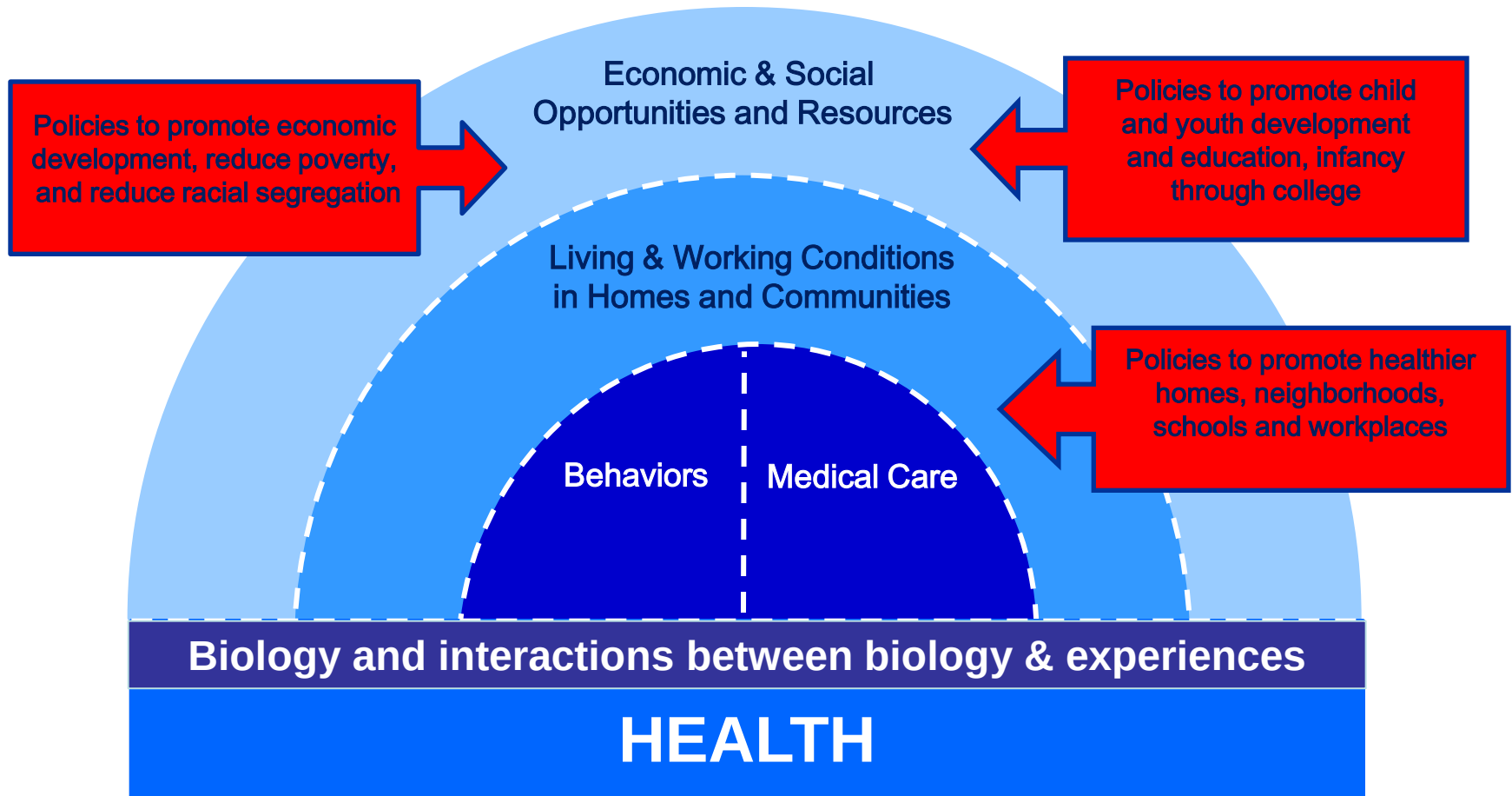




EPI222: Multi-Level and Longitudinal Conceptual Approaches for Health Disparities Research

Lecture 7: Social Policies Contributing to and Alleviating
Health Disparities

Where are we in the class?



Policies and Health Disparities

- Reasons to research policies
- Types of policies that may affect health disparities
- Rigorous empirical approaches to evaluating health effects of policies
 - MTO: a randomized trial
 - Regression discontinuity and related methods: hospital desegregation, educational policies
 - Pseudo-randomization: juvenile judges
- Distinguishing policy effects on *average outcomes* from effects on *disparities*: GI Bill
- Major controversies or uncertainties

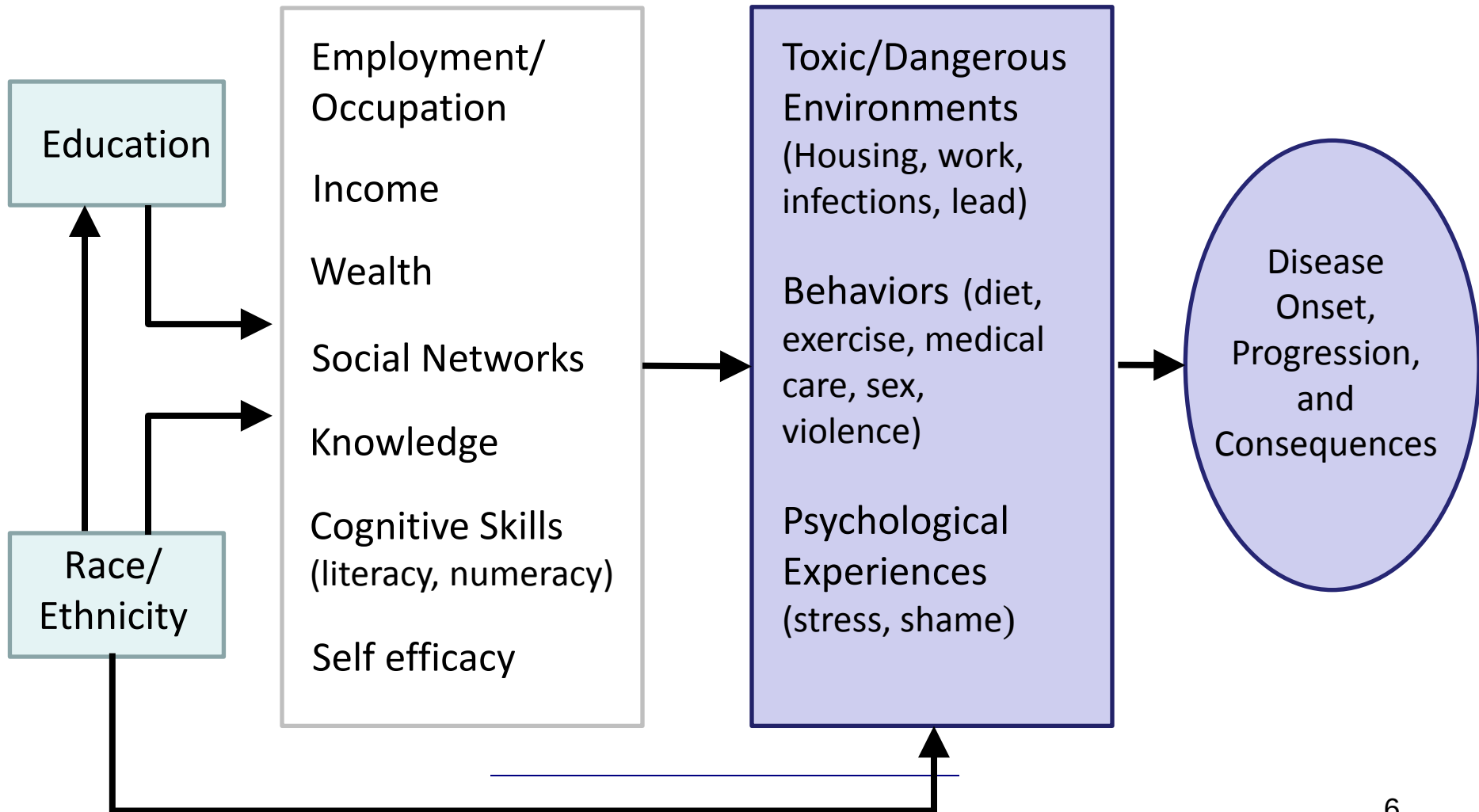
Policies and Health Disparities

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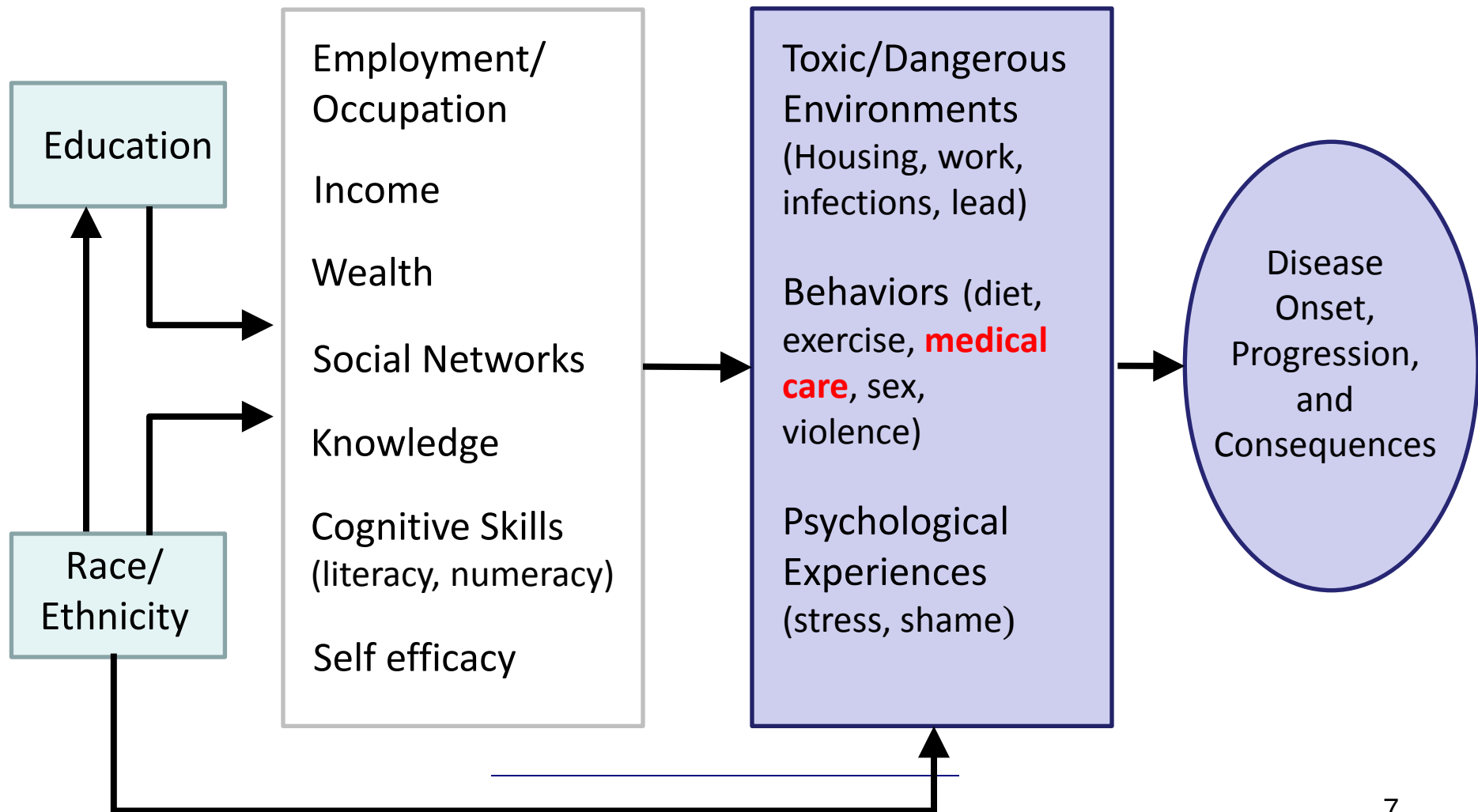
Why study *social* policies and health?

- Policies themselves – at the federal, state, local, or organizational levels – may be the most powerful health interventions.
- Evaluating the health impact of policies can contribute to arguments about the design and implementation of such policies.
- Policies may also provide “natural experiments” to understand the origins of health disparities.
- Evaluating policies as natural experiments can give new insight into whether social factors are causal.

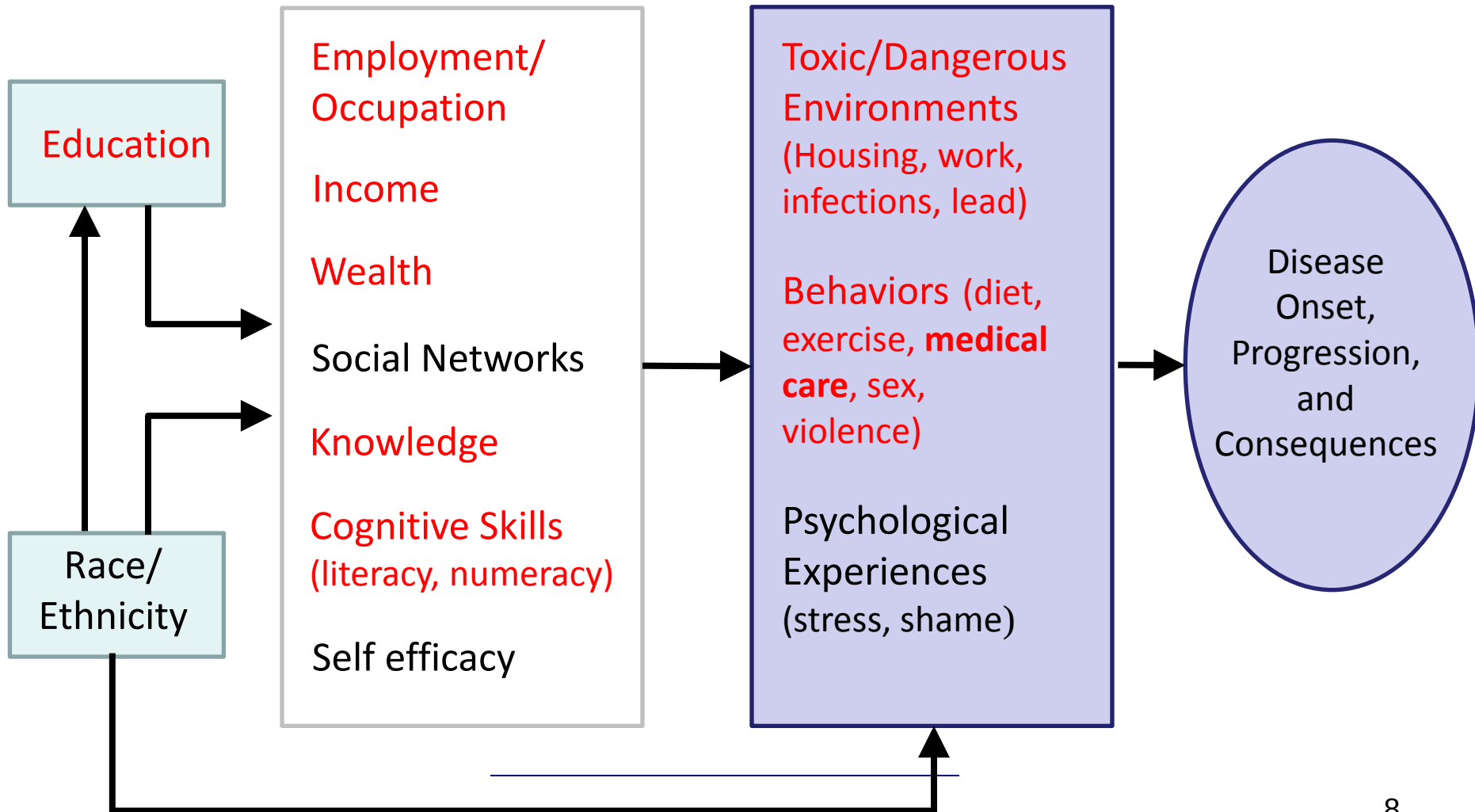
Social Factors and Health: Hypothesized Pathways



Which Pathways Are Affected by Policies?

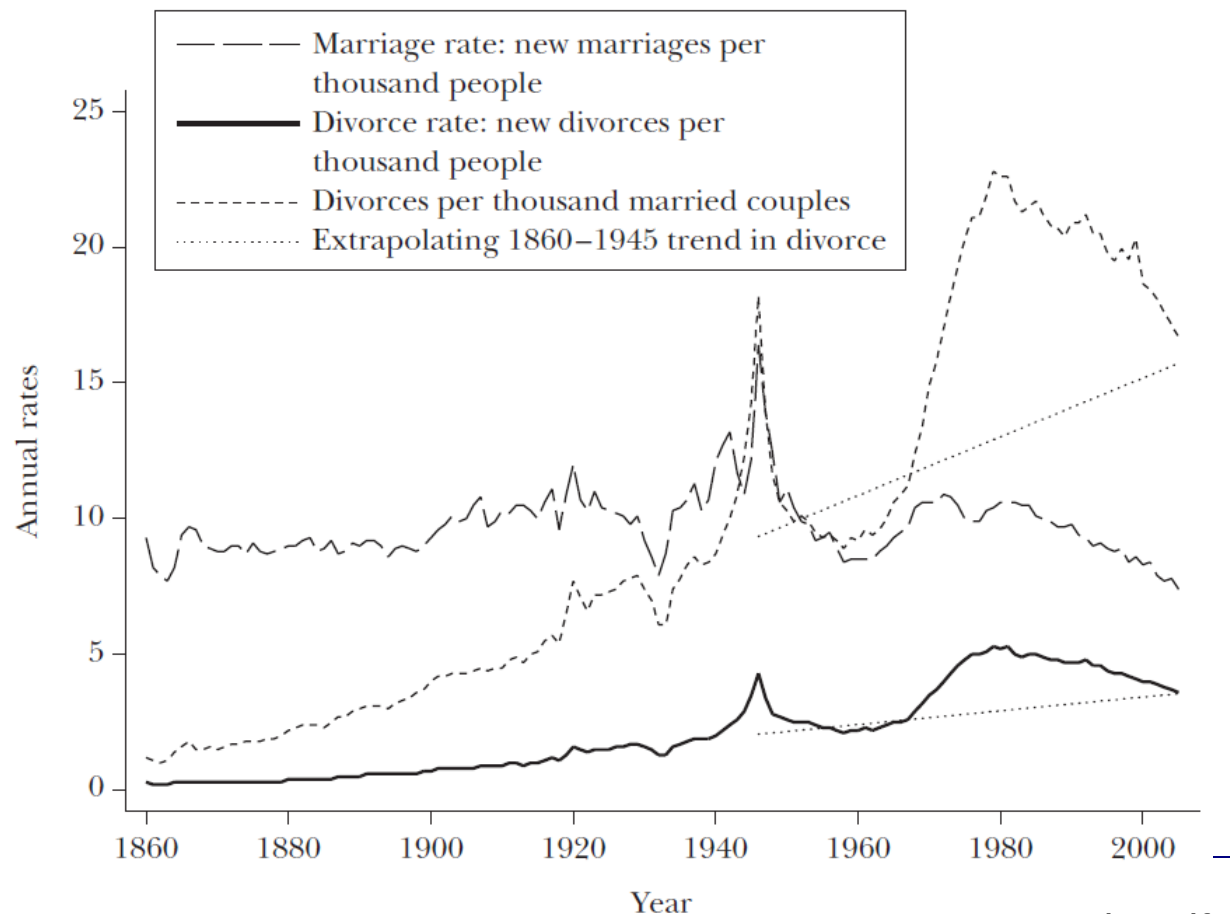


Which Pathways Are Affected by Policies?



Even profoundly personal exposures are shaped by policies

Marriage and divorce rates US 1860-2005



Even profoundly personal exposures are shaped by policies

Marriage and divorce rates internationally (circa 2003)

	<i>U.S.</i>	<i>Canada</i>	<i>UK</i>	<i>France</i>	<i>Germany</i>	<i>Italy</i>	<i>Sweden</i>
<i>Marriage</i>							
Annual marriages per thousand people	7.4	4.7	5.1	4.3	4.8	4.3	4.8
Annual marriages per thousand unmarried adults	18.1	13.0	11.4	9.4	12.1	10.8	8.8
<i>Divorce</i>							
Annual divorces per thousand people	3.6	2.2	2.8	2.1	2.6	0.8	2.2
Annual divorces per thousand married people	8.5	4.6	6.9	5.1	5.7	1.3	6.8

Stevenson and Wolfers, JEP 2006

Marriage and divorce rates to changed markedly across time and differ dramatically across countries.

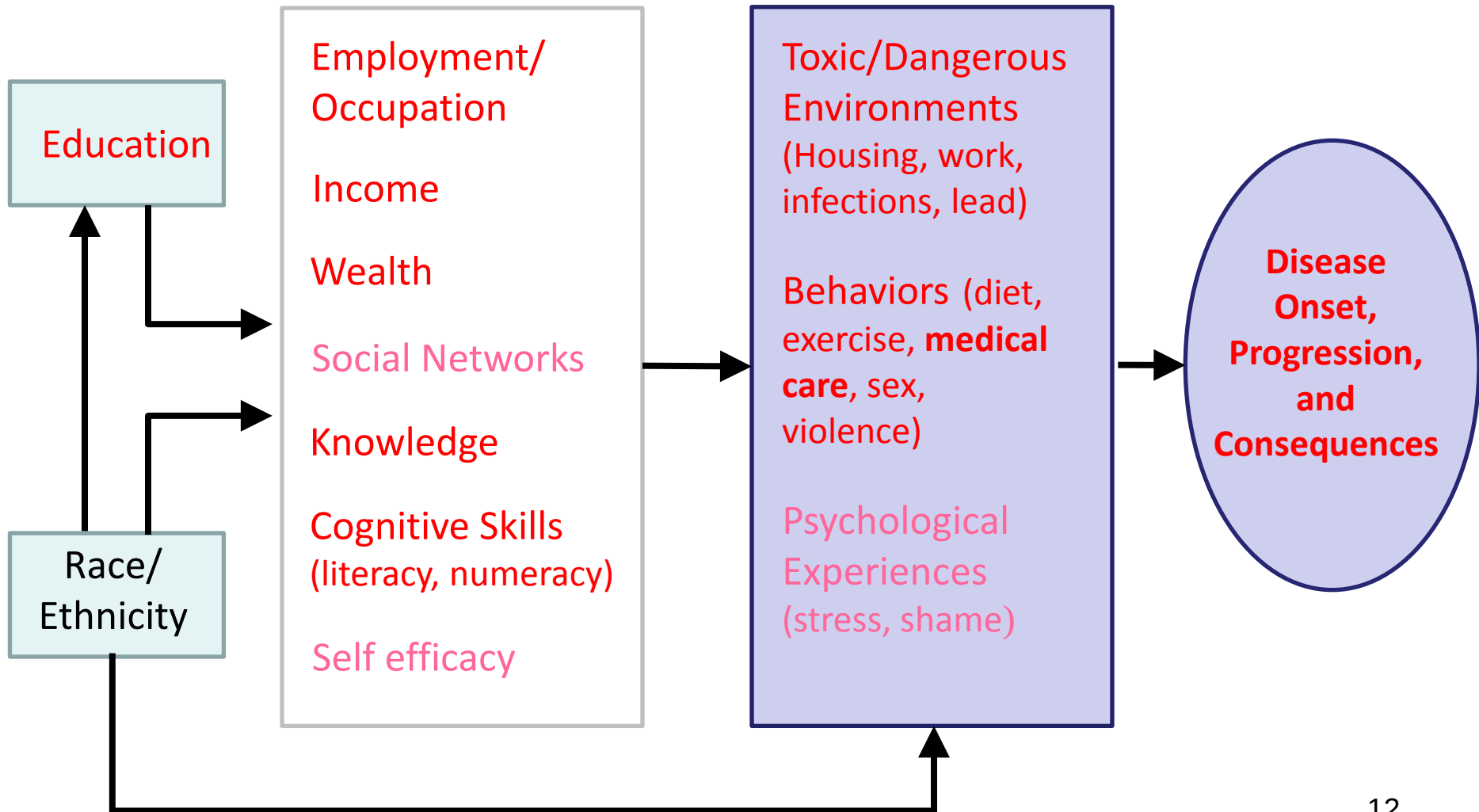
Probably dynamic feedback between social policies and social norms



Even profoundly personal exposures are shaped by policies

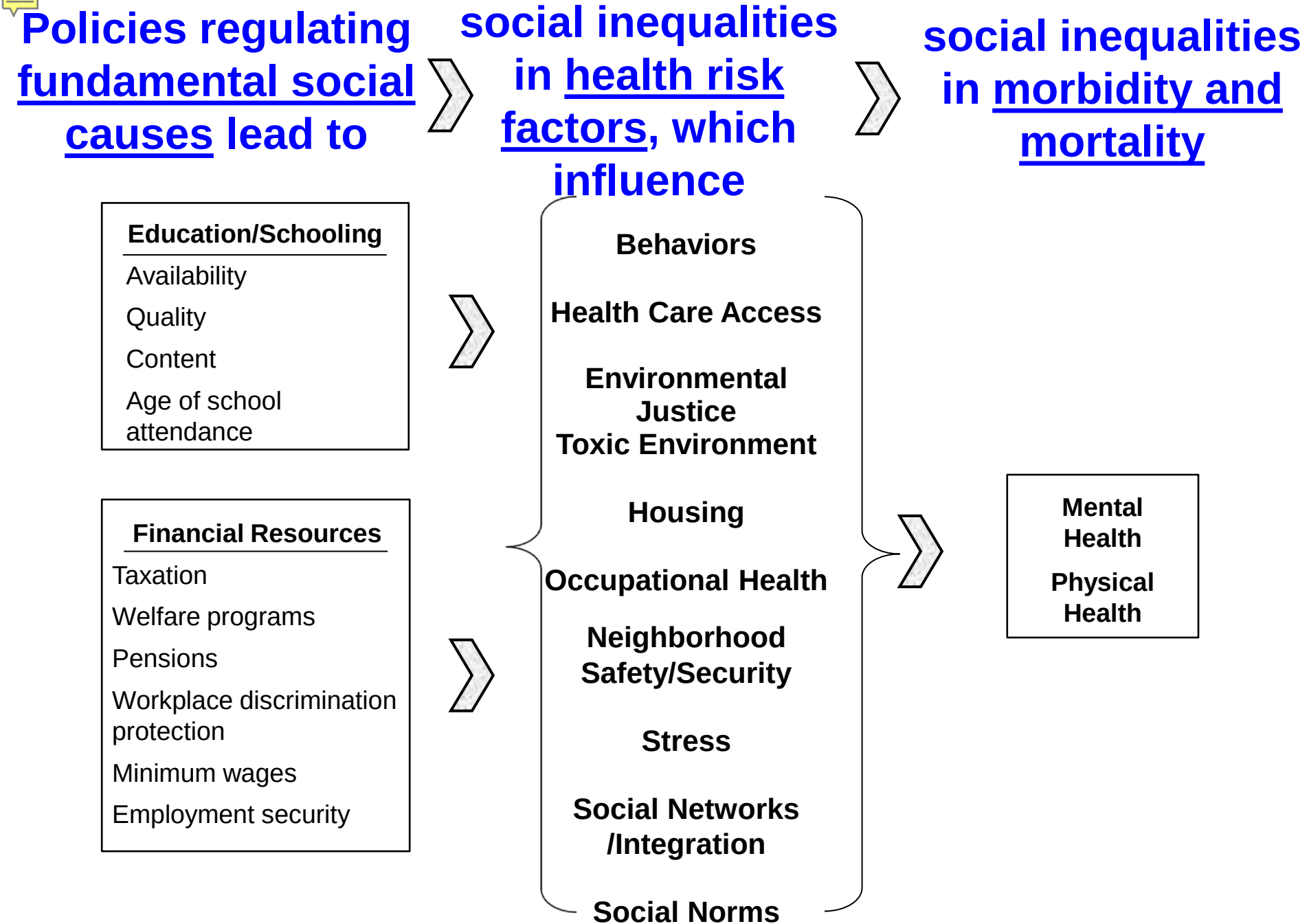
- Marriage, divorce, and children: core social networks
- Birth control availability and legality
 - Griswold v Connecticut (1965) birth control ok
 - Eisenstadt v. Baird (1972) even for unmarried people
 - Changed both marriage and fertility
- Legal obligations to children
 - Gomez v Perez (1973) Dads have to pay, even if unmarried
- Marriage and divorce laws
 - Loving v Virginia (1967) allowing interracial marriage
 - “irreconcilable differences” as grounds for divorce (late 1960s, state by state)→ divorce at the request of either spouse, and “no fault” laws
 - Unilateral divorce: short term effects on divorce rates but not large long-term effects; decreases in female suicide and domestic violence.(Stevenson and Wolfers 2006)

Which Pathways Are Affected by Policies?



Policies and Health Disparities

- Reasons to research policies
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Types of policies that may affect health disparities

- Not carved in stone, but helpful to distinguish by “proximity” to health outcome
 - Social determinants of health, level and inequalities
 - Recognized health risk factors
 - Receipt of high quality medical care
- Can also consider where in disease process
 - Primordial prevention: prevent development of risk factors
 - Primary prevention: prevent disease incidence
 - Secondary prevention: reduce the impact of disease that already occurred
 - Tertiary prevention: Reduce long-term impact of ongoing illness

Social Epidemiology Translation (SET) model

Interventions within the Medical Care System

Identify populations likely to be underdiagnosed to improve screening and preventive treatment

Identify vulnerable people and vulnerable periods to improve quality of care delivery systems

Identify modifiers of treatment effects/personalize treatment

Disease Risk Factors

Disease Incidence

Disease Diagnosis

Disease Management

Morbidity and Mortality

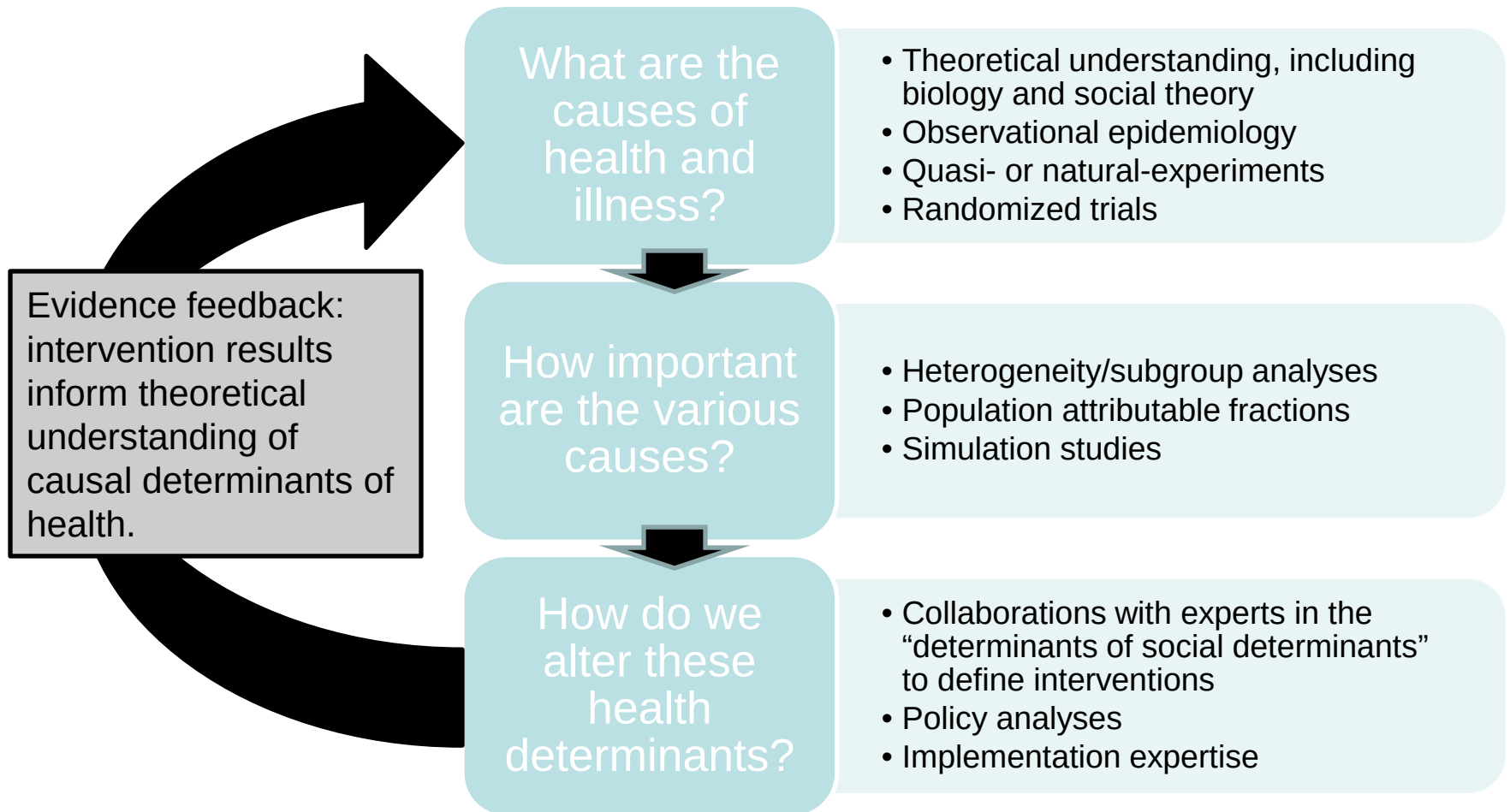
Prevent development of risk factors (e.g., unhealthy behaviors). Modify risk factors for disease incidence, e.g., smoking, lead exposure

Modifiable risk factors for non-adherence to treatment, e.g., low literacy, lack of transportation

Modifiable risk factors for poor outcomes even with good treatment adherence. e.g., psychological stressors

Interventions for Individual or Community/Environment

Policy Evaluation Relevant at Multiple Stages of Public Health



Policies and Health Disparities

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How do you study health effects of policies?

1. Randomize: generally preferable, but rare.
2. Some other possible sources of exogenous variation:
 - a. Geography variations in policies
 - b. Temporal variations in policies
 - c. Institutional features with policy differences (banking policies, loan guarantees)
 - d. Evidence on the effects of the target of the policy:
Hypothesize: Policy → “resource” → Health
Prove “resource” affects health

Policies and Health Disparities

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Design

- Families with children in urban public housing developments invited and randomized to:
 1. Control
 2. section 8, or
 3. “low poverty” section 8
- Once randomized:
 - 60% of section 8 group moved
 - 47% of low poverty group moved.
- Compare to Women’s Health Initiative:
 - “At the time the trial was stopped, 54.0% of study participants assigned to receive CEE and 53.5% of those assigned to receive placebo had discontinued use of their study medication.” –Hsia 2006

Did the trial affect neighborhood environment?

Variable	Control			Low-Poverty Voucher			Traditional Voucher		
	Mean	Intention-to-Treat Estimate (95% CI) [†]		P Value	Mean	Intention-to-Treat Estimate (95% CI) [†]		P Value	Mean
Mean no. of moves [‡]	2.1	0.57 (0.42 to 0.71)		<0.001	2.7	0.58 (0.38 to 0.79)		<0.001	2.7
Poverty rate in census tract (%) [§]									
Baseline	53.1	-0.37 (-1.23 to 0.50)		0.41	52.5	-0.37 (-1.55 to 0.81)		0.54	52.9
At 1 yr	50.0	-17.06 (-18.57 to -15.56)		<0.001	32.7	-13.50 (-15.33 to -11.67)		<0.001	36.6
At 5 yr	39.9	-9.78 (-11.25 to -8.31)		<0.001	30.0	-6.26 (-8.41 to -4.11)		<0.001	33.0
At 10 yr	33.0	-4.86 (-6.23 to -3.48)		<0.001	28.3	-2.87 (-4.80 to -0.95)		0.003	29.2

Did the trial affect neighborhood environment?

	Control Overall Mean (1)	Intent- to-Treat Difference (2)
Streets near home are unsafe or very unsafe during the day	.386	-.144** (.048)
Child has seen someone with a weapon during the past three months	.102	-.071** (.029)
Head or children seen or heard gunfire once a month or more	.205	-.122** (.037)
Head or children seen people using or selling drugs once a week or more	.359	-.196** (.045)
Personal crime during past six months, at least one child involved	.127	-.059* (.031)
Personal crime during past six months, household head involved	.073	.009 (.029)
Property crime during past six months	.134	-.070** (.034)

From Katz 2001

Early Results for Labor Market Outcomes (Boston, 2-Year)

	Quarters after random assignment	Control Overall Mean (1)	Intent-to- Treat Difference (2)	Treatment-on- Treated Difference (3)
Received AFDC/TANF	1 to 3	.611	.002 (.028)	.005 (.060)
	4 to 6	.560	-.004 (.036)	-.009 (.076)
	7 to 9	.495	.004 (.039)	.008 (.084)
Positive earnings	1 to 3	.368	-.006 (.035)	-.013 (.073)
	4 to 6	.370	.023 (.036)	.049 (.077)
	7 to 9	.434	.010 (.038)	.022 (.080)

No effect on employment, earnings, or welfare receipt. -Katz 2004

Early Results for Health, Boston 2 Year Low Poverty

		Control Overall Mean (1)	Intent-to- Treat Difference (2)	Treatment- on-Treated Difference (3)
Fraction of 7 behavior problems	Boys	.326	-.090** (.041)	-.184** (.088)
	Girls	.193	-.023 (.030)	-.046 (.056)
Any injuries or accidents during past 6 months that required medical attention		.105	-.059** (.027)	-.118** (.055)
Any asthma attacks requiring medical attention during past 6 months		.098	-.051* (.029)	-.103* (.059)
Been to doctor for regular checkup or immunization during past 6 months		.856	-.043 (.037)	-.087 (.077)

Early Results for Health, Boston 2 Year Section 8

		Control Overall Mean (1)	Intent-to- Treat Difference (5)	Treatment- on-Treated Difference (6)
Fraction of 7 behavior problems	Boys	.326	-.113** (.053)	-.160** (.079)
	Girls	.193	-.050 (.034)	-.078 (.053)
Any injuries or accidents during past 6 months that required medical attention		.105	-.059** (.027)	-.118** (.055)
Any asthma attacks requiring medical attention during past 6 months		.098	-.051* (.029)	-.103* (.059)
Been to doctor for regular checkup or immunization during past 6 months		.856	-.043 (.037)	-.087 (.077)

Mid-Term (5-7 year) Results for Health

- No effects on adult economic self-sufficiency
- Reduction in adult obesity
- Improvements in adult mental health

Mid-Term (5-7 year) Results for Children's Mental Health

Outcome	Females			Males		M-F TOT (9)
	CM (1)	ITT (2)	TOT (3)	ITT (6)	TOT (7)	
A. Experimental - Control						
Psychological distress -- K6 scale z-score	.268	-.246* (.091)	-.508* (.195)	.069 (.091)	.167 (.223)	.675* (.293)
Ever had serious depression symptoms	.137	-.049 (.029)	-.099 (.060)	.015 (.022)	.036 (.054)	.135 (.082)
Ever had generalized anxiety symptoms	.121	-.064* (.025)	-.131* (.053)	-.006 (.026)	-.015 (.065)	.116 (.084)

Mid-Term (5-7 year) Results for Children's Mental Health

		Girls ITT	Girls TOT	Boys ITT	Boys TOT
B. Section 8 – Control					
Psychological distress -- K6 scale, z-score	.268	-.133 (.104)	-.232 (.183)	-.027 (.096)	-.053 (.187)
Ever had serious depression symptoms	.137	-.067* (.029)	-.114* (.050)	.001 (.022)	.002 (.042)
Ever had generalized anxiety symptoms	.121	-.071* (.026)	-.125* (.046)	-.032 (.025)	-.063 (.049)

Mid-Term (5-7 year) Results for Children's Mental Health

	Females		Males		Males-Females	
	E-C	S-C	E-C	S-C	E-C	S-C
Education (4 measures)	.129 (.066)	.053 (.065)	-.021 (.051)	.026 (.059)	-.150 (.082)	-.027 (.087)
Absence of Risky Behavior (4 measures)	.137* (.051)	.084 (.054)	-.194* (.063)	-.250* (.072)	-.331* (.080)	-.334* (.090)
Absence of Mental Health Problems (3 measures)	.188* (.062)	.179* (.062)	-.046 (.085)	.056 (.087)	-.234* (.106)	-.123 (.107)
Absence of Physical Health Problems (4 measures)	-.001 (.050)	.056 (.051)	-.159* (.053)	-.150* (.059)	-.158* (.073)	-.206* (.079)
Overall (15 measures)	.109* (.034)	.089* (.033)	-.109* (.035)	-.088* (.039)	-.218* (.049)	-.177* (.052)

Long-Term (10 year) Results for Health, Adults

Variable	Control	Low-Poverty Voucher			Traditional Voucher		
		Intention-to-Treat Estimate (95% CI)†	P Value	Prevalence (%)	Intention-to-Treat Estimate (95% CI)†	P Value	Prevalence (%)
BMI‡							
≥30	58.6	−1.19 (−5.41 to 3.02)	0.58	57.5	−0.14 (−6.27 to 5.98)	0.96	58.4
≥35	35.5	−4.61 (−8.54 to −0.69)	0.02	31.1	−5.34 (−11.02 to 0.34)	0.07	30.8
≥40	17.7	−3.38 (−6.39 to −0.36)	0.03	14.4	−3.58 (−7.95 to 0.80)	0.11	15.4
Glycated hemoglobin§							
≥6.5%	20.0	−4.31 (−7.82 to −0.80)	0.02	16.3	−0.08 (−5.18 to 5.02)	0.98	20.6

MTO: Harmful Effects on Boys, Aged 0-8 at Randomization

Follow-up ages 13-19	Estimate (95% CI) ^a		
	Voucher Group		Control Group
	Low Poverty	Traditional	
Boys, No.	713	533	604
Major depressive disorder			
Absolute risk, %	7.1 (4.1 to 10.1)	5.7 (3.8 to 7.7)	3.5 (2.3 to 4.6)
Absolute risk reduction, %	-3.7 (-6.9 to -0.4)	-2.3 (-4.5 to -0.1)	
Odds ratio	2.2 (1.2 to 3.9)	1.7 (0.9 to 3.4)	1 [Reference]
P value ^b	.03	.23	
No. of respondents ^c	52	30	22
Girls, No.	711	541	564
Major depressive disorder			
Absolute risk, %	6.5 (4.7 to 8.3)	6.5 (4.5 to 8.4)	10.9 (8.4 to 13.4)
Absolute risk reduction, %	4.4 (1.5 to 7.3)	4.4 (1.3 to 7.5)	
Odds ratio	0.6 (0.3 to 1.0)	0.6 (0.3 to 0.9)	1 [Reference]
P value ^b	.06	.04	
No. of respondents ^c	46	35	61

From: Associations of Housing Mobility Interventions for Children in High-Poverty Neighborhoods With Subsequent Mental Disorders During Adolescence. JAMA 2014

Trial challenges

- Mixed effects,
- Small samples?
- Heterogeneous Effects?
- What was the salient component of the treatment?

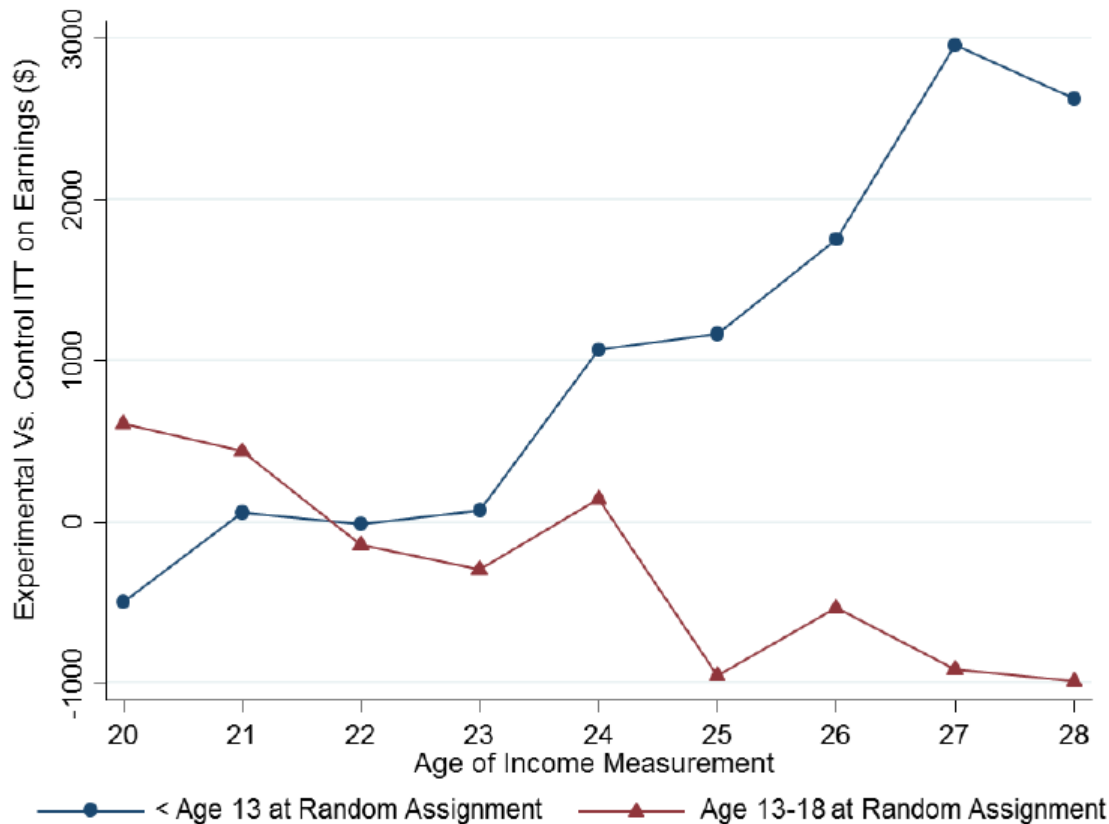
New MTO results: Earlier exposure → later benefits

- Children whose families take up an experimental voucher to move to a lower-poverty area when they are <13 years old have an average annual income \$3,477 (31%) higher relative to a mean of \$11,270 in the control group in their mid-twenties.
- In contrast, the same moves have, if anything, negative long-term impacts on children who are more than 13 years old when their families move, perhaps because of disruption effects

- Chetty, Hendren, and Katz 2015
- http://www.equality-of-opportunity.org/images/mto_paper.pdf

Benefits for kids randomized before age 13 on earnings age 24+

Impacts of Experimental Voucher by Age of Earnings Measurement



- Chetty, Hendren, and Katz 2015
- http://www.equality-of-opportunity.org/images/mto_paper.pdf

Benefits for kids randomized before age 13 on earnings age 24+

Heterogeneity of Treatment Effects by Gender

	Experimental vs. Control		Section 8 vs. Control	
	Male (1)	Female (2)	Male (3)	Female (4)
<i>Panel A: Children < Age 13 at Random Assignment</i>				
Individual Earnings 2008-12 (\$) ITT	1679.2 ⁺ (973.3) [10020.8]	1438.9 (885.1) [12634.2]	1073.8 (947.1) [10020.8]	1097.6 (931.6) [12634.2]
	- -	- -	- -	- -
<i>Panel B: Children Age 13-18 at Random Assignment</i>				
Individual Earnings 2008-12 (\$) ITT	-1832.4 (1298.3) [14814.4]	-204.9 (1044.6) [16997.5]	-1410.6 (1363.6) [14814.4]	-740.6 (1165.4) [16997.5]

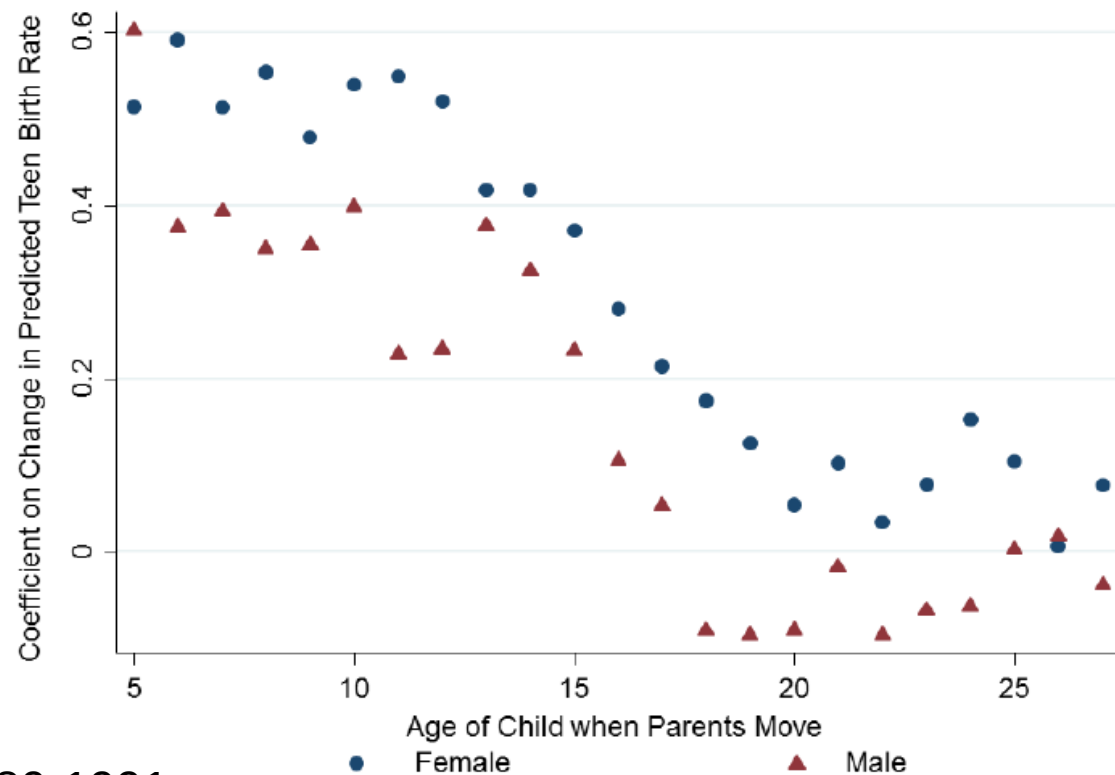
- Chetty, Hendren, and Katz 2015
- http://www.equality-of-opportunity.org/images/mto_paper.pdf

New Neighborhood Results: Compare Children by Age When Parents Move

- Stated differently, the outcomes of children who move converge to the outcomes of permanent residents of the destination area at a rate of approximately 3-4% per year of exposure
- We find analogous childhood exposure effects for several other outcomes, including college attendance, teenage employment, teenage birth, and marriage.
- - Chetty and Hendren 2015

New Neighborhood Results: Compare Children by Age When Parents Move

D. Teenage birth



N=~16,829,532, born 1980-1991

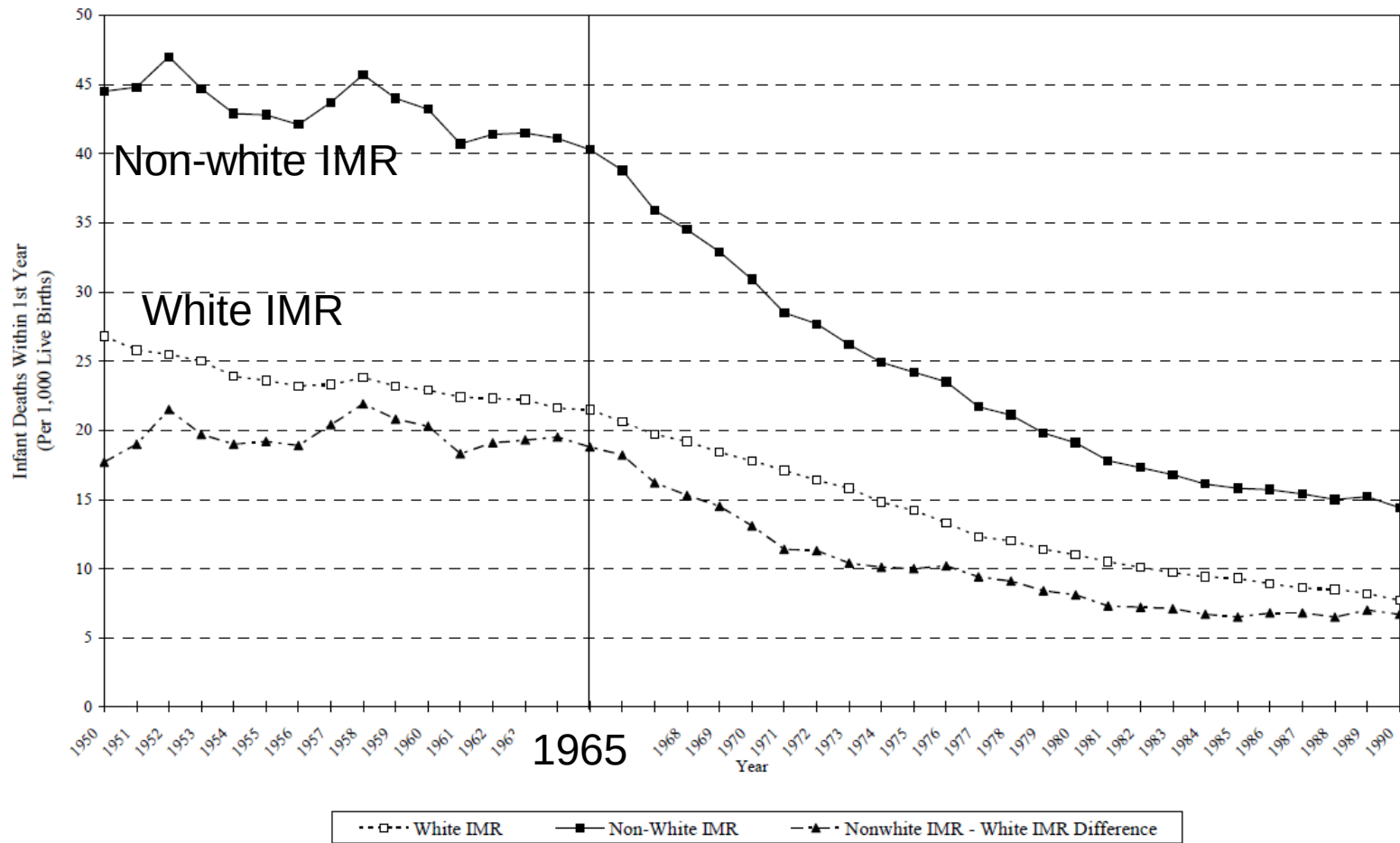
Chetty & Hendren, NBER 2015

<http://www.equality-of-opportunity.org/>

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Trends in US Infant Mortality by Race: 1950-1990



Pre-Civil Rights: Limited Access in Southern States

Table 1: Black Access to Hospital Care Before Title VI of 1964 Civil Rights Act

	(1)	(2)	(3)
A. Fraction of Births Occurring in a Hospital with Physician Present, 1955-1965			
	<u>Black</u>	<u>White</u>	<u>Black-white Differen</u>
Urban Rustbelt	97.0	99.3	2.4
Urban Elsewhere	98.4	99.4	1.0
Urban South	92.8	98.4	5.6
Rural South	60.1	95.9	35.7
Mississippi	47.6	98.1	50.5
B. Allocated Hospital Beds Per 1,000 Births by Race in Mississippi, 1960-1964			
	<u>Black beds</u>	<u>White beds</u>	<u>Black-white ratio</u>
Entire State	158.2	353.7	.447
Counties Where $> 2/3$ of Births are to Blacks	40.4	229.1	.176
Counties Where $< 2/3$ of Births are to Blacks	246.5	374.8	.658



Did desegregation of hospitals reduce black infant mortality?

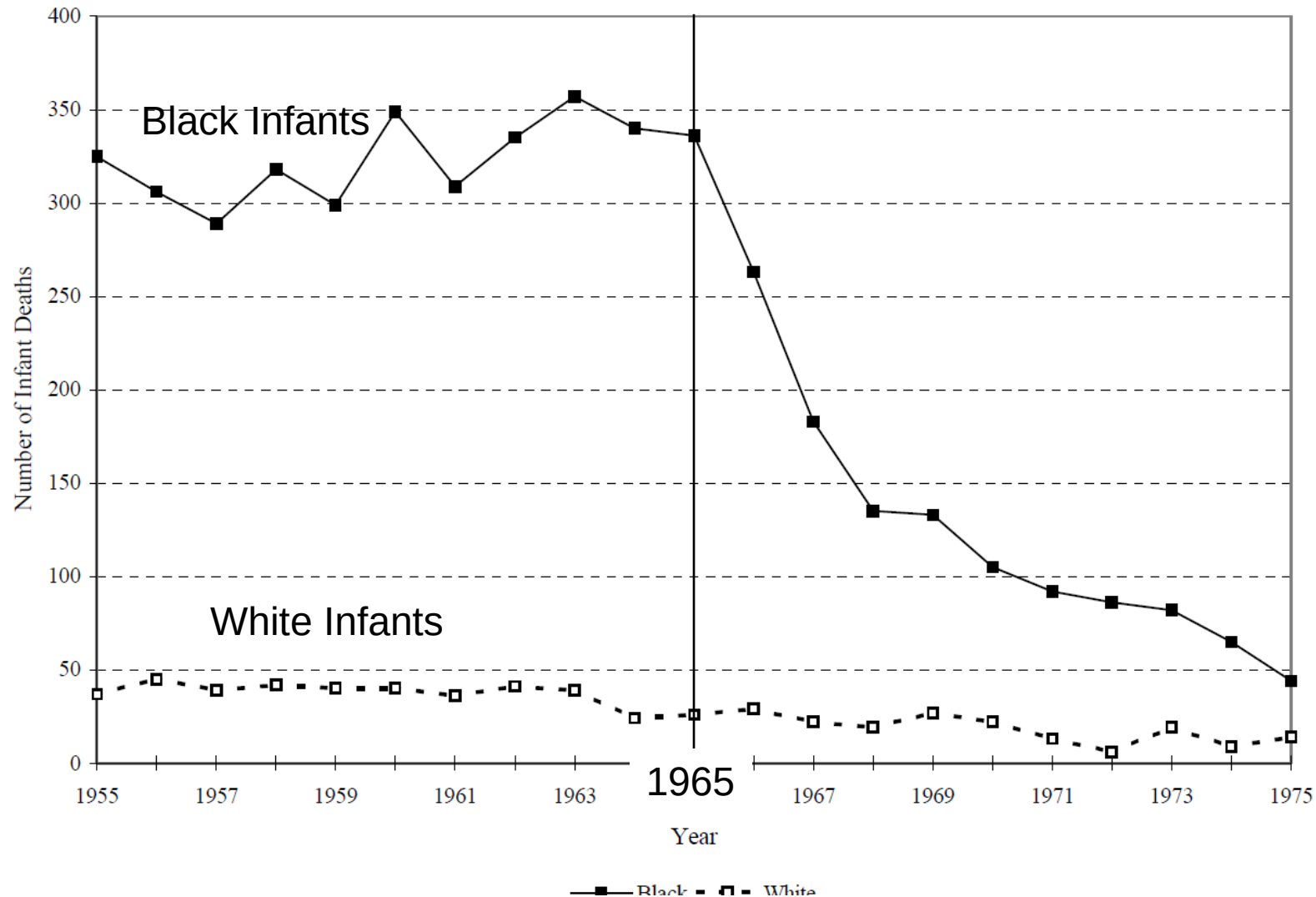
- Almond, Chay and Greenstone make 4 predictions:
 - Racial gap will decrease after 1965
 - The gap will decrease more in areas of the country where segregation and inadequate supply were more pervasive prior to 1965
 - The gap will decrease more among causes of death responsive to access to hospitals
 - Among causes of death preventable with hospital access, the gap will fall promptly and persistently upon integration.
- Data?



Did desegregation of hospitals reduce black infant mortality?

- Data?
 - Individual level mortality data for 1960-1975
 - Natality data for each state by race and urban/rural
 - Examine trends in mortality rates due to pneumonia and gastroenteritis
 - Separate analysis for Mississippi counties
- Trend break in 1965
 - Blacks in the rural south: $-.705$
 - Whites in the rural south: $-.076$
 - Blacks in the urban rustbelt: $-.205$
 - Whites in the urban rustbelt: $-.048$

Post-neonatal infant deaths due to Diarrhea and Pneumonia in Mississippi, 1955-1975



What makes their evidence convincing?

- This is basically a time trend – is the result credible?
- *A priori* plausible
- Specificity of population affected (black infants, not white infants)
- Specificity of the outcome (amenable to the exposure targeted by the policy)
- Specificity of the place (southern, segregated states)

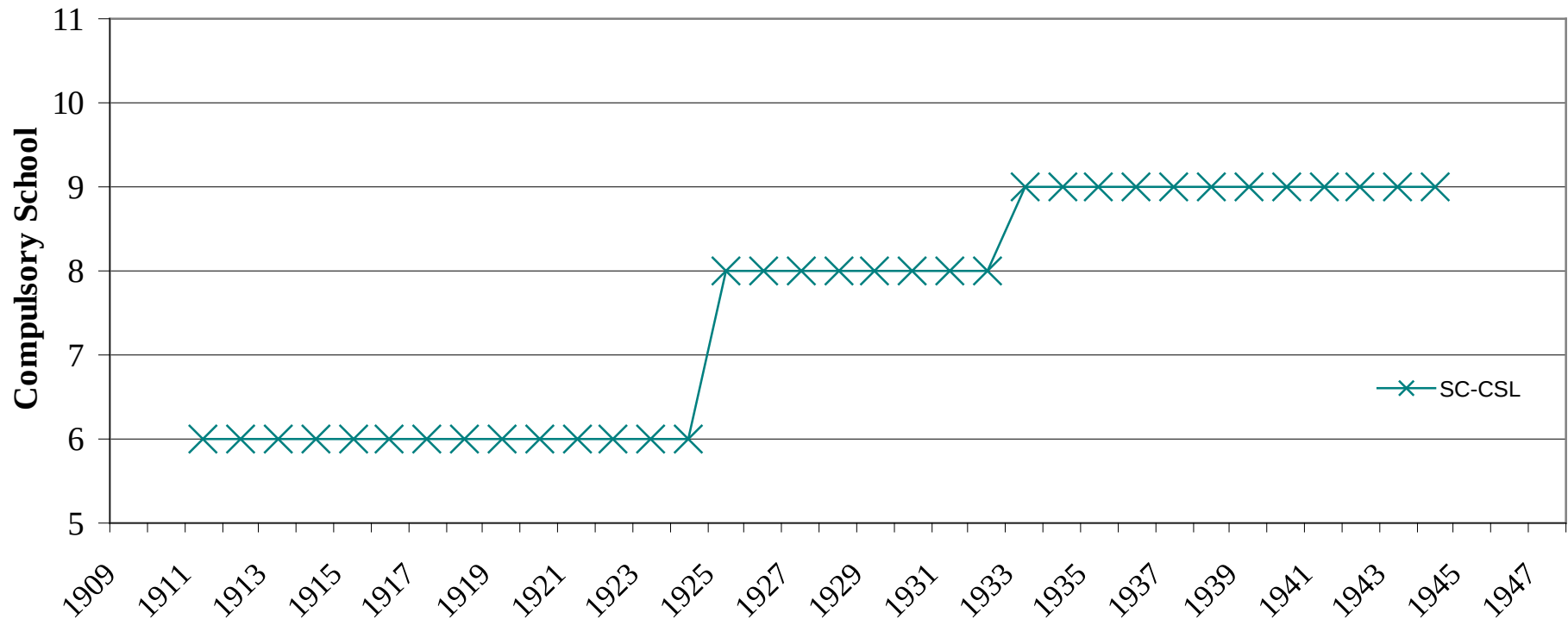
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Research Question

- Do increases in education (years completed) lead to reduced in old age dementia risk, measured with cognitive test scores?
- Why education?
 - Education is modifiable via individual or policy actions (unlike, say, the APOE gene)
 - Likely few harmful side effects (?), possibly other benefits
 - Generally politically accepted as a target of social policy
 - Revolutionary changes in avg education in the US in the 20th century
 - Effects of education supports the “use it or lose it” hypothesis, relevant for individual-level interventions and social policies on housing, work.
- Challenge: Many factors influence educational attainment and also late life dementia risk
- How to show that it was education itself that benefited kids?

Early 20th Century Compulsory Schooling Law Changes in South Carolina



Birth Cohort affected, based on laws in force at ages 6 and 14

The High-School Revolution

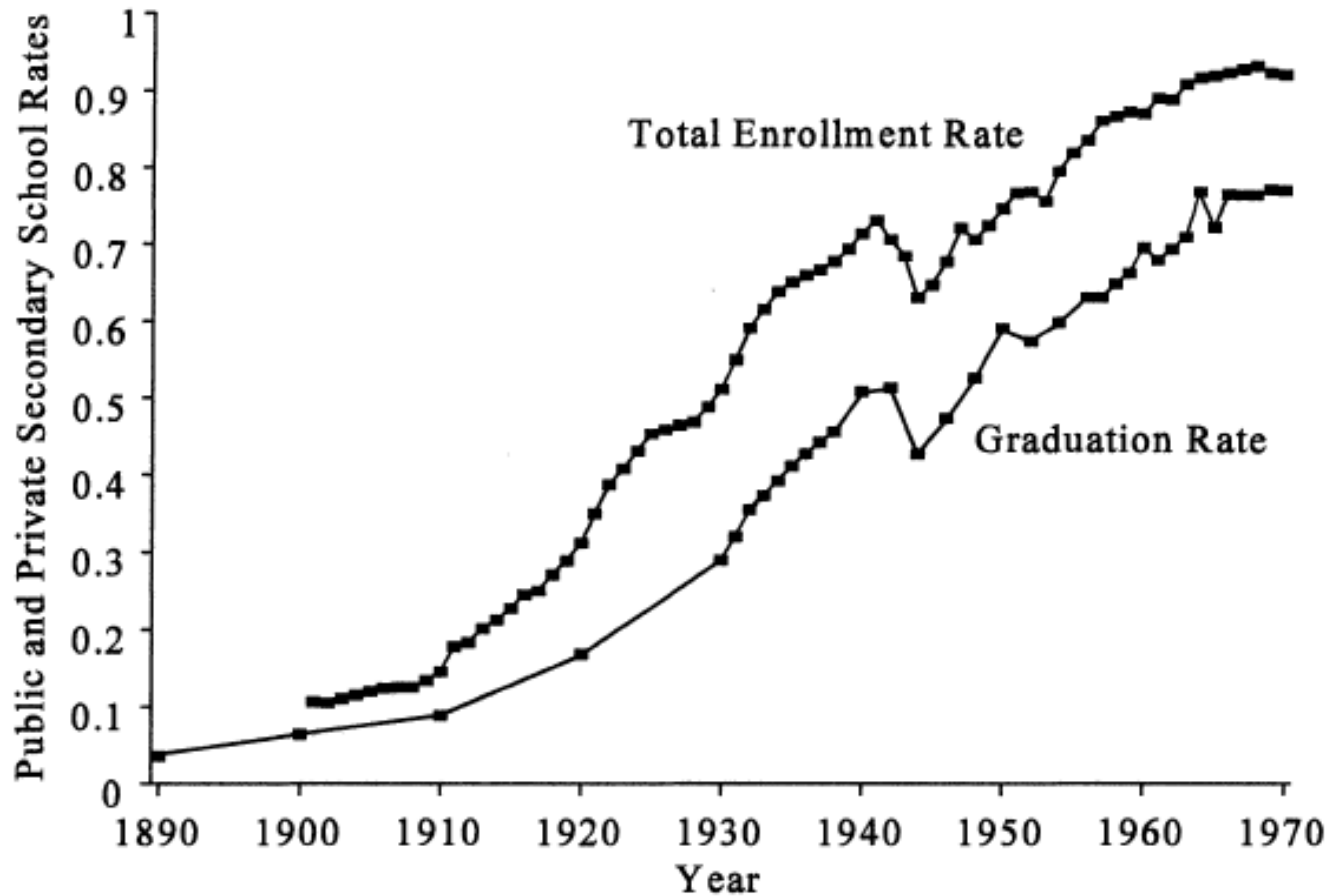


FIGURE 1
SECONDARY SCHOOL ENROLLMENT AND GRADUATION RATES:
ENTIRE UNITED STATES

From Goldin,
J Econ Hist 1998



Cohort Differences in Educational Attainment

- Old people now and in the near future are better educated than ever before
- If education is causally related to cognition/dementia risk, this should improve population health
- If parental education is causally related to cognitive outcomes in old age, this should continue to pay off for another generation
- Educational access delayed for African-Americans, so the health dividend of improving education will pay out for a longer period of time

IV Analyses using School Policy as a Natural Experiment

- Sample: US born whites with ≤ 12 years of school
 - State schooling policies
 - Compulsory school to drop out (CSL) or receive a work-permit (CSL-W)
 - Based on policy in state of birth when school-age
 - Separate-Sample 2-stage least squares analysis
 - Exposure (endogenous) variable:
 - Years of education (self-report)
 - Outcome: Memory score in later adulthood
-

Covariates

- 1 • Unadjusted
 - 2 • Sex
• Birthyear
 - 3 • State of birth indicators
 - 4 • State characteristics: age 6 % black, % urban, and % foreign born; age 14 manufacturing jobs per capita and wages per manufacturing job
-

HRS Sample

	n	%
n	11,439	100
Male	4,862	43
<i>Birth Year</i>		
<1914	1,278	11
1914-1921	2,078	18
1922-1930	2,656	23
1931-1941	4,241	37
1942-1947	1,186	10
<i>Years of schooling</i>		
<6	308	3
6-8	1,706	15
9-11	2,677	23
12	6,719	59



IV Estimates for Education: CSLs

Estimated effect of 1 year ed'n on cognitive test scores.

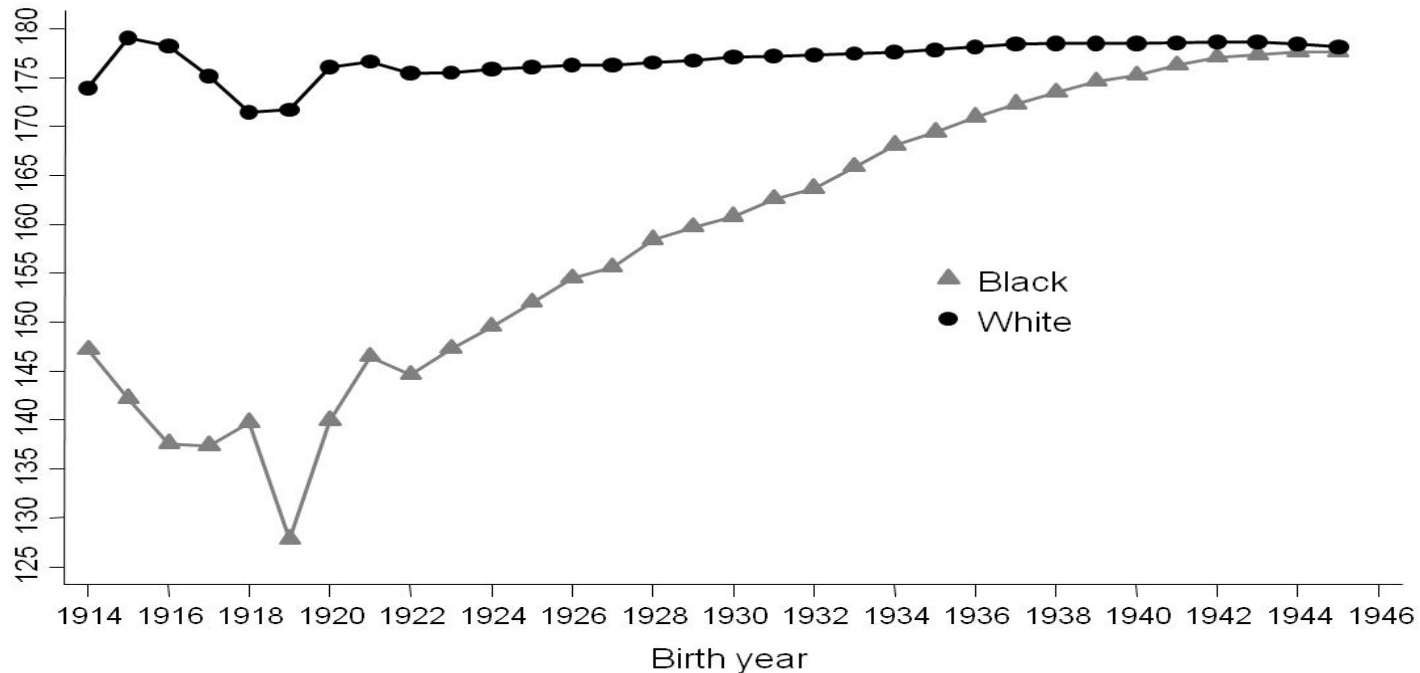
Model covariates	Memory	
	β_{IV}	95% CI [^]
1. Unadjusted	0.33	(0.27, 0.39)
2. Birthyear, and sex	0.30	(0.14, 0.46)
3. Model 2 + birth state	0.18	(0.02, 0.33)
4. Model 3 + state condns	0.34	(0.11, 0.57)
5. OLS estimates	0.09	(0.08, 0.10)

Schooling and racial disparities

- Analyses on Compulsory schooling restricted to whites because evidence that mandatory schooling/minimum work permit age not enforced for black children
 - Major historical differences in school *quality* for black and white children
 - *De jure* desegregation fairly recent and *de facto* segregation persists— do we know if it affects health?
 - Surprisingly limited evidence
-

Major historical differences in school quality for black and white children

Average state-mandated school term length by birth cohort, based on state and year of birth, stratified by race, 2009-2011 ACS

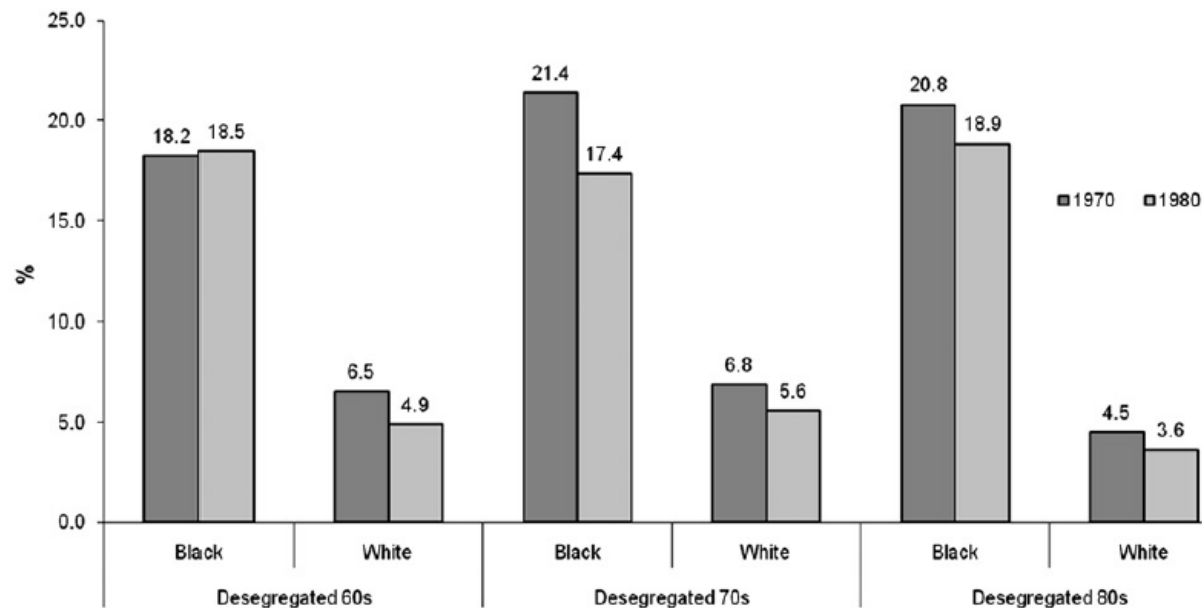


Do these contribute to persistent disparities in adult health?

Effect of longer school term length (at the state level) on Systolic Blood Pressure

	10% Difference in school term length			
	Black		White	
	Female	Male	Female	Male
Systolic BP (mm/Hg)	-5.9 (-8.7, -3.0)	-2.4 (-6.1, 1.3)	-0.3 (-2.3, 3.0)	1.6 (-0.8, 4.0)

Does desegregation affect health outcomes?



Difference in Difference in Difference

(change in teen fertility) (among black versus white adolescents) (in cities that desegregated in the 1970s vs desegregated in the 60s or 80s)

- Sze Liu 2012 SSM

Desegregating Schools and Reductions in Teen Pregnancy

Difference in Difference in Difference

(change in teen fertility) (among black versus white adolescents) (in cities that desegregated in the 1970s vs desegregated in the 60s or 80s)

$$\begin{aligned} Y = & \beta_0 + \beta_1 \text{Census1980} + \beta_2 \text{Desegregated1970s} + \beta_3 \text{Black} \\ & + \beta_4 \text{Census1980} * \text{Desegregated1970s} + \\ & \beta_5 \text{Census1980} * \text{Black} + \beta_6 \text{Desegregated1970s} * \text{Black} + \\ & \beta_7 \text{Desegregated1970s} * \text{Census1980} * \text{Black} + \varepsilon_{\text{istr}} \end{aligned}$$

“School desegregation policy in the US in the 1970s was associated with a significant reduction of **3.2 percentage points** in the prevalence of births among black female adolescents between 1970 and 1980.” - Sze Liu 2012 SSM

Conclusions re School Policy and Health

- Mandatory schooling applicable in state of birth predicted years of education completed.
 - Estimated effect of education received because of mandatory schooling on Memory score were significant and larger than conventional estimates.
 - Other state characteristics are plausible confounders, but must change in tandem with mandatory schooling and affect only those with <13 years of education.
 - School quality differences → persistent racial disparities in blood pressure, but effects differ by sex
 - Desegregation → Reduced adolescent births
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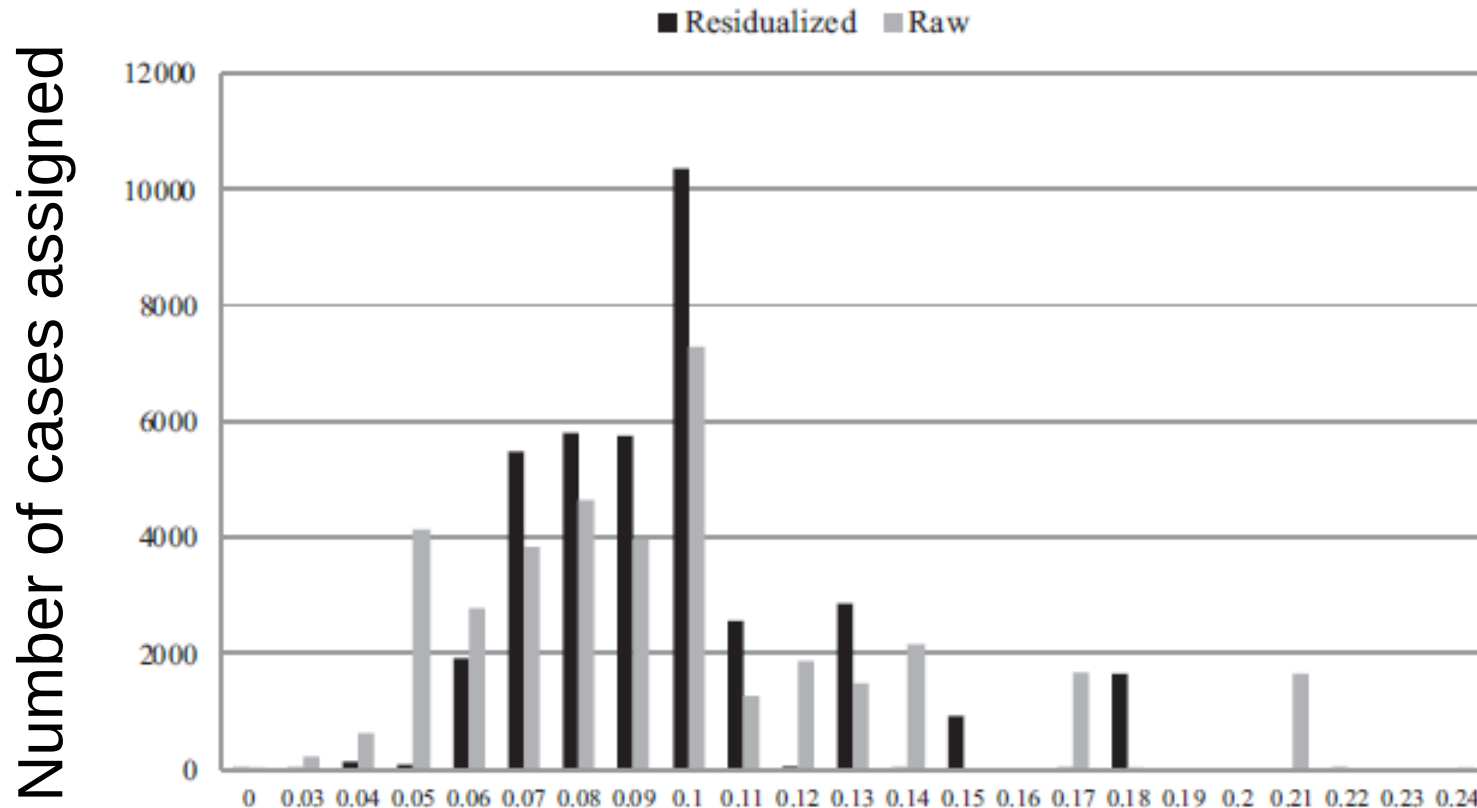
Policies and Health Disparities

- Reasons to research policies
- Types of policies that may affect health disparities
- How to study health effects of policies?
 - MTO: a randomized trial
 - Regression discontinuity and related methods: hospital desegregation, mandatory educational policy
 - Pseudo-randomization: juvenile judges
- Distinguishing policy effects on health from effects on health disparities: GI Bill
- Major controversies or uncertainties

What are the effects of juvenile incarceration?

- 35,000 children (avg=14) in Chicago juvenile court
- Linked to public school and adult incarceration data
- Assigned to 1 of 62 judges essentially randomly
 - order entered into system & judge's schedule
- Judge decides whether the juvenile is:
 - Placed on probation
 - Detained (Cook County Juvenile Temporary Detention Center) and *then* placed on probation
 - Average detention~42 days
- Aizer and Doyle, QJE 2015

Chance of incarceration depends on judge assigned: 6% to 18%



Probability Judge Chooses to Incarcerate (Based on Other Cases)
Black bars are adjusted for covariates such as child's age.

Juvenile incarceration instead of probation *due to differences in judge...*

- Decreased chance of high school graduation by ~13 percentage points
- Decreased chance of entering an adult prison by age 25 by ~23 percentage points.
- Decreased chance of adult prison for a violent crime by age 25 by ~15 percentage points
- Effects largest for children ages 15-16
- Estimates often very different than estimates from conventional regression
- Note: not for *all kids*, this is among kids on the margin: who some judges thought should be incarcerated and others thought should not.
- Health effects???????

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WW2 GI Bill

- Increase in % of blacks serving in WW2 due to (controversial) policy changes, but blacks still underrepresented in military
- GI Bill implemented in 1944 under Roosevelt
- Four primary components:
 - Educational subsidy and stipend to cover college tuition
 - Guarantees for loans for housing, small business initiatives
 - Job placement assistance from the US Employment Service
 - Unemployment compensation
- Eligibility: 90+ days of service, no dishonorable discharge
- De jure, race neutral
- Were the effects race neutral?

Job Placement

- Assistance administered by local offices, mostly staffed by whites (in the south, southern whites)

“Describing the overall predicament that black former servicemen encountered when they went to USES offices, Harry Wright, a Southern Regional Council field agent and fellow black veteran wrote:

‘In trying to find a job he’d [the veteran] visit the local U.S. Employment Service Office, if he’ll accept some laborer’s job they’ll readily place him – if he knows some of the old –timey trades they can get him placed, but if he’s qualified in some of the new skills that Negroes haven’t traditionally been doing – or has some kind of professional training, they just can’t find a place for him and he’ll be offered a job as a porter in the local hotel or the like. [sic]’”

GI Bill: Job placement

- In MS in Oct 1945, NSES counselors filled 6,583 non-agricultural jobs
- 86% of professional, skilled, and semi-skilled positions went to whites
- 92% of the unskilled and service oriented jobs went to blacks
- Men who did not take a job deemed “suitable” by the job counselor were refused unemployment compensation

GI Bill: Loan Guarantees

- Administered by local banks
 - Loans require collateral
- Survey of 13 Mississippi cities in 1947
 - 3,229 loans guaranteed by the VA
 - 2 were for blacks
- Unclear how widespread – very limited evidence, but strong suggestion loan guarantees were essentially unavailable to blacks

GI Bill: Education

- At the end of WW2, blacks wanting to attend college in the south restricted to ~100 designated public and private institutions: small, under-resourced colleges
- Southern black colleges turned away ~55% of veterans for lack of space
- High school graduation rates lower among blacks, further reducing potential value of college tuition subsidy
- How to estimate the effect of GI bill?
 - Compare veterans to non-veterans?
- Clearly biased, and biased differentially for blacks and whites because of different selection criteria for entry into the military (literacy, disability, discrimination)

Bound & Turner use birth cohort as a natural experiment

- Don't compare vets to non-vets
- Equate birth cohort with chance of being a vet
- Compare outcomes by birth cohorts

Due to age eligibility and draft rules,
birth year → chance of military service

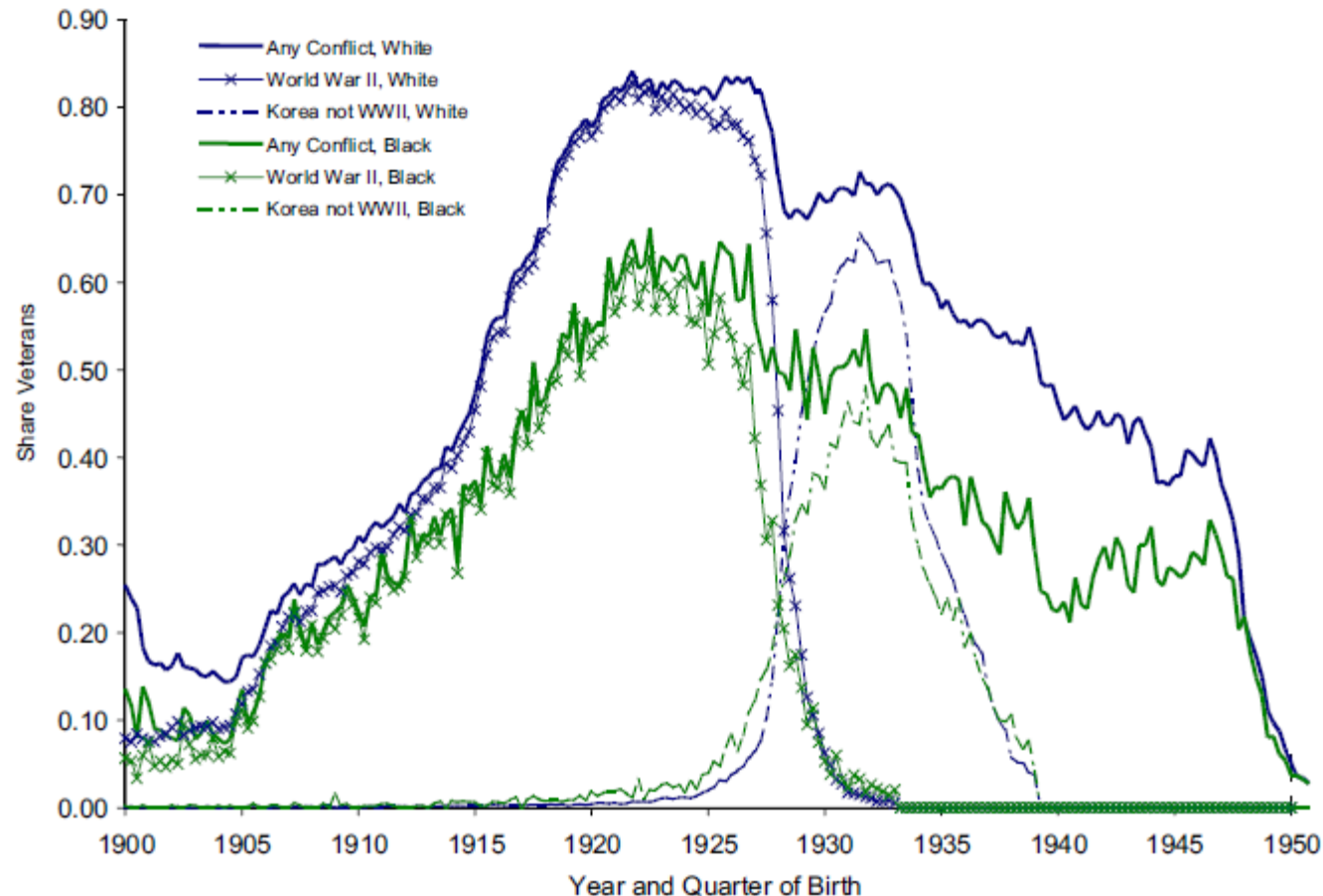


FIGURE 1
SHARE OF VETERANS AMONG MEN, 1900–1950 BIRTH COHORTS, 1970 CENSUS
DATA

How to Estimate Disparate GI Bill Benefits?

- Assume that the reasons military participation differed by birth cohort had *nothing to do* with characteristics of the men that would predict their education
- Men in peak service cohorts were not smarter, did not have better high school training, did not have more money, were not less likely to have children etc.
- Not quite credible, because there is a secular trend in college enrollment, even before the war.

Secular Trend in College Attendance: Black Men

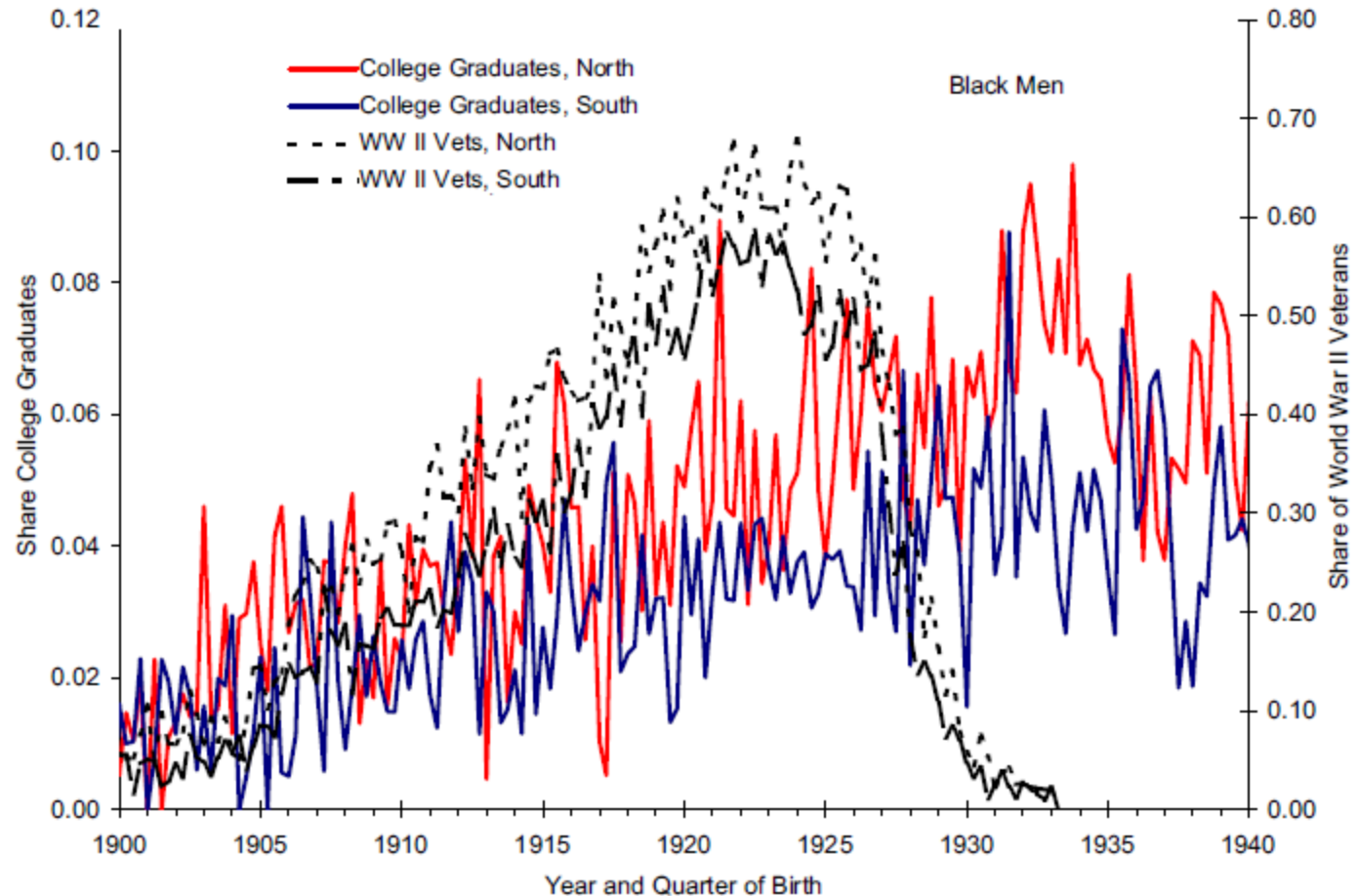


FIGURE 3B
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS

Secular Trend in College Attendance: White Men

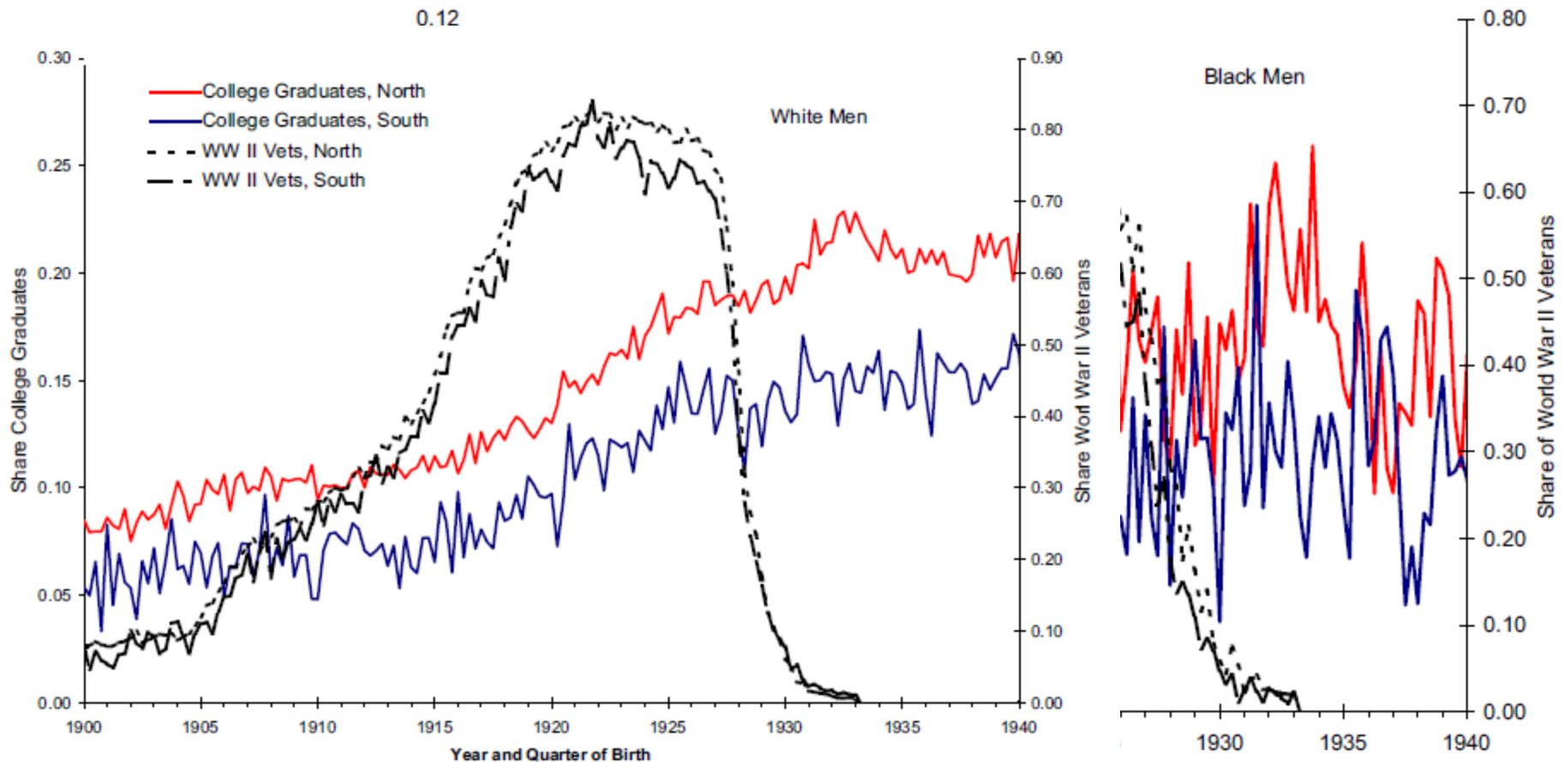


FIGURE 3A
REGIONAL DIFFERENCES IN EDUCATIONAL ATTAINMENT AND VETERAN STATUS
BY RACE: COLLEGE GRADUATION, WHITE

MENT AND VETERAN STATUS
ON, BLACK

Estimated Effect of GI Bill

- At least 4 percentage point increase in college completion, probably 5-6 percentage points (college completion was unusual, so this is about a third)
- Benefits for white men large and positive
- Benefits for black men born in the south negligible
- Benefits for black men outside the south positive (6-8 percentage points)
- Health effects???

Untargeted Resources Can Exacerbate Inequalities

- Key lesson from GI Bill:
 - Making a resource generally available without special consideration for least advantaged can exacerbate disparities even while helping the “average”
 - Advantaged are best able to use the new resource
 - This is one prediction of fundamental cause theory: new information, technological advances, and similar general progress can exacerbate inequalities
- Unclear how often this occurs, but clearly sometimes
- May depend on how inequality is measured (more coming...)

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Uncertainties and Controversies

1. How much does the 'Intervention' delivered correspond with future flavors of the policy?
 - Additional education at age 4 versus age 17? Additional high vs low quality of education?
 - Education in the future similar to education in the past?
 - MTO: section 8 housing similar effects as the voucher?
2. Results are often sensitive to model specification if relying on time trends, regression discontinuity approaches.
3. Insufficient power
4. Main problem: very little rigorous research. Major social policies simply never evaluated for health impact: social security, home ownership subsidies, school quality, transportation
5. Results are often not what we expect – things that seem obvious are not necessarily the case -- suggesting we need to do more not less research.

In groups

- Identify a policy you think may have important health implications.
- Describe why an evaluation of that policy is informative (primarily about the policy, or primarily a test of hypothesized mediators?)
- Specify the outcomes and populations you think most responsive or least responsive to the policy.
- Propose a study design to evaluate the policy
 - Describe biggest challenge to implementing and drawing inferences