



IDFPR

Illinois Department of Financial and Professional Regulation

Division of Real Estate

www.idfpr.com

JB PRITZKER
Governor

MARIO TRETO, JR.
Secretary

LAURIE MURPHY
Director

Illinois Department of Financial & Professional Regulation

Real Estate Valuation Task Force

OPEN Minutes

Date: June 26th, 2024

Call to Order: 11:04 a.m. –Ericka Johnson

Location: IDFPR - Division of Real Estate ("DRE")
555 West Monroe Street 4th Floor, Chicago Room
Chicago, IL 60661
And
Via Interactive Video Conference at IDFPR
320 West Washington Street, 2nd Floor, Conference Room 258
Springfield, IL 62786

Board Member(s) Present: Jeffery Baker, Paul D. Brown, Deborah Fears, Javier Gumucio, Dan Hofacker, Steven Monroy, Tito Quinones, Anthony E. Simpkins, Ashia Walker, Cassandra Halm and Ericka Johnson.

Board Member(s) Absent: Leader Marcus Evans, Adrienne Suits Bailey, and Jamie Cumbie

Division Staff Present: Gabriela Nicolau- DRE Deputy General Counsel, Jennifer Rossiter
Moreno- DRE Operations Manager, Tia Davis- Legislative Liaison

Guest(s) Present: Cassandra Sneed- Chicago Housing Trust, Falon Young- Chicago Housing Authority, Jim Blaydes, Sofia Papoutsis, Scott DiBiasio, Brian Weaver, Daniele Stanly- NHS Chicago

Topic	Discussion	Action
Call to Order	With no Chair or Vice Chair Present, Deputy Secretary Ericka Johnson opened the meeting. (The VC arrived later)	The meeting was called to order at 11:04 am by Ericka Johnson
Roll Call	<p>Speaker of the House: Leader Marcus Evans- Absent</p> <p>Minority Leader of the House: Dan Hofacker- Present</p> <p>Minority Leader of the Senate: Jeffrey Baker- Present</p> <p>Director of the Department of Commerce and Economic Opportunity or Designee: Tito G. Quinones - Present</p> <p>Director of Department of Human Rights or Designee: Steven Monroy - Present</p> <p>Director of Department of Revenue or Designee: Adrienne Suits Bailey - Absent</p> <p>Executive Director of the Illinois Housing Development or Designee: Javier Gumucio - Present</p> <p>Representative of Statewide Banking Association Representing banks of all asset size: Ashia Walker - Present</p> <p>Representative of Statewide Banking Association exclusively representing banks with assets below \$20,000,000,000: Jamie Cumbie - Absent</p> <p>Representative of a Statewide Association representing Credit Unions: Deborah Fears - Present</p> <p>Representative of an Agency, Organization, or Association advocating for Fair Housing: Anthony E. Simpkins - Present</p> <p>Representative of an Agency, Organization, or Association for Consumer Protection: Cassandra Halm - Present</p> <p>Representative of a Statewide Appraisal Organization: Paul D. Brown - Present</p> <p>Secretary of Department of Financial and Professional Regulation or Designee: Ericka D. Johnson- Present</p>	<p>Members Leader Marcus Evans, Adrienne Suits Bailey and Jamie Cumbie</p>
Approval of Minutes	Ericka Johnson went over last meeting's minutes and asked the task force if they had any questions, comments, or changes. Miss Johnson also reminded everyone that Dr. Rosenblatt's presentation was attached to the minutes. Hearing none, minutes were adopted.	Dan Hofacker motioned for the approval of minutes. Paul D. Brown made the second motion

Topic	Discussion	Action
<p>Report Drafting: Discussion and Presentation</p>	<p>Miss Johnson introduced the presenter for the day, Dr. Luis Lopez. Miss Johnson asked Dr. Lopez to introduce himself.</p> <p>Dr. Lopez said good morning and thanked everyone for their time then shared his screen with the presentation 'Talk on Appraisal Racial Bias'.</p> <p>Miss Johnson told the task force that disparities in communities at the borrower level and getting loans needed to be included in the report due to the GA. Therefore, it was agreed different studies that address that topic needed to be included in the presentations and that Dr. Lopez will share the research he conducted.</p> <p>Dr. Lopez introduced himself and said that he is an assistant professor at the University of Illinois Chicago and has a PH.D. in business Administration from the Pennsylvania State University. Dr. Lopez shared some of his peer reviewed research that has been published on topics of paycheck protection and discrimination. Dr. Lopez then informed the task force that he will be presenting his research, in collaboration with others, on appraisal and racial bias. Dr. Lopez informed the group that the research he would be presenting today, 'Do Appraiser and Borrower Race Affect Mortgage Collateral Valuation?', is currently undergoing peer-review. and has been discussed with institutions such as Zillow, Freddie Mac, and others. Dr. Lopez went on to say that he has work history as a broker and currently works with HUD.</p> <p>Dr. Lopez started his presentation by asking 'Why Focus on Appraisals?'. That appraisals are important to the home buying process and helps people know what the worth/value of the property and in default, lets the lender know how much they will be able to recover. Even so, 1930's saw the arrival of the modern mortgage industry and the standardization of using race to determine the appreciation of a property. This practice became forbidden by the Fair Housing act of 1968, the Equal Credit Opportunity Act of 1974, and the Community Reinvestment Act of 1977.</p> <p>However, the media continues to report racial bias in appraisals. Dr. Lopez mentioned how in 2020, a Florida couple was trying to refinance their home. The couple got two appraisals and one came in 40% lower than the other. As more people shared their stories on appraisals, people started talking more about the discrepancies between appraisals.</p> <p>Dr. Lopez goes on to discuss why this matters. That Black and Hispanic families have been shown to have less wealth when compared to White families. That there are disparities in income and education between the groups, as well as documented evidence of disparities in the home buyer process. For example, the same home shown to a Black family and White family, will have higher rates for the Black family, than the white.</p>	

Topic	Discussion	Action
	<p>Dr. Lopez goes on to discuss how fees for getting a loan are higher for Blacks when compared to Whites. This has been seen in appraisals, which is a concern. Even so, to help address this issue, the White House put together the Property Appraisal and Valuation Equity (PAVE) task force, with policy recommendations. Dr. Lopez pointed out how it's important for policy to relate back and look at research when making recommendations for policies, even though the research is limited with conflicting results. Dr. Lopez informed the group that he added some studies that people can go and look at that discuss bias and discrimination in the real estate process.</p> <p>Dr. Lopez then discusses how appraisal racial bias has many definitions, such as, (1) difference in equivalent homes in white and black neighborhoods, (2) the racial gap in difference of sales price and appraisals, and (3) racial gap in difference of appraisal and value.</p> <p>When it comes to difference in equivalent homes of white and black neighborhoods, there was a study done by Perry et al. (2018) that compared similar homes in White and Black neighborhoods. The researchers found that homes in Black neighborhoods were 22%-23% undervalued when compared to the White neighborhood. Then, in Howell and Korver-Gleen (2021) study looked at the increasing effect of neighborhood racial composition on housing values from 1980 through 2015. The researchers found neighborhood racial composition determining a home value is greater in 2015 than it was in the 1980's. Therefore, these two studies show that there is evidence of racial disparities in valuations but does not prove discrimination from appraisals.</p> <p>Dr. Lopez goes on to mention how Freddie Mac looked at differences between AVM values and Sales Prices. That Freddie Mac looked at market transactions for properties being purchased and the differences between sales price and appraisals. Dr. Lopez pointed out how if an appraisal comes in below the purchase price, it can cause the house transaction to derail and, in some cases, make the deal fall through. Even so, Freddie Mac found that in white neighborhoods, 7.4% of appraisals came in below the contract price while in Black/Hispanic neighborhoods, 12.5%-15.4% of homes were appraised below contract value. However, there was only a 2%-3% difference in the contract price and appraisal when the ethnicity of the appraisal was counted for. Overall, though, Freddie Mac's study does not establish racial appraisal bias and remains unclear on if there is discrimination towards the home-buyer or seller.</p> <p>Dr. Lopez then discussed Fannie Mae's study, where they looked at the difference between AVM values and appraised value with a focus on mortgage refinancing. By focusing on mortgage refinance, the homeowner and buyer are the same. The study found that Black homes are 1000% below property value estimates when compared to White homes. This shows that there is a larger racial bias in Black neighborhoods than in White ones and that White neighborhoods get premium estimates.</p>	

Topic	Discussion	Action
	<p>Even so, Fannie Mae's study had some challenges. Dr. Lopez pointed out how those shortcomings were that the study does not account for who is doing the appraisal and the AVM Fannie Mae uses could be bias itself because it does not include everything that an appraiser looks at when valuing a home.</p> <p>Then, Marshall Jean and Gideon Blustein did a study called Color and Collateral for the IL Realtors, where they looked at appraisal outcomes inferred from the Home Mortgage Disclosure Act (HMDA) from 2007-2020 and collateral rates. It was found that collateral rates were higher for Blacks when compared to other races and that has remained consistent over the last 17 years. This then shows, that there is a greater need for transparency and housing data to be available.</p> <p>Miss Johnson said that she had a question. That so far, major studies are saying that there are some flaws in much of the research? For example, Brookens study stated that a lot of the data was self-reported through a survey. Miss Johnson asked what ACS means.</p> <p>Dr. Lopez said that ACS means American Community Survey and the biggest obstacle with research is getting the necessary data when looking at a sensitive topic. That right now, a lot of data shows a home's square footage and number of bedrooms but there is a lot more to a home than those two variables. Even so, HMDA used information on a home's mortgage but not on the quality of the property which leads to obstacles in answering the simple question of "Does the Race of the borrower matter?" Even so, in the Brookens study, it showed that the best way to access property values is through studies. But, the question remains, when additional factors are considered in a home's valuation, will the same disparities be seen as they are now because homes will always have some value. Then, the information in the HMDA study is not conclusive, therefore the authors call for greater transparency and availability of housing appraisal data. So, Dr. Lopez wants to replicate what Jean and Blustein are doing in their study to build on the researchers approaches to better understand housing appraisal's.</p> <p>Miss Johnson said thank you to Dr. Lopez and that the information was helpful. Dr. Lopez asked if there were any additional questions.</p> <p>Mr. Brown asked how HMDA data was being used? That in refinance, the appraiser meets with the homeowner and know the person race and with the borrower, the purchase model is used. Therefore, how is the data being used with the appraiser not knowing the race of the seller or the buyer.</p> <p>Dr. Lopez told Mr. Brown that his point was a critique with the Freddie Mac study. That there is a lack of information and multiple individual properties could also be vacant. That the focus in his study is on refinanced homes because a property is occupied, and an appraiser is more likely to interact with a homeowner and learn that person's race.</p> <p>Dr. Lopez moved on in his presentation and said that in his research, there are two main questions. (1) Are minority owned homes valued</p>	

Topic	Discussion	Action
	<p>differently than similar White-owned homes by the same appraiser? Dr. Lopez said that yes, minority owned homes are valued differently with a .6-.41 discount seen in Black owned homes. (2) Does the appraiser's race matter? Dr. Lopez said that no, the appraiser's race does not matter, and racial biases is not a white only problem. That racial bias is not going to go away easily and diversity is not going to solve the problem. Therefore, more needs to be done.</p> <p>Dr. Lopez then discussed the data used in his study. That information on mortgages from 2000-2007 using a data set from New Century which was one of the largest sub-prime lenders before GFC. New Century liquidated and sold their data set to Penn State which represented 61,000 individuals. The appraisers in this data set worked for multiple lenders, not just one and therefore, the information can be generalized. Even so, sub-prime loans were targeted to minority home borrowers and gave access to credit for people of color during 2000. In the Fannie Mae and Freddie Mac studies, only confirming loans were looked at. Even so, there was data on refinance and purchase, but they focused on refinance applications.</p> <p>Even so, Dr. Lopez said that the valuation metrics used in his study was appraisal value over benchmark value, appraisal value over automated valuation model (AVM), and finally appraisal value over V(over/under value of minority owned homes). Even so, the AVM estimate is something that is still being used today by Black Knight. However, due to concerns for bias in the AVM, Dr. Lopez study used their own valuation metric to get likely statistics for sale of a property.</p> <p>Dr. Lopez discussed how minorities have slightly lower appraised value over AVM. His research looked at the effect of race while factoring in where the property is located, market conditions, and the loan. Dr. Lopez study also took into consideration who appraised the property. It was found that in a refinance loan, Black owners received \$1,344 lower than White Owners.</p> <p>Jim Blaydes asked if it was right to assume bias as the variation between the same house and appraiser is 5-8% difference?</p> <p>Dr. Lopez said that looking at the differences, there is some doubt that it is racially driven which is why his study accounted for the appraiser race. Even so, when estimates pick up value, it comes from a difference in the portfolio of their appraiser.</p> <p>Vice Chair Anthony Simpkins said that he is getting confused and lost. That the Macro data shows that there is a trend, and that the trend is racial. When the trend is moved to appraisers, it's a smaller trend but has the same racial trajectory. In Dr. Lopez research, he made accommodations for location, and it seems to VC Simpkins that location is the key because the trend that is majorly seen in minority neighborhoods is the undervaluation of homes. Even so, the larger trend is based on racial compensation in neighborhoods while at the individual level, if the appraiser is racist then the appraisal will be racist.</p>	

Topic	Discussion	Action
	<p data-bbox="332 222 1094 506">FtONqr gl 'said he agrees with VC Simpkins on racial compensation in a neighborhood could be racist. The Freddie Mac study was trying to get at what VC Simpkins is saying. In more recent studies, they look more at the individual level or if the race of the individual borrow has any impact, even though it shouldn't. That there tends to be some evidence that race of an individual borrower does matter. However, these studies don't answer the question at the individual level. Dr. Lopez asked if there were additional questions before moving on to the next slide.</p> <p data-bbox="332 541 1094 699">Dr. Lopez discussed the concerns with his study and that the research has some issues. That only the last appraisal of a home was looked at even though some people might get multiple appraisals. With the couple in Florida, they removed photos of the family to camouflage the race of the family for their second appraisal.</p> <p data-bbox="332 735 1094 892">Even so, there is no evidence that minorities are more likely to pay higher fees or get multiple appraisals when Dr. Lopez tested for this in his study. His research looked for systematic difference between minority and white owners and saw that there is no difference in appraisal coast with the average cost of an appraisal being \$600.</p> <p data-bbox="332 928 1094 1085">Brian Weaver said that appraisers are not getting \$600 for an appraisal and more likely the lender is charging that much. Dr. Lopez asked Mr. Weaver how much he would say an appraisal cost. Mr. Weaver said \$350. Lenders make the price higher. Dr. Lopez thanked Mr. Weaver for pointing that out and that he will have to update data.</p> <p data-bbox="332 1121 1094 1241">Dr. Lopez moved on to the next slide that discussed alternative valuation metric (AVM). Dr. Lopez said that AVM may misvalue the home of minorities but it helps researchers project what a home would have been sold for at the time of refinance.</p> <p data-bbox="332 1276 1094 1497">When it comes to the alternative benchmark valuation, Dr. Lopez study found that when it came to two identical homes, the White homeowner's house would be appraised for 278K while a Black homeowner was appraised for 266K. This showed Black homeowners getting an appraisal that was 9k lower than White homeowners. Showing that there is a 1k-9k loss in equity due to the race of the borrower.</p> <p data-bbox="332 1533 1094 1875">Dr. Lopez then discussed if the race of the appraiser matters. The data set that was used in Dr. Lopez research did not have race but had names. Therefore, racial compensation was based on common last names and used race math that has been used in areas where race matters. In the 1970's, a police department did not have the race of offices on file and used race math formula to determine the race of officers. Using race math showed that 79% of the time, the formula was accurate in identifying white and Hispanics correctly while it was a 65% to 61% accuracy for Blacks. This showed two inferences, (1) race algorithm is likely working, (2) that there is not a big difference in racial composition over time.</p>	

Topic	Discussion	Action
	<p>When it comes to Appraiser Race, it doesn't matter because in Dr. Lopez research, they did not see any systematic differences. The price gaps do not lessen when the appraiser and borrower share the same race.</p> <p>Gabriela Nicolau said that appraisers can use other appraisers work and the data being used is similar to other reports. Therefore, is that why race wouldn't matter?</p> <p>Dr. Lopez said that he would ask an appraiser that is in the task force meeting. How often do they see another appraiser's report?</p> <p>Mr. Weaver said that people will offer and appraisal on a home from 3 to 4 years ago. However, mortgage work has their rules that must be followed and appraisers have to ignore older reports because they are out of date. Then there are the differences between homes, farms and commercial. So, the data would need to separate appraisers who do homes and those who do other properties.</p> <p>Jim Blaydes said that he rarely sees prior appraisals and that in the appraiser world, they try not to rely on other's work. Appraisers want to make sure they are relying on what they have seen themselves, and any data that is available to them they did not see themselves, would be dated. That appraisers can look at other appraisals to look at the differences in the properties appraisal and built in variances. Appraisers will then take these variations and look at difference in value. Even so, appraisers are not accused of being bias if the value of the home exceeds the contract price.</p> <p>Dr. Lopez said that he will look at the approach Mr. Blaydes discussed in his next set of analysis with his research. Even so, a look inside the data showed that there is a 65% rate of disparities between minorities and Whites. That research shows that there is a disruption with some appraisers consistently overvaluing minority homes while some consistently undervalue the home for a variety of reasons and randomness. When it came to Black owned homes, there were undervalued at 4%. This shows that there is a systematic racial bias. However, enforcement is where it becomes challenging.</p> <p>Mr. Brown asked if the GSC data gave Dr. Lopez access to the range. That Fannie Mae and Freddie Mac require appraisers to indicate a value with a range of comparables. Does Dr. Lopez data provide a look into that.</p> <p>Dr. Lopez said that his research does not look at that on the AVM but wish he did have that information.</p> <p>Miss Johnson said she had a question, but she thinks Dr. Lopez is about to answer her question which are if he had any recommendations for the task force as they compile studies to the GA</p>	

Topic	Discussion	Action
	<p>Dr. Lopez said that he has a few suggestions. (1) Need for financial literacy on home valuation and appraisal appeals for homeowners. (2) Unconscious bias training for all appraisers. (3) Anonymization of borrower and homeowners in appraisals. Dr. Lopez said that the public is already doing this themselves by staging their home and the industry can help with this. Finally, (4) Diversify. Dr. Lopez told the task force that if anyone had questions on his research, to feel free to reach out to him.</p> <p>Miss Johnson said that the data Dr. Lopez looked at was from a different time frame and therefore was not a wide pool of data to collect from. Does Dr. Lopez have plans to expand his research.</p> <p>Dr. Lopez said that the goal is to get more data. The work that his research has is fairly telling and in favor of doing a replication using more contemporary data. That agencies, such as the United States Department of Housing and Urban Development (HUD) would need to replicate the study using Federal Housing Administration (FHA) data because that data looks into minority households. Dr. Lopez said that he has been working with HUD to replicate his study and come out with a report by the end of the year.</p> <p>Dan Hofacker asked if Dr. Lopez has worked with the Federal Housing Finance Agency (FHFA). Dr. Lopez said he has talked with FHFA but is not currently working on any projects with them.</p> <p>Miss Johnson asked if there were any other questions. That Dr. Lopez has offered to stay in touch as the task force builds out their recommendations. Miss Johnson said that PAVE also recommended more transparent data.</p>	
<p>Progress of Report Drafting</p>	<p>Miss Johnson said that VC Simpkins wanted to discuss recommendations for each section of the report that's due to the GA. That the task force does need to start formulating the report and people have been asking for a deadline for the report along with what should be in the report and the organization. Miss Johnson asked that everyone use what has been sent to them as a baseline for the report and that by August 31st, people should have the first draft of their section done. Miss Johnson then informed the task force that even though there isn't much time left, the task force will continue to focus on various topics and at the next meeting, it will be discussed, what topics still need to be gone over. Miss Johnson asked if anyone had any questions or comments.</p> <p>Mr. Hofacker said that he liked the guidelines that Miss Johnson sent out and appreciates them. Miss Johnson replied that she was happy he liked them before moving on to open discussion.</p>	

Topic	Discussion	Action
Open Discussion	Miss Johnson asked if anyone had any comments for open discussion. Hearing none, Miss Johnson moved on to public comments.	
Public Comments	<p>Miss Johnson told the task force that if they have any supporters helping them draft their section of the report, to let administration staff know.</p> <p>Miss Nicolau said they also need these names to make sure the right people are added to the foot notes for their contribution.</p> <p>Miss Johnson followed up and said she wants to make sure everyone is credited for their work before moving on to new business.</p>	
New Business	<p>Miss Johnson told the task force that appraiser qualifications has opened discussion about the college degree requirement for licensure and that this would be a good topic for the task force to weigh in on if a college degree should be a requirement to be an appraiser because it creates a barrier to licensure. Miss Johnson said the task force can provide to the Governor's office a recommendations that they make and can make the letter part of the task force to do list. Miss Johnson stressed that there is not a lot of time to discuss the letter in today's meeting but at next month's meeting it can be discussed because the letter is due by July 27th.</p> <p>Dr. Lopez said that he has a program that offers classes for those seeking their appraiser license but needs to get approved by the AQB. Miss Johnson then said that the AQB is trying to make it so that a college degree isn't required for licensure and people will have to take college classes instead.</p> <p>Mr. Weaver told Mr. Lopez that the AQB would have to come out and study his program and Mr. Lopez would need to reach out to the AQB to get that done.</p> <p>Miss Johnson told Dr. Lopez that she can talk to him about the process out of the task force meeting.</p> <p>Miss Nicolau then told the task force that it is a tight deadline to get the letter done and that members should send their thoughts individually to Tia Davis.</p> <p>Miss Johnson reminded the task force that they did not have to do the letter and that it was just an idea that members can think over. Mr. Hofacker then reminded the task force that there is a convention in August from the 19th to the 22nd that may interfere with the August 21st task force meeting. Miss Johnson thanked Mr. Hofacker for the reminder and would look into changing the date of the August meeting.</p>	
Adjournment	The next meeting is scheduled for July 17th, 2024.	There being no further business to discuss, motion made by Dan Hofacker and seconded by Paul D. Brown at 12:28pm. Motion carried unanimously.

Talk on Appraisal Racial Bias for The Illinois Real Estate Valuation Task Force

By Luis A. Lopez, Ph.D.

University of Illinois, Chicago

About Me

- Assistant Professor at the Stuart Handler Department of Real Estate, University of Illinois at Chicago from 2019 to Present.
- Ph.D. in Business Administration with Real Estate Emphasis from The Pennsylvania State University.
 - MA and BA in Economics from University of Nevada, Las Vegas.
- Prior work experience in government and industry:
 - Data Analyst, LIED Institute of Real Estate Studies, UNLV
 - U.S. Department of Interior, Bureau of Land Management, Realty Technician
 - Real Estate Agent (Broker-salesperson)
- Consultant for U.S. Department of Housing and Urban Development, Office of Policy Development and Research (PD&R)

Recent Peer-Reviewed Research

The Review of Financial Studies

JOURNAL ARTICLE

Does Borrower and Broker Race Affect the Cost of Mortgage Credit?

[Get access >](#)

[Brent W Ambrose](#) ✉, [James N Conklin](#), [Luis A Lopez](#)

The Review of Financial Studies, Volume 34, Issue 2, February 2021, Pages 790–826,
<https://doi.org/10.1093/rfs/hhaa087>

Published: 07 August 2020 **Article history** ▼

“ Cite  Permissions  Share ▼

Abstract

We test for pricing disparities in mortgage contracts using a novel data set that allows us to observe the race and ethnicity of both parties to the loan. We find that minorities pay between 3% and 5% more in fees than similarly qualified whites when obtaining a loan through the same white broker. Critically, we find that the premium paid by minorities depends on the race of the broker. We also examine recent policy changes around broker compensation rules that may not only reduce these price disparities but may also limit access to credit for minorities.



ORIGINAL ARTICLE

COVID-19 and housing market effects: Evidence from U.S. shutdown orders

[Walter D'Lima](#), [Luis Arturo Lopez](#) ✉, [Archana Pradhan](#)

First published: 15 December 2021 | <https://doi.org/10.1111/1540-6229.12368> | Citations: 26

[Read the full text >](#)

 PDF  TOOLS  SHARE

Abstract

This paper provides novel evidence on pricing effects in housing markets following government shutdown responses to COVID-19 using microlevel data on U.S. residential property transactions. We find that post-shutdown pricing effects not only depend on population density but also the size and structural density of properties. The average price of a three-bedroom property fell by approximately 1.4% in densely populated locations (e.g., downtown) but increased by about 1.5% in low-density locations (e.g., suburbs) where shutdowns were enacted. The effects are more drastic for properties with fewer bedrooms. We also document a significant decrease in sales for markets under a shutdown.



AMERICAN
ECONOMIC
ASSOCIATION

Did the Paycheck Protection Program Help Small Businesses? Evidence from Commercial Mortgage-Backed Securities

[Sumit Agarwal](#)

[Brent W. Ambrose](#)

[Luis A. Lopez](#)

[Xue Xiao](#)

AMERICAN ECONOMIC JOURNAL: ECONOMIC POLICY (FORTHCOMING)

Abstract

In this study, we examine the broader economic effects of the U.S. federal government's Paycheck Protection Program (PPP) by focusing on the performance of securitized commercial mortgages. We provide novel evidence for spillover effects of government interventions in the face of economic crises. We find that the PPP reduced mortgage delinquencies by approximately \$36 billion in 2020. The strongest effects occur when PPP funds targeted businesses in areas most affected by COVID-19, where banks overperformed in providing PPP loans, and among mortgages on properties in retail and lodging. Thus, PPP relief to small businesses eased economic distress beyond the labor market.

Do Appraiser and Borrower Race Affect Mortgage Collateral Valuation?

Brent W. Ambrose¹ Jim N. Conklin² N. Ed Coulson³
Moussa Diop⁴ Luis A. Lopez⁵

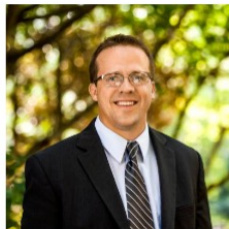
¹The Pennsylvania State University

²University of Georgia

³University of California, Irvine

⁴University of Southern California

⁵University of Illinois at Chicago



Pre-print available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3951587 (undergoing peer-review)

This research has been discussed around the world and updated accordingly

- Zillow Home Loans, LLC's FORCE-VHM Reading Group
- Hospitality Finance & Economics Conference, Singapore
- Conference on Low-Income Housing Supply Housing Affordability, Tel Aviv, Israel
- Freddie Mac's E&HR Seminar
- The 2022 Homer Hoyt meetings
- The 2023 ASSA/AREUEA annual meeting
- The 2023 APPAM Fall Research Conference
- University seminars: NYU Furman Center, National University of Singapore, UC-Riverside, Syracuse University, USC, and Penn State

Why Focus on Appraisals?

Appraisers are important in the home-buying and home-lending markets

- Mortgage lenders → need accurate valuations of property before using them as collateral
- After the arrival of “modern” mortgage industry in 1930s, appraisal practices would normally use borrower race and neighborhood ethnic characteristics as a factor in appraisals. (This grew into “red-lining”.)
 - ▶ (Jackson, 1980; Fishback et al., 2020; Aaronson, Hartley, and Mazumder, 2021)
- This practice was forbidden by the Fair Housing Act of 1968, the Equal Credit Opportunity Act of 1974, and the Community Reinvestment Act of 1977.

And yet...Media reports of racial bias in appraisals

The New York Times

Black Homeowners Face Discrimination in Appraisals

Companies that value homes for sale or refinancing are bound by law not to discriminate. Black homeowners say it happens anyway.

f WhatsApp Twitter Email Print 368



A second appraisal valued Abena and Alex Horton's Jacksonville home 40 percent higher than the first appraisal, after Ms. Horton removed all signs of Blackness. Charlotte Kest for The New York Times

CHICAGO SUN-TIMES

Log In | Try a month for \$4

News • Sports • Politics • Coronavirus • Entertainment • Newsletters • E-Paper • Classifieds • More »

CHICAGO NEWS METRO/STATE

Black homeowner, 2 appraisals, \$62,000 difference

The owner thinks her lower home appraisal was skewed by her race and her neighborhood — and a recent study says those factors play more of a role in appraisals now than in 1980.

By Eva Managan | Updated Oct 7, 2020, 12:14pm CDT

WTTW NEWS POLITICS COVID-19 U.S. NEWS WORLD OPINION BUSINESS

WATCH NOW

U.S. NEWS

After she concealed her race, Black Indianapolis owner's home value more than doubled

The homeowner suspected race played a role in her first two low appraisals. Now her experiences are part of complaints with federal housing authorities.

This matters

- Black and other nonwhite groups have **less wealth** and **lower ownership rates**, even after controlling for demographic characteristics, income, etc.
 - ▶ Gyourko, Linneman, and Wachter (1999); Dietz and Haurin (2003); Dawkins (2005); Coulson and Dalton (2010), and many others
- Evidence of **bias** and **discrimination** at different stages in the process
 - ▶ Real estate agents (Ondrich, Ross, and Yinger, 2003; Page, 1995; Zhao, Ondrich, and Yinger, 2006)
 - ▶ Mortgage lenders and brokers (Munnell et al., 1996; Black, Boehm, and DeGennaro, 2003; Bartlett et al., 2021; Ambrose, Conklin, and Lopez, 2021)
- **Now in appraisal, too?**
 - ▶ White House Property Appraisal and Valuation Equity (PAVE) taskforce
 - ▶ Limited research / conflicting results (Pinto and Peter, 2021; Freddie Mac, 2021, 2022; Perry, Rothwell, and Harshbarger, 2018; Howell and Korver-Glenn, 2018; LaCour-Little and Green, 1998)

Appraisal racial bias has many definitions!

1. Difference in equivalent homes of white and black neighborhoods
2. Racial gap in difference of sales price and AVM value.
3. Racial gap in difference of appraisal and AVM value.

Difference in equivalent homes of white and black neighborhoods

- Perry, Rothwell, and Harshbarger (2018)
 - 22% - 23% devaluation of homes in black neighborhoods (50% black)
 - Differences are larger when not accounting for neighborhood quality or property quality.
 - 2016 5-year estimates from ACS and List prices from Zillow
- Howell and Korver-Glenn (2021) [The increasing effect of neighborhood racial composition on housing values, 1980–2015](#)
 - Finds that neighborhood racial composition is a greater determinate of home values in 2015 than in 1980s.
 - Use ACS data and Decennial Census data from 1980s to 2017
- Overall, these studies look at the role of **neighborhood racial composition** in home valuations and show evidence of racial disparities in valuations.

Caveat: survey data does not establish racial appraisal bias

- These studies **DO NOT** prove racial discrimination by appraisers because they look at valuations given by **homeowners** and not appraisers.

- Here is the survey question:

19 About how much do you think this house and lot,
apartment, or mobile home (and lot, if owned)
would sell for if it were for sale?

Amount – Dollars

\$ [] [] [] [] [] [] .00
 , ,

- These studies, nonetheless, suggest that neighborhood composition influences how households value their own homes, and they motivated research on how appraisers value homes.

Freddie Mac looks at differences between AVM values and Sales Prices

EXHIBIT 1:

Appraisal gaps for minority tracts

Appraisals for the purchase of single-family one-unit homes,
Jan. 1, 2015-Dec. 31, 2020

Property Tract	Count	% Lower Than Contract Price	Gap vs. White
Overall	12,752,779	8.3%	-
White	10,632,616	7.4%	-
Latino [50% -100%]	553,470	15.4%	8.0%
Latino [50%-80%]	443,218	15.0%	7.7%
Latino [80%-100%]	110,252	16.7%	9.4%
Black [50%-100%]	373,747	12.5%	5.2%
Black [50%-80%]	245,428	12.1%	4.8%
Black [80%-100%]	128,319	13.3%	5.9%

Source: <https://www.freddiemac.com/research/insight/20220510-racial-ethnic-valuation-gaps-home-purchase-appraisals-modeling-approach>

Freddie Mac looks at differences between AVM values and Sales Prices

EXHIBIT 2:

Appraisal gaps for minority applicants

Appraisals for the purchase of single-family one-unit homes,
Jan. 1, 2016-Dec. 31, 2020

Race/Ethnicity Applicants	Count	% Lower Than Contract Price	Gap vs. White
Overall	1,711,961	7.1%	-
White	1,043,557	6.5%	-
Latino	155,965	9.5%	2.9%
Black	73,287	8.6%	2.1%

Source: <https://www.freddiemac.com/research/insight/20220510-racial-ethnic-valuation-gaps-home-purchase-appraisals-modeling-approach>

Still, Freddie Mac's Study does not establish racial appraisal bias

1. Their analysis is unable to discern whether the bias is against the current owner of property or new owner.
 - Undervaluation in purchase appraisals may be a good thing (e.g., triggers renegotiation for a lower purchase price, lower property taxes, protects borrower from overpaying, mitigates mortgage fraud, etc...)
2. Their analysis falls short of the ideal pair audit setup. They compare appraisals by different appraisers.
3. This study cannot rule out differences on unobservable quality. This ratio is often influenced by the actual sales price which the appraiser can observe in purchase contracts. It is not uncommon for the appraisal to be exactly the Sales Price.
4. This study only looks at Freddie Mac's portfolio, excluding FHA loans and non-GSE products that supply credit to minorities.

Researchers at Fannie Mae examine the difference between AVM values and appraised values

- 1.8 million **refi appraisals** in 2019 and 2020 Fannie Mae's Desktop Underwriter system, as the homeowner and borrower are the same in refi's.
- They compare appraisals to Fannie Mae's proprietary **AVMs to account for unobservable quality**.

Figure 1: Distribution of AVM 1 comparison differences by racial groups

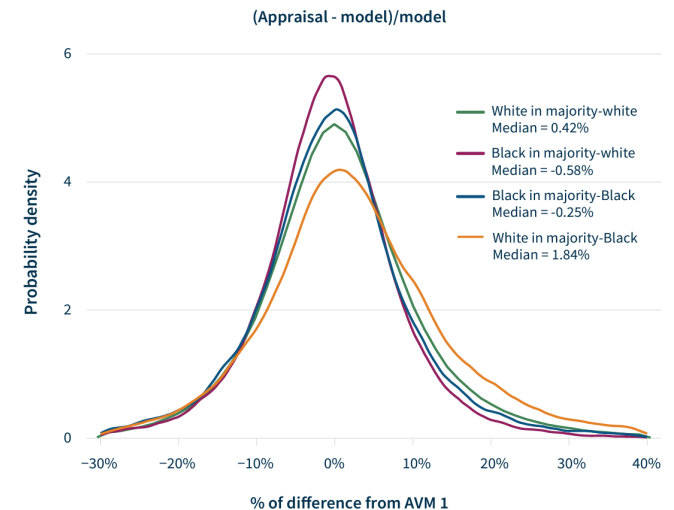


Table 1: Median differences from AVM by racial group

Cohort	AVM comparison 1		AVM comparison 2	
	Median: Appraisal — AVM estimate	% AVM estimate	Median: Appraisal — AVM estimate	% AVM estimate
Black in majority-white	(\$1,693)	-0.58%	(\$1,143)	-0.39%
Black in majority-Black	(\$572)	-0.25%	(\$1,437)	-0.63%
White in majority-white	\$1,277	0.42%	\$2,026	0.65%
White in majority-Black	\$3,955	1.84%	\$1,525	0.63%

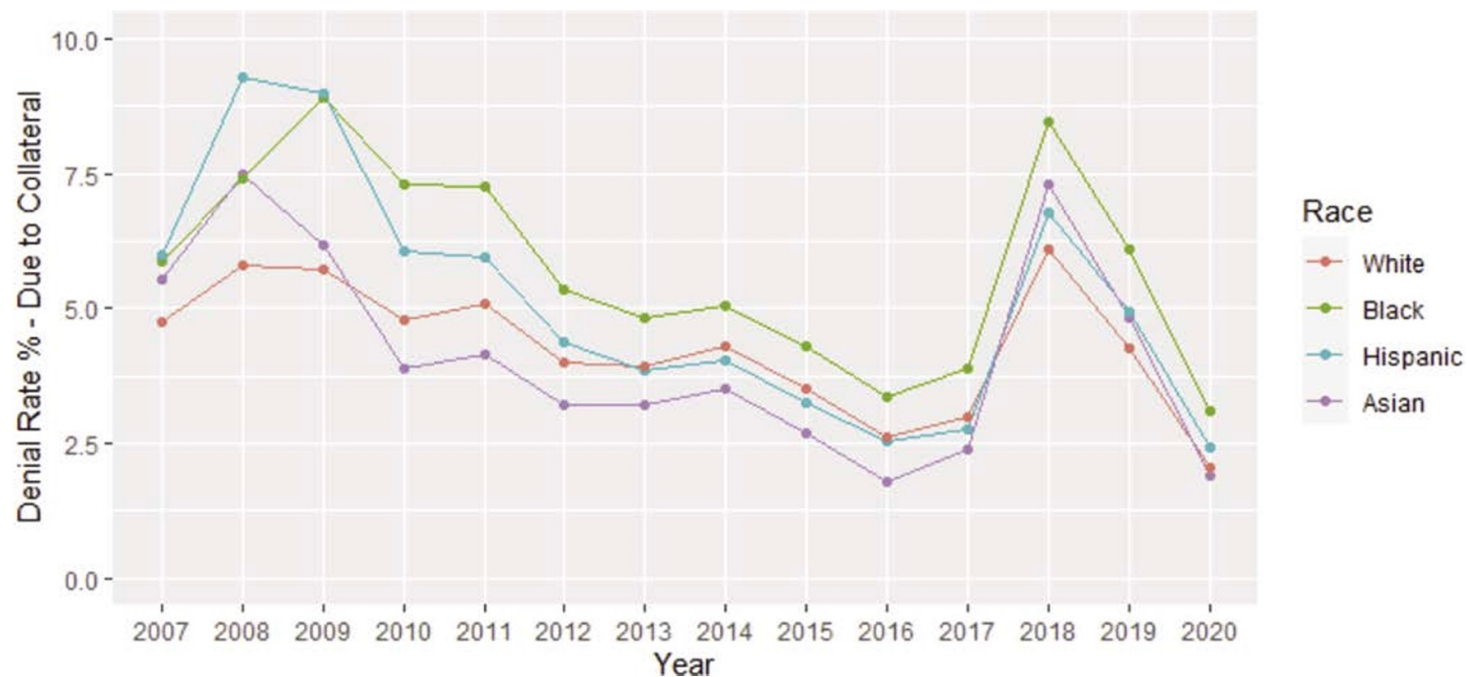
Source: [Appraising the appraisal](#)

Challenges with Fannie Mae Study

1. Does not condition on individual appraiser. It fails the pair audit test setup.
2. Does not establish a causal relationship between borrower race and valuations. AVMs account for property and neighborhood characteristic but may be biased themselves.
3. They only look at GSE refi's.

However, more in-depth research is in progress at Fannie Mae.

Color and Collateral by Marshall Jean and Gideon Blustein – they study appraisal outcomes inferred from HMDA 2007-2020



Source: <https://www.illinoisrealtors.org/blog/racial-bias-in-determining-a-homes-value-erodes-housing-equity-and-accessibility-for-minority-homeowners/>

Color and Collateral by Marshall Jean and Gideon Blustein – Study HMDA 2007-2020

- One key finding looking at the universe of residential mortgages loans is that the denial rate for Whites increases in Black neighborhoods, whereas it declines for Blacks in the same neighborhoods.
- Evidence is suggestive and concerning as mortgage denial rates due to collateral is likely an outcome of low appraisals.
- Still, this study is not conclusive, as the authors call for “greater transparency and availability of housing appraisal data”
 - AEI makes a similar call for data. See [here](#).

Our research - Two Main Questions

Q1: Minority-owned homes valued differently than similar White-owned homes by the *same appraiser*?

$$\blacktriangleright \frac{\text{Appraised Value}}{\text{Benchmark Value}}$$

Q2: Does the **appraiser's race** matter?

Note: within-appraiser, within-neighborhood bias

*Other forms of bias outside the scope of this paper

Key takeaways

Q1: Minority-owned homes valued differently than similar White-owned homes by the *same appraiser*?

- ▶ Yes! (but not on scale of media reports)
- ▶ 0.6 - 4.1 pp discount for Black-owned homes
- ▶ Asian and Hispanic discounts too

Q2: Does the **appraiser's race** matter?

- ▶ No
- ▶ Policy → increased appraiser diversity, *per se*, unlikely to “fix” issue (although it may solve other kind of issues)

The Data

- New Century (NCEN) was one of the largest subprime lenders before the GFC.
 - ▶ Sample period: 2000-2007
 - ▶ Greater minority participation in the mortgage market
 - ▶ Less oversight and regulation of lenders and appraisers
- A single lender, but:
 - ▶ **45,000 brokers**
 - ▶ **61,000 appraisers**
- Includes: Borrower race, Appraiser name (use to infer appraiser race), Appraised value, and Loan/property characteristics.
- ***Refinance mortgage applications

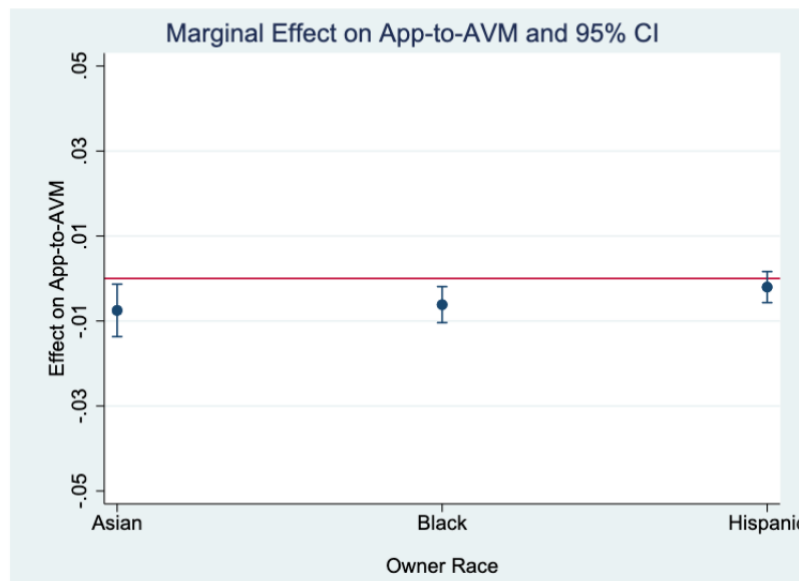
Table: Descriptive Statistics for Main Refinance Sample

Panel A: Refinance Loans					
	Obs	Mean	Std. Dev.	Min	Max
Appraisal Value	222,269	\$277,987	\$171,488	\$35,000	\$2,600,000
AVM Value	222,269	\$270,685	\$176,949	\$17,000	\$3,600,000
App-to-AVM Ratio	222,269	1.09	0.29	0.30	3.00
App-to- \hat{V}	222,042	1.06	0.22	0.31	2.98
App-to- $\hat{V} < .8$	222,042	0.08	.	0	1
Appraisal Fee	78,065	\$345	\$94	\$75	\$1,200
Asian Owner	222,269	0.04	.	0	1
Black Owner	222,269	0.20	.	0	1
Hispanic Owner	222,269	0.23	.	0	1
White Owner	222,269	0.53	.	0	1

Valuation Metrics $\rightarrow \frac{\text{Appraised Value}}{\text{Benchmark Value}}$

- ① App-to-AVM ratio ($\frac{\text{Appraised Value}}{\text{AVM}}$)
 - ▶ Automated Valuation Model (AVM) estimate
 - ★ Statistical model
 - ★ Property characteristics, granular location, local market characteristics
 - ★ Proprietary model from industry leader
- ② App-to- \hat{V} ratio ($\frac{\text{Appraised Value}}{\hat{V}}$)
 - ▶ AVM may systematically over/under value minority-owned homes
 - ▶ \hat{V} tries to account for this possibility

Minorities have slightly lower App-to-AVMs Table



$$Y_i = \delta_1 A_i + \delta_2 B_i + \delta_3 H_i + X_i \beta + \zeta_z + \gamma_t + \omega_j + \epsilon_i,$$

App-to-AVM = F(Borrower Race, Appraiser, Location, Year, Other Controls)

- White Owner: \$278K → Black Owner: \$276.3K → \$1,334 lower refinance loan

Racial disparities are visible (approx. 1%), but smaller than the anecdotal accounts (of 20-40%)

Concerns

- ① We only observe the last appraisal. Perhaps minorities get multiple appraisals until they are satisfied.
- ② The AVM does not capture soft information that an appraiser would observe when visiting a property.
 - ▶ If minority borrowers select low-quality properties, we would overestimate the gap.
- ③ Property assessments tend to be higher for minority borrowers (Avenancio-León and Howard, 2022).
- ④ Minority borrowers either overpay or have higher housing valuations (Bayer et al., 2017)

No evidence that minorities are more likely to pay higher fees or get multiple appraisals

Table: Appraised Value, AVM Estimates, and Owner Race

	(1) Appraisal Fee	(2) Appraisal Fee > \$600
Asian Owner	2.974 (2.411)	0.001 (0.005)
Black Owner	-1.653 (1.254)	-0.003 (0.002)
Hispanic Owner	1.325 (1.132)	0.001 (0.002)
Observations	63,662	63,662
Adjusted R-squared	0.349	0.153
Zip FE	Y	Y
Year FE	Y	Y
Property Type Controls	Y	Y
Appraiser FE	Y	Y
Missing Characteristics Dummies	Y	Y
Missing Characteristics Interactions	Y	Y
Other Controls	Y	Y

Alternative Valuation Metric ($\frac{\text{Appraised Value}}{\hat{V}}$)

- $\frac{\text{Appraised Value}}{\text{AVM}} \rightarrow$ AVM may tend to mis-value minority owned homes

- 1 We project AVM onto the market value of a property using a sample of purchase mortgage applications:

$$\ln(P_i) = \rho \ln(\text{AVM}_i) + \delta_1 A_i + \delta_2 B_i + \delta_3 H_i + X_i \beta + \zeta_i + \gamma_i + \varepsilon_i$$

- 2 The market value in levels for refinance mortgages can be estimated as:

$$\hat{V} = \exp\{\ln(\hat{P}_i) + \hat{\sigma}^2/2\}.$$

- 3 We estimate our baseline regressions using the refinanced mortgages but with the “corrected” AVM values in the dependent variable:

$$\frac{\text{Appraised Value}_i}{\hat{V}_i}.$$

Alternative Benchmark Valuation ($\frac{App}{\hat{V}}$)

Table: Appraised Value, \hat{V} , and Owner Race

	(1) Ln(Purch Price)	(2) App-to- \hat{V}	(3) App-to- $\hat{V} < .8$
Ln(AVM)	0.531*** (0.004)		
Asian Owner	0.019*** (0.002)	-0.019*** (0.003)	0.008** (0.003)
Black Owner	0.028*** (0.002)	-0.041*** (0.002)	0.019*** (0.002)
Hispanic Owner	0.008*** (0.002)	-0.026*** (0.001)	0.015*** (0.002)
Observations	134,272	195,085	195,085
Adjusted R-squared	0.906	0.214	0.115
Other Controls and FE	Y	Y	Y
Sample	Purchases	Refinances	Refinances

- White Owner: \$278K → Black Owner: \$266.6K → \$9,118 lower refinance loan

AVM First Stage Robustness

Twilight Zones (i.e., Alternative Modeling Choices)

- What if the AVM varies by race? [Col. 1, Table Z0](#)
- What if the AVM varies by race and other attributes? [Col. 2, Table Z0](#)
- What if the AVM error varies by race? [Col. 3, Table Z0](#)
- What about appraiser x race FE? [Table Z1](#)
- What about year x month x zip FE? [Table Z2](#)
- What if the predicted price should be race-blind? (normative) [Table Z3](#)

Range of Average Discounts Found

- Asian → 0% to 2.2%
- Black → 1.2% to 4.1%
- Hispanic → 1.8% to 3%

Does the race of the appraiser matter?

- Infer appraiser race using MAP BIFS algorithm
- Our appraiser race distribution is similar to other sources

Table: Racial Distribution of Appraisers

Appraiser Race	NCEN-ABSNet		Appraisal Foundation	Appraisal Institute
	Freq.	Share	Share	Share
Asian	759	2%	2%	1%
Black	943	3%	5%	1%
Hispanic	1,555	4%	4%	5%
White	31,674	91%	89%	93%
Total	34,931	100%	100%	100%

79% accuracy for identifying white and Hispanics correctly, and 65% and 61% for correctly identifying Blacks and Asians, respectively.

Appraiser-Owner Sorting

Race Math

$$\begin{aligned} p(r|f, s) &= \frac{p(r, f, s)}{p(f, s)} \\ &= \frac{p(r, f, s)}{\sum_{r=1}^6 p(r, f, s)} \\ &= \frac{p(r|s)p(f|r, s)}{\sum_{r=1}^6 p(r|s)p(f|r, s)} \\ &= \frac{p(r|s)p(f|r)}{\sum_{r=1}^6 p(r|s)p(f|r)} \end{aligned}$$

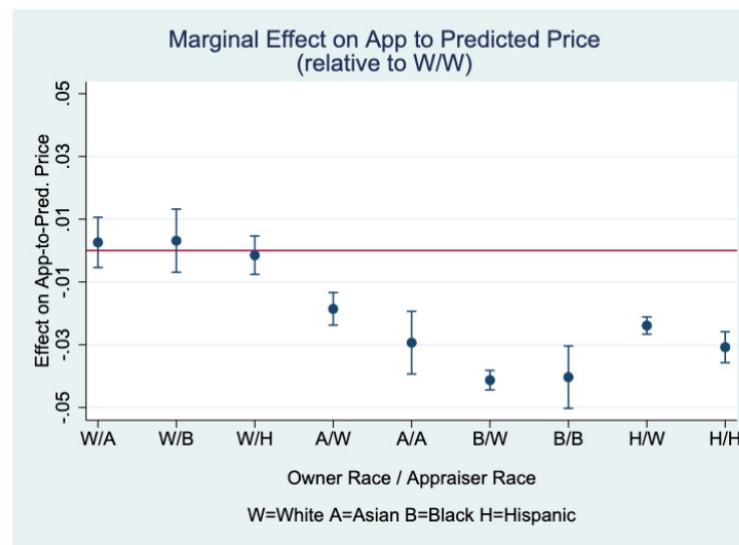
We must assume that $p(f|r) = p(f|r, s)$. Note that r = race, f = first name, s = surname.

Similar to method used by regulators to determine consumer race and ethnicity (CFPB, 2014)

Used to enforce equal employment opportunity and civil rights laws (e.g., Guardians Ass'n of NYC Police Dep't v. Civil Serv. Comm'n, 1977 - showed that NYCPD's test for employment and retention had a disparate impact against Black and Hispanic officers.)

<https://law.justia.com/cases/federal/district-courts/FSupp/431/526/2185002/>

Appraiser's race doesn't matter!



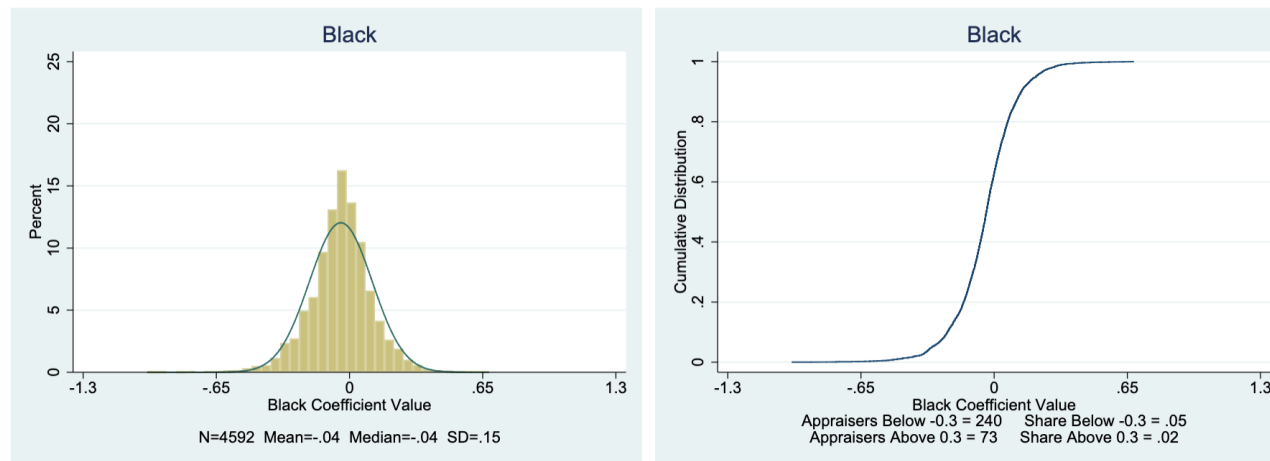
- Gaps do not lessen when the appraiser and borrower share the same race

Appraiser-specific Race Coefficients

- Are differences driven by a few appraisers or the result factors more systemic to the industry?
- Estimate appraiser level racial disparities conditional on a host of control variables:

$$Y_i = \alpha M_i + \lambda_j \omega_j + \sum_j \delta_j \omega_j \times M_i + X_i \beta + \zeta_i + \gamma_i + \epsilon_i,$$

M_i is a binary variable indicating that the owner is a minority.



Policy Implications

1. According to survey data, homeowners undervalue their own homes in Black and Hispanic neighborhoods. We show that requests for re-appraisals are rare. → **This suggests that financial literacy on home valuation and appraisal appeals for homeowners is important in minority neighborhoods.**
2. Appraisers systemically undervalue Black, Hispanic, and Asian owned homes for mortgage refi's, regardless of the appraiser's race. **Racial appraisal bias is not a white only issue.** → **Supports unconscious bias training for all appraisers. This also supports the anonymization of the borrower and/or homeowner in appraisals.**
 - *E.g., information about the borrower (e.g., name) should be concealed in appraisal requests. The appraiser should not meet or interact with homeowners.*

Policy Implications Continued

3. Black and Hispanic appraisers are under-represented in the appraisal industry pre- and post-Dodd Frank.
 - There is no evidence that diversifying the appraisal workforce will fix current racial bias issues **in the short-run**.
 - However, diversification may have positive **long-run effects**, if racial bias is unconsciously passed on from *mentor to trainee* in the appraisal apprenticeship. This may breakdown over time.
 - Further research is needed on understanding how appraiser turnover affects valuations.

This implies that *failing to find reductions* in black-white appraisal gaps during the near future would be a **weak argument against diversifying** the appraisal workforce. The long-run effects of diversification is unknown.

Policy Implications Continued

- 4. The purpose of research is replication:** We need Federal laws that require and allow mortgage data providers to disclose all HMDA records.
- These data exist but the crosswalks are not easily available to independent researchers or academics.
 - **Big data providers on mortgage records (e.g., CoreLogic, Black Knight) withhold HMDA data fields necessary to study race issues.**
 - Researchers can merge public HMDA data to the purchased data. But this results in built-in errors that can be used to cast doubt on evidence of racial discrimination.
 - *The NCEN dataset provides an example of how big data may be disseminated without risking the privacy of borrowers.*

Direction of Future Research

- FHFA Uniform Appraisal Dataset released on Oct. 24, 2022
 - 2013 to 2021 data on appraisals collected by GSEs (Fannie Mae and Freddie Mac).
 - Aggregated data and a 5% random sample are available.
 - This was an outcome of HUD's White House PAVE Taskforce!
 - These data are not enough to establish appraisal racial bias, but their release is a step in the right direction.
- Researchers need to examine appraisals of government-insured mortgages (e.g., FHA), as they are a major source of financing for minority borrowers.
- Research on the barriers of entry into the appraisal workforce is also of interest.

References I

- Aaronson, D., D. Hartley, and B. Mazumder. 2021. The effects of the 1930s HOLC “redlining” maps. *American Economic Journal: Economic Policy* 13:355–92.
- Ambrose, B. W., J. N. Conklin, and L. A. Lopez. 2021. Does borrower and broker race affect the cost of mortgage credit? *The Review of Financial Studies* 34:790–826.
- Avenancio-León, C. F., and T. Howard. 2022. The assessment gap: Racial inequalities in property taxation. *The Quarterly Journal of Economics* 137:1383–434.
- Ayers, I., and P. Siegelman. 1995. Race and gender discrimination in bargaining for a new car. *American Economic Review* 85:304–21.
- Bartlett, R., A. Morse, R. Stanton, and N. Wallace. 2021. Consumer-lending discrimination in the fintech era. *Journal of Financial Economics* .
- Bayer, P., M. Casey, F. Ferreira, and R. McMillan. 2017. Racial and ethnic price differentials in the housing market. *Journal of Urban Economics* 102:91–105.

References II

- Black, H. A., T. P. Boehm, and R. P. DeGennaro. 2003. Is there discrimination in mortgage pricing? The case of overages. *Journal of Banking & Finance* 27:1139–65.
- Coulson, N. E., and M. Dalton. 2010. Temporal and ethnic decompositions of homeownership rates: Synthetic cohorts across five censuses. *Journal of Housing Economics* 19:155–66.
- Dawkins, C. 2005. Racial gaps in the transition to first-time homeownership: The role of residential location. *Journal of Urban Economics* 58:537–554.
- Dietz, R., and D. Haurin. 2003. The social and private micro-level consequences of homeownership. *Journal of Urban Economics* 54:401–450.
- Fishback, P. V., J. LaVoice, A. Shertzer, and R. Walsh. 2020. Race, risk, and the emergence of federal redlining. Working Paper, National Bureau of Economic Research.
- Freddie Mac. 2021. Racial and ethnic valuation gaps in home purchase appraisals. *Freddie Mac Economic & Housing Research Note* .
- . 2022. Racial & ethnic valuation gaps in home purchase appraisals - A modeling approach. *Freddie Mac Economic & Housing Research Note* .

References III

- Gyourko, J., P. Linneman, and S. Wachter. 1999. Analyzing the relationships among race, wealth, and home ownership in America. *Journal of Housing Economics* 8:63–89.
- Howell, J., and E. Korver-Glenn. 2018. Neighborhoods, Race, and the Twenty-first-century Housing Appraisal Industry. *SOCIOLOGY OF RACE AND ETHNICITY* 4:473–490. doi:{10.1177/2332649218755178}.
- Jackson, K. T. 1980. Race, ethnicity, and real estate appraisal: The home owners loan corporation and the federal housing administration. *Journal of Urban History* 6:419–52.
- LaCour-Little, M., and R. K. Green. 1998. Are minorities or minority neighborhoods more likely to get low appraisals? *The Journal of Real Estate Finance and Economics* 16:301–15.
- Munnell, A. H., G. M. Tootell, L. E. Browne, and J. McEneaney. 1996. Mortgage lending in boston: Interpreting HMDA data. *American Economic Review* 86:25–53.

References IV

- Ondrich, J., S. Ross, and J. Yinger. 2003. Now you see it, now you don't: Why do real estate agents withhold available houses from black customers? *Review of Economics and Statistics* 85:854–73.
- Page, M. 1995. Racial and ethnic discrimination in urban housing markets: Evidence from a recent audit study. *Journal of Urban Economics* 38:183–206.
- Perry, A. M., J. Rothwell, and D. Harshbarger. 2018. The devaluation of assets in black neighborhoods: The case of residential property. *Brookings* November:1–28.
- Pinto, E., and T. Peter. 2021. How common is appraiser racial bias? Working report, American Enterprise Institute Housing Center.
<https://www.aei.org/how-common-is-appraiser-racial-bias/>.
- Zhao, B., J. Ondrich, and J. Yinger. 2006. Why do real estate brokers continue to discriminate? Evidence from the 2000 housing discrimination study. *Journal of Urban Economics* 59:394–419.