

# The Inequality Lab.

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The Demography of Rising Wealth Inequality.

# THE DEMOGRAPHY OF RISING WEALTH INEQUALITY

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## *Abstract*

*The growth of inequality in household wealth over recent decades is well documented. We determine the independent contribution of several demographic trends to rising U.S. wealth inequality over the last three decades. Using data from the Survey of Consumer Finances from 1989 through 2016 and novel decomposition techniques, we show that rapid growth in wealth inequality and increasing wealth concentration at the top coincided with important changes in the demographic composition of the country but that the two are not directly related. However, the shifts in the wealth distribution among demographic groups, in particular the move of households with less education and non-elderly households away from the middle of the distribution, explain much of the observed overall growth in inequality. Part, but not all, of these demographic contributions to rising wealth inequality operate through their contributions to rising income inequality.*

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## INTRODUCTION

Economic inequality has been on the rise for several decades. In particular, inequality in family wealth – understood as the total sum of assets minus debts (net worth) – is higher today than it has been in nearly a century (Saez and Zucman 2016). In this contribution, we seek to uncover the demographic sources of the growing wealth inequality between U.S. households. A robust literature has reliably established that many demographic factors, including household structure, age, race, and education, are strongly associated with families' wealth (Keister 2000; Killewald, Pfeffer, and Schachner 2017). As the demographic makeup of the U.S. has changed substantially in recent decades, shifts in demography may also account for at least some of the rise in wealth inequality. Demographic research has begun to formally determine the role of demographic components to rising wealth disparities between select demographic groups (e.g. Gibson-Davis and Percheski 2018). We provide a comprehensive assessment of the independent contribution of a broad set of demographic forces to rising wealth inequality between all households.

Prior work has successfully uncovered the demographic forces behind growing *income* inequality (Western, Bloome, and Percheski 2008). However, despite its correlation with family income, family wealth represents a separate dimension of economic advantage (Keister and Moller 2000; Killewald et al. 2017), is marked by its own pattern of and trend in inequality (Pfeffer, Danziger, and Schoeni 2013; Wolff 2016), and its growing inequality may therefore also be ruled by different demographic forces. We first consider both the direct and income-mediated contribution of demographic change itself, that is, the contribution of educational expansion, changing age and fertility patterns as reflected in changing household structures, trends in partnership, and change in racial and ethnic composition to rising wealth inequality. We also consider the extent to which shifts in the wealth distribution among those demographic

groups directly contribute to rising wealth inequality and indirectly through their influence on income.

In the next section, we provide a brief overview of prior contributions that have sought to uncover the demographic factors driving trends in inequality. We then describe a recently developed methodological approach that enables the decomposition of measures that effectively capture wealth inequality, namely the gini coefficient and percentile shares, and apply it to data from the Survey of Consumer Finances (SCF). We next describe trends in both the wealth structure and the demographic structure of the U.S. over the last three decades, focusing on the earliest available survey year, 1989, the survey year immediately preceding the Great Recession, 2007, and the most current available survey year, 2016. Given the remarkable shift in the wealth structure that occurred during the Great Recession, we also begin our decomposition analyses restricted to pre-recession years, i.e. changes occurring between 1989 and 2007, before considering the full time period of change between 1989 and 2016.

## **BACKGROUND**

Although, compared to the literature on income inequality, quantitative research on wealth has a relatively short history, consensus about some of the main demographic correlates of family wealth has emerged (see Killewald et al. 2017). For instance, we know that households' net worth is strongly associated with their members' age, education, household structure, partnership status, race, and, of course, income. In this contribution we seek to estimate the joint and independent contribution of all of these demographic characteristics to trends in wealth inequality. More precisely, our question is whether the changing distribution of demographic groups and changes in the wealth distribution within demographic groups can account for the observed growth in wealth inequality. We should acknowledge that our analysis does not

assume, nor expect, that demographic trends are the only determinants of changes to the wealth structure nor, as we will discuss again in the conclusion, do they provide a final, sufficiently deep explanation of *why* wealth inequality has grown. In fact, a number of prior contributions convincingly demonstrate how other, mostly macro-economic, forces have promoted the growth of wealth inequality, such as fluctuations in stock and housing markets (Keister 2000), the rate of return on capital outpacing the growth rate (Piketty 2014), capital appreciation and leverage (Wolff 2017), as well as government policies such as the taxation of wealth and bequests (Keister 2000; Piketty 2014; Wolff 2017).

In focusing on the demographic contributions to rising wealth inequality, we consider both changes in the distribution and wealth position of demographic groups defined by education, household structure, partnering, and race. Ample prior research has documented the correlation of each of these demographic characteristics with household wealth (Emmons, Hernandez Kent, and Ricketts 2018; 2018a, 2018b; Keister 2000; Killewald et al. 2017; Wolff 2017). Recent contributions include Gibson-Davis and Percheski's (2018) finding of a pronounced increase in the wealth gap between elderly households and households with children as the former's wealth has grown and many of the latter suffered significant wealth losses. Maroto (forthcoming) also documents the particular wealth disadvantage of households with children. Single households have also been shown to be disadvantaged in their wealth accumulation compared to their married counterparts (Lersch 2017; Maroto and Aylsworth 2017).

In this paper, we provide a joint assessment of the relative contribution of a broad set of demographic characteristics to the growth in overall wealth inequality and concentration. A few prior contributions have also estimated the relative contribution of a comprehensive set of demographic characteristics to rising inequality. Western et al. (2008) have done so to trace the

demographic sources of growing *income* inequality. Focusing on households with children, whose income inequality has risen particularly strongly, they show that increasing income returns to education as well as an increasing income penalty to single motherhood have contributed to the rising income inequality but that other distributional shifts, such as increased educational participation, have cushioned these trends. For the purpose of our study, their evidence also suggests that the link between demographic trends and income is important to consider as it may mediate or explain the association between demographic change and wealth. A recent contribution engages in the same type of analysis for *net worth* inequality in Canada, finding a compensating role of family formation and educational expansion in preventing the growth of Canadian wealth inequality (Davies, Fortin, and Lemieux 2017). Importantly, Davies et al. (2017) also develop the methodological tools for a formal decomposition of wealth inequality trends, which we draw on here (see also Firpo, Fortin, and Lemieux 2018).

## **DATA AND MEASURES**

We use the Survey of Consumer Finances (SCF), which has collected detailed data on household wealth, income, and demographics every three years between 1989 and 2016. We focus on changes that occurred through the run-up to the Great Recession, measured in 2007, as well as the most recent available, post-recession wave of 2016. Our main measure of wealth is households' total net worth, i.e., the sum of all financial assets (e.g. savings, stocks, etc.) and real assets (e.g., home, real estate, vehicles, etc.) minus all financial obligations (e.g., mortgages, credit card debt, student loans, etc.). All reported dollar values are inflation adjusted to 2016. The SCF is generally acknowledged as the current gold standard for the measurement of the wealth of U.S. households, partly thanks to its oversample of very wealthy individuals that provides better coverage of the top of the wealth distribution.

We also draw on SCF information on the households' total family income as well as a range of demographic characteristics. We consider the *highest educational degree* attained by either the household head or spouse/partner, measured as less than high school, high school, some college, or BA degree or more. To capture difference in *household structure*, following Gibson-Davis and Percheski (2018), we distinguish households with children, middle-aged household without children (based on the highest age of either household head or spouse/partner below 65), and elderly households (household head or spouse/partner 65 or older). *Partnership type* describes whether the household head is single, cohabitating, or married. We measure *race* based on whether the household head is non-Hispanic white, non-Hispanic Black, Hispanic, or other. Finally, we capture household income in five categories (inflation adjusted to 2016), from less than \$25k, \$25-<\$50k, 50k-<\$100k, 100k-<\$200k, and \$200k or more, which – depending on the survey year – corresponds roughly to the bottom quarter of the income distribution, the next quarter, the next third, the next 15%, and the top 4-8%, respectively.

Our analyses draw on SCF's analytical weights to attain population-representativeness, in particular to account for the oversample of high wealth households (Kennickell and Woodburn 1999). We use the multiply imputed datasets provided by the SCF, analyzing all of the five provided imputation versions for our descriptive analyses.

## **APPROACH AND METHOD**

To analyze trends in wealth inequality, we draw on two widely used measures of inequality, the *gini* coefficient and wealth shares (*p-shares*), specifically the share of total wealth held by the bottom half of the wealth distribution, those in the next 40 percent (51<sup>st</sup>-90<sup>th</sup> percentile), the next 5 percent (91<sup>st</sup>-95<sup>th</sup> percentile), and the top five percent (above the 95<sup>th</sup> percentile). In conjunction, these measures allow for a description of both the overall level of wealth inequality

(*gini*) and more detailed attention to shifts in different parts of the wealth distribution (*p-shares*). Other inequality measures – such as the variance or coefficient of variation – which provide an effective way to summarize trends in income inequality (Western et al. 2008) are less fitting for the purpose of this study due to the severe skew of the wealth distribution. It is also worth noting that both the gini coefficient and the p-shares cover the full distribution of net worth, including the substantial fraction of households with zero or negative net worth (12% in 2016).

After separately describing both changes in overall wealth inequality and changes in demographic characteristics across three decades (1989-2016), we formally estimate how changes in wealth inequality are related to two aspects of changes in the demography of wealth: First, we consider the relative contribution of *demographic change* itself to rising wealth inequality. That is, we estimate the extent to which changes in the demographic composition of the population – in terms of education (educational expansion), household types and age (population ageing), partnering, and race – have contributed to growing wealth inequality independent of changes in the wealth distribution within demographic groups. Second, we also consider the changing importance of membership in a given demographic group in terms of contributing to overall wealth inequality. That is, we investigate the extent to which shifts in the wealth distribution within a given group – e.g., distributional shifts in wealth within groups of different educational status – relate to overall wealth inequality trends, independent of changes in the relative size of the groups. Based on recent methodological work that enables the application of classical decomposition techniques to measures such as the gini coefficient and wealth shares (Davies et al. 2017; Firpo, Fortin, and Lemieux 2009; Firpo et al. 2018; Monti 1991), we are able to engage in a formal decomposition exercise that estimates the independent contribution of these co-occurring demographic trends. We describe the technical details of our decomposition approach in detail below, but here we emphasize that its mechanics and limitations are the same



as those of standard Oaxaca-Blinder decomposition techniques. The important distinction is that our outcomes of interest are measures of inequality, not central tendency. That is, we do not estimate whether changes in the demographic composition vs. changes in average wealth between demographic groups (“wealth returns”) explain rising or falling wealth *levels*. Instead, we ask to what extent wealth inequality has changed due to (i) changes in the demographic distribution of the population per se versus (ii) changes in the wealth distribution within given demographic groups. We label (i) the effect of demographic change the *demographic composition effect* and (ii) the effect of within-category distributional shifts the *wealth structure effect* from here forward. We also note that within-category distributional change (the wealth structure effect) can take many forms, including changes in inequality and/or central tendency. Following and based on the results of the decomposition analyses, we therefore also return to another detailed assessment of distributional changes within those demographic categories identified as central contributors to the observed trends in wealth inequality.

Using the notation of Davies et. al. (2017), an influence function for a distributional statistic  $v$ , analyzed at  $Y = y$ , can be written as  $IF(y; v)$ . For any distribution  $F_Y$  of a variable  $Y$ ,  $IF(y; v)$  measures how the distributional statistic  $v$  changes when a small mass point at  $Y = y$  is added to the existing distribution. Any distribution statistic,  $v$ , can be analyzed in this way, including the mean, Gini index, and the share of total wealth for different percentile groupings (i.e., Lorenz curve coordinates).

The  $IF(y; v)$  is a first-order approximation of a directional derivative. For example, we expect the influence function for the Gini index of wealth to be positive when evaluated at values near the top or bottom of the wealth distribution. The closer to the minimum or maximum value of wealth, the higher the magnitude of the IF. That is, an increase in the number of people at the poles of the wealth distribution will increase inequality as measured by the Gini. In contrast, the

IF evaluated at any point in the middle of the wealth distribution is likely to be negative, indicating that an increase in the proportion of observations in the middle will decrease the overall Gini Index.

Following previous research (Davies et al. 2017), we estimate a normalization of the IF, called a re-centered influence function (RIF), which is defined as  $IF(y; v) + v$ . Similar to the IF, the  $RIF(y; v)$  is defined for a distributional statistic  $v$  at point  $Y = y$  of the distribution  $F_Y$ ; however, the RIF represents the counterfactual value of statistic  $v$  when a mass point is added to  $F_Y$  at  $Y = y$ . Davies et. al. (2017) derive the formula for the RIF of the Gini index and p-shares. These are easily estimated using standard statistical software and we do so using Stata 14.

A useful property of the RIF is that  $\mathbb{E}[RIF(y; v)] = v$ . One can regress the RIF on demographic covariates to generate fitted values where the average over all the fitted values is equal to  $\mathbb{E}[RIF(y; v)] = v$ . More formally, we estimate  $\mathbb{E}\{RIF(y; v)|\mathbf{X}\}$  where  $\mathbf{X}$  is a matrix of demographic dummy variables. For instance, suppose we are interested in studying how an inequality statistic changes between two time periods,  $t=0,1$ . We can estimate

$$\mathbb{E}\{RIF_1(y; v)|\mathbf{X}_1\} - \mathbb{E}\{RIF_0(y; v)|\mathbf{X}_0\} = \Delta v \quad (1)$$

Using the standard Oaxaca Blinder decomposition approach, the change in the inequality statistic can be decomposed into the changes due to shifts in the composition of the independent variables (“explained changes”) and shifts in the wealth distribution within categories of the independent variable (“unexplained changes”).<sup>2</sup> With  $j$  control variables, we can rewrite the equation 1 as:

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<sup>2</sup> We remind the reader that our analysis is descriptive. A number of unobserved factors may underlie shifts in the wealth distribution within categories; though, we also point out that for these unobserved factors to bias our interpretation, their association with observed demographic characteristics and wealth outcomes also needs to *change* over time.

$$\Delta v = \underbrace{\sum_{j=1}^J \beta_{j,1} * (\bar{X}_{j,1} - \bar{X}_{j,0})}_a + \underbrace{(\beta_{0,1} - \beta_{0,0})}_b + \underbrace{\sum_{j=1}^J (\beta_{j,1} - \beta_{j,0}) * \bar{X}_{j,0}}_c \quad (2)$$

where  $\beta_{j,t}$  is the estimated coefficient on control variable  $j$  at time  $t$  from the RIF regression, and  $\bar{X}_{j,t}$  is the sample mean of control variable  $j$  at time  $t$ . The first term of the decomposition (a) is the demographic composition effect as it estimates how the change in population proportions impacts  $\Delta v$ . The second and third term of the decomposition (b and c) are the wealth structure effects since they estimate how the changing wealth distribution within demographic groups impacts  $\Delta v$ .

One important point to note about Oaxaca-Blinder decompositions when using dummy variable covariates is that the choice of omitted category can impact the estimated breakdown between demographic composition effects and the wealth structure effects (see e.g., Fortin, Lemieux, and Firpo 2011). In the context of our analyses, the contribution of within-category distributional shifts to rising wealth inequality, i.e. the wealth structure effects, is thus estimated as the influence of distributional shifts within a given category relative to distributional shifts in the reference category. As reference categories, we choose the most advantaged categories in terms of wealth – households with a college degree, married, ages 64 or older, white, and at least \$200,000 of total income.

We begin by estimating RIF statistics for changes in the wealth gini coefficient and p-shares between 1989 and 2007. Generally, one may expect changes in the composition of the population (demographic composition effect) and the distribution of wealth within certain demographic groups (wealth structure effect) to occur gradually and thereby also contribute to rising wealth inequality over an extended timeframe. When macro-economic events, such as the Great Recession, trigger a drastic and sudden shock to household wealth portfolios, one may at

first sight expect that such events may overwhelm the more gradual influence of changes related to demographics. This is one of the reasons why we first restrict our view to the time period between 1989 and 2007.

However, the expectation that large macro-economic shocks would overpower the influence of demographics may also be premature: Recessions may well alter the basic demographic makeup of the population, for instance, by triggering increased divorce rates, by changing families' fertility intentions, by increasing post-secondary enrollment in avoidance of weak labor markets, or by increasing return-migration and decreasing immigration. Even more importantly, economic recessions are not exogenous shocks in the sense that their impact would be randomly distributed across the population. In fact, prior research has shown, for instance, that the Great Recession has impacted the wealth holdings of Black and Hispanic households much more sharply than those of Non-Hispanic white households (Pfeffer et al. 2013; Taylor et al. 2011). Demographic groups are differentially vulnerable to recessions and, as was the case during the Great Recession, shifts in the wealth distribution may be more pronounced among certain demographic groups during times of economic crisis. Therefore, in a second step, we extend our period of investigation to cover the full timespan in the SCF data, from 1989 to the most current post-recession wave of 2016.

## **RESULTS**

### **Trends in Wealth Inequality**

Following prior research, we begin by documenting the growth of net worth inequality across the last three decades, highlighting trends leading up to the Great Recession (1989-2007) and following the recession (2007-2016). Table 1 presents the main inequality measures used here

for these three time points. It shows that wealth inequality had already increased substantially leading up to the Great Recession, from 1989 to 2007. The net worth gini rose by 3.8 percent, from 0.79 to 0.82. An additional 6.1 percent of all wealth shifted to the wealthiest five percent of the population, whose wealth share rose from 54.2 to 60.3 percent. Most of that wealth was drawn from wealth between the median and 90th percentile – what some may consider the wealth of the upper middle class – whose wealth share decreased by 4.0 percentage points from 30.1 to 26.1 percent.

**Tables 1. Wealth Inequality Trends, 1989-2016**

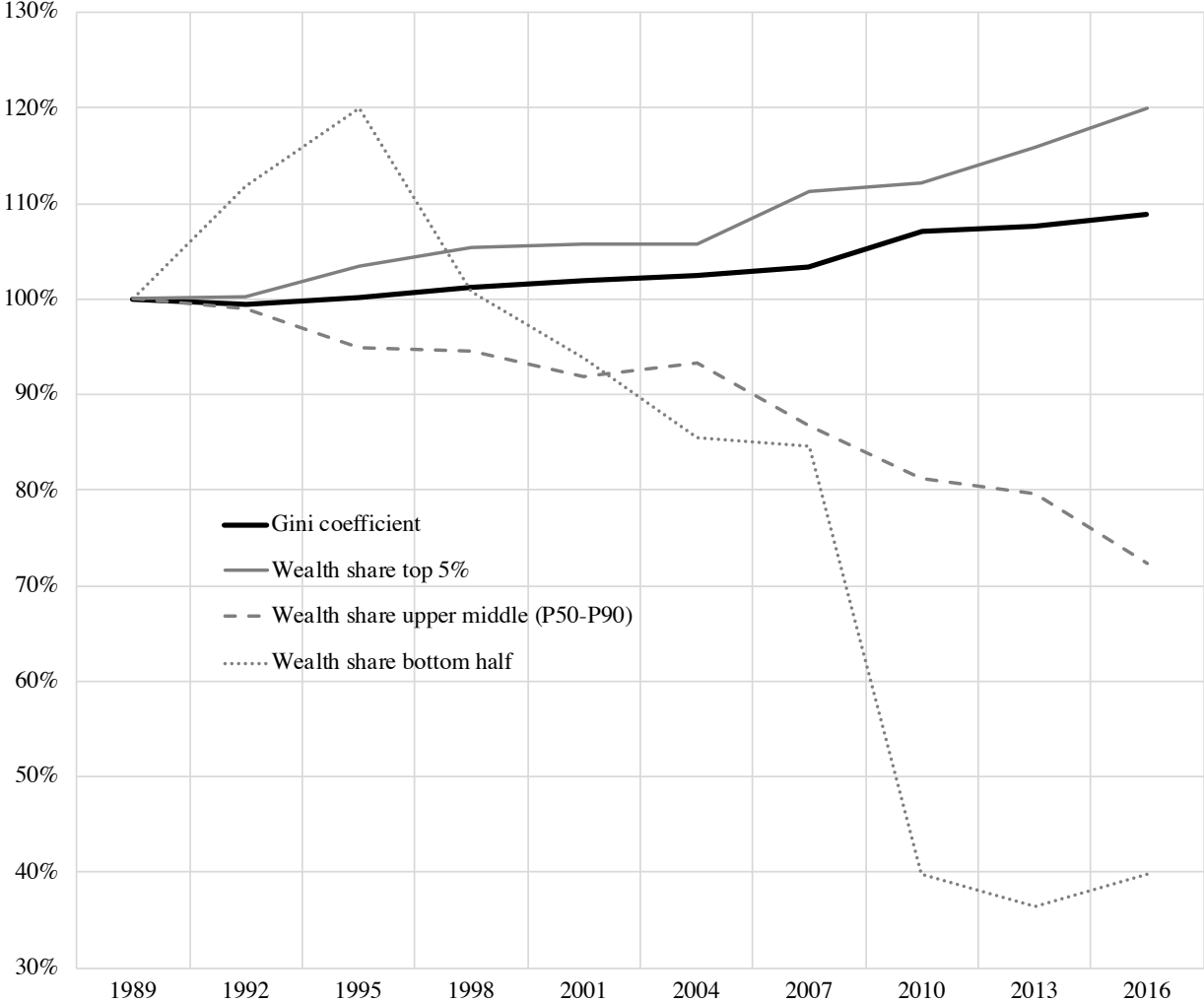
Total Household Net Worth; all dollar values in thousands of 2016 dollars

	1989	2007	2016	Change	
				$\Delta_{07-89}$	$\Delta_{16-07}$
Gini coefficient	0.790	0.816	0.860	0.026	0.043
Shares					
P96-P100 (Top 5%)	54.2%	60.3%	65.1%	6.1	4.7
P91-P95	12.7%	11.1%	12.0%	-1.6	0.9
P51-P90	30.1%	26.1%	21.8%	-4.0	-4.3
P0-P50 (Bottom 50%)	3.0%	2.5%	1.2%	-0.5	-1.3
No. of Observation	3,143	4,417	6,248		

A similar pattern of change emerged during and following the Great Recession, between 2007 and 2016. The net worth gini rose by another 5.3 percent to 0.86. An additional 4.7 percent of the nation’s wealth flowed to the top five percent of the distribution, again largely taken out of middle class wealth (51<sup>st</sup> to 95<sup>th</sup> percentile), which decreased by 4.3 percentage points to 21.8 percent. By 2016, the bottom half of the wealth distribution has been effectively excluded from

wealth ownership, holding just 1.2 percent of national wealth, down from an already meager 3.0 percent in 1989. For additional illustration, Appendix Figure A.1 contains the Lorenz curves of net worth, which underlie both the gini coefficients and wealth shares, for 1989, 2007, and 2016.

**Figure 1. Wealth Inequality Trends, 1989-2016**



Note: Based on data from the Survey of Consumer Finances (SCF). Changes relative to survey year 1989.

Overall, then, the Great Recession drastically increased wealth inequality but it did so by accelerating, or at least accentuating, trends towards higher wealth inequality that preceded the recession. To further illustrate this conclusion, Figure 1 displays the relative change in some of

these inequality measures across the full time period (see Appendix A.1 for the distributional measures in each SCF survey year). The gini coefficient rose more steeply during the recession compared to the two decades preceding it (1989-2007), the wealth share of the bottom half has been on a steep decline since 1995 but then plummeted during the recession, the reduction of middle class wealth (P50-P90) has continually decreased since 1989, and wealth has been increasingly concentrated among the wealthiest five percent of the population, with particularly pronounced increases since 2004. When judged based on its effects on the wealth distribution, the Great Recession is still very much with us.

**Table 2: Demographic Change and Compositional Changes**

	1989			2007			2016		
	Distribution	Net worth Median	Gini	Distribution	Net worth Median	Gini	Distribution	Net worth Median	Gini
<b>Education</b>									
Less than high school degree	17.6%	36,007	0.744	9.7%	23,803	0.843	8.7%	13,700	0.818
High school degree	32.6%	55,022	0.763	28.7%	67,031	0.783	21.0%	49,800	0.783
Some college	17.6%	81,377	0.758	19.2%	83,199	0.828	22.6%	54,950	0.829
Bachelor's degree or more	32.2%	206,877	0.753	42.4%	293,274	0.813	47.6%	221,600	0.826
<b>Household Structure</b>									
Household with children	35.7%	67,748	0.788	34.0%	87,084	0.887	30.1%	62,640	0.883
Middle-aged household (<65) without children	42.3%	73,568	0.793	44.5%	116,659	0.853	44.1%	65,100	0.881
Elderly household (head or partner >65)	22.0%	138,008	0.771	21.5%	248,475	0.773	25.8%	243,000	0.797
<b>Partnering</b>									
Single	41.8%	27,258	0.749	41.2%	58,745	0.809	43.3%	40,000	0.820
Cohabitating	2.9%	19,323	0.845	7.9%	19,200	0.933	9.5%	26,100	0.922
Married	55.2%	157,801	0.820	51.0%	241,289	0.854	47.2%	212,330	0.872
<b>Race</b>									
Black	12.7%	7,773	0.761	12.6%	19,200	0.823	15.9%	16,300	0.837
Hispanic	7.9%	9,038	0.824	9.4%	23,590	0.871	11.3%	21,360	0.905
Other	4.5%	65,434	0.859	4.1%	175,156	0.871	4.8%	102,000	0.882
White	74.8%	130,471	0.826	73.9%	183,263	0.837	68.0%	162,770	0.817
<b>Family Income</b>									
Less than 25k	29.3%	5,712	0.814	22.2%	11,677	0.938	22.0%	7,011	0.945
25k to <50k	24.0%	63,138	0.691	25.8%	59,295	0.778	25.7%	41,041	0.792
50k to <100k	29.1%	127,072	0.636	28.3%	164,602	0.709	27.8%	130,770	0.674
100k to <200k	13.1%	331,237	0.545	17.2%	428,459	0.636	16.4%	337,880	0.630
More than 200k	4.5%	1,349,352	0.637	6.5%	2,143,417	0.637	8.1%	2,058,600	0.676
<hr/>									
N	3,143			4,417			6,248		

## **Demographic and Compositional Change**

Table 2 reports the distribution of our main demographic descriptors for 1989, 2007, and 2016 (Appendix Table A.2 reports the same information for all intervening survey years) alongside estimates of median net worth and net worth gini coefficients for each group. Together, these estimates describe demographic change and within-group wealth shifts across the investigated period of rising wealth inequality. For educational attainment, we observe continued educational expansion between 1989 and 2016 as the share of households where the highest educated household head and/or partner is a high school drop-out or only a high school graduate decreases sharply. Conversely, the share of those with some college experience and, in particular, those completing college rises throughout this period. Within these educational groups, we observe pronounced changes in wealth: Wealth inequality increased to a similar degree within most groups (less so among high school graduates) and for high school drop-outs the increase occurred exclusively before the recession. While rising wealth inequality impacted all educational groups, the gap between the lowest and highest educated households rose substantially, with the latter holding close to 6 times the median net worth in 1989 but more than 16 times by 2016.

Second, both population aging and decreasing fertility are reflected in the decline of households with children, from 35.7 percent in 1989 to 30.1 percent in 2016, and an increase in elderly households from 22.0 to 25.8 percent. That is, the prevalence of these two household types has become much more similar over this time period, with just 4.3 percentage points more child households than elderly households in 2016 – down from 13.7 percentage points in 1989. In terms of their wealth holdings, households with children faced the steepest rise in wealth inequality (12 percent growth across the full period), but this rise already occurred before the Great Recession. These households also fell further behind elderly households, whose net worth



rose from slightly more than twice that of households with children to nearly four times (see also Gibson-Davis and Percheski 2018).

Third, households led by married couples continue to constitute the modal living arrangement in the U.S., although they no longer form the majority of U.S. households (down from 55.2 in 1989 to 47.2 percent in 2016) as the prevalence of single households has increased somewhat (43.4 percent in 2016) and cohabitation has spread further (from just below 3 percent of households in 1989 to close to 10 percent of all households in 2016). Single households saw a more pronounced increase in wealth inequality than married households and although their median net worth is substantially lower than that of married households, the gap did not increase. The low wealth and high wealth inequality among cohabitating households is likely a reflection of their younger age (calling for the type of multivariate analyses reported later) and given the small number of cohabitating households in our sample, we cannot rule out that the fluctuations in net worth and inequality across measurement years largely reflects noise.

Fourth, changes in the racial composition of the country is reflected in the decrease of households whose head identifies as non-Hispanic white (from 74.8 percent in 1989 to 68.0 percent in 2016) and, conversely, an increase in non-Hispanic black and Hispanic household heads (by 3.2 and 3.4 percentage points, respectively, between 1989 and 2016). Racial gaps in net worth holdings are very large and growing – as documented in much prior research (Maroto 2016; Oliver and Shapiro 1995; Shapiro, Meschede, and Osoro 2013; Taylor et al. 2011) – with black and Hispanic households holding just 10 and 13 percent of white wealth, respectively, in 2016. The catch-up of other racial groups towards white households that occurred between 1989 and 2007 was largely lost again during the Great Recession, leaving the median net worth of other racial groups at less than two thirds that of non-Hispanic whites. The more striking changes occurred in terms of wealth inequality within each racial group, with the net worth gini

coefficient of black and Hispanic households increasing by 10% while remaining largely unchanged among white households.

Finally, the changing distribution of income as defined by absolute thresholds shows that the share of households below \$25,000 has been decreasing between 1989 and 2007, though no further improvements can be observed post-recession. Conversely, the number of households with very high annual incomes (\$200,000 and more) has risen throughout this period. Wealth inequality has grown both at the bottom and the top of the income distribution (with the net worth gini rising by about 16 percent for all groups except those making between \$50,000 and \$100,000, whose wealth gini rose by only about 6 percent). The median net worth ratio between the top and bottom income group surged from 21 (in 1989) to 36 (in 2007) to 50 (in 2016).

Overall, then, rising wealth inequality coincided with a number of important demographic trends and significantly altered the wealth distribution among demographic groups: The U.S. demographic structure changed through continued educational upgrading, a rise in the share of elderly households relative to child households, a decline of marriage, and a decreasing share of households headed by non-Hispanic whites. At the same time, wealth gaps between many groups – in particular between white and non-white households, between elderly households and households with children, and between highly and low educated groups – have grown substantially before and during the Great Recession. Furthermore, most demographic groups have encountered higher levels of wealth inequality, with the notable exception of white households. In general, the most disadvantaged households – including households with children and single households – have faced the most pronounced increases in wealth inequality. The next section will *jointly* consider all of these demographic trends and shifts within demographic

groups and directly estimates their *independent* contribution to the observed growth of wealth inequality.

### **Demographic Contributions to Growing Wealth Inequality: Pre-Recession**

To determine the contribution of demographic trends to rising wealth inequality, we first focus on the time period leading up to the Great Recession, 1989 through 2007. Our initial analysis jointly investigates the influence of education, household structure, partnering, and race. We consider the contribution of changes to and within income groups only in a second step, as we expect income to be a central driver of the link between demographics and wealth. Prior research has shown that demographic trends play a central role in explaining growing income inequality (Western et al. 2008) and that income is closely, though far from perfectly, correlated with wealth (Killewald et al. 2017). In other words, we first study the overall contribution of demographic trends to rising wealth inequality (Table 3a) and then assess to what extent these contributions flow through income (Table 3b).

The first row of Table 3a again reports the change in wealth inequality between 1989 and 2007, based on the gini coefficient (increase of 0.03 points or 3.8 percent) and wealth shares (e.g. a reallocation of 6.4 percent of total wealth towards the top five percent of the distribution).<sup>3</sup> To estimate the contribution of *demographic change*, i.e. shifts in the demographic makeup of the country, we first generate a counterfactual change in the gini coefficient under the scenario that the relative size of demographic groups but not the within-category distribution of wealth have changed (i.e. allowing a demographic composition effects while holding wealth structure effects constant). That counterfactual change in the gini coefficient is close to zero (0.2 percent

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<sup>3</sup> Non-substantive deviation of these trends from those reported in Table 1 stem from the fact that the decomposition analyses are (reported in Tables 3 and 4) rely on just one imputed dataset while the simpler descriptive analyses average across five imputed datasets.

**Table 3: Decomposing Trends in Wealth Inequality, 1989-2007**

	Change in Gini		Change in Shares (percentage points)			
	absolute	%	P0-P50	P50-90	P90-P95	P95-100
Observed	0.0302	(3.8%)	-0.59	-4.53	-1.37	6.48
<i>(a) Demographics Only</i>						
<u>Contribution of Demographic Change</u>						
Overall (sum of components)	-0.0018	-(0.2%)	0.10	-0.12	0.33	-0.31
By Component						
Education	-0.0057	-(0.7%)	0.30	0.07	0.35	-0.72
Household Structure	0.0000	(0.0%)	0.00	-0.02	0.00	0.02
Partnering	0.0035	(0.4%)	-0.18	-0.18	-0.02	0.37
Race	0.0004	(0.0%)	-0.03	0.01	0.00	0.02
<u>Contribution of Within-Category Change</u>						
Overall (sum of components)	0.0320	(4.1%)	-0.69	-4.41	-1.70	6.80
By Component						
Education	0.0348	(4.4%)	-1.35	-1.52	-3.45	6.32
Household Structure	0.0237	(3.0%)	-0.43	-3.28	-1.47	5.18
Partnering	-0.0228	-(2.9%)	0.90	2.03	-0.83	-2.09
Race	-0.0192	-(2.4%)	0.61	2.18	-0.62	-2.16
<i>(b) Controlling for Income</i>						
<u>Contribution of Demographic Change</u>						
Overall (sum of components)	0.0026	(0.3%)	0.08	-1.25	0.69	0.49
By Component						
Education	-0.0027	-(0.3%)	0.07	0.38	0.04	-0.48
Household Structure	0.0001	(0.0%)	0.00	-0.02	-0.01	0.03
Partnering	0.0040	(0.5%)	-0.18	-0.31	0.03	0.46
Race	0.0006	(0.1%)	-0.03	-0.04	0.01	0.05
<u>Contribution of Within-Category Change</u>						
Overall (sum of components)	0.0276	(3.5%)	-0.67	-3.28	-2.06	6.00
By Component						
Education	0.0215	(2.7%)	-1.04	-0.69	-0.76	2.49
Household Structure	0.0051	(0.7%)	0.13	-0.94	-1.52	2.33
Partnering	-0.0270	-(3.4%)	0.80	2.74	0.64	-4.18
Race	-0.0120	-(1.5%)	0.19	0.92	-0.24	-0.87

decrease). Hence, all demographic changes observed between 1989 and 2007 do not explain the rise of wealth inequality as measured by the gini during the same time period. Also, no single component of demographic change stands out as having contributed in a major way to rising wealth inequality. For instance, educational expansion alone – without considering distributional changes within educational categories – would have decreased the wealth gini by 0.7 percent when, in reality, it rose by 3.8 percent.

Instead, the growth of wealth inequality in this period stems from distributional shifts in wealth within these demographic categories (or changes in their unobserved correlates), that is, changes are driven by *wealth structure effects*. Holding the distribution of all demographic groups constant at their 1989 level but letting the association between demographic groups and overall wealth inequality vary, produces a counterfactual increase of 4.1 percent in the gini, close to the observed 3.8 percent. In other words, membership in these different demographic groups is highly informative about the rise of overall wealth inequality. This insight becomes more tangible when we turn our attention to the independent contribution of single demographic components: Increases in overall wealth inequality are mostly related to distributional shifts tied to educational groups and household structures. Shifts in the wealth distribution within educational groups – holding constant the relative size of educational groups as well as any changes in other demographic components – increased the gini coefficient by 4.4 percent. In other words, the “inequality returns” to education have increased in a way that accounts for all (and more) of the overall increase in wealth inequality. Appendix Table A.3 serves to further elucidate this conclusion by reporting the contribution of each separate educational category to rising wealth inequality. Recalling that the reference category in the RIF regressions is the highest educated category (BA or more), we observe that all lower educational categories, but in particular the lowest category of high-school dropouts, contributed to rising wealth inequality. In

essence, lower educated households – more so than college educated households – have drifted away from the center of the overall wealth distribution in such a way that these distributional shifts alone account for the total pre-recession increase in wealth inequality. The distributional analyses reported in Table 2 and discussed above for the group of high-school drop-outs already provide us with an initial sense that this shift away from the middle consisted both of broad loss (leftward shift) and increasing wealth stratification among the lower educated, but we will return to a more detailed assessment of these movement below.

A similar inequality-increasing role can be noted for the contribution of the wealth distribution among different categories of family structure, which independently increased the overall wealth gini coefficient by 3.0 percent. Again considering the reference category, we deduce that the drift of the wealth of non-elderly households away from the middle of the wealth distribution plays an important role in explaining overall wealth inequality (see also Appendix Table A.3) and we will again revisit this particular shifts further below.

The independent contributions of wealth structure effects tied to education and household structure towards increasing wealth inequality are partly counterbalanced by the contribution of those tied to two other demographic characteristics, partnership status and race. Distributional changes among different partnership categories – with married couples as the reference group and holding constant all other demographic changes – would have decreased the gini coefficient by 2.9 percent. The equalizing pressure of non-marital partnership status arises from the fact that the wealth distribution of single households has shifted more towards the middle of the distribution (see Table A.3). Changes in the wealth distribution among racial groups played a similar but likely surprising inequality-decreasing role: The shift of the wealth distribution within minority households (to a similar degree for Black and Hispanic households; see Table A.3)

towards the middle exerted equalizing effects on overall wealth inequality leading up to the recession despite within-race increases in wealth inequality.

The right-hand side of Table 3a allows us to trace in more detail how demographic trends relate to changes in different parts of the wealth distribution. The earlier, broad conclusion drawn based on the gini coefficient extends to percentile shares: wealth structure effects not demographic composition effects account for increasing wealth inequality even when we focus on different parts of the wealth distribution. Allowing for changes in the relationship between the four considered characteristics while holding demographic structure constant at 1989 levels leads to estimates of changes in wealth concentration that closely mirror those observed, namely a reallocation of wealth from the middle class (P50-90, -4.4 compared to observed -4.5 percentage points) to the top five percent (+6.8 compared to +6.5 percentage points). Again, wealth structure effects tied to education groups and household types independently account for much of this shift in the distribution of wealth; in particular, each accounts well for the increasing wealth concentration at the very top. In addition, household structure accounts somewhat better than education for the reallocation of wealth away from the middle class: shifts in the wealth distribution among non-elderly households compared to elderly households – *ceteris paribus* – predict a loss of 3.3 percentage points in the wealth share of the middle class (closer to the observed 4.5 percentage points), while shifts in the wealth distribution among less educated households compared to highly educated households predict a more pronounced loss of the P90-P95 share (3.5 percentage points compared to the observed 1.4 percentage points). In contrast, shifts in wealth among non-married vs. married and non-white vs. white households exerted some downward pressure on wealth concentration at the top to the advantage of the middle class (each accounting for a shift of approximately two percent of wealth from the top to the middle class).

Finally, as mentioned earlier, we expect that some of the link between demographic and wealth trends operates through income. That is, the contribution of demographics to rising wealth inequality should partly arise from their contribution to rising income inequality (Western et al. 2008). Conditioning on income should therefore tend to reduce the estimates discussed earlier. Conversely, the extent to which demographic trends retain explanatory power conditional on income reveals the direct relationship between changing demographics and rising wealth inequality (or, alternatively, changes in the role of other, unanalyzed correlates of demographic characteristics and wealth). Table 3b reports the results when conditioning on income. The contribution of demographic change to rising wealth inequality remains negligible across all demographic characteristics and across all parts of the wealth distribution (p-shares). When we allow the distribution of education, household structure, partnering, race, and income to change but hold constant the wealth distribution among these groups at their 1989 level, overall wealth inequality again barely moves.

Earlier, we observed that distributional changes in the wealth held by different educational groups and household types both fully accounted for observed wealth trends; now we see that part of the rising importance of these two characteristics operates through their association with income, in particular for household structure. Nearly all of the inequality increase related to the shift of non-elderly households away from the middle stems from shifts in income as the counterfactual rise in the gini drops from 3.0% to 0.7% when controlling for income (compare Table 3a and 3b). This strong mediation through income is, in many ways, not surprising, as the income position of elderly households is closely intertwined with their wealth position since many of these households rely on asset (and pension) income rather than labor earnings. In some sense, the distinction between wealth and income is most blurred for these elderly households, explaining the pattern observed in Table 3b.



In contrast, the explanatory power of education is only partly mediated by income. Clearly, the widely documented rise in income returns to a college degree (Goldin and Katz 2008) play a role, but beyond that, there appears to be a distinct and increasing advantage of a BA degree for the attainment of wealth that directly explains an important part of the rising inequality in wealth: Allowing only the relationship between education and wealth to change across time raises the net worth gini by 2.7% (when the observed change was 3.8%). The independent inequality-reducing role of wealth changes by partnerships status remain with income controls, suggesting that the shift of single households towards the middle of the wealth distribution is not necessarily based on shifts in their income. About half of the independent, inequality-reducing shift of minority groups towards the middle of the wealth distribution operates through changes in the racial income structure.

To summarize, the growth of wealth inequality between 1989 and 2007 cannot be explained by demographic change, i.e., changes to the demographic make-up of the country, but instead by changes to the importance of demographic characteristics, i.e. the changing relationship between the wealth distribution among demographic groups and overall wealth inequality. In particular the shift of households with lower education and non-elderly households away from the middle of the wealth distribution drives rising overall wealth inequality, broadly and in terms of increasing wealth concentration at the top. Elderly households also account for much of the redistribution of middle class wealth (between the median and 90<sup>th</sup> percentile) to the top. Most of the contribution of elderly households to our understanding of rising wealth inequality can be captured by income, likely due to the close interrelationship between income and assets during retirement. The exposed role of education in our understanding of rising wealth inequality is partly but not exhaustively related to the well-established growth of the changing

link between education and income. Finally, everything else equal, shifts in the wealth distribution among single and minority households towards the middle worked to lower wealth inequality, in the case of race independently of changes in the income distribution between racial groups.

### **Demographic Contributions to Growing Wealth Inequality: Post-Recession**

We now turn to an assessment of trends spanning the entire time period observed in the SCF, that is, changes occurring between 1989 and 2016. As we have seen before, the Great Recession did not fundamentally alter the direction but accelerated the trajectory of trends in the wealth structure. The question is, whether the significant turmoil that occurred during and in the aftermath of the Great Recession altered the role of demographic trends in explaining growing wealth inequality. Did such turmoil inflict a random shock that undermined broader demographic forces or, on the contrary, did unequal impacts of the Great Recession further bolster the role of demographics in explaining wealth inequality? The latter appears to be the case based on the results reported in Table 4 (see also Appendix Table A.4).

Again, we observe that demographic change holds no power to appreciably explain the growth of wealth inequality, just as it did not before the recession (cf. Table 3). Instead, wealth structure effects, i.e. shifts in the wealth distribution among demographic groups (or their unobserved correlates), account for much of the observed changes. Education and household structure continue to be the leading inequality-increasing influences among those considered here. Each independently contributed to a growth in the net worth gini coefficient (by 4.7 percent based on changing returns to education and 6.2 percent based on changing returns to household structure; compared to an observed growth by 8.9 percent) and they also independently predict the reallocation of wealth from the middle class to the wealthiest five percent. In fact, the

**Table 4: Decomposing Trends in Wealth Inequality, 1989-2016**

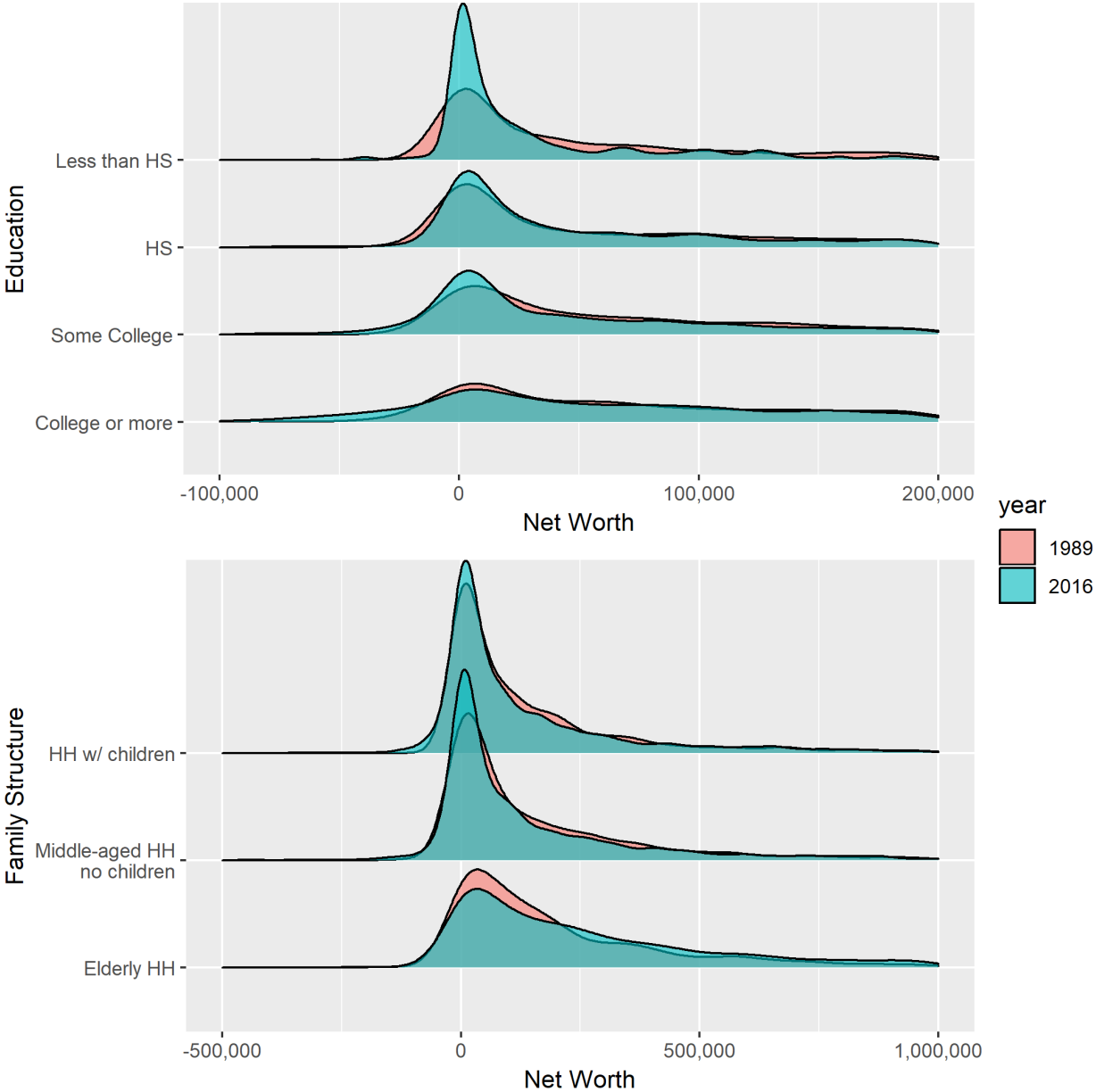
	Change in Gini		Change in Shares (percentage points)			
	absolute	%	P0-P50	P50-90	P90-P95	P95-100
Observed	0.0704	(8.9%)	-1.89	-8.17	-0.53	10.60
<i>(a) Demographics Only</i>						
<u>Contribution of Demographic Change</u>						
Overall (sum of components)	-0.0020	-(0.3%)	-0.06	0.76	0.41	-1.11
By Component						
Education	-0.0069	-(0.9%)	0.18	0.98	0.29	-1.45
Household Structure	-0.0037	-(0.5%)	0.12	0.33	0.11	-0.57
Partnering	0.0053	(0.7%)	-0.24	-0.29	-0.01	0.54
Race	0.0032	(0.4%)	-0.13	-0.26	0.02	0.37
<u>Contribution of Within-Category Change</u>						
Overall (sum of components)	0.0725	(9.2%)	-1.83	-8.93	-0.95	11.71
By Component						
Education	0.0367	(4.7%)	-0.60	-5.68	-2.44	8.72
Household Structure	0.0489	(6.2%)	-0.03	-9.32	-2.89	12.25
Partnering	-0.0137	-(1.7%)	1.08	-0.47	-0.67	0.06
Race	-0.0163	-(2.1%)	-2.27	6.54	5.06	-9.33
<i>(b) Controlling for Income</i>						
<u>Contribution of Demographic Change</u>						
Overall (sum of components)	0.0030	(0.4%)	-0.06	-0.49	0.52	0.04
By Component						
Education	0.0007	(0.1%)	-0.14	0.54	0.07	-0.47
Household Structure	-0.0040	-(0.5%)	0.13	0.36	0.12	-0.62
Partnering	0.0042	(0.5%)	-0.18	-0.26	0.05	0.39
Race	0.0034	(0.4%)	-0.12	-0.36	0.04	0.44
<u>Contribution of Within-Category Change</u>						
Overall (sum of components)	0.0674	(8.6%)	-1.83	-7.68	-1.05	10.56
By Component						
Education	0.0047	(0.6%)	-0.09	-0.90	-0.75	1.75
Household Structure	0.0244	(3.1%)	0.89	-7.02	-2.75	8.89
Partnering	-0.0245	-(3.1%)	1.01	1.80	0.34	-3.15
Race	-0.0137	-(1.7%)	0.49	1.25	0.12	-1.86

growing separation of the wealth distributions of non-elderly and elderly households, which widened even further during the Great Recession, contributed to a reallocation of as much as 12.3 percent of total wealth towards the top.

To further elucidate and emphasize the finding of the dominating role of the wealth structure effects tied to household structure and education, we supply another visual illustration that supplements our initial assessment of distributional shifts in wealth within these demographic categories. Figure 2 displays net worth distributions in 1989 (red) and 2016 (blue) for each educational category and each family structure category using ridgeplots. For educational categories, we immediately observe that the most significant change in the wealth distribution occurred among the least educated: Their overall wealth distribution moved substantially towards zero, partly due to a thinning out of middle wealth positions. Wealth inequality, as shown before (in Table 2), has also increased within the most educated category, partly via a somewhat broader left-tail that could be a direct result of increasing rates of student debt (Houle 2014). Overall, however, the distributional movement among the least educated is much larger compared to that among the most educated and our decomposition analysis confirms that this shift, independent of other forms of demographic change and wealth structure effects, is one main driver of the overall growth in wealth inequality. The other major and independent factor identified in the decomposition analysis is the distributional shift in wealth among elderly households compared to non-elderly household, in particular those with children. Figure 2 also helps illustrate those shifts further: The most pronounced move in the wealth distribution occurred among elderly households and – in contrast to other family structure types – to the right. What may be considered middle class wealth has expanded substantially among elderly households and declined among non-elderly households without children as well as households with children, for whom we can also observe somewhat increased levels of indebtedness. This

separation of the wealth holdings of elderly households from all others independently explains a substantial share of the overall rise in wealth inequality, as discussed based on the decomposition analysis.

**Figure 2. Shifts in the Wealth Distribution by Education and Family Structure, 1989-2016**



Note: Based on data from the Survey of Consumer Finances (SCF). As the focus is on comparisons across survey years within demographic groups, the x-axes are scaled (differently for the two demographic characteristics) to find the right balanced between truncation and compression of the distributional display and given the specific number of categories.

Finally, based on Table 3b, we also observe that – compared to pre-recession trends – a larger share, namely about half, of the wealth structure effect of family structure remains when adjusting for income (3.1 percent increase in the gini compared to 6.2 percent without conditioning on income), suggesting that the advantageous wealth distribution among elderly households was maintained in the aftermath of the recession irrespective of the recession’s impact on their income (in particular at the top where, even conditioning on income, household structure still contributes to a shift of 8.9 percent of wealth towards the top). In contrast, the wealth inequality-increasing effect of education operated largely through income (a 4.7 percent increase in the gini is reduced to 0.6 percent once income is controlled). This difference in the role of income could be related to patterns of unemployment: during economic downturns, the role of a college degree in shielding households from unemployment rises. We would therefore expect that highly educated households were more likely to avoid unemployment and its accompanying income loss. The ability of highly educated households to maintain their income more so than less educated households may explain the large role of income in explaining the inequality-increasing role of education through the post-recession period. That the contribution of elderly households to wealth inequality would depend less on their income also makes sense as these households’ incomes tend to depend less on labor market conditions.

The counterbalancing and smaller contributions of wealth structure effects by marital status and race are more consistent when comparing pre- and post-recession years, in particular, once we condition on income. Everything else equal, distributional shifts by marital status still contributed to a decrease of the gini coefficient (by 3.1 percent) while changes in the wealth inequality returns to race had an inequality reducing but smaller effect.

## CONCLUSION

In this paper, we once more document the remarkable growth of wealth inequality and increase of wealth concentration at the very top across the last decades (see also Keister 2000; Pfeffer et al. 2013; Wolff 2017). A large share of wealth has shifted away from the upper middle of the wealth distribution to the very top, while the already meager wealth of those in the bottom half of the distribution has all but disappeared. The Great Recession has been a significant contributor to these trends, however, it merely emphasized and accelerated existing trends towards a more unequal distribution of wealth. As others before us, we are interested in explaining these fundamental shifts in the U.S. wealth structure. The main contribution of this paper lies in establishing the extent to which these shifts are tied to demographic trends, in particular those in education, household structures, partnership status, and race. We find that neither growing wealth inequality nor increasing wealth concentration at the top are direct consequences of population change. That is, the changing demographic composition of the U.S. population – by education, race, family structure, and marital status – does not directly account for the rise of wealth inequality and concentration. Instead, shifts in the wealth distribution among demographic groups, in particular the move of households with less education and non-elderly households away from the middle of the distribution, explain much of the observed overall growth in inequality.

Furthermore, we showed that these demographic contributions to rising wealth inequality only partly operate through their contributions to rising income inequality. Finally, similar to the role of the Great Recession in accelerating the growth of wealth inequality, the demographic contribution to increased wealth inequality has also been bolstered by the recession. Rather than inducing a random shock to the U.S. wealth structure, the recession helped to further separate the

wealth distributions of lower and higher educated as well as non-elderly and elderly households further apart and these structural changes account for the takeoff in overall wealth inequality.

Our findings about the importance of household structure, and in particular the growing separation of elderly households and non-elderly households, both middle age and those with young children, resonate with a number of prior contributions that, rather than pursuing the type of multi-dimensional demographic view reported here, focus on a single demographic component of growing wealth inequality: Keister and Deeb-Sossa's (2001) evidence on the distinctive wealth advantage of the baby boomers as well as Gibson-Davis and Percheski's (2018) documentation of an increasing wealth gap between elderly and child households are putting the focus on what we can now confirm to be one of the most influential and independent demographic components of growing wealth inequality. Future research should seek to elucidate the mechanisms that account for the central role of family structure in the rise of wealth inequality. Increasing costs of raising a child (Kornrich and Furstenberg 2012; Schneider, Hastings, and LaBriola 2018) have recently been shown to directly account for wealth declines among families with children (Maroto forthcoming). Further investigations of the increasing wealth advantage of the elderly may begin with a careful consideration of pension wealth, a wealth component not captured here. In fact, the exclusion of pension wealth may yet underestimate the substantial wealth advantage of today's elderly households and its contribution to overall wealth inequality (see Bönke et al. 2017). Furthermore, shifts in pension wealth from defined contribution to defined benefit plans (Devlin-Foltz, Henriques, and Sabelhaus 2016; Wolff 2017) may require a cohort (rather than age) perspective on the likely future trajectory of wealth inequality and further underline the privilege of the baby boomers.

Throughout, we have emphasized that our decomposition analysis – like any other decomposition analysis – is of descriptive nature and should not be perceived as a causal



explanation of growing wealth inequality. Even if we were, for a moment, willing to lend a causal interpretation to some of the presented coefficients, we would quickly need to acknowledge that they provide far from a *sufficiently deep* causal explanation. For instance, stating the role of elderly households in increasing wealth concentration calls for – apart from attention to the above mentioned age-period-cohort identification problem – an understanding of the household dynamics and policy contexts that underlie this rising advantage. Are elderly households more prudent investors? How did government policies help sustain the advantage of this group? Similarly, if we were to assume that there has been a change in the causal link between educational attainment and wealth inequality, immediate questions are whether higher education has helped households make smarter investment decisions, whether increased exposure to financial markets has amplified informational requirements, or whether the strategic targeting of subprime financial products to less educated households contributed to their wealth losses? Even if answers to these important questions may lie outside the field of demographics and this contribution, the presented evidence may help guide future research to lay its focus on the crucial demographic trends that underlie the growing inequality in household wealth. Doing so seems urgent as rising wealth inequality has multifold implications for society, including increasing disparities in the development of children (Pfeffer and Schoeni 2016) that may contribute to the long-term maintenance of wealth inequality across generations (Pfeffer and Killewald 2018).

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## APPENDIX

**Table A.1: Trends in Wealth Inequality**  
Total Household Net Worth; all dollar values in thousands of 2016 dollars

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
<b><i>Distribution</i></b>										
Mean	342.3	303.9	333.8	405.5	522.1	554.0	625.2	530.4	528.4	689.5
% with 0 or less	11.4%	10.3%	9.7%	10.4%	9.5%	8.9%	9.7%	13.1%	12.9%	11.5%
Percentiles										
5th	-1.5	-1.8	-2.3	-4.3	-2.0	-3.4	-5.2	-16.5	-18.6	-17.3
10th	0.0	0.0	0.1	0.0	0.1	0.2	0.0	-1.1	-2.1	-1.0
25th	10.2	11.9	15.7	14.2	16.8	16.4	15.9	8.9	8.8	10.2
Median	85.1	80.8	90.5	102.5	113.9	114.8	135.9	82.5	81.4	97.3
75th	267.2	240.5	252.1	298.8	378.6	405.9	418.5	321.8	316.8	368.6
90th	665.2	581.5	597.7	705.5	979.0	1,029.4	1,022.1	1,020.5	942.2	1,186.6
95th	1,253.3	1,085.3	1,071.8	1,287.7	1,729.2	1,762.8	2,133.5	1,997.4	1,871.6	2,387.3
<b><i>Inequality</i></b>										
Gini coefficient	0.790	0.786	0.791	0.800	0.805	0.809	0.816	0.846	0.850	0.860
Shares										
P0-P50 (Bottom 50%)	0.030	0.033	0.036	0.030	0.028	0.026	0.025	0.012	0.011	0.012
P50-P90	0.301	0.297	0.285	0.284	0.276	0.280	0.261	0.244	0.239	0.218
P90-P95	0.127	0.125	0.119	0.114	0.122	0.121	0.111	0.135	0.121	0.120
P95-P100 (Top 5%)	0.542	0.544	0.561	0.572	0.574	0.574	0.603	0.609	0.629	0.651
Percentile Ratios										
P50/P25	8.3	6.8	5.8	7.2	6.8	7.0	8.6	9.3	9.3	9.6
P95/P50	14.7	13.4	11.8	12.6	15.2	15.4	15.7	24.2	23.0	24.5
P95/P25	122.7	90.9	68.4	90.8	102.7	107.5	134.3	224.0	212.7	235.0
No. of Observation	3,143	3,906	4,299	4,305	4,442	4,519	4,417	6,482	6,015	6,248
No. of Observation with positive net worth	2,916	3,607	3,989	3,937	4,097	4,178	4,086	5,714	5,329	5,623

**Table A.2: Demographic Change**

	1989	1992	1995	1998	2001	2004	2007	2010	2013	2016
<b>Education</b>										
Less than high school degree	17.6%	15.7%	12.5%	12.0%	11.7%	11.1%	9.7%	8.4%	7.8%	8.7%
High school degree	32.6%	28.6%	30.5%	29.0%	28.6%	26.6%	28.7%	28.2%	26.1%	21.0%
Some college	17.6%	18.6%	19.8%	19.8%	18.7%	19.2%	19.2%	18.3%	19.2%	22.6%
Bachelor's degree or more	32.2%	37.1%	37.1%	39.2%	41.0%	43.1%	42.4%	45.1%	46.8%	47.6%
<b>Household Structure</b>										
Household with children	35.7%	35.3%	34.3%	34.5%	34.7%	33.8%	34.0%	32.6%	32.1%	30.1%
Middle-aged household (<65) without children	42.3%	42.4%	43.7%	43.9%	44.0%	45.0%	44.5%	45.1%	43.9%	44.1%
Elderly household (head or partner >65)	22.0%	22.3%	21.9%	21.6%	21.3%	21.2%	21.5%	22.3%	24.0%	25.8%
<b>Partnering</b>										
Married	55.2%	54.1%	52.5%	52.1%	52.9%	50.6%	51.0%	50.3%	48.0%	47.2%
Cohabitating	2.9%	3.5%	6.0%	6.4%	7.4%	7.4%	7.9%	7.7%	9.1%	9.5%
Single	41.8%	42.4%	41.5%	41.5%	39.7%	42.0%	41.2%	41.9%	42.8%	43.3%
<b>Race</b>										
White	74.8%	75.3%	77.6%	77.7%	76.2%	73.6%	73.9%	70.8%	70.1%	68.0%
Black	12.7%	12.7%	12.8%	11.9%	13.0%	13.6%	12.6%	13.8%	14.6%	15.9%
Hispanic	7.9%	7.5%	5.7%	7.2%	8.0%	9.1%	9.4%	10.8%	10.6%	11.3%
Other	4.5%	4.6%	3.9%	3.2%	2.8%	3.7%	4.1%	4.6%	4.7%	4.8%
<b>Family Income</b>										
Less than 25k	29.3%	30.0%	26.0%	26.3%	22.9%	21.9%	22.2%	23.2%	25.3%	22.0%
25k to <50k	24.0%	26.2%	26.7%	24.9%	25.6%	25.1%	25.8%	27.2%	27.5%	25.7%
50k to <100k	29.1%	28.1%	29.8%	29.4%	28.2%	29.5%	28.3%	29.2%	26.5%	27.8%
100k to <200k	13.1%	11.9%	13.3%	14.9%	17.1%	17.0%	17.2%	14.6%	14.3%	16.4%
More than 200k	4.5%	3.7%	4.2%	4.5%	6.1%	6.5%	6.5%	5.9%	6.4%	8.1%
<b>N</b>	3,143	3,906	4,299	4,305	4,442	4,518	4,417	6,482	6,015	6,248

**Table A.3 Decomposition 1989-2007**

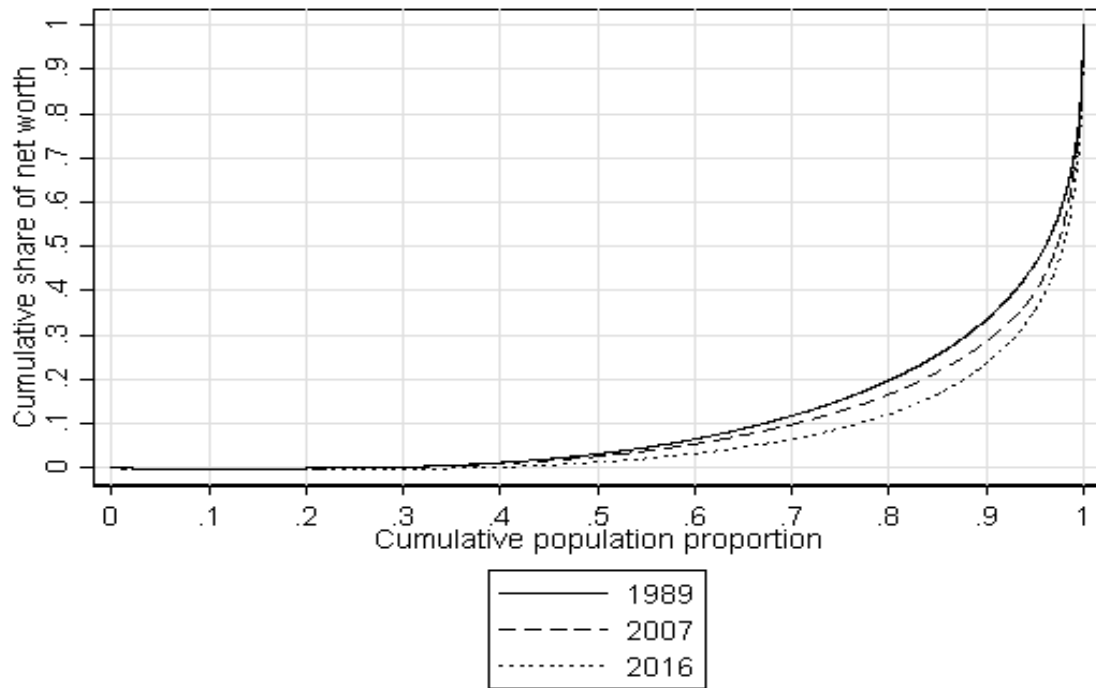
	<i>(a) Demographics Only</i>						<i>(b) Controlling for Income</i>					
	Change in Gini		Change in Shares (percentage points)				Change in Gini		Change in Shares (percentage points)			
	absolute	%	P0-P50	P50-90	P90-P95	P95-100	absolute	%	P0-P50	P50-90	P90-P95	P95-100
Observed	0.0302	(3.8%)	-0.59	-4.53	-1.37	6.48	0.0302	(3.8%)	-0.59	-4.53	-1.37	6.48
<u>Contribution of Demographic Change</u>												
Overall (sum of components)	-0.0018	(-0.2%)	0.10	-0.12	0.33	-0.31	0.0026	(0.3%)	0.08	-1.25	0.69	0.49
<u>By Component</u>												
Education	-0.0057	(-0.7%)	0.30	0.07	0.35	-0.72	-0.0027	(-0.3%)	0.07	0.38	0.04	-0.48
Less than high school	-0.0054	(-0.7%)	0.27	0.14	0.27	-0.68	-0.0027	(-0.3%)	0.07	0.34	0.04	-0.45
High school	-0.0004	(-0.1%)	0.05	-0.14	0.15	-0.06	-0.0006	(-0.1%)	0.02	0.10	0.03	-0.15
Some college	0.0001	(0.0%)	-0.02	0.07	-0.07	0.01	0.0007	(0.1%)	-0.02	-0.06	-0.03	0.11
Household Structure	0.0000	(0.0%)	0.00	-0.02	0.00	0.02	0.0001	(0.0%)	0.00	-0.02	-0.01	0.03
Family w/ children	-0.0010	(-0.1%)	0.06	-0.01	0.00	-0.05	-0.0012	(-0.1%)	0.07	0.00	0.00	-0.08
Family middle aged	0.0010	(0.1%)	-0.06	-0.01	0.00	0.07	0.0013	(0.2%)	-0.07	-0.03	-0.01	0.11
Partnering	0.0035	(0.4%)	-0.18	-0.18	-0.02	0.37	0.0040	(0.5%)	-0.18	-0.31	0.03	0.46
Single	-0.0002	(0.0%)	0.02	-0.03	0.00	0.00	-0.0001	(0.0%)	0.01	-0.02	-0.01	0.02
Cohabitation	0.0037	(0.5%)	-0.20	-0.15	-0.02	0.37	0.0040	(0.5%)	-0.19	-0.29	0.04	0.44
Race	0.0004	(0.0%)	-0.03	0.01	0.00	0.02	0.0006	(0.1%)	-0.03	-0.04	0.01	0.05
Other race	0.0000	(0.0%)	0.00	-0.01	0.00	0.00	0.0000	(0.0%)	0.00	0.00	0.00	-0.01
Black	-0.0001	(0.0%)	0.00	0.00	0.00	-0.01	-0.0001	(0.0%)	0.00	0.01	0.00	-0.01
Hispanic	0.0004	(0.1%)	-0.03	0.02	-0.01	0.02	0.0007	(0.1%)	-0.04	-0.05	0.01	0.07
<u>Contribution of Within-Category Change</u>												
Overall (sum of components)	0.0320	(4.1%)	-0.69	-4.41	-1.70	6.80	0.0276	(3.5%)	-0.67	-3.28	-2.06	6.00
<u>By Component</u>												
Education	0.0348	(4.4%)	-1.35	-1.52	-3.45	6.32	0.0215	(2.7%)	-1.04	-0.69	-0.76	2.49
Less than high school	0.0160	(2.0%)	-0.57	-1.04	-0.82	2.44	0.0095	(1.2%)	-0.43	-0.37	0.00	0.80
High school	0.0105	(1.3%)	-0.40	-0.26	-1.69	2.35	0.0057	(0.7%)	-0.28	-0.15	-0.39	0.82
Some college	0.0083	(1.0%)	-0.37	-0.21	-0.94	1.53	0.0063	(0.8%)	-0.33	-0.17	-0.37	0.87
Household Structure	0.0237	(3.0%)	-0.43	-3.28	-1.47	5.18	0.0051	(0.7%)	0.13	-0.94	-1.52	2.33
Family w/ children	0.0104	(1.3%)	-0.20	-1.47	-0.39	2.05	-0.0020	(-0.3%)	0.14	0.18	-0.30	-0.01
Family middle aged	0.0133	(1.7%)	-0.23	-1.81	-1.08	3.12	0.0072	(0.9%)	-0.01	-1.11	-1.22	2.34
Partnering	-0.0228	(-2.9%)	0.90	2.03	-0.83	-2.09	-0.0270	(-3.4%)	0.80	2.74	0.64	-4.18
Single	-0.0219	(-2.8%)	0.86	1.96	-0.68	-2.14	-0.0265	(-3.4%)	0.78	2.72	0.74	-4.24
Cohabitation	-0.0009	(-0.1%)	0.04	0.07	-0.15	0.04	-0.0005	(-0.1%)	0.02	0.02	-0.10	0.06
Race	-0.0192	(-2.4%)	0.61	2.18	-0.62	-2.16	-0.0120	(-1.5%)	0.19	0.92	-0.24	-0.87
Other race	-0.0044	(-0.6%)	0.13	0.55	-0.05	-0.63	-0.0033	(-0.4%)	0.09	0.45	-0.02	-0.52
Black	-0.0068	(-0.9%)	0.18	0.93	-0.40	-0.71	-0.0039	(-0.5%)	0.10	0.48	-0.22	-0.35
Hispanic	-0.0080	(-1.0%)	0.30	0.69	-0.16	-0.82	-0.0047	(-0.6%)	0.17	0.34	-0.04	-0.47

**Table A.4 Decomposition 1989-2016**

	<i>(a) Demographics Only</i>						<i>(b) Controlling for Income</i>					
	Change in Gini		Change in Shares (percentage points)				Change in Gini		Change in Shares (percentage points)			
	absolute	%	P0-P50	P50-90	P90-P95	P95-100	absolute	%	P0-P50	P50-90	P90-P95	P95-100
Observed	0.0704	(8.9%)	-1.89	-8.17	-0.53	10.60	0.0704	(8.9%)	-1.89	-8.17	-0.53	10.60
<b>Contribution of Demographic Change</b>												
Overall (sum of components)	-0.0020	(-0.3%)	-0.06	0.76	0.41	-1.11	0.0030	(0.4%)	-0.06	-0.49	0.52	0.04
<b>By Component</b>												
Education	-0.0069	(-0.9%)	0.18	0.98	0.29	-1.45	0.0007	(0.1%)	-0.14	0.54	0.07	-0.47
Less than high school	-0.0055	(-0.7%)	0.18	0.60	0.17	-0.94	-0.0005	(-0.1%)	-0.02	0.27	0.04	-0.29
High school	-0.0020	(-0.3%)	0.02	0.44	0.25	-0.70	0.0007	(0.1%)	-0.13	0.44	0.10	-0.42
Some college	0.0006	(0.1%)	-0.02	-0.05	-0.12	0.20	0.0005	(0.1%)	0.01	-0.17	-0.08	0.24
Household Structure	-0.0037	(-0.5%)	0.12	0.33	0.11	-0.57	-0.0040	(-0.5%)	0.13	0.36	0.12	-0.62
Family w/ children	-0.0051	(-0.6%)	0.17	0.47	0.13	-0.77	-0.0055	(-0.7%)	0.18	0.50	0.15	-0.84
Family middle aged	0.0014	(0.2%)	-0.05	-0.13	-0.02	0.20	0.0015	(0.2%)	-0.05	-0.15	-0.02	0.22
Partnering	0.0053	(0.7%)	-0.24	-0.29	-0.01	0.54	0.0042	(0.5%)	-0.18	-0.26	0.05	0.39
Single	0.0007	(0.1%)	-0.03	-0.03	0.00	0.07	0.0002	(0.0%)	-0.01	0.00	0.01	0.01
Cohabitation	0.0047	(0.6%)	-0.20	-0.26	-0.01	0.48	0.0040	(0.5%)	-0.17	-0.26	0.04	0.39
Race	0.0032	(0.4%)	-0.13	-0.26	0.02	0.37	0.0034	(0.4%)	-0.12	-0.36	0.04	0.44
Other race	-0.0001	(0.0%)	0.00	0.03	0.02	-0.04	-0.0002	(0.0%)	0.00	0.04	0.02	-0.06
Black	0.0019	(0.2%)	-0.07	-0.16	0.00	0.23	0.0018	(0.2%)	-0.06	-0.19	0.00	0.25
Hispanic	0.0014	(0.2%)	-0.05	-0.13	0.01	0.18	0.0017	(0.2%)	-0.05	-0.21	0.02	0.25
<b>Contribution of Within-Category Change</b>												
Overall (sum of components)	0.0725	(9.2%)	-1.83	-8.93	-0.95	11.71	0.0674	(8.6%)	-1.83	-7.68	-1.05	10.56
<b>By Component</b>												
Education	0.0367	(4.7%)	-0.60	-5.68	-2.44	8.72	0.0047	(0.6%)	-0.09	-0.90	-0.75	1.75
Less than high school	0.0148	(1.9%)	-0.34	-1.91	-0.54	2.79	0.0043	(0.6%)	-0.23	-0.13	-0.01	0.37
High school	0.0129	(1.6%)	-0.03	-2.66	-1.19	3.87	-0.0012	(-0.2%)	0.21	-0.60	-0.41	0.80
Some college	0.0090	(1.1%)	-0.24	-1.12	-0.71	2.07	0.0016	(0.2%)	-0.07	-0.17	-0.34	0.57
Household Structure	0.0489	(6.2%)	-0.03	-9.32	-2.89	12.25	0.0244	(3.1%)	0.89	-7.02	-2.75	8.89
Family w/ children	0.0218	(2.8%)	0.11	-4.61	-1.33	5.82	0.0071	(0.9%)	0.58	-2.96	-1.17	3.55
Family middle aged	0.0271	(3.4%)	-0.14	-4.71	-1.57	6.43	0.0173	(2.2%)	0.31	-4.07	-1.58	5.34
Partnering	-0.0137	(-1.7%)	1.08	-0.47	-0.67	0.06	-0.0245	(-3.1%)	1.01	1.80	0.34	-3.15
Single	-0.0126	(-1.6%)	1.01	-0.51	-0.53	0.03	-0.0234	(-3.0%)	0.95	1.72	0.45	-3.12
Cohabitation	-0.0010	(-0.1%)	0.07	0.04	-0.14	0.03	-0.0011	(-0.1%)	0.06	0.08	-0.11	-0.03
Race	-0.0163	(-2.1%)	-2.27	6.54	5.06	-9.33	-0.0137	(-1.7%)	0.49	1.25	0.12	-1.86
Other race	-0.0049	(-0.6%)	0.08	0.82	0.20	-1.10	-0.0057	(-0.7%)	0.08	1.00	0.23	-1.31
Black	-0.0045	(-0.6%)	0.23	0.23	-0.15	-0.31	-0.0033	(-0.4%)	0.16	0.17	-0.07	-0.25
Hispanic	-0.0068	(-0.9%)	0.35	0.24	-0.10	-0.50	-0.0046	(-0.6%)	0.25	0.08	-0.04	-0.29



**Figure A.1 Lorenz Curves**



# The Inequality Lab.

## Discussion Paper Series

The Inequality Lab at the University of Michigan is a research and training laboratory that investigates the dynamics of social inequality and trains the next generation of inequality scholars. The lab opened in the fall of 2017 to support the study of social inequality, its change across time, and its maintenance across generations. Current projects are focused on wealth inequality and its intergenerational consequences, the determinants and effects of social mobility, and the development of new data and methods to address these topics.

The Discussion Paper series serves to distribute ongoing work by members and affiliates of the Inequality Lab.

