Financial Constraints and the Racial Housing Gap

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- Housing is a central component of racial wealth gaps $\Rightarrow$ role for **mortgage** finance
  - Black HHs have 1/6th the wealth of white HH + stalled convergence since 1950
  - Despite attention, persistent Black-white wealth gap in the US (Derenoncourt et al., 2022)

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  - Despite attention, persistent Black-white wealth gap in the US (Derenoncourt et al., 2022)
- **Research Question:** Do financial (downpayment) constraints lead to spatial misallocation, impairing wealth building for Black Americans?

This Paper: Leverage Constraints Contribute to Racial Disparities

Part 1: New stylized facts on the racial housing gap

- Document **racial leverage gap**: substantially higher leverage for Black borrowers
- Disproportionate reliance on low down payment FHA loans
  - FHA policy caps restrict loan size + location choice

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- Leverage constraints bind differentially and ration access to *high-opportunity* areas

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  - *Match quasi-experimental estimate* of Black HH sensitivity to leverage constraint
  - Explain large fraction of persistent racial wealth gap

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- **Result**: leverage constraints exacerbate Black-white disparities
  - *Without tighter LTV constraint* in high-opportunity area: improved spatial sorting, lower gaps in wealth + consumption
  - Further improved *without tighter housing supply*, which limits price impact of LTV constraint

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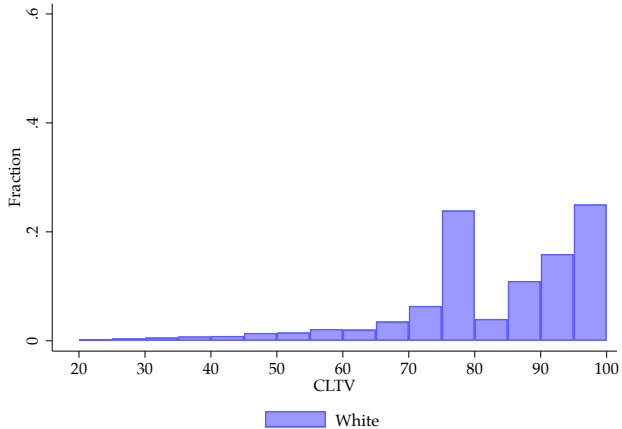
- **Contribution:** Financial constraints lead to spatial misallocation with lasting consequences for wealth accumulation for low-wealth groups

1. Data + Stylized Facts

Data

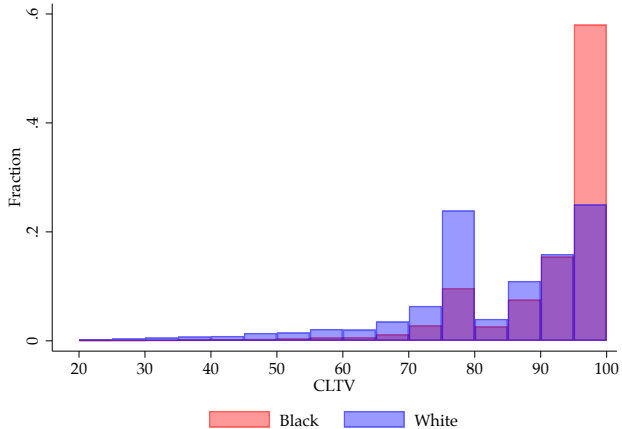
- **HMDA**: details of mortgage originations + race and ethnicity at loan-level
  - Location + property value + leverage (since 2018) + borrower race...
- **Infutor**: longitudinal individual-level housing choices (owning + renting)
  - Moving choices across housing stocks + homeownership
- **Opportunity Insights + ACS**: neighborhood level measures
  - Income + school quality + causal place effects...

Fact 1: Racial Leverage Gap



For white borrowers: average down payment is just over 20%

Substantially More Leverage for Black Borrowers



The **median** Black borrower put just 3.5% down in 2018

Racial Leverage Gap Holds Conditional on census tract + year + income + other controls (PTI)

	log(LTV)		I(LTV≥95)	
Black	0.1162 (.001)	0.0651 (.001)	0.2952 (.001)	0.1550 (.001)
Census Tract FE	✗	✓	✗	✓
Year FE	✗	✓	✗	✓
Controls	✗	✓	✗	✓
Observations	4,092,570	4,092,570	4,228,202	4,228,202

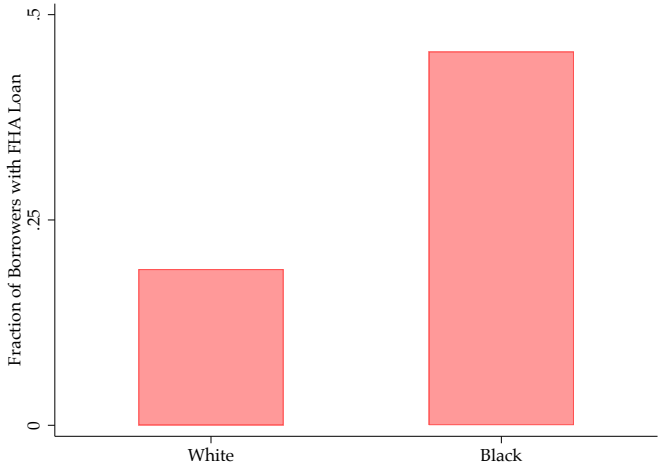
Mechanisms of Racial Gaps in Downpayments

- Less than one-fifth of Black borrowers put 10% or more down for new purchases
  - Compared to more than half of white borrowers
- Most Black borrowers take (effectively) the **maximum** available leverage...
- How are borrowers getting such high leverage?

Background: Leverage Constraints and the FHA

- Conventional loans typically come with 20% down payment requirements
  - Fannie Mae/Freddie Mac: need private mortgage insurance to put less than 20% down
- The Federal Housing Administration (**FHA**) relaxes the constraint...
  - Provides 100% guarantee to lenders for qualifying high leverage mortgages (details)
  - Allows down payments as low as 3.5%
- ...but only for relatively inexpensive housing
  - **Caps** on loan size based on local housing costs (subject to nationwide floor + ceiling)
  - Generates a kink in the leverage constraint: more binding above the cap

Fact 2: Black Borrowers Differentially Rely on FHA Loans

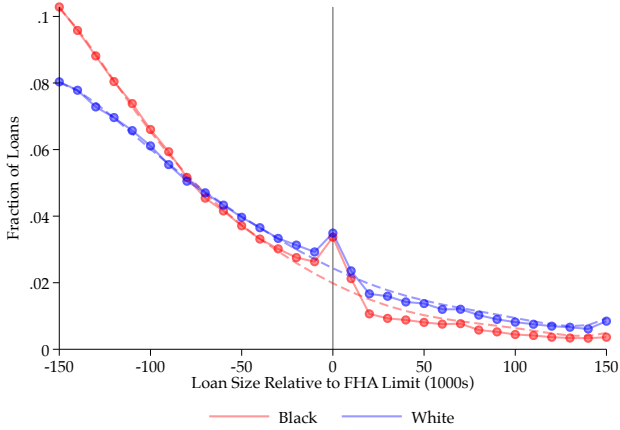


Relax leverage constraint—but only below the loan **cap**

(Timeseries + Table)

2. Reduced Form Evidence on Binding Leverage Constraints for Black Households

Significant Bunching at the FHA Cap for Black HHs

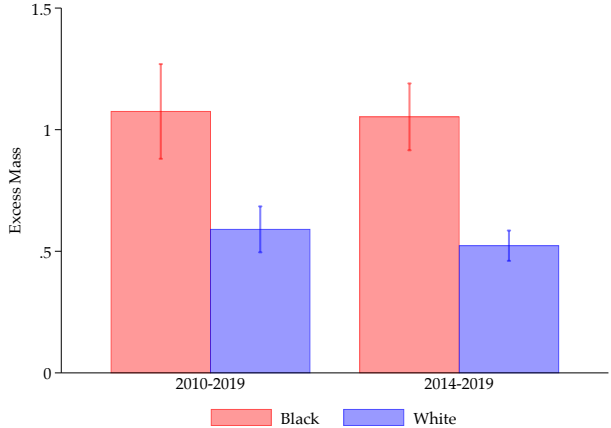


Suggests unconstrained HHs would choose larger loans + more valuable homes

$\Rightarrow$ Leverage constraints distort housing choices for Black borrowers

Excess Mass at the FHA Threshold for Black and White Borrowers

Table



Leverage Constraints Distort Location Choices

- Black borrowers are less likely to put 20% down and buy in valuable areas
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- Alternative: leverage reflects pre-existing location choices
  - Persistent racial segregation: Black households locate in less valuable areas
  - Low home prices $\Rightarrow$ utilize the FHA program to a greater extent

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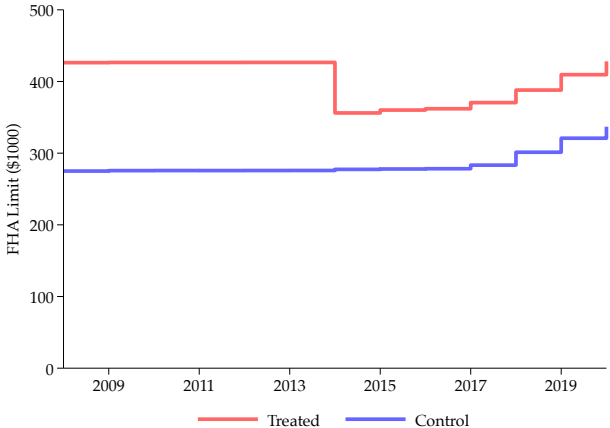
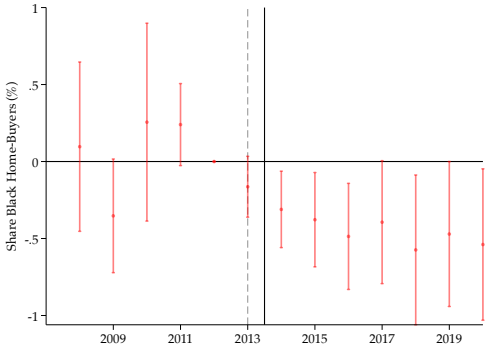
  - Low home prices $\Rightarrow$ utilize the FHA program to a greater extent
- Test: exploit large reduction in FHA cap using difference-in-differences approach
  - Treated areas: Reduction in FHA limit in 2014
  - Control areas: FHA cap remained unchanged
  - Does share of purchases/presence of Black households in treated areas decrease?

Reduction in FHA Limits

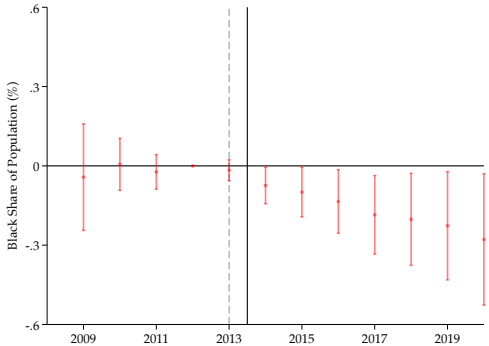


FHA Limit Reductions Alter Mortgage and Location Choices for Black Borrowers

Black Share of Mortgage Borrowers



Black Share of Population



$$y_{jt} = \alpha_j + \gamma_t + \sum_{k=2008}^{2020} \beta_k (\text{Treated}_j \cdot \mathbf{1}_{\{t=k\}}) + \varepsilon_{jt}.$$

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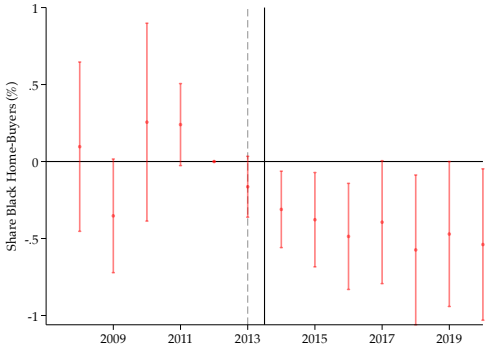

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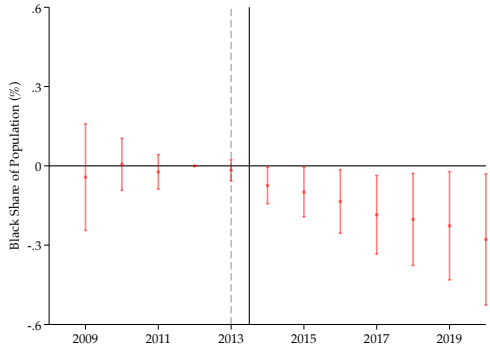

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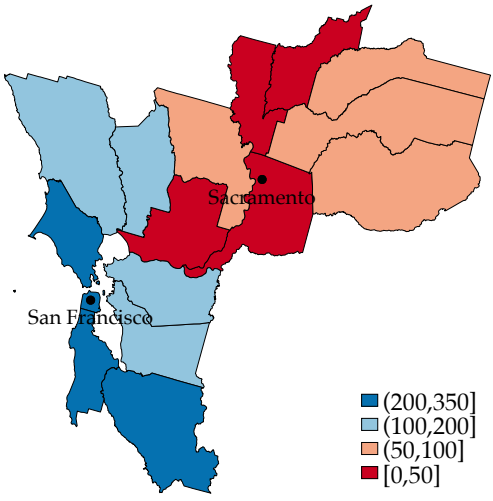
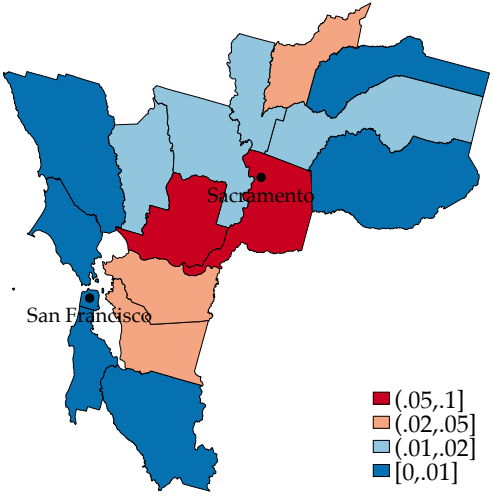
Lower presence of Black households shows renting does not displace foregone purchases

Leverage Constraints Distort Location Choices: CA Bay Area

Median Down Payment ($1000s)



Black Share of Mortgages



Leverage Constraints Ration Access to Opportunity

- More valuable/FHA-ineligible housing stocks associated with labor market opportunity
  - Higher incomes in high-price (and FHA-ineligible) areas (plot)
  - Meaningful causal effect of location (Glaeser and Gottlieb, 2009; Card, Rothstein and Yi, 2022; Boustan, 2016)
- Also associated with greater intergenerational mobility
  - Causal effect of moving to opportunity for young children (Chetty, Hendren and Katz, 2016)
  - Higher test-scores in high-price (and FHA-ineligible) areas (plot)
- Within and across metro areas

Financial and Real Implications

- Leverage constraint distorts access to opportunity
  - Wealth necessary to buy in high-price + high productivity areas
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- **Implications for wealth accumulation across groups?**
  - Beyond Local Average Treatment Effect: long run, spatial reallocation, GE
  - Real effects on income and consumption

3. Two-by-Two General Equilibrium Model of Housing Markets

2×2 Life-Cycle Model: Two Demographics $\times$ Two Geographies

Key: heterogeneous wealth + financial constraints + geography

- **Two demographic groups** (Black and white households) differ in:
  - **Initial wealth** + **income mean and risk** + **initial location**
  - Median net worth below 35 y.o. is $25,400 for white HHs and $600 for Black HHs

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$\Rightarrow 2 \times 2$ **cross-sectional distributions** over individual state variables

Life-Cycle and Preferences

- **Lifecycle:** Households live for 20 periods (4 years each)
  - Exogenous survival probabilities $\{p_a\}$
  - Labor income when young (11 periods), retirement pension when old
- **Flow preferences:** CRRA utility over CES aggregator of consumption + housing

$$\frac{\left[\left((1-\alpha)c_{it}^{\epsilon}+\alpha h_{it}^{\epsilon}\right)^{\frac{1}{\epsilon}}\right]^{1-\gamma}}{1-\gamma}+\widetilde{\Xi}_{it}-\widetilde{m}_{it}$$

- Match quasi-experimental evidence (FHA limit reduction) with CES parameter ϵ
- Idiosyncratic shocks $\widetilde{\Xi}_{it}$ and $\widetilde{m}_{it}$ (i.i.d. EV1 distribution) capture exogenous motives for owning and moving in addition to optimal choices
  - Means vary based on group and area

Income Process + Bequests

- **Log income** while working of household i, age a, group g, location j:

$$\log\left(y_{i,a,j,g,t}\right) = g_a + e_{i,t} + \mu^j$$

$$e_{i,t} = \rho_e e_{i,t-1} + \varepsilon_{i,t}, \varepsilon \overset{iid}{\sim} \mathcal{N}\left(\mu_g, \sigma_\varepsilon^2\right)$$

  - Exogenous **age profile + location shifter + group shifter (mean and risk)**

- Accidental bequests within group
  - SCF: 30% of white hhs have inheritance income vs. 10% of Black hhs
  - Conditional median exp. inheritance 95% higher for white hhs

Liquidity Constraints

Housing and Investment Choices

- **Housing:** Choose to buy house $h_t = \bar{h}$ or rent $h_t \in (0, \bar{h}]$
  - Home + rent prices differ endogenously across locations
  - Purchase financed by long-term mortgage with **location-specific LTV cap** θ^j_{LTV} applying at origination, and amortization constraint θ_{am}
  - Default is non-recourse $\Rightarrow$ utility cost + switch to rental
- **Investment:** risk-free asset with $r > 0$ and housing. (SCF)
  - Mortgage rate $r^b >$ risk free rate r
  - No unsecured borrowing at r + no saving with mortgage debt

General Equilibrium

- **Housing supply:** total sqft of owner-occupied and rental housing
  - $H_j^o = I^{oj} P_j^{\rho_j}$ and $H_j^r = I^{rj} P_j^{\rho_j}$
  - Different levels I and price-elasticities ρ of housing supply curves
- **Market clearing in both locations:**
  - House prices adjust to equate owner-occupied housing demand and supply
  - Rents adjust to equate rental demand and supply
- Estimated contributions of financial and spatial constraints accounts for *price adjustment* and *default risk*

Model Summary

- **Groups differ in:** initial location + wealth, income shifter, mean of ownership and moving shocks
- **Locations differ in:** house + rent prices, income shifter, level and price-elasticity of housing supply, LTV caps, mean of ownership and moving shocks
- **Households choose:** consumption + savings + housing + leverage + location
- **General equilibrium:** endogenous rents + prices
- **Details:** State variables + Bellman eqns

Calibration: External Parameters

Parameter	Explanation	Value	Source/Target
		Preferences and income:	
γ	Risk aversion	2	Standard value
ρ_e	Autocorrelation income process	0.70	Floden & Lindé (2001)
σ_ε	Std. dev. income process	0.39	Floden & Lindé (2001)
		Mortgages:	
r	Risk-free rate	4.00%	Avg 30-year Treasury rate
r^b	Mortgage rate	4.50%	Avg 30-year mortgage rate
F_b	Selling transaction cost	6.00%	Share of purchase price
F_s	Proportional buying transaction cost	0.60%	Share of mortgage size
f_s	Fixed buying transaction cost	1,200	Mortgage origination fee
θ_{am}	One minus amortization rate	0.96	Minimum amortization
		Housing areas:	
θ^H_{LTV}	LTV limit high-opportunity area	0.81	Conventional mortgage LTV limit
θ^L_{LTV}	LTV limit low-opportunity area	0.95	FHA mortgage LTV limit
π^H_W	Share white born in high-opportunity	0.19	Share white born in high-opportunity
π^H_B	Share Black born in low-opportunity	0.08	Share Black born in high-opportunity
ρ^H	Housing supply elasticity high-opportunity	0.594	Elasticity in high-opportunity (Baum-Snow & Han (2023))
ρ^L	Housing supply elasticity low-opportunity	0.590	Elasticity in low-opportunity (Baum-Snow & Han (2023))
		Demographic groups:	
π_B	Population share Black	0.15	Population share Black
$b_{0,W}$	Initial wealth white	25,400	Avg wealth white under 35 y.o.
$b_{0,B}$	Initial wealth Black	600	Avg wealth Black under 35 y.o.

Calibration: Internal Parameters

Parameter	Explanation	Value	Source/Target
	Preferences:		
β	Discount factor	0.83	Avg wealth/avg income
α	Housing utility weight	0.54	Avg rent/avg income
ϵ	CES housing and consumption	0.35	Quasi-exp. treatment effect
d	Utility cost of default	1.07	Avg default rate
Ξ_W^H	Mean homeownership shock white in high-opportunity	2.03	Avg homeownership white
Ξ_W^L	Mean homeownership shock white in low-opportunity	1.03	Avg homeownership white
Ξ_B^H	Mean homeownership shock Black in high-opportunity	1.50	Avg homeownership Black
Ξ_B^L	Mean homeownership shock Black in low-opportunity	-0.43	Avg homeownership Black
	Housing areas and demographic groups:		
μ^H	Income shifter high-opportunity	0.25	Avg income high/low opportunity
μ_W	Mean income process white	0.15	Avg income white/Black
I^{oH}	Supply curve intercept high-opportunity owner-occupied	0.11	Avg house price high-opportunity
I^{oL}	Supply curve intercept low-opportunity owner-occupied	0.74	Avg house price low-opportunity
I^{rH}	Supply curve intercept high-opportunity rentals	0.05	Avg rent high-opportunity
I^{rL}	Supply curve intercept low-opportunity rentals	0.35	Avg rent low-opportunity
m_W^H	Mean moving cost shock white to high-opportunity	6.08	Moving rate white to high-opportunity
m_B^H	Mean moving cost shock Black to high-opportunity	7.82	Moving rate Black to high-opportunity
m_W^L	Mean moving cost shock white to low-opportunity	-3.63	Share white living in high-opportunity
m_B^L	Mean moving cost shock Black to low-opportunity	-4.61	Share Black living in high-opportunity

Targeted Moments: Income and Homeownership Gaps

Variable	Data	Model
Aggregate		
Avg house price high-opportunity	455,000	455,000
Avg house price low-opportunity	225,000	225,000
Avg rent high-opportunity	1,588	1,588
Avg rent low-opportunity	1,008	1,008
Avg income high/low-opportunity	1.70	1.76
Avg income white/Black	1.73	1.70
Share white living in high-opportunity	0.19	0.21
Share Black living in high-opportunity	0.08	0.15
Avg moving rate to high-opportunity white	0.02	0.03
Avg moving rate to high-opportunity Black	0.02	0.02
Homeownership white in high-opportunity	0.68	0.72
Homeownership Black in high-opportunity	0.48	0.55
Homeownership white in low-opportunity	0.67	0.69
Homeownership Black in low-opportunity	0.45	0.46
Avg wealth/avg income	4.50	4.28
Avg house price/avg income	4.05	4.03
Avg rent/avg income	0.20	0.18
Avg default rate	0.02	0.02
Quasi-exp. treatment effect: $\frac{\Delta(\pi^{high}_{Black})}{\Delta(\ell^{LTV^+}_{sh})}$	0.098	0.101

Notes: Moments are annualized.

Non-Targeted Moments: Leverage and Wealth Gaps

Life-Cycle

Table: Non-Targeted moments

Variable	Data	Model
Share owned sqft high-opportunity	0.65	0.72
Share owned sqft low-opportunity	0.68	0.69
Avg moving rate to low-opportunity white	0.10	0.11
Avg moving rate to low-opportunity Black	0.10	0.12
Avg LTV white	0.85	0.79
Avg LTV Black	0.92	0.83
P90 LTV white	0.97	0.95
P90 LTV Black	0.98	0.95
Avg default rate white	0.01	0.01
Avg default rate Black	0.03	0.03
Avg housing wealth white/Black	3.30	2.21
Avg bequest white/Black	3.57	2.43
Avg total wealth white/Black	4.12	2.59

Sources: Survey of Consumer Finances (2019), Home Mortgage Disclosure Act (2018).

4. Structural Estimation: Financial and Spatial Constraints Impact Racial Gaps

Three Counterfactual Experiments

- **Goal:** quantify contributions of leverage and spatial constraints to wealth disparities

1. Same leverage constraint in high- as in low-opportunity area
   - Leverage constraints contribute to wealth disparities
2. Relaxed spatial constraints
   - Black borrowers also disproportionately affected by spatial frictions
3. Combination of leverage and spatial constraints
   - Beneficial policy increasing both opportunities and financial access

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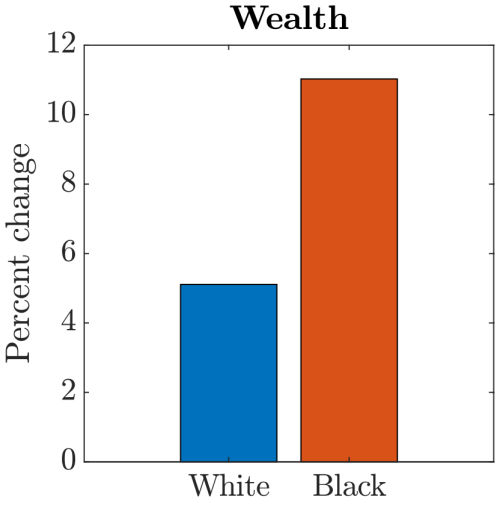
- Differences in leverage constraints with low-opportunity areas exacerbate racial disparities in access to high-opportunity, income prospects, hence wealth accumulation

1. Counterfactual: Leverage Constraints Exacerbate Disparities Full

Same LTV limit in high- as in low-opportunity area (80 $\rightarrow$ 95) :

- Less wealth disparities (why?)



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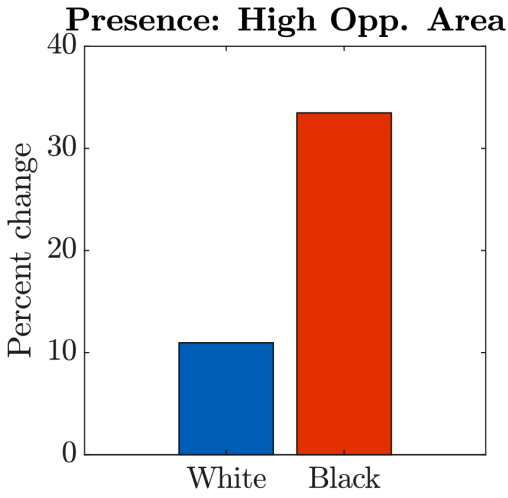
  1. $\uparrow$ presence in high opp. area



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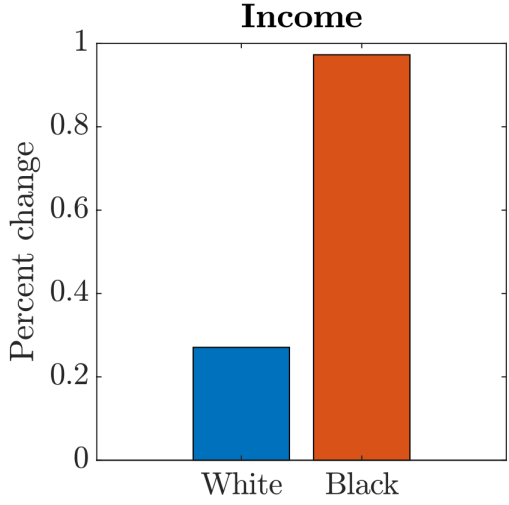
  1. ↑ presence in high opp. area
  2. ↑ **income** for Black hhs



1. Counterfactual: Leverage Constraints Exacerbate Disparities Full

Same LTV limit in high- as in low-opportunity area (80 → 95) :

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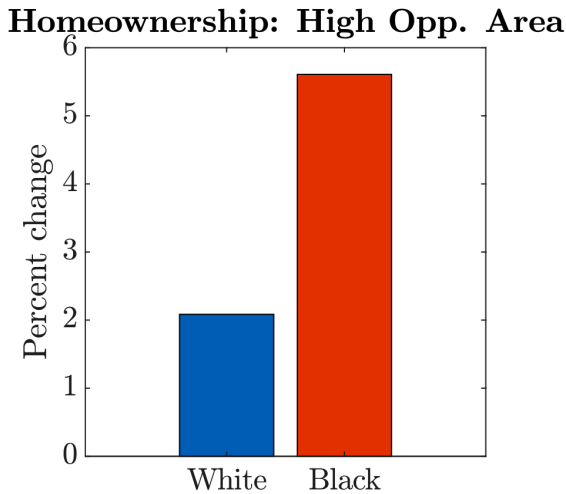
  - Limit chances to build + store wealth



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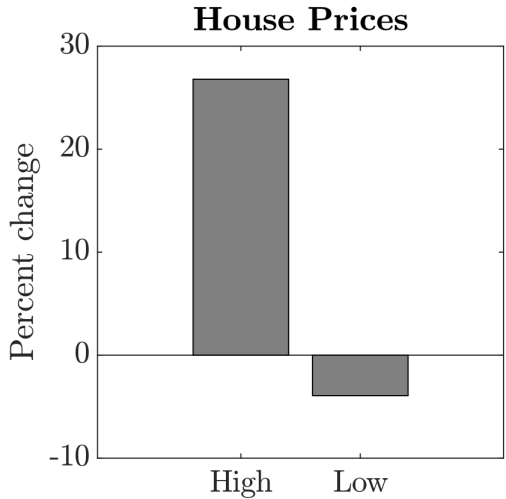

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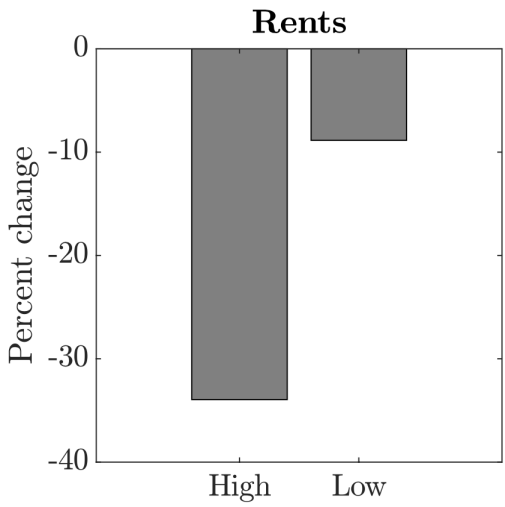
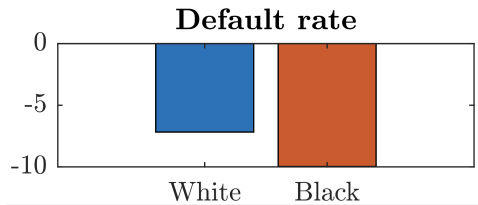
- Constraints distort spatial allocations
  - Limit chances to build + store wealth
- GE consequences ambiguous:
  - House prices ↑ , which rations access
  - Rents ↓, increases presence in high opportunity areas. Implication: wealth building, even by renters, as rental stock is less congested.



Should Leverage Constraints Be Relaxed?

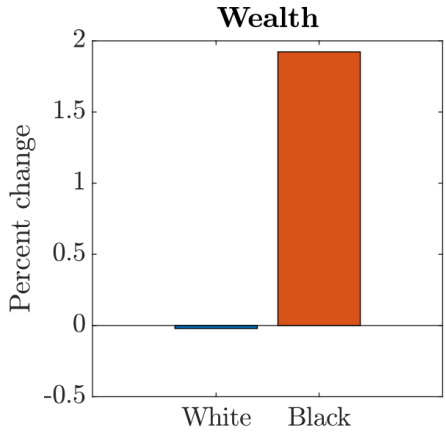
- Full examination of macroprudential implications of leverage constraint is outside the scope of the paper, but some options:
- If sufficient down payment requirement is essential for other macroprudential reasons, negative equity consequences are bad but unavoidable
- One interpretation: improve recourse/social welfare to make higher leverage more attainable (Bernstein and Koudijs 2021: typical LTVs in Netherlands > 100)
- Key concern is default implications. We examine this in the model; find lower default rates, improved income
  - **Where** hhs get leverage is key. Problem with 2008 subprime boom: locations where leverage restrictions were loosened.



2. Relaxed Spatial Constraints Full

Increasing Housing Supply 10% in High Opportunity Area:

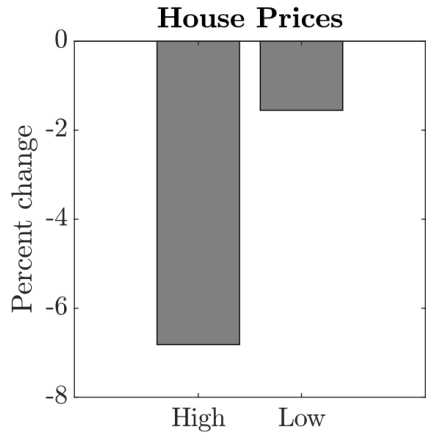
- Only increases wealth for Black households



2. Relaxed Spatial Constraints

Increasing Housing Supply 10% in High Opportunity Area:

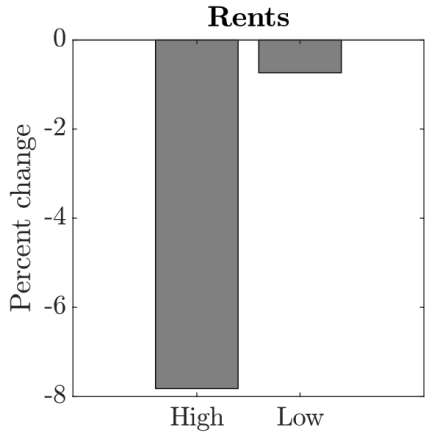
- Only increases wealth for Black households
  1. Large ↓ in prices.



2. Relaxed Spatial Constraints

Increasing Housing Supply 10% in High Opportunity Area:

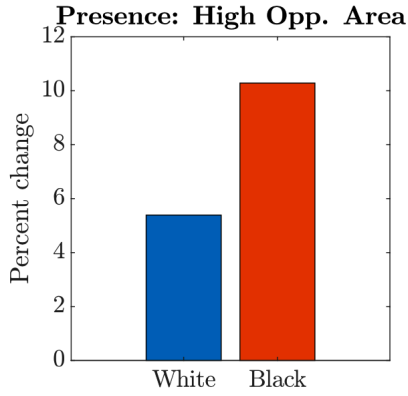
- Only increases wealth for Black households
  1. Large ↓ in prices and rents



2. Relaxed Spatial Constraints

Increasing Housing Supply 10% in High Opportunity Area:

- Only increases wealth for Black households
  1. Large ↓ in prices and rents
  2. Black hhs more sensitive to financial conditions, so ↑ presence in high opp. areas
  3. New white residents also benefit; but fall in prices also shock to existing (disproportionately white) households



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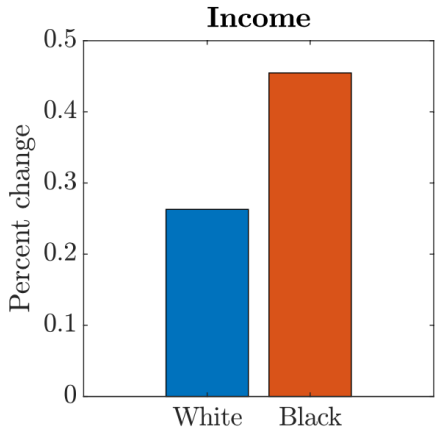
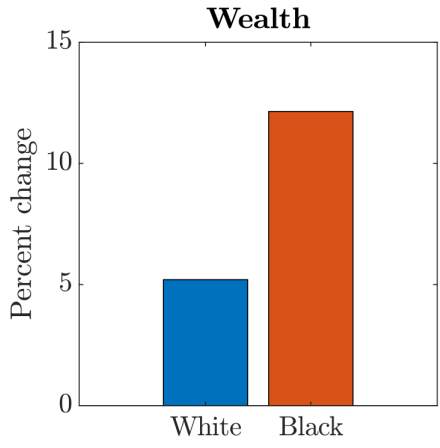


3. Relaxed Financial + Spatial Constraints Full

Same leverage constraints in high- as in low-opp area + higher housing supply:

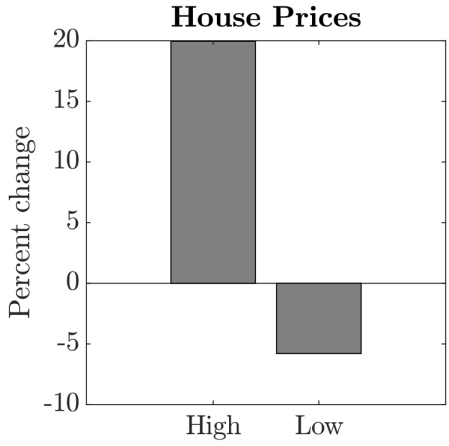
- Large impact on wealth
  - Improves both quantity of housing stock, as well as financial means of access



3. Relaxed Financial + Spatial Constraints

Same leverage constraints in high- as in low-opp area + higher housing supply:

- Large impact on wealth
  - Improves both quantity of housing stock, as well as financial means of access
- Price impact smaller: more quantity rather than price adjustment
  - Potentially valuable to address other unmodeled costs (i.e., macroprudential policy)



Robustness

Variable (% change)	Baseline	Mortgage rate discrimination	Leverage-dep. mortgage rate	PTI limit	Low spatial income shifter	Same shock means
Wealth Black (white)	11.0 (5.1)	11.0 (5.1)	10.4 (4.4)	6.8 (2.6)	3.7 (3.9)	10.4 (5.1)
Income Black (white)	1.0 (0.3)	1.0 (0.3)	0.9 (0.3)	0.8 (0.4)	0.2 (0.1)	0.7 (0.3)
Consumption Black (white)	2.8 (0.8)	2.7 (0.8)	2.8 (0.7)	2.1 (0.9)	0.4 (0.7)	3.5 (0.8)
Homeownership high opp. Black (white)	5.6 (2.1)	5.5 (2.1)	5.0 (2.1)	7.7 (1.2)	9.0 (2.6)	-0.7 (2.1)
Presence high opp. Black (white)	33.5 (11.0)	33.3 (11.0)	31.9 (10.4)	26.7 (12.0)	20.0 (9.5)	30.3 (11.3)
LTV high opp. Black (white)	34.1 (35.8)	34.2 (35.8)	33.6 (33.6)	40.0 (28.4)	52.5 (25.6)	42.6 (34.9)
House prices high (low) opp.	26.8 (-3.9)	26.8 (-3.9)	26.3 (-3.9)	21.2 (-4.1)	20.0 (-2.5)	26.5 (-3.9)
Rents high (low) opp.	-33.9 (-8.9)	-33.9 (-8.8)	-33.7 (-8.6)	-6.3 (-2.9)	-10.3 (-2.6)	-34.6 (-8.4)

Additional Counterfactual Experiments

- Migration Frictions Link
- Migration and Leverage Link
- Reparation Policies (equate initial conditions Link)

Contribution: heterogeneity + financial constraints + geography

- Black-white wealth and housing gap: Gyourko et al. (1999), Charles & Hurst (2002), Collins & Margo, (2011), Garriga. et al. (2017), Derenoncourt et al. (2021), Kermani & Wong (2021), Kahn (2021), Avenancio-Leon & Howard (2019), Gerardi et al. (2021); Bartlett et al. (2021); Bhutta & Hizmo (2021)
  - **Black-white leverage gap + spatial mismatch amplify Black-white disparities**
- Housing models with incomplete markets: Corbae & Quintin (2015), Favilukis et al. (2017), Greenwald (2018), Greenwald et al. (2020), Gete & Zecchetto (2018). Mabille (2021)
  - **Heterogeneity in demographic groups + location choice $\rightarrow$ impacts of financial constraints.**
- Spatial Models: Rosen (1982), Roback (1979), Bilal & Rossi-Hansberg (2021), Kennan & Walker (2011), De La Roca & Puga (2017), Chetty & Hendren (2018), Card Rothstein Yi (2021)
  - **Financial constraints and heterog wealth as source of persistent inequality.**

Conclusion

- Policy focuses on homeownership gaps—we highlight Black-white leverage gap
- Combine quasi-experimental evidence + spatial GE housing model with heterog HH
- Financial constraints (LTV) contribute to persistent disparities
  - Housing necessary to access high opportunity areas is expensive
  - Substantial wealth is a pre-condition to buy
  - Model explains large fraction of wealth gap
- Financial frictions lead to spatial misallocation of HH, which exacerbates group disparities in wealth
  - **Where** minorities are able to buy is key

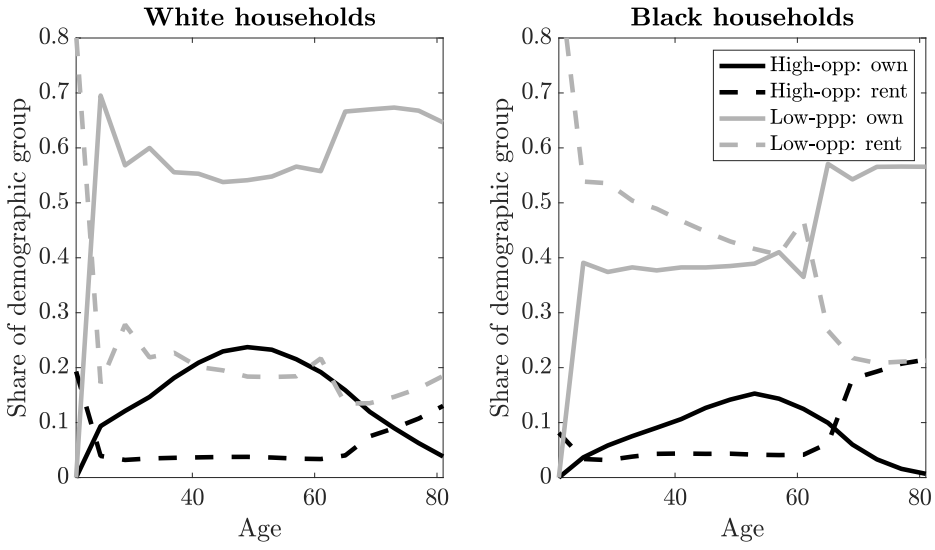
Thanks!

Table: Excess Mass at the FHA Threshold for Black and White Borrowers

Back

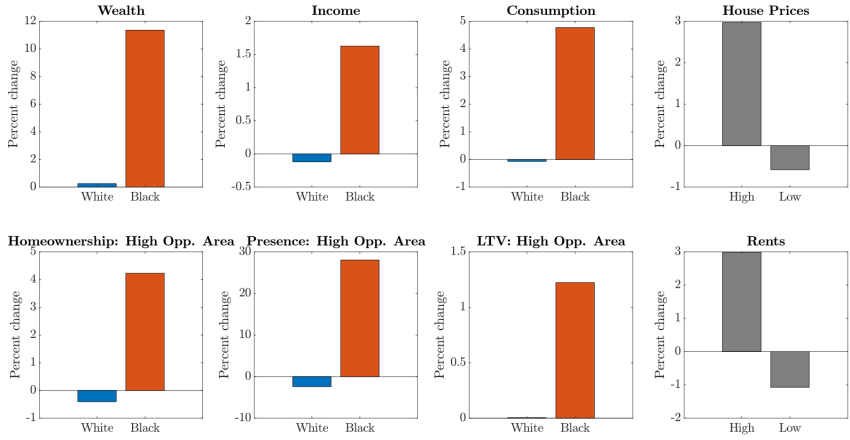
	2010-2019		2014-2019	
	Black	White	Black	White
Excess Mass	1.075***	0.590***	1.053***	0.523***
	(0.099)	(0.048)	(0.070)	(0.032)

Renting, Owning, and Location Choice over the lifecycle



Migration Frictions

FIGURE D.I: TARGETED MOVING COST REDUCTION



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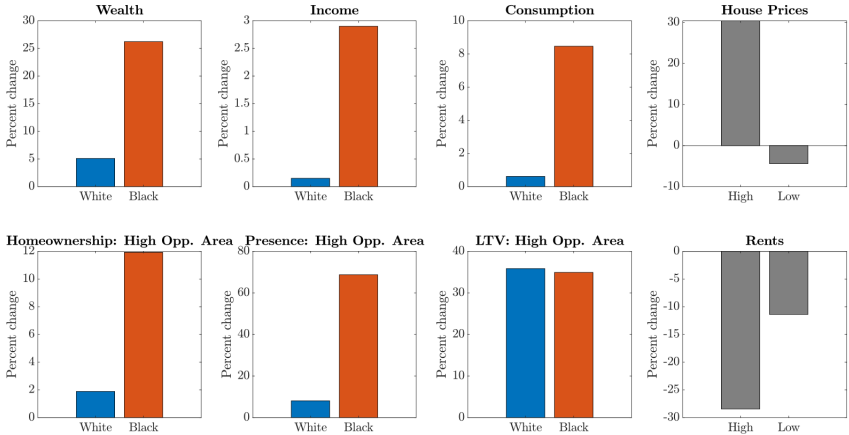
Migration and Leverage Frictions

FIGURE D.II: HIGH LEVERAGE LIMITS AND TARGETED MOVING COST REDUCTION



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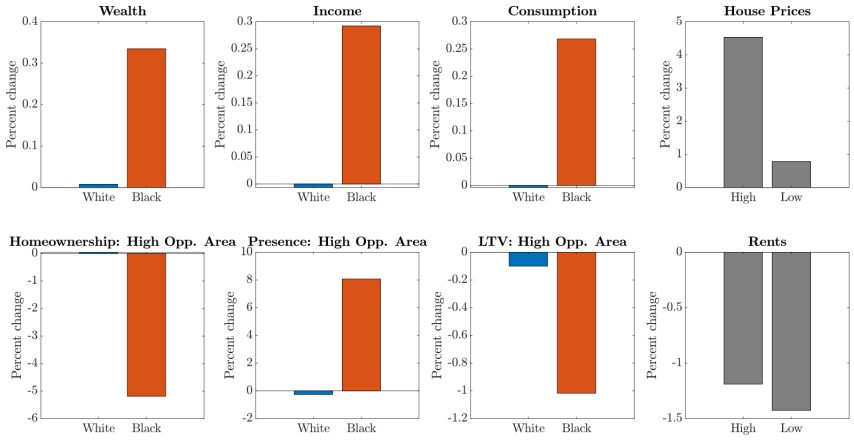
Reparation Policies

FIGURE D.IV: REPARATIONS REMOVING INITIAL LOCATION DIFFERENCES



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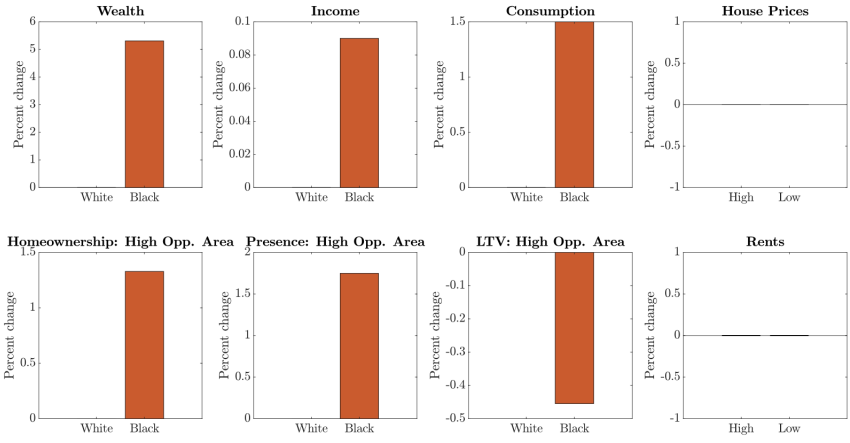
Reparation Policies

FIGURE D.III: REPARATIONS REMOVING INITIAL WEALTH DIFFERENCES



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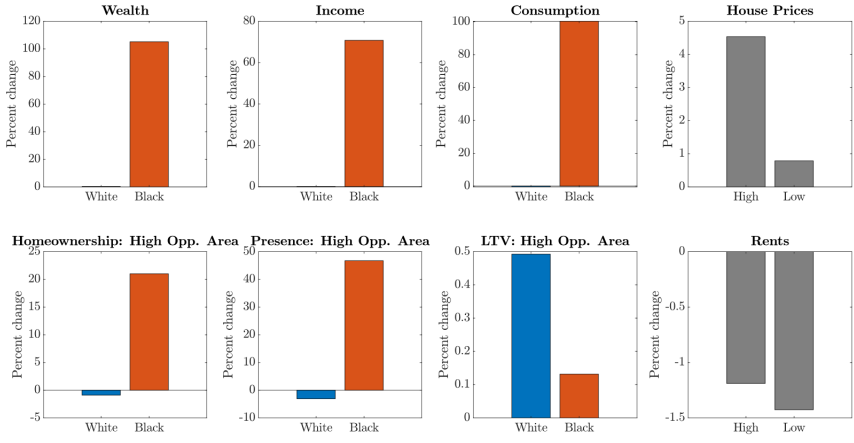
Reparation Policies

FIGURE D.V: REPARATIONS REMOVING INCOME PROCESS DIFFERENCES



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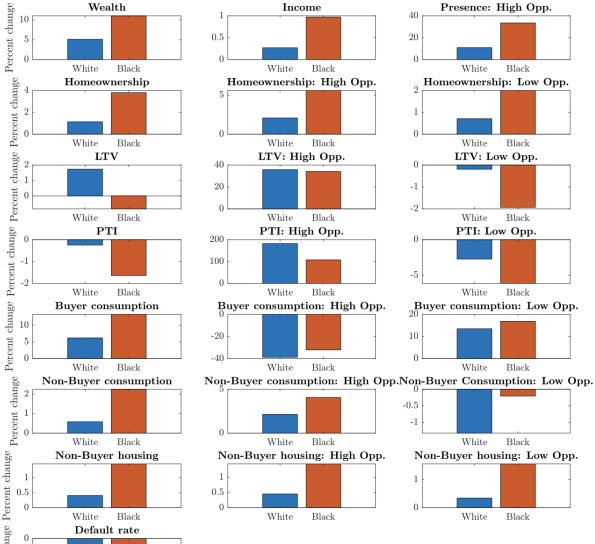
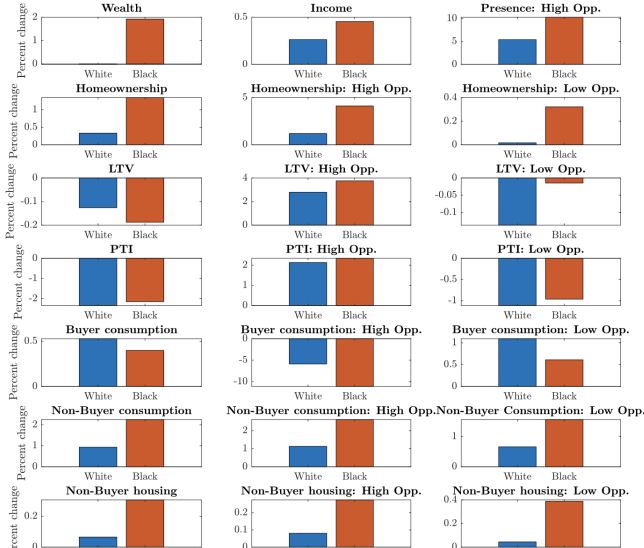
Leverage Constraints

FIGURE E.I: UNIFORM LEVERAGE LIMITS: DETAILED RESULTS



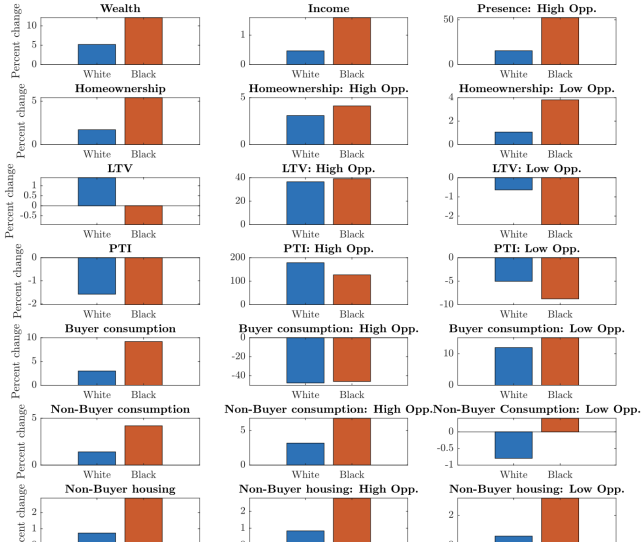
Supply Constraints

FIGURE E.III: HIGH HOUSING SUPPLY IN HIGH-OPPORTUNITY AREA: DETAILED RESULTS



Supply + Financial Constraints

FIGURE E.V: HIGH LEVERAGE LIMITS AND HIGH HOUSING SUPPLY IN HIGH-OPPORTUNITY AREA: DETAILED RESULTS



FHA Limits Grow Over Time

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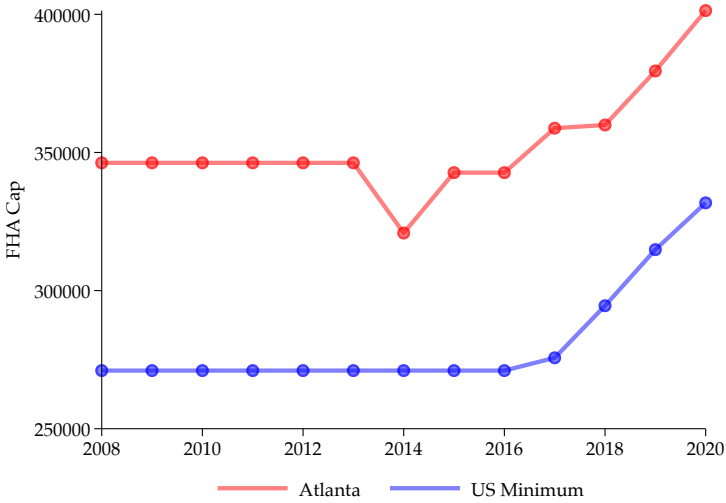
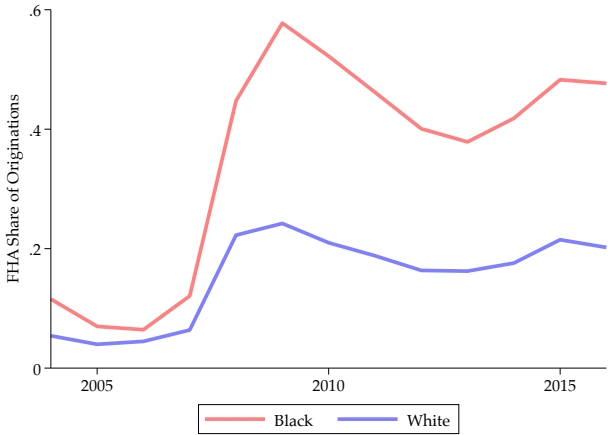


FHA Lending to Black HH has Grown Sharply Since the Crisis

Back



FHA Cap Distorts Loan Choices for Black Borrowers

FHA Gap

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \varepsilon_{ijt}$$

	P(Borrower is Black)			
FHA Eligible	0.053***			
	(0.003)			
Property Value	✗			
Census-Tract FE	✗			
Year FE	✗			
County × Property Value FE	✗			
Mean of Dep. Var.	0.062	0.062	0.062	0.062
N	11640000	11639327	11638947	11611900

- Black households significantly more likely to purchase FHA eligible properties

FHA Cap Distorts Loan Choices for Black Borrowers

FHA Gap

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \delta_{\text{Property Value}_{ljt}} + \varepsilon_{ijt}$$

	P(Borrower is Black)			
FHA Eligible	0.053***	0.029***		
	(0.003)	(0.005)		
Property Value	✗	✓		
Census-Tract FE	✗	✗		
Year FE	✗	✗		
County × Property Value FE	✗	✗		
Mean of Dep. Var.	0.062	0.062	0.062	0.062
N	11640000	11639327	11638947	11611900

- Black households significantly more likely to purchase FHA eligible properties
  - Even conditional on property value

FHA Cap Distorts Loan Choices for Black Borrowers

FHA Gap

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \delta_{\text{Property Value}_{ljt}} + \eta_j + \gamma_t + \varepsilon_{ijt}$$

	P(Borrower is Black)			
FHA Eligible	0.053***	0.029***	0.007***	
	(0.003)	(0.005)	(0.001)	
Property Value	✗	✓	✓	
Census-Tract FE	✗	✗	✓	
Year FE	✗	✗	✓	
County × Property Value FE	✗	✗	✗	
Mean of Dep. Var.	0.062	0.062	0.062	0.062
N	11640000	11639327	11638947	11611900

- Black households significantly more likely to purchase FHA eligible properties
  - Even conditional on property value + within census-tract

FHA Cap Distorts Loan Choices for Black Borrowers

FHA Gap

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \theta_{\text{Property Value}_{ljt} \times \text{County}_j} + \gamma_t + \varepsilon_{ijt}$$

	P(Borrower is Black)			
FHA Eligible	0.053***	0.029***	0.007***	0.005***
	(0.003)	(0.005)	(0.001)	(0.001)
Property Value	✗	✓	✓	✗
Census-Tract FE	✗	✗	✓	✗
Year FE	✗	✗	✓	✓
County × Property Value FE	✗	✗	✗	✓
Mean of Dep. Var.	0.062	0.062	0.062	0.062
N	11640000	11639327	11638947	11611900

- Black households significantly more likely to purchase FHA eligible properties
  - Even conditional on property value + within census-tract
- More likely to buy at a given value when the FHA-cap increases

FHA Cap Distorts Location Choices for Black Borrowers

	Loan Level				Census-Tract Level			
					Full Sample		Ineligible in 2018	
FHA Eligible	0.053***	0.029***	0.007***	0.005***	0.060***	0.037***	0.003***	0.001**
	(0.003)	(0.005)	(0.001)	(0.001)	(0.004)	(0.007)	(0.001)	(0.001)
Property Value	✗	✓	✓	✗	✗	✓	✗	✗
Census-Tract FE	✗	✓	✓	✗	✗	✗	✓	✓
Year FE	✗	✓	✓	✓	✗	✗	✓	✓
County × Property Value	✗	✗	✗	✓	✗	✗	✗	✗
Mean of Dep. Var.	0.062	0.062	0.062	0.062	0.068	0.068	0.018	0.018
N	11640000	11639327	11638947	11611900	205067	205035	33033	33033

FHA Caps Restrict Access to Areas with Greater Opportunity

Back

- High leverage properties tend to have worse returns (plot) (table)
- Rental housing stock has worse test scores
- Rental housing stock has worse intergenerational mobility
- High leverage is persistent for Black borrowers

High Leverage Associated with Worse Returns

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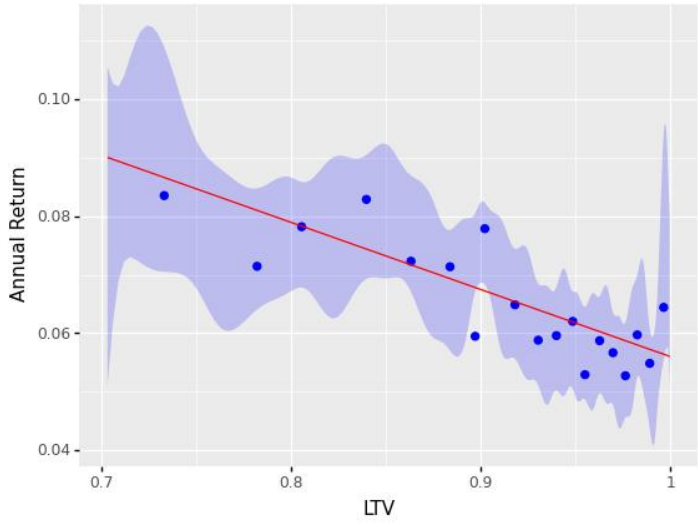

High Leverage Associated with Worse Returns

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Dependent Variable	Realized Return					
LTV	-0.15992*** (.003)	-0.17764*** (.003)	-0.01814* (.007)	-0.01639 (.023)	-0.02225 (.026)	-0.01203 (.089)
County F.E	Yes	Yes	No	No	No	No
Year F.E	No	Yes	Yes	No	No	No
ZipCode F.E	No	No	Yes	No	No	No
ZipCode x BuyYear F.E	No	No	No	Yes	No	No
ZipCode x SellYear F.E	No	No	No	No	Yes	No
ZipCode x Year F.E	No	No	No	No	No	Yes
Zip Code Subsample	No	No	Yes	Yes	Yes	Yes
Adjusted R^2	0.0912	0.1421	0.1840	0.2891	0.3492	0.5555

Rental Housing Associated with Worse Test Scores

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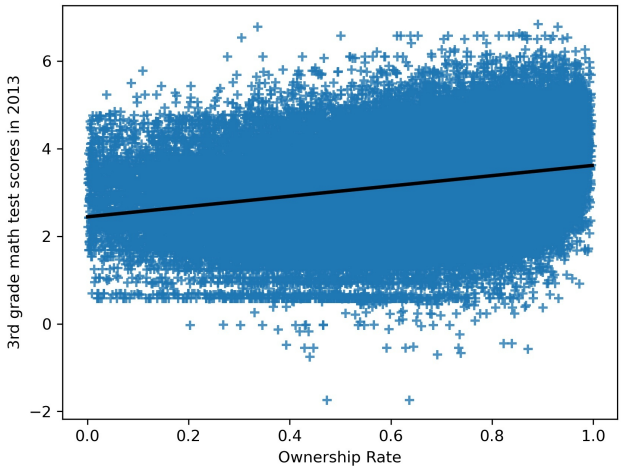

Rental Housing Associated with Worse Intergenerational Mobility

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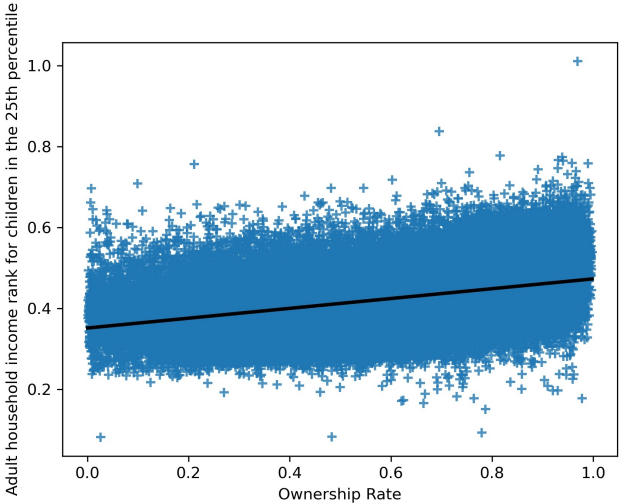
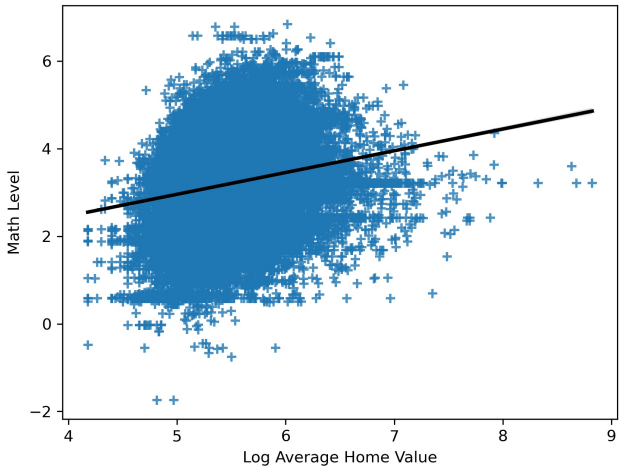


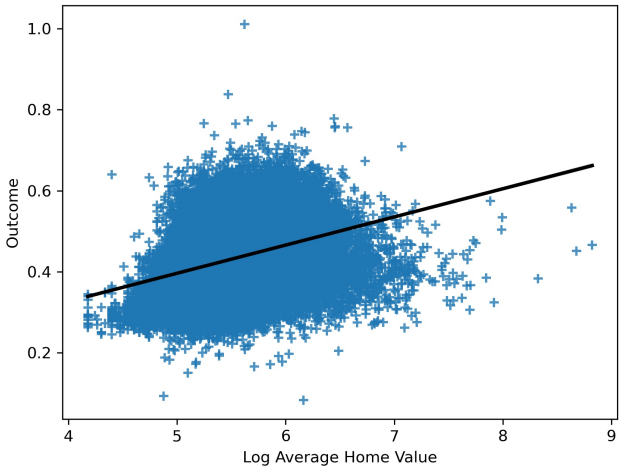
Areas with Higher House Prices Have Higher Test Scores

Back



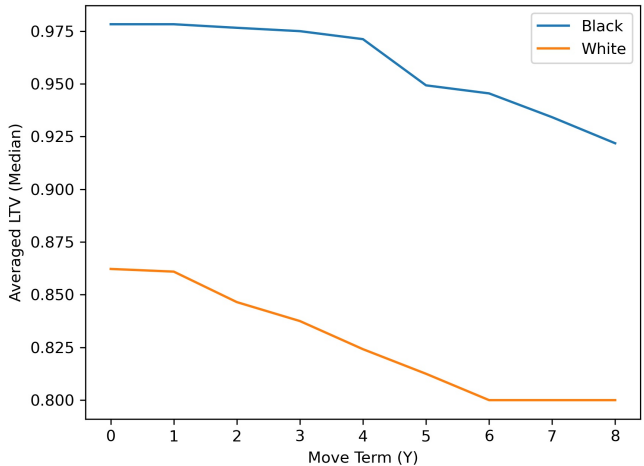
More Valuable Areas Have Higher Intergenerational Mobility

Back



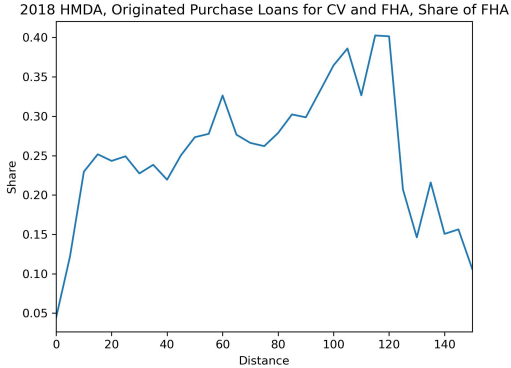
High Leverage Remains Persistent for Black Borrowers

Back



FHA Housing is Not Centrally Located

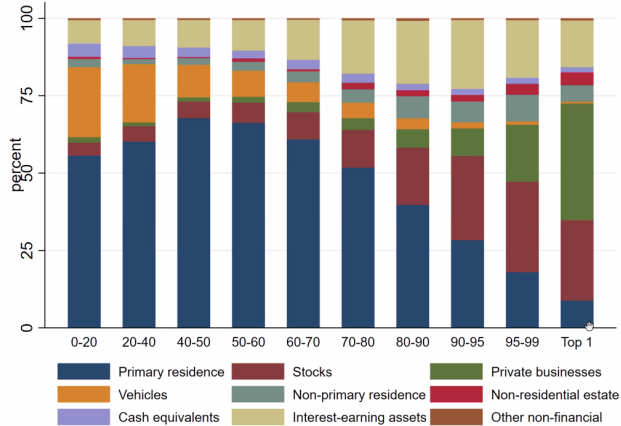
Back



In 1997, only about 5 percent of welfare recipients in Fulton and DeKalb counties had access to a licensed vehicle (Brookings, 2001)

SCF Shows Housing is Main Investment for Middle Class

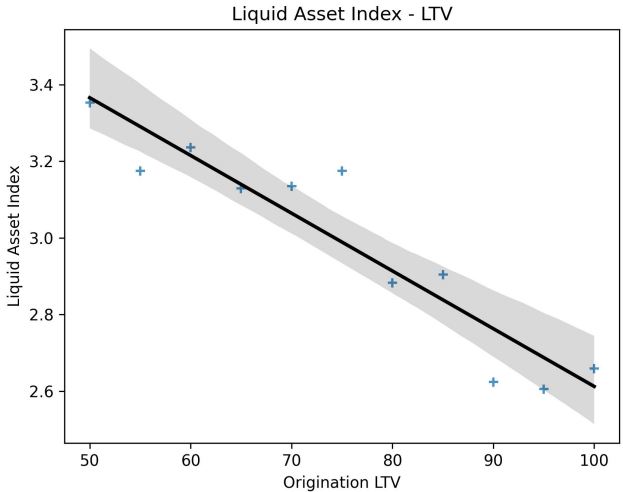
Back



Notes: % of total assets, constructed using SCF 2019.

Households with Low Down Payments Have Few Other Liquid Assets

Back



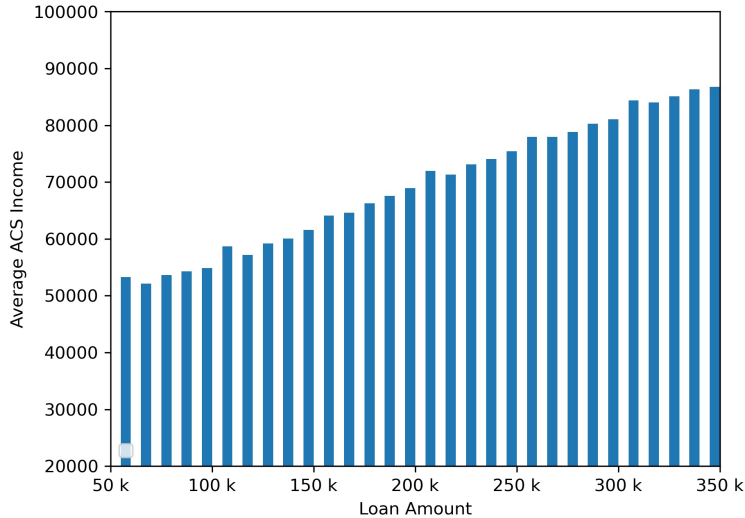
FHA Details

- FHA created with national housing act of 1934
  - Stimulate building + mortgage credit during the depression
- The FHA guarantees loans of up to 96.5% of the home price
  - Requires 580+ FICO score
  - Can borrow 90% with 500+ FICO
  - Must occupy the house (for at least a year)
- Compensates lender for 100% of loss in case of default
  - Requires MIP of 1.75% up-front + annual fee (e.g. 85 bp for 95+ LTV)
- Current FHA floor-ceiling: $420,680-$970,800
  - 65%-150% of conforming loan limit

(back)

Areas with Higher House Prices Have Higher Incomes

Back



The Racial Leverage Gap: Black Borrowers Have Higher Leverage

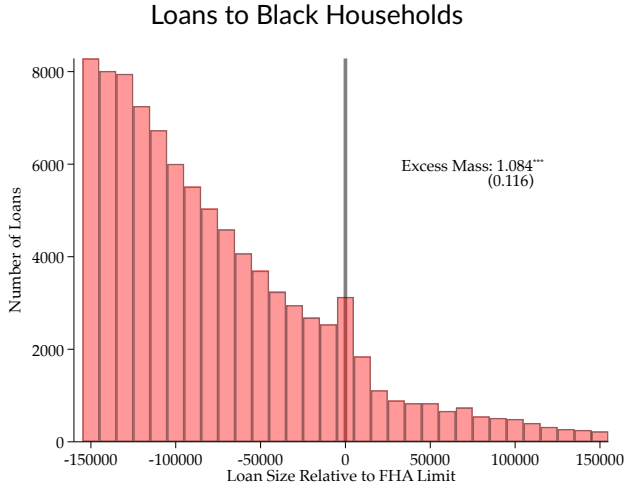
Back

Dependent	log(LTV)				I(LTV>=95)			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
Black	0.1162	0.0728	0.0651	0.0325	0.2952	0.1684	0.1550	0.1239
	(.001)	(.001)	(.001)	(.001)	(.001)	(.002)	(.001)	(.002)
Hispanic	0.0674	0.0231	0.0372	0.0173	0.1279	0.0472	0.0587	0.0393
	(.001)	(.001)	(.001)	(.001)	(.002)	(.002)	(.002)	(.003)
Asian	-0.0489	-0.0467	-0.0252	-0.0312	-0.1824	-0.1087	-0.0794	-0.0812
	(.001)	(.000)	(.001)	(.001)	(.001)	(.001)	(.001)	(.002)
Controls	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Geographic Control	No	No	Yes	Yes	No	No	Yes	Yes
First Home Control	No	No	No	Yes	No	No	No	Yes
Observations	4,092,570	4,092,570	4,092,570	1,317,103	4,228,202	4,228,202	4,228,202	1,358,401
R^2	0.014	0.213	0.137	0.251	0.029	0.304	0.282	0.307

Besides explicitly noted control variables, which are geographic (census tract) and first home buyer (age between 24-35), 'Controls' includes year, income decile, sex, purchaser type, loan type, occupancy type, debt to income ratio.

Bunching: FHA Caps Distort Loan Sizes for Black Borrowers

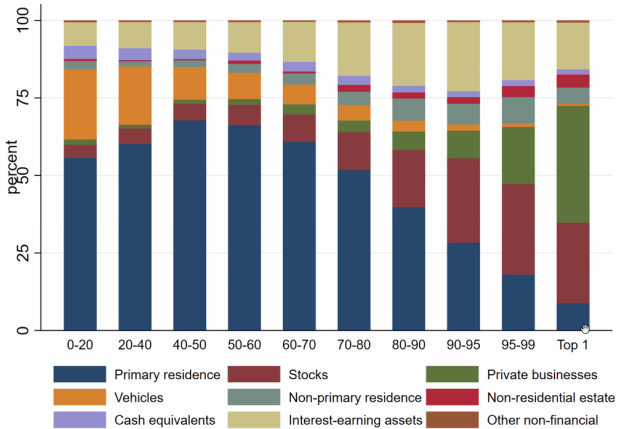
Back



Leverage constraints bind + distort housing choices for Black borrowers

SCF Shows Housing is Main Investment for Middle Class

Back

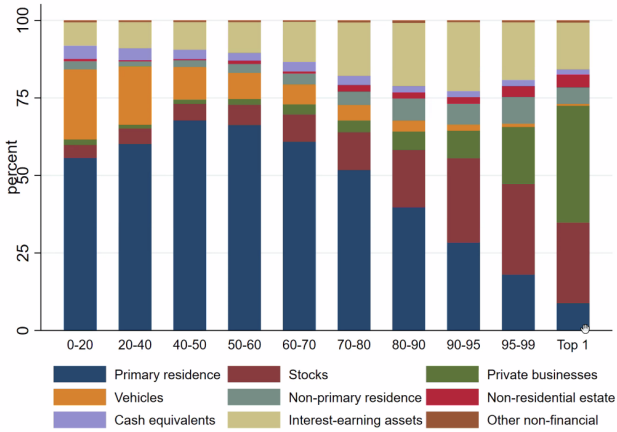


Notes: % of total assets, constructed using SCF 2019.

Median net worth of $25,400 for white HH vs $600 for Black HH

SCF Shows Housing is Main Investment for Middle Class

Back



Notes: % of total assets, constructed using SCF 2019.

Median net worth of $25,400 for white HH vs $600 for Black HH

Model Details: State Variables Back

- **State Variables:**
  - Demographic group: g
  - Home ownership status: $\mathcal{H} = r, o$ (renter or owner)
  - Housing stock: $j = L, H$ (low- or high-opportunity area)
  - Age a
  - Net asset position b
  - Endowment y

Model Details: Value Functions

Back

Consider a renter who starts the period in housing stock L:

- Envelope value of value functions for each option:

$$V_g^{rL}(a, b_t, y_t) = \max\left\{ V_g^{rL,rL}, V_g^{rL,rH}, V_g^{rL,oL}, V_g^{rL,oH}. \right\}$$

- The transition from renting to owning in the high-opportunity zone (oH) is:

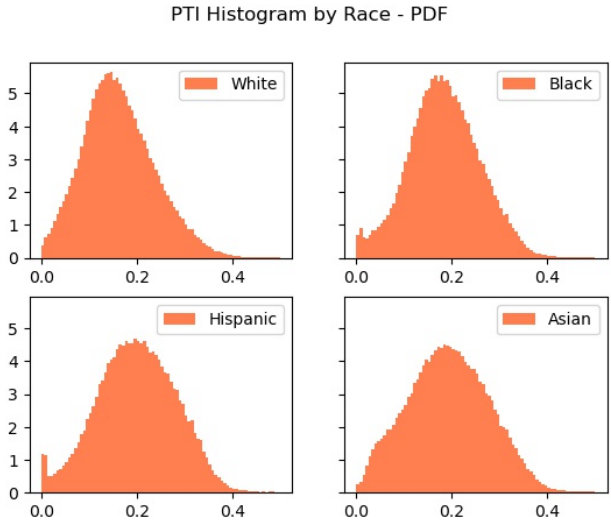
$$V_g^{rL,oH}(a, b_t, y_t) = \max_{c_t, h_t, b_{t+1}} \frac{u\left(c_t, h_t\right)^{1-\gamma}}{1-\gamma} - m_H + \beta p_a \mathbb{E}_t \left[V_g^{oH}(a+1, b_{t+1}, y_{t+1}) \right],$$

- subject to the budget constraint and the LTV constraint in the high-opp stock:

$$c_t + R_L h_t + F_m + P_H \overline{h}(1+f_m) + b_{t+1} = y_t + (1+r^f) b_t, \quad h_t \in \left(0, \overline{h}\right],$$
$$b_{t+1} \geq -\theta_{LTV}^H P_H \overline{h}.$$

PTI by Race and Ethnicity

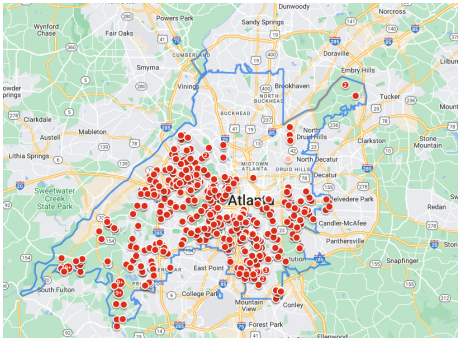
Back



Single Family Homes on Zillow Last Week

Back

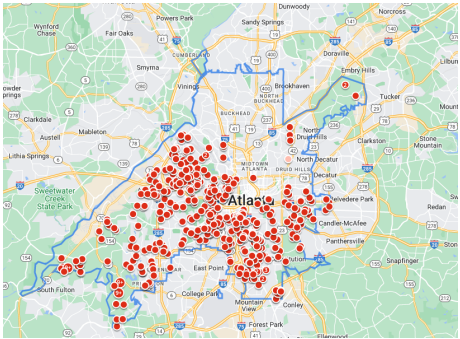
Below FHA Limit



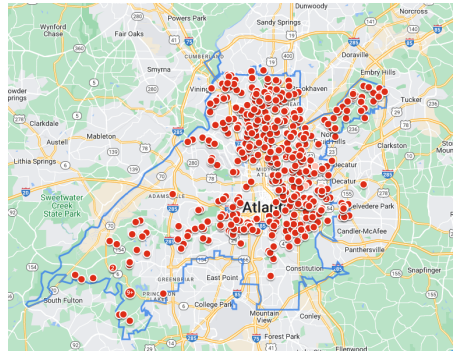
Single Family Homes on Zillow Last Week

Back

Below FHA Limit



Above FHA Limit



Single Family Homes on Zillow Last Week

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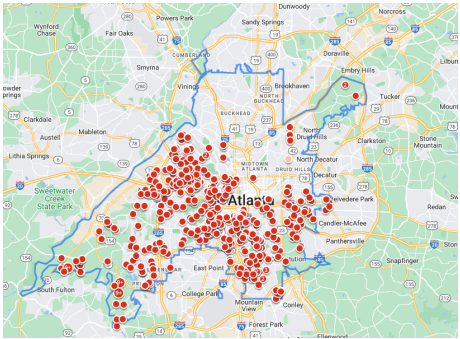
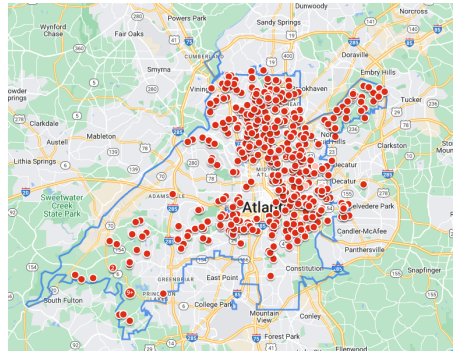
Below FHA Limit



Above FHA Limit



FHA Cap Distorts Location Choices for Black Borrowers

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \varepsilon_{ijt}$$

	Fraction of Black Borrowers			
	Full Sample		Above Limit in 2018	
FHA Eligible	0.060***			
	(0.004)			
Property Value	✗			
Census-Tract FE	✗			
Year FE	✗			
Mean of Dep. Var.	0.068	0.068	0.018	0.018
N	205067	205035	33033	33033

- Black households significantly more likely to purchase FHA eligible properties

FHA Cap Distorts Location Choices for Black Borrowers

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \delta_{\text{Property Value}_{ljt}} + \varepsilon_{ijt}$$

	Fraction of Black Borrowers			
	Full Sample		Above Limit in 2018	
FHA Eligible	0.060***	0.037***		
	(0.004)	(0.007)		
Property Value	✗	✓		
Census-Tract FE	✗	✗		
Year FE	✗	✗		
Mean of Dep. Var.	0.068	0.068	0.018	0.018
N	205067	205035	33033	33033

- Black households significantly more likely to purchase FHA eligible properties
  - Even conditional on property value

FHA Cap Distorts Location Choices for Black Borrowers

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \delta_{\text{Property Value}_{ljt}} + \eta_j + \gamma_t + \varepsilon_{ijt}$$

	Fraction of Black Borrowers			
	Full Sample		Above Limit in 2018	
FHA Eligible	0.060***	0.037***	0.003***	
	(0.004)	(0.007)	(0.001)	
Property Value	✗	✓	✗	
Census-Tract FE	✗	✗	✓	
Year FE	✗	✗	✓	
Mean of Dep. Var.	0.068	0.068	0.018	0.018
N	205067	205035	33033	33033

- Black households significantly more likely to purchase FHA eligible properties
  - Even conditional on property value + within census-tract

FHA Cap Distorts Location Choices for Black Borrowers

$$y_{ljt} = \beta \text{FHA Eligible}_{ljt} + \theta_{\text{Property Value}_{ljt} \times \text{County}_j} + \gamma_t + \varepsilon_{ijt}$$

	Fraction of Black Borrowers			
	Full Sample		Above Limit in 2018	
FHA Eligible	0.060***	0.037***	0.003***	0.001**
	(0.004)	(0.007)	(0.001)	(0.001)
Property Value	✗	✓	✗	✗
Census-Tract FE	✗	✗	✓	✓
Year FE	✗	✗	✓	✓
Mean of Dep. Var.	0.068	0.068	0.018	0.018
N	205067	205035	33033	33033

- Black households significantly more likely to purchase FHA eligible properties
  - Even conditional on property value + within census-tract
- More likely to buy at a given value when the FHA-cap increases