HOW INVIDIOUS DISCRIMINATION WORKS AND HURTS: AN EXAMINATION OF LENDING DISCRIMINATION AND ITS LONG-TERM ECONOMIC IMPACTS ON BORROWERS OF COLOR

VIRTUAL HEARING

BEFORE THE

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AND INVESTIGATIONS

OF THE

COMMITTEE ON FINANCIAL SERVICES

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HOW INVIDIOUS DISCRIMINATION WORKS AND HURTS: AN EXAMINATION OF LENDING DISCRIMINATION AND ITS LONG-TERM ECONOMIC IMPACTS ON BORROWERS OF COLOR

Wednesday, February 24, 2021

U.S. HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON OVERSIGHT
AND INVESTIGATIONS,
COMMITTEE ON FINANCIAL SERVICES,
Washington, D.C.

The subcommittee met, pursuant to notice, at 3:05 p.m., via Webex, Hon. Al Green [chairman of the subcommittee] presiding.

Members present: Representatives Green, Cleaver, Adams, Tlaib, Garcia of Illinois, Williams of Georgia; Barr, Loudermilk, Mooney, and Taylor.

Ex officio present: Representative Waters.

Chairman GREEN. The Oversight and Investigations Subcommittee will come to order.

Without objection, the Chair is authorized to declare a recess of the subcommittee at any time. Also, without objection, members of the full Financial Services Committee who are not members of this subcommittee are authorized to participate in today's hearing.

As a reminder, I ask all Members to keep themselves muted when they are not being recognized by the Chair to minimize disturbances while Members are asking questions of our witnesses. The staff has been instructed not to mute Members, except when a Member is not being recognized by the Chair and there is inadvertent background noise.

Members are also reminded that all House rules relating to order and decorum apply to this remote hearing. And Members may only participate in only one remote proceeding at a time. If you are participating today, please keep your camera on, and if you choose to attend a different remote proceeding, please turn your camera off.

If Members wish to be recognized during the hearing, please identify yourself by name to facilitate recognition by the Chair.

The title of today's hearing is, "How Invidious Discrimination Works and Hurts: An Examination of Lending Discrimination and Its Long-Term Economic Impacts on Borrowers of Color."

We will now move to opening statements, and, in so doing, I will recognize myself for 4 minutes for an opening statement, with the understanding that the Chair of the Full Committee, Chairwoman

Waters, will be present at some point, and will receive 1 minute of the additional time that we have for opening statements.

Friends, lie on a mortgage application to secure a loan, and you are likely to get caught and criminally prosecuted for mortgage fraud, with jail time as a consequence. Lie as a loan originator to deny a loan to a person of color, and you are not likely to get caught, and if you do get caught, a civil monetary fine is likely the consequence, and little more than the cost of doing business.

H.R. 166, the Fair Lending for All Act, provides the best tool available—testing—to catch, prosecute, and deter these predatory criminal lenders.

First, H.R. 166 would provide critical tools for detecting, ending, and sanctioning discrimination that would otherwise go undetected. It would deter the predatory lending that perpetuates race-based differences in wealth, asset accumulations, income, and financial security.

There is no enforcement tool—some things bear repeating—there is no enforcement tool with the utility of matched-pair testing. This is why H.R. 166 creates a dedicated Federal office within the Consumer Financial Protection Bureau (CFPB), which would be charged with conducting such testing.

Second, H.R. 166 would expand the Equal Credit Opportunity Act's (ECOA's) terms to expressly prohibit lending discrimination against LGBTQ+ persons.

Finally, H.R. 166 would establish criminal penalties for lenders and lending officials who engage in knowing and willful discrimination in violation of ECOA.

This concludes my opening statement.

At this time, without objection, I would like to place in the record the following documents: a GAO report dated February 24, 2021; a document styled, "Financial Resilience Challenges During the Pandemic," which is an article from the Atlanta Federal Reserve Bank examining the history of discriminatory policies that leave many Black and Hispanic households less resilient in the face of economic shock caused by the pandemic; and a document styled, "Mortgage Prepayment, Race, and Monetary Policy," a working paper from the Boston Federal Reserve Bank which finds that Black and Hispanic borrowers pay more than 50-basis-points-higher interest rates than White borrowers in a large representative sample of loans insured by Fannie Mae and Freddie Mac.

Without objection, it is so ordered.

Having made my opening statement, it is now my honor to yield to the ranking member of the subcommittee, Mr. Barr, for 5 minutes for his opening statement.

Mr. BARR. Thank you, Mr. Chairman. I appreciate you yielding, and I appreciate you holding today's hearing.

Thank you also to our witnesses for appearing today.

Discrimination in lending and other financial services is wrong, it is illegal, and it should not be tolerated. There is no room for compromise on that point.

While discrimination is illegal, that does not mean that there are not large pockets of the population who continue to be left behind by our banking system. It is important that we review and address those problems holistically. Our discussion on the economic impacts

of inequities in the financial system should extend to all unbanked and underbanked groups.

Economic recovery is well under way in the wake of the COVID pandemic. Unfortunately, many Americans continue to struggle financially. The pandemic has exposed and exacerbated certain weaknesses in our financial system, highlighting how large portions of the population still have trouble accessing credit. Every American should have equal access to our financial system regardless of their race or gender, whether they live in urban or in rural America, or any other factor.

One area of particular concern to me is the access to capital and other financial services in rural areas. According to a recent FDIC study, people in rural areas are more likely than their urban and suburban counterparts to visit a bank branch in person to do their banking. Unfortunately, the number of bank branches across the country continues to decrease, and the pace of de novo bank formation has slowed significantly compared to pre-financial crisis levels.

As there has been a movement towards online banking, we know the challenges that rural Americans face with respect to rural broadband, and that is another impediment.

There were 181 de novo charters granted in 2007, but between 2010 and 2019, an average of fewer than 10 new banks opened per year. A recent Federal Reserve study shows that 51 percent of the 3,114 counties in the United States saw net declines in the number of bank branches between 2012 and 2017. These declines in bank branches disproportionately hit rural communities. A total of 794 rural counties lost a combined 1,553 bank branches over the 5-year period, a 14-percent decline.

The negative financial impacts on rural counties of branch closures are perpetuated by the continuing difficulties due to burdensome regulations and other roadblocks of de novo community bank formation.

The Federal Reserve report identified 44 counties considered deeply affected by trends in bank closures and consolidation, which it defines as counties that had 10 or fewer branches in 2012, and lost at least 50 percent of those branches by 2017. Eighty-nine percent of the deeply affected counties are rural counties, including Nicholas County in my district, and counties in the districts of several of my colleagues.

The current framework of Federal, State, and local laws prohibits discrimination of any kind in lending. Financial regulators have developed robust tools to ensure that regulated firms play by those rules. To the extent that firms are failing to comply with those rules, or that additional statutory authority is needed to combat discrimination, we must act.

However, we must also be cautious about imposing additional restrictions and regulations on lenders that do not accomplish a specific goal, and monitor potential impacts of our actions on the widespread availability of financing to creditworthy borrowers.

Emerging technology has allowed people previously outside the banking system to access financial services and has enhanced lenders' ability to tailor their products to the specific characteristics of the borrower based on race-blind metrics. Meaningful restrictions

on risk-based pricing will do more harm than good, as creditworthy borrowers pay more for the capital they need.

Promoting across-the-board financial inclusion should be a top bipartisan priority for this subcommittee. I appreciate the opportunity to discuss ways to ensure that more people, including those currently underserved in the market, have easy, fair, and safe access to financial services.

I look forward to working with Chairman Green to ensure that discrimination does not occur in lending, and to promote policies that expand access to credit and lead to long-term economic growth. And, again, the warning is to not do away with risk-based pricing, which I think would curtail and restrict access to credit for creditworthy borrowers.

I look forward to hearing from our witnesses today, and I yield back the balance of my time.

Chairman GREEN. Thank you, Mr. Ranking Member. I appreciate your commentary, and I look forward to working with you.

I am told that the Chair of the Full Committee, Chairwoman Waters, has arrived, so I will now yield to Chairwoman Maxine Waters for 1 minute.

Chairwoman WATERS. Thank you so very much. Good afternoon, Chairman Green.

The discriminatory lending practices of the 20th Century continue to affect minority communities long after they are repealed. The effects of decades of government-sanctioned discrimination continue to plague our housing and lending markets today, ultimately hindering the ability of households of color to build equity and accumulate wealth through homeownership relative to White households.

Since home equity is the primary source of wealth for most families, disparities in homeownership and home equity are key drivers of the racial wealth gap. So, I look forward to hearing from our witnesses today about what we can do to remedy the continuing economic effects of discrimination.

Thank you, and I yield back the balance of my time.

Chairman GREEN. Thank you, Madam Chairwoman.

Let me make an announcement, if I may. We will have additional votes, and the staff has indicated that we will make a great attempt to wait until the first vote has expired, or nearly expired. This way, we will be able to cast two votes and then come back to the hearing. My hope is that we will get this done as expeditiously as possible.

Today, I would like to welcome each of our witnesses. And I am pleased to introduce this panel: William Darity, Jr., professor of public policy, African and African-American studies, and economics at Duke University, as well as the director of the Samuel DuBois Cook Center on Social Equity; Lisa Rice, president and CEO of the National Fair Housing Alliance; Andre Perry, senior fellow at the Metropolitan Policy Program at the Brookings Institution; Frances Espinoza, executive director of the North Texas Fair Housing Center; and Cheryl Cooper, an analyst for the Financial Economics Division at the Congressional Research Service.

Witnesses are reminded that your oral testimony will be limited to 5 minutes. You should be able to see a timer—and this timer

should be on your screen—that will indicate how much time you have left, and a chime will go off at the end of your time. I would ask that you be mindful of the timer, and quickly wrap up your testimony if you hear the chime, so that we can be respectful of both the witnesses' and the committee members' time. And without objection, your written statements will be made a part of the record.

Once the witnesses finish their testimony, each Member will have 5 minutes to ask questions. And may I remind Members to please get your questions and answers in within that 5-minute time period. Let me restate this differently; you should not, at the end of your 5 minutes, have multiple questions to be answered. Please be mindful of the time of other Members in trying to get your time in within the 5 minutes.

Professor Darity, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF WILLIAM DARITY, JR., PROFESSOR OF PUBLIC POLICY, AFRICAN AND AFRICAN-AMERICAN STUDIES, AND ECONOMICS, DUKE UNIVERSITY; AND DIRECTOR, SAMUEL DUBOIS COOK CENTER ON SOCIAL EQUITY

Mr. DARITY. Thank you, Chairman Green, Ranking Member Barr, and members of the subcommittee.

Discrimination in access to credit and the terms of credit is an important barrier to Black wealth accumulation. Elimination of this barrier, albeit wholly desirable, will not eliminate the gaping chasm in wealth between Black and White Americans.

The fundamental reason for Black-White differences in wealth is not high Black indebtedness. The fundamental reason is low Black asset holdings.

A Prosperity Now study in 2019 reported that median Black household liabilities were $30,800, while the median White household liabilities were more than twice as large, at $73,800. However, White households had a median level of assets valued in excess of $260,000, in contrast with the median Black households' assets, valued at $55,900.

The median Black household had 40 percent of the debt of the median White household but only 20 percent of the assets. Correspondingly, the ratio of assets to debts for Black households was 1.6, versus 2.8 for White households, both measured at the median.

The magnitude of the racial wealth gap, driven predominantly by a racial difference in asset ownership, is staggering. The 2019 Survey of Consumer Finances indicates that the Black-White wealth gap at the median was $164,000, and at the mean, it was substantially larger, at $840,900.

Assuming an average household size of 3 persons, the median gap per person was $52,500 and the mean gap was $280,000. These are conservative estimates of per-capita differentials because the average White household size is actually less than 3 people.

Many observers treat the median gap as the target for closing the racial wealth gap in the United States. In this context, it may be more appropriate to set the more demanding target at the mean.

Wealth is so densely concentrated in the United States that 90 percent of the wealth held by White Americans is in the possession of White households with a net worth above the White median.

Close to 99 percent of White household wealth is held by those with a net worth above the national median, approximately $100,000. Twenty-five percent of White households have a net worth in excessive of $1 million, in contrast with only 4 percent of Black households.

The limitations of an exclusive focus on debt reduction rather than asset building comes into stark relief when considering a policy of student loan relief. Whether one eliminates student debt by trying to erase the difference at the median or the mean, there will be at best an incremental effect on the racial wealth differential.

The net reduction in the gap will be $1,856 after we adjust for the enrollment rates that are different between the two communities. And, therefore, the reduction amounts to only 3 percent of the total median gap of $52,500. It amounts to less than 1 percent at the mean gap of $280,000.

Indeed, the key to understanding the sources of the racial wealth gap is government policy that supported the underdevelopment of asset accumulation in the Black community.

In January 1865, General William T. Sherman, after Secretary of War Edwin Stanton and he held a consultation with a group of Black leaders in Savannah, Georgia, issued Special Order No. 15. His directive assigned 5.3 million acres of land, stretching from the Sea Islands of South Carolina to the portion of northern Florida bordered by the St. Johns River, as a site for settlement and property for the newly emancipated.

Here was an intended preliminary phase of a substantial land reform on behalf of the formerly enslaved that would have amounted to at least 40 million acres of land for the 4 million persons released from bondage.

Ultimately, only 40,000 persons settled on 400,000 acres, but even that small allotment was lost by the end of the year. Andrew Johnson, Lincoln's successor, ended the land allocation program and restored the properties to the former slaveholders. The promise of 40-acre land grants remained unfulfilled.

Simultaneously, the Federal Government, under the auspices of the Homestead Act of 1862, was distributing 160-acre tracts of lands to upwards of 1.5 million White families in the western territories. This huge asset-building policy resulted in benefits carrying over to a conservative estimate of 45 million White living descendants of Homestead Act patents.

The racial wealth gap in the United States originates with the failure to give the formerly enslaved 40 acres, while White Americans, including new immigrants, were given 160 acres of land.

Conditions worsened with wave upon wave of White massacres that took place between the end of the Civil War and World War II. In the Red Summer of 1919, upwards of 35 White terrorist actions took place across the country in locations ranging from Chicago, Illinois; to Omaha, Nebraska; to Washington, D.C.; to Elaine, Arkansas.

The most famous of these—

Chairman GREEN. Professor, I am going to have to ask that you summarize quickly, please.

Mr. DARITY. Okay—took place in Tulsa, Oklahoma, in 1921.

I would add that the destruction of Black property and the appropriation of Black property that was lost in that period of time was compounded by the policies in the 20th Century that discriminatorily provided support for asset building in the form of homeownership.

Indeed, the effects of these disparities transmitted across generations resulted in the contemporary Black-White wealth gap. And the disproportionate growth in Black debt matters in explaining America's racial wealth gap, but the disproportionate deprivation of Black assets matters far more.

By all means, we should take steps to make the credit market more racially equitable, but if our goal is to eliminate the Black-White difference in wealth, the focus must be placed on building Black assets to a level consistent with White asset ownership.

[The prepared statement of Mr. Darity can be found on page 44 of the appendix.]

Chairman GREEN. Thank you, Professor.

Ms. Rice, you are now recognized for 5 minutes to give your oral presentation.

STATEMENT OF LISA RICE, PRESIDENT AND CEO, NATIONAL FAIR HOUSING ALLIANCE (NFHA)

Ms. RICE. Chairwoman Waters, Subcommittee Chair Green, Subcommittee Ranking Member Barr, and other members of the subcommittee, I want to first thank you for inviting me to talk about this really important issue.

Housing and lending discrimination have been a part of the United States since its inception, and have helped create the racial wealth and homeownership gaps that Professor Darity has just spoken about.

Due to government-sanctioned discriminatory policies as well as private-market practices, underserved groups have been systemically excluded from wealth-building opportunities such as homeownership.

These groups still experience high levels of discrimination. There are over 4 million instances of housing discrimination each year. Redlining, which persists in various forms today, real estate sales discrimination, appraisal bias, lending discrimination, and tech bias are significant barriers that keep the dream of homeownership from becoming a reality for many people, and contribute to the racial wealth gap.

Moreover, structural barriers, such as the dual credit market, segregation, and restrictive zoning ordinances, create systemic impediments which significantly prohibit the ability of people of color to access fair housing and fair lending opportunities and perpetuates the racial wealth and homeownership gaps.

The segregation of people based on race, coupled with the segregation of resources, drives many of the disparities in health, education, wealth, and many other areas. And these structural barriers, these structural inequities are a reason that Blacks, Latinos, and Native Americans are contracting and dying from the COVID virus at disproportionately higher rates than their White counterparts.

Segregation is also a driver of the racial homeownership gaps. The homeownership rate for Black Americans, for example, is where it was when the Fair Housing Act was passed in 1968. And the homeownership gap between Blacks and Whites is as wide today as it was in 1890.

There are many ways that invidious discrimination harms communities. For example, many of the technologies used in the housing and financial services space are biased, and discriminate against consumers of color. Tenant screening selection tools, automated underwriting systems, credit scoring models, risk-based pricing systems, and digital marketing platforms all have discriminatory outcomes and lock people out of housing opportunities.

Too many people experience discrimination when they seek to access housing and housing-related opportunities. Newsday recently completed an in-depth testing project on Long Island, New York, in which they found that 49 percent of African Americans, 39 percent of Hispanics, and 19 percent of Asian Americans experienced discrimination, including racial steering.

Real estate discrimination can take on myriad forms, and our recent lawsuit against Redfin illustrates that: NFHA and nine of our member organizations conducted a comprehensive investigation of Redfin, one of the nation's largest real estate companies. The investigation uncovered disturbing practices that suggested really wide-scale discrimination and modern-day technology-based real estate redlining. The groups found that Redfin offered its best available service at significantly higher rates in extremely White communities, and offered no service for homes in communities of color at much greater rates than in predominantly White areas.

Appraisal bias and lending discrimination are also still too common. Analysis of Home Mortgage Disclosure Act (HMDA) data revealed that communities of color are still being redlined by mainstream financial institutions.

One way to overcome discrimination is to increase funds for testing programs. And the Supreme Court has stated that testing is one of the best mechanisms for ferreting out discrimination.

This is why the National Fair Housing Alliance supports the Fair Lending for All Act, which would help address longstanding barriers to fair and equal credit by adding sexual orientation and gender identity protections to the Equal Credit Opportunity Act, but would also make it illegal to discriminate against people based on geographical location, and re-empower the Consumer Financial Protection Bureau (CFPB) to address fair-lending issues and to test for fair-lending violations.

And I thank you.

[The prepared statement of Ms. Rice can be found on page 60 of the appendix.]

Chairman GREEN. Thank you very much, Ms. Rice, for your testimony.

Mr. Perry, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF ANDRE M. PERRY, SENIOR FELLOW, METRO-POLITAN POLICY PROGRAM, THE BROOKINGS INSTITUTION

Mr. PERRY. Chairwoman Waters, Chairman Green, Ranking Member Barr, Vice Ranking Member Timmons, thank you for inviting me to testify today on this extremely important issue that affects millions of people across the country.

"We are here today because we are tired. We are tired of paying more for less."

Dr. Martin Luther King, Jr., said those words in 1966, to 35,000 people in Chicago's Soldier Field, as part of the Chicago Freedom Movement, also known as the Chicago Open Housing Movement. Dr. King went on to relay housing price differences that resulted in Black people paying higher rents in Black-majority communities for worse housing than their White counterparts.

"Now is the time to make real the promises of democracy," Dr. King declared. "Now is the time to open the doors of opportunity to all of God's children."

More than half a century later, now is still the time. According to the most recent Census figures, the Black homeownership rate in America is 46 percent, almost the exact same level that it was when Dr. King spoke in 1966. This is compared to the White homeownership rate, which is roughly 74 percent.

Even as overall U.S. homeownership has grown over the last 2 decades, there has been a catastrophic loss of homeownership in key cities that have large shares of Black residents.

When people in Black neighborhoods do own homes, we accrue less wealth. Homeowners in disproportionately Black and Latino neighborhoods are gaining wealth at about half the speed of homeowners in predominantly White neighborhoods.

One of the reasons is that these homes are devalued. In the 2018 Brookings report, "The Devaluation of Assets in Black Neighborhoods," Jonathan Rothwell, David Harshbarger, and I found that, even after accounting for structural characteristics such as square footage, age, and number of bedrooms, as well as neighborhood characteristics such as crime and school quality, homes in Black neighborhoods were valued, on average, $48,000 less than they would have been if the residents of the neighborhood were mostly White. That is a cumulative loss of $156 billion nationwide.

And we witness viral news stories revealing how appraisers value Black and White homeowners differently. In Jacksonville, Florida, a mixed-race family looking to sell their home in a predominantly White neighborhood received an original appraisal of $330,000. After presenting a White owner, a second appraisal came in $135,000 higher.

A similar incident occurred in Denver. Again, after the family removed indicators of Blackness, the home increased in value by $145,000. In San Francisco, a second appraisal increased its value by $500,000.

"We are here today because we are tired. We are tired of paying more for less."

These seemingly individual acts of racism are part and parcel of a structural problem. The housing market is structured to disproportionately exclude Black and Brown households.

For instance, our zoning codes and building practices are streamlined to deliver large, single-family homes. My colleague, Tracy Loh, and I showed in a recent study that, for decades, the very largest houses—four or more bedrooms—have grown as a share of all housing inventory, while smaller homes, which are more affordable for low-wealth families, have stagnated or declined.

Over 6 million Black and Brown millennials would be considered mortgage-ready if there were any attainable homes for sale in prime locations.

Black buyers are subjected to racist steering practices when looking for a home. When applying for a loan, Black buyers are perceived as higher-risk, leading to more denials and higher interest rates.

Devaluation limits the amount of gain from refinancing. As we have heard, bad appraisals also rob families of wealth.

And all of these housing industry actors blame each other for the problem.

"We are here today because we are tired. We are tired of paying more for less."

We made individual racism in the housing market illegal, and when it finds its way back in, we make a headline. But structural racism rigs the game from the start. The root cause for these negative trends is structural racism, which is systemic. To unlock the potential of Black neighborhoods and their residents, systemic racism must be pulled at its roots, rather than trimmed neatly, only to grow again.

Thank you for my time.

[The prepared statement of Mr. Perry can be found on page 52 of the appendix.]

Chairman GREEN. Thank you, Mr. Perry.

Ms. Espinoza, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF FRANCES ESPINOZA, EXECUTIVE DIRECTOR, NORTH TEXAS FAIR HOUSING CENTER

Ms. ESPINOZA. Thank you, Chairman Green, Ranking Member Barr, and subcommittee members.

The North Texas Fair Housing Center is a nonprofit organization that provides fair-housing services to residents of north Texas. Our services consist of fair-housing counseling, intake, and investigation of housing discrimination complaints, and fair-housing education.

It has been 50 years since the Federal Fair Housing Act banned racial discrimination in lending, yet African-American and Latino applicants continue to be routinely denied conventional mortgage loans at rates far higher than their White counterparts.

In 2011, the North Texas Fair Housing Center did an analysis of Home Mortgage Disclosure Act data and found that African-American and Latino mortgage applicants were denied conventional mortgages at much higher rates than Whites in the Dallas-Fort Worth market.

For example, African-American mortgage applicants to Wells Fargo Bank were 57 percent less likely to get a home purchase loan when compared to White applicants. Latino mortgage appli-

cants to Chase Bank were 64 percent less likely to get a loan than were White applicants. Home Mortgage Disclosure Act data from 2015 and 2016 confirmed the same pattern.

One of the most valuable tools we use to investigate housing discrimination is testing. Testing allows us to compare how applicants of color are treated as compared to their White counterparts.

As part of our enforcement program, we use the results of testing as evidence in housing discrimination complaints. We file both administrative complaints with the U.S. Department of Housing and Urban Development and lawsuits in Federal court.

The most common form of testing we do is rental testing. In 2011, we conducted rental testing which showed that African Americans who were otherwise qualified encountered discrimination in 37 percent of their housing searches. This means that African Americans face discrimination in two out of every five housing searches.

The testing also showed that Latinos experienced discrimination in 33 percent of their housing searches, or at least once in every three housing searches.

In our most recent enforcement initiative in 2019, we conducted tests to measure how veterans with Housing Choice Vouchers were treated in the housing market in Dallas, Texas. We conducted a total of 35 tests, and the results of 32 of them showed evidence of discrimination. We filed housing discrimination administrative complaints for all 32 tests.

The next most common form of testing that we do is sales testing. These tests measure how real estate agents treat buyers of color as compared to their White counterparts. In 2018, we conducted sales tests which showed that African-American testers are still being steered, based on their race, to neighborhoods that are predominantly African-American and steered away from neighborhoods that are majority-White.

Unlike rental and sales testing, mortgage lending testing is very resource-intensive. One of the challenges is the significant amount of time that testers must devote to each test. Unlike rental tests, which can be completed rather quickly, lending interviews involve several complex financial components, even at the pre-application stage. Testers must also be knowledgeable about the entire lending process.

Rental, sales, and lending testing can all be used to uncover practices that lead to segregation of neighborhoods. However, there is a particular need to devote resources to lending testing because it is so resource-intensive.

There is also a need for enforcement of complaints based on lending testing evidence. Because lending testing cases are more complex, they sometimes languish in the administrative process. There is a need for a strong entity with an expertise in lending discrimination that can take the testing evidence generated by local fair-housing organizations and move forward with enforcement that will thwart illegal practices.

Thank you for inviting me. My statement is complete.

[The prepared statement of Ms. Espinoza can be found on page 50 of the appendix.]

Chairman GREEN. Thank you very much, Ms. Espinoza.

Ms. Cooper, you are now recognized for 5 minutes to give an oral presentation of your testimony.

STATEMENT OF CHERYL R. COOPER, ANALYST, FINANCIAL ECONOMICS DIVISION, CONGRESSIONAL RESEARCH SERVICE

Ms. COOPER. Chairman Green, Ranking Member Barr, and members of the subcommittee, thank you for the opportunity to testify today.

My name is Cheryl Cooper, and I am an analyst in financial economics at the Congressional Research Service (CRS), focusing on consumer finance markets and policy issues. For those who might be unfamiliar with CRS, our role is to provide objective, nonpartisan research and analysis to Congress.

Any arguments presented in my testimony are for the purposes of informing Congress and not to advocate for a particular policy outcome.

My testimony today will focus on disparities in access to financial products and services, including racial, ethnic, income, age, and geographic disparities. In particular, I will focus on discussing disparities in access to banking services and disparities in inclusion in the credit reporting system. These areas are generally considered foundational for households to successfully manage their financial affairs and to graduate to wealth-building activities in the future, like homeownership.

Consumers often rely on family or community connections to get their first bank account, establish a credit history, and gain access to affordable credit. However, research suggests that disparities in family wealth or in community relationships with financial institutions can potentially persist across generations.

A factor that may be influencing racial disparities is the intergenerational effects of discrimination—for example, historical mortgage lending practices, redlining practices.

Moreover, violations in fair-lending laws can cause harm to consumers who do not get access to financial services. This is important because safe and affordable financial services are an important tool for most American households to help them avoid financial hardship and build assets over the course of their lives.

According to the FDIC's 2019 survey, over 5 percent of households in the United States were unbanked, meaning that these households did not have a bank account. In addition, over 17 percent of households used a nonbank financial transaction service, like a money order, a check-cashing, or a bill payment service.

These households are disproportionately of a racial or ethnic minority and tend to be lower-income, younger, and have less formal education. Urban and rural households are more likely to be unbanked, compared to suburban households.

Unbanked households report that they do not have a bank account because they do not have enough money, they don't trust banks, they have privacy concerns, and they want to avoid high and unpredictable bank fees.

These disparities in access are significant because some research suggests the importance of emergency savings and affordable payment transactions. Also, developing a relationship with a bank can

sometimes lead to access to other financial products, helping young consumers develop a credit history.

A limited credit history may serve as a barrier to achieving affordable credit, yet consumers also can't develop a credit history without access to credit products. This chicken-and-egg situation can make it difficult for some people to enter the credit reporting system.

According to the CFPB, credit scores can't be generated for approximately 20 percent of the U.S. population due to their limited credit histories. Limited credit history is correlated with age, income, race, and ethnicity. Many of these consumers are young. For example, 40 percent of credit invisibles are under 25-years-old. These consumers are disproportionately Black or Latino and live in lower-income or rural neighborhoods.

Most young adults transition into the credit reporting system in their early twenties. Young adults in lower-income and rural neighborhoods tend to make the transition to credit visibility at older ages than young adults in higher-income areas. And, notably, in lower-income communities, it is less common to enter the credit reporting system through what is called, "piggybacking," or becoming a joint account holder or authorized user on another person's account, such as a parent's account.

The disparities in inclusion to the credit reporting system are significant because it is generally a precursor to gain access to affordable credit and eventually to homeownership.

Thank you for your time, and I am happy to answer any questions that you have.

[The prepared statement of Ms. Cooper can be found on page 32 of the appendix.]

Chairman GREEN. Thank you very much, Ms. Cooper.

The Chair will now recognize Members for questions.

The gentleman from Missouri, Mr. Cleaver, who is also the Chair of our Subcommittee on Housing, Community Development, and Insurance, is now recognized for 5 minutes.

Mr. CLEAVER. Thank you, Mr. Chairman. I appreciate this opportunity. And I think this is exactly the kind of hearing that we need, so thank you.

Where I would like to center my discussion, my questions, is on the fact that the current Federal public policies operate to perpetuate or expand the racial wealth gap.

So, I would like to ask any of the panelists, are there Federal public policies that actually contribute to the exclusion of African Americans, Brown people, people of color? And what impact does it have on the wealth gap? I am talking about Federal policies.

Mr. PERRY. I will take a stab at that.

One of the things I am noticing is that current legislation does not address wealth in this country. We measure almost everything by income. And by doing so, you essentially abdicate responsibilities of dealing with the structures that created the gaps in the first place. In many different systems—housing, education, and other areas—if you don't address the wealth gap, you essentially gloss over the problem.

In addition, we also have a race and space problem. Because racist policies have followed Black people, we see discrimination in

rural communities, in urban communities, in suburbs. And, for my take, it is hard to not have a race and place approach to change.

And so, for me, it is not necessarily what the Federal Government is doing; it is what the Federal Government is not doing, not measuring, not testing. Because we have ample data that shows the impact of our policies, but what we have not done is really get at the reasons, the causes for these disparities.

Mr. CLEAVER. Yes. I think you are making a case for the increase of the minimum wage, and I think that is going to—that is a debate we are having right now.

Ms. RICE. Congressman, if I can add to that, too, there are a lot of policies that perpetuate racial disparity. So, in terms of Federal policies: the recently promulgated cap rule that was promulgated by the Federal Housing Finance Agency; the GSE LLPA structure, the loan-level pricing adjustment structure, discriminates against communities of color; the current Affirmatively Furthering Fair Housing rule that was promulgated several months ago by the Department of Housing and Urban Development, which really eviscerates our civil rights rules; and the current Disparate Impact rule that was promulgated by the Department of Housing and Urban Development several months ago, which also eviscerates a major civil rights tool that we have for addressing discriminatory policies.

So, there are many, many Federal policies that right now, work to perpetuate discriminatory outcomes.

Mr. CLEAVER. Thank you.

I think my time is running down, so I appreciate both you and Mr. Perry for your comments. Thank you.

Chairman GREEN. The gentleman yields back.

The Chair now recognizes the ranking member of the subcommittee, Mr. Barr, for 5 minutes.

Mr. BARR. Thank you, Mr. Chairman.

Last year, I introduced H.R. 8410, the Promoting Access to Capital in Underbanked Communities Act, which is designed to spur de novo bank formation and promote banking services in underserved areas.

The bill would ease the up-front burden of opening a bank, and provide incentives for banks to open and operate in rural areas. The bill is intended to address the problem of deeply affected counties that I referenced in my opening statement, which have lost a large portion of their bank branches.

Ms. Cooper, how have bank closures in rural communities impacted customers living in those areas? What long-term issues will arise if rural communities continue to face an unprecedented number of bank closures? And we anticipate that, given the trend of bank consolidation. Could a bill like the one I just referenced, designed to promote more banking activity in rural and otherwise underserved areas, help with those problems?

Ms. COOPER. Thank you so much for your question, Congressman.

As I mentioned in my oral statement, there are geographic disparities that exist in terms of access to financial products. And as you mentioned and I mentioned, research suggests that, for consumers living in rural areas, these consumers may be living farther

from bank branches or also may be less likely to have access to high-speed internet, and both of these factors could possibly make it more difficult for consumers to access quality banking services.

We at CRS don't advocate for a particular policy outcome, but I would be happy, after this hearing, to look at the bill with some of my CRS colleagues.

Also, in general, around trends in terms of consolidation in the banking industry, this has been happening for decades. We have seen a reduction in community banks for the past few decades, particularly a reduction in bank branch openings in the past decade.

And there are a lot of different factors that are leading to this trend. In general, economists would say that you are starting to see economies of scale, which basically means that big banks are becoming more profitable than smaller banks to operate. And that is probably part of the reason why we are seeing this consolidation in the banking industry.

Mr. BARR. Ms. Cooper, I did see, though—and I respect that CRS doesn't make policy endorsements, but I did see in your testimony, in the, "Possible Policy Responses" section, "Bank Regulation Changes," that you mentioned the Community Reinvestment Act (CRA). And I think, for our friends and neighbors in underserved parts of our country in both urban and rural areas, this is something that I think would be welcome, to give banks more credit for bank account outreach activities in those underserved areas.

Do you have any specifics on that? We saw an effort by the OCC, and Lael Brainard at the Federal Reserve, to update the CRA, but how can we give incumbent banks and new banks in these underserved areas credit for originating loans under the CRA?

Ms. COOPER. Yes. Thank you so much for that question.

You are right, one of the things that I mentioned in terms of possible policy options for expanding access to credit was possible proposed changes to bank regulation. So, this is one of the areas where we see proposals on this.

For example, I know the bank regulators have stated that they were considering changes to the Community Reinvestment Act to give banks more credit for bank account outreach activities in underserved communities. But I think there are trade-offs to these type of policies.

The positive, as you were saying, is that it can encourage bank outreach and connect more consumers to banks. But I think the flip side to it is, also, it could give credit for what some may consider effectively marketing, rather than the intention of the law, which was to encourage lending in underserved communities.

Mr. BARR. Thank you.

Ms. COOPER. This is an area where there—

Mr. BARR. Thank you.

And just reclaiming my time, in the final time I have, how is compliance under the Equal Credit Opportunity Act currently tested? And is there any indication that the testing regime needs to be strengthened? Or do regulators currently have enough authority to enforce that law?

And that is again to you, Ms. Cooper.

Ms. COOPER. Yes. Thank you so much for that question. And we are running out of time, so let me get back to you with that. I am happy to answer that question with one of my CRS colleagues.

Mr. BARR. Mr. Chairman, my time has expired, and I know that is a subject or a topic that is part of your legislation, so I invite any or all of the witnesses to comment on that and how we can make sure the ECOA is tested.

With that, I yield back.

Chairman GREEN. The gentleman's time has expired. And the witness may respond in writing to the gentleman's question.

The Chair will now recognize Ms. Adams, the gentlelady from North Carolina.

Ms. ADAMS. Thank you, Mr. Chairman.

And thank you to our witnesses for your testimony today.

Mr. Darity and Mr. Perry, you have both have done extensive research and writing on economic and racial inequity in the United States. In today's hearing, we focus primarily on how lending discrimination harms individual borrowers of color, but I am curious to hear your thoughts on how the same dynamics, primarily racism, also impact institutions of color, such as Historically Black Colleges and Universities (HBCUs).

In December of 2019, a study in the Journal of Financial Economics found that HBCUs pay higher underwriting fees to issue tax-exempt bonds compared with similar non-HBCUs, apparently reflecting higher costs of finding willing buyers. The effect is 3 times larger in the Deep South, where racial animus remains the most severe.

For example, identical fee differences are observed between HBCUs and non-HBCUs with triple-A ratings or when insured by the same company, even before the 2007–2009 financial crisis. HBCU-issued bonds are also more expensive to trade in secondary markets and, when they do, sit in inventory longer.

So are you familiar with this type of institutional lending discrimination? And what policy steps can we take to collect more data on the prevalence of this issue and ultimately to eradicate this type of harmful discrimination in lending for institutions that have been historically underserved and undervalued?

Mr. DARITY. It is my impression that this is a serious problem, but I think it is compounded or generated by the fact that Historically Black Colleges and Universities have such low endowment levels that they are then pressured to go into the credit market, a discriminatory credit market, to gain resources.

Another way to think about improving their circumstances is something that I think is applicable to individual households as well, which is, we need to build the wealth position of those institutions in such a way that they don't have the same type of pressure to seek predatory lending options to try to maintain their operations.

And we should think about how we could go about building the endowments of Historically Black Colleges and Universities so that they are comparable to the endowment levels that exist for White institutions in the United States. That is where we have a very glaring and dramatic difference.

In addition, of course, I think that we do have to confront these kinds of discriminatory practices. And it may be necessary for the Federal Government to take the step of providing public banking services in competition with the private sector to offset the types of behavior that we are observing that the private sector is undertaking.

And one final comment in this context. I said that this parallels the conditions that we observe for households, because the reason why households are pushed into trying to seek high levels of credit under very, very difficult circumstances, discriminatory circumstances, is, again, because their initial levels of wealth are so low. So, again, I would say, we have to think about asset building in addition to trying to improve credit market conditions.

Ms. ADAMS. Thank you, sir.

Mr. Perry, did you want to comment?

Mr. PERRY. I think Mr. Darity said everything I was going to say. In a nutshell, I think Black institutions are treated like Black people. And you have school boards and universities that, because of their wealth position, have to take essentially subprime market products, for all of the reasons that Mr. Darity indicated.

But I will just leave it there.

Ms. ADAMS. Okay. Thank you, sir.

Let me move on quickly. Ms. Rice, Ms. Espinoza, just how pervasive is lending discrimination in the United States? Is it widescale, or is it just a small problem?

Ms. Rice?

Ms. RICE. Sure. I am happy to answer that.

Yes, it is very widescale, especially when you consider, Congresswoman Adams, that almost all of the technologies that we use in the lending space—automated underwriting systems, risk-based pricing systems and credit scoring systems—discriminate against consumers of color and other underserved groups.

So the discrimination is very prevalent, which is why we have to really work to de-bias all of these technologies that we are using in the housing and financial services space.

Ms. ADAMS. Okay. Is the answer—

Chairman GREEN. The gentlelady's time has expired.

Ms. ADAMS. Okay. Thank you very much, and, Mr. Chairman, I yield back.

Chairman GREEN. The gentlelady's question can be answered in writing.

Ms. ADAMS. Great. Thank you.

Chairman GREEN. The gentleman from Georgia, Mr. Loudermilk, is now recognized for 5 minutes.

Mr. LOUDERMILK. Thank you, Mr. Chairman.

As I was preparing for this hearing, I was trying to think of ways that we as policymakers can help the minority communities have more access to financial services and wealth building. One thing that immediately came to mind, which is something that I have been working on for a long time, is fintech.

In recent years, developments in the financial technology arena have made enormous strides toward giving minority consumers access to the banking system. Let me just go through a few of these.

The first is mobile banking. It makes it easier than ever to open a checking account without having to go into a bank branch.

The second is online lending. It uses fintech platforms and even incorporates artificial intelligence in underwriting and has expanded access to credit to millions of consumers who were credit-invisible and didn't qualify for a traditional bank loan.

Prepaid cards are another. They have enabled consumers who do not have credit or debit cards to access e-commerce.

And the list goes on and on.

And it is not just in consumer finance. A recent study by New York University showed that fintech companies are by far the number-one source of Paycheck Protection Program (PPP) loans for Black-owned small businesses, exceeding Minority Depository Institutions (MDIs) and Community Development Financial Institutions (CDFIs). Fintechs have also been the number-one source of PPP lending to Hispanic-owned businesses.

As a result of this, I offered an amendment at this committee's markup of the stimulus bill that would allow fintech companies to participate in the State Small Business Credit Initiative (SSBCI). Unfortunately, it was rejected by the Majority. I would just say, if my colleagues are interested in improving access to financial services for minority consumers, I would suggest embracing fintech instead of opposing it.

Ms. Cooper, in your testimony, you said that new technology can provide more affordable financial products to consumers. Can you discuss how fintech has expanded access to credit for minority consumers?

Ms. COOPER. Thank you so much for that question, Congressman.

So, yes, as you just stated, I think new technology could potentially provide more affordable financial products to underserved communities, but it also could introduce consumer protection risks as well.

And this is similar to what you were saying. One example of this, for example, would be internet-based or mobile financial products, which, for example, could lower the cost to provide payment services or other types of products, but these types of products could have, for example, cybersecurity or privacy risks as well.

So, I think there is always a trade-off there when you are thinking about this stuff.

Mr. LOUDERMILK. Thank you for that, and I appreciate it.

On another note, because of these developments and what you have laid out, data security and data privacy laws, I think, need to be updated, and we need a uniform national standard. Do you have any thoughts on that?

Ms. COOPER. No. In general, I would say that CRS does not advocate for any particular policy outcome. And I personally am not the one at CRS who covers those issues, but I would be happy to put you in touch with the CRS analyst who does, to work with you and your staffers.

Mr. LOUDERMILK. I appreciate that.

And as we continue to hopefully promote fintech, since it is very beneficial in underserved areas of our nation and underserved demographics, we do have to address some limitations, which could

be the data security, because we are looking at more than 50 different standards with which we have to deal.

So, I appreciate the time here, Mr. Chairman, and I yield back.

Chairman GREEN. The gentleman yields back.

The Chair now recognizes the gentlelady from Michigan, Ms. Tlaib, for 5 minutes.

Ms. TLAIB. Thank you, Mr. Chairman.

And thank you all so much for being with us.

As we all know, despite decades of civil rights laws on the books, Black homeownership is plunging across the nation, with the worst losses happening right here in Michigan. Detroit has seen a dramatic shift from a city of homeowners where Black family members could build intergenerational wealth to, now, a city of renters. And the predatory lenders on Wall Street who crashed the economy in 2007–2008, as we know, got bailed out, while many of my residents got foreclosed on by the thousands.

Redlining never ended in Detroit. In 2019, in a city of more than 650,000 people, there were only 1,535 mortgages issued. And that is up from 2012, when we only had 244 mortgages that were reported. When mortgages are issued in Detroit, they go towards those who are White borrowers, who are a small minority of the population.

And so, unwillingness of banks to lend in Detroit and other majority-Black communities pushes our residents into riskier arrangements, like land contracts, which offer opportunities but also fewer protections and have been abused by predatory sellers.

Ms. Rice, we know banks aren't drawing red lines on a map anymore but that discrimination still persists. Can you describe some of the tactics and technology that lenders use now to perpetuate racial redlining?

Ms. RICE. Sure. Thank you so much for that question, and it is a critically important issue.

I am from Toledo, Ohio, and so I am very familiar with the Detroit market and other markets like it. One major problem that we have in cities like Detroit is that a lot of the housing stock is very affordable and is priced under $100,000. And, for a variety of reasons, it is extremely difficult in today's marketplace for consumers to access mortgage credit in the financial mainstream when you are trying to get what we call a smaller-dollar loan.

The qualified mortgage rule, coupled with the LLPAs from the GSEs, coupled with other Federal policies, really restrict credit access for more affordable loans. So, that is a major problem.

The other problem is the industry's overreliance on credit scores. Back when I was underwriting mortgages years ago, two of the key things that I relied on to determine a borrower's creditworthiness were: What are your current housing payments? Have you been paying your rent on time? And if you have been paying your current housing bill on time, you are a very good candidate. And, also, what is your housing payment shock? So, is the new mortgage that you are going to be paying appreciably different from the housing payment that you have been used to making? And if you have been paying your rent on time, and if there is really no housing payment shock, you are a very good candidate for getting credit.

But we don't use those two indicators anymore. Today, we overrely on algorithmic-based systems, like credit scores, automated underwriting systems, that don't include those kind of indicators.

And you heard one of the other panelists already testify that consumers of color are disproportionately credit invisible. So, just the systems that we have in place in order to give people an entrance into the financial mainstream are blocking folks out because those systems do not work for underserved communities.

Ms. TLAIB. Thank you, Ms. Rice.

I am not sure how much time I have, but I just want folks on the panel and just the public to notice that none of this discrimination that we are talking about today is explicitly spelled out in some sort of company handbook, but it is all implicit and cloaked in, like, proxies and codewords and misguided assumptions. And its effect, regardless of the intent, is to disproportionately deny homeownership opportunities to Black and Brown folks.

We have the tools to fight it. Just last year, though, unfortunately, President Trump struck a huge blow to fair-housing protection with this disparate impact final rule which failed to comply with the Supreme Court's Inclusive Communities decision. And we need to address that, Mr. Chairman.

We also know that, as recently as 2015, the Supreme Court recognized the continuing availability of disparate impact litigation on the Fair Housing Act. We need to restore these protections. They are getting watered down by conservative courts and decisions. And so, I just hope our subcommittee can proceed and be very intentional about addressing this discrimination that leaves a lot of my residents out of opportunities for economic stability.

Thank you, and I yield back.

Chairman GREEN. The gentlelady's time has expired.

We will now hear from Mr. Mooney from West Virginia for 5 minutes, and then, we will take our break. So if you are after Mr. Mooney, you might want to go cast your vote now. And we will cast our second vote as well. That is two votes before we return.

So, please, now, Mr. Mooney, you are now recognized for 5 minutes.

Mr. MOONEY. Thank you, Mr. Chairman.

My concerns are going to address access to rural banking, generally speaking. And I am going to direct a question to Ms. Cooper. But I want to highlight some of the concerns related to getting my constituents in rural West Virginia, and others, access to loans, credit, and banking, any and all banking services in general.

According to a survey by the FDIC, 7.8 percent of West Virginia households are unbanked. This puts West Virginia in the bottom 10 in the nation in terms of unbanked households.

Ms. Cooper, what can we do to help rural Americans get access to credit and basic financial services?

And just as a quick follow-up to that, after you answer that one, how do you feel the COVID-19 pandemic has affected efforts to reach the unbanked?

Ms. COOPER. Thank you so much for your questions, Congressman.

So, yes, in general, I know we have already spoken about this, and in my oral and written statements I have mentioned, kind of, the geographic disparity, the fact that research suggests consumers living in rural areas may be living farther from bank branches, and are less likely to have access to high-speed internet, and these reasons might make it more difficult for them to access quality banking services.

In general, in my written testimony, I talk about some policy options that are often discussed in this space just generally to increase access to credit to consumers.

And there are five broad types of policy approaches in this space: first, possible changes to bank regulation to further encourage banks to serve underserved communities; second, payment system improvements that may make bank products more attractive; third, financial technologies to potentially increase access to consumers; fourth, the government directly providing certain financial products directly to consumers; and fifth, financial education programs.

And I would say, in terms of all of these policy options, they all have costs and benefits and potential unintended impacts and risks, but they are all things that could be potential places to explore in this space if you are interested in expanding access to credit.

Thank you so much. And then your second question was around the COVID-19 pandemic? Is that correct?

Mr. MOONEY. That is correct, how you feel that affects efforts to reach the unbanked?

Ms. COOPER. Yes. Thank you so much for that question.

I am actually not aware of that much data, since the COVID-19 pandemic is something that has happened in this past year, and the FDIC's survey that they do regularly was most recently done in 2019.

But, yes, I think at least at the beginning of the pandemic, there were a lot of reports of more people accessing banking services online, given the pandemic. That pattern makes sense. So, I do think that is an interesting trend in this space.

Mr. MOONEY. Okay.

Thank you, Mr. Chairman. I yield back.

Chairman GREEN. The gentleman yields back.

At this time, we will stand in recess for the Members to cast two votes and then return.

[brief recess]

Chairman GREEN. Thank you, everyone, for your patience, especially our witnesses. Thank you so much. It is not unusual for Members to have to rush out and vote, and we try to do it as expeditiously as possible, because we know that your time is very valuable

Let me just see if Mr. Garcia of Illinois is present.

Mr. Garcia, are you with us? If so, I will yield 5 minutes to you for your questions.

We will stand in recess for a bit longer. We are awaiting the arrival of our ranking member and additional members, so please be a little bit patient with us. Thank you so much.

[brief recess]

Chairman GREEN. Friends, just to give you a quick update, we are not waiting on Mr. Garcia, so that you won't think that we are. We are waiting on our ranking member, Mr. Barr. I assume that he will be arriving shortly, so please continue to be patient with us while we await his arrival.

Mr. GARCIA OF ILLINOIS. And Mr. Garcia is on standby, Mr. Chairman.

Chairman GREEN. Yes, sir. I have noted that you are here. As soon as Mr. Barr arrives, we will come right to you. Thank you so much, Mr. Garcia.

Friends, if I may have your attention, please, the hearing will now return to order.

We will continue with questions. And next in order for questions will be Mr. Garcia of Illinois. Mr. Garcia, you are recognized for 5 minutes to ask your questions.

Mr. GARCIA OF ILLINOIS. Thank you so much, Mr. Chairman, for convening this important meeting.

When we talk about wealth in this country and opportunities to build wealth, we have to talk about housing. So when I think about the wealth gap, I think about neighborhoods like mine. I represent a working class, mostly Latino community in Chicago. I have lived here for more than 50 years. Most of my constituents are renters, and the housing crisis they are facing now under COVID-19 isn't new.

My neighbors are squeezed. On the one hand, our community can't get the investment they need. On the other hand, working-class Latino and Black people are being pushed out of their own neighborhoods by wealthier White residents who do have access to capital. So, I am glad to talk with you today to learn more about what is driving that and what we can do to support working-class communities and communities of color especially. I thank all of the witnesses for being here.

I would like to ask Ms. Espinoza a question on bank mergers. This country had 12,000 banks in 1990, and now it has fewer than 5,000. The Fed and the Department of Justice rubber-stamped bank merger applications without a second thought, even though mergers can often close down local bank branches and leave communities underserved.

Do you find that consolidation in the banking industry has a negative impact on marginalized communities, and does it hurt access to credit in communities like mine?

Ms. ESPINOZA. It does hurt access to credit, and one of the things that we have seen here with the bank mergers is that the Community Reinvestment Act (CRA) requirements don't change when banks merge. Instead of them having to do twice the amount, for example, by merging, they are actually having to do less under the CRA. So, it is definitely hurting people, and it hurts people of color because as they merge, they seem to close down branches in minority neighborhoods that are predominantly African American and Latino.

Mr. GARCIA OF ILLINOIS. Okay. Thank you.

Mr. Perry, in your testimony, you mentioned recent high-profile instances of the appraisal gap, that is, when a family's home is ap-

praised at a low value because of racial discrimination. This is a huge problem in my City of Chicago.

Could you talk a little bit more about how the appraisal gap hurts communities that have always had a hard time getting loans, and what can Congress and housing advocates do to get help?

Mr. PERRY. Yes, that is a difficult one, because Congress does not authorize appraisals. However, there are some key areas that we know are at fault. We know that the price comparison model in which homes are compared to other homes in similar neighborhoods essentially recycles racism, because if you are essentially measuring homes against other homes that have been impacted by discrimination, you really never get a sense of values.

The other area that is clear that home improvements are not treated the same in Black and Brown communities as they are in White communities, and we see that time and time again.

And there is one other area, and this is the area—the Dodd-Frank Act created an arm's-length relationship between appraisers and lenders, and it seems that in some communities, it is very strict, where lenders and appraisers don't talk at all, and it results in loans falling through, where in White communities, there seems to be enough communication to come to an agreed-upon price. And so those are the three areas where I see of some of the biggest problems.

Mr. GARCIA OF ILLINOIS. Thank you very much.

Mr. Chairman, I don't have any more questions at this time. I have to go vote.

Chairman GREEN. The gentleman yields back. Thank you, Mr. Garcia.

The Chair now recognizes the vice ranking member, Mr. Timmons from South Carolina, for 5 minutes.

Mr. TIMMONS. Thank you, Mr. Chairman.

Ms. Cooper, since the 1990s, the median wealth among minority families has plateaued, while it has increased roughly 50 percent for White families. This is a huge problem, as White families on average now have 41 times the wealth of Black families and 22 times the wealth of Latino families. I think we can all agree that that is a major problem.

A friend of mine, who is Black, explained it to me in a way that really stuck with me. He said, imagine a game of monopoly. Certain families have been playing for generations. They have been passing go, collecting $200. They have been purchasing property, building houses, building hotels, buying the railroads, and certain families have started much later. And it is challenging to play the game, it is challenging to compete, it is challenging to have a chance when you are faced with those kind of odds.

So, a racial wealth gap has always been an issue. But why has it gotten worse over the last few decades, and does it have anything to do with lending practices of financial institutions?

Ms. COOPER. Thanks for that question. As I was saying in my oral testimony, as you were describing, research suggests that disparities in family wealth or in community relationships with financial institutions can potentially persist across generations. For example, from parents to children, influencing children's financial outcomes, so, for example, children's credit history or homeowner-

ship status. And in this way, past discrimination can cause inter-generational effects, and as I described, these disparities exist in terms of access to financial products.

I will say in general, I am not aware of research around increases or decreases in some of these disparities. Over time, a lot of this research, particularly around intergenerational effects, is relatively new. But I would be happy to do some more research on that question and get back to you.

Mr. TIMMONS. Thank you.

Mr. DARITY. I would like to comment on this, if I may, to say that the widening gap that we have observed is in part attributable to the adverse effects of the Great Recession, but more significantly is due to the cumulative nature of wealth accumulation and decumulation across generations. That is to say, wealth begets wealth and lack of wealth begets lack of wealth.

And so communities that have been subjected to denial and deprivation have less of an opportunity to transfer resources across generations and, therefore, we observe a widening gap over the course of time. It is a fact that is associated with the very way in which people acquire additional assets.

Mr. TIMMONS. Sure. And, Mr. Darity, let me follow up on that. I appreciate you jumping in.

Mr. DARITY. Yes.

Mr. TIMMONS. Would you agree that it is a worthy endeavor to try to find ways to give people opportunities, who have not had opportunities in the past, without necessarily putting people who do not fall into that category at a disadvantage?

I am in the military. I am in the South Carolina Air National Guard, and we talk a lot about these issues, and the question becomes, not everyone is in the same box, and if you are going to try to give people opportunities who have not had opportunities in the past, that is a worthy endeavor, and I actually support that. My concern is that there are people who would be lumped in with the people who theoretically have had opportunities, who really haven't had opportunities.

So while we look at these statistics, and I agree they are actually quite terrible and we need to take steps, the question is, if someone is not necessarily in the bucket of, wealth begets wealth, they are struggling just like anyone else, how do we not disadvantage that person? Does that question make sense to you, sir?

Mr. DARITY. It makes sense to me, but I think that we have to recognize that those differences in opportunity historically have been racialized to the point that Whites who are in the bottom 20 percent of the income distribution have a higher median level of wealth than all Black Americans taken together. And so, I would argue that there is a racial differential that needs to be addressed.

Mr. TIMMONS. And I will do everything I can to help address that, because I do agree with you, in large part.

And I guess my next question is, would you segment out—

Chairman GREEN. The gentleman's time has expired. Excuse me. I'm sorry.

Mr. TIMMONS. Oh, I will yield back, Mr. Chairman. Thank you.

Chairman GREEN. Okay. Because we are trying to end before this next vote. The gentleman's time has expired.

And we will move on now to Ms. Garcia of Texas. You are now recognized for 5 minutes.

Ms. GARCIA OF TEXAS. Thank you, Mr. Chairman, and thank you so much for hosting this hearing.

And thank you to all of the witnesses. And most of all, thank you for your patience as we struggle through these votes.

I want to start with Ms. Rice. Ms. Rice, the Center for Investigative Reporting report revealed that out of 31 million Home Mortgage Disclosure Act records, that modern-day redlining still exists in 61 metro areas in our country. As compared to White borrowers, lenders denied African-American borrowers in significantly higher rates in 48 cities, Latinos in 25 cities, Asian Americans in 9 cities, and Native Americans in 3 cities.

Still, 98 percent of the banks nationally received a passing grade in the Community Reinvestment Act examination. What is wrong here? Do you think that we need to redo how we grade for the Community Reinvestment Act, and would moving from a pass/fail system to a more transparent letter grade be better?

Ms. RICE. Thank you so much, Congresswoman Garcia, for that question. One of the challenges that we face with the Community Reinvestment Act and the CRA examinations is that it is not automatically a given that if there are fair-lending violations at a financial institution, that it will translate into a lower score for the financial institution.

And so, oftentimes, fair-lending violations are not even considered in terms of being reflected in the ultimate score for the financial institution. And that is why you have seen, since 1977, when the Community Reinvestment Act was enacted, multiple examples over and over again of financial institutions who have been found to violate the Fair Housing Act, they have been found to have engaged in discrimination, and received an outstanding CRA grade.

Part of that is because CRA is tied to income. The Community Reinvestment Act says that lenders are supposed to be meeting the credit needs of their entire delineated community, including low-income areas. And it just depends on the guidance at the regulatory agencies at the particular time, but for some reason, the part that says that the banks are supposed to meet the credit needs of their entire community—somehow, communities of color don't get picked up in that definition.

Ms. GARCIA OF TEXAS. Should we look at other punishment, if you will? Should we look at criminal sanctions for intentional discrimination by the landlords, the builders, the mortgage companies?

Ms. RICE. We can certainly look at that, whether or not there should be criminal violations. But I think one of the first steps that should be taken is we should add race as a consideration explicitly in the Community Reinvestment Act, so it makes it clear that lenders cannot redline communities of color, they cannot avoid serving communities of color in order to get the higher grades in the CRA designations.

And also, lenders should be required to include communities of color in their service area. In other words, you shouldn't be able to carve out neighborhoods of color when you are designating what is your service area.

Ms. GARCIA OF TEXAS. Okay. But as my colleague, Ms. Tlaib, mentioned, nobody goes around and says, "Okay neighborhood A, you are being redlined." It is a lot more subtle. And with algorithms and the technology that is being used now, it is hard to find, and it is hard to find the appropriate enforcement tool. But thank you for that.

And I wanted to ask quickly, Ms. Espinoza, because I know I am running out of time, you mentioned the three different kinds of testing that you all do and look at. I think you said there was rental testing, self testing, and mortgage testing. How complicated is that, and about how much money do you all need for more testing so that we can more easily prove some of these cases?

Ms. ESPINOZA. Well—

Chairman GREEN. If I may, Ms. Espinoza, the gentlelady's time has expired, and we are trying to get back for the next vote.

Ms. ESPINOZA. Oh, okay. I can address that in writing.

Ms. GARCIA OF TEXAS. Thank you, Ms. Espinoza.

I yield back, Mr. Chairman. I apologize.

Chairman GREEN. That is quite all right. We are trying to get to everybody.

We will now go to Ms. Williams from Georgia for 5 minutes. And my apologies to everyone, but we do want to finish before the next vote.

Ms. WILLIAMS OF GEORGIA. Thank you, Chairman Green, and thank you for convening this hearing today.

In my district and across the country, we see racial wealth disparities brought on by barriers like invidious discrimination. In 2019, the median wealth in Black households was about $24,000, compared to $188,000 for White households, with the gaps sure to continue to widen because of the disproportionate impact of COVID-19.

I have an obligation in Congress to work to break down these barriers and ensure communities of color have a fair chance to buy homes, start their own businesses, and even send their kids to college without taking on the massive debt that I have had to incur. When fewer of us face barriers to building wealth and long-term prosperity, the better off our economy, our communities, and our people will be.

Professor Darity, student debt certainly stands in the way of closing the racial wealth gap, but in your testimony, you mention that there are some limitations to focusing exclusively on debt reduction. What are some next steps that we should consider from an asset-building perspective to lessen the financial burden of things like going to college for communities of color?

Mr. DARITY. Historically, the United States has practiced asset-building policies. Representative of these are the 19th Century policies that involved land allocation. In the 20th Century, the policies were focused primarily on supporting homeownership.

I would argue, though, that since the 1960s, the entire emphasis of Federal policy has been on income supports rather than wealth building or asset building. And so, if we are really concerned about improving opportunities for all Americans to engage in the widest range of opportunities, there needs to be a shift back towards asset-building opportunities.

And I would think that if we are thinking about individuals having an opportunity to go to college and to leave college on a debt-free basis, either we have to eliminate the expense of attending college altogether, as some people have advocated zero tuition for attending State universities. I think that is an idea that should be explored.

But on the other hand, I think that we tend to think about education as driving wealth, but we really should think about wealth as driving educational achievement. So, if we could alter the foundation for assets that are held by a large number of wealth-poor families in the United States, we would create greater opportunities for their kids to go further in school and not have to do so on the basis of the acquisition of extraordinary levels of indebtedness.

Mr. PERRY. And, Representative Williams, I just wanted to add that there are a number of innovative products going on right now which are enabling people to get a mortgage and cancel a student loan debt at the same time, and I think those are the kind of products we need to see in communities.

Ms. WILLIAMS OF GEORGIA. Thank you so much.

And, Professor Darity, I appreciate that.

Ms. Rice, I do have a quick question for you. As we have heard today, we must break down the discriminatory barriers to things like owning a home if we really want to close the racial wealth gap. In your testimony, you offered some suggestions to increase diversity in the real estate industry. Do you have any additional recommendations for increasing diversity in other parts of the financial services industry that impact how communities of color access housing?

Ms. RICE. Yes, absolutely. One of the first things we have to do is break down barriers to credit access and the overreliance on things like credit scores. Credit scores are a major factor that preclude people of color from being able to access financial services. People of color disproportionately live in credit deserts. They also disproportionately live in communities where there is a hyper concentration of nontraditional financial services providers who do not report positive behavior to the credit repositories.

So, that is a huge thing that we need to break down, and we can actually use new artificially intelligent tools in order to do that. But we do need more support from regulators and Congress in order to onboard those new debiasing, tech debiasing methodologies so that we can expand opportunities for people.

Ms. WILLIAMS OF GEORGIA. Thank you.

Ms. COOPER. And I will just—

Ms. WILLIAMS OF GEORGIA. We are out of time, because we only get 5 minutes, but I appreciate everyone being here today. And I look forward to working with everyone on the subcommittee as we continue to address these disparities.

Thank you, Mr. Chairman. I yield back the balance of my time.

Chairman GREEN. And thank you very much for being a little bit conscious of the time. I greatly appreciate it.

Let me move expeditiously and yield myself 5 minutes, so that we may quickly get to the next vote.

I was here in 2008 when we had the downturn in the economy, and one of the questions that we asked quite consistently was,

would anyone go to jail for the predatory lending that took place? The answer to the question is, yes, someone did: one person. One person went to jail for that long line of predatory lending that took place. In fact, we had one CEO of a major bank who settled out of court with the Justice Department, and the bank's board of directors gave this CEO a 74 percent raise in salary, amounting to about $20 million.

So, the question becomes this: Do we want to continue to allow persons who make loan applications to be punished criminally for falsifying information on a loan application while the loan originator does not face any charges if the loan originator denies a person credit? That is predatory lending, by the way. If you intentionally deny a person credit who is qualified for that credit, you are engaging in predatory lending, which is a crime.

But the question becomes, how do we deal with it? And testing is the means by which we can acquire the empirical evidence necessary to prosecute these crimes.

Let me start with you, Ms. Rice. Would you give me some indication as to how efficacious testing is, in your opinion, with reference to bringing forth the empirical evidence necessary to prosecute?

Ms. RICE. Testing is extremely efficacious for that purpose. And thank you so much, Congressman Green, for that question. The Supreme Court actually has stated that testing is one of the most verifiable and efficient ways of ferreting out discrimination.

Part of the challenge though, is that we don't have sufficient funding to support testing in the United States, and it is private fair housing organizations who engage in testing in a consistent fashion, as you have heard Frances Espinoza already testify to. But the challenge is that, some years we have very, very little funding to support testing and in some years we have more funding, but we never have sufficient funding.

The other thing that—

Chairman GREEN. Let me intercede for just a quick second. I am familiar with the Fair Housing Initiatives Program (FHIP) and the Fair Housing Assistance Program (FHAP). Here is something that is important. In H.R. 166, we provide for, in the Consumer Financial Protection Bureau (CFPB), an entity to conduct these tests. We want to formalize it to a greater degree.

I still support FHIP and FHAP. That is a great program, so I am going to support it. But what I would like to know is, if we put this together with the CFPB, does that give you some greater degree of belief that we can police and deter those who would intentionally deny people loans? Ms. Rice?

Ms. RICE. Yes, I do. And we vehemently support the bill that you referenced, the Fair Lending for All Act. It definitely will, and it is important for Congress to include protections, guardrails, so that the testing program can be ongoing no matter who is in control or who is at the helm of the organization.

Chairman GREEN. Let me move quickly to Ms. Espinoza. Ms. Espinoza, would you agree that testing is an efficacious methodology, and would you support H.R. 166 as we propose having testing take place through the CFPB?

Ms. ESPINOZA. Yes. Testing is the best way to uncover these predatory practices in fair housing investigations, so I do support—

Chairman GREEN. Okay. And let me ask Mr. Perry, would you agree as well?

Mr. PERRY. Yes. And, in fact, journalists and individuals are doing it.

Chairman GREEN. I hate to do this to you, but I am going to have to accept your yes, because I am running out of time.

Mr. PERRY. Yes.

Chairman GREEN. And I can't be unfair to others by giving myself more time.

Just let me say, Professor, I am very much familiar with Andrew Johnson and what happened, especially as it relates to him in 1868 when there was an effort to impeach him. I would add that he was the bigot of his time, and he denied the newly free persons the opportunity to start to amass wealth with the land that would have been accorded them. I can only say this, I don't pretend to say that this is the silver bullet, but this will at least help us with some of the credit issues. I do agree with you that the wealth issue is something that is paramount for us.

With that said, my time has expired, friends. I do appreciate all of the witnesses for being here today. Your being here and being patient with us has meant a lot to us. I regret that we had to intercede with votes, but these things happen, and we now have another vote that we have to deal with. So thank you, all of you.

The hearing is now adjourned, after I read a statement, excuse me. There is a statement that I have to read before we can adjourn this hearing, so please be patient as I move to the statement.

I thank the witnesses for their testimony and for devoting their time and resources to share their expertise with this subcommittee. Their testimony today will help to advance the important work of this subcommittee and of Congress in addressing lending discrimination and systemic racial inequality.

The Chair notes that some Members may have additional questions for this panel, which they may wish to submit in writing. Without objection, the hearing record will remain open for 5 legislative days for Members to submit written questions to these witnesses and to place their responses in the record. Also, without objection, Members will have 5 legislative days to submit extraneous materials to the Chair for inclusion in the record.

This hearing is now adjourned. Thank you so much.

[Whereupon, at 5:23 p.m., the hearing was adjourned.]

APPENDIX

February 24, 2021

Congressional Research Service
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TESTIMONY

Statement of

Cheryl R. Cooper
Analyst in Financial Economics

Before

Committee on Financial Services
Subcommittee on Oversight and Investigations
U.S. House of Representatives

Hearing on

"How Invidious Discrimination Works and Hurts: An Examination of Lending Discrimination and Its Long-Term Economic Impacts on Borrowers of Color"

February 24, 2021

Chairman Green, Ranking Member Barr, Members of the Subcommittee, thank you for the opportunity to testify today. My name is Cheryl Cooper, and I am an Analyst in Financial Economics at the Congressional Research Service (CRS) focusing on consumer finance markets and policy issues. CRS's role is to provide objective, nonpartisan research and analysis to Congress. CRS takes no position on the desirability of any specific policy. Any arguments presented in my written and oral testimony are for the purposes of informing Congress, not to advocate for a particular policy outcome.

My testimony will focus on racial, ethnic, and other disparities in access to financial products and services. In particular, I will focus on discussing disparities in access to bank and other payment accounts and disparities in inclusion in the credit reporting system. These areas are generally considered foundational for households to successfully manage their financial affairs, and graduate to wealth-building activities in the future, such as homeownership.[1]

Consumers often rely on family or community connections to get their first bank accounts, establish a credit history, and gain access to affordable credit. However, research suggests that disparities in family wealth or in community relationships with financial institutions can potentially persist across generations.[2] A factor that may be influencing racial disparities is the intergenerational effects of discrimination—for example, historical redlining practices in the mortgage lending market.[3] Moreover, violations in fair lending laws can cause harm to consumers who do not get access to financial services. This is important because safe and affordable financial services are an important tool for most American households to help them avoid financial hardship and build assets over the course of their lives.

Some U.S. households do not use banking services or have a robust credit history. Different barriers affect different populations. For some younger consumers, a lack of a co-signer might make it more difficult to build a credit report history, and a lack of knowledge or familiarity with financial institutions may be a barrier to obtaining a bank account. For consumers living paycheck to paycheck, a bad credit history or a lack of money could serve as barriers to obtaining affordable credit or bank accounts. For consumers living in rural areas, living further from bank branches or not having high-speed internet may make it more difficult to access quality banking services.

My testimony will first discuss the impact on consumers of access to financial products and services. Second, I will discuss racial, ethnic, and other disparities in access to financial services and then, lastly, potential policy interventions.

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[1] Wealth-building activities include access to homeownership, education, and other financial investments, such as for retirement. For more information on homeownership, see CRS Report R42995, *An Overview of the Housing Finance System in the United States*, by Katie Jones, Darryl E. Getter, and Andrew P. Scott. For more information on education finance, see CRS Report R43351, *The Higher Education Act (HEA): A Primer*, by Alexandra Hegji. For more information on saving and investing for retirement, see CRS Report R46441, *Saving for Retirement: Household Decisionmaking and Policy Options*, by Cheryl R. Cooper and Zhe Li.

[2] For example, recent research studies suggest correlations between parent credit and wealth characteristics and children's future credit scores and homeownership status. See Andra C. Ghent and Marianna Kudlyak, "Intergenerational Linkages in Household Credit," *Federal Reserve Bank of San Francisco Working Paper Series*, Working Paper 2016-31, December 2016, http://www.frbsf.org/economic-research/publications/working-papers/wp2016-31.pdf; Rawley Z. Heimer and Nicholas Fritsch, "Intergenerational Homeownership and Mortgage Distress," *Economic Commentary*, Federal Reserve Bank of Cleveland, June 18, 2020, https://www.clevelandfed.org/newsroom-and-events/publications/economic-commentary/2020-economic-commentaries/ec-202012-intergenerational-homeownership-and-mortgage-distress.aspx; and Jung Hyun, Choi Jun Zhu, and Laurie Goodman, *Intergenerational Homeownership: The Impact of Parental Homeownership and Wealth on Young Adults' Tenure Choices*, Urban Institute, October 2018, https://www.urban.org/sites/default/files/publication/99251/intergenerational_homeownership_0.pdf.

[3] Mehrsa Baradaran, *The Color of Money: Black Banks and the Racial Wealth Gap* (Harvard University Press, 2017).

The Impact of Access to Financial Products and Services[4]

In the United States, robust consumer credit markets allow most consumers to access financial services and credit products to meet their needs in traditional financial markets. For example, the vast majority of consumers have a bank account, a credit score, and a credit card. However, some consumers—who tend to be younger adults, low- and moderate-income (LMI) consumers, racial or ethnic minorities, and those who live in rural areas—can find gaining access to these products and services challenging. In addition, discrimination, such as violations in fair lending laws, can also prevent consumers from accessing financial services.

These consumers may find managing their financial lives expensive and difficult. Some households also use financial products and services outside of the banking system either by choice or due to a lack of access to traditional institutions. While products outside the banking sector may better suit some households' needs, these products might also lack consumer protections or other benefits that traditional financial institutions tend to provide.

Financial inclusion refers to the idea that individuals "have access to useful and affordable financial products and services that meet their needs—transactions, payments, savings, credit, and insurance—delivered in a responsible and sustainable way."[5] Access to financial products allows households to better manage their financial lives, such as storing funds safely, making payments in exchange for goods and services, and coping with unforeseen financial emergencies, such as medical expenses or car or home repairs.

The Consumer Financial Protection Bureau (CFPB)[6] defines *financial well-being* as:

1. having control over day-to-day, month-to-month finances,
2. having the ability to absorb a financial shock,
3. being on track to meet financial goals, and
4. being able to make choices that allow a person to enjoy life.[7]

Many Americans have low financial well-being and live paycheck to paycheck. National surveys suggest that about 40% of Americans find "covering expenses and bills in a typical month is somewhat or very difficult,"[8] and they could not pay all of their bills on time in the past year.[9] In addition, more than 35% of households did not set aside any money in the past year for emergency expenses.[10] Therefore, a sizable portion of the adult population report they would have difficulty meeting an unexpected expense. If faced with a $400 unexpected expense, 39% of adults say they would borrow, sell something, or not be able to

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[4] For more information on financial inclusion and credit access policy issues, see CRS Report R45979, *Financial Inclusion and Credit Access Policy Issues*, by Cheryl R. Cooper.

[5] The World Bank's definition of *financial inclusion*. See World Bank, "Financial Inclusion," October 2, 2018, https://www.worldbank.org/en/topic/financialinclusion/overview.

[6] For more information on the Consumer Financial Protection Bureau (CFPB), see CRS In Focus IF10031, *Introduction to Financial Services: The Consumer Financial Protection Bureau (CFPB)*, by Cheryl R. Cooper and David H. Carpenter.

[7] CFPB, *Financial Well-Being: The Goal of Financial Education*, January 2015, p. 5, https://files.consumerfinance.gov/f/201501_cfpb_report_financial-well-being.pdf.

[8] CFPB, *Financial Well-Being in America*, September 2017, p. 72, https://files.consumerfinance.gov/f/documents/201709_cfpb_financial-well-being-in-America.pdf.

[9] Financial Health Network (formerly CFSI), *U.S. Financial Health Pulse: 2018 Baseline Survey Results*, May 2019, p. 4, https://finhealthnetwork.org/research/u-s-financial-health-pulse-2018-baseline-survey-results/.

[10] Federal Deposit Insurance Corporation (FDIC), *How America Banks: Household Use of Banking and Financial Services*, 2019 FDIC Survey, October 2020, p. 55, https://www.fdic.gov/analysis/household-survey/2019report.pdf.

cover the expense.[11] These financial struggles lead to real impacts on the health and wellness of these families; those with low financial well-being are more likely to face material hardship.[12]

Banking and Other Transaction Accounts

The banking sector provides valuable financial services for households that allow them to save, make payments, and access credit.[13] Most U.S. consumers choose to open a bank account because it is a safe and secure way to store money.[14] For example, the Federal Deposit Insurance Corporation (FDIC) insures up to $250,000 per depositor against an institution's failure. In addition, consumers gain access to payment services through checking accounts, such as bill pay and paper checks. Frequently, a checking account includes access to a debit card, which facilitates payment transactions through the account. For most consumers, a bank account is less expensive than alternative ways to access these types of services. Some studies suggest that affordable access to payment transactions may be particularly important for consumers to manage their financial lives.[15]

For most consumers, opening a bank account is relatively easy. A consumer undergoes an account verification process and sometimes provides an initial opening deposit of money into the account. Many consumers open their first depository account when they get their first job or start post-secondary education. Bank accounts are often the first relationship that a consumer has with a financial institution, which can later progress into other types of financial products and services, such as loan products or financial investments. Financial institutions sometimes provide consumer loans to existing customers, even if the borrower lacks a credit history (e.g., a consumer with a checking account who is a student or young worker) to build long-term relationships.

Banking Account Alternatives

Some households use financial services outside of the banking system. Nonbank financial transaction products include check cashing, money orders, and bill payment services. These products can sometimes be less expensive, faster, and more convenient for some consumers.[16] For example, although check cashing, money orders, and other nonbank transaction products might charge high fees, some consumers may incur higher or less predictable fees with a checking account. In addition, such nonbank financial transaction products might allow consumers to access cash more quickly, which might be valuable for consumers with tight budgets and little liquid savings or credit to manage financial shocks or other expenses. Lastly, nonbank stores often are open longer hours than banks, including evenings and weekends, which might be more convenient for working households. Although consumers may find benefits in using financial services outside of the banking system, these products may not always have all of the benefits of bank accounts, such as FDIC insurance or other consumer protections.

General-purpose prepaid cards are another popular alternative to a traditional checking account. These cards can be obtained through a bank, at a retail store, or online, and they can be used in payment networks such as Visa and MasterCard. General-purpose reloadable prepaid cards generally have features

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[11] Federal Reserve, *Report on the Economic Well-Being of U.S. Households in 2018*, May 2019, p. 2, https://www.federalreserve.gov/publications/files/2018-report-economic-well-being-us-households-201905.pdf.

[12] CFPB, *Financial Well-Being in America*, p. 6.

[13] The banking sector includes both banks and credit unions.

[14] *Bank accounts* refer to checking, savings, and other accounts at all depository institutions, including banks and credit unions.

[15] CFPB, *Financial Well-Being in America*, p. 57; and Dean Karlan et al., *Research and Impacts of Digital Financial Services*, National Bureau of Economic Research (NBER), Working Paper no. 22633, September 2016, p. 3.

[16] Lisa Servon, *The Unbanking of America: How the New Middle Class Survives* (Mariner Books, 2017).

similar to debit and checking accounts, such as the ability to pay bills electronically, get cash at an ATM, make purchases at stores or online, and receive direct deposits. Prepaid cards often have a monthly maintenance fee and other particular service fees, such as for using an ATM or reloading cash.

Impact of Access to Banking and Other Transaction Accounts

Research has examined the impact of access to bank and other transaction accounts in achieving financial well-being. For example, a CFPB study found that not having a bank account and nonbank transaction product use (e.g., check cashing or money orders) is correlated with lower financial well-being.[17] In addition, accumulating liquid savings[18] is highly correlated with the CFPB's financial well-being scale.[19]

Other research suggests that emergency savings are crucial for a household's financial stability. The ability to meet unexpected expenses is particularly important, because within any given year most households face an unexpected financial shock.[20] For example, one study found that following a financial shock, families with even a relatively small amount of non-retirement savings (e.g., $250-$750) are less likely to be evicted or miss a housing or utility payment.[21] These findings are consistent throughout the income spectrum, not only for lower-income families.[22]

One barrier for building emergency savings may include not having a separate account dedicated to saving.[23] When money is kept in a transaction account intended for emergencies, it can be vulnerable to unintentional overspending.[24] In particular, debit accounts seem to help consumers save more by reducing money spent on financial services and monitoring costs.[25] Moreover, access to faster and more secure payment services has also been shown to provide benefits to consumers, including helping lower-income consumers better handle financial shocks.[26]

The Credit Reporting System[27]

The credit reporting industry collects information on consumers that is frequently related to their past financial performance and repayment history on traditional credit products. Lenders use the information

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[17] CFPB, *Financial Well-Being in America*, p. 57.

[18] Liquid savings are financial assets, such as a savings account, from which the household can easily access funds. In contrast, illiquid wealth includes valuable items, such as a car or home that a household owns. For more information on U.S. households' balance sheet, see CRS Report R45813, *An Overview of Consumer Finance and Policy Issues*, by Cheryl R. Cooper.

[19] CFPB, *Financial Well-Being in America*, pp. 49-53.

[20] According to a Pew Charitable Trusts survey, 60% of households face a financial shock within 12 months, such as a major car or home repair, a trip to the hospital, a pay cut, or another large expense. The median cost of a household's most expensive shock during a year is $2,000. For more information, see Pew Charitable Trusts, *How Do Families Cope with Financial Shocks? The Role of Emergency Savings in Family Financial Security*, October 2015, pp. 4-5, https://www.pewtrusts.org/~/media/assets/2015/10/emergency-savings-report-1_artfinal.pdf.

[21] Signe-Mary McKernan et al., *Thriving Residents, Thriving Cities: Family Financial Security Matters for Cities*, Urban Institute, April 2016, p. 2, https://www.urban.org/research/publication/thriving-residents-thriving-cities-family-financial-security-matters-cities.

[22] McKernan et al., *Thriving Residents, Thriving Cities*, pp. 6-9.

[23] Karlan et al., *Research and Impacts of Digital Financial Services*, p. 2.

[24] For more information on consumer financial biases, see CRS Report R45813, *An Overview of Consumer Finance and Policy Issues*, by Cheryl R. Cooper.

[25] Pierre Bachas et al., *How Debit Cards Enable the Poor to Save More*, NBER, Working Paper no. 23252, October 2018.

[26] Karlan et al., *Research and Impacts of Digital Financial Services*, p. 3.

[27] For more information on the credit reporting industry, see CRS Report R44125, *Consumer Credit Reporting, Credit Bureaus, Credit Scoring, and Related Policy Issues*, by Cheryl R. Cooper and Darryl E. Getter.

to estimate the probability of successfully repaying a loan or defaulting on it. Consumer files generally do not contain information on consumer income or assets or on nonbank financial services. Credit bureaus collect and store payment data reported to them by financial firms and others, and they or other credit scoring companies use this data to estimate individual consumers' creditworthiness, generally expressed as a numerical "score." The three largest credit bureaus—Equifax, Experian, and TransUnion—provide credit reports nationwide that include repayment histories.[28] Credit reports generally may not include information on items such as race or ethnicity, religious or political preference, or medical history.

Impact of Access to the Credit Reporting System

The credit reporting industry significantly affects consumer access to financial products, because lenders and other financial firms use consumer data or a credit score as a factor when deciding whether to provide credit or other products to an individual and under what terms. For this reason, inclusion in credit bureaus can have positive effects on consumers by reducing market information asymmetry and allowing some consumers to obtain better terms of credit.[29] Consumers with good credit histories may find it easy to access credit on good terms. Consumers who find it challenging to enter the traditional credit reporting system may face challenges accessing many consumer credit products, such as mortgages or credit cards. In this way, a limited credit history can serve as a barrier to obtaining affordable credit. Yet consumers also face challenges developing a credit history without access to credit products. This chicken-and-egg situation can make it difficult for some people to enter the credit reporting system.

Some consumers can access nonbank credit financial products for their credit needs without a credit history. Nonbank credit financial products include payday loans, pawn shop loans, auto title loans, and other types of loan products from nonbank providers.[30] Some argue that these products are expensive and are more likely than bank products to lead to debt traps. Bank credit may be less expensive for borrowers with good credit histories or relationships with banks. For other consumers, nonbank credit financial products might better serve their needs due to fee structure or less stringent underwriting.[31]

Disparities in Access to Financial Services

Racial, ethnic, and other disparities exist in access to bank and other payment accounts and in inclusion in the credit reporting system. One factor influencing these disparities is likely the intergenerational effects of discrimination. Some consumers face barriers that make it more difficult for them to open bank accounts, enter the credit system, and gain access to financial product and service offerings. These barriers can be significant because they may disadvantage these consumers from effectively managing their financial lives and achieving financial well-being.

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[28] For a list of consumer reporting agencies, see "List of Consumer Reporting Agencies," issued by CFPB, at https://files.consumerfinance.gov/f/documents/cfpb_consumer-reporting-companies-list.pdf.

[29] Karlan et al., *Research and Impacts of Digital Financial Services*, pp. 4-5.

[30] For more information, on nonbank alternative credit products, see CRS Report R44868, *Short-Term, Small-Dollar Lending: Policy Issues and Implications*, by Darryl E. Getter; and CRS Insight IN11059, *CFPB Finalizes New Payday Lending Rule, Reversing Prior Regulation*, by Cheryl R. Cooper.

[31] The extent to which borrowers' financial situations would be harmed by using expensive credit or having limited access to credit is widely debated. Credit is an important way households pay for unexpected expenses and compensate for emergencies, such as a car or home repair, a medical expense, or a pay cut. Research suggests that access to this type of short-term credit can help households during short-term emergencies, yet unsustainable debt can harm households. Consumer groups often raise concerns regarding the affordability of small-dollar loans. Some borrowers may fall into *debt traps*, situations where borrowers repeatedly roll over existing loans into new loans and find it difficult to repay outstanding balances.

Disparities and Barriers to Bank Accounts and Transaction Services[32]

According to the FDIC's 2019 survey, 5.4% of households in the United States were *unbanked*, meaning that these households do not have a bank account.[33] Unbanked consumers tend to be lower-income, younger, have less formal education, of a racial or ethnic minority, disabled, and have incomes that varied substantially from month to month compared with the general U.S. population.[34] Urban and rural households were more likely to be unbanked compared to suburban households.[35] Unbanked persons may be electing not to open a bank account due to costs, a lack of trust, or other barriers. According to the survey, these households report that they do not have a bank account because they do not have enough money, do not trust banks, are concerned about privacy, and want to avoid high and unpredictable bank fees.[36] Prepaid card use was more prevalent among unbanked households.[37] Moreover, unbanked households are much more likely to report not saving for unexpected expenses and emergencies (74%) than banked households.[38]

In addition, 17.2% of households used nonbank financial transaction services in the past year.[39] Nonbank financial transaction services include money orders, check cashing, and bill payment services. Households using nonbank financial transaction services tend to be lower-income, younger, have less formal education, of a racial or ethnic minority, and have incomes that varied substantially from month to month compared with the general U.S. population.[40] These households are more likely to be unbanked; however, 15% of banked consumers used nonbank financial transaction services in the past year as well.[41]

Consumers with low bank account balances or who are less creditworthy may generally be less profitable for banks to serve. Lower-balance consumers provide banks minimal funds to lend out and earn interest. Moreover, less creditworthy consumers may be less likely to develop profitable relationships with banks if they are not in a position to obtain loans. Therefore, bank fees allow banks to recoup the costs associated with providing accounts for these consumers. Because of the way bank fees are structured, consumers with lower balances using checking and savings accounts tend to incur more fees than consumers with higher balances.

The availability of free or low-cost checking accounts has reportedly diminished in the past decade or so, and fees associated with checking accounts have grown.[42] In addition to certain minimum account balance and other service fees, the most common fees that checking account consumers incur are overdraft and nonsufficient fund fees.[43] Overdraft services can help consumers pay bills on time, but fees can be costly,

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[32] For more information on access to bank accounts, see CRS In Focus IF11631, *Financial Inclusion: Access to Bank Accounts*, by Cheryl R. Cooper.

[33] FDIC, *How America Banks*, p. 1.

[34] FDIC, *How America Banks*, pp. 1-2.

[35] FDIC, *How America Banks*, p. 2.

[36] FDIC, *How America Banks*, p. 3.

[37] FDIC, *How America Banks*, p. 6.

[38] FDIC, *How America Banks*, p. 56.

[39] FDIC, *How America Banks*, p. 6.

[40] FDIC, *How America Banks*, p. 6.

[41] FDIC, *How America Banks*, p. 39.

[42] CFPB, *CFPB Study of Overdraft Programs: A White Paper of Initial Data Findings*, June 2013, pp. 15-17, https://files.consumerfinance.gov/f/201306_cfpb_whitepaper_overdraft-practices.pdf; and FDIC, *FDIC Quarterly Banking Profile: Quarterly Income Time-Series Data*, 2019, https://www.fdic.gov/bank/analytical/qbp/.

[43] Trevor Bakker et al., *Data Point: Checking Account Overdraft*, CFPB, July 2014, p. 5, https://files.consumerfinance.gov/f/201407_cfpb_report_data-point_overdrafts.pdf.

particularly if used repeatedly.[44] For consumers living paycheck to paycheck, maintaining bank account minimums and avoiding account overdrafts might be difficult, leading to unaffordable account fees. In addition, unpaid fees can lead to involuntary account closures, making it more difficult to obtain a bank account in the future.

Bank access may also have a geographic component, as some observers are concerned that *banking deserts*—areas without a bank branch nearby—exist in certain communities. Branch offices are still important to many consumers, even as mobile and online banking has become more popular. For example, most banked households visit a bank branch regularly, and over a quarter of banked households visit 10 or more times in a year.[45] Older and rural households were more likely to visit bank branches more frequently than other banked households.[46] However, in the past decade, the number of bank branch offices has declined in the United States due to many causes, such as bank consolidations and the rise of online banking.[47] Some argue that this has left some communities without any nearby bank branches, making it more difficult to access quality banking services, particularly in lower-income, non-urban areas.[48] Yet others argue that banking deserts are not a major issue in the United States because they have been stable over time, and minority areas are less likely to be affected than other areas of the country.[49]

Disparities and Barriers to Entering the Credit Reporting System

According to the CFPB, credit scores cannot be generated for approximately 20% of the U.S. population due to their limited credit histories.[50] The CFPB categorizes consumers with limited credit histories into several groups. One category of consumers, referred to as *credit invisibles*, have no credit record at the three nationwide credit reporting agencies and, thus, do not exist for the purposes of credit reporting. Credit invisibles represents 11% of the U.S. adult population, or 26 million consumers. Another category of consumers have a credit record and thus exist, but they cannot be scored or are considered *unscorable*. Unscorable consumers either have insufficient (short) histories or stale (outdated) histories. The insufficient and stale unscored groups, each containing more than 9 million individuals, collectively represent 8.3% of the U.S. adult population, or approximately 19 million consumers.[51]

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[44] For more information on overdraft, see CRS In Focus IF11460, *Overdraft: Payment Service or Small-Dollar Credit?*, by Andrew P. Scott.

[45] FDIC, *How America Banks*, p. 23.

[46] FDIC, *How America Banks*, p. 24.

[47] Although some traditional banks have tried to compete in digital banking to provide cheaper products to consumers, banks have not always been successful with the online product channel. See Penny Crosman, "Where Did JPMorgan Chase's Finn Experiment Go Wrong?," *American Banker*, June 6, 2019.

[48] Drew Dahl and Michelle Franke, *"Banking Deserts" Become a Concern as Branches Dry Up*, Federal Reserve Bank of St. Louis, July 25, 2017, https://www.stlouisfed.org/publications/regional-economist/second-quarter-2017/banking-deserts-become-a-concern-as-branches-dry-up; Donald Morgan, Maxim Pinkovskiy, and Bryan Yang, *Banking Deserts, Branch Closings, and Soft Information*, Federal Reserve Bank of New York, March 7, 2016, https://libertystreeteconomics.newyorkfed.org/2016/03/banking-deserts-branch-closings-and-soft-information.html; and Francisco Covas, *Some Facts About Bank Branches and LMI Customers*, Bank Policy Institute, April 4, 2019, https://bpi.com/notes-papers-presentations/some-facts-about-bank-branches-and-lmi-customers/.

[49] Morgan, Pinkovskiy, and Yang, *Banking Deserts, Branch Closings, and Soft Information*; and Covas, *Some Facts About Bank Branches and LMI Customers*.

[50] Kenneth P. Brevoort, Philipp Grimm, and Michelle Kambara, *Data Point: Credit Invisibles*, CFPB, May 2015, p. 6, http://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf.

[51] Brevoort, Grimm, and Kambara, *Data Point: Credit Invisibles*, p. 6.

Limited credit history is correlated with age, income, race, and ethnicity. Many consumers that are credit invisible or unscorable are young. For example, 40% of credit invisibles are under 25 years old.[52] Moreover, consumers who live in lower-income neighborhoods or are Black or Latino are also disproportionately credit invisible or unscorable compared with the U.S. population.[53] Credit invisibility is higher in rural areas as well as areas where fewer households have high-speed internet.[54]

Most young adults transition into the credit reporting system in their early 20s—80% of consumers transition out of credit invisibility before age 25, and 90% do so before age 30.[55] For young consumers, the most common ways to become credit visible are through credit cards, student loans, and *piggybacking* (i.e., becoming a joint account holder or authorized user on another person's account, such as a parent's account).[56] Young adults in LMI neighborhoods tend to make the transition to credit visibility at older ages than do young adults in higher-income neighborhoods. In urban areas, consumers over 25 years old from LMI neighborhoods have higher rates of credit invisibility than those in middle- and upper-income areas.[57] In addition, the highest rates of credit invisibility for consumers over 25 years old are in rural areas, and these rates do not vary much based on neighborhood income.[58] Credit invisible consumers in LMI and rural areas are less likely to enter the credit bureaus through a credit card than credit invisible consumers in other parts of the country,[59] possibly because piggybacking is notably less common in LMI communities.[60] Moreover, using student loans to become credit visible is also less common in LMI areas.[61]

Over 27% of households do not have access to bank credit products,[62] generally because they are either unscorable or have a blemished credit history. These households tend to be lower-income, have less formal education, of a racial or ethnic minority, and disabled compared with the general U.S. population.[63] Moreover, less than 5% of households used nonbank credit financial products, such as payday or pawn shop loans, in 2019.[64] These households also tend to be lower-income, have less formal education, of a racial or ethnic minority, and disabled compared with the general U.S. population.[65] Rural households were more likely to use nonbank credit products than suburban and urban households, as well as households in the South.[66]

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[52] Brevoort, Grimm, and Kambara, *Data Point: Credit Invisibles*, p. 14.

[53] Brevoort, Grimm, and Kambara, *Data Point: Credit Invisibles*, pp. 16-23.

[54] Kenneth P. Brevoort et al., *Data Point: The Geography of Credit Invisibility*, CFPB, September 2018, p. 11, 20, https://www.consumerfinance.gov/data-research/research-reports/data-point-geography-credit-invisibility/.

[55] Kenneth P. Brevoort and Michelle Kambara, *Data Point: Becoming Credit Visible*, CFPB, June 2017, pp. 5 and 8, https://files.consumerfinance.gov/f/documents/BecomingCreditVisible_Data_Point_Final.pdf.

[56] Brevoort and Kambara, *Data Point: Becoming Credit Visible*, p. 13; and CFPB, *Building a Bridge to Credit Visibility: A Report on the CFPB's September 2018 Building a Bridge to Credit Visibility Symposium*, July 2019, p. 12, https://files.consumerfinance.gov/f/documents/cfpb_building-a-bridge-to-credit-visibility_report.pdf.

[57] Brevoort et al., *Data Point: The Geography of Credit Invisibility*, pp. 10-11.

[58] Brevoort et al., *Data Point: The Geography of Credit Invisibility*, pp. 11-12.

[59] Brevoort et al., *Data Point: The Geography of Credit Invisibility*, p. 13.

[60] Brevoort and Kambara, *Data Point: Becoming Credit Visible*, p. 6.

[61] Brevoort and Kambara, *Data Point: Becoming Credit Visible*, p. 17.

[62] FDIC, *How America Banks*, p. 8.

[63] FDIC, *How America Banks*, p. 48.

[64] FDIC, *How America Banks*, p. 8.

[65] FDIC, *How America Banks*, p. 8.

[66] FDIC, *How America Banks*, pp. 9, 49.

Possible Policy Responses

Expanding access to banking services and the credit reporting system could reduce racial, ethnic, and other disparities that currently exist, and help more consumers achieve higher financial well-being and graduate to wealth-building activities in the future, such as homeownership. Some research suggests that consumers may particularly benefit from (1) access to affordable electronic payment system services and a safe way to accumulate and hold emergency savings, for example, through a traditional bank account; and (2) access to the credit reporting system and affordable credit. The government, the private sector, and the nonprofit sector may all be in a position to help increase access to these types of financial products for the underserved.

Bank Regulation Changes. Some propose changes to bank regulation to try to increase access to bank accounts and bank credit products. For example, bank regulators have considered changes to the Community Reinvestment Act (CRA; 12 U.S.C. §§2901-2908) to give banks more credit for bank account outreach activities in underserved communities.[67] In addition, bank regulators have considered their guidance to banks interested in offering small-dollar lending products.[68] However, policymakers often face a trade-off between consumer protection and access to credit when regulating the banking sector.

Payment System Improvements.[69] Payment system improvements, either by the government or by the private sector, may also have the potential to improve welfare for unbanked consumers or consumers who use nonbank transaction products. Many of these consumers choose nonbank transaction products such as check cashers to access their funds quickly.[70] These consumers might not require such products if bank payment systems operated faster than they currently do. Both the private sector and the government are currently working on initiatives to make the bank payment system faster.[71] For example, the Federal

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[67] See U.S. Department of the Treasury, "Memorandum for the Office of the Comptroller of the Currency, the Board of Governors of the Federal Reserve System, the Federal Deposit Insurance Corporation," April 3, 2018, https://home.treasury.gov/sites/default/files/2018-04/4-3-18%20CRA%20memo.pdf; and Federal Reserve, *Perspectives from Main Street: Stakeholder Feedback on Modernizing the Community Reinvestment Act*, June 2019, p. 9, https://www.federalreserve.gov/publications/files/stakeholder-feedback-on-modernizing-the-community-reinvestment-act-201906.pdf. For more information on the Community Reinvestment Act (CRA), see CRS Report R43661, *The Effectiveness of the Community Reinvestment Act*, by Darryl E. Getter.

[68] Before 2013, some banks offered *deposit advance* products to consumers with bank accounts, which were short-term loans paid back automatically out of the borrower's next qualifying electronic deposit. In 2013, the Office of the Comptroller of the Currency (OCC), FDIC, and Federal Reserve issued supervisory guidance advising banks to make sure deposit advance products complied with consumer protection and safety and soundness regulations. In October 2017, the OCC rescinded the 2013 guidance and in May 2018 issued a new bulletin to encourage their banks to enter this market. In November 2018, the FDIC solicited advice about how to encourage more banks to offer small-dollar credit products. See OCC, "Guidance on Supervisory Concerns and Expectations Regarding Deposit Advance Products," 78 *Federal Register* 70624, November 26, 2013; FDIC, "Guidance on Supervisory Concerns and Expectations Regarding Deposit Advance Products," 78 *Federal Register* 70552, November 26, 2013; Federal Reserve, *Statement on Deposit Advance Products*, CA 13-7, April 25, 2013, https://www.federalreserve.gov/supervisionreg/caletters/CA13-07attachment.pdf; OCC, *Core Lending Principles for Short-Term, Small-Dollar Installment Lending*, May 23, 2018, https://www.occ.gov/news-issuances/bulletins/2018/bulletin-2018-14.html; OCC, "Rescission of Guidance on Supervisory Concerns and Expectations Regarding Deposit Advance Products," 82 *Federal Register* 196, October 12, 2017; and FDIC, "Request for Information on Small-Dollar Lending," 83 *Federal Register* 58566, November 20, 2018, https://www.govinfo.gov/content/pkg/FR-2018-11-20/pdf/2018-25257.pdf.

[69] For more information, see CRS Report R45927, *U.S. Payment System Policy Issues: Faster Payments and Innovation*, by Cheryl R. Cooper, Marc Labonte, and David W. Perkins.

[70] Aaron Klein, "The Fastest Way to Address Income Inequality? Implement a Real Time Payment System," Brookings Institution, January 2, 2019, https://www.brookings.edu/research/the-fastest-way-to-address-income-inequality-implement-a-real-time-payment-system.

[71] Several private sector initiatives are underway to implement faster payments. For an overview, see Nacha, *Faster Payments 101*, https://www.nacha.org/system/files/2020-12/FasterPayments101_Nacha_Alliance.pdf. Notably, the Clearing House

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Reserve plans to introduce a real-time payment system called FedNow in 2023 or 2024, which would allow consumers access to funds quickly after initiating the transfer.[72]

Financial Technology.[73] New technology could potentially provide more affordable financial products to underserved consumers. Whereas bank products may be expensive to provide to lower-income or less creditworthy consumers, technology may be able to reduce the cost. For example, internet-based or mobile financial products could provide access to payment services or lower the cost to provide loans for underserved consumers.[74]

Alternative data could potentially be used to expand access to credit for current credit invisible or unscorable consumers, but it could also create data security risks or consumer protection violations.[75] *Alternative data* generally refers to data that the national consumer reporting agencies do not traditionally use (e.g., information other than traditional financial institution credit repayments) to calculate a credit score. New products that use alternative data on prospective borrowers—either publicly or with the borrower's permission—may be able to better price lenders' default risk, which could expand credit access or make credit cheaper for some consumers.[76] Recent findings suggest that some types of alternative data—such as education, employment, and cash-flow information—might be promising ways to expand access to credit.[77] Yet these technologies also create risks for consumers. For example, new digital technology exposes consumers to data security risks. Some prospective borrowers may be unaware that alternative data has been used in credit decisions, raising privacy and consumer protection concerns.[78] In addition, lenders' alternative data used to make credit decisions could result in disparate impacts or other consumer protection violations.[79] In terms of using new technology and alternative data in consumer

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introduced its real-time payment network (with real-time settlement) in November 2017. According to the Clearing House, it currently "reaches 50% of U.S. transaction accounts, and is on track to reach nearly all U.S. accounts in the next several years." For more information, see the Clearing House, *The RTP Network: For All Financial Institutions*, https://www.theclearinghouse.org/payment-systems/rtp/institution.

[72] The Federal Reserve stated that "it will likely take longer for any service, whether the FedNow Service or a private-sector service, to achieve nationwide reach regardless of when the service is initially available." Board of Governors of the Federal Reserve, *Federal Reserve Actions to Support Interbank Settlement of Faster Payments*, August 5, 2019, Docket No. OP-1670, https://www.federalreserve.gov/newsevents/pressreleases/files/other20190805a1.pdf.

[73] For more background on financial technology policy issues, see CRS Report R46332, *Fintech: Overview of Innovative Financial Technology and Selected Policy Issues*, coordinated by David W. Perkins.

[74] For more information, see CFPB, *Mobile Financial Services: A Summary of Comments from the Public on Opportunities, Challenges, and Risks for the Underserved*, November 2015, p. 7, https://files.consumerfinance.gov/f/201511_cfpb_mobile-financial-services.pdf.

[75] For more information, see CRS In Focus IF11630, *Alternative Data in Financial Services*, by Cheryl R. Cooper.

[76] See Julapa Jagtiani and Catharine Lemieux, *The Roles of Alternative Data and Machine Learning in Fintech Lending: Evidence from the LendingClub Consumer Platform*, Federal Reserve Bank of Philadelphia, Consumer Finance Institute, Working Paper no. 18-15, https://www.philadelphiafed.org/-/media/frbp/assets/working-papers/2018/wp18-15r.pdf?la=en.

[77] For example, initial results from the Upstart Network's credit model, which uses alternative data to make credit and pricing decisions, shows that the model expands the number of consumers approved for credit, lowers the rate consumers pay for credit on average, and does not increase disparities based on race, ethnicity, gender, or age. See Patrice Ficklin and Paul Watkins, *An Update on Credit Access and the Bureau's First No-Action Letter*, CFPB, August 6, 2019, https://www.consumerfinance.gov/about-us/blog/update-credit-access-and-no-action-letter/. Moreover, another recent study suggests that cash-flow data may more accurately predict creditworthiness, and its use would expand credit access to more borrowers while meeting fair lending rules. See FinRegLab, *The Use of Cash-Flow Data in Underwriting Credit: Empirical Research Findings*, July 2019, https://finreglab.org/wp-content/uploads/2019/07/FRL_Research-Report_Final.pdf.

[78] For more information on data privacy and data protection law, see CRS Report R45631, *Data Protection Law: An Overview*, by Stephen P. Mulligan, Wilson C. Freeman, and Chris D. Linebaugh.

[79] For example, a Charles River Associates report suggests that "geographic location, use of banking services, educational attainment, college or university attended and use of nonprime credit tend to be correlated with race and ethnicity." Bank regulatory agencies have not made it clear whether using this information is a *legitimate business justification*. (Using credit bureau information is generally a legitimate business justification.) For more information, see Marsha J. Courchane and David M.

lending, questions exist about how to comply with fair lending and other consumer protection regulations.[80]

Government Providing Consumer Financial Products. Other policy proposals include the government directly providing accounts or credit to retail customers—for example, offering banking services through postal offices[81] or providing banking services online to the public through the Federal Reserve, which already provides accounts to banks.[82] Providing credit to consumers is more risky than providing bank accounts or other banking services, because some consumers will default on their loans. Opposition to these proposals often argue that the government should not be competing with the private sector to provide these services to consumers, especially in the competitive banking market.[83]

Financial Education. Financial education programs or outreach initiatives coordinated by the government, nonprofit organizations, and financial institutions could support financial inclusion as well.[84] For example, the "Bank On" movement—a coalition of city, state, and federal government agencies; community organizations; financial institutions; and others—aims to encourage unbanked consumers to open and use bank accounts.[85] In addition, financial education and partnerships between financial services providers and nonprofit groups may help consumers learn how credit reporting works, develop a credit history, and become scorable.[86] For example, financial wellness programs at workplaces are a growing way to deliver these types of programs.[87] Yet financial education, coaching, and counseling can be expensive and difficult to provide to consumers.[88]

Skanderson, *Fair Lending in the Brave New World of Big Data*, Charles River Associates, May 2017, p. 5, https://www.crai.com/sites/default/files/publications/FE-Fair-Lending-whitepaper-050317.pdf.

[80] For example, the Equal Credit Opportunity Act (ECOA; 15 U.S.C. §§1691-1691f) generally prohibits discrimination in credit transactions based upon certain protected classes, including sex, race, color, national origin, religion, marital status, age, and "because all or part of the applicant's income derives from any public assistance program." ECOA has historically been interpreted to prohibit both intentional discrimination and disparate impact discrimination, in which a facially neutral business decision has a discriminatory effect on a protected class. However, the Supreme Court's reasoning in a June 2015 decision involving the Fair Housing Act, another federal antidiscrimination law, has sparked debate about whether disparate impact claims are covered under ECOA. For background on disparate impact claims, see CRS Report R44203, *Disparate Impact Claims Under the Fair Housing Act*, by David H. Carpenter.

[81] Mehrsa Baradaran, "It's Time for Postal Banking," *Harvard Law Review Forum*, vol. 127 (February 2014), pp. 165-175; and Mehrsa Baradaran, *How the Other Half Banks: Exclusion, Exploitation, and the Threat to Democracy* (Cambridge, MA: Harvard University Press, 2015).

[82] Morgan Ricks, John Crawford, and Lev Menand, "A Public Option for Bank Accounts (or Central Banking for All)," *Vanderbilt Law Research Paper 18-33 & UC Hastings Research Paper No. 287*, January 26, 2019.

[83] Eric Grover, "Return to Sender: Here's What's Wrong with Postal Banking," *American Banker*, May 17, 2018.

[84] Adele Atkinson and Flore-Anne Messy, *Promoting Financial Inclusion through Financial Education: OECD/INFE Evidence, Policies and Practice*, Organization for Economic Co-operation and Development (OECD), OECD Working Papers on Finance, Insurance and Private Pensions no. 34, 2013, https://www.oecd-ilibrary.org/docserver/5k3xz6m88smp-en.pdf.

[85] Heather Hennerich, *A Look at the Affordable Banking Movement*, Federal Reserve Bank of St. Louis, January 23, 2019, https://www.stlouisfed.org/open-vault/2019/january/affordable-banking-movement.

[86] CFPB, *Building a Bridge to Credit Visibility*, p. 9.

[87] CFPB, *Financial Wellness at Work: A Review of Promising Practices and Policies*, August 2014, https://files.consumerfinance.gov/f/201408_cfpb_report_financial-wellness-at-work.pdf; and Diana Elliott, Christine Heffernan, and Adaeze Okoli, *Credit Building at the Workplace: Assessing Outcomes for Participants in Working Credit NFP*, Urban Institute, June 20, 2019, https://www.urban.org/research/publication/credit-building-workplace-assessing-outcomes-participants-working-credit-nfp.

[88] CFPB, *Building a Bridge to Credit Visibility*, pp. 22-23.

Testimony before the House Committee on Financial Services Subcommittee on Oversight and Investigations

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Discrimination in access to credit and the terms of credit is an important barrier to black wealth accumulation. Elimination of this barrier, albeit wholly desirable, will not eliminate the gaping chasm in net worth between black and white Americans. *The fundamental reason for black-white differences in wealth is not high black indebtedness; the fundamental reason is low black asset holdings.*

A Prosperity Now (Nieves) study in 2019 reported that median black household liabilities were $30,800, while median white household liabilities were more than twice as large at $73,800. However, white households had a median level of assets valued in excess of $260,000 in contrast with the median black households' assets valued at $55,900. The median black household had forty percent of the debt of the median white household, but only 20 percent of the assets. Correspondingly, the ratio of assets to debts for black households was 1.6 versus 2.8 for white households, both measured at the median.

Moreover, households with lower levels of *prior* wealth tend to acquire relatively higher levels of debt to meet their obligations and to try to make investments in future opportunities for wealth-building. For example, for given socioeconomic status, black students obtain more years of schooling and more educational credentials than white students (Mangino 2010, 2012). Their greater drive for educational attainment is a consequence of more restricted options for upward mobility. Unfortunately, because of their families' smaller resource base, especially sharply lower levels of wealth, they must rely disproportionately on loan finance to pursue higher education.

The result is black college graduates owe $25,000 more in student loan debt than white college graduates. Forty-five percent of that indebtedness is due to borrowing to meet graduate school expenses. If black families had higher levels of wealth at the outset, there would be considerably less pressure to seek credit to finance their children's higher education. In short, lower relative levels of wealth drive higher relative levels of indebtedness, especially with respect to student loan debt.

Indeed, black parents are comparatively generous in providing support for their children's higher education. Black parents who provided any support for their sons' and daughters' higher education had a net worth one-third of that for white parents who provided no support for their sons' and daughters' higher education (Nam et al. 2015, Figure 3). Black families do more with less; they could do even more with more.

The magnitude of the racial wealth gap, driven predominantly by a racial gap in asset ownership, is staggering. The 2019 Survey of Consumer Finances (Bhutta et al. 2020) indicates that the black-white wealth gap at the median was $164,000, and, at the mean, it was substantially larger, $840,900. Assuming an average household size of three persons, the median gap per person was $52,500 and the per person mean gap was $280,000. These are conservative estimates of per capita differentials because average white household size actually is less than three people.

Many observers treat the median gap as the target for closure of the black-white gap in wealth. In this context, it may be more appropriate to set the more demanding target at the mean. Wealth is so densely concentrated in the United States that 97 percent of the wealth held by white Americans is in the possession of white households with a net worth above the *white median*. Close to 99 percent of white wealth is held by white households with a net worth above the *national median,* approximately $100,000. Twenty-five percent of white households have a net worth in excess of $1 million in contrast with only four percent of black households (Darity, Addo, and Smith 2020). Centering on the median as the target for eliminating the racial wealth gap leaves vast amounts of white wealth untouched.

The limitations of an exclusive focus on debt reduction rather than asset building as a route toward closing the wealth gap is transparent when considering a policy of student loan relief. Whether one eliminates student debt by trying to erase the difference at the median or the mean gap, there will be, at best, an incremental effect on the racial wealth differential. The average level of student loan debt for all black students and graduates is $23,400, while the average for white students and graduates is $16,000.

Gauging the amount of the gain in net worth by erasure of student loan debt requires applying weights to these values by enrollment rates for each group; persons who do not enroll in college or university do not acquire student loan debt. Whites currently have a higher enrollment rate than blacks (41 percent versus 36 percent, respectively). Adjusting the amounts by enrollment rates, the black gain in wealth becomes $8424, while the white gain in wealth becomes $6560. The net reduction in the gap will be $1856. The reduction amounts to only three percent of the total median gap of $52,500. It amounts to less than a one percent reduction at the mean gap of $280,000.

The key to understanding the sources of the racial wealth gap is government policy that supported white wealth accumulation and stifled black wealth accumulation. Black wealth accumulation has undergone a sustained process of *asset underdevelopment* via an array of American programs and practices.

In January 1865, General William T. Sherman, after Secretary of War Edwin Stanton and he held a consultation with a group of black leaders in Savannah, Georgia issued Special Field Orders No. 15. His directive assigned 5.3 million acres of land stretching from the Sea Islands of South Carolina to the portion of northern Florida bordered by the St. John's River as a site for settlement and property for the freedmen. Here was an intended preliminary phase of a substantial land reform, on behalf of the formerly enslaved, that would have amounted to at least 40 million acres of land for the four million persons released from bondage (Darity and Mullen 2020, 156-159).

Ultimately, only 40,000 persons settled on 400,000 acres, but even that small allotment was lost by the end of the year. Andrew Johnson, the successor to the Presidency after Lincoln's assassination ended the land allocation program and restored the properties to the former slaveholders. The promise of 40 acres land grants remained unfulfilled.

Simultaneously, the federal government, under the auspices of the Homestead Act of 1862, was distributing 160 acres tracts of land to upwards of 1.5 million white families in the western territories. This mammoth asset-building policy has resulted in benefits carrying over to a conservative estimate of 45 million white living descendants of Homestead Act patents.

The racial wealth gap in the United States originates with the failure to provide the formerly enslaved with 40 acres while white Americans, including new immigrants, were given 160 acres of land.

Conditions worsened with wave upon wave of white massacres that took place between the end of Civil War and World War II. In the "Red Summer" of 1919 upwards of 35 white terrorist actions took place across the country in locations ranging from Chicago, Illinois to Omaha, Nebraska to Washington DC to Elaine, Arkansas. The most notorious of the massacres took place win Wilmington, North Carolina in 1898 and Tulsa, Oklahoma in 1921. These white uprisings frequently targeted black communities where some measure of visible prosperity had been achieved. They led to the loss of black lives and either the destruction or seizure of black-owned property by white terrorists. The lynching trail also was a path of intentional appropriation of black property (Darity and Mullen 2020, 207-217).

In the twentieth century, national asset-building policies shifted from provision of land grants to support for homeownership. Federally sanctioned redlining reduced the credit available for black households to engage in home buying (Rothstein 2017). Discriminatory access to homeownership subsidies under the New Deal legislation and the G.I. Bill gave a further edge to white wealth growth, an advantage denied black households (Katznelson 2005).

Racial zoning practices (Silver 1997) and tax policies that disproportionately favor the already wealthy exacerbate the black-white wealth gap. Vanessa Williamson (2020) has indicted the effects of the long carry-over of state tax policies that date from the early years of the Jim Crow period as having an especially pernicious effect on prospects for black wealth accumulation.

Dorothy Brown (2018-2019) highlights the importance of the regressive nature of the home mortgage interest deduction in producing asset-building deficits for black Americans. Not only is there a racial gap in rates of homeownership (73 percent for whites versus 45 percent for blacks), there is a racial gap in the equity values associated with white and black owned homes. Zillow listing prices indicate that a home in a neighborhood with no black residents has a median value of $341,000. In contrast, homes in neighborhoods with a majority of black residents have a median value of $184,000 (Perry, Rothwell, and Harshberger 2018). The average level of equity whites hold in their homes is $216,000; for blacks the average level is $94,000 (Ross 2020).

Moreover, there are wide differences in the possession of other types of assets by race. Sixty percent of white households have retirement accounts but only 34 percent of black households. Fifteen percent of white households have family owned business equity but a mere 15 percent of black households. Sixty percent of white households have publicly traded stocks but only 31 percent of black households (Ross 2020).

There is a tendency to overemphasize homeownership as the primary route toward asset-building. Plainly, equity in a home is the core asset for households in the middle of the wealth distribution. However, for persons in the upper quarter of the wealth distribution, homeownership is markedly less important in comparison with non-residential land ownership, business ownership, and stocks and other financial assets.

The effects of these disparities, transmitted across generations, result in the contemporary black-white wealth gap. Several major factors come into play with respect to the impact of intergenerational

transfers of wealth-building opportunities: inheritances, gifts ("in vivo" transfers), reduced anxiety, better education, better health, and greater confidence in taking risks (a "cushion" effect).

The disproportionate growth in black debt matters in explaining America's racial wealth gap, but the disproportionate deprivation in black assets matters far more. By all means, steps should be taken to make the credit market more racially equitable, but if the objective is to eliminate the black-white difference in wealth, the focus must be placed on building black assets to a level consistent with white asset ownership (Darity and Mullen 2020).

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Testimony of Frances Espinoza, Executive Director

North Texas Fair Housing Center

February 24, 2021

Committee on Financial Services, Oversight and Investigations Subcommittee Hearing

How Invidious Discrimination Works and Hurts: An Examination of Lending Discrimination and Its Long-term Economic Impacts on Borrowers of Color

Introduction

The North Texas Fair Housing Center is a nonprofit organization that provides fair housing services to residents of North Texas. Our services consist of fair housing counseling, intake and investigation of housing discrimination complaints, and fair housing education.

It has been 50 years since the federal Fair Housing Act banned racial discrimination in lending, yet African American and Latino applicants continue to be routinely denied conventional mortgage loans at rates fair higher than their white counterparts. In 2011, the North Texas Fair Housing Center did an analysis of Home Mortgage Disclosure Act data and found that African American and Latino mortgage applicants were denied conventional mortgages at much higher rates than Whites in the Dallas-Fort Worth market. For example, African American mortgage applicants to Wells Fargo Bank were 57% less likely to get a home purchase loan when compared to White applicants. Latino mortgage applicants to Chase Bank were 64% less likely to get a loan than were White applicants. Home Mortgage Disclosure Act Data from 2015 and 2016 confirmed this same pattern.

Investigating Lending Discrimination Through Testing

One of the most valuable tools we use to investigate housing discrimination is testing. Testing allows us to compare how applicants of color are treated as compared to their White counterparts. As part of our enforcement program, we use the results of testing as evidence in housing discrimination complaints. We file both administrative complaints with the U.S. Department of Housing and Urban Development and lawsuits in Federal court.

The most common form of testing we do is rental testing. In 2011 we conducted rental testing that showed African Americans who were otherwise qualified, encountered discrimination in 37% of their housing searches. This means that African Americans face discrimination in two out of every five housing searches. The tests also showed that Latinos experienced discrimination in 33% of their housing searches, or at least once in every three housing searches.

In our most recent enforcement initiative in 2019 we conducted tests to measure how veterans with housing choice vouchers were treated in the housing market in Dallas, Texas. We

1

conducted a total of 35 tests; the results of 32 of the tests showed evidence of discrimination. We filed housing discrimination administrative complaints for all 32 tests.

The next most common form of testing we do is sales testing. These tests measure how real estate agents treat buyers of color as compared to their White counterparts. In 2018, we conducted sales tests that showed that African American testers are still being steered, based on their race, to neighborhoods that are predominately African American and steered away from neighborhoods that are majority White.

More Resources Needed for Mortgage Testing

Unlike rental and sales testing, mortgage lending testing is very resource intensive. One of the challenges is the significant amount of time testers must devote to each test. Unlike rental tests, which can be completed rather quickly, lending interviews involve several complex financial components, even at the preapplication stage. Testers must also be knowledgeable about the entire lending process.

Rental, sales, and lending testing can all be used to uncover practices that lead to segregation of neighborhoods. However, there is a particular need to devote resources to lending testing because it is so resource intensive. There is also a need for enforcement of complaints based on lending testing evidence. Because lending testing cases are more complex, they sometimes languish in the administrative process. There is a need for a strong governmental entity with an expertise in lending discrimination that can take the testing evidence generated by local fair housing organizations and move forward with enforcement to thwart illegal practices.

BROOKINGS

Racial Disparities in Home Prices Reveal Widespread Discrimination

Testimony Submitted to U.S. House of Representatives Committee on Financial Services
Subcommittee on Oversight and Investigations

"How Invidious Discrimination Works and Hurts: An Examination of Lending Discrimination and Its Long-Term Economic Impacts on Borrowers of Color"

Written testimony of Andre M. Perry
Senior Fellow
Metropolitan Policy Program
The Brookings Institution
February 24, 2021

Chairman Green, Ranking Member Barr, Vice Ranking Member Timmons,

Thank you for inviting me to testify today *on this extremely important issue that affects millions of people across this country. It is a pleasure to be here again in front of the distinguished representatives of this Committee and Subcommittee.*

"We are here today because we are tired. We are tired of paying more for less."

Dr. Martin Luther King Jr. said these words in 1966 to 35,000 people in Chicago's Soldier Field as part of the Chicago Freedom Movement, also known as the Chicago Open Housing Movement.

Dr. King went on to relay housing price differences that resulted in Black people paying higher rents in Black-majority communities for worse housing than their white counterparts.

"Now is the time to make real the promises of democracy," King declared. "Now is the time to open the doors of opportunity to all of God's children."

More than a half-century later, "now" is still the time.

According to the most recent census figures, the Black homeownership rate in America is 46%—almost the exact same level that it was when King spoke in 1966. The white homeownership rate is roughly 74%. In 2017, home prices in Black-majority neighborhoods across the country were priced $48,000 less on average than similar-sized

homes in comparable white neighborhoods. And we've witnessed viral news stories revealing how appraisers value Black and white homeowners differently:

- In Jacksonville, Fla., a Black family looking to sell their home in a predominantly white neighborhood received an original appraisal of $330,000. After removing family photos and other indicators of race, a second appraisal came in at to $465,000.[1]
- In Denver, a Black family in another white neighborhood was looking to make renovations and sought an appraisal for a loan, which initially came in at $405,000. At first, comparisons were drawn from a separate Black-majority neighborhood. During the second appraisal, the family removed indicators of race and received an appraisal based on comparisons from within their own neighborhood, which came in at $550,000.[2]
- In San Francisco, a Black family invested $400,000 into renovations, and received an increase in appraised value of only $100,000. After removing indicators of race, effectively scrubbing Blackness from the home, it was appraised a second time for $500,000 more.[3]

On their face, each one of these bad appraisals shows some form of malpractice. Certainly, it's in the entire nation's interest to hold individual appraisers accountable for these seemingly racist outcomes. Municipalities fund vital services such as education and infrastructure based on the priced value of homes. Individuals use the equity in their home to start businesses, pay for soaring tuition at postsecondary institutions, and move to better neighborhoods. If not for the ingenuity of the homeowners in the examples provided, those biased appraisals would have robbed the homeowners of hundreds of thousands of dollars. However, Brookings Institution research shows a much more systemic and costly problem, which largely goes unaccounted for and involves many more parties than the appraisal industry.

In the 2018 Brookings report "The devaluation of assets in Black neighborhoods," Jonathan Rothwell, David Harshbarger, and I make an apples-to-apples comparison of homes in Black neighborhoods to similar homes in similar neighborhoods that are predominantly white.[4] We did not recreate the job of the appraisal industry with direct comparisons, because differences in structural characteristics of homes between Black and white neighborhoods do exist. Instead, we built a research model that assessed variation in price relative to similar homes in comparable conditions, carefully looking at the impact of the racial composition of the neighborhood.

We found that even after accounting for structural characteristics of homes such as square footage, age, and number of bedrooms (as well as neighborhood characteristics such as location, crime, school quality, and walkability), homes in Black neighborhoods were valued on average 23% less than they would have been if the residents of the neighborhood were mostly white. That's $48,000 less per home on average—a cumulative loss of $156 billion nationwide that year.

Homeownership while black   BROOKINGS

Differences in **home** and **neighborhood quality** do **not** fully explain the devaluation of homes in majority-black neighborhoods

$48,000 average loss in home market value

Amounting to **$156 billion** in cumulative losses

Homes of similar quality in neighborhoods with similar amenities are worth **23% less** in majority-black neighborhoods

Past racist housing policies have contributed to this loss, including redlining—the government-sponsored practice of outlining areas with sizable Black populations in red ink on maps as a warning to mortgage lenders, effectively isolating Black people in areas that would suffer lower levels of investment than their white counterparts. Racial housing covenants, predatory lending, and neighborhood-destroying highway construction have also contributed to consistently lower home prices in Black-majority neighborhoods. These lower home prices have led to a wealth gap in which white families have roughly 10 times the net worth of the average Black family.[5] Past discrimination that privileged whiteness—and current biases that do the same—heighten white homeowners' ability to increase assets while throttling Black individuals' capacity to acquire, retain, and grow assets that are critical to well-being.

Neighborhood median home value by black population share
U.S. metropolitan areas, 2012-2016

Bar chart values by black population share category:
- Blacks 0%-1%: $341,155 (Median list price), $306,511 (Median value)
- 1%-5%: $337,654, $308,441
- 5%-10%: $278,056, $250,356
- 10%-20%: $239,669, $208,474
- 20%-50%: $211,383, $181,281
- 50% or higher: $184,440, $149,217

Legend: ■ Median list price (Zillow) ■ Median value (Census Bureau)
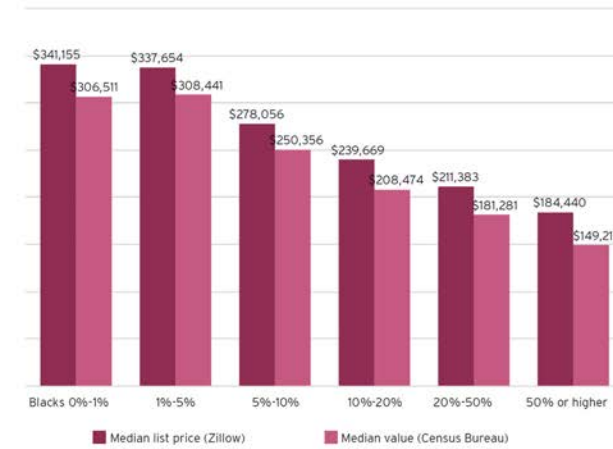
Source: Authors' analysis of Zillow and 2016 American Community Survey 5-year estimates

Many anti-Black, discriminatory practices officially ended with the passage of the 1968 Fair Housing Act and the 1977 Community Reinvestment Act, which barred redlining.[6,7] But de facto segregation continues, evidenced by home price variations.

Sociologists Junia Howell and Elizabeth Korver-Glenn found homes in metropolitan areas increased, on average, by $68,000 from 1980 to 2015 after adjusting for inflation.[8] But homeowners in disproportionately Black and Latino or Hispanic neighborhoods are gaining wealth at around half the speed as homeowners in disproportionately white neighborhoods. Howell and Korver-Glenn argue that appraisal practices contribute to this form of segregation in two ways. First, appraisers continue to explicitly use neighborhood racial demographics in their modeling to determine which homes are comparable. Second, because no steps were taken to mitigate historical redlining practices, when appraisers use previous home sales to predict future home prices, they are feeding discrimination into their modelling only to produce more.

This disparity cannot be wholly explained by the physical quality of Black homes or by the actions of any individual actors in the market. The fact that home values vary widely between white and Black neighborhoods (with homes in Black-majority neighborhoods worth less than half that of homes in white neighborhoods) reflects the magnitude of the systemic obstacles faced, not the quality or characteristics of the homes or neighborhoods themselves.

The 23% difference that we found in the housing devaluation study suggests that homes in Black neighborhoods have twice as much crime as there actually is, or if education and walkability are far worse than they actually are. In other words, the negative perceptions of Black neighborhoods reveal themselves in the form of lower prices. Those negative perceptions are shared by leaders and practitioners throughout housing and other markets.

High-profile reporting of instances of appraisal bias should also draw attention to the systems that facilitate those behaviors. We must understand that these stories are not isolated incidents (racist appraisal practices have occurred and continue to occur without making headlines), and that the appraisal is not the only step of the process in which racism distorts housing markets and extracts wealth across numerous systems.

How racism distorts the housing market

Step	Description
Search ⚠	Black buyers are subjected to racist "steering" practices, in which the selection of homes shown for sale are restricted to certain neighborhoods.
Purchase ⚠	When applying for loans, Black buyers are perceived as high-risk, leading to higher interest rates than white peers or simply being denied access to capital.
Improvement ⚠	Homeowners who wish to remodel have the option of leveraging their home equity to finance investments. But homes in Black neighborhoods are devalued, which restricts this source of capital.
Appraisal ⚠	Negative perceptions of Black neighborhoods can influence appraisal through explicit or implicit bias. In Black neighborhoods, homeowners cannot simply remove family photos and other indicators of race.
Sale ⚠	Due to false narratives of Black neighborhoods, the market demands 23% less, on average, for homes in Black neighborhoods. This represents $156 billion in lost equity nationwide.

Even with the prohibition of overt racial discrimination and oversight, the housing market is structured to disproportionately exclude Black and brown households.[9] For instance, our zoning codes and building practices are streamlined to deliver large single-family homes at the urban fringe. My colleague Tracy Hadden Loh and I showed in a recent piece that for decades, the very largest houses (four or more bedrooms) have grown as a share of all housing inventory, while smaller configurations have stagnated or declined. Because people of color are far more likely than white people to be first-time rather than repeat homebuyers, a mass of housing inventory weighted against attainable starter homes disproportionately favors households with higher concentrations of generational wealth to

pay bigger down payments.[10,11] Over 6 million Black and brown millennials would be considered mortgage-ready if there were any attainable homes for sale in prime locations.[12]

Nationwide housing inventory by number of bedrooms
1980 to 2017

Source: Brookings analysis of American Housing Survey data. This chart was originally published on https://www.brookings.edu/essay/trend-2-americas-demographics-are-transforming-but-our-housing-supply-is-not/.

B **Metropolitan Policy Program** at BROOKINGS
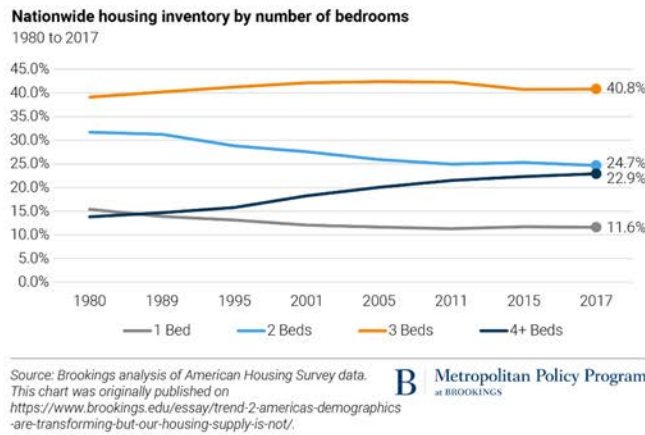
Meanwhile, during the last two decades, even as overall U.S. homeownership has grown, there has been a catastrophic loss of homeownership in key cities that have large shares of Black homeowners.[13]

Change in the number of owner-occupied housing units
2000 and 2018

Source: Updated and expanded from Mallach, 2018. Data from the 2000 census and 2013-18 American Community Survey 5-year estimates. This chart was originally published on https://www.brookings.edu/essay/trend-1-separate-and-unequal-neighborhoods-are-sustaining-racial-and-economic-injustice-in-th e-us/.

B **Metropolitan Policy Program** at BROOKINGS
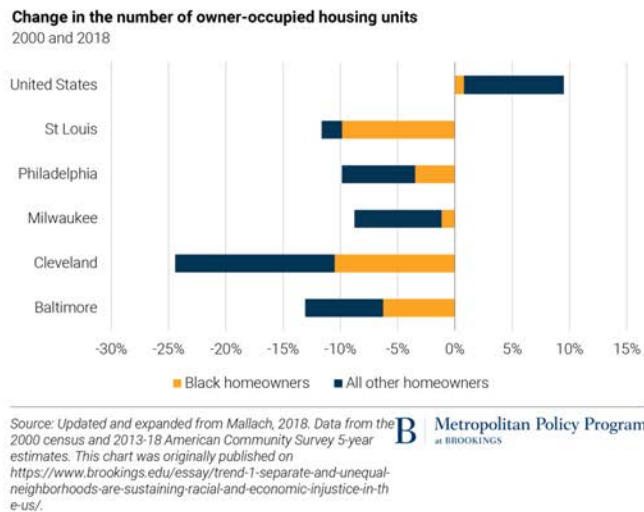
The root cause for these negative trends is structural racism, which is systemic. Corrective policies and prescriptions must be as well. We must create a new regulatory environment and market-based solutions that address various facets of the home pricing gap.

In closing, homeownership lies at the heart of the American Dream, representing success, opportunity, and wealth. Progress has been made toward racial equity in housing in the last 100 years, particularly through the landmark legislation of the Fair Housing Act. But structural racism—as much as personal racism—still inhibits the growth of Black wealth. Because of the legal triumphs of the civil rights movement, the most insidious forms of discrimination that were once supported by federal policy are now illegal. However, it would be a mistake to believe that the largest obstacle Black families face in the housing market today is the personal bias of an individual appraiser, realtor, or lender.

We made individual racism in the housing market illegal, and when it finds a way back in, we make it a headline. But structural racism rigs the game from the start. To unlock the potential of Black neighborhoods and their residents, systemic racism must be pulled at its roots rather than trimmed neatly, only to grow again.

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Testimony of Lisa Rice, President & CEO

National Fair Housing Alliance

February 24, 2021

Oversight and Investigations Subcommittee Hearing

How Invidious Discrimination Works and Hurts: An Examination of Lending Discrimination and Its Long-term Economic Impacts on Borrowers of Color

Introduction

Housing and lending discrimination have been a part of the United States since its inception. Due to government-sanctioned discriminatory policies as well as private market practices Blacks, Latinos, Native Americans, Asian Americans, people with disabilities, women, and many other groups have been systematically excluded from wealth-building opportunities such as homeownership. Redlining, which persists in various forms today, real estate sales discrimination, appraisal bias, lending discrimination, and tech bias are significant barriers that keep the dream of homeownership from becoming a reality for many people and contribute to the racial wealth gap.

Moreover, structural barriers such as the dual credit market, segregation, and restrictive zoning ordinances create systemic impediments which significantly prohibit the ability of People of Color to access fair housing and lending opportunities and perpetuates the racial wealth and homeownership gaps. The homeownership rate for Black Americans is still where it was when the Fair Housing Act was passed in 1968; White homeownership is 73.4%; Latinx homeownership is 47.8%; and Black homeownership is 42.7%. This translates to a homeownership gap between Blacks and Whites that is as wide now as it was in 1890.

Systemic barriers that impede access to housing and lending opportunities for millions of people will require a long-term commitment to overcoming those impediments and a comprehensive set of tools to create a fairer marketplace where everyone has equitable access.

Congress has a ripe opportunity to create a just society by ensuring full and complete enforcement of our nation's fair housing and lending laws, closing loopholes established by the previous administration, beefing up oversight, clarifying guidance and regulations, and providing robust support for groups working on the ground to advance fair housing and lending goals.

Biased Technology

Algorithmic systems are increasingly deciding many aspects of everyday life; as we gain more insights about these systems we are also learning about their discriminatory impacts. Whether applying for a job, renting an apartment, getting a mortgage or seeking insurance coverage, algorithmic systems will likely be used to decide whether a person will be approved or denied.

Algorithmic systems hold great potential since they can minimize human subjectivity, facilitate more consistent outcomes, increase efficiencies, and can be more accurate and easier to audit. These are powerful utilities that, if built and used correctly, can expand opportunities for people. At the same time, because of limitations in data and math, inherent biases in the data, a lack of diversity in the technology field, limited or no training in the field about civil rights issues, and systemic inequalities, algorithmic decisions can also be prone to discriminating[1] against historically underserved groups.

These systems have been shown to inappropriately deny Black, Brown and Female loan applicants or approving them on worse terms than their white counterparts. Goldman Sachs, Ally, Toyota, Honda and many other lenders have all been subject to charges of algorithmic bias. Researchers at Berkeley found that traditional and FinTech lenders using algorithmic risk-based pricing systems charge Black and Latino borrowers higher rates for purchase and refinance mortgage loans to the tune of $765 Million each year.[2] This discriminatory pricing may likely be occurring because algorithmic systems are designed to optimize for profit and may be penalizing consumers who have low-shopping behavior. The systems may also be amplifying and mimicking discrimination that exists in the marketplace.

Fair housing groups have challenged digital advertising systems, operated by algorithms, that manifest discrimination against protected groups.[3] Fair housing groups are also challenging the use of tenant screening tools due to their ability to arbitrarily discriminate against underserved groups.[4]

Credit scoring systems can also manifest bias against Communities of Color and other underserved groups unnecessarily restricting their access to credit and keeping them locked out of the financial mainstream.[5] These systems are built using information primarily contained in the repositories of credit reporting agencies which creates systemic challenges for consumers of color who disproportionately live in credit deserts. Consumers who live in credit deserts disproportionately rely on non-traditional lenders like payday lenders and check cashers who typically do not report consumers' positive behavior to credit repositories.[6] These consumers are often credit invisible – not because they are not responsible but rather because their responsible payment behavior is not reflected in traditional financial databases. Credit scoring systems can perpetuate discrimination not only because of the information contained in the data sets used to build them but also because of the data that is not

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[1] Kareem Saleh, "Black Wealth Matters. AI Can Help Create It. Here's How," Forbes, June 24, 2020. Available at https://www.forbes.com/sites/kareemsaleh/2020/06/24/black-wealth-matters-ai-can-help-create-it-heres-how/?sh=71e83aff7d0b

[2] Robert Bartlett et al., Consumer-Lending Discrimination in the FinTech Era, available at http://faculty.haas.berkeley.edu/morse/research/papers/discrim.pdf?_ga=2.174884706.1580350990.1613713379-766650251.1611367030

[3] Tracy Jan and Elizabeth Dwoskin, "Facebook Agrees to Overhaul Targeted Advertising System for Job, Housing, and Loan Ads After Discrimination Complaints," The Washington Post, March 19, 2019. Available at https://www.washingtonpost.com/business/economy/facebook-agrees-to-dismantle-targeted-advertising-system-for-job-housing-and-loan-ads-after-discrimination-complaints/2019/03/19/7dc9b5fa-4983-11e9-b79a-961983b7e0cd_story.html

[4] Shannon Houston, "Center Files Federal Lawsuit Against National Tenant Screening Company," Connecticut Fair Housing Center Blog, August 24, 2018. Available at https://www.ctfairhousing.org/corelogic/

[5] Lisa Rice and Deidre Swesnik, Discriminatory Effects of Credit Scoring on Communities of Color. 2013. 46 Suffolk University Law Review 935. Available at https://cpb-us-e1.wpmucdn.com/sites/suffolk.edu/dist/3/1172/files/2014/01/Rice-Swesnik_Lead.pdf

[6] See National Fair Housing Alliance website "Access to Credit" available at https://nationalfairhousing.org/access-to-credit/

included in these data sets. Credit scoring systems also often reflect the inequities of the environment in which a consumer is utilizing credit.

In the 1990s and early 2000s, NHFA brought administrative complaints and lawsuits against Prudential and other insurers over the discriminatory effects their decision-making systems were having on consumers.[7] NFHA is currently suing Redfin for discriminatory offering of their services in non-White areas.[8] Redfin hosts a website that perpetuates discrimination against Communities of Color. In NFHA's investigation, fair housing groups found that Redfin offered "No Service" for homes in non-White areas at a greater rate than for homes in White areas.

Algorithmic systems have been found to perpetuate discrimination beyond the financial services space. Researchers found that they discriminate against Black patients by prioritizing care for healthier White patients.[9] This discrimination resulted in Black patients receiving less care then healthier White patients. The system may have also contributed to extremely harmful outcomes for Black patients including death. Algorithmic systems have also been found to discriminate in hiring potential job candidates[10], determining who is eligible for bail[11], and how much time a person may serve in jail.[12]

We are now learning that algorithmic systems do not have to perpetuate bias. Researchers at universities like Stanford[13], Carnegie Mellon[14], Berkeley, and elsewhere are developing techniques that allow fairness

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[7] NFHA, et al v. Prudential Insurance, Motion to Dismiss decision, 208 F. Supp. 2d 46 (D.D.C. 2002) which acknowledges the following bases for the plaintiffs' lawsuit against Prudential – 1) Prudential's minimum underwriting requirements for obtaining replacement cost coverage include the age of the home, the market value of the home and the difference between the replacement cost and the market value; (2) Since 1994, Prudential does not have a policy of selling homeowners insurance policies in the District of Columbia; to the extent that Prudential has re-entered the District, it has done so for select clients and without notice to the D.C. Insurance Commissioner or the public; (3) Prudential rates territories by segregating neighborhoods into zones that reflect their racial composition; (4) Prudential uses credit scores or credit ratings of applicants to determine eligibility for homeowners insurance policies. Available at https://casetext.com/case/national-fair-housing-alli-v-prudential-ins-co

[8] See NFHA, et al. v. Redfin investigation summary, available at https://nationalfairhousing.org/redfin-investigation/

[9] Melanie Evans and Anna Wilde Mathews, "New York Regulator Probes UnitedHealth Algorithm for Racial Bias," The Wall Street Journal, October 26, 2019. Available at https://www.wsj.com/articles/new-york-regulator-probes-unitedhealth-algorithm-for-racial-bias-11572087601

[10] Alex Engler, "For Some Employment Algorithms, Disability Discrimination by Default," Brookings Institution, October 31, 2019. Available at https://www.brookings.edu/blog/techtank/2019/10/31/for-some-employment-algorithms-disability-discrimination-by-default/

See also Jeffrey Dastin, "Amazon Scraps Secret AI Recruiting Tool That Showed Bias Against Women," Reuters, October 10, 2018. Available at https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G

See also Miranda Bogen, "All the Ways Hiring Algorithms Can Introduce Bias," Harvard Business Review, May 6, 2019. Available at https://hbr.org/2019/05/all-the-ways-hiring-algorithms-can-introduce-bias

[11] Tom Simonite, "Algorithms Were Supposed to Fix the Bail System. They Haven't," WIRED, February 19, 2020. Available at https://www.wired.com/story/algorithms-supposed-fix-bail-system-they-havent/

[12] Karen Hao, "AI is Sending People to Jail-and Getting it Wrong," MIT Technology Review. January 21, 2019. Available at https://www.technologyreview.com/2019/01/21/137783/algorithms-criminal-justice-ai/

[13] Pratyusha Kalluri, "Controllable Fairness in Machine Learning," The Stanford AI Lab Blog, May 27, 2019. Available at http://ai.stanford.edu/blog/controllable-fairness/

[14] Amanda Coston, Edward H. Kennedy, Alexandra Chouldechova, Counterfactual Predictions under Runtime Confounding, Cornell University. 2020. Available at https://arxiv.org/abs/2006.16916

considerations to be embedded into algorithms so that banks, insurers, landlords, employers and others that make high-stakes decisions can use technology that's fairer and ultimately more profitable[15].

Legislators, regulators and policy makers must do more to encourage the development and use of algorithmic fairness technologies. As an initial matter, the users of algorithmic systems in high-stakes applications ought to be required to do much more rigorous fairness testing. Today many lenders are afraid that efforts to root out bias in their automated decisioning systems will expose them to liability. Consequently, many companies choose not to look for bias in their algorithms or use rudimentary fairness assessment methods that overlook biases in these systems.

Companies using algorithmic systems to decide important aspects of our lives need to be required to do more rigorous fairness testing and, when factors and methodologies that result in biased outcomes are identified, they ought to be required to correct for bias in these systems.

Other steps policymakers can take to ensure the fairness of algorithmic systems include:

1. **Require and Support Data Sharing**. The federal government must mandate that the FHFA, GSEs, FHA, and CFPB release more loan-level data into the national mortgage survey and the national mortgage databases so researchers, advocacy groups and the public can study bias in the housing market.
2. **Improve Consumer's Awareness of Algorithmic Systems.** Since algorithms have such profound impacts on people's lives, they must be more explainable. Companies must be required to give consumers a roadmap for being approved by algorithmic systems that have denied them, for example by requiring adverse action reasons to be actionable not merely descriptive.
3. **Provide Clear Guidance on Defining and Measuring Fairness.** Though the law currently prohibits discrimination in lending, lending rules do not specify the dimensions on which fairness should be evaluated or the thresholds that ought to be used for bias measurement. This has led to wildly varying approaches to fairness by lenders and uneven standards across the industry.
4. **Use Disparate Impact to Increase Fairness.** Lenders who rely on "Business Necessity" must be required to justify disparities in their loan portfolios to document and justify how they balance fairness considerations with profitability objectives.
5. **Expand Application of Guidance to All Industry Players.** Congress and regulators must extend the Fed/OCC/FDIC model risk management guidance to non-bank FinTechs, specialty finance companies and other lenders.
6. **Increase Fair Lending Practices.** All algorithmic-based systems can be improved to be fairer and responsibly expand credit access to underserved consumers. Lenders must be required to search more rigorously for less discriminatory alternative algorithms.
7. **Improve Fairness in Credit Scoring Systems.** Credit scoring systems can be improved in many ways to lessen discriminatory impacts. Regulators must require examiners of financial institutions to evaluate how 3rd party credit scores contribute to loan portfolio bias.

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[15] Nick Noel, Duwain Pinder, Shelley Stewart, and Jason Wright, "The Economic Impact of Closing the Racial Wealth Gap," McKinsey & Company. August 13, 2019. Available at https://mck.co/2NrVddw

8. **Support the Public's Ability to Advance Fairness.** Increasing funding for fair housing, academic, and public policy organizations to conduct research, education, and enforcement activities to help effectively address algorithmic bias.

Artificial Intelligence ("AI") has the potential to expand the availability of affordable credit to thin-file, no-file and other hard-to-score borrowers, but AI models can be so complex that even their developers lack visibility into how they work. This opacity and the complex data interactions relied upon by AI can result in discrimination and digital redlining if algorithms are not designed and governed to address these risks. We believe sensible updates to our laws and regulations can help to ensure that the power of AI is harnessed and managed for good.

The Need for Increased Support for Real Estate Sales Testing

We are particularly encouraged by the Subcommittee's attention to the importance of testing as a powerful civil rights enforcement tool. The widely acclaimed Newsday investigation shows the tragic persistence of housing discrimination in the real estate market more than fifty years after passage of the Fair Housing Act. It also demonstrates the continuing, vital role of fair housing testing in ensuring our national commitment to ending housing discrimination and advancing racial integration is fully and finally realized.

Discrimination in the real estate market perpetuates racial segregation of communities. Subjecting customers of color to more onerous conditions of sale deprives them of opportunities to purchase homes in which they can build equity and thereby contributes to the substantial racial gap in wealth accumulation. When realtors steer potential home-seekers to neighborhoods based on their race or the racial composition of the neighborhood, they are reinforcing long-established geographic boundaries that were rooted in segregationist policies and now still separate communities. They are also violating the law.

The Fair Housing Act was intended to redress these practices, and some of the earliest cases filed under the Act addressed this form of discrimination in home sales.[16] As the Newsday investigation demonstrates, real estate agents still impose differential conditions upon customers and direct them to different locations based on race at startlingly rates.[17] Even to veteran fair housing advocates like members of the National Fair Housing Alliance (NFHA), it was stunning to learn that 40 percent of the tests conducted by Newsday showed discrimination against Customers of Color, with Black testers experiencing differential treatment 49% of the time; Hispanic testers 39% of the time; and Asian American testers 19% of the time.[18]

The value of testing to support strong enforcement of fair housing laws within the residential sales market cannot be overstated. The practice involves pairing an individual belonging to a protected class with someone outside of that class to pose as home-seekers in order to "test" whether a real estate agency treats their qualifications differently or sends them to different neighborhoods. Fair housing testing is well-established and a tremendously effective method for detecting housing discrimination. As early as 1982, the Supreme Court

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[16] *See e.g., United States v. Pelzer Realty Co.*, 484 F 2d 438 (5th Cir. 1973), *cert. denied*, 416 U.S. 936 (1974) (telling Black potential homebuyers they can live in some developments but not others).
[17] Ann Choi, Bill Dedman, Keith Herbert & Olivia Winslow, *Long Island Divided*, NEWSDAY, Nov. 17, 2019, *available at* https://projects.newsday.com/long-island/real-estate-agents-investigation/
[18] *Id.*

authorized the use of tests by recognizing the legal standing of testers to sue under the Fair Housing Act. *In Havens Realty Corp. v. Coleman*, the Court acknowledged that "a tester who has been the object of a misrepresentation made unlawful under § 804(d) [of the Fair Housing Act] has suffered injury in precisely the form the statute was intended to guard against."[19]

Over the years, a substantial amount of enforcement of the Fair Housing Act against real estate companies has often involved testing, largely because of the difficulty in comparing the treatment of an individual home-seeker with similarly situated individuals. Testing evidence provides additional proof of discrimination to support the discrimination claims of bona fide home-seekers. As the *Havens* case from 1982 made clear, testing alone can serve as proof of discrimination and form the basis of a lawsuit. Some of the most seminal fair housing cases involving sales of homes have relied exclusively on testing to prove discrimination by realtors.[20]
Testing is still widely used by NFHA and its members to affirmatively investigate potential violations of the Fair Housing Act in the sales market. We have also relied on testing to identify and challenge discrimination in the rental of housing, appraising of housing, and within the lending and insurance markets. The Department of Justice has recognized the value of testing, and its testing program has operated for thirty years.[21] As long as our communities remain segregated, it is important to have available all of the enforcement tools for detecting and redressing discriminatory practices. While testing originated as a method for uncovering race discrimination, it is deployed to detect all forms of discrimination prohibited by the Fair Housing Act, including national origin, religion, color, gender, disability, and familial status.

Importantly, testing assists real estate companies in complying with fair housing laws. The real estate industry has a tremendous role to play in helping to challenge and overcome both discrimination and the segregated housing patterns we still see today. Through testing and fair housing training and education, companies and agents can learn how their actions and statements can signal to customers—either consciously or unconsciously—characteristics of neighborhoods that can have racial significance. Discussion of schools, crime rates, and even access to grocery stores and transportation can serve as code words for describing neighborhoods in racialized terms, without mentioning the neighborhood's racial composition, which most agents know by now is prohibited by law.

The real estate industry also has an opportunity to join others in the housing industry to work together to promote fair housing and advance integration. In addition to ensuring they are not committing acts of discrimination, there are numerous affirmative actions they can take to foster integration and equal housing opportunity.

Real estate agents play a significant role in the decisions that potential homebuyers make about where to buy a home. In many ways, agents are gatekeepers, with the power to determine which buyers get the chance to view and bid on different properties and the power to influence which bids are presented to and accepted by

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[19] 455 U.S. 363, 373 (1982).
[20] *Chicago v. Matchmaker Real Estate Sales Ctr.*, 982 F.2d 1086 (7th Cir. 1992), *cert. denied*, 113 S. Ct. 2961 (1993) (upholding steering claims by City of Chicago and others against real estate agents); *Heights Community Congress v. Hilltop Realty*, 774 F.2d 135 (6th Cir. 1985), *cert. denied*, 475 U.S. 1019 (1986) (racial steering proven through use of testers contracted by City of Cleveland Heights).
[21] Fair Housing Testing Program Civil Rights Division, U.S. Department of Justice, *available at* https://www.justice.gov/crt/fair-housing-testing-program-1
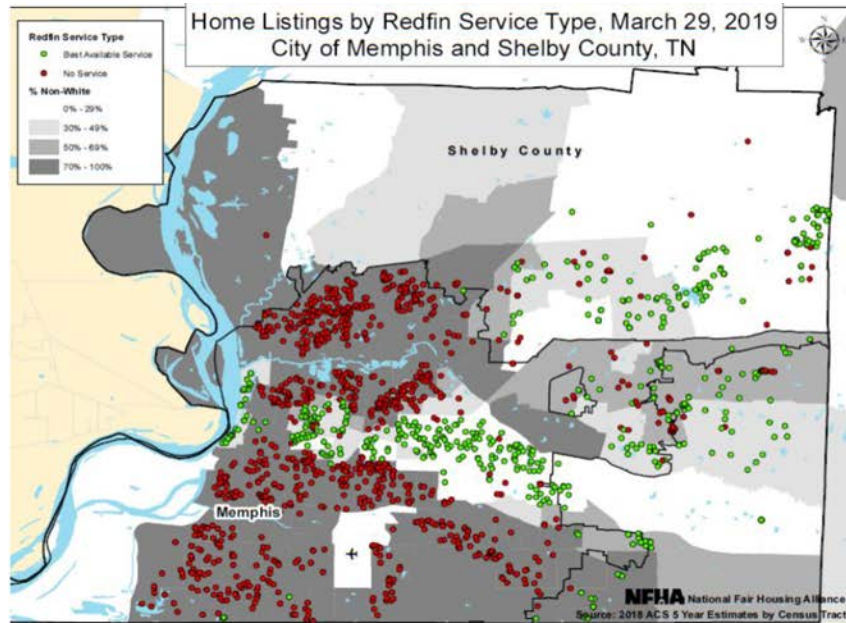
home sellers. Historically, discriminatory practices in the real estate sales market were among the major forces driving segregation and to the extent those practices continue today, they contribute to the perpetuation of segregation. But just as real estate agents can help sustain a segregated and discriminatory housing market, they can also be a force for good, helping to eliminate discrimination and segregation from the market. Agents that play this positive role can help move us toward the kind of diverse, inclusive communities our fair housing laws envision and from which our entire society benefits.

NFHA's Redfin Investigation

NFHA and nine of its member fair housing organizations conducted a comprehensive investigation of Redfin, one of the nation's largest real estate companies. The investigation uncovered disturbing practices that suggested widescale discrimination and modern-day technology-based real estate redlining. The groups found that Redfin offered its "Best Available Service" at a significantly greater rate in extremely White communities and offered "No Service" for homes in Communities of Color at much greater rates than in predominately White areas. The groups filed a lawsuit alleging violations of the Fair Housing Act in October 2020.[22]

The following maps depict the alleged discriminatory impacts of Redfin's policies. In the maps, a green dot represents a property that received the "Best Available Service" designation. Orange dots represents properties designated for "No Service" based on the area in which the property is located. Red dots represent properties that received the "No Service" designation based on price. The darker shaded areas in the maps represent communities heavily populated with People of Color.

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[22] See National Fair Housing Alliance, et. al. v. Redfin Corporation, U.S. District Court Western District of Washington. Available at https://nationalfairhousing.org/wp-content/uploads/2020/10/Redfin-Filed-Complaint.pdf

Home Listings by Redfin Service Type, March 29, 2019
City of Memphis and Shelby County, TN

Home Listings by Redfin Service Type, June 11, 2020
City of Louisville (Jefferson County), KY

Home Listings by Redfin Service Type, January 2, 2019
Wyandotte County, Leavenworth County, and Johnson County, KS
Jackson County, Clay County, and Platte County MO

Home Listings by Redfin Service Type, November 6-8, 2018
City of Philadelphia (Philadelphia County), PA

Home Listings by Redfin Service Type, December 17-19, 2018
City of Chicago, IL

Home Listings by Redfin Service Type, June 11, 2020
City of Baltimore, MD

To see more maps, click here.[23]

In 2019, after the release of the *Newsday* investigation, NFHA published a report describing the ways that discrimination occurs in real estate sales, and outlining a number of strategies to combat this discrimination and the segregation that it perpetuates.[24] That report recommends a variety of steps that members of the real estate industry can take to help eliminate discrimination in the market. They include:

1. **Promote diversity in the real estate industry.** We need more real estate agents of color in this field, serving all communities, not just communities of color. This will require aggressive, meaningful and impactful initiatives to increase racial diversity throughout the industry, including paid internships and mentoring programs for young real estate professionals of color and partnerships with Historically Black Colleges and Universities IHBCUs).

2. **Encourage the establishment of sales offices in communities of color.** There are too few sales offices in communities of color, and too many of those that do exist are staffed exclusively by real estate agents of

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[23] See National Fair Housing Alliance Redfin Investigation. Available at https://nationalfairhousing.org/redfin-investigation/
[24] Cloud, Cat, Debby Goldberg, Lisa Rice, Jorge Soto and Morgan Williams, "Fair Housing Solutions: Overcoming Real Estate Sales Discrimination," National Fair Housing Alliance, December, 2019. Available at https://nationalfairhousing.org/wp-content/uploads/2019/12/Fair-Housing-Solutions-Overcoming-Real-Estate-Sales-Discrimination-2.pdf.

color. This must change, so that real estate offices are diverse and all agents are conversant with all neighborhoods in their region and willing to show homes and encourage buyers in every community.

3. **Provide financial support for fair housing testing, research and education.** National real estate associations, local real estate boards and individual real estate offices should be closely aligned and financially supportive of fair housing efforts at the local level, aiding efforts to conduct testing and other research and develop education and outreach materials and activities designed to inform consumers about their rights and industry about its fair housing obligations. They should help establish and support new full-service fair housing organizations in underserved areas.

4. **Provide better comprehensive training for real estate professionals.** Agents should be required to go through comprehensive training prepared by experts in housing discrimination and fair housing. Such training should cover the history of discrimination and segregation and the role of the industry in establishing and perpetuating both; fair housing laws and implementing regulations; recent case examples of discrimination; information about the costs of segregation for families, communities and the nation; and best practices to ensure compliance with fair housing.

5. **Implements serious consequences for violations of fair housing laws.** Education and training alone cannot achieve full compliance with fair housing by the real estate industry. There is too much deep-seated and unwarranted bias and too few consequences for failure to comply. Those who violate the law should face license restrictions or revocations, financial penalties and other consequences. There should be a national, neutral entity to adjudicate violations, applying a single set of standards of behavior, rather than leaving these decisions to a plethora of local real estate boards.

6. **Provide fair housing policies and best practices for real estate professionals.** Just like other professionals, real estate agents need established protocols and best practices for how to engage with customers and the public. These should cover providing information and assistance to consumers in a consistent fashion, treating every consumer fairly, and requiring that consumers be shown houses that fit their needs. They should also address how to market schools and neighborhoods appropriately, as these often drive steering and discriminatory practices.

7. **Establish transparency around pocket listings.** Pocket listings are not places on the Multiple Listing Service (MLS) or otherwise made public, but rather shared with a limited number of agents, shielding properties that are available for sale from most potential buyers. This practice makes it easy to support discrimination. The industry should adopt systems and rules to bring pocket listings into the open so that all eligible buyers, regardless of race or national origin, have a fair opportunity to submit bids.

8. **Support fair housing policies and initiatives, including affirmatively furthering fair housing.** Real estate professionals and trade associations must be fully involved in the process conducted by state and local governments to assess the barriers to fair housing that communities face and identify meaningful solutions to overcome those barriers. They should also be fully committed to supporting, funding and helping to implement the strategies and activities to overcome fair housing barriers that state and local governments generate through this fair housing planning process.

Real estate agents cannot solve this problem alone. Government, at the local, state and federal levels, state real estate commissions, and other industry players – including lenders, appraisers, insurance companies and others – must also be part of the solution. But real estate agents can lead the way in helping to eliminate discrimination from our housing markets and dismantling the segregated living patterns that reflect our nation's history of systemic racism and undermine our prosperity today.

Congress Must Provide More Resources for Private Fair Housing and Lending Testing

NFHA represents the nation's network of private, nonprofit, qualified fair housing enforcement organizations (QFHEOs) and knows firsthand the challenges in conducting housing and lending testing. Fair housing and lending testing require highly technically expert staff that employ complex investigation methodologies to unearth and accurately assess discrimination. It takes time and program continuity to ensure reliable results that can be acted on in HUD's administrative complaint process or via federal or state courts.

Housing discrimination is pervasive. There are over 4 million instances of housing discrimination each year. The news media is full of stories about the invidiousness of housing and lending discrimination. Recently, the stories of Black families facing appraisal bias have drawn scrutiny over the lack of effective fair lending enforcement.[25] In one case, a Black family in San Francisco had their home appraisal increase $500K in value after they demanded their lender perform a second evaluation. A White friend had offered to assume the family's identity and greeted the second appraiser. The value of the home increased from $989,000 to $1,482,000.[26] Analysis of HMDA data also reveal that Communities of Color are still being redlined by mainstream lending institutions. In one study by WBEZ in Chicago, found that even though Chicago is almost evenly split in racial composition – 33.3% Non-Hispanic White; 29% Black; 27% Hispanic; and 6.65% Asian American – lenders invested 68.1% of mortgage dollars in majority-White areas while just 8/1% went to majority-Black areas and 8.7% went to majority-Latino areas. One major lender, JPMorgan Chase, invested 41 times more mortgage dollars in majority-White communities than majority-Black communities. In fact, the study revealed that lenders invested more money in one majority-White area – Lincoln Park – than in all of Chicago's combined majority-Black communities.[27]

Moreover, industry practices in the housing and lending markets are changing at an alarming pace, especially through the increased use of third-party service providers that operate biased machine learning systems to help providers make housing and credit decisions. And in the age of social media, dynamic online platforms like Facebook are playing a larger role in the placement of housing and credit product advertisements. The current funding available to address these challenges is simply not enough and, now more than ever, Congress must commit to providing more financial support to challenge pervasive housing and credit discrimination and better implement the nation's fair housing and lending laws.

QFHEOs compete for grants under HUD's Fair Housing Initiatives Program (FHIP) to test for discrimination in all types of housing transactions, including in mortgage lending and real estate sales. FHIP is the only funding source of this type. FHIP grantees must share a total of $40 to $46 million annually to uncover, investigate, and address ALL reported housing and mortgage discrimination cases, as well as conduct education and outreach to consumers, and train local housing professionals in a nation with a population of 328,000,000 people. Of those grantees who are able to secure a FHIP grant, many are the only QFHEO in their entire state and therefore have to stretch grant funding even further. Congress has also mandated that HUD use a minimum of 17 to 20 percent

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[25] Debra Kamin, "Black Homeowners Face Discrimination in Appraisals," New York Times, August 25, 2020. Available at https://www.nytimes.com/2020/08/25/realestate/blacks-minorities-appraisals-discrimination.html
[26] Julian Glover, "Black California Couple Lowballed by $500K in Home Appraisal, Believe Race was a Factor," ABC News, February 12, 2021. Available at https://abc7news.com/black-homeowner-problems-sf-bay-area-housing-discrimination-minority-homeownership-anti-black-policy/10331076/
[27] Linda Lutton, Andrew Fan, Alden Loury, "Where Banks Don't Lend," WBEZ, June 3, 2020. Available at https://interactive.wbez.org/2020/banking/disparity/

annually on education and outreach grants, leaving less money available for enforcement grants which make up the most effective component of FHIP in curbing discrimination. Additionally, constant delays by HUD in making available Notices of Funding Availability and award decisions each year has created recurring delays in grant cycles, leaving many QFHEOs in limbo as they wait for the next round of enforcement funding.[28]

	2014	2015	2016	2017	2018	2019	2020	2021
FHIP (millions)	$40.10	$40.10	$39.20	$39.20	$39.60	$39.60	$44.95	$46.3
Reported Complaints	27,528	27,937	28,181	28,825	31,202	28,880[29]	NA	NA

During the last six years for which we have reported complaint data (2014-2019), complaints increased by nearly 10 percent all-the-while FHIP funding decreased by 10 percent. In (2019), 3.5 percent of all complaints (1,013) involved either a real estate sales or mortgage lending basis.[30] However, that is not an indication that discrimination does not occur at higher levels than what the fair housing movement can currently ascertain. NFHA estimates that at least 4 million incidents of housing discrimination occur each year just in rental housing alone,[31] yet the fair housing movement is only provided resources to tackle a small fraction of it. Indeed, the recent Newsday Investigation revealed rampant real-estate sales discrimination that mirrored past real-estate sales investigations NFHA has conducted on its own, and it showed that when QFHEOs are provided adequate resources to conduct testing pervasive discrimination is brought to light and addressed.

We are grateful for the work Congress has done to require HUD to administer FHIP in a timelier manner, but more must be done. Congress must fund FHIP at a minimum of $55 million each year and begin the process of converting it into an entitlement program to ensure its reliability and efficacy. This nation's ability to tackle the scourge of housing and lending discrimination rests on the reliability of the resources it provides to QFHEOs. Congress must eliminate all possible avenues through which this work can be stalled, whether that happens through willful disregard for its importance or simply a matter of poor administration. Converting FHIP into an entitlement program will remove the risk of funding delays; ensure that there is at least one QFHEO per MSA; appropriately scale available funding to QFHEOs according to the population they serve; and it will provide a

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[28] Testimony of Keenya Robertson before House Appropriations Committee's Subcommittee on Transportation, Housing, & Urban Development and Related Agencies, February 27, 2019, available at
https://www.congress.gov/116/meeting/house/108964/witnesses/HHRG-116-AP20-Wstate-RobertsonK-20190227.pdf.
[29] *See* National Fair Housing Alliance, "Fair Housing in Jeopardy: Trump Administration Undermines Critical Tools for Achieving Racial Equity," available at https://nationalfairhousing.org/wp-content/uploads/2020/09/NFHA-2020-Fair-Housing-Trends-Report.pdf.
[30] *Ibid.*
[31] Simonson, John, *Report for the National Fair Housing Alliance on the Incidence of Housing Discrimination Based on HDS 2000*, Center for Applied Public Policy at the University of Wisconsin-Platteville. The HDS reported on the probability (using percentages) that discrimination would occur; NFHA's commissioned study reports instead on the number of instances of discrimination.

better way to calibrate annual funding to the actual costs of conducting fair housing and lending testing in a marketplace that continues to grow in complexity.

NFHA Supports the Fair Lending for All Act

Fair lending enforcement saw a dramatic turn during the Trump Administration, beginning with actions taken by Acting Director of the CFPB, Mick Mulvaney. On February 1, 2018, then Acting Director Mulvaney took action to strip away the CFPB's Office of Fair Lending's enforcement powers and diminish its role within the Bureau. The signal this sent to the lending industry suggested it could operate with lowered expectations of being held accountable for discriminatory practices. However, issues related to the efficacy of the Equal Credit Opportunity and the Home Mortgage Disclosure Acts began long before even the establishment of the CFPB.

NFHA strongly supports the Fair Lending for All Act as major step forward in addressing the limitations of fair lending enforcement. Rep. Green's legislation addresses long-standing barriers to fair and equal credit by adding sexual orientation and gender identity protections to ECOA, bringing LGBTQ people closer to reaching equity in the credit markets. The bill also makes it unlawful to discriminate against a person on the basis of geographic location, directly addressing rampant discrimination perpetuated through the use of geography as a proxy for race and ethnicity. The Fair Lending for All Act also adds critical data reporting requirements to the Home Mortgage Disclosure Act to ensure that the CFPB and other enforcement agencies can better ascertain discriminatory patterns in the mortgage market and act upon them.

The Fair Lending for All Act also re-empowers the CFPB to conduct meaningful fair lending compliance and take appropriate enforcement action to address credit discrimination. By establishing the requirement to conduct fair lending testing at the CFPB, we can be assured that the CFPB's civil rights authority is used to the fullest extent regardless of who runs the Bureau. Additionally, the bill's provision which requires the CFPB to review the loan application process of covered institutions will help unearth and address critical flaws in the credit application process where discrimination occurs and require corrective changes to that process.

Among the most meaningful changes in the legislation is the establishment of stronger criminal penalties for individuals who engage in a pattern or practice of knowingly or willfully violating ECOA, as well as personal liability for executive officers at lending institutions who knowingly and willfully direct an institution to violate the Act. Together, these changes will finally create a lending environment in which the intentional reverse-redlining and other forms of systemic discrimination that prevailed in the run up to the 2008 foreclosure crisis can no longer be repeated. It is well past time that leaders in finance and lending officers who knowingly cause people of color and other protected classes to lose their homes face criminal consequences akin to the disruption they cause to the lives of underserved communities which they have targeted.

NFHA has long been a proponent of these changes and we thank Rep. Green for his leadership. We also look forward to working with Mr. Green and the Committee to ensure that additional changes in the Fair Lending for All Act can be made to further meet the legislation's goals.

Appraisal Institute®

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March 2, 2021

The Honorable Al Green
Chairman
Subcommittee on Oversight and Investigations
House Committee on Financial Services
2129 Rayburn House Office Building
Washington, DC 20515

The Honorable Andy Barr
Ranking Member
Subcommittee on Oversight and Investigations
House Committee on Financial Services
2129 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Green and Ranking Member Barr:

On behalf of the nearly 17,000 Designated members, candidates, and affiliates of the Appraisal Institute, we write to you to update on actions we and others in the appraisal profession are taking to address allegations of discrimination or potential bias in appraisal. We respectfully request this letter be included in the hearing record for the February 24, 2021 hearing entitled, "*How Invidious Discrimination Works and Hurts: An Examination of Lending Discrimination and Its Long-term Economic Impacts on Borrowers of Color.*"

To start, the Appraisal Institute remains strongly supportive of H.R. 166, the *Fair Lending for All Act*. This legislation would provide much needed resources for fair housing enforcement, among other things. As discussed during the hearing, these resources have tended to ebb and flow over time and having a more consistent set of resources will surely enhance enforcement efforts, including those involving appraisal.

Discrimination has no place in appraisal, and we believe any concerns over discrimination involving appraisers should be referred for potential criminal complaint and/or fair housing enforcement. We offer the full weight and resources of our organization to fair housing enforcement agencies in understanding appraisal related issues, which may require specific expertise to help prove intent. When we see even one story of a consumer who feels they were treated differently because of their race, we take pause and reflect because that goes against everything we stand for. Bias, in whatever form it takes, is the enemy of the valuation profession.

Appraisers take a lot of pride in being an objective source of real estate value information. Appraisers look at the numbers and facts, attempting to mirror what the market tells. Appraisers know bias is human and exists in various forms (whether conscious or unconscious), and no profession is immune from that. We believe that it is important to continue educating ourselves about the situations and circumstances that can potentially lead to bias.

<u>Anti-Bias Campaign</u>
Ensuring bias does not play a role in appraisals and seeking solutions to promote equity, diversity and inclusion in appraisal are top priorities for the Appraisal Institute. We are spearheading several initiatives, partnerships, and commitments. We are excited to see how this work positively affects the greater real estate industry and the communities across the country where our appraisers work.

Specifically:
1. Last year, we convened a Fair and Affordable Housing Symposium for appraisers, lenders, and others, where we invited researchers critical of appraisers or appraisal process to present their findings on valuation and appraisal, identify concerns, and propose ideas for solutions. The Symposium identified several ideas that we are exploring with this Committee, Government Sponsored Enterprises and the Federal Housing Finance Agency and others.
2. Together with other appraisal associations, the Appraisal Institute hosted a free seminar for appraisers on unconscious bias, hosted by nationally renowned diversity, equity and inclusion consultants, the Ivy Planning Group. This presentation raised awareness amongst all appraisers about unconscious bias and provided tips for countering it in appraisal practice.
3. The Appraisal Institute is proposing enhancements to its Code of Professional Ethics to include a new Ethics Rule that specifically prohibits AI professionals from basing an analysis, opinion, conclusion or report partially or completely on <u>personal characteristics</u>. Concerns about personal characteristics have

"How Invidious Discrimination Works and Hurts: An Examination of Lending Discrimination and Its Long-term Economic Impacts on Borrowers of Color."
March 2, 2021

been raised in recent media reports involving refinance appraisal appeals, and the new Ethics Rule reinforces and makes clear that appraisers are to focus on property, not race, ethnicity, or other personal characteristics.

4. Adjunct to the new Ethics Rule, we have also developed a Guide Note on Personal Characteristics and Valuation, which illustrates the application of this new Ethics Rule in appraisal practice scenarios. For example, the Guide Note includes scenarios involving residential and commercial appraisal illustrations to fight bias in the range of valuation scenarios encountered by appraisers.

5. We are also developing new education for our members and the public on valuation bias, reflecting on historical developments in appraisal and real estate and providing quality control techniques to combat all forms of bias, including unconscious bias. Lastly, we also are likely to enhance education on fair housing considerations for appraisers that have existed for many years but deserves to be enhanced or updated.

6. We are supportive of proposals (currently pending in CA, MN, and NY) to require that appraisers take periodic continuing professional education specifically related to the topics of valuation bias, fair housing, and equal opportunity.

Amid these activities, we have also been working with The Appraisal Foundation, the appraisal profession's standards-setting body, to enhance appraisal standards and qualifications requirements to address bias concerns. Several positive changes are being made to promote valuation bias education for all appraisers.

Increasing Appraiser Diversity

We are also tackling diversity in the appraisal profession, which has been raised as an additional concern. According to our most recent research, the appraisal profession is predominantly white and male. While some strides have been made in recent years, much work is to be done on this front. The appraisal profession has historically leveraged an apprenticeship model, and this has fostered many familial ties within the profession. Historically, family run, and managed firms were common and handed down generationally. Specifically, our efforts in diversity involve several internal committees, including our University Relations Committee, which is conducting outreach to Historically Black Colleges and Universities to expose appraisal and establish education connections. The Appraisal Institute Education and Relief Foundation also maintain the Minorities and Women Scholarship Program, which supports education scholarships for existing appraisers working through certification and licensing requirements.

Lastly, over the past two years, we have worked with Fannie Mae and the National Urban League to host the Appraiser Diversity Initiative (ADI). ADI exposes appraisal careers to new entrants of the appraisal profession, providing scholarships for interested individuals to complete the entry-level coursework for appraisal. The program is sponsored by the AI Education and Relief Foundation, which has committed $150,000 in scholarships over the next three years. We are expanding this program to involve private sector organizations as sponsors to also offer linkages for these individuals to complete experience requirements with supervisory appraisers.

We remain committed moving forward with our initiatives outlined above. We also want to be part of the solution to any identified concerns. For the past year, we have been working with Chairwoman Waters to discuss how all the relevant stakeholders can gather in one room, evaluate the respective collateral underwriting guidelines from agencies and Enterprises and develop consistent approaches to challenging topics such as lending and valuing in limited or inactive markets. These discussions have also discussed ways in which we can continue to improve diversity within the profession. We look forward to continuing to work on these and other issues that promote community and economic development and housing opportunities for all Americans.

Thank you for your attention and for the opportunity today. Please contact Bill Garber, Director of Government and External Relations at 202-298-5586 or bgarber@appraisalinstitute.org if you have any questions.

Sincerely,

Appraisal Institute

March 03, 2021

Attn: Members of the Subcommittee on Oversight and Investigations of the House Committee on Financial Services,

Engine is a non-profit technology policy, research, and advocacy organization that bridges the gap between policymakers and startups. Engine works with the government and a community of thousands of high-technology, growth-oriented startups across the nation to support the development of technology entrepreneurship. Engine welcomes the opportunity to provide comments for the record regarding the impact of lending discrimination in communities of color and its impact on the economic development of startups.

Within the startup ecosystem, Black and Latino startups are both underrepresented and underfunded[1]. Diversity is more than a talking point; it's a necessary element for startups to drive innovation and growth. In a study conducted by the Boston Consulting Group, gender and racially diverse teams were 21 percent and 33 percent more likely to be profitable compared to less diverse teams.[2] However, many of these founders are unable to demonstrate their potential for success because they are hindered by barriers that limit their access to capital. And significant funding streams, like venture capital investments, are woefully behind in directing funds to diverse founders. Specifically, women-founded companies represent roughly 3 percent of the total VC funding circulating, and Black and Latino founders have raised a similar, small fraction.[3] And wealth gaps and systemic racism mean that even many traditional financing methods, like self-funding or a friends and family round, leave diverse founders behind in accessing needed capital.[4]

Faced with the lack of preexisting networks to source significant funding, underrepresented founders are left with fewer options, and some may seek personal or business loans.[5] But obtaining a

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[1] *Diversity in U.S. Startups*, Diversity VC (January, 2017) available at
https://news.crunchbase.com/news/untapped-opportunity-minority-founders-still-being-overlooked/
[2] See Engine's Comments to the USPTO, available at:
https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/60366ecbd288114c62743c45/1614180046522/Engine+USP
TO+diversity+comments.pdf; and, Rocío Lorenzo, Nicole Voigt, Miki Tsusaka, Matt Krentz, & Katie Abouzahr, *How Diverse Leadership Teams Boost Innovation*, Bos. Consulting Grp. (Jan. 23, 2018), https://www.bcg.com/en-us/publications/2018/how-diverse-leadership-teams-boost-innovation.
[3] Engine, *supra* note 2; and, *Funding to the Female Founders* (Crunchbase, S.F., Cal.), Mar. 2020, at 5 ("In 2019, female-only founded companies raised *3 percent* of venture dollars." (emphasis added)), https://about.crunchbase.com/wp-content/uploads/2020/03/Funding-To-Female-Founders_Report.pdf; *Funding to Black & Latinx Founders*, Crunchbase Diversity Spotlight 2020 (Crunchbase, S.F., Cal.), Oct. 2020, at 4 ("So far in 2020, Black and Latinx founders have raised $2.3 billion, representing *2.6 percent* of funding through Aug. 31, 2020." (emphasis added)), http://about.crunchbase.com/wp-content/uploads/2020/10/crunchbase_diversity_report_2020.pdf.
[4] Engine, *supra* note 2.
[5] *Crunchbase Diversity Spotlight 2020: Funding to Black and Latinx Founders (2020)*, http://about.crunchbase.com/wp-content/uploads/2020/10/2020_crunchbase_diversity_report.pdf.

loan as an underrepresented founder is not a straightforward path, nor is it always equitable. When faced with the urgency and need for capital to support their ventures, underrepresented founders may turn to predatory lenders, who subject loan applicants to significant interest rates and upfront costs.[6] Further, when controlling for other differences in applicants, people of color and women are still often subject to worse loan terms.[7] Founders of color also have fewer loan approval outcomes compared to white founders, and they routinely do not receive the total amount of funds for which they apply.[8] And even when looking at programs—like the Paycheck Protection Program (PPP)—that are designed to help struggling businesses during the pandemic, discrimination in lending is still a significant problem. As Engine noted in recent comments to the U.S. Patent and Trademark Office (USPTO), "[d]ata show, for example, that predominantly Black congressional districts got fewer PPP loans, where applicants faced longer delays receiving funds; minority-owned PPP applicants had to wait longer and try harder to have applications processed; and Black applicants received worse treatment from banks."[9] Though recent efforts have been made to direct funds to those businesses truly in need, "[t]he federal government must understand its failures and shortcomings in order to surmount them."[10]

And other factors that influence loan issuance, like credit scoring, are often not reflective of a founder's ability to make on-time loan payments and are influenced by factors like income and wealth inequality.[11] As we noted in comments to the USPTO, "[t]he current credit score system is a serious barrier to an underserved founder's ability to access capital, and is in serious need of reform. . . credit scores present a chicken-or-the-egg problem: you need a higher credit score to get more capital, but you need a longer credit history to get a higher credit score. And it is often not a good measure of whether a borrower can and will repay a loan."[12] The Consumer Financial Protection Bureau notes that roughly 20 percent of the adult U.S. population is credit invisible or unscorable,[13] and Black and Hispanic consumers are more likely to fall into this population compared to white or Asian consumers.[14] Further, as detailed by the witnesses in the hearing, these communities lack opportunities to enter the credit market by credit-piggybacking, compared to white communities.[15] And lack of good (or any) credit can then become a significant hindrance for underrepresented founders to become approved for loans.

While discrimination in lending represents a significant barrier to accessing capital for

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[6] See House Committee on Financial Services Hearing available at
https://financialservices.house.gov/calendar/eventsingle.aspx?EventID=407193.
[7] Engine, *Capital Access and Founders of Color*,
https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/601972a9523cbf6f0ca52288/1612280489760/Capital+Access+and+Founders+of+Color.pdf.
[8] Engine, *supra* note 7.
[9] Engine, *supra* note 2.
[10] *Id.*
[11] *Id.*
[12] *Id.*
[13] *Who are the credit invisibles?*, Consumer Finance Protection Bureau *(Dec., 2016) available at* https://files.consumerfinance.gov/f/documents/201612_cfpb_credit_invisible_policy_report.pdf; and *Data Point: Credit Invisibles*, Consumer Finance Protection Bureau (May, 2015) available at https://files.consumerfinance.gov/f/201505_cfpb_data-point-credit-invisibles.pdf.
[14] *Id.*
[15] See House Committee on Financial Services Hearing available at
https://financialservices.house.gov/calendar/eventsingle.aspx?EventID=407193.

underrepresented founders, Engine believes policymakers have the opportunity to address the issue. While we go into greater detail concerning possible solutions in the attached report submitted to USPTO on their request for comments regarding diversity in innovation, briefly, policymakers could consider a number of initiatives. Agencies could work to eliminate bias in federal lending by ensuring that decision makers also reflect a diverse pool of talent.[16] This requires ensuring that government is comprised of diverse leaders and that government has "the data it needs to drive better, more inclusive decisions in the future and that it takes steps to eliminate current bias."[17] It also requires sufficient action be taken to address the inequities the data may show.[18] As Engine recommended in the same comments, action is needed "to encourage other departments and agencies to make similar strides in data collection and targeting, to better understand and assist underrepresented innovators. And once that data is collected, the federal government needs to move more quickly to rectify inequity."[19]

Policymakers should also work to expand and improve small business loan programs, like PPP or Small Business Administration's 7(a) loan program, to ensure Black- and Latino-owned small businesses and startups are not improperly and unfairly denied loans. Policymakers should work to ensure that underrepresented founders have better access to relief,[20] and the resources needed to know what forms of relief are available. And policymakers can also shift their focus to lending solutions that have the potential to decrease discrimination.[21] As Engine has noted in the past, fintech firms may have some promise at reducing discrimination in lending (though more work most certainly should be done). "While the fintech industry's demographics are no better than the broader technology industry, studies suggest that, while finance algorithms discriminate against Black and Latino loan applicants, they may discriminate less in certain industries (e.g., mortgages) than traditional face-to-face lending."[22]

Finally, policymakers should work to address the inherent discrimination reflected in the U.S.' credit reporting system so that disadvantaged borrowers who may in actuality be good candidates for loans or credit can better access needed funding options. Pursuing efforts to develop alternatives to the traditional credit score—including by encouraging the CFPB to work with credit reporting agencies—could help provide real change within the financial system.[23]

Engine is grateful for the opportunity to provide feedback on the impact discrimination in lending has on underrepreseted startup founders and to pose possible actions government can take to help these founders. We are happy to serve as a resource for the committee on issues affecting startup founders in the future.

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[16] Engine, *supra* note 2.
[17] *Id.*
[18] *Id.*
[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] *Id.*
[23] *Id.*

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ENGINE'S RESPONSE
to the Call for Comments *on*
EXPANDING AMERICAN
INNOVATION

Before the
U.S. Patent and Trademark Office

In the Matter of
**Request for Comments on the National Strategy
for Expanding American Innovation**

Docket Number PTO-P-2020-0057

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February 23, 2021

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INTRODUCTION

Engine is a non-profit technology policy, research, and advocacy organization that bridges the gap between policymakers and startups. Engine works with government and a community of thousands of high-technology, growth-oriented startups across the nation to support the development of technology entrepreneurship through economic research, policy analysis, and advocacy on local and national issues. Engine appreciates the opportunity to submit this response to the U.S. Patent and Trademark Office's (USPTO) request for comment on expanding the country's innovation ecosystems to be more diverse and inclusive.[1]

The National Council for Expanding American Innovation's (NCEAI) work will touch on critical challenges and opportunities facing the nation's innovation ecosystems. Engine encourages NCEAI to seek a complete picture of the barriers underrepresented innovators and entrepreneurs routinely yet unfairly face, and Engine urges the entire federal government to mobilize toward increasing diversity and inclusion in innovation.

It would be difficult to overstate the value of diversity to innovation and entrepreneurship. Diverse teams generate better economic results, and more—often better—innovation emerges from their unique perspectives. In addition, as the nation continues the essential work of seeking to rectify systemic inequality and structural racism, increasing diversity in innovation should be a core component. Startups make outsized contributions to economic and job growth, and those benefits cannot continue to be withheld from historically underserved communities.

Looking first to the patent system, NCEAI and USPTO must recognize that the agency's stakeholders extend far beyond patent applicants and owners. And in seeking to promote diversity in innovation, the USPTO should not only keep startups in mind—the USPTO should also look to customers and users who never intend to interact with the patent system because they still have a stake when the government grants exclusive rights in certain technologies. To promote diversity, Engine encourages the USPTO to build or expand initiatives that equip underrepresented founders who want patents with the tools or resources they need to obtain high-quality ones. It should also find ways to eliminate bias in the application process and collect better data to monitor progress.

Outside the patent system, there is much more the government should do to foster diverse and inclusive innovation. The most significant challenge facing many startups is accessing capital. Venture capital (VC) and equity investment is imbalanced along race, gender, ethnic, and geographic lines. Most VC funding goes to companies founded by white men located in a few corners of the U.S. Many underrepresented founders are further excluded because they lack equitable access to more common sources of startup capital— personal or family wealth and lines of credit or business loans. Systemic racism and sexism have created deep gaps in wages and wealth, leaving many underserved founders at an unwarranted (and sometimes severe) disadvantage.

There are many levers the government can pull, starting with its own funding. Agencies should seek to eliminate current bias and disparities in federal grants and loans. To accomplish this they should, for example, ensure diverse leaders are at the table, setting more inclusive research priorities and making funding decisions. The government should also create or improve existing financial programs to better serve startups—particularly nascent tech companies, which have different needs, and would benefit from specific tax credits or streamlined grant review. In addition, the government should consider how it can encourage private investors to spend in more equitable ways, like by incentivizing angel investors or implementing policies to reduce bias in banking.

[1] Request for Comments on the National Strategy for Expanding American Innovation, 85 Fed. Reg. 83906 (Dec. 23, 2020).

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Another core feature of startup success is rooted in networking and mentoring. Startups across the country routinely emphasize the enormous value of community. Yet this is another area where underrepresented founders have been historically excluded—costing them access to potential investors, seasoned industry advisors, and entrepreneurial peers. The government can support and bolster the connective tissue of startup ecosystems by, for example, funding incubators, accelerators, and entrepreneurial support organizations that focus on underrepresented founders. And it should actively meet startups where they are, by attending conventions or working through regional offices to facilitate access to government resources and hear directly from startups about what they need from policymakers.

Finally, the talent pipeline is key. It is critical that training resources are equitably distributed, but all young people—no matter their zipcode—should be encouraged to be innovators. Unfortunately, certain students lack access to STEM education, but even those who pursue it often abandon STEM before they choose a career. The government can—and should— spend more on education, but it should figure out how to get "smarter" about training tomorrow's innovators. For many innovators, their path will not include a university degree. Part of building the talent pipeline will require new curricula to highlight accomplished innovators from underrepresented backgrounds. The government should also focus on attracting and retaining more diverse STEM educators. And finally, the government should invest in improved, dedicated innovation and entrepreneurship education, to train creative, innovative young people and equip them with the tools they need to succeed in solving problems and developing new ideas into practical solutions through advanced technology.

IMPORTANCE OF DIVERSITY

Engine applauds the USPTO and the NCEAI for seeking to increase diversity throughout American's innovation ecosystems. Promoting diversity and inclusion in innovation is not only the right thing to do, it also makes for the best economic policy.[2] Studies show that diverse teams produce better financial returns and more innovation: racially and gender diverse teams are 33 percent and 21 percent more likely to be profitable than their less-diverse peer teams, respectively.[3] The diversity of a company's leadership correlates to increased innovation, measured by the revenue attributable to new products and services.[4] And innovative companies whose leaders exhibit inherent and acquired diversity are likelier to capture new market share and report market share growth.[5]

Generations of American inventors from many different backgrounds have created countless products and processes that enrich our lives and power our economy. Percy Julian created fire-retardant foam used throughout World War II,[6] Sarah Boone was fundamental in developing the modern ironing board,[7] and Katharine Burr Blodgett made "invisible" glass,[8] a key component of computer screens today, just to name a few. Julian, Boone, and Blodgett are all examples of women and Black American founders and inventors, merely some of the innovators from underrepresented backgrounds who have driven America's scientific progress.

Similarly, diversity can impact—and improve—the direction of product development and innovation. Diverse teams serve a more diverse customer base, and bring unique perspectives to develop solutions to more problems experienced by more people.[9] Merely by way of example, engineers who navigate the world in a wheelchair will more-readily see opportunities to improve accessibility in public transit; women are more likely to introduce innovative new services that cater to the purchasing needs of women;[10] and multilingual teams will better notice the value of testing voice recognition technology on many accents.[11] And these varied perspectives are integral to keeping American startups at the forefront of global innovation.

Startup Testimonial:

On running a startup focused on the race and gender accuracy of facial recognition: "Facial recognition technology has far-reaching implications. We saw this [] during the George Floyd protests, when law enforcement relied on inaccurate facial recognition technology. The issue also affects me and the people I care about. I am Black and I am a woman, and we know that facial recognition technology is particularly bad at identifying people of color and women. . . . Part of my social responsibility and holding Infiltron accountable is through working with teams that are diverse. For the company I am building and the solutions we are building, diversity will show in what we build, attending to accuracy and defending against racial or gender bias." [12]

[2] *See* Rocio Lorenzo, Nicole Voigt, Miki Tsusaka, Matt Krentz, & Katie Abouzahr, *How Diverse Leadership Teams Boost Innovation*, Bos. Consulting Grp. (Jan. 23, 2018), https://www.bcg.com/en-us/publications/2018/how-diverse-leadership-teams-boost-innovation; Vivian Hunt, Lareina Yee, Sara Prince, & Sundiatu Dixon-Fyle, *Delivering Through Diversity*, McKinsey & Co. (Jan. 18, 2018), https://www.mckinsey.com/business-functions/organization/our-insights/delivering-through-diversity.
[3] Hunt et al., *supra* note 2.
[4] Lorenzo et al., *supra* note 2.
[5] Sylvia Ann Hewlett, Melinda Marshall, & Laura Sherbin, *How Diversity Can Drive Innovation*, Harv. Bus. Rev. (Dec. 2013), https://hbr.org/2013/12/how-diversity-can-drive-innovation.
[6] *Percy Julian - Facts, Inventions & Death*, Biography (Jan. 8, 2021), https://www.biography.com/scientist/percy-julian.
[7] *Sarah Boone - Invention, Ironing Board & Facts*, Biography (Jan. 13, 2021), https://www.biography.com/inventor/sarah-boone.
[8] Jacob Roberts, *The Invisible Woman*, Science History Institute: Distillations (May 3, 2014), https://www.sciencehistory.org/distillations/the-invisible-woman.
[9] *See, e.g.*, Edward Graham, *Stylaquin Reimagines Online Shopping*,

Engine (June 14, 2019), https://www.engine.is/news/category/startupseverywhere-providence-rhode-island ("There's a huge opportunity in the funding community to create funds for women and minorities . . . . [Investors] should also be aware that if you're not in those communities, you don't know what their needs are. Every one of those needs has a solution that is potentially profitable.") (quoting Sarah Fletcher, co-founder of Stylaquin in Rhode Island) [hereinafter "Stylaquin"]
[10] Modupe Akinnawonu, *Why Having a Diverse Team Will Make Your Products Better*, N.Y. Times Open (May 23, 2017), https://open.nytimes.com/why-having-a-diverse-team-will-make-your-products-better-c73e7518f677.
[11] Laura Evans, *I'm a Latina Veteran Who Works at Amazon. Diversity Isn't About Checking a Box*, Fast Company (July 30, 2020), https://www.fastcompany.com/90532486/im-a-latina-veteran-who-works-at-amazon-diversity-isnt-about-checking-a-box.
[12] Edward Graham, *Securing Data and Devices from Hackers*, Engine (Nov. 11, 2020), https://www.engine.is/news/startupseverywhere-warner-robins-ga-infiltron (quoting Chasity Wright, founder and CTO of Infiltron in Georgia) [hereinafter "Infiltron"].

IMPORTANCE OF DIVERSITY

Moreover, increasing diversity in the nation's innovation ecosystems is one path toward creating wealth and building the jobs of the future in communities across the country that have been historically marginalized and excluded from these benefits without justification.[13] And the COVID-19 pandemic has escalated the need for concerted focus on advancing diversity in innovation sectors, as women—especially Black and Latina women—are being driven from the workforce in significant numbers.[14] Rapidly increasing unemployment rates now put a finer point on the inequity that existed in innovation sectors before the pandemic, and ratchets up the urgency for effective government intervention now.

With all of this in view, it is apparent that the value of and need for greater diversity and inclusion in U.S. innovation is paramount. Likewise, as USPTO and members of the NCEAI no-doubt know, the barriers facing underrepresented founders are complex and reaching. And they extend far beyond the patent system. Of course, the solutions to expand U.S. innovation cannot be one-size-fits-all. The NCEAI and USPTO should instead carefully consider the unique needs of different underrepresented founders and propose a variety of strategies to support innovators across, e.g., race, gender, and geography. Otherwise, the country risks implementing policies that only help a few and continue to unfairly leave many innovators behind.

Engine urges the USPTO and NCEAI to thoroughly examine the complex barriers underrepresented founders face, and consider a broad range of bold, creative solutions. Were NCEAI merely to take a narrow focus on barriers to patenting, it would be missing an opportunity to contribute real value toward advancing diversity in innovation. To be sure, patenting is a valuable part of some innovators' startup models, but innovation is not always about a patentable invention— valuable innovation can include new business models,[15] or customer outreach services. All underrepresented innovators and entrepreneurs, regardless of whether they want or need patents, also deserve the attention and support of the USPTO, NCEAI, and the federal government more broadly.

Indeed, agencies and officials across the federal government have a critical role to play in dismantling the unjust barriers facing underrepresented founders. Advancing diversity in innovation and entrepreneurship will require dedicated efforts from all branches and levels of government, not just the USPTO. For example, the Small Business Administration, National Science Foundation, and Department of Education each have expertise and authority that can be brought to bear and should take a prominent role in the government's efforts to expand American innovation. And some steps will require Congressional action. Engine encourages USPTO and NCEAI to share findings with other agencies and tap into parallel efforts underway elsewhere.

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[13] *See, e.g., Why 1863?*, 1863 Ventures, https://www.1863ventures.net/why-1863 (last visited Feb. 2, 2021) ("Our thesis is that entrepreneurship is becoming an increasingly viable pathway for the New Majority to build wealth. Our goal is to facilitate this trend by reducing barriers and risk for these founders across the nation.").

[14] LuLu Garcia-Navarro, Interview with Elise Gould, *The Economic Fallout of the Pandemic Has Had a Profound Effect on Women*, NPR (Jan. 31, 2021), https://www.npr.org/2021/01/31/962528953/the-economic-fallout-of-the-pandemic-has-had-a-profound-effect-on-women.

[15] But the value of a patent is often not the incentive to invent, especially for startups. *See* Stuart J.H. Graham, Robert P. Merges, Pam Samuelson, & Ted Sichelman, *High Technology Entrepreneurs and the Patent System: Results of the 2008 Berkeley Patent Survey*, 24 Berkeley Tech. L.J. 1255, 1296–97 (2009).

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PATENTING

Technology startups create promising innovations and develop them for the benefit of their customers and the public. Many startups continue in the footsteps of Percy Julian, Sarah Boone, and Katharine Burr Blodgett by seeking patents. Some inventors hope to license to fund further research and development,[16] and others want strategic advantages associated with being the first to patent.[17] For others, patents are not a part of their innovation strategy.[18] Moreover, when the USPTO issues a patent, that has far reaching economic consequences. And many startups' only interaction with the patent system is when they are accused of infringement. But there are few avenues for the public to engage with the Office, as it interacts almost exclusively with patent applicants (or owners), and has very few ways to hear "from those who stand to suffer immensely" from, e.g., improvidently granted patents.[19] In thinking about the importance of diversity within the patent system, the USPTO and NCEAI should not take a myopic view and misunderstand patent applicants or owners as the only relevant stakeholders. As detailed further below, Engine encourages the USPTO and NCEAI to focus on the whole innovation sector, but here presents issues and some possible solutions underrepresented innovators face in patenting.

STARK DISPARITIES IN PATENT OWNERSHIP EXIST.

Examples of excellence do not mitigate legacies of discrimination.

Our history is full of stories of inventors from communities who have been underrepresented in innovation and prevented from fully exploiting the fruits of their labor. Enslaved Black artisans literally built the Capitol building and the White House.[20] Across generations, Black inventors' talents have been stolen and undervalued by American racism, and this is reflected in our patent system. Despite this inglorious history, many Black inventors were able to unleash their talent during America's Golden Age of Invention. Black inventors were awarded 50,000 patents between 1870 and 1940, making Black people among the most patent-productive groups of Americans at the time.[21] This was in spite of Jim Crow-era anti-Black violence that, according to pathbreaking research by Professor Lisa Cook, robbed the U.S. of an estimated 1,100 patented inventions.[22] In fact, Black Americans' patent rates have never recovered from their high at the turn of the 20th century.[23] The consequences of our history reverberate into patent disparities today. Black American innovations from the past to the present, despite significant obstacles, should not be interpreted as a sign of historic inclusion.

American women also have patented inventions for centuries, despite significant barriers. Hannah Wilkinson Slater is considered by many to be the first (white) woman to receive a patent in the U.S., in 1793,[24] and Sarah Goode was the first Black woman granted a patent, in 1885.[25] Coverture doctrine in early America meant that legal title to a patent went to a married woman's husband. Some scholars suggest that this early legal regime stopped many women from commercializing their inventions.[26] Similarly, enslaved Black women could not receive patents.[27] Best estimates suggest that women inventors overall composed about 4 to 8 percent of patent recipients between 1870 and 1940.[28] The rates for Black women are much lower:

[16] See, e.g., id. at 1300 (recounting anonymous inventor's story).
[17] Bhaven N. Sampat, *A Survey of Empirical Evidence on Patents and Innovation* 5, 9 (Nat'l Bureau of Econ. Rsch., Working Paper No. 25383, 2018), https://www.nber.org/system/files/working_papers/w25383/w25383.pdf.
[18] Id. at 20 ("A considerable amount of innovation occurs outside the patent system.").
[19] Priti Krishtel, Opinion, *The Path to Racial Justice Runs Through This Agency*, N.Y. Times (Feb. 9, 2021), https://www.nytimes.com/2021/02/09/opinion/biden-patent-office.html?action=click&module=Opinion&pgtype=Homepage.
[20] Felicia Bell, *Enslaved Labor and the Capitol*, U.S. Capitol Hist. Soc'y (2003), https://uschs.org/explore/historical-articles/enslaved-labor-united-states-capitol/; *Slavery and the White House*, White House Hist. Ass'n (last visited Feb. 15, 2021), https://www.whitehousehistory.org/press-room/press-backgrounders/slavery-and-the-white-house.

[21] Jonathan Rothwell, Andre M. Perry & Mike Perry, *The Black Innovators Who Elevated the United States: Reassessing the Golden Age of Invention*, Metropolitan Policy Program, Brookings Inst. (Nov. 23, 2020), https://www.brookings.edu/research/the-black-innovators-who-elevated-the-united-states-reassessing-the-golden-age-of-invention/.
[22] Lisa D. Cook, *Violence and Economic Activity: Evidence from African American Patents, 1870-1940*, 19 J. Econ. Growth 221, 239 (2014).
[23] Rothwell et al., *supra* note 21.
[24] *Progress and Potential: A Profile of Women Inventors on U.S. Patents*, Office of the Chief Economist, U.S. Patent and Trademark Office, 2019 IP Data Highlights 2, 3 https://www.uspto.gov/sites/default/files/documents/Progress-and-Potential.pdf.
[25] *Sarah Boone*, *supra* note 7.
[26] Daniel H. Shulman & Angela Upchurch, *Spousal Rights to Inventions: A Latent Threat to Corporate Patent Portfolios*, 50 Seton Hall L. Rev. 1, 4 (2019); B. Zorina Khan, *Married Women's Property Laws and Female Commercial Activity: Evidence from United States Patent Records, 1790-1895*, 56 J. Econ. Hist. 356, 385 (1996).
[27] Shontavia Jackson Johnson, *The Colorblind Patent System and Black Inventors*, 11 Landslide 4 (2019), https://www.americanbar.org/groups/intellectual_property_law/publications/landslide/2018-19/march-april/colorblind-patent-system-black-inventors/.
[28] *Report to Congress Pursuant to P.L. 115-273, the SUCCESS Act*, U.S. Patent and Trademark Office 8 (Oct. 2019), https://www.uspto.gov/sites/default/files/documents/USPTOSuccessAct.pdf; see Sarada et al., Historical Changes in the Demographics of Inventors in the United States (Jan. 30, 2017), https://ssrn.com/abstract=2908160.

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"historians can identify only four African-American women who were granted patents for their inventions" between 1865 and 1900.[29] To understand and rectify today's patent disparities, we must relearn our past.

Historic disparities persist today.

The latest data suggest that, while underrepresented inventors make up a larger share of the tech community than ever, reaching equity will require much more work. Despite being more than half the U.S. population, and holding about a quarter of science and engineering jobs, women made up only 13 percent of all inventor-patentees.[30] The USPTO has not released official data on inventor-patentees by race, but multiple studies suggest that Black people and Latinos, as well as Native Americans, are dramatically underrepresented.[31] Separately, some studies suggest that women inventors emerge from the patent prosecution process with fewer claims approved and more alterations of their claims (therefore potentially lowering the claims' value) than men.[32] Evidence also suggests that patent examiners may be inclined to treat applications from inventors of the same gender more favorably.[33] These data suggest the legal and cultural barriers to diverse and inclusive patenting may have abated over time but remain substantial.

MAKING THE PATENT SYSTEM MORE INCLUSIVE.
Embodying diversity and minimizing bias.

The Biden-Harris Administration has an early opportunity to nominate a USPTO Director who embodies diversity and values inclusion,[34] alongside Commerce Secretary-designate Gina Raimondo and Small Business Administrator-designate Isabel Guzman. The Administration should also seek to grow diversity within the rest of USPTO leadership and among USPTO's employees—by attracting and retaining a diverse slate of examiners and administrative patent judges.[35]

The next USPTO Director should also move quickly to minimize bias in patent examination. To start, she should launch a pilot program to de-identify patent applicants—removing inventor and attorney names.[36] The Director should also launch an independent investigation to understand the role of systemic racism and bias within the patent system.

Creating better demographic data sets.

Part of understanding these problems of underrepresentation is being able to quantify them, and the USPTO needs metrics to monitor progress. To that end, it should collect demographic data from patent applicants, and "more systematically collect and distribute data about assignees that support the tracking of startups, small businesses, independent inventors, minority- and veteran-owned businesses."[37] And this data should support investigations into possible implicit, structural, or other bias in the patent system. The USPTO should also examine how it can act under its current authority to implement proposals within the IDEA Act to better collect and disseminate demographic data throughout the patent application process.[38] A strong early focus on equity, backed by data from an authoritative source, would help the country understand and address gaps in invention and innovation.

[29] Leila McNeill, *These Four Black Women Inventors Reimagined the Technology of the Home*, Smithsonianmag.com (Feb. 7, 2017), https://www.smithsonianmag.com/science-nature/these-four-black-women-inventors-reimagined-technology-home-180962060/.
[30] *SUCCESS Act Report*, *supra* note 28, at 8-10; *Progress and Potential*, *supra* note 24, at 2, 4 https://www.uspto.gov/sites/default/files/documents/OCE-DH-Progress-Potential-2020.pdf.
[31] *SUCCESS Act Report*, *supra* note 28, at 11-14
[32] Kyle Jensen et al., *Gender Differences in Obtaining and Maintaining Patent Rights*, 36 Nature Biotechnology 307, 308 (2018).
[33] Pranav Desai, *Biased Regulators: Evidence from Patent Examiners* (Nov. 10, 2019) (unpublished manuscript), https://www.hhs.se/contentassets/8dc2ad16aae347b68404bdf57e02dbc3/200117-jpm-pranav-desai_ssrn-id3485965.pdf; *see also* Michael Risch, *Race and Gender in the USPTO: Schuster's Hard Data for Hard Issues*, Written Description (Aug. 18, 2020), https://writtendescription.blogspot.com/2020/08/race-and-gender-in-uspto-schusters-hard.html.

[34] Letter from Engine to President Joe Biden and Vice President Kamala Harris (Jan. 19, 2021), https://www.engine.is/news/engine-asks-biden-harris-team-to-consider-startups-when-naming-next-uspto-director.
[35] The USPTO should also consider adding diversity to its public advisory committees. *See* Priti Krishtel, *The Path to Racial Justice Runs Through This Agency*, N.Y. Times (Feb. 9, 2021), https://www.nytimes.com/2021/02/09/opinion/biden-patent-office.html.
[36] *U.S. Patent and Trademark Office (USPTO) Transition Document*, Day One Project 5 (last accessed Feb. 15, 2021), *available at* https://9381c384-0c59-41d7-bbdf-62bbf54449a6.filesusr.com/ugd/14d834_fa6b0d730acb491fa81b0fce54cfbef8.pdf.
[37] Colleen V. Chien, Increasing Diversity in Innovation by Tracking Women, Minority, and Startups Innovators that Patent and Supporting Experimentation in Inclusive Innovation (June 30, 2019), *available at* https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3413805.
[38] Press Release, U.S. Representative Nydia M. Velázquez, Velázquez, Stivers, Hirono, Tillis, Introduce Bipartisan, Bicameral Bill to Help Close Patent Gap Faced by Women, Minorities (July 25, 2019), https://velazquez.house.gov/media-center/press-releases/velazquez-stivers-hirono-tillis-introduce-bipartisan-bicameral-bill-help.

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Helping underrepresented inventors seek high-quality patents.

Patent quality is essential to startups. High-quality patents can be a valuable asset for underrepresented founders growing emerging tech companies. But when the USPTO issues low-quality patents—which sometimes happens—those patents operate as a drain on innovation. Moreover, low-quality patents create problems for patent owners—innovators and entrepreneurs who spent time and money on a patent application that has little (if any) value.[39]

But to obtain a high-quality patent, an inventor needs financial resources to cover, e.g., prior art searches, specification and claim drafting, and prosecution counsel. It is critical that underrepresented inventors seeking patent protection can access the resources they need to support issuance of a high-quality patent.

The USPTO should take (and Congress should support) more direct steps to help underrepresented inventors who choose to file for a patent obtain a high-quality patent. And that focus on quality should remain paramount. Professor Colleen Chien and her students have documented that smaller firms, such as startups, are over 40 percent less likely to have an application end in a patent, signaling that many startups that do file patents may need assistance during the application process.[40] On top of that, underrepresented innovators often have less access to capital and social networks of other innovators, which can leave them with fewer resources to tap for guidance or assistance in navigating the examination process.

Congress and the USPTO have both acted in recent years to support underrepresented innovators. The America Invents Act (AIA) was an important step. It allowed the USPTO to adjust its fees and establish a lower fee rate for smaller applicants.[41] It created a pro bono program to assist under-resourced inventors and small businesses.[42] And it established regional USPTO offices, making it easier for inventors across the country to access the Office's resources.[43]

But more can be done. For example, as USPTO staff previously noted, applicants may benefit from accessible online tools for the pre-submission process.[44] Better low- and no-cost tools to research prior art would help both applicants and examiners. The pro bono program should be more accessible and prioritized to include more lawyers from underrepresented backgrounds. And USPTO should also move to diversify the patent bar by relaxing the technical requirements for the patent bar,[45] because the lack of representation among patent prosecutors, in part, reflects the lack of representation in the relevant degree programs.[46] The government should also ensure startups wrongly-accused of infringement can afford to challenge low-quality patents or avoid the steep costs of frivolous litigation.[47]

Finally, given the successes of its newer regional office structure, the USPTO should consider adding another regional office and expanding resources for existing ones. Creating a regional office in the southeastern U.S., for example near Atlanta, could add a lot of value. The region is home to several historically Black colleges and universities (HBCUs) and has burgeoning startup industries, but currently lacks a dedicated USPTO office.

> ### Startup Testimonial:
>
> *On applying for a patent as a woman entrepreneur: "I would like to see the U.S. government do something [], like create a program for women and minorities, because it's just such a heavy lift. . . . So I think the government should consider setting up programs [for women and minorities] to help reduce some of the financial burdens of the patent process."* [48]

[39] Comment by Engine to the Subcommittee on Intellectual Property of the Senate Judiciary Committee (Nov. 6, 2019), *available at* https://www.engine.is/news/engine-submits-comments-to-senate-judiciary-subcommittee-on-patent-quality.

[40] Colleen V. Chien et al., *Guest Post: Advancing Inclusive Innovation and Entrepreneurship through the Patent System*, Patently-O (Nov. 4, 2020), https://patentlyo.com/patent/2020/11/advancing-innovation-entrepreneurship.html.

[41] John R. Thomas, *The Leahy-Smith America Invents Act: Innovation Issues*, Cong. Rsch. Serv. 17 (Jan. 15, 2014), https://fas.org/sgp/crs/misc/R42014.pdf.

[42] *E.g., Inventors*, U.S. Patent and Trademark Office (June 1, 2020), https://www.uspto.gov/patents/basics/using-legal-services/pro-bono/inventors.

[43] Michelle K. Lee, *Report on Satellite Offices*, U.S. Patent and Trademark Office, https://www.uspto.gov/sites/default/files/aia_implementation/USPTO_AIASatelliteOfficesReport_2014Sept30_Online.pdf.

[44] *E.g., Patent Quality Chat, Application readiness: Assessing incoming applications*, U.S. Patent and Trademark Office 20 (Feb. 19, 2020), https://www.uspto.gov/sites/default/files/documents/Patent%20Qual%20Chat%20Application%20Readiness%202_19_2020%20for%20posting.pdf.

[45] *See* General Requirements Bulletin, U.S. Patent and Trademark Office, *available at* https://www.uspto.gov/sites/default/files/documents/OED_GRB.pdf.

[46] *See* Eric L. Goldman et al., *Boosting Patentee Diversity by Relaxing the Technical Barriers to Patent Bar Membership*, Docket No. PTO–C–2019–0010 (June 30, 2019), *available at* https://www.uspto.gov/sites/default/files/documents/SUCCESSAct-Goldman-etal.pdf.

[47] *See, e.g.,* Comments of Engine Advocacy in Response to Setting and Adjusting Patent Fees During Fiscal Year 2020, Proposed Rule, Docket No. PTO-P-2018-0031 (Sept. 30, 2019), *available at* https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/5d92500377d2fc7dc66349f1/1569869827579/2019.09.30_Comments+to+Docket+PTO+P+2018+0031.pdf (discussing disproportionate costs to challenge low-quality patents).

[48] Graham, *Stylaquin, supra* note 9.

ACCESS TO CAPITAL

The most significant challenge facing almost every startup innovator is access to capital—but this is especially true for underrepresented founders. These groups of entrepreneurs face unique and complex barriers to raising the money they need to launch and grow their businesses and introduce new technologies. But the government can, and should, help dismantle those barriers and create new funding channels for historically underrepresented innovators.

Underrepresented founders face serious barriers across every traditional startup funding stream.

The most common forms of startup funding are routinely and unfairly unavailable to underrepresented founders.

Cash and credit can propel a groundbreaking idea into a successful business, but that capital is often not accessible to underrepresented founders. An entrepreneur with access to enough capital to hire, research, and expand has a head start on others who must choose between, e.g., new hires or a new product line. Most startups begin their financial journeys by raising money from the founders and their family.[49] The head start begins there: systemic racism and sexism mean that many entrepreneurs cannot equitably access those traditional sources of capital. The gender and racial pay gaps are well-known illustrations of this problem. For every dollar a white man earns in America: white women earn approximately 79 cents; Black men, 67 cents; Black women, 62 cents; Latino men, 68 cents; Latina women, 54 cents.[50] These disparities remain when analyzing the family wealth gap. In the U.S., for every dollar the average Black family owns, the average white family owns about eight dollars; for every one dollar of assets the average Latino family owns, the average white family owns

about six dollars.[51] And while the average single white woman's wealth is about half as much as the average white man (the "singles wealth gap"), comparable figures for Black people and Latinos are insulting: single Black men's wealth is equivalent to 1% of single white men; 0.69% for Black women; 3.3% for Latino men; 0.35% for Latina women.[52] The inequities in access to capital start with underrepresented innovators' relative lack of income and wealth and balloon from there.

Gender & Racial Wage Gaps
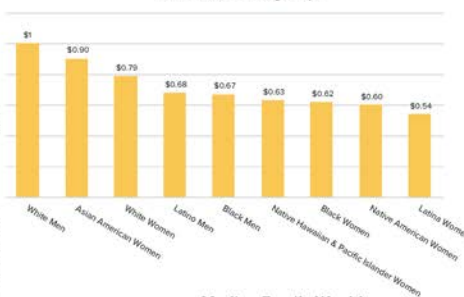
Median Family Wealth
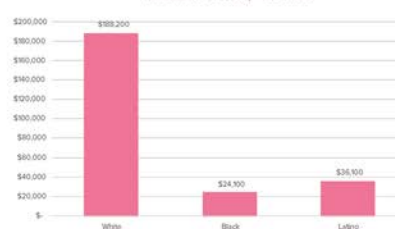
have-faced-some-of-the-most-damaging-economic-and-health-effects-of-the-coronavirus/; *Quick Facts About the Gender Wage Gap* (Center for American Progress, Washington, D.C.), Mar. 24, 2020, at 1–2, https://cdn.americanprogress.org/content/uploads/2020/03/23133916/Gender-Wage-Gap-.pdf?_ga=2.77896212.1092372900.1612138845-1354523628.1612138845; Courtney Connley, *New Census Data Reveals No Progress Has Been Made on Closing the Overall Gender Pay Gap*, CNBC: Make It (Sept. 18, 2020), https://www.cnbc.com/2020/09/18/new-census-data-reveals-no-progress-has-been-made-closing-the-gender-pay-gap.html.
51 Neil Bhutta, et al., *Disparities in Wealth by Race and Ethnicity in the 2019 Survey of Consumer Finances*, Board of Governors of the Federal Reserve System: FEDS Notes (Sept. 28, 2020), https://www.federalreserve.gov/econres/notes/feds-notes/disparities-in-wealth-by-race-and-ethnicity-in-the-2019-survey-of-consumer-finances-20200928.htm.
52 Women and Wealth: Insights for Grantmakers (Asset Funders Network, Evanston, Ill.), 2005, at 5, https://assetfunders.org/wp-content/uploads/Women_Wealth_-Insights_Grantmakers_brief_15.pdf.

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49 *Startup Financing Trends by Race: How Access to Capital Impacts Profitability*, Annual Survey of Entrepreneurs Data Briefing Series, (Kauffman Foundation, Kansas City, M.O.), Oct. 2016, https://www.kauffman.org/wp-content/uploads/2019/12/ase_brief_startup_financing_by_race.pdf.
50 It is worth noting that while the data trends are consistent across sources, exact figures differ by source. *See, e.g.*,
David Leonhardt, *The Black-White Wage Gap Is as Big as It Was in 1950*, N.Y. Times (June 25, 2020), https://www.nytimes.com/2020/06/25/opinion/sunday/race-wage-gap.html; Press Release, Economic Policy Institute, Latinx workers—Particularly Women—Have Faced Some of the Most Damaging Economic and Health Effects of the Coronavirus (Aug. 20, 2020), https://www.epi.org/press/latinx-workers-particularly-women-

ACCESS TO CAPITAL

Underrepresented founders also have less access to outside financing. Relative to white men, Black and Latino small business owners rely more on capital from personal and family sources, utilize business loans less, and their loans have higher interest rates.[53] Women-owned small businesses also receive less in business loans than small businesses owned by men.[54] And all of these underrepresented groups report higher reticence to seek out business loans out of a fear of rejection.[55]

Startup Testimonial:

"Until the whole of government addresses the generation wealth gap, the food insecurities a lot of our families suffer, and the educational challenges we continue to have, then everything else is just lip service. You can't grow prosperous communities when people are hungry, poorly educated, and the Black-white wealth gap is what it is right now. The net worth of a typical white family is nearly 10 times greater than that of a Black family." [56]

These gaps in capital are the result of several factors. For example, about 1 in 20 American families lack any relationship with banks, and even more families utilize credit outside the banking system, such as payday or auto title loans.[57] The FDIC found that Black and Latino households were more likely to use nonbank credit, even after controlling for income.[58] It seems likely that recent trends of bank branch closures in Black and rural neighborhoods (the latter particularly impacting Latino and Native American communities) will only worsen these issues.[59] Similarly, over the past two decades, half of Black-owned banks have closed.[60] Disparities in credit scores are also an important factor here: studies suggest that women, Black people, and Latinos all have relatively lower credit scores.[61] Income and wealth inequality result in systemic differences in credit scores, which are then used by banks to determine who does and does not get a loan. In addition, Black people and Latinos receive unequal and worse treatment by financial institutions, even after controlling for disparities in income, wealth, and credit scores.[62]

At the same time, Black- and Latino-owned small businesses are often pushed to use riskier credit options to capitalize their businesses—including personal credit cards and cash advances—at higher rates than white-owned small businesses.[63] These closed doors to traditional financing push underrepresented founders towards riskier alternatives to make their visions a reality, and unfortunately may push many out of innovation altogether.

53 *Startup Financing Trends by Race*, *supra* note 49; *see also* Robert Fairlie et al., *Black and White: Access to Capital among Minority-Owned Startups* 9-10, 25 (Stan. Inst. for Econ. Pol'y Rsch., Discussion Paper No. 17-03, 2016), https://siepr.stanford.edu/sites/default/files/publications/17-003.pdf.; *see also Small Business Credit Survey*, Rpt. on Minority-Owned Firms (Federal Reserve Bank of Atlanta, Atlanta, Ga.), Dec. 2019, at 16 (reporting higher interest rates), https://www.fedsmallbusiness.org/medialibrary/fedsmallbusiness/files/2019/20191211-ced-minority-owned-firms-report.pdf.

54 *Women Business Owners' Access to Capital Literature Review*, (National Women's Business Council, Washington, D.C.), Mar. 1, 2018, at 14-15, https://cdn.www.nwbc.gov/wp-content/uploads/2018/03/28215658/NWBC-Report_Understanding-the-Landscape-Access-to-Capital-for-Women-Entrepreneurs.pdf.

55 *Id.* at 15 (women); *Minority Small Business Credit*, *supra* note 53, at 9 (people of color).

56 Edward Graham, *Supporting Innovation and Entrepreneurship in Southeast Arkansas*, Engine (July 31, 2020), https://www.engine.is/news/startupseverywhere-pinebluff-ark-generator (quoting Mildred Franco, Executive Director of The Generator at Go Forward Pine Bluff).

57 *How America Banks: Household Use of Banking and Financial Services*, 2019 FDIC Survey, (FDIC, Washington, D.C.), Oct. 2020, at 1 (unbanked), 6-9 (finding higher rates of nonbank financial transactions), https://www.fdic.gov/analysis/household-survey/2019execsum.pdf.

58 *Id.* at 8-9.

59 *See, e.g.*, Zach Fox et al., *Bank branch closures take greatest toll on majority-black areas*, S&P Global: Market Intelligence (July 25, 2019), https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/bank-branch-closures-take-greatest-toll-on-majority-black-areas-52872925; *Bank Branch Closures from 2008-2016: Unequal Impact in America's Heartland*, Rsch. Memo (Nat'l Cmty. Reinvestment Coal., Washington, D.C.), May 2017, https://ncrc.org/wp-content/uploads/2017/05/NCRC_Branch_Deserts_Research_Memo_050517_2.pdf.

60 Cameron Costa, *Minority Entrepreneurs at a Tipping Point as Black-Owned Banks Dwindle in the U.S.*, CNBC (Aug. 25, 2020), https://www.cnbc.com/2020/08/25/minority-entrepreneurs-at-tipping-point-as-black-owned-banks-dwindle.html.

61 *See, e.g.*, *Women Business Owners*, *supra* note 54, at 16; *Minority Small Business Credit*, *supra* note 53, at 6.

62 *See, e.g.*, *Disinvestment, Discouragement and Inequity in Small Business Lending* (Nat'l Cmty. Reinvestment Coal., Washington, DC), Sept. 2019, at 5-6 ("[W]hile the customer service experience of all applicants for small business credit is poor, it's even worse for [B]lack and Hispanic applicants"), 29-30 ("The profiles of all testers was sufficiently strong that on paper, either profile would qualify them for a loan. Furthermore, the [B]lack and Hispanic testers' profiles were slightly better than their white counterparts in terms of income, assets and credit scores. ... In almost every measure evlauted, white testers received superior customer service by being asked fewer questions about eligibility and receiving more information about the loan product than were their [B]lack and Hispanic counterparts."), https://ncrc.org/wp-content/uploads/2019/09/NCRC-Small-Business-Research-FINAL.pdf; Press Release, Credit Sesame, *Black and Hispanic Americans on the U.S. Financial System: "The Odds Were Always Against Me," New Credit Sesame Survey Finds* (Jan. 26, 2021), https://apnews.com/press-release/pr-newswire/business-race-and-ethnicity-north-america-public-opinion-african-americans-044f597aa001de38936a9f64c8997bfc.

63 *See Startup Financing Trends by Race*, *supra* note 49 (Black Americans' lower credit card scores); *Minority Small Business Credit*, *supra* note 53, at 12.

ACCESS TO CAPITAL

Equity investment from VC and angel investors is very unevenly distributed.

While VC is rightly acknowledged for successfully fueling much innovation, it has fallen enormously short in supporting diversity and inclusion. VC's modern origins chart from the post-WWII boom in the U.S., when several firms were founded in Boston and New York City in the 1940s.[65] VC emerged in California alongside the rise of the semiconductor industry in Silicon Valley in the 1950s and 1960s.[66] While less than 1 percent of all startups utilize VC funding,[67] that early mover advantage remains critical—over 70 percent of the $130 billion in VC investment today goes to founders in three states: California, Massachusetts, and New York.[68] This concentration speaks to many inequities—for example, less than 1 percent of VC investment goes to rural communities.[69] VC's demographic composition is similarly concentrated: only about 20 percent of VC professionals are women, 5 percent are Latino, and 3 percent are Black.[70] While VC was crucial to the successes of certain well-known companies like Facebook, Zynga, or Spotify, there are systemic failures in VC that must be addressed. And if addressed, could contribute to more startups led by diverse teams growing into household names.

VC Deal Volume By State

[64] Edward Graham, *Helping the Production Community Locate and Hire Talent*, Engine (Feb. 19, 2021), https://www.engine.is/news/startupseverywhere-atlanta-ga-filmconnx (quoting Carolyn Pitt, CEO and Founder of Film Connx) [hereinafter "Film Connx"].
[65] Martin Kenney, *How Venture Capital Became a Component of the US National System of Innovation*, 20 Industrial and Corporate Change 1677, 1687-89 (2011).
[66] *Id.* at 1689-90.
[67] Meredith Wood, *Raising Capital for Startups: 8 Statistics That Will Surprise You*, Fundera (Feb. 3, 2020), https://www.fundera.com/resources/startup-funding-statistics.
[68] *Venture Capital Funding Report Q4 2020* (PwC/CB Insights), 2nd ed. 2021, at 57, https://www.pwc.com/us/en/moneytree-report/assets/pwc-moneytree-2020-q4.pdf.

[69] Matt McKenna, *Access to Capital Is Critical to Ensuring Success of Rural Entrepreneurs*, VC-List (June 6, 2018), https://vc-list.com/startup-capital-rural-entrepreneurs/.
[70] *NVCA–Deloitte Human Capital Survey* (NVCA/Deloitte), June 2019, at 7-9, *available at* https://www2.deloitte.com/us/en/pages/audit/articles/diversity-venture-capital-human-capital-survey.html.
[71] Edward Graham, *The Digital Home: A Social Messaging Platform for Authentic and Private Connections*, Engine (Sept. 25, 2020), https://www.engine.is/news/startupseverywhere-gaithersburg-md-postagraph (quoting Pelumi Olatinpo, CEO of Postagraph in Maryland) [hereinafter "Postagraph"].

ACCESS TO CAPITAL

VC has not been a source of equitable financing for many underrepresented founders. Crunchbase estimates that women founders receive about 3 percent of venture capital, while Black and Latino founders receive a similar fraction of overall venture funds.[72] And consistent with other trends, Black and Latina women receive a fraction of these fractions from the venture capital sector—less than 1 percent each.[73] While there have been recent efforts to increase racial and gender equity, VCs still have a long way to go.

Gender and Racial Disparity in VC Funding
Black women & Latina founders receive less than

1% of VC

2.4% of VC has been raised by Black and Latino founders

3% of VC has been raised by women-only founded companies

Startup Testimonial:

"A lot of times, VC firms aren't looking for early-stage entrepreneurs or businesses, which is another big barrier. And a lot of Black and Brown entrepreneurs cater their services towards Black or Brown people, and investors can't see the vision or the mission of their companies. So they don't understand their focus, and then they skip over those entrepreneurs. If they look hard enough though, and if they really want to, they will find startups led by entrepreneurs of color." [74]

Disparities in VC Workforce:
By Percentage of Investment Professionals

Women 21%

Men 79%

Asian American/ Pacific Islander 17%

Latino 5%

Black 3%

White 75%

Newer sources of startup funding may have some potential but present similar challenges for underrepresented founders. Angel investors—wealthier individual investors who back startups—are substantially smaller than VCs as a whole but can have high profiles.[75] While demographic investment data for angels is sparse, the demographic profile of angel investors is consistent with the VC industry as a whole—few women and fewer Black people and Latinos.[76]

Many advocates suggest that equity crowdfunding may be a potential tool to combat discriminatory trends, and there are several crowdfunding platforms designed specifically for underrepresented founders.[77] But data on efficacy is hard to find. Some studies have

[72] *Funding to the Female Founders* (Crunchbase, S.F., Cal.), Mar. 2020, at 5 ("In 2019, female-only founded companies raised *3 percent* of venture dollars." (emphasis added)), https://about.crunchbase.com/wp-content/uploads/2020/03/Funding-To-Female-Founders_Report.pdf; *Funding to Black & Latinx Founders*, Crunchbase Diversity Spotlight 2020 (Crunchbase, S.F., Cal.), Oct. 2020, at 4 ("So far in 2020, Black and Latinx founders have raised $2.3 billion, representing *2.6 percent* of funding through Aug. 31, 2020." (emphasis added)), http://about.crunchbase.com/wp-content/uploads/2020/10/crunchbase_diversity_report_2020.pdf.

[73] Sources differ on exact figures, but there is consensus that the total figure is less than 1 percent. *See, e.g., id.*; Jessica Guynn, *Racial inequity persists after George Floyd: Black women and Latina entrepreneurs get less than 1% of venture capital*, USA Today (Dec. 3, 2020) ("Black women-founded companies raised about $700 million in funding from 2018-2019, a significant increase from the previous two-year period yet still account for 0.27% of the $276.7 billion in venture capital investment."), https://www.usatoday.com/story/tech/2020/12/02/black-women-latinas-venture-capital-systemic-racism-george-floyd/3795961001/.

[74] Edward Graham, *A Platform to Help Professionals of Color Make Informed Career Choices*, Engine (June 12, 2020), https://www.engine.is/news/startupseverywhere-nyc-dipper (quoting Netta Jenkins, Co-Founder of Dipper).

[75] *Angels: Foundational Investors to VC* (Pitchbook, Seattle, Wash.), Sept. 1, 2020, at 1-2, 6 ("While a relatively small slice of overall investment, angels still play an important role within the market."), *available at* https://pitchbook.com/news/reports/q3-2020-pitchbook-analyst-note-angels-foundational-investors-to-vc.

[76] *The American Angel* (Angel Capital Association/John Huston Fund for Angel Professionalism), Nov. 2017, 7 (reporting survey findings that 22.1 percent of angel investors were women, 2.3 percent were Latino and 1.3 percent were Black), https://www.angelcapitalassociation.org/data/Documents/TAAReport11-30-17.pdf?rev=DB68.

[77] *See, e.g., Crowdfunding, Cryptocurrency, and Capital: Alternative Sources of Business Capital for Black Entrepreneurs* (Congressional Black Caucus Foundation, Inc./Center for Policy Analysis and Research, Washington,

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found that crowdfunding is a more welcoming environment for women founders. A PwC report found that women-led crowdfunding campaigns were 32 percent more successful than those led by men.[78]

Fintech, firms focused on updating the banking model for the digital world, may hold similar promise in decreasing discrimination. While the fintech industry's demographics are no better than the broader technology industry,[79] studies suggest that, while finance algorithms discriminate against Black and Latino loan applicants, they may discriminate less in certain industries (e.g., mortgages) than traditional face-to-face lending.[80] Both the financial and technology sectors have lagged historically in tackling discrimination, but advances in fintech algorithm design could cut down on biased lending and promote greater equity. While some of these developments are encouraging, no matter the vector, the challenges to true equity in accessing capital remain deep.

Leveraging the government in expanding capital access across the board.

Making federal financing fairer and more equitable.

The federal government should take a leading role in creating a financial system that builds bridges to innovation instead of walls. That starts with addressing systemic problems within the government itself. As this pandemic demonstrated, federal programs can play an important role in exacerbating inequities,

as well as mitigating them. On the one hand, researchers suggest that COVID-19 relief efforts like enhanced unemployment insurance and stimulus checks kept millions of Americans out of poverty.[81] But on the other, measures like the Paycheck Protection Program (PPP) failed to provide adequate support for Black and Latino-owned businesses, particularly those that were unbanked or underbanked.[82] Data show, for example, that predominantly Black congressional districts got fewer PPP loans,[83] where applicants faced longer delays receiving funds;[84] minority-owned PPP applicants had to wait longer and try harder to have applications processed;[85] and Black applicants received worse treatment from banks.[86] The federal government must understand its failures and shortcomings in order to surmount them.

Expanding Existing Programs for Small Business Financing and Prioritizing Underrepresented Founders.

Startups can tap into many existing federal funding programs and Engine encourages the NCEAI to holistically review how best to improve and expand them. Some ideas include:

D.C.), Mar. 2019, 12-13, 15, https://www.cbcfinc.org/wp-content/uploads/2019/03/CPAR-Report-Crowdfunding-Cryptocurrency-FINAL.pdf; Steven Overly, *Crowdfunding Expands Access to Capital for Women, Minority Entrepreneurs*, Wash. Post (Apr. 7, 2013), https://www.washingtonpost.com/business/capitalbusiness/crowdfunding-expands-access-to-capital-for-women-minority-entrepreneurs/2013/04/07/f37f2cda-9d59-11e2-a2db-efc5298a95e1_story.html.

[78] *Women Unbound: Unleashing Female Entrepreneurial Potential* (PwC/The Crowdfunding Center), July 2017, at 4, https://www.pwc.com/gx/en/diversity-inclusion/assets/women-unbound.pdf.

[79] *Achieving Gender Equity in the Fintech Community: Enlisting Key Stakeholders to Drive Change*, Within Reach Series (Deloitte Center for Financial Services/100 Women in Finance), Oct. 2020, at 2 ("[W]omen-founded fintechs [fintech startups] accounted for 3.1% of the total pool [of startups] in 2019."), 3 ("In the world of startups, the global fintech founder community is still dominated by men, with women making up just 7% of the total pool), *available at* https://www2.deloitte.com/us/en/insights/industry/financial-services/women-in-fintech.html?id=us:2em:3na:4di6918:5awa:6di:MMDDYY:&pkid=1007338; *see also* Lauryn Nwankpa, *I'm a Black Woman in Fintech. My Industry Has to Overcome Its Racism to Survive*, Fast Company (Oct. 19, 2020), https://www.fastcompany.com/90565223/im-a-black-woman-in-fintech-my-industry-has-to-overcome-its-racism-to-win-talent.

[80] Robert Bartlett et al., *Consumer-Lending Discrimination in the Fintech Era*

(Nat'l Bureau of Econ. Rsch., Working Paper No. 25943, 2019), https://www.nber.org/system/files/working_papers/w25943/w25943.pdf; Thomas Philippon, *On Fintech and Financial Inclusion* (Nat'l Bureau of Econ. Rsch., Working Paper No. 26330, 2019), https://www.nber.org/system/files/working_papers/w26330/w26330.pdf.

[81] Meghan Roos, *First Stimulus Check Prevented Around 12.5 Million Americans from Poverty, Study Finds*, Newsweek (July 6, 2020), https://www.newsweek.com/first-stimulus-check-prevented-around-125-million-americans-poverty-study-finds-1515694; Ben Zipperer, *Over 13 Million More People Would Be in Poverty Without Unemployment Insurance and Stimulus Payments*, Economic Policy Institute: Working Economics Blog (Sept. 17, 2020), https://www.epi.org/blog/over-13-million-more-people-would-be-in-poverty-without-unemployment-insurance-and-stimulus-payments-senate-republicans-are-blocking-legislation-proven-to-reduce-poverty/.

[82] Megan Cerullo, *Up to 90% of Minority and Women Owners Shut Out Of Paycheck Protection Program, Experts Fear*, CBS News (Apr. 22, 2020), https://www.cbsnews.com/news/women-minority-business-owners-paycheck-protection-program-loans/.

[83] Imani Moise, *Predominately Black Congressional Districts Got Fewer PPP Loans: Study*, Reuters (July 30, 2020), https://www.reuters.com/article/us-health-coronavirus-ppp/predominately-black-congressional-districts-got-fewer-ppp-loans-study-idUSKCN24V24B?edition-redirect=uk.

[84] Sifan Liu & Joseph Parilla, *New Data Shows Small Businesses in Communities of Color Had Unequal Access to Federal COVID-19 Relief*, Brookings (Sept. 17, 2020), https://www.brookings.edu/research/new-data-shows-small-businesses-in-communities-of-color-had-unequal-access-to-federal-covid-19-relief/.

[85] Joyce M. Rosenberg & Justin Myers, *Minority-Owned Companies Waited Months for Loans, Data Shows*, Assoc. Press (Dec. 31, 2020), https://apnews.com/article/technology-small-business-new-york-coronavirus-pandemic-7613e946275f085367b5fc8c9a496aea.

[86] Emily Flitter, *Black Business Owners Had a Harder Time Getting Federal Aid, a Study Finds*, N.Y. Times (July 15, 2020), https://www.nytimes.com/2020/07/15/business/paycheck-protection-program-bias.html.

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- Streamline and expand small business forgivable loan programs,[87] like PPP or SBA's 7(a) loans more broadly, so that Black- and Latino-owned businesses are not unfairly denied and have better access to (emergency) relief;[88]

- Widen and simplify the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs to include more U.S. startups;

- Accelerate reforms and address acknowledged shortcomings in startup access to National Science Foundation (NSF) grants,[89] and expand funding; and

- Make direct equity investments,[86] such as in (1) startups struggling to meet operating demands during the global pandemic, or (2) industries critical to maintaining and enhancing U.S. global competitiveness.

Elevating, Establishing, and Strengthening Dedicated Organizations to Implement Priorities for Underrepresented Founders.

The federal government should start by adopting a holistic government approach centered on promoting innovation and entrepreneurship. Elevating the profile of underrepresented entrepreneurs would be a good step forward. Part of this should include attracting and retaining diverse leaders and employees across every government agency that funds or regulates research and development sectors. But dedicated organizations can provide necessary focus and momentum, as well as make the federal government's programs more accessible. One way to move forward would be enhancing the role and status of the Minority Business Development Agency (MBDA) within the Commerce Department. Under a proposal from the Center for American Progress, for example, the MBDA could be a one-stop shop for many underrepresented entrepreneurs: providing technical assistance, loans, and grants as well as a hub for internal advocacy across the executive branch.[91]

Startup Testimonial:

"The government has programs that we can apply to in order to get money or support, which is great. However, they often forget that startups have very few resources or limited administrative capacity. In order to get the government funding, startup founders have to allocate hours and hours to get through the application process to secure any funding. When startups go through these lengthy and expensive processes, by the time they end up qualifying for funding, they could have gone out of business. If the government could establish some kind of entrepreneur-residency program to help startups with this process, then I think that would really help." [92]

Addressing Sexism, Racism, and Bias in Federal Funding.

Part of resolving existing disparity in federal funding will require ensuring that the government's decisions are being made by more diverse leaders and employees. But the government should also ensure it has the data it needs to drive better, more inclusive decisions in the future and that it takes steps to eliminate current bias.

Engine welcomes President Biden's fresh thinking about innovation policy by encouraging investment through targeting specific sectors, which could bring greater geographic diversity into the nation's innovation hubs.[93] While a good start, the Biden-Harris Administration must also take care that their research strategy is inclusive; one way to do this is to ensure that research priorities are set by diverse teams and that funding decisions are inclusive.[94] For example Vice President Harris and Representative

[87] *Startup-Oriented COVID-19 Relief Proposals* (Engine, Washington, D.C.), 2020, at 2-3, https://static1.squarespace.com/static/571681753c44d835a440c8b5/t/5f15c9ebd0fec75789c be677/1595263468537/Engine+Proposals+for+Future+%28Phase+4%2 9+COVID-Relief+Packages.pdf.
[88] *See* Cerullo, *Minority Business Shut out of PPP*, *supra* note 82.
[89] *See* Jane Edwards, *NSF Seeks to Reach More Startups Through 'Project Pitch' Platform*, ExecutiveGov (June 23, 2020), https://www.executivegov.com/2020/06/nsf-seeks-to-reach-more-startups-through-project-pitch-platform/.
[90] *Startup-Oriented COVID-19 Relief Proposals*, *supra* note 87, at 2.
[91] *A Blueprint for Revamping the Minority Business Development Agency* (Center

for American Product/CAP's National Advisory Council on Eliminating the Black-White Wealth Gap, Washington, D.C.), July 31, 2020, https://wwwamericanprogress.org/issues/race/reports/2020/07/31/488423/blueprint-revamping-minority-business-development-agency/.
[92] *Using Satellites and Technology to Detect Methane Leaks from Space*, Engine (Jan. 22, 2021), https://www.engine.is/news/startupseverywhere-new-york-city-ny-bluefield (quoting Yotam Ariel, Founder and CEO of Bluefield Technologies).
[93] *The Biden Plan to Ensure the Future Is "Made in All of America" by All of America's Workers* (Biden-Harris campaign, Phila., Penn.), 2020, https://joebiden.com/made-in-america/.
[94] *See, e.g.*, Jeffrey Mervis, *Study Identifies a Key Reason Black Scientists are Less Likely to Receive NIH Funding*, Science (Oct. 9, 2019), https://www.sciencemag.org/news/2019/10/study-identifies-key-reason-black-

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Yvette Clarke elevated the need to research uterine fibroids, which disproportionately harm Black women.[95] And as the Biden-Harris Administration has brought on a diverse group of leaders within the White House and Cabinet, lower-level leadership and staff in the federal government must also reflect the diversity of America. Federal promotion of innovation and entrepreneurship should start with strengthening the government's capacity to engage with underrepresented founders.

In addition, the federal government should also improve its data collection and targeting capacity. For example, the IRS was more successful in distributing the second round of stimulus checks than the first time around—confirming that capacity exists for change.[96] But the lack of data collection and proper targeting seen within the USPTO and through the PPP are seen throughout the federal government. And even when data is collected, insufficient action follows. In the procurement process, for example, recent data show that only 10 percent of federal contracting went to disadvantaged small businesses, while only 5 percent went to women-owned small businesses.[97] Grant programs demonstrate similar disparities.[98] The White House should use its authority to encourage other departments and agencies to make similar strides in data collection and targeting, to better understand and assist underrepresented innovators. And once that data is collected, the federal government needs to move more quickly to rectify inequity.

Creating New Indirect Financial Benefits to Support Underrepresented Founders.

The government currently offers numerous indirect financial benefits, in significant part through tax incentives, to support and encourage business. However, many extant tax incentives are a poor fit for startups and new tax incentives could be targeted to unique needs of underrepresented founders. For example, the government should:

- Grow and tailor research and development (R&D) tax credits to better support startups,[99] such as by offsetting income and payroll tax liability for small businesses that spend on R&D, or by expanding what counts as R&D to include common software development activities like user experience (UX) research and design;

- Prioritize employee retention and support the most nascent companies, such as through the First Employee credit in the PROGRESS Act.[100] Women-owned businesses tend to have less annual income, so they may not benefit from existing tax incentives. The PROGRESS Act would create a first employee credit that more women-owned companies and companies owned by underrepresented entrepreneurs of color could take advantage of sooner.[101]

The federal government should also do more to recognize the full extent of the work that startups do as well as to support founders' roles outside of the workplace. For example, women are disproportionately responsible for taking care of children, older adults, and sick family members in the U.S., which limits their opportunities to launch new tech or companies.[102] Likewise many women—mothers and women of color in particular—have been pushed out of the workforce during the pandemic.[103] To support underrepresented founders, the government should expand family

scientists-are-less-likely-receive-nih-funding.
[95] Renee G, *Kamala Harris Introduces Bill to Tackle Uterine Fibroids*, The Grio (Aug. 1, 2020), https://thegrio.com/2020/08/01/kamala-harris-bill-uterine-fibroids/; Uterine Fibroid Research and Education Act of 2020, H.R. 6383, 116th Cong. (2020).
[96] Shahar Ziv, *IRS to Send Out Stimulus Checks Faster This Time*, Forbes (Dec. 21, 2020), https://www.forbes.com/sites/shaharziv/2020/12/21/irs-to-send-out-stimulus-checks-faster-this-time-600-per-person-could-go-out-to-bank-accounts-next-week/?sh=598a64ba4e8b.
[97] Press Release, U.S. Small Business Administration, Federal Government Exceeds Small Business Contracting Goals by Awarding Record-Breaking $132.9 Billion to Small Businesses (Aug. 12, 2020), https://www.pmewswire.com/news-releases/federal-government-exceeds-small-business-contracting-goals-by-awarding-record-breaking-132-9-billion-to-small-businesses-301111199.html.
[98] Michael A. Taffe & Nicholas W. Gilpin, *Equity, Diversity and Inclusion: Racial inequity in grant funding from the US National Institutes of Health*, eLife (2021), *available at* https://elifesciences.org/articles/65697; *Is There Gender Bias in Federal Grant Programs?*, Research Brief (RAND, Santa Monica, Cal.), 2005 ("[W]e found a gender gap in the amount of funding on average that females receive relative to their male counterparts at NIH, although important caveats are associated with that finding. Second, we found a gender gap in subsequent application rates."); Donna K. Ginther et al., *Gender, Race/Ethnicity, and National Institutes of Health R01 Research Awards: Is There Evidence of a Double Bind for Women of Color?*, 91 Acad. Med. 1098 (2016), https://journals.lww.com/academicmedicine/

Fulltext/2016/08000/Gender,_Race_Ethnicity,_and_National_Institutes_of.23.aspx#ej-article-sam-container.
[99] *Startup-Oriented COVID-19 Relief Proposals*, *supra* note 87, at 3-4.
[100] Press Release, Office of Senator Ron Wyden, Wyden Introduces Bill to Boost Capital Access for Women-Owned Businesses (Oct. 30, 2019), https://www.finance.senate.gov/ranking-members-news/wyden-introduces-bill-to-boost-capital-access-for-women-owned-business.
[101] This bill would also create an investor tax credit—a promising proposal discussed in a subsequent section.
[102] *E.g.*, Eduardo Porter, *Why Aren't More Women Working? They're Caring for Parents*, N.Y. Times (Aug. 29, 2019), https://www.nytimes.com/2019/08/29/business/economy/labor-family-care.html.
[103] Alexandra Kelley, *Women's Labor Force Participation Hits 33-Year Low*, The Hill: Changing America (Feb. 8, 2021), https://thehill.com/changing-america/respect/equality/537884-womens-labor-force-participation-hits-33-year-low.

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leave and other caregiver support programs—such as the child tax credit. And it should consider other creative ways to bring women with caregiving responsibilities (back) into the innovation sector.

Making Existing Funding Programs Work Better for Startups.

While federal grants and loans can be essential for many startups, the approval processes need to be quicker and more streamlined to better suit the startup lifecycle. The government should also leverage existing incubators and accelerators to improve government programs to fund diverse startups directly. Applying for grants is a lengthy and time-consuming process, with applicants competing for set amounts of money. This is often not suited to the startup lifecycle, where companies tend to need more flexibility and (a potentially smaller amount of) capital quickly. The government could funnel some traditional SBIR and STTR funding through incubators, accelerators, and innovation intermediaries who can disburse it directly into the startup ecosystems in their communities.[104] This would make government grants more nimble and allow more focus on underrepresented founders.

Incentivizing private investment.

The government can also encourage more inclusive innovation by incentivizing private investors to fund more diverse teams. Innovators have many great ideas but a serious need for flexible capital.

Creating Public-Private Partnerships.

Bringing public and private dollars together can help diversify innovation ecosystems through (1) increasing available funding, (2) increasing private lenders' (perceived) risk tolerance, and (3) prioritizing underrepresented founders in investment portfolios. One legislative proposal to partner the private and public sectors— the New Business Preservation Act—would help incentivize investments in startups by creating an equity investment program at the Treasury Department to give states the necessary funding to support the growth of new startups.[105] And that funding would be directed to underrepresented founders in less traditionally tech-heavy regions of the country. Businesses would be able to invest in these programs as well, and the combined funding would seed new growth in the startup space. This type of legislation would increase startup diversity and development, while also creating a self-sustaining program that would allow the federal government's financial returns to be reinvested in future startups.

> ## Startup Testimonial:
>
> *"Not only do Black and Brown founders and women founders face these challenges, but founders allocated outside of Silicon Valley face similar investment issues as well. So there's an opportunity to have the government partner with venture capital to ensure that those dollars are available, and also ensure that entrepreneurs who come from underrepresented communities or outside of Silicon Valley have the ability to build and grow their companies." 106*

Establishing Tax Credits for Investors Who Make Qualified Investments.

Startups, and underrepresented founders in particular, have unique expenses and challenges. Encouraging investors to make productive investments to diversify innovation should be a priority. For example, some states have angel investor tax credits through which the government offers tax breaks to individuals that make qualifying investments. To subsidize private investment in underrepresented founders, Congress should enact a federal tax program which would allow angel investors a credit of the amount they invested in a startup launched by an underrepresented founder (e.g., new investments in recently established businesses with a tech-focus and with underrepresented founders of color or women founders).[107] To take another example, the PROGRESS Act would create an angel investor tax credit that would offer greater incentive to invest, including in women-owned small businesses.[108] Similarly, Opportunity Zones could be reformed to include more areas and attract more funding to a more diverse array of communities.[109]

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[104] Engine and others have made similar suggestions in the past. *E.g., Startup-Oriented COVID-19 Relief Proposals, supra* note 87, at 4.
[105] *Id.* at 1-2.

[106] Graham, *Film Convo, supra* note 64.
[107] *Id.* at 3.
[108] Wyden, *Capital Access Bill, supra* note 100.
[109] *Startup-Oriented COVID-19 Relief Proposals, supra* note 87, at 3; *see also* Joe Gose, *Despite Challenges, Opportunity Zones Provide Much-Needed Capital,* N.Y. Times (Nov. 24, 2020), https://www.nytimes.com/2020/11/24/business/opportunity-zones-funding-development.html.

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Opening Up More Alternatives.

The federal government should also engage with traditional and newer forms of startup financing to get more innovations into the market. Crowdfunding and fintech solutions offer some promise as viable alternatives for startup financing. Engine encourages the Biden-Harris Administration to ensure that a recent rule change that would allow startups to raise more crowdfunding in a given year goes into effect.[110]

Exploring alternatives to credit scores.

The current credit score system is a serious barrier to an underserved founder's ability to access capital, and is in serious need of reform. As noted above, in general, underrepresented founders have lower credit scores than white male founders. However, credit scores present a chicken-or-the-egg problem: you need a higher credit score to get more capital, but you need a longer credit history to get a higher credit score. And it is often not a good measure of whether a borrower can and will repay a loan. In addition, the banking system has played an important part in preventing Black Americans from building wealth, such as through historical redlining and ongoing discrepancies in mortgage lending. Because rental payments are not counted in many credit histories, inequitable access to housing also contributes to lower credit scores.[111]

Alternative credit scoring could use a borrower's ability to pay by measuring other inputs, including rental payments, occupations, cell phone payments, checking account information and shopping history. Such scoring, according to community leader, entrepreneur, investor, and professor Melissa Bradley, could play a meaningful role in ameliorating systemic inequities in the financial system.[112] Engine encourages the Biden-Harris Administration to continue its early efforts to develop alternatives to the current credit scoring system, such as pushing the Consumer Financial Protection Bureau to work with existing credit agencies to create and disseminate an alternative.[113]

And alongside proposals like the New Business Preservation Act, the federal government should promote the development of more community development financial institutions—with enhanced funding—as well as women-, Black-, and Latino-owned banks. Rectifying inequities in the financial system requires diversifying the financial sector, and the Biden-Harris Administration should join newer efforts from major financial institutions and venture capital firms to achieve that goal.[114] Underrepresented innovators need a whole of government approach to realize their financial dreams and grow.

110 *See* JD Alois, *Presidential Action Taken by Biden Administration May Delay Investment Crowdfunding Improvements*, Crowdfund Insider (Jan. 22, 2021), https://www.crowdfundinsider.com/2021/01/171487-presidential-action-taken-by-biden-administration-may-delay-investment-crowdfunding-improvements/.
111 Michelle Singletary, *Credit Scores Are Supposed to Be Race-Neutral. That's Impossible.*, Wash. Post: Personal Fin. (Oct. 16, 2020), https://www.washingtonpost.com/business/2020/10/16/how-race-affects-your-credit-score/.
112 Melissa L. Bradley, *Expanding Credit through Alternative Credit Scores*, Medium (Oct. 21, 2020), https://medium.com/@melissa_6316/expanding-credit-through-alternative-credit-scores-f015c4edea29.

113 *See* Andrew Ackerman & Orla McCaffrey, *Banks Brace for Tougher Rules Under Biden on Consumer Protection, Fair Lending*, Wall St. J. (Jan. 30, 2021), https://www.wsj.com/articles/banks-brace-for-tougher-rules-under-biden-on-consumer-protection-fair-lending-11612022400.
114 *See* Ryan Williams, *Opinion: Investing in Black-Owned Banks Key to Ending Racial Disparities*, CNBC (Oct. 14, 2020), https://www.cnbc.com/2020/10/14/opinion-investing-in-black-owned-banks-key-to-ending-racial-disparities.html; Jeffrey McKinney, *Citi Hires Four Black Investment Banks to Disburse $2.5 Billion Bond Issuance*, Black Enter. (Jan. 29, 2021), https://www.blackenterprise.com/citi-hires-four-black-investment-banks-to-disburse-2-5-billion-bond-issuance/; Emily Birnbaum, *Inside Tech's Efforts to Invest in Black Banks*, Protocol (Dec. 21, 2020), https://www.protocol.com/tech-investing-black-owned-banks.

NETWORKING & MENTORING

Networking and mentoring are crucial to every startup—and underrepresented innovators are no exception. But underrepresented innovators and entrepreneurs have been historically excluded from many of these opportunities. The government can and should do more to establish and foster links between entrepreneurs and investors, between entrepreneurs and industry advisors, and between similarly situated entrepreneurs.[115]

Startup Testimonial:

"This is not just about underrepresented entrepreneurs, but also about broadening the entire ecosystem by being more inclusive when it comes to leadership, mentors, advisors, investors, and talent. Underrepresented founders and women are not in the same networks as traditional white male entrepreneurs, so they were not getting that same access. How do you learn from startup failures and successes if you're not even talking to the people who have done it? So we wanted to almost force our way into the existing startup ecosystem and say, 'We are here, and we're going to be here.' Great ideas are not limited to a certain race or gender. Nor are they determined by zip codes." [116]

Community is critical for startup success, and underrepresented innovators often lack access.

Investors

Access to networks is often a critical component of access to capital, as investors traditionally source investment opportunities from their own networks or rely on introductions from people they already know.[117] And both VCs and founders have historically backed or hired people from within networks that tend to consist of people with similar views and life experiences.[118] Geography is also key, with over 40 percent of VC investment concentrated in Silicon Valley.[119]

This means, for example, people of color, women, and geographically diverse entrepreneurs often lack the connections needed to get in the room with angel investors and VC firms. Several underrepresented founders in Engine's network have faced these barriers; their stories highlight the importance of networks as critical to raising capital. For example, Bernard Worthy, co-founder and CEO of LoanWell in North Carolina, describes how "[c]ommunity and connections are so important" to connecting "business[es] to big companies and [venture capitalists]."[120] When underrepresented entrepreneurs lack connections to funding networks, they struggle to gain needed investments. It is not that funding is unavailable generally, as noted by Thkisha Sanogo, founder and CEO of MyTaask in Alabama; it is that underrepresented innovators do not have access to the "paths and avenues to capture that [funding]."[121]

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[115] Cindy Foy-Uhlir, founder and CEO of Fierce Female Founders in North Carolina, summarizes it well: "When I work with [underrepresented] entrepreneurs, there are three consistent issues that they all face. They're not sure about the right next steps if they want to scale, they lack a network of other [underrepresented] entrepreneurs that understand what they're going through, and they lack access to capital." Eric Sampsel, *Creating New Opportunities for Women*, Engine (Aug. 14, 2020), https://www.engine.is/news/startupseverywhere-raleigh-nc-fierce-female-founders [hereinafter "Fierce Female Founders"].
[116] Edward Graham, *Driving Entrepreneurial Innovation Through Diversity, Equity, and Inclusion*, Engine (June 19, 2020), https://www.engine.is/news/startupseverywhere-austin-divinc (quoting Preston L. James, II, co-founder and CEO of DivInc in Texas).

[117] *See Beyond the VC Funding Gap*, Morgan Stanley (Oct. 23, 2019), https://www.morganstanley.com/ideas/venture-capital-funding-gap.
[118] *Diversity in U.S. Startups*, RateMyInvestor (2020), *available at* https://ratemyinvestor.com/pdfjs/fullfile=%2FDiversityVCReport_Final.pdf.
[119] *Id.*
[120] Abby Rives, *Platform Helps Streamline Loan Origination and Servicing Processes for Community Lenders*, Engine (Dec. 18, 2020), https://www.engine.is/news/startupseverywhere-durham-nc-loanwell [hereinafter "Loanwell"].
[121] Edward Graham, *A New Tool to Help People Plan*, Engine (Jan. 17, 2020), https://www.engine.is/news/startupseverywhere-daphne-ala (quoting Thkisha Sanogo, Founder and CEO of MyTaask in Alabama) [hereinafter "MyTaask"].

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Startup Testimonial:

On the connection between networks and access to capital: "[A] lot of funding that happens in this area is based on relationships. A lot of white entrepreneurs that are building startups already have those networks and connections. . . . Programs to implement tax incentives for angel investors could work in a way that bypasses some of the problems associated with other private funding programs. I think a program that adds a lot of incentives for angels to make investments in underserved communities could actually work." [122]

The lack of diversity in existing startup networks and communities can easily become a cyclical problem, with the same types of people from the same universities and regions of the country invited into the same rooms. Part of solving the problem must come from the networks themselves, with investors thinking differently and diversifying their own ranks. But the government can incentivize the expansion of these networks.

Advisors

Beyond networks for funding, all entrepreneurs need experienced industry advisors to mentor them as they grow their companies.[123] Industry advisors provide inside know-how on transforming an idea into a flourishing startup,[124] offer outside perspective to inform business decisions, and help founders work through thorny issues, develop industry connections, and meet potential customers. This mentorship not only empowers underrepresented innovators to grow their businesses, but it also facilitates connections between

entrepreneurs and other industry actors, synergistically expanding networks beyond advisors to investors and similar entrepreneurs.[125]

Similarly Situated Entrepreneurs

Networks between similarly situated entrepreneurial peers are also critically important, not only as a source of information but also as a source of community. Bernard Worthy of LoanWell highlights that founders at a common stage learn from one another about "the menu of options for next steps."[126] And, as Jake Soberal—co-founder and co-CEO of Bitwise in California—indicates, connecting innovators with "similar backgrounds . . . make[s] them feel safe and welcome."[127] This sense of community allows underrepresented founders the space to be free of pressure "to prove that they deserve" to exist and expand their businesses.[128] These communities then become "sacred space[s] to offer organic and authentic connection[s]" to others who "understand what they're going through."[129] The ability to learn from and grow alongside of similarly situated entrepreneurs in turn can help foster networks for new generations of startup founders.

Startup Testimonial:

On the importance of connecting underrepresented founders to one another: "A diverse, online community can give you more feedback to help you make your decisions. And the beauty of the online community is that it can transcend geography, so that a founder in a small county in North Carolina can connect to larger networks in Raleigh or Charlotte. Similarly, if I can find someone in an online community who looks like me and landed a big sales deal, then it is easy to ask them about how they landed the deal and what the experience of being the only Black person in the room was like for them."[130]

122 Graham, *Postagraph*, *supra* note 65.
123 Rhett Morris, *Mentors Are the Secret Weapons of Successful Startups*, TechCrunch (Mar. 22, 2015), https://techcrunch.com/2015/03/22/mentors-are-the-secret-weapons-of-successful-startups/.
124 *See* Edward Graham, *A Platform to Help Professionals of Color Make Informed Career Choices*, Engine (June 12, 2020), https://www.engine.is/news/startupseverywhere-nyc-dipper ("Having advis[o]rs who can talk about how to scale and have a network of founders is really key, because some professionals of color might not have that network and might be starting from scratch." (quoting Netta Jenkins, co-founder of Dipper in New York)).

125 *See, e.g.*, Graham, *Infiltron*, *supra* note 12 ("Google for Startups . . . empowered us with so much information and I have been able to connect with so many other people. Google opened their rolodex up to us . . . . I've already been able to take what I've learned from the program to help out other entrepreneurs in our network." (quoting Chastity Wright, founder and CTO of Infiltron in Georgia)).
126 Rives, *LoanWell*, *supra* note 120.
127 *Activating Tech Workers in Underserved and Overlooked Communities*, Engine (Jan. 8, 2021), https://www.engine.is/news/startupseverywhere-fresno-calif-bitwise [hereinafter "Bitwise"].
128 Edward Graham, *A Search Engine for Colors*, Engine (Feb. 28, 2020), https://www.engine.is/news/startupseverywhere-charlotte-north-carolina (quoting Samantha Smith, founder and CEO of Vishion in North Carolina) [hereinafter "Vishion"].
129 Sampsel, *Fierce Female Founders*, *supra* note 115.
130 Rives, *LoanWell*, *supra* note 120.

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Startup Testimonial:

"I wanted to ensure that there was equal representation on the panels and within the actual audience, and what that really takes is just reaching out and inviting people. Women want to see other women in the room, because they assume if other women are there that it's a safe environment where they have the ability to act like themselves and don't have to prove that they deserve to be there."[131]

Facilitating and funding networking and mentoring programs for underrepresented founders.

To help address inequities in innovation ecosystems and ensure underrepresented founders are connected to robust networking and mentorship opportunities, the federal government should take an active role in promoting and financing local and national initiatives that foster diverse businesses. While many of these connections traditionally occur face-to-face, enabling networking through online platforms can also expand access, particularly for those in remote or rural communities, and would encourage connections without limitations inherent in geography-based networking events.

Funding

The federal government should increase and direct funding to develop networks between and among underrepresented innovators. Specifically, incubators and accelerators in underserved communities, whose stated goal is to create connections for entrepreneurs within their own communities, are uniquely situated to address the entrepreneurial needs of the startups they serve and could benefit from increased access to federal resources, including grants. For example, Arrowhead Center in New Mexico features an accelerator program for underserved entrepreneurs in the state. The Center connects these entrepreneurs with networks of experts so that the entrepreneurs can access the resources they need to establish and grow their businesses.[132]

131 Graham, *Vishion, supra* note 128 (quoting Samantha Smith, founder and CEO of Vishion in North Carolina).
132 Edward Graham, *Helping Entrepreneurs Thrive Across New Mexico*, Engine (Apr. 12, 2019), https://www.engine.is/news/category/startupseverywhere-las-cruces-nm [hereinafter "Arrowhead Center"].

Startup Testimonial:

On the importance of looking to local incubators and accelerators: "We [] have a business incubator that is focused on developing a peer community. A lot of business owners or entrepreneurs feel very isolated. There are no words in Navajo for the concept of entrepreneur or business, and people who are engaged in business activity feel like it's another world and separate from our Native American identity. But Native people have been artisans and traders and sellers as long as we have existed. Unfortunately, there is a lot of negative connotation associated with the concepts of business and entrepreneurship, so people who run businesses are always straddling a fine line where they have to almost ask for permission to start a business. Our incubator is trying to create new narratives and help people connect with their peers."[133]

Startup Testimonial:

"It is important to invest in entrepreneurs of color and women though without the programming or infrastructure to support them, the impact will not be measurable. For a successful outcome, in addition to providing financial support to entrepreneurs, the funding for economic development should include programming and support to fund the ecosystem builders, like In3."[134]

133 Edward Graham, *Supporting the Growth and Development of Native Entrepreneurs*, Engine (Oct. 19, 2020), https://www.engine.is/news/startupseverywhere-tuba-city-ariz-change-labs (quoting Heather Fleming, co-founder and executive director of Change Labs in Arizona).
134 Edward Graham, *Supporting Black and Underrepresented Entrepreneurs in the District*, Engine (July 2, 2020), https://www.engine.is/news/startupseverywhere-dc-in3 (quoting Aaron Saunders, CEO of the Inclusive Innovation Incubator).

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Building on Pre-Existing Initiatives

Federal entities can also bolster pre-existing initiatives targeted at supporting underrepresented innovators so that the programs are situated to provide networking and mentorship opportunities. For its part, the Small Business Administration should work to hire and retain more diverse staff, especially in its regional offices, ensure regional offices receive and distribute resources equitably to their geographic regions, and focus on programs targeted at underrepresented entrepreneurs like the 8(a) Business Development Program.[135]

> ### Startup Testimonial:
>
> *On the importance of building initiatives in local innovation ecosystems: "Policy leaders and government institutions have a unique ability to convene and coordinate. For us, it would be incredibly impactful if policy leaders would use this power to develop a strategic vision for the future of innovation to improve economic development and job creation in Baltimore, as well as the rest of the state. Specifically in Baltimore, officials could use their strength as conveners to establish a coordinating position or entity solely focused on bolstering the ecosystem."[136]*

Taking a More Active Approach to Outreach

Federal actors cannot expect that underrepresented innovators will easily find them. The government needs to both actively seek out diverse entrepreneurs and also improve the accessibility of government resources. To be sure, this requires intentionality and thus considerable time and effort, but it is necessary to ensure that government resources and programs are more likely to be discovered and used by those for whom they are intended.

There are at least two specific ways the government can facilitate direct outreach: first, government entities should make it easier for

underrepresented businesses to register as, for example, person-of-color- or woman-owned. As described by Cindy of Fierce Female Founders, bureaucratic hoops and complicated paperwork can make it difficult to register as an underrepresented entrepreneur, which in turn makes it difficult to access dedicated resources.[137] Reducing barriers to the registration process would also provide local government and private startup services with better information about where to direct resources.[138] Additionally, it can encourage advising and peer networks by more easily identifying similarly situated startups.[139]

Second, the government should show up—literally. Underrepresented entrepreneurs organize and attend conferences, where government representatives are often able to participate;[140] and they should seek to do so and bring resources in hand. Whether it be giving out pamphlets at an information booth, delivering remarks, or just listening to what founders need (but ideally all of the above), federal agencies should be present where the founders are, proactively highlight government programs, and hear directly about what startups need to advance their businesses.

> ### Startup Testimonial:
>
> *"I just finished with a women's entrepreneurship conference last week. We had about 130 female entrepreneurs come in . . . . It was our third annual conference, and it was a really fantastic opportunity for female entrepreneurs to network, get inspired and empowered, and actually walk away with the tools and resources they need to start a venture."[141]*

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[135] *See Minority Owned*, U.S. Small Bus. Admin., https://www.sba.gov/category/business-groups/minority-owned (last visited Jan. 28, 2021).
[136] Emma Peck, *#StartupsEverywhere: Darius Graham* (Baltimore, MD), Engine (Mar. 2, 2017), https://www.engine.is/news/category/startupseverywhere-darius-graham-baltimore-md (quoting Darius Graham, director of the Social Innovation Lab at Johns Hopkins University).
[137] Sampsel, *Fierce Female Founders, supra* note 115.

[138] *See* Graham, *Arrowhead Center, supra* note 132 ("I'm also launching . . . an open list of female entrepreneurs in New Mexico, and I'm going to share this with economic development organizations, entrepreneurship development organizations, and others who are in charge of running entrepreneurship or startup-based programs or services. . . . [S]o there are essentially no excuses for not having equal representation." (quoting Zetdi Runyan Sloan of Arrowhead Center)).
[139] *See* Rives, *LoanWell, supra* note 120 ("[T]here are efficiencies that can come from companies at a similar stage who would benefit from common advising, professional services, and counsel." (quoting Bernard Worthy of LoanWell)).
[140] *See, e.g.*, Graham, *Vishion, supra* note 128 ("I initially created Collective Hustle[, a Charlotte-based investor and startup coalition,] to be a monthly meet-up, with the goal of having panels of investors and founders tackling a specific topic. I wanted to ensure that there was equal representation on the panels and within the actual audience, and what that really takes is just reaching out and inviting people." (quoting Samantha Smith of Vishion)).
[141] Graham, *Arrowhead Center, supra* note 132 (quoting Zetdi Runyan Sloan of Arrowhead Center).

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Including Online Resources and Ways to Connect

But resources, like funding and networking opportunities, should not be confined to the physical world—they should be expanded to online formats. Online resources offer meaningful benefits in that they are not bounded by geography, and they can provide breadth and depth of advising opportunities. Organizations serving underrepresented founders describe these benefits after moving their own initiatives online in light of the COVID-19 pandemic. Online platforms reach everywhere, from urban to rural entrepreneurs.[143] And online resources connect underrepresented innovators with perspectives beyond a single mentor: "If a company only has one mentor, that's only one person's advice. A diverse, online community can give you more feedback to help you make your decisions."[144]

Supporting Equity in All Professions

The community surrounding a startup founder is bigger than investors, mentors, and colleagues—entrepreneurs must also turn to experts for other services like legal advice and accounting. Building diversity in those pipelines is also critical so that underrepresented founders can turn to professionals that bring similarly diverse and unique perspectives. The ability to readily hire a Black woman patent lawyer, for example, will help build trust and facilitate successful applications for high-quality patents by Black women inventors. The same is true for services across the innovation sector.

142 Graham, *MyTaask*, *supra* note 121 (quoting Thkisha Sanogo of MyTaask).
143 Sampsel, *Fierce Female Founders*, *supra* note 115 ("We pivoted by taking our programs online. The advantages we have seen is that in going virtual we are no longer bound by geography. It has opened us up to be able to serve women everywhere." (quoting Cindy Foy-Uhlir of Fierce Female Founders)).
144 Rives, *LoanWell*, *supra* note 120 (quoting Bernard Worthy of LoanWell).

145 Edward Graham, *Support Entrepreneurial Success in the Borderlands*, Engine (Sept. 18, 2020), https://www.engine.is/news/startupseverywhere-el-paso-texas-pioneers-21 (quoting Carlos Martinez-Vela, Executive Director of Pioneers 21).
146 Graham, *Arrowhead Center*, *supra* note 132 (quoting Zetdi Runyan Sloan of Arrowhead Center).

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While improving access to capital and expanding networks for underrepresented entrepreneurs may yield more near-term results, federal entities should also improve education opportunities for underrepresented innovators so that they are equitable and inclusive, affecting long-lasting change. This includes improving access to science, technology, engineering, and mathematics (STEM) education, but it also applies to business and innovation and entrepreneurship (I&E) education and training for underrepresented students. Greater access and retention is critical because the nation needs diverse students in the talent pipeline. In order to achieve that goal, diversity of STEM, business, and I&E educators is also critical but often overlooked.

Diversity gaps among students and educators.

Retention of Students in Innovation Careers

The nation's innovation ecosystems need high-skilled, diverse talent. In order to grow and sustain diversity in innovation, the government should invest in a diverse talent pipeline because, beyond funding, building a team is one of the biggest challenges facing startups. A successful talent pipeline not only starts early to excite young students about innovation, but it also requires encouraging talented students to channel that excitement into innovation careers.

Disparities in education representation are compounded by problems of retention, which cuts off the innovation pipeline too early for students who cannot or do not want to pursue innovation careers. Students of color represent 38.5 percent of STEM postsecondary students,[147] but Black and Latino students switch out of STEM degree programs at higher rates than their white peers.[148] In addition, an estimated 20 percent of Black STEM

Ph.D. holders and 20 percent of women STEM Ph.D. holders leave STEM fields.[149] And the retention problems only continue, creating further underrepresentation in the workplace: of all STEM professionals, only 9 percent are Black and only 7 percent are Latino.[150]

Women and Black Ph.D. Holders Leave the STEM Field More Often

20+ years to obtain STEM Ph.D.

1 in 5 Black STEM Ph.D. holders &
1 in 5 women with STEM Ph.D.s
Leave STEM
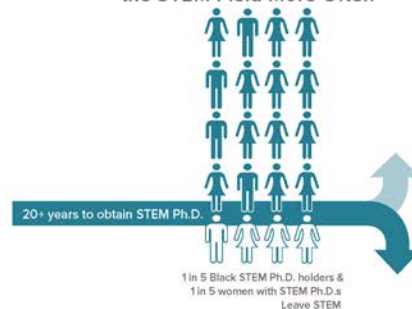
Beyond a lack of representation in STEM fields, taking a closer view—and acknowledging that not all STEM jobs are created equal—reveals other relevant disparities across STEM fields. For example, computer jobs feature one of highest median earnings of any STEM field, but the computer workforce is only 14 percent Black or Latino and only 25 percent women.[151] On the other end of the salary median are healthcare practitioners and technicians.[152] And it is these lower paying fields that have the highest representation of Black, Latino, and women workers. By way of example, 37 percent of licensed nurses are Black or Latino as are about a quarter of health support, medical record, and clinical laboratory technicians.[153] Women, on the other hand, comprise 75 percent of healthcare practitioners and technicians.[154]

[147] Nat'l Ctr. For Educ. Stat., *Table 318.45*, Dig. Educ. Stat. (Oct. 2019), https://nces.ed.gov/programs/digest/d19/tables/dt19_318.45.asp (2017-2018 percentages).
[148] Emily Arnim, *A Third of Minority Students Leave STEM Majors. Here's Why.*, EAB (Oct. 8, 2019), https://eab.com/insights/daily-briefing/student-success/a-third-of-minority-students-leave-stem-majors-heres-why/; *see also* Univ. of Ill. Coll. of Agric., Consumer & Env't Scis., *Racial Microaggressions Contribute to Disparities in STEM Education*, ScienceDaily (Dec. 8, 2020), https://www.sciencedaily.com/releases/2020/12/201208111636.htm.

[149] *See* Carol O'Donnell & Shelina Ramnarine, An Integrated Approach to Diversity, Equity, Accessibility and Inclusion (DEAI) in STEM, Smithsonian Sci. & Educ. Ctr. (2019), *available at* https://ssec.si.edu/sites/default/files/other/STEMLeadershipAlliance2020.pdf.
[150] Cary Funk & Kim Parker, *Women and Men in STEM Often at Odds Over Workplace Equity*, Pew Rsch. Ctr. 8 (Jan. 9, 2018), https://www.pewresearch.org/social-trends/wp-content/uploads/sites/3/2018/01/PS_2018.01.09_STEM_FINAL.pdf.
[151] *Id.* at 16, 34, 36.
[152] *Id.*
[153] *Id.* at 34.
[154] *Id.* at 30.

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Understanding STEM's "leaky pipeline," and ensuring that underrepresented innovators are inspired and able to pursue lucrative careers, will require further data collection; and Engine encourages NCEAI to call for that. But anecdotal evidence suggests that disparate access to education, lack of encouragement at an early age, discrimination, difficulty balancing work and family, and lack of representation are barriers to entering STEM jobs for underrepresented innovators of color and women innovators.[155]

It is also important to note that fostering STEM jobs should be inclusive of those positions that do not require postsecondary education. Innovation does not require a degree, so inquiry into innovation retention should not focus on only advanced education-related factors. For example, alternative education like immersion programs or "boot camps" can be another successful path to STEM and innovation careers.[156]

Finally, in addressing retention, geography is another important factor: innovation industries, talent, and jobs cluster in a few cities.[157] And rural communities that may be successful at turning out students interested in STEM tend to lose talent to other regions upon graduation. Indeed, some entrepreneurs looking to launch companies outside those traditional tech sectors face pressure to relocate so that they can connect with investors and talent.[158]

Startup Testimonial:

On Missoula's startup ecosystem: "Our number one challenge right now is continuing to fuel the talent pipeline. When I first moved here, Montana's biggest export was its talent, we used to lose a lot of people to big cities and traditional hubs. What we're going through now is trying to help the students coming through our universities understand that there are great career opportunities here. We are also trying to get the word out to Montanans who have left here and want to come back that the opportunities with successful companies exist."[159]

Startup Testimonial:

On Effingham's startup ecosystem: "[T]he hardest part about staying in a rural community, especially when you leave high school and go to college, is not understanding or knowing what the local opportunities are. It would be great to have a program funded by the government, at the high school level, that allows local companies to engage with students. For students at Effingham High School, it would be great to educate them about the local job opportunities as part of career development. If students going from high school to college don't know about their local opportunities or companies, then they won't come back because they don't know that there are good jobs for them in rural communities."[160]

Innovation Educators

To better encourage and foster diversity in innovation, the government should invest in underrepresented STEM and business educators as well as students.

The diversity of educators matters because representation matters.[161] The opportunity for students to identify themselves in their educators instills the belief in students that they, too,

155 *Id.* at 21.
156 For a discussion of some alternative pathways to STEM education and STEM careers, see Joe Alper, *Developing a National STEM Workforce Strategy: A Workshop Summary*, Nat'l Acads. 63-70 (2016), *available at* https://www.nap.edu/read/21900/chapter/8.
157 Eduardo Porter, *A Few Cities Have Cornered Innovation Jobs. Can That Be Changed?*, N.Y. Times (Dec. 9, 2019), https://www.nytimes.com/2019/12/09/business/economy/innovation-jobs-cities.html.
158 Nathan Lindfors, *Cultivating a Marketplace for Farmers Using Technology*, Engine (Nov. 24, 2020), https://www.engine.is/news/startupseverywhere-manhattan-kan-hitchpin (interviewing Trevor McKeeman, CEO of HitchPin in Kansas).
159 Andrew Jones, *#StartupsEverywhere: Missoula, MT*, Engine (Mar. 26, 2018), https://www.engine.is/news/category/startupseverywhere-
missoula-mt (interviewing Paul Gladen, director of Blackstone Launchpad at the University of Montana).
160 Edward Graham, *Streamlining Acreage Reporting Solutions for Farmers*, Engine (Aug. 28, 2020), https://www.engine.is/news/startupseverywhere-effingham-ill-myagdata (quoting Deb Casurella, co-founder and CEO of MyAgData in Illinois).
161 The same is true in fields other than education. Lack of representation leads to additional inequalities and exacerbates existing ones. This is well-documented in medicine, where Black patients face more adverse outcomes when treated by white doctors than when treated by Black doctors. *See, e.g.*, Erin Dehon et al., *A Systematic Review of the Impact of Physician Racial Bias on Clinical Decision Making*, 24 Acad. Emergency Med. 895 (2017); Nat'l Acads., Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care 3-12, 19 (Brian D. Smedley, Adrienne Y. Stith, & Alan R. Nelson eds., 2003); *see also* Talia Milgron-Elcott, *Students of Color Are Missing Out on STEM Opportunities, So the Planet Is Missing Out on Their Brilliance. Here's How We Finally Achieve Equity in High School STEM*, Forbes (Sept. 24, 2020), https://www.forbes.com/sites/taliamilgromelcott/2020/09/24/students-of-color-are-missing-out-on-stem-opportunities-so-the-planet-is-missing-out-on-their-brilliance-heres-how-we-finally-achieve-equity-in-high-school-stem/?sh=52eba28e5148 (making the connection between the effects of representation in medicine and in education).

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belong as innovators.[162] This is due, at least in part, to role model effects and cultural understanding. Diverse educators serve as role models and signal to underrepresented students that they have a future in STEM, innovation, and entrepreneurship.[163] Additionally, cultural understanding between educators and students helps ensure that material is explained in a "culturally relevant and engaging way."[164] As one expert describes the effects, "[a] diverse staff allows more students to see themselves in their teachers, school leaders, and other school personnel.... [and] provides more opportunities for students to find someone they can connect with, whether through shared culture or other experiences."[165]

Representation in education is essential because it encourages more underrepresented students to choose a career of innovation and entrepreneurship. Early exposure to inclusive innovation education excites and motivates students to pursue STEM, business, and innovation higher education, and from there, careers. As Irma Olguin Jr., co-founder and co-CEO of Bitwise, explains, joining an innovation ecosystem "shouldn't be an unfathomable option[] or an accident for anyone."[166]

Unfortunately, the educator workforce is less diverse than the population. STEM and business education begins far earlier than college,[167] so the government should start by looking at educators

Underrepresented Groups in STEM Education, Compared to Representation in U.S. Population
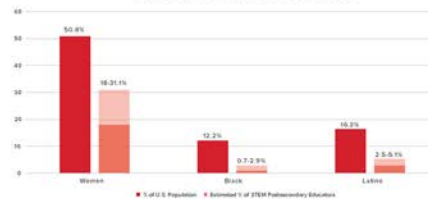
in primary and secondary schools, where a recent report by the Department of Education found that only 18 percent of educators were people of color,[168] while over the same time, 36 percent of the population identified as people of color.[169]

The same is true for postsecondary educators. Only 24 percent of university faculty members in the U.S. are people of color.[170] And across STEM fields, the statistics are even bleaker. According to a 2017 study, 12.2 percent of the population is Black, but only 0.7 to 2.9 percent of STEM faculty are Black.[171] And while 16.3 percent of the population is Latino, between 2.5 to 5.1 percent of postsecondary STEM faculty identify as such.[172] Gender parity is likewise absent, with only 18 to 31.1 percent STEM postsecondary educators identifying as women despite comprising 50.8 percent of the population.[173]

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[162] *See* Christopher Redding, *A Teacher Like Me: A Review of the Effect of Student-Teacher Racial/Ethnic Matching on Teacher Perceptions of Students and Student Academic and Behavioral Outcomes*, 89 Rev. Educ. Rsch. 499 (2019).
[163] *See* Seth Gershenson et al., *The Long-Run Impacts of Same-Race Teachers*, Nat'l Bureau Econ. Rsch. (Nov. 2018), *available at* https://www.nber.org stanford.idm.oclc.org/papers/w25254.
[164] *See* Anna J. Egalite & Brian Kisida, *The Effects of Teacher Match on Students' Academic Perceptions and Attitudes*, 40 Educ. Evaluation & Pol'y Analysis 59, 75 (2018); *see also Cultivating Native American Entrepreneurship in Northern Michigan*, Engine (Jan. 29, 2021), https://www.engine.is/news/startupseverywhere-traverse-city-mich-arrowhead-incubator (interviewing Shiloh Slomsky, executive director and co-founder of Arrowhead Incubator in Michigan, and describing the power of infusing culture into business training for Native American entrepreneurs, like by lecturing in traditional attire).
[165] Daniel A. Domenech, *Here Is Why Diversity in STEM Education Is So Important*, Educ. & Career News, https://www.educationandcareernews.com/education-technology/here-is-why-diversity-in-stem-education-is-so-important/ (last visited Feb. 9, 2021) (interviewing and quoting Kendell V. Ali).
[166] *Bitwise, supra* note 127.
[167] *See* Edward Graham, *Using Technology to Support Child Care Providers*, Engine (Oct. 4, 2019) https://www.engine.is/news/startupseverywhere-pittsburgh-pa (interviewing Shimira Williams, co-founder of C.C. Busy in Pennsylvania, who discusses the need to start STEM education as

early as preschool); Andrew Jones, *#StartupsEverywhere: Kansas City, MO*, Engine (May 15, 2018), https://www.engine.is/news/category/startupseverywhere-kansas-city-mo?rq=Missouri (interviewing Ryan Weber, president of the KC Tech Council in Missouri, who notes the disparity in computer science education across schools in Missouri).
[168] U.S. Dep't of Educ., The State of Racial Diversity in the Educator Workforce at 3, 6 (July 2016), *available at* https://www2.ed.gov/rschstat/eval/highered/racial-diversity/state-racial-diversity-workforce.pdf.
[169] Stephanie Ewart, U.S. Population Trends: 2000 to 2060, U.S. Census Bureau at 7 (Oct. 15, 2015), *available at* https://www.ncsl.org/Portals/1/Documents/nalfo/USDemographics.pdf.
[170] Leslie Davis & Richard Fry, *College Faculty Have Become More Racially and Ethnically Diverse, But Remain Far Less So Than Students*, Pew Rsch. Ctr. (July 31, 2019), https://www.pewresearch.org/fact-tank/2019/07/31/us-college-faculty-student-diversity/.
[171] Diyi Li & Cory Koedel, *Representation and Salary Gaps by Race-Ethnicity and Gender at Selective Public Universities*, 46 Educ. Researcher 343, 346, 347 tbl.3 (2017). Note that the Li and Koedel used the 2010 census demographic data in making their comparisons. Demographic data from the 2020 census remains outstanding, but it is expected that the proportion of nonwhite residents has only grown, meaning these data underestimate the disparity in representation.
[172] *Id.*
[173] *Id.*

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Funding STEM and I&E education initiatives for underrepresented students and educators.

To diversify American innovation ecosystems, the government should invest in local and federal programs aimed at improving access to STEM and I&E teaching and education across primary, secondary, and postsecondary levels.

Improving and Expanding Programs for Students.

Access to STEM and I&E education should improve on two axes. First, the government should ensure innovation education resources and programs are available to underrepresented students regardless of race, gender, or geography. This includes access to STEM and I&E educators as well as to innovation and entrepreneurial co-curricular and extracurricular activities. Second, those resources should be presented in ways that are tailored to and engaging for underrepresented students.

Startup Testimonial:

"I worked on a bill to provide funding to STEM organizations that focus on students of color across Georgia's education system. That funding has gone to create STEM clubs across the state. We are hosting targeted workshops, and we are seeing more Black and Latino children engaged with science and math throughout the course of their education. I wanted to be part of this effort to give students opportunities that I did not have at their age. If I had a STEM club in elementary school, then I think I would have been an aerospace engineer a lot earlier in my career."[174]

The federal government should invest in programs aimed at expanding and revising STEM and I&E curriculum resources so that innovation education is exciting and inviting to all students. Federal entities can fund and encourage state and local funding of tailored education programs for

students of all ages—from early childhood to postgraduate education—and highlight contributions of diverse innovators. Additionally, the government should invest in local STEM and I&E co-curricular and extracurricular programs for primary and secondary schools in underserved communities.[175] For postsecondary education, the government should invest in innovation-related clubs at HBCUs, land-grant universities, and other postsecondary education institutions that attract more diverse student bodies, including community colleges.

It is also vital that innovation educators establish inclusive environments.[176] Doing so requires that educators reflect on their own identities and privileges, recognize the multidimensional motivations and aspirations of their students, and highlight STEM and I&E contributions by diverse entrepreneurs.[177] Instead of focusing on only Thomas Edison, for example, the works of Percy Julian, Sarah Boone, and Katharine Burr Blodgett also should be center stage.

Increasing Diversity Among Educators.

The government should encourage and invest in efforts to diversify the educator workforce. For example, alternative-route certification programs attract more diverse educators and should be expanded.[178] The government should also increase funding for initiatives like the Smithsonian STEM Education Summit and 100Kin10 that specifically seek to increase diversity in STEM and I&E education.[179] More broadly, the government should build and encourage the narrative that teaching STEM is a viable career path for all, both through explicit programming and through more expansive loan forgiveness.

The government should also take an active role in reaching out to and connecting with potential underrepresented educators.

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[174] Graham, *Infiltron, supra* note 12 (quoting Chastity Wright of Infiltron).

[175] *See, e.g., Project Invent Fellowship*, Project Invent, https://projectinvent.org/for-educators (last visited Jan. 29, 2021); Graham, *Infiltron, supra* note 12 (discussing STEM program focusing on students of color across Georgia).
[176] Alison Singer, Georgina Montgomery, & Shannon Schmoll, *How to Foster the Formation of STEM Identity: Studying Diversity in an Authentic Learning Environment*, Int'l J. STEM Educ. (Nov. 6, 2020), https://doi.org/10.1186/s40594-020-00254-z.
[177] *See* Tess L. Killpack & Laverne C. Melón, *Toward Inclusive STEM Classrooms: What Personal Role Do Faculty Play?*, CBE Life Sci. Educ. (Oct. 13, 2017), https://www.lifescied.org/doi/full/10.1187/cbe.16-01-0020.
[178] U.S. Dep't of Educ., *supra* note 168, at 17.
[179] *STEM Education Summit: Building a Coalition for Attracting and Retaining a Diverse STEM Teaching Workforce*, Smithsonian Sci. & Educ. Ctr., https://ssec.si.edu/event/stem-education-summit-building-coalition-attracting-and-retaining-diverse-stem-teaching (last visited Jan. 28, 2020); *Our Story*, 100Kin10, https://100kin10.org/about (last visited Jan. 28, 2021).

EDUCATION & TRAINING

For example, the Department of Education should actively recruit underrepresented educators to join the STEM and I&E education workforce. Action produces results: as Washington University in St. Louis demonstrated with its practice of solicitation and invitation for its Women in Innovation and Technology program, actively reaching out to underrepresented educators diversifies the innovation educator workforce which in turn provides role models for underrepresented students to see themselves in STEM and I&E.[180]

Investing in I&E Education Programs Focused on Underrepresented Innovators.

The government should also look to I&E education as a path to expand American innovation. Innovation and entrepreneurship are often complex and non-linear, and preparing students to succeed requires different educational approaches compared to traditional disciplines.[181] Extant I&E programs range from guiding students from an idea to a business or technology launch to focusing further upstream by training students to be more innovative and creative.[182] Indeed, I&E are core skills, and training students to be more innovative should be considered a part of the core curriculum from a young age.[183]

Because I&E programs are often interdisciplinary, attracting

students from across an institution, they can create a natural pull towards diversity. Well-designed I&E programs can encompass students from a broad range of disciplines—engineering, computer science, psychology, sociology, marketing, finance, law, nursing, and more. And in so doing, I&E programs can attract students who may shy away from traditional STEM fields but are interested in learning about innovation.[184]

Many I&E programs currently look to private donors[185] and may struggle to compete for traditional government funding because they do not fit tidy STEM definitions. While these private donations add a lot of value, I&E programs reliant on private funds are often targeted to the donor's particular interests and can be difficult to scale. The government should consider establishing dedicated funding pools or issuing specific grant opportunities for I&E education. This would make it easier to expand U.S. innovation and would enable schools that lack a wealthy donor base to launch successful I&E programs. The government could also expand existing programs like NSF's I-CORPS, which is designed to support the commercialization of new technologies and reduce the risk and time required to translate new ideas to the market.[186]

Importantly, the government should also identify gaps in diversity for its current I&E investments and develop new, dedicated programs that serve all underrepresented students. Existing I&E education investments provide a start, but they do not fully accomplish this goal. For example, while I-CORPS has made strides broadening participation by women,[187] participation by other underrepresented groups is still lacking.[188] The government should consider establishing additional programs at institutions that attract a more diverse student body, like HBCUs, land-grant universities, and community colleges.

[180] Wash. Univ. in St. Louis, Comment Letter on Request for Comments on the SUCCESS Act of 2018, at 2-3 (June 27, 2019), https://www.uspto.gov/sites/default/files/documents/SUCCESSAct-Washington-University-in-St-Louis.pdf.

[181] See Gabriel Linton & Markus Klinton, University Entrepreneurship Education: A Design Thinking Approach to Learning, J. Innovation & Entrepreneurship (Jan. 14, 2019), https://innovation-entrepreneurship.springeropen.com/articles/10.1186/s13731-018-0098-z.

[182] See Martin Lackéus, Entrepreneurship in Education: What, Why, When, How, Entrepreneurship360, at 1 (2015), https://www.oecd.org/cfe/leed/BGP_Entrepreneurship-in-Education.pdf (noting that the definition of entrepreneurship can vary, from training students to start a business to making students more creative. For examples of I&E programs, see Duke Univ., Education, Duke Innovation & Entrepreneurship, https://entrepreneurship.duke.edu/education/ (last visited Feb. 12, 2021); Ga. Inst. of Tech., TI:GER Program, Ga. Tech Scheller Coll. Bus., https://www.scheller.gatech.edu/centers-initiatives/tiger/index.html (last visited Feb. 12, 2021); and Univ. Colo. Colo. Springs, UCCS Bachelor of Innovation, https://innovation.uccs.edu/what-is-the-bi/. See also U.S. Dep't of Com., The Innovative and Entrepreneurial University: Higher Education, Innovation & Entrepreneurship in Focus 10-12 (Oct. 2013), https://www.eda.gov/pdf/The_Innovative_and_Entrepreneurial_University_Report.pdf (listing select programs).

[183] One model, the Network for Teaching Entrepreneurship (NFTE), is an education non-profit focused on bringing entrepreneurship to middle and high school students, as well as educators, in low-income communities. NFTE, NFTE, https://www.nfte.com/ (last visited Feb. 18, 2021).

[184] Indeed, the student population of certain I&E programs mirrors the diversity of the entire student population. Compare, e.g., Duke Univ., Scaling, Duke Innovation & Entrepreneurship, https://entrepreneurship.duke.edu/ar-2019-2020-scaling/ (last visited Feb. 18, 2021) with Duke Facts, https://facts.duke.edu/ (last visited Feb. 22, 2021) (I&E students drawn from multiple majors across the university, where the demographic data of the I&E program are highly similar to that of the overall university).

[185] See, e.g., A. James & Alice B. Clark Found., A. James Clark Scholars Program, https://clarkfoundationdc.org/clark-scholars/ (last visited Feb. 11, 2021).

[186] Nat'l Sci. Found., National Science Foundation Innovation Corps, https://www.nsf.gov/news/special_reports/i-corps/about.jsp (last visited Feb. 12, 2021).

[187] Nat'l Sci. Found., Innovation Corps (I-Corps): Biennial Report 13 (Spring 2019), https://www.nsf.gov/news/special_reports/i-corps/pdf/I-CorpsReport--6_4_19FINAL_508.pdf.

[188] See id. at 26 (noting that, of 1626 individuals, only 453 were from underrepresented groups but 338 of those were women and reporting that only 208 team leads were from underrepresented groups but 164 of those were women); Nat'l Sci. Found., A National Initiative to Develop Diversity and Inclusion Infrastructure for STEM Innovation, https://www.nsf.gov/awardsearch/showAward?AWD_ID=1940055 (last visited Feb. 11, 2021).

CONCLUSION

Diversity in innovation is critical. Yet for too long, underrepresented startup founders have faced unfair and unwarranted barriers—erected both intentionally and unintentionally—across the country. And these injustices have also deprived the nation of economic opportunities and great ideas. Engine is thankful NCEAI will take up these vital questions about how to expand American innovation and encourages NCEAI to conduct a thorough, nuanced assessment of the roadblocks underrepresented founders face, as well as suggest creative solutions to start dismantling them. While the USPTO may be limited in what it can do directly, it has a role to play. Importantly, Engine urges the entire federal government to think broadly about what it can do to right past wrongs; create new opportunities through funding and programs to invite more diversity into existing innovation ecosystems; and incentivize private actors to make change.

Thank you for the opportunity to submit these perspectives. Engine is firmly committed to helping grow and support the nation's startup ecosystems, and a substantial part of that work must include promoting diversity and inclusion. Engine is likewise committed to serving as a resource for and engaging with NCEAI, USPTO, and all levels of government on changes that could advance this goal.

Engine

COVID-19 RESOURCES AND INFORMATION: See the Atlanta Fed's list of publications, information, and resources; listen to our Pandemic Response webinar series.

PUBLICATIONS

Financial Resilience Challenges during the Pandemic

AFFORDABLE HOUSING AND NEIGHBORHOODS :: NEIGHBORHOODS AND PLACE :: HOUSEHOLD FINANCIAL WELL-BEING ::
COMMUNITY DEVELOPMENT FINANCE :: COMMUNITY DEVELOPMENT FINANCIAL INSTITUTIONS

In March 2019, the Atlanta Fed made it an explicit priority to promote economic mobility and resilience in the Southeast. That includes addressing how institutionalized racism contributes to racial wealth and income gaps through a long history of discriminatory policies and practices. Today, that legacy leaves many Black and Hispanic people less resilient in face of the economic shock caused by the ongoing coronavirus pandemic, and therefore more likely to encounter hardships.

In this article, the authors look at discrimination's connections to financial resilience, which is one essential piece of what makes us resilient overall. We define it as a household's capacity to weather unexpected expenses or shocks to income.

The Federal Reserve Board's Survey of Household Economics and Decisionmaking (SHED) collects data on factors that contribute to financial resilience, including personal savings that provide a cushion for households that experience a sudden economic strain.[1] The SHED indicates that when the COVID crisis hit, only half of American households had a rainy day fund, defined as three months of saved income. The data also reveal that even smaller shares of Black and Hispanic households, along with renter and low-income households, had these savings available. Supplemental SHED data from July 2020 help show the pandemic's impact on these households' finances. We use the SHED and other sources to demonstrate how low personal savings tie into racial and economic disparities, and we challenge institutions to devise appropriate responses.[2]

Data indicate differences by race and ethnicity that must be understood in the context of structural racism. Legal discrimination, especially against Black people, has excluded racial and ethnic minorities from critical wealth-building opportunities over generations, with a compounding impact. It is present today in homeownership gaps, barriers to educational attainment, and occupational segregation patterns where Black people are disproportionately employed in lower-wage jobs. Although discriminatory practices like redlining have been abolished, systemic barriers in both housing and labor markets continue to disadvantage Black and Hispanic people. Research shows that Black people with qualifications comparable to their white peers are considered for jobs less and paid less for the same jobs. Research also shows that racial discrimination in both access to and cost of mortgage credit maintain the white-Black homeownership gap today.

Who had savings before the pandemic?

According to the SHED, 47 percent of U.S. households did not have a rainy day fund in October 2019. Upon closer examination, stark disparities emerge across income level, housing tenure, and race and ethnicity (see chart 1). Nearly three-quarters (72 percent) of households with less than $40,000 in annual income had no rainy day fund. Two-thirds (67 percent) of renters lacked these savings, as did over 6 in 10 Black and Hispanic households (both 61 percent).[3] Intersectional disadvantage also exists within these groups. Black and Hispanic households are more likely to be extremely low-income renters than white households, a pattern that can be traced to the ongoing reality of racial discrimination in labor and housing markets.

Chart 1: National Share of Households without a Three-Month Rainy Day Fund by Sociodemographic Group (October 2019)

Category	Group	Percent
	All Households	47%
RACE AND ETHNICITY	White, Non-Hispanic	41%
	Black, Non-Hispanic	61%
	Hispanic	61%
INCOME	Low-Income	72%
	Middle-Income	50%
	High-Income	27%
HOUSING TENURE	Renters	67%
	Homeowners	39%
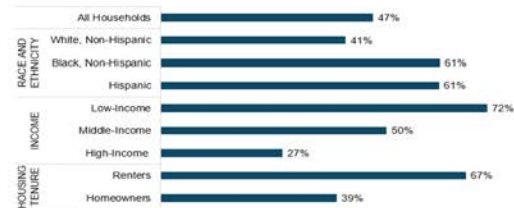
Notes: National population weights are applied to these data; n = 12,173; the SHED defines a "rainy day fund" as three months of saved income; the SHED defines "Low-Income," "Middle-Income," and "High-Income" at a national level according to the following household income ranges, respectively: less than $40,000, $40,000 to $100,000, and greater than $100,000.

Sources: Federal Reserve Board's 2019 Survey for Household and Economic Decisionmaking (SHED), authors' calculations

In southeastern states served by the Atlanta Fed, an even smaller portion of respondents reported having three months of income saved. Similar disparities by race, ethnicity, income, and housing tenure show up here, too. Some southeastern subgroups appear even more prone to lacking a rainy day fund, with 63 percent of Black respondents and 69 percent of renters in the Southeast reporting that they did not have three months of income saved in 2019.[4]

Savings and hardship

Without the safety net offered by personal savings, households are more vulnerable to hardship.[5] SHED data show that in 2019, households without a rainy day fund more frequently experienced certain financial hardships that are now being observed as economic consequences of the COVID-19 pandemic (see chart 2).

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Chart 2: National Comparison of Rainy Day Fund Availability with Hardship Experiences, Share of Households (October 2019)

■ Households without a rainy day fund   ■ Households with a rainy day fund
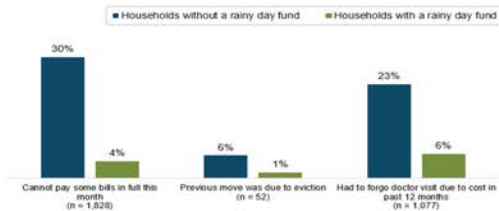
Notes: National population weights are applied to these data; the SHED defines a "rainy day fund" as three months of saved income.

Sources: Federal Reserve Board's 2019 Survey for Household Economics and Decisionmaking (SHED), authors' calculations

- When they were surveyed, 30 percent of households without three months of income saved said that they struggled to pay all bills on time that month versus only 4 percent of those who did have a rainy day fund.
- Missing rent payments puts tenants at risk of being evicted. While only a small percentage of households attributed a recent move to an eviction, those without rainy day funds reported experiencing an eviction at a higher rate. Among households that moved recently, 6 percent of those without savings said that an eviction caused their move, compared with only 1 percent of those with savings.
- Households with no rainy day fund also reported more limited health care uptake. Fifteen percent missed a doctor's visit due to the cost versus 4 percent among households that had a fund available.

Who has lost income during the pandemic?

Black and Hispanic households, which were less likely to have rainy day funds before the pandemic, face a disproportionately high risk of needing one during the crisis. Data from the U.S. Bureau of Labor Statistics show that unemployment rates for these groups, which historically trend higher than the general population, have grown steeply during the pandemic (see chart 3). While unemployment rates improved from April to December 2020, they remain higher than they were before the pandemic began.

Chart 3: National Unemployment Rates by Race and Ethnicity (2020)

■ Total   ■ White   ■ Black   ■ Hispanic
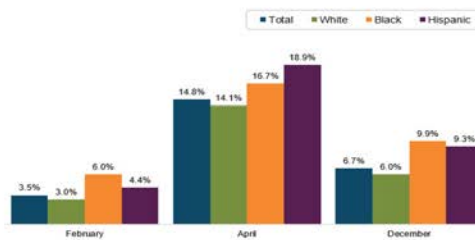
Source: U.S. Bureau of Labor Statistics, labor force statistics from the Current Population Survey: household data, seasonally adjusted, employment status (Tables A-3 and A-4), last accessed January 20, 2021

The Atlanta Fed's Unemployment Claims Monitor offers additional evidence of the lopsided representation of Black and Hispanic workers among unemployment claims filed since March 2020, and it indicates the disparity is even more pronounced across southeastern states.[5]

Many factors rooted in the legacy of labor market discrimination contribute to disproportionately high unemployment rates today. For example, occupational segregation leaves Black and Hispanic workers concentrated in some industries hardest hit by the pandemic, including transportation and accommodation and food services.[7]

Data from the SHED confirm how the pandemic's economic fallout reinforces the link between low incomes, smaller rainy day funds, and hardship. In July 2020, the Federal Reserve Board recontacted about one-third of respondents from the October 2019 sample. Those July responses reveal higher rates of job loss among households that had previously reported lower incomes and less savings. Although 15 percent of recontacted respondents had lost a job since February, job loss hit 17 percent of households earning less than $40,000, 18 percent of households who had reported not having a three-month rainy day fund, and 19 percent of those who had lacked $400 in savings.

SHED supplement finds that 24 percent of households receiving unemployment insurance reported struggling to pay bills during that month, compared with 46 percent of out-of-work households that had not received unemployment. By helping households avoid hardship in this way, unemployment insurance and other safety net support can provide a buffer for those without personal savings.

What's needed: targeted support for widespread financial resilience

High unemployment rates and urgent health care needs resulting from the pandemic present a greater risk of financial hardship to households without emergency savings. We have highlighted the disparate distribution of risks by race, ethnicity, income level, housing tenure, and region. We've also begun to connect these patterns to long-standing labor and housing market discrimination that keeps incomes lower than average for Black and Hispanic workers and excludes many of them from the relative stability and potential financial benefits of homeownership. Indeed, the shock is poised to exacerbate disparities in the long run, much like the Great Recession and other shocks and stresses have done.[9]

Provisions in the $2 trillion CARES Act passed in March 2020 and the $900 billion relief package passed in December 2020 may help to mitigate the ongoing hardship. However, policymakers could build on these protections and direct payments and loans to households and businesses. In the short run, the severity of current hardships demands support that targets people in the most affected groups and serves as a bridge for the duration of the crisis. That might include larger and repeated installments of cash assistance and eviction moratoria and unemployment benefits extended through the pandemic. The December 2020 package's $25 billion in rental assistance funds may help stabilize renters who are struggling. More support to landlords and tenants is needed to facilitate rent forgiveness or fair repayment plans for those who remain in arrears.[10]

In the long run, efforts to build financial resilience for all should address the root causes of savings and hardship disparities. For example, higher minimum wages and strong safety nets help combat the impact of discriminatory labor markets. Down payment assistance programs and small-dollar mortgages promote homeownership among those who have been historically excluded, particularly Black people. Other financial products can help all households accumulate rainy day funds over time, including matched savings and prize-linked savings accounts. For households without savings, affordable, small dollar consumer loans assist with managing unexpected expenses.

Mission driven financial institutions play a role. Community development financial institutions (CDFIs) and minority depository institutions (MDIs) exist to serve low-income and minority individuals and communities. CDFIs and MDIs are uniquely positioned to provide immediate relief to those in need as well as longer-term support through lending and services. Accordingly, the December 2020 bill allocated $12 billion to increase CDFIs' and MDIs' capacity in helping to mitigate the pandemic's economic shock to these disadvantaged groups. Funders and future relief programs must continue to prioritize these institutions.

In this article, we demonstrate the link between low wages, a lack of savings, and hardship as well as the root causes that create barriers to financial resilience for many Black and Hispanic families. Without committed action, the disparities that were in place as the country entered the COVID-19 recession will limit widespread financial resilience and an inclusive recovery.

By Julie Siwicki, CED adviser, and Nisha Sutaria, CED research analyst II

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[1] For more on this model of household finance, see the following works: Morduch, Jonathan and Rachel Schneider. (2017). *The Financial Diaries: How American Families Cope in a World of Uncertainty*. Princeton, NJ: Princeton University Press; Aspen Institute Financial Security Program. (2020, November 9). *The State of Financial Security 2020: A Framework for Recovery and Resilience*.

[2] The Federal Reserve Board established the SHED in 2013. The annual survey is nationally representative of U.S. households and covers topics related to financial security such as credit, housing, education, and retirement. The SHED is not a longitudinal survey, yet it does resurvey some respondents in each installment.

[3] The SHED provides data on a limited number of racial and ethnic groups. In addition to the groups we focus on here—Black, Hispanic, and white—the survey also includes categories for people identifying as an "other" race or ethnicity and as two or more races or ethnicities. We do not expand this analysis to these additional categories because of small sample size limitations and the complexities of disaggregating a wide range of identities and experiences held within them. We use the terms Black and Hispanic throughout in keeping with the SHED's decision to use these terms.

[4] The six southeastern states in the Federal Reserve Bank of Atlanta's Sixth District are Alabama, Georgia, Florida, and parts of Louisiana, Mississippi, and Tennessee. The weights provided by SHED were designed for a national purpose and were therefore not applied to this regional subset analysis. With weights applied, southeastern disparities by race, ethnicity, income, and housing tenure appear even more exaggerated when compared with national numbers. We opted not to disaggregate survey data by state due to the disproportionate sample sizes across states as well as the size of certain samples, which range from N=804 in Florida to N=68 in Mississippi.

[5] See McKernan, Signe-Mary, Caroline Ratcliffe, Breno Braga, and Emma Cancian Kalish. (2016). *Thriving Residents, Thriving Cities: Family Financial Security Matters for Cities*. Urban Institute. The work shows that having even $250 in savings makes evictions and missed bill payments significantly less likely.

[6] The Atlanta Fed's Unemployment Claims Monitor displays disaggregated unemployment insurance claims employees over time. The tool is based on U.S. Department of Labor Employment and Training Administration data.

[7] The U.S. Bureau of Labor Statistics indicates that in 2019 Black or African American workers made up 12.3 percent and Hispanic or Latino workers made up 17.6 percent of employment across all industries for workers 16 years and older. However, Black or African American workers made up 21.4 percent and Hispanic or Latino workers 19.8 percent of those employed in the transportation industry, and 13.9 percent and 27.0 percent, respectively, of those working in the accommodation and food services sector (Data accessed December 15, 2020.) Both industries are among those defined as "hardest-hit" by the pandemic in a study by the Federal Reserve Bank of Philadelphia.

[8] Population weights are applied to these figures from the SHED supplement, which come from the authors' calculations. Eight percent of respondents from the 2019 annual survey completed a supplemental April 2020 survey, and 34 percent completed a supplemental July 2020 survey. An analysis of April's data reveals similar patterns to what we report for July, though less extreme.

[9] For more on the uneven reach of previous recoveries, see the following works: McKernan, Signe-Mary, Caroline Ratcliffe, Eugene Steuerle, and Sisi Zhang. (2014, April). "Impact of the Great Recession and Beyond." Urban Institute working paper; Hoynes, Hilary W., Douglas L. Miller, and Jessamyn Schaller. (2012, March). "Who Suffers during Recessions?" National Bureau of Economic Research working paper 17951; Holder, Michelle. (2015, November). "The Impact of the Great Recession on the Occupational Segregation of Black Men"; and Carr, James H. (2020, March 25). "Why Recovery from the Great Recession Favored the Wealthy: The Role of Public Policy." *Nonprofit Quarterly*.

[10] The Federal Reserve Bank of Philadelphia estimates that 1.3 million renters will accrue $7.2 billion in unpaid rent through 2020 alone, and that Hispanic households, Black households, and family households headed by single women are disproportionately likely to experience rental debt.

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Working Papers

FEDERAL RESERVE
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Mortgage Prepayment, Race, and Monetary Policy

Kristopher Gerardi, Paul Willen, and David Hao Zhang

Abstract:

Over the period 2005 to 2020, Black borrowers with mortgages insured by Fannie Mae or Freddie Mac paid interest rates that were almost 50 basis points higher than those paid by non-Hispanic white borrowers. We show that the main reason is that non-Hispanic white borrowers are much more likely to exploit periods of falling interest rates by refinancing their mortgages or moving. Black and Hispanic white borrowers face challenges refinancing because, on average, they have lower credit scores, equity, and income. But even holding those factors constant, Black and Hispanic white borrowers refinance less, suggesting that other social factors are at play. Because they are more likely to exploit lower interest rates, white borrowers benefit more from monetary expansions. Policies that reduce barriers to refinancing for minority borrowers and alternative mortgage contract designs that more directly pass through interest rate declines to borrowers can reduce racial mortgage pricing inequality.

1 Introduction

At the end of 2012, Black borrowers with mortgages insured by Fannie Mae or Freddie Mac (GSEs) paid interest rates that were approximately 60 basis points higher than those paid by Non-Hispanic white borrowers. This difference was not a new phenomenon, although the gap has waxed and waned over time, as depicted in Figure 1. What accounts for this gap? One explanation could be that loans to Black borrowers are riskier and lenders charge higher rates on riskier loans. Another explanation is that racially biased loan officers charge higher rates to Black borrowers. We show in this paper that neither of these explanations directly explains most of the gap. If we make the counterfactual assumption that all borrowers, regardless of race or perceived risk, receive the Freddie Mac Primary Mortgage Market Survey (PMMS) rate prevailing that quarter, we find that the gap shrinks by only about 15 percent. In other words, even if lenders completely ignored risk and race when they priced new loans, Black homeowners in 2012 would still have paid over 30 basis points more than their non-Hispanic white counterparts.

In this paper, we document large differences in prepayment behavior across racial groups and show that they generate the rate disparities discussed above. The quarterly hazard of prepayment due to refinance for a Black borrower with a loan from the GSEs is 0.75 percentage points lower than it is for a non-Hispanic white GSE borrower, which corresponds to approximately 44 percent of the average quarterly refinance probability for all borrowers with GSE loans in our sample (1.71 percentage points). For prepayments due to sale, the Black-white gap is –0.524 percentage points, which corresponds to approximately 55 percent of the average quarterly sale probability (0.96 percentage points). Given the trend decline in mortgage rates over the last 40 years, differences in prepayment speeds alone would lead to lower rates for non-Hispanic white borrowers. However, the problem is compounded by the fact that non-Hispanic white borrowers appear to respond much more strongly to fluctuations in interest rates. In 2006 and 2007, when the PMMS 30-year FRM rate averaged over 6 percent, which is higher than it had been since 2001, Black and non-Hispanic white borrowers refinanced at roughly the same rate. In 2009 and 2010, when the PMMS 30-year FRM rate fell to historic lows of under 5 percent, non-Hispanic white borrowers were almost twice as likely to refinance as Black borrowers.

What explains these differences in prepayment behavior across racial groups? Our rich data provide answers. We use the Credit Risk Insights Servicing McDash-Home Mortgage Disclosure Act (CRISM-HMDA) data set, a three-way match between administrative mortgage data from McDash, Home Mortgage Disclosure Act (HMDA) data collected by the Federal Reserve, and credit bureau data from Equifax. In contrast to data used in previous

work in this area, the CRISM-HMDA data set allows us to distinguish between mortgage prepayments due to sales and refinances, provides up-to-date information on borrower creditworthiness, and is nationally representative. We find that observable differences between Black and non-Hispanic white borrowers account for approximately 80 percent of the difference in refinance rates. The typical Black borrower has a lower credit score, lower income, and higher leverage. A Black borrower is also more likely to be female and less likely to have a co-borrower. All of those factors lead to lower refinance propensities, regardless of race. However, a small gap remains even after controlling for these factors in addition to extremely fine geographic-by-time fixed effects. Suppose we take two borrowers living in the same Zip code with the same credit score, income, and gender and we observe them in the same year and quarter. If one borrower is Black and the other is non-Hispanic white, we show that the Black borrower is 0.15 percentage points less likely to refinance.

Further insights come from looking at responses to refinance incentives through the course of a loan. Refinance opportunities emerge for two reasons: macroeconomic and idiosyncratic. The main macro reason to refinance is lower interest rates, which increase the incentive for borrowers to exercise the prepayment option. Idiosyncratic reasons stem from individual increases in creditworthiness such as a reduction in leverage from higher house prices or an increased credit score resulting from higher income and employment security. We show that in our sample of GSE mortgages, minority and non-Hispanic white borrowers respond similarly to idiosyncratic shocks. An 100 point increase in credit score leads to a 0.7 percent increase in the refinance probability, and the number is not significantly different across races. Therefore, we find that the refinance gap is due to non-Hispanic white borrowers responding much more strongly to macroeconomic shocks compared with minority borrowers. Yet, macroeconomic changes in interest rates are precisely the channel through which the interest rate reduction driven by monetary policy gets passed through to mortgage borrowers, which suggests that there is large heterogeneity by race in the mortgage refinancing channel of monetary policy.

The implications for monetary policy here are significant. Expansionary monetary policy by definition leads to lower interest rates and so, given the evidence we have presented, disproportionately benefits non-Hispanic white borrowers and exacerbates mortgage rate inequality. While mortgage rates have always played a role in Federal Reserve policy, policymakers explicitly targeted mortgage rates only in 2008. Quantitative Easing (QE1), initiated in November of that year, consisted of large scale asset purchases (LSAPs) of mortgage-backed securities (MBS). The announcement of the LSAPs on November 25, 2008, provides a good laboratory to study the interaction between monetary policy and mortgage rate inequality. We compare the six months before with the six months after the announcement

of QE1 and find that the quarterly refinance probability for non-Hispanic white borrowers increased by 3.2 percentage points (per quarter) compared with only 1 percentage point for Black borrowers. This led to differential effects on outstanding mortgage rates, with a 21 basis point drop for the average non-Hispanic white borrowers versus a 9 basis point drop for the average Black borrower in the six months following QE1.

The observation that minority borrowers have lower prepayment speeds also has implications for mortgage pricing. Slower prepayment speeds typically make mortgages more valuable to investors, which drives down rates. We show evidence that in a competitive market, lenders would offer *lower* rates to Black and Hispanic white households as compared with otherwise identical non-Hispanic white households. This makes the observation that Black borrowers tend to be charged a higher interest rate than observationally similar non-Hispanic white borrowers at origination less justifiable as being due to statistical discrimination.[1]

Our research draws a distinction between the extensive and intensive margins of opportunity in credit markets. If we think of the intensive margin here as mortgage rates offered to Black and Non-Hispanic White borrowers at origination, we find the intensive margin does not contribute that much to rate disparities. A series of recent papers (Bartlett et al. (2019), Bhutta and Hizmo (2020), and Zhang and Willen (2020)) has also documented small differences in average rates between Non-Hispanic and minority borrowers, on the order of 2–8 basis points. However, the extensive margin, defined here as whether Black borrowers get new loans by refinancing, appears to be more important.

More broadly, our paper contributes to the literature on heterogeneity in monetary policy transmission in mortgage markets. Factors such as the type of mortgage contract (Calza, Monacelli, and Stracca (2013), Di Maggio, Kermani, Keys, Piskorski, Ramcharan, Seru, and Yao (2017)), house price growth (Beraja, Fuster, Hurst, and Vavra, 2018), renting versus owning a home (Cloyne, Ferreira, and Surico, 2019), borrower age (Wong, 2019), income (Agarwal, Chomsisengphet, Kiefer, Kiefer, and Medina, 2020), and lender concentration (Scharfstein and Sunderam (2017), Agarwal, Amromin, Chomsisengphet, Landvoigt, Piskorski, Seru, and Yao (2020)) have all been found to lead to differential pass-through of monetary policy through the mortgage market across households and regions. Our finding that Black and Hispanic white mortgagees benefit less from monetary policy is therefore complementary to these results.

Our paper is also related to the literature on racial differences in mortgage performance and their implications for pricing. Previous studies including Kelly (1995), Clapp, Goldberg,

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[1]Higher interest rates for Black borrowers at origination was found by Black and Schweitzer (1985), Boehm, Thistle, and Schlottmann (2006), Bocian, Ernst, and Li (2008), Ghent, Hernández-Murillo, and Owyang (2014), Cheng, Lin, and Liu (2015), Bartlett, Morse, Stanton, and Wallace (2019), and Zhang and Willen (2020).

Harding, and LaCour-Little (2001), Deng and Gabriel (2006), Firestone, Van Order, and Zorn (2007), and Kau, Fang, and Munneke (2019) document that minority borrowers prepay their mortgages at lower rates than non-Hispanic white borrowers. There are some important differences between our analysis and these papers, however. First, none is able to distinguish between prepayments caused by home sales and those caused by refinances. Second, these studies use relatively narrow mortgage samples from either small geographic areas, short time periods, or individual banks/lenders. Finally, previous studies focus exclusively on the pricing implications of prepayment differences and do not establish their implications for disparities in outstanding mortgage rates and the effect of monetary policy in exacerbating those differences.

In addition, our paper is related to the literature documenting that many borrowers appear to exercise their prepayment option in a suboptimal manner. Recently, Keys, Pope, and Pope (2016) show that a significant fraction of financially unconstrained households (approximately 20 percent) do not refinance when it is optimal to do so. Johnson, Meier, and Toubia (2018) find that more than 50 percent of borrowers neglect to refinance in a setting with zero up-front monetary costs and substantial gains in monthly payment savings. Agarwal, Ben-David, and Yao (2017) find that many homebuyers appear to suffer from the sunk cost fallacy when deciding whether to refinance. Andersen, Campbell, Nielsen, and Ramadorai (2020) decompose the inertia in refinancing into time and state dependence.[2]

The rest of this paper is organized as follows. Section 2 details our data and summary statistics. Section 3 contains the empirical approach we use and our results on differential prepayment tendencies across racial groups. Section 4 explores the implications of the differences in prepayment for the interest rate gap and the pass-through of monetary policy. Section 5 describes the implications of our results for mortgage pricing. Section 6 concludes.

2 Data and Summary Statistics

We use a novel data set that combines three sources of administrative data: Home Mortgage Disclosure Act (HMDA) data, Black Knight McDash mortgage servicing data (hereafter referred to as the McDash data), and credit bureau data from Equifax. The three data sources are linked together through two separate loan-level matches: a match between the HMDA and McDash databases, which we will refer to as the HMDA-McDash data set; and a match between the McDash and Equifax databases, which is referred to as CRISM

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[2]Earlier papers that find evidence of borrowers failing to refinance when it is likely beneficial to do so include Campbell (2006), Chang and Yavas (2009), Deng and Quigley (2012), Green and LaCour-Little (1999), and Schwartz (2006).

(Equifax Credit Risk Insight Servicing McDash Database). We are then able to merge the two matched data sets, creating a final data set with information from all three sources, which we will refer to as the HMDA-McDash-CRISM data set. We will briefly describe each of the three sources of data below. We describe the details of the matching procedures in the Appendix (section A.1).[3]

The HMDA database provides information on approximately 90 percent of US mortgage originations (see National Mortgage Database, 2017). It has been frequently used in the literature to study issues around mortgage market discrimination.[4] The database contains a limited amount of information on borrower and loan characteristics at the time of mortgage origination, such as loan amount, borrower income, and borrower race and ethnicity. However, it does not contain some of the important underwriting variables, such as borrower credit scores, LTV ratios, loan maturities, and mortgage rates. In addition, since HMDA does not contain any information on mortgage performance over time, it is impossible to use the database to study prepayment and/or default behavior.

The McDash data set is constructed using information from mortgage servicers, which are financial institutions that are responsible for collecting payments from borrowers. It covers 60 percent to 80 percent of the US mortgage market (depending on the year) and contains detailed information on the characteristics and performance of both purchase-money mortgages and refinance mortgages. For example, it includes information on borrower credit scores, LTV ratios, maturities, interest rates, documentation levels, and additional variables measured at the time of mortgage origination. Each loan is tracked at a monthly frequency from the month of origination until it is paid off voluntarily or involuntarily via the foreclosure process. The McDash database has been used by many papers in the literature to study questions around loan performance.[5]

Finally, the CRISM data set consists of an anonymous credit file match of McDash loans to credit bureau data from Equifax at the borrower level. The Equifax data are updated at a monthly frequency and include information on outstanding consumer loans and credit lines for the primary borrower as well as all co-borrowers associated with the McDash mortgage.[6]

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[3]We note that all information on borrower race and gender used in this analysis comes from the HDMA database and not from the CRISM database.

[4]Examples include Carr and Megbolugbe (1993), Schill and Wachter (1993), Schill and Wachter (1994), Munnell, Tootell, Browne, and McEneaney (1996), Tootell (1996), Avery, Beeson, and Calem (1997), Black, Collins, and Cyree (1997), Holloway (1998), Reibel (2000), Black, Robinson, and Schweitzer (2001), Cherian (2014), Haupert (2019), Bartlett et al. (2019), Bhutta and Hizmo (2020), Zhang and Willen (2020).

[5]Examples include Keys, Seru, and Vig (2012), Piskorski, Seru, and Vig (2010), Jiang, Nelson, and Vytlacil (2013), Bubb and Kaufman (2014), Jiang, Nelson, and Vytlacil (2014), Kaufman (2014), Ding (2017), Fuster, Goldsmith-Pinkham, Ramadorai, and Walther (2018), Adelino, Gerardi, and Hartman-Glaser (2019), Agarwal, Ambrose, and Yao (2020) and Berger, Milbradt, Tourre, and Vavra (2020).

[6]We keep only observations that pertain to the primary mortgage borrower to avoid double counting.

The CRISM data set provides the borrower's credit bureau information beginning six months before the McDash mortgage is originated and ending six months after the McDash mortgage is terminated.[7] It contains fields that allow us to distinguish between mortgage prepayments that are due to the borrower refinancing versus prepayments that are due to the borrower selling the property and moving. This is a significant advantage, as one of the drawbacks of virtually all loan-level data sets is that it is impossible to distinguish between prepayments due to refinances and prepayments due to home sales.

We follow the methodology used by Lambie-Hanson and Reid (2018) to classify prepayments as either refinances or sales.[8] Specifically, we categorize a prepayment as a refinance if the borrower's address does not subsequently change and we observe new first mortgage debt being originated either just before or just after the time of the prepayment.[9] We categorize a prepayment as a property sale and move if we observe the borrower's address change within a six-month window of the prepayment date.[10]

In addition to allowing us to distinguish between prepayments due to refinances and sales, the CRISM data set provides updated information about borrower credit scores, which we use in some of our empirical specifications to proxy for liquidity shocks.[11]

Our final HMDA-McDash-CRISM data set includes loans originated in the 2005–2015 (inclusive) period. The CRISM database begins in June 2005 but does include mortgages originated prior to 2005. However, the McDash database has poorer coverage of pre-2005 mortgage originations, and thus we include only originations on or after 2005 in our sample.[12] Our data on loan performance extends through June 2020. In order to focus on a

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[7]The McDash data set provides only information about the timing of mortgage prepayment and whether the prepayment was voluntary or involuntary due to foreclosure or distressed sale, and it does not provide any further information after the month of prepayment.

[8]Lambie-Hanson and Reid (2018) use similar data to study differences in refinancing behavior between subprime and prime borrowers.

[9]The CRISM data set provides a field that tells us the most recent quarter in which the borrower's first mortgage debt balance changed. We use this field to identify changes in a borrower's first mortgage debt.

[10]There are two fields in the CRISM data set that provide information on individuals changing their mailing addresses, which we use to identify moves. First, there is a field updated monthly that lists the month of the most recent change in the individual's mailing address. Second, there is a field that shows the current Zip code associated with the individual's mailing address that is also updated monthly. We assume that a borrower moves when we see either the Zip code change *or* when we see that the individual's address has changed within a six-month window of the termination date of the mortgage. Our results are robust to narrowing the window to three months.

[11]There are numerous alternative credit score measures in CRISM. Our analysis below focuses on the Equifax Risk Score 3.0 that was introduced in 2005 and predicts the likelihood of a consumer becoming seriously delinquent on any debt account. However, we have verified that our results are not sensitive to the particular credit score employed. For example, our results are virtually identical if we instead use FICO scores.

[12]In 2005 McDash added a large servicer to its database, which substantially increased its overall coverage of the mortgage market. In addition, the large servicer provided information only on its *active* loans as of January 2005, while providing no information on its historical loans that had terminated prior to 2005. This

homogeneous mortgage product, we limit the sample to 30-year, fully amortizing, fixed-rate mortgages (FRMs) that were insured (against default risk) by the federal government. Specifically, we include loans that were acquired and insured by the GSEs (Fannie Mae and Freddie Mac) as well as loans that were insured by the Federal Housing Administration (FHA).[13] We impose some additional sample restrictions to address outliers and missing information on key underwriting variables. Table A.4 in the Appendix lists all of the restrictions and how they impact the size of our sample. Most of the sample restrictions are adopted from Fuster et al. (2018), which uses the McDash-HMDA matched database.[14] Finally, we include loans that were originated to Asian, Black, and white borrowers. Since HMDA provides separate identifiers for race and ethnicity, we are also able to distinguish between Hispanic/Latino white borrowers and non-Hispanic white borrowers.[15]

Since most of our analysis is conducted on a panel data set at the quarterly frequency where the unit of observation is a loan-quarter, we work with a 7.5 percent random sample of the HMDA-McDash-CRISM data set to ease the computational burden.[16] We also distinguish between the GSE and FHA loans in our sample and conduct our analysis on each group separately. The two loan types represent very different segments of the US mortgage market, as the FHA program typically focuses on more disadvantaged and riskier borrowers who have lower credit scores and lower down payments compared with the GSEs.

Tables 1 and 2 display summary statistics (means and standard deviations) for key observable variables in our sample of GSE and FHA loans, respectively. The top panel in each table displays mortgage and borrower characteristics at origination where the unit of observation is a loan (that is, one observation per loan), while the bottom panels display summary statistics of the time-varying variables included in our analysis where the unit of

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raises the possibility of attrition bias being an issue in the pre-2005 McDash sample as well as the pre-2005 McDash-HMDA merged database.

[13]GSE and FHA loans account for the vast majority of 30-year FRM originations during our sample period. Loans insured by the GSEs prior to September 2008, when they were placed in conservatorship, were not technically backed by the federal government. However, most market participants believed those loans to be implicitly guaranteed by the government.

[14]There are a few notable sample differences between that study and our current analysis. Fuster et al. (2018) focus on 2009–2013 loan originations and consider data on loan performance only through 2016. In addition, their paper includes loans with maturities of less than 30 years as well as loans held by portfolio lenders (banks) and loans that are privately securitized.

[15]The race codes in HMDA are (1) American Indian or Alaska Native, (2) Asian, (3) Black or African American, (4) Native Hawaiian or other Pacific Islander, (5) white, (6) information not provided by applicant in mail, internet, or telephone application, (7) not applicable. We exclude groups 1) and 4) due to low observation counts. We also exclude groups 6) and 7). The ethnicity codes in HMDA are (1) Hispanic or Latino, (2) not Hispanic or Latino, (3) information not provided by applicant in mail, internet, or telephone application, (4) not applicable. We classify borrowers in the first group as "Hispanic," but we make the distinction only for white borrowers. We combine Hispanic and non-Hispanic Black borrowers into the single "Black" category.

[16]This was the maximum sample size that we were able to work with on our Unix cluster.

observation is a loan-quarter (that is, multiple observations per loan). In both tables we display statistics for the pooled sample of borrowers as well as separately for Black, Hispanic white, and non-Hispanic white borrowers.[17] There are large differences across the racial/ethnic categories for many of the observable variables in both tables. Focusing on the GSE sample, for example, non-Hispanic white borrowers have significantly higher average credit scores and household incomes compared with Black and Hispanic white borrowers (752 versus 715 and 730 and \$97.6K versus \$81.6K and \$79.1K, respectively). Non-Hispanic white borrowers obtain significantly lower mortgage rates on average (5.18 versus 5.64 and 5.45, respectively), which is documented by several papers in the literature.[18] Interestingly, Black borrowers are much more likely to be female (47.8 percent) compared with both Hispanic white (31.2 percent) and non-Hispanic white (28.4 percent) borrowers, while non-Hispanic white borrowers are much more likely to have a co-applicant on the mortgage (53.1 percent) compared with Black (27.8 percent) and Hispanic white (35.7 percent) borrowers. While we see similar discrepancies between the racial/ethnic groups in the FHA sample, the values of the group averages are quite different. For example, average credit scores and household income levels are significantly lower for all groups in the FHA sample compared with the GSE sample. In addition, LTV ratios are much higher in the FHA sample (93.6 percent versus 72.6 percent).

The bottom panel of Table 1 shows that the average prepayment rate due to refinancing is 1.71 percent per quarter in our GSE sample, while the average prepayment rate due to selling and moving is 0.96 percent per quarter. The average quarterly default rate is only 0.35 percent.[19] The average refinance rate is slightly lower in the FHA sample (1.33 percent) while the average sale hazard is virtually identical. The FHA default rate is more than twice as high (0.89 percent) as the GSE rate, which is unsurprising since the FHA program is characterized by mostly first-time homebuyers with low income and low credit scores. There are large differences in average refinance rates across racial/ethnic groups in both loan samples. In the GSE sample, non-Hispanic white borrowers refinance at an average rate of 1.74 percent per quarter compared to only 1.21 percent for Black and Hispanic white borrowers. There are similar differences between non-Hispanic white and Black refinance

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[17] Asian borrowers are included in the pooled sample, but due to space constraints we do not include separate statistics for them in the table. The characteristics of Asian borrowers look very similar to non-Hispanic white borrowers across most observable variables.

[18] See, for example, Black and Schweitzer (1985), Boehm et al. (2006), Bocian et al. (2008), Ghent et al. (2014), Cheng et al. (2015), Bartlett et al. (2019), Bhutta and Hizmo (2020), Zhang and Willen (2020).

[19] We use a serious delinquency (90 days or more past due) measure of default in our analysis to be consistent with the previous literature. We also employ an involuntary prepayment definition of default that includes loans that terminated due to foreclosure (both auction sales and bank/REO sales) or pre-foreclosure distressed sales (that is, short sales). We discuss results using this measure below.

rates in the FHA sample (1.44 percent versus 0.89 percent). There are also fairly large differences across racial/ethnic groups in both quarterly default rates as well as quarterly sale rates in both mortgage samples.

The left panel in Figure 2 plots Kaplan-Meier estimates of the hazard rates of prepayment due to refinancing by racial/ethnic group. These are unconditional, average quarterly rates as a function of duration that account for right censoring.[20] The figure shows that the unconditional hazard estimates of refinancing for non-Hispanic white borrowers are approximately 1 to 1.5 percentage points higher than those for Black borrowers, and that difference is fairly constant over the first 10 years of the mortgage life cycle. Hispanic white borrowers also have considerably lower refinance hazards compared with non-Hispanic white borrowers, although the difference is not as large as it is for Black borrowers.

The right panel in Figure 2 displays the Kaplan-Meier estimates of the sale hazards by racial/ethnic group. Consistent with the summary statistics discussed above, the level of the sale hazards is significantly lower than those of the refinance hazards. However, similar to the refinance estimates, we see large gaps between the hazards for non-Hispanic white borrowers and our two minority borrower groups, as non-Hispanic white households are much more likely to sell and move each quarter compared with Black and Hispanic white households.

There are also significant differences in quarterly default rates across the racial/ethnic groups. Table 1 shows that in the GSE sample, Black borrowers are almost three times as likely to default as non-Hispanic white borrowers (0.30 percent versus 0.87 percent per quarter). Hispanic white borrowers are also characterized by relatively high default hazards (0.80 per per quarter). These differences are similar in the FHA sample.[21]

3   Prepayment Results

In this section we present our main empirical results. We start by showing estimates of the gap between minority and non-Hispanic white households in voluntary prepayments due to both refinancing and selling. Next, we test for differences in default behavior across the racial/ethnic borrower groups. We then show that differences in refinancing propensities are primarily due to differences in the extent to which borrowers refinance when their prepayment options are in the money, which are in turn mostly explained by observables such as income, credit scores, and loan-to-value ratios. Finally, we provide evidence that monetary policy

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[20]Specifically, the Kaplan-Meier estimates are calculated as follows: Assuming that hazards occur at discrete times t_j where $t_j = t_{0+j}$, $j = 1, 2, ..., J$, if we define the number of loans that have reached time t_j without being terminated or censored as n_j, and the number of terminations due to refinancing at t_j as d_{pj}, then the Kaplan-Meier estimate of the hazard function is: $\lambda_p(t_j) = \frac{d_{pj}}{n_j}$.

[21]The Kaplan-Meier estimates for defaults are displayed in Figure A.4 in the Appendix.

has exacerbated the gaps in refinance propensities.

3.1 Empirical Setup

We examine differences in mortgage prepayment behavior due to refinance and home sale as well as differences in the propensity to default across racial/ethnic groups. For the bulk of our analysis we will focus on linear probability models (LPMs) that are estimated at a quarterly frequency.[22] While linear probability models have some notable drawbacks,[23] they allow us to work with relatively large sample sizes and easily incorporate multiple levels of fixed effects, including highly disaggregated geographic fixed effects. We also consider logit models and show that the estimated average marginal effects are very similar to the LPM coefficient estimates.

Our primary specifications take the following general form:

$$Outcome_{it} = \beta_1 * Black_i + \beta_2 * Hispanic_i + \beta_3 * Asian_i + \gamma * X_{ijt} + \nu_g + \mu_v + \epsilon_{it}, \quad (1)$$

where i indexes the individual mortgage and t indexes the year-quarter. We focus on three mortgage outcomes: the likelihood of voluntary prepayment due to refinance, prepayment due to home sale, and finally, the likelihood of default. Specifically, $Prepay_{it}^{refi}$ is an indicator variable that takes a value of 1 if loan i prepays due to the borrower refinancing in year-quarter t, and $Prepay_{it}^{sale}$ takes a value of 1 if loan i prepays due to the borrower selling the house and moving in year-quarter t. $Default_{it}$ is an analogous indicator variable that identifies when a loan defaults. Our focus will be on testing for differences in mortgage outcomes across the racial/ethnic borrower groups, which will include Black, Hispanic white, Asian, and non-Hispanic white borrowers. We specify indicator variables for each group in equation (1) with non-Hispanic white borrowers representing the omitted category. Thus, the β coefficients will tell us how much more or less likely Black, Hispanic white, and Asian borrowers are to prepay/default compared with non-Hispanic white borrowers. X_{it} is a vector of control variables that include numerous mortgage and borrower characteristics, which we describe in detail below. Most of the control variables are time-invariant, but a few vary at the quarterly frequency. In some specifications we will include geographic fixed effects, ν_g, typically at the state level or Zip code level, as well as vintage year-quarter fixed effects, μ_v.

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[22]Our data set provides only the year-quarter in which each mortgage was originated due to privacy concerns. We describe the data in detail below.

[23]For example, Horrace and Oaxaca (2006) prove that the LPM can lead to biased and inconsistent estimates of structural parameters when the predicted values from the regression falls outside of the [0,1] interval. On the other hand, Jörn-Steffen Pischke notes that if marginal effects are of interest, the linear probability model will be a good approximation to the conditional expectation function: http://www.mostlyharmlesseconometrics.com/2012/07/probit-better-than-lpm/.

The standard errors are heteroskedasticity robust and are double clustered by county and year-quarter of origination.

Since the LPMs are estimated at a quarterly frequency, we are working in a hazard framework in which we model the likelihood of prepayment/default in year-quarter t conditional on the loan surviving through $t-1$. For example, if a loan is active for three years, at which point it prepays due to the borrower refinancing into a new loan, it will contribute 12 observations, with the $Prepay_{it}^{refi}$ indicator taking a value of 0 for the first 11 observations and a value of 1 for the final observation. Hazard models are commonly employed in the mortgage literature due to their ability to account for right-censored data (that is, loans that neither prepay or default during the sample period and are either still active at the end of the sample or exit the data set prior to the end of the sample period for other reasons).[24]

3.2   Prepayment due to Refinancing

We begin by estimating the LPM model in equation (1) for prepayment due to borrowers refinancing into new loans. Table 3 contains the results. Columns (1) through (6) report estimates for the GSE sample, while columns (7) through (10) show estimates for the FHA sample. In all columns, we have multiplied the dependent variable (refinance indicator) by 100 so that the coefficients can be interpreted in terms of percentage points. Column (1) reports estimates from our simplest specification, which includes vintage year-quarter fixed effects to control for unobservable changes in underwriting standards over time and a control for mortgage age (third-order polynomial).[25] Black (Hispanic white) borrowers refinance at a rate that is 0.75 (0.69) percentage point lower than non-Hispanic white borrowers on average, while Asian borrowers refinance at a rate that is 0.44 percentage point higher than non-Hispanic white borrowers on average. These differences are all statistically significant as well as economically meaningful. The gap between Black and non-Hispanic white borrowers is approximately 44 percent of the average quarterly refinance hazard among all GSE loans (1.71 percentage points).

To examine the extent to which lower prepayment likelihood of minority borrowers can be explained by their observable characteristics, in column (2) of Table 3 we include controls for some basic underwriting characteristics at origination, such as the borrower's credit score (Equifax risk score), LTV ratio, loan size, and indicator variables for loans that are refinances, less than full documentation of income/assets, and different property types (con-

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[24] A nontrivial number of loans in our sample are transferred to different mortgage servicers before they terminate. If the new servicer is not a contributor to the database, the loan drops out and we do not know its final outcome. These servicing transfers make up a significant fraction of our right-censored observations.

[25] We experimented with higher order polynomials as well as one-year bins for loan age, but the results did not materially change.

dominiums and 2 to 4 units).[26] In addition, we include an estimate for the borrower's change in LTV over time, which we calculate by updating the mortgage balance based on the amortization schedule and the value of the property using the change in the county-level house price index since the quarter of origination. Finally, we add state fixed effects to the specification. The underwriting coefficient estimates are consistent with our expectations and with previous findings in the prepayment literature. Borrowers with higher credit scores and larger loan sizes refinance at faster rates. The differences in refinancing propensities between racial/ethnic groups decrease significantly with the addition of these controls. The difference between Black and non-Hispanic white borrowers drops by almost 50 percent, from 0.75 to −0.38 percentage point per quarter. The differences between non-Hispanic white borrowers and the other minority groups also decline (in absolute magnitude) with the addition of the underwriting controls. These results suggest that about half of the difference in refinance behavior can be attributed to differences in basic underwriting variables.

In column (3) we add more information about the borrower. First, we add three variables from the HMDA database: the borrower's reported income at the time of loan origination, an indicator for female borrowers, and an indicator for the presence of a co-applicant. We do not display the estimates due to space constraints, but they can be found in Table A.5 in the Appendix. Borrowers with higher income are more likely to refinance, while female borrowers are slightly less likely to do so. Borrowers with a co-applicant are more likely to prepay. The differences across income categories (displayed in Table A.5 are economically large and comparable to the racial/ethnic group differences. We also control for three additional variables in column (3). We control for borrower age (second order polynomial), which we obtain from the CRISM data set. We control for the "moneyness" of the refinance option using a measure constructed by Deng, Quigley, and Van Order (2000) that compares the present discounted value of the remaining stream of mortgage payments discounted at the borrower's current mortgage rate and the remaining stream discounted at the prevailing market rate. Specifically, the "Call Option" measure of Deng et al. (2000) is calculated as:

$$Call\ Option_{i,k} = \frac{V_{i,m} - V_{i,r}}{V_{i,m}}$$

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[26]We also include indicators for missing information about documentation and property type.

where

$$V_{i,m} = \sum_{s=1}^{TM_i-k_i} \frac{P_i}{(1+m_t)^s}$$

$$V_{i,r} = \sum_{s=1}^{TM_i-k_i} \frac{P_i}{(1+r_i)^s}$$

and r_i is borrower i's mortgage rate, TM_i is the mortgage term, k_i is the age/seasoning of the mortgage, m_i is the prevailing market rate (the PMMS index), and P_i is the mortgage payment. The larger the value of the "Call Option," the more the borrower would benefit from refinancing into a new loan with a lower rate and payment. The third variable, "SATO" (spread at origination), is the difference between the borrower's mortgage rate and the value of the PMMS index in the year-quarter of origination. $SATO$ is often included in prepayment models to proxy for unobserved constraints that may prevent a borrower from being able to obtain the prevailing market rate. Both *Call Option* and $SATO$ are strong predictors of refinance propensities as a one standard deviation increase in "Call Option" (6.4 percentage points) is associated with a 1.97 percentage point increase in the refinance hazard, while a one standard deviation increase in SATO (0.41 percentage points) is associated with a -0.65 percentage point decrease in the refinance hazard. Finally, we specify credit score, LTV, and loan size in small, discrete bins, rather than as continuous variables in column (3), in order to allow for any non-linearities that might exist in their relationship with the propensity to refinance. The inclusion of all these additional controls and the more flexible functional forms has only a small effect on the prepayment gaps between racial/ethnic groups relative to basic underwriting variables.

Comparing the coefficients associated with the minority groups and the non-Hispanic white group in columns (1) and (3), we see that approximately 44 percent of the gap remains for Black borrowers, while two-thirds of the gap remains for Hispanic white borrowers. One possibility is that minority borrowers are more likely to experience adverse income or liquidity shocks that make it difficult to qualify for a new loan. While we do not have direct information on income or wealth over time, the CRISM data include updated information about borrower credit scores over the life of the mortgage. Since income and wealth shocks are correlated with the likelihood of debt repayment, updated credit scores should serve as a proxy for such shocks. In column (4) of Table 3 we use this information and include the change in the borrower's credit score between the current year-quarter and the quarter of origination. The change in the Risk Score is highly correlated with the likelihood of refinancing. A 100 point increase is associated with a 0.78 percentage point increase in the

quarterly refinance hazard. The addition of the variable also has a significant impact on the difference in refinance propensities between Black borrowers and non-Hispanic white borrowers, as the gap declines by approximately 23 percent (0.075 percentage points). Therefore, evidence suggests that a majority of the refinancing gap between non-Hispanic white and minority borrowers can be attributed to differences in underwriting variables and time-varying credit scores. This in turn implies that for policy, addressing the heterogeneous refinancing behavior of borrowers by their characteristics in a race-neutral way, such as creating and providing outreach for streamlined refinancing programs, or promoting the use of adjustable rate mortgages (ARMs), could resolve most of the refinancing gap by race.

Next, we examine whether refinancing differences are more correlated with race or the neighborhoods that minorities live in. The specification reported in column (5) of Table 3 includes Zip code fixed effects, so that differences in refinance hazards between groups in column (5) are estimated using variation only within a fairly small geographic area. This specification has the virtue of accounting for many sources of time-invariant, unobserved heterogeneity, such as the demographic composition of the Zip code area as well as the average income/wealth of the area. Controlling for the Zip code significantly narrows the gap between the racial/ethnic groups. Both the Black and Hispanic white coefficients decline by more than one-third in absolute magnitude, from –0.255 to –0.148, and –0.421 to –0.278, respectively. Finally, in column (6) we add a full set of Zip-code-by-year-quarter fixed effects. This specification controls for time-varying, unobserved heterogeneity at the Zip code level, and thus accounts for local economic shocks as well as local house price dynamics.[27] The addition of Zip-code-by-year-quarter fixed effects has almost no effect on the gap in quarterly refinance hazards. Black (Hispanic white) borrowers refinance by approximately 0.15 (0.29) percentage points less per quarter compared with non-Hispanic white borrowers in the same year-quarter in the same Zip code, controlling for credit score, change in credit score, LTV, income, gender, and our additional underwriting variables. Comparing columns (1) and (6), controlling for all observable variables at the time of mortgage origination, in addition to the change in credit scores, LTV, and Zip code level shocks over time, we can explain approximately 80 percent of the gap between the refinance behaviors of Black and non-Hispanic white borrowers and about two-thirds of the gap between Hispanic and non-Hispanic white borrowers. This again suggests that a race-neutral policy based on addressing refinancing gaps by neighborhood and borrower characteristics would resolve most of the gap in refinancing.

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[27]There are almost 800,000 Zip-code-by-year-quarter fixed effects. A few thousand are dropped due to there being only a single observation. Since the specification also includes vintage year-quarter fixed effects, we are unable to include the third order polynomial for mortgage age.

Columns (7) through (10) in Table 3 display results corresponding to four LPM specifications estimated on our sample of FHA loans. Column (7) is analogous to column (1) and includes only vintage effects and controls for mortgage age, while column (8) is the same specification displayed in column (2), which includes basic underwriting controls such as credit score and LTV. Columns (9) and (10) are the same specifications as columns (5) and (6) and include Zip code and Zip-code-by-year-quarter fixed effects, respectively. The differences in refinance hazards across the racial/ethnic groups in the FHA sample and the patterns across the different specifications are similar to what we found in the GSE sample. Notably, similar to the results that we obtained from the GSE sample, comparing columns (7) and (10), controlling for observable borrower and mortgage characteristics and geographic differences, explains a large fraction (about 73 percent) of the differences in refinance propensities between Black and non-Hispanic white borrowers.[28]

In Table A.6 in the Appendix we show that the results in Table 3 are not sensitive to our choice of the LPM, which assumes that the refinance hazard is a linear function of the covariates. The table contains estimated average marginal effects from logit models corresponding to each specification in Table 3.[29] The average marginal effects associated with the logits in all specifications are very close to the corresponding LPM coefficients.

3.3 Prepayment due to Selling

In Table 4 we test for prepayment differences between non-Hispanic white and minority borrowers due to home sales rather than refinancing activity. Our dependent variable in the LPM regressions is an indicator that takes a value of 1 if mortgage i voluntarily prepays in year-quarter t and we see that the borrower has moved and changed addresses (and 0 otherwise). We multiply the sale indicator by 100 so that the coefficients can be interpreted in terms of percentage points. The table is structured identically to Table 3, as we estimate the exact same set of specifications.

Columns (1) and (7) show that there are large differences in the propensity to sell between minority and non-Hispanic white households, controlling for only vintage effects and the age of the loan in both the GSE and FHA samples. Black borrowers are approximately 0.52 (0.64) percentage points less likely to sell their homes in a given quarter compared with non-Hispanic white borrowers in the GSE (FHA) sample, which corresponds to about 54 percent (68 percent) of the quarterly sample average (0.96 and 0.94 percentage points, respectively).

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[28]Interestingly, this is not the case for Hispanic white borrowers, however. Observables can explain only about 20 percent of the gap in refinance behavior between Hispanic and non-Hispanc white borrowers in the FHA sample.

[29]The exception is the specifications with Zip code and Zip-code-by-year-quarter fixed effects. Those specifications include too many fixed effects to include in a logit model.

In contrast to our analysis of prepayment due to refinancing, adding detailed controls for borrower and mortgage characteristics in columns (2) and (8) does not have a large effect on the minority coefficients. The gap between sale hazards for Black borrowers and Hispanic white borrowers decreases (in absolute magnitude) by approximately 20 percent in the GSE sample and even less in the FHA sample.

The addition of the HMDA variables (income, gender, and co-applicant indicator), updated credit score information, our proxy for the incentive to refinance (*Call Option*), and geographic fixed effects (state and Zip code) does further attenuate the gaps between the sale propensities of the racial/ethnic groups. However, controlling for our detailed observable borrower and loan characteristics does not have as large of an effect on the differences in sale hazards as it did on the differences in refinance hazards that we see in Table 3. Comparing the simplest specification in column (1) with our most sophisticated specification in column (6), we can explain approximately one-third of the differences between sale hazards of minority and non-white Hispanic borrowers in our GSE loan sample. Comparing columns (7) and (1), we find very similar effects in our FHA sample.

3.4   Default

In this section we present results on differences in default hazards across racial/ethnic groups. We assume that borrowers default when they miss at least three payments (that is, 90-plus days past due), to be consistent with the recent mortgage default literature. Table 5 presents estimation results for the same LPM specifications in Tables 3 and 4, with one exception. We do not include a separate specification in which we add a control for changes in borrowers' credit scores.[30] Again, we multiply the default indicator by 100 so that the coefficients can be interpreted in terms of percentage points.

In column (1) we see large differences between the default hazards of minority borrowers compared with non-Hispanic white borrowers. Black borrowers with GSE loans are 0.44 percentage points more likely to default on their payments each quarter, which is more than 125 percent of the average default hazard in the GSE sample (0.35 percentage points). The addition of basic controls attenuates this difference, as the Black coefficient declines to 0.29 percentage points in column (2). Further controlling for our HMDA variables and Zip code fixed effects reduces the coefficient to 0.15 percentage points. Comparing columns (1) and (5), we are able to explain almost 70 percent of the differences in Black versus non-Hispanic white default hazards by controlling for observable borrower and loan characteristics and highly

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[30]Since credit scores are likely to decline quickly when borrowers miss mortgage payments, it wouldn't be clear whether the changes in the scores are reflecting liquidity/income shocks that drive borrowers to default or, alternatively, whether the missing payments are causing the credit scores to decrease.

disaggregated geographic-by-time fixed effects. The pattern is similar for the estimated differences between Hispanic white and non-Hispanic white borrowers.

The default patterns are largely similar for Black borrowers in the FHA sample, but they are different for Hispanic white borrowers. The gap for Hispanic white borrowers of 0.165 percentage points is much smaller in column (6) (only 17 percent of the FHA sample average), and it becomes statistically insignificant in column (9) when we add our controls and the Zip-code-by-year-quarter fixed effects.

These results are consistent with previous studies documenting that Black borrowers tend to have higher cumulative default probabilities than non-Hispanic white borrowers.[31] However, it is important to note that they are quite sensitive to the definition of default that one employs. In Table A.9 in the Appendix we estimate the same specifications but use a default definition that is based on involuntary prepayments due to foreclosure or pre-foreclosure distressed sales (that is, short sales) rather than serious delinquency. The table shows that minority loans are significantly more likely to end in involuntary prepayment when we do not control for borrower and mortgage characteristics. However, when those controls are included (in both the GSE and FHA samples), minority loans are significantly *less* likely to involuntarily prepay. This pattern suggests that minority borrowers are more likely to miss payments, but are less likely to actually lose their homes to foreclosure.[32]

3.5 Racial Differences in the Sensitivity of Refinancing to Mortgage Rates

In this section we dig a bit deeper into the results on refinance disparities that we documented in section 3.2. The most common reason for borrowers to refinance is to take advantage of lower market rates and save on interest payments. In Table 3 we found that the *Call Option* variable, which proxies for the "moneyness" of the prepayment option and is driven by movements in market rates relative to the borrower's current rate, is an important predictor of the propensity to refinance. One possible explanation for the large disparities in refinancing behavior between our racial/ethnic groups is that minority borrowers are less likely or less able to refinance to take advantage of lower rates. We test this hypothesis by estimating a version of equation (1) in which we interact our race/ethnicity variables with *Call Option*:

$$Prepay_{it} = \beta * Black_i + \eta * Call\ Option_{it} + \delta * (Black_i * Call\ Option_{it}) + \gamma * X_{ijt} + \nu_g + \mu_v + \epsilon_{it}, \quad (2)$$

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[31] See, for example, Canner, Gabriel, and Woolley (1991), Berkovec, Canner, Gabriel, and Hannan (1994), and Berkovec, Canner, Gabriel, and Hannan (1998)

[32] One possibility is that minority households are more likely to obtain loan modifications and avoid foreclosure. We provide some evidence below that modifications appear to disproportionately impact the interest rates that minority borrowers pay on outstanding mortgages, which is consistent with such an interpretation.

If differences in refinance behavior between Black/Hispanic white and non-Hispanic white borrowers are explained by differential sensitivities of minority borrowers to respond to declining rates, then we should expect to find $\delta < 0$, and we should also expect to see that the inclusion of the interaction term attenuates the estimate of β.

Before discussing the results from estimating equation (2), we present a simple binned scatter plot in Figure 3 that shows the unconditional relationship between the propensity to refinance and *Call Option* for each of our racial/ethnic groups. Specifically, in Figure 3 we group the *Call Option* variable into deciles (separately for each racial/ethnic group) and then plot the average value of *Call Option* against the average quarterly refinance rate within each decile. The chart shows that all borrowers are more likely to refinance when the *Call Option* variable increases in magnitude, which corresponds to the prepayment option being deeper in the money. However, the figure clearly shows that non-Hispanic white and Asian borrowers are much more likely to refinance compared with minority borrowers when their prepayment options are deeper in the money. When market rates are either higher or about the same as the borrowers' coupon, so that *Call Option* is negative or close to zero, all borrowers have a similarly low propensity to refinance. When market rates are lower relative to the rates on outstanding loans and *Call Option* becomes more positive, the refinance hazard for non-Hispanic white and Asian borrowers increases by more than a factor of five to approximately 5 percentage points. In contrast, minority borrowers' average refinance hazard approximately doubles.

These patterns are confirmed in Table 6, which displays the results from estimating equation (2) separately for GSE and FHA loans. We start by displaying results for the LPM model without any interactions in columns (1) and (5). These specifications closely correspond to the specifications in columns (5) and (9) in Table 3, which include all of our controls as well as Zip code fixed effects, but do not include Asian borrowers. In columns (2) and (6) we add the interactions between the Black and Hispanic white dummies and the *Call Option* variable. The addition of the *Call Option* interaction explains the entire discrepancy in refinance behavior between minority and non-Hispanic white borrowers in both samples. That is, differences in refinance propensities between minority GSE borrowers and non-Hispanic white GSE borrowers comes entirely from differences in the sensitivity of refinancing in response to interest rate movements. Both columns (2) and (6) show that Black and Hispanic white borrowers are significantly less likely to refinance in response to market rates declining and the prepayment option becoming more valuable. In the GSE sample, a one standard deviation increase in *Call Option* (6.40 percentage points) increases the likelihood of refinancing by 2.1 percentage points for non-Hispanic white borrowers but only 1.4 percentage points for Black and Hispanic white borrowers. While the qualitative patterns are similar in the FHA sample, the differences are not as large. However, the differential sensitivity to the *Call Option* variable also explains all of the difference in refinance propensities between minority and non-Hispanic white borrowers in the FHA sample.[33]

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[33]In the Appendix we show that these results are robust to an alternative measure of the moneyness of

The change in a borrower's credit score is another time-varying factor that we found to be a strong predictor of refinance behavior in Table 3 and that has an important effect on the estimated disparities in refinance hazards between minority and non-Hispanic white borrowers. Our contention is that changes in credit scores over time likely reflect liquidity/income shocks that are impacting a borrower's ability to repay debt. In columns (3) and (7) we interact the change in credit score with the Black and Hispanic white dummies to see if there are heterogeneous effects across racial/ethnic groups in their propensity to refinance in response to credit score changes. In the GSE sample, we do not find any statistically significant differences. In contrast, minority FHA borrowers are statistically significantly less likely to refinance in response to credit score improvements compared with non-Hispanic white borrowers, though the difference is not as strong in percentage terms compared with the different sensitivity to the *Call Option* value.

It is possible that the effect of changes in credit scores on refinancing propensities depends on the original credit score level. For example, an increase of 50 points for a borrower with a very low initial credit score may not improve that borrower's ability to refinance into a lower rate, but an increase of 50 points for a borrower with a score closer to the sample average may appreciably increase the likelihood that the borrower can qualify for a lower rate. Thus, in columns (4) and (8) we add triple interaction terms between our race/ethnicity dummies, the change in credit score, and the credit score level at the time of mortgage origination. The triple interaction terms are all positive and statistically significant, which suggests that minority borrowers with high initial credit scores are more likely to refinance for a given increase in their credit scores compared with non-Hispanic white borrowers.

3.6 The Effect of Monetary Policy on Refinance Gaps

In the previous section we found that minority borrowers respond significantly less to changes in market rates that make their prepayment options more valuable compared with non-Hispanic white borrowers. This suggests that expansionary monetary policy that lowers mortgage rates could exacerbate the refinancing disparities that we have documented. In this section we take a closer look at this issue.

Figure 4 displays unconditional, quarterly refinance rates for Black (solid black line) and non-Hispanic white (dashed red line) GSE loans in calendar time over the course of our sample period. The figure shows that the refinance gap is relatively small in the first few years of the sample period, but then it increases dramatically beginning in early 2009, right about the time of the announcement of the Federal Reserve's first large-scale asset purchase program (LSAP), which is commonly referred to as quantitative easing (QE1). The gap closes in late 2009/early 2010, but then grows again in the third quarter of 2010, which coincides with the first Federal Reserve discussions

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the prepayment option. Specifically, we use the more sophisticated measure derived by Agarwal, Driscoll, and Laibson (2013) that accounts for mobility, the volatility of interest rates, closing costs, and inflation. Those results can be found in Table A.10 and are consistent with the patterns in Table 6.

of the second LSAP, QE2.[34] Finally, the third increase in the refinance gap in the figure occurs around the time of the announcement of the Fed's final LSAP, QE3, in the third quarter of 2012.[35]

While Figure 4 is consistent with the hypothesis that the Federal Reserve's unconventional monetary policies played an important role in generating large differences in refinancing behavior between minority and non-Hispanic white borrowers, it is not definitive. The post-crisis period was extremely turbulent, with many other policies and shocks impacting the mortgage market.[36] For that reason, we implement a more direct test for monetary policy effects on the gap between the refinance behaviors of minority and non-Hispanic white households. We focus exclusively on our GSE sample since we showed in the previous section that the racial gaps in refinance behavior among FHA borrowers are not as sensitive to fluctuations in market rates. We also explicitly focus on the first LSAP, QE1. Beraja et al. (2018) show that mortgage rates fell significantly and refinancing activity expanded considerably when QE1 was announced.[37] Furthermore, the paper argues that unlike later LSAPs, QE1 was unanticipated by mortgage borrowers and thus provides for a fairly clean source of identification for the monetary policy effects on refinancing behavior.

QE1 was announced by the Federal Reserve on November 25, 2008, and initially called for purchases of as much as \$500 billion in MBS guaranteed by the GSEs.[38] In March 2009, the Federal Reserve announced that it would expand the program by purchasing \$750 billion more in MBS. QE1 terminated at the end of the first quarter of 2010 with the Federal Reserve having purchased a total of \$1.25 trillion in MBS.[39]

We test whether QE1 exacerbated the gap between the refinance rates for minority and Non-Hispanic White borrowers by estimating the following difference-in-differences regression, which is similar in spirit to the specification used in Beraja et al. (2018):[40]

$$Prepay_{it} = \beta * Black_i + \eta * postQE1_t + \delta * (Black_i * postQE1_t) + \gamma * X_{ijt} + \nu_g + \mu_v + \epsilon_{it}, \quad (3)$$

where $postQE1$ is an indicator variable that equals 1 for the period after QE1 and 0 for the period before QE1 as well as the quarter in which QE1 was announced (2008:Q4).[41] We consider two

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[34]On August 27, 2010, Fed Chairman Ben Bernanke stated in his speech at the Jackson Hole monetary policy conference, "A first option for providing additional monetary accommodation if necessary, is to expand the Federal Reserve's holdings of longer-term securities."

[35]QE3 was announced and initiated on September 13, 2012. It involved the Federal Reserve purchasing large amounts of both MBS and Treasury securities at a monthly frequency.

[36]For example, the Home Affordable Refinance Program (HARP) was initiated by the Federal Housing Finance Agency in March 2009 and was reformed and expanded in December 2011.

[37]Beraja et al. (2018) show that the large increase in mortgage originations following QE1 was entirely driven by refinancings rather than purchases.

[38]It also announced purchases of as much as \$100 billion in debt obligations of Fannie Mae, Freddie Mac, Ginnie Mae, and the Federal Home Loan Banks.

[39]See Fuster and Willen (2010) for further details about QE1 and its effect on the mortgage market.

[40]See equation (1) and Table I in the paper. The focus of that paper is on regional differences in housing equity, rather than racial differences, causing regional differences in refinancing behavior.

[41]Since QE1 was announced at the end of November, refinances driven by QE1 would not show up until

different sample windows around the QE1 announcement: a one-year window that consists of the two quarters before and after the announcement as well as a two-year window that consists of the 4 quarters before and after the announcement.

Table 7 displays the estimation results. In columns (1) through (3) we restrict the sample to a one-year window around QE1, and in columns (4) through (6) we expand the sample to a two-year window. For each window we estimate three specifications. First, we estimate an unconditional regression with no additional controls. Second, we estimate our preferred specification from above that includes all of our loan and borrower underwriting variables as well as Zip code and origination year-quarter fixed effects (the specification in column (5) in Table 3). Finally we estimate a specification that adds interaction terms between our *postQE*1 dummy and credit scores as well as LTV ratios. This is a more flexible specification that allows QE1 to differentially impact borrowers with different credit scores and LTVs, and it is motivated by anecdotal evidence that suggests the refinancing boom that followed QE1 was driven mainly by borrowers with high credit scores and low LTVs.

The estimation results in Table 7 suggest that QE1 had a large effect on the racial gap in refinance propensities. According to column (1), Black borrowers were about 0.1 percentage point less likely to refinance in the six months prior to QE1 compared with non-Hispanic white borrowers, and the gap increases by an order of magnitude to approximately 2.3 percentage points after QE1. While refinance propensities for non-Hispanic white borrowers increased by 3.2 percentage points, an increase of approximately 520 percent of their rate prior to QE1 (0.6 percent points), Black borrowers increased their refinance rates by approximately 1.0 percentage point, an increase of approximately 200 percent of their pre-QE1 rate (0.5 percent points). Including our controls and fixed effects slightly changes the magnitudes, but the large effect of QE1 on refinance gaps remains. In column (2) Black and Hispanic white conditional prepayment rates are actually significantly higher than those of non-Hispanic white borrowers in the six months before QE1, but afterwards their rates fall more than 2.6 percentage points below the rates for non-Hispanic white borrowers.

In column (3) the addition of the interactions between the *postQE*1 dummy and credit scores and LTVs slightly attenuates the gaps between refinances by minority and non-Hispanic white borrowers that emerged after QE1, but the differences remain large and statistically significant. The interactions with credit score, which are displayed in the table, are striking.[42] High-credit-score borrowers (Risk Score > 740) increased their refinance rates by more than 3.7 percentage points after QE1 compared with an increase of about 0.77 percentage points for low-credit-score borrowers (Risk Score ≤ 600). Since the refinance differences across credit score bins are small in the period before QE1, these findings are consistent with the claim that the refinancing boom from QE1 was disproportionately driven by borrowers with high credit scores.

Columns (4) through (6) show that expanding the window size to one year slightly changes

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the beginning of 2009:Q1.

[42]The interaction effects with LTV are much smaller and thus not shown due to space constraints.

the estimated magnitudes, but does not alter the main patterns. QE1 appears to have generated a much larger increase in refinancing behavior by non-Hispanic white borrowers compared with minority borrowers as well as high-credit-score borrowers compared with those with lower credit scores.

While the results in Table 7 strongly suggest that QE1 significantly exacerbated refinance disparities between minority and non-Hispanic white borrowers, there were other major policies enacted around the same time as QE1, which could confound inference from our difference-in-differences estimator. For example, the Home Affordable Refinance Program (HARP) and the Home Affordable Modification Program were both enacted in March 2009, and may have had an impact on refinancing disparities across racial/ethnic groups. To address this issue and increase our confidence that QE1 really drove the differential changes in refinancing behavior in the relevant window, we zero in on the day of the announcement. To do this, we use confidential HMDA data, which provide information on the exact day on which a borrower applied for a mortgage. Figure 5 shows that from November 24 to 25, refinance applications by non-Hispanic white borrowers increased from 15,000 to more than 30,000, an increase of over 100 percent. Over those same days, applications by Black borrowers increased from 1,800 to 2,100, a gain of a little over 15 percent. Black borrowers did make further gains over the next week, but overall, over the next few weeks, the maximum increase relative to November 24 was about 50 percent, whereas for non-Hispanic white borrowers the increase rarely fell below 100 percent.

4   Implications for Mortgage Rate Disparities

The literature on statistical discrimination in mortgage market pricing focuses almost exclusively on the flow of mortgage rates—the difference in rates obtained by minority and non-Hispanic white borrowers at the time of origination. In this section we show that the large differences across groups in prepayment behavior drives large disparities in the *stock* of mortgage rates across racial/ethnic groups—the difference in rates associated with outstanding mortgages. While there are certainly good reasons to focus on the *flow* of rates, as we will show, the disparities in the stock of rates are significantly larger than the flow differences. Furthermore, we will show that monetary policy appears to have driven disparities in the stock of rates while having little impact on flow disparities.

The top panel of Figure 6 displays the difference in the flow of average mortgage rates (solid red line) for Black and non-Hispanic white borrowers during our sample period and the difference in the stock of average rates (solid blue line). The left panel pools together FHA and GSE loans, while the right panel focuses on only GSE mortgages. These graphs are very similar to Figure 1, with the only difference being that they are constructed using our estimation sample of loans originated during the 2005–2015 period. Figure 1 uses loans originated during the 1996–2015 period. In the initial quarter (2005:Q1), the two measures coincide since we do not include any loans originated prior to 2005. There is an initial gap of about 15 basis points. The flow gap fluctuates between 10

and 25 basis points over the first few years of the pooled sample before falling to zero in 2011 and remaining below 10 basis points through the end of the sample period. In the GSE sample, the flow gap falls from just over 30 basis points in 2008 to 10 basis points in 2010 and then fluctuates between 5 and 20 basis points for the remainder of the period.[43] In contrast to the gap in the flow of rates, the gap in the stock of mortgage rates rises substantially after 2008 in both graphs. In the pooled sample it peaks at about 35 basis points in 2013, while it climbs to almost 60 basis points in the GSE sample.

We include a third series in each panel (dotted blue line) that adjusts the gap in outstanding rates to account for loan modifications. As we discussed above, HAMP was introduced in early 2009 and provided loan modifications to many borrowers in distress. One of the common types of modifications was interest rate reductions. Our McDash data provide information on interest rate changes over time, which we use to adjust the gap in the stock of rates to account for modifications that reduced borrower rates.[44] Interestingly, modifications appear to have had a significant impact on the rate gaps. In both panels, we can see that the difference between the average outstanding rate for Black versus non-Hispanic white borrowers is significantly reduced when we account for rate-reducing modifications. This suggests that broad-based modification programs disproportionately affected minority borrowers and helped alleviate rate disparities in the aftermath of the crisis.

To isolate the disparities in the stock of rates that is due only to prepayment behavior (as opposed to differences in pricing at origination) in the bottom panel of Figure 6, instead of using actual interest rates paid by borrowers, we assume that every mortgage origination receives that quarter's PMMS value. Thus, by construction, there are no disparities in the rate of mortgage flows for Black and non-Hispanic white borrowers, so that the disparities in the stock of rates are driven only by the differences in prepayment propensities. The bottom panel of Figure 6 shows that beginning in 2009, the tendency of Black borrowers to pay higher than market rates for longer than non-Hispanic white borrowers increases the rate gap by more than 35 basis points in the pooled sample and by almost 50 basis points in the GSE sample.

If we go back to Figure 1, where we have a longer time series that goes back to 2000, we can see the obvious correlation between refinance waves and the differences in the stock of rates. The gap spikes during the refinance wave in the early 2000s and then again during the 2009–2015 period when unconventional monetary policy, largely through the purchases of trillions of dollars in mortgage-backed securities (MBS), drove down mortgage rates and spurred another refinance

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[43]These are slightly larger differences compared with the results in Bartlett et al. (2019), who find differences between interest rates for minority and non-Hispanic white borrowers of 7.9 and 3.6 basis points for purchase and refinance 30-year FRMs originated between during the 2009–2015 period and insured by the GSEs. However, the gap in Figure 6 is unconditional while the differences documented in Bartlett et al. (2019) are conditional on credit scores and LTV ratios. In Appendix A.7 we repeat the exercise with Survey of Consumer Finances (SCF) data as a robustness check. Although the data are much more noisier due to a smaller sample size and an inability to control for the quarter of origination, we do find a similar pattern in that the rate difference by race is larger in the stock of mortgages than at origination for new mortgages.

[44]Since our sample comprises only fixed-rate loans, any change in the interest rate must be due to a modification or measurement error.

boom.

We now look further into the role played by unconventional monetary policy in driving the large increase in the gap in outstanding mortgage rates that we see in Figure 6 by estimating a difference-in-differences specification that is similar to equation 3 above. Specifically we estimate the following regression:

$$R_{it}^{M} = \beta * Black_i + \eta * postQE1_t + \delta * (Black_i * postQE1_t) + \epsilon_{it}, \tag{4}$$

where the dependent variable, R_{it}^{M} is the current mortgage interest rate paid by borrower i (which is the same as the rate at origination, since all loans in our sample are fixed rate).

Table 8 displays the estimation results for three windows around the announcement of QE1: one year, two years, and four years. For each window we display two different specifications. In columns (1), (3), and (5) we estimate specifications with no additional controls, while in columns (2), (4), and (6) we add a set of vintage year-quarter fixed effects. Adding vintage year-quarter fixed effects means that only loans originated in the same year-quarter identify the QE1 coefficients, and thus, it eliminates all variation due to prepayment differences.

The unconditional regression estimates are consistent with Figure 6. Rates paid by non-Hispanic white borrowers drop significantly after QE1—21 basis points in the one-year window and 46 basis points in the four-year window. At the same time, rates paid by minority borrowers also decline, but by much smaller magnitudes. For the one-year window, average rates paid by black borrowers drop by 11.5 basis points after QE1 and by about 23 basis points in the four-year window. This causes the gap in outstanding rates to grow from 21 basis points in the two years before QE1 to 44 basis points in the two years after the policy.

The addition of vintage year-quarter fixed effects completely eliminates the positive post-QE1 estimates on mortgage rates for all borrowers. This confirms that it is loans originated in different periods that drive the unconditional results, which is consistent with differential refinancing behavior driving the large divergence in mortgage rates for minority and non-Hispanic white borrowers in the period after QE1.

5   Pricing Implications

Differential prepayment behavior of Black and Hispanic borrowers has significant implications for the pricing of mortgages. We focus on three aspects. First, lower prepayments mean that loans to Black and Hispanic white borrowers are more valuable to lenders and investors. Second, as a result, equilibrium interest rates paid by Black and Hispanic white borrowers should be *lower* at origination than rates paid by otherwise identical non-Hispanic white borrowers. Third, lower prepayment rates mean that the cost of default could be higher for Black and Hispanic white borrowers even when the hazard of default is the same as it is for comparable non-Hispanic white borrowers.

Consider a mortgage with an initial balance S_0. Assume that time is continuous and the loan has constant prepayment and default hazards, λ_p and λ_d, respectively. The interest rate in the economy is r, the note rate on the mortgages is m, and the lender pays a guarantee fee g to insure timely repayment of principal and interest. The value of this loan is

$$V = \int_0^\infty e^{-rt} S_t \left(m - g + \lambda_p + \lambda_d\right) dt.$$

We assume that the hazards are exponential so $S_t = S_0 e^{-(\lambda_p + \lambda_d)t}$, implying that:

$$V - S_0 = \frac{m - g - r}{r + \lambda_p + \lambda_d} \tag{5}$$

We follow industry practice and refer to the left-hand side of equation (5) as the gain-on-sale of a mortgage. Two key insights emerge from equation (5). First, gain-on-sale is positive if and only if the flow income from the loan $m - g - r$ is positive. In the top part of Figure A.3 in the Appendix, we use MBS market prices for Fannie Mae and Freddie Mac loans to compute $V - S_0$ for different pools of loans. The line labelled "TBA" is for low-risk mortgages with a note rate equal to the Freddie Mac PMMS rate for a 30-year FRM. The figure shows that $V - S_0$ is always positive and, in the later years of our sample, substantial, which in turn implies that the flow income from the loan, $m - g - r$, is always positive. Second, equation (5) shows that a reduction in λ_p, the prepayment speed, reduces gain-on-sale if $m - g - r$ is positive. These two facts imply that for the typical loan, a reduction in the prepayment rate should increase the value of the mortgage to lenders and investors.

We can validate our claim that lower prepayment speeds increase the value of mortgages and get some idea of the quantitative magnitudes by looking at low-balance mortgages. It is well known in the industry that borrowers with low balances are less likely to prepay. The reason is that some costs of refinancing are fixed, but the benefits are proportional to the balance of the loan. Because of their different prepayment properties, low-balance loans trade in their own specified or "spec" pools. We can use pricing information from these spec pools to obtain a rough estimate of the rate premium that Black borrowers might obtain if lenders took into account their lower prepayment speeds.

In order to conduct this exercise we need to determine the appropriate spec pool to use as a comparison. In Table A.12 in the Appendix we combine refinances and home sales into a single prepayment variable (since investors do not care about the reason for voluntary prepayment) and regress this prepayment variable on our race dummies (column (1)) and then separately on our indicator variables for loan amount (column (2)). The difference in quarterly prepayment hazards for Black and non-Hispanic white borrowers is approximately 1.63 percentage points. Column (2) in Table A.12 shows that this is very similar to the prepayment gap between loans that are below

$85,000 and those that are above $175,000 (1.70 percentage points).[45] Thus, we will focus on spec pools that consist of loans with original balances lower than $85,000. The gain-on-sale premium for pools of loans in these spec pools is typically between 50 and 100 basis points.[46]

How does this affect borrowers? To get some sense of how rates paid by minority borrowers would change if lenders took into account lower prepayment speeds, we can look at the low-balance mortgages. Assuming that a lender wants to maintain a constant gain-on-sale across all loans, we can then ask what the rate reduction on loans to Black borrowers would need to be to ensure that outcome. If MBS price differences were fully passed through to Black borrowers, they would typically pay 5 to 15 basis points less than they currently do.[47]

In our sample, mortgages are either insured by GSEs or guaranteed by FHA. If such default insurance were instead provided by private parties, there would be a potentially offsetting effect that would make minority borrowers less attractive to default insurers and, *ceteris paribus*, increase the rates that they might face relative to non-Hispanic white borrowers. It is easiest to see this if we consider a mortgage insurer such as Fannie Mae or Freddie Mac. Fannie and Freddie receive income from the flow of mortgage insurance payments g and from a one-time fee called an $LLPA$. Using our assumptions from above, a mortgage insurance contract is worth

$$I = LLPA + \int_0^\infty e^{-rt} S_t \left(g - \lambda_d LGD \right) dt = LLPA + S_0 \left[\frac{g - LGD\lambda_d}{r + \lambda_p + \lambda_d} \right],$$

where $LGD \cdot S_t$ is the loss suffered by the lender on a loan that defaults. Suppose the lender chooses $LLPA$ and g for a given pool of loans in which all borrowers have the same λ_d. It is easy to see that unless $g = LGD\lambda_d$, the value of the insurance contract I depends on the prepayment speed. If $LGD\lambda_d > g$, then higher prepayment speeds will make insurance contracts more valuable.

Because of a quirk in the way Fannie Mae and Freddie Mac price insurance, higher prepayment speeds may make non-Hispanic white borrowers more attractive to insure. The issue is that Fannie and Freddie set g independently of risk characteristics and adjust the $LLPA$ to account for LTV and FICO score. Because they have higher unconditional default hazards, λ_d, $g - \lambda_d LGD$ is more likely to be negative for Black and Hispanic white borrowers. Thus, I will be lower for a Black or Hispanic white borrower when compared with an otherwise identical non-Hispanic white borrower who has a higher λ_p.

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[45]The omitted/reference group in the regression consists of mortgages that are greater than $175,000 so that the coefficients in the table should be interpreted as relative comparisons with that group.

[46]Compare the lines labeled "Low-balance spec pool" and "TBA" in Figure A.3 in the Appendix.

[47]Figure A.3 shows that there are periods, such as early 2009 and late 2010, when they would pay substantially less ($\sim$ 30 bps).

6 Conclusion

In this paper we have shown that minority borrowers refinance their fixed-rate mortgages at a significantly lower rate compared with non-Hispanic white borrowers, and that expansionary monetary policy appears to have exacerbated these differences. In turn, the large differences in refinance propensities have resulted in significant disparities in the average interest rate that minority borrowers pay on the stock of outstanding mortgages compared with their non-Hispanic white counterparts. These differences in the stock of rates are much larger in magnitude than the corresponding differences in the rates paid on newly originated loans.

To be clear, our analysis does not suggest that policies that drive down mortgages rates are harmful to minority borrowers. To the contrary, minority borrowers do benefit from lower mortgage rates. However, our analysis suggests that they benefit much less than white borrowers.

Our research leads to two important questions. First, why do Black and Hispanic white borrowers refinance less frequently? In particular, why are they so much less responsive to variation in interest rates. As we have shown, observable differences across borrowers can explain about 80 percent of the difference, but a nontrivial gap remains. The remaining gap could be explained by numerous factors that are omitted from our analysis including different levels of education and/or financial literacy, differential exposure to negative income/employment shocks that may inhibit the ability to refinance into low rates and that are not reflected in updated credit scores, or even heterogeneous social networks, which have been shown to be important transmitters of information about refinancing opportunities (Maturana and Nickerson (2019)).

The second question is, what can policymakers do to reduce racial differences? The prepayable, fixed-rate mortgage plays a central role in the story. Many commentators argue that the FRM offers the best of both worlds. Essentially, the prepayment option enables the borrower to take advantage of falling rates while providing insurance against rising rates. But the value of this option, in the real world, depends on both the willingness and ability of borrowers to exercise the option. The data show systematic variation across racial groups in refinancing and moving propensities, and thus, in a sense, the value of the option.

How could a policymaker enable Black and Hispanic white borrowers to exploit rate reductions more effectively? One way would be to expand the use of adjustable-rate mortgages (ARMs). The United States is almost unique in its reliance on FRMs. In many countries, the mortgage ecosystem is largely populated with ARMs, and those countries enjoy high home-ownership rates and have foreclosure problems that are no worse than in the United States. Another would be to encourage the mortgage industry to develop products that combine the benefits of FRMs and ARMs. For example, for many years, market participants have discussed "ratchet" mortgages, which adjust down but not up. These alternative mortgage contract designs may lead to a more equitable distributional impact of monetary policy. Finally, complementary, race-neutral policies that make it easier and less costly to refinance such as streamlined refinancing programs may also be effective in closing these rate disparities.

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Figure 1: Rates on outstanding mortgages: Black versus non-Hispanic white Borrowers for mortgages originated from 1996–2015
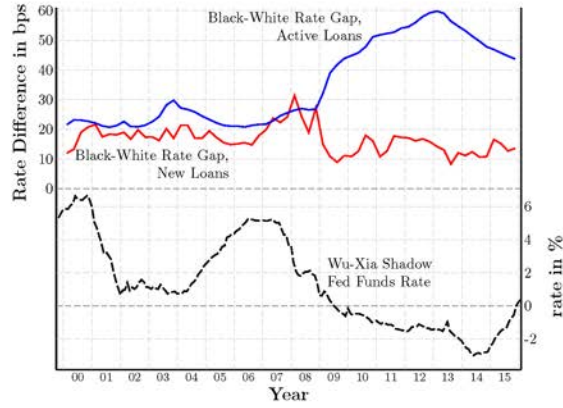
Notes: This figure displays the rate gap for Black and non-Hispanic white borrowers with 30-year FRMs. New Loans are originated in the quarter and active loans are all outstanding loans. Data to compute the rate gaps come from the HMDA-McDash database. The Wu-Xia Shadow Fed Funds rate comes from https://www.frbatlanta.org/cqer/research/wu-xia-shadow-federal-funds-rate.

Figure 2: Kaplan Meier unconditional refinance and sale hazard rates
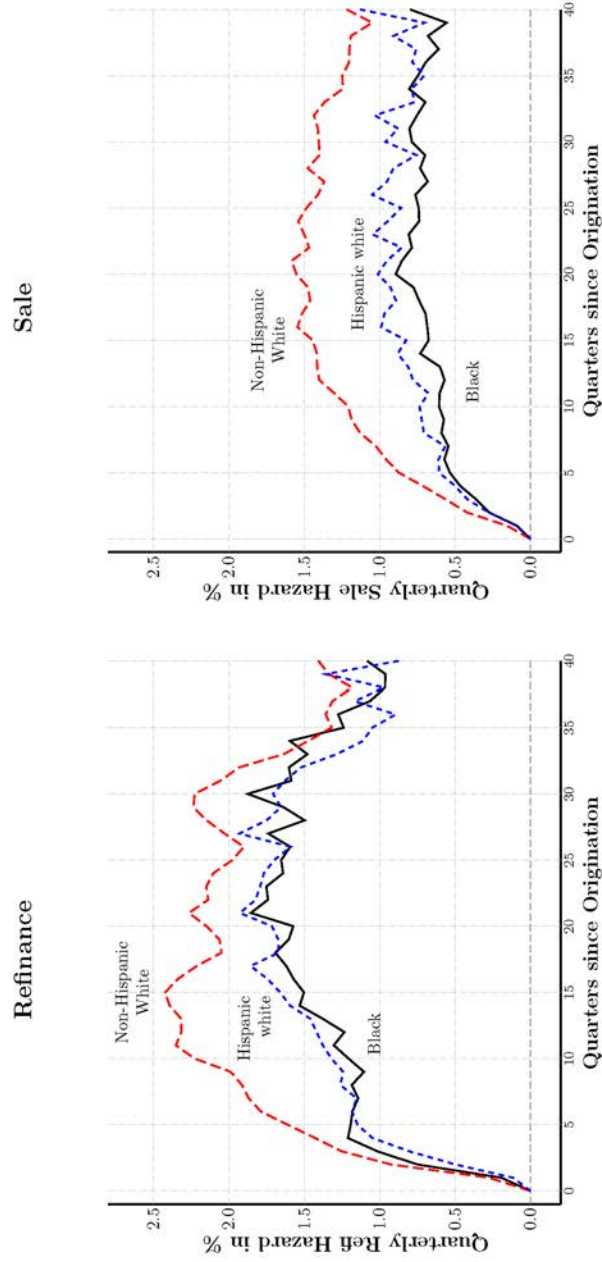
Refinance

Sale

Notes: This figure displays the Kaplan-Meier hazard estimates of refinance and home sale broken down by racial/ethnic groups. The Kaplan-Meier estimate of the hazard function is: $\lambda_p(t_j) = \frac{d_{pj}}{n_j}$, where the number of loans that have reached time t_j without being terminated or censored is given by n_j, and the number of terminations due to prepayment at t_j is given by d_{pj}. The underlying data come from the HMDA-McDash-CRISM database.

Figure 3: Responses to gain from exercising the refinance option.
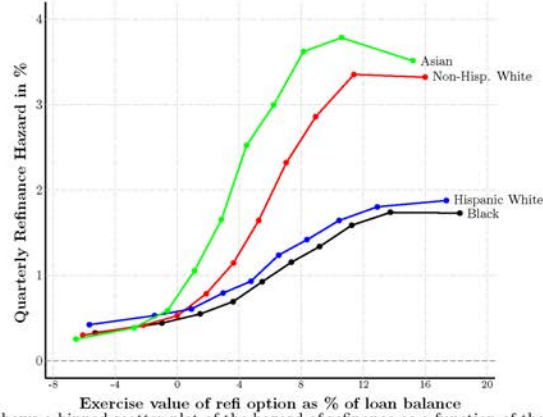
Notes: This figure shows a binned scatter plot of the hazard of refinance as a function of the gain from exercising the refinance option as calculated in Deng et al. (2000).

Figure 4: Unconditional quarterly refinance hazards for Black and non-Hispanic white borrowers.
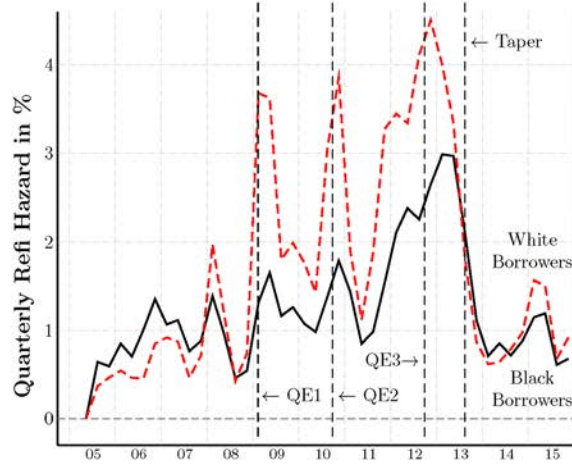
Notes: Hazard is defined as the percentage of matched HMDA-McDash-CRISM loans at the beginning of a quarter that are refinanced by the end of the quarter. Events are QE1, annoucement of original LSAP in November 2008; QE2, Bernanke's August 2010 speech suggesting an expansion of LSAPs; QE3, FOMC vote to buy $40b bonds per month in September 2012; Taper, Bernanke's 2013 FOMC press conference suggesting that FOMC would wind down purchases of MBS.

Figure 5: Event study of the announcement of first quantitative easing (QE1) on November 25, 2008.
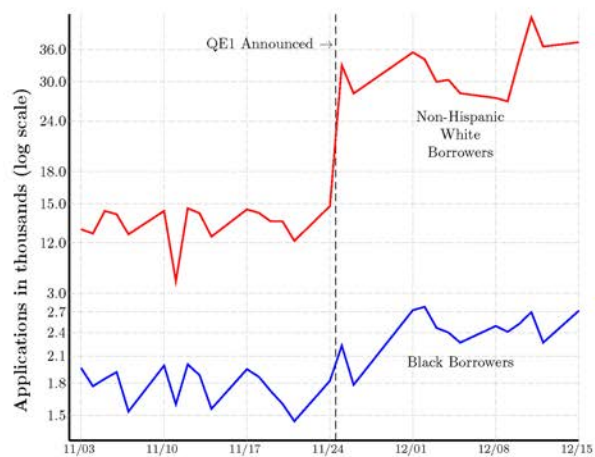
Notes: This figure shows the ratio of Black versus non-Hispanic white refinance applications normalized to the day before the announcement of QE1. The data come from the confidential Home Mortgage Disclosure Act (cHMDA) files.

Figure 6: Gap between interest rates for Black and non-Hispanic white borrowers for mortgages originated from 2005–2015

1. GSE and FHA Loans

2. GSE Loans Only

A. With Actual Rates
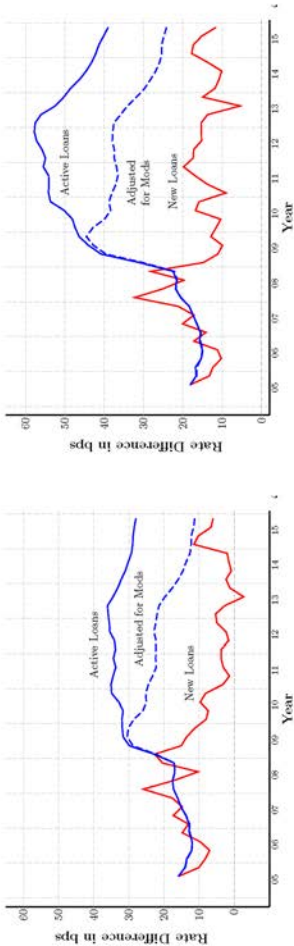
B. Assuming all borrowers receive average quarterly rate at origination
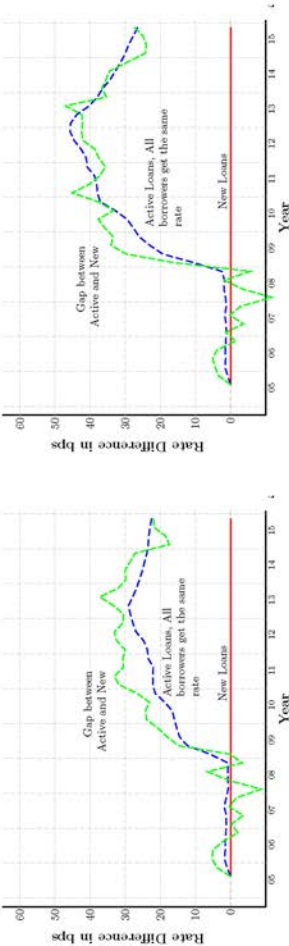
Notes: This figure displays the difference between the average interest rate paid by a Black versus a non-Hispanic white borrower. "New Loans" are loans originated in the quarter. "Active Loans" are all loans outstanding in the quarter (including new loans.) The top two panels shows the actual rates reported in the HMDA-McDash-Equifax database. In the bottom panels, we isolate the effect of refinances by assigning every borrower the average FHLMC Primary Mortgage Market Survey rate for the quarter in which their loan was originated.

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Table 1: Summary Statistics: GSE Sample

Panel A: Fixed Characteristics

	All		Black		Hispanic White		Non-Hispanic White	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Equifax Risk Score (100s points)	7.50	0.59	7.15	0.72	7.30	0.63	7.52	0.57
LTV (%)	72.6	15.9	75.6	15.4	74.0	15.9	72.5	16.0
Loan Amount ($100k)	2.12	1.13	1.84	1.00	1.98	1.03	2.10	1.11
Interest Rate (ppts)	5.20	1.02	5.64	1.09	5.45	1.06	5.18	1.01
Income ($1k)	97.6	64.0	81.6	51.9	79.1	51.5	98.6	64.7
Borrower Age (years)	46.3	13.4	48.4	13.2	45.2	12.8	46.5	13.5
Refinance (d)	0.538	0.499	0.588	0.492	0.513	0.500	0.543	0.498
Condo (d)	0.140	0.347	0.149	0.356	0.141	0.348	0.134	0.340
2-4 Family (d)	0.018	0.133	0.039	0.194	0.040	0.197	0.015	0.121
Low Documentation (d)	0.308	0.462	0.325	0.468	0.308	0.462	0.309	0.462
Non-Occupant Owner (d)	0.140	0.347	0.160	0.367	0.144	0.351	0.137	0.344
Female (d)	0.294	0.455	0.478	0.500	0.312	0.463	0.284	0.451
Co-applicant (d)	0.505	0.500	0.278	0.448	0.357	0.479	0.531	0.499
# Loans	800,806		32,753		43,269		676,986	

Panel B: Time-Varying Characteristics

	All		Black		Hispanic White		Non-Hispanic White	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Qtrs since Orig	12.5	9.9	14.2	11.1	13.5	10.6	12.3	9.8
Interest Rate (ppts)	5.15	1.01	5.61	1.06	5.45	1.04	5.12	1.00
Call Option (ppts)	4.77	6.40	7.16	6.87	6.38	6.71	4.57	6.31
SATO (ppts)	0.150	0.411	0.281	0.478	0.235	0.445	0.139	0.403
LTV Change	-4.60	14.70	-1.92	16.96	-1.74	20.38	-4.84	13.96
Negative Equity (d)	0.045	0.207	0.090	0.287	0.104	0.306	0.038	0.192
Risk Score Change (100s points)	0.070	0.530	-0.030	0.686	0.005	0.659	0.077	0.510
Prepay Refinance (ppts)	1.71	12.95	1.21	10.95	1.21	10.91	1.74	13.09
Prepay Sale (ppts)	0.96	9.76	0.54	7.35	0.63	7.93	1.02	10.03
Default (ppts)	0.35	5.90	0.87	9.28	0.80	8.92	0.30	5.44
# Loan-quarters	15,460,588		730,648		924,765		12,970,785	

Notes: This table reports summary statistics from a 7.5% random sample of loans originated from 2005–2015 (inclusive) and held by the GSEs (Fannie Mae and Freddie Mac) from a matched HMDA-McDash-CRISM data set. The unit of observation in Panel A is a loan, while the unit of observation in Panel B is a loan-quarter. The label (d) denotes dummy variables. "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year FRMs according to the FHLMC survey. "Call Option" is a measure of the incentive to refinance taken from Deng et al. (2000).

Table 2: Summary Statistics: FHA Sample

Panel A: Fixed Characteristics

	All		Black		Hispanic White		Non-Hispanic White	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Equifax Risk Score (100s points)	6.84	0.67	6.53	0.71	6.77	0.64	6.89	0.66
LTV (%)	93.6	7.5	93.1	8.2	94.1	7.2	93.5	7.4
Loan Amount ($100k)	1.73	0.91	1.68	0.90	1.67	0.88	1.72	0.89
Interest Rate (ppts)	4.93	1.00	5.10	1.05	4.87	0.98	4.92	0.99
Income ($1k)	65.8	37.5	61.0	33.3	56.2	30.3	67.6	38.5
Borrower Age (years)	38.5	11.9	41.9	12.1	37.8	11.2	38.2	11.9
Refinance (d)	0.294	0.456	0.310	0.462	0.181	0.385	0.312	0.463
Condo (d)	0.115	0.318	0.155	0.362	0.110	0.312	0.106	0.308
2-4 Family (d)	0.014	0.119	0.024	0.154	0.031	0.174	0.010	0.101
Low Documentation (d)	0.190	0.393	0.207	0.405	0.164	0.370	0.192	0.394
Non-Occupant Owner (d)	0.033	0.178	0.033	0.179	0.026	0.158	0.034	0.181
Female (d)	0.353	0.478	0.530	0.499	0.318	0.466	0.333	0.471
Co-applicant (d)	0.414	0.493	0.248	0.432	0.367	0.482	0.445	0.497
# Loans	295,487		31,764		33,717		222,236	

Panel B: Time-Varying Characteristics

	All		Black		Hispanic White		Non-Hispanic White	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Qtrs since Orig	13.3	10.2	15.0	11.1	13.7	10.3	12.9	10.0
Interest Rate (ppts)	4.93	0.98	5.11	1.01	4.90	0.96	4.92	0.97
Call Option (ppts)	4.77	6.53	5.68	6.68	4.88	6.50	4.64	6.50
SATO (ppts)	0.116	0.346	0.165	0.376	0.158	0.356	0.104	0.338
Equity (%)	-9.25	14.85	-8.84	16.42	-12.38	16.86	-8.70	14.10
Negative Equity (d)	0.117	0.322	0.146	0.353	0.105	0.307	0.115	0.319
Risk Score Change (100s points)	0.016	0.697	-0.109	0.778	0.002	0.727	0.036	0.676
Prepay Refinance (ppts)	1.33	11.47	0.89	9.40	1.03	10.10	1.44	11.93
Prepay Sale (ppts)	0.94	9.67	0.47	6.87	0.62	7.86	1.08	10.33
Default (ppts)	0.89	9.41	1.58	12.47	0.90	9.42	0.81	8.94
# Loan-quarters	6,184,502		765,502		749,691		4,518,876	

Notes: This table reports summary statistics from a 7.5% random sample of FHA loans originated from 2005-2015 (inclusive) from a matched HMDA-McDash-CRISM data set. The unit of observation in Panel A is a loan, while the unit of observation in Panel B is a loan-quarter. The label (d) denotes dummy variables. "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year FRMs according to the FHLMC survey. "Call Option" is a measure of the incentive to refinance taken from Deng et al. (2000).

Table 3: Baseline Prepayment due to Refinance Results

Dependent Variable: Prepay Refinance (d)

	GSE Loans						FHA Loans			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Black (d)	-0.746***	-0.380***	-0.330***	-0.255***	-0.148***	-0.149***	-0.600***	-0.364***	-0.235***	-0.163***
	(0.086)	(0.049)	(0.038)	(0.032)	(0.025)	(0.025)	(0.053)	(0.031)	(0.028)	(0.028)
Hispanic White (d)	-0.687***	-0.454***	-0.462***	-0.421***	-0.278***	-0.289***	-0.401***	-0.384***	-0.400***	-0.315***
	(0.118)	(0.066)	(0.064)	(0.057)	(0.038)	(0.036)	(0.076)	(0.042)	(0.047)	(0.041)
Asian (d)	0.436***	0.258***	0.208***	0.256**	0.189**	0.176**	0.417***	-0.020	0.071	0.034
	(0.143)	(0.093)	(0.097)	(0.098)	(0.068)	(0.068)	(0.088)	(0.059)	(0.073)	(0.073)
Equifax Risk Score		0.381***						0.449***		
		(0.068)						(0.060)		
LTV Origination		-0.011***						-0.010***		
		(0.002)						(0.002)		
Loan Amount		0.567***						0.789***		
		(0.059)						(0.053)		
LTV Change		-0.001	-0.050***	-0.046***	-0.045***	-0.038***		-0.015***	-0.038***	-0.014***
		(0.004)	(0.004)	(0.004)	(0.004)	(0.004)		(0.003)	(0.003)	(0.002)
Refinance (d)		-0.208***	-0.239***	-0.208***	-0.217***	-0.256***		-0.123***	-0.147***	-0.214***
		(0.061)	(0.052)	(0.050)	(0.051)	(0.048)		(0.034)	(0.041)	(0.044)
Female (d)			-0.061***	-0.060***	-0.078***	-0.079***			-0.082***	-0.101***
			(0.012)	(0.012)	(0.013)	(0.014)			(0.016)	(0.017)
Call Option			0.308***	0.315***	0.316***	0.721***			0.194***	0.505***
			(0.021)	(0.021)	(0.021)	(0.061)			(0.020)	(0.081)
SATO			-1.597***	-1.549***	-1.518***	-4.560***			-0.293**	-3.302***
			(0.128)	(0.122)	(0.123)	(0.427)			(0.122)	(0.509)
Risk Score Change				0.775***	0.764***	0.778***			0.843***	0.836***
				(0.085)	(0.084)	(0.077)			(0.084)	(0.083)
Loan Age	X		X	X	X	X	X		X	X
Underwriting Vars		X	X	X	X	X		X	X	X
HMDA Vars			X	X	X	X			X	X
Vintage Year-Qtr FE	X	X	X	X	X	X	X	X	X	X
State FE		X	X	X				X		
Zip Code FE					X				X	
Zip Code-by-Year-Qtr FE						X				X
# Observations	15,460,588	11,983,398	11,547,035	11,469,141	11,469,141	11,318,445	6,184,502	4,316,733	3,732,349	3,559,947
# Loans	792,823	622,936	601,094	601,028	601,028	590,643	291,587	209,827	182,517	170,234
R²	0.008	0.012	0.019	0.020	0.022	0.079	0.004	0.012	0.017	0.145

Notes: This table reports LPM estimates of equation (1)—the likelihood of voluntary mortgage prepayment due to refinancing on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-CRISM data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's Equifax Risk Score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2–4 multi-family properties, low documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year mortgages according to the FHLMC survey. "Call Option" is a measure of the incentive to refinance taken from Deng et al. (2000). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p<0.1)

Table 4: Baseline Prepayment due to Sale Results

Dependent Variable: Prepay Sale (d)

	GSE Loans						FHA Loans			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Black (d)	-0.524***	-0.424***	-0.385***	-0.383***	-0.346***	-0.346***	-0.644***	-0.554***	-0.449***	-0.425***
	(0.019)	(0.018)	(0.017)	(0.019)	(0.022)	(0.023)	(0.030)	(0.036)	(0.035)	(0.033)
Hispanic: White (d)	-0.439***	-0.338***	-0.329***	-0.324***	-0.273***	-0.273***	-0.515***	-0.559***	-0.522***	-0.472***
	(0.028)	(0.020)	(0.021)	(0.021)	(0.018)	(0.018)	(0.029)	(0.035)	(0.035)	(0.035)
Asian (d)	-0.185***	-0.196***	-0.219***	-0.220***	-0.215***	-0.211***	-0.233***	-0.357***	-0.336***	-0.343***
	(0.031)	(0.027)	(0.029)	(0.029)	(0.030)	(0.031)	(0.041)	(0.033)	(0.038)	(0.036)
Equifax Risk Score		0.039*						0.121***		
		(0.016)						(0.011)		
LTV Origination		-0.001						-0.003***		
		(0.001)						(0.001)		
Loan Amount		0.136***						0.189***		
		(0.015)						(0.014)		
LTV Change		-0.016***	-0.023***	-0.023***	-0.023***	-0.024***		-0.026***	-0.027***	-0.017***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.002)		(0.002)	(0.002)	(0.002)
Refinance (d)		-0.191***	-0.134***	-0.133***	-0.116***	-0.131***		-0.223***	-0.112***	-0.114***
		(0.019)	(0.018)	(0.018)	(0.018)	(0.018)		(0.025)	(0.021)	(0.022)
Female (d)			0.026***	0.024***	0.019**	0.016			0.023**	0.011
			(0.008)	(0.008)	(0.009)	(0.010)			(0.011)	(0.012)
Call Option			0.041***	0.042***	0.043***	0.271***			0.010**	0.292***
			(0.003)	(0.003)	(0.003)	(0.014)			(0.004)	(0.019)
SATO			-0.141***	-0.138***	-0.122***	-1.830***			0.101**	-1.996***
			(0.031)	(0.030)	(0.030)	(0.100)			(0.047)	(0.128)
Risk Score Change				0.039	0.020	0.031			0.277***	0.260***
				(0.033)	(0.033)	(0.030)			(0.015)	(0.015)
Loan Age	X						X			
Underwriting Vars		X	X	X	X	X		X	X	X
HMDA Vars		X	X	X	X	X		X	X	X
Vintage Year-Qtr FE	X	X	X	X	X	X	X	X	X	X
State FE		X	X	X				X		
Zip Code FE					X	X			X	X
Zip Code-by-Year-Qtr FE						X				X
# Observations	15,460,588	11,983,398	11,547,035	11,469,141	11,469,141	11,318,445	6,184,502	4,316,733	3,732,349	3,559,947
# Loans	792,823	622,936	601,094	601,028	601,028	590,643	291,587	209,827	182,517	170,234
R²	0.002	0.003	0.004	0.004	0.006	0.062	0.003	0.005	0.006	0.131

Notes: This table reports LPM estimates of equation (1)—the likelihood of voluntary mortgage prepayment due to home sale on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-CRISM data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's Equifax Risk Score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2-4 multi-family properties, low documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year mortgages according to the FHLMC survey. "Call Option" is a measure of the incentive to refinance taken from Deng et al. (2000). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p< 0.1)

Table 5: Baseline Default Results

Dependent Variable: Default (d)	GSE Loans					FHA Loans			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Black (d)	0.443***	0.285***	0.223***	0.146***	0.135***	0.733***	0.466***	0.421***	0.318***
	(0.076)	(0.053)	(0.043)	(0.030)	(0.029)	(0.057)	(0.038)	(0.033)	(0.033)
Hispanic White (d)	0.422***	0.274***	0.235***	0.194***	0.188***	0.165***	0.155***	0.085*	0.071
	(0.097)	(0.066)	(0.061)	(0.049)	(0.049)	(0.044)	(0.047)	(0.046)	(0.044)
Asian (d)	0.026	0.028***	0.048***	0.027**	0.021*	-0.125***	-0.052**	-0.041	-0.052
	(0.018)	(0.012)	(0.014)	(0.012)	(0.012)	(0.023)	(0.024)	(0.026)	(0.039)
Equifax Risk Score		-0.449***					-0.894***		
		(0.062)					(0.075)		
LTV Origination		0.010***					0.014***		
		(0.001)					(0.001)		
Loan Amount		0.046***					0.125***		
		(0.012)					(0.026)		
LTV Change		0.034***	0.036***	0.037***	0.039***		0.036***	0.037***	0.051***
		(0.003)	(0.004)	(0.004)	(0.004)		(0.004)	(0.004)	(0.006)
Refinance (d)		0.129***	0.069***	0.065***	0.060***		0.252***	0.140***	0.135***
		(0.018)	(0.016)	(0.015)	(0.015)		(0.043)	(0.034)	(0.034)
Female (d)			-0.017***	-0.016***	-0.015***			-0.027*	-0.025
			(0.005)	(0.005)	(0.005)			(0.014)	(0.015)
Call Option			-0.014***	-0.013***	0.038***			-0.001	0.323***
			(0.003)	(0.003)	(0.013)			(0.004)	(0.026)
SATO			0.485***	0.477***	0.073			0.447***	-2.104***
			(0.091)	(0.087)	(0.120)			(0.062)	(0.166)
Loan Age	X					X			
Underwriting Vars		X	X	X	X		X	X	X
HMDA Vars			X	X	X			X	X
Vintage Year-Qtr FE	X	X	X	X	X	X	X	X	X
State FE	X	X	X			X	X		
Zip Code FE				X				X	
Zip Code-by-Year-Qtr FE					X				X
# Observations	14,883,532	11,555,401	11,555,402	11,135,402	10,983,861	5,484,924	3,840,247	3,328,566	3,154,707
# Loans	792,823	622,936	601,094	601,094	590,534	291,587	209,827	182,527	169,608
R²	0.006	0.012	0.013	0.016	0.084	0.006	0.011	0.012	0.146

Notes: This table reports LPM estimates of equation (1)—the likelihood of mortgage default (defined as 90-day delinquency) on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-CRISM data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's Equifax Risk Score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2-4 multi-family properties, low documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year mortgages according to the FHLMC survey. "Call Option" is a measure of the incentive to refinance taken from Deng et al. (2000). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p< 0.1)

Table 6: Prepayment due to Refinance with Interaction Effects

Dependent Variable: Prepay Refinance (d)	GSE Loans				FHA Loans			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Black (d)	-0.178***	0.465***	0.470***	2.665***	-0.158***	0.233**	0.227**	1.861***
	(0.027)	(0.073)	(0.075)	(0.468)	(0.025)	(0.100)	(0.100)	(0.339)
Hispanic White (d)	-0.293***	0.284***	0.295***	2.596***	-0.297***	0.062	0.072	1.714***
	(0.038)	(0.065)	(0.070)	(0.445)	(0.040)	(0.081)	(0.082)	(0.352)
Call Option	0.310***	0.320***	0.321***	0.321***	0.193***	0.209***	0.209***	0.211***
	(0.021)	(0.022)	(0.022)	(0.022)	(0.020)	(0.021)	(0.021)	(0.022)
Risk Score Change	0.754***	0.742***	0.756***	2.428***	0.836***	0.832***	0.889***	0.456***
	(0.084)	(0.083)	(0.093)	(0.203)	(0.083)	(0.083)	(0.087)	(0.108)
Black * Call Option		-0.100***	-0.101***	-0.112***		-0.068***	-0.070***	-0.076***
		(0.007)	(0.007)	(0.008)		(0.009)	(0.009)	(0.010)
Hispanic White * Call Option		-0.097***	-0.099***	-0.109***		-0.068***	-0.070***	-0.075***
		(0.007)	(0.007)	(0.008)		(0.008)	(0.009)	(0.009)
Black * Risk Score Change			-0.052	-1.312***			-0.207***	-0.452***
			(0.055)	(0.197)			(0.026)	(0.131)
Hispanic White * Risk Score Change			-0.097	-1.327***			-0.177***	-0.388**
			(0.065)	(0.245)			(0.038)	(0.164)
Equifax Risk Score				0.614***				0.758***
				(0.090)				(0.087)
Equifax Risk Score * Risk Score Change				-0.352***				-0.052***
				(0.031)				(0.018)
Black * Equifax Risk Score * Risk Score Change				0.226***				0.082***
				(0.030)				(0.026)
Hispanic White * Equifax Risk Score * Risk Score Change				0.224***				0.072***
				(0.038)				(0.025)
Loan Age	X	X	X	X	X	X	X	X
Underwriting Vars	X	X	X	X	X	X	X	X
HMDA Vars	X	X	X	X	X	X	X	X
Vintage Year-Qtr FE	X	X	X	X	X	X	X	X
Zip Code FE	X	X	X	X	X	X	X	X
# Observations	10,816,263	10,816,263	10,816,263	10,816,263	3,636,573	3,636,573	3,636,573	3,636,573
# Loans	563,001	563,001	563,001	563,001	177,437	177,437	177,437	177,437
R²	0.022	0.022	0.022	0.022	0.023	0.023	0.023	0.023

Notes: This table reports LPM estimates of equation (2). The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-CRISM data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's Equifax Risk Score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2-4 multi-family properties, low documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year mortgages according to the FHLMC survey. "Call Option" is a measure of the incentive to refinance taken from Deng et al. (2000). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p< 0.1)

Table 7: Effect of QE1 on Differences in Refinance Propensities

Dependent Variable: Prepay Refinance (d)	1-Year			2-Year		
Window:	(1)	(2)	(3)	(4)	(5)	(6)
postQE1 (d)	3.221***	3.004***	0.771*	1.762***	2.361***	0.970***
	(0.496)	(0.219)	(0.414)	(0.438)	(0.222)	(0.283)
Black * postQE1	-2.236***	-2.671***	-1.798***	-1.241***	-1.593***	-1.037***
	(0.417)	(0.271)	(0.205)	(0.338)	(0.187)	(0.142)
Hispanic White * postQE1	-2.288***	-2.624***	-2.119***	-1.263***	-1.515***	-1.191***
	(0.413)	(0.275)	(0.239)	(0.346)	(0.216)	(0.191)
Black (d)	-0.112**	1.056***	0.595***	-0.268***	0.608***	0.305***
	(0.040)	(0.113)	(0.090)	(0.092)	(0.105)	(0.094)
Hispanic White (d)	-0.311***	0.914***	0.641***	-0.480***	0.423***	0.241**
	(0.051)	(0.093)	(0.082)	(0.103)	(0.094)	(0.089)
$600 \leq$ Equifax Risk Score < 740 (d)		0.511***	-0.185**		0.546***	0.074
		(0.062)	(0.072)		(0.060)	(0.059)
Equifax Risk Score ≥ 740 (d)		1.643***	-0.243**		1.386***	0.186
		(0.122)	(0.094)		(0.128)	(0.109)
postQE1 * ($600 \leq$ Equifax Risk Score < 740)			1.484***			1.033***
			(0.162)			(0.119)
postQE1 * (Equifax Risk Score ≥ 740)			3.754***			2.377***
			(0.331)			(0.227)
Constant	0.615***	-3.886***	-3.312***	1.095***	0.256	0.912**
	(0.066)	(1.275)	(1.271)	(0.177)	(0.261)	(0.343)
Loan Age		X	X		X	X
Underwriting Vars		X	X		X	X
HMDA Vars		X	X		X	X
Vintage Year-Qtr FE		X	X		X	X
Zip Code FE		X	X		X	X
# Observations	1,066,525	782,523	782,523	2,129,912	1,563,213	1,563,213
R^2	0.012	0.055	0.058	0.004	0.038	0.039

Notes: This table reports LPM estimates of equation (3). The estimation is performed at the quarterly frequency on a 7.5% random sample of GSE 30-year FRMs from a matched HMDA-McDash-CRISM data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's Equifax Risk Score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2-4 multi-family properties, low documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "QE1" is an indicator variable that takes a value of 1 for year-quarters after 2008:Q4. Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p< 0.1)

Table 8: Effect of QE1 on Differences in the Stock of Outstanding Mortgage Rates

Dependent Variable: Mortgage Rate						
Window:	1-Year		2-Years		4-Years	
	(1)	(2)	(3)	(4)	(5)	(6)
Black (d)	0.224***	0.189***	0.222***	0.187***	0.210***	0.176***
	(0.014)	(0.012)	(0.014)	(0.012)	(0.014)	(0.012)
Hispanic White (d)	0.135***	0.112***	0.132***	0.109***	0.123***	0.101***
	(0.019)	(0.016)	(0.019)	(0.016)	(0.019)	(0.016)
postQE1 (d)	-0.209***	-0.006***	-0.313***	-0.004***	-0.463***	-0.008***
	(0.004)	(0.000)	(0.005)	(0.000)	(0.007)	(0.001)
Black * postQE1	0.115***	-0.005***	0.162***	-0.009***	0.226***	-0.007*
	(0.004)	(0.002)	(0.005)	(0.002)	(0.007)	(0.003)
Hispanic White * postQE1	0.111***	0.004**	0.157***	0.003	0.214***	0.006*
	(0.004)	(0.002)	(0.006)	(0.002)	(0.010)	(0.004)
Constant	6.239***	6.142***	6.245***	6.090***	6.252***	6.000***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Vintage Year-Qtr FE		X		X		X
# Observations	1,066,525	1,066,525	2,129,912	2,129,912	4,085,825	4,085,825
R^2	0.044	0.528	0.070	0.588	0.114	0.660

Notes: This table reports LPM estimates of equation (4). The estimation is performed at the quarterly frequency on a 7.5% random sample of GSE 30-year FRMs from a matched HMDA-McDash-CRISM data set. The unit of observation is a loan-quarter. "QE.1" is an indicator variable that takes a value of 1 for year-quarters after 2008:Q4. Standard errors are double clustered by county and vintage year-quarter. (*** $p<0.01$, ** $p<0.05$, * $p<0.1$)

Mortgage Prepayment, Race, and Monetary Policy

Appendix

This appendix supplements the empirical analysis in Gerardi, Willen, and Zhang (2020). Below is a list of the sections contained in this appendix.

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A.1   HMDA-McDash and HMDA-McDash-CRISM Match Rates

As we discussed in section 2, our analysis employs a novel data set that combines three sources of administrative data: Home Mortgage Disclosure Act (HMDA) data, Black Knight McDash mortgage servicing data, and credit bureau data from Equifax. The three data sources are linked together through two separate loan-level matches: a match between the HMDA and McDash databases, which we will refer to as the HMDA-McDash dataset, and a match between the McDash and Equifax databases, which is referred to as CRISM (Equifax Credit Risk Insight Servicing McDash Database). We are then able to merge the two matched data sets, creating a final data set with information from all three sources, which we will refer to as the HMDA-McDash-CRISM data set. Below we will discuss some of the details of both matches and show match rates by loan vintage (year) to provide information on the quality and scope of the final data set used in the analysis.

A.1.1   HMDA-McDash Database

The HMDA-McDash matched data set is available to users within the Federal Reserve System and includes more than 93 million loans originated from 1992 through2015 (inclusive). The matching algorithm was written by the Risk Assessment, Data Analysis and Research (RADAR) group at the Federal Reserve Bank of Philadelphia and matches HMDA and Mc-Dash loans by the origination date, origination amount, property Zip code, lien type, loan purpose (that is, purchase or refinance), loan type (for example, conventional or FHA), and occupancy type. Tables A.1 and A.1 display match rates by origination year;the former table calculates rates by dividing by the number of McDash loans, while the latter table divides by the total number of HMDA loans. Overall, approximately two-thirds of McDash loans are successfully matched to HMDA, while almost 40 percent of HMDA loans are successfully matched to loans in McDash. Since the HMDA database covers a greater fraction of the mortgage market, the match rates normalized by HMDA loans are significantly lower than the rates normalized by McDash loans.

Our sample includes only loans originated in 2005 and later due to lower coverage in the pre-2005 McDash database. In 2005 McDash added a large servicer to its database, which substantially increased the overall coverage of the database. The last column in Table A.1 shows that the coverage (relative to the total number of HMDA loan originations) goes from 65 percent in 2004 to 81 percent in 2006. When servicers are added to the McDash database, they typically provide information on only their active loans. This raises concerns of attrition bias, and thus we focus only on loans originated in 2005 and later.

The matching algorithm is based on the following logic:

- Origination date (McDash) and action date (HMDA) must be within five days of each other.

- Origination amounts must be within $500.

- Property Zip codes must match.

- Lien types must match.

- Loan purposes (purchase, refinance) must match.

- Loan types (conventional, jumbo, etc.) must match.

- Occupancy types must match.

In our analysis, we use only loans that were uniquely matched. The last column in Table A.2 shows that during our sample period (2005 through 2015) our sample covers from 34 percent to 47 percent of all loan originations in HMDA.

Table A.1: Match Rate by Origination Year (Matched McDash Mortgages/All McDash Mortgages)

Origination Year	McDash Loans Matched	Only 1 HMDA Candidate	McDash Loans Uniquely Matched	McDash Coverage
1992	51%	48%	20%	58%
1993	55%	50%	19%	70%
1994	58%	53%	24%	52%
1995	61%	57%	29%	46%
1996	63%	58%	33%	42%
1997	62%	58%	35%	39%
1998	65%	60%	36%	52%
1999	65%	60%	35%	46%
2000	64%	61%	50%	31%
2001	64%	60%	49%	44%
2002	65%	59%	50%	50%
2003	71%	64%	53%	67%
2004	69%	64%	55%	65%
2005	**67%**	**61%**	**51%**	**73%**
2006	**63%**	**59%**	**49%**	**81%**
2007	**63%**	**59%**	**50%**	**87%**
2008	**65%**	**62%**	**54%**	**79%**
2009	**67%**	**64%**	**59%**	**79%**
2010	**69%**	**67%**	**61%**	**77%**
2011	**69%**	**67%**	**61%**	**73%**
2012	**73%**	**71%**	**64%**	**67%**
2013	**75%**	**74%**	**67%**	**62%**
2014	**77%**	**76%**	**71%**	**48%**
2015	**79%**	**78%**	**75%**	**45%**
Total	66%	62%	49%	61%

Notes: Match rates are calculated by the Risk Assessment, Data Analysis and Research (RADAR) group. McDash coverage is estimated by dividing the number of originations in the McDash database by the number of originations in HMDA.

Table A.2: Match Rate by Origination Year (Matched HMDA Mortgages/All HMDA Mortgages)

Origination Year	HMDA Loans Matched	Only 1 McDash Candidate	HMDA Loans Uniquely Matched
1992	21%	14%	12%
1993	27%	16%	13%
1994	22%	15%	12%
1995	22%	15%	13%
1996	21%	16%	14%
1997	21%	16%	14%
1998	30%	23%	19%
1999	25%	19%	16%
2000	19%	17%	16%
2001	27%	24%	22%
2002	33%	30%	25%
2003	48%	43%	36%
2004	45%	41%	36%
2005	**48%**	**43%**	**37%**
2006	**50%**	**45%**	**40%**
2007	**53%**	**48%**	**43%**
2008	**49%**	**46%**	**43%**
2009	**53%**	**50%**	**47%**
2010	**53%**	**50%**	**47%**
2011	**49%**	**47%**	**45%**
2012	**47%**	**45%**	**42%**
2013	**46%**	**44%**	**42%**
2014	**37%**	**35%**	**35%**
2015	**36%**	**35%**	**34%**
Total	38%	34%	30%

Notes: Match rates are calculated by the Risk Assessment, Data Analysis and Research (RADAR) group.

A.1.2 CRISM Database

CRISM is a data set that consists of McDash mortgages matched to credit bureau data from Equifax at the borrower level. The Equifax credit bureau data are updated at a monthly frequency and include information on outstanding consumer loans and credit lines for the primary borrower as well as all co-borrowers associated with the McDash mortgage. The matching process was conducted by Equifax using confidential and proprietary data. The exact matching algorithm is proprietary, but according to Equifax, anonymous fields such as the original and current mortgage balance, date of origination, ZIP code, and monthly payment history are all used in the algorithm.

CRISM coverage begins in June 2005, and according to Equifax, approximately 90 percent of McDash mortgages were matched to a credit bureau account with high confidence.[1] We keep only observations that pertain to the primary mortgage borrower to avoid double counting. Borrower credit information is included in the data set for the life of each loan as well as for the six months preceding origination and the six months following termination.

Figure A.1 displays the match rate by vintage for the HMDA-McDash-CRISM matched data set as a ratio of the total number of McDash originations (solid red line). For 2005–2015 originations, the match rate is between 50 percent and 60 percent. The figure also shows the total number of mortgage originations for the McDash data set, the HMDA-McDash matched data set, and the HMDA-McDash-CRISM matched data set. The largest decline in the sample occurs when the McDash database is matched to HMDA. The addition of CRISM data results in only a small decline in loan originations during our sample period.

Finally, in Table A.3 we compare summary statistics for the HMDA-McDash and HMDA-McDash-CRISM GSE (Panel A) and FHA (Panel B) samples, respectively. The tables show that the summary statistics are almost identical across the two samples, which suggests that the addition of the Equifax credit bureau data does not significantly alter the composition of mortgages.

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[1]Equifax provides a "Match Confidence Score" that is based on a scale of 0 to 0.9, where a higher score indicates that the McDash and Equifax data align better on the matching fields. Approximately 90 percent of McDash loans have a match confidence score of 0.8 or higher. Equifax recommends using 0.8 as a threshold for modeling purposes, and we follow this advice, keeping only matches with scores above 0.8.

Figure A.1: Loans in the HMDA-McDash-CRISM Match, HMDA-CRISM Match, and McDash Data Sets by Vintage
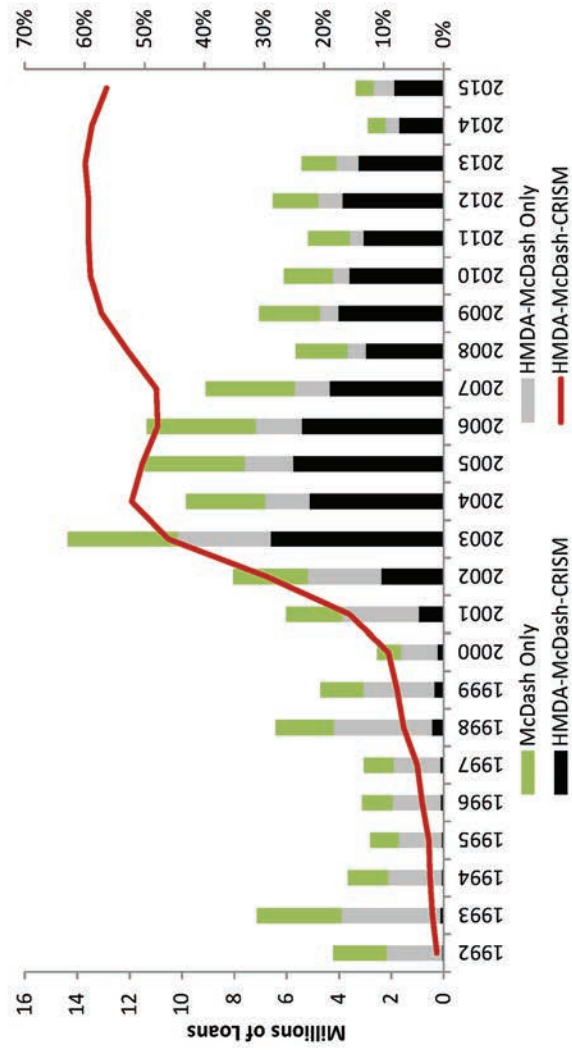
Notes: This figure shows the number of loans in the McDash data set, the HMDA-McDash data set, and the HMDA-McDash-CRISM data set by vintage (bars). In addition, the solid red line shows the match rate for the HMDA-McDash-CRISM data set, calculated as a percentage of the number of loans in the McDash database by vintage. This figure was created by the Risk Assessment, Data Analysis and Research (RADAR) group, which conducted the matching exercise.

Table A.3: Comparison of Summary Statistics: HMDA-McDash vs. HMDA-McDash-CRISM Databases

Panel A: GSE Loans				
	HMDA-McDash-Equifax		HMDA-McDash	
	Mean	Std. Dev.	Mean	Std. Dev.
FICO Origination (100s points)	7.44	0.54	7.45	0.53
LTV (%)	72.6	15.9	72.7	15.9
Loan Amount ($100k)	2.12	1.13	2.12	1.13
Interest Rate (ppts)	5.20	1.02	5.20	1.02
Income ($1k)	97.6	64.0	97.5	63.9
Refinance (d)	0.538	0.499	0.539	0.498
Condo (d)	0.140	0.347	0.139	0.346
2-4 Family (d)	0.018	0.133	0.018	0.133
Low Documentation (d)	0.308	0.462	0.309	0.462
Non-Occupant Owner (d)	0.140	0.347	0.140	0.347
Female (d)	0.294	0.455	0.294	0.456
Co-applicant (d)	0.505	0.500	0.503	0.500
# Loans	800,806		1,076,117	

Panel B: FHA Loans				
	HMDA-McDash-Equifax		HMDA-McDash	
	Mean	Std. Dev.	Mean	Std. Dev.
FICO Origination (100s points)	6.85	0.60	6.88	0.59
LTV (%)	93.6	7.5	93.6	7.4
Loan Amount ($100k)	1.73	0.91	1.73	0.91
Interest Rate (ppts)	4.93	1.00	4.93	1.00
Income ($1k)	65.8	37.5	65.8	37.3
Refinance (d)	0.294	0.456	0.295	0.456
Condo (d)	0.115	0.318	0.114	0.317
2-4 Family (d)	0.014	0.119	0.015	0.120
Low Documentation (d)	0.190	0.393	0.191	0.393
Non-Occupant Owner (d)	0.033	0.178	0.033	0.178
Female (d)	0.353	0.478	0.352	0.478
Co-applicant (d)	0.414	0.493	0.415	0.493
# Loans	295,487		397,686	

Notes: This table reports summary statistics from a 7.5% random sample of GSE loans originated between 2005 and 2015 (inclusive) from a matched HMDA-McDash-CRISM data set and a 10% random sample of GSE and FHA loans originated between 2005 and 2015 (inclusive) from a matched HMDA-McDash data set. The label (d) denotes dummy variables.

A.2 Sample Restrictions

Table A.4 below displays all of the restrictions that we impose in constructing our 7.5 percent random sample of the HMDA-McDash-CRISM data set. We adopt most of the restrictions implemented in Fuster et al. (2018). We implement most of our restrictions while querying the database (and thus, we do not know how many loans are lost as a result of those restrictions).[2] For the restrictions that we implement while applying code to clean and create our variables, we display the number of loans that are dropped.

Table A.4: Sample Restrictions

Sample Restriction:	# Loans Lost	# Loans Remaining
Originations between 01/2005 and 12/2015		
Loans with "conf" $\geq$ 0.80		
Fixed Rate Loans		
First Liens		
Fully Amortizing Loans No Prepayment Penalty		
$20 \leq$ LTV ≤ 100		
Occupancy Non-missing		
Loan Amount $\leq$ \$1m		
Income $\leq$ \$500k		
Term $= 30$ years		
No Home Improvement Loans		1,681,252
Seasoning ≤ 6 Months	193,898	1,487,354
Black, Hispanic White, Asian, and White Borrowers	208,817	1,278,537
GSE and FHA Loans	179,810	1,098,727
$3\% \leq$ Mortgage Rate $\leq 8\%$	2,434	1,096,293

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[2]Because the HMDA-McDash-CRISM database is a monthly panel and extremely large, we were unable to download more than a 7.5 percent sample given computing constraints.

A.3 LPM Estimates for All Covariates

In Table A.5 below we display the full set of regression estimates from the specifications estimated in Table 3. The column numbers correspond to identical specifications across the two tables.

Table A.5: Baseline Refinance Results with All Covariates

Dependent Variable: Prepay Refinance (d)

	GSE Loans					FHA Loans	
	(2)	(3)	(4)	(5)	(6)	(9)	(10)
Black (d)	-0.380***	-0.330***	-0.255***	-0.148***	-0.149***	-0.235***	-0.163***
	(0.049)	(0.038)	(0.032)	(0.025)	(0.025)	(0.028)	(0.028)
White Hispanic (d)	-0.454***	-0.462***	-0.421***	-0.278***	-0.289***	-0.400***	-0.315***
	(0.066)	(0.064)	(0.057)	(0.038)	(0.036)	(0.047)	(0.041)
Asian (d)	0.258***	0.268***	0.256**	0.180**	0.176**	0.071	0.034
	(0.093)	(0.097)	(0.098)	(0.068)	(0.068)	(0.073)	(0.073)
Qtrs since Orig	0.340***	0.130***	0.119***	0.123***		0.114***	
	(0.053)	(0.021)	(0.021)	(0.021)		(0.018)	
Qtrs since Orig $\hat{2}$	-0.014***	-0.008***	-0.007***	-0.007***		-0.007***	
	(0.003)	(0.001)	(0.001)	(0.001)		(0.001)	
Qtrs since Orig $\hat{3}$	0.000***	0.000***	0.000***	0.000***		0.000***	
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)	
Call Option		0.308***	0.315***	0.316***	0.721***	0.194***	0.595***
		(0.021)	(0.021)	(0.021)	(0.061)	(0.020)	(0.081)
SATO		-1.597***	-1.549***	-1.518***	-4.560***	-0.293**	-3.302***
		(0.128)	(0.122)	(0.123)	(0.427)	(0.122)	(0.509)
Refinance (d)	-0.208***	-0.239***	-0.208***	-0.217***	-0.256***	-0.147***	-0.214***
	(0.061)	(0.052)	(0.050)	(0.051)	(0.048)	(0.041)	(0.044)
Condo (d)	-0.438***	-0.462***	-0.489***	-0.571***	-0.585***	-0.373***	-0.528***
	(0.050)	(0.050)	(0.053)	(0.061)	(0.062)	(0.040)	(0.053)
2-4 Family (d)	-0.919***	-0.992***	-1.009***	-0.959***	-0.951***	-0.518***	-0.445***
	(0.090)	(0.083)	(0.083)	(0.076)	(0.077)	(0.087)	(0.086)
Prop Type Missing (d)	0.247***	0.219***	0.216***	0.209***	0.238***	0.258***	0.332***
	(0.060)	(0.060)	(0.060)	(0.058)	(0.061)	(0.058)	(0.068)

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Table A.5 – continued from previous page

Dependent Variable: Prepay Refinance (d)

	GSE Loans					FHA Loans	
	(2)	(3)	(4)	(5)	(6)	(9)	(10)
Low Documentation (d)	0.162***	0.128**	0.136**	0.142***	0.133**	-0.099*	-0.121**
	(0.056)	(0.053)	(0.053)	(0.052)	(0.054)	(0.058)	(0.054)
Documentation Missing (d)	0.853***	0.830***	0.819***	0.822***	0.762***	0.849***	0.787***
	(0.102)	(0.098)	(0.098)	(0.095)	(0.092)	(0.129)	(0.132)
Non-Occupant Owner (d)	-0.469***	-0.742***	-0.765***	-0.682***	-0.676***	4.031***	4.450***
	(0.052)	(0.064)	(0.065)	(0.058)	(0.056)	(0.729)	(0.704)
Risk Score	0.381***						
	(0.068)						
LTV	-0.011***						
	(0.002)						
LTV = 80 (d)	0.567***						
	(0.059)						
Loan Amount	-0.019						
	(0.022)						
LTV Change	-0.001	-0.050***	-0.046***	-0.045***	-0.038***	-0.038***	-0.014***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.002)
Risk Score Change			0.775***	0.764***	0.778***	0.843***	0.836***
			(0.085)	(0.084)	(0.077)	(0.084)	(0.083)
600 < Risk Score ≤ 620 (d)		0.256***	0.412***	0.430***	0.384***	0.519***	0.497***
		(0.052)	(0.057)	(0.060)	(0.053)	(0.054)	(0.050)
620 < Risk Score ≤ 640 (d)		0.347***	0.526***	0.535***	0.481***	0.687***	0.666***
		(0.060)	(0.065)	(0.062)	(0.053)	(0.083)	(0.071)
640 < Risk Score ≤ 660 (d)		0.483***	0.681***	0.698***	0.639***	0.856***	0.829***
		(0.066)	(0.073)	(0.070)	(0.055)	(0.109)	(0.090)
660 < Risk Score ≤ 680 (d)		0.618***	0.832***	0.855***	0.797***	0.941***	0.914***
		(0.085)	(0.093)	(0.094)	(0.077)	(0.109)	(0.096)

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Table A.5 – continued from previous page

Dependent Variable: Prepay Refinance (d)

		GSE Loans				FHA Loans	
	(2)	(3)	(4)	(5)	(6)	(9)	(10)
680 < Risk Score ≤ 700 (d)		0.703***	0.934***	0.949***	0.897***	1.036***	1.004***
		(0.091)	(0.102)	(0.102)	(0.082)	(0.131)	(0.116)
700 < Risk Score ≤ 720 (d)		0.856***	1.100***	1.115***	1.066***	1.186***	1.155***
		(0.100)	(0.112)	(0.113)	(0.090)	(0.144)	(0.134)
720 < Risk Score ≤ 740 (d)		0.983***	1.254***	1.268***	1.225***	1.310***	1.275***
		(0.111)	(0.125)	(0.125)	(0.103)	(0.154)	(0.139)
740 < Risk Score ≤ 760 (d)		1.128***	1.421***	1.431***	1.391***	1.465***	1.421***
		(0.122)	(0.139)	(0.139)	(0.116)	(0.152)	(0.139)
760 < Risk Score ≤ 780 (d)		1.256***	1.582***	1.584***	1.551***	1.554***	1.526***
		(0.134)	(0.155)	(0.154)	(0.134)	(0.161)	(0.149)
780 < Risk Score ≤800 (d)		1.304***	1.677***	1.674***	1.643***	1.633***	1.577***
		(0.146)	(0.171)	(0.170)	(0.152)	(0.172)	(0.160)
800 < Risk Score ≤ 820 (d)		1.297***	1.740***	1.730***	1.705***	1.657***	1.610***
		(0.146)	(0.176)	(0.176)	(0.159)	(0.176)	(0.168)
Risk Score > 820 (d)		1.294***	1.783***	1.732***	1.703***	1.760***	1.620***
		(0.152)	(0.186)	(0.181)	(0.167)	(0.195)	(0.192)
25 < LTV ≤ 30 (d)		-0.039	-0.019	0.049	0.029	0.875	0.429
		(0.065)	(0.069)	(0.069)	(0.076)	(0.801)	(0.860)
30 < LTV ≤ 35 (d)		0.006	0.027	0.114	0.094	0.765	0.098
		(0.066)	(0.067)	(0.072)	(0.077)	(0.623)	(0.638)
35 < LTV ≤ 40 (d)		0.011	0.031	0.166***	0.142**	0.476	0.329
		(0.050)	(0.053)	(0.061)	(0.063)	(0.526)	(0.654)
40 < LTV ≤ 45 (d)		-0.053	-0.020	0.154**	0.120	0.280	0.108
		(0.057)	(0.059)	(0.071)	(0.077)	(0.558)	(0.624)
45 < LTV ≤ 50 (d)		-0.075	-0.037	0.173**	0.139*	0.840	0.655
		(0.056)	(0.058)	(0.075)	(0.072)	(0.562)	(0.651)

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Table A.5 – continued from previous page

Dependent Variable: Prepay Refinance (d)

	(2)	GSE Loans				FHA Loans	
		(3)	(4)	(5)	(6)	(9)	(10)
50 < LTV ≤ 55 (d)		-0.159***	-0.115**	0.106	0.082	0.701	0.471
		(0.050)	(0.052)	(0.070)	(0.066)	(0.573)	(0.709)
55 < LTV ≤ 60 (d)		-0.213***	-0.160***	0.081	0.056	0.554	0.316
		(0.056)	(0.056)	(0.073)	(0.072)	(0.555)	(0.648)
60 < LTV ≤ 65 (d)		-0.314***	-0.256***	0.009	-0.023	0.506	0.292
		(0.061)	(0.061)	(0.079)	(0.077)	(0.536)	(0.619)
65 < LTV ≤ 70 (d)		-0.411***	-0.347***	-0.071	-0.099	0.391	0.305
		(0.063)	(0.063)	(0.080)	(0.078)	(0.517)	(0.626)
70 < LTV ≤ 75 (d)		-0.574***	-0.503***	-0.203**	-0.229***	0.388	0.338
		(0.067)	(0.065)	(0.086)	(0.081)	(0.509)	(0.605)
75 < LTV ≤ 80 (d)		-0.669***	-0.592***	-0.292***	-0.319***	0.319	0.279
		(0.069)	(0.066)	(0.084)	(0.078)	(0.510)	(0.603)
80 < LTV ≤ 85 (d)		-0.874***	-0.790***	-0.480***	-0.501***	0.176	0.142
		(0.082)	(0.078)	(0.091)	(0.087)	(0.525)	(0.622)
85 < LTV ≤ 90 (d)		-1.116***	-1.022***	-0.693***	-0.717***	0.104	0.088
		(0.112)	(0.106)	(0.111)	(0.106)	(0.518)	(0.613)
90 < LTV ≤ 95 (d)		-1.253***	-1.143***	-0.813***	-0.833***	0.075	0.080
		(0.124)	(0.115)	(0.117)	(0.111)	(0.525)	(0.617)
95 < LTV ≤ 100 (d)		-1.383***	-1.263***	-0.911***	-0.933***	-0.016	0.002
		(0.124)	(0.114)	(0.118)	(0.110)	(0.523)	(0.622)
85k < Orig Amount ≤ 110k (d)		0.418***	0.417***	0.378***	0.373***	0.350***	0.252***
		(0.056)	(0.056)	(0.057)	(0.052)	(0.049)	(0.042)
110k < Orig Amount ≤ 125k (d)		0.593***	0.595***	0.537***	0.529***	0.573***	0.456***
		(0.075)	(0.076)	(0.077)	(0.072)	(0.069)	(0.061)
125k < Orig Amount ≤ 150k (d)		0.793***	0.794***	0.734***	0.731***	0.763***	0.621***
		(0.093)	(0.093)	(0.095)	(0.087)	(0.091)	(0.077)

Table A.5 – continued from previous page

Dependent Variable: Prepay Refinance (d)

		GSE Loans				FHA Loans	
	(2)	(3)	(4)	(5)	(6)	(9)	(10)
150k < Orig Amount ≤ 175k (d)		0.953***	0.954***	0.878***	0.877***	1.054***	0.867***
		(0.112)	(0.114)	(0.116)	(0.107)	(0.110)	(0.093)
Orig Amount > 175k (d)		1.493***	1.496***	1.350***	1.356***	1.710***	1.382***
		(0.148)	(0.151)	(0.154)	(0.142)	(0.152)	(0.124)
25k < Income ≤ 50k (d)		0.057*	0.051	0.032	0.049*	0.130***	0.103***
		(0.029)	(0.031)	(0.030)	(0.028)	(0.039)	(0.035)
50k < Income ≤ 75k (d)		0.084**	0.064*	0.037	0.060*	0.130***	0.120***
		(0.036)	(0.037)	(0.035)	(0.035)	(0.047)	(0.036)
75k < Income ≤ 100k (d)		0.164***	0.137**	0.086*	0.112**	0.262***	0.233***
		(0.049)	(0.052)	(0.047)	(0.048)	(0.051)	(0.044)
100k < Income ≤ 125k (d)		0.262***	0.227***	0.142**	0.171***	0.374***	0.321***
		(0.060)	(0.062)	(0.054)	(0.053)	(0.064)	(0.051)
125k < Income ≤ 150k (d)		0.320***	0.280***	0.168**	0.200***	0.433***	0.287***
		(0.077)	(0.079)	(0.067)	(0.066)	(0.082)	(0.065)
150k < Income ≤ 175k (d)		0.371***	0.331***	0.207**	0.220***	0.673***	0.440***
		(0.094)	(0.096)	(0.080)	(0.077)	(0.101)	(0.085)
175k < Income ≤ 200k (d)		0.336***	0.301***	0.160*	0.182**	0.616***	0.268
		(0.101)	(0.103)	(0.085)	(0.082)	(0.174)	(0.179)
200k < Income ≤ 225k (d)		0.354***	0.310**	0.158	0.169*	0.851***	0.526***
		(0.113)	(0.115)	(0.095)	(0.091)	(0.136)	(0.168)
225k < Income ≤ 250k (d)		0.246**	0.206	0.051	0.072	0.694**	0.376
		(0.122)	(0.124)	(0.103)	(0.099)	(0.283)	(0.290)
250k < Income ≤ 275k (d)		0.281*	0.246*	0.089	0.094	0.556**	0.249
		(0.142)	(0.144)	(0.117)	(0.116)	(0.264)	(0.256)
275k < Income ≤ 300k (d)		0.228	0.192	0.043	0.049	0.205	-0.349
		(0.137)	(0.137)	(0.114)	(0.110)	(0.271)	(0.331)

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Table A.5 – continued from previous page

Dependent Variable: Prepay Refinance (d)

	(2)	GSE Loans				FHA Loans	
		(3)	(4)	(5)	(6)	(9)	(10)
300k < Income ≤ 325k (d)		0.140	0.125	-0.029	-0.033	0.323	-0.461
		(0.148)	(0.145)	(0.127)	(0.123)	(0.487)	(0.545)
325k < Income ≤ 350k (d)		0.141	0.119	0.000	-0.005	0.960*	0.458
		(0.146)	(0.145)	(0.125)	(0.123)	(0.483)	(0.654)
350k < Income ≤ 375k (d)		0.086	0.053	-0.069	-0.063	0.830	0.421
		(0.163)	(0.166)	(0.154)	(0.160)	(0.584)	(0.764)
375k < Income ≤ 400k (d)		0.106	0.067	-0.023	-0.045	-0.048	-1.031
		(0.182)	(0.187)	(0.178)	(0.173)	(0.752)	(0.954)
400k < Income ≤ 425k (d)		-0.074	-0.111	-0.189	-0.220	-0.145	0.014
		(0.172)	(0.171)	(0.163)	(0.164)	(0.608)	(0.663)
425k < Income ≤ 450k (d)		0.079	0.034	-0.129	-0.067	0.762	0.575
		(0.196)	(0.196)	(0.192)	(0.192)	(1.015)	(1.050)
450k < Income ≤ 475k (d)		-0.155	-0.193	-0.312*	-0.298	0.578	1.094
		(0.192)	(0.194)	(0.186)	(0.184)	(0.741)	(0.918)
475k < Income ≤ 500k (d)		-0.055	-0.089	-0.203	-0.174	0.115	-0.515
		(0.167)	(0.167)	(0.182)	(0.185)	(1.210)	(1.333)
Female (d)		-0.061***	-0.060***	-0.078***	-0.079***	-0.082***	-0.101***
		(0.012)	(0.012)	(0.013)	(0.014)	(0.016)	(0.017)
Co-applicant (d)		0.171***	0.150***	0.161***	0.161***	-0.103***	-0.080***
		(0.033)	(0.028)	(0.026)	(0.027)	(0.018)	(0.019)
Borrower Age		-0.007	-0.007*	-0.004	0.000	0.021***	0.021***
		(0.004)	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)
Borrower Age $\hat{2}$		-0.000	-0.000	-0.000*	-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-2.967***	-0.846***	-1.265***	-1.556***	-2.865***	-2.487***	-3.746***

Table A.5 – continued from previous page

Dependent Variable: Prepay Refinance (d)

	GSE Loans					FHA Loans	
	(2)	(3)	(4)	(5)	(6)	(9)	(10)
	(0.592)	(0.221)	(0.247)	(0.248)	(0.379)	(0.608)	(0.949)
Underwriting Vars	X	X	X	X	X	X	X
HMDA Vars	X	X	X	X		X	
Vintage Year-Qtr FE	X	X	X	X	X	X	X
State FE	X	X	X			X	
Zip Code FE				X		X	
Zip Code-by-Year-Qtr FE					X		X
# Observations	11,983,398	11,547,035	11,469,141	11,469,141	11,318,445	3,732,349	3,559,947
# Loans							
R^2	0.012	0.018	0.019	0.022	0.077	0.017	0.145

Notes: This table reports LPM estimates of equation (1)—the likelihood of voluntary mortgage prepayment due to refinancing on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-Equifax data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's risk score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2–4 multi-family properties, low-documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income, and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year mortgages according to the FHLMC survey. "Refi Money" is a measure of the incentive to refinance taken from Deng et al. (2000). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p< 0.1)

A.4 Logit Models

In this section we present prepayment due to refinance and home sale results as well as default results from logit models. These models are estimated on a 7.5 percent random sample of our HMDA-McDash-Equifax matched data set. Table A.6 contains the refinance results, Tablel A.7 contains the home sale results, and Table A.8 displays the default results. Both tables show the estimated average marginal effects associated with the racial/ethnic indicator variables. The covariates and fixed effects in each column correspond exactly to their counterparts in Tables 3, 4, and 5 in the main text. The omitted specifications are those with Zip code and Zip- code-by-year-quarter fixed effects. It was not possible to estimate those specifications using the logit framework.

Table A.6: Logit Prepayment due to Refinance Hazard Estimates

Dependent Variable: Prepay Refinance (d)	GSE Loans				FHA Loans	
	(1)	(2)	(3)	(4)	(7)	(8)
Black (d)	-0.686***	-0.421***	-0.353***	-0.282***	-0.585***	-0.419***
	(0.033)	(0.030)	(0.029)	(0.030)	(0.037)	(0.024)
Hispanic (d)	-0.654***	-0.475***	-0.489***	-0.449***	-0.405***	-0.389***
	(0.057)	(0.024)	(0.030)	(0.031)	(0.059)	(0.028)
Asian (d)	0.466***	0.275***	0.259***	0.247***	0.455***	-0.030
	(0.132)	(0.070)	(0.070)	(0.070)	(0.088)	(0.043)
Loan Age	X	X	X	X	X	X
Underwriting Vars		X	X	X		X
HMDA Vars			X	X		X
Vintage Year-Qtr FE	X	X	X	X	X	X
State FE		X	X	X		X
# Observations	15,460,588	11,983,398	11,547,035	11,469,141	6,184,502	4,316,733

Notes: This table reports estimated marginal effects estimates from a logit model of equation (1)—the likelihood of voluntary mortgage prepayment due to refinancing on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 5% random sample of loans from a matched HMDA-McDash-Equifax data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's risk score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2–4 multi-family properties, low-documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income, and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). Standard errors are clustered by county. (*** $p<0.01$, ** $p<0.05$, * $p< 0.1$)

Table A.7: Logit Prepayment due to Sale Hazard Estimates

Dependent Variable: Prepay Sale (d)

	GSE Loans				FHA Loans	
	(1)	(2)	(3)	(4)	(7)	(8)
Black (d)	-0.505***	-0.440***	-0.415***	-0.414***	-0.633***	-0.587***
	(0.014)	(0.013)	(0.012)	(0.012)	(0.017)	(0.016)
Hispanic (d)	-0.417***	-0.347***	-0.340***	-0.340***	-0.501***	-0.524***
	(0.017)	(0.015)	(0.018)	(0.018)	(0.022)	(0.020)
Asian (d)	-0.189***	-0.190***	-0.208***	-0.209***	-0.234***	-0.339***
	(0.020)	(0.019)	(0.020)	(0.020)	(0.031)	(0.024)
Loan Age	X	X	X	X	X	X
Underwriting Vars		X	X	X		X
HMDA Vars			X	X		X
Vintage Year-Qtr FE	X	X	X	X	X	X
State FE		X	X	X		X
# Observations	15,460,588	11,983,398	11,547,035	11,469,141	6,184,502	4,316,733

Notes: This table reports estimated marginal effects estimates from a logit model of equation (1)—the likelihood of voluntary mortgage prepayment due to sale on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 5% random sample of loans from a matched HMDA-McDash-Equifax data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's risk score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2–4 multi-family properties, low-documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income, and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). Standard errors are clustered by county. (*** $p<0.01$, ** $p<0.05$, * $p< 0.1$)

Table A.8: Logit Default Hazard Estimates

Dependent Variable: Default (d)	GSE Loans			FHA Loans	
	(1)	(2)	(3)	(6)	(7)
Black (d)	0.350***	0.149***	0.101***	0.719***	0.340***
	(0.023)	(0.013)	(0.012)	(0.031)	(0.025)
Hispanic White (d)	0.362***	0.185***	0.132***	0.162***	0.158***
	(0.038)	(0.012)	(0.012)	(0.028)	(0.025)
Asian (d)	0.015	0.011	0.010	-0.163***	-0.098***
	(0.015)	(0.012)	(0.012)	(0.030)	(0.037)
Loan Age	X	X	X	X	X
Underwriting Vars		X	X		X
HMDA Vars			X		X
Vintage Year-Qtr FE	X	X	X	X	X
State FE		X	X		X
# Observations	9,929,254	7,705,281	7,424,419	3,653,447	2,558,071

Notes: This table reports estimated marginal effects estimates from a logit model of the likelihood of mortgage default on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 5% random sample of loans from a matched HMDA-McDash-Equifax data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's risk score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2–4 multi-family properties, low-documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income, and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). Standard errors are clustered by county. (*** p<0.01, ** p<0.05, * p< 0.1)

A.5 Involuntary Prepayments

In Section 3.4 we showed that minority borrowers are more likely to default on their loans. The default definition that we use in that section is based on borrowers becoming seriously delinquent on their loans by missing at least three payments (that is, 90-plus days past due). We now consider an alternative definition of default that focuses on involuntary mortgage prepayment due to foreclosure and/or distressed sale (that is, short sales). Like our voluntary prepayment variables (refinance and home sale), this default definition identifies a terminal state, and is likely more correlated with the actual losses that lenders experience on distressed loans. As such, it is likely more relevant to mortgage pricing than a serious delinquency definition of default.

Table A.9 displays the estimation results. The table is identical in structure to Table 5, with the only difference being the dependent variable. The results are very different, however. In column (1) we see that minority borrowers are significantly more likely to lose their homes due to foreclosure, and the magnitudes are large.[3] However, as we add more controls and fixed effects, the differences disappear. In our most saturated model with Zip-code-by-year-quarter fixed effects, minority GSE borrowers are significantly *less* likely to lose their homes to foreclosure. We see a similar pattern in the FHA sample, as Black borrowers are more than 8 percentage points less likely to lose their homes to foreclosure compared with non-Hispanic white borrowers (column (8)).

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[3]The sample average for involuntary prepayment is approximately 0.11 percentage point.

Table A.9: Involuntary Prepayment/Foreclosure Results

Dependent Variable: Involuntary Prepayment/Foreclosure (d)

	GSE Loans					FHA Loans			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Black (d)	0.095***	0.032*	0.001	-0.028**	-0.034***	-0.007	-0.059***	-0.084***	-0.089***
	(0.024)	(0.017)	(0.016)	(0.012)	(0.013)	(0.014)	(0.016)	(0.017)	(0.017)
Hispanic White (d)	0.142***	0.048***	0.031**	0.035**	0.030**	-0.027*	-0.018	-0.037***	-0.022
	(0.036)	(0.016)	(0.015)	(0.014)	(0.014)	(0.014)	(0.012)	(0.013)	(0.016)
Asian (d)	0.020*	0.026***	0.033***	0.020**	0.018**	-0.066***	-0.021	-0.009	-0.009
	(0.011)	(0.008)	(0.008)	(0.008)	(0.008)	(0.015)	(0.014)	(0.016)	(0.023)
Risk Score Origination		-0.161***					-0.207***		
		(0.024)					(0.017)		
LTV Origination		0.006***					0.010***		
		(0.001)					(0.001)		
Loan Amount		0.016***					0.031***		
		(0.004)					(0.008)		
LTV Change		0.023***	0.023***	0.023***	0.029***		0.023***	0.022***	0.028***
		(0.002)	(0.002)	(0.002)	(0.003)		(0.002)	(0.002)	(0.003)
Refinance (d)		0.023***	0.004	0.003	0.005		0.109***	0.078***	0.081***
		(0.007)	(0.008)	(0.008)	(0.008)		(0.020)	(0.018)	(0.019)
Female (d)			-0.013***	-0.012***	-0.010***			-0.029***	-0.027***
			(0.004)	(0.003)	(0.004)			(0.008)	(0.009)
Refi Money			0.004***	0.004***	-0.059***			0.015***	0.025*
			(0.001)	(0.001)	(0.008)			(0.003)	(0.014)
SATO			0.162***	0.157***	0.615***			0.042**	-0.052
			(0.036)	(0.034)	(0.077)			(0.018)	(0.106)
Loan Age	X					X			
Underwriting Vars	X	X	X	X	X	X	X	X	X
HMDA Vars		X	X	X	X		X	X	X
Vintage Year-Qtr FE	X	X	X	X	X	X	X	X	X
State FE	X	X	X			X	X		
Zip Code FE				X				X	
Zip Code-by-Year-Qtr FE					X				X
# Observations	15,460,588	11,983,398	11,547,035	11,547,035	11,396,543	6,184,502	4,316,733	3,748,150	3,575,715
# Loans	792,823	622,936	601,094	601,028	599,643	291,587	209,827	182,517	170,234
R²	0.004	0.008	0.009	0.011	0.076	0.004	0.006	0.007	0.126

Notes: This table reports LPM estimates of the likelihood of involuntary mortgage prepayment due to foreclosure and/or distressed sale default on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-Equifax data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's risk score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2-4 multi-family properties, low-documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income, and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year mortgages according to the FHLMC survey. "Refi Money" is a measure of the incentive to refinance taken from Deng et al. (2000). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p<0.1)

A.6   Agarwal, Driscoll, and Laibson Closed-Form Refinance Rule

In this section we proxy for the moneyness of the prepayment option using an alternative measure developed by Agarwal et al. (2013) (hereafter ADL). ADL derived a closed-form solution for the optimal time to refinance from a borrower's perspective. Specifically, the rule states that a borrower should refinance when the current mortgage interest rate falls below the original rate by at least:

$$\frac{1}{\psi}\left[\phi + W(-exp(-\phi))\right]$$

where W is the Lambert W-function and

$$\psi = \frac{\sqrt{2\rho + \lambda}}{\sigma}$$

$$\phi = 1 + \psi(\rho + \lambda)\frac{\kappa/M}{(1-\tau)}$$

$$\lambda = \mu + \frac{i_0}{exp[i_0\Gamma]-1} + \pi$$

In these expressions ρ is the discount rate, μ is the expected probability of moving, σ is the standard deviation of the mortgage rate, $\frac{\kappa/M}{1-\tau}$ is the ratio of the tax-adjusted refinancing cost and the remaining mortgage value, Γ is the remaining maturity of the mortgage, i_0 is the original mortgage rate, π is the expected inflation rate, and τ is the marginal tax rate. We assume the following parameter values, where σ is estimated by taking the standard deviation of changes in the Freddie Mac Primary Market Mortgage Survey rate from April 1971 to August 2020:

$\rho =$	0.02
$\sigma =$	0.95
$\pi =$	0.02
$\mu_b =$	0.02
$\mu_w =$	0.04
$\frac{\kappa/M}{1-\tau} =$	$\frac{2000}{M} + 0.01$

We assume different mobility rates, μ_b, μ_w, for Black and non-Hispanic white borrowers, respectively, which we annualize based on the quarterly hazards from Table 1.[4] We specify two variables based on the above threshold. First, we create an indicator variable, *ADL Dummy*, which takes a value of 1 if the difference between the borrower's current interest rate and the market rate (PMMS survey) is greater than the ADL threshold. Second, we create a continuous variable, *ADL*, which measures how much higher/lower the difference between the current rate and market rate is from the ADL threshold. Positive values of *ADL* imply that the refinance option is in the money given the borrower type specific moving hazards

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[4]For simplicity we assume the same mobility rate for Black and Hispanic white households.

and refi costs, while negative values imply that it is not.

We then re-estimate equation (2) and substitute our ADL variables for *Call Option*, which is our proxy for the moneyness of the refinance option from Deng et al. (2000). We focus on the specifications in columns (1) and (2) of Table 6. Column (1) includes only a control for the moneyness of the option, while column (2) includes interactions between the moneyness of the option and the race dummies. Table A.10 displays the results. In columns (1) and (2) we show results for the *Call Option* variable applied to the sample of loans with non-missing ADL values. Columns (3) and (4) display results for the *ADL Dummy*, and columns (5) and (6) display results for the *ADL* continuous variable.

A few notable patterns emerge from Table A.10. First, both ADL variables are positive and statistically significant as expected, which suggests that borrowers are more likely to refinance when their option is in the money. However, columns (2), (4), and (6) show that the refinancing behavior of minority borrowers is much less sensitive to changes in the value of the option. In fact, these differences appear to be much larger when we use the ADL variables, as the interaction coefficients in columns (4) and (6) are of about the same magnitude, but with the opposite sign as the ADL coefficients by themselves. This implies that minority borrowers are actually insensitive to macroeconomic changes in rates that make their prepayment option more valuable. Finally, as we saw in Table 6, the inclusion of the interaction terms causes the sign associated with the race dummies to flip and become positive. This means that the racial differences in refinance propensities is driven entirely by differential sensitivities of minority borrowers to respond to declining rates.

Table A.10: Prepayment due to Refinance with Interaction Effects

| Dependent Variable: Prepay Refinance (d)	GSE Loans					
	(1)	(2)	(3)	(4)	(5)	(6)
Black (d)	-0.118***	0.309***	-0.136***	0.065**	-0.149***	0.044
	(0.021)	(0.048)	(0.021)	(0.029)	(0.020)	(0.028)
Hispanic White (d)	-0.197***	0.172***	-0.224***	-0.019	-0.234***	-0.049*
	(0.025)	(0.045)	(0.026)	(0.026)	(0.025)	(0.025)
Call Option	0.225***	0.232***				
	(0.016)	(0.016)				
Black * Call Option		-0.068***				
		(0.005)				
Hispanic White * Call Option		-0.064***				
		(0.005)				
ADL Dummy			0.525***	0.605***		
			(0.079)	(0.086)		
Black * ADL Dummy				-0.572***		
				(0.061)		
Hispanic White * ADL Dummy				-0.625***		
				(0.067)		
ADL					0.530***	0.560***
					(0.049)	(0.049)
Black * ADL						-0.550***
						(0.054)
Hispanic White * ADL						-0.564***
						(0.059)
Loan Age	X	X	X	X	X	X
Underwriting Vars	X	X	X	X	X	X
HMDA Vars	X	X	X	X	X	X
Vintage Year-Qtr FE	X	X	X	X	X	X
Zip Code FE	X	X	X	X	X	X
# Observations	10,544,968	10,544,968	10,544,968	10,544,968	10,544,968	10,544,968
# Loans	557,848	557,848	557,848	557,848	557,848	557,848
R^2	0.016	0.016	0.011	0.011	0.012	0.012

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A.7 Evidence from Survey of Consumer Finances

In this section we use data from the 1992–2019 Survey of Consumer Finances (SCF) to examine the rate gap between Black and non-Hispanic white borrowers for active loans as well as new loans originated that year.

Data construction is as follows. For comparison with the fixed-rate, conforming, and FHA mortgages used in our main analysis, the observations are from respondents who report having a non-adjustable-rate mortgage (X820=5) that is either non-federally guaranteed (X724=1) or a FHA loan (X726=1) with a loan amount at origination (X804) of less than $450,000. The current interest rate is reported in X816, from which we remove outlier rates that are less than 2 percent or more than 4 percent over the average Freddie Mac PMMS rate during the year of origination, which is comparable to the restriction of rate to 3 percent to 8 percent in our main analysis.

The SCF definition of race underwent a slight revision in 1998 to include more categories. For the 1992–1995 SCF, we define respondent race based on Question X5909, "Are you Native American, Asian, Hispanic, black, white, or another race?", with an answer of 4 ("black or African-American") being our definition of a Black respondent and an answer of 5 ("white") being our definition of a White respondent. In the 1998–2019 SCF, we define respondent race based on the revised Question X6809, which asks, "Which of these categories do you feel best describe you: (white, black or African-American, Hispanic or Latino, Asian, American Indian or Alaska Native, Hawaiian Native or other Pacific Islander, or another race?)," with an answer of 2 ("black or African-American") being our definition of a Black respondent and answer of 1 ("white") being our definition of a white respondent.

We compute the mean rate for all active loans by respondent race using the provided survey weights by race to compute the active loan-rate gap. For the new loans rate gap, we take means by respondent race and by the year of origination (X802) rounded to the nearest SCF survey year. The mean rate differences between Black and non-Hispanic white borrowers for active and new loans are shown in Figure A.2. While the estimates are much more noisy due to a smaller sample size (and potential survey error), we do find that the rate gap for active loans is higher than the rate gap for new loans, consistent with Figure 1 in the main text.

Figure A.2: Gap between interest rates for Black and non-Hispanic white borrowers based on data from the SCF
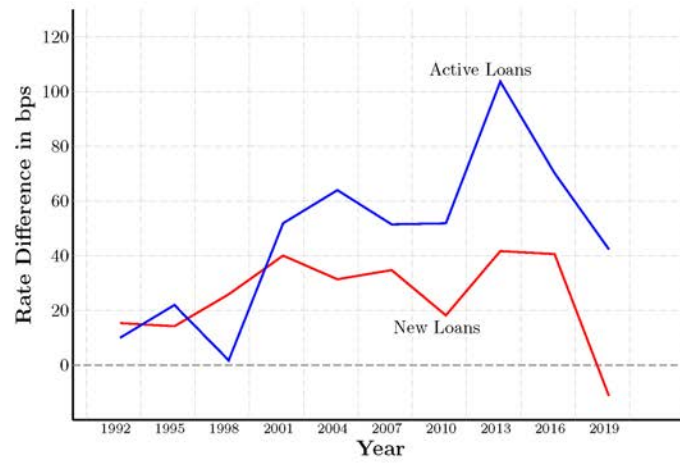
A.8 Secondary Market Pricing Estimates for All Co-variates

Table A.11: Payups regression with all covariates

	(1)	(2)
	≥$85k trades	≥$1mil trades
(mean) tract_black	0.998***	1.411***
	(0.303)	(0.219)
Loan size		
under 85k	0	0
	(.)	(.)
85-110k	-0.376***	-0.369***
	(0.0296)	(0.0281)
110-125k	-0.609***	-0.591***
	(0.0310)	(0.0291)
125-150k	-0.715***	-0.687***
	(0.0309)	(0.0285)
150-175k	-0.927***	-0.907***
	(0.0299)	(0.0280)
175-200k	-1.147***	-1.132***
	(0.0338)	(0.0319)
over 200k	-1.244***	-1.251***
	(0.0332)	(0.0311)
fico_cat=680	0	0
	(.)	(.)
fico_cat=720	0.302***	0.325***
	(0.0431)	(0.0427)
fico_cat=750	0.399***	0.399***
	(0.0439)	(0.0438)
ltv_cat=80	0	0
	(.)	(.)
ltv_cat=90	-0.0767***	-0.0583***
	(0.0168)	(0.0153)
ltv_cat=95	-0.397***	-0.319***
	(0.0522)	(0.0394)
ltv_cat=100	-0.384***	-0.261***
	(0.0771)	(0.0733)
refi_diff	0.326***	0.242**
	(0.101)	(0.0948)
refi_diff_sq	-1.699***	-1.595***
	(0.165)	(0.158)
refi_diff_cube	0.408***	0.362***
	(0.0724)	(0.0714)

log_vol	6.227***	3.534***
	(1.007)	(1.329)
log_vol_sq	-0.389***	-0.224***
	(0.0632)	(0.0820)
log_vol_cube	0.00800***	0.00464***
	(0.00132)	(0.00168)
group(dt_week coupon)=0	0	0
	(.)	(.)
group(seller)=0	0	0
	(.)	(.)
Observations	14374	13570
R^2	0.731	0.754

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

A.9 Additional Tables and Figures

Table A.12: Prepayment, Race, and Loan Amount

| Dependent Variable: Prepay (d)		
	GSE Loans	
	(1)	(2)
Black (d)	-1.628***	
	(0.117)	
Hispanic White (d)	-1.342***	
	(0.158)	
Asian (d)	0.440**	
	(0.188)	
Orig Amount $\leq$ 85k (d)		-1.697***
		(0.165)
85k < Orig Amount < 110k (d)		-1.225***
		(0.137)
110k < Orig Amount < 125k (d)		-1.050***
		(0.127)
125k < Orig Amount < 150k (d)		-0.854***
		(0.109)
150k < Orig Amount < 175k (d)		-0.681***
		(0.096)
Loan Age	X	X
Underwriting Vars		
HMDA Vars		
Vintage Year-Qtr FE	X	X
State FE		
Zip Code FE		
Zip Code-by-Year-Qtr FE		
# Observations	15,460,588	15,460,588
R^2	0.009	0.009

Notes: This table reports LPM estimates of the likelihood of voluntary prepayment due to either refinance or home sale on a set of race/ethnicity indicator variables (column (1)) and a set of indicator variables for loan amount bins at origination (column (2)). The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-Equifax data set. The unit of observation is a loan-quarter. All columns include a 3rd order polynomial for the number of quarters since origination (duration). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p< 0.1)

Table A.13: Prepayment LPM Results

Dependent Variable: Prepay (d)

|	GSE Loans						FHA Loans			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Black (d)	-1.628***	-1.040***	-0.967***	-0.867***	-0.690***	-0.694***	-1.447***	-1.074***	-0.818***	-0.723***
	(0.117)	(0.060)	(0.050)	(0.047)	(0.040)	(0.042)	(0.066)	(0.050)	(0.056)	(0.053)
Hispanic White (d)	-1.342***	-0.977***	-0.948***	-0.887***	-0.667***	-0.682***	-0.932***	-1.017***	-0.972***	-0.852***
	(0.158)	(0.089)	(0.087)	(0.078)	(0.049)	(0.048)	(0.099)	(0.048)	(0.054)	(0.049)
Asian (d)	0.440**	0.176	0.202	0.191	0.106	0.107	0.290**	-0.329***	-0.216**	-0.269***
	(0.188)	(0.125)	(0.131)	(0.131)	(0.098)	(0.097)	(0.128)	(0.071)	(0.085)	(0.073)
Risk Score Origination		0.482***						0.653***		
		(0.089)						(0.071)		
LTV Origination		-0.024***						-0.018***		
		(0.004)						(0.002)		
Loan Amount		0.765***						0.984***		
		(0.084)						(0.066)		
LTV Change		-0.025***	-0.089***	-0.084***	-0.084***	-0.075***		-0.051***	-0.077***	-0.038***
		(0.006)	(0.006)	(0.005)	(0.005)	(0.006)		(0.004)	(0.005)	(0.004)
Refinance (d)		-0.602***	-0.593***	-0.561***	-0.553***	-0.619***		-0.438***	-0.350***	-0.415***
		(0.090)	(0.079)	(0.075)	(0.075)	(0.073)		(0.048)	(0.042)	(0.047)
Female (d)			-0.079***	-0.072***	-0.102***	-0.107***			-0.075***	-0.110***
			(0.017)	(0.017)	(0.019)	(0.020)			(0.021)	(0.021)
Refi Money			0.404***	0.410***	0.411***	1.128***			0.220***	0.960***
			(0.026)	(0.026)	(0.027)	(0.083)			(0.025)	(0.102)
SATO			-1.965***	-1.907***	-1.846***	-7.215***			-0.216	-5.761***
			(0.171)	(0.162)	(0.163)	(0.586)			(0.168)	(0.625)
Risk Score Change				0.899***	0.874***	0.908***			1.198***	1.172***
				(0.130)	(0.129)	(0.116)			(0.100)	(0.098)
Loan Age	X	X	X	X	X	X	X	X	X	X
Underwriting Vars		X	X	X	X	X		X	X	X
HMDA Vars		X	X	X	X	X		X	X	X
Vintage Year-Qtr FE	X	X	X	X			X	X		
State FE		X	X	X				X		
Zip Code FE					X				X	
Zip Code-by-Year-Qtr FE						X				X
# Observations	15,460,588	11,983,398	11,547,035	11,469,141	11,469,141	11,318,445	6,184,502	4,316,733	3,732,349	3,559,947
R²	0.009	0.012	0.020	0.020	0.023	0.080	0.006	0.013	0.019	0.146

Notes: This table reports LPM estimates of the likelihood of voluntary prepayment due to either refinance or home sale on a set of race/ethnicity indicator variables. The estimation is performed at the quarterly frequency on a 7.5% random sample of loans from a matched HMDA-McDash-Equifax data set. The unit of observation is a loan-quarter. Underwriting variables include the borrower's risk score at origination, LTV at origination, loan amount, change in LTV since origination, indicators for condos and 2–4 multi-family properties, low-documentation loans, non-owner occupant properties, and refinance loans. HMDA variables include borrower age (2nd order polynomial), borrower income, and indicators for gender and co-applicants. All columns include a 3rd order polynomial for the number of quarters since origination (duration). "SATO" is the spread between the mortgage rate and the average rate associated with newly originated 30-year mortgages according to the FHLMC survey. "Refi Money" is a measure of the incentive to refinance taken from Deng et al. (2000). Standard errors are double clustered by county and vintage year-quarter. (*** p<0.01, ** p<0.05, * p< 0.1)

Figure A.3: Mortgage pricing for low prepayment loans.
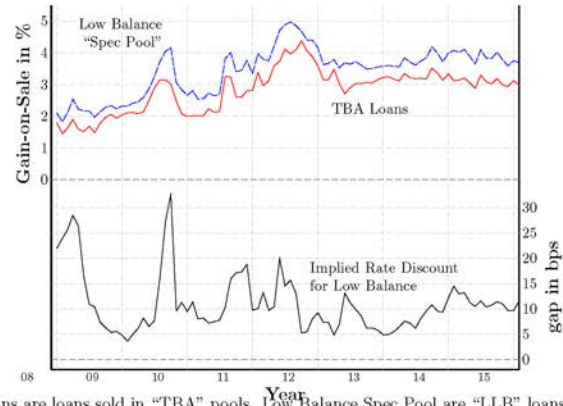
Notes: TBA loans are loans sold in "TBA" pools. Low Balance Spec Pool are "LLB" loans defined as loans with balances of less than $85K. Gain-on-sale is the gap between par and the interpolated price of an MBS paying a coupon equal to the FHLMC Primary Mortgage Market Survey 30-year FRM rate less the g-fee. Implied rate discount is the gap between the FHLMC PMMS 30-year FRM rate and the interest rate that yields the same gain-on-sale for an LLB mortgage.

Figure A.4: Kaplan Meier unconditional default hazard rates
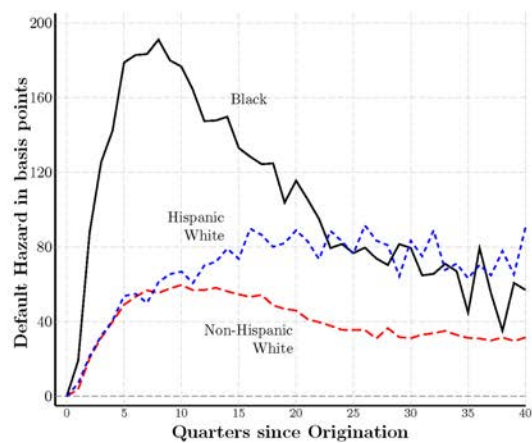
Notes: This figure displays the Kaplan-Meier hazard estimates of default broken down by racial/ethnic groups. The Kaplan-Meier estimate of the hazard function is: $\lambda_p(t_j) = \frac{d_{pj}}{n_j}$, where the number of loans that have reached time t_j without being terminated or censored is given by n_j, and the number of terminations due to default at t_j is given by d_{pj}. The underlying data come from the Black Knight McDash database.

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United States Government Accountability Office

Statement for the Record

To the Subcommittee on Oversight and Investigations, Committee on Financial Services, House of Representatives

For Release on Delivery
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FINANCIAL SERVICES

Fair Lending, Access, and Retirement Security

Statement for the Record by Michael E. Clements, Director, Financial Markets and Community Investment

A Century of Non-Partisan Fact-Based Work

GAO-21-399T

GAO@100 Highlights

February 24, 2021

FINANCIAL SERVICES

Fair Lending, Access, and Retirement Security

Why GAO Did This Study

As GAO has long reported, income, wealth, and other inequalities are associated with racial and other disparities in access to financial services and financial security in retirement.

Income and wealth inequality in the United States have increased over several decades. There is concern among some researchers and policy makers that these disparities may indicate potential problems for the financial security of many Americans in retirement.

Concerns about discrimination in credit markets also have long existed. Fair lending laws are intended to address the concerns by prohibiting discrimination in credit provision on the basis of race, national origin, gender, and other characteristics. However, the occurrence and magnitude of discrimination remain unclear, particularly in nonmortgage credit markets.

This statement summarizes information on more than a decade of GAO work related to the relationship between racial, income, wealth, and other inequalities and access to financial services and retirement security, and highlights related regulatory issues and industry developments. For a full list of the reports, see Related GAO Products.

View GAO-21-399T. For more information, contact Michael E. Clements at (202) 512-8678 or ClementsM@gao.gov.

What GAO Found

GAO's work found racial and income disparities in access to financial services and availability of credit.

- Lower-income or minority households were less likely to access traditional banking services and more likely to use costlier products and services, such as payday loans or loans against tax refunds. Generally, these households used alternative financial services providers and products because they did not have checking or savings accounts or were unable to obtain credit or discouraged from applying for credit from a bank.
- Women and minority farmers and ranchers, including tribal members, had less access to credit than other agricultural businesses.
- Minority-owned small businesses generally had lower approval rates for credit sought and were approved for smaller shares of financing they sought.

GAO's work also has shown persistent income and wealth disparities that present disproportionate challenges to financial security in retirement for minority and poorer households.

- Wealth was consistently lower for older minority households relative to White households in the same income groupings. For example, for households with incomes between $40,000 and $69,000 in 2016, average White household wealth was about $304,000 and average minority wealth was $71,000.
- Low-income and minority households had lower participation in retirement savings plans and lower levels of other nonretirement assets such as home equity and other financial assets than White households.

GAO work identified selected regulatory issues and developments related to fair lending, including data limitations and fair lending concerns associated with technology applications.

- Data limitations pose fair lending oversight and enforcement challenges, particularly in nonmortgage credit markets where lenders are prohibited from collecting data on personal characteristics such as race and nationality.
- There is some evidence that regulations, such as for anti-money laundering, may add burden for financial institutions that can negatively affect consumer access to financial services, although GAO also found that the potential negative effect on the availability of credit is likely modest.
- "Fintech"—use of technology and innovation to provide financial products and services—can expand credit access for borrowers (for example, lenders could assess their creditworthiness with alternative data such as bill payments). But the lending discrimination risks in fintech use of alternative data are not fully understood.

United States Government Accountability Office

February 24, 2021

Chairman Green, Ranking Member Barr, and Members of the Subcommittee:

I am pleased to submit this statement summarizing GAO's work on fair lending, access, and retirement security issues. While concerns about discrimination in credit markets have long existed, the occurrence and magnitude of discrimination remain unclear, particularly in nonmortgage credit markets. But as GAO has long reported, income, wealth, and other inequalities are associated with racial and other disparities in access to financial services and financial security in retirement.

The Equal Credit Opportunity Act and other fair lending laws prohibit discrimination in all forms of credit transactions, including consumer, business, and mortgage loans. To support enforcement of the fair lending laws, the Home Mortgage Disclosure Act (HMDA) provides for disclosure of information about mortgage loan applicants and borrowers. Such information is intended to help identify possible discriminatory lending patterns.

This statement provides findings from our past reports on (1) racial and other disparities in access to financial services by businesses and individuals; (2) racial and other disparities affecting economic security in retirement; and (3) selected regulatory issues related to fair lending and access to financial services. See the Related GAO Products page for a list of the GAO reports on which we based this statement. These reports provide a detailed description of our sources and methodology. In addition, we updated some data where appropriate.

We conducted the work on which this statement is based in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Racial and Other Disparities in Access to Financial Services and Availability of Credit

Minority- and Women-Owned Businesses Had Less Access to Credit Than Other Businesses

Our recent work has found that minority- and women-owned businesses had less access to credit than other businesses. For example, in a 2019 report, we found that women and minority farmers and ranchers received a disproportionately small share of farm loans and agricultural credit overall.[1] More specifically, women and minority farmers and ranchers represented an estimated 17 percent of primary producers in a Department of Agriculture survey, but accounted for 13 percent of farms with loans and 8 percent of outstanding total agricultural debt.

Advocacy groups, lending industry representatives, and federal officials cited several factors that could contribute to the disparities: women and minority farmers and ranchers are more likely to operate smaller, lower-revenue farms, have weaker credit histories, or lack clear title to their agricultural land, which can make it difficult to qualify for loans. Advocacy groups also said some women and minority farmers and ranchers face actual or perceived unfair treatment in lending, may be dissuaded from applying for credit because of past experience, or may not be fully aware of credit options and lending requirements.[2]

[1]GAO, *Agricultural Lending: Information on Credit and Outreach to Socially Disadvantaged Farmers and Ranchers Is Limited,* GAO-19-539 (Washington, D.C.: July 11, 2019).

[2]Most agricultural lending is done by commercial banks or the Farm Credit System, which is regulated by the Farm Credit Administration. Farm Credit System lenders have responsibilities to expand credit access to young, beginning, and small farmers and ranchers. The Department of Agriculture facilitates outreach in a broad based effort including on USDA-guaranteed farm loans. According to the Farm Credit Administration, the Farm Credit System is not statutorily mandated to focus on providing financial opportunities to any other group.

In another 2019 report, we found that multiple issues limit tribal access to agricultural credit.[3] Tribal stakeholders and experts reported a general lack of commercial credit on tribal lands for reasons including land tenure issues, lenders' legal concerns, and capital constraints at some lending institutions. For example, constraints on tribal members' ability to use tribal trust land as collateral can negatively affect how lenders assess borrowers' creditworthiness.[4] Tribal stakeholders and experts also said tribal members may not have applied for loans because loan officers directly discouraged them or they heard of other tribal members being denied loans. Some experts told us Native credit unions, community banks, and loan funds were a growing source of agricultural credit for tribal members. But a 2014 survey found that 56 percent of the Native credit unions, community banks, and loan funds that made agricultural loans reported not having enough capital for such loans, with a total unmet need of at least $3 million in the previous year.[5]

More generally, differences by race in small business access to credit appear to be persistent. A 2018 survey found that, on average, approval rates for loans or lines of credit and cash advances that minority-owned firms sought at small banks or online lenders were lower than those for White-owned firms.[6] For example, 56 percent of minority-owned business applicants were approved for at least some of the financing they sought at small banks, compared to 73 percent of White-owned firm applicants. Minority-owned firms also were approved for smaller shares of the financing they sought than White-owned firms. This is in line with previous findings.[7] For example, in 2014 Black-owned firms were the most likely to have applied for bank financing, but least likely to be fully funded (less than half of the applications—a rate more than 10 percentage points

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[3]GAO, *Indian Issues: Agricultural Credit Needs and Barriers to Lending on Tribal Lands*, GAO-19-464 (Washington, D.C.: May 9, 2019).

[4]Long-term agricultural loans are typically used to acquire, construct, and develop land and buildings and are secured by real estate. But most tribal lands can be used as loan collateral only in certain circumstances or with federal permission.

[5]First Nations Oweesta Corporation, *Food Financing Efforts 2014: Native CDFI Support of Native Farmers & Ranchers* (Longmont, Colo.: 2014).

[6]Federal Reserve Bank of Atlanta, *Small Business Credit Survey: Report on Minority Owned Firms* (Atlanta, Ga.: December 2019). The results did not control for firm characteristics.

[7]Board of Governors of the Federal Reserve System, *Report to the Congress on the Availability of Credit to Small Businesses* (Washington, D.C.: September 2017).

higher than all other racial categories). We found similar results in a 2008 review of studies on minority business lending.[8]

Lower-Income and Minority Groups Were More Likely to Use Costlier Products and Services Such as Payday Loans

Lower-income or minority households also were less likely to access traditional banking services and more likely to use costlier products and services, such as payday loans or loans against tax refunds.[9] For example, in a 2018 report we found that lower-income households generally were more likely to use alternative financial services providers (such as payday or auto title lenders, pawnshops, and check cashers) than higher-income households, despite bank and credit union branches being relatively near.[10] In 2019, the Federal Deposit Insurance Corporation found that households with less than $75,000 in income were more likely than those with higher incomes to report having used an alternative financial services provider in the past 12 months.[11]

Lack of proximity or access to banks or credit unions did not appear to be a major reason for using alternative financial service providers. We estimated that low-income communities in rural areas and larger urban areas had at least as many bank and credit union branches within 2 miles as middle-income communities, all else being equal. Rather, the households used alternative providers—at least in part—because they did not have checking or savings accounts or because they were unable to obtain credit or discouraged from applying for credit from a bank. The Federal Deposit Insurance Corporation estimated in 2019 the share of households with income of less than $15,000 that did not have a checking

[8]GAO, Fair Lending: Race and Gender Data Are Limited for Nonmortgage Lending, GAO-08-698 (Washington, D.C.: June 27, 2008). We reviewed eight studies on minority business lending. Seven of the eight studies found that lenders denied loans to Black-owned businesses or required them to pay higher interest rates for loans significantly more often than for White-owned businesses. The studies we reviewed found that Hispanic-owned businesses also were denied credit or charged higher interest rates more often than White-owned businesses with similar risk characteristics.

[9]A payday loan is a small-dollar loan (usually $100–$500) and repayable in a short term, usually 2 weeks. Consumers can pay fees of $15–$20 for every $100 borrowed.

[10]GAO, Community Reinvestment Act: Options for Treasury to Consider to Encourage Services and Small-Dollar Loans When Reviewing Framework, GAO-18-244 (Washington, D.C.: Feb. 14, 2018).

[11]Federal Deposit Insurance Corporation, How America Banks: Household Use of Banking and Financial Services, 2019 FDIC Survey (Washington, D.C.: Oct. 19, 2020).

or savings account was about 22.7 percentage points higher than households with $75,000 or more.[12]

In a 2019 report, we focused on alternative financial products—so called "tax-time" loans or advances—which tens of millions of Americans have used in recent years.[13] We found that Black households were 36 percent more likely to use these products than White households after controlling for other factors.[14] We also found that lower-income households were more likely to use tax-time products than higher-income households, particularly when they used paid tax preparers to file their taxes.

Users of tax-time products tend to have immediate cash needs and the products generally provide more cash at a lower cost than alternatives such as payday, pawnshop, or car title loans. However, fees for some products increased in 2018 and consumers may not always have been aware of the total costs associated with their use before they obtained the product.

Economic Effects of Income and Wealth Disparities Include Retirement Security Challenges for Older Minority and Poorer Households

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[12]Federal Deposit Insurance Corporation, How America Banks.

[13]GAO, Tax Refund Products: Product Mix Has Evolved and IRS Should Improve Data Quality, GAO-19-269 (Washington, D.C.: Apr. 5, 2019).

[14]Banks issue these products through paid tax return preparers to help taxpayers file taxes and get advances or loans against tax refunds.

Race and Ethnicity Were Factors in Persistent Income and Wealth Disparities as Households Aged

In a 2019 report, we found income and wealth disparities among older households—55 and older—were sizeable and disparities existed by race (see fig. 1). More specifically, income and wealth were consistently lower over time for older households with a minority head of household relative to those with a White head of household, and these disparities existed across all quintiles and all years. For example, for the middle wealth quintile, average wealth for White households in 1989 was about $203,000 and for minority households in the same quintile, around $45,000. Differences for this quintile in 2016 were similar, with average White household wealth at about $304,000 and average minority household wealth at about $71,000.[15]

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[15]GAO, *Retirement Security: Income and Wealth Disparities Continue through Old Age*, GAO-19-587 (Washington, D.C.: Aug. 9, 2019). All reported amounts are in 2016 dollars. We used data from the Survey of Consumer Finances, a triennial, cross-sectional survey produced by the Board of Governors of the Federal Reserve System. We divided households into groups of five or quintiles by income and wealth. We found similar results using data from the Health and Retirement Study, a nationally representative survey that follows the same set of Americans from their 50s through the rest of their lives. We divided survey households into five quintiles, or earnings groups, based on the number of households and their mid-career household earnings (earnings between ages 41–50). We generally found significant differences in income and wealth by race and ethnicity within earnings groups as the households aged into their retirement years.

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Figure 1: Estimated Wealth of Older Households in the Middle and Top 20 Percent of the Wealth Distribution by Race, 1989–2016

Source: GAO analysis of Survey of Consumer Finances data. | GAO-21-399T
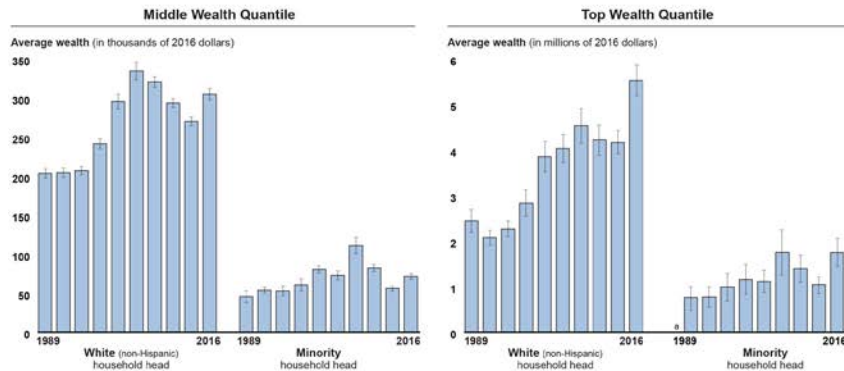
Notes: We defined wealth as net worth, or assets minus debt. Averages represent mean estimates. The lines overlapping the bars represent 95 percent confidence intervals. Older households are those in which survey respondents or any spouses or partners were aged 55 or older in the year of the survey. We defined minority as someone Black, Asian, or Hispanic. We ranked the households by their net worth and broke them into five equally sized groups, or quintiles. Each year of data in our analysis, and, therefore, each quintile included different sets of households over time.

Challenges to Retirement Security of Low-Income and Minority Households Include Low Retirement Resources

Low-income and minority households have faced challenges in achieving retirement security that include the income and wealth disparities discussed above, lower participation in retirement savings plans, and lower levels of other assets such as home equity. Households primarily rely on three main sources of retirement income: Social Security, employer-sponsored pension plans—defined benefit and defined contribution plans—and other nonretirement plan savings and investments, such as home equity, stocks, bonds, and savings.

Low-Income and Minority Households Had Low Access to and Savings in Defined Contribution Retirement Plans

In a 2016 report, we found income and race differences in access to and savings in defined contribution plans.[16]

- Low-income households had less savings in and access to defined contribution plans than other income groups as of 2013.[17] Among working households, only 25 percent of low-income households had any defined contribution savings, compared to 81 percent of high-income households. For households with such savings, the median for low-income working households was an estimated $10,400, compared to $201,500 for high-income households.[18] Lower plan access and participation rates among low-income households contributed to the discrepancy in plan savings.[19]

- Similarly, minority households had less plan access and savings than White households. For example, an estimated 64 percent of White, 47 percent of Black, and 31 percent of Hispanic working households had defined contribution savings in 2013. The estimated median balance for White households was $58,800; for Black households, $16,400; and for Hispanic households, $18,900. When able to access such a

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[16]GAO, *Retirement Security: Low Defined Contribution Savings May Pose Challenges*, GAO-16-408 (Washington D.C.: May 5, 2016). Over the past three decades, employers largely have shifted from offering defined benefit plans in which workers accrue guaranteed lifetime benefits, to offering defined contribution plans, in which workers accumulate savings in personal accounts such as 401(k) plans and Individual Retirement Accounts to fund their retirements.

[17]The ranges of income groups for working households were $0–$56,700 (median savings estimate in this range is $10,400, plus or minus $1,500) for the lowest usual household income group; $57,700–$87,600 ($28,400, plus or minus $5,500) for the second lowest income group; $88,100–$133,900 ($60,900, plus or minus $6,200) for the second highest income group; and $135,000 and above ($201,500, plus or minus $28,300) for the highest group.

[18]We have similar findings in GAO-19-587: In 2016, 89 percent of the households in the bottom wealth quintile had no retirement accounts, and another 10 percent had account balances of less than $50,000. More than half the households in the middle wealth quintile had retirement accounts, and almost all of these households had less than $200,000 in their accounts.

[19]For instance, about 35 percent of low-income working households had access to a defined contribution plan, compared to 80 percent of high-income working households. And an estimated 64 percent of low-income working households participated in a plan compared to 95 percent of high-income working households.

plan, differences in household participation by race and ethnicity were small.[20]

Low-Income and Minority Households Had Low Home Equity and Other Nonretirement Assets

Additionally, disparities in the overall accumulation of nonretirement assets may account for racial and ethnic disparities in retirement security. A study we reviewed for this statement found that home equity accounts for the largest part of most U.S. families' wealth, but home ownership is unequally distributed along racial and ethnic lines.[21] Disparities in homeownership rates (73 percent for Whites, 47 percent for Latinos, and 45 percent for Blacks), home equity ($86,800 for Whites at the median, compared to $50,000 for Blacks and $48,000 for Latinos), and neighborhood housing values substantially contribute to the racial wealth gap. According to the authors, because White families are more likely to receive inheritances and other family assistance to put a down payment on a home, they are often able to acquire home equity many years earlier than Black and Latino families, offering a head start on wealth-building.

Home equity has historically been an important source of retirement security as people age. In a 2020 report on retirement security for women age 70 and older, we found that between 40 and 50 percent of households with older women who owned a home, either outright or with a mortgage, reported high confidence in their retirement security, compared to 24 percent of those who were renting. In addition, renters were significantly more likely to have low household retirement confidence than homeowners overall.[22] In another study, we found that renting among Black households increased from 54 percent in 2001 to 58 percent in 2017.[23] In contrast, renting among White households ranged from 26 to 29 percent. Moreover, minority households were more commonly rent-burdened—that is, rents were above 30 percent of household income.

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[20]For instance, 88 percent of White, 81 percent of Black, and 80 percent of Hispanic working households participated when they had access to a defined contribution plan.

[21]Demos and Institute for Assets and Social Policy, "The Racial Wealth Gap: Why Policy Matters" (New York: June 21, 2016).

[22]GAO, *Retirement Security: Older Women Report Facing a Financially Uncertain Future*, GAO-20-435 (Washington, D.C.: July 14, 2020).

[23]GAO, *Rental Housing: As More Households Rent, the Poorest Face Affordability and Housing Quality Challenges*, GAO-20-427 (Washington D.C.: May 27, 2020).

And in the 2019 report we previously discussed, other nonretirement assets (besides home equity or vehicles) such as stocks, bonds, and savings were a significant source of retirement security for the top quintile of households. Estimated average wealth in these assets was about $3.3 million in 2016 for the top quintile, which was more than the average value of their home equity.[24]

Select Regulatory Issues Related to Fair Lending and Access to Credit

New Mortgage Reporting Requirements Add Data on Borrowers and Exempt Small Lenders from Reporting

The Home Mortgage Disclosure Act (HMDA) requires certain lenders to collect and publicly report data on the race, ethnicity, and sex of mortgage loan borrowers. HMDA data are the only publicly available source of nationwide loan-level data on the supply and demand for mortgage credit. In 2010, the Dodd-Frank Wall Street Reform and Consumer Protection Act addressed HMDA data limitations that our 2009 report identified.[25] Consequently, the Consumer Financial Protection Bureau required mortgage lenders to report the new data points starting in 2018. Examples of some of the new data points include borrower's age, borrower's credit score, combined loan-to-value ratio, and whether the loan is an open-end line of credit.

In 2018, Congress passed the Economic Growth, Regulatory Relief, and Consumer Protection Act, which exempts certain small insured banks and credit unions from reporting the new HMDA data. Prior to the act, in 2009, we raised concerns about regulatory burden from additional HMDA requirements on smaller entities, and in 2018, community banks and

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[24]GAO-19-587.

[25]GAO, *Fair Lending: Data Limitations and the Fragmented U.S. Financial Regulatory Structure Challenge Federal Oversight and Enforcement Efforts*, GAO-09-704 (Washington, D.C.: July 15, 2009).

credit unions raised similar concerns.[26] As required by law, we are currently reviewing how the reporting exemptions affect HMDA data availability at the national and local levels.[27]

Limited Nonmortgage Data Have Posed Challenges for Oversight and Enforcement of Fair Lending Laws

There is no parallel to HMDA for data on nonmortgage loans (such as small business, credit card, and automobile loans). Regulations generally prohibit lenders from collecting information on applicants' personal characteristics to prevent lending discrimination.[28] However, some members of Congress and consumer advocates argue that the prohibition on data collection has limited the ability of researchers, regulators, Congress, and the public to monitor nonmortgage lending practices and identify possible discrimination.[29]

As discussed previously, we found that women and minority farmers and ranchers faced challenges accessing credit, but we could not determine if this was a result of discriminatory lending practices due to the lack of personal characteristic data on a large portion of agricultural loan applications.[30] Some advocates with whom we spoke expressed concern about the lack of accurate public information on lending to these groups, which they said forces them to rely on anecdotal evidence in attempts to monitor potential discrimination. Similarly, in a July 2009 report we found

[26]GAO, *Community Banks and Credit Unions: Regulators Could Take Additional Steps to Address Compliance Burdens*, GAO-18-213 (Washington, D.C.: Feb. 13, 2018). Interviews and focus groups we conducted with representatives of over 60 community banks and credit unions indicated regulations for reporting mortgage characteristics, reviewing transactions for potentially illicit activity, and disclosing mortgage terms and costs to consumers were the most burdensome.

[27]Pub. L. No. 115-174, § 104(b) (2018).

[28]*See* 12 C.F.R. § 1002.5(b); see also 12 C.F.R. § 1002.5(a) (setting forth certain circumstances when a creditor may obtain otherwise protected applicant information). The Equal Credit Opportunity Act prohibits creditors from discriminating against credit applicants on the basis of race, color, religion, national origin, sex, marital status, or age; because an applicant receives income from a public assistance program; or because an applicant has in good faith exercised any right under the Consumer Credit Protection Act. 15 U.S.C. § 1691(a).

[29]Section 1071 of the Dodd-Frank Wall Street Reform and Consumer Protection Act amended the Equal Credit Opportunity Act to require financial institutions to compile, maintain, and submit to the Consumer Financial Protection Bureau certain data on applications for credit for women-owned, minority-owned, and small businesses. In December 2020, the agency reported that it was writing proposed regulations to implement section 1071.

[30]GAO-19-539.

that personal characteristic data would enhance transparency by helping researchers and others better assess the potential risk for discrimination.[31]

While requiring lenders to report additional data would impose costs on them, particularly smaller institutions, options exist to mitigate such costs to some degree, such as limiting the reporting requirements to larger institutions. We are currently conducting a review of the Consumer Financial Protection Bureau and the Office of the Comptroller of the Currency's oversight of fair lending.

Regulatory Burden and Other Factors Can Affect Access to Financial Services

In the past two decades, financial regulators implemented many new regulations in the aftermath of events such as the September 11 terrorist attacks and the financial crisis in 2007–2009. Community banks and credit unions have expressed concerns about the burden that additional regulations have created. The regulations were intended to address the risks and problematic practices that contributed or led to the events, and included provisions that ranged from strengthening financial institutions' anti-money laundering programs to creating additional protections for mortgage lending and strengthening oversight of financial institutions.

In multiple recent reports, we found some evidence of these rules affecting access to financial services and creating a regulatory burden for some institutions.

- In 2018, we reported that the requirements of Bank Secrecy Act (BSA) and its implementing regulations may affect access to financial services in some communities.[32] For example, half of the 91 banks that responded to a GAO survey reported terminating at least one money transmitter account in 2014–2016.[33] Money transmitters provide financial services to people less likely to use traditional banking services. In addition, more than 70 percent of Southwest border banks reported terminating cash-intensive small business

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[31]GAO-09-704.

[32]GAO, *Bank Secrecy Act: Derisking along the Southwest Border Highlights Need for Regulators to Enhance Retrospective Reviews*, GAO-18-263 (Washington, D.C.: Feb. 16, 2018).

[33]GAO, *Bank Secrecy Act: Examiners Need More Information on How to Assess Banks' Compliance Controls for Money Transmitter Accounts*, GAO-20-46 (Washington, D.C.: Dec. 3, 2019).

accounts, such as retail stores and restaurants—partly to manage perceived regulatory concerns about facilitating money laundering.

- Ten of 11 banks we studied for a 2020 report did not impose any direct fees or other charges on customers to recoup their BSA-related compliance costs, but minimized such costs by not offering certain higher-risk products and services or not servicing certain types of customers and locations.[34] For example, at least six of the 11 banks said they did not offer accounts to money services businesses because of the potentially greater and more costly due diligence, monitoring, and reporting involved.

- But in another 2018 report, we found that some compliance burdens arose from misunderstanding these disclosure regulations—which in turn may have led institutions to take actions not actually required.[35] We used econometric models to determine that community banks' small business lending since 2010 can be explained largely by macroeconomic, local market, and bank characteristics, and that the potential effect of regulatory changes was likely modest.[36]

Nevertheless, we recommended that regulators improve their processes and procedures. Specifically, in a 2018 report on financial regulators' compliance with the Regulatory Flexibility Act—intended to minimize regulatory burden on small entities—we found deficiencies in the way most financial regulators conducted their regulatory flexibility analyses when issuing rulemakings.[37] We recommended that they improve their related policies and procedures so as not to potentially undermine the intended goal of the act.

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[34]GAO, *Anti-Money Laundering: Opportunities Exist to Increase Law Enforcement Use of Bank Secrecy Act Reports, and Banks' Costs to Comply with the Act Varied*, GAO-20-574 (Washington, D.C.: Sept. 22, 2020).

[35]GAO-18-213.

[36]GAO, *Community Banks: Effect of Regulations on Small Business Lending and Institutions Appears Modest, but Lending Data Could Be Improved*, GAO-18-312 (Washington, D.C.: Aug. 6, 2018).

[37]GAO, *Financial Services Regulations: Procedures for Reviews under Regulatory Flexibility Act Need to Be Enhanced*, GAO-18-256 (Washington, D.C.: Jan. 30, 2018). The Regulatory Flexibility Act requires regulatory agencies to provide an assessment—a regulatory flexibility analysis—of a rule's potential impact on small entities and consider alternatives that may reduce burden. Alternatively, agencies may certify that a rule would not have a significant economic impact on a substantial number of small entities instead of performing a regulatory flexibility analysis.

Fintech Products Help Some Consumers Access Credit but Also Raise Fair Lending Concerns

In a 2018 report on financial technology, we identified several potential consumer benefits of "fintech" products, including lower cost and increased access or inclusion.[38] Fintech refers to the use of technology and innovation to provide financial products and services, such as electronic payments, loans, or financial advice to consumers and businesses. Because fintech providers often have fewer staff and lower overhead costs, they may be able to pass these cost savings on to consumers by offering lower rates or fees on products, including loans.

Fintech has been expanding access for borrowers with weaker credit histories, or who might have difficulty qualifying under traditional standards. For example, several (five of 11) fintech lenders with which we spoke in 2018 said they use alternative data (such as bill payment history) to supplement traditional data when making a credit decision.[39] Using alternative data may allow fintech lenders to offer loans to consumers whose traditional credit history may have been insufficient for banks to extend them credit.

Regulators and industry stakeholders also noted the potential for use of alternative data to expand access to credit (such as to some among the estimated 45 million people who lack traditional credit scores) or offer lower-cost access to financial services.[40] Using alternative data may enhance assessment of a borrower's creditworthiness. For instance, the borrower may be placed in a better credit classification and receive lower-priced credit than would be available using traditional data alone. Fintech robo-advising services offer low-cost investment advice provided solely by algorithms instead of humans, which can make that advice more

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[38]GAO, *Financial Technology, Additional Steps by Regulators Could Better Protect Consumers and Aid Regulatory Oversight*, GAO-18-254 (Washington, D.C.: Mar. 22, 2018).

[39]GAO, *Financial Technology: Agencies Should Provide Clarification on Lenders' Use of Alternative Data*, GAO-19-111 (Washington, D.C.: Dec. 19, 2018). Alternative data consist of any information not traditionally used by the three national consumer reporting agencies when calculating a credit score.

[40]See Board of Governors of the Federal Reserve System, Consumer Financial Protection Bureau, Federal Deposit Insurance Corporation, National Credit Union Administration, and Office of the Comptroller of the Currency, *Interagency Statement on the Use of Alternative Data in Credit Underwriting* (Washington, D.C.: Dec. 3, 2019). In the statement, the regulators recognize the potential benefits of alternative data and state that a well-designed compliance management program allows firms to understand the opportunities, risks and compliance requirements before using alternative data.

accessible to consumers who cannot meet account minimums at traditional advisers.

However, fintech also presents challenges and potential discrimination risks for borrowers. Borrowers could face challenges in checking and correcting alternative data that some fintech lenders use to make underwriting decisions because these data are not typically reflected in credit reports.[41] Although consumers face risk of discrimination regardless of whether they borrow from a traditional or fintech lender, the risks are not fully understood with fintech lenders that use alternative data. Fintech firms assessing applicant creditworthiness with information and criteria highly correlated with a protected class may lead to a disproportionate negative effect. For example, according to a Federal Reserve System newsletter, it has been reported that some lenders consider whether a consumer's online social network includes people with poor credit histories, which can raise concerns about discrimination against those living in disadvantaged areas.[42] We are currently conducting a study of the use of alternative data in mortgage lending.

In conclusion, racial, income, and other disparities have significant economic impacts, whether they be on the financial services consumers can obtain and at what cost or on their ability to achieve retirement security. Fintech may help address some of the access issues, but also raises some fair lending concerns.

Chairman Green, Ranking Member Barr, and Members of the Subcommittee, this completes my statement for the record.

GAO Contact and Staff Acknowledgments

For further information regarding this statement, please contact Michael E. Clements at (202) 512-8678 or ClementsM@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement.

Individuals who made key contributions to this statement include Karen Tremba (Assistant Director), Silvia Arbelaez-Ellis (Analyst in Charge), Elizabeth Leibinger, Barbara Roesmann, Jessica Sandler, and Jena Y.

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[41]All 11 of the fintech lenders we interviewed in 2018 stated that they test their underwriting model for accuracy or compliance with fair lending laws, including testing to ensure their credit models do not discriminate against "protected classes," such as race or marital status. See GAO-19-111.

[42]Federal Reserve System, *Consumer Compliance Outlook*, 2nd issue (2017).

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Related GAO Products

Access to Financial Services	*Agricultural Lending: Information on Credit and Outreach to Socially Disadvantaged Farmers and Ranchers Is Limited.* GAO-19-539. Washington, D.C.: July 11, 2019.
	Indian Issues: Agricultural Credit Needs and Barriers to Lending on Tribal Lands. GAO-19-464. Washington, D.C.: May 9, 2019.
	Tax Refund Products: Product Mix Has Evolved and IRS Should Improve Data Quality. GAO-19-269. Washington, D.C.: April 5, 2019.
	Community Reinvestment Act: Options for Treasury to Consider to Encourage Services and Small-Dollar Loans When Reviewing Framework. GAO-18-244. Washington, D.C.: February 14, 2018.
	Fair Lending: Race and Gender Data Are Limited for Nonmortgage Lending, GAO-08-698. Washington, D.C.: June 27, 2008.
Fintech and Lending	*Financial Technology: Agencies Should Provide Clarification on Lenders' Use of Alternative Data.* GAO-19-111. Washington, D.C.: December 19, 2018.
	Financial Technology: Additional Steps by Regulators Could Better Protect Consumers and Aid Regulatory Oversight. GAO-18-254. Washington, D.C.: March 22, 2018.
Retirement Security	Retirement Security: Older Women Report Facing a Financially Uncertain Future. GAO-20-435. Washington, D.C.: July 14, 2020.
	Rental Housing: As More Households Rent, the Poorest Face Affordability and Housing Quality Challenges. GAO-20-427. Washington, D.C.: May 27, 2020.
	Retirement Security: Income and Wealth Disparities Continue through Old Age. GAO-19-587. Washington, D.C.: August 9, 2019.
	Retirement Security: Low Defined Contribution Savings May Pose Challenges. GAO-16-408. Washington D.C.: May 5, 2016.

Oversight and Data	*Fair Lending: Data Limitations and the Fragmented U.S. Financial Regulatory Structure Challenge Federal Oversight and Enforcement Efforts.* GAO-09-704. Washington, D.C.: July 15, 2009.
Regulatory Burden on Community Banks and Credit Unions	*Anti-Money Laundering: Opportunities Exist to Increase Law Enforcement Use of Bank Secrecy Act Reports, and Banks' Costs to Comply with the Act Varied.* GAO-20-574. Washington, D.C.: September 22, 2020. *Bank Secrecy Act: Examiners Need More Information on How to Assess Banks' Compliance Controls for Money Transmitter Accounts.* GAO-20-46. Washington, D.C.: December 3, 2019. *Community Banks: Effect of Regulations on Small Business Lending and Institutions Appears Modest, but Lending Data Could Be Improved.* GAO-18-312. Washington, D.C.: August 6, 2018. *Community Banks and Credit Unions: Regulators Could Take Additional Steps to Address Compliance Burdens.* GAO-18-213. Washington, D.C.: February 13, 2018. *Financial Services Regulations: Procedures for Reviews under Regulatory Flexibility Act Need to Be Enhanced.* GAO-18-256. Washington, D.C.: January 30, 2018.

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