Long Run Puzzles in Head Start Research

Doug Miller

War on Poverty conference

Center for Poverty Research

UC Davis, January 10, 2014

Long run Head Start Puzzles: This talk

- Brief history of Head Start, and history of related research debates
- What we know, and why we know so little, about long run impacts
- Advertisement / preview of ongoing work here at UC Davis

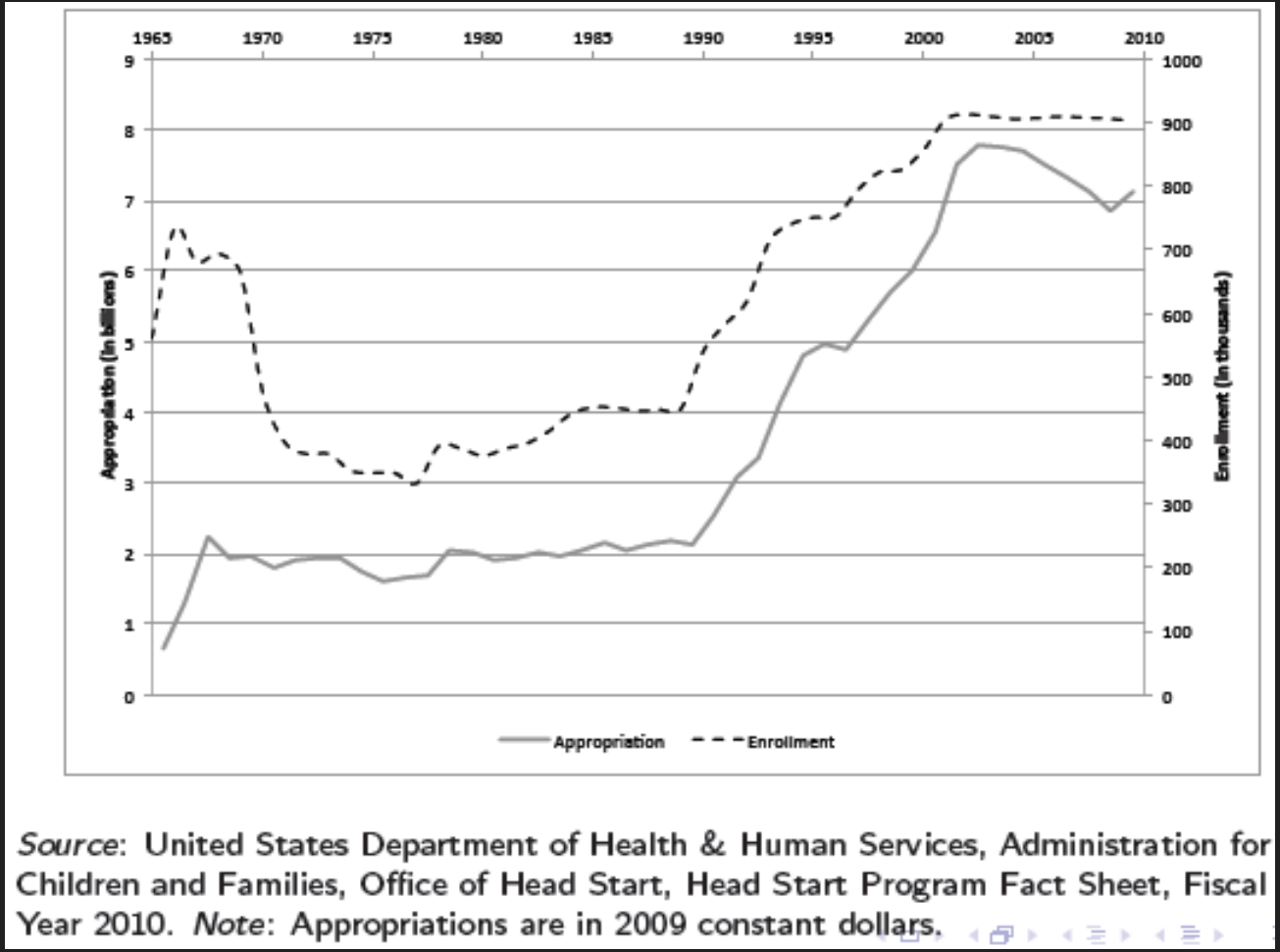
Long run Head Start Puzzles: History

- We all know and love Head Start
- Not part of LBJ's war on poverty speech!
- Housed in Office of Economic Opportunity
- Serendipitous alignment of:
  - Excess CAP funds in first year – bad local politics – led to targeting children
  - Personal history (Eunice Kennedy Shriver, Rosemary Kennedy, president's panel on mental retardation)
  - Legislative (Republican) & Administrative (HEW, Office of Ed) competition
- "Project Rush-Rush" (eg, $180/kid)
- Local (not state!) agencies applied directly to OEO

Long run Head Start Puzzles: History

- 1965-1972: wild West (wild South?)
- 1973-1988: relative stability
- 1989-2001: massive expansion
- 2002-2010: relative stability

- 1965-today
  - Perceived success!



Source: United States Department of Health & Human Services, Administration for Children and Families, Office of Head Start, Head Start Program Fact Sheet, Fiscal Year 2010. *Note*: Appropriations are in 2009 constant dollars.

Head Start's attraction: Fairness and Efficiency

- Fairness: What a great target demographic!

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Head Start's attraction: Fairness and Efficiency

- Efficiency: long-run impacts from investment in early childhood.
- "Neuroplasticity"; "Dynamic complementarities in learning"
- Ludwig & Phillips 2008: "The best available evidence suggests that Head Start probably passes a benefit–cost test."

Long run Head Start Puzzles, part 1: Recurring debates 1965-2014

1. Does it work? And the question of “fade out” …
2. More vs. Less
3. And if more, “quantity” vs. “quality”
4. Academic vs “Whole Child”

Long run Head Start Puzzles, part 2: What is the long-run impact?

- This is the key question. But it's hard!
- Short-run impact is hard to measure
  - Perennial challenge of identifying causal effects from nonexperimental settings:
    - Those who don't sign up for HS are bad comparisons to those who do

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Short-run impact is hard to measure
- Economists' approach: quasi-experiments
- Many of the confounding variables are correlated with "demand for Head Start," so …
- Identify a "supply shock"
  - Ideally one that's not correlated with other determinants of long-run outcomes

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Short-run impact is hard to measure
- Long-run impact is even harder!
  - Same problems as SR. AND …
  - Difficult to find data that links “LR outcomes” to “Head Start Exposure”
  - … and also enables quasi-experimental variation!
- Also, “external validity” issues
  - Any valid estimate speaks only to
    - The (population / program / alternatives) of the time

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Ideal situation
  - Identify LR impact from earlier cohorts
    - AND impacts on SR outcomes for those cohorts
    - Like “Intermediate Clinical Endpoints” and “Ultimate Clinical Endpoints” in medicine
  - Find stable relationship between SR and LR outcomes
  - Examine SR outcomes in today’s cohorts

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Two types of “best available” direct measures of LR impacts:

- Within-family sibling comparisons
  - Currie & Thomas (1995, NLSY)
    - Deming (2009)
  - Garces, Thomas, & Currie (2002, PSID)

- Early implementation grant-writing assistance
  - Ludwig & Miller (2007)

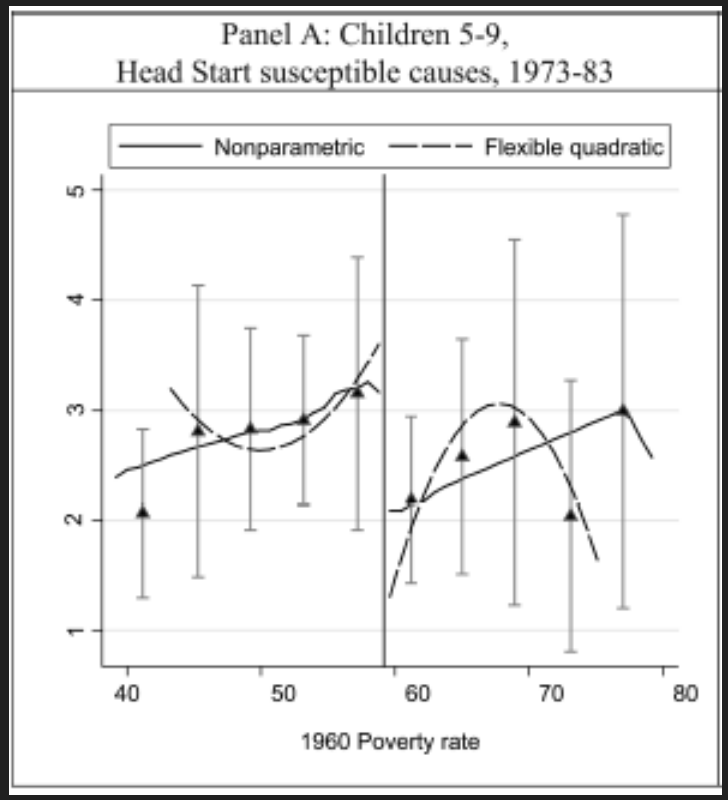
Long run Head Start Puzzles, part 2: What is the long-run impact?

- Garces, Thomas, & Currie (2002)

	ALL	AFRICAN-AMERICAN	WHITE
High School Grad	0.037	-0.025	**0.203****
	(0.053)	(0.065)	**(0.098)**
Some college	0.092	0.023	**0.281****
	(0.056)	(0.066)	**(0.108)**
Booked/Charged w/ Crime	-0.053	**-0.116****	0.122
	(0.039)	**(0.045)**	(0.077)
N	1,742	706	1,036

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Ludwig & Miller (2007): discontinuity in grant writing assistance for Head Start.
  - (+) schooling attainment ~ one half year
  - (+) attending some college ~ 15% of the control mean.
  - (-) child mortality



Long run Head Start Puzzles, part 2: What is the long-run impact?

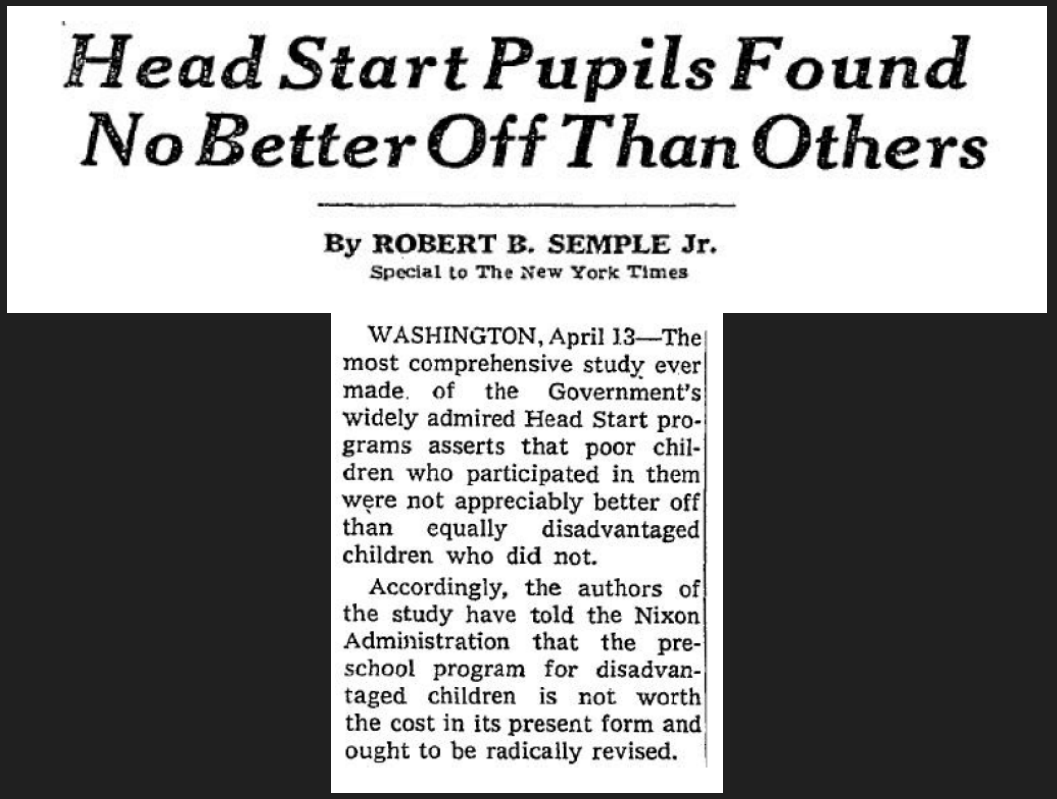
- Promising, in-progress: Johnson (2013)
  - PSID geo-coded to county-year funding data
  - Panel FE design
  - Beneficial impacts on Schooling, Wages, Incarceration, Health

- The Optimistic take on LR impacts
  - Johnson (2013): “Estimated long-term benefits for previous cohorts … From 3 separate research designs, three independent datasets (sibling difference, regression discontinuity, diff-in-diff)”

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Is there a consensus? No!
- NYT, Page A1, April 14, 1969

- Test score fade out, Westinghouse report, 1969.



Head Start Pupils Found No Better Off Than Others

By ROBERT B. SEMPLE Jr.
Special to The New York Times

WASHINGTON, April 13—The most comprehensive study ever made of the Government's widely admired Head Start programs asserts that poor children who participated in them were not appreciably better off than equally disadvantaged children who did not.

Accordingly, the authors of the study have told the Nixon Administration that the preschool program for disadvantaged children is not worth the cost in its present form and ought to be radically revised.

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Is there a consensus? No!
- Joe Klein, Time Magazine, July 2011

- Test score fade out, NHSIS, 2010.
- Randomized intervention = "gold standard"

TIME TO AX PUBLIC PROGRAMS THAT DON'T YIELD RESULTS

"…finally there is indisputable evidence about the program's effectiveness, provided by the Department of Health and Human Services: Head Start simply does not work."

"[Continued funding is] criminal, every bit as outrageous as tax breaks for oil companies."

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Optimism: LR impacts
- Pessimism: test score fade out
- Optimism rejoinder 1: There was “fade out” for cohorts w/ LR impacts!
  - Deming (2009)
  - Ludwig & Miller, Garces Thomas & Currie, Westinghouse
  - Also, Perry Preschool
  - Also, Tennessee STAR
- Optimism rejoinder 2: cognitive scores (1-2 years out) wrong “intermediate clinical endpoint”
  - Some positive impacts w/in NHSIS
    - Parent involvement (Gelber & Isen 2013)
    - Subgroup (lower tail) impacts, non-cognitive skills (Bitler et al 2013)

Long run Head Start Puzzles, part 2: What is the long-run impact?

- (1) Optimism; (2) Pessimism; (3) Optimism rejoinders
- (4) Pessimism rejoinder 1:
  - NHSIS measured non-cognitive scores (zero effects)
  - Is this a fishing expedition? We know what we **want** to find!

- Pessimism rejoinder 2: the LR evidence is not bullet proof

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Re-assessing the LR evidence: Ludwig-Miller (2007)
- Educational gains?
  - Marginal statistical significance.
  - E.g. NELS, Yrs Schooling, +0.58, (T* = 1.55)
  - E.g. Census, HS Grad, +0.03, (p value = 0.032)
  - Concerns about migration

- Health gains?
  - “HS susceptible causes” = Anemias, Meningitis, Respiratory
  - Small fraction of mortality then; much smaller now.

Long run Head Start Puzzles, part 2: What is the long-run impact?

- Re-assessing the LR evidence: Garces Thomas Currie (2002)
- Well-known concerns about “sibling comparison” strategies
  - Why did one child get exposure, the other did not?
  - Back to problems w/ non-experimental research designs

- Our replication & extension of G-T-C indicates:
  - Sibling comparison estimates in PSID only suggestive, not definitive.

PSID sibling comparison analysis

- Following G-T-C (2002), we re-construct PSID sample
- Looks good for Means and (full sample) sample size, and “observational” regression.
- Then we re-estimate “sibling comparison” regression …

PSID sibling comparison analysis Sibling comparison sample, mother FE estimates

		GTC (2002)				UC Davis Econ (2014)	
	ALL	AFRICAN-AMERICAN	WHITE		ALL	AFRICAN-AMERICAN	WHITE
High School Grad	0.037	-0.025	**0.203****		0.050	-0.025	0.140
	(0.053)	(0.065)	**(0.098)**		(0.054)	(0.057)	(0.088)
Some college	0.092	0.023	**0.281****		0.097	-0.008	**0.230****
	(0.056)	(0.066)	**(0.108)**		(0.059)	(0.054)	**(0.098)**
Booked/Charged w/ Crime	-0.053	**-0.116****	0.122		0.052	-0.050	**0.230***
	(0.039)	**(0.045)**	(0.077)		(0.036)	(0.042)	**(0.13)**
N	1,742	706	1,036		1,554	627	924

PSID sibling comparison analysis Sibling comparison sample, mother FE estimates

- Investigating the discrepancies, we learned:
  - Smaller “N” than you might think!

- Eg., African-American sibling sample, N = 627
  - 94% of which are in families with no Head Start switching
  - About 50 children in “Head Start switching” families ..
  - … of whom, about 13 kids booked/charged with a crime.

PSID sibling comparison analysis
Sibling comparison sample, mother FE estimates

- Next, we expand the sample
  - Later cohorts
  - Older siblings
  - More than 3x sample size

- Also, we examine longer-run outcomes (through mid-40's)

PSID sibling comparison analysis Sibling comparison sample, mother FE estimates

		UCD Original Sample				UCD Expanded Sample	
	ALL	AFRICAN-AMERICAN	WHITE		ALL	AFRICAN-AMERICAN	WHITE
High School Grad	0.050	-0.025	0.140		0.011	-0.016	0.034
	(0.054)	(0.057)	(0.088)		(0.025)	(0.028)	(0.043)
Some college	0.097	-0.008	**0.230****		**0.065****	-0.025	**0.161*****
	(0.059)	(0.054)	**(0.098)**		**(0.032)**	(0.031)	**(0.057)**
Booked/Charged w/ Crime	0.052	-0.050	**0.230***		0.010	-0.038	0.068
	(0.036)	(0.042)	**(0.13)**		(0.029)	(0.024)	(0.055)
N	1,554	627	924		5,341	2,347	2,988

PSID sibling comparison analysis Sibling comparison sample, mother FE estimates

- Also, we examine longer-run outcomes (through mid-40's)
- No impacts for:
  - Cigarettes, drinks, SRHS, BMI, food stamps, TANF, ln(earnings), Employment, Unemployment

Long run Head Start Puzzles, part 2: What is the long-run impact?

- (1) Optimism; (2) Pessimism; (3) Optimism rejoinders; (4) Pessimism rejoinders

- Reminder of the Ideal situation:
  - LR impact from earlier cohorts
    - AND SR outcomes for those cohorts
  - Stable relationship between SR and LR
  - SR outcomes today

- We are a long way off!

Long run Head Start Puzzles: This talk

- Brief history of Head Start, and history of related research debates
- What we know, and why we know so little, about long run impacts
- Advertisement / preview of ongoing work here at UC Davis

Preliminary Results EULA

- I acknowledge that the following results are based on extremely preliminary data analysis.
- I expect that with further data and analysis work by the researchers, they will change.
- I will not take these too seriously – they are intended as “proof of concept”
- I may need to accept cookies to view these results.
  - (The type you eat)

New work in progress: Three projects in search of titles

1. “Untitled project: Head Start long run impact, PSID analysis”
2. “Untitled project: Head Start funding data, county-year and state-year panels”
3. “Untitled project: Head Start long run impact, rapid growth in funding during the 1990s”

Joint work with: Ariel Marek, Esra Kose, Michel Grosz, Na’ama Shenhav, Natalie Ho

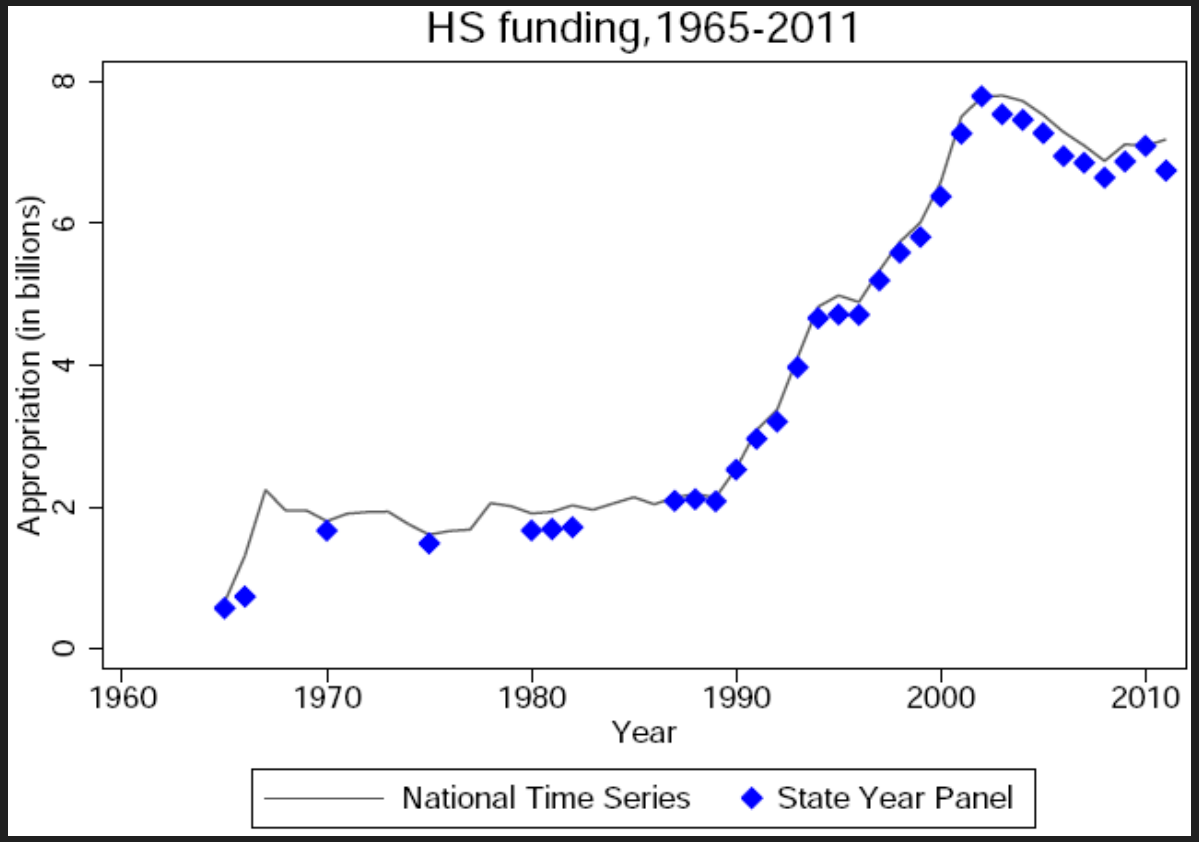
2: “Untitled project: Head Start funding data, state-year and county-year panels”

State-Year Panel

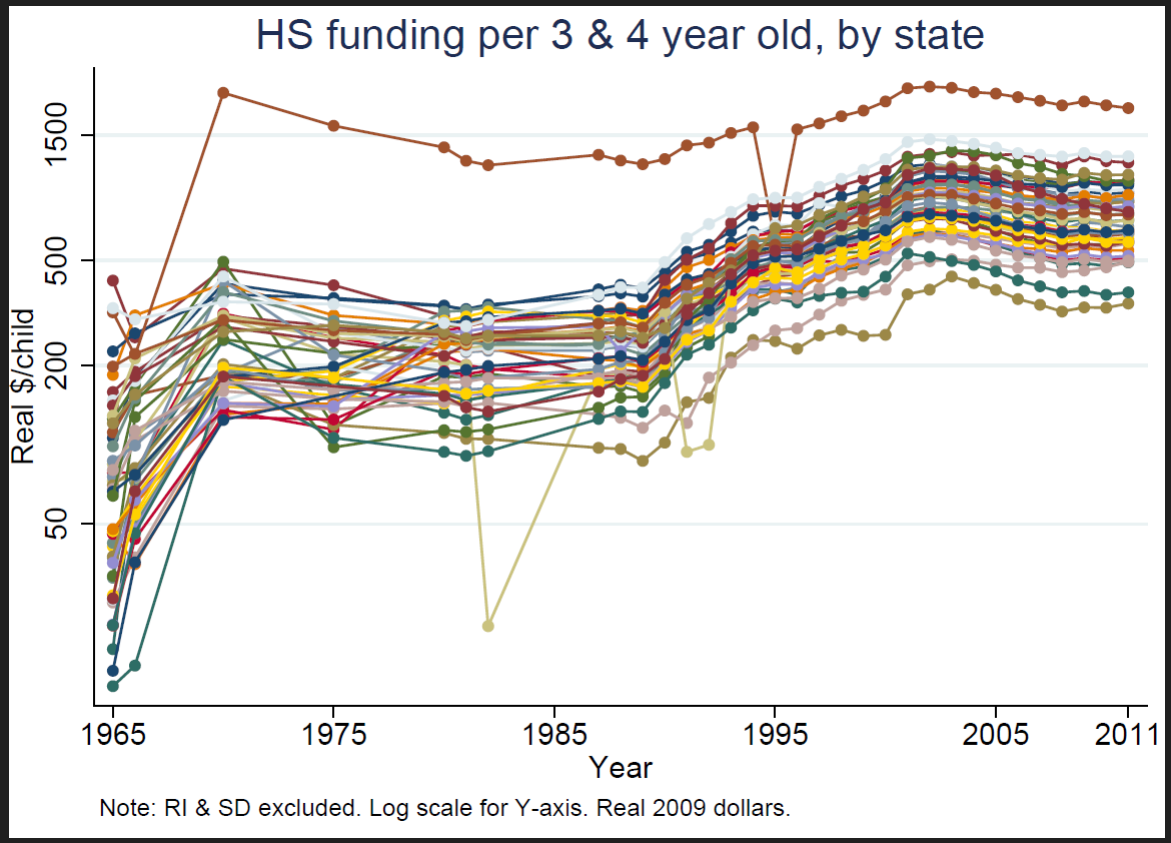
- Many sources of secondary data
  - OEO reports
  - Head Start Statistical Fact Sheets
  - NCES digest
  - Congressional Research Service Report
  - GPO Budget reports
- Funding and (sometimes) enrollment
- Used in two ways
  - Can validate later county-year panel
  - Direct source of information on Head Start exposure
- Also: population (3-4) and child poverty estimates

State-Year Panel

We have many years, but not all!



State-Year Panel



County-Year Panel

- Community Action Program funding data (1965-1968)
- Federal Outlay System Files (1968-1980)
- These provide information on funding at the Program-County-year level.

County-Year Panel

- These data are very messy!
- And without decent documentation

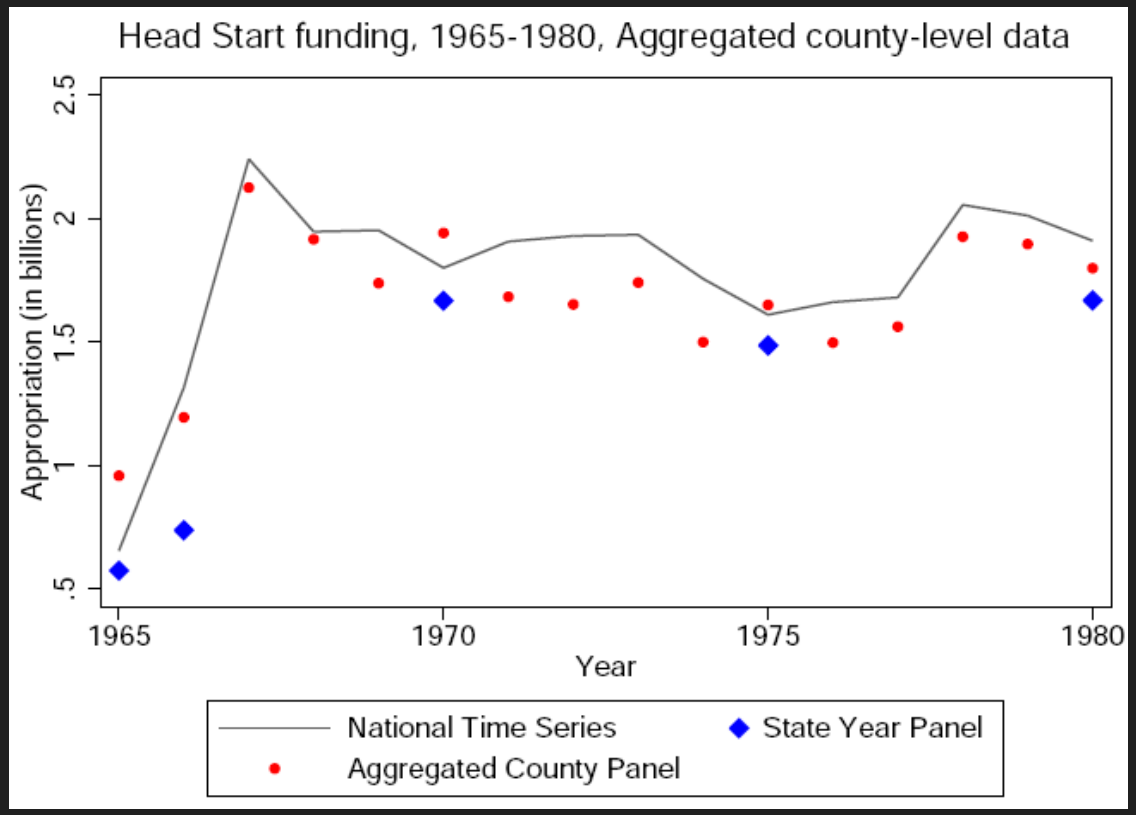
- Three examples:
  - “letters” instead of numbers in funding data.
  - Amite County, MS, 1974
  - New York and New Jersey, 1974

- Lots of cleaning work done so far
  - Lots more left to do

- So far, data quality is a “decent start”

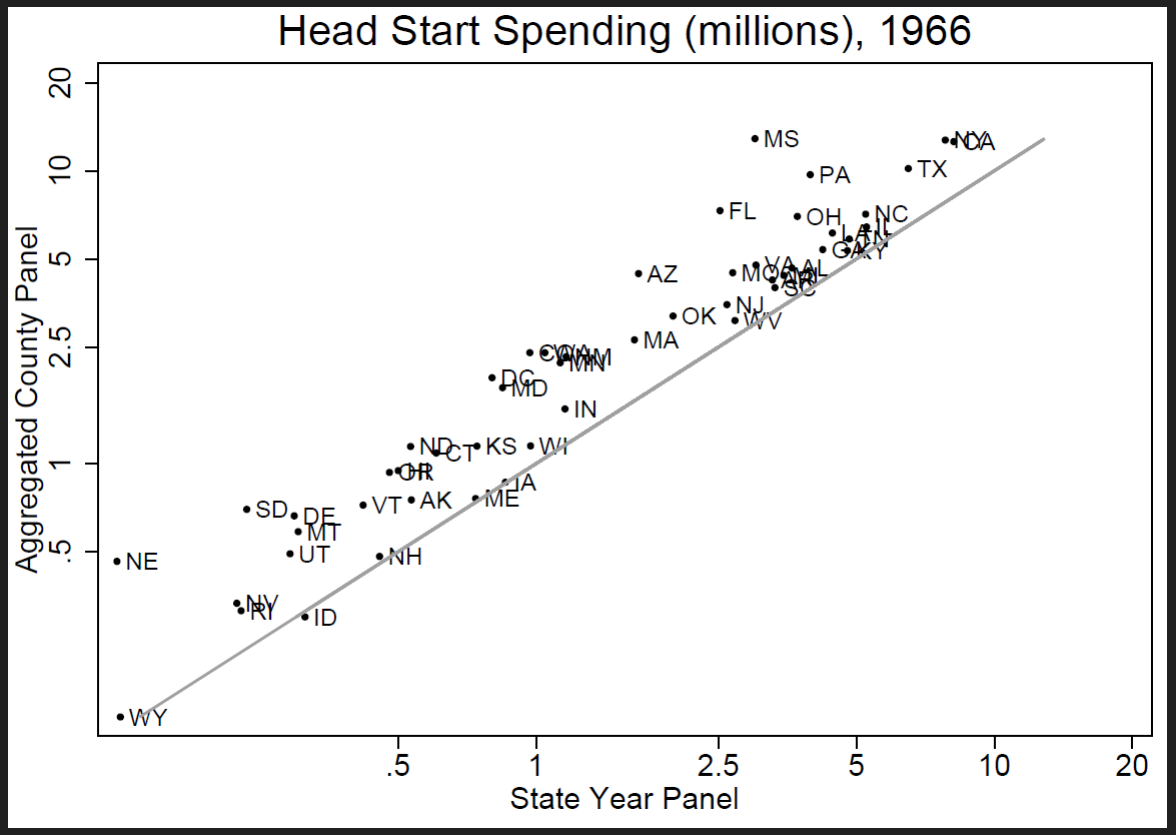
County-Year Panel

Time series comparing county data against state-year panel and national time series.



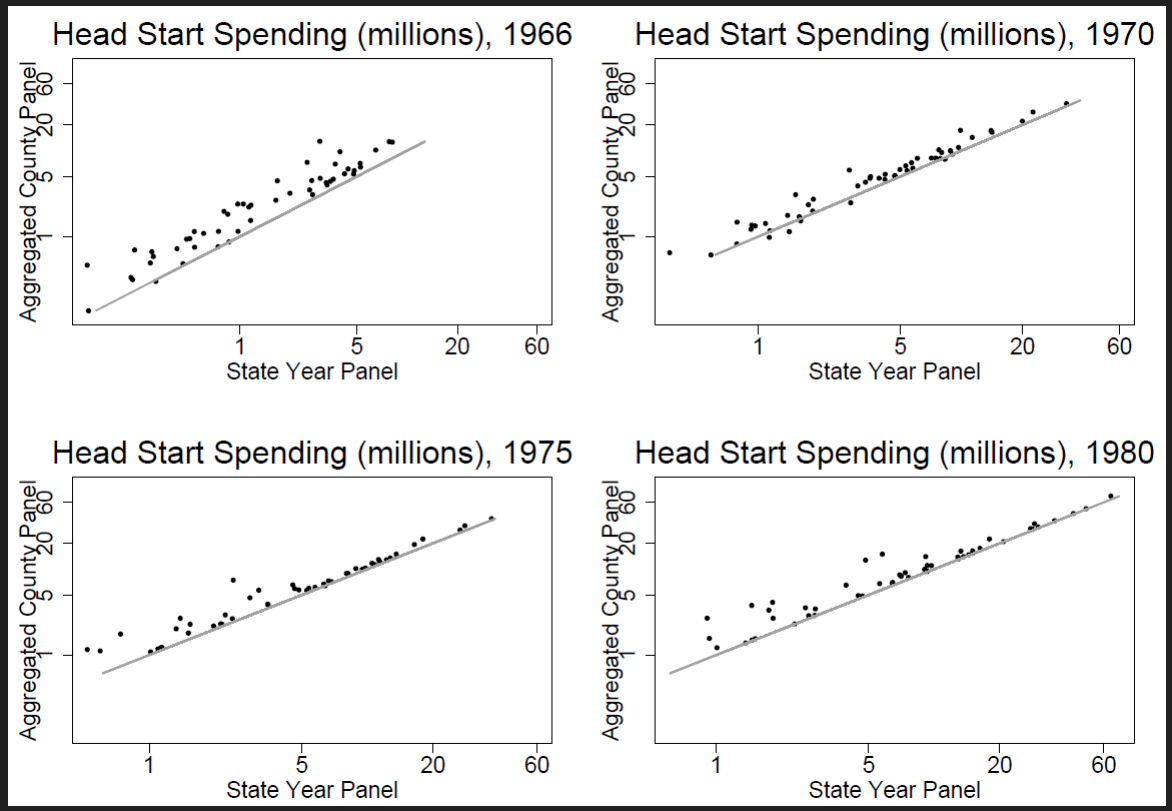
County-Year Panel

Cross section comparing county data against state-year panel. Log scale.

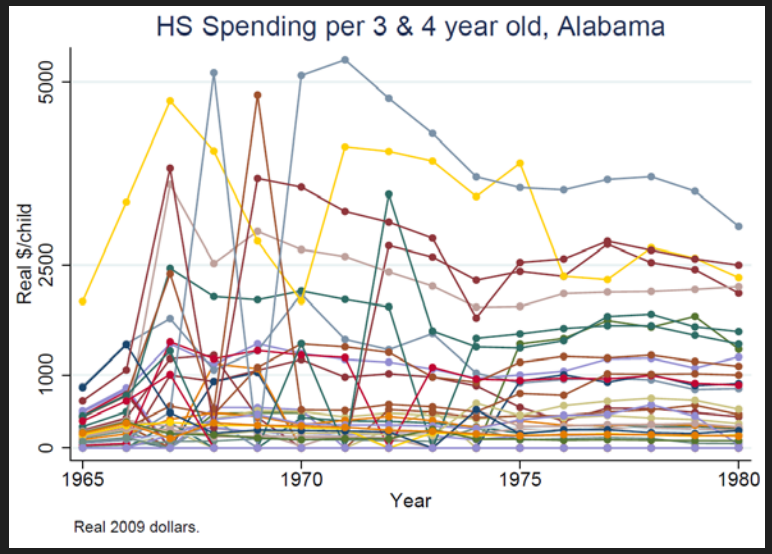


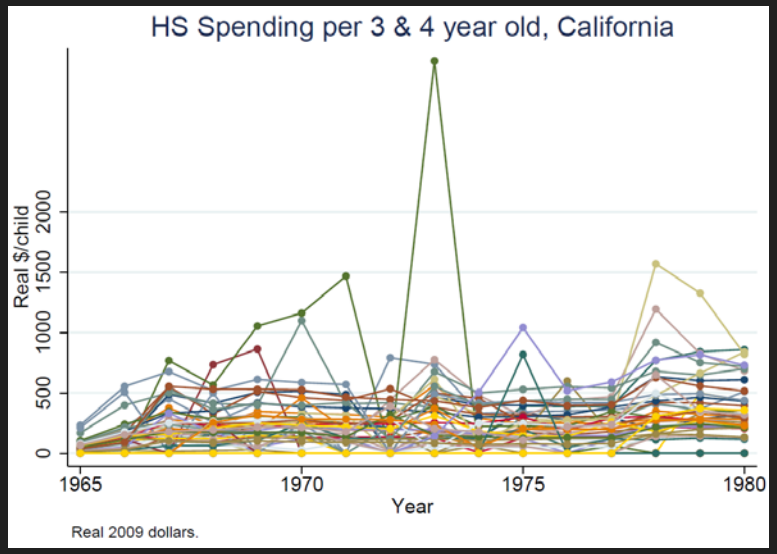
County-Year Panel

Cross sections comparing county data against state-year panel. Log scale.



County-Year Panel
What does the data look like?



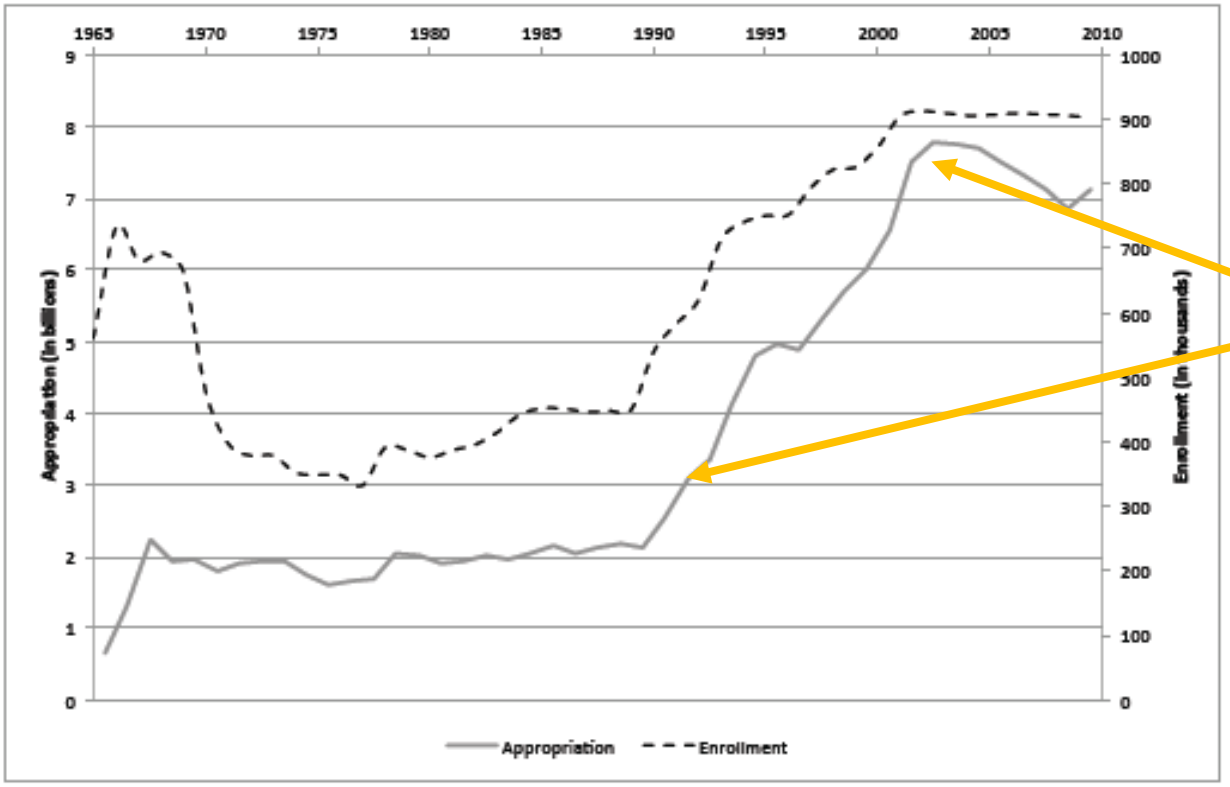


State-Year and County-Year Panels Lessons learned

- These data have potential, but require deep attention to cleaning.
- Difficult to even know what to check against
- I would welcome leads and suggestions

3: “Untitled project: Head Start long run impact, rapid growth in funding during the 1990s”

Growth in HS funding 1990-2001

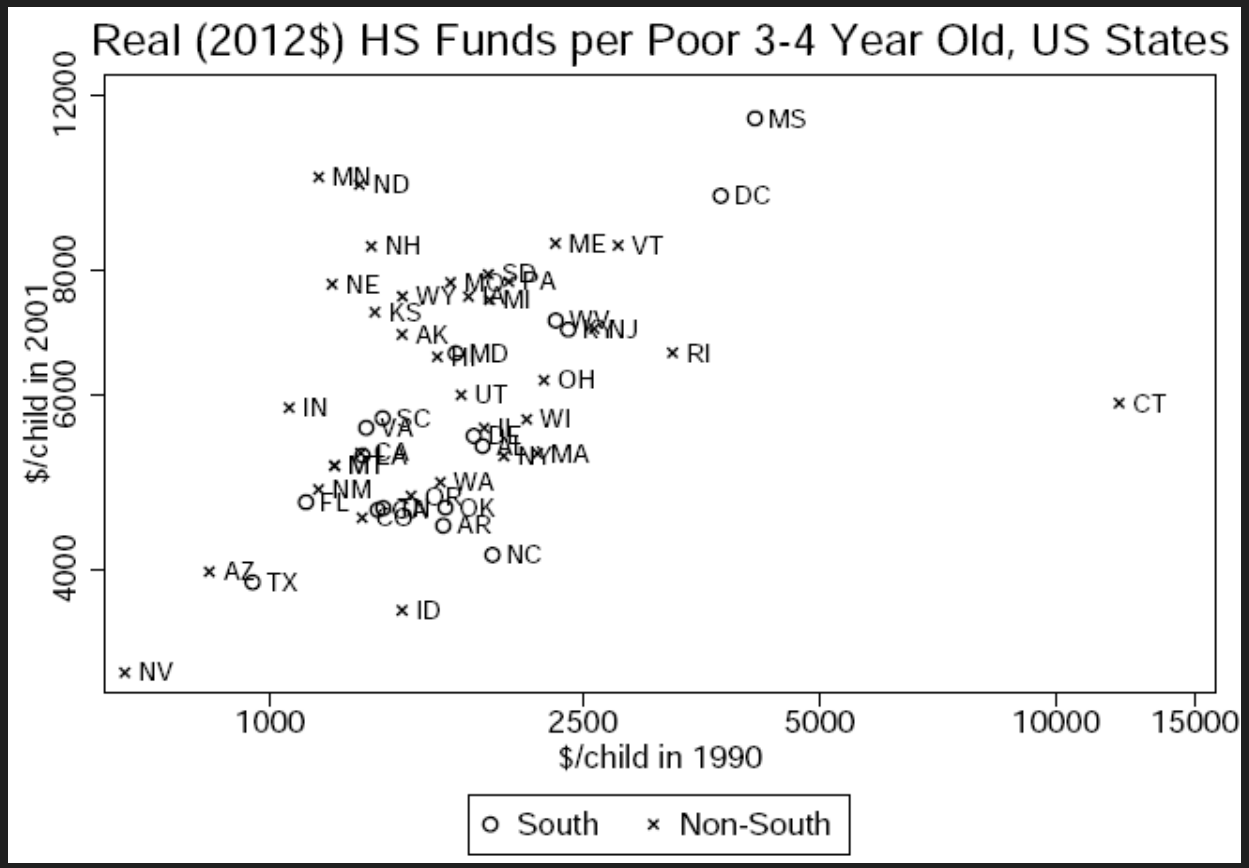


Big ramp up in 1990s!

Source: United States Department of Health & Human Services, Administration for Children and Families, Office of Head Start, Head Start Program Fact Sheet, Fiscal Year 2010. *Note*: Appropriations are in 2009 constant dollars.

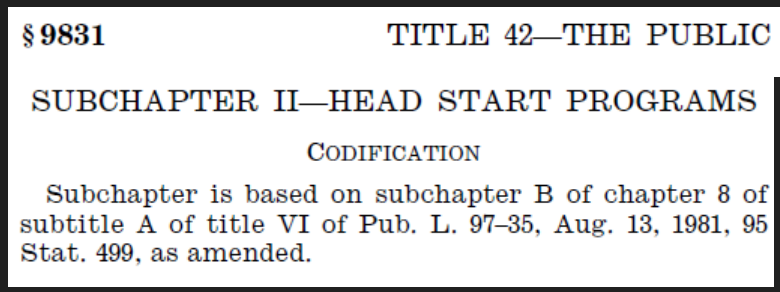
Growth in HS funding 1990-2001

- Big!
- Equalizing across states
- Not uniform across states
- Left great amounts of variation
- HS $ per poor 3-4 year old:



Growth in HS funding 1990-2001

- What is behind variation in HS growth? One potential answer: legislative language.
- We are collecting this for Head Start's history. Example, USC 42, 1994:

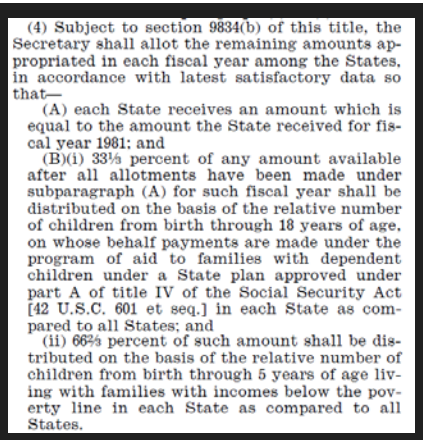


§ 9831 TITLE 42—THE PUBLIC HEALTH AND WELFARE Page 4866

SUBCHAPTER II—HEAD START PROGRAMS

CODIFICATION

Subchapter is based on subchapter B of chapter 8 of subtitle A of title VI of Pub. L. 97–35, Aug. 13, 1981, 95 Stat. 499, as amended.



(4) Subject to section 9834(b) of this title, the Secretary shall allot the remaining amounts appropriated in each fiscal year among the States, in accordance with latest satisfactory data so that—

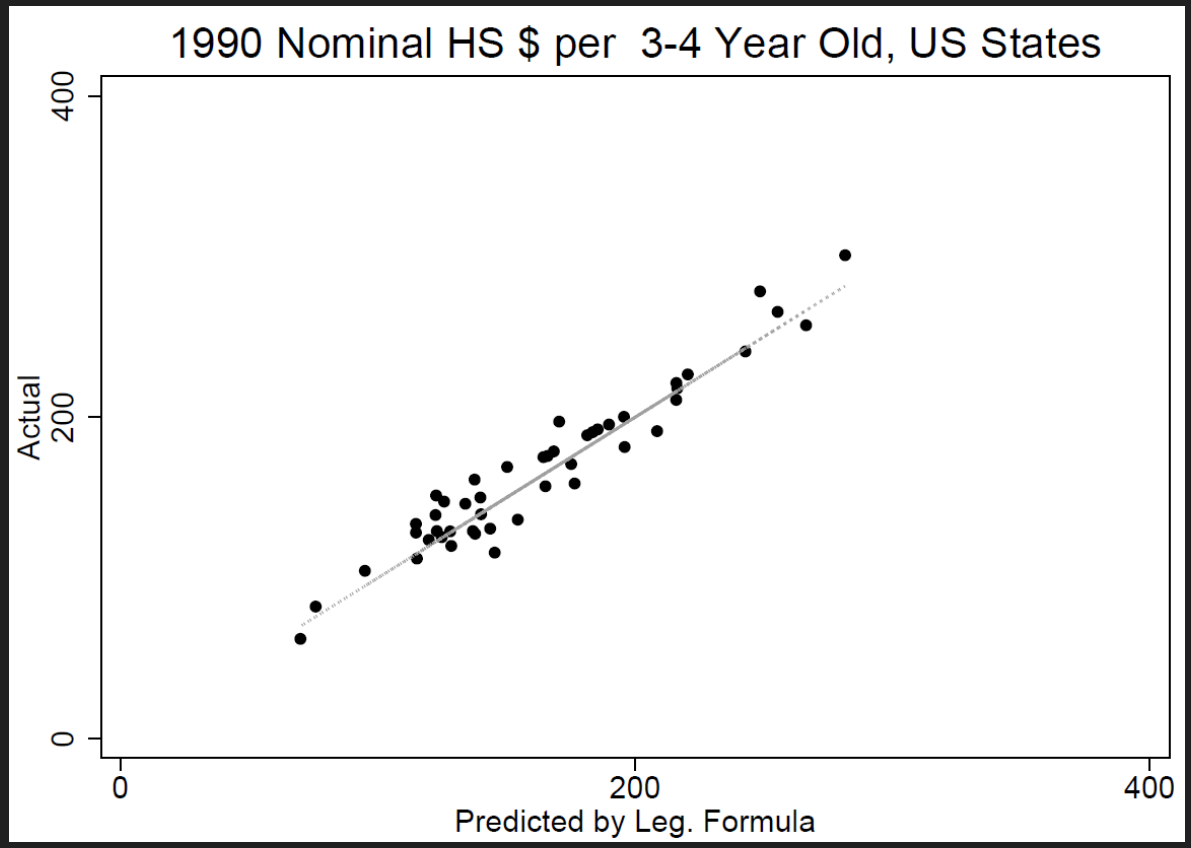
(A) each State receives an amount which is equal to the amount the State received for fiscal year 1981; and

(B)(i) 33⅓ percent of any amount available after all allotments have been made under subparagraph (A) for such fiscal year shall be distributed on the basis of the relative number of children from birth through 18 years of age, on whose behalf payments are made under the program of aid to families with dependent children under a State plan approved under part A of title IV of the Social Security Act [42 U.S.C. 601 et seq.] in each State as compared to all States; and

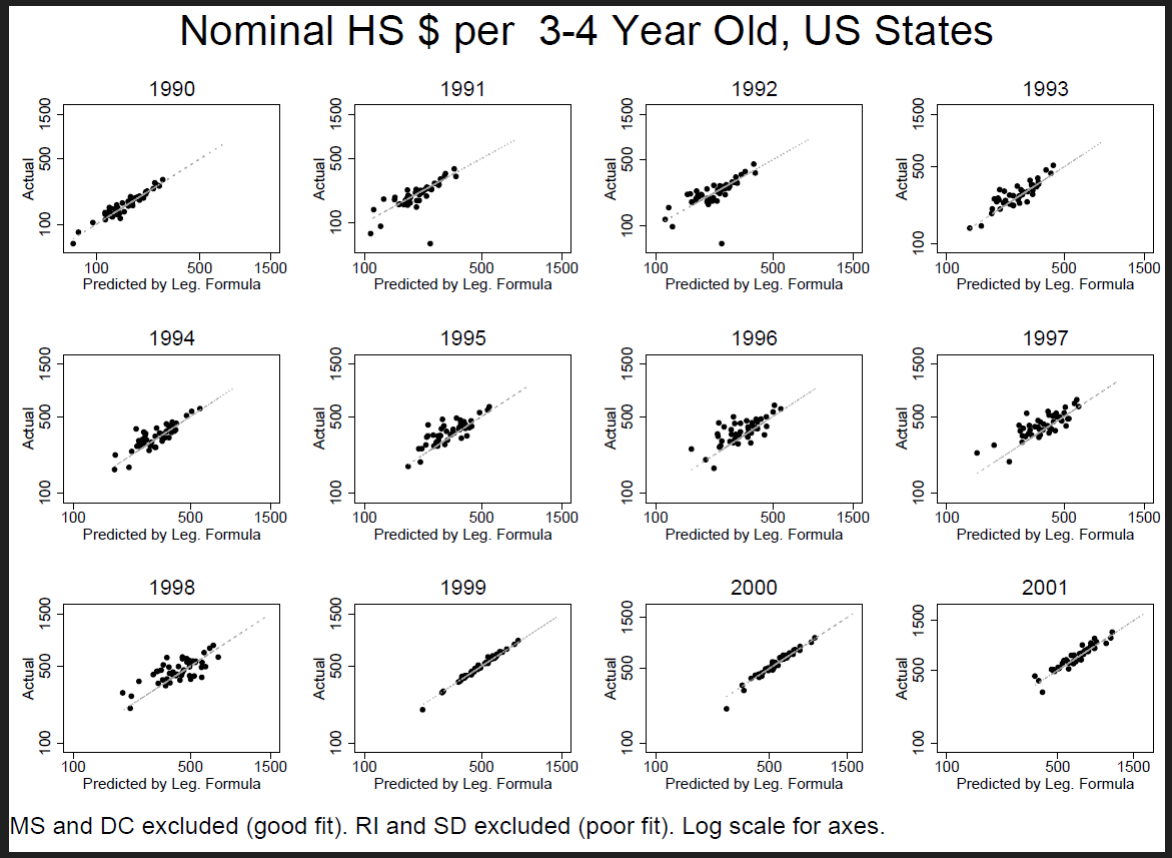
(ii) 66⅔ percent of such amount shall be distributed on the basis of the relative number of children from birth through 5 years of age living with families with incomes below the poverty line in each State as compared to all States.

1. Set asides
2. Each state gets its 1981 $$
3. Of the excess …
    1. 1/3 based on 0-18 AFDC caseload
    2. 2/3 based on 0-5 kids poverty

Growth in HS funding 1990-2001
Legislated formula and actual HS $



Growth in HS funding 1990-2001
Legislated formula and actual HS $



MS and DC excluded (good fit). RI and SD excluded (poor fit). Log scale for axes.

Growth in HS funding 1990-2001

Percent Change in Real HS Funding per 3-4 Year Old, 1990-2001

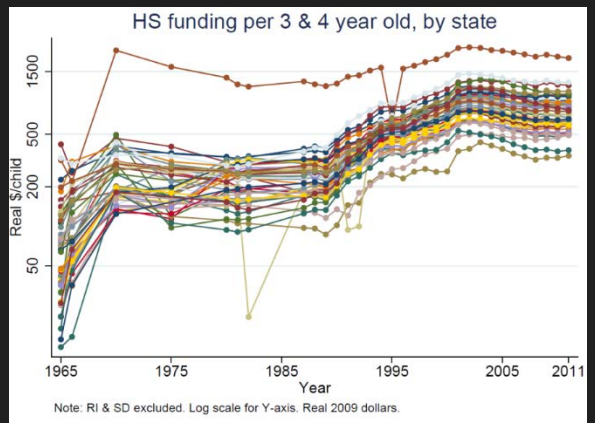
	(1)	(2)	(3)
Predicted growth in real funding	1.005***	1.056***	0.982***
	(0.121)	(0.0688)	(0.0762)
Change in ln 3-4 pop		-16.16***	-17.08***
		(4.548)	(4.332)
Change in fraction kids AFDC/TANF		0.0111	0.0578
		(0.224)	(0.231)
Change in fraction 0-5 poor		-0.402***	
		(0.132)	
Fraction 0-5 poor, 1989			0.370
			(0.717)
Constant	2.831	-6.810	5.158
	(22.81)	(16.74)	(23.31)
Adjusted R-Squared	0.803	0.893	0.872
N	51	51	51

Notes: * p < .10, ** p < .05, *** p < .01. Robust SE. Unweighted.

Growth in HS funding 1990-2001

- The promise of this research design: we only need to know state and cohort in order to get "treatment intensity"
  - Many available datasets
  - Many outcomes – including "intermediate clinical endpoints"
  - Migration less of a concern

- This design extends naturally to periods outside of "the ramp up"



Long run Head Start Puzzles: Conclusion

- We all know and love Head Start
- But we don’t know as much as we should
- Stay tuned …