

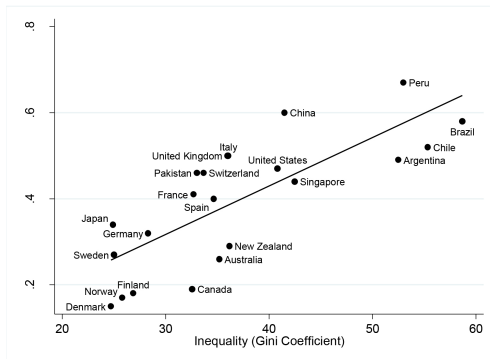
Extract from Social Mobility

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University of Chicago

Econ 350, Spring 2022

Figure 1: Intergenerational Mobility and Inequality: The “Gatsby Curve”

$$\text{IGE: } \underbrace{\ln Y_1}_{\text{Income in current generation}} = \alpha + \beta \underbrace{\ln Y_0}_{\text{Income of parents}} + \varepsilon$$

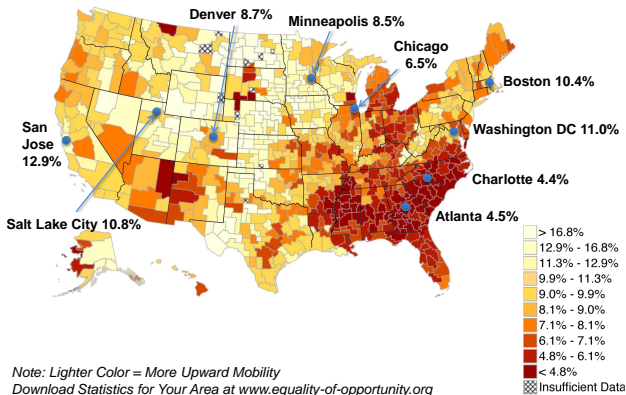


Source: Corak (2013)

- Inequality is measured **after taxes and transfers**.
- Gini index defined on **household income**.
- IGE measured by **pre-tax and transfer** income of **individual** fathers and sons. Notice inconsistencies.

Figure 2: The Geography of Upward Mobility in the United States

Chances of Reaching the Top Fifth Starting from the Bottom Fifth by Metro Area



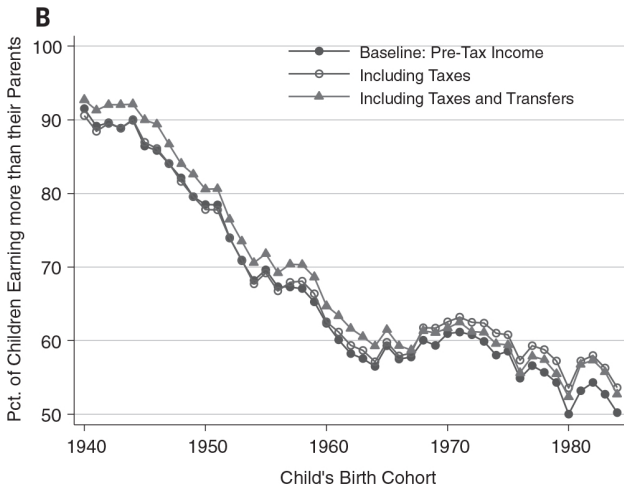
The ranks are from national income distribution.

Source: Chetty (2016)

Note: The measure of $P(\text{Child in Q5} - \text{Parent in Q1})$ derived from within-CZ OLS regressions of child income rank against parent income rank.

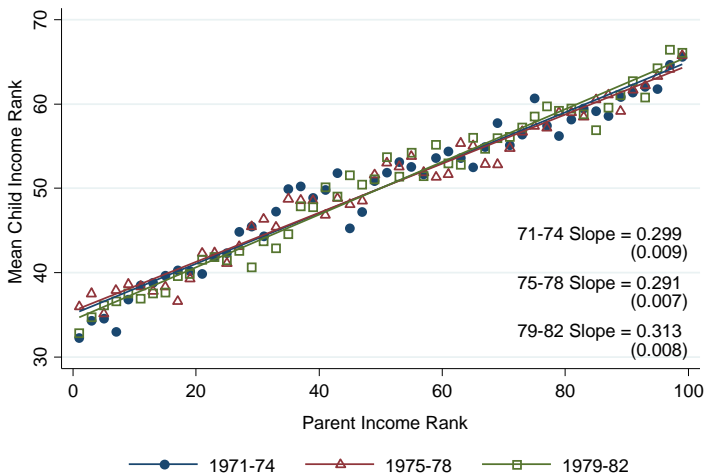


Figure 3: Fig. 3. Trends in absolute mobility: Sensitivity analysis



Source: The fading American dream: Trends in absolute income mobility since 1940.

Figure 4: Child Income Rank vs. Parent Income Rank by Birth Cohort



Source: Chetty et al. (2014).

Some Basic Questions

How to Interpret These Relationships?

What Policies (If Any) Should Be Adopted to Promote Social Mobility? To Reduce Inequality?

Is Income a Proper Measure of Welfare of Agents? Per Capita or Household or Extended Family Unit

Direction of Causality for Gatsby Curve?

- Inequality $\uparrow \Rightarrow \beta \uparrow$?
- $\beta \uparrow \Rightarrow$ inequality \uparrow ?
- Limited access to credit and labor markets \Rightarrow both $\beta \uparrow$ and inequality \uparrow ?
- Family or place? In what proportion?
- What exactly is place? What features determine place?

Understanding the Sources of Inequality and Social Immobility is Essential for Devising Effective Policies

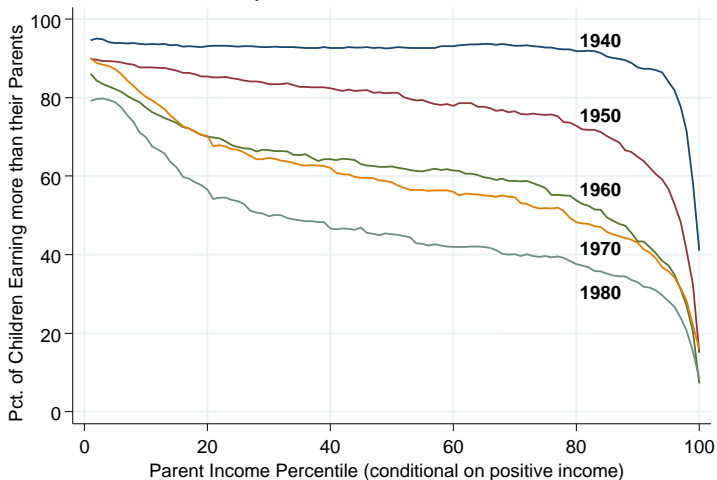
**Families? Schools? Neighborhoods? Peers?
Tax/Transfer Policy? Macro Policy?**

Which Measure of Mobility to Use?

- Rank (positional) Mobility? (and in what distribution?)
- Absolute Mobility (child doing better in real value terms than parent)?
- Mobility Within a Lifetime?

**Recent Cohorts Appear to be Doing Worse Than Previous
Ones:
Effects Concentrated Among Younger Entrants Within
Cohorts
Negative Effects Much More Pronounced for Males**

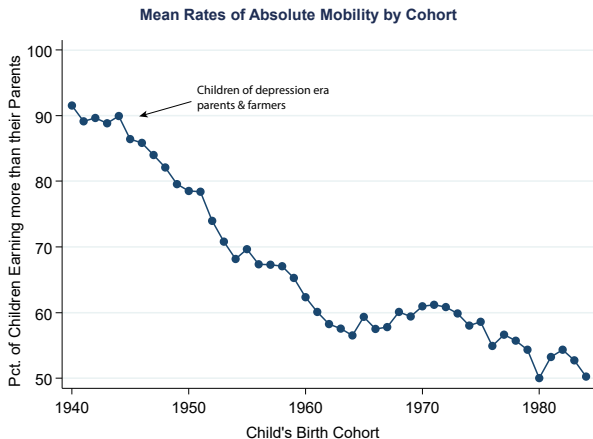
Figure 5: Percent of Children Earning More than their Parents By Parent Income Percentile



Source: Chetty et al. (2017)

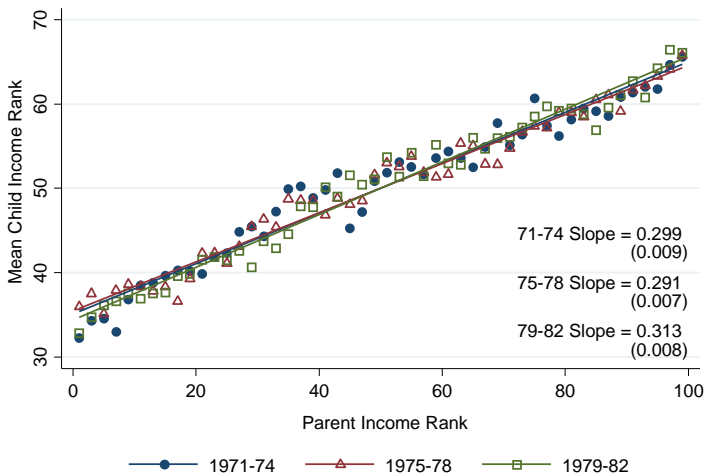
Relative Mobility Has Been Stable Over Time

Figure 6: Mean Rates of Absolute Mobility (Probability Children Do Better Than Parents) by Cohort



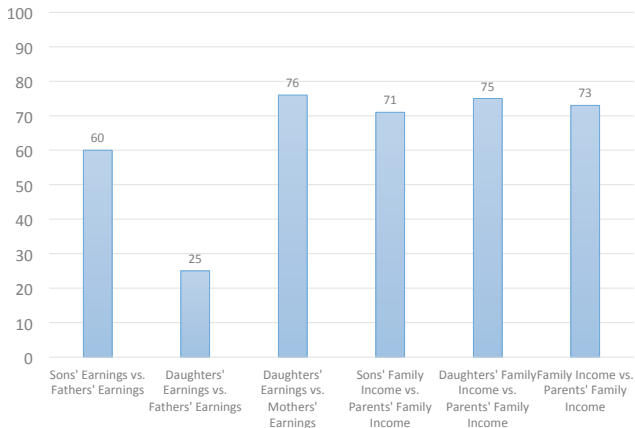
Source: Chetty et al. (2017)

Figure 7: Child Income Rank vs. Parent Income Rank by Birth Cohort



Source: Chetty et al. (2014).

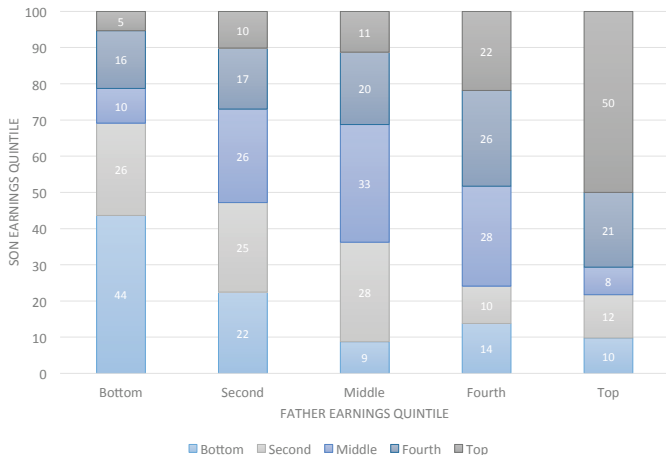
Figure 8: Percent of Grown Children Surpassing the Income of Parents



Source: Winship (2017). Author's analysis of the Panel Study of Income Dynamics (PSID).

Note: The sample begins with all parent-child pairs with income measured at either age 38, 39, 40, 41, or 42, and that single year of income is used (starting with age 40 and moving outward if unavailable). It then is restricted to pairs in which the parent turned 40 after 1974 and the child before 2006. Up to seven years of income are then averaged, using every other year, within a 13-year window. Family incomes are size-adjusted and all earnings and income measures are adjusted for inflation. Sample sizes are 129 for sons, 175 for daughters, and 308 for pooled family income. See Appendix 1 for methodological details.

Figure 9: Percent of Grown Sons in Each Fifth of Male Earnings by Each Fifth of Father Earnings

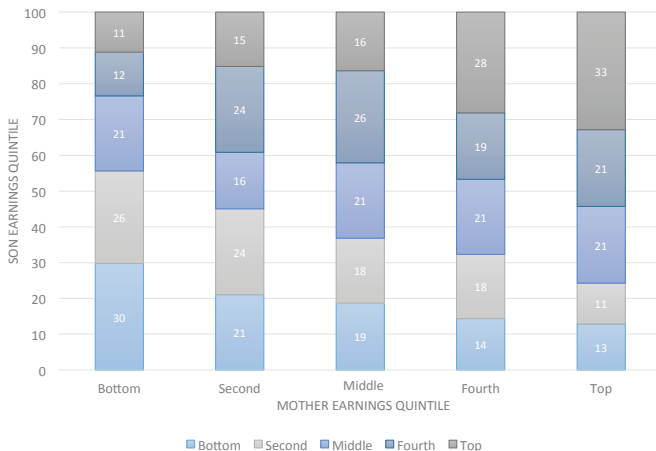


Source: Winship (2017). Author's analysis of the Panel Study of Income Dynamics (PSID).

Note: The sample includes the 442 father-son pairs where fathers had at least 8 years of non-missing earnings (out of a maximum of 15) and sons had at least 9 years. See Appendix 1 for methodological details.



Figure 10: Percent of Grown Daughters in Each Fifth of Female Earnings by Each Fifth of Mother Earnings

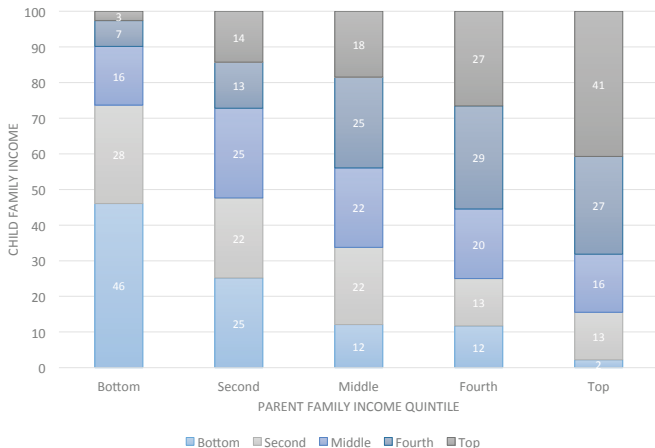


Source: Winship (2017). Author's analysis of the Panel Study of Income Dynamics (PSID).

Note: The sample includes the 854 mother–daughter pairs where mothers had at least 5 years of non-missing earnings (out of a maximum of 15) and daughters had at least 7 years. See Appendix 1 for methodological details.



Figure 11: Percent of Grown Children in Each Fifth of Family Income by Each Fifth of Parental Income



Source: Winship (2017). Author's analysis of the Panel Study of Income Dynamics (PSID).

Note: The sample is restricted to the 719 parent-child pairs where parents had at least 10 years of non-missing income and children had at least 9 years. Incomes are adjusted for family size. See Appendix 1 for methodological details.

Table 1: Summary of Key Measures of Persistence

Measure	Men's Earnings	Women's Earnings	Family Income
Persistence of Relative Inequality			
Intergenerational rank association (rank-rank)	.44-.52 (.51)	.31-.40 (.37)	.51-.53 (.53)
Persistence of Absolute Inequality			
Intergenerational elasticity	.44-.78 (.77)	.27-.54 (.40)	.59-.66 (.66)
Intergenerational correlation	.38-.51 (.48)	.35-.42 (.39)	.51-.53 (.53)
Sibling Similarity			
Sibling rank association	.38-.39 (.39)	.24-.32 (.31)	.36-.43 (.43)
Sibling correlation	.33-.45 (.39)	.22-.31 (.30)	.35-.45 (.45)

Source: Winship (2017).

Note: Estimates are preferred ranges and, in parentheses, preferred point estimates. See the text for selection criteria. Women's earnings compare women to their mothers or sisters. Family incomes are adjusted for family size. All earnings and incomes are adjusted for inflation.

What are Effective Policies to Promote Social Mobility?

Recent Analyses Recognize:

- 1 Fundamental importance of skills in modern economies
- 2 Multiplicity of skills
- 3 The multiple sources of skills
 - a Schools
 - b Families
 - c Neighborhoods and peers
 - d Firms
- 4 The importance of supporting and incentivizing all of these sources of skill
- 5 The importance of the early life origins of adult skills
- 6 Effective targeting by age of skill formation strategies
- 7 Need for evaluations of skill formation approaches accounting for costs and benefits measured in terms of social opportunity costs

A Skills-based Policy Tackles Many Aspects of Poverty, Inequality, and Social Mobility

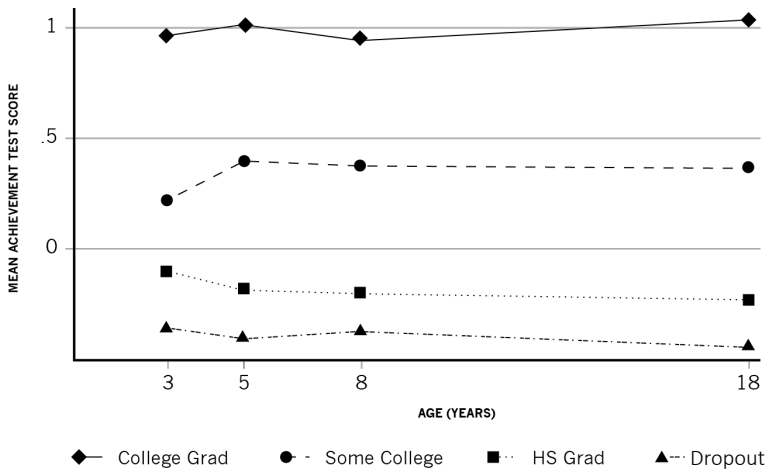
**Should We Solve Problems As They Arise?
“The Squeaky Wheel Gets the Grease”
OR Should We Target Them to Prevent?**

Is Prevention Efficient? How Well Can We Target?

Skill Gaps Open Up Early

- Gaps in skills across socioeconomic groups open up very early:
 - Persist strongly for cognitive skills
 - Less strongly for noncognitive skills
- Skills are not set in stone at birth—but they solidify as people age. They have genetic components.
- Skills evolve and can be shaped in substantial part by investments and environments.

Figure 12: Mean Achievement Test Scores by Age by Maternal Education



Source: Brodsky, Gunn et al.

Impacts by Family Background Status

Mothers' Speech and Child Vocabulary: Hart & Risley, 1995

Children enter school with “meaningful differences” in vocabulary knowledge.

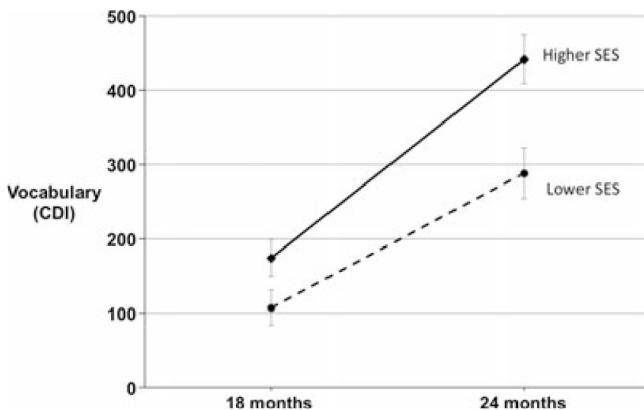
1. **Emergence of the Problem** In a typical hour, the average child hears:

Family Status	Actual Differences in <u>Quantity</u> of Words Heard	Actual Differences in <u>Quality</u> of Words Heard
Welfare	616 words	5 affirmatives, 11 prohibitions
Working Class	1,251 words	12 affirmatives, 7 prohibitions
Professional	2,153 words	32 affirmatives, 5 prohibitions

2. **Cumulative Vocabulary at Age 3**

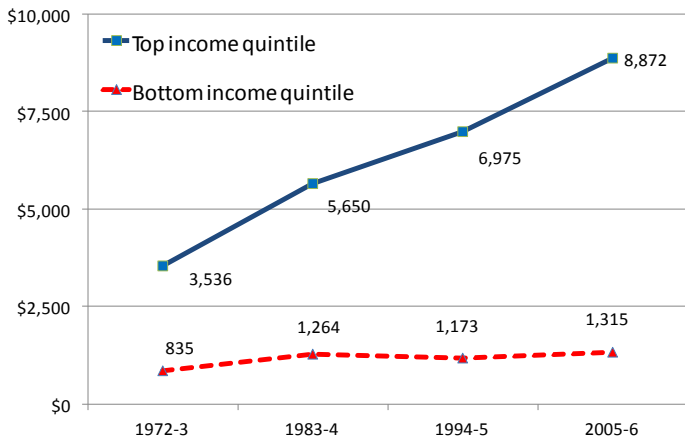
Cumulative Vocabulary at Age 3	
Children from welfare families:	500 words
Children from working class families:	700 words
Children from professional families:	1,100 words

Figure 13: Mean number of spoken words reported on the MacArthur/Bates CDI by age and SES (HI). Error bars represent SE of the mean over participants



Source: Fernald et al. (2013).

Figure 14: Per Capita Enrichment Expenditures on Children (\$2008) Top Versus Bottom Quintile of Households

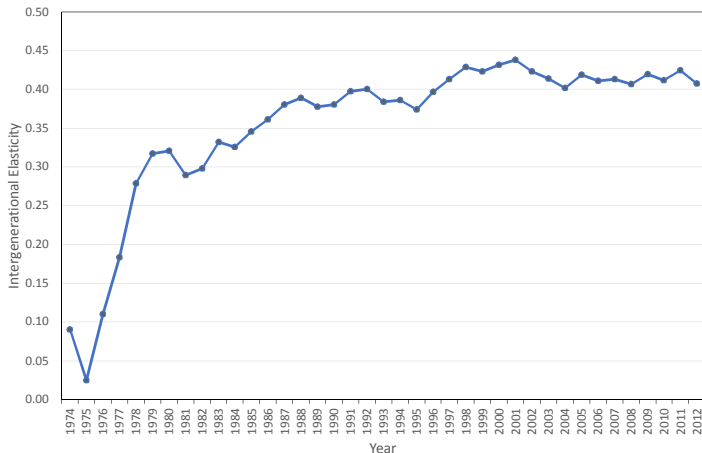


Source: Duncan and Murnane (2011).

Do Income Transfers Work?

**Big Debate: Income Transfers Per Se vs
What “Income” Really Represents**

Figure 15: Trends in the Intergenerational Correlation of Welfare Participation



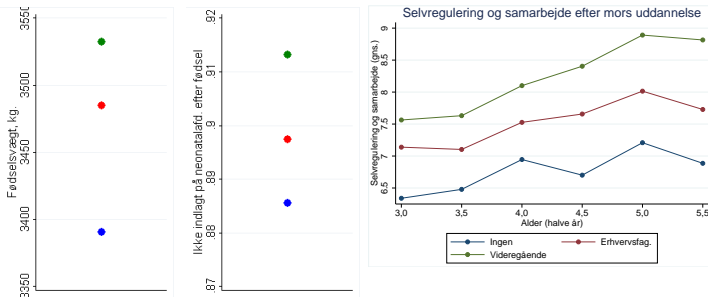
Source: Hartley et al. 2016

Note: Welfare participation includes AFDC/TANF, SSI, Food Stamps and Other Welfare.

**These Gaps Have Counterparts in Denmark, Despite its
Much More Generous Welfare State**

**Equal Access to High-Quality Public Services Uniformly
Funded Across Neighborhoods:
Health, Pre-K, Education, & Free Tuition**

Figure 16: Gaps throughout life, by mother's level of education, Denmark



Age:

0 yrs

0 yrs

3-5 yrs

Outcome:

Birth weight

Not admitted to
neo-natal ward

Score for self-
regulation

Unit:

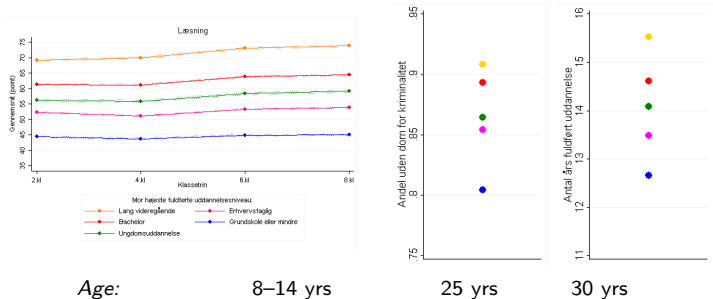
Gram

Fraction

Rating



Figure 16: Gaps throughout life, by mother's level of education, Denmark, Cont'd



Outcome: Test scores, Danish in national tests

No criminal conviction

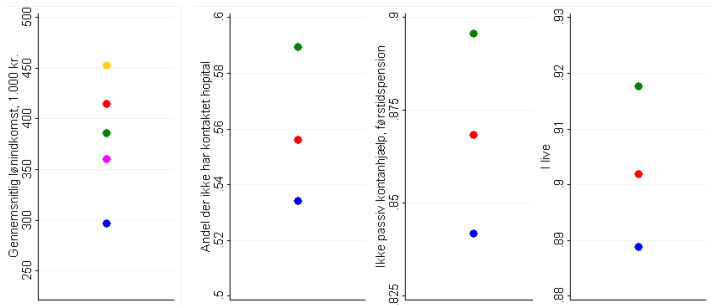
Years of schooling

Unit: Test score

Fraction

Years

Figure 16: Gaps throughout life, by mother's level of education, Denmark, Cont'd



Age:

40 yrs

40-50 yrs

54 yrs

60 yrs

Outcome:

Wage earnings

Not contacted
a hospital

In the labor
force

Alive

Unit:

1.000DKK

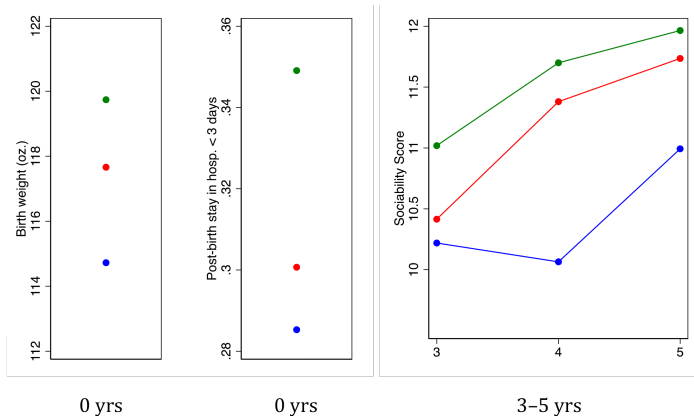
Fraction

Fraction

Fraction



Figure 17: Gaps throughout life, by mother's level of education, U.S.



Outcome:

Birth weight

Post-birth stay in hospital < 3 days

Sociability Score

Unit:

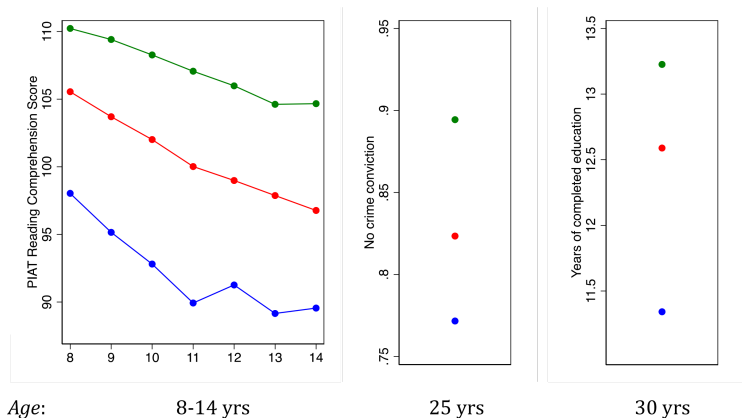
Ounces

Fraction

Rating



Figure 17: Gaps throughout life, by mother's level of education, U.S.



Outcome: PIAT Reading Comprehension Score

Outcome: No criminal conviction

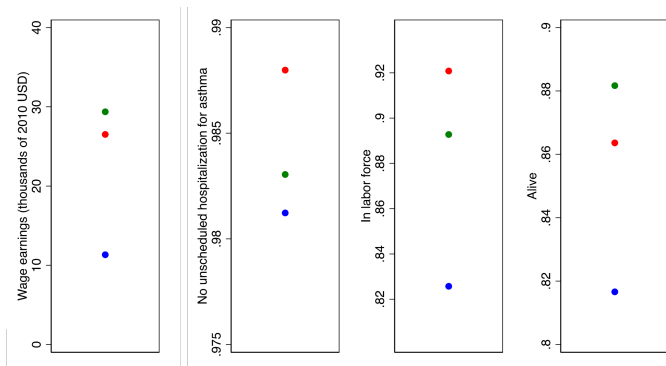
Outcome: Years of schooling

Unit: Test score

Unit: Fraction

Years  THE UNIVERSITY OF CHICAGO

Figure 17: Gaps throughout life, by mother's level of education, U.S.



Age:

40 yrs

40-50 yrs

54 yrs

55-57 yrs

Outcome:

Wage earnings

No unscheduled
hospitalization for
asthma

In the labor
force

Alive

Unit:

1,000 USD

Fraction

Fraction

Fraction UNIVERSITY OF
CHICAGO

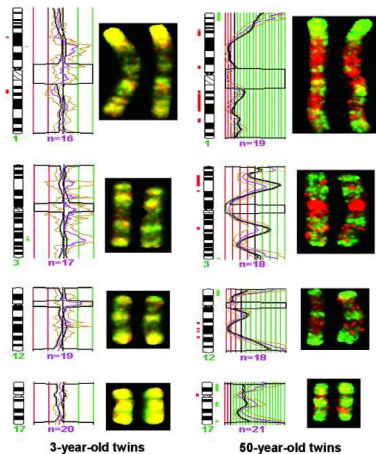
How to Interpret This Evidence

- Evidence on the early emergence of gaps leaves open the question of which aspects of families are responsible for producing these gaps.
- Genes? Eugenics?
- Parenting and family investment decisions?
- Family environments? Neighborhood, peer, and sorting effects?
- The evidence from a large body of research demonstrates an important role for investments and family and community environments in determining adult capacities above and beyond the role of the family in transmitting genes.
- The quality of home environments by family type is highly predictive of child success.

Genes, Biological Embedding of Experience, and Gene-Environment Interactions

Gene Expression Modified by Environments

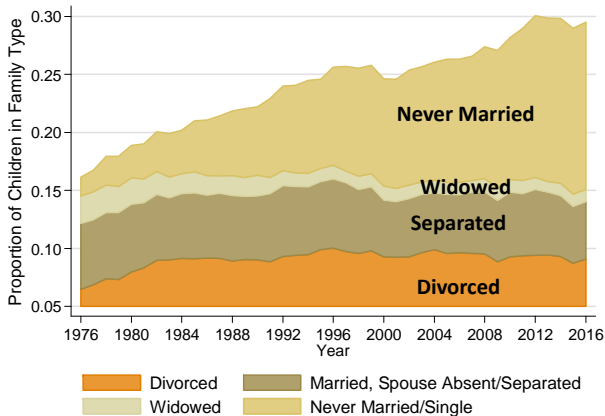
Figure 18: DNA Methylation and Histone Acetylation Patterns in Young and Old Twins



Source: Fraga, Ballestar et al. (2005)

The Family as Producer of Child Quality and as a Source of Inequality: Early Family Environments are Deteriorating

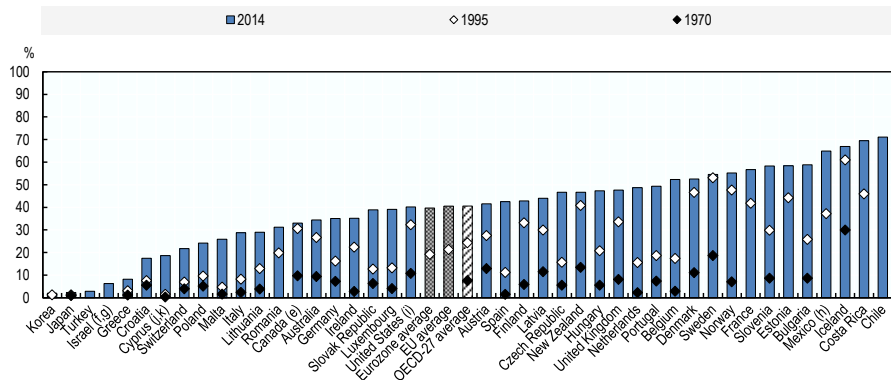
Figure 19: Children Under 18 Living in Single Parent Households by Marital Status of Parent



Note: Parents are defined as the head of the household. Children are defined as individuals under 18, living in the household, and the child of the head of household. Children who have been married or are not living with their parents are excluded from the calculation. Separated parents are included in "Married, Spouse Absent" Category.

Source: IPUMS March CPS 1976-2016.

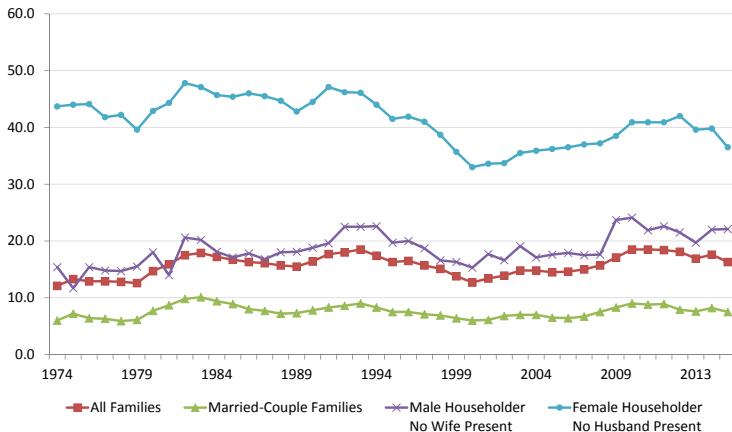
Figure 20: Share of births outside of marriage, 1970^a, 1990^b and 2014 or latest available year^c — Proportion (%) of all births where the mother's marital status at the time of birth is other than married^b



Source: OECD Family Database

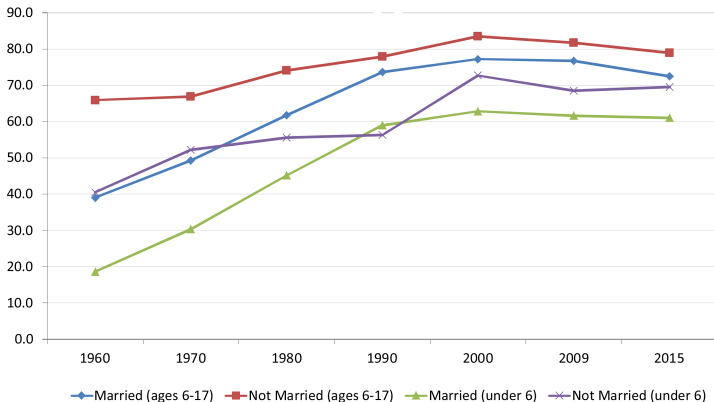
Demographic Factors: Change in Households and Household Behavior

Figure 21: Family Poverty Rates by Household Type, 1974-2015 :
Households with Children Under Age 18



Sources: <http://www.census.gov>.

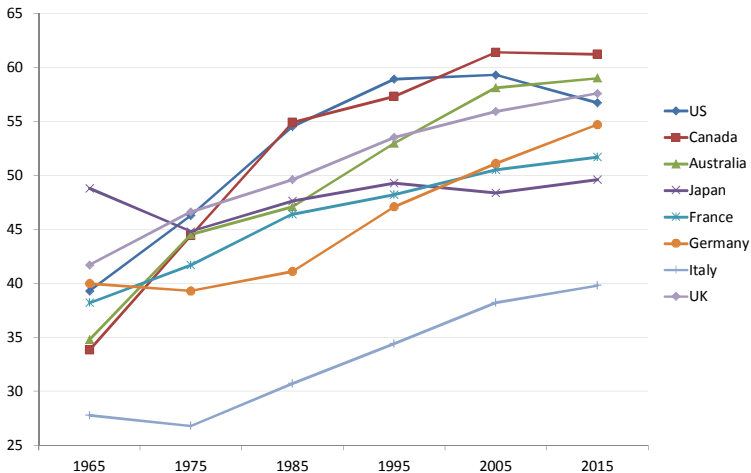
Figure 22: Labor Force Participation Rates of Mothers by Marital Status and Child's Age , US



Note: Married category includes married husband present. Single category includes never married, widowed, divorced or separated and married with spouse absent.

Source: Census The 2012 Statistical Abstract, Women in the Labor Force: A Databook 2015, United States Department of Labor.

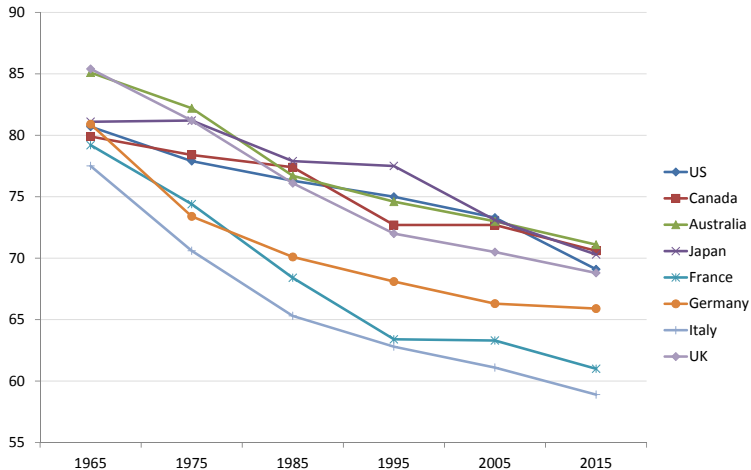
Table 2: Female Labor Force Participation Rates, 15+



Source: Browning, Martin, Pierre-Andre Chiappori, and Yoram Weiss. Economics of the Family. Cambridge University Press, 2014 and OECD.stat.



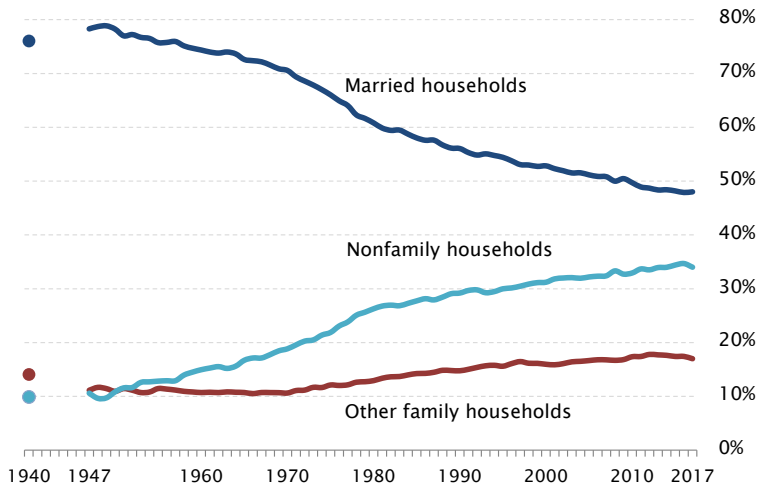
Table 3: Male Labor Force Participation Rates, 15+



Source: Browning, Martin, Pierre-Andre Chiappori, and Yoram Weiss. Economics of the Family. Cambridge University Press, 2014 and OECD.stat.



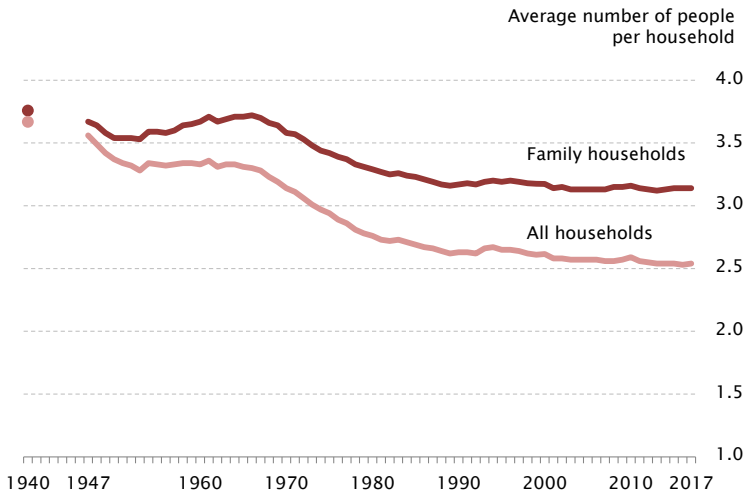
Figure 23: Percent of households by type



Source: U.S. Census Bureau, Decennial Census, 1940, and Current Population Survey, Annual Social and Economic Supplements, 1968 to 2017.

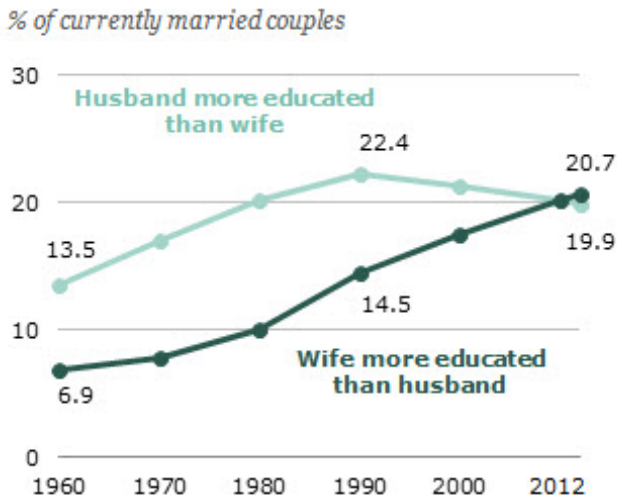


Figure 24: Changes in household size



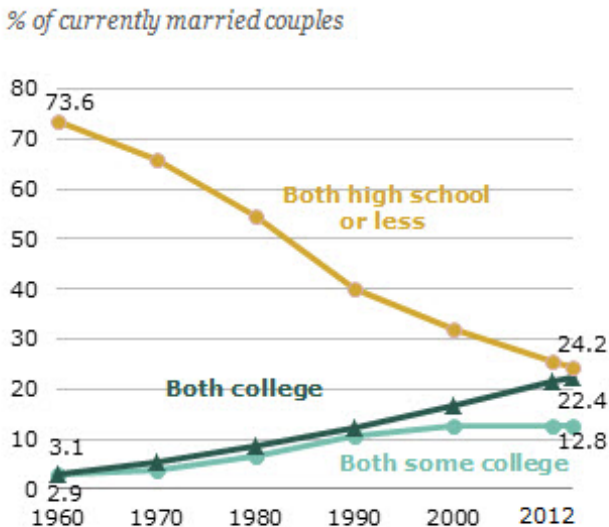
Source: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements, 1940 and 1947 to 2017.

Figure 25: More Women Marrying Down



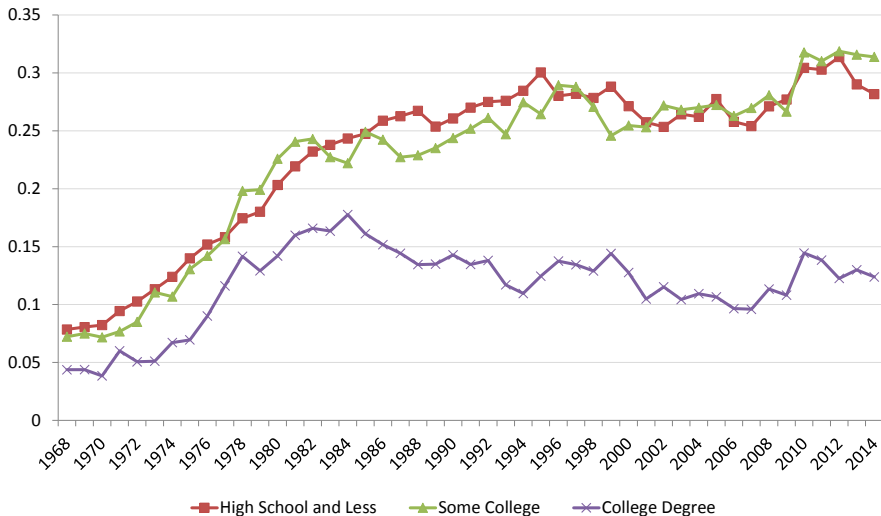
Source: Pew Research Center (2014) analysis of the Decennial Census and American Community Survey, IPUMS files.

Figure 26: Share of Marriages Between Less-Educated Declines



Source: Pew Research Center (2014) analysis of the Decennial Census and American Community Survey, IPUMS files.

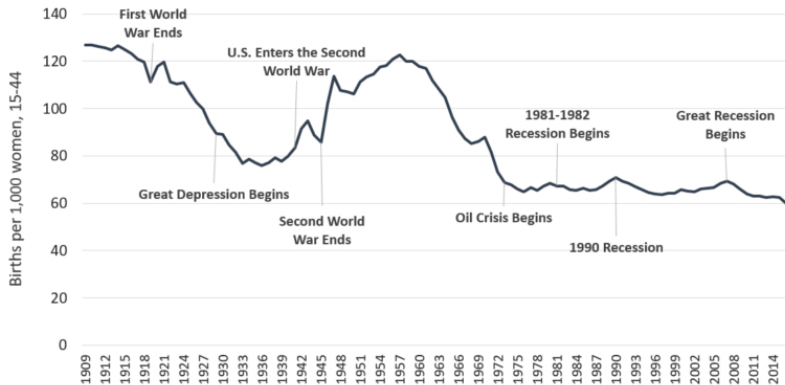
Figure 27: Divorce Rates by Schooling, US



Source: IPUMS CPS. Divorce Rate is defined as (% divorced ages 30-35) / (% married age 25-30).

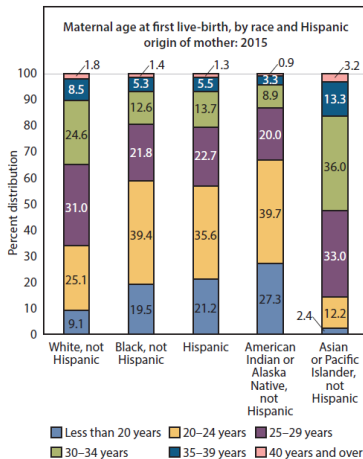
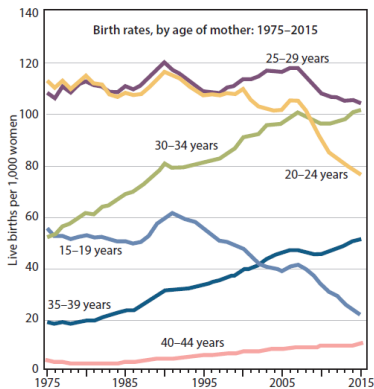


Figure 28: Birth Rates, 1909-2016



Source: Population Research Institute. NCHS, National Vital Statistics Report, Vol 66, No 1 (for data 1960–2015). NCHS, Vital Statistics of the United States, 2003, Volume 1, Natality (for data 1909–1960).

Figure 29: Birth rates, by age of mother and age at first live-birth: United States, 1975–2015

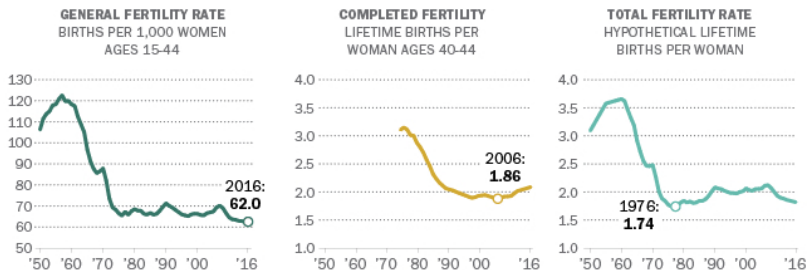


NOTE: See data table for Figure 9.

SOURCE: NCHS, National Vital Statistics System (NVSS).

Figure 30: U.S. Fertility Hits All-Time Low in 2016... and 2006... and 1976

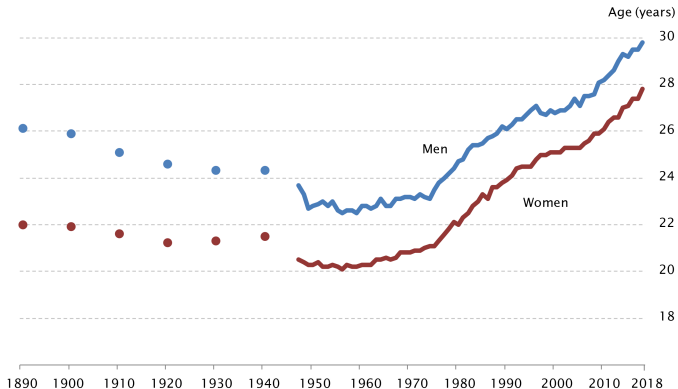
Fertility indicators



Note: Completed fertility data available for 1976-2012 only. Where necessary, TFR and completed fertility values are interpolated. All values based upon live births.

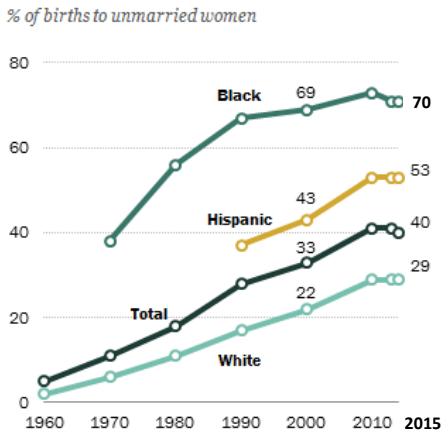
Source: Pew Research Center (2015). Data for GFR obtained from National Center for Health Statistics and Heuser (1976); for completed fertility, U.S. Census Bureau, Current Population Survey; for TFR, National Center for Health Statistics.

Figure 31: Median Age at First Marriage, 1890 to Present



Source: United States Census Bureau. Decennial Census, 1890 to 1940, and Current Population Survey, Annual Social and Economic Supplements, 1947 to 2018.

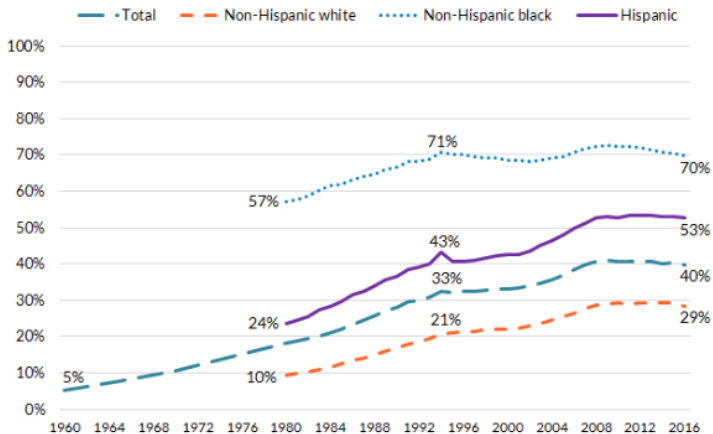
Figure 32: The Decoupling of Marriage and Childbearing



Note: Whites and blacks include only single-race non-Hispanics. Hispanics are of any race. 2014 data are preliminary. Data for Asians only not available.

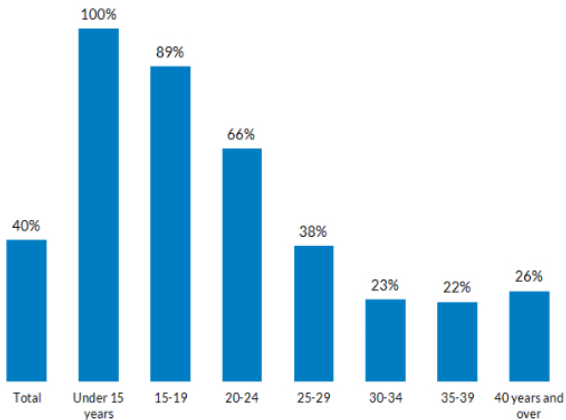
Source: National Center for Health Statistics natality data, PEW Research Center.

Figure 33: Percentage of All Births that Were to Unmarried Women, by Race and Hispanic Origin: Selected Years, 1960-2016



Source: Data by race and Hispanic origin for 1980–1989: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics (2014).

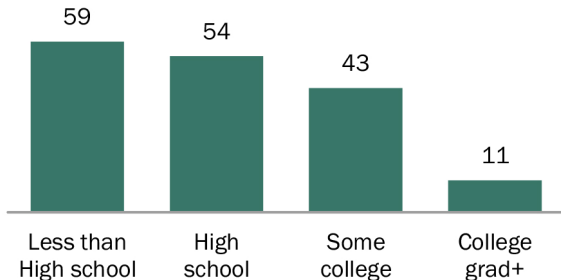
Figure 34: Percentage of All Births That Were to Unmarried Women, by Maternal Age: 2016



Source: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System (2018). CDC Wonder (data tool).

Figure 35: For the Less Educated, More Births Outside of Marriage

% of new mothers who are unmarried



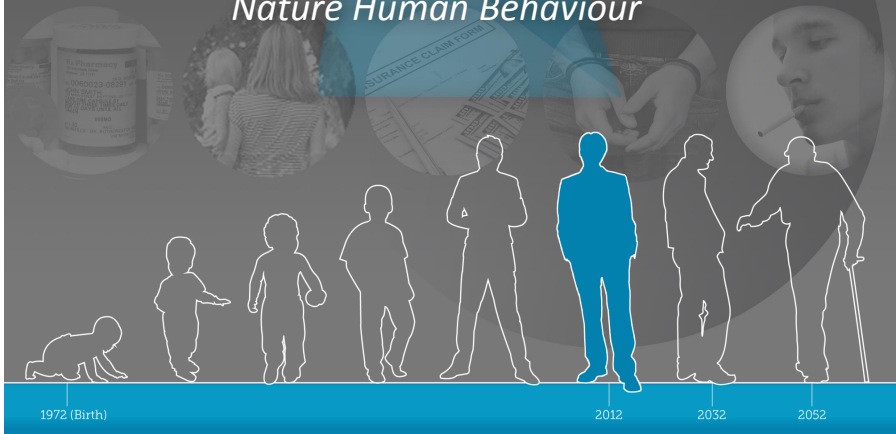
Note: Based on women ages 15–44 who have given birth in the past year. Marital status is based on time of survey.
Source: Pew Research Center analysis of 2014 American Community Survey (IPUMS).

Evidence on the Effectiveness of Early Targeting to Promote Skills (Including Character Skills)

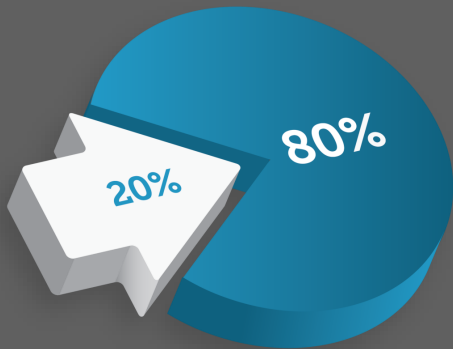
- 80% of adult social problems regarding health, healthy behaviors, crime and poverty are due to 20% of the population.
- Reliable indicators of these problems by age 5
Caspi et al. (2016).

Childhood Forecasting of a Small Segment of the Population with Large Economic Burden

Caspi, Moffitt, et al. (2017)
Nature Human Behaviour



The Pareto Principle

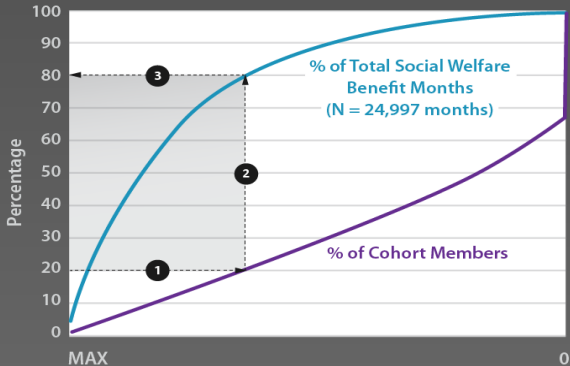


20% of the Actors
Account for **80%**
of the Results.

Vilfredo Pareto, 1848-1923

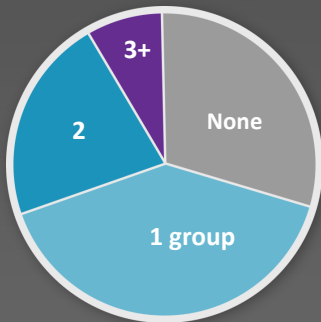
Social Welfare Benefit Months

20% of Cohort Members = 80% of Total Social Welfare Benefit Months

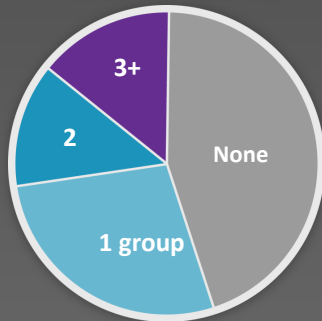


Concentration of High-Cost Groups in the Dunedin Birth Cohort

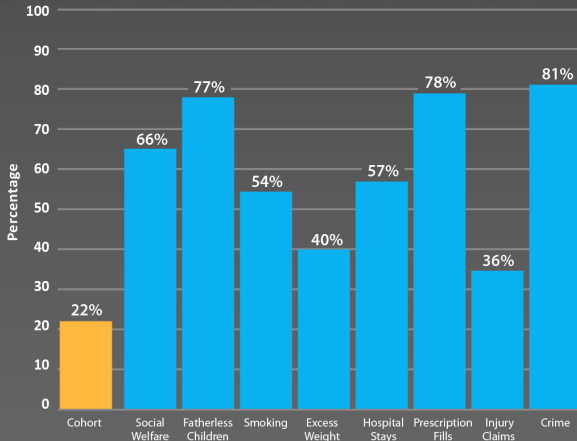
Chance Overlap



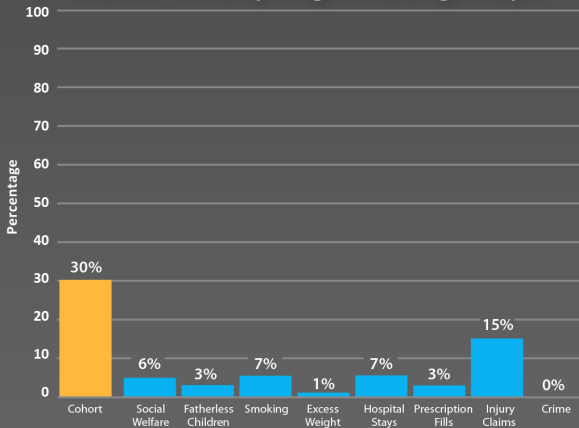
Observed Overlap



The High-need/High-cost Group in 3 or more sectors: How many health/social services do they use?



Small Footprint of cohort members never in any high-cost group:



Childhood Risk Factors to Describe High-cost Actor Groups: Composites across ages 3, 5, 7, 9, 11

- IQ
- Self-control
- SES (socio-economic status)
- Maltreatment

Summary of findings

- 20% of people contribute 80% of social/health problems.
- A high-need/high-cost population segment uses ~half of resources in multiple sectors.
- Most high-need/high-cost people in this segment share risk factors in the first decade of life;
- Brain integrity in the first years of life is important.

Seen in this way, early-life risks seem important enough to warrant investment in early-years preventions.

Skill Development by Family Background (Consider Just Cognitive Skill)

The Importance of Cognition and Character

- a Major advances have occurred in understanding which human capacities matter for success in life.
- b Cognitive ability as measured by IQ and achievement tests is important.
- c So are the **socio-emotional skills** – sometimes called character traits or personality traits:

- Motivation
- Sociability; ability to work with others
- Attention
- Self Regulation
- Self Esteem
- Ability to defer gratification
- Health and Mental Health

Welfare Subsidized Poverty Enclaves: Detached The Poor from Society

**The Dynamics of Skill Formation:
Two Notions of Complementarity**
[Link to Additional Material](#)

50% of Inequality in Lifetime Earnings Due to Factors in Place by Age 18

Cunha et al. (2005)

- Roemer (2017) reports a similar estimate
- Keane and Wolpin: 90%!

Power of Place
Is Geography Destiny?

Additional Material

Static Complementarity

- The productivity of investment greater for the more capable.
 - **High returns for more capable people: Matthew Effect**
 - **Does this justify social Darwinism?**
 - On grounds of economic efficiency, should we invest primarily in the most capable?
 - **Answer: It depends on where in the stage of the life cycle we consider the investment.**

Dynamic Complementarity

- If we invest today in the base capabilities of disadvantaged young children, there is a huge return.
- Makes downstream investment more productive.
- **No necessary tradeoff between equality and efficiency goals.**
- Augmenting this investment by public infrastructure and schools gives agency to people and enhances economic and social functioning.

- Both processes are at work.
- No necessary contradiction.
- Investing early creates the skill base that makes later investment productive.
- Effective targeting.

Figure 36: Life Cycle Developmental Framework

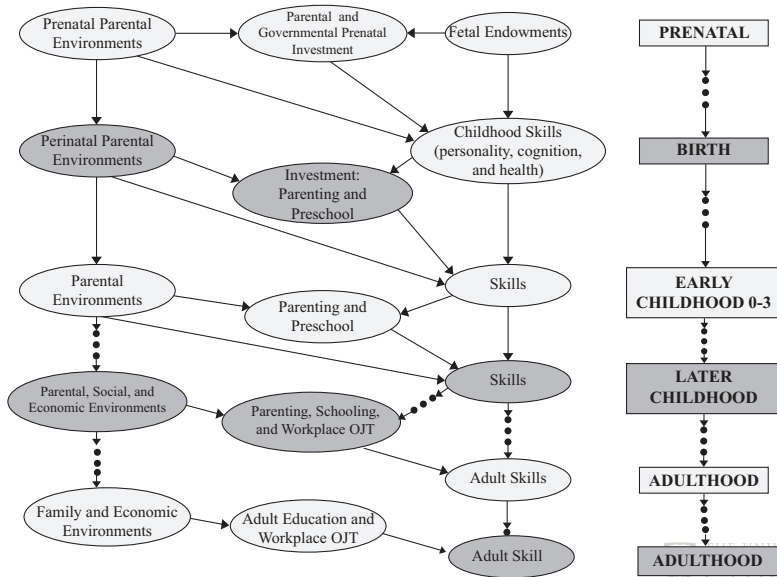
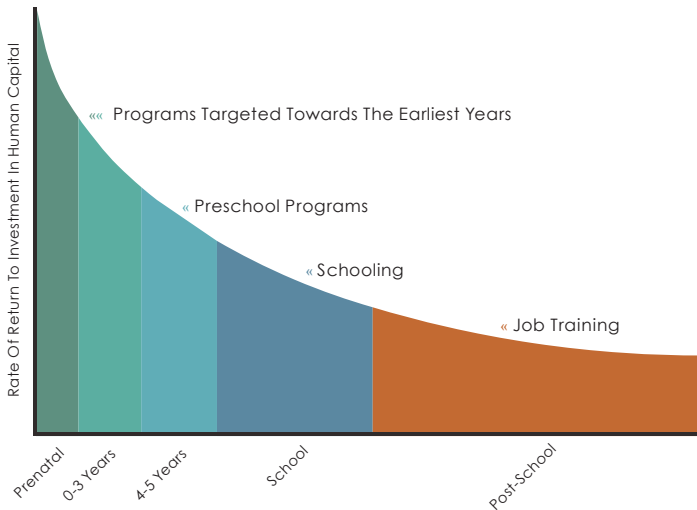


Figure 37: Returns to a Unit Value Invested



Source: Heckman (2008)

**Modern Understanding of the Dynamics of Skill Formation
Causes Us to Rethink Traditional Distinctions in Philosophy
and Political Science**

Raises Question of How and When Merit Acquired

**Merit vs. Chance vs. Effort Distinctions Currently Used in
Philosophy and Political Science Literature Are Without
Much Empirical Content**

[Return to main text](#)