The State of U.S. Mortgage Fairness: A FairPlay Report

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Introduction

FairPlay, the world's first Fairness-as-a-Service Solution™, conducted a comprehensive analysis of fairness trends in mortgage application approvals. The study evaluated how much mortgage fairness has changed—or not—in the past 30 years for protected status homebuyers including Black, Latino or Hispanic, Native American, Asian and female mortgage applicants.

The report relied entirely on public source data collected from the Home Mortgage Disclosure Act (HMDA). This is the most comprehensive publicly available data source that identifies race, ethnicity and gender for mortgage applications. FairPlay reviewed all HMDA mortgage applicant data currently available, which includes loan-level data for almost all mortgage applications from 1990-2021. The HMDA data during this period totaled 640 million mortgage transactions. This study looked at all mortgages on single-family homes including first mortgages, HELOCs, and refinances. After our filters, we were able to analyze over 350 million transactions.

Since 1990, policymakers and the financial services industry have taken an array of steps to increase mortgage fairness. The Consumer Financial Protection Bureau (CFPB) has emerged on the regulatory scene and conducted multiple supervision and enforcement actions related to unfairness in the mortgage market. This 30 year period also coincides with the introduction of modern credit scores. In 1989, FICO and Equifax launched the first generic credit score. This development was hailed as a shift to an "objective" credit evaluation system from decisioning processes based on the judgment of individual lenders or loan agents.

+ Key Takeaways

Our analysis found the following:

+ For most protected groups, mortgage fairness is no better today than it was in 1990;
+ Mortgage fairness for Black homebuyers appears stuck in neutral. Black homebuyers also endure deep and persistent discrepancies in approvals in five states (Louisiana, Mississippi, South Carolina, Alabama, Arkansas) regardless of how good the macroeconomic environment is;
+ HMDA data reflects an alarming drop in mortgage fairness for Native American mortgage applicants going back to 1990; and
+ Mortgage fairness for females has improved in the last 30 years.
+ Mortgage fairness plummeted during the Great Recession, which may be an indicator of what we may see in a future recession

While the increase in underwriting fairness for females is an encouraging sign, we believe the persistent disparities in mortgage lending for Black and Native American borrowers deserves policymakers' attention.

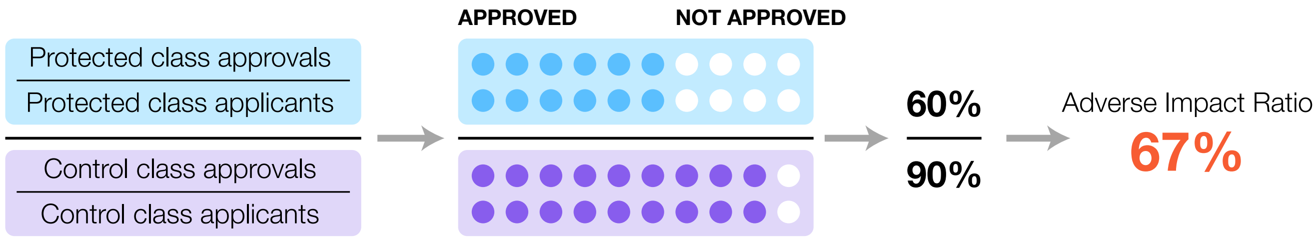
Our analysis shows that decades of policy interventions and economic reforms to equalize lending opportunities have largely failed to reduce the gap in loan approvals between Black and Native American borrowers and White borrowers.

Methodology for Assessing Fairness

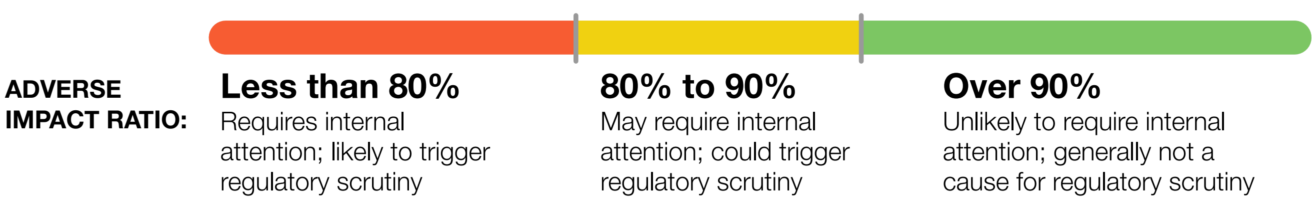
This report measures loan fairness using **Adverse Impact Ratios (AIRs).**[1] AIRs measure the rate of approval for a protected status applicant compared to the control group (typically White males). In the example below, if protected class applicants have a 60% approval rate, while the control group has a 90% approval rate, the AIR would be 60/90 or 67%. This metric is borrowed from the employment context where regulators consider an AIR of 80% for job hiring to reflect a disparate impact. We similarly consider an AIR of 80% or lower to reflect a baseline of unfairness.

Computing Adverse Impact Ratios

Regulators use adverse impact ratio (AIR) to gauge whether protected groups get a positive outcome as often as the control group.



Although there are no concrete fairness thresholds, regulators generally find:



While AIR is the most commonly used tool by courts and regulators to measure fairness, it does have its limitations. AIR presents a measure of loan approval that asks whether one group experiences a positive outcome, like mortgage approval, at a higher or lower rate than another group. It does not consider risk-related factors that may drive a lending decision.

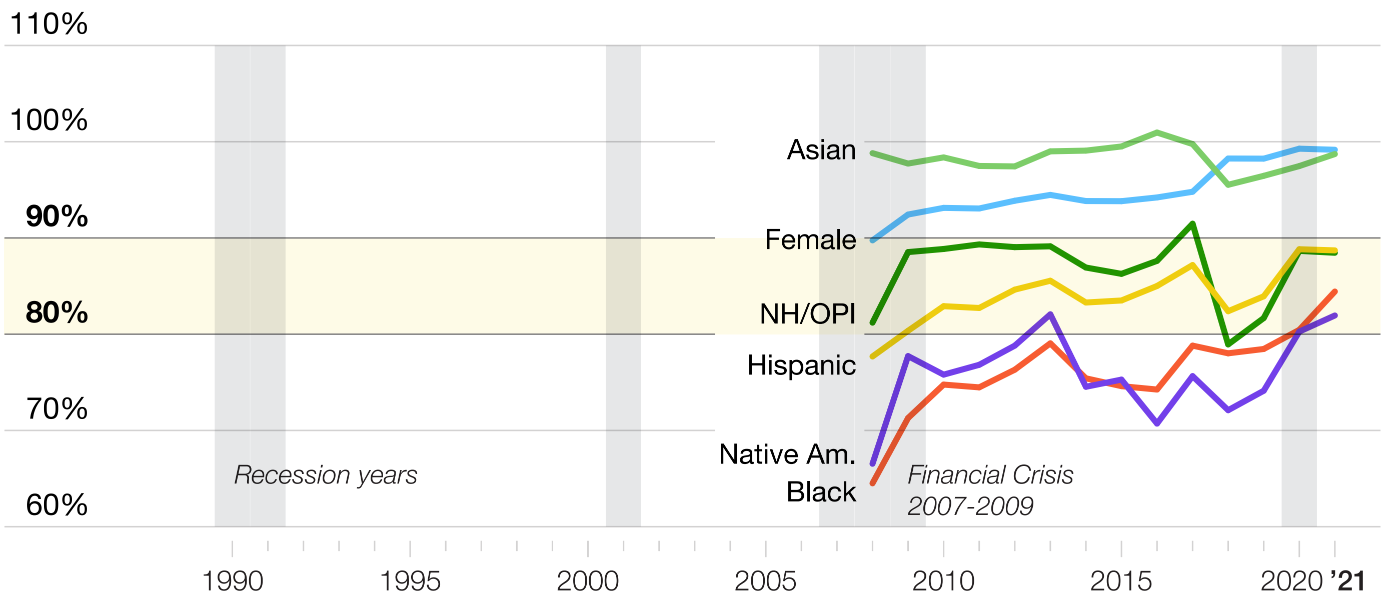
When looking at long-term fairness trends in lending, AIR offers a powerful lens because it presents a straightforward view of the relative success of protected class borrowers in getting loans relative to a control group.

ANALYSIS

2021 was the fairest year since the housing crisis . . .

On a positive note, 2021 was the fairest year in the American mortgage market since the 2008 housing crisis. As reflected in the chart below, AIRs for select protected groups, analyzed using state-level data, are as high as they've been since 2008.

Adverse Impact Ratio for Selected Groups, U.S. Mortgage Applications



Each of the lines in the chart represents the fairness levels experienced by a protected category of mortgage applicants. Since 2008, AIRs have risen steeply for Black mortgage applicants (64.5% to 84.4%) and Native American applicants (66.5% to 81.9%). Female mortgage applicants (89.7% to 99.2%) and Hispanic mortgage applicants (77.7% to 88.7%) also saw substantial increases in fairness. Asian homebuyers, who almost had fairness parity with White mortgage applicants in 2008, saw little change in fairness (98.8% to 98.7%).

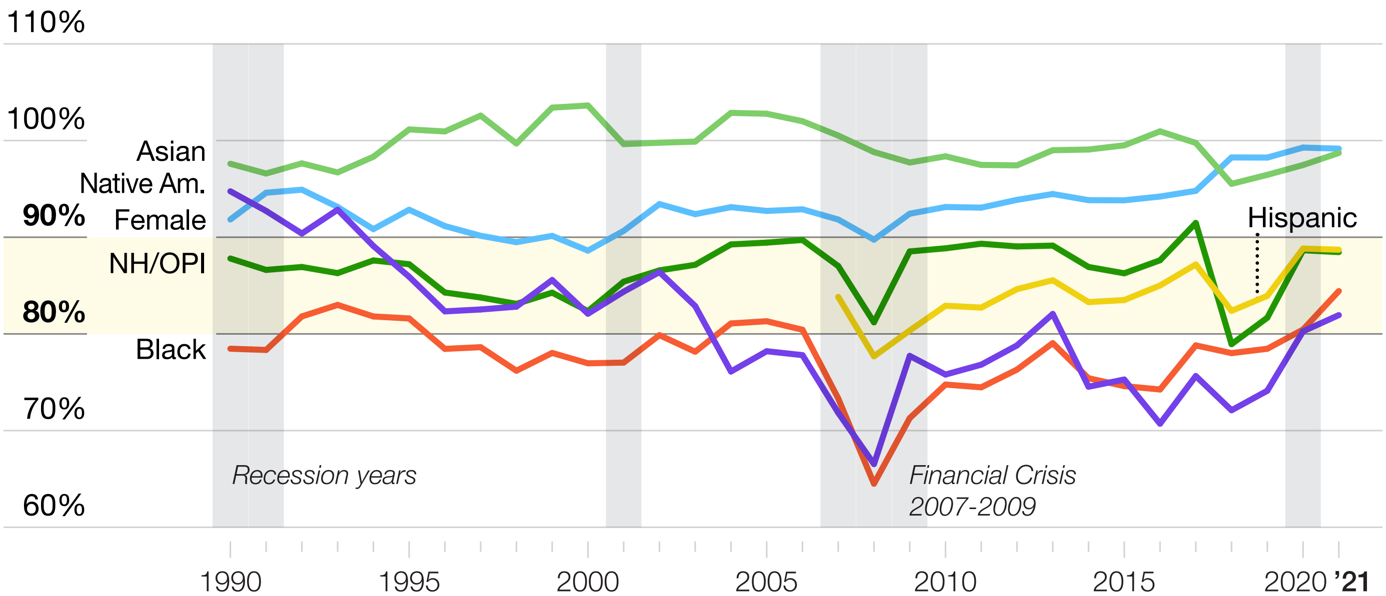
The 2021 fairness numbers may reflect aberrational economic circumstances during the pandemic. For example, the AIRs of Black mortgage applicants jumped to 84.4% in 2021 from 80.4% in 2020. This rise coincided with extraordinary measures by the Federal government to protect consumers including economic stimulus payments, loan forbearance programs and the imposition of restrictions on the reporting of adverse information to credit bureaus. Credit scores, a major factor in mortgage underwriting, actually rose for most Americans during the pandemic. Additionally, consumer spending patterns changed with a decrease in credit utilization.

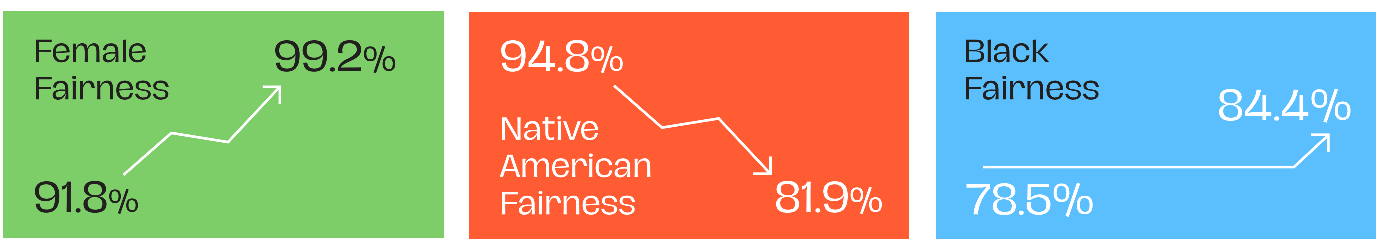
Recent consumer data suggest this bump is already deflating. For the time since 2012, credit scores have not risen in 2022, and face downward pressures as average credit card utilization is going up, and average credit balances are increasing.

ANALYSIS

. . . But Fairness Is Stuck at 1990 levels

While fairness in mortgage application approvals has improved since 2008, extending this view further back in time reveals discomfiting results. This chart illustrates that mortgage fairness has not improved significantly over time for most groups.





On the positive side, female AIRs have increased from 91.8 % in 1990 to about 99.2% in 2021 - almost parity with the control group. On the down side, fairness for Native Americans mortgage applicants has dropped from 94.8% to 81.9%, the edge of what is generally considered a disparate impact. The AIRs of Black and Hispanic mortgage applicants, meanwhile, had a downward jolt during the Great Recession and showed a fairness bump in 2021, but for the most part have maintained a flat trendline.

The implications of this chart are profound. It offers a dour picture of the advances of Black, Native American, and Hispanic mortgage applicants in obtaining loan approvals over the past 30 years compared to White mortgage applicants. Black and Brown mortgage applicants continue to experience the same disparities that existed in the 1990s. This paper does not purport to explain the underlying causes of these persistent disparities. More research is needed to pinpoint how factors such as persistent disparities in household wealth, income, access to financial information impact loan approvals. Rather, the point here is that, in the aggregate, the societal, business and regulatory efforts that have targeted lending fairness over the last 30 years have not moved the needle on mortgage fairness.

ANALYSIS

Rising Interest Rates May Increase Unfairness

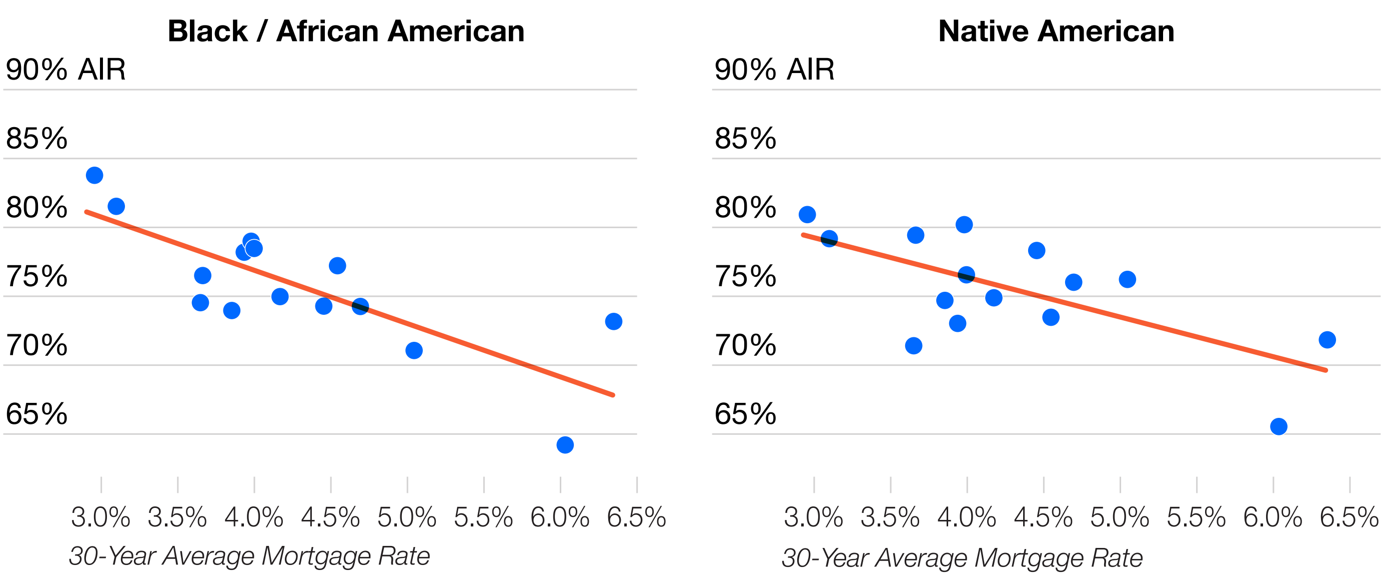
What is the outlook for the future of mortgage fairness?

Our current environment of rising interest rates suggests that mortgage fairness faces a troubled near-term outlook.

Mortgage interest rates have nearly doubled over the past year. On September 26, 2021, according to the St. Louis Federal Reserve Bank, the average interest rate for a 30-year fixed mortgage in the United States was 2.86%. On October 13, 2022, the average rate was 6.92%.

Fairplay analyzed the impact of rising interest rates on fairness using HMDA data. Here's how fairness is impacted for Native American and Black mortgage applicants when interest rates rise. As interest rates get to five and six percent, mortgage fairness plunges to almost housing crisis levels.

National Mean AIRs vs. 30-Year Mortgage Rate, 2007–2021

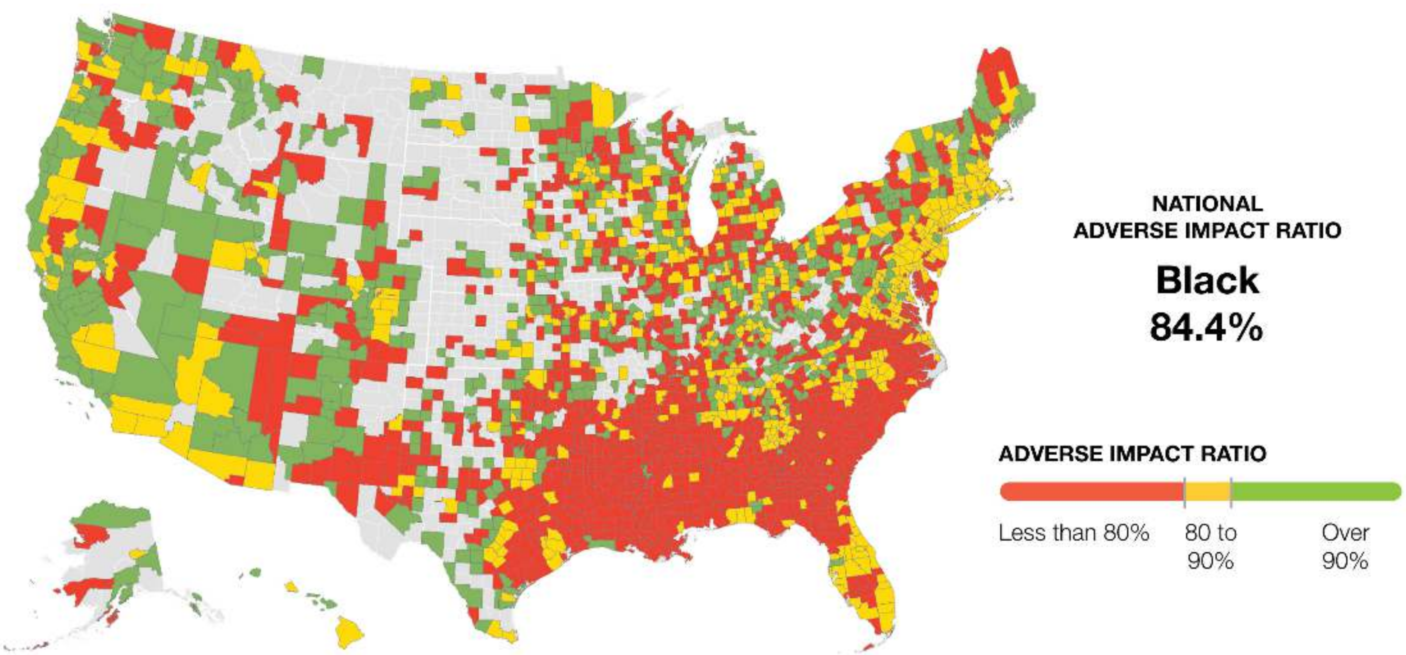


ANALYSIS

Mortgage Fairness for Black Homebuyers

2021 was the fairest year ever for Black mortgage applicants since HMDA data started being collected. AIR for Black mortgage applicants nationwide was 84.4%.

Mortgage Fairness for Black Homebuyers in 2021:



Given that AIR below 80% is commonly seen as the threshold for disparate impact, the 2021 figures are encouraging. We note, however, that as recently as 2019 the AIR for Black applicants remained stuck at 78.5%. It is too soon to tell whether this fairness bump is enduring or reflects anomalous financial conditions during the COVID pandemic. Plus, as one can tell from the swath of red in the southeastern United States (representing an AIR below 80%), fairness for Black mortgage applicants doesn't apply evenly across geographies. In fact, it appears to get worse in regions where Black homebuyers have the highest percentage of the local population.

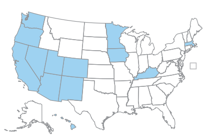
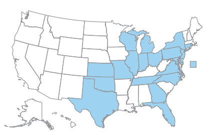
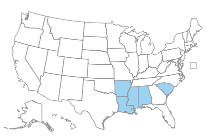
ANALYSIS

Mortgage Fairness for Black Homebuyers

Taking a more granular look at mortgage fairness for Black homebuyers, FairPlay has identified three clusters of states that have differing levels of fairness:

1. High trend AIR States
2. Medium trend AIR States
3. Low trend AIR States

If you're a Black homebuyer, states cluster into one of three groups:

BLACK ADVERSE IMPACT RATIO	STATES	2021 AIR	1990-2021 AVERAGE	DIFFERENCE	AVG. MEDIAN INDIV. INCOME	AVG. BLACK POPULATION
High trend AIR states	**13** 	**89.0%**	**83.1%**	**+5.9**	**$61,300**	**4.6%**
Medium trend AIR states Includes D.C.	**22** 	**82.1%**	**74.2%**	**+7.9**	**$58,222**	**16.1%**
Low trend AIR states	**5** 	**69.2%**	**67.3%**	**+1.9**	**$47,858**	**27.7%**

11 other states with small Black populations had more variable trends

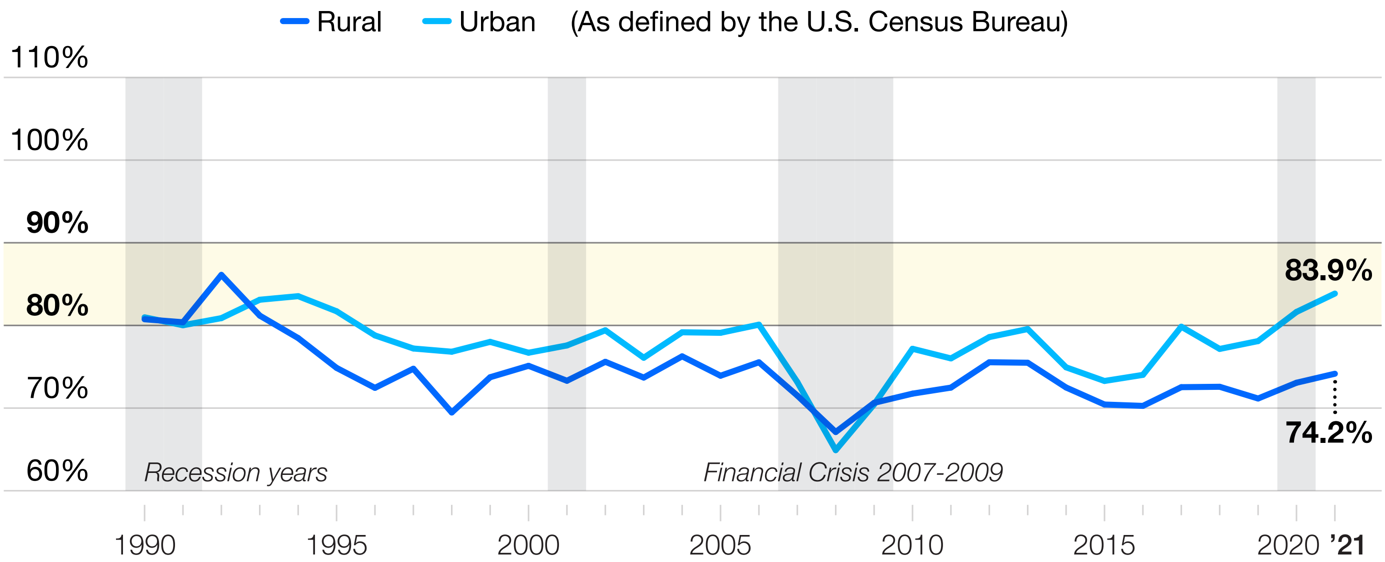
Of particular note are the low-trend AIR states which average a 69% AIR, well below the 80% figure commonly seen as a threshold for disparate impact. It's notable that the five low AIR states had the lowest average median individual income and had the highest percent of Black residents.

This cluster of five states with low AIR for Black mortgage applicants — Louisiana, Mississippi, South Carolina, Arkansas, and Alabama — yield persistently poor loan application outcomes no matter the macro environment. Even in boom times, with rock bottom unemployment, the AIR in these states lag for Black mortgage applicants.

ANALYSIS

Mortgage Fairness for Black Homebuyers

Another axis of unfairness for Black homebuyers relates to whether they live in urban or rural areas:



Black mortgage applicants in urban areas have had a roughly 80% AIR for the past thirty years except for a substantial dip in the Great Recession. In 2021, the AIR for Black applicants in urban areas rose to 83.9%. In rural areas, the AIR for Black mortgage applicants has consistently been lower than those in urban areas, dropping from 80 % in 1990 to the high 60s percentages during the Great Recession, and finally rebounding to 74% in 2021.

ANALYSIS

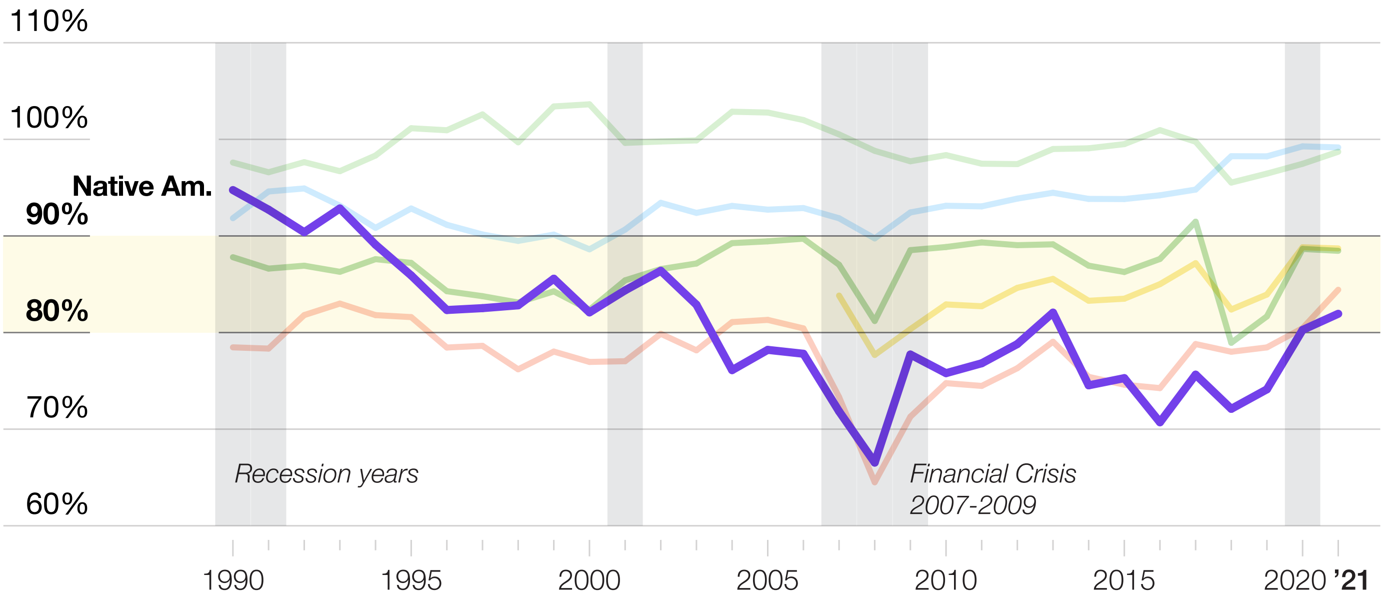
Mortgage Fairness for Native American Homebuyers

The drop in mortgage fairness for Native Americans homebuyers over the past three decades is among the most troubling findings in our study.

In 1990, Native American mortgage applicants had an AIR of 94.8%. But over the next two decades, fairness for Native American borrowers steadily dropped and then fell precipitously during the Great Recession. Fairness for Native American mortgage applicants has yet to recover from its depths in the Great Recession and in 2021, this group had the lowest AIR of any group we studied.

In 2021, **the AIR of Native Americans mortgage applications was 81.9%**, which is down over 10% from the 1990s.

Adverse Impact Ratios for Selected Groups, U.S. Mortgage Applications

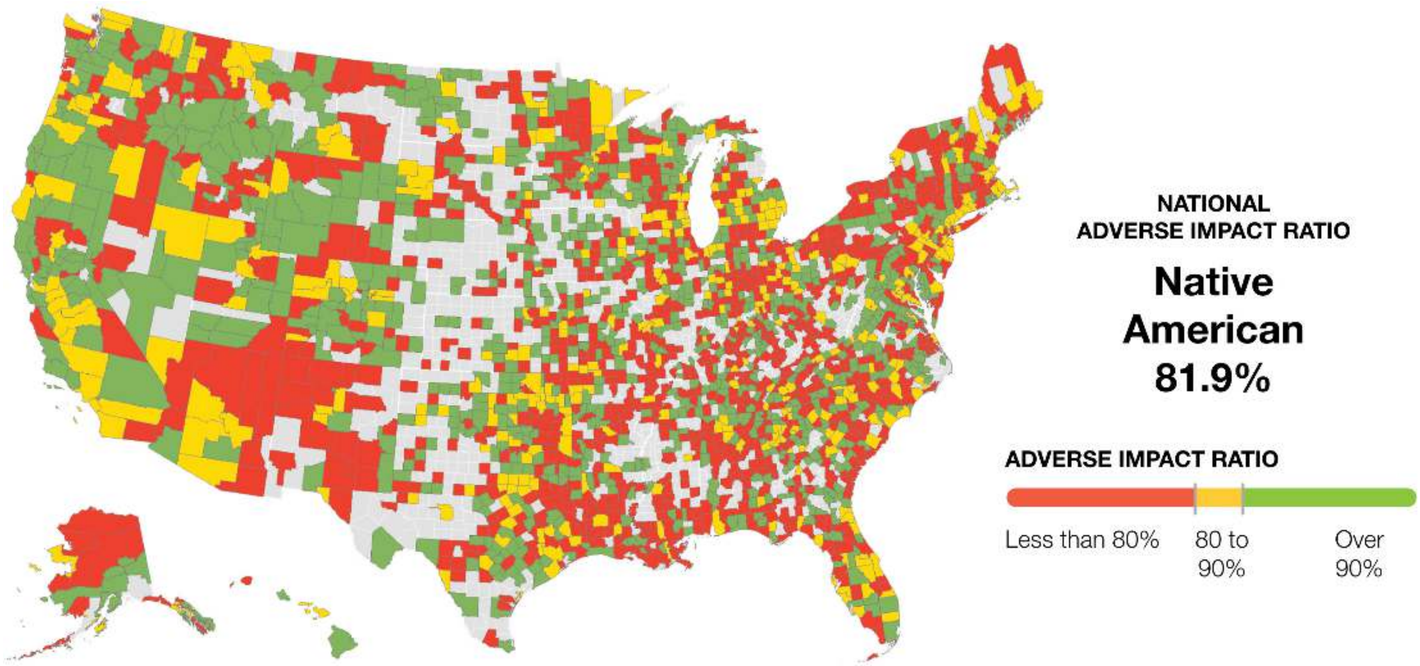


By digging deeper into the data, we found that patterns of unfairness to Native Americans homebuyers mirror those of Black mortgage applicants. Like Black applicants, Native Americans appear to have the biggest spikes of unfairness in regions where they have greater population concentrations. Below is a visual map of mortgage unfairness by county. As the chart reflects, the biggest cluster of unfairness for Native American borrowers is in the Southwest.

ANALYSIS

Mortgage Fairness for Native American Homebuyers

Mortgage Fairness for Native American Homebuyers in 2021:

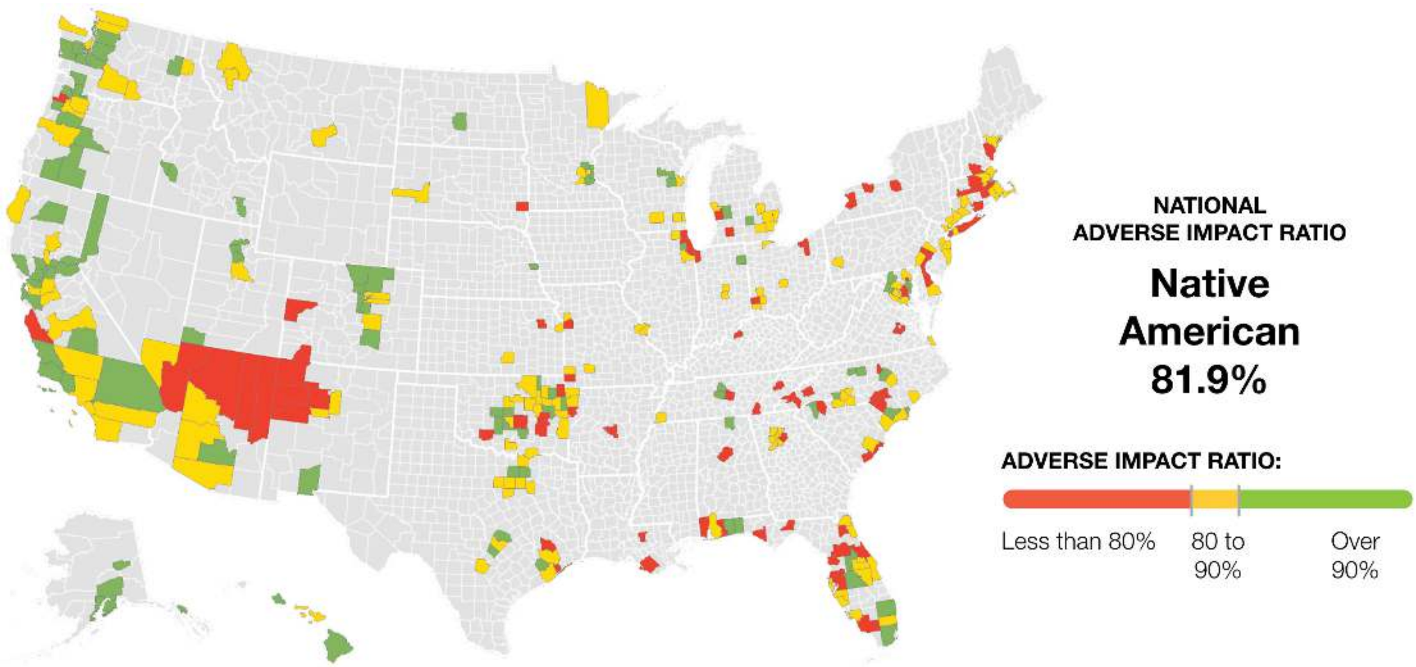


To get a sense of where unfairness was most concentrated, we tightened the lens of our analysis to only show regions where Native Americans had a minimum of 30 mortgage applications in 2021. The biggest concentration of Native American mortgage applications is in the Southwest and that area reflects the highest area of mortgage unfairness for this population. The revised map shows a cluster of red counties in Northern Arizona and New Mexico – largely coincident with the Navajo and Hopi reservations in those states.

ANALYSIS

Mortgage Fairness for Native American Homebuyers

Mortgage Fairness for Native Americans: Minimum 30 Applications

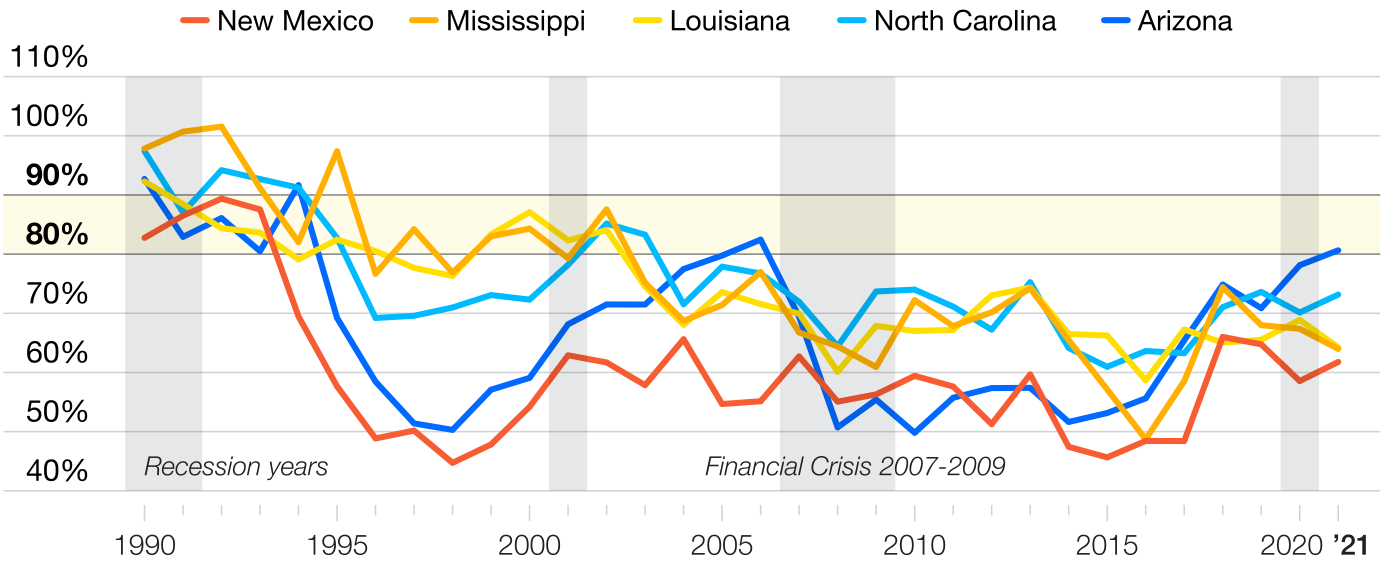


Overall, we found five states that are persistently unfair to Native American homebuyers over the last 30 years – **New Mexico, Mississippi, Louisiana, North Carolina, and Arizona.**

ANALYSIS

Mortgage Fairness for Native American Homebuyers

States That Are Particularly Unfair to Native American Applicants



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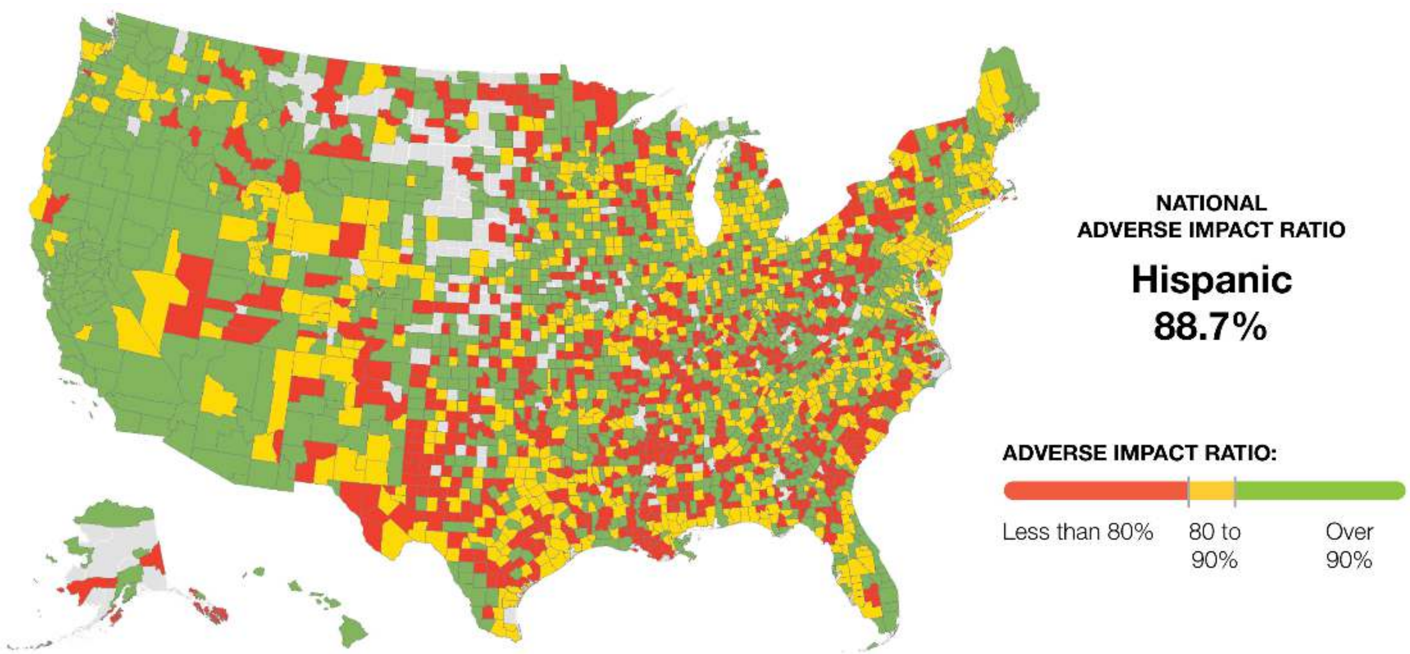
ANALYSIS

Mortgage Fairness for Hispanic Homebuyers

The recent fairness story for Hispanic mortgage applicants is positive as the fairness of their **mortgage approvals rose from 77.7% at the height of the Great Recession to 88.7% in 2021.**

In contrast to Black mortgage applicants, Hispanic mortgage applicants tend to see an increase in fairness of mortgage approvals as their proportion of a community's population increases. The chart below indicates that fairness for Hispanic mortgage applications tends to run higher (see green and yellow colors) across the southwestern border states, California, Arizona, New Mexico, and Florida, which have higher concentrations of Hispanic residents.

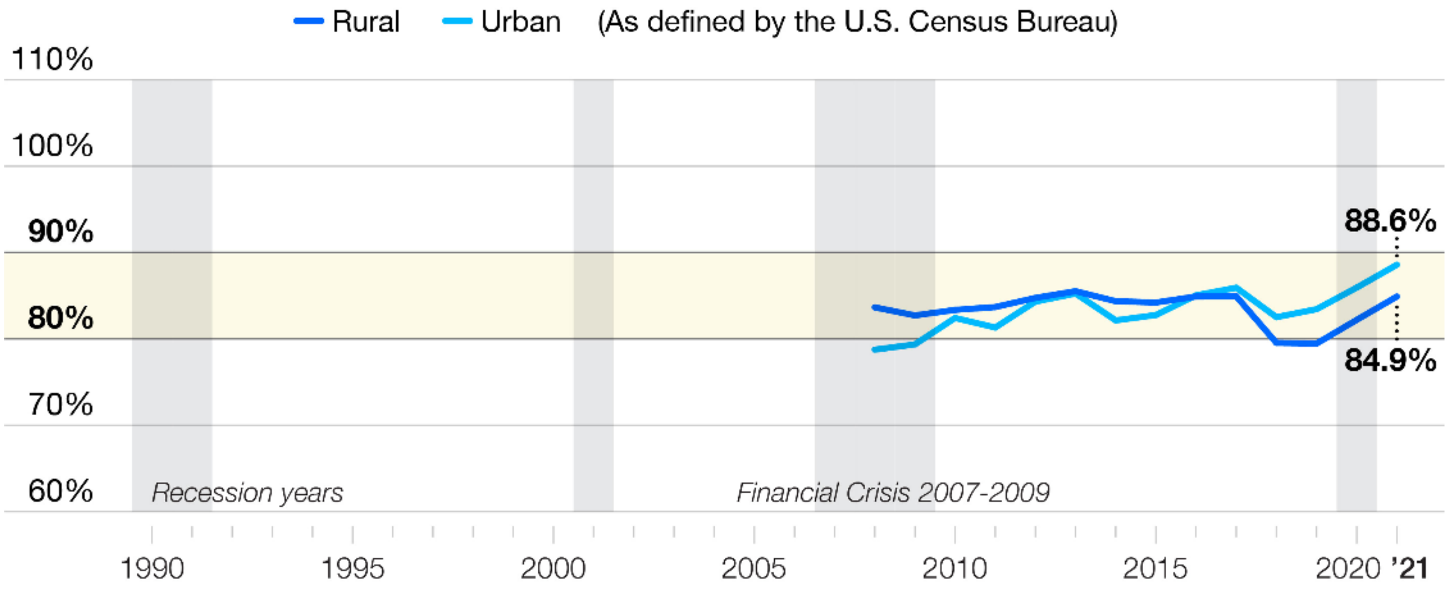
Mortgage Fairness for Hispanic Homebuyers in 2021:



ANALYSIS

Mortgage Fairness for Hispanic Homebuyers

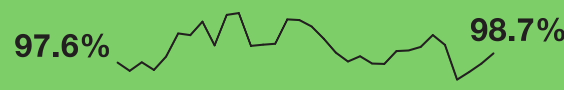
Urban and Rural Counties: AIRs for Hispanic Mortgage Applicants



HMDA databases did not include Hispanic or Latino data prior to 2004, so a historical analysis of fairness Hispanic homebuyers is necessarily incomplete.

ANALYSIS

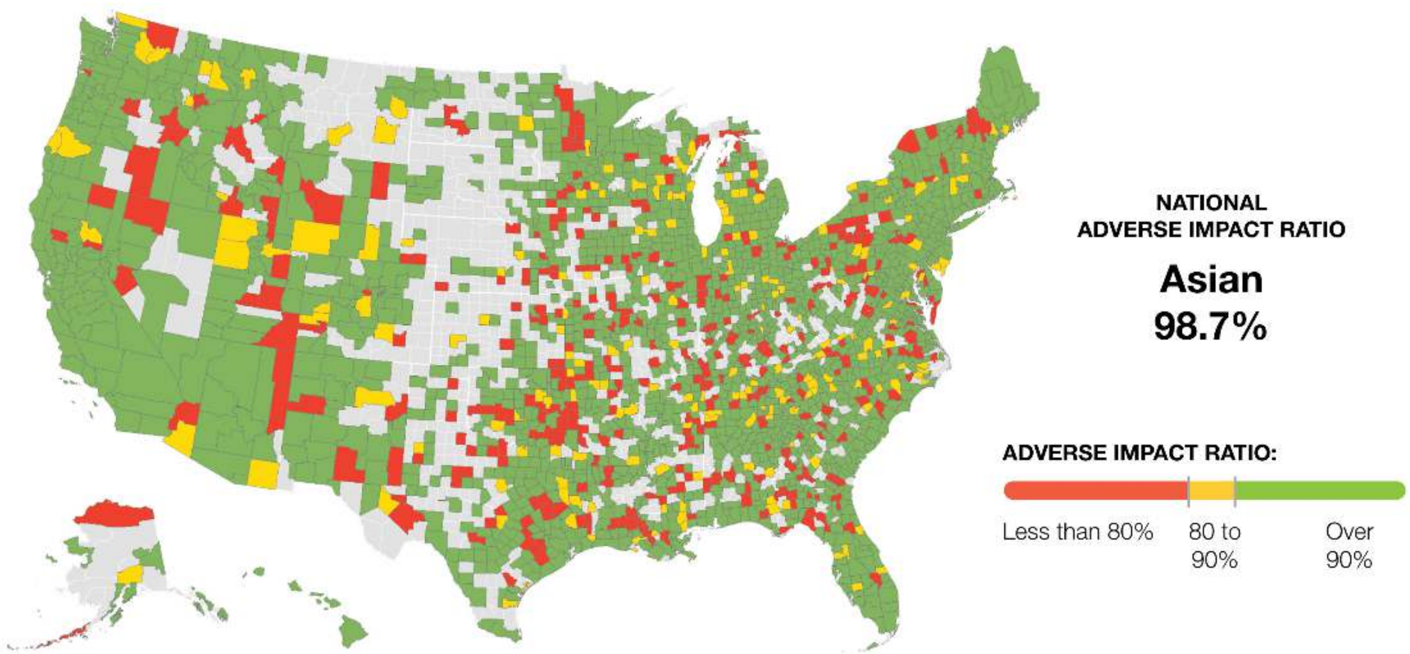
Mortgage Fairness for Asian Homebuyers



Asian mortgage applicants have consistently experienced high mortgage fairness relative to White applicants over the last thirty years.

In 1990, Asian homebuyers had AIR rates of 97.6%, which was nearly comparable to White homebuyers. Between 1995 and 2008, AIRs for Asian homebuyers typically had AIRs above 100%, thus exceeding the rate of approvals of White applicants. By 2021, the national AIR for Asian mortgage applicants stood at 98.7%. As you can see, fairness for Asian applicants in 2021 is strong nationwide, particularly on the West Coast, with just little pockets of red scattered in counties across various states.

Mortgage Fairness for Asian Homebuyers in 2021:



ANALYSIS

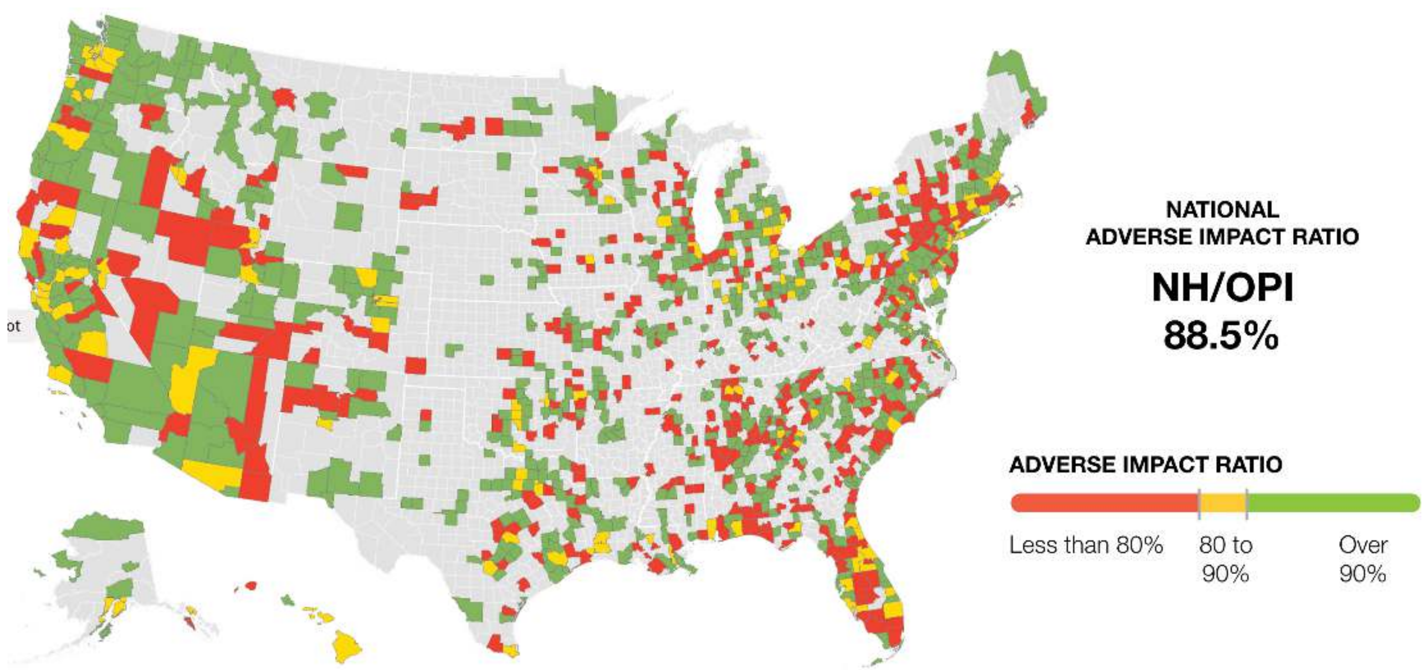
Mortgage Fairness for Native Hawaiian & Other Pacific Islander Homebuyers

The AIR of Native Hawaiian/Other Pacific Islander mortgage applicants has not meaningfully improved over the past thirty years.

In 1990, the AIR of the NH/OPI population was at 86.2% of White mortgage applicants. Thirty-years later, in 2020, the AIR of the NH/OPI stood at 88.7%. Notably, fairness has dipped twice for NH/OPI, once in the Great Recession to 81.2%, and once again in 2018 to 78.9%. We do not know the reason for the significant drop in fairness in 2018, so this is certainly an avenue for further research.

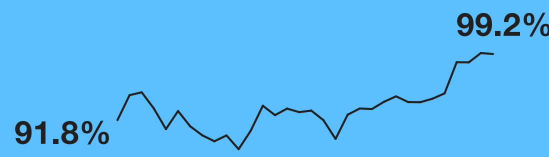
In 2021, as the map shows below, **AIR for NH/OPI stood at 88.5%.**

U.S. Morgage Fairness in 2021: NH/OPI



ANALYSIS

Mortgage Fairness for Female Homebuyers

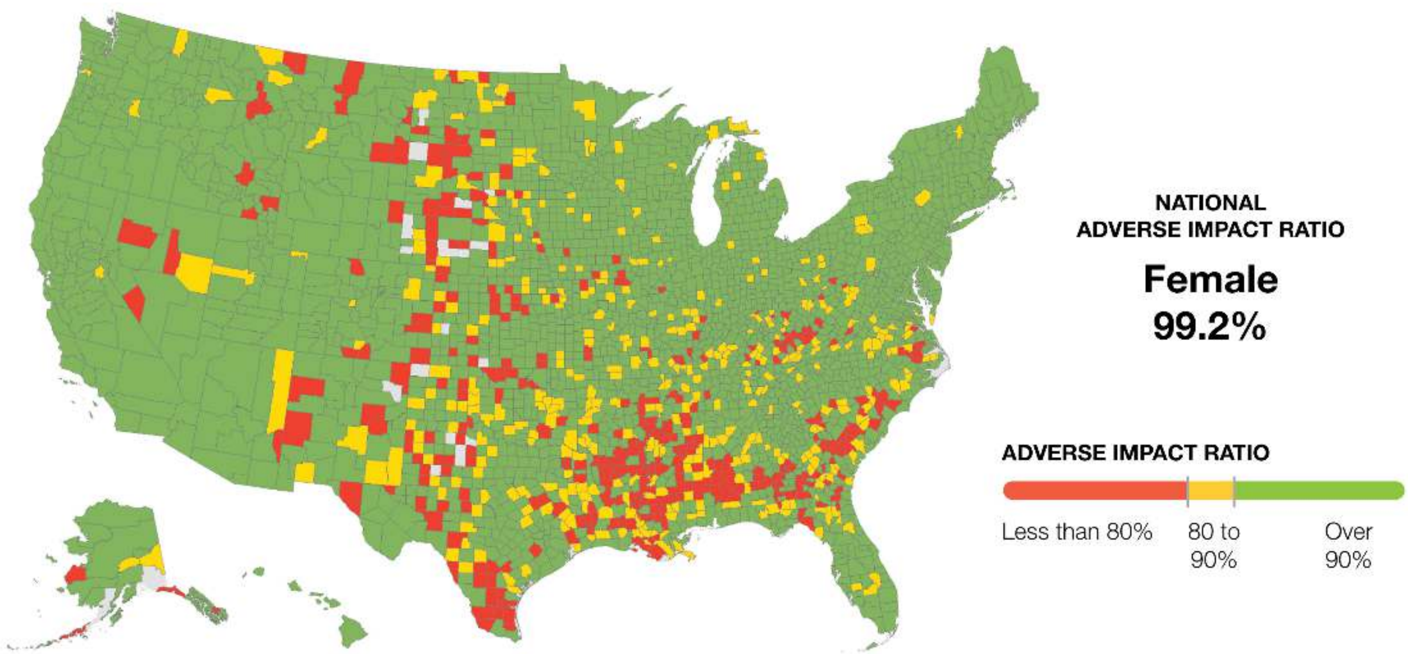


The most positive trend we've seen in the HMDA relates to mortgage fairness for females.

Since 1990, mortgage fairness for females rose from 91.8% to 99.2%.

As shown in the map below, fairness for females is now on par with that of the control group, with an AIR of 99.2%. There are still, however, many counties in the South and the Great Plains that are unfair to females. These counties have one thing in common: they're almost all rural. Overall, though, whether a woman lives in an urban or rural area, the story is generally positive. In 2021, the AIR for female mortgage applications ran at 95.2% in rural counties, and 97.9% in urban areas.

Mortgage Fairness for Female Homebuyers in 2021:



The positive fairness story for female mortgage applicants remains true even when considering intersectional categories such as Black female homebuyers, Hispanic female homebuyers, and Native American female homebuyers. The table below provides AIRs calculated at the State level for subcategories of female mortgage applicants at the beginning of HMDA data collection in 1990, during the Great Recession (2008), and 2021. Because ethnicity information was not represented in the HMDA data until 2004, we could not obtain AIRs for Hispanic females in 1990.

ANALYSIS

Mortgage Fairness for Female Homebuyers

Average AIRs for Groups of Female Mortgage Applicants:

Adverse Impact Ratio (state avgs)	1990	2008	2021
Female	**91.8%**	**89.7%**	**99.2%**
Native Am. female	**83.4%**	**60.0%**	**79.9%**
Black female	**69.8%**	**58.8%**	**86.3%**
Hispanic female	N.A.	**71.4%**	**88.6%**
NH/OPI female	**82.4%**	**73.9%**	**88.8%**
Asian female	**89.9%**	**90.0%**	**99.5%**

It's notable that Black and Hispanic female mortgage applicants experienced significantly more unfairness than their ethnic/racial group as a whole in 1990 and 2008. However, the story flipped in 2021 when Black and Hispanic female homebuyers experienced equal or higher AIRs than the average Black and Hispanic mortgage applicant.

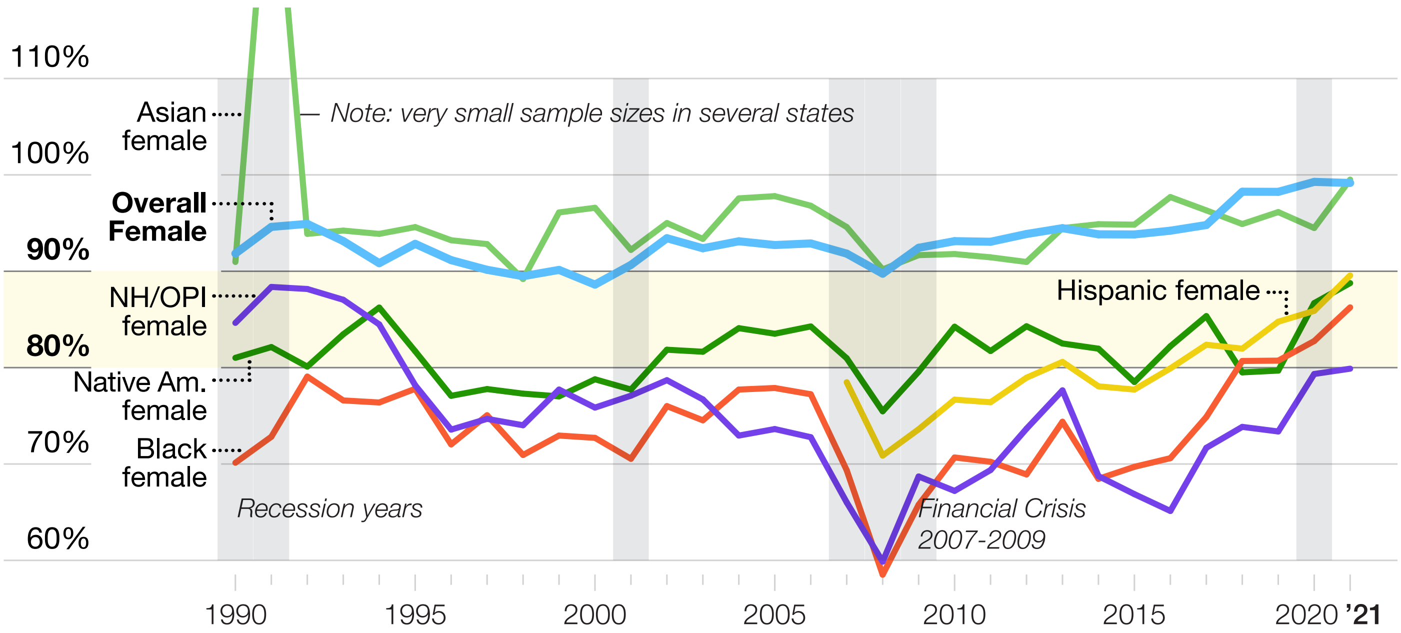
Specifically, in 1990 AIRs were just below 80% for Black applicants, but only 69.8% for Black females. In 2008, Black homebuyers had AIRs of around 65% while Black female homebuyers experienced disturbingly low AIRs of 59.8%. By 2021, Black female homebuyers had an AIR of 86.3%, which was greater than the fairness results for all Black applicants. Similarly, in 2008, Hispanic female mortgage applicants had AIRs of 72%, significantly below the AIRs for the full category of Hispanic homebuyers of 77.7%. But by 2021, the AIRs for Hispanic female mortgage applicants (88.8%) had slightly surpassed the fairness for Hispanic applicants overall (87.7%).

ANALYSIS

Mortage Fairness For Females: An Intersectional View

A 30-year trend chart of these intersectional categories of females is shown below.

Adverse Impact Ratios for Female Groups, U.S. Mortgage Applications



Control group for females is men. Intersectional control group is female/ethnicity vs. White men.

About HMDA

The Home Mortgage Disclosure Act (HMDA) requires lenders of a certain asset-size and loan-volume threshold to report detailed information about the loan, the property securing the loan, and the loan applicant. Specifically, HMDA values include:

1. **Loan information**
   Granular information about the loan including a loan identification number, application date, loan type, loan purpose, loan amount, action take by bank on application, rate spread, credit score, total loan cost, origination charges and discount points, interest rate, debt-to-income ratio, and loan term;

2. **Property**
   Precise address information and a description of the type of dwelling; and

3. **Applicant information**
   Information on the prospective/actual borrower inclIding ethnicity, race, sex, age and income.[2]

The HMDA database can offer powerful information about leading fairness because it contains information about borrowers' race, ethnicity, and gender. HMDA reporting is an exception to the restriction in Regulation B of the Equal Credit Opportunity Act (ECOA) that generally prohibits lenders from collecting protected status data about consumers such as race, ethnicity, gender.

Additionally, the size and sheer scope of the HMDA database is impressive. HMDA data represents the most comprehensive information on mortgages made available to the public. In 2021, over 4,300 financial institutions reported information to HMDA. The 2021 data includes information on 23 million loan applications with 15 million resulting in loan originations, approximately at 65% approval rate. For purposes of this analysis, we reviewed all mortgages on single-family homes including first-mortgage, HELOCs, and refinances.

Research Methodology

HMDA data is a publicly available resource. FairPlay downloaded HMDA data from 1990 - 2021 from the FFIEC HMDA dedicated website (2017-2021), the CFPB's website (2007-2016) and the National Archives (1990-2007).

We considered all mortgages on single-family homes including first mortgages, HELOCs and refinances that were approved regardless of customer acceptance. Denied loans reflected loans where the application or pre-approval request was denied. Rows in HMDA that were not home purchases were dropped from our study.

Race and sex data are given directly as variables in all years of the HMDA data.Race data was collapsed into a smaller number of buckets in order to generalize across different races. Specifically, we collapsed buckets into:

- White,
- Hispanic or Latino,
- Black or African American,
- Native American (Native Am.),
- Asian (Korean, Japanes, Chinese, Filipino, Indian, etc.), and
- Native Hawaiian or other Pacific Islander (NH/OPI) (constituting Fiji, Samoa, etc)

In order to compare Hispanic / Latino populations with the dominant group (White applicants) to match established standards, we ignored the races of all applicants if they were Hispanic or Latino. For example, a Black Hispanic applicant and a white Hispanic applicant are both considered Hispanic, not Black or White. This analysis obscures the potential intersectional disparities.

Rows that did not have values for race or sex were dropped from the study.

There were significant format shifts during the period of this study, but corresponding documentation from the FFIEC and the National Archives made it possible to parse the historical data for the exact fields as are represented in later datasets (besides Hispanic or Latino data, which was not included until 2004).

Using this data, AIR ratios can be calculated for country, state, county, and census tract levels relative to a pre-defined control group ("White" in the case of single-variable fairness, "White male" in the case of intersectional).

+ Qualifications & Data Limitations

We note the following potential limitations to our findings:

+ **Because AIRs are ratios of ratios, they're susceptible to small sample sizes.** Each application in an area with few applications carries a disproportionately heavier weight than areas with more applications. As an example, consider the case of a county with three White applicants (two of whom were given loans) and three Black applicants (of whom only one got a loan). Despite the tiny difference in the number of loans, the AIR for that county would be 0.5 or 50%.

+ **Some of the racial or ethnic groups are heterogeneous combinations.** For instance, "Asian" clusters people who consider themselves to be South Asian with people who consider themselves to be East Asian. Indeed, it clusters people from the central states of India with people from Bangladesh. This confounds the distinct histories of those groups, both before and after they immigrated to the United States. This problem has been partially, but not completely, ameliorated in some of the fields in the most recent releases of the database.

+ **This analysis does not include broader economic or social factors.** In particular, it ignores the impact of the COVID-19 epidemic on financial activity, during which the US government kept interest rates low and provided major financial stimulus to American consumers.

Endnotes

[1] We chose AIRs as our base metric over another common fairness metric, “denial odds.” because AIRs are the more commonly cited metric in fair lending case law. Denial odds ratios, instead of focusing on loan approvals, look at the ratio of loan denials. They express whether the odds of a protected status loan applicant being denied is greater than, less than, or the same as the odds of denial for a non-protected status applicant. If the odds of being denied between the two groups were equal, the denial odds would be one.

[2] Data on Hispanic borrowers goes back only to 2004. Analysis was performed from 2007 onwards.

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