

Can Everyone Tap into the Housing Piggy Bank? Racial Disparities in Access to Home Equity

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(with Kris Gerardi and Lauren Lambie-Hanson)

University of Georgia

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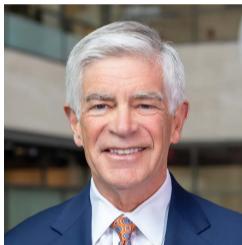
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- Raphael Bostic,
President Atlanta Fed

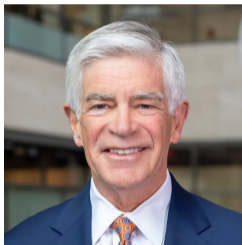


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President Philly Fed

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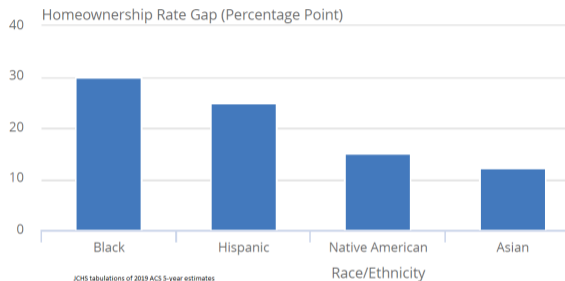
- Jerome Powell,
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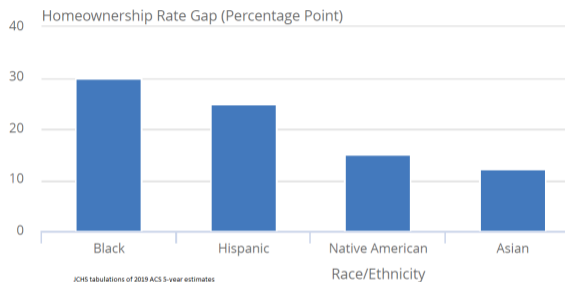


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- Home equity is an important source of wealth for U.S. households

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 - 3 **Mortgage equity withdrawal (MEW) products** (e.g., HELOC)

This paper → use 2018+ cHMDA data to answer the following questions

- 1 How difficult is it for homeowners to access their home equity via MEW products?
 - Cash-out refinances
 - Home equity lines of credit (HELOCs)
 - Closed-end home equity loans (HELoans)

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- 3 What explains racial disparities?
 - Underwriting factors?
 - Discrimination?

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 - Underwriting factors?
 - Discrimination?
- Under-explored area → dearth of data before cHMDA 2018+

Main Findings

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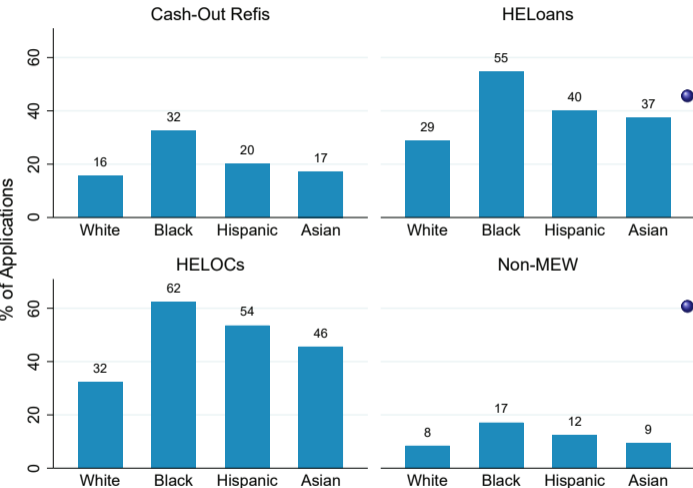
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 - Lender FEs also important.
- 4 “Residual” disparities non-trivial \Rightarrow 3–4 ppts.
- 5 Unobserved underwriting factors unlikely to be sole driver of “residual” disparities (discrimination?)

Data and Sample Construction

- Confidential HMDA data in 2018–2021 period.
 - Additional loan and borrower characteristics added to HMDA reporting requirements in 2018.
 - DTI and LTV ratios.
 - Credit score (confidential files only)
 - HMDA coverage expanded to include HELOCs in 2018.
 - Exemption for institutions with fewer than 500 originations.
- MEW products (HELOCs, HELoans, cash-out refis)
 - Asian, Black, Hispanic, and White applicants.
 - ~ 16 million applications across all 50 states.

Summary Statistics

Application denial rates (and racial gaps) much higher on MEW



• Mean Denial Rates

- Non-MEW → 10%
- **Cash-out refi → 18%**
- **HELOCs → 33%**
- **HELOCs → 37%**

• Minority-White denial gaps much larger for MEW products!

- B/W gap non-MEW → 9 ppts.
- **B/W gap HELOCs → 30 ppts.**

Back-of-the-Envelope Calculations – over our sample period (under some assumptions)

(in billions)	White	Black	Hispanic	Asian
Applied to extract	\$599.1	\$46.4	\$68.4	\$89.2
Denied	\$159.0	\$23.0	\$26.2	\$32.9
Unconditional “excess” denied		\$11.2	\$8.8	\$8.5

If you take nothing else away from the presentation...

(DRAMATIC PAUSE)

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- 1 Relatively hard to access equity via MEW (esp. HELOCs and HELoans)
- 2 Really hard for minorities

Can Observable Risk Factors Explain Denial Gaps?

- Regress application denial indicator on race/ethnicity dummies and loan, property, and applicant risk factors, \mathbf{X} .

$$Y_{it} = \beta_1 Black_i + \beta_2 Hispanic_i + \beta_3 Asian_i + \mathbf{X}_{it}\gamma + \eta_t + \lambda_l + \omega_s + \epsilon_{it}$$

- Positive race/ethnicity coefficients \Rightarrow discrimination *assuming* \mathbf{X} includes all relevant risk factors. [List of covariates](#)
 - But, unobserved factors include: assets/liquid wealth, employment status and history, etc.

Can Observable Risk Factors Explain Denial Gaps?

Dependent Var: Loan Denied (d)	(1)	(2)	(3)	(4)	(5)	(6)
Black (d)	0.212*** (0.022)	0.192*** (0.019)	0.068*** (0.008)	0.065*** (0.008)	0.056*** (0.005)	0.042*** (0.004)
Hispanic (d)	0.095*** (0.025)	0.092*** (0.015)	0.034** (0.011)	0.034** (0.011)	0.027** (0.008)	0.028*** (0.005)
Asian (d)	0.076*** (0.018)	0.087*** (0.013)	0.073*** (0.012)	0.075*** (0.012)	0.058*** (0.008)	0.043*** (0.005)
Year FE	N	Y	Y	Y	Y	Y
State FE	N	Y	Y	Y	Y	Y
DTI Buckets	N	N	Y	Y	Y	Y
Credit Score Buckets	N	N	Y	Y	Y	Y
CLTV Buckets	N	N	N	Y	Y	Y
Other Controls	N	N	N	N	Y	Y
Lender FE	N	N	N	N	N	Y
# Observations	12,638,969	12,638,969	12,638,969	12,638,969	12,638,969	12,638,969
Adjusted R ²	0.020	0.047	0.240	0.259	0.316	0.380
Mean Denial Rate	0.26	0.26	0.26	0.26	0.26	0.26

• *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

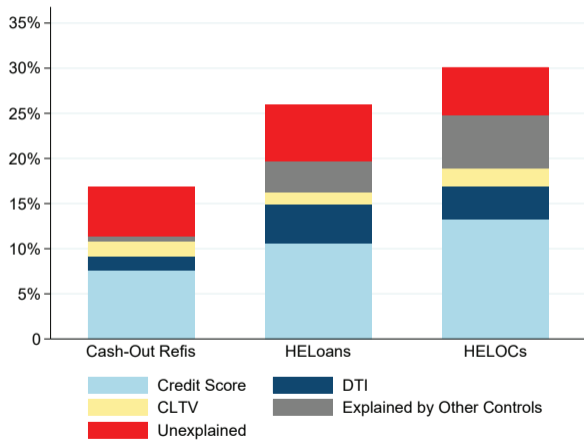
• Standard errors double-clustered: state and lender.

- Unconditional B/W denial gap = 21 pts.
- “Excess denials” of ~ 4 pts remain.
 - Estimated \$2 billion in loan proceeds denied “in excess” over 4 years.
- Which controls matter most? Depends on order.

Logit Models

Results by Product Type

Kitagawa/Oaxaca/Blinder (KOB) Decomposition (B/W Gaps)



- Credit score (40-45% of total B/W gap)
- Debt-to-income
- Combined loan-to-value ratio
- [List of all covariates](#)

Results vary across different types of financial institutions

- Banks, credit unions, and nonbanks
 - Minorities more likely to be denied across all product types and financial institutions.
 - Denial rate gaps generally smallest at nonbanks
 - B/W denial gap largest at credit unions (esp. HELoans and HELOCs)
- Some evidence that Hispanics and Asians fare better at minority-owned banks

Residual racial disparities (after controlling for observables in HMDA)



- (AI image generator) supposed to say “acknowledged” \Rightarrow my job is safe...for now

Residual racial disparities (after controlling for observables in HMDA)



- (AI image generator) supposed to say “acknowledged” \Rightarrow my job is safe...for now
- **Discriminatory behavior** or **unobserved underwriting factors?**
(assets, employment history, etc.)

Scope for lender discrimination may be larger in MEW.

- Standardized AUSs play a larger role in the purchase and rate-term refinance market segments.
 - Secondary market / securitization \Rightarrow formal/rigid reviews using common AUSs (e.g., Desktop Underwriter[©]).
- HELOCs and HELoans are often held in bank portfolios.
 - Internal underwriting models leave more room for subjective considerations.
- MEW borrowers more likely to apply in-person.
 - We provide some evidence in paper

Exercise

Are residual racial disparities driven **solely** by unobserved (to us) underwriting factors? \Rightarrow **NOT LIKELY !**

① Kitagawa-Blinder-Oaxaca decompositions by lender.

- Are residual disparities greater at lenders with highest levels of explained disparities?
- If Black applicants at a specific lender are very different on observables, they may also be very different on unobservables. **KOB**

② Control for AUS decision (only possible for cash-out refis)

- Accounts for many underwriting factors not available in HMDA **AUS**

③ Lender strictness correlated with residual disparities?

- Lenders that rely more on factors not in HMDA data have larger racial disparities? **Strictness**

④ Are magnitudes of residual disparities correlated with geographic variation in racial animus? **Animus**

Conclusion

- MEW products → high denial rates (26% vs. 10% for non-MEW)
 - 44% among Black applicants, 32% among Hispanic
- Underwriting factors (esp. credit scores and DTI) explain a large portion of racial denial rate gaps
- Racial disparities in MEW are quantitatively important
 - Black applicants: \$11.2 (\$2) billion in unconditional (conditional) excess equity denied.
 - Hispanic borrowers: \$8.8 (\$2.2) billion.
 - Asian borrowers: \$8.5 (\$3.9) billion.
- “Residual disparities” → probably not driven solely by unobserved underwriting factors

SUPPLEMENTAL SLIDES

Sample Summary Statistics

Table: Descriptive Statistics for MEW Products

	White	Black	Hispanic	Asian
Income (thousands \$)	118.1	93.1	102.3	147.8
DTI (%)	36.5	41.2	40.7	40.3
Credit Score	735	688	715	745
CLTV (%)	65.2	68.4	64.9	63.4
Loan Amount	185,529	166,378	195,211	264,885
Units	1.0	1.1	1.1	1.0
Loan term (months)	301	311	310	315
Second Home (d)	0.02	0.01	0.01	0.02
Investment Property (d)	0.04	0.06	0.06	0.10
No Co-applicant (d)	0.53	0.72	0.54	0.53
Home Improvement (d)	0.22	0.23	0.21	0.23
Second Lien (d)	0.30	0.27	0.28	0.35
Prepayment Penalty (d)	0.08	0.08	0.08	0.13
Interest Only (d)	0.16	0.09	0.11	0.15
Other Nonamortizing Features (d)	0.02	0.02	0.03	0.03
Application to Minority-Owned Bank (d)	0.001	0.001	0.002	0.009
Application Denied (d)	0.23	0.44	0.32	0.30
# Observations	9,572,670	1,011,791	1,184,479	870,398

Mean Values of Select Characteristics by Race [Back](#)

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Cash-Out Refinance (d)	0.55	0.59	0.59	0.51
HELoan (d)	0.12	0.12	0.12	0.10
HELOC (d)	0.33	0.29	0.29	0.39
# Observations	9,572,670	1,011,791	1,184,479	870,398

List of Covariates

- Categorical variables:
 - Credit score, CLTV, DTI, Household income, Loan amount, Loan term, # units
- Indicator variables:
 - Loan type (FHA, VA, GSE), Product type (HELOC, HELoan, Cash-out refi), Second lien, Home improvement loan, Prepayment penalty, Interest-only loan, Non-amortizing features, Second residence, Investment property, Co-applicant

[Back \(eqn.\)](#)

[Back \(decompositions\)](#)

Table: Logit Models of Denial for MEW Products

	(1)	(2)	(3)	(4)	(5)
Black	0.212*** (0.007)	0.186*** (0.010)	0.059*** (0.005)	0.056*** (0.005)	0.046*** (0.003)
Hispanic	0.095*** (0.010)	0.091*** (0.010)	0.031*** (0.009)	0.032*** (0.008)	0.024*** (0.006)
Asian	0.076*** (0.006)	0.088*** (0.004)	0.073*** (0.005)	0.075*** (0.005)	0.054*** (0.006)
# Observations	12,639,272	12,639,272	12,639,272	12,639,272	12,639,272
Mean Denial Rate	0.26	0.26	0.26	0.26	0.26
Year FE	N	Y	Y	Y	Y
State FE	N	Y	Y	Y	Y
DTI Buckets	N	N	Y	Y	Y
Credit Score Buckets	N	N	Y	Y	Y
CLTV Buckets	N	N	N	Y	Y
Other Controls	N	N	N	N	Y
Lender FE	N	N	N	N	N

Product Type Regressions

Table: Applicant Race and Likelihood of Denial: Cash-Out Refinances

	(1)	(2)
Black	0.168*** (0.023)	0.040*** (0.004)
Hispanic	0.045** (0.014)	0.016*** (0.004)
Asian	0.017* (0.007)	0.026*** (0.003)
# Observations	7,030,943	7,030,943
Adjusted R ²	0.015	0.289
Mean Denial Rate	0.18	0.18
Year FE	N	Y
State FE	N	Y
DTI Buckets	N	Y
Credit Score Buckets	N	Y
CLTV Buckets	N	Y
Other Controls	N	Y
Lender FE	N	Y

Product Type Regressions

Table: Applicant Race and Likelihood of Denial: HE Loans

	(1)	(2)
Black	0.259*** (0.026)	0.050*** (0.005)
Hispanic	0.112*** (0.017)	0.032*** (0.004)
Asian	0.085*** (0.024)	0.045*** (0.006)
# Observations	1,479,900	1,479,900
Adjusted R ²	0.027	0.445
Mean Denial Rate	0.33	0.33
Year FE	N	Y
State FE	N	Y
DTI Buckets	N	Y
Credit Score Buckets	N	Y
CLTV Buckets	N	Y
Other Controls	N	Y
Lender FE	N	Y

Product Type Regressions

Table: Applicant Race and Likelihood of Denial: HELOCs

	(1)	(2)
Black	0.301*** (0.012)	0.044*** (0.004)
Hispanic	0.213*** (0.021)	0.046*** (0.006)
Asian	0.133*** (0.018)	0.051*** (0.008)
# Observations	4,128,076	4,128,076
Adjusted R ²	0.039	0.469
Mean Denial Rate	0.37	0.37
Year FE	N	Y
State FE	N	Y
DTI Buckets	N	Y
Credit Score Buckets	N	Y
CLTV Buckets	N	Y
Other Controls	N	Y
Lender FE	N	Y

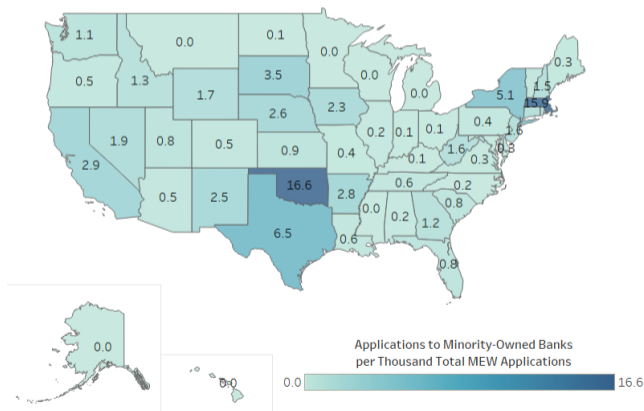
Alternative Geographic Controls

	(1)	(2)	(3)	(4)
Black	0.042*** (0.004)	0.035*** (0.003)	0.035*** (0.003)	0.041*** (0.003)
Hispanic	0.028*** (0.005)	0.025*** (0.004)	0.027*** (0.004)	0.026*** (0.004)
Asian	0.043*** (0.005)	0.045*** (0.005)	0.047*** (0.005)	0.045*** (0.005)
Year FE	Y	Y	Y	Y
State FE	Y	Y	Y	Y
DTI Buckets	Y	Y	Y	Y
Credit Score Buckets	Y	Y	Y	Y
CLTV Buckets	Y	Y	Y	Y
Other Controls	Y	Y	Y	Y
Lender FE	Y	Y	N	Y
Census Tract FE	N	Y	N	N
Lender x Tract FE	N	N	Y	N
County x Year FE	N	N	N	Y
Observations	12,638,969	12,638,969	10,864,102	12,505,642
Adjusted R-squared	0.380	0.383	0.399	0.387
Mean Denial Rate	0.26	0.26	0.26	0.26

Minority-Owned Bank Shares

- A lot of geographic heterogeneity in market shares of minority-owned banks.

Back



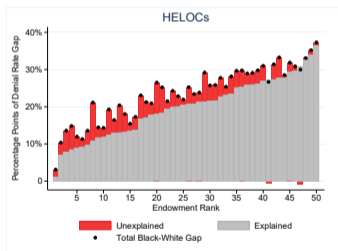
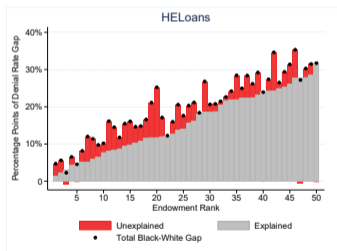
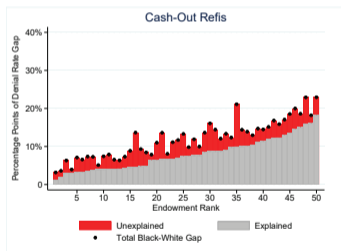
Face-to-face Interactions More Likely in MEW Space

- Use feature of HMDA data reporting instructions to calculate a proxy for in-person lending.
- During application process lenders must impute each applicant's race, ethnicity, and gender “based on visual observation or surname” **if the applicant declines to supply that information on the application AND the lender meets with the applicant in person prior to closing.**
 - Rate of imputation among applicants who don't supply information (~ 20%) is good indicator of frequency with which applications are taken in-person.
 - Lenders imputed race on 46% of HELOC and 31% of HELoans applications where borrowers refused to provide information.
 - Only 7% for cash-out and rate/term refis and 13% for purchase loans.

Back

Unobservables? → Lender Decompositions

- Top 50 largest lenders for each MEW product type. [Back](#)
- Lender-level B/W KOB decomposition.
 - Sort lenders by size of “explained” component.



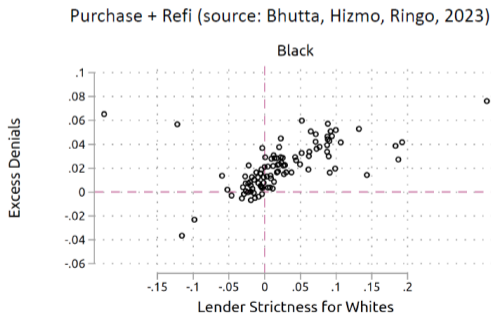
- Size of “explained” component not highly correlated w/ size of “unexplained” component.

Unobservables? → AUS Recommendation (Bhutta et al. (2022))

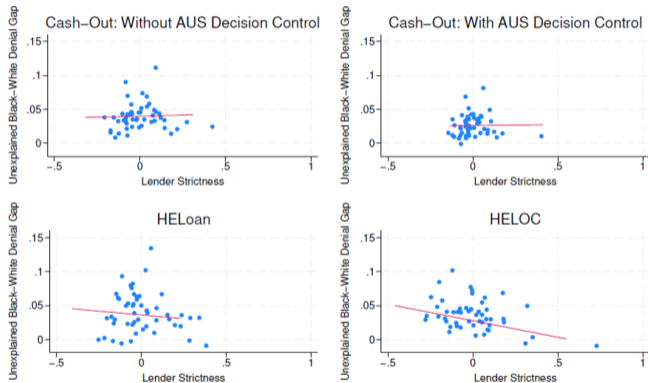
(cash-out refis) [Back](#)

	(1) "AUS Denial"	(2) Application Denial without AUS Outcome Control	(3) Application Denial with AUS Outcome Control
Black	0.020*** (0.003)	0.037*** (0.004)	0.027*** (0.003)
Hispanic	0.006*** (0.002)	0.013*** (0.003)	0.010*** (0.003)
Asian	0.007*** (0.001)	0.023*** (0.002)	0.020*** (0.002)
AUS "Denial"			0.464*** (0.025)
Year FE	Y	Y	Y
State FE	Y	Y	Y
DTI Buckets	Y	Y	Y
Credit Score Buckets	Y	Y	Y
CLTV Buckets	Y	Y	Y
Other Controls	Y	Y	Y
Lender FE	Y	Y	Y
AUS "Denial"	N	N	Y
# Observations	6,138,590	6,138,590	6,138,590
Adjusted R ²	0.203	0.208	0.311
Mean Outcome	0.08	0.13	0.13

- 1 Denial regression for **White borrowers only** → lender FE capture “lender strictness” (lenders focus on factors not observed in HMDA)
- 2 Relationship between lender-level residual racial disparities and lender strictness



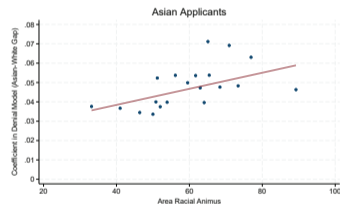
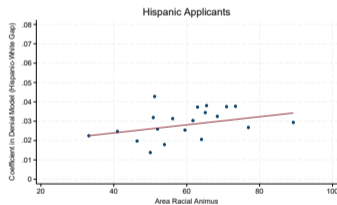
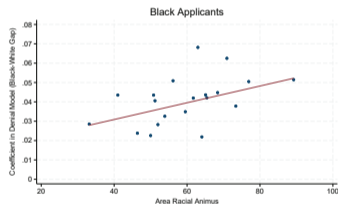
Unobservables? → **Lender Strictness in MEW (top 50 lenders)** → No relationship between lender strictness for Whites and B/W Denial Gap



Minority denial gaps are positively correlated with location's level of racial animus

Back

- Media markets' level of racial animus (Stephens-Davidowitz, 2014).
 - Google search queries only focused on racial animus toward Black individuals.



- Positive correlation between “unexplained” denial rate gaps and racial animus at CBSA level \Rightarrow consistent with discrimination being a factor.
 - 1-std-dev \uparrow in media market racial animus \Rightarrow 1.0 ppt \uparrow in Black-White denial gap.