

# Does Student Loan Debt Contribute to Racial Wealth Gaps? A Decomposition Analysis

2019 Federal Reserve Community Development Research Conference

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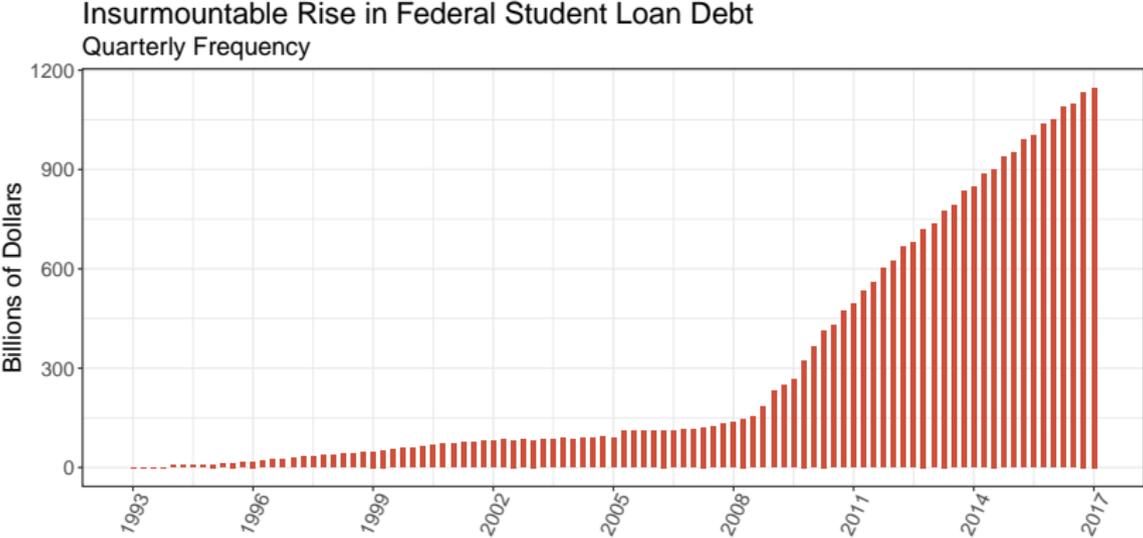
# The \$555,000 Student-Loan Burden

*The Wall Street Journal*, February 13, 2010

*“The entire balance of her federal loans will be paid off in 351 months. Dr. Bisutti will be 70 years old. The debt load keeps her up at night. Her damaged credit has prevented her from buying a home or a new car. She says she and her boyfriend of three years have put off marriage and having children because of the debt.”*

# Rise in Federal Student Debt

Average Annual growth rate 12% & over 100% increase since 2007

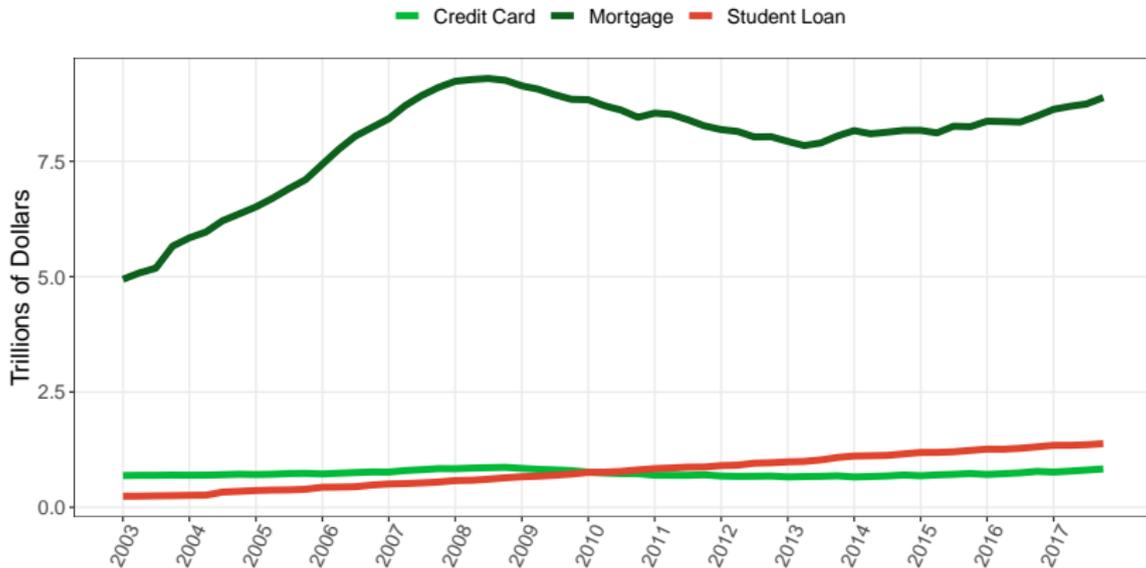


Source: Board of Governors of the Federal Reserve System

# Top 3 household debt categories

Student loan debt surpassed Credit card debt

Top Three Household Debt Categories  
Quarterly Frequency



Source: New York Fed Consumer Credit Panel/Equifax

## More facts on student debt

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## More facts on student debt

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- ▶ **How many?** **one-in-five households** in the U.S. now vs one-in-ten in 1989 (44 million borrowers), **Fry (2012)**
- ▶ **How much?** **\$1.46 trillion**, Consumer Credit Panel (CCP) **Federal Reserve Bank of New York's Research and Statistics Group (2019)**

# Objectives

**Is student debt jeopardizing short-term wealth for U.S. households?**

**Contribution:**

1. This relationship is examined in the **aftermath of the Great Recession**

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**Is student debt jeopardizing short-term wealth for U.S. households?**

**Contribution:**

1. This relationship is examined in the **aftermath of the Great Recession**
2. First paper to identify the contribution of student debt to **racial wealth gaps**

## Related Literature

Our study: closely related to **Elliott and Nam (2013b)**

- ▶ Determine whether student loan debt is associated with household net worth during the Great Recession (2007-09) using SCF data.
- ▶ **Main finding:** Presence of student debt is associated with net worth loss across the wealth distribution, adjusted for the level of household student debt.
- ▶ Disproportionate burden for poor households e.g. 285% net worth loss associated with student debt for households in 15th percentile.

# Data

Pooled cross-section from 2013 and 2016 Survey of Consumer Finances (SCF)

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- ▶ Representative of U.S. families in the survey year
- ▶ About 6,000 and 6,500 families interviewed in the two surveys

# Methodology

- ▶ **Inverse Hyperbolic Sine (IHS) of wealth**, Pence (2006)
- ▶ **Median Regression**
- ▶ **Decomposition Methods**, Oaxaca (1973) and Blinder (1973) for mean and Firpo et al. (2009) for quantiles

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  - ▶ Transformation allows estimation of a percentage change specification on data that include nonpositive values e.g. net worth
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- ▶ **Decomposition Methods**, Oaxaca (1973) and Blinder (1973) for mean and Firpo et al. (2009) for quantiles
  - ▶ Quantifying the contribution of explanatory factors in accounting for racial wealth gaps

# Model

$$\text{IHS}(\text{wealth}_{it}) = \beta_0 + \beta_1 \text{Student debt}_{it} + \beta_2 \mathbf{X}_{it} + \text{D16}_t + u_{it}$$

▶ **Student debt:**

- ▶ indicator for households with positive aggregate loan balances for education loans

▶ **X:**

- ▶ College degree
- ▶ Marital status
- ▶ Welfare use
- ▶ Health insurance
- ▶ Age
- ▶ Profession
- ▶ Race
- ▶ Real income

▶ **D16:** year dummy

# Is Student Debt Associated with Net Worth in the Aftermath of the Great Recession?

# Summary Statistics

Table: Summary Statistics by Year.

Characteristics	2013		2016	
	No. or mean	% or median	No. or mean	% or median
Student loan use	28,799,044.00	23.50%	32,238,597	25.59%
Amount of loans for education	\$28,382.96	\$15,454.61	\$32,797.35	\$17,000.00
Net worth	\$551,107.80	\$89,945.81	\$697,901.40	\$104,470.00
Income	\$89,220.61	\$48,082.83	\$102,252.00	\$52,657.09
Observations	122,530,070		125,981,701	

Note: Weighted data from the SCF survey are used. Amount of loans for education are only for those with student loans.

## Key Takeaways

- ▶ Share of households with student debt rose from 24% to 26%
- ▶ Median student debt amount rose from \$15,455 to \$17,000 (for those with holdings)
- ▶ Median adjusted net worth rose from \$89,946 to \$104,470
- ▶ Median income rose from \$48,083 to \$52,657

[More Summary Stats](#)

# Summary Statistics

Table: Summary Statistics for 2016.

Characteristics	2016			
	Student loans		No student loans	
	No. or mean	% or median	No. or mean	% or median
Net worth	\$209,232.20	\$49,120.00	\$865,956.50	\$140,210.00
Four-year college graduate	13,103,392	40.65%	29,767,294	31.75%
Age	40.94	39	55.37	56
Income	\$79,325.45	\$57,720.28	\$110,136.50	\$50,631.82
Race				
White	20,643,609	64.03%	65,067,909	69.41%
Black	6,719,656	20.84%	13,254,076	14.14%
Hispanic	3,269,043	10.14%	11,013,126	11.75%
Other	1,606,289	4.98%	4,407,992	4.70%
Observations	32,238,597		93,743,104	

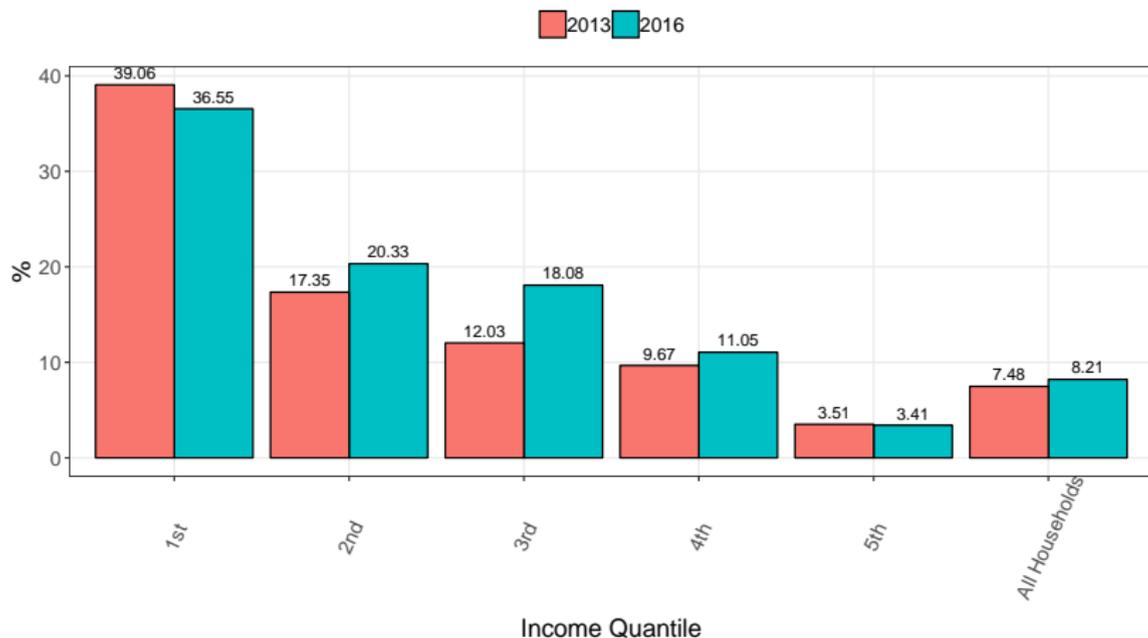
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## Key Takeaways for households with student debt vs. those without

- ▶ Lower adjusted net worth
- ▶ Are younger
- ▶ Have higher median income, but lower average income
- ▶ Statistics are similar to 2013

# Summary Statistics: Student Debt as Share of Income

## Student Loan Debt as a Share of Income by Household Income Groups



Source: Survey of Consumer Finances (weighted)

# Regression Results

Table: Median Regression Results

	15th Percentile \$4,332	30th Percentile \$20,297	50th Percentile \$89,946
<b>Student loan use</b>	<b>-3,299.06***</b> (266.98)	<b>-9,442.76***</b> (736.53)	<b>-31,865.69***</b> (2,981.48)
Four-year college graduate	5,490.54*** (328.82)	18,157.66*** (740.54)	66,418.45*** (2,836.17)
Race ( <i>Base: White</i> )			
Black	-3,312.51*** (336.54)	-15,294.81*** (1,303.93)	-59,810.97*** (3,622.94)
Hispanic	-5,666.05*** (382.32)	-18,231.14*** (1,561.16)	-59,694.80*** (4,972.15)
Other	-1,816.34*** (494.40)	-3,373.49* (1,958.50)	-582.58 (5,361.83)

Note: We also control for income, age, occupational prestige, marriage status, welfare use, if respondent has health insurance, and year. Standard errors are bootstrapped with 999 replications and are adjusted for imputation uncertainty. The coefficients are marginal effects evaluated at quantiles for net worth in 2013. Standard errors are in parentheses. Significance levels are denoted by: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

- ▶ Student debt is associated with a 80%, 49%, 37% wealth loss compared with similar households with no student debt.

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- ▶ These losses were 285%, 56%, 54% during the Great Recession.
- ▶ Wealth losses significant and disproportionate for Black and Hispanic hh relative to Whites.
- ▶ Encouraging result within group: for Hispanic households, student loan use associated with positive net worth at the bottom of the wealth distribution to the median; for Blacks at the 30th percentile

# Does Student Debt Help to Explain to Racial Wealth Gaps?

# Oaxaca-Blinder Decomposition Results

Table: Decomposition of Mean Wealth Differentials

Reference group: White coef.	Black/White		Hispanic/White	
		Share		Share
Unadjusted mean wealth gap	4,252.27***		4,163.31***	
$E[IHS_W] - E[IHS_R]^a$	(148.16)		(178.29)	
Total explained	2,839.98***	67%	2,827.87***	68%
	(114.69)		(117.50)	
Total unexplained	1,412.29***	33%	1,335.45***	32%
	(131.28)		(162.67)	
<i>Explained: Composition Effects Attributable to</i>				
<b>Student loan use</b>	150.51***	<b>5%</b>	-27.16	-1%
	(22.71)		(16.95)	
	⋮			

Note: Estimates are survey weighted. Significance levels are denoted by: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

<sup>a</sup>The variable  $W$  denotes white and  $R$  denotes the comparison group.

- ▶ OB decomposition: 67-68% of the mean Black-White and Hispanic-White wealth gap is accounted for by the variables in our model.
- ▶ Differences in student loan use account for 5% of the mean wealth gap between Black and White households.
- ▶ Differences in income plays a significant role (51% BW and 43% HW)

# RIF Regression Method Decomposition Results

**Table:** Decomposition of Wealth Differentials: Black vs. White

Percentile	15th		30th		50th	
Reference group: White coef.	Share		Share		Share	
Mean RIF gap	4,651***		5,282***		4,845***	
$E[\text{RIF}_\tau(\text{IHS}_W)] - E[\text{RIF}_\tau(\text{IHS}_R)]^b$	(170.2)		(188.6)		(239.0)	
Total explained	5,384***	116%	5,058***	96%	3,561***	74%
	(334.1)		(284.5)		(163.9)	
Total unexplained	-733.8**	-16%	223.4	4%	1,283***	26%
	(363.4)		(301.1)		(225.5)	
<i>Explained: Composition Effects Attributable to</i>						
<b>Student loan use</b>	187.0***	<b>3%</b>	207.1***	<b>4%</b>	233.9***	<b>7%</b>
	(52.73)		(44.99)		(34.40)	
	⋮					

Note: Estimates are survey weighted. Bootstrapped standard errors (500 replications) are in parenthesis.

Significance levels are denoted by: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

<sup>b</sup>The variable  $W$  denotes white,  $R$  denotes the comparison group, and  $\tau$  denotes the percentile.

- ▶ Contribution of student loan use to the Black-White wealth gaps varies considerably across the distribution
- ▶ Effects more pronounced for households at the median of the wealth distribution.

# RIF Regression Method Decomposition Results

**Table:** Decomposition of Wealth Differentials: Hispanic vs. White

Percentile Reference group: White coef.	15th		30th		50th	
		Share		Share		Share
Mean RIF gap	4,490***		4,902***		4,900***	
$E[\text{RIF}_\tau(\text{IHS}_W)] - E[\text{RIF}_\tau(\text{IHS}_R)]^b$	(243.6)		(268.0)		(280.1)	
Total explained	4,410***	98%	4,947***	101%	3,769***	77%
	(316.8)		(262.4)		(171.9)	
Total unexplained	79.31	2%	-44.84	-1%	1,131***	23%
	(350.2)		(342.1)		(290.8)	
<i>Explained: Composition Effects Attributable to</i>						
<b>Student loan use</b>	-32.76	-1%	-35.91	-1%	-40.89	-1%
	(22.66)		(23.61)		(25.96)	
	:					

Note: Estimates are survey weighted. Bootstrapped standard errors (500 replications) are in parenthesis. Significance levels are denoted by: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

<sup>b</sup>The variable  $W$  denotes white,  $R$  denotes the comparison group, and  $\tau$  denotes the percentile.

- ▶ Student loan use does not contribute to explaining the Hispanic-White wealth gap across the wealth distribution.

Full Results (15<sup>th</sup>-50<sup>th</sup>)

Full Results (50<sup>th</sup>-85<sup>th</sup>)

# Conclusion

This research underscores the growing importance of student loan debt in contributing to wealth disparities across racial groups and across the wealth distribution.

## **Presence of student loan debt**

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This research underscores the growing importance of student loan debt in contributing to wealth disparities across racial groups and across the wealth distribution.

## **Presence of student loan debt**

- ▶ Is associated with *lower net worth* across the wealth distribution
- ▶ Is associated with *disproportionate* decrease in wealth for poor households
- ▶ Contributes to explaining a portion of *Black-White wealth gap* but not Hispanic-White wealth gap in period after the Great Recession.

# Limitations

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- ▶ Since the **data are not panel**, we could not examine whether the same indebted households actually improved their financial situation between 2013 and 2016.

## Policy implications

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- ▶ Need for policymakers to determine if there is a **systemic bias** in the provision of financial literacy education.
- ▶ **Transparency and full disclosure** about the type of student loans (federal vs. private), various ways of repayment, grant, merit aid, and financial aid programs, and assistance with complaints related to student loans.

“We may come from different places and have different stories, but share common hopes, and one very American dream.”

- *Former President Barack Obama, April 14, 2008*

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- ▶ **Manuscript:** <http://dx.doi.org/10.2139/ssrn.3094076>

**Thank You!**

# Appendix

# Summary Statistics

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Four-year college graduate	47,518,268	38.78%	42,870,686	34.03%
Age	51.16	51	51.68	52
Income	\$89,220.61	\$48,082.83	\$102,252.00	\$52,657.09
Profession				
Managerial or Professional	35,024,305	28.58%	35,732,728	28.36%
Technical services	24,869,145	20.30%	27,057,850	21.48%
Other	21,711,964	17.72%	21,472,627	17.04%
Not Working	40,924,657	33.40%	41,718,495	33.11%
Married	70,027,299	57.15%	71,452,898	58.39%
Use of welfare	17,081,664	13.94%	18,077,117	14.35%
Race				
White	85,882,792	70.09%	85,711,518	68.03%
Black	17,904,989	14.61%	19,973,733	15.85%
Hispanic	13,041,734	10.64%	14,282,169	11.34%
Other	5,700,555	4.65%	6,014,281	4.77%
Has health insurance	96,491,519	78.75%	109,675,006	87.06%
Observations	122,530,070		125,981,701	

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Profession				
Managerial or Professional	12,347,079	38.30%	23,385,648	24.95%
Technical services	9,340,364	28.97%	17,717,486	18.90%
Other	5,454,567	16.92%	16,018,060	17.09%
Not Working	5,096,586	15.81%	36,621,909	39.07%
Married	19,271,005	59.78%	52,181,893	55.66%
Use of welfare	5,116,492	15.87%	12,960,625	13.83%
Race				
White	20,643,609	64.03%	65,067,909	69.41%
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Hispanic	3,269,043	10.14%	11,013,126	11.75%
Other	1,606,289	4.98%	4,407,992	4.70%
Has health insurance	27,885,492	86.50%	81,789,514	87.25%
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# Regression Results with Interactions

Table: Median Regression Results with Interactions

	15th Percentile \$4,332	30th Percentile \$20,297	50th Percentile \$89,946
Student loan use	-4,283.43*** (331.95)	-14,269.55*** (894.29)	-45,106.27*** (3,721.03)
Four-year college graduate	5,401.86*** (314.23)	18,338.93*** (713.49)	67,312.70*** (2,719.57)
Race ( <i>Base: White</i> )			
Black	-4,380.85*** (418.31)	-20,418.27*** (1,441.34)	-75,372.08*** (4,497.73)
Hispanic	-6,424.13*** (487.38)	-23,042.31*** (1,573.65)	-74,051.42*** (6,364.49)
Other	-2,006.52*** (511.50)	-4,659.10** (2,273.07)	-3,191.39 (5,812.26)
Interaction terms ( <i>Base: White</i> × <i>Student loan use</i> )			
Black × Student loan use	3,859.61*** (574.47)	15,272.82*** (1,699.64)	40,253.51*** (6,108.88)
Hispanic × Student loan use	4,587.57*** (1,738.32)	21,677.13*** (2,726.55)	58,307.52*** (11,012.84)
Other × Student loan use	720.35 (1,861.78)	5,103.02 (4,260.61)	13,838.62 (16,207.87)

Note: We also control for income, age, occupational prestige, marriage status, welfare use, if respondent has health insurance, and year. Standard errors are bootstrapped with 999 replications and are adjusted for imputation uncertainty. The coefficients are marginal effects evaluated at quantiles for net worth in 2013. Standard errors are in parentheses. Population size in 2013 and 2016 are 122,530,070 and 125,981,701, respectively. Significance levels are denoted by: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

# Oaxaca-Blinder Decomposition Results

Table: Decomposition of Mean Wealth Differentials

Reference group: White coef.	Black/White		Hispanic/White	
		Share		Share
Unadjusted mean wealth gap	4,252.27***		4,163.31***	
$E[IHS_W] - E[IHS_R]^a$	(148.16)		(178.29)	
Total explained	2,839.98***	67%	2,827.87***	68%
	(114.69)		(117.50)	
Total unexplained	1,412.29***	33%	1,335.45***	32%
	(131.28)		(162.67)	
<i>Explained: Composition Effects Attributable to</i>				
<b>Student loan use</b>	150.51***	<b>5%</b>	-27.16	-1%
	(22.71)		(16.95)	
Income	1,445.45***	51%	1,208.65***	43%
	(74.76)		(75.39)	
Four-year college graduate	188.30***	7%	270.54***	10%
	(23.83)		(30.65)	
Age	352.62***	12%	736.00***	26%
	(47.48)		(58.14)	
Occupational prestige	32.69**	1%	135.80***	5%
	(13.51)		(30.34)	
Married	127.44***	4%	-4.22	0%
	(27.40)		(8.69)	
Use of welfare	461.84***	16%	269.67***	10%
	(49.41)		(37.88)	
Has health insurance	81.12***	3%	238.58***	8%
	(18.34)		(45.20)	

Note: Income denotes the logarithm of income and age is collapsed into 5 groups to avoid omitted group bias.

# RIF Regression Method Decomposition Results

Table: Decomposition of Wealth Differentials: Black vs. White

Percentile Reference group: White coef.	15th		30th		50th	
		Share		Share		Share
Mean RIF gap	4,651***		5,282***		4,845***	
$E[\text{RIF}_\tau(\text{IHS}_W)] - E[\text{RIF}_\tau(\text{IHS}_R)]^b$	(170.2)		(188.6)		(239.0)	
Total explained	5,384***	116%	5,058***	96%	3,561***	74%
	(334.1)		(284.5)		(163.9)	
Total unexplained	-733.8**	-16%	223.4	4%	1,283***	26%
	(363.4)		(301.1)		(225.5)	
<i>Explained: Composition Effects Attributable to</i>						
<b>Student loan use</b>	187.0***	<b>3%</b>	207.1***	<b>4%</b>	233.9***	<b>7%</b>
	(52.73)		(44.99)		(34.40)	
Income	1,466***	27%	1,777***	35%	1,590***	45%
	(139.2)		(129.6)		(95.47)	
Four-year college graduate	236.7***	4%	287.8***	6%	298.3***	8%
	(54.32)		(49.80)		(38.67)	
Age	477.3***	9%	680.2***	13%	533.2***	15%
	(85.17)		(105.9)		(73.09)	
Occupational prestige	89.37**	2%	102.1***	2%	26.11	1%
	(38.01)		(32.70)		(22.69)	
Married	611.6***	11%	444.4***	9%	261.1***	7%
	(95.19)		(71.53)		(49.63)	
Use of welfare	2,064***	38%	1,322***	26%	485.6***	14%
	(231.4)		(146.6)		(64.64)	
Has health insurance	251.9***	5%	237.2***	5%	132.9***	4%
	(61.75)		(49.86)		(28.22)	

Note: Income denotes the logarithm of income and age is collapsed into 5 groups to avoid omitted group bias.

# RIF Regression Method Decomposition Results

Table: Decomposition of Wealth Differentials: Black vs. White

Percentile Reference group: White coef.	50th		70th		85th	
		Share		Share		Share
Mean RIF gap	4,845***		3,982***		3,931***	
$E[\text{RIF}_\tau(\text{IHS}_W)] - E[\text{RIF}_\tau(\text{IHS}_R)]^b$	(239.0)		(186.20)		(172.54)	
Total explained	3,561***	74%	2,639***	66%	2,044***	52%
	(163.9)		(120.56)		(100.65)	
Total unexplained	1,283***	26%	1,342***	34%	1,887***	48%
	(225.5)		(177.08)		(160.65)	
<i>Explained: Composition Effects Attributable to</i>						
<b>Student loan use</b>	233.9***	<b>7%</b>	168.63***	<b>6%</b>	135.10***	<b>7%</b>
	(34.40)		(26.69)		(22.43)	
Income	1,590***	45%	1,664***	63%	1,831***	90%
	(95.47)		(102.00)		(109.81)	
Four-year college graduate	298.3***	8%	317.46***	12%	231.75***	11%
	(38.67)		(36.35)		(29.35)	
Age	533.2***	15%	369.57***	14%	294.89***	14%
	(73.09)		(52.52)		(39.95)	
Occupational prestige	26.11	1%	13.26	1%	0.35	0%
	(22.69)		(20.27)		(18.89)	
Married	261.1***	7%	56.16	2%	-93.96***	-5%
	(49.63)		(38.80)		(32.82)	
Use of welfare	485.6***	14%	6.69	0%	-319.78***	-16%
	(64.64)		(33.75)		(37.50)	
Has health insurance	132.9***	4%	42.95***	2%	-34.92***	-2%
	(28.22)		(14.21)		(11.56)	

Note: Income denotes the logarithm of income and age is collapsed into 5 groups to avoid omitted group bias.

# RIF Regression Method Decomposition Results

**Table:** Decomposition of Wealth Differentials: Hispanic vs. White

Percentile Reference group: White coef.	15th		30th		50th	
		Share		Share		Share
Mean RIF gap	4,490***		4,902***		4,900***	
$E[\text{RIF}_\tau(\text{IHS}_W)] - E[\text{RIF}_\tau(\text{IHS}_R)]^b$	(243.6)		(268.0)		(280.1)	
Total explained	4,410***	98%	4,947***	101%	3,769***	77%
	(316.8)		(262.4)		(171.9)	
Total unexplained	79.31	2%	-44.84	-1%	1,131***	23%
	(350.2)		(342.1)		(290.8)	
<i>Explained: Composition Effects Attributable to</i>						
<b>Student loan use</b>	-32.76	-1%	-35.91	-1%	-40.89	-1%
	(22.66)		(23.61)		(25.96)	
Income	1,226***	28%	1,486***	30%	1,329***	35%
	(128.9)		(119.4)		(93.45)	
Four-year college graduate	341.3***	8%	415.6***	8%	430.5***	11%
	(75.31)		(70.11)		(51.06)	
Age	980.2***	22%	1,443***	29%	1,145***	30%
	(128.0)		(136.5)		(99.62)	
Occupational prestige	-27.86	-1%	186.2**	4%	241.2***	6%
	(94.96)		(79.62)		(48.87)	
Married	-20.60	0%	-15.19	0%	-9.18	0%
	(43.90)		(31.64)		(18.75)	
Use of welfare	1,205***	27%	771.4***	16%	283.4***	8%
	(168.8)		(106.0)		(45.26)	
Has health insurance	739.4***	17%	696.2***	14%	390.0***	10%
	(153.2)		(116.2)		(66.88)	

Note: Income denotes the logarithm of income and age is collapsed into 5 groups to avoid omitted group bias

# RIF Regression Method Decomposition Results

**Table:** Decomposition of Wealth Differentials: Hispanic vs. White

Percentile Reference group: White coef.	50th		70th		85th	
		Share		Share		Share
Mean RIF gap	4,900***		3,693***		3,739***	
$E[\text{RIF}_\tau(\text{IHS}_W)] - E[\text{RIF}_\tau(\text{IHS}_R)]^b$	(280.1)		(231.4)		(193.1)	
Total explained	3,769***	77%	2,973***	81%	2,342***	63%
	(171.9)		(124.09)		(111.65)	
Total unexplained	1,131***	23%	719.66***	19%	1,397***	37%
	(290.8)		(218.4)		(199.1)	
<i>Explained: Composition Effects Attributable to</i>						
<b>Student loan use</b>	-40.89	-1%	-29.99	-1%	-24.08	-1%
	(25.96)		(18.67)		(15.11)	
Income	1,329***	35%	1,397***	47%	1,536***	66%
	(93.45)		(98.77)		(111.71)	
Four-year college graduate	430.5***	11%	459.85***	15%	335.73***	14%
	(51.06)		(48.56)		(39.65)	
Age	1,145***	30%	791.62***	27%	601.56***	26%
	(99.62)		(65.65)		(51.23)	
Occupational prestige	241.2***	6%	225.42***	8%	179.16***	8%
	(48.87)		(38.47)		(34.64)	
Married	-9.18	0%	-2.21	0%	3.15	0%
	(18.75)		(4.79)		(6.86)	
Use of welfare	283.4***	8%	3.98	0%	-186.29***	-8%
	(45.26)		(19.98)		(26.42)	
Has health insurance	390.0***	10%	127.90***	4%	-103.97***	-4%
	(66.88)		(39.25)		(32.33)	

Note: Income denotes the logarithm of income and age is collapsed into 5 groups to avoid omitted group bias

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