ethno-racial differences would go away if you had them,’ ” said José Loya, assistant professor of urban planning at UCLA who has studied public mortgage data extensively and reviewed our methodology. “Your work shows that’s not true.”

We sent our complete analysis to industry representatives: The American Bankers Association, The Mortgage Bankers Association, The Community Home Lenders Association, and The Credit Union National Association. They all criticized it generally, saying the public data is not complete enough to draw conclusions, but did not point to any flaws in our computations.

Blair Bernstein, director of public relations for the ABA, acknowledged that our analysis showed disparities but that “given the limitations” in the public data we used, “the numbers are not sufficient on their own to explain why those disparities exist.”

In written statements, the [ABA](#) and [MBA](#) criticized The Markup’s analysis for not including credit scores and for focusing on conventional loans only and not including government loans, such as those guaranteed by the Federal Housing Administration and Department of Veterans Affairs.

Isolating conventional loans from government loans is common in mortgage research because they are different products, with different thresholds for approval and loan terms. Government loans bring people who wouldn’t otherwise qualify into the market but tend to be more expensive for the borrower.

Even the Federal Reserve and Consumer Financial Protection Bureau, the agency that releases mortgage data, separate conventional and FHA loans in their research on lending disparities. Authors of one academic study out of Northeastern and George Washington universities said they focus on

conventional loans only because FHA loans have "[long been implemented in a manner that promotes segregation](#)."

As for credit scores, it was impossible for us to include them in our analysis because the CFPB strips them from public view from HMDA data—in part due to the mortgage industry's [lobbying](#) to remove them, citing borrower privacy.

When the CFPB first proposed expanding mortgage data collection to include the very data that industry trade groups have told us is vital for doing this type of analysis—credit scores, debt-to-income ratio, and loan-to-value ratio—those same groups objected. They didn't want the government to even collect the data, let alone make it public. They cited the risk of cyberattack, which could reveal borrowers' private information.

"These new [data] fields include confidential financial data," [several large trade groups wrote](#) in a letter to the CFPB, including the ABA and MBA.

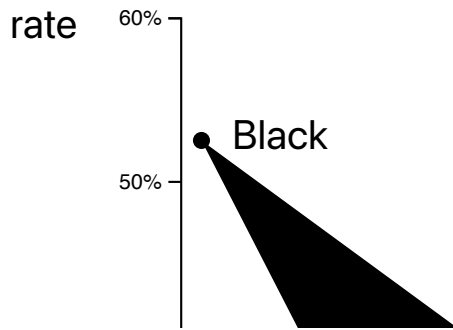
"Consequently, if this [sic] data are inadvertently or knowingly released to the public, the harm associated with re-identification would be even greater."

Government regulators do have access to credit scores. The CFPB analyzed 2019 HMDA data and found that accounting for credit scores [does not eliminate lending disparities for people of color](#).

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## **Applicants of color were significantly more likely to be denied than White applicants with comparable credit scores**

### **Denial rate by credit score and race/ethnicity**



Applicants of color were 20% to 120% more likely to be denied than White applicants with the same credit score

Source: CFPB, "An Updated Review of the New and Revised Data Points in HMDA"

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## Location, Location, Location

In addition to finding disparities in loan denials nationally, we examined cities and towns across the country individually and found disparities in 89 metropolitan areas spanning every region of the country. In Charlotte, where Crystal Marie and her family searched for a home, lenders were 50 percent more likely to deny loans to Black applicants than White ones with similar financial profiles. In other places, the gap was even larger.

Black applicants in Chicago were 150 percent more likely to be denied by financial institutions than similar White applicants there. Lenders were more than 200 percent more likely to reject Latino applicants than White applicants in Waco, Texas, and to reject Asian and Pacific Islander applicants than White ones in Port St. Lucie, Fla. And Native American applicants in Minneapolis were 100 percent more likely to be denied by financial institutions than similar White applicants there.

"It's something that we have a very painful history with," said Alderman Matt

Martin, who represents Chicago's 47th Ward. "Redlining," the now-outlawed practice of branding certain Black and immigrant neighborhoods too risky for financial investments that began in the 1930s, can be traced back to Chicago. [Chicago activists exposed](#) that banks were still redlining in the 1970s, leading to the establishment of the Home Mortgage Disclosure Act, the law mandating the collection of data used for this story.

"When you see that maybe the tactics are different now, but the outcomes are substantially similar," Martin added, "it's just not something we can continue to tolerate."

Who makes these loan decisions? Officially, lending officers at each institution. In reality, software, most of it mandated by a pair of quasi-governmental agencies.

[Freddie Mac](#) and [Fannie Mae](#) were founded by the federal government to spur homeownership and now buy about half of all mortgages in America. If they don't approve a loan, the lenders are on their own if the borrower skips out.

And that power means that Fannie and Freddie essentially set the rules for the industry, starting from the very beginning of the mortgage-approval process.

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*When you see that maybe the tactics are different now, but the outcomes are substantially similar, it's just not something we can continue to tolerate.*

*Alderman Matt Martin, Chicago*

## Stuck in the Past



Fannie and Freddie require lenders to use a particular credit scoring algorithm, “Classic FICO,” to determine whether an applicant meets the minimum threshold necessary to even be considered for a conventional mortgage, currently a score of 620.

This algorithm was developed from data from the 1990s and is more than 15 years old. It’s widely considered detrimental to people of color because it rewards traditional credit, to which White Americans have more access. It doesn’t consider, among other things, on-time payments for rent, utilities, and cellphone bills—but will lower people’s scores if they get behind on them and are sent to debt collectors. Unlike more recent models, it penalizes people for past medical debt even if it’s since been paid.

“This is how structural racism works,” said Chi Chi Wu, a staff attorney at the National Consumer Law Center. “This is how racism gets embedded into institutions and policies and practices with absolutely no animus at all.”

*This is how structural racism works.*

*Chi Chi Wu, National Consumer Law Center*

Potentially fairer credit models have existed for years. A [recent study](#) by Vantage Score—a credit model developed by the “Big Three” credit bureaus to compete with FICO—estimated that its model would provide credit to 37 million Americans who have no scores under FICO models. Almost a third of them would be Black or Latino.

Yet Fannie and Freddie have resisted a steady stream of plaintive requests since 2014 from advocates, the mortgage and housing industries, and Congress to update to a newer model. Even the company that created Classic FICO has lobbied for the agencies to adopt a newer version, which it

said expands credit to more people.

"A lot of things that minorities and underserved borrowers are doing, responsible financial behaviors, are going under the radar," said Scott Olson, executive director of the Community Home Lenders Association, a trade group representing small and mid-sized independent mortgage lenders.

Fannie's and Freddie's regulator and conservator, the Federal Housing Finance Agency, continues to allow the companies to stick with Classic FICO, more than five years after ordering them to study the effects of switching to something newer. The FHFA has also expressed concern about the "cost and operational implications" if they would have to continually test new credit scoring models.

Neither of the companies would answer questions from The Markup about why they still require Classic FICO.

"They've been testing alternate scores for years, and I don't know why the process is taking so long," said Lisa Rice, president and CEO of the National Fair Housing Alliance, a consortium of hundreds of fair housing organizations. "Well-deserving consumers are being left behind."

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## "Color-Blind" Approvals?

Fannie's and Freddie's approval process also involves other mysterious algorithms: automated underwriting software programs that they first launched in 1995 to much fanfare about their speed, ease and, most important, fairness.

"Using a data base as opposed to human judgment can avoid influences by

other forces, such as discrimination against minority individuals and red-lining,” Peter Maselli, then a vice president of Freddie Mac, told The New York Times when it launched its software, now called Loan Product Advisor. A bank executive told Congress that year that the new systems were “explicitly and implicitly ‘color blind,’ ” since they did not consider a person’s race at all in their evaluations.

But, like similar promises that algorithms would make color-blind decisions in criminal risk assessment and health care, research shows that some of the factors Fannie and Freddie say their software programs consider affect people differently depending on their race or ethnicity. These include, in addition to credit histories, the prospective borrowers’ assets, employment status, debts, and the size of the loan relative to the value of the property they’re hoping to buy.

“The quality of the data that you’re putting into the underwriting algorithm is crucial,” said Aracely Panameño, director of Latino affairs for the Center for Responsible Lending. “If the data that you’re putting in is based on historical discrimination, then you’re basically cementing the discrimination at the other end.”

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*Aracely Panameño,  
Center for Responsible  
Lending*

[Research](#) has shown that payday loan sellers usually place branches in neighborhoods populated mainly by people of color, where bank branches are less common. As a result, residents are more likely to use these predatory services to borrow money. This creates lopsided, incomplete

credit histories because banks report both good and bad financial behavior to credit bureaus, while payday loan services only report missed payments.

Gig workers who are people of color are more likely to report that those jobs are their primary source of income—rather than a side hustle they’re using for extra cash—than White gig workers. Having multiple sources of income or unconventional employment can complicate the verification process for a mortgage, as Crystal Marie and Eskias learned.

Considering an applicant’s assets beyond the down payment, which lenders call “reserves,” can cause particular problems for people of color. People with fatter bank accounts present a lower risk because they can more easily weather a setback that would leave others unable to pay the mortgage. But, largely due to intergenerational wealth and past racist policies, the typical White family in America today has [eight times the wealth](#) of a typical Black family and five times the wealth of a Latino family. People of color are more likely to have smaller savings accounts and smaller (or nonexistent) stock portfolios than White people.

*Any type of data that you look at from the financial services space has a high tendency to be highly correlated to race.*

*Lisa Rice, National Fair Housing Alliance*

“This is a relatively new world of automated underwriting engines that by intent may not discriminate but by effect likely do,” said David Stevens, a former president and CEO of the Mortgage Bankers Association, now an independent financial consultant.

Not even home valuations are free from controversy. The president of the trade group representing real estate appraisers, who determine property

values for loans, [recently acknowledged](#) that racial bias is prevalent in the industry and launched new programs to combat it.

“Any type of data that you look at from the financial services space has a high tendency to be highly correlated to race,” said Rice, of the National Fair Housing Alliance.

In written statements, Fannie said its software analyzes applications “without regard to race,” and both Fannie and Freddie said their algorithms are routinely evaluated for compliance with fair lending laws, internally and by the FHFA and the Department of Housing and Urban Development. HUD said in an email to The Markup that it has asked the pair to make changes in underwriting criteria as a result of those reviews but would not disclose the details.

“This analysis includes a review to ensure that model inputs are not serving as proxies for race or other protected classes,” Chad Wandler, Freddie’s director of public relations, said in a written statement. He declined to elaborate on what the review entails or how often it’s done.

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## A Secret Algorithm's Secret Decisions

No one outside Fannie and Freddie knows exactly how the factors in their underwriting software are used or weighted; the formulas are closely held secrets. Not even the companies’ regulator, the FHFA, appears to know, beyond broad strokes, exactly how the software scores applicants, according to Stevens, who served as Federal Housing Administration commissioner and assistant secretary for housing at HUD during the Obama administration.

The Markup's analysis does not include decisions made by Fannie's and Freddie's underwriting algorithms because, while lenders are required to report those decisions to the government, the CFPB scrubs them from public mortgage data, arguing that including them "[would likely disclose information about the applicant or borrower](#) that is not otherwise public and may be harmful or sensitive." Lenders' ultimate mortgage decisions are public, however. Borrowers' names are not reported to the government and addresses are not in the public data.

Fannie and Freddie declined to answer our questions about why their algorithms' decisions are excluded from the public data but said in a 2014 letter to the CFPB that the revelation could allow their decision-making algorithms to be [reverse-engineered](#).

Loan officers say the software's decisions are mysterious even to them.

"When you run so many deals through the automated system, you'll look at one deal that didn't get an approval, and you just know that that's a better client than someone else that might've gotten approved," said Ashley Thomas III, a broker and owner of LA Top Broker, Inc., a minority-owned real estate agency and brokerage in South Los Angeles. "That lack of transparency in the technology is very concerning."

The Community Home Lenders Association [sent a letter](#) to Fannie and Freddie in April complaining about unannounced changes to both of their underwriting software programs that members discovered when applicants who had previously been approved suddenly were denied.

Olson, executive director of CHLA, said there's no good reason to keep lenders in the dark: "The more transparent, the more clear the guidance is, the easier it is for borrowers to know what they need to do to be in a position to qualify."

Earlier this month—and weeks after we began asking about its algorithms—Fannie announced in a press release that it would start incorporating on-time rent payments in its loan approval software starting in mid-September. When we asked about the timing of that change, spokesperson Katie Penote emailed The Markup a statement saying the company wanted prospective borrowers “to have this option as soon as possible” but was silent about what prompted it.

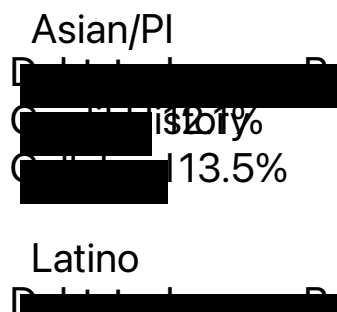
In addition to using Fannie’s or Freddie’s software, many large lenders also run applicants through their institutions’ own underwriting software, which may be more stringent. How those programs work is even more of a mystery; they are also proprietary.

When we examined the reasons lenders listed for denying mortgages in 2019, the most common reason across races and ethnicities, with the exception of Native Americans, was that applicants had too much debt relative to their incomes. When lenders did list “credit history” as the reason for denial, it was cited more often for Black applicants than White ones in 2019: 33 percent versus 21 percent.

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## Debt ratio was the most common reason for denial

### Percent of loan denials by race/ethnicity and reason



Source: 2019 HMDA data

When we examined the decisions by individual lenders, many denied people of color more than White applicants. An additional statistical analysis showed that several were at least 100 percent more likely to deny people of color than similar White borrowers. Among them: the mortgage companies owned by the nation's three largest home builders.

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## Laws and Their Limits

The two principal laws forbidding housing and lending discrimination are the 1968 Fair Housing Act and the 1974 Equal Credit Opportunity Act. An alphabet soup of federal agencies can refer evidence of violations of these laws to HUD or the justice department for investigation, but referrals have [dropped precipitously over the past decade](#).

*We have never totally enforced the Fair Housing Act.*

*Marcia Fudge, HUD Secretary*

Marcia Fudge, who took over HUD leadership earlier this year, [told Axios](#) in June that part of the reason Black ownership rates are so low in America is that “we have never totally enforced the Fair Housing Act.” In an email, HUD press secretary Meaghan Lynch told The Markup that Fudge intends to tackle “systemic discrimination in the

housing and credit markets that is at the heart of the racial homeownership gap.”

“We do have laws that explicitly protect against discrimination, and yet you still see these disparities that you’re finding, so that suggests that we need



better enforcement of existing laws, and more investigations,” said Kevin Stein, deputy director of the California Reinvestment Coalition. “Agencies need to do a better job of ferreting out discrimination and taking serious action once they find it.”

Another key housing law, the federal Community Reinvestment Act (CRA) of 1977, allows the federal government to penalize lenders who fail to invest in low-income or blighted neighborhoods but makes no requirements regarding borrowers’ race. Stein’s group has lobbied for the law to be reformed.

Lenders who violate fair lending rules can be punished with fines in the millions of dollars. Rep. Al Green (D-TX) has sponsored legislation wending its way through Congress that would make it a crime to engage in lending discrimination.

“Banks already have laws that punish people who commit fraud,” he said. “You can be imprisoned for—I hope you have your seatbelt on—30 years. Why not have some similar law that deals with banks who are invidiously discriminating against people who are trying to borrow money?”

And some fair lending advocates have begun to ask whether the value system in mortgage lending should be tweaked.

“As an industry, we need to think about, what are the less discriminatory alternatives, even if they are a valid predictor of risk,” said David Sanchez, a former Federal Housing Finance Agency policy analyst who currently directs research and development at the nonprofit National Community Stabilization Trust. “Because if we let risk alone govern all of our decisions, we are going to end up in the exact same place we are now when it comes to racial equity in this country.”

Crystal Marie said whatever effect race may have had on her denial, it wasn't overt.

"I'm not sure you ever really know, because there's no Klansmen in our yard or anything—but it's definitely something we always think about," she said. "It's just something that we always understand might be a possibility."

*There's no Klansmen in our yard or anything—but it's definitely something we always think about.*

*Crystal Marie  
McDanielsnone*

The lender, loanDepot, denied race had anything to do with the decision. The company's vice president of communications, Lori Wildrick, said in an email that the company follows the law and expects "fair and equitable treatment" for every applicant. "We take the issues raised by Ms. [McDaniels] very seriously and are conducting a thorough review of her concerns."

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## Perseverance

Crystal Marie said that buying a house was crucial for her because she wants to pass on wealth to her son someday, giving him an advantage she never had. So when the loan officer told her that the deal wasn't going to happen, she refused to give up.

With the help of their real estate agent, and multiple emails from her employer on her behalf, she and her husband Eskias pushed back against the denial.

At around 8 p.m. on the night before the original closing date, Crystal Marie

got an email from the lender: "You're cleared to close."



Crystal Marie in the yard of her new house. Nell Redmond/AP Photo

She still doesn't understand how the lender went from a no to a yes, but she was relieved and elated.

"It means so much to me, as a Black person, to own property in a place where not that many generations ago you were property," said Crystal Marie, who said she is descended from slaves in neighboring South Carolina.

She said her family has always had a fraught relationship with money. Some relatives were so mistrustful of banks that they'd insisted on dealing only in cash, she said, making it impossible to build up credit or wealth for future generations.

"It's meant so much," she said, "that we were able to go through this process and finally, eventually, be successful."