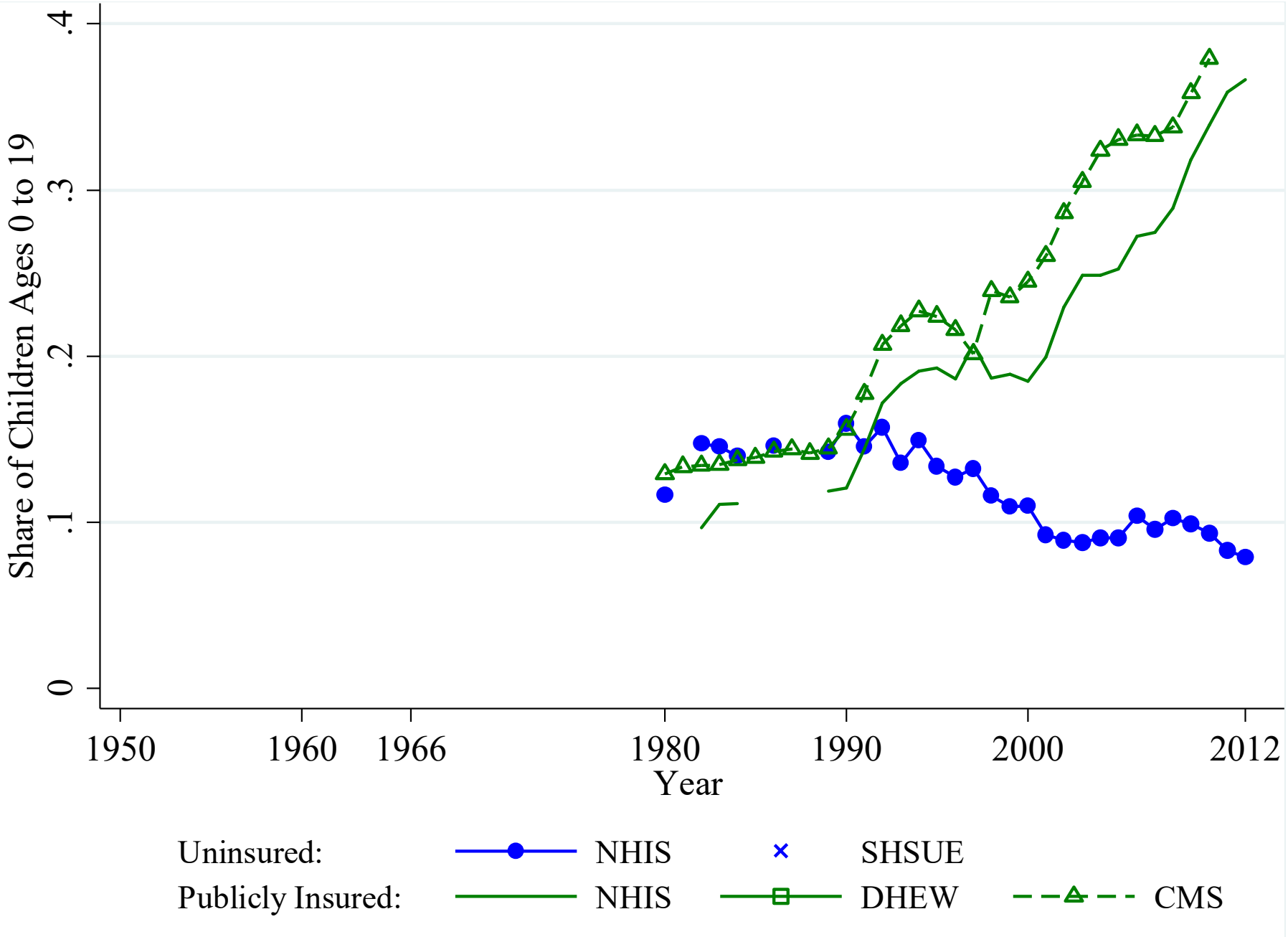
The Long-Run Effects of Childhood Insurance: Medicaid Implementation, Adult Health, and Labor Market Outcomes

April 4, 2017

Andrew Goodman-Bacon
Vanderbilt University

Publicly Insured and Uninsured Children, 1950-2012



Sources: DHEW (various years); CMS (2012); NORC (1984); HHS, CHC, NCHS (2010); MPRC/SHADAC (2012)

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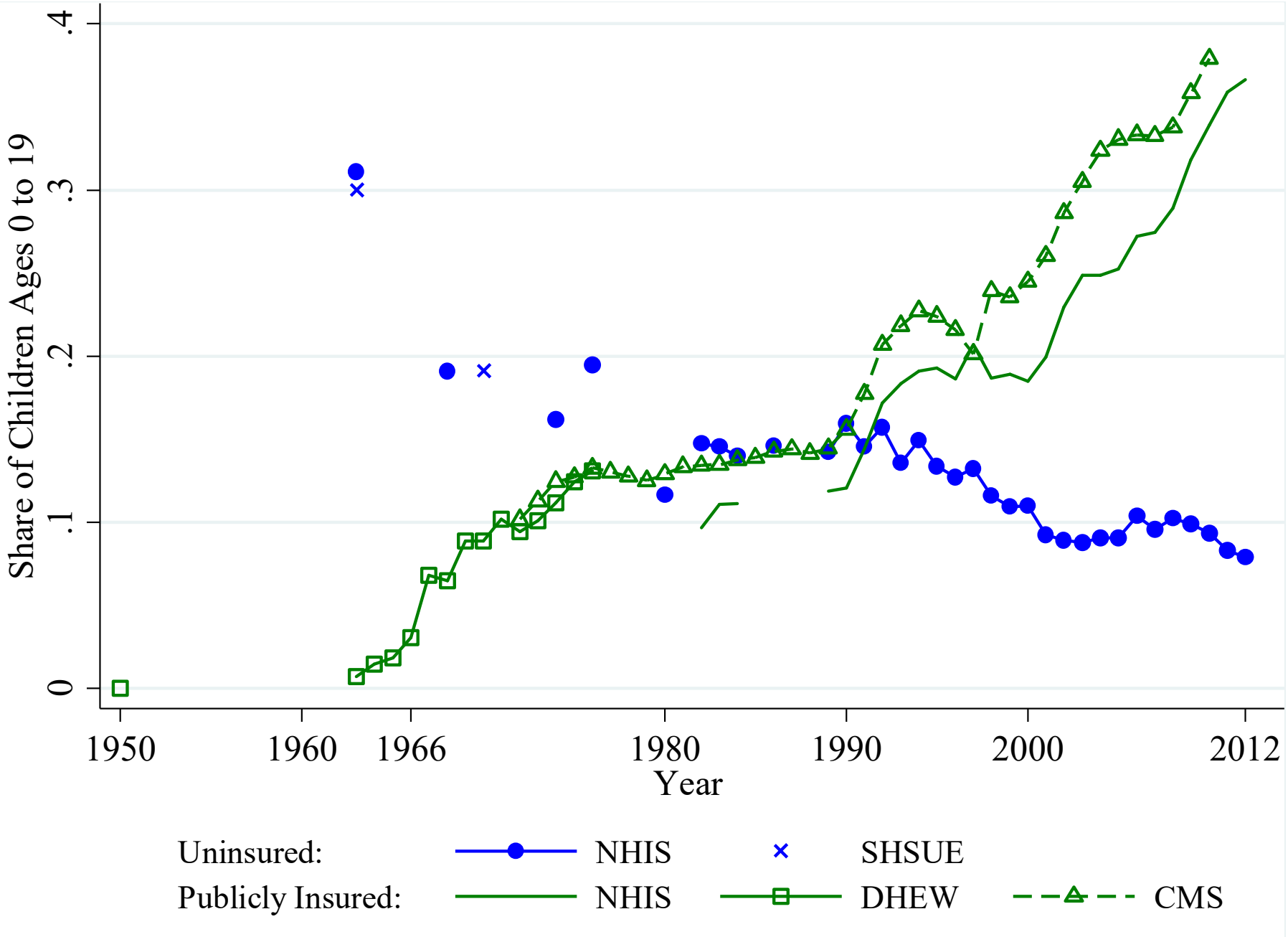

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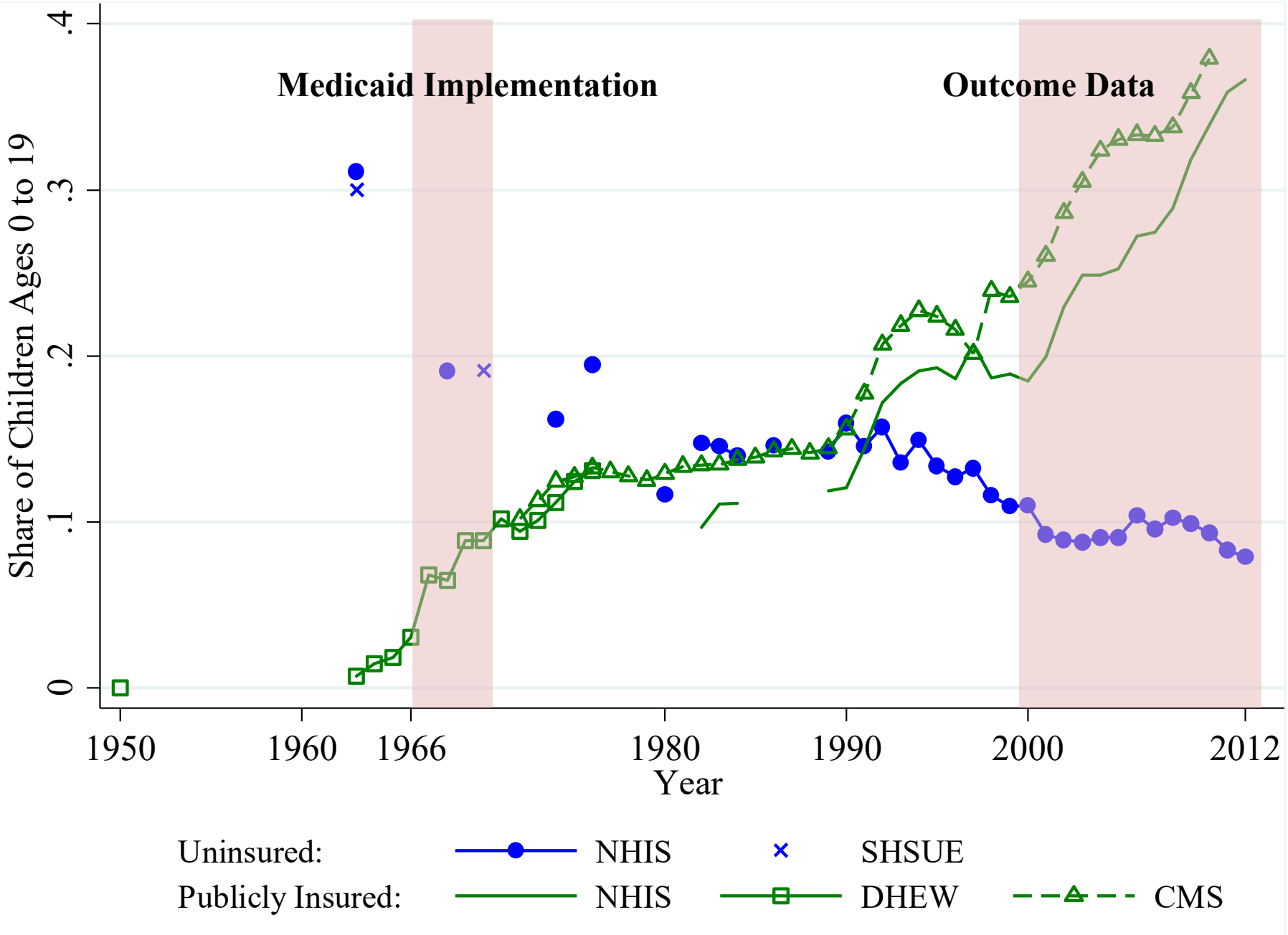

Sources: DHEW (various years); CMS (2012); NORC (1984); HHS, CHC, NCHS (2010); MPRC/SHADAC (2012)

Medicaid Implementation

Share of Kids with Annual MD Visit by Income,

Sources: Surveys of Health Services Utilization and Expenditure, NORC (1984); National Health Examination Survey Cycle II, NCHS (1991); (Integrated) National Health Interview Survey, MPRC/SHADAC (2015).

Medicaid's Passage, 1965 SSA

1. Open-ended federal financing

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1. Open-ended federal financing

2. "Essential Health Benefits"

Inpatient, Outpatient, Physician, Lab/X-ray, Nursing Home

Optional: Drugs (42), clinic services, dental, vision/hearing

Post-1967: outreach, screening and treatment (EPSDT)

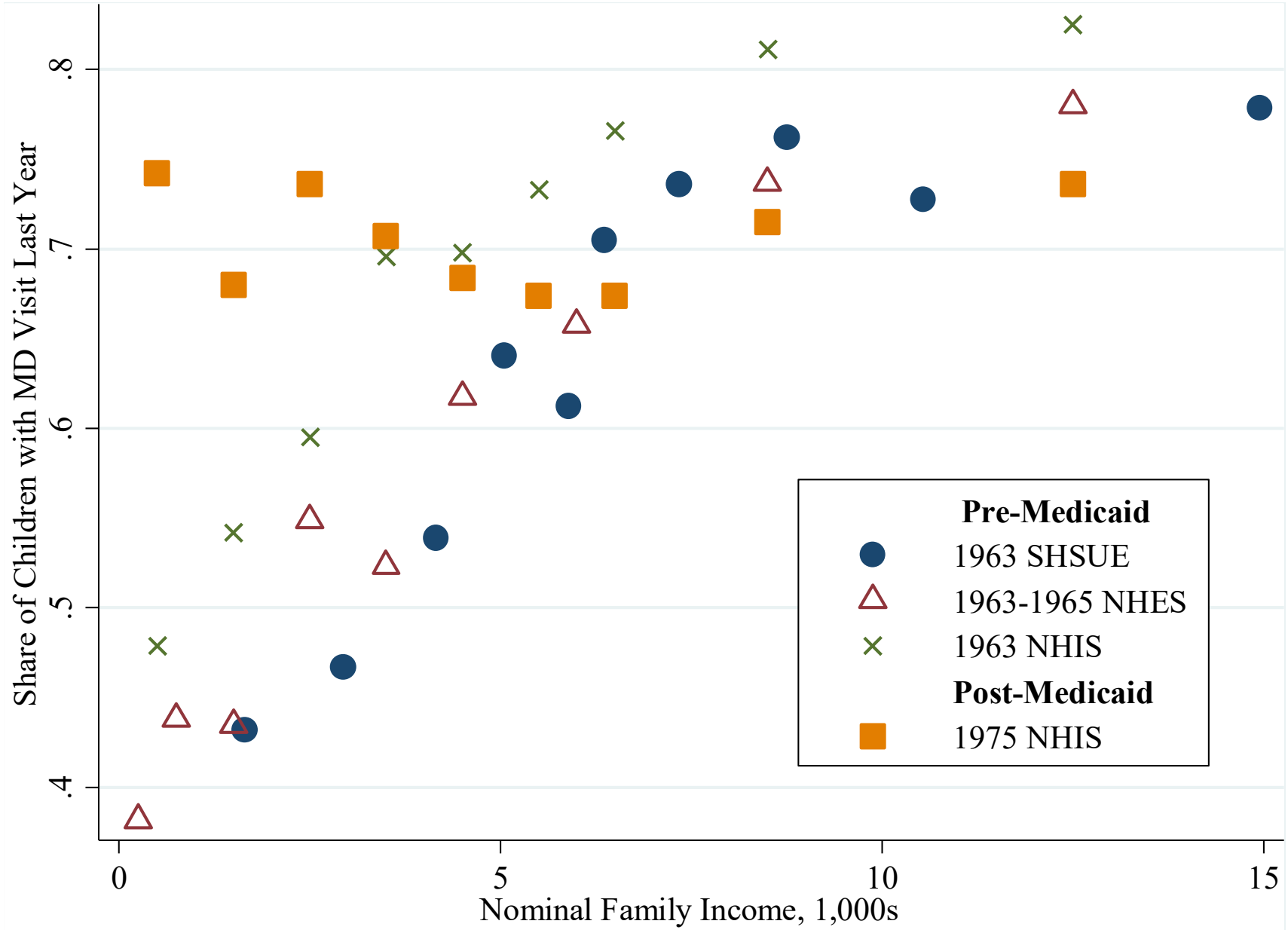
Medicaid's Passage, 1965 SSA

1. Open-ended federal financing

2. "Essential Health Benefits"

3. **Coverage Mandate: welfare recipients**
   89% of Medicaid kids were on AFDC (DHEW)

Share of Kids with Annual MD Visit by Income,



Sources: Surveys of Health Services Utilization and Expenditure, NORC (1984); National Health Examination Survey Cycle II, NCHS (1991); (Integrated) National Health Interview Survey, MPRC/SHADAC (2015).

Why should Medicaid have long-run effects?

1. "Black box" correlations

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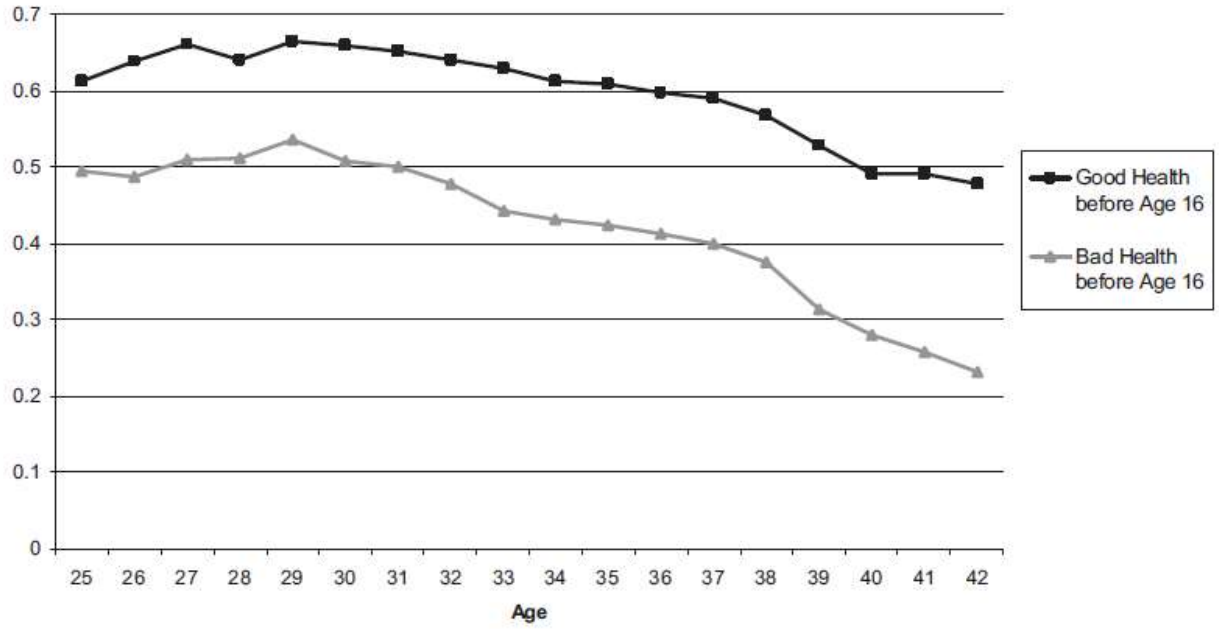
1. "Black box" correlations

Smith (1999)

FIGURE 1.—SELF-REPORTED HEALTH STATUS EXCELLENT OR VERY GOOD BY HEALTH STATUS BEFORE AGE 16



Why should Medicaid have long-run effects?

1. "Black box" correlations
2. Specific conditions

Pneumonia (sulfa, 1937)	(Bhalotra and Venkataramani 2015)
Hookworm (eradication, 20s)	(Bleakley 2007)
Malaria	(Barreca 2010)
Meningitis	(Roed et al. 2013)
Goiter/iodine deficiency (salt)	(Adhvaryu et al 2015)
Burden of infection	(Crimmins and Finch 2005)
Low birth weight	(lots)
Neonatal respiratory distress	(Bharadwaj, Loken and Neilson 2015)

Why should Medicaid have long-run effects?

1. "Black box" correlations
2. Specific conditions
3. Policy effects

Food stamps	(Almond, Hoynes, Schanzenbach 2014)
Hospital desegregation	(Chay, Guryan, Mazumder 2009, 2014)
Medicaid in the 1980s	(Levine and Schanzenbach 2008 Meyer and Wherry 2013 Miller and Wherry 2015 Miller, Wherry, Kaestner, Meyer 2015 Cohodes et al. 2014 Brown, Kowalski and Lurie 2015)

Why should Medicaid have long-run effects?

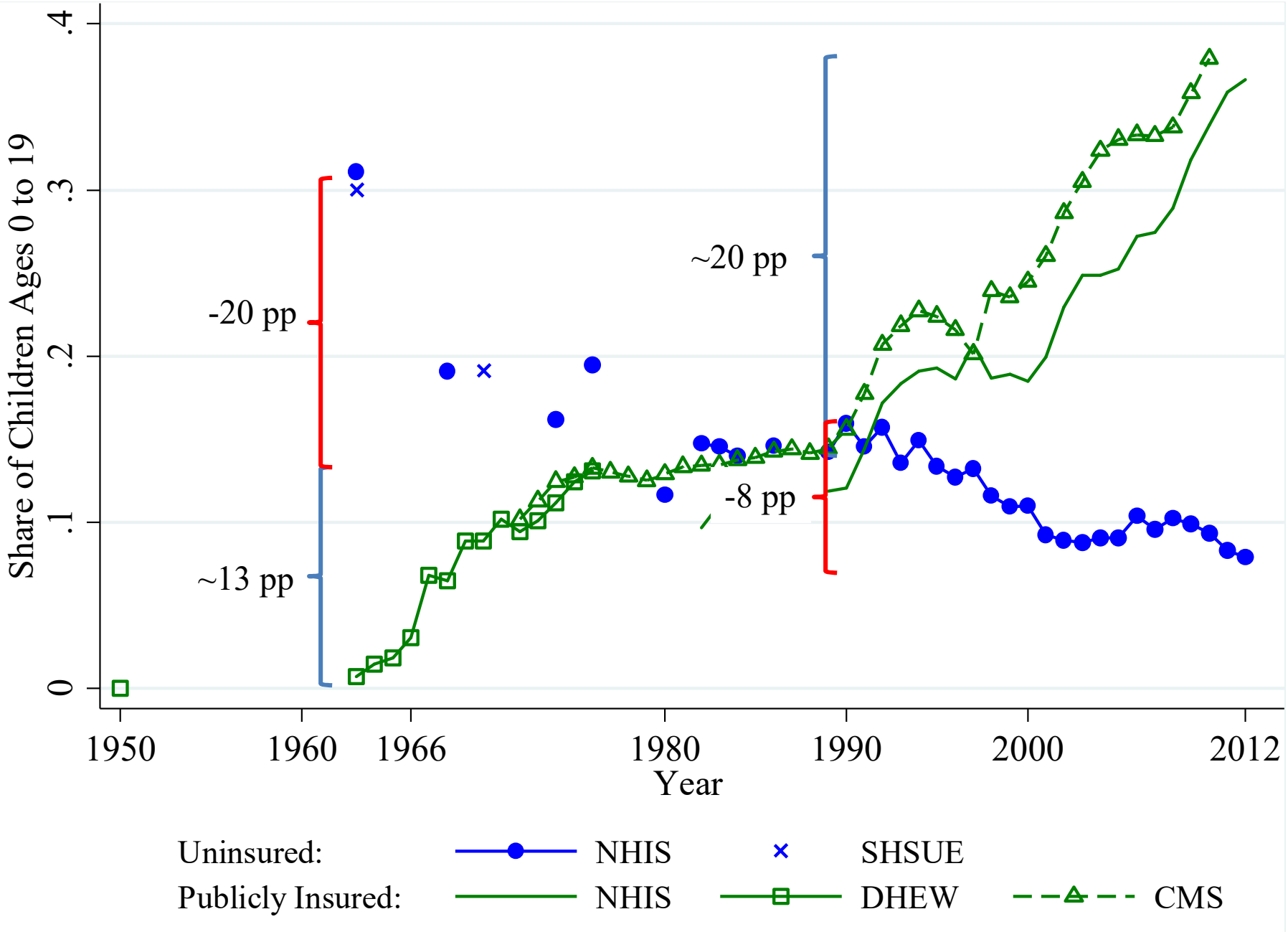
1. "Black box" correlations
2. Specific conditions
3. Policy effects
4. Unhealthy target group in 1960s

The most significant finding of the Task Force about the Medical Rejectee is that *75 percent of all persons rejected for failure to meet the medical and physical standards would probably benefit from* treatment.

Why should Medicaid have long-run effects?

1. "Black box" correlations
2. Specific conditions
3. Policy effects
4. Unhealthy target group in 1960s
5. Huge policy change

Publicly Insured and Uninsured Children, 1950-2012



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Why should Medicaid have long-run effects?

1. "Black box" correlations
2. Specific conditions
3. Policy effects
4. Unhealthy target group in 1960s
5. Huge policy change
6. Short-run health effects (Goodman-Bacon 2016)

Measuring Childhood Eligibility

Data on Categorical Eligibility (AFDC)

Form FS-2019.1
DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Social and Rehabilitation Service
(8/67)

Budget Bureau No. 122-S67007

1967 AFDC STUDY — CASE SCHEDULE

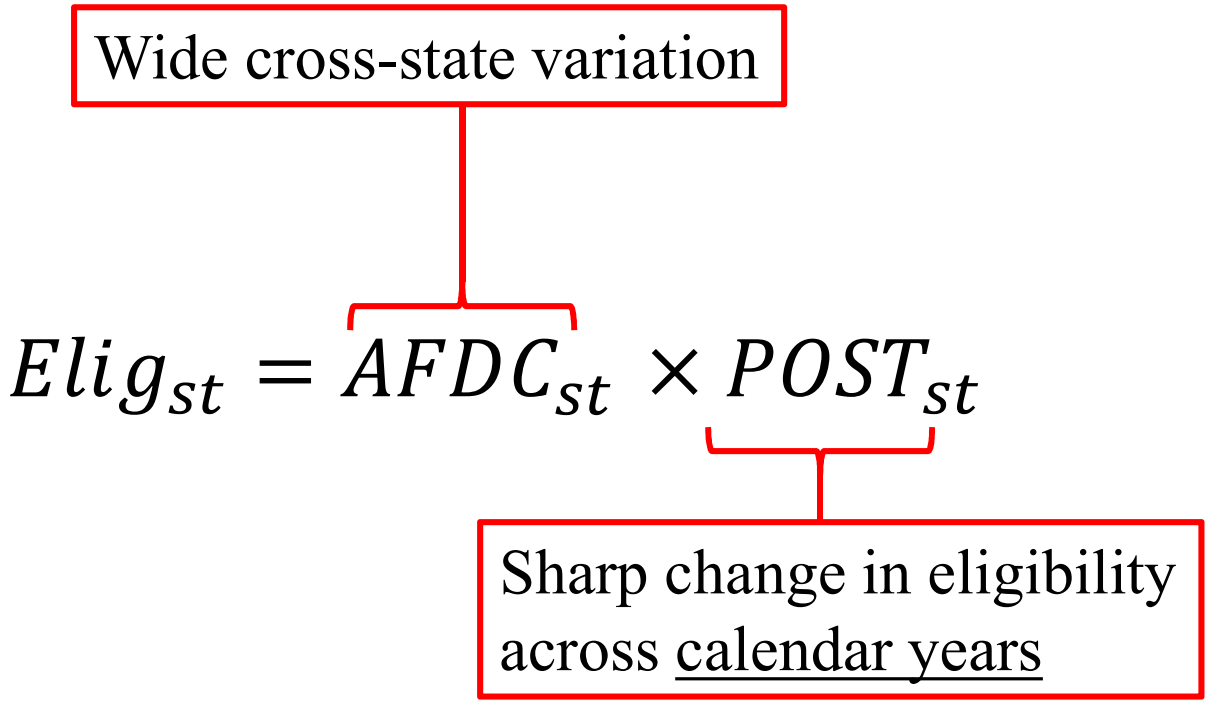
TO THE CASEWORKER: The following case from your AFDC caseload is in the random sample of cases to be included in the 1967 AFDC Study. Please complete all of the items (except those in italics) by filling in the blanks or circling the code for the correct information. Please take your time, and read the questions carefully. Answer the questions on the basis of information in the case record or in other agency records, or on the basis of your personal knowledge of the case. If you are unable to determine the correct information requested, do not base the answer on your guess, but give the answer as "unknown," unless instructions call for your estimate or opinion. Please recheck your answers and be sure all items are completed before you return the schedule. Answer all questions according to directions in the "Instructions to Caseworker." If you still have questions, ask your supervisor to request clarification from the State office.

Name of payee_____ Case number_____

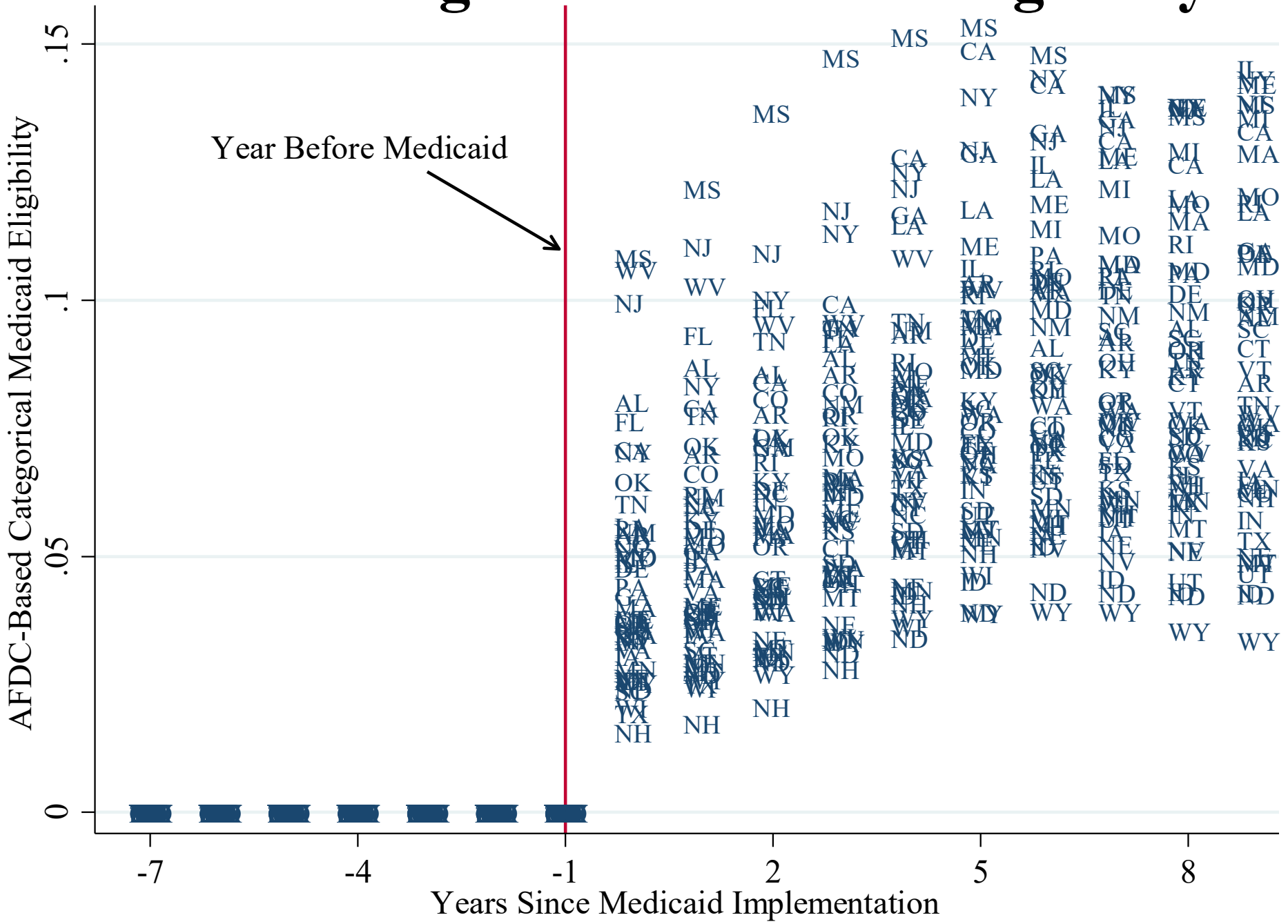
Home address_____

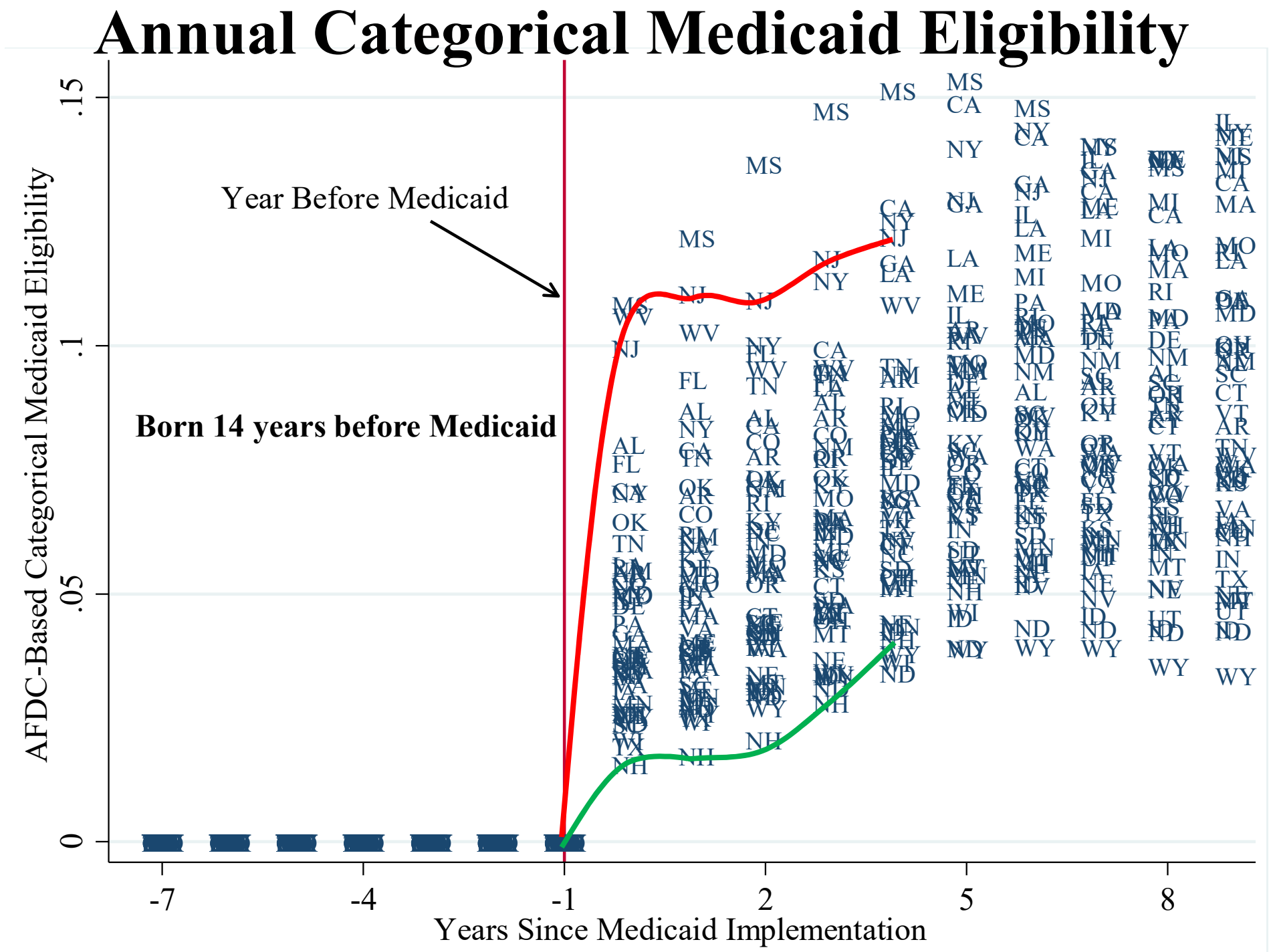
pop_{rst}

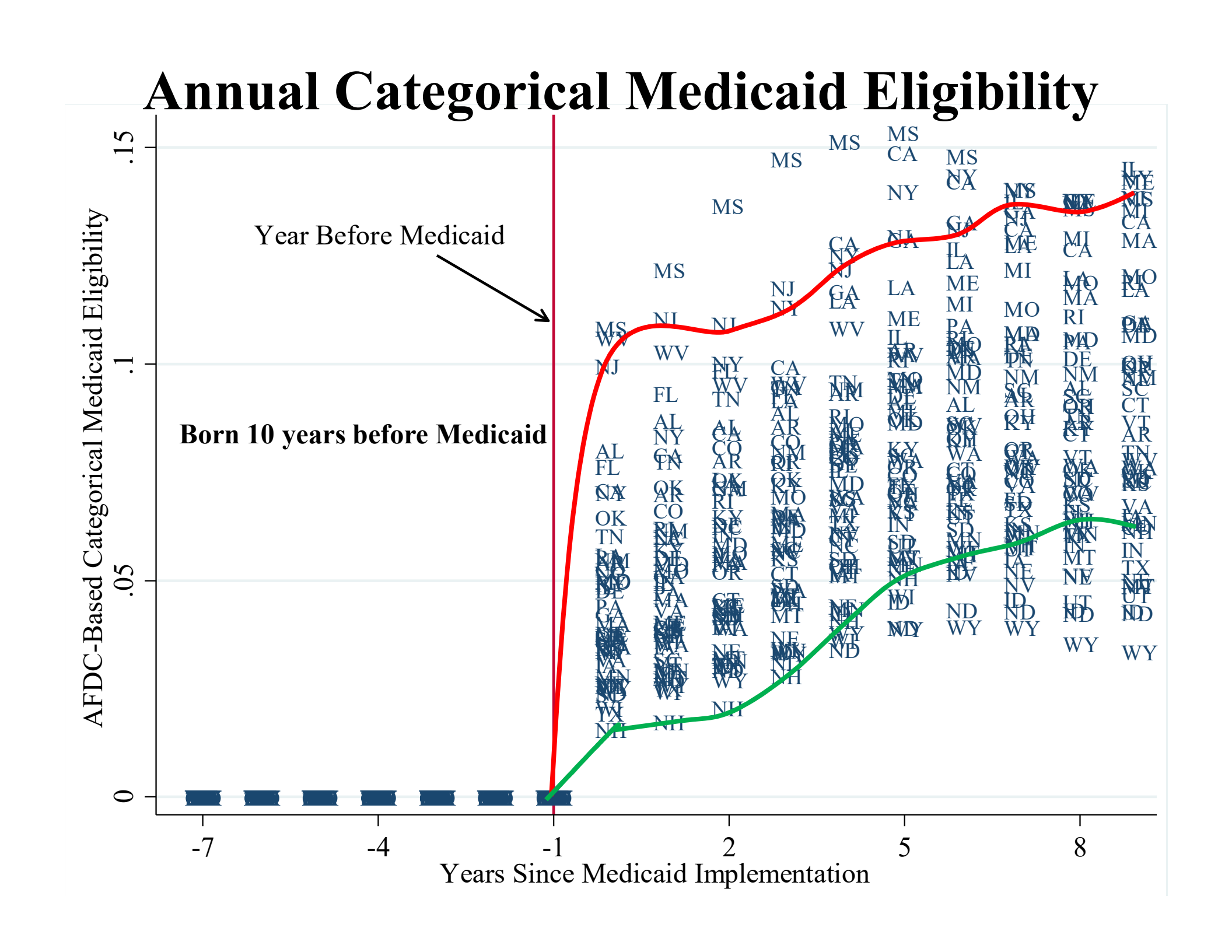
Annual Categorical Medicaid Eligibility



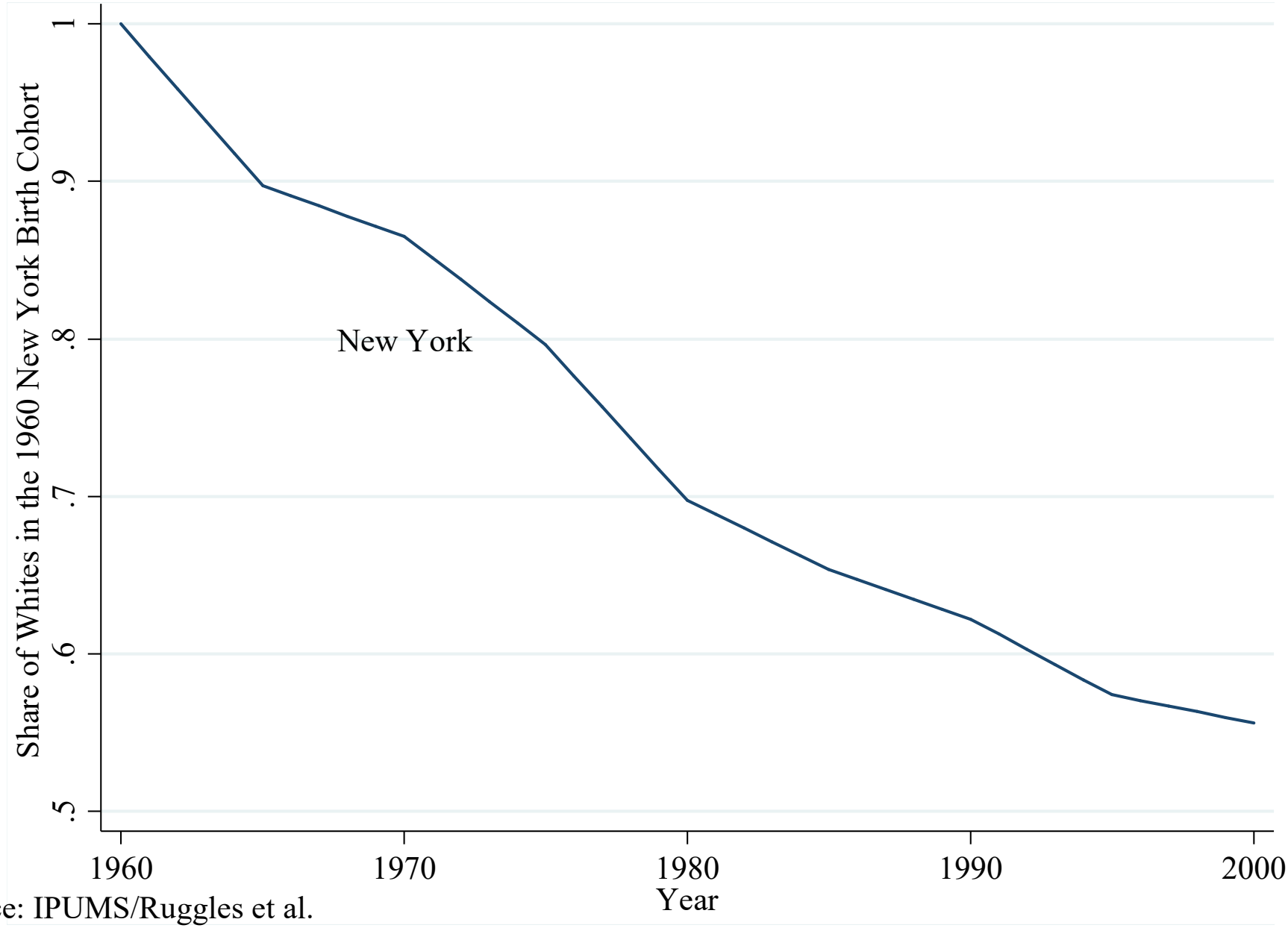
Annual Categorical Medicaid Eligibility




Annual Categorical Medicaid Eligibility
AFDC-Based Categorical Medicaid Eligibility
0
.05
.1
.15
Year Before Medicaid
Born 14 years before Medicaid
-7
-4
-1
2
5
8
Years Since Medicaid Implementation

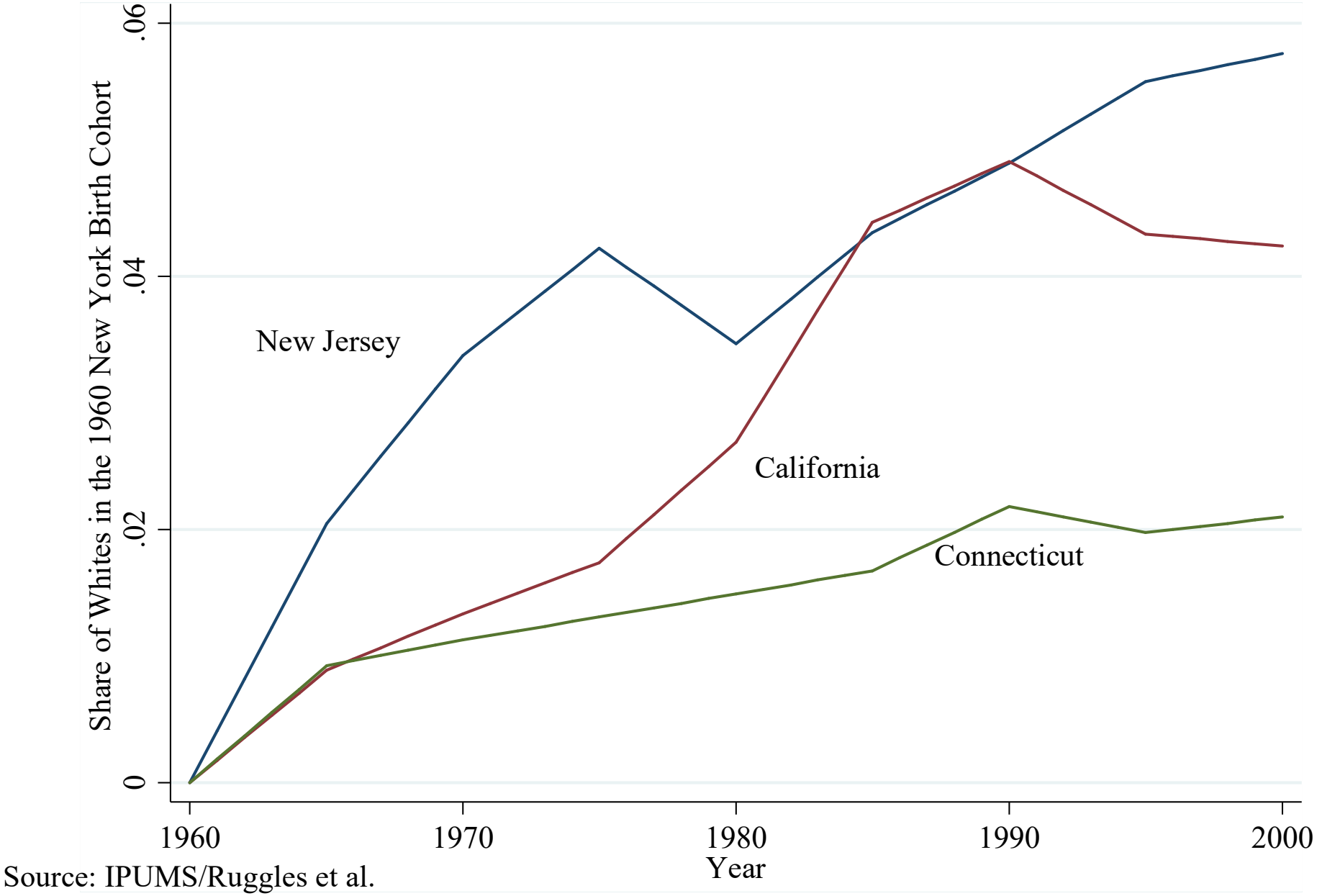

Annual Categorical Medicaid Eligibility
AFDC-Based Categorical Medicaid Eligibility
0
.05
.1
.15
Year Before Medicaid
Born 10 years before Medicaid
-7
-4
-1
2
5
8
Years Since Medicaid Implementation

Location of Whites Born in New York in 1960



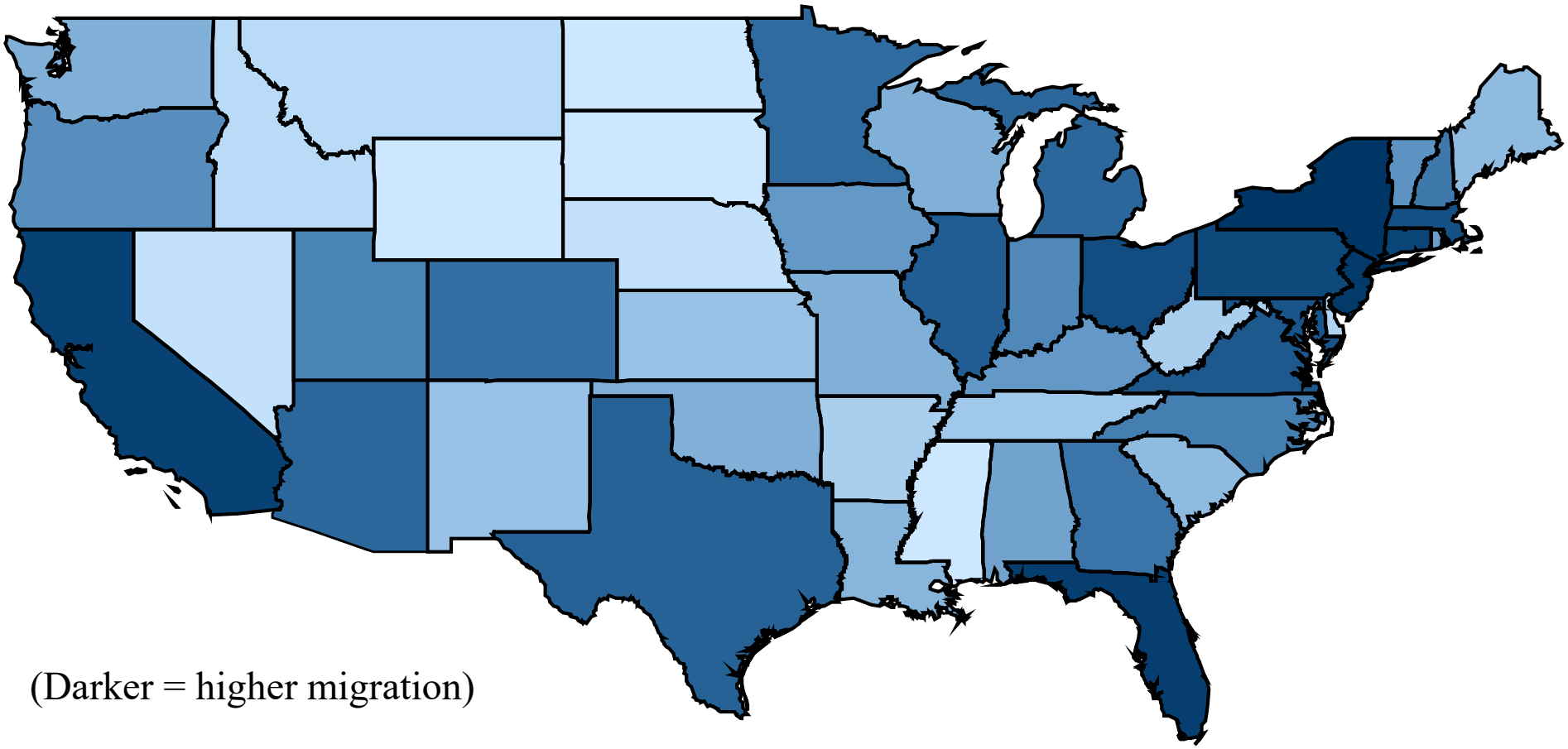
Source: IPUMS/Ruggles et al.

Location of Whites Born in New York in 1960



Source: IPUMS/Ruggles et al.

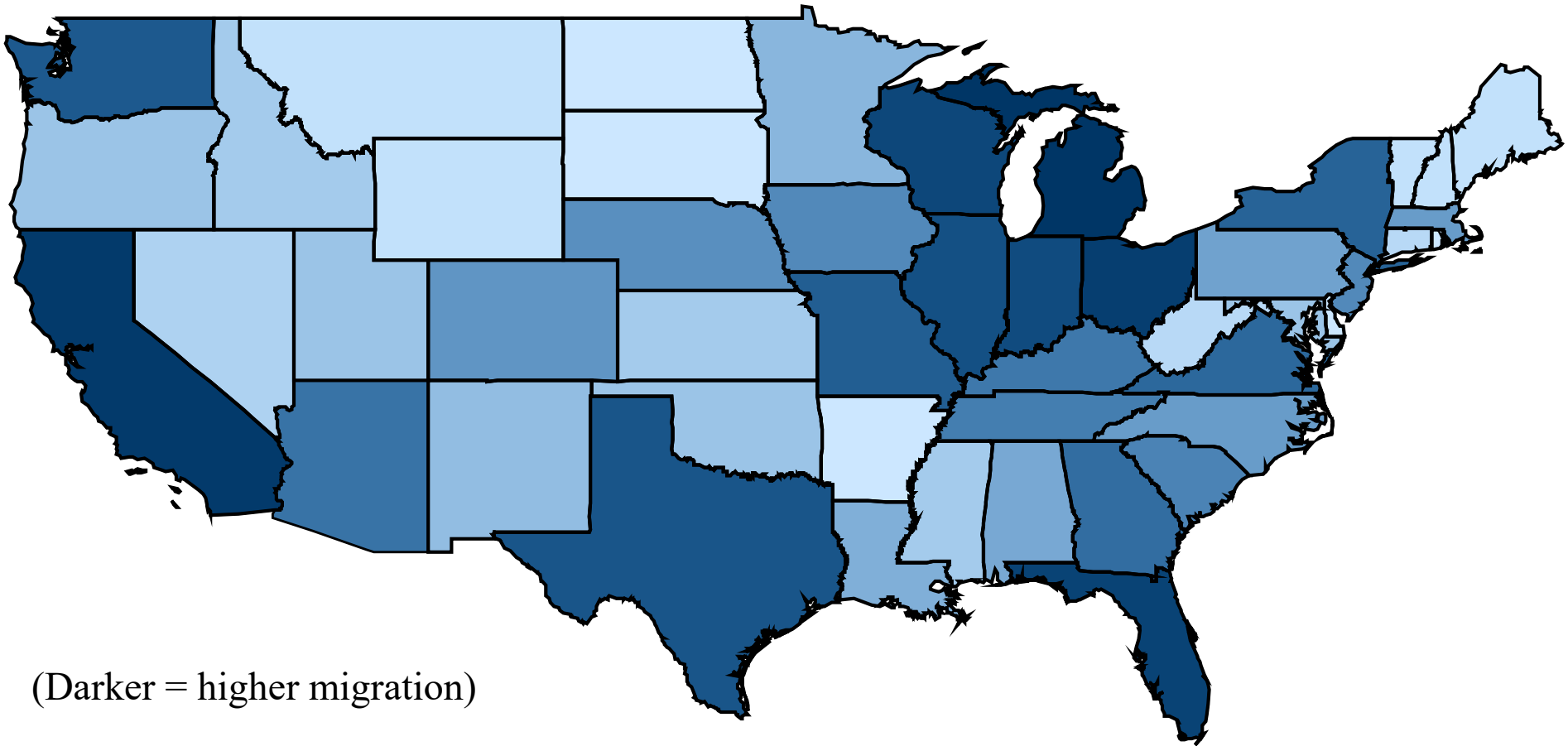
1970 Location of Whites Born in New York in 1960



(Darker = higher migration)

Source: IPUMS/Ruggles et al.

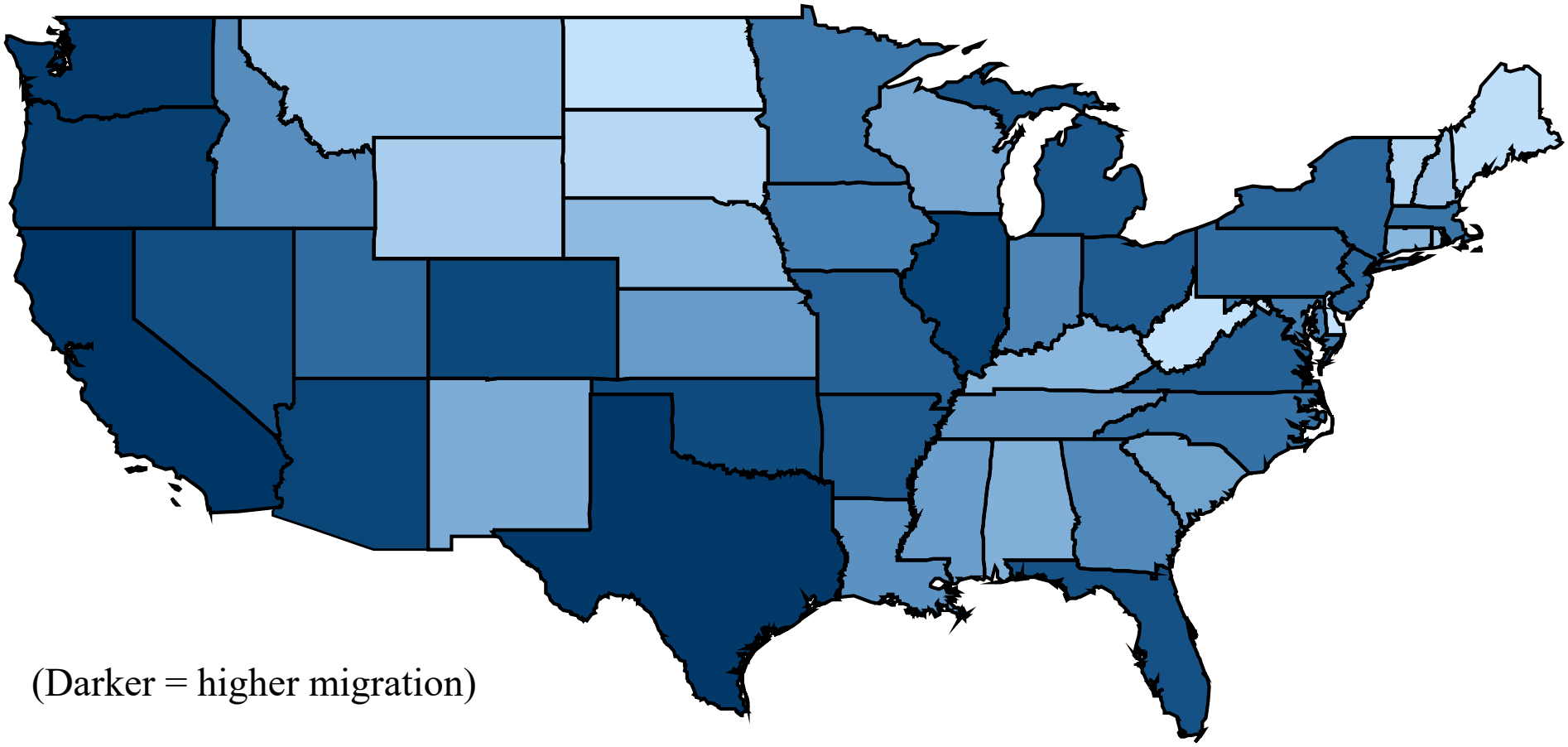
1970 Location of Whites Born in Michigan in 1960



(Darker = higher migration)

Source: IPUMS/Ruggles et al.

1970 Location of Whites Born in California in 1960



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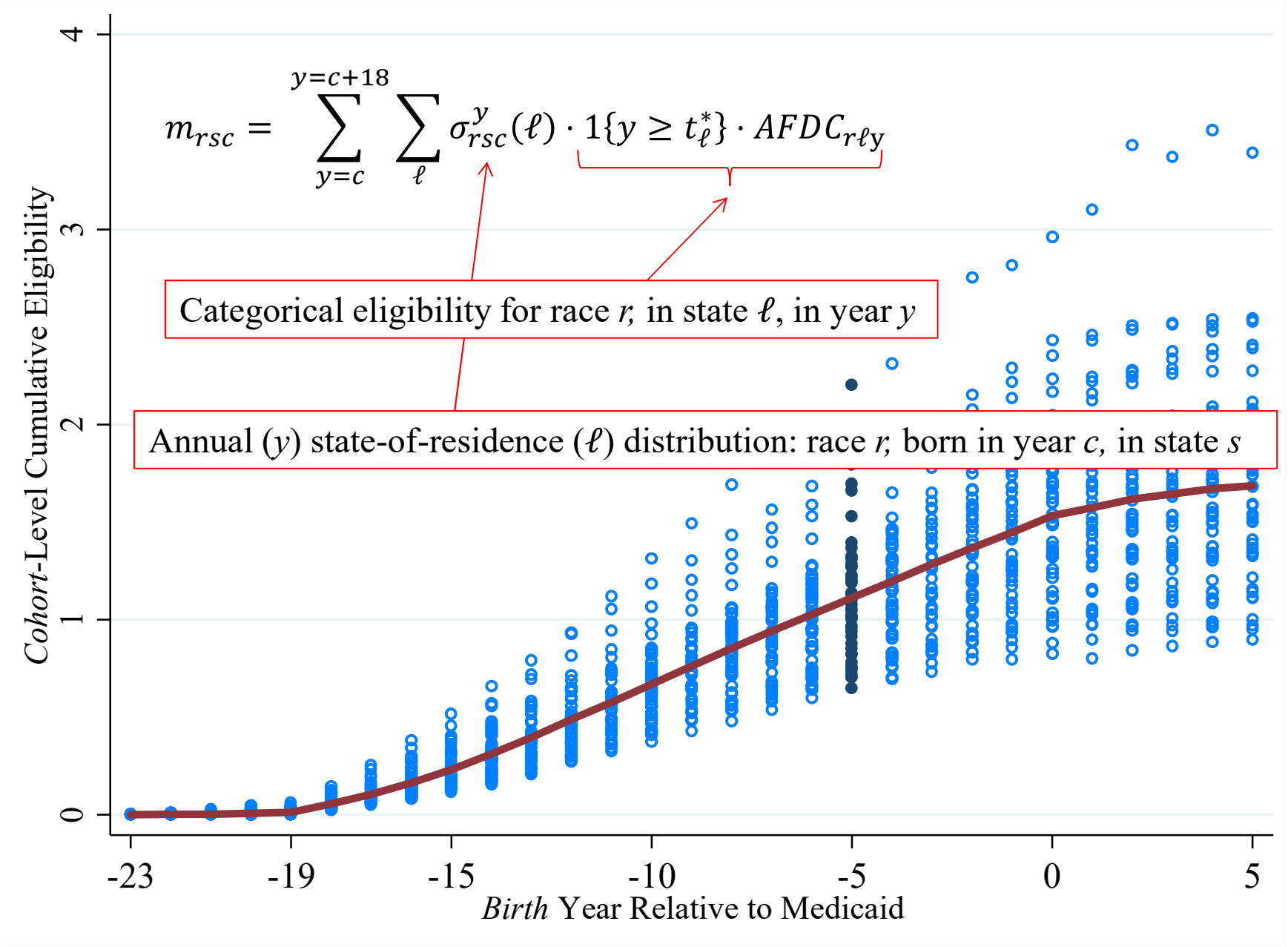
Source: IPUMS/Ruggles et al.

Cumulative Eligibility by Event Cohort



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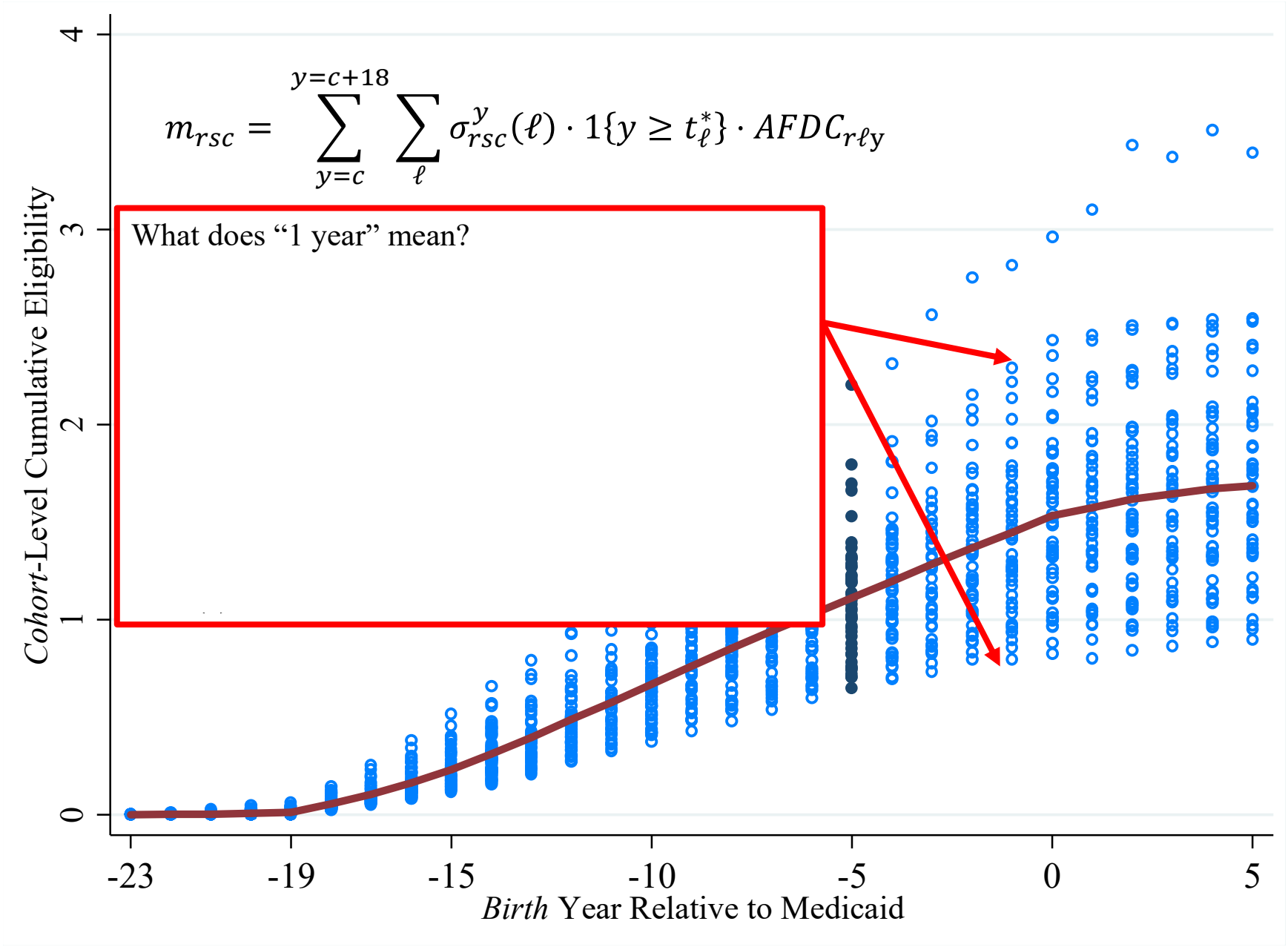


Long-Run Research Design

Can we use actual eligibility, m_{rsc}?

Probably not.

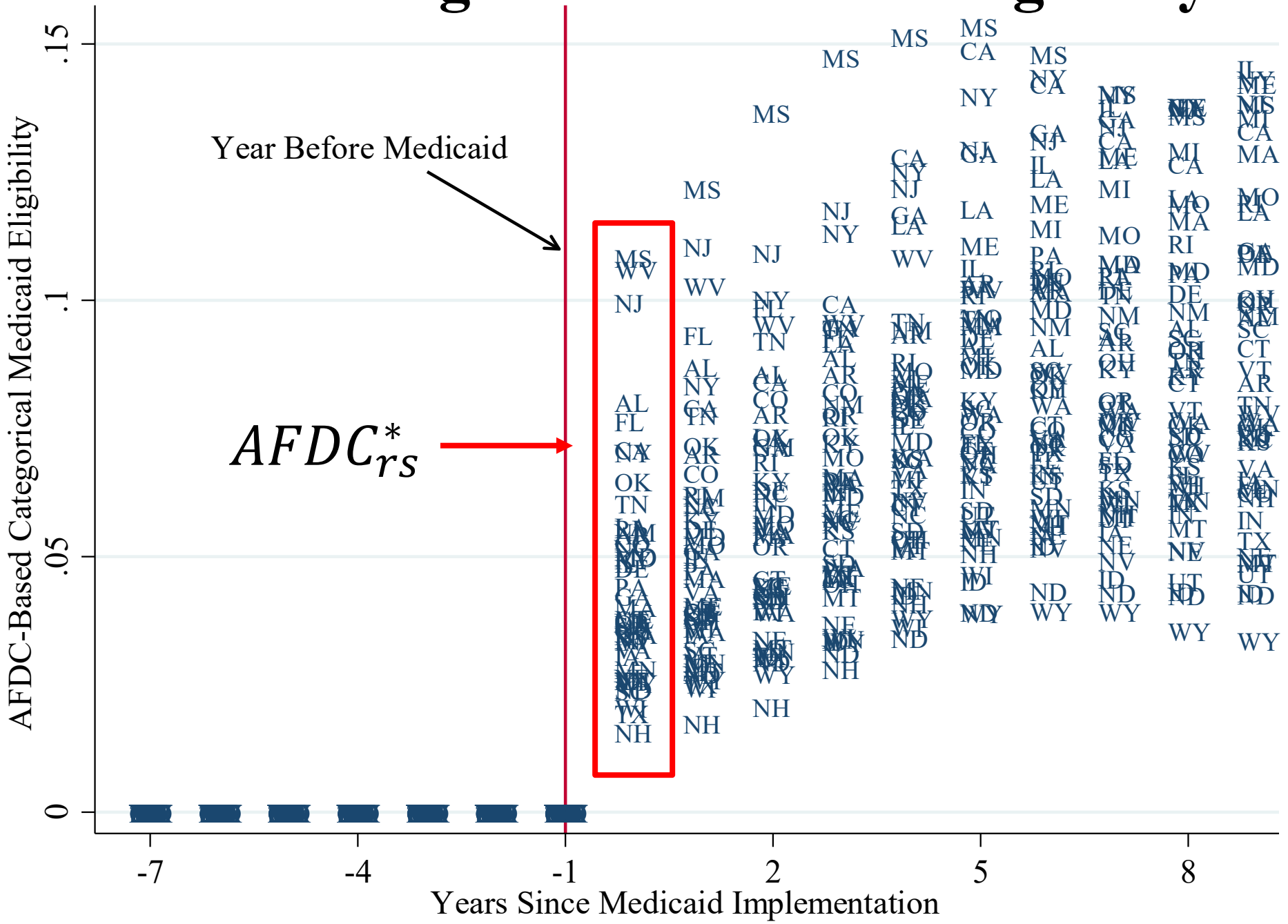
a. AFDC policy: OBRA '81
b. Labor demand: $cov(AFDC, unemp) > 0$
c. Demographics: SFH ↑ AFDC, ↓ adult outcomes
d. Migration: moves may respond to Medicaid

Use Initial AFDC Rates

Share of children on AFDC in your *birth* state's Medicaid implementation year (t_s^*) by race (r):

$$AFDC_{rs}^*$$

Annual Categorical Medicaid Eligibility



Use Initial AFDC Rates

Share of children on AFDC in your *birth* state's Medicaid implementation year (t_s^*) by race (r):

$$AFDC_{rs}^*$$

→Diff-in-diff:

compare cohorts born at different times relative to Medicaid ($c - t_s^*$) and in states with different $AFDC_{rs}^*$

Where does $AFDC^{*}_{rs}$ come from?

Historical variation in institutions/*de facto* welfare systems:

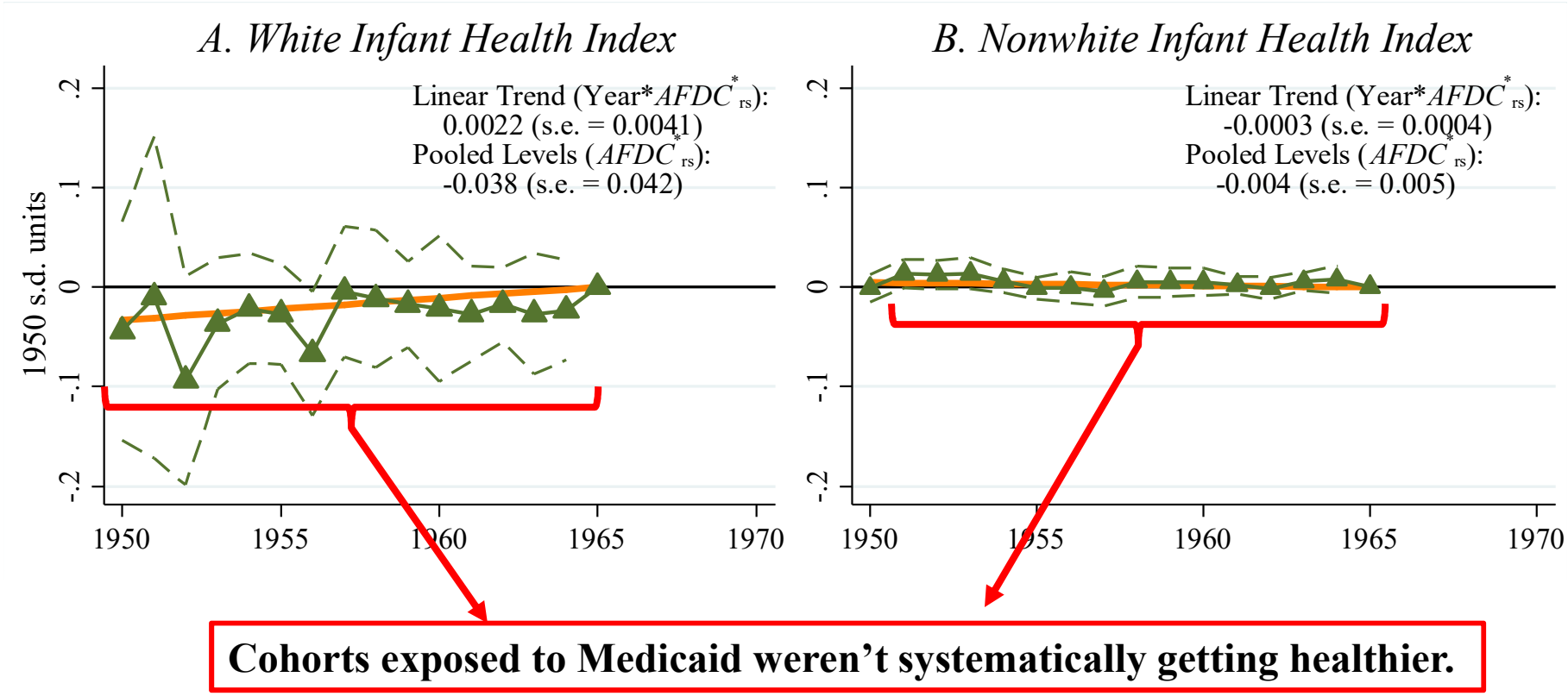
1. *Industrial structure (Alston and Ferrie)*
2. *Discrimination (Bell)*
3. *Traditions of aid (Moehling)*
4. *Constitutional structure (Fox)*

Historically stable, largely arbitrary w.r.t. children's circumstances.

Why is this a good idea?

1. $AFDC^{*}_{rs} \not\rightarrow$ pre-Medicaid health trends

$AFDC^*_{rs}$ and Infant Health

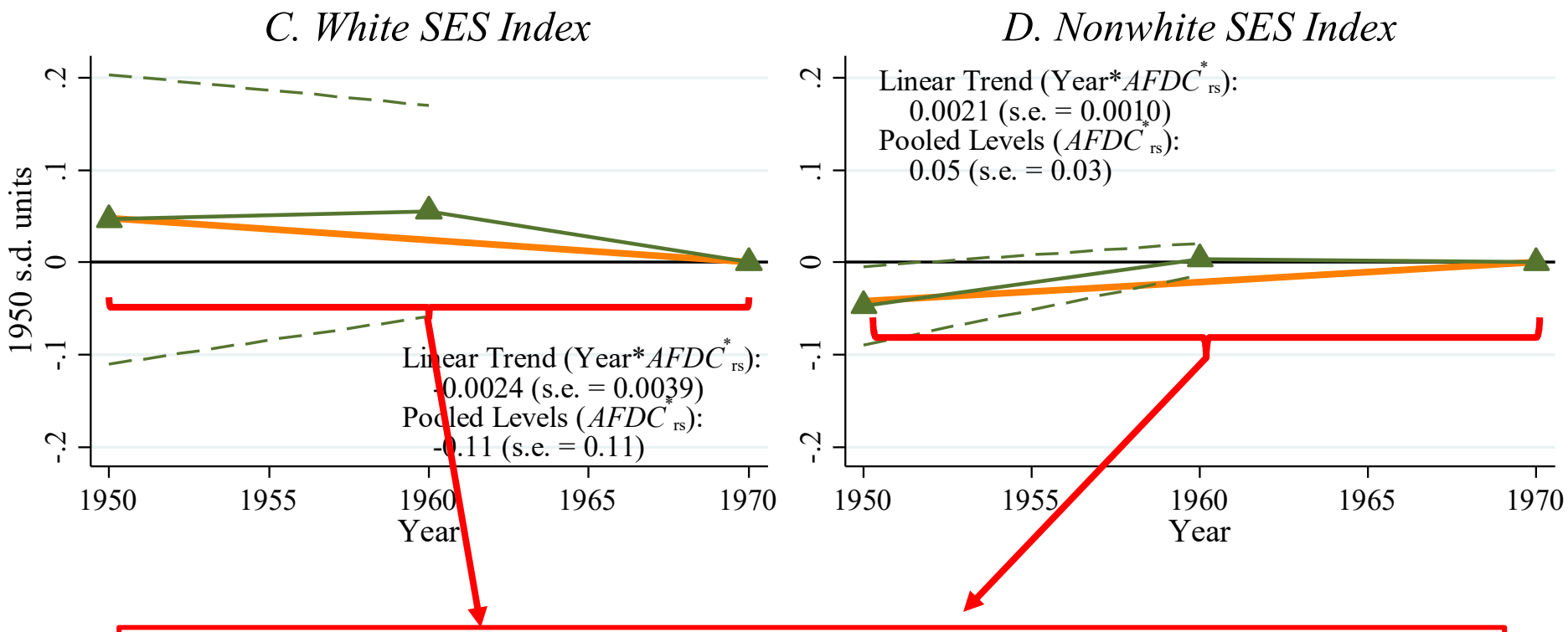


Notes: The infant health index is an equally weighted mean of the following variables standardized by their 1950 mean and standard deviation: low and very low birth weight rates, neonatal and postneonatal infant mortality rates, the sex ratio at birth, and the share of births in a hospital.

Why is this a good idea?

1. $AFDC^{*}_{rs} \not\rightarrow$ pre-Medicaid health trends
2. $AFDC^{*}_{rs} \not\rightarrow$ pre-Medicaid SES trends

$AFDC^*_{rs}$ and Child SES



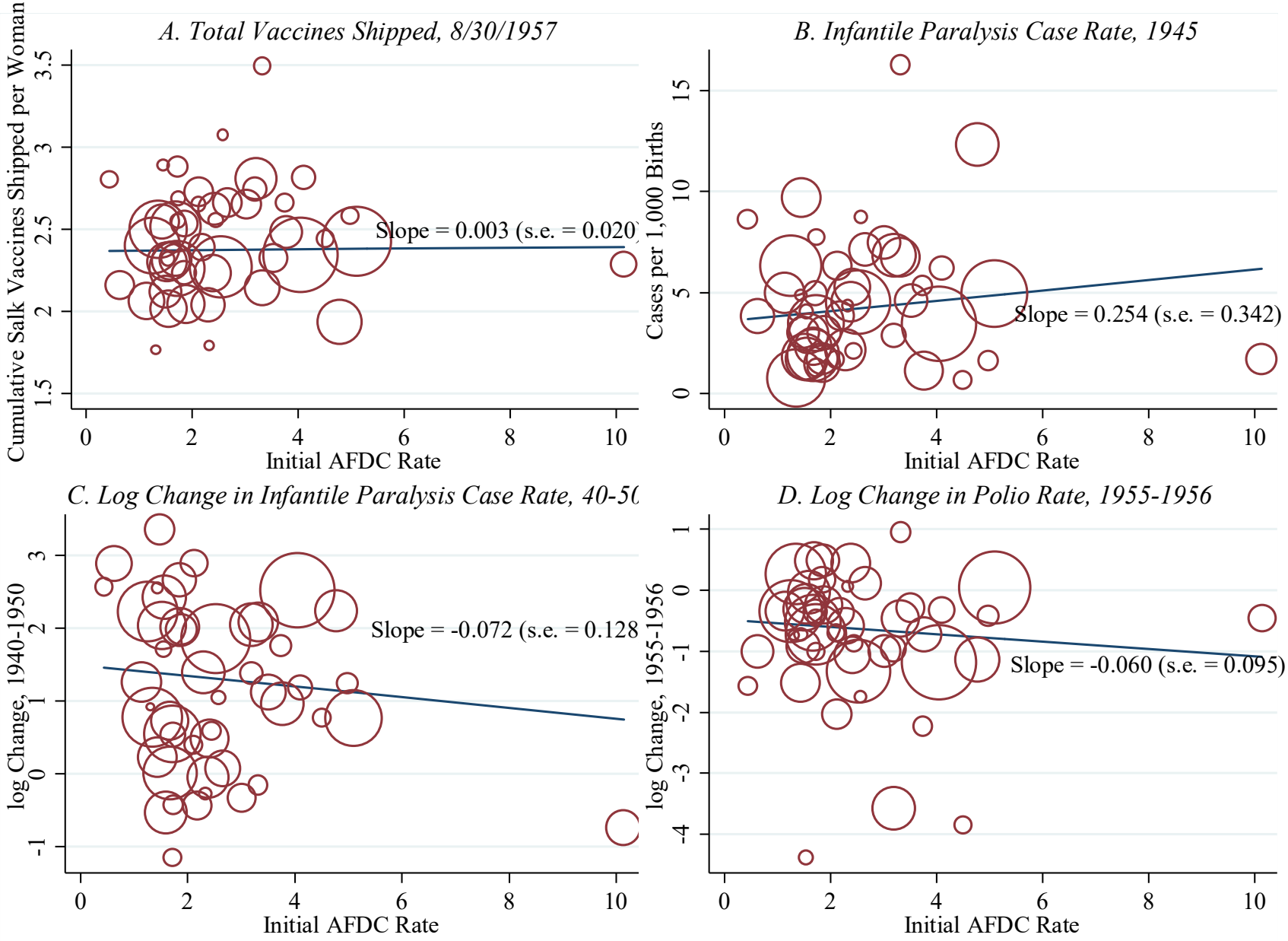
Cohorts exposed to Medicaid weren't systematically living in better conditions.

The SES index is constructed similarly (for children under age 10) and includes the 25th, 50th, and 75th percentiles of children's household incomes; the child poverty rate; the share of children in households whose head has a high school degree or more, is in the labor force, and is employed; the share of children who live with no parents or both parents; household size; and the share of children ages 4-6 enrolled in school.

Why is this a good idea?

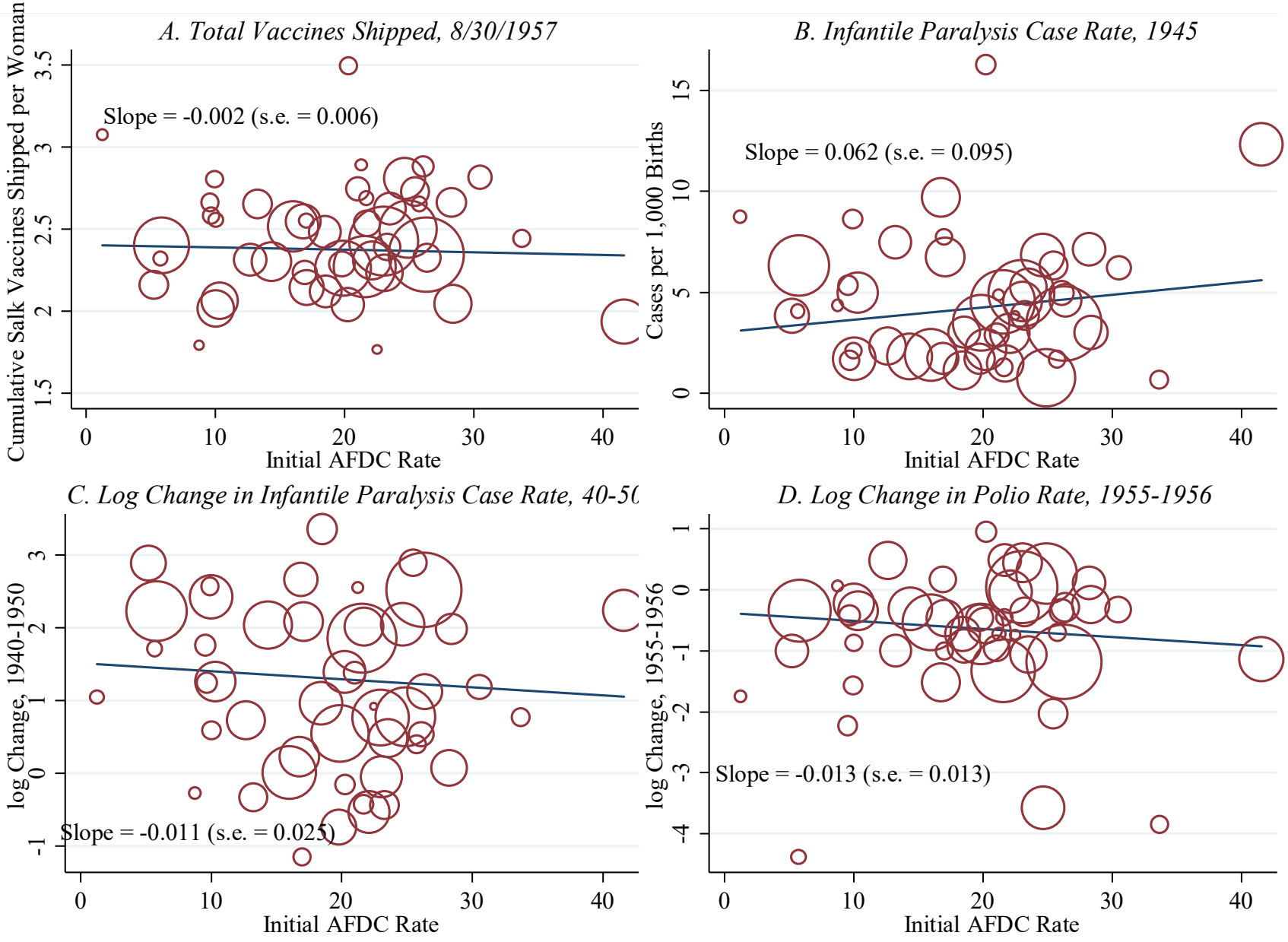
1. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid health trends
2. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid SES trends
3. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid public health efforts

White AFDC and Polio Incidence/Vaccination



Notes: Panel A uses data on total Salk vaccines shipped from FDA approval (1955) through 8/30/1957. Panel B uses data on reported cases of infantile paralysis (a subset of polio cases) in 1945. Panel C uses data on the change in the infantile paralysis case rate from 1940-1950. Panel C uses data on the change in the polio incidence rate between 1955 (mostly pre-vaccine) and 1956 (post-vaccine). Source: March of Dimes Archive.

Nonwhite AFDC and Polio Incidence/Vaccination



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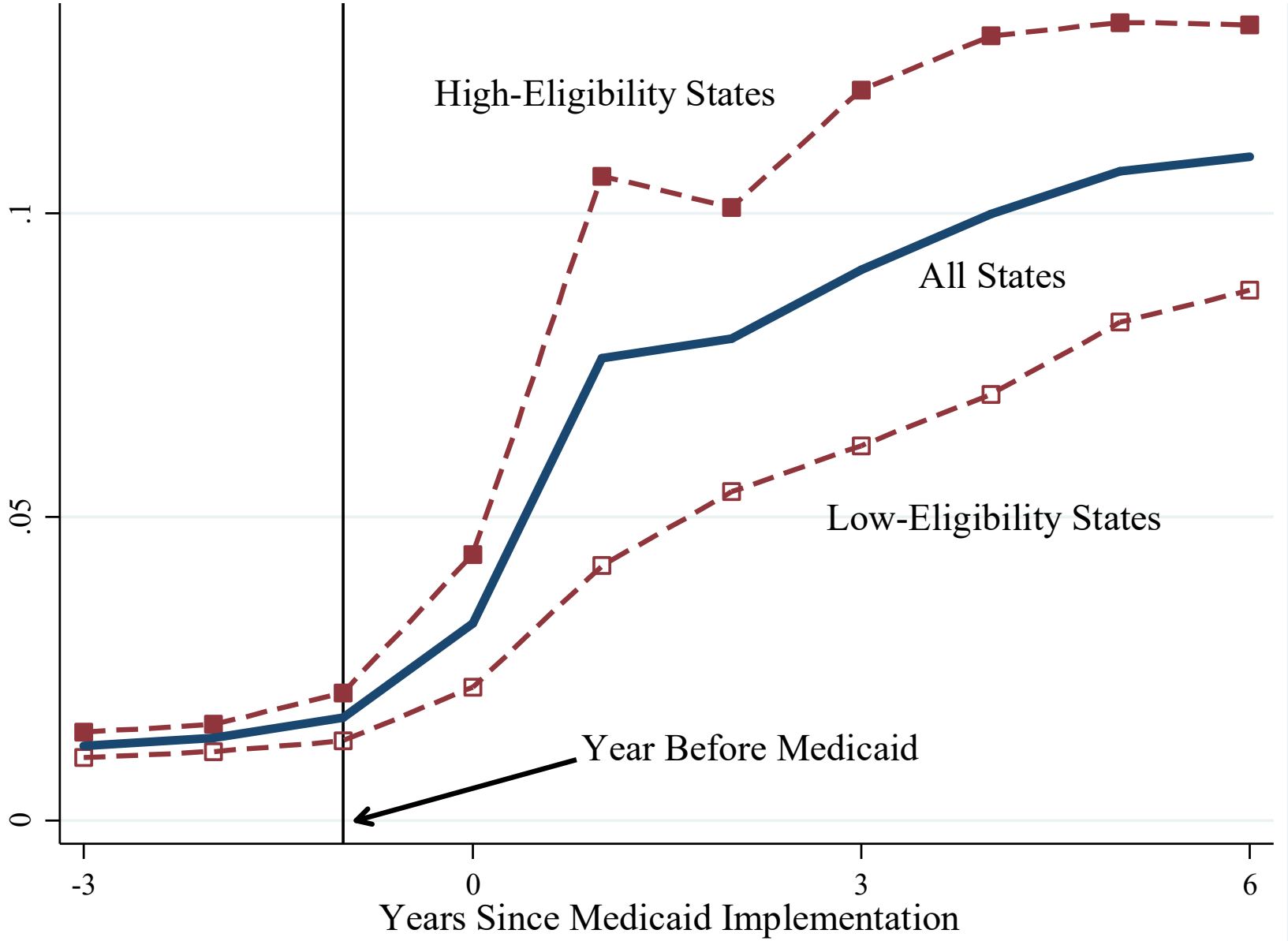
Why is this a good idea?

1. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid health trends
2. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid SES trends
3. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid public health efforts
4. $AFDC^*_{rs} \rightarrow$ actual Medicaid use

Relevance: $AFDC^*_{rs}$ and Medicaid Use



Sources: DHEW Medical Vendor Payment and Medicaid Tables, 1963-1976.

Why is this a good idea?

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2. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid SES trends
3. $AFDC^*_{rs} \not\rightarrow$ pre-Medicaid public health efforts
4. $AFDC^*_{rs} \rightarrow$ actual Medicaid use
5. $AFDC^*_{rs} \rightarrow$ child health (Goodman-Bacon 2016)

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4. $AFDC^*_{rs} \rightarrow$ actual Medicaid use
5. $AFDC^*_{rs} \rightarrow$ child health (Goodman-Bacon 2016)

No systematic differences by $AFDC^*_{rs}$ except in Medicaid exposure!

Event-Study Specification

$$y_{rsc} = \boldsymbol{X}'_{\boldsymbol{rs}}\ \boldsymbol{\beta} + AFDC^*_{rs}\left[\sum_{j=-23}^{-20} \pi_j 1\{c - t^*_s = j\} + \sum_{j=-18}^{5} \phi_j 1\{c - t^*_s = j\}\right] + \varepsilon_{rsc}$$

Pre-Trends (Falsification test)
Sign/magnitude/significance
Estimate trend

Intention to Treat Effects (relative to $j = -19$)
ϕ_j represents different:

a. Dose $= AFDC^*_{rs} \cdot (19 - \max\{0, t^*_s - c\})$
b. Age at exposure $= \max\{0, t^*_s - c\}$

Event-Study Specification

$$y_{rsc} = \boldsymbol{X}'_{\boldsymbol{rsc}}\boldsymbol{\beta} + AFDC^*_{rs}\left[\sum_{j=-23}^{-20} \pi_j 1\{c - t^*_s = j\} + \sum_{j=-18}^{5} \phi_j 1\{c - t^*_s = j\}\right] + \varepsilon_{rsc}$$

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$t^*_s - c \in (1,18)$ provide information about the effects

Event-Study Specification

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Pre-Trends (Falsification test)
Sign/magnitude/significance
Estimate trend

Intention to Treat Effects (relative to $j = -19$)
ϕ_j represents different:

a. Dose $= AFDC^*_{rs} \cdot (19 - \max\{0, t^*_s - c\})$
b. Age at exposure $= \max\{0, t^*_s - c\}$

$t^*_s - c \in (1,18)$ provide information about the effects

$t^*_s \leq c$ is another test: ϕ_j should be similar b/c (a) dose and (b) age-at-exposure are same

Adult Outcomes by Cohort and Birth State

1. **Vital Stats: Cumulative Mortality 1980-1999**

$$\frac{\text{\# deaths by cohort/state of birth}}{\text{\# pop in 1980 by cohort/state of birth}}$$

2. **Census/ACS: Health & Labor Market Outcomes 2000-2014**
   a. Adult Disability (2000-2007 or 2008-2014):
   b. Labor Supply
   c. Program Participation (cash and public insurance)
   d. Income by Source

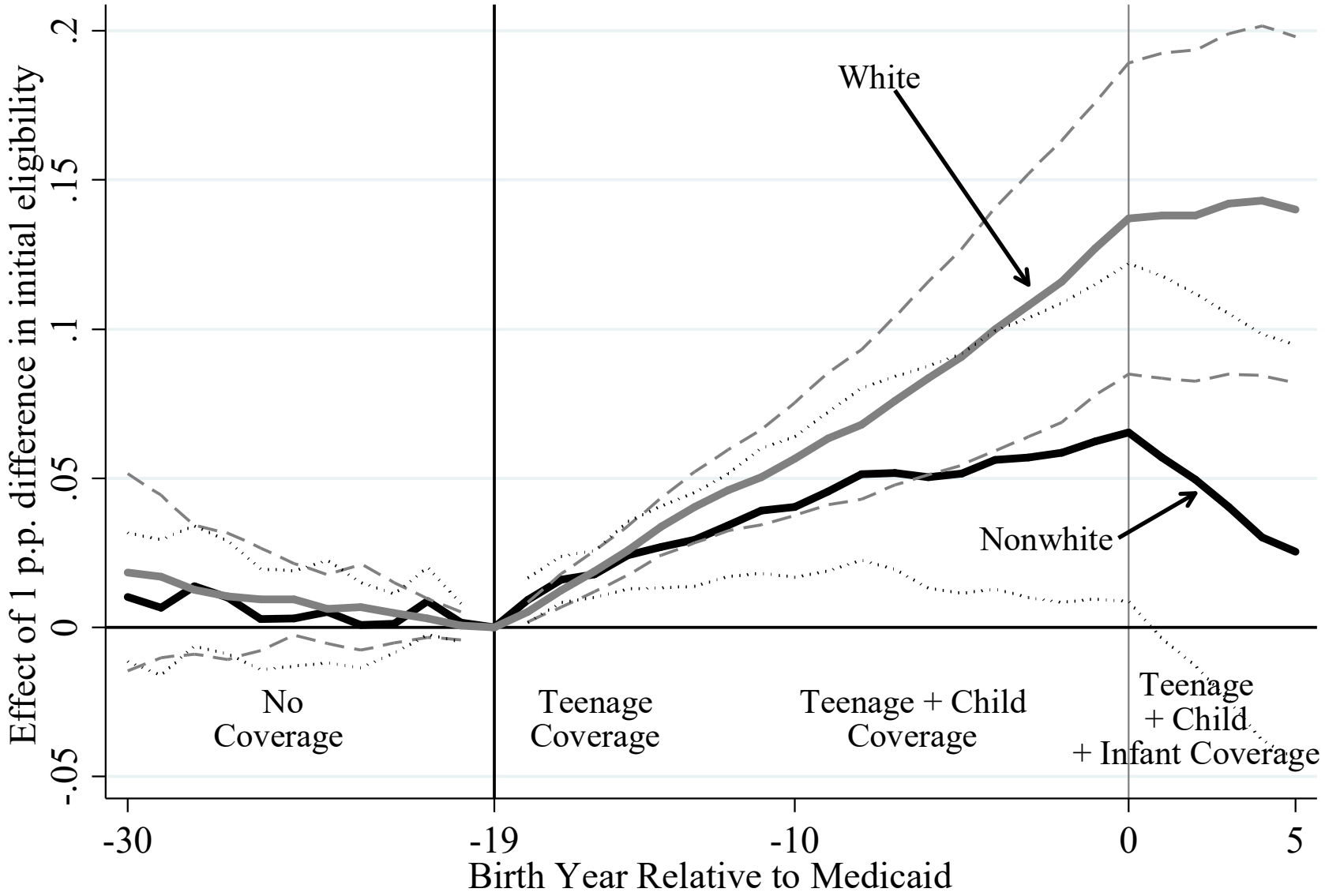
y_{rsc} *are birth state/birth cohort averages*

→ *~41*49=2,009 observations*

First Stage:

Do initial AFDC rates predict cumulative eligibility?

Event-Study Estimates for Cumulative Eligibility

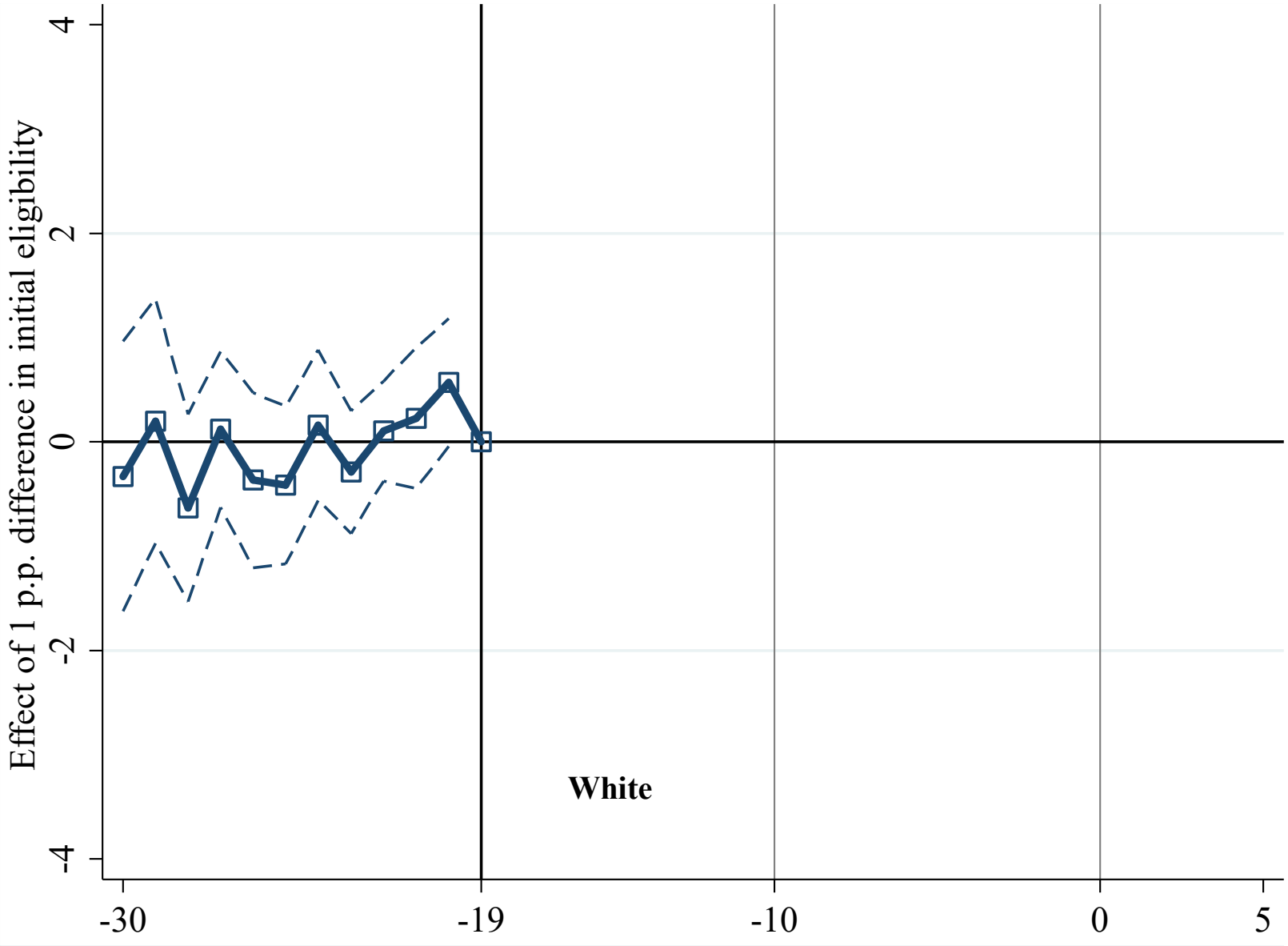


Notes: the model includes state, region-by-cohort, and Medicaid-year-by-cohort fixed effects and the birth-year infant mortality rate, general fertility rate, and per-capita income and hospital beds. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Standard errors are clustered by state and the regression is weighted by the sum of the Census survey weights within each state/cohort cell. These estimates use 2000 Census data only.

Results 1:

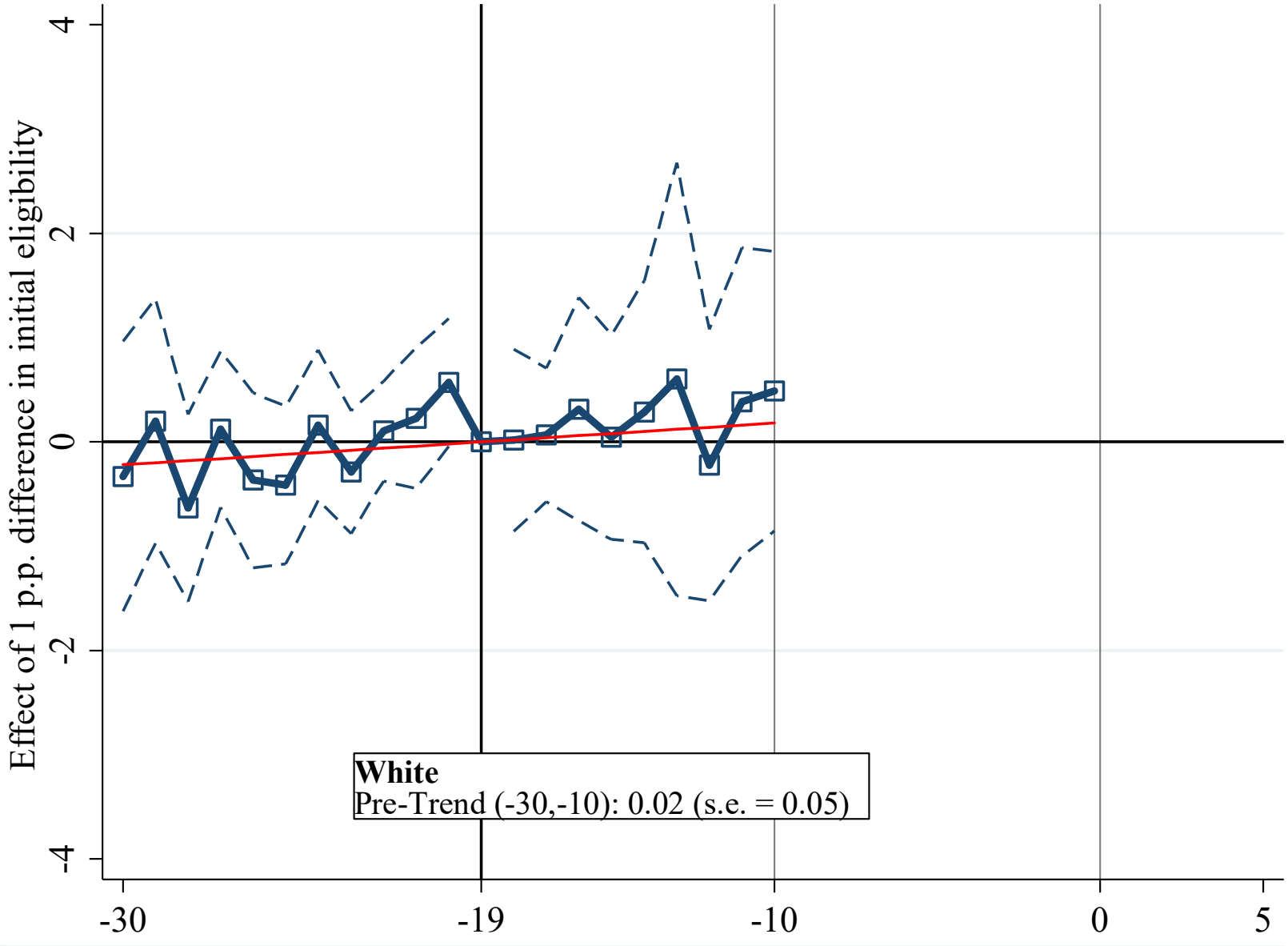
Do initial AFDC rates predict adult health?

Event-Study Estimates: Mortality, 1980-1999



Notes: Dependent variable the log 20-year mortality rate (1980-1999) by cohort. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. The model includes state, region-by-cohort, and Medicaid-year-by-cohort fixed effects and the birth-year general fertility rate, and per-capita income and hospital beds. Source: Multiple Cause of Death files and 1980 Census.

Event-Study Estimates: Mortality, 1980-1999



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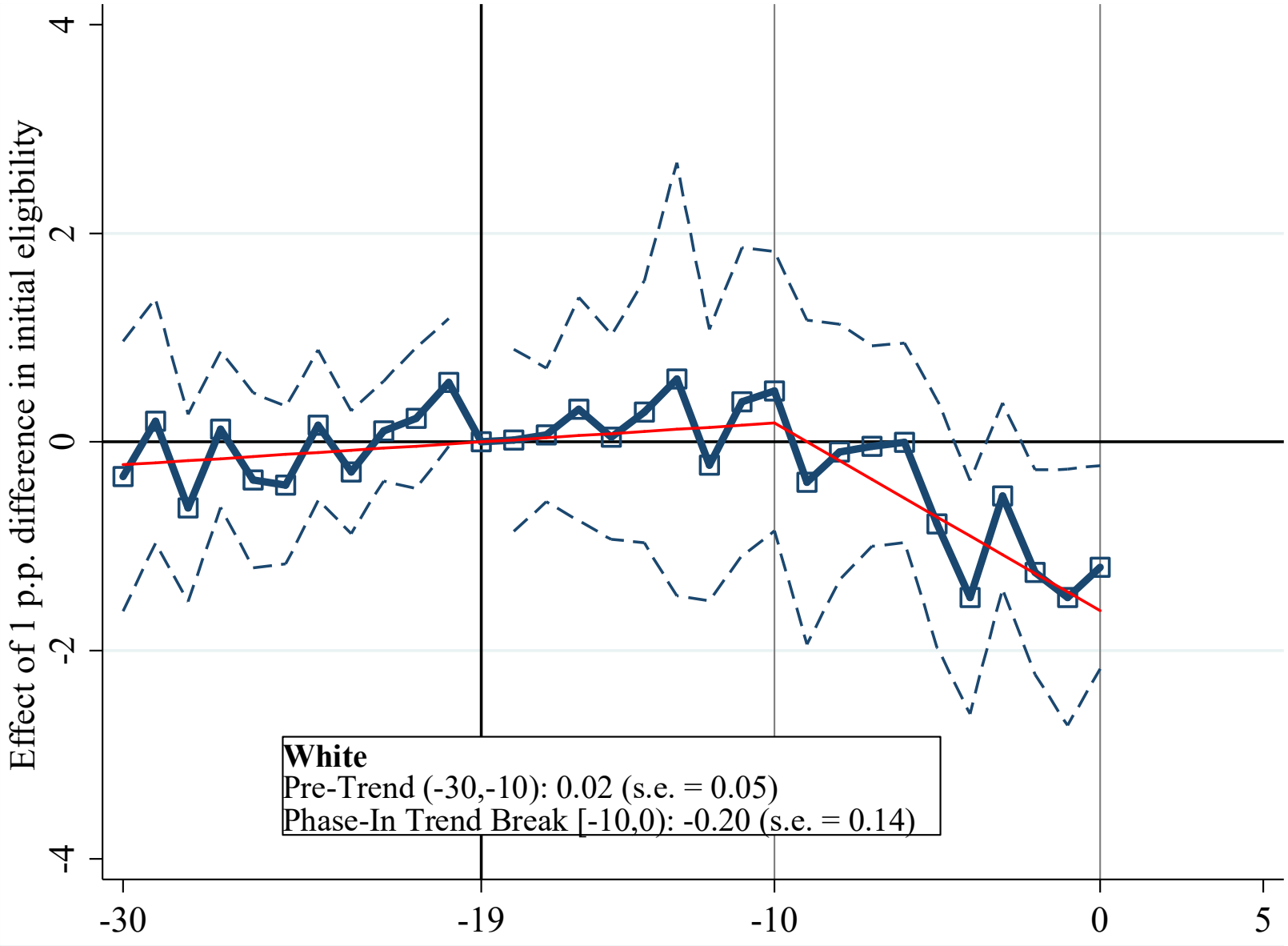

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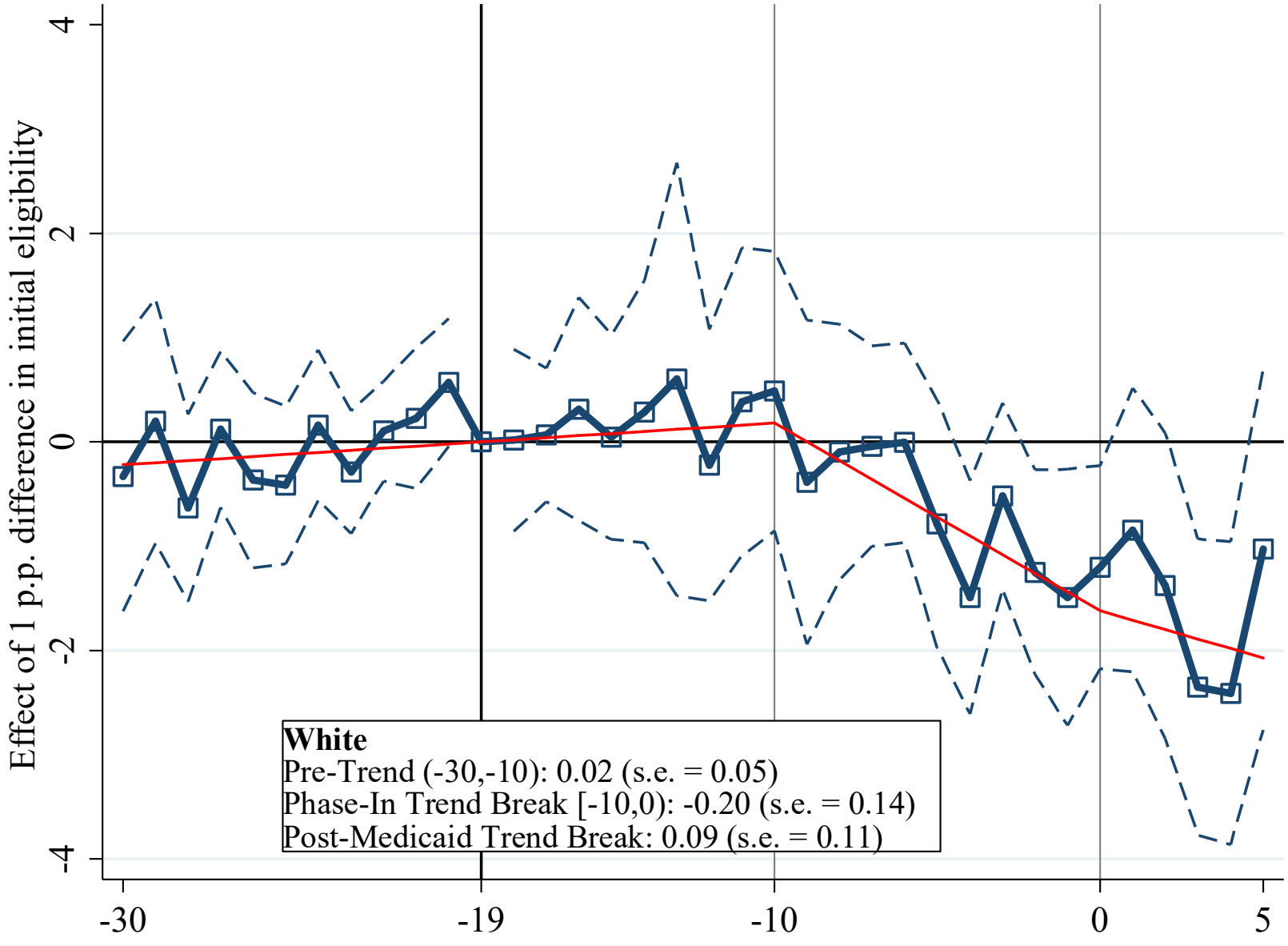
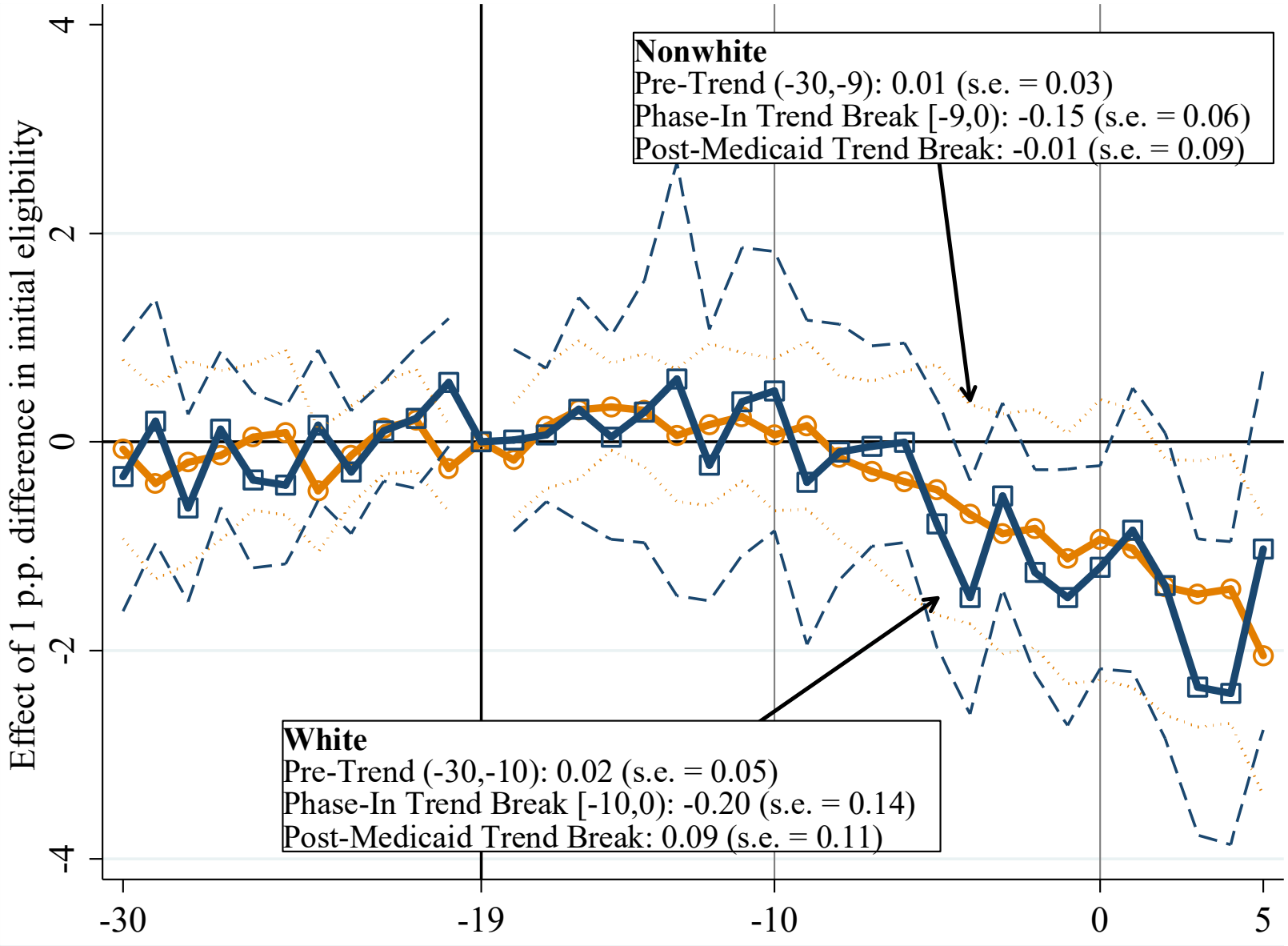


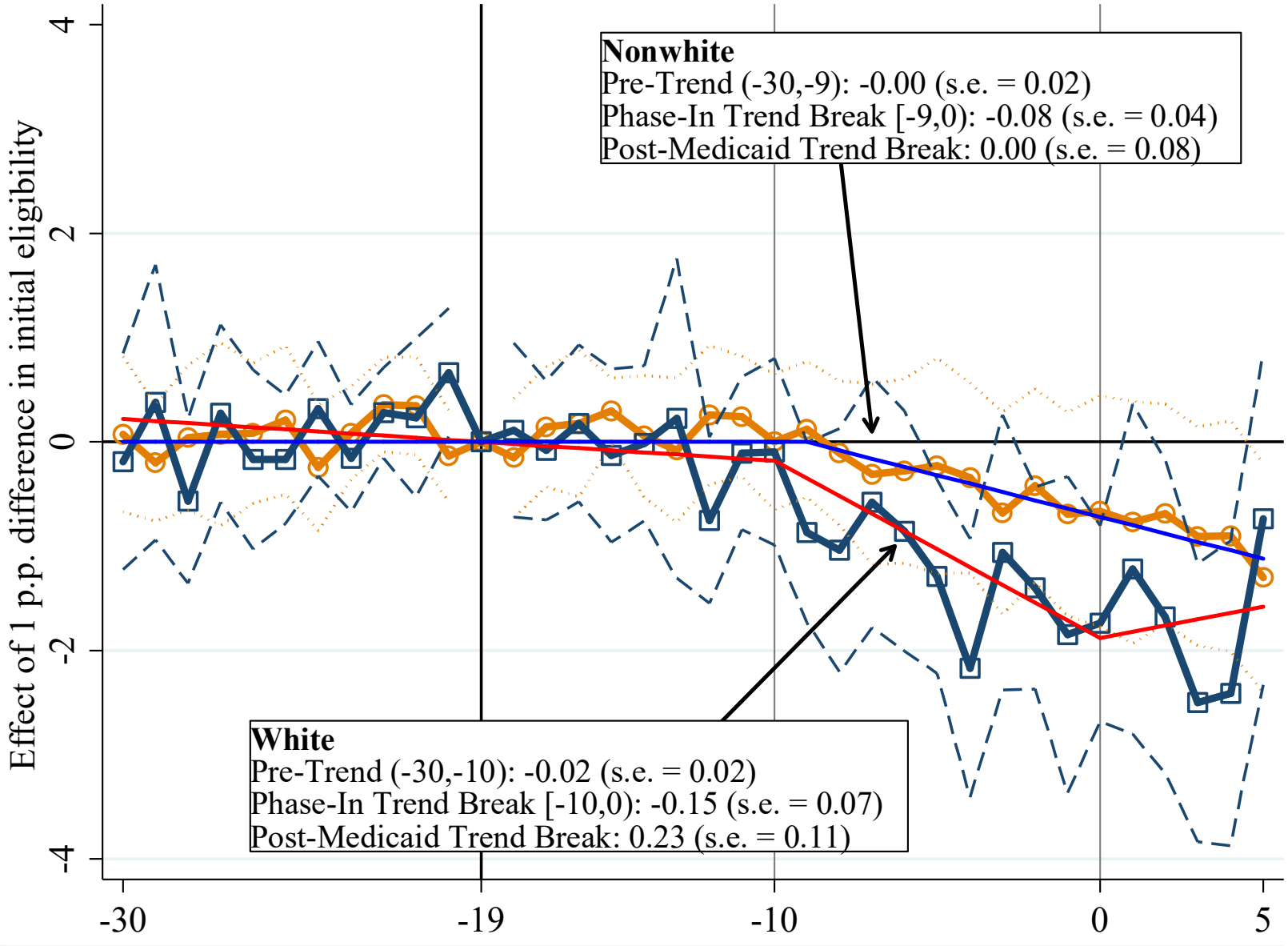
Notes: Dependent variable the log 20-year mortality rate (1980-1999) by cohort. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. The model includes state, region-by-cohort, and Medicaid-year-by-cohort fixed effects and the birth-year general fertility rate, and per-capita income and hospital beds. Source: Multiple Cause of Death files and 1980 Census.

Event-Study Estimates: Mortality, 1980-1999



Notes: Dependent variable the log 20-year mortality rate (1980-1999) by cohort. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. The model includes state, region-by-cohort, and Medicaid-year-by-cohort fixed effects and the birth-year general fertility rate, and per-capita income and hospital beds. Source: Multiple Cause of Death files and 1980 Census.

Event-Study Estimates: Non-AIDS Mortality, 1980-1999



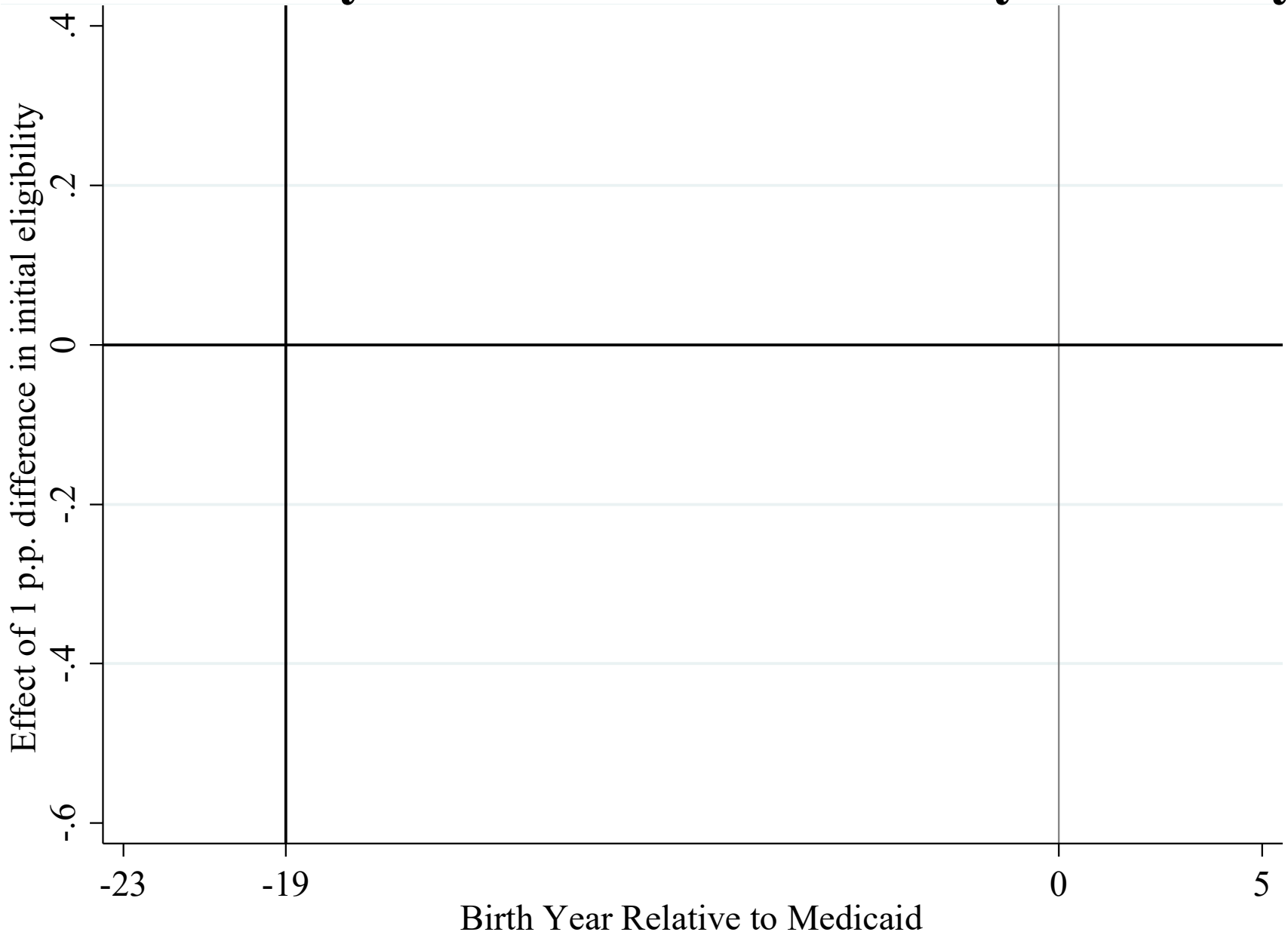
Notes: Dependent variable the log 20-year mortality rate from non-AIDS-related causes (1980-1999). Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. The model includes state, region-by-cohort, and Medicaid-year-by-cohort fixed effects and the birth-year general fertility rate, and per-capita income and hospital beds. Source: Multiple Cause of Death files and 1980 Census.

IV Estimates for Non-AIDS Mortality, 1980-1999

	Non-AIDS-Related Causes	
Childhood Medicaid Eligibility:	White	Nonwhite
Ages 0-10	-15.5	-19.6
	[5.4]	[9.4]
Ages 11-18	-11.0	4.8
	[7.2]	[6.9]
H_0: 0-10 = 11-18 (*p*-val)	0.70	0.06
Mean Dependent Variable (deaths per 100,000)	3,090	5,600

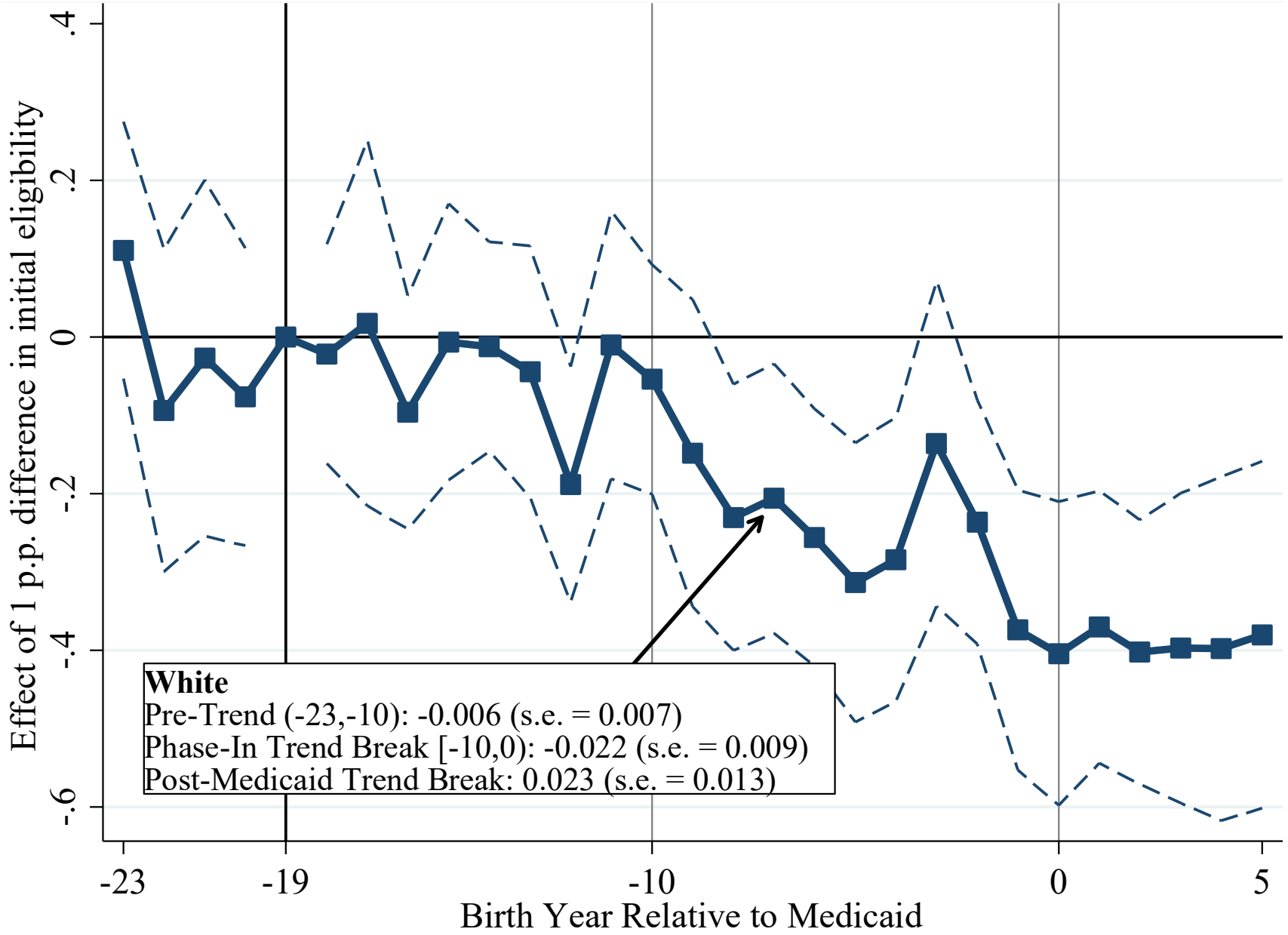
1. Proportional effect on treated kids:
    1. White: -16% (2 years on AFDC)
    2. Nonwhite: -30% (3.33 years on AFDC)
2. Whites: no effect on homicide or accidents
3. Spread across causes
    a. Suicide (Case and Deaton 2015)

Event-Study Estimates: Ambulatory Difficulty



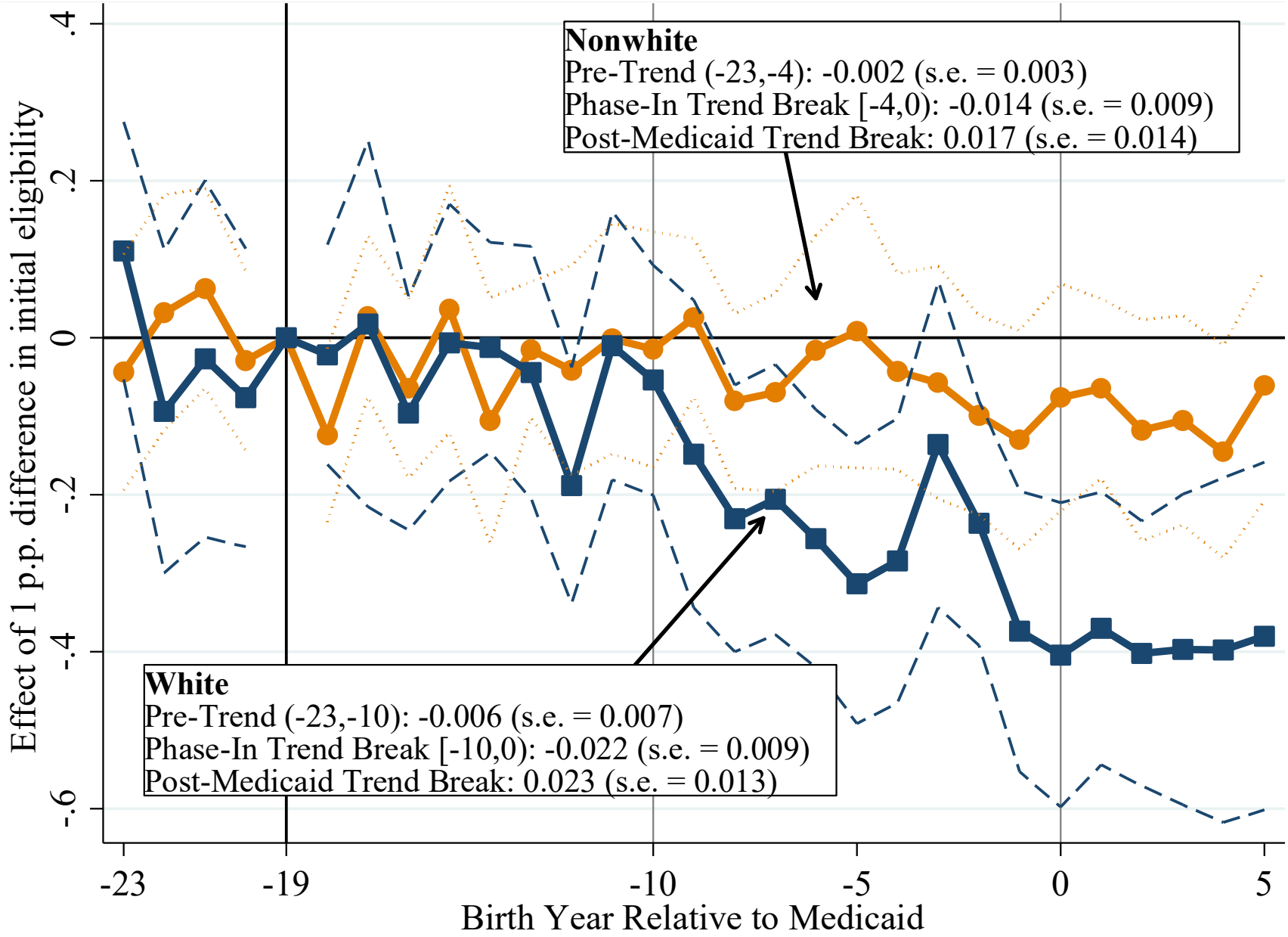
Notes: State/cohort means from 2000 Census and 2001-2007 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Coefficients are multiplied by 100. "Does this person have any of the following long-lasting conditions: ...A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?"

Event-Study Estimates: Ambulatory Difficulty



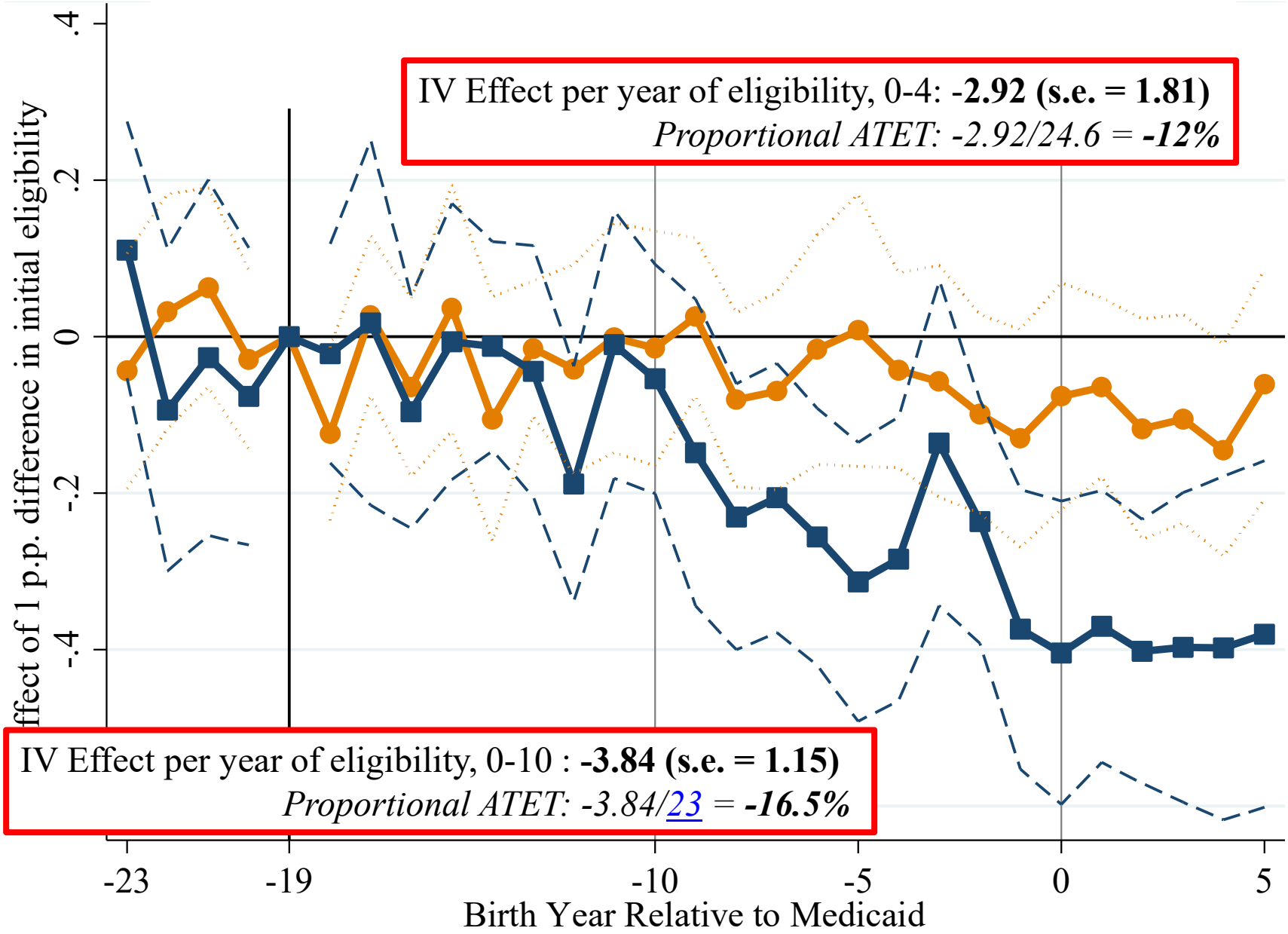
Notes: State/cohort means from 2000 Census and 2001-2007 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Coefficients are multiplied by 100. "Does this person have any of the following long-lasting conditions: ...A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?"

Event-Study Estimates: Ambulatory Difficulty



Notes: State/cohort means from 2000 Census and 2001-2007 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Coefficients are multiplied by 100. "Does this person have any of the following long-lasting conditions: ...A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?" F-stat

Event-Study Estimates: Ambulatory Difficulty



Notes: State/cohort means from 2000 Census and 2001-2007 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Coefficients are multiplied by 100. "Does this person have any of the following long-lasting conditions: ...A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?" Specs

Result 1: Childhood Medicaid Eligibility Improves Health

- Saved ~346,00 lives
  - Worth at least $290 billion
    - $840k VSL, l.b. in Ashenfelter and Greenstone (2004)

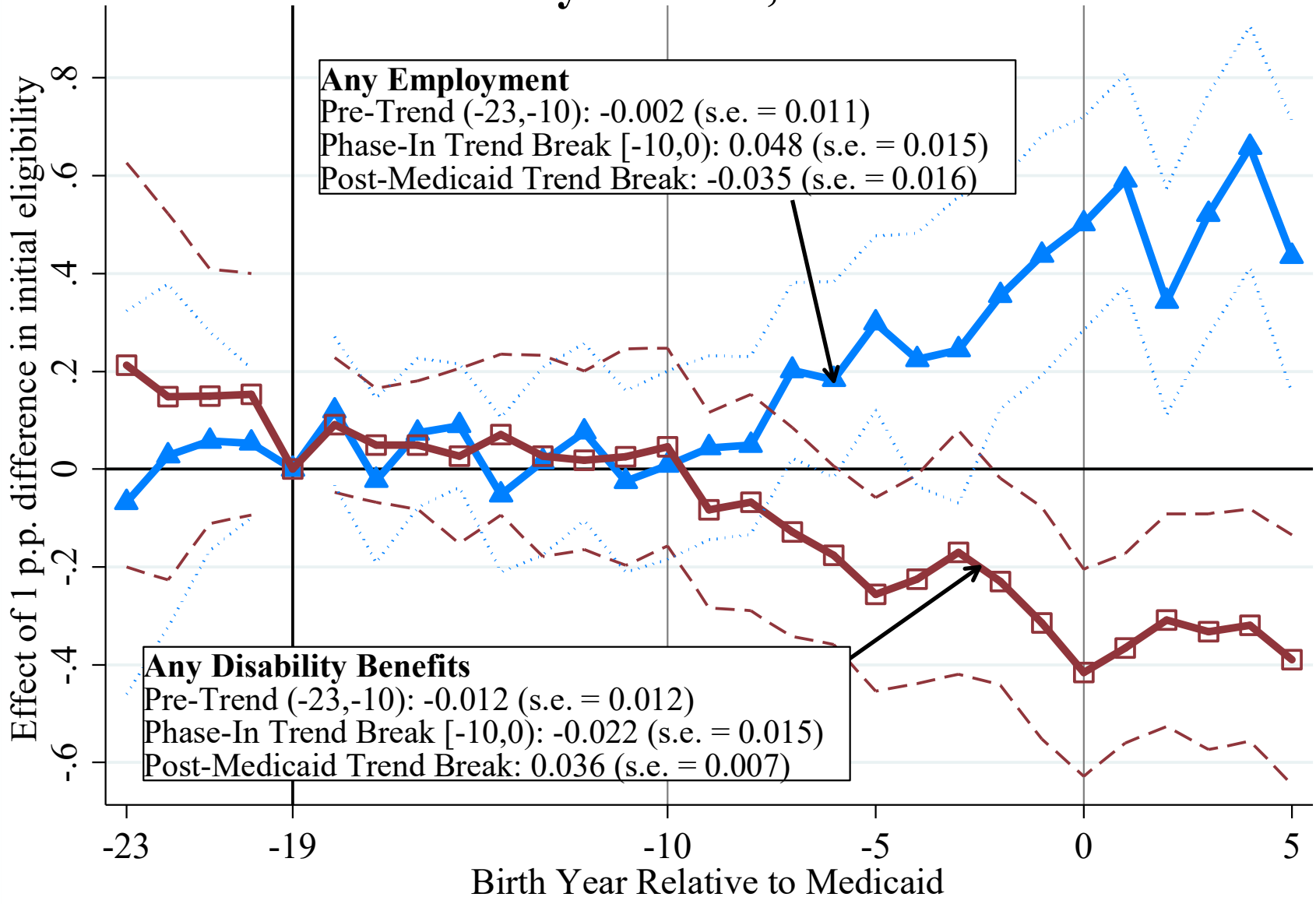
- Reduced physical limitations among the treated by 1/3
  - Hard to value, strongly correlated with happiness

- Spread across causes/conditions

Results 2:

Do initial AFDC rates predict adult labor market outcomes?

Event-Study Estimates for Employment and Disability Benefits, Whites



Notes: State/cohort means from 2000 Census and 2001-2014 ACS data. Each point is the interaction between the *continuous* value of initial Medicaid eligibility and an event-time indicator. Employment refers to any employment in the previous year. Disability benefits include Social Security Disability and Supplemental Security Income.

IV Estimates for White Program Participation

	(1) Any Public Assistance	(2) Disability Benefits (SSDI/SSI)	(3) TANF or General Assistance
Ages 0-10	-5.09	-5.88	0.83
	[1.50]	[1.54]	[0.14]
Ages 11-18	1.95	2.23	-0.19
	[3.48]	[3.40]	[0.29]
Mean Dependent Variable	15.8	15.1	1.00

Disabled, poor, single mothers prefer disability:
Average TANF benefit (2010): $392
Federal SSI benefit (2010): $674

Notes: State/cohort means from 2000 Census and 2001-2014 ACS data. Predicted cumulative Medicaid eligibility (ages 0-10 or 11-18) are used as instruments for actual, cohort-level, migration-adjusted, cumulative Medicaid eligibility. Standard errors clustered by birth state. N=24,411

IV Estimates for White Program Participation

	(1) Any Public Assistance	(2) Disability Benefits (SSDI/SSI)	(3) TANF or General Assistance	(4) Public Insurance	(5) Any Insurance
Ages 0-10	-5.09	-5.88	0.83	-4.19	-1.16
	[1.50]	[1.54]	[0.14]	[0.98]	[0.70]
Ages 11-18	1.95	2.23	-0.19	0.77	4.04
	[3.48]	[3.40]	[0.29]	[1.62]	[1.63]
Mean Dependent Variable	15.8	15.1	1.00	12.6	87.7

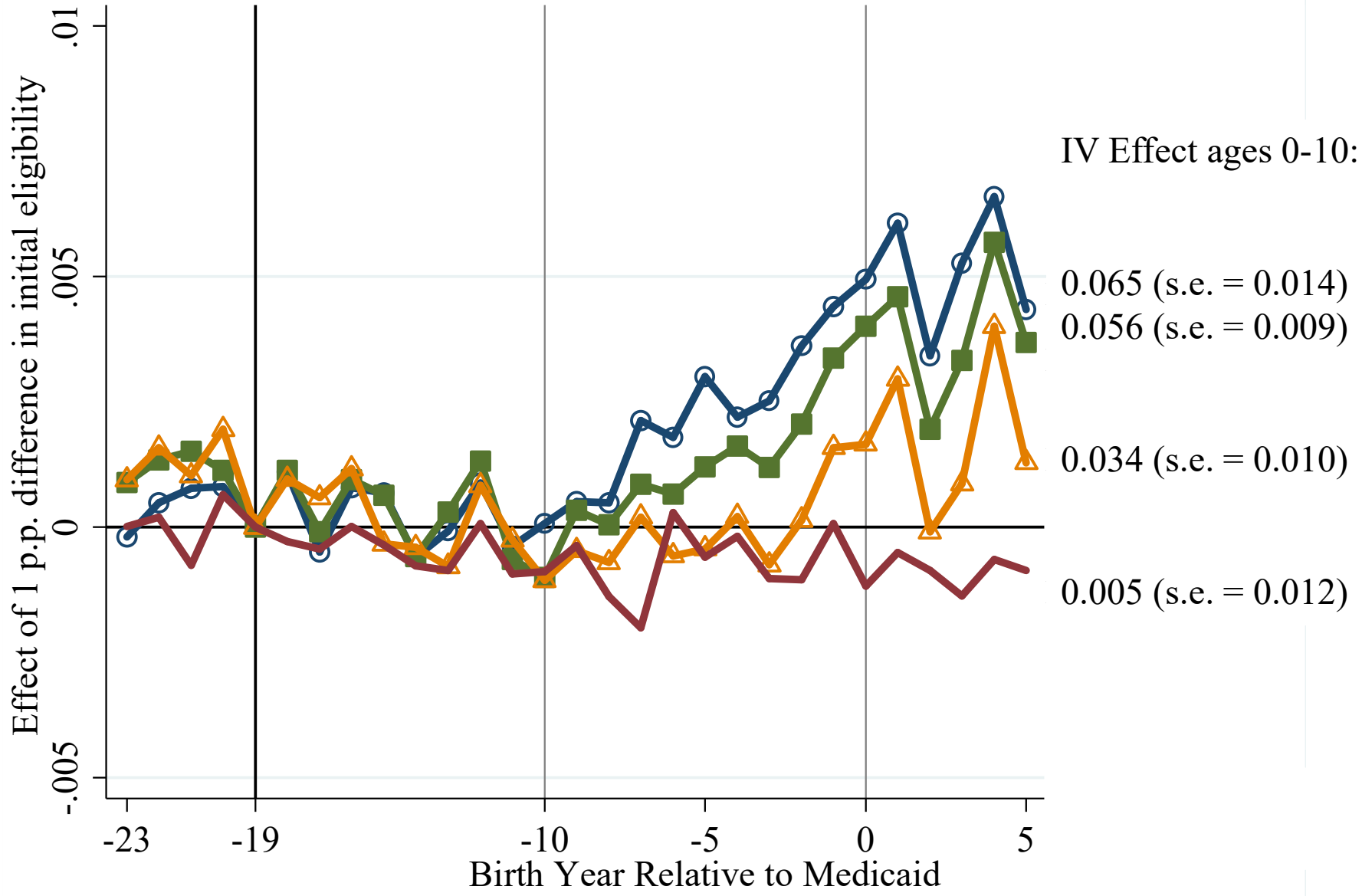
Notes: State/cohort means from 2000 Census and 2001-2014 ACS data. Predicted cumulative Medicaid eligibility (ages 0-10 or 11-18) are used as instruments for actual, cohort-level, migration-adjusted, cumulative Medicaid eligibility. Standard errors clustered by birth state. N=24,411

IV Estimates for White Employment Outcomes

	(1) Out of the Labor Force	(2) Currently Employed	(3) Any Employment Last Year	(4) Full-Time/ Full-Year Employment
Ages 0-10	-6.59	5.82	6.33	4.72
	[1.47]	[1.18]	[1.37]	[0.75]
Ages 11-18	1.46	-2.10	-0.94	-2.44
	[2.00]	[1.95]	[1.97]	[1.93]
Mean Dependent Variable	22.0	74.2	80.9	51.4

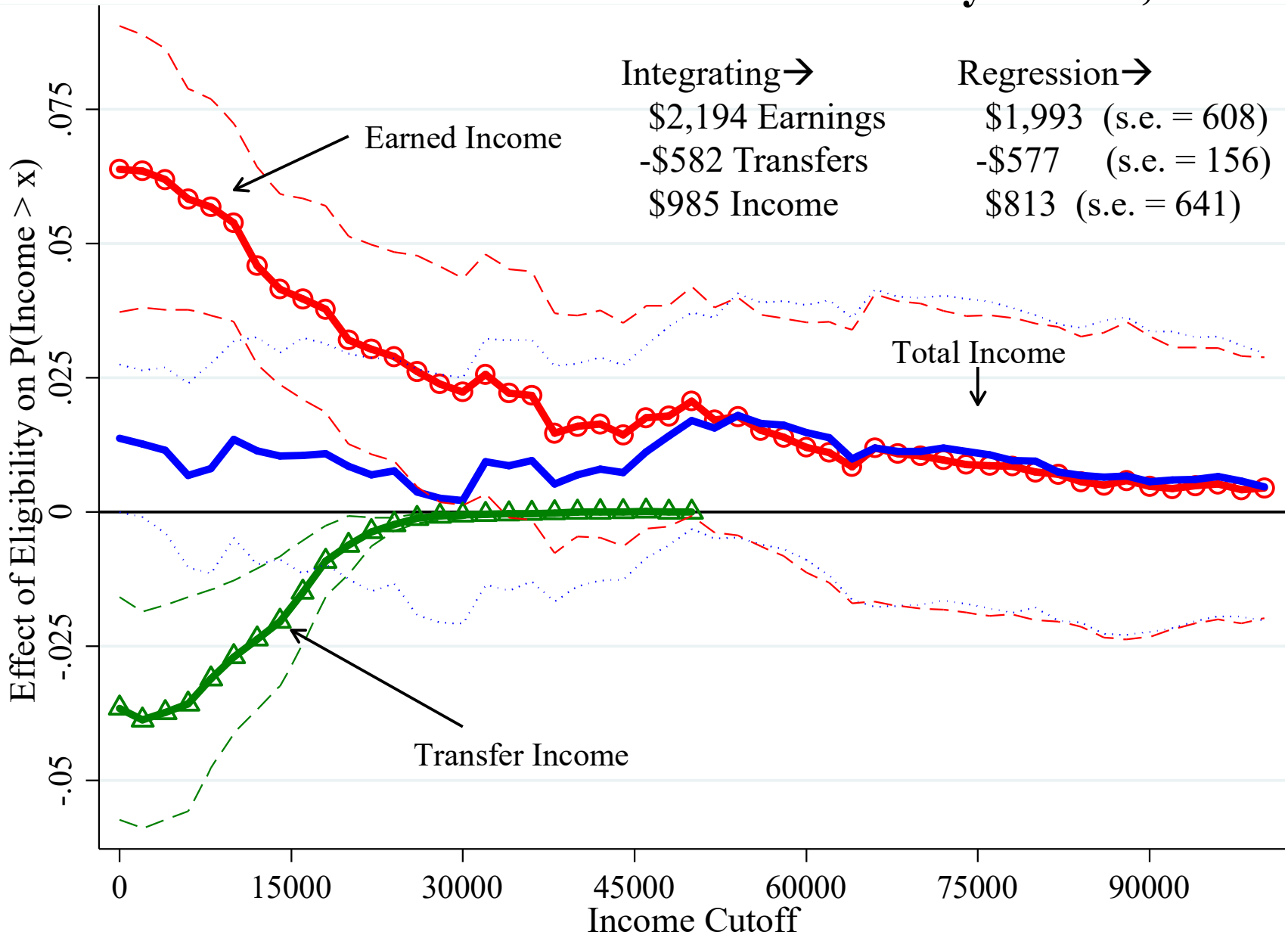
Notes: State/cohort means from 2000 Census and 2001-2014 ACS data. Predicted cumulative Medicaid eligibility (ages 0-10 or 11-18) are used as instruments for actual, cohort-level, migration-adjusted, cumulative Medicaid eligibility. Standard errors clustered by birth state. N=24,411

Event-Study Estimates Across the Earnings Distribution, Whites



Notes: State/cohort means from 2000 Census and 2001-2014 ACS data. Predicted cumulative Medicaid eligibility (ages 0-10 or 11-18) are used as instruments for actual, cohort-level, migration-adjusted, cumulative Medicaid eligibility. Standard errors clustered by birth state. N=24,411

IV Estimates Across the Income Distribution by Source, Whites



Notes: State/cohort means from 2000 Census and 2001-2014 ACS data. Each point is an instrumental variables estimate using predicted cumulative Medicaid eligibility (up to age 10) as an instrument for actual, cohort-level, migration-adjusted, cumulative Medicaid eligibility (up to age 10). The outcome variable at each point is the probability that respondents report income at or below a given dollar amount. N=24,411.

Result 2: Medicaid Increases Adult Employment, Reduces Program Participation

- Health the most likely channel
  - Not education (contrast w/ Cohodes et al./BKL)

- DI effects are big
  - 12% of current (white) participation
  - Role of health in SSI/SSDI:
    - Participation decompositions (cf. Autor and Duggan 2006)
    - Labor supply q-experiments (cf. Maestas, Mullen and Strand 2013)

Discussion: Public Return to Medicaid Spending

- **$21.2b** annual savings
  - $6.1b increase in federal taxes per year (TaxSim)
  - $2.9b savings in public insurance spending
    - Median disabled Medicare recipient: $3,326
  - $12.2b savings in cash assistance
- **$132b** total cost (cohorts born before 1976)

Discussion: Public Return to Medicaid Spending

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  - $2.9b savings in public insurance spending
    - Median disabled Medicare recipient: $3,326
  - $12.2b savings in cash assistance
- **$132b** total cost (cohorts born before 1976)
- **5.6-8.5%** discounted annual return (at 3%)
  - Earned back 104% from 2000-2014
- **1.6-2.6%** annual return (at actual treasury rates)
  - Earn back 28% from 2000-2014

Discussion: Potential Medicaid Reforms Today

Subtitle C—Per Capita Allotment for Medical Assistance

SEC. 121. PER CAPITA ALLOTMENT FOR MEDICAL ASSISTANCE.

Title XIX of the Social Security Act is amended—

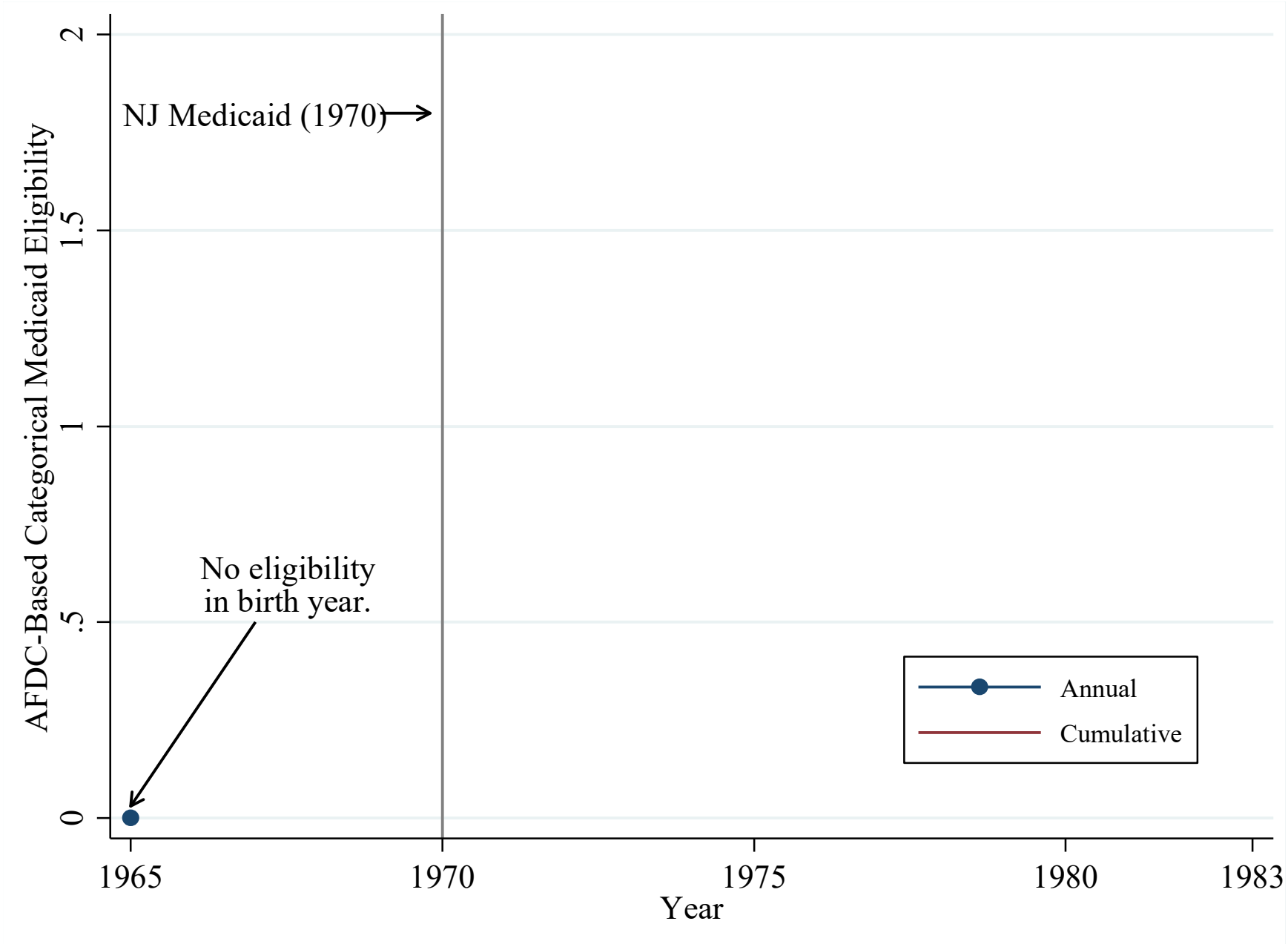
Public Medical Programs, 1963–1980.

Data from 1963 through 1976 come from Department of Health, Education and Welfare reports and exclude recipients and spending in the Kerr–Mills program from 1963 through 1965 (see the Supplementary Appendix for details). Data from 1976 through 1980 come from the Medicare and Medicaid Statistical Supplement. Spending is inflated to 2014 dollars using the medical care Consumer Price Index available from the St. Louis Federal Reserve Bank.

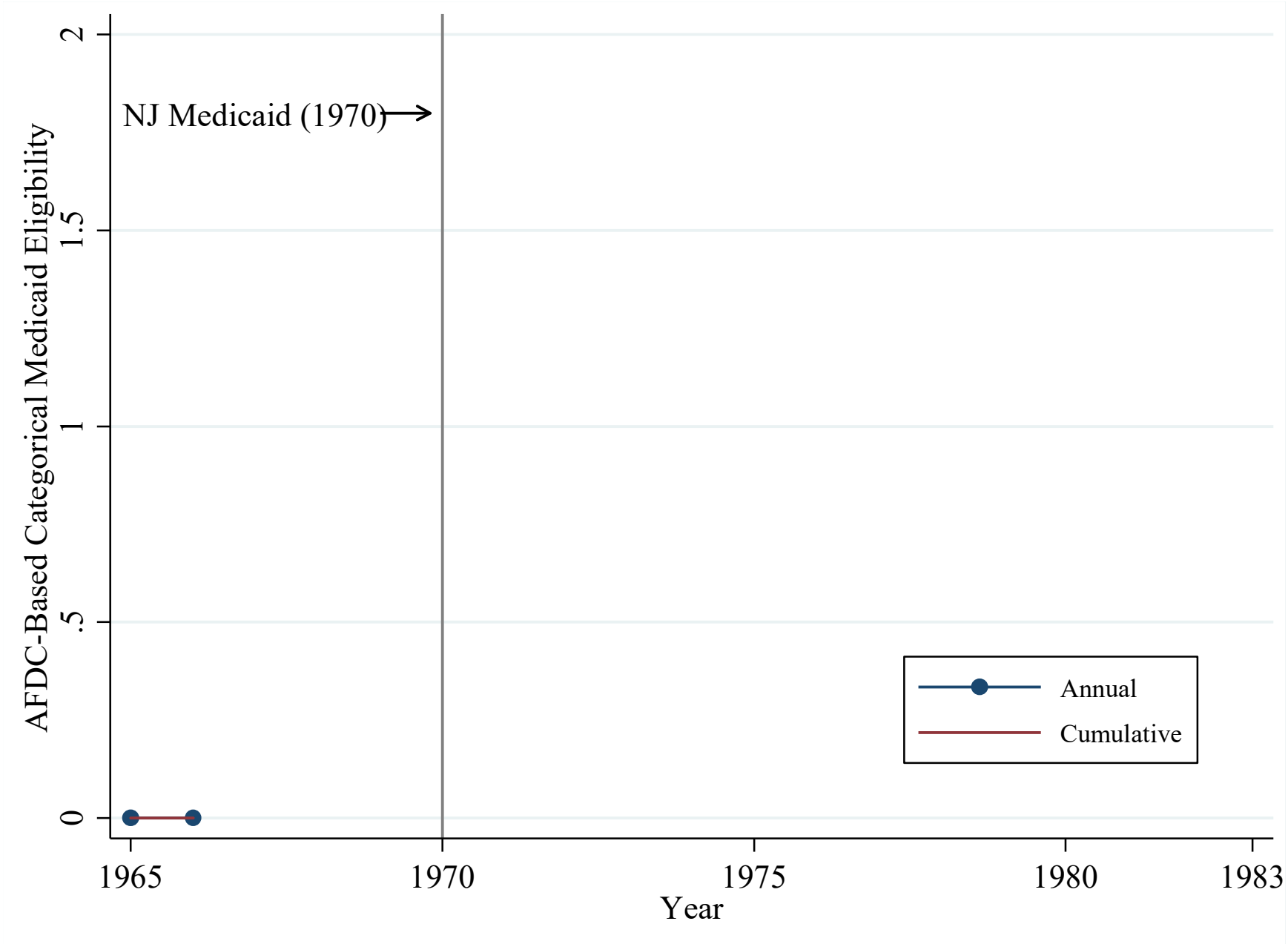
Source: Goodman-Bacon and Nikpay, NEJM 2/1/2017

Thank You!

Cumulative Eligibility for One State/Cohort: 1965 New Jersey



Cumulative Eligibility for One State/Cohort: 1965 New Jersey



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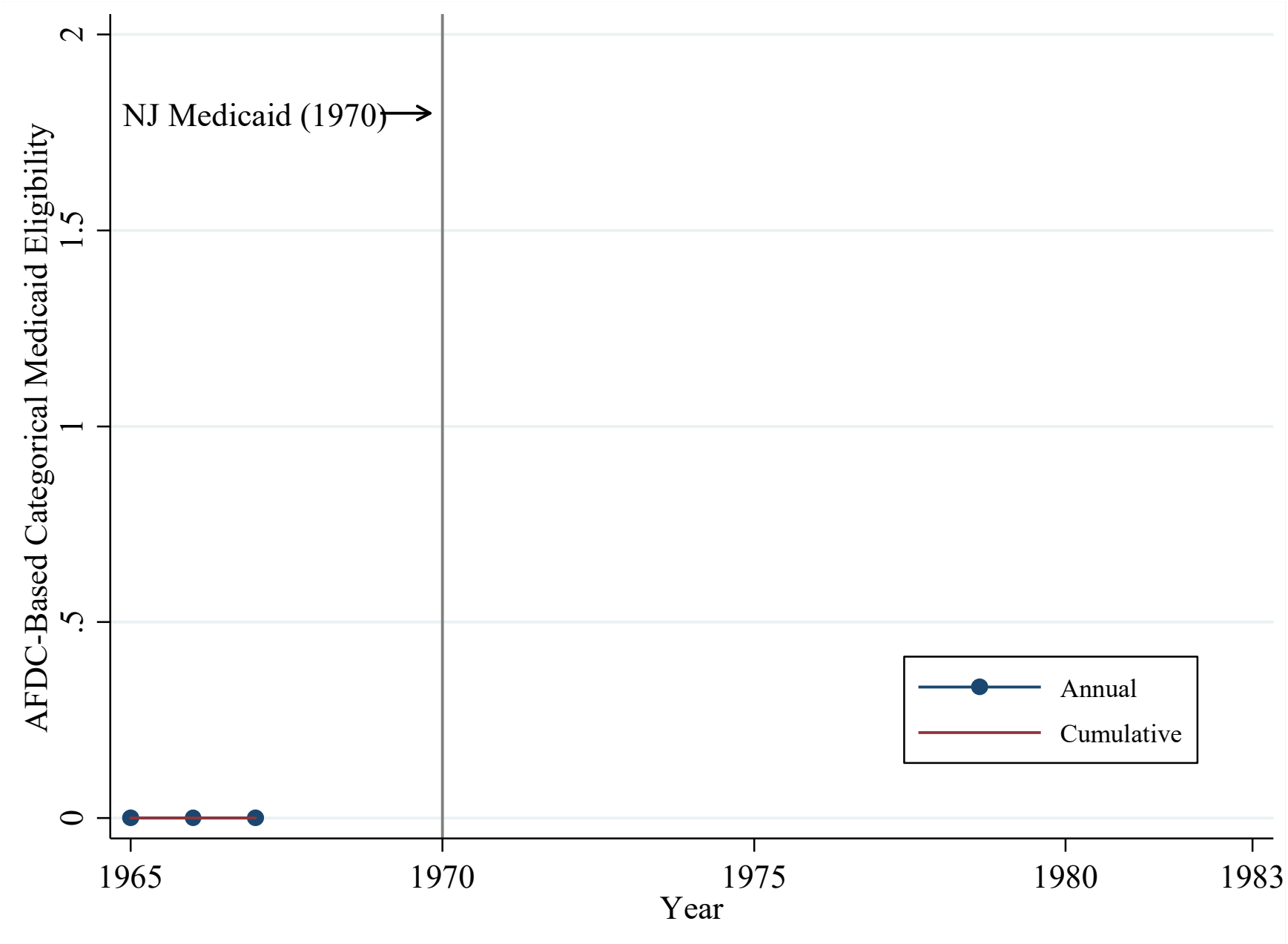

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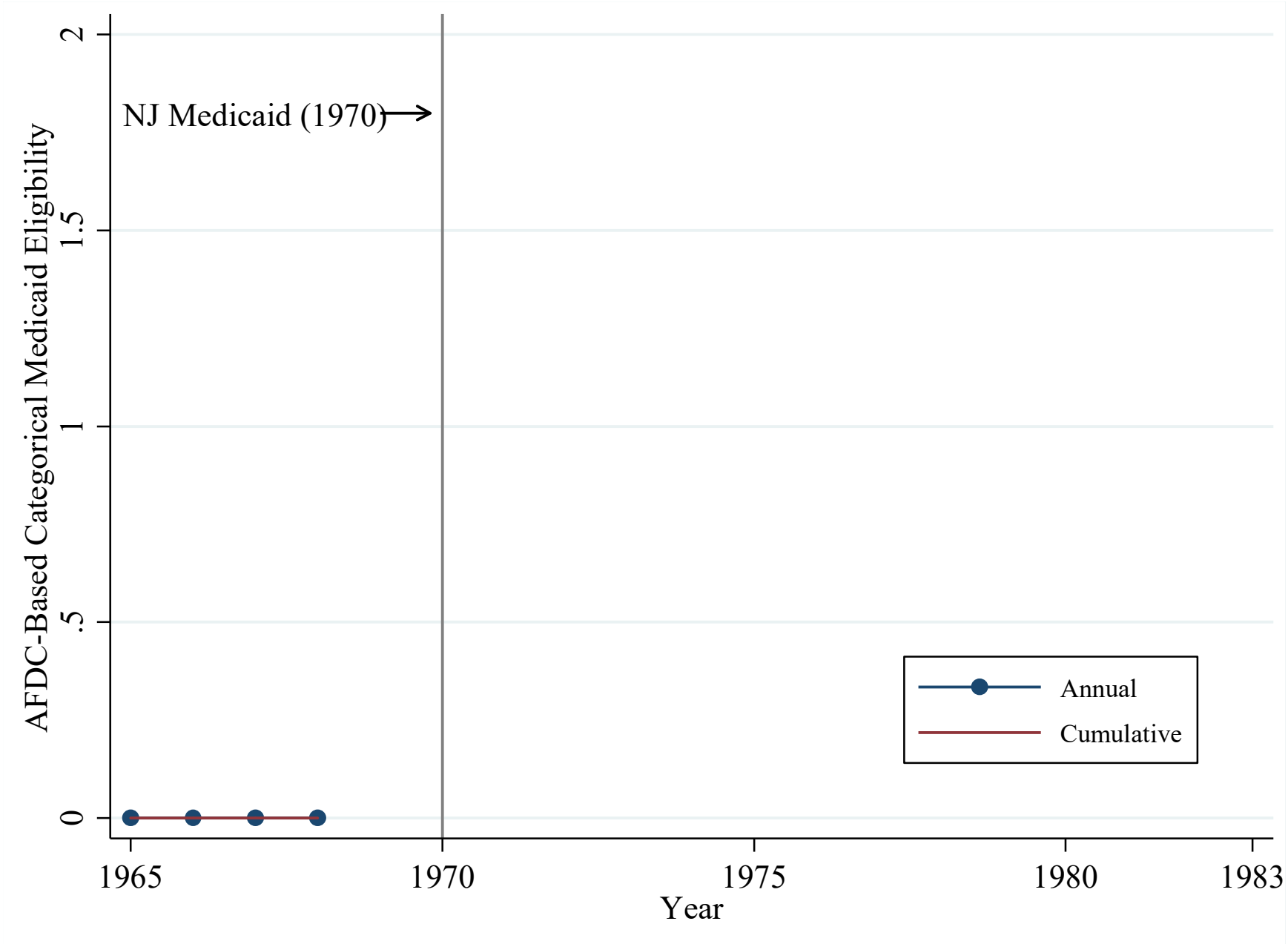

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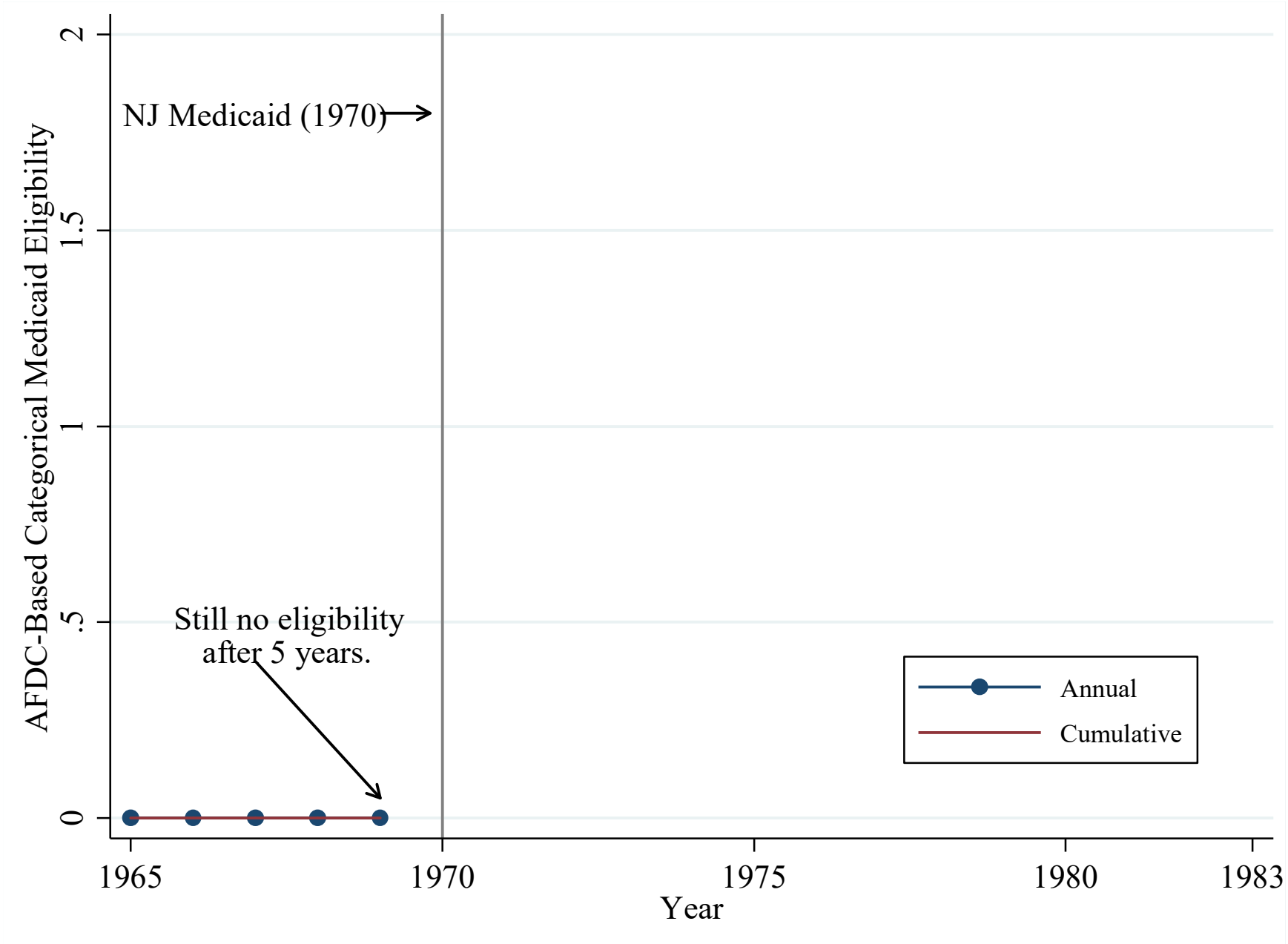
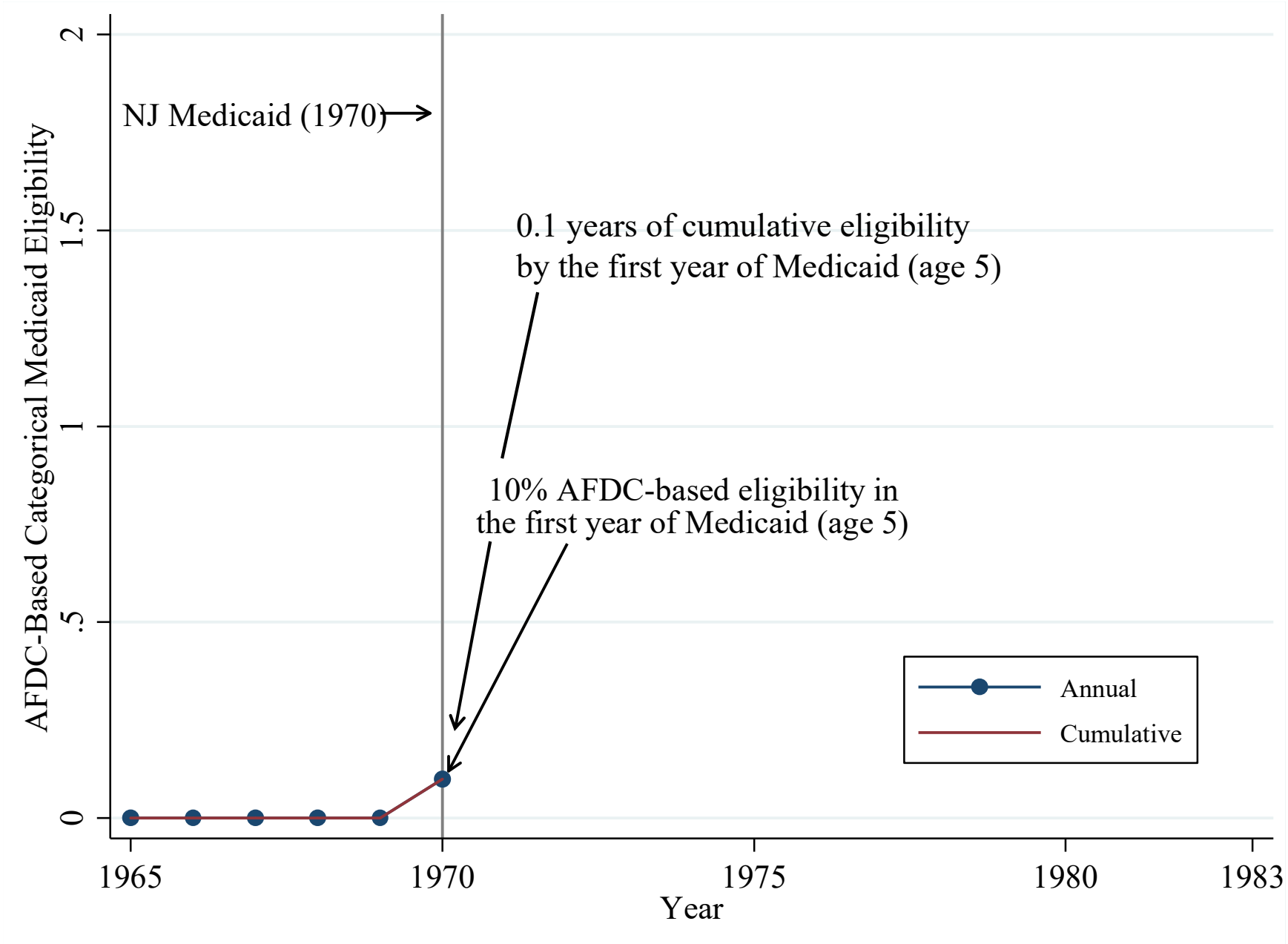
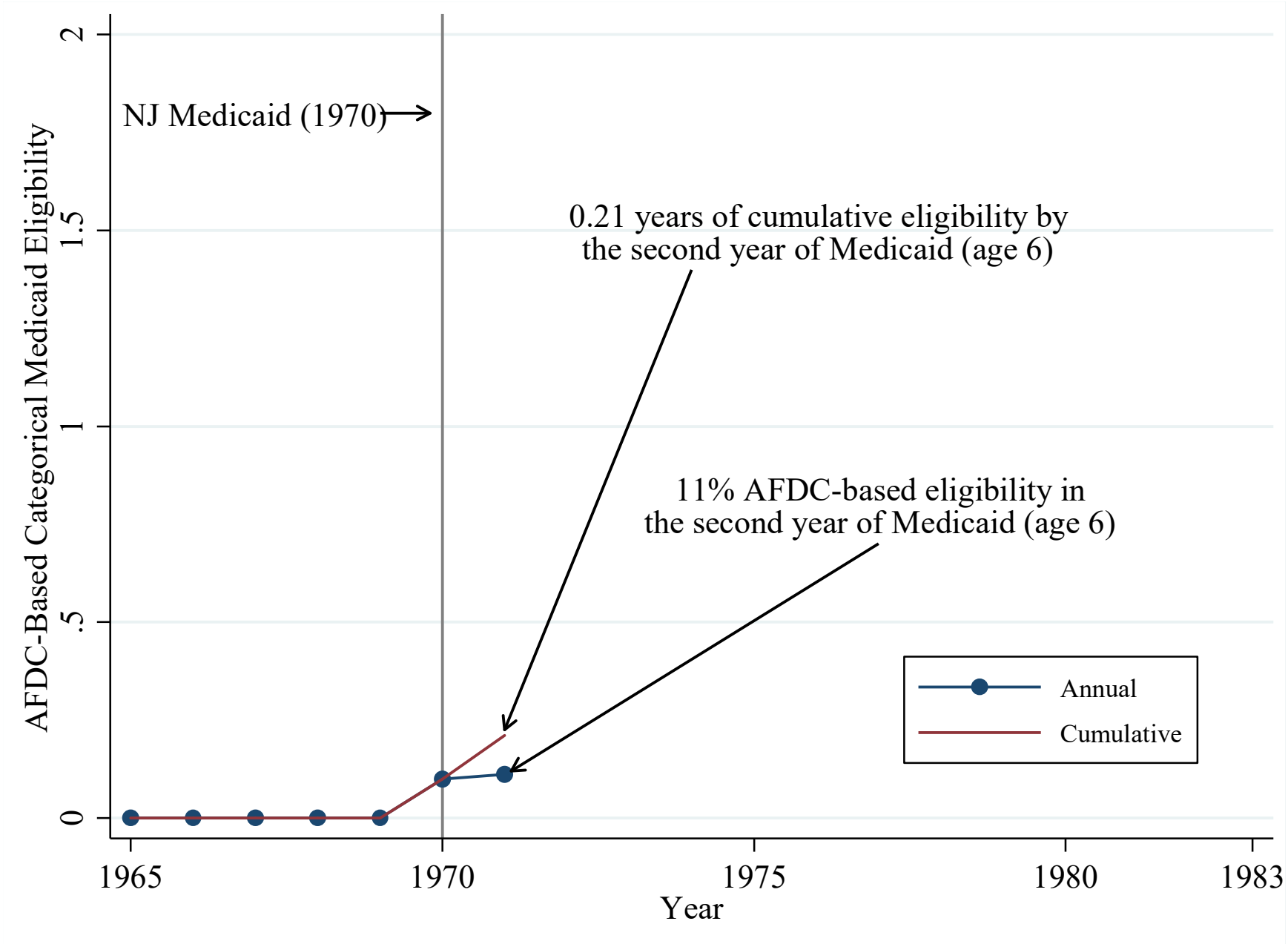


Cumulative Eligibility for One State/Cohort: 1965 New Jersey



Cumulative Eligibility for One State/Cohort: 1965 New Jersey



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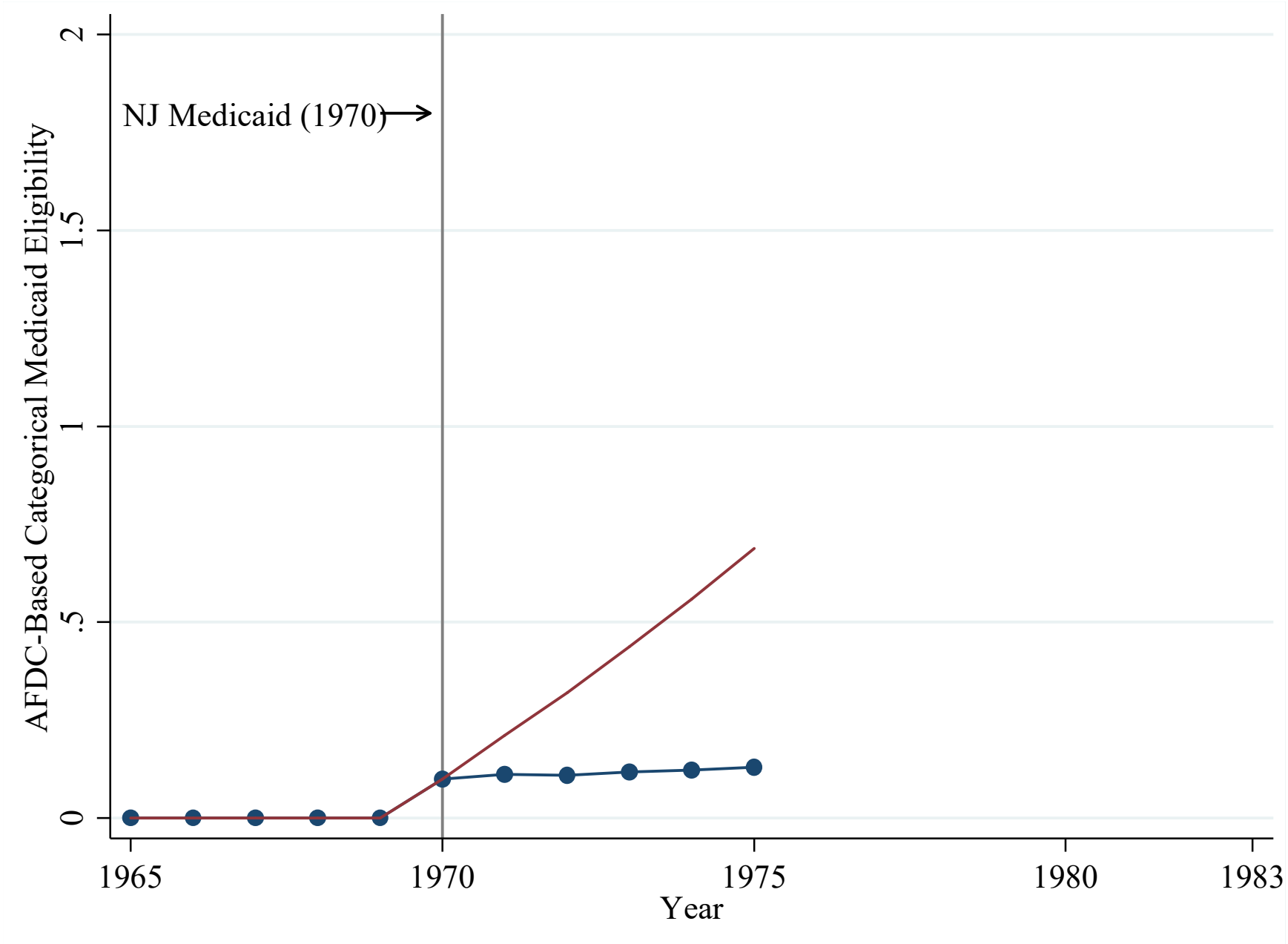
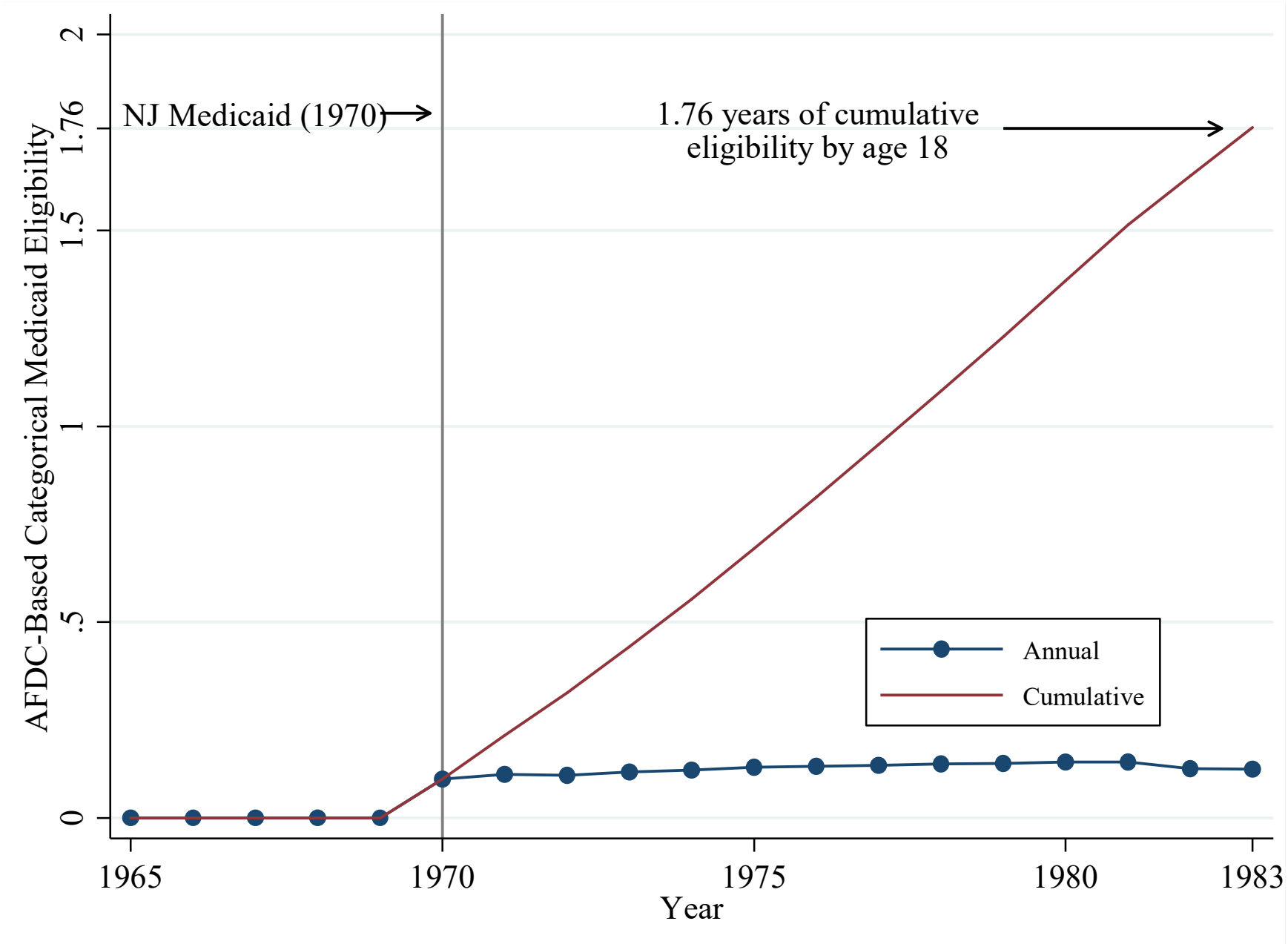
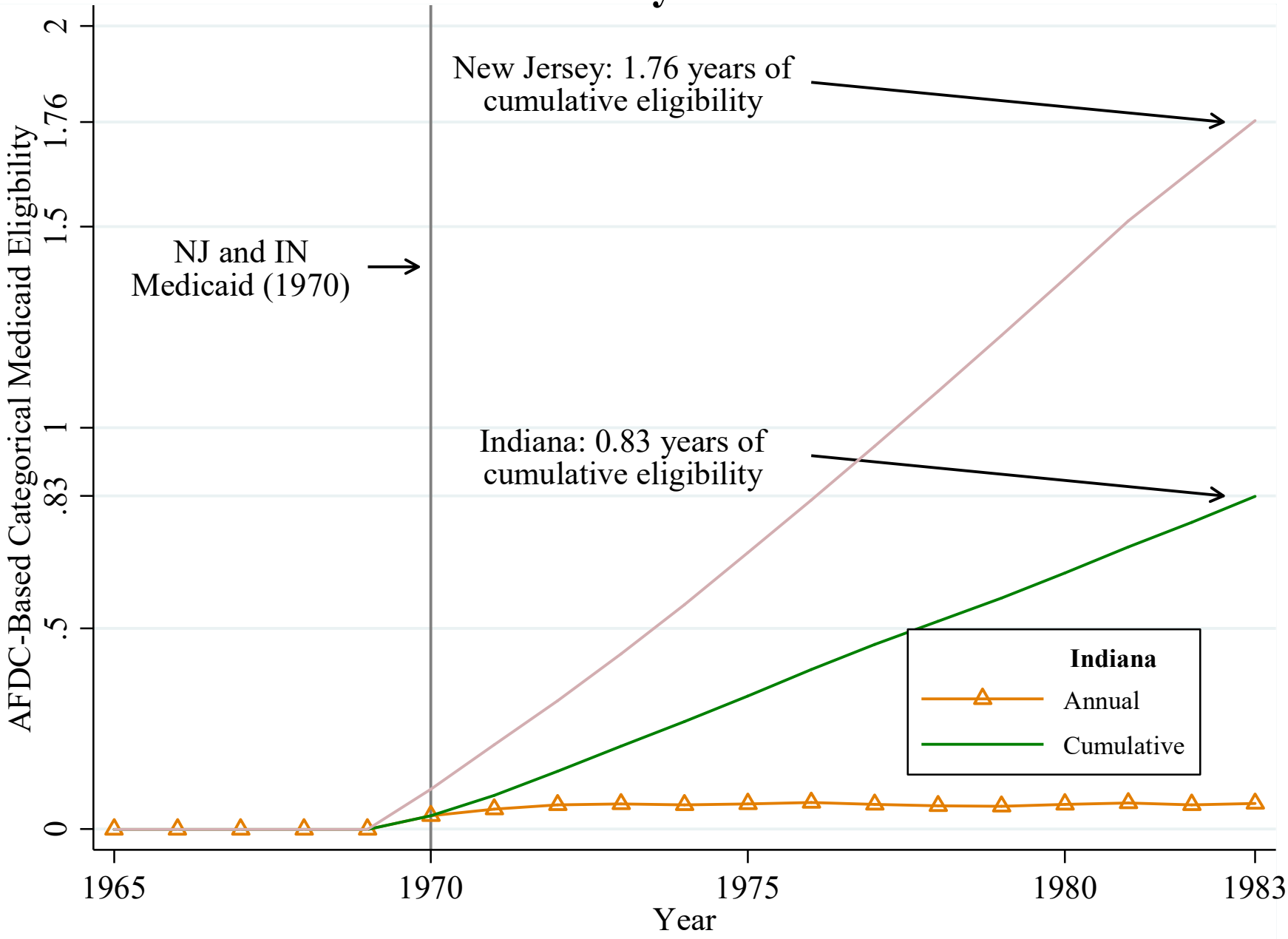


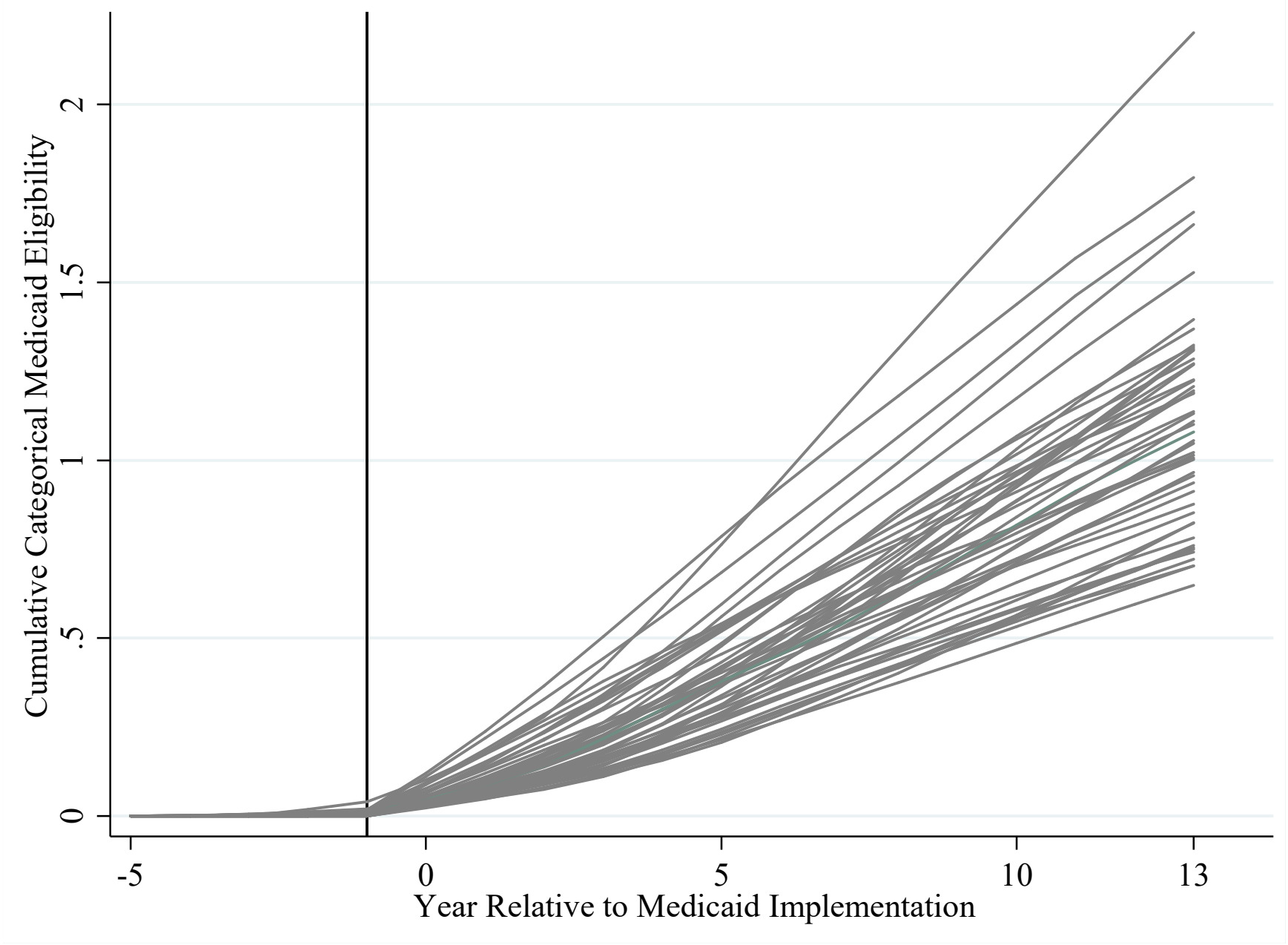
Cumulative Eligibility for One State/Cohort: 1965 New Jersey



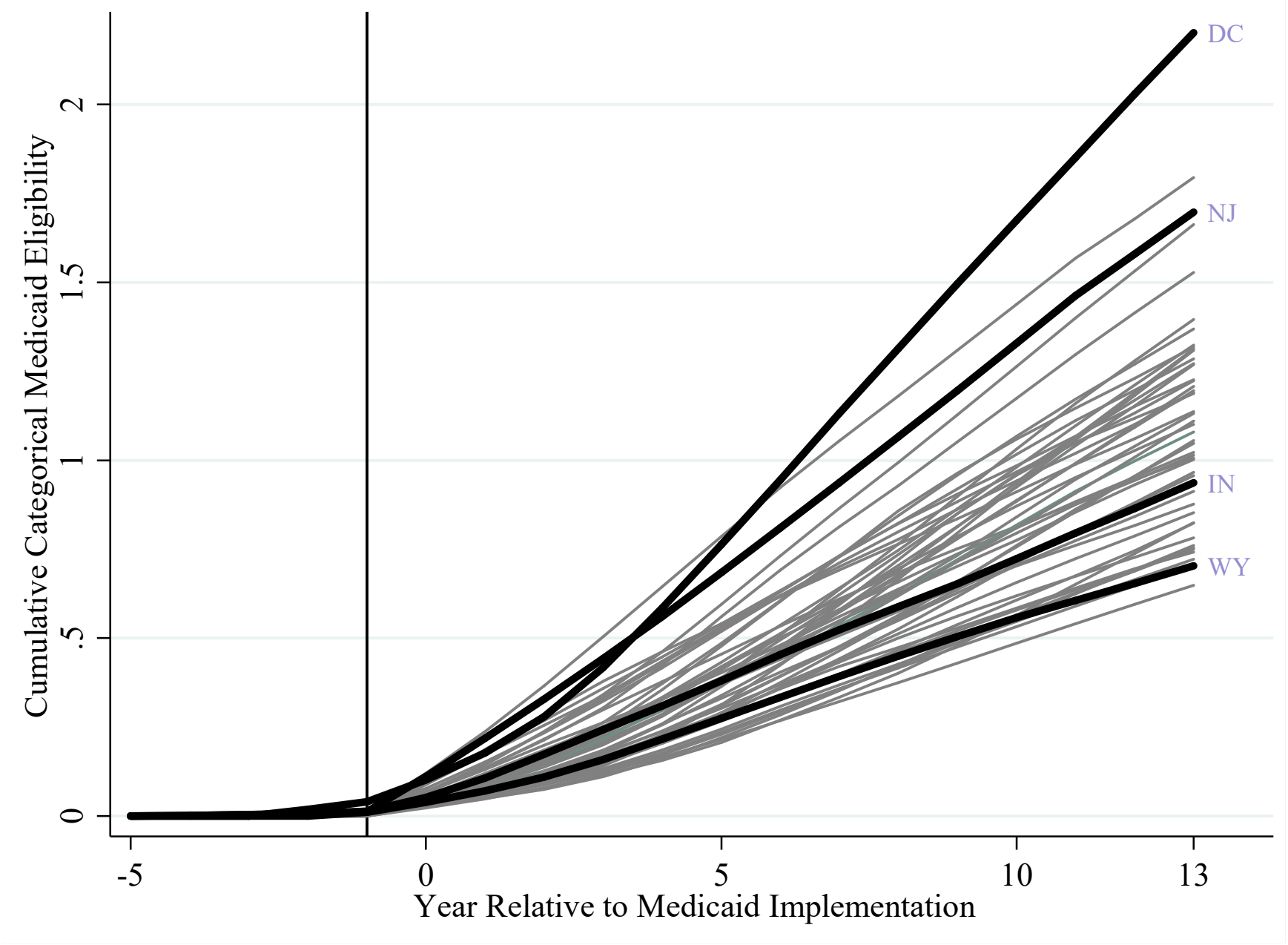
Cumulative Eligibility for Two States, One Cohort: 1965 New Jersey and Indiana



Cumulative Eligibility for All States, One (Event) Cohort: Born 5 Years before Medicaid



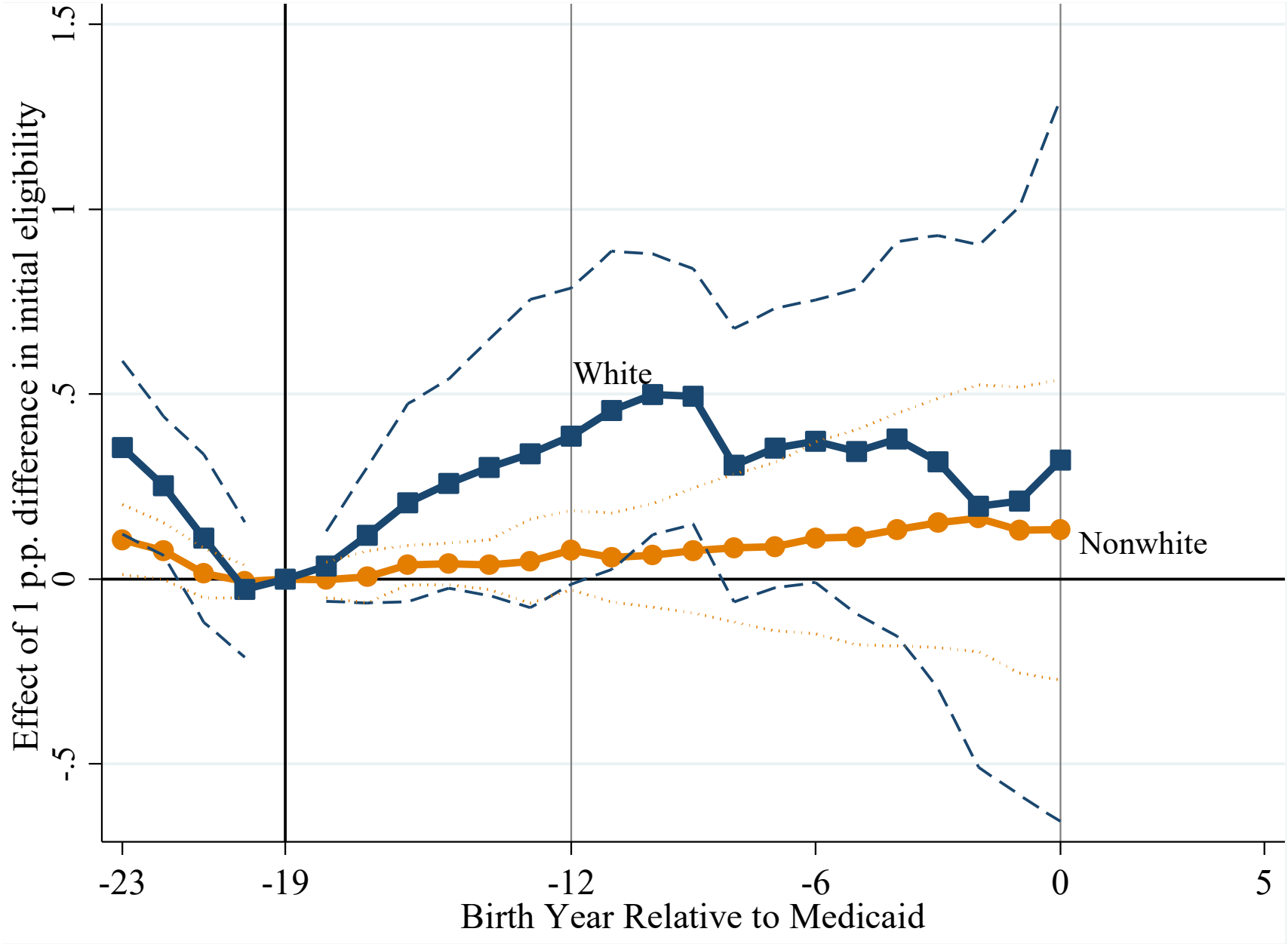
Cumulative Eligibility for All States, One (Event) Cohort: Born 5 Years before Medicaid



Threats to Validity:

Do initial AFDC rates predict anything else?

Crack Index (migration-adjusted, ages 15-30)



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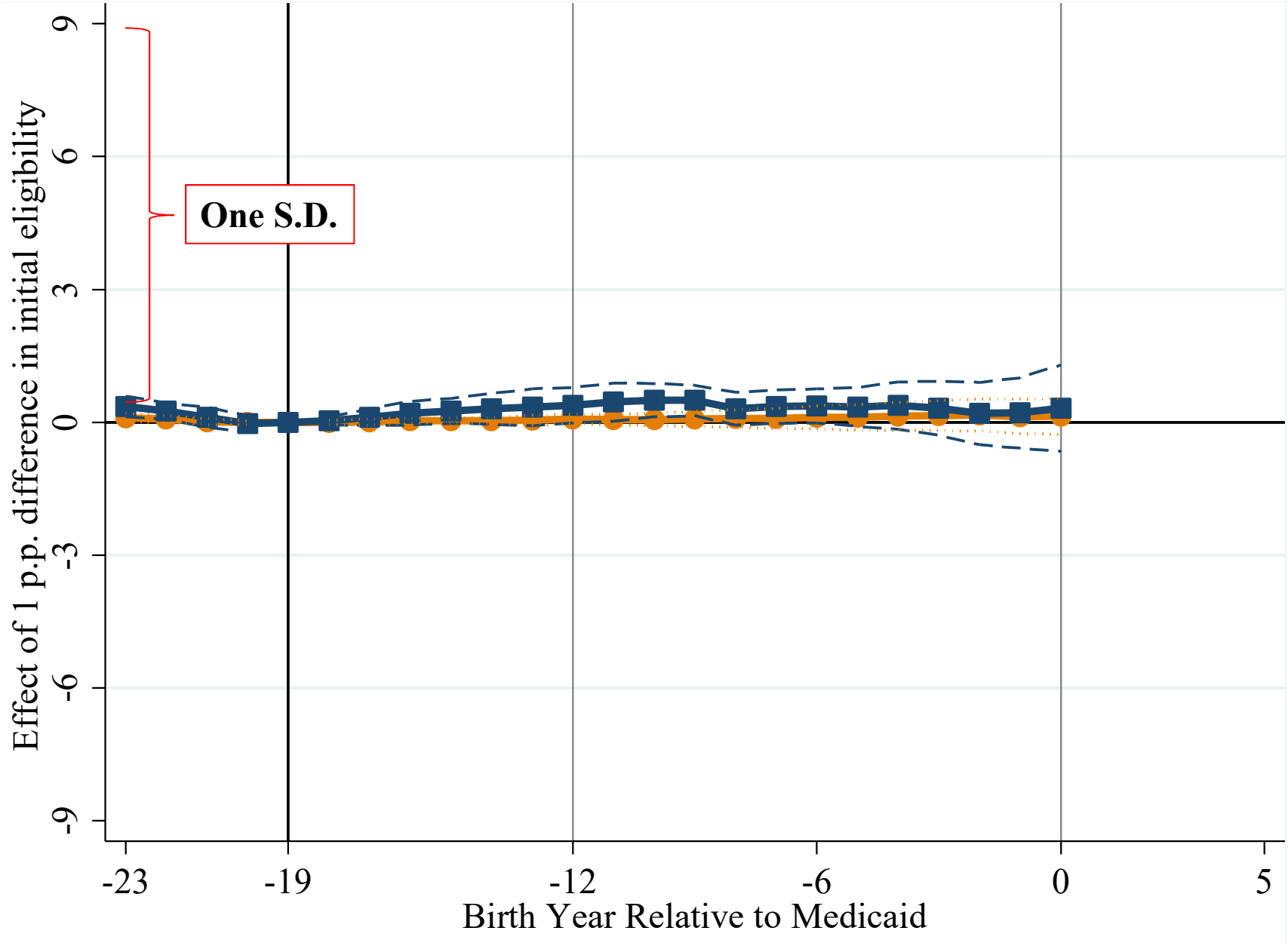
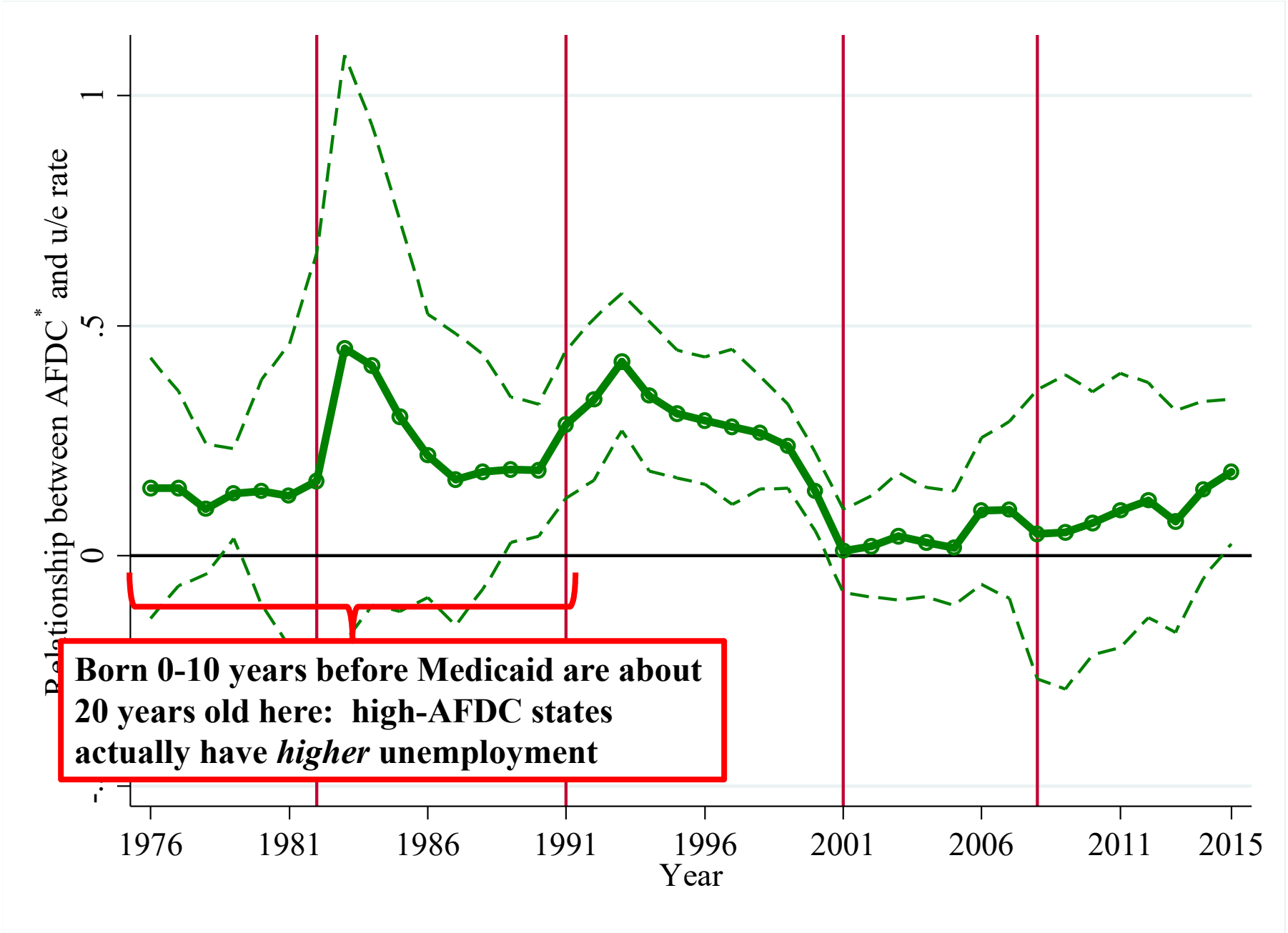
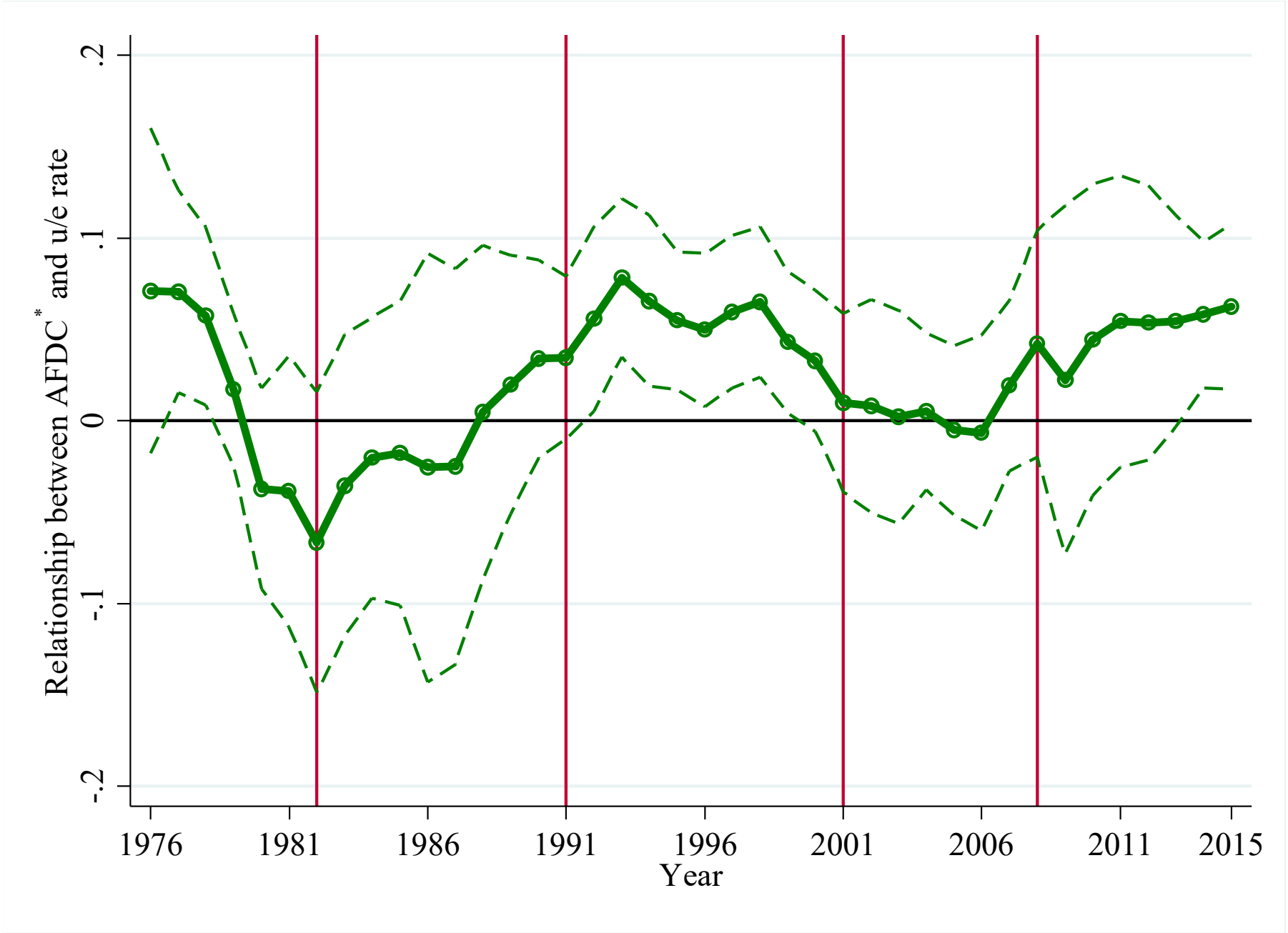


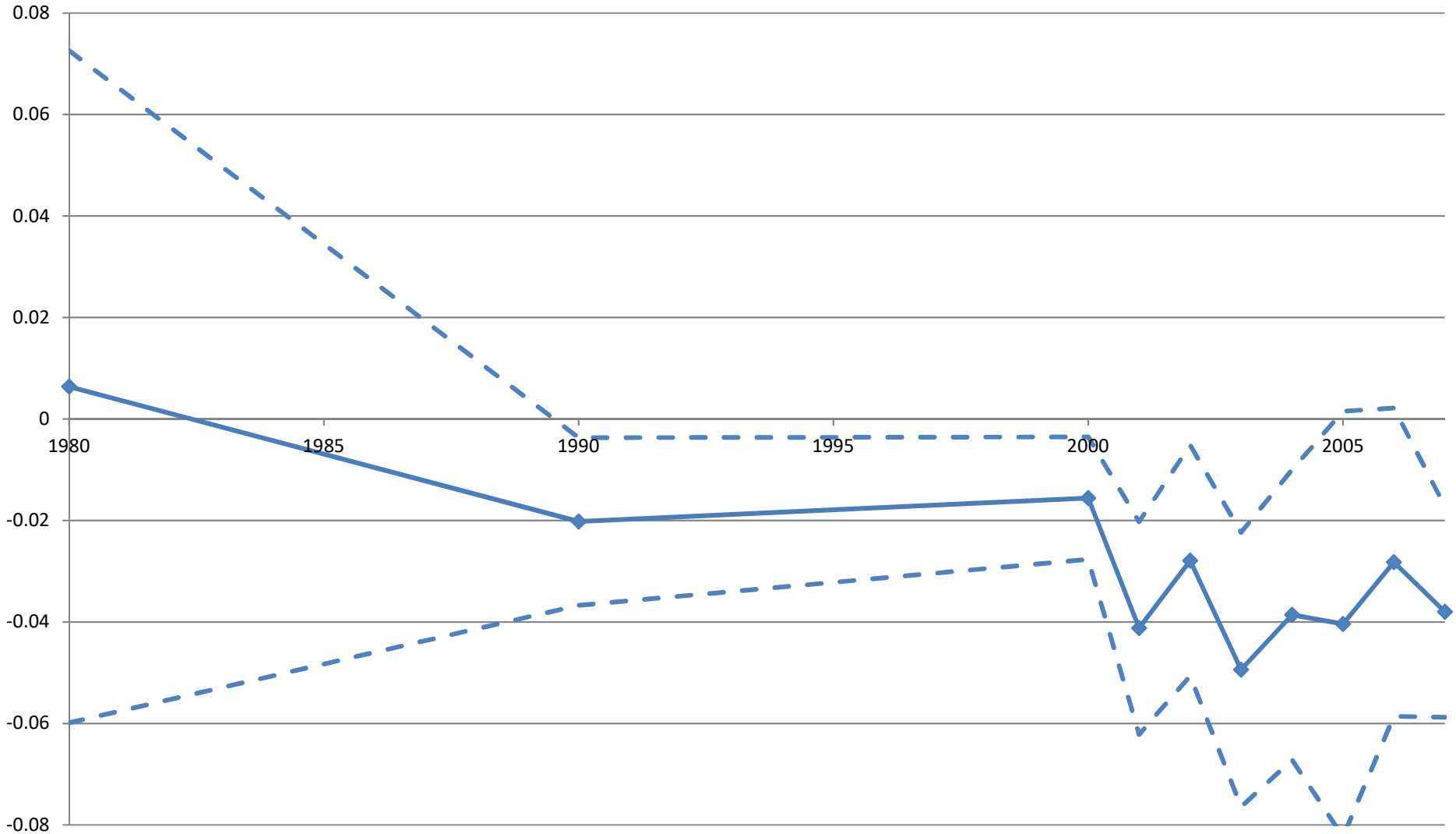
Initial (White) AFDC and Entry Unemployment



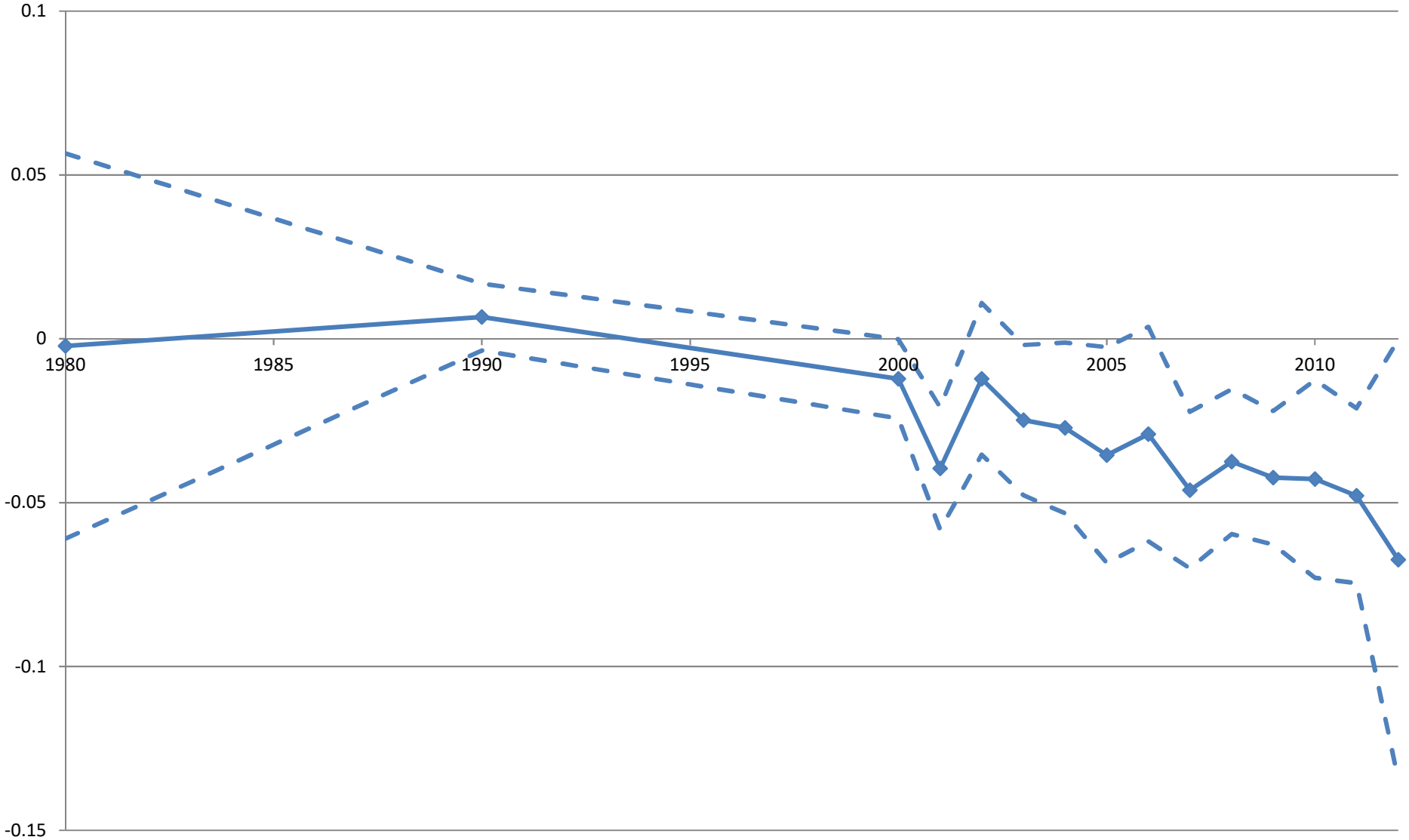
Initial (Nonwhite) AFDC and Entry Unemployment



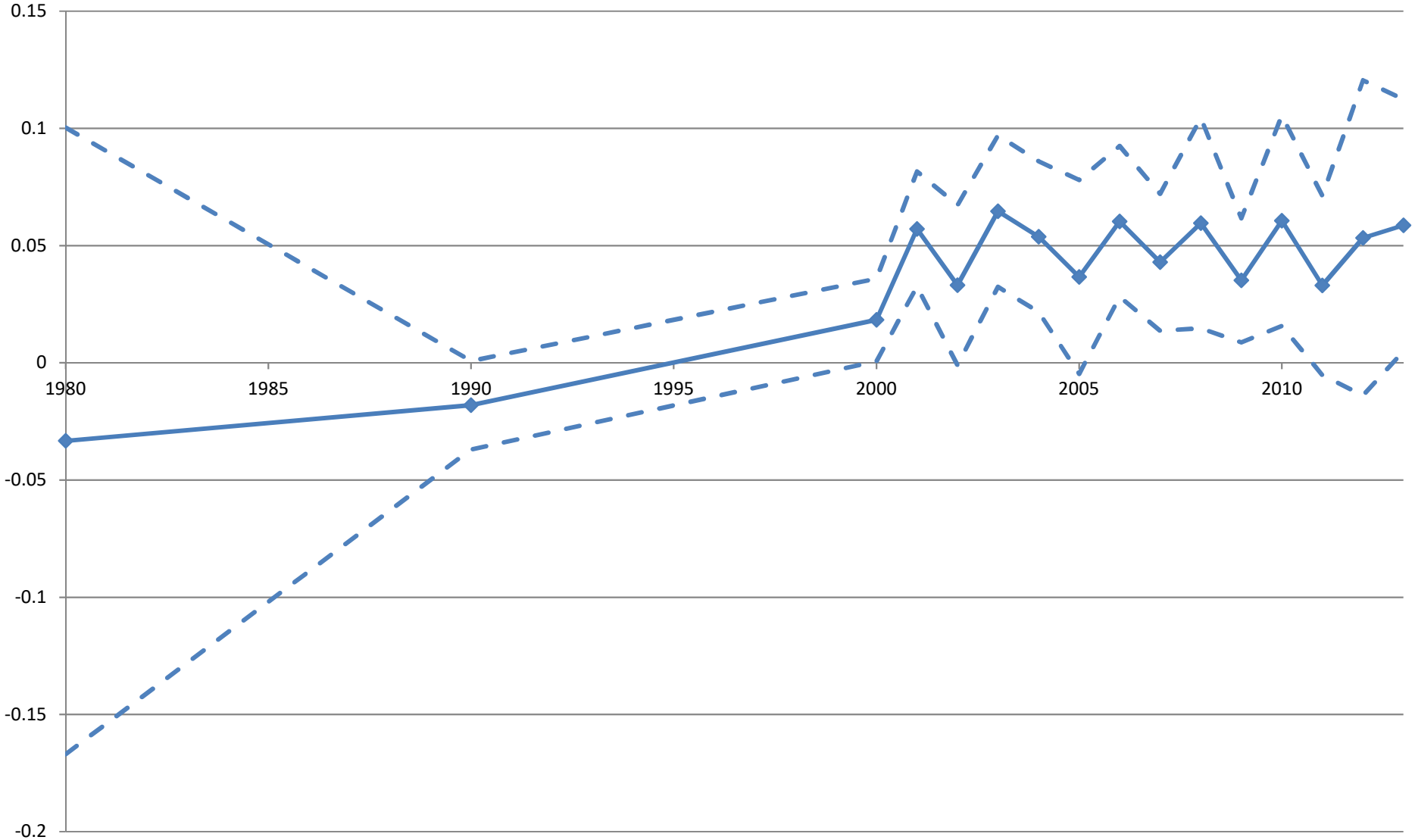
IV Estimate of the Effect of Medicaid on Adult Work Disability by Survey Year



IV Estimate of the Effect of Medicaid on Public Assistance Receipt by Survey Year

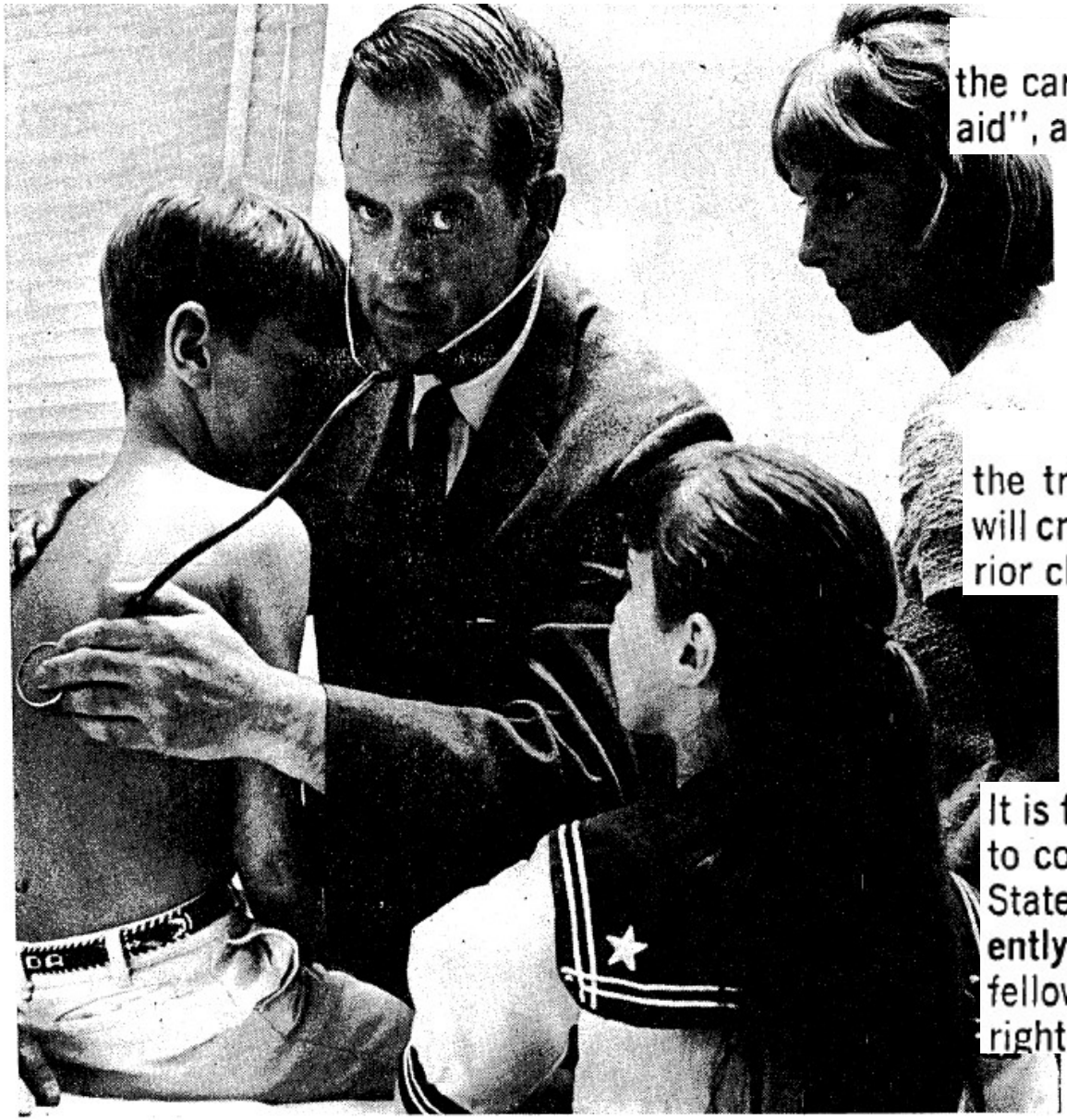


IV Estimate of the Effect of Medicaid on Adult Employment by Survey Year



Median Cell Sizes

	2000 Census	2001-2013 ACS
White	288	2185
Nonwhite	38	309



This new State law for the care of patients under 65 is not "Medic-aid", as it is called. **It is socialized medicine.**

It will destroy the traditional doctor-patient relationship. It will create two classes of medical care—a superior class and an inferior class.

It is for these reasons that I find it impossible to cooperate with the implementation of this State law for patients under 65—**as it is presently proposed**—which operates to deprive my fellow physicians and me of our constitutional rights to practice medicine in a free society.

I am a Doctor...

This statement has been endorsed by the membership of the Suffolk County Medical Society

What did Medicaid provide?

Primary Care Utilization Among Low-Income Children by Medicaid Status

	Income < ~3k	Categorically Eligible
	1963-1965	**1968-1969**
		52.50%
	~48%	Low-Income in Non-Medicaid State
		36%
Source	NHES Cycle II, SHSUE, NHIS	Loewenstein (1971)

What did Medicaid provide?

Primary Care Utilization Among Low-Income Children by Medicaid Status

	Income < ~3k	Categorically Eligible	Medicaid Recipients				
	1963-1965	**1968-1969**	**1968-1969**	**1970-1976**	**1975**	**1976**	**1980**
		52.50%	80%	70% (+36% OPD)	81%	84%	85%
	~48%	Low-Income in Non-Medicaid State	Non-Medicaid Recipients				
		36%	68%		67%	72%	75%
Source	NHES Cycle II, SHSUE, NHIS	Loewenstein (1971)	OEO 11 City Survey	DHEW Tables	Survey of Access to Medical Care	NHIS	NHIS

Counterfactual Disability Among Treated Whites

Adjusting observed disability rate for treated sub-sample:

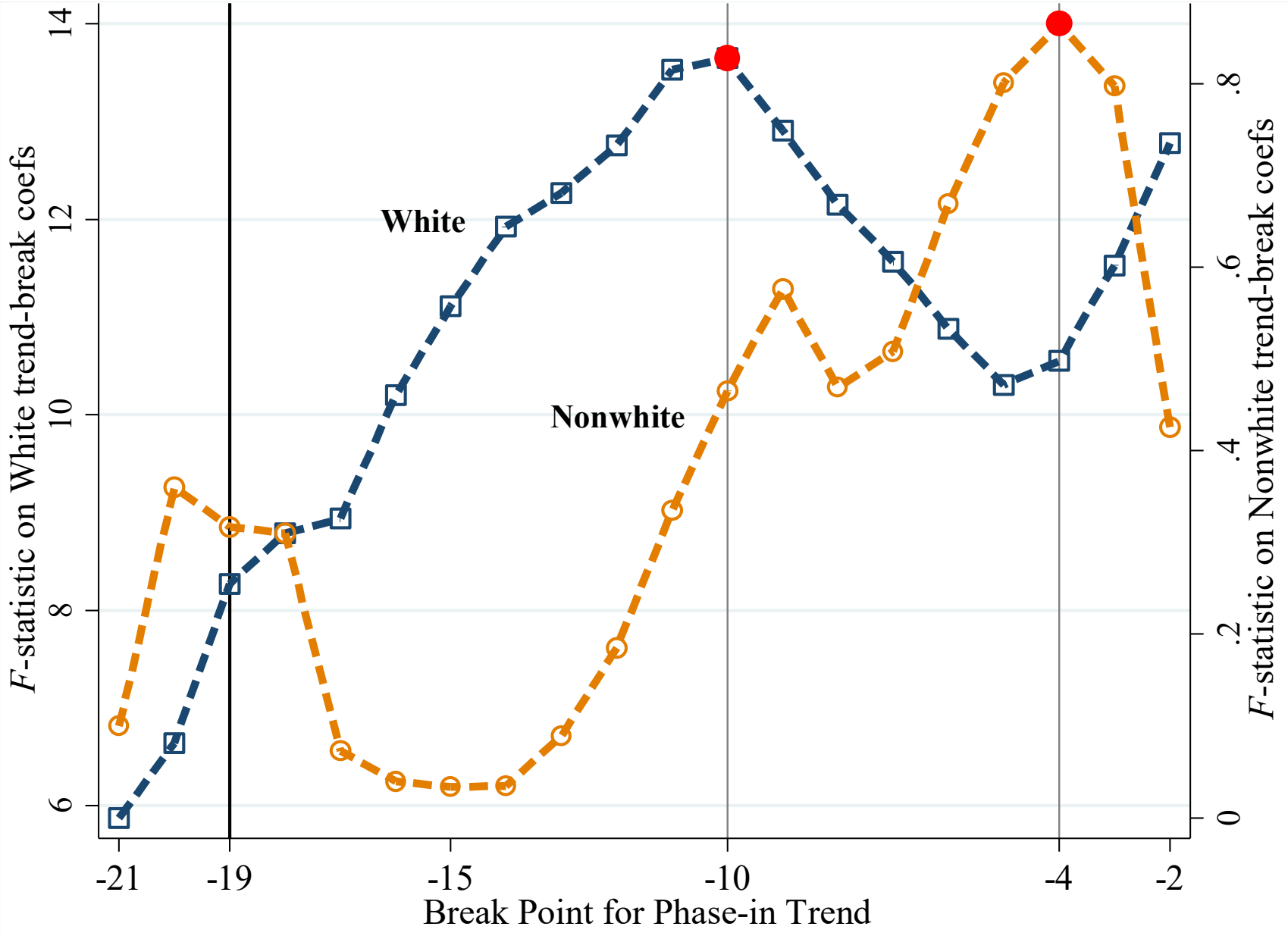
Census Mean (born 1955-1975):	0.057
Disability among adults with child welfare (PSID):	0.41
Disability among adults with child welfare (PSID):	0.15
Adjusted Census Mean: (0.41/0.15)*0.057 =	**0.156**

Adding ba[illegible]effect:

0.58 years overall (T1)
~20% with any welfare (T3)
0.58/0.2 = 2.9

Years 0-10 with *any* welfar[illegible]nd Yeung)	2.9
Share of year on AFDC | any AFDC (KY: Berger and Black)	0.68
Average *full years* of childhood elig.	1.97
IV effect per year	-0.039
Effect among treated to add back in	0.076
Counterfactual Mean	**0.23**

F-Statistics on Trend Break Variables for Different Break Points, Ambulatory Difficulty



IV Estimates for Educational Attainment

	(1) High School Grad	(2) Any College	(3) Bachelor's Degree
Childhood Medicaid Eligibility			
Ages 0-10	1.15	1.59	0.62
	[1.11]	[3.08]	[1.97]
Ages 11-18	0.42	-1.32	-1.99
	[1.81]	[3.26]	[1.59]
H_0: 0-10 = 11-18 (p-val)	0.76	0.60	0.37
Mean Dependent Variable	91.8	62.7	31.5

Notes: IV estimates for eligibility at ages 0-10. Models include state, cohort, region-by-cohort, and Medicaid-year-by-cohort FE, per-capita hospital beds and income during childhood, general fertility and infant mortality rates in each cohort's year of birth. Standard errors clustered by state of birth. Source: 2000 Census and 2000-2013 American Community Survey (Ruggles et al. 2015).

First Stage by Age Group and Race

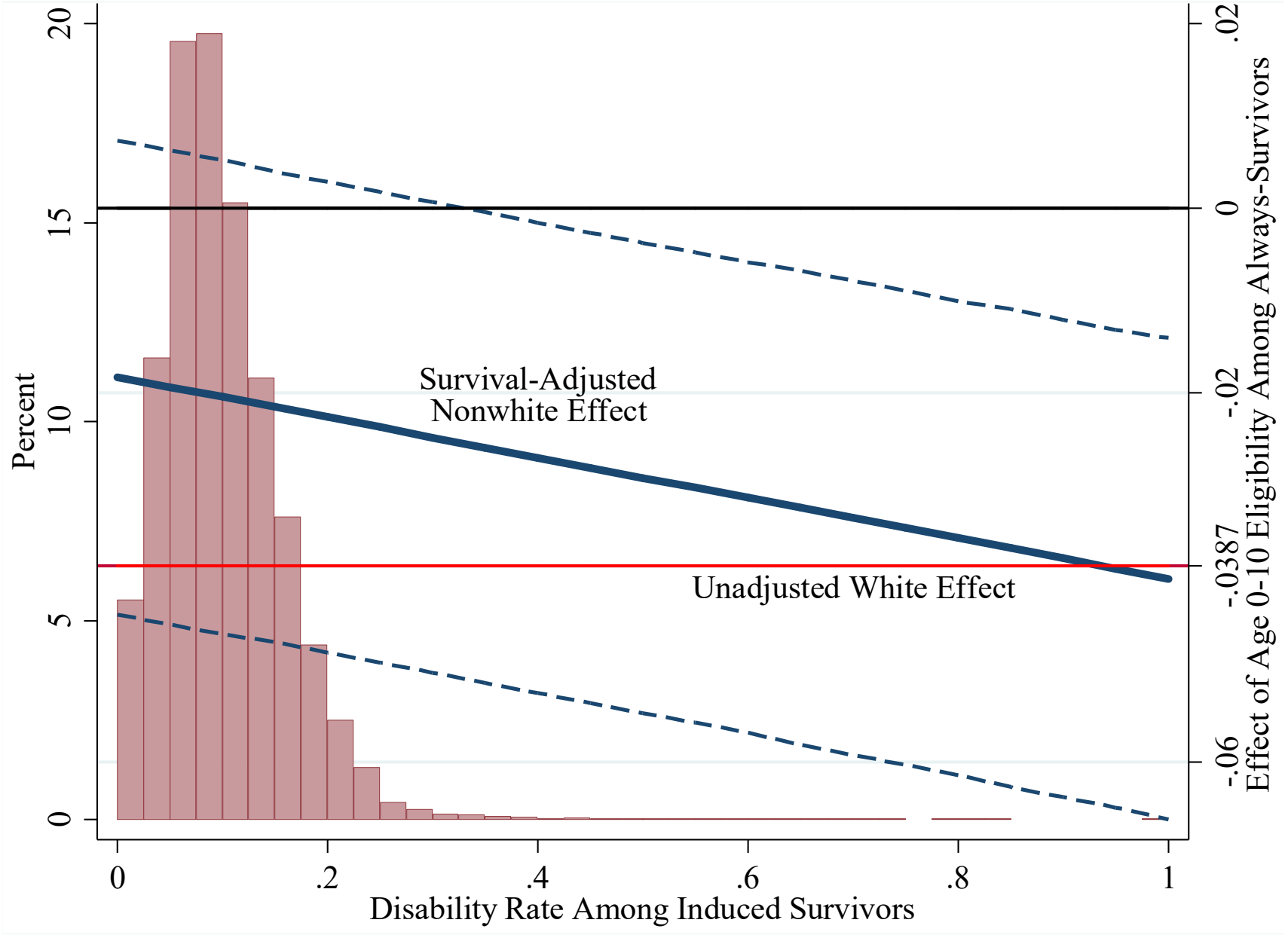
	White	*Nonwhite*
Dependent Variable:	**m_{cs}: ages 0-10**	
z_{cs}: ages 0-10	0.77	0.41
	[0.23]	[0.20]
z_{cs}: ages 11-18	-0.04	-0.03
	[0.10]	[0.08]
Angrist/Pischke *F*-statistic	37.3	18.5
Dependent Variable:	**m_{cs}: ages 11-18**	
z_{cs}: ages 0-10	0.09	-0.42
	[0.07]	[0.08]
z_{cs}: ages 11-18	0.57	0.55
	[0.13]	[0.13]
F-statistic	17.8	14.5

IV Estimates for Other Disabilities

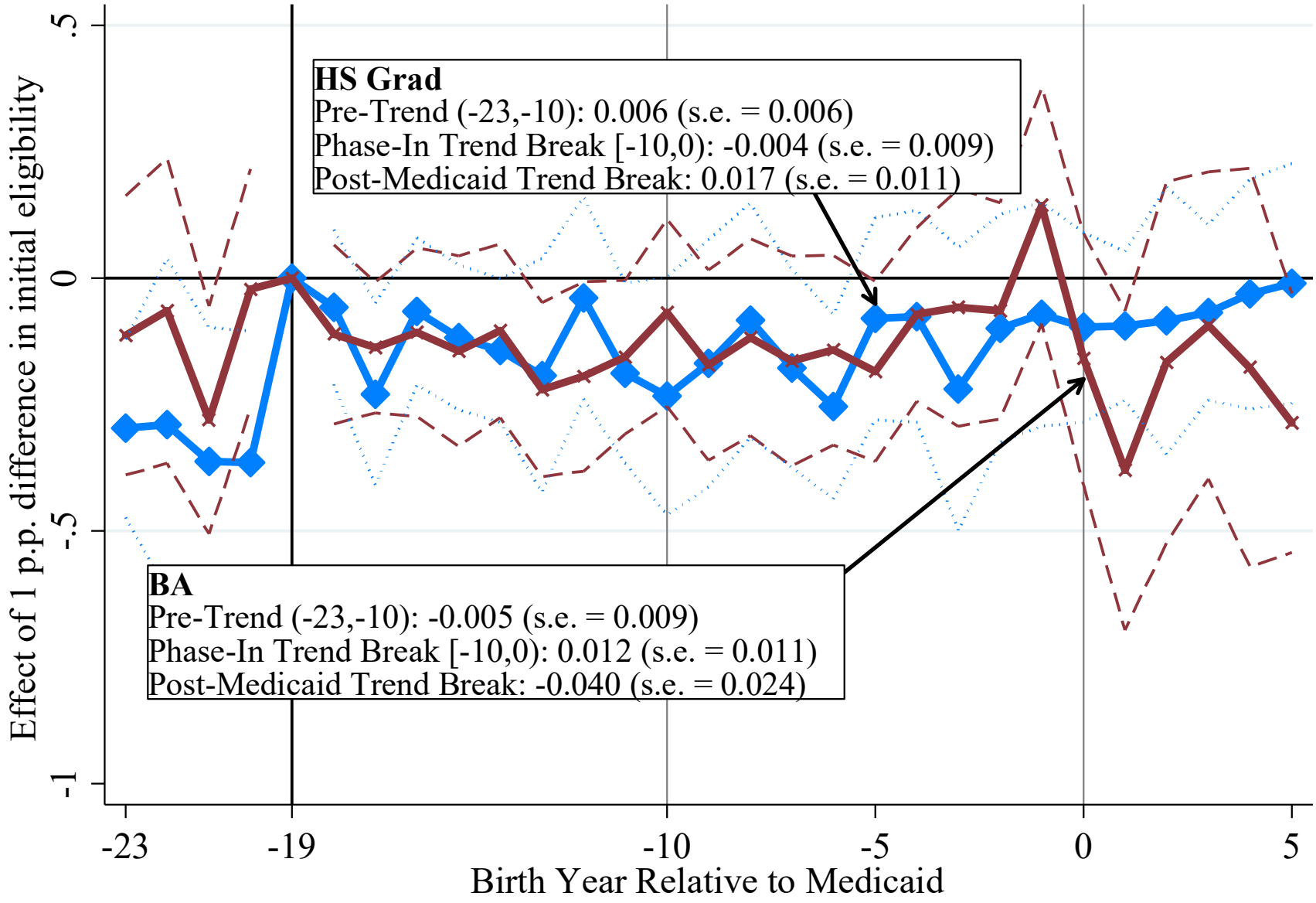
	(1) Ambulatory Difficulty	(2) Hearing/Vision Difficulty	(3) Mobility Difficulty	(4) Self-Care Difficulty	(5) Cognitive Difficulty	(6) Work Limitation
Childhood Medicaid Eligibility						
Ages 0-10	-3.87	-1.18	-1.36	-1.26	-1.72	-3.30
	[1.17]	[0.29]	[0.36]	[0.29]	[0.4]	[0.81]
Ages 11-18	-1.06	0.31	-0.67	0.38	0.34	-2.54
	[1.45]	[0.71]	[0.57]	[0.5]	[0.64]	[1.23]
H_0: 0-10 = 11-18 (p-val)	0.20	0.06	0.33	0.02	0.03	0.60
Mean Dependent Variable	8.61	3.15	3.75	2.27	4.41	8.12
	Does this person have any of the following long-lasting conditions:		Because of a physical, mental, or emotional condition lasting ≥ 6 months does this person have any difficulty:			
Question Text	...that substantially limits ≥1 basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?	Blindness, deafness, or a severe vision or hearing impairment?	Going outside the home alone to shop or visit a doctor's office?	Dressing, bathing, or getting around inside the home?	Learning, remembering, or concentrating?	Working at a job or business?

Notes: State/cohort means from 2000 Census and 2001-2007 ACS data. IV estimates use predicted cumulative eligibility from ages 0-10 and 11-18 (z_{rsc}) as instruments for actual, migration-adjusted cumulative Medicaid eligibility (m_{rsc}) at the same ages. There are 14,331 observations, except column 6 (N=12,417), which omits the year 2000 because the work-limiting disability responses differ strongly from subsequent surveys.

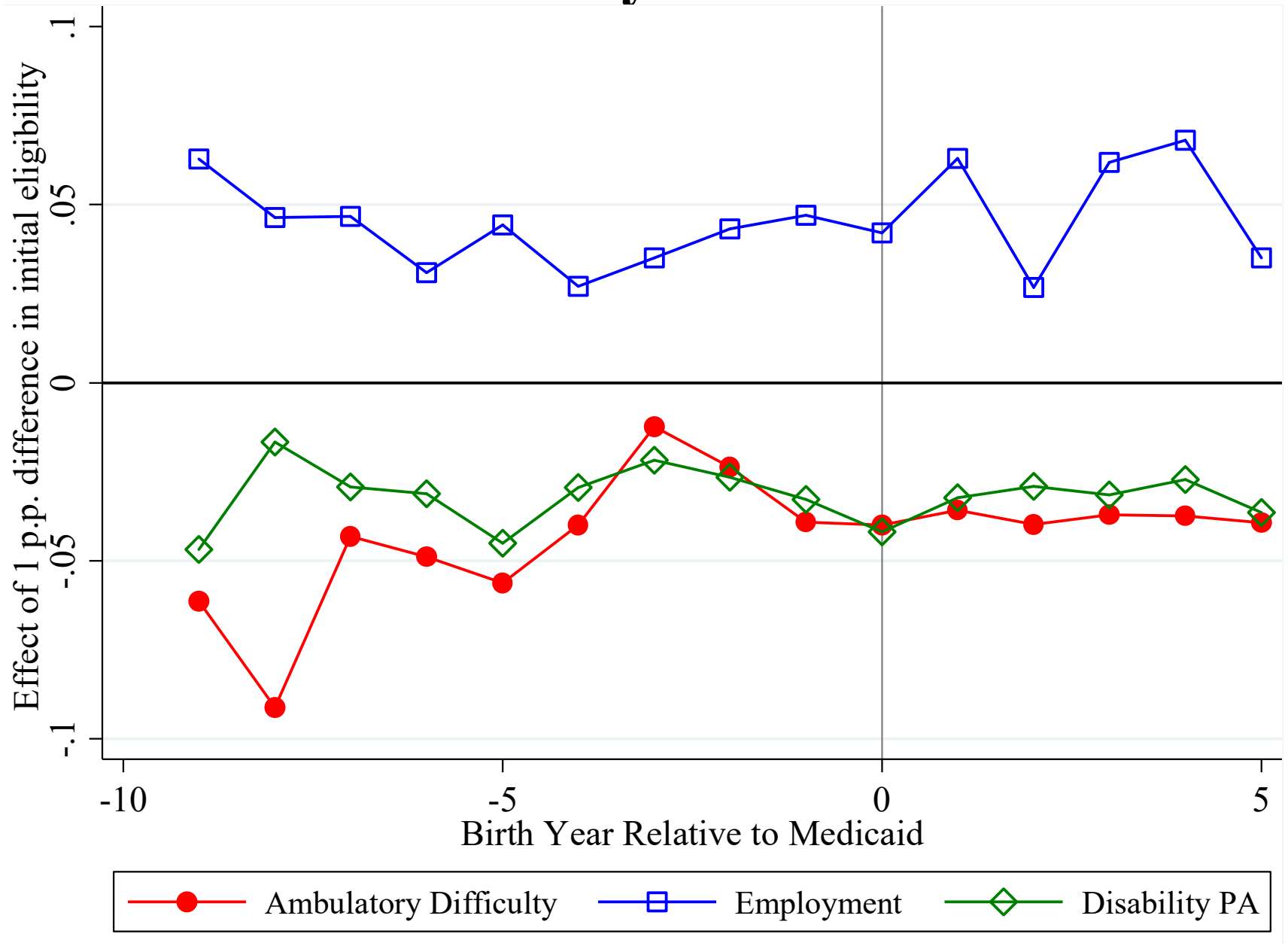
Survival-Adjusted Bounds on Disability Effects



Event-Study Estimates for HS and BA



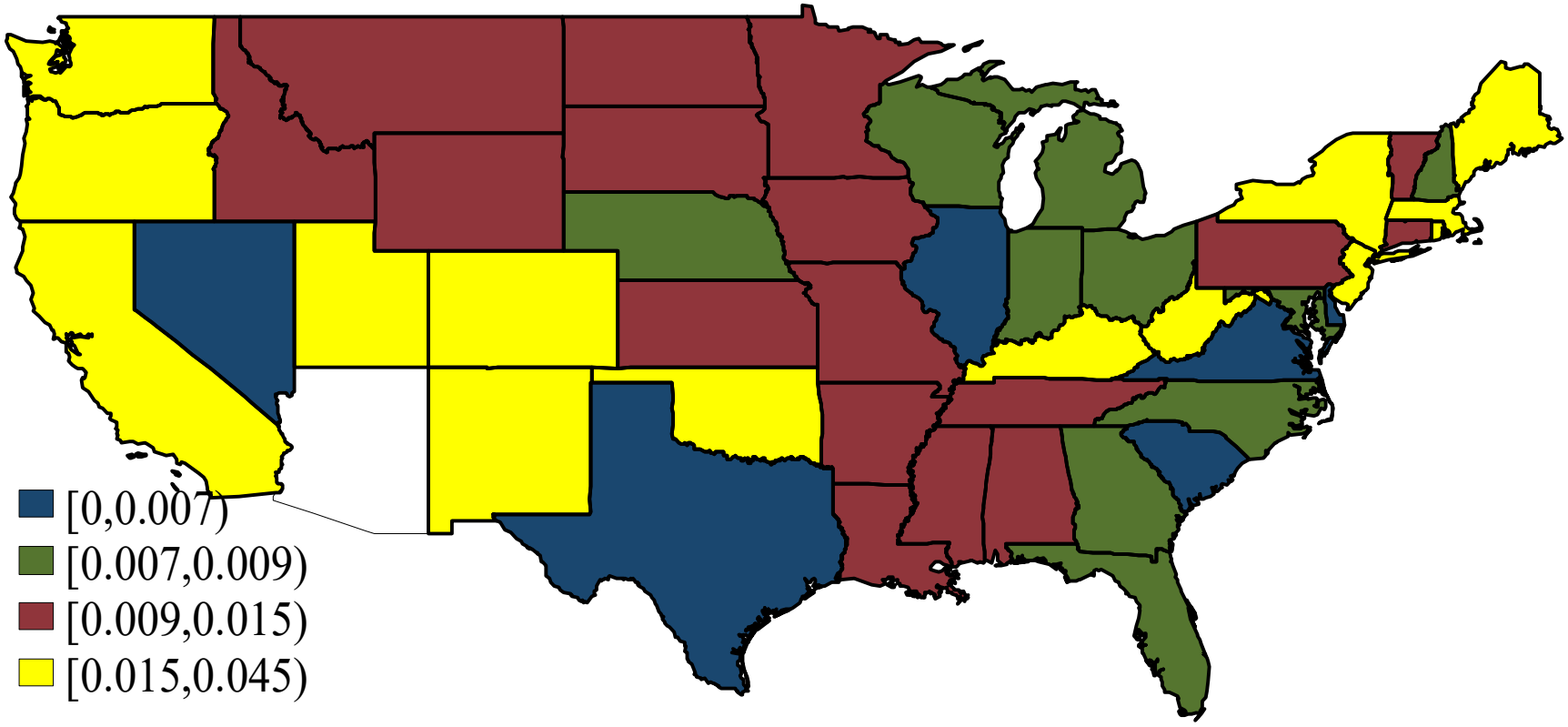
Ratio of reduced-form to first-stage event-study coefficients



IV Estimates for Disability, Infant vs. Child Exposure

	(1) Ambulatory Difficulty	(2) Hearing/ Vision Difficulty	(3) Mobility Difficulty	(4) Self-Care Difficulty	(5) Cognitive Difficulty	(6) Work Limitation
			A. White Adults, 2000-2007			
Ages 0-1	-6.50	0.73	-3.42	-3.61	-5.32	-4.67
	[3.52]	[1.02]	[1.25]	[1.62]	[1.47]	[1.71]
Ages 2-10	-3.08	-1.76	-0.74	-0.54	-0.62	-2.51
	[0.84]	[0.38]	[0.49]	[0.44]	[0.44]	[0.72]
Ages 11-18	-1.38	0.54	-0.92	0.09	-0.10	-2.27
	[1.28]	[0.65]	[0.64]	[0.43]	[0.56]	[1.12]
H_0: 0-1 = 2-10 (p-val)	0.33	0.04	0.08	0.12	0.01	0.22

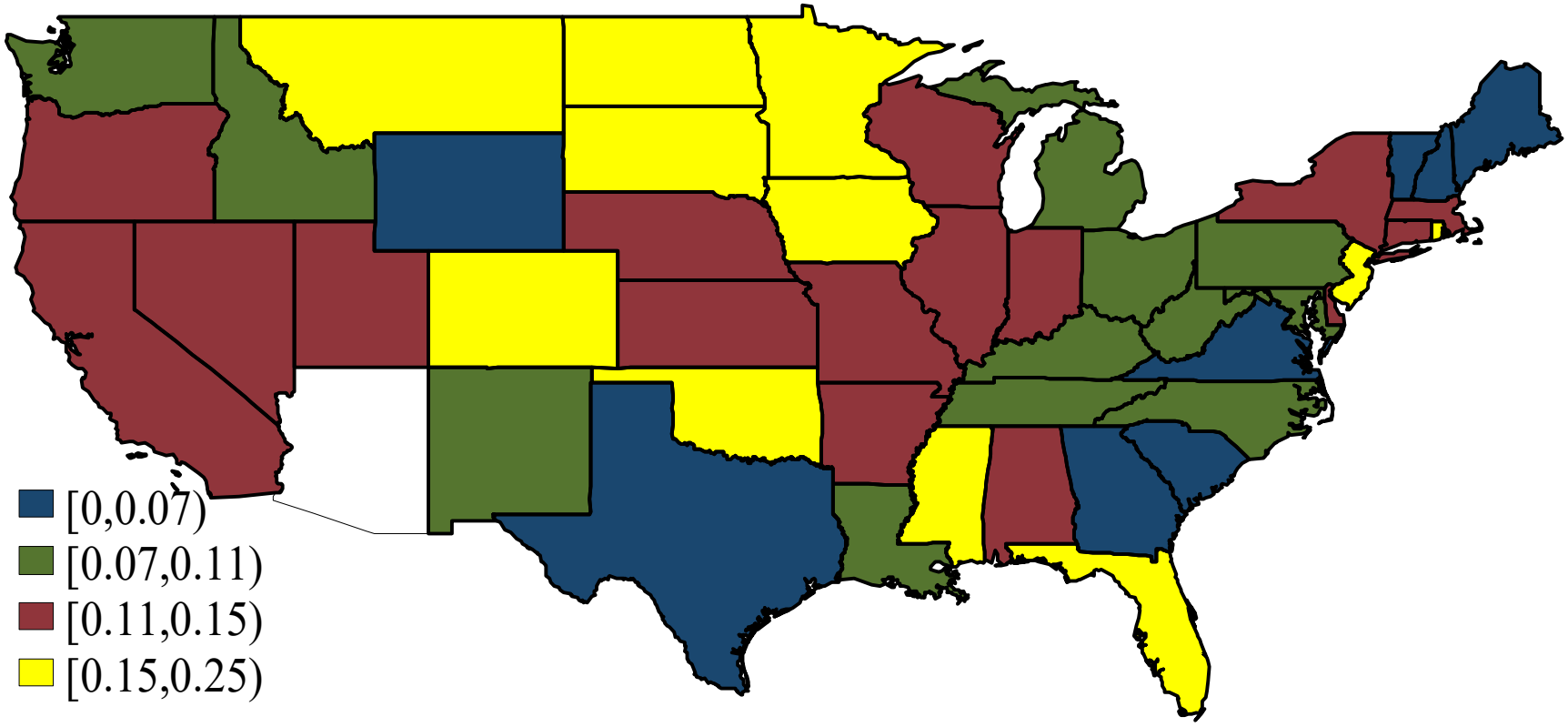
Share of White Women on AFDC in the Year Of Medicaid Implementation



White range: 0.001 (DC) to 0.044 (WV)

Source: AFDC Characteristics Studies (1967-1979), HHS Caseload Data, Census/SEER population.

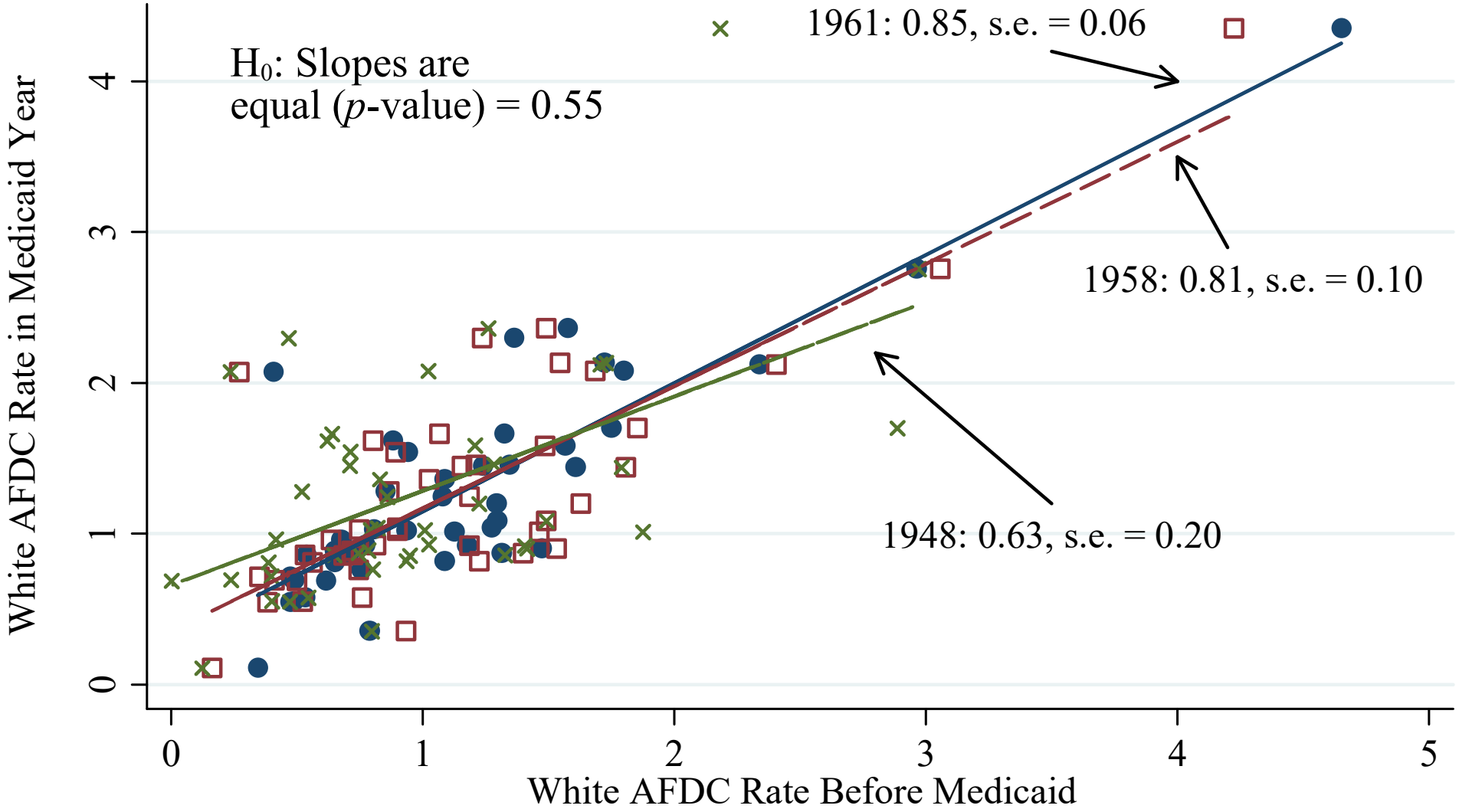
Share of Nonwhite Women on AFDC in the Year Of Medicaid Implementation



Nonwhite range: 0.004 (VT) to 0.26 (SD)

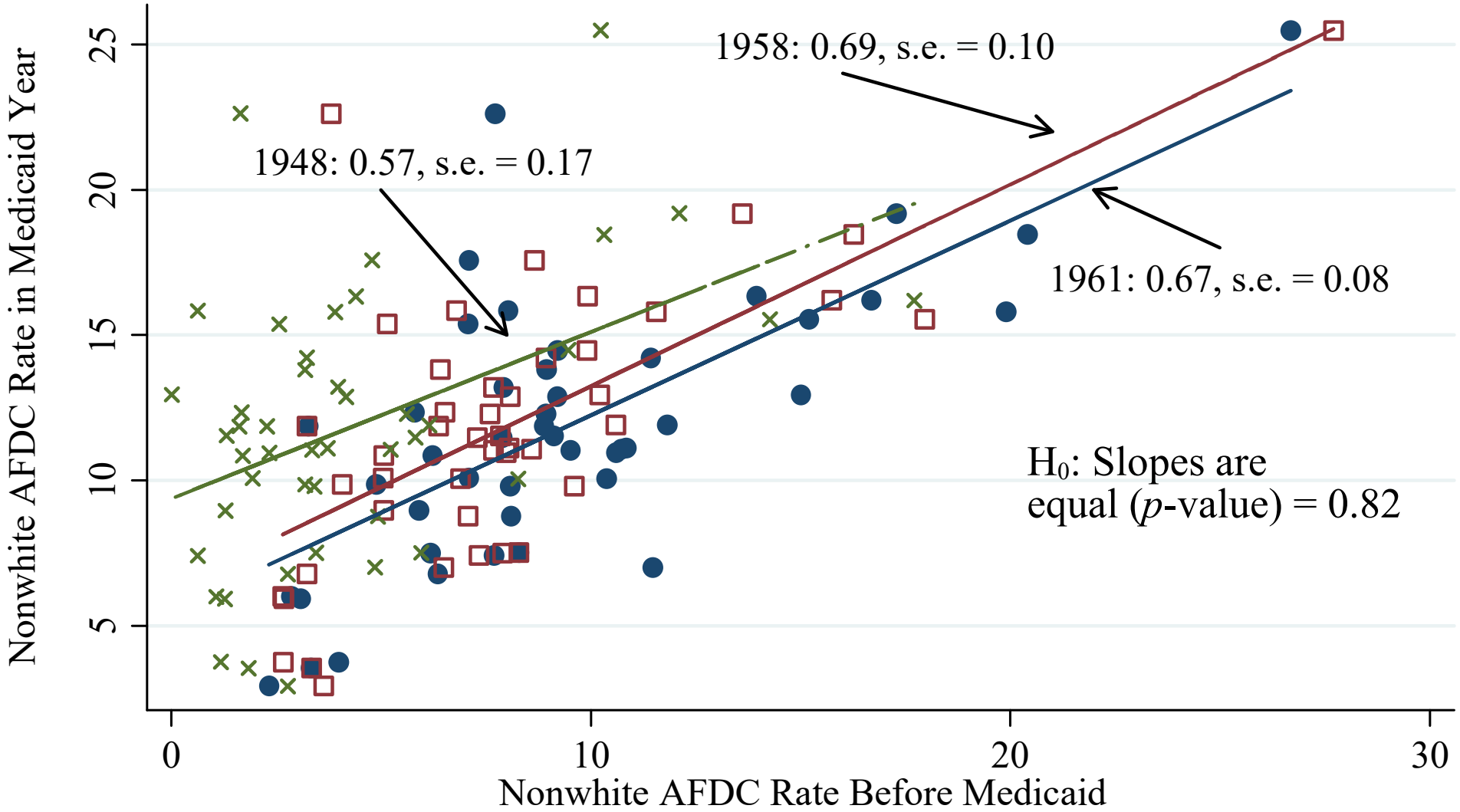
Source: AFDC Characteristics Studies (1967-1979), HHS Caseload Data, Census/SEER population.

Validity: Stability in White AFDC Rates



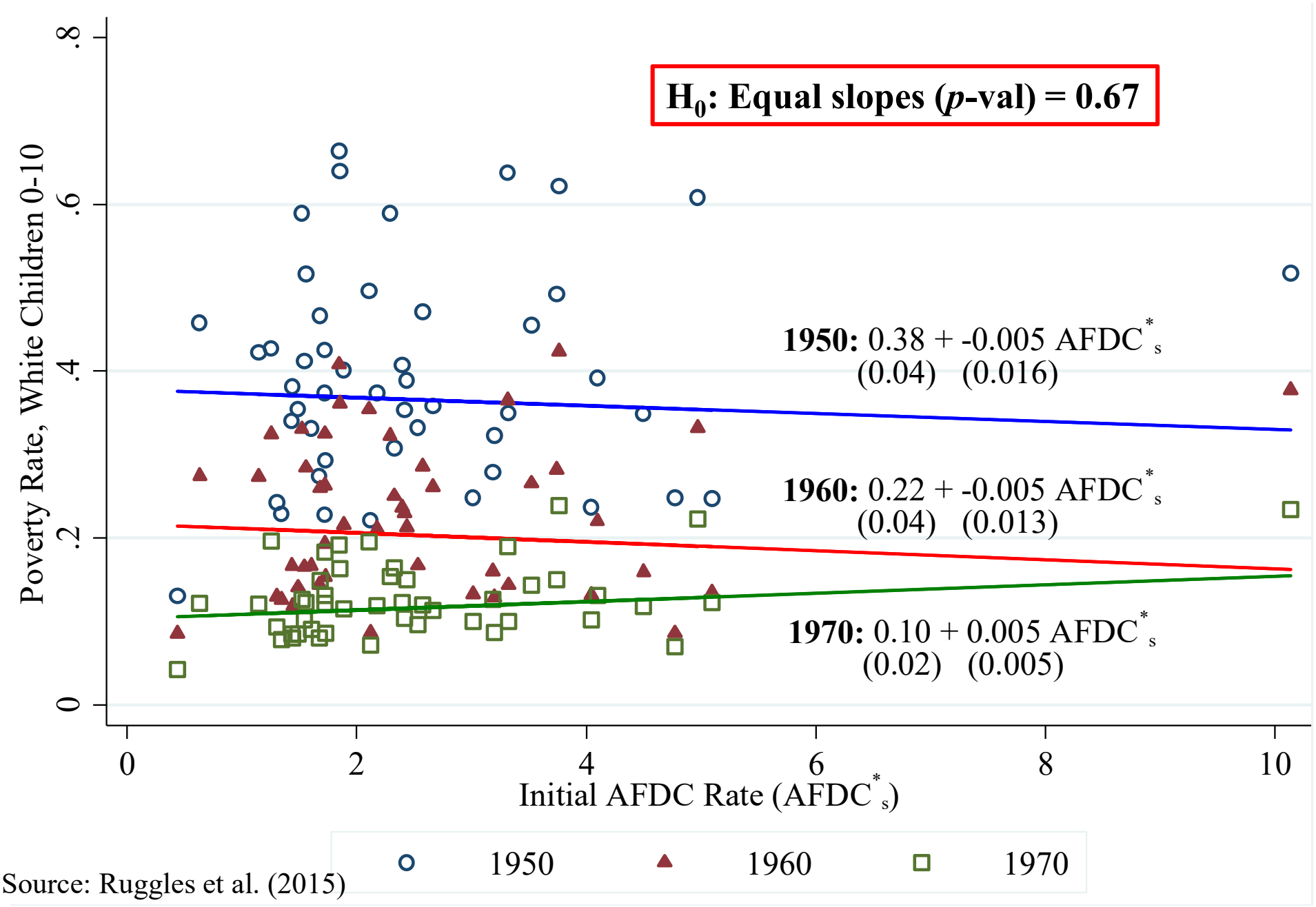
Notes: The figure presents scatter plots and fitted values of the relationship between the paper's primary measure of categorical eligibility—the AFDC rate in the year of Medicaid implementation (y-axis)—and three measures of AFDC rates in years prior to each state's Medicaid year. The p-values from a test that the slopes are equal (i.e. that AFDC variation is stable over time) are 0.55 and 0.32 using robust regression (Berk 1990).

Validity: Stability in Nonwhite AFDC Rates



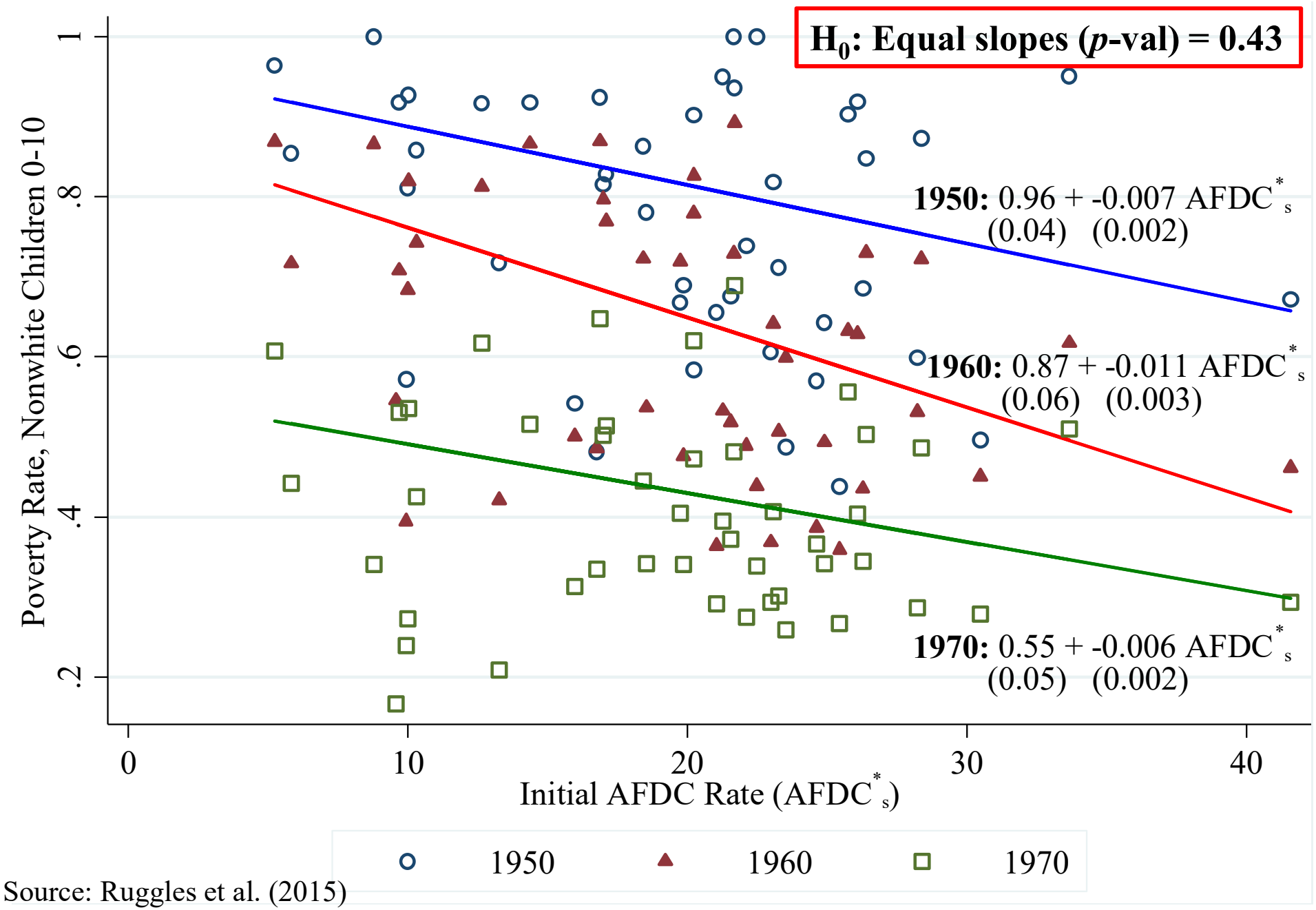
Notes: The figure presents scatter plots and fitted values of the relationship between the paper's primary measure of categorical eligibility—the AFDC rate in the year of Medicaid implementation (y-axis)—and three measures of AFDC rates in years prior to each state's Medicaid year. The p-values from a test that the slopes are equal (i.e. that AFDC variation is stable over time) are 0.82 and 0.34 using robust regression (Berk 1990).

Validity: Trends in White Child Poverty



Source: Ruggles et al. (2015)

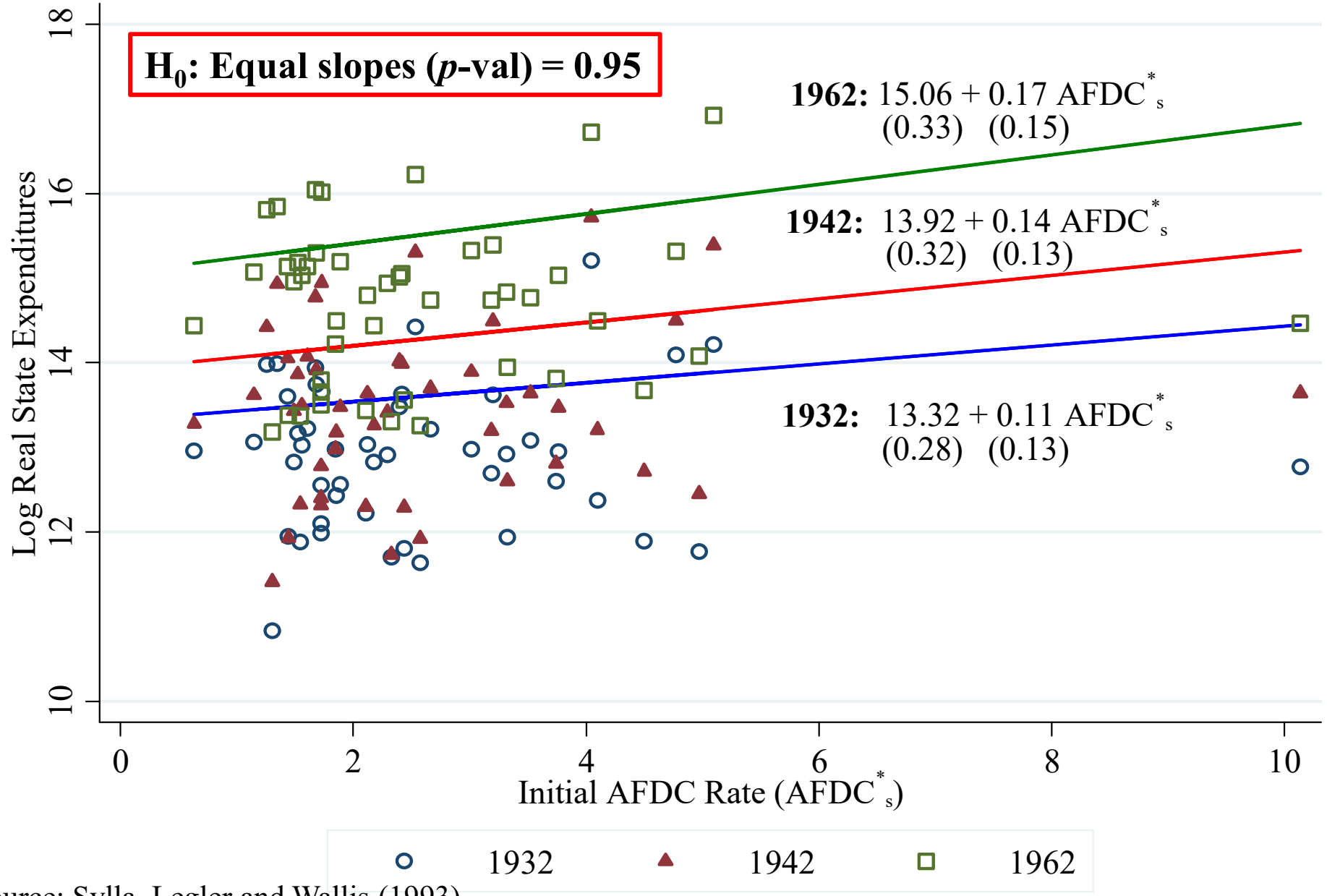
Validity: Trends in Nonwhite Child Poverty



Source: Ruggles et al. (2015)

Validity: Trends in Public Expenditures

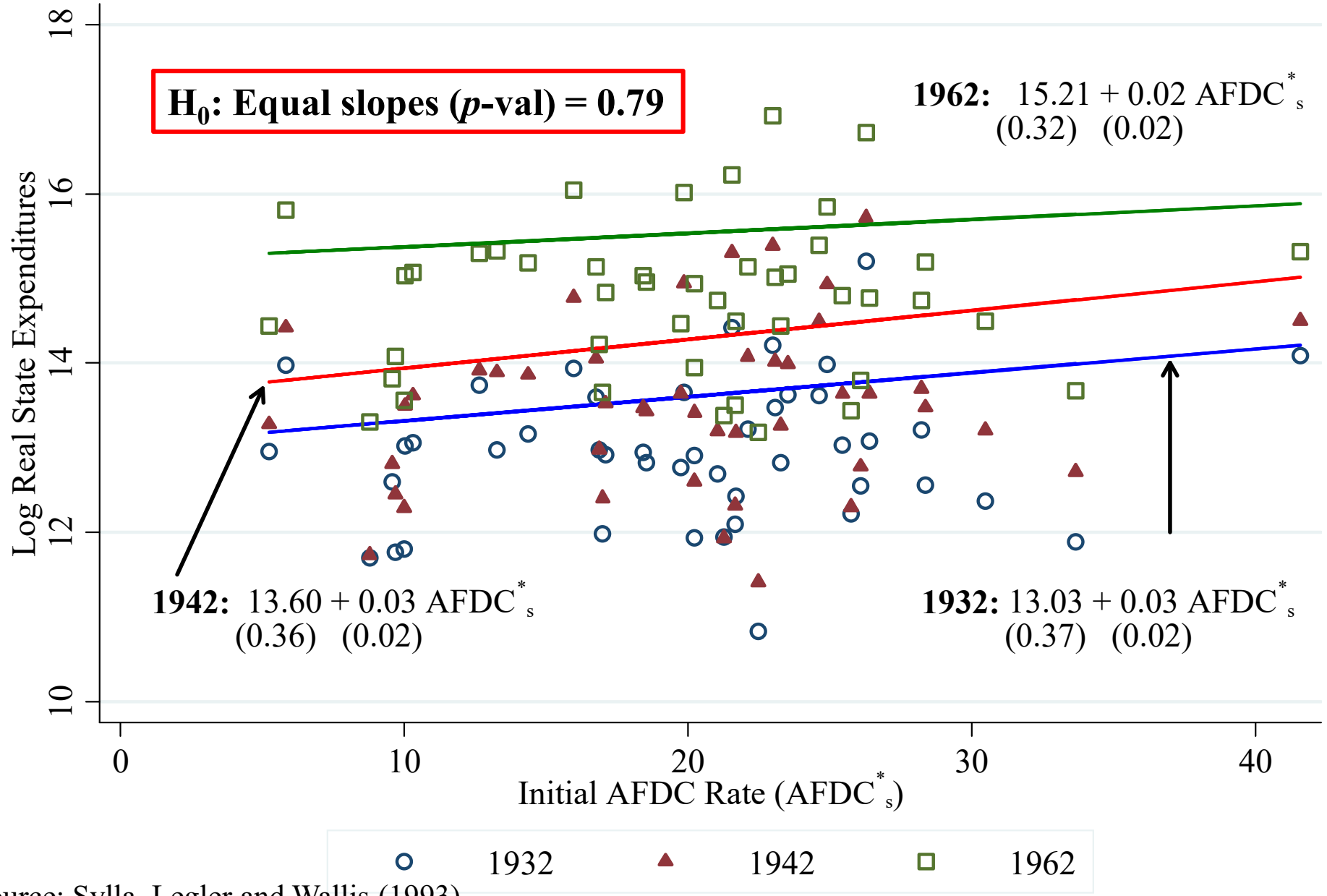
White AFDC Rate



Source: Sylla, Legler and Wallis (1993)

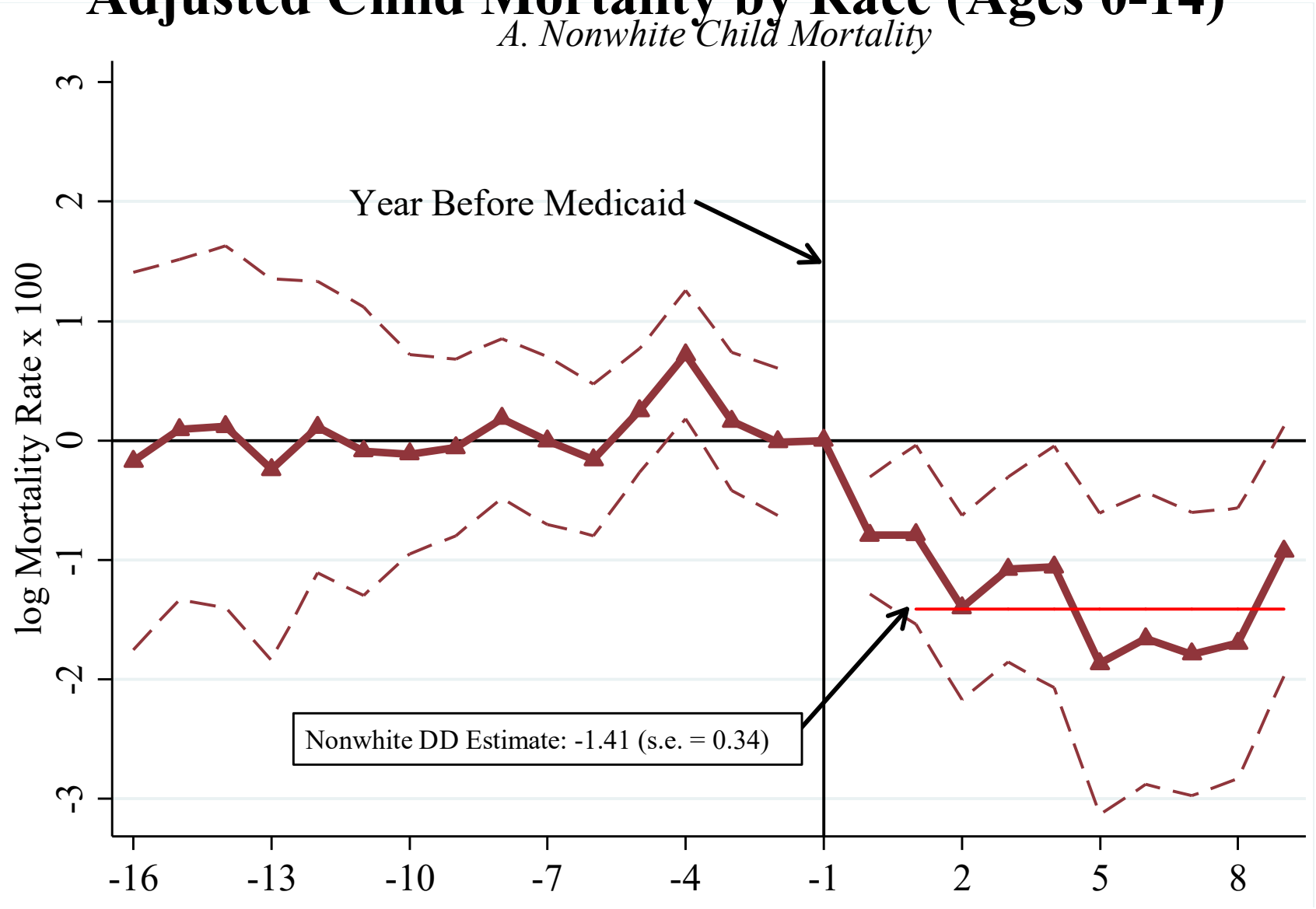
Validity: Trends in Public Expenditures

Nonwhite AFDC Rate



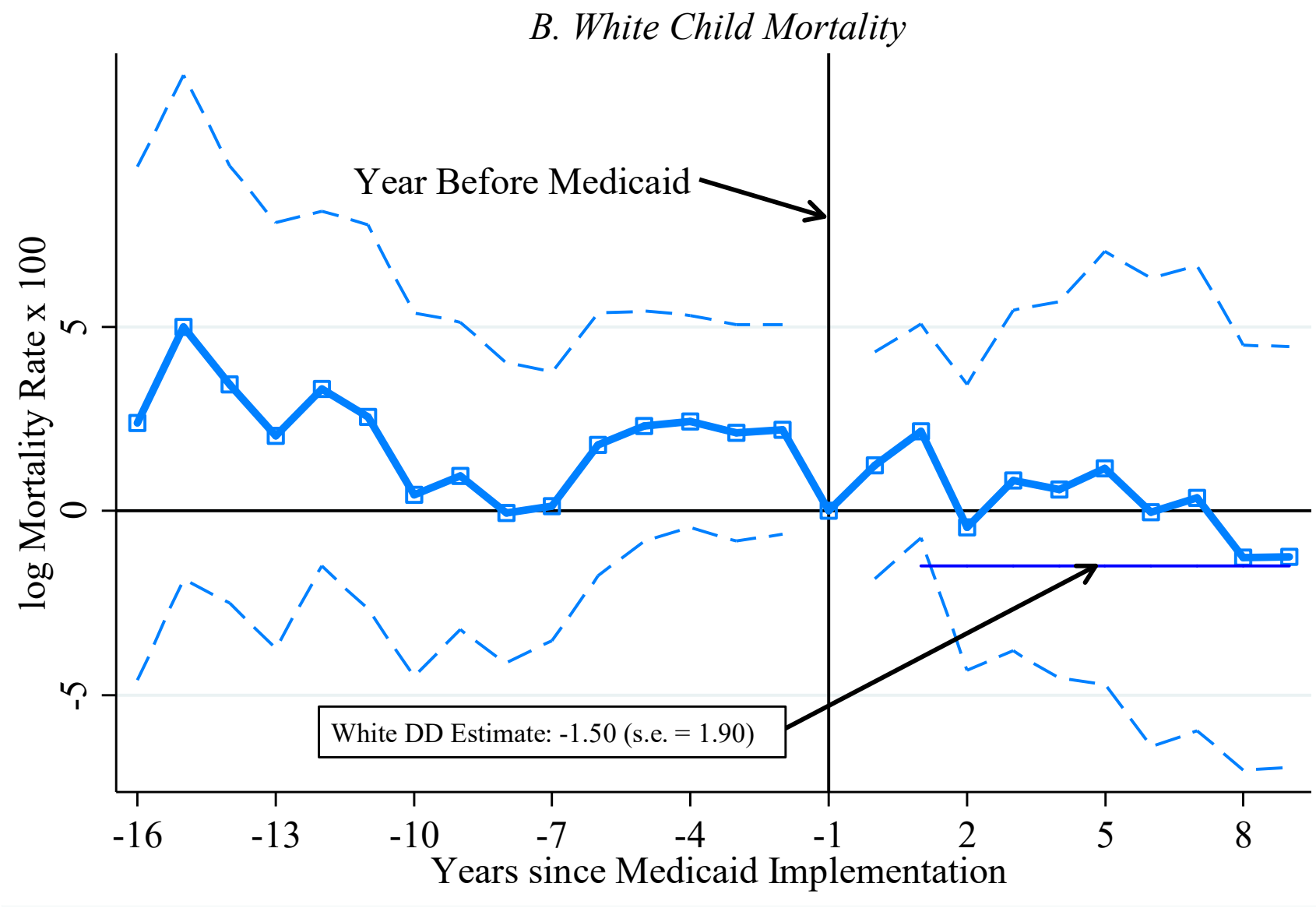
Source: Sylla, Legler and Wallis (1993)

Event-Study Estimates of Medicaid's Effect on Log Age-Adjusted Child Mortality by Race (Ages 0-14)



Notes: Standard errors clustered by state.

Event-Study Estimates of Medicaid's Effect on Log Age-Adjusted Child Mortality by Race (Ages 0-14)



IV Specification

Instrument (dose predicted by $AFDC_{rs}^{*}$)

$$z_{rsc} = AFDC_{rs}^{*} \cdot (19 - \max\{0, t_{s}^{*} - c\})$$

First stage (predicted year → actual years of eligibility):

$$m_{rsc} = \boldsymbol{X}'_{\boldsymbol{rsc}}\boldsymbol{\alpha} + \pi z_{rsc} + \nu_{rsc}$$

Reduced form (predicted year → adult outcomes):

$$y_{rsc} = \boldsymbol{X}'_{\boldsymbol{rsc}}\boldsymbol{\beta} + \phi z_{rsc} + \varepsilon_{rsct}$$

Validity: Fertility and Infant Mortality

		White		Nonwhite	
Outcome/year:		Mean	Coef. on Initial White AFDC	Mean	Coef. on Initial Nonwhite AFDC
Infant Mortality Rate					
	1947	29.72	0.09	47.89	-0.19
			[0.55]		[0.13]
	1957	22.86	0.15	43.43	-0.03
			[0.25]		[0.09]
	1965	21.65	-0.05	40.55	-0.02
			[0.21]		[0.1]
H_0: Equal slopes (*p*-val)			**0.93**		**0.49**
General Fertility Rate					
	1947	112.40	-0.92	107.80	-0.62
			[1.55]		[0.42]
	1957	120.10	-1.85	155.30	-0.82
			[1.12]		[0.45]
	1965	91.46	-0.28	127.70	-0.24
			[0.41]		[0.28]
H_0: Equal slopes (*p*-val)			**0.41**		**0.49**

IV Estimates for Non-AIDS Mortality, 1980-1999

	Non-AIDS-Related Causes	
Childhood Medicaid Eligibility:	White	Nonwhite
Ages 0-10	-15.5	-19.6
	[5.4]	[9.4]
Ages 11-18	-11.0	4.8
	[7.2]	[6.9]
H_0: 0-10 = 11-18 (*p*-val)	0.70	0.06
Mean Dependent Variable (deaths per 100,000)	3,090	5,600

$$DD^{ITT} \approx \delta(1+\sigma) \qquad \frac{\text{counterfactual mortality|Medicaid}}{\text{mortality|No Medicaid}} \qquad \frac{y^{treated}}{y^{untreated}} = (1+\sigma)(1+\delta m^{*})$$

ATET

IV Estimates for Non-AIDS Mortality, 1980-1999

	Non-AIDS-Related Causes	
Childhood Medicaid Eligibility:	White	Nonwhite
Ages 0-10	-15.5	-19.6
	[5.4]	[9.4]
Ages 11-18	-11.0	4.8
	[7.2]	[6.9]
H_0: 0-10 = 11-18 (p-val)	0.70	0.06
Mean Dependent Variable (deaths per 100,000)	3,090	5,600

White:

$$DD^{ITT} \approx \delta(1+\sigma)$$

$$1.55 = (1+\sigma)(1+\delta m^{*})$$

(NLMS)

IV Estimates for Non-AIDS Mortality, 1980-1999

	Non-AIDS-Related Causes	
Childhood Medicaid Eligibility:	White	Nonwhite
Ages 0-10	-15.5	-19.6
	[5.4]	[9.4]
Ages 11-18	-11.0	4.8
	[7.2]	[6.9]
H_0: 0-10 = 11-18 (*p*-val)	0.70	0.06
Mean Dependent Variable (deaths per 100,000)	3,090	5,600

White:

$$DD^{ITT} \approx \delta(1+\sigma)$$

$$1.55 = (1+\sigma)(1+\delta 2)$$

(NLMS) (PSID + AFDC spell data)

IV Estimates for Non-AIDS Mortality, 1980-1999

	Non-AIDS-Related Causes	
Childhood Medicaid Eligibility:	White	Nonwhite
Ages 0-10	-15.5	-19.6
	[5.4]	[9.4]
Ages 11-18	-11.0	4.8
	[7.2]	[6.9]
H_0: 0-10 = 11-18 (*p*-val)	0.70	0.06
Mean Dependent Variable (deaths per 100,000)	3,090	5,600

White:

$$-0.155 \approx \delta(1+\sigma)$$

(IV ITT)

$$1.55 = (1+\sigma)(1+\delta 2)$$

(NLMS) (PSID + AFDC spell data)

IV Estimates for Non-AIDS Mortality, 1980-1999

	Non-AIDS-Related Causes	
Childhood Medicaid Eligibility:	White	Nonwhite
Ages 0-10	-15.5	-19.6
	[5.4]	[9.4]
Ages 11-18	-11.0	4.8
	[7.2]	[6.9]
H_0: 0-10 = 11-18 (*p*-val)	0.70	0.06
Mean Dependent Variable (deaths per 100,000)	3,090	5,600

White:

$-0.155 \approx \delta(1+\sigma)$

(IV ITT)

$\Rightarrow \delta^W = -0.08$

$1.55 = (1+\sigma)(1+\delta 2)$

(NLMS)

(PSID + AFDC spell data)

IV Estimates for Non-AIDS Mortality, 1980-1999

	Non-AIDS-Related Causes	
Childhood Medicaid Eligibility:	White	Nonwhite
Ages 0-10	-15.5	-19.6
	[5.4]	[9.4]
Ages 11-18	-11.0	4.8
	[7.2]	[6.9]
H_0: 0-10 = 11-18 (*p*-val)	0.70	0.06
Mean Dependent Variable (deaths per 100,000)	3,090	5,600

White:

$-0.155 \approx \delta(1+\sigma)$ (IV ITT)

$\Rightarrow \delta^W = -0.08$

$1.55 = (1+\sigma)(1+\delta 2)$ (NLMS) (PSID + AFDC spell data)

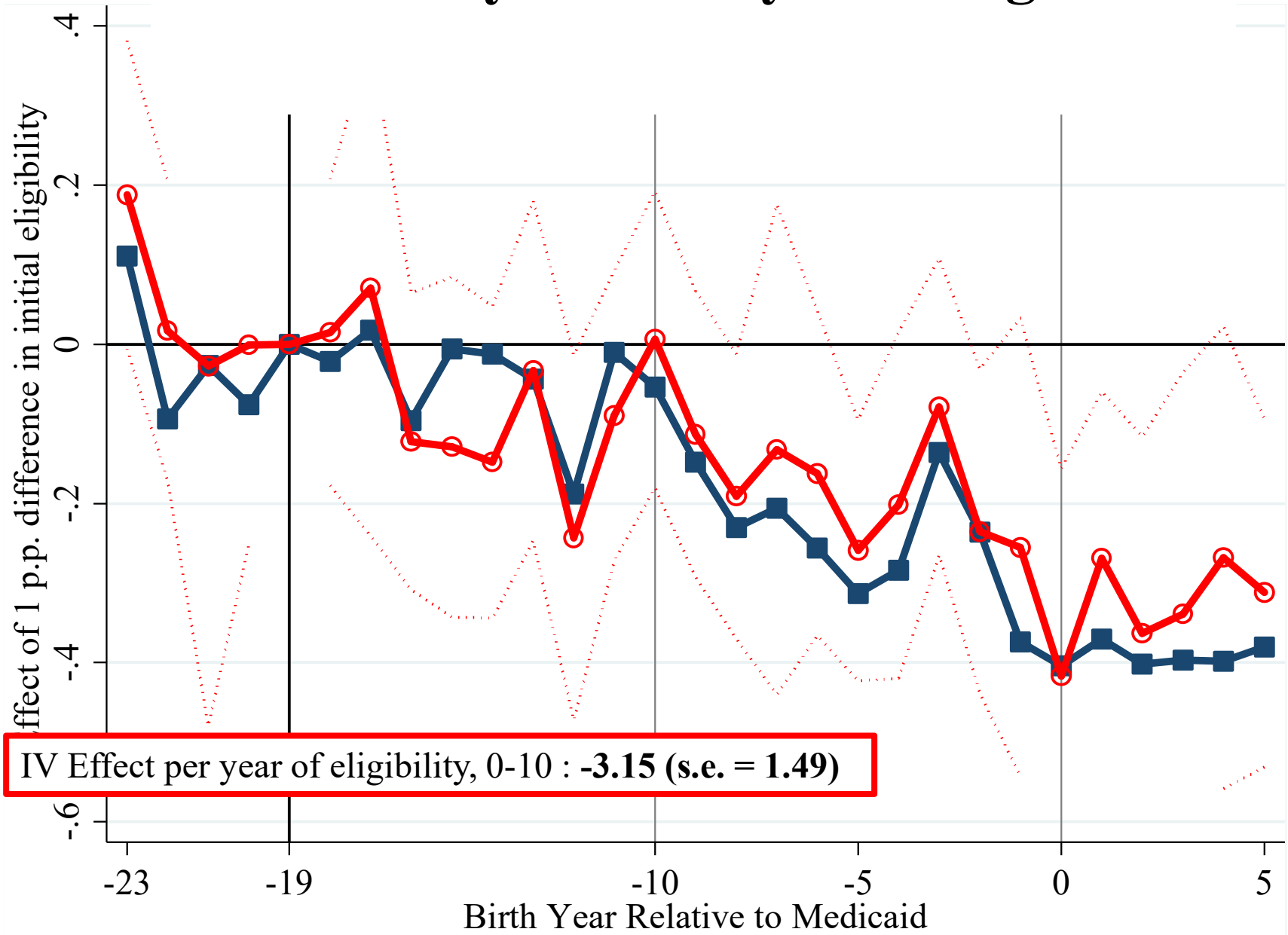
Nonwhite:

$-0.196 \approx \delta(1+\sigma)$ (IV ITT)

$\Rightarrow \delta^{NW} = -0.09$

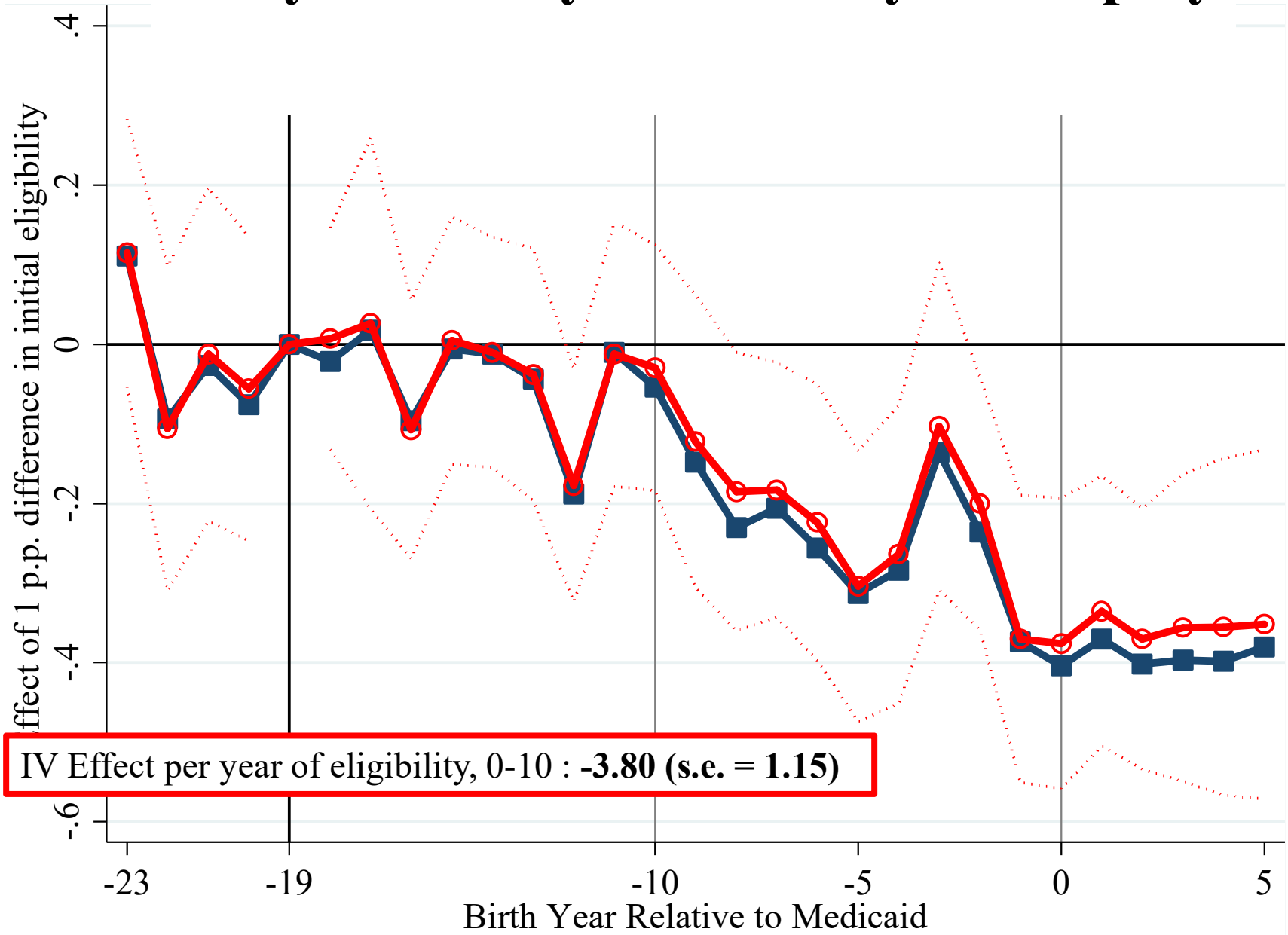
$1.19 = (1+\sigma)(1+\delta 3.33)$ (NLMS) (PSID + AFDC spell data)

Ambulatory Difficulty: Unweighted



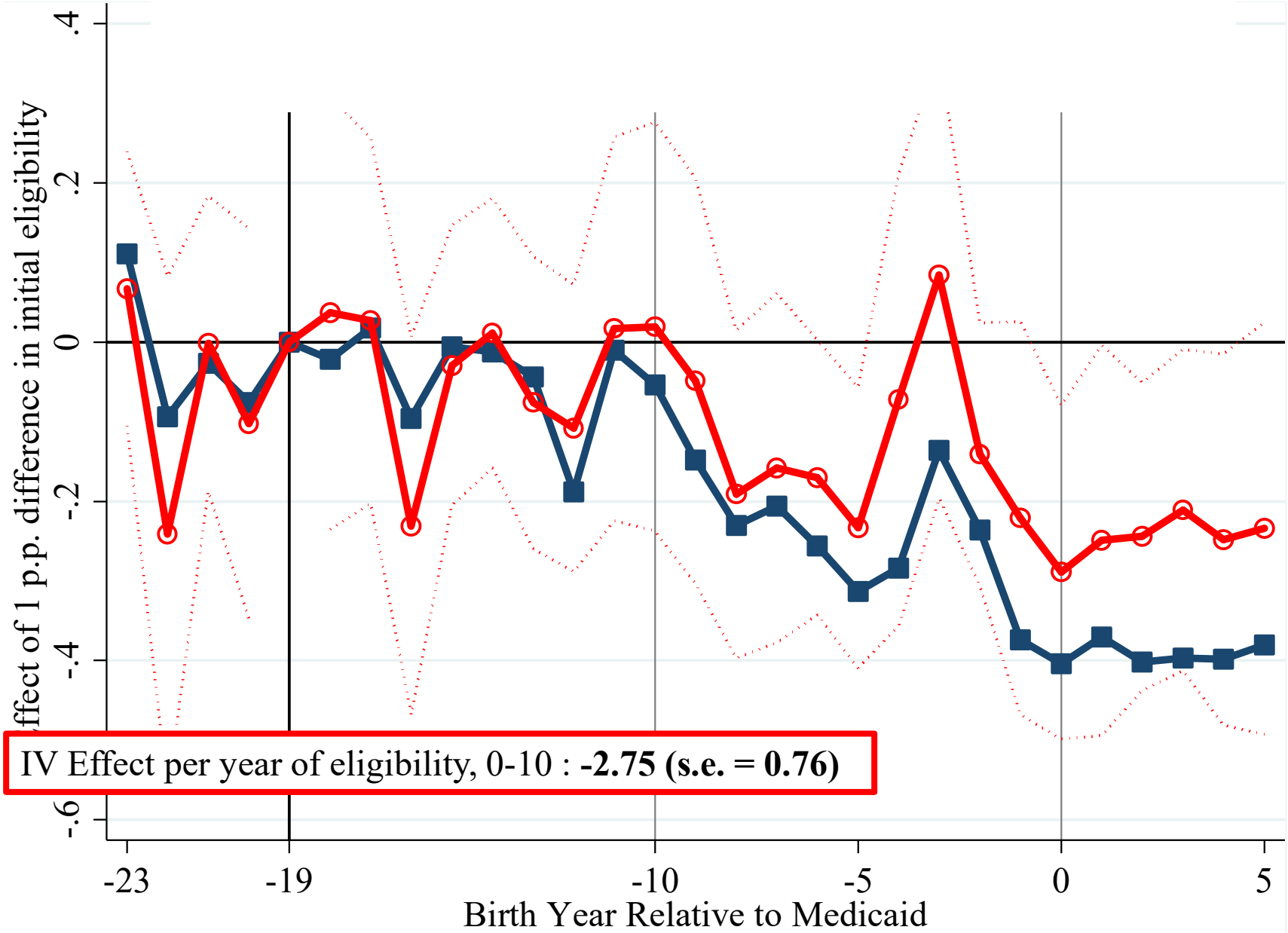
Notes: State/cohort means from 2000 Census and 2001-2007 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Coefficients are multiplied by 100. "Does this person have any of the following long-lasting conditions: ...A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting, or carrying?"

Ambulatory Difficulty: Cohort-by-Unemployment



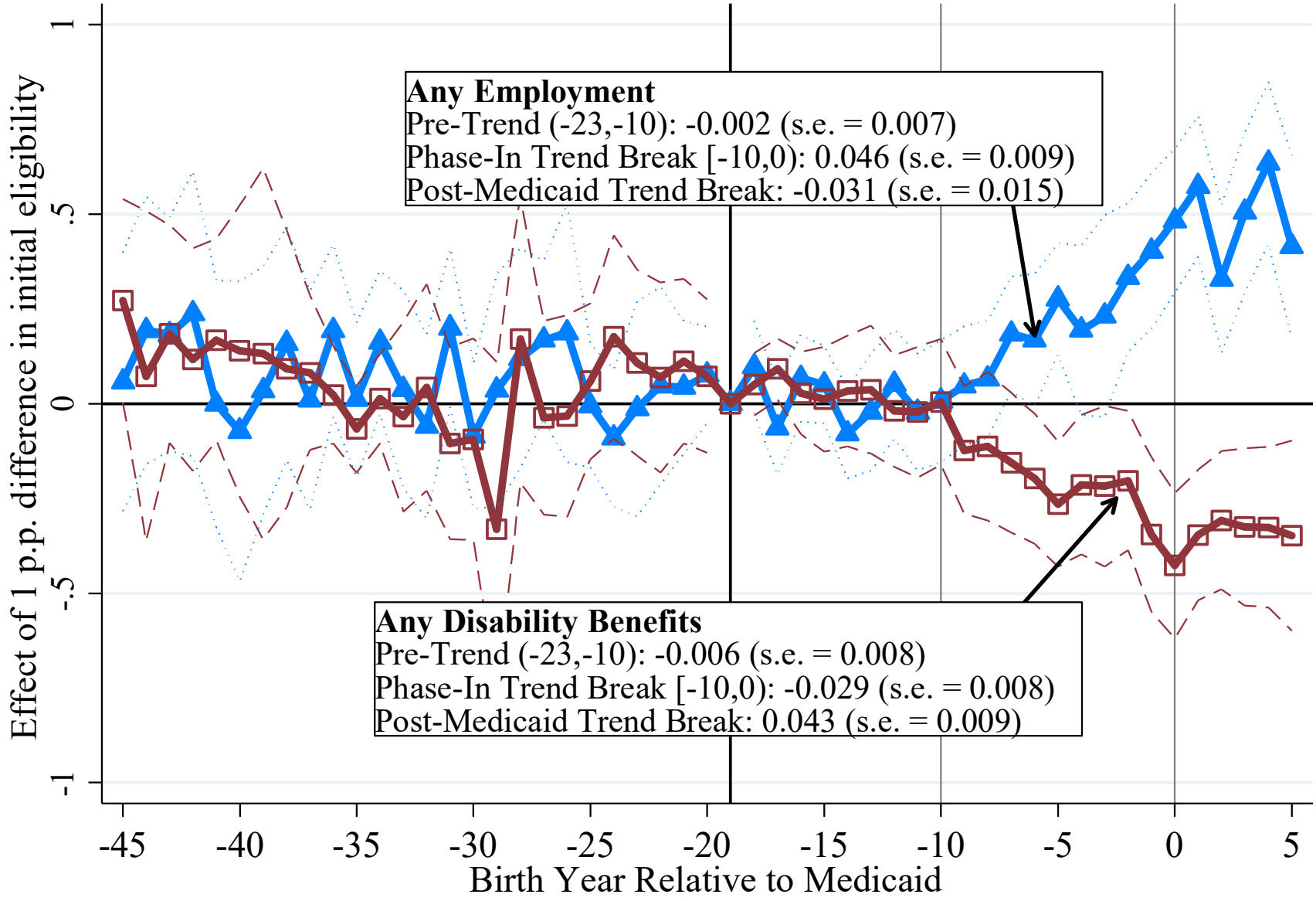
Notes: State/cohort/state-of-residence means from 2000 Census and 2001-2007 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Coefficients are multiplied by 100. "Does this person have any of the following long-lasting conditions: ...A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting,

Ambulatory Difficulty: Cohort-by-State-of-Residence



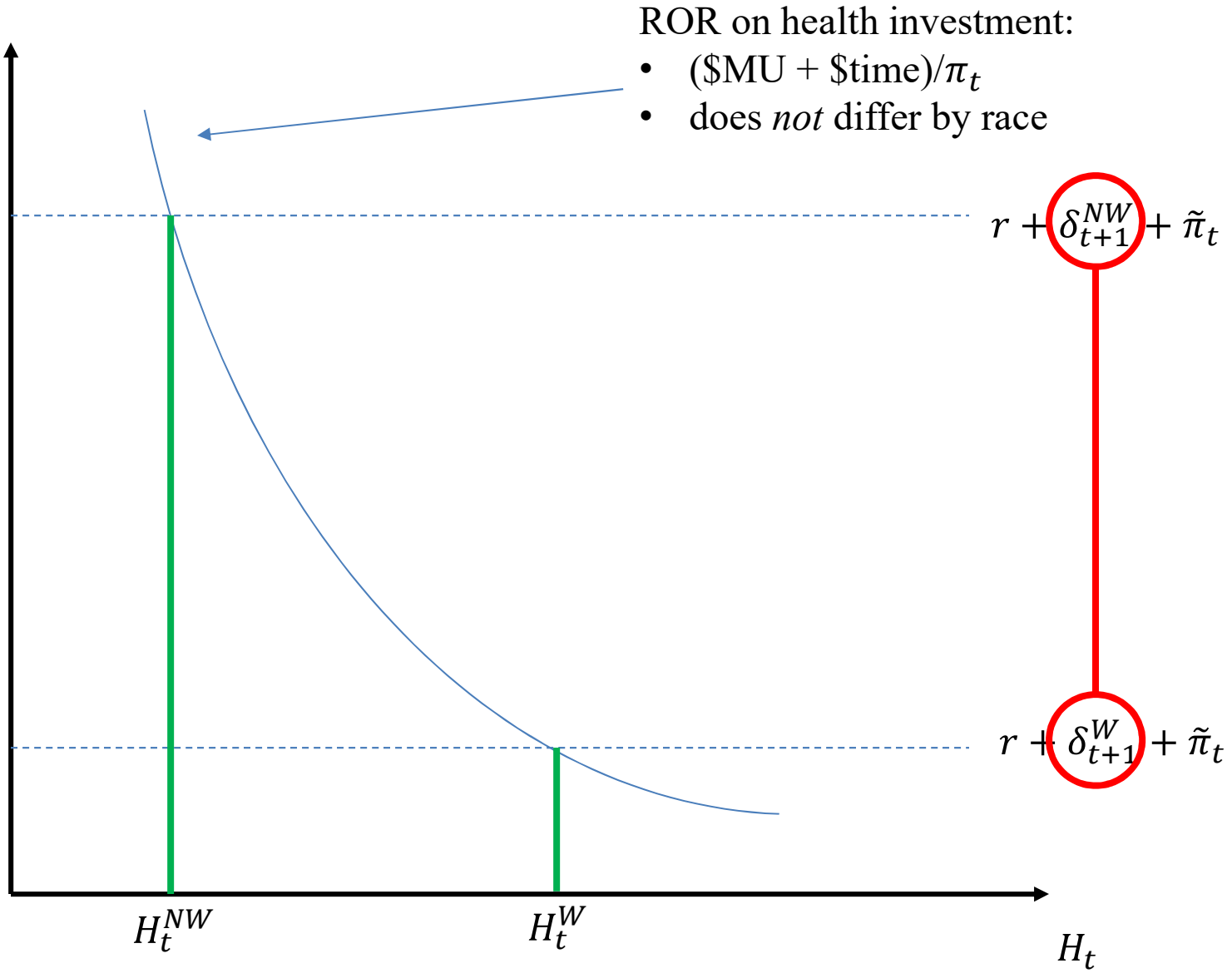
Notes: State/cohort/state-of-residence means from 2000 Census and 2001-2007 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Coefficients are multiplied by 100. "Does this person have any of the following long-lasting conditions: ...A condition that substantially limits one or more basic physical activities such as walking, climbing stairs, reaching, lifting,

Event-Study Estimates for Employment and Any Cash Benefits, Whites, Extended Sample

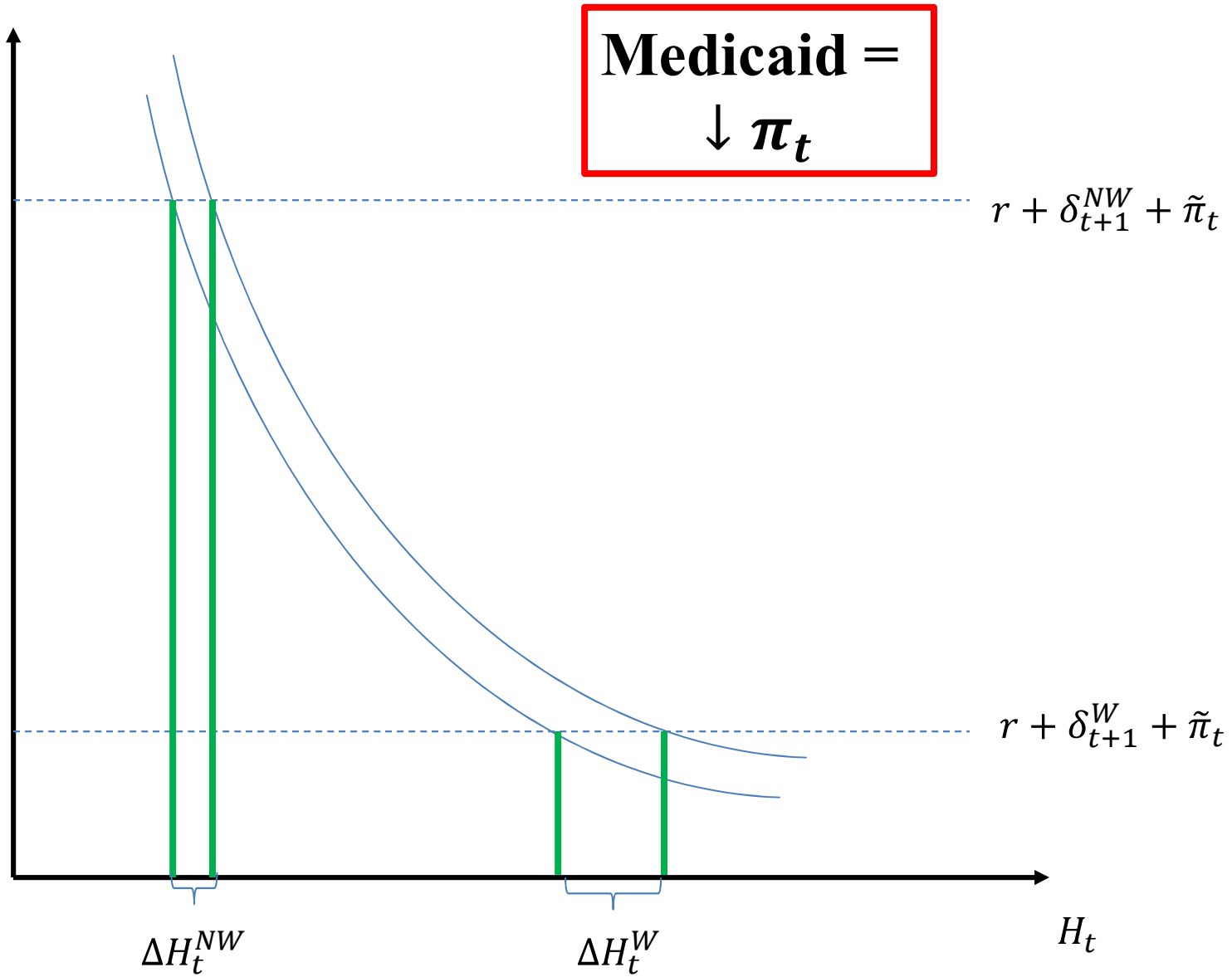


Notes: State/cohort means from 1980, 1990, 2000 Censuses and 2001-2014 ACS data. Each point is the interaction between initial AFDC-based Medicaid eligibility and an event-time indicator. Infant mortality, general fertility rate and per-capita income are omitted. IV estimates for eligibility under age 10 are 6.41 (s.e. = 1.22) for employment and -3.84 (s.e. = 0.97) for public assistance receipt.

Sketch of a Grossman Model Explanation



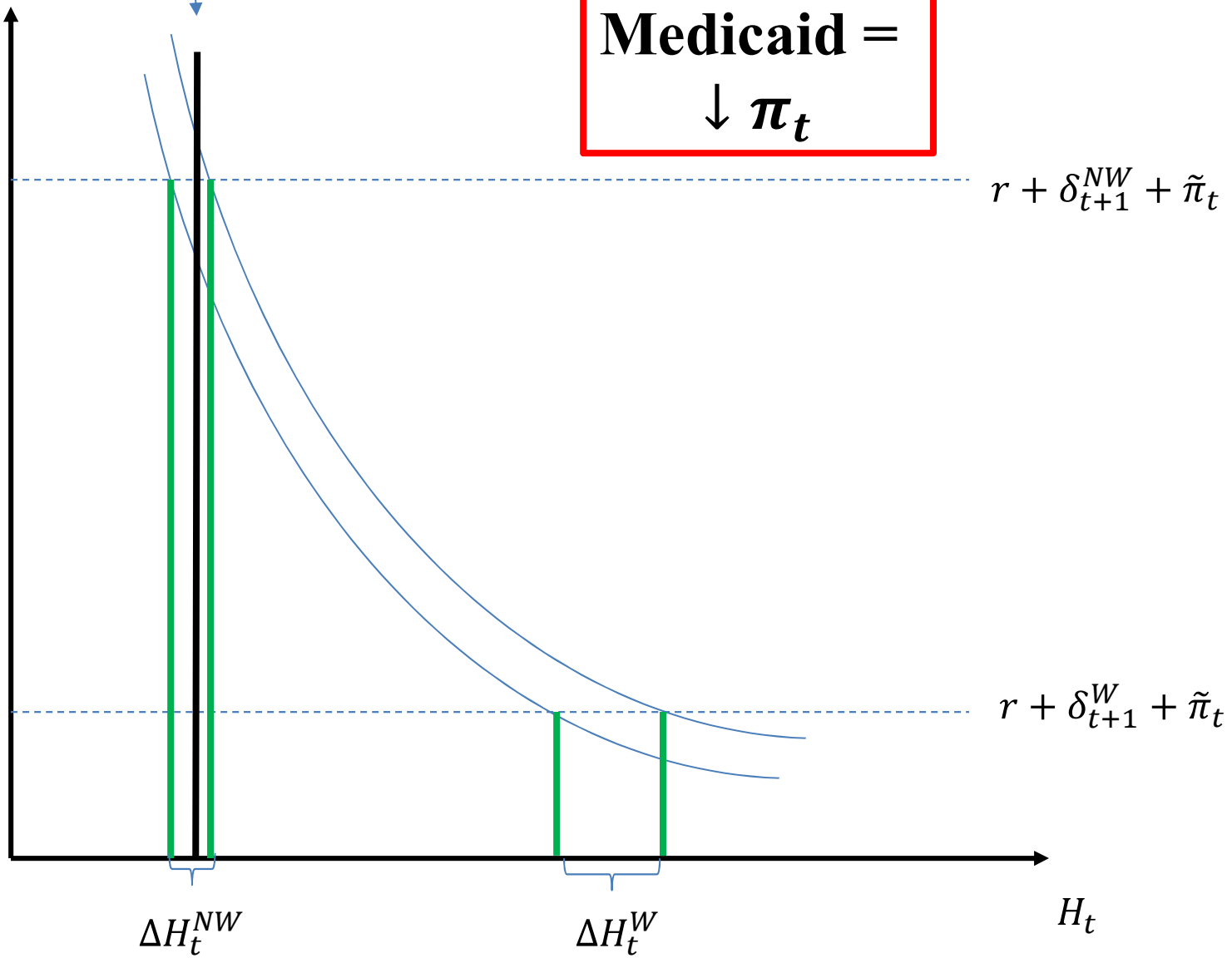
Sketch of a Grossman Model Explanation



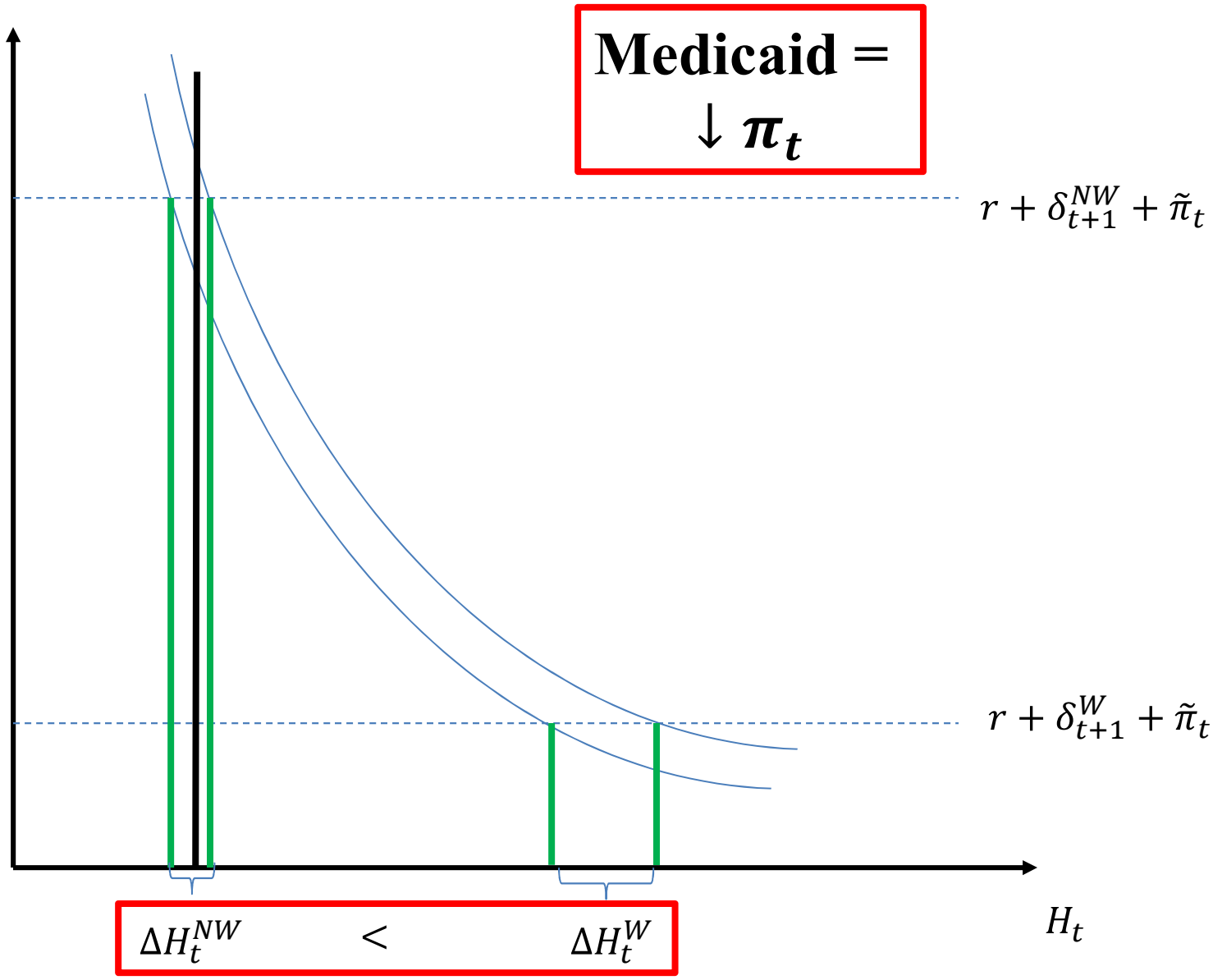
If this is H^{min}
→ Fewer NW deaths
→ No Δ in white deaths

Short Run

Medicaid = $\downarrow \boldsymbol{\pi_t}$



Long Run


Medicaid =
$\downarrow \boldsymbol{\pi_t}$
$r + \delta_{t+1}^{NW} + \tilde{\pi}_t$
$r + \delta_{t+1}^{W} + \tilde{\pi}_t$
H_t
ΔH_t^{NW} < ΔH_t^{W}