Estimating Changes in the Black-White House Value Gap from 1997 to 2005

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Objectives

- examine the extent of the black-white gap in housing values
  - housing equity forms a major component of household wealth
  - impact of rapid price appreciation from 1997 to 2005
    $\Rightarrow$ what impact did appreciation have on the gap?
- use quantile regression to decompose the differences in house values into a
  $\Rightarrow$ **characteristics gap (CG)** captures the racial differences in housing characteristics
  $\Rightarrow$ **returns gap (RG)** captures the racial differences in returns to housing services

Results

- Racial convergence in cheaper housing

  and divergence for more expensive housing

  $\Rightarrow$ valuation of housing attributes (RG) converged for cheaper housing

  $\Rightarrow$ housing attibutes (CG) converged except for the most expensive housing

- Interpretation:
  - integration in poorer neighborhoods
  - at the higher end, whites are consuming more housing services (new housing?)

  $\Rightarrow$ filtering

Literature Review

- Long and Caudill (1992) find persistance in the racial difference in house values between $1970 - 1986$
- Collins and Margo (2003) look at long-run racial difference ($1940 - 1990$) and find racial convergence (RG $\downarrow$)

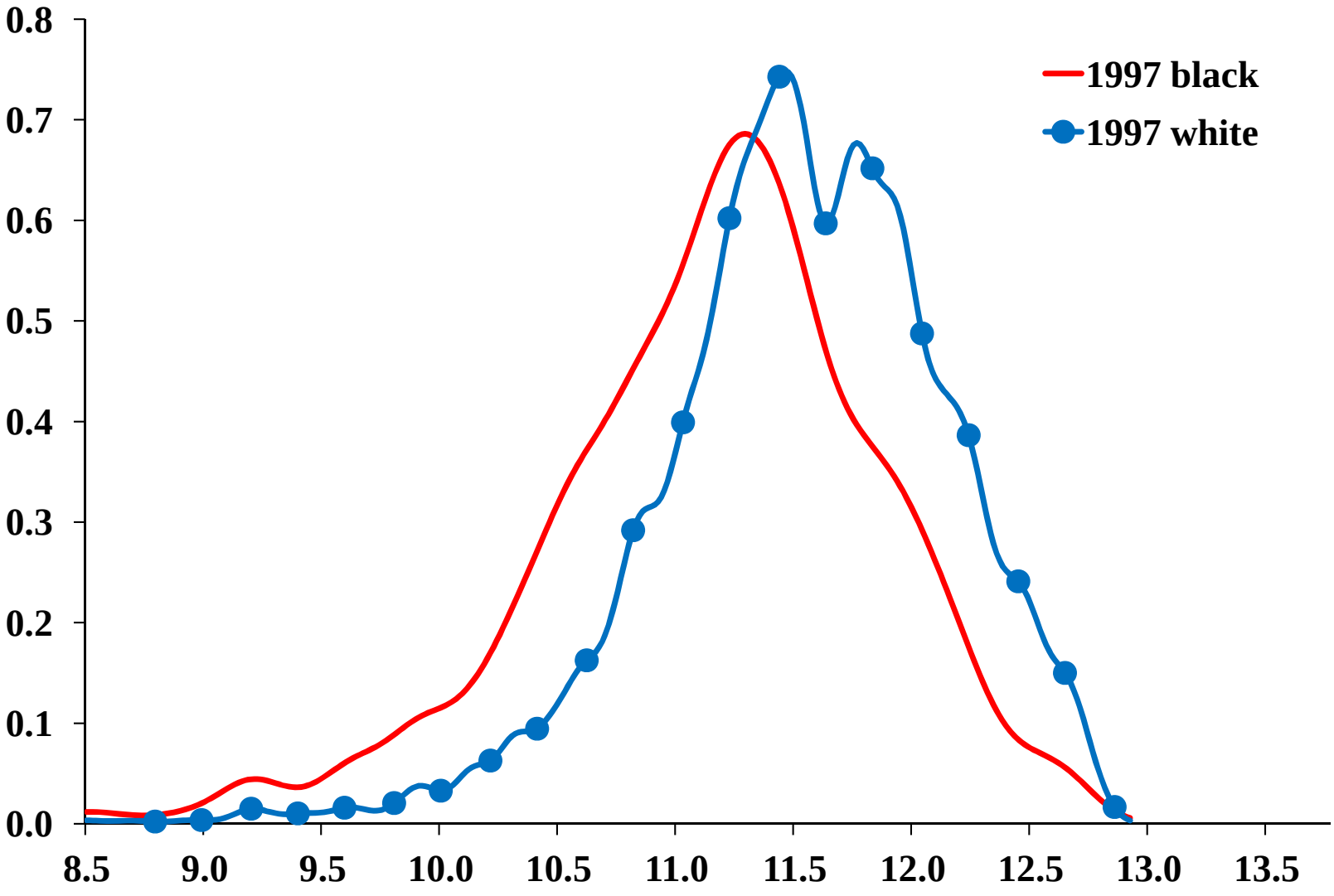
Data

- 1997 and 2005 American Housing Survey national sample
- contains data on self-reported house values, house characteristics, demographics, financial characteristics
- use single-family housing
- use over 40,000 obs in estimation

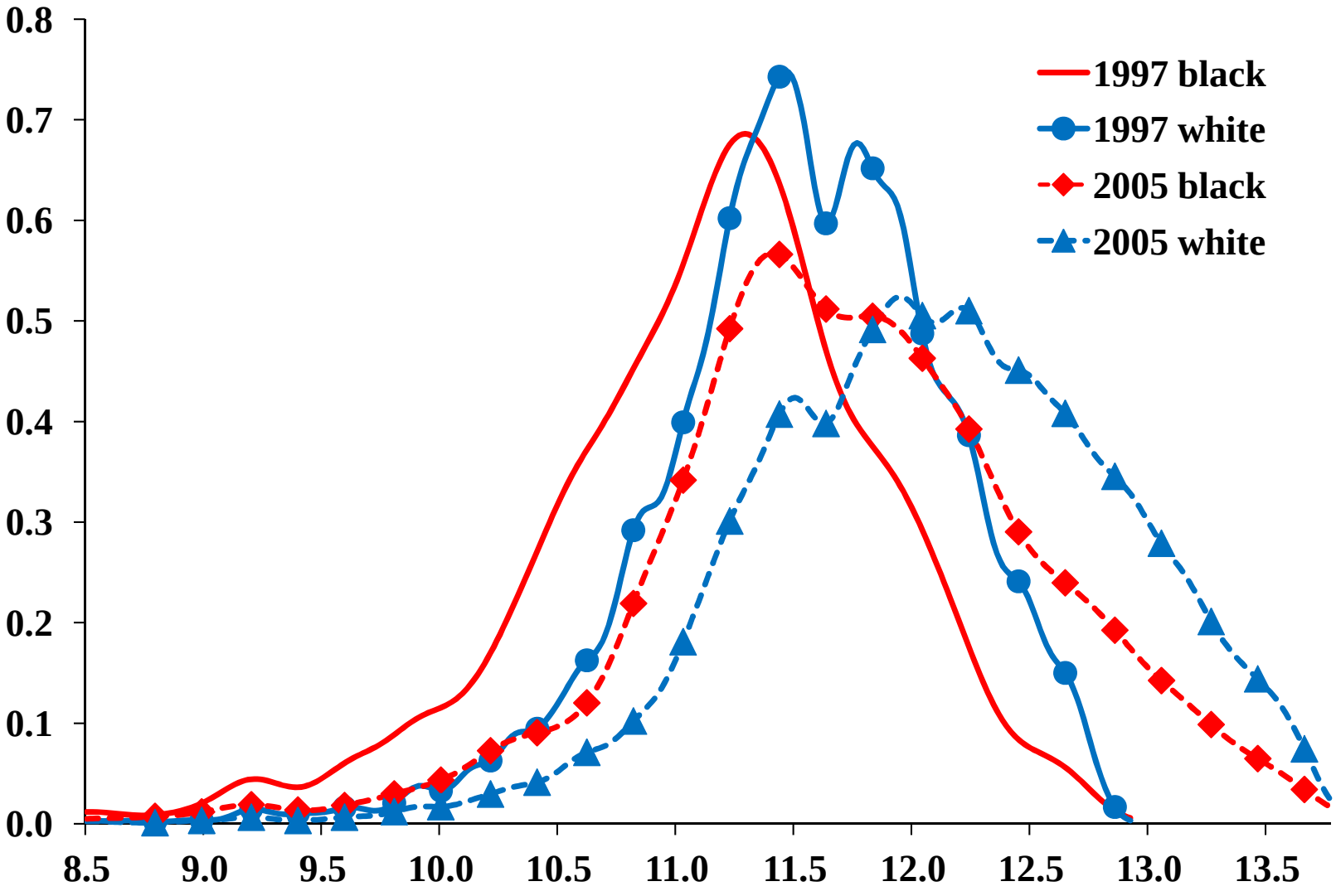
Summary Statistics

	1997				2005			
	White		Black		White		Black	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Value of housing unit	117,283	64,307	84,349	54,925	223,895	163,758	160,555	134,935
Year housing unit was built								
1919 or earlier	0.08	0.27	0.07	0.26	0.06	0.24	0.05	0.22
1920s	0.05	0.21	0.06	0.23	0.04	0.19	0.04	0.21
1930s	0.05	0.22	0.08	0.28	0.04	0.20	0.07	0.25
1940s	0.08	0.27	0.12	0.33	0.06	0.24	0.09	0.29
1950s	0.16	0.36	0.17	0.38	0.13	0.34	0.13	0.34
1960s	0.15	0.36	0.17	0.38	0.13	0.34	0.15	0.36
1970 - 1974	0.08	0.28	0.10	0.30	0.07	0.26	0.09	0.28
1975 - 1979	0.10	0.31	0.07	0.25	0.10	0.31	0.09	0.28
1980 - 1984	0.06	0.23	0.04	0.20	0.05	0.22	0.04	0.19
1985 - 1989	0.08	0.27	0.05	0.21	0.07	0.25	0.05	0.22
1990 - 1994	0.12	0.32	0.07	0.25	0.07	0.25	0.05	0.21
1995 - 1999					0.09	0.28	0.06	0.24
2001 - 2005					0.09	0.28	0.09	0.29
Metro status								
Central City of MSA	0.21	0.41	0.49	0.50	0.21	0.41	0.42	0.49
In MSA, not in cen. city - urban	0.38	0.48	0.27	0.44	0.37	0.48	0.32	0.47
In MSA, not in cen. city - rural	0.17	0.37	0.06	0.24	0.18	0.38	0.09	0.28
Outside MSA, urban	0.09	0.29	0.08	0.27	0.10	0.29	0.08	0.28
Outside MSA, rural	0.15	0.36	0.10	0.30	0.15	0.36	0.09	0.28
Region								
Northeast	0.20	0.40	0.12	0.32	0.18	0.39	0.11	0.32
Northwest	0.29	0.45	0.21	0.41	0.27	0.45	0.18	0.38
South	0.34	0.47	0.59	0.49	0.35	0.48	0.63	0.48
West	0.18	0.38	0.08	0.27	0.19	0.40	0.08	0.26
Observations	17,394		1,623		19,676		1,901	

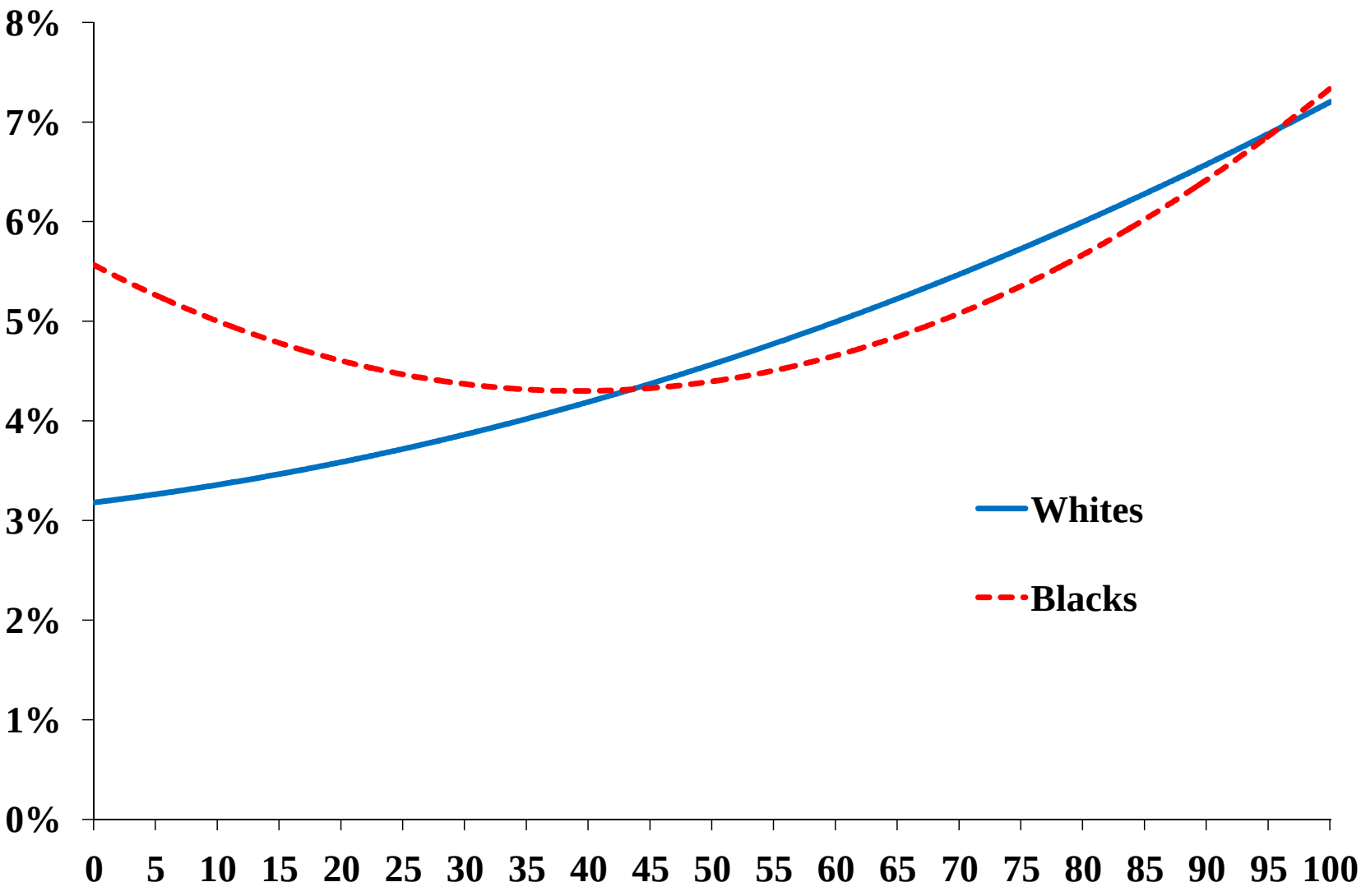
House Value Distributions



House Value Distributions



Appreciation Rates by Percentile



Quantile Regression

- hedonic model:

  log value of unit i owned by race r in period t

$$V_{it} = x_{it}\beta^r + e_{it}$$

- then, the θ^{th} quantile is

$$\text{Quant}_\theta\left(V_{it}|x_{it}\right) = x_{it}\beta_\theta^r + h\left(\gamma^r z_{it}\right).$$

- $h\left(\gamma^r z_{it}\right)$ is a nonparametric Heckman sample correction

Estimating marginal and counterfactual densities

marginal density of house values for race *wh*

1. draw random sample of quantiles from $UNIF[0,1]$: $\theta^1, \ldots, \theta^m$
2. for each θ^i estimate the quantile regression to find $\hat{\beta}^{wh}_{\theta^i}$
3. bootstrap observed white characteristics: $x^*_{wh,1}, x^*_{wh,2}, \ldots, x^*_{wh,m}$
4. random sample of white house values is

$$\{V^*_{wh,i} \equiv x^*_{wh,i}\beta^{wh}_{\theta^i}\}_{i=1}^m \Rightarrow f^*\left(V^{wh}\right)$$

counterfactual density of black house values with white returns, replace steps 3 and 4

3. bootstrap observed black characteristics: $x^*_{bl,1}, x^*_{bl,2}, \ldots, x^*_{bl,m}$
4. counterfactual sample of black house values is

$$\{V^*_{bl,i} \equiv x^*_{bl,i}\beta^{wh}_{\theta^i}\}_{i=1}^m \Rightarrow f^*\left(V^{bl};\beta^{wh}\right)$$

Decomposition

the decomposition at each quantile θ is

$$Quant_\theta\left(V^{wh}\right) - Quant_\theta\left(V^{bl}\right) = \left(Quant_\theta\left(V^{wh}\right) - Quant_\theta\left(V^{bl};\beta^{wh}\right)\right)$$

$$+ \left(Quant_\theta\left(V^{bl};\beta^{wh}\right) - Quant_\theta\left(V^{bl}\right)\right)$$

the LHS is the total gap

the first term on the RHS is the CG

the second term on the RHS is the RG

Decomposition Results by Percentile

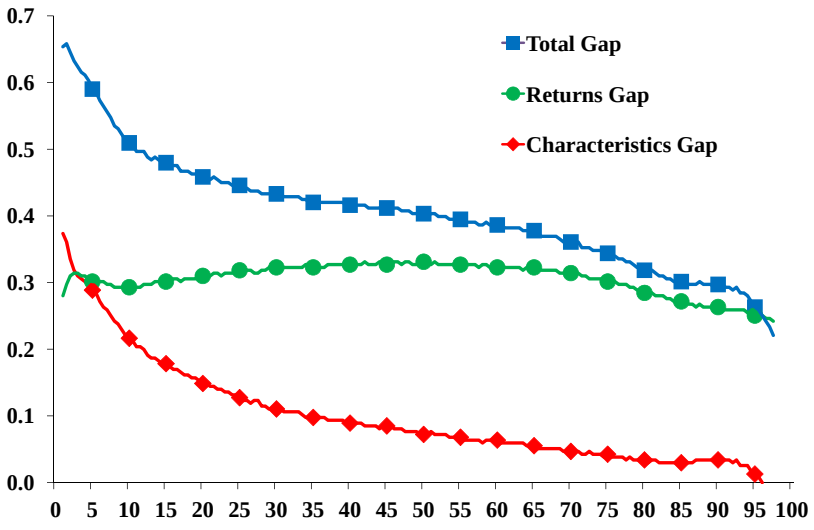


Figure: **1997**

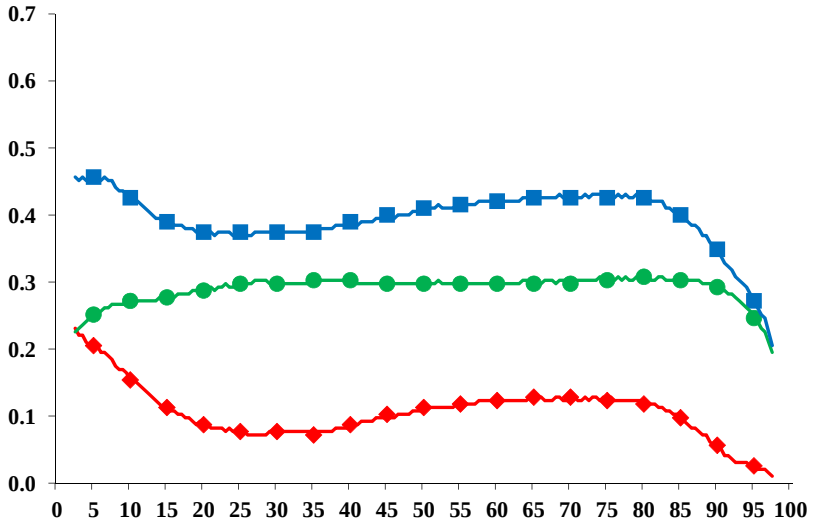
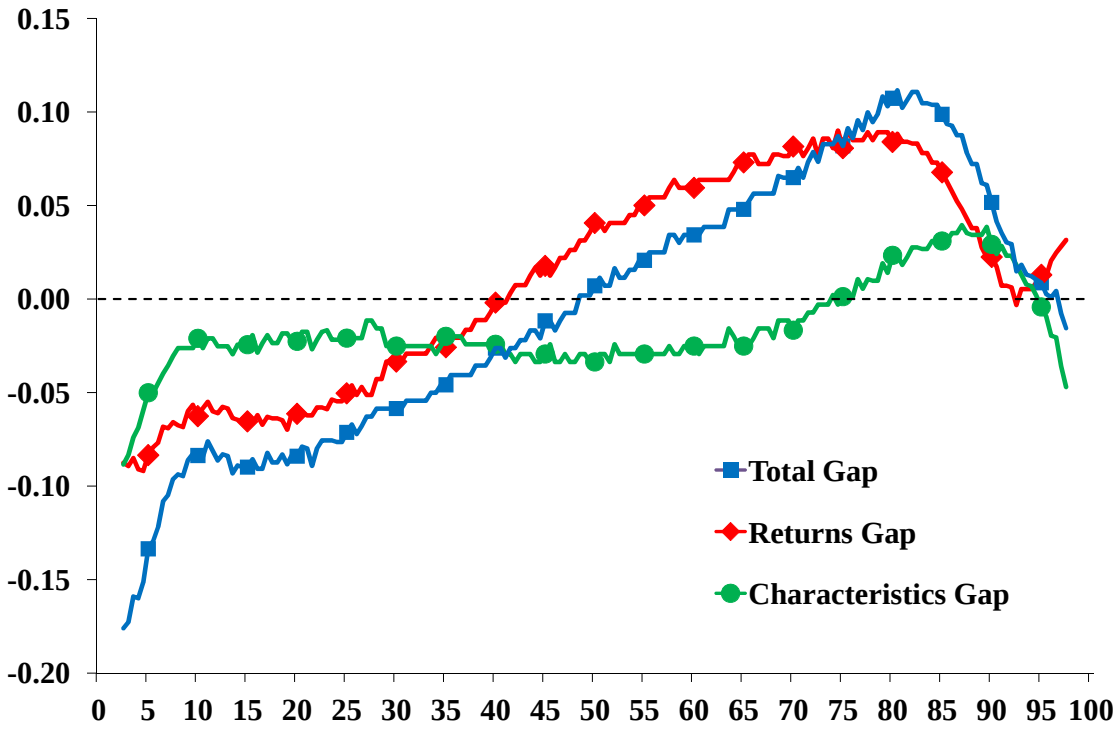


Figure: **2005**

- total racial gap is dominated by CG
- variation over the distribution is explained by variation in RG

1997-2005 Change in Gaps by Percentile



- total gap decreased at lower percentiles, increased at upper percentiles
- changes explained primarily by RG and by CG at upper percentiles

Results

Our results suggest that

1. the RG decreased up to the 40^{th} percentile
   $\Rightarrow$ integration occurred in poorer neighborhoods
2. CG decreased by a constant factor up to the 75^{th} percentile
   $\Rightarrow$ blacks and whites occupied more similar housing
3. for the most expensive housing whites increased the consumption of housing services relative to blacks
   $\Rightarrow$ white new housing relatively better than black new housing

$\Rightarrow$ is filtering taking place?

White to Black Ownership Frequencies

	White to Black Owned Houses		All Other Houses Sold	
Quintile	Count	Percentage	Count	Percentage
1	42	21	614	16
2	57	29	747	19
3	54	28	902	23
4	25	13	787	20
5	18	9	834	21

Regressions

Dependent variable: 2005 Deflated House Value - 1995 House Value

Variable	Parameter Estimate	Standard Error	t Value	Parameter Estimate	Standard Error	t Value
Intercept	77,539	6,126	12.66	77,861	6,119	12.72
Black to black ownership	-8,038	8,294	-0.97	-8,225	8,293	-0.99
White to white ownership	18,808	8,859	2.12	18,615	8,858	2.10
White to black ownership	-10,802	6,559	-1.65	-11,064	6,555	-1.69
In MSA, not CC, urban	5,305	3,379	1.57	5,278	3,379	1.56
In MSA, not CC, rural	-18,835	4,416	-4.27	-18,848	4,416	-4.27
Not in MSA, not CC, urban	-44,648	5,412	-8.25	-44,765	5,411	-8.27
Not in MSA, not CC, rural	-37,158	4,870	-7.63	-37,126	4,870	-7.62
Midwest	-56,590	3,998	-14.16	-56,521	3,997	-14.14
South	-37,487	3,956	-9.47	-37,466	3,956	-9.47
West	25,704	4,380	5.87	25,810	4,379	5.89
Purchased in 1999	8,468	5,868	1.44	8,448	5,869	1.44
Purchased in 2000	931	5,835	0.16	1,032	5,835	0.18
Purchased in 2001	974	5,798	0.17	1,020	5,798	0.18
Purchased in 2002	5,635	5,629	1.00	5,715	5,628	1.02
Purchased in 2003	12,274	5,478	2.24	12,405	5,477	2.27
Purchased in 2004	15,350	5,399	2.84	15,537	5,397	2.88
Purchased in 2005	14,313	6,466	2.21	14,396	6,466	2.23
2nd Quintile	-285	663	-0.43	-272	663	-0.41
3rd Quintile	-4,500	3,705	-1.21	-4,361	3,703	-1.18
4th Quintile	1,983	3,893	0.51	2,209	3,888	0.57
5th Quintile	32,732	3,995	8.19	33,277	3,963	8.40
Renovations in $1,000	281	0	1.09			
R-squared	0.21			R-squared	0.21	