

Announcements

- The next few lectures will be talking about how to measure inequality and mobility and what modern patterns look like
- On Wednesday, we'll go over details for the Du Bois project (no lecture or office hours on MLK Jr. Day)
- Readings for next week:
 - Gottschalk, P. (1997) "Inequality, income growth and mobility: The basic facts." *Journal of Economic Perspectives*, 11 (2), 21-40
 - Corak, M. (2013) "Income inequality, equality of opportunity, and intergenerational mobility." *Journal of Economic Perspectives*, 27 (3), 79-102
- The reading list for the entire course will be posted this weekend

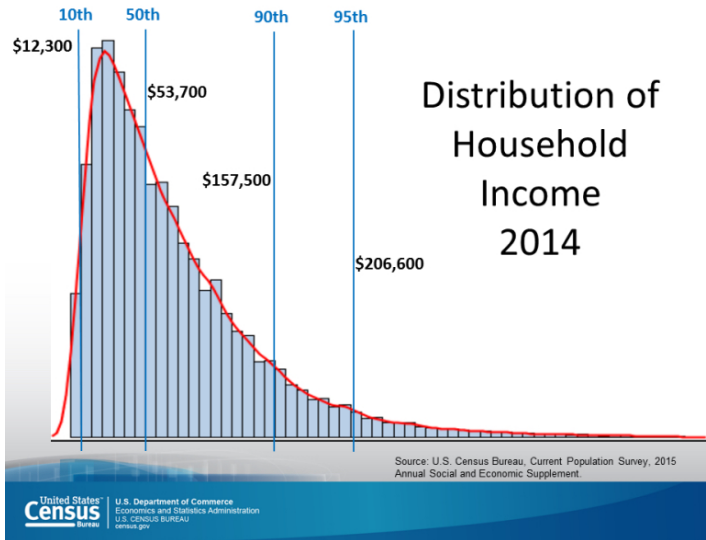
Measuring Inequality

- Quantifying inequality can be rather difficult
- There are a large number of measures of inequality that each capture a slightly different dimension of inequality
- Beyond that issue of how to quantify inequality for a particular distribution, we need to identify which distribution we care about
- We can think of three main areas of inequality we may care about:
 - Inequality in opportunity
 - Inequality in outcomes
 - Inequality related to discrimination

Measuring Inequality

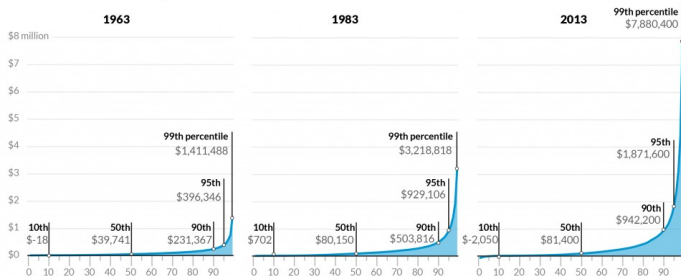
- Let's focus for the moment on outcomes
- Which outcomes do we care about?
- Just a few (but certainly not all) relevant ones:
 - Income
 - Wealth
 - Consumption
- Our choice of outcome can dramatically change our view of inequality and our policies

Choosing an Outcome



Choosing an Outcome

Percentiles of Family Wealth, 1963–2013



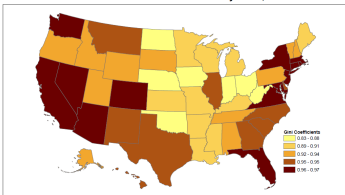
Sources: Urban Institute calculations from Survey of Financial Characteristics of Consumers 1962 (December 31), Survey of Changes in Family Finances 1963, and Survey of Consumer Finances 1983 and 2013.

Note: 2013 dollars.

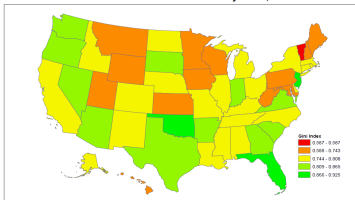
URBAN INSTITUTE

Choosing an Outcome

Model-based Wealth Gini Coefficients by State, ACS2013



Household Income Gini Coefficient By State, ACS2013



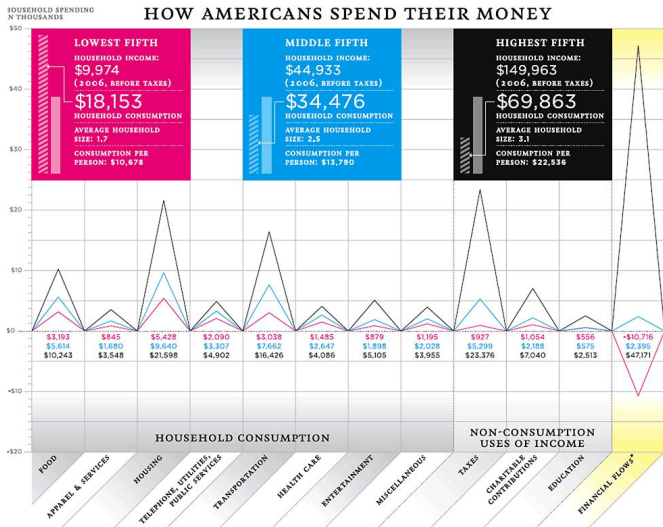
From Noss, 2014. "Household Income: 2013." *American Community Survey Briefs*.

Choosing an Outcome

Median income and wealth by group in the United States

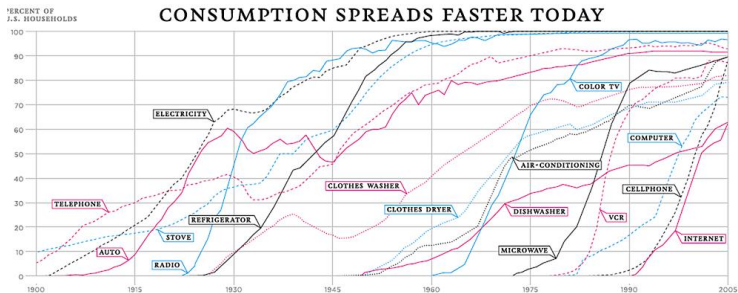
	Median income, 2016	Median net worth, 2013	Median net worth excluding equity in own home, 2013
White	\$60,869	\$103,976	\$34,755
White, not Hispanic	\$63,745	\$132,483	\$51,100
Black	\$37,364	\$9,211	\$2,725
Asian	\$78,141	\$112,250	\$41,507
Hispanic (any race)	\$45,719	\$12,458	\$5,825

Choosing an Outcome



*(FINANCIAL OUTFLOWS INCLUDE PAYMENTS LIKE PRIVATE PENSION CONTRIBUTIONS AND MORTGAGE PRINCIPAL; INFLOWS INCLUDE DRAWING DOWN OF SAVINGS, SALES OF PRINCIPAL HOLDINGS LIKE HOUSES OR SECURITIES, AND INSURANCE POLICIES REDEEMED.)

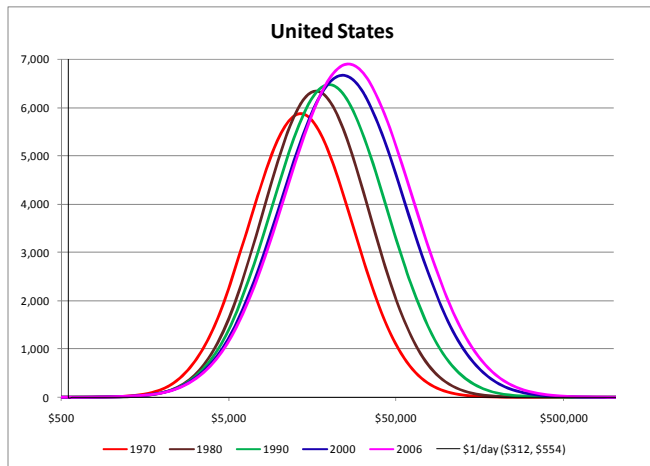
Choosing an Outcome



Choosing an Outcome

- Another thing to consider is whether to work in logs
- Many variables like income are distributed somewhat log normal
- Taking logs gives you a different sense of the distribution
- Thinking in logs may also approximate our gut feelings about inequality
- Which resonates more with you, a \$1,000 raise or a 5% raise?

Choosing an Outcome



From [Global Income Distribution in 20 Charts](#)

Choosing a Measure

- Even once we pick an outcome (or opportunity) to focus on, we still need to settle on a measure of inequality
- We could just visually inspect distributions but this will only get us so far
- We need to settle on a statistic to describe the relevant features of that distribution
- Let's start with some basics

Choosing a Measure

- There are a few statistical properties of a distribution we may care about
- The mean and median as measures of the central tendency of the distribution:

$$\text{mean} = \bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

$$\text{median} = m, \text{ s.t. } P(X \leq m) \geq \frac{1}{2} \text{ and } P(X \geq m) \geq \frac{1}{2}$$

Choosing a Measure

- There are a few statistical properties of a distribution we may care about
- The standard deviation as a measure of the dispersion of the distribution:

$$\text{standard deviation} = s = \left[\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2 \right]^{\frac{1}{2}}$$

Choosing a Measure

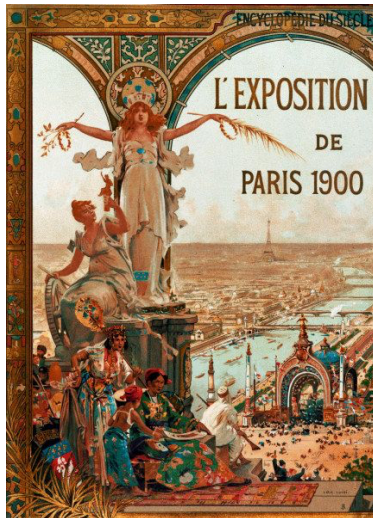
- There are a few statistical properties of a distribution we may care about
- The skewness as a measure of the symmetry of the distribution:

$$\text{skew} = \frac{n}{(n-1)(n-2)} \sum_{i=1}^n \left(\frac{x_i - \bar{x}}{s} \right)^3$$

Announcements

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 - Corak, M. (2013) "Income inequality, equality of opportunity, and intergenerational mobility." *Journal of Economic Perspectives*, 27 (3), 79-102
- The full reading list is up on Blackboard

The Du Bois Project



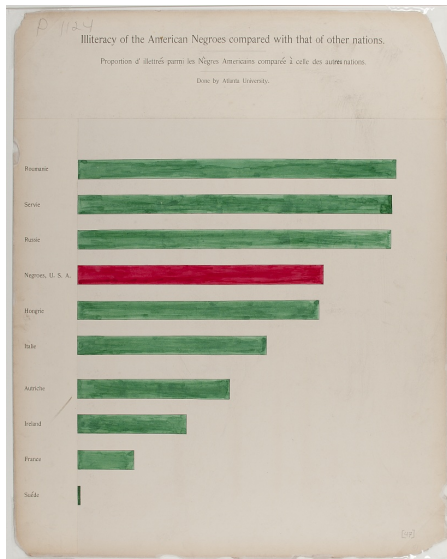
The Du Bois Project



The Du Bois Project



The Du Bois Project



The Du Bois Project

- Your goal is to recreate two figures of your choosing
- One should be a Georgia figure recreated with Virginia data from the same time period (1900)
- The other should be a national figure recreated with modern data
- In both cases, stay true to the spirit of the original figure and include similar information (to the extent possible)
- You should update words and descriptions to adopt modern language

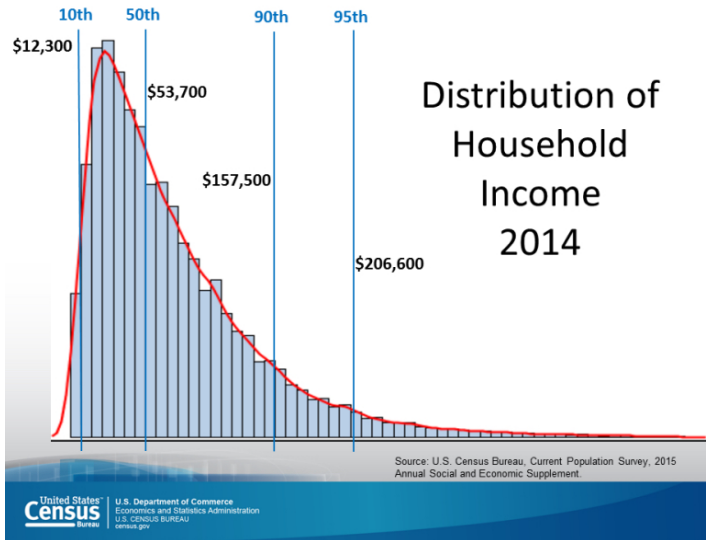
The Du Bois Project

- The complete details and links to the figures are in the handout on Blackboard
- Here are a couple of key things I want to emphasize
- You will submit pdf and jpg versions of each figure
- Use the highest resolution possible and the file naming conventions given in the handout
- This will facilitate the construction of a course website with a gallery of the updated figures
- You will also submit a document providing data sources and explaining any data manipulation
- Everything is due February 8th at 5pm

The Du Bois Project

- You can use any program you want to create figures (Stata, Excel, ArcMap, etc.)
- If you are struggling with any aspect of data collection or figure creation, feel free to come in to office hours
- I am happy to try to point you in the right direction for data or help you work through software glitches
- The handout on Blackboard contains several useful starting points for data
- Let's take a moment to look through them

Choosing an Measure



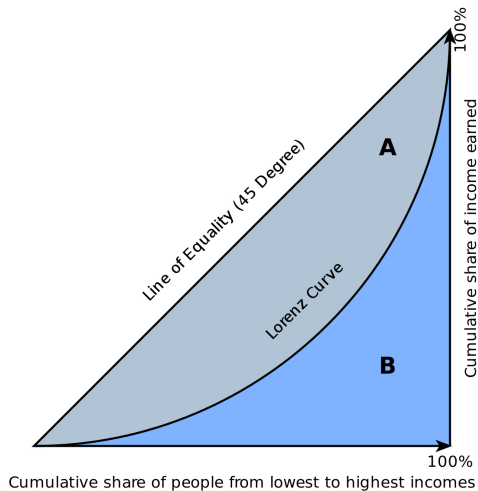
Choosing a Measure

- The mean, median and standard deviation all have the advantage (and disadvantage) of being measured in units of the outcome of interest
- A unitless measure to capture inequality using these variables is the coefficient of variation:

$$CV = \frac{s}{\bar{x}}$$

- Think about how this varies if incomes are rising overall but the dispersion (standard deviation) is staying the same

Choosing an Measure



Choosing a Measure

- The Lorenz curve simply represents the cumulative distribution of income for a country
- The further the curve is from the line of equality, the more unequal the distribution of income is
- The Gini coefficient quantifies this relationship:

$$G = \frac{A}{A + B}$$

- Notice that the Gini coefficient can range from 0 (complete equality) to 1 (complete inequality)

Choosing a Measure

- The Gini coefficient is very common but it is a little hard to interpret magnitudes
- Another common approach to getting a single measure of inequality relies on ratios of percentiles of the income distribution
- For example, the 90-10 ratio would be the ratio of the income for someone at the 90th percentile to the income for somebody at the 10th percentile
- The bigger the ratio, the greater the inequality
- Common ratios include 90-10, 90-50, and 50-10

Choosing a Measure



Choosing a Measure

[Inequality] cannot, in general, be measured without introducing social judgements about the weight to be attached to inequality at different points on the income scale – Atkinson, The Economics of Inequality

Choosing a Measure

- Another relevant concept here is the poverty line
- The poverty line has its roots in President Johnson's 'War on Poverty'
- It was created as an indicator for being able to afford basic food needs
 - The Department of Agriculture estimated that families spent one third of their income on food
 - Poverty was defined as not having sufficient income to afford the USDA's economy food plan

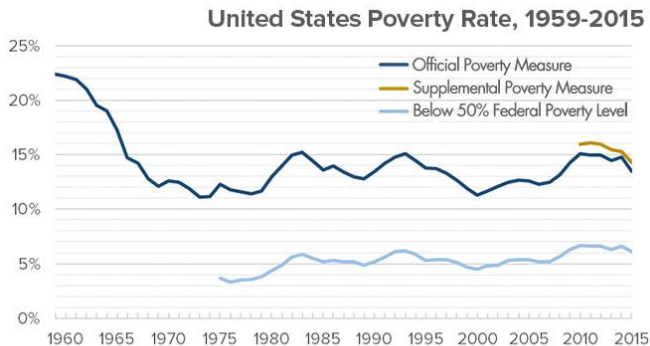
Choosing a Measure

- The census poverty threshold for a family of four in 2017 was \$24,858
- Note that this is an absolute measure of poverty given the way it is defined
- We may be more interested in measures of *relative poverty*
- This distinction between absolute and relative is also important when thinking about any measure of inequality

Announcements

- Readings for next week:
 - Corak, M. (2013) “Income inequality, equality of opportunity, and intergenerational mobility.” Journal of Economic Perspectives
 - Chetty et al. (2014) “Is the United States still a land of opportunity? Recent trends in intergenerational mobility” American Economic Review
- Let me know if you run into any problems working on the Du Bois project
- We'll go over referee report details next week

Absolute vs Relative Measures



UCDAVIS
CENTER FOR POVERTY RESEARCH

Data source: U.S. Census Bureau

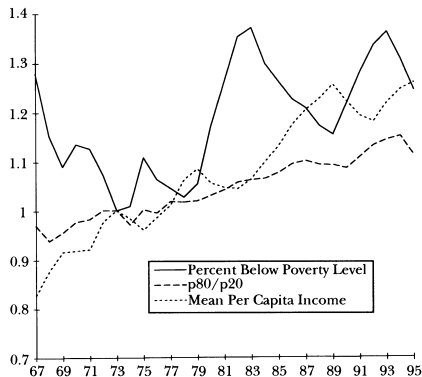
poverty.ucdavis.edu

Absolute vs Relative Measures

- Let's take a quick moment to think about absolute versus relative measures
- We'll take a brief poll to assess our own preferences over doing absolutely better or relatively better
- Note that your responses will be anonymous
- To join the poll, either point your browser to:
Pollev.com/jmparman

Trends in Inequality

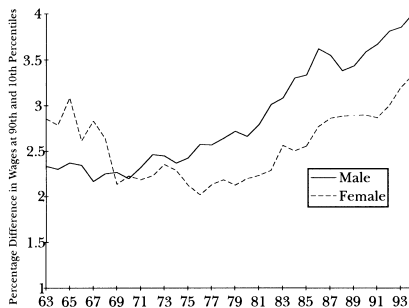
Mean Per Capita Income, 80th/20th Percentiles and Poverty Rates (1973 = 1.0)



Source: Tables B-3 and B-5 Current Population Reports—Consumer Income Series P60-193 and Table C-1 of P60-194. Mean per capita income is a weighted average of male and female persons, including persons with zero income.

Trends in Inequality

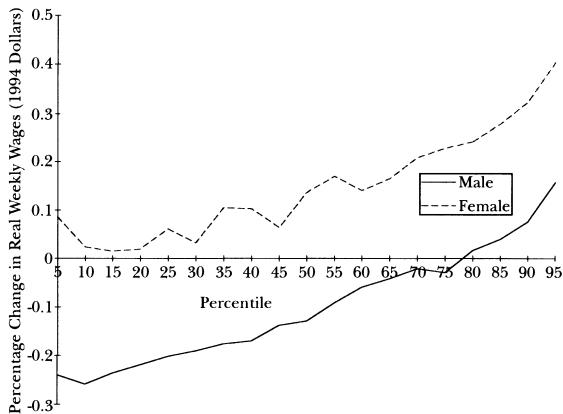
Percentage Difference in Weekly Wages at 90th and 10th Percentiles, 1963–1994



Source: Author's tabulation of the March CPS.

Trends in Inequality

Percentage Change in Real Weekly Wages by Percentile, 1973–1994

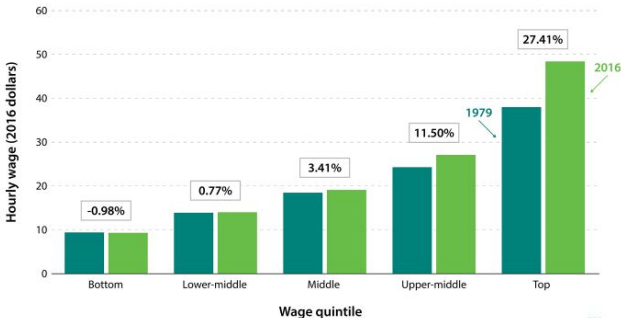


Source: Author's tabulation of the March CPS.

Trends in Inequality

FIGURE 2.

Real Wages by Wage Quintile, 1979 and 2016



Source: Current Population Survey, BLS (1979–2016); authors' calculations.

Note: Wages are expressed in 2016 dollars, deflated using the CPI-U-RS. Sample restricted to workers ages 25–54. Growth rates are cumulative.

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Trends in Inequality by Gender and Race

- Important elements of public policy debates are the wage gaps for females and minorities
- There are two important dimensions to these wage gaps:
 - Average differences in observable characteristics across groups that correlate with earnings
 - Discrimination in the labor market (or other areas that contribute to eventual earnings)
- Let's look at how Gottschalk handles this

Trends in Inequality by Gender and Race

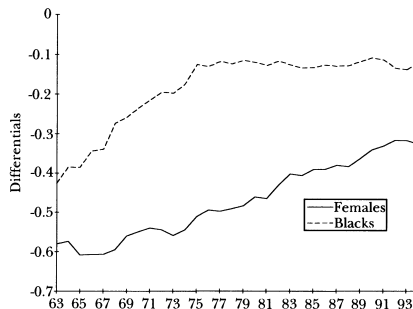
- Gottschalk starts with a basic earnings regression:

$$\ln w_{i,R} = \beta_0 + \beta_1 \text{Edu}_i + \beta_2 \text{Exp}_i + \beta_3 \text{Exp}_i^2 + \beta_4 \text{Female}_i + \theta_R + \varepsilon_i$$

- The outcome $w_{i,R}$ is the weekly earnings of individual i from region R
- This equation controls for differences in education and experience across genders (but not differences in the returns to those inputs)
- The coefficient on Female_i will then pick up the gender gap in earnings after controlling for observables

Trends in Inequality by Gender and Race

Gender and Race Differentials, 1963–1994

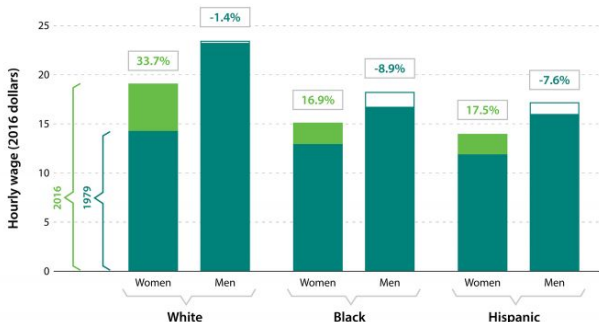


Source: Coefficient on variables for female and black in log earnings regression, estimated separately in each year from the March CPS.

Trends in Inequality by Gender and Race

FIGURE 5.

Real Wages of White, Black, and Hispanic Men and Women, 1979 and 2016

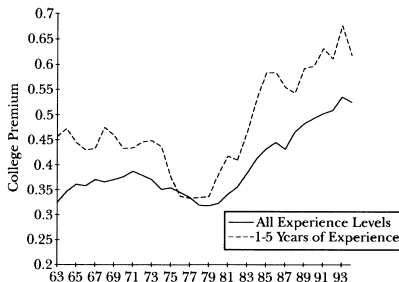


Source: Current Population Survey, BLS (1979–2016); authors' calculations.

Note: Wages are median hourly earnings expressed in 2016 dollars and deflated using the CPI-U-RS. Sample is restricted to workers ages 25–54. Hollow green bars represent a decrease from 1979 to 2016. Race/ethnicity categories are mutually exclusive.

Trends in Inequality and the Return to Education

College Premium: All and New Entrants

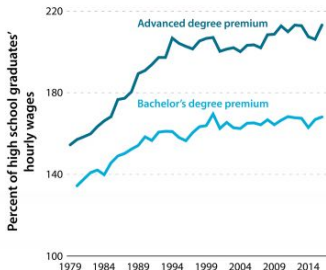


Source: Coefficient on college education in log earnings regression, estimated separately in each year from the March CPS.

Trends in Inequality and the Return to Education

FIGURE 3A.

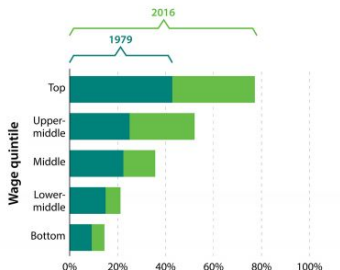
Bachelor's Degree and Advanced Degree Wage Premiums, 1979–2016



Source: Current Population Survey, BLS (1979–2016); authors' calculations.
Note: Sample restricted to workers ages 25–54. Wage premiums are the ratio of median wages for each educational attainment group with respect to median wages for workers with exactly a high school diploma.

FIGURE 3B.

Share of Income Quintile with a Four-Year Degree, 1979 and 2016

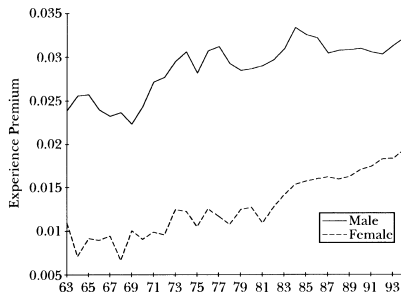


Source: Current Population Survey, BLS (1979–2016); authors' calculations.
Note: Wages are hourly. Sample is restricted to workers ages 25–54.

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Trends in Inequality and the Return to Experience

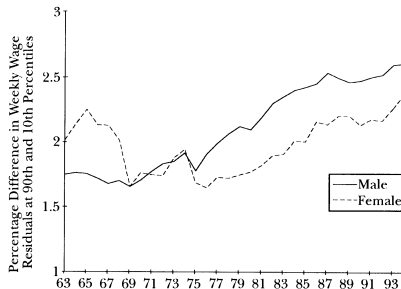
Experience Premium



Source: Coefficients on experience squared in log earnings regression, estimated separately in each year from the March CPS. The coefficients on the quadratic experience profile are evaluated at 10 years of experience.

Trends in Inequality Within Groups

Residual Wage Inequality: Percentage Difference in Weekly Wages at 90th and 10th Percentiles, Holding Other Factors Constant, 1963–1994

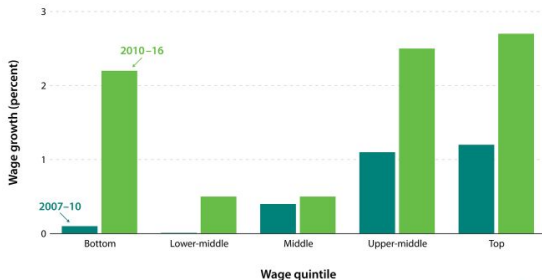


Source: $(p_{90}-p_{10})/p_{10}$ of the residuals from log earnings regression, estimated separately in each year from the March CPS

Trends in Inequality and the Great Recession

FIGURE 13.

Real Wage Growth by Wage Quintile, 2007–10 and 2010–16



Source: Current Population Survey, BLS (2007–16); authors' calculations.

Note: Wages are hourly and expressed in 2016 dollars, deflated using the CPI-U-RS. Sample is restricted to workers ages 25–54 and pooled within years. Growth rates are cumulative.

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