

# Investing in infants: the lasting effects of cash transfers to new families

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# ECD Long-run effects

- Much affirmative evidence of health and education (in-kind) interventions.
  - Food stamps are different from cash ([Hoynes, Schanzenbach, and Almond 2016; Bailey et al. 2023](#)).
  - Lottery cash distributions are given at older children, results are mixed ([Akee et al. 2010; Cesarini et al. 2016](#)).
- Cash intervention impacts are little known.

# Data

## IRS1040 data at U.S. Census

- Main tax form used to file a U.S. individual income tax return
- Every filer
- Years: 1979, 1984, 1989, 1994-95, 1998-2018
- Various incomes, dependents (Social Security Numbers)



# Data

## Social Security Administration Numident File

- Every person born after 1969
- Date of birth, sex, state of birth
  - Gives: Size of cash transfer in early childhood, family composition
- $\pm 1$  month of Jan 1, 1982, 1986, 1992



# Data

## North Carolina Education Data

- Students born in 1992-1999 (1993-98 recentred years)
- Birth dates, academic achievements, behavioral records, free and reduced-price lunch (FRL) eligibility
  - Income thresholds are similar between EITC and FRL
    - \$25,600 (FRL) vs. \$27,400 (EITC) in 2000
    - EITC eligible rate  $\simeq 75\%$  of all FRL eligible
- Born within \$\$0928 day windows of Jan 1 (excluding closest 8 days on both sides): 44,992 students

# Data

- IRS1040: Parent-dependents linkage
  - Child's incomes in 23-25, 26-28, 29-31, 32-34 (individual+spouse, 3-year averages)
- IRS1040+NumIdentFile: Date of birth of dependent → Pre-birth parental incomes → Pre-birth adjusted gross income (AGI) → EITC amount
- Use 1979 incomes (in 1980 tax record) to predict 1980 AGI
  - Pre-birth AGI for a Jan 1981 born child

# Data

- Predicted AGI using lagged incomes
  - Attenuation bias
  - Less concerns of endogeneity (parental ability correlates with AGI, chance of birth date selection)
- Create an index: Weighted normalised  $z$  scores or each outcome  $k$  =  $\sum_k w_k \frac{x_{k,treated} - \hat{\mu}_{x_{k,control}}}{\hat{\sigma}_{x_{k,control}}}$  (Kling, Liebman, and Katz 2007)  
$$\text{outcome } k = \sum_k w_k \frac{x_{k,treated} - \hat{\mu}_{x_{k,control}}}{\hat{\sigma}_{x_{k,control}}}$$

# Empirical strategy

Birthday RDD (Schulkind and Shapiro 2014)

- Dec 31: Eligible in +1 day
- Jan 1: Eligible in +1 year

# Empirical strategy

## Strength

- Pure cash transfer impacts, not “coupled with changes to work incentives”

## Concerns



# Empirical strategy

## Concerns

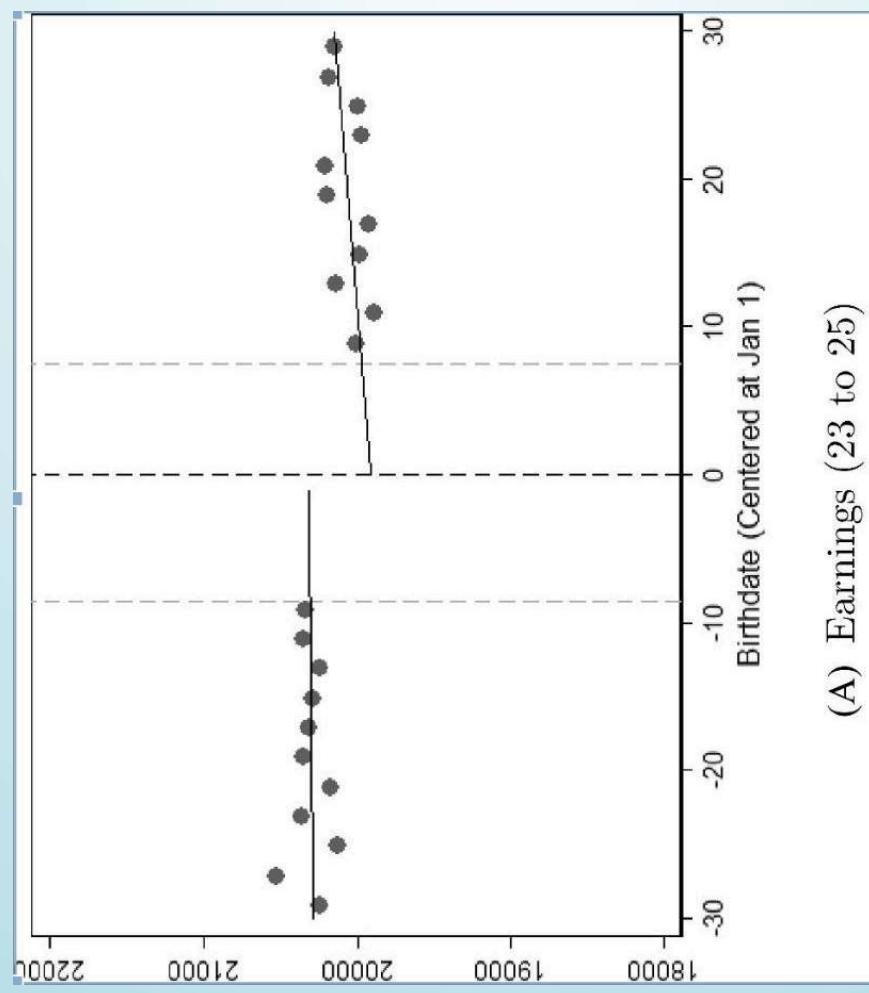
2. Discontinuity in other variables
  - School year begins near Jan 1 in some states, drop these states
  - Larger tax benefits in later years: Expect larger impacts in later years

# Empirical strategy

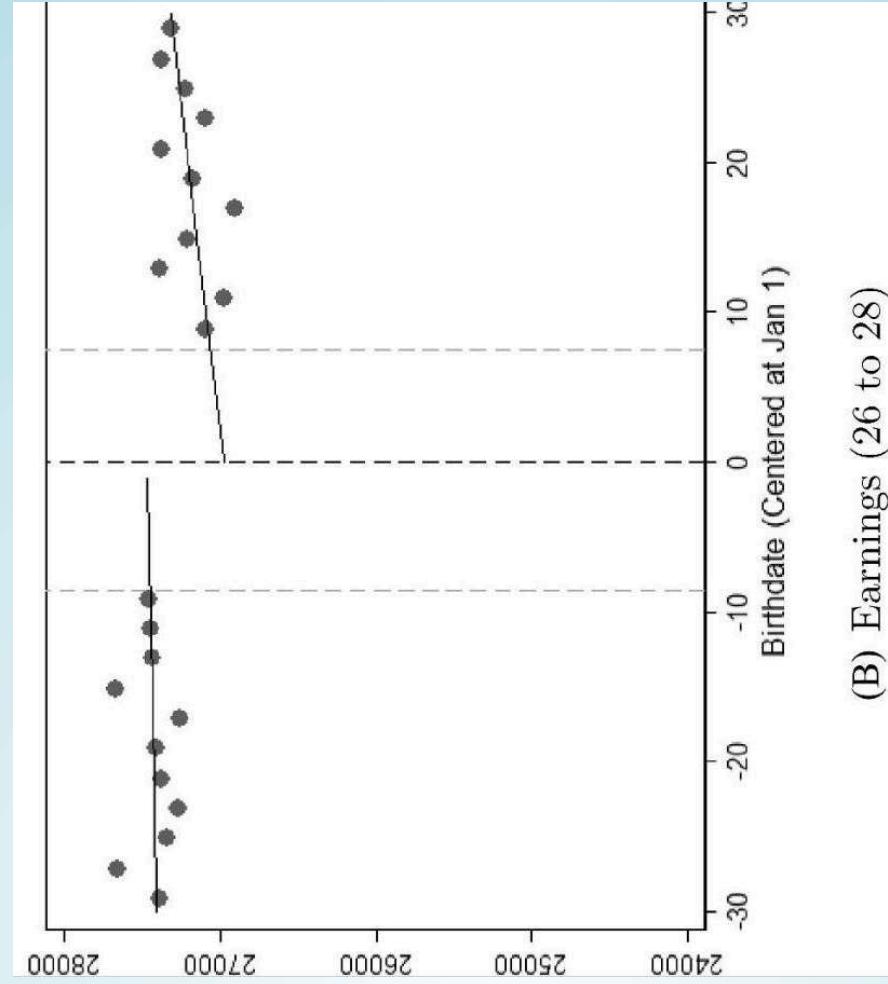
$$Y_{it} = \beta_0 + \beta_{11}[z_i < 0] + \beta_2 z_i + \beta_{31}[z_i < 0]z_i + \theta_t + \epsilon_{it}. \quad (2)$$

$z_i$	Days before Jan 1.
$\mathbf{1}[z_i < 0]$	Treatment assignment.
$\beta_1$	Main interest.

# Results



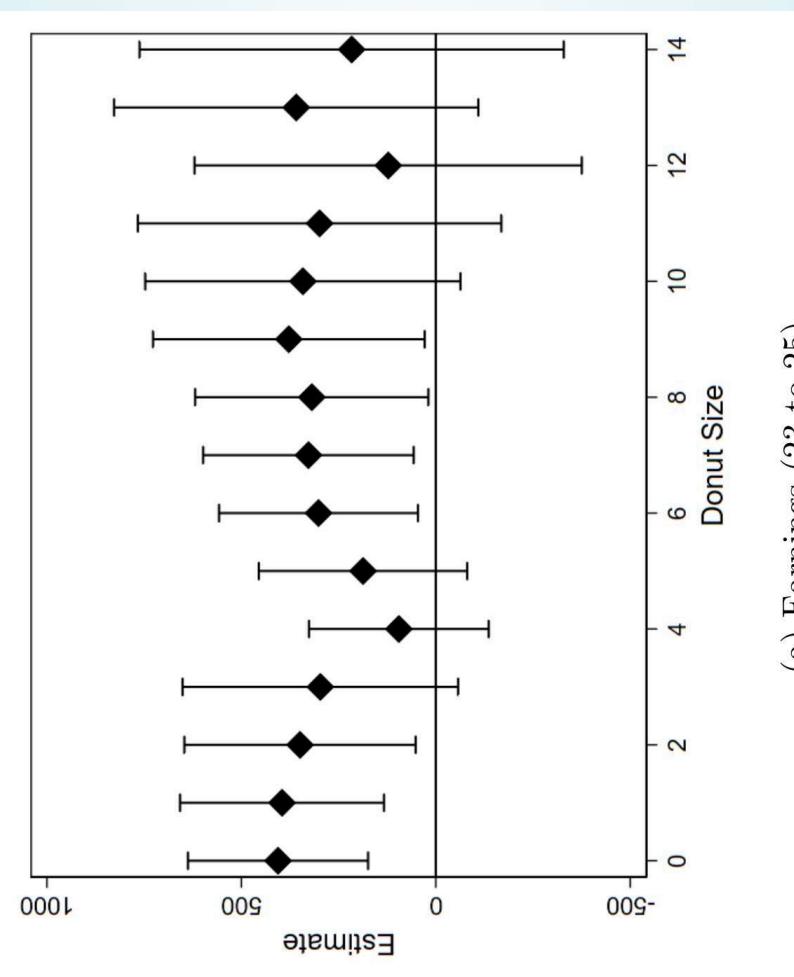
(A) Earnings (23 to 25)



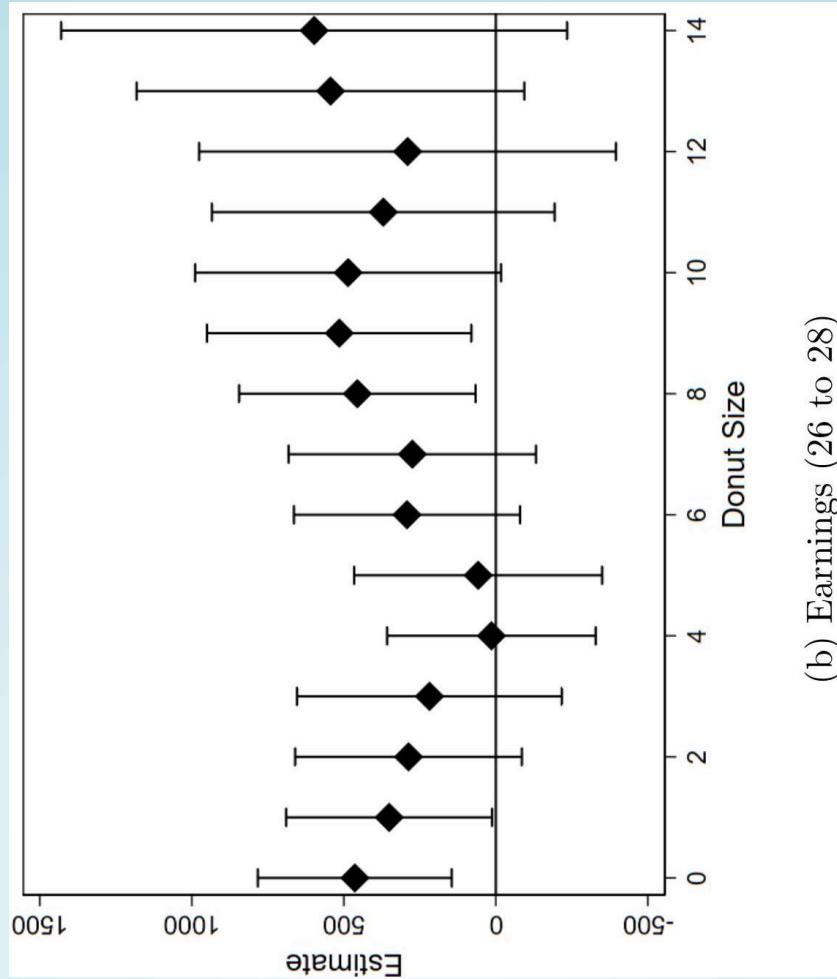
(B) Earnings (26 to 28)

# Results

Figure A.V: Adult Earnings RD Estimates by Donut Size



(a) Earnings (23 to 25)



(b) Earnings (26 to 28)

- Parents may shift delivery by 4 days (just after Christmas)...



# Results

- Later cohorts have larger impacts (Tab IV)
- Much smaller impacts for nonfirstborn given transfer is \$306 vs. \$1,291 (Tab A.VI)
- Smaller income impacts for women, because they are more likely to file jointly with spouse, and their income shares are lower (Fig IV)
- Larger impacts in later years (Fig V)

# Results

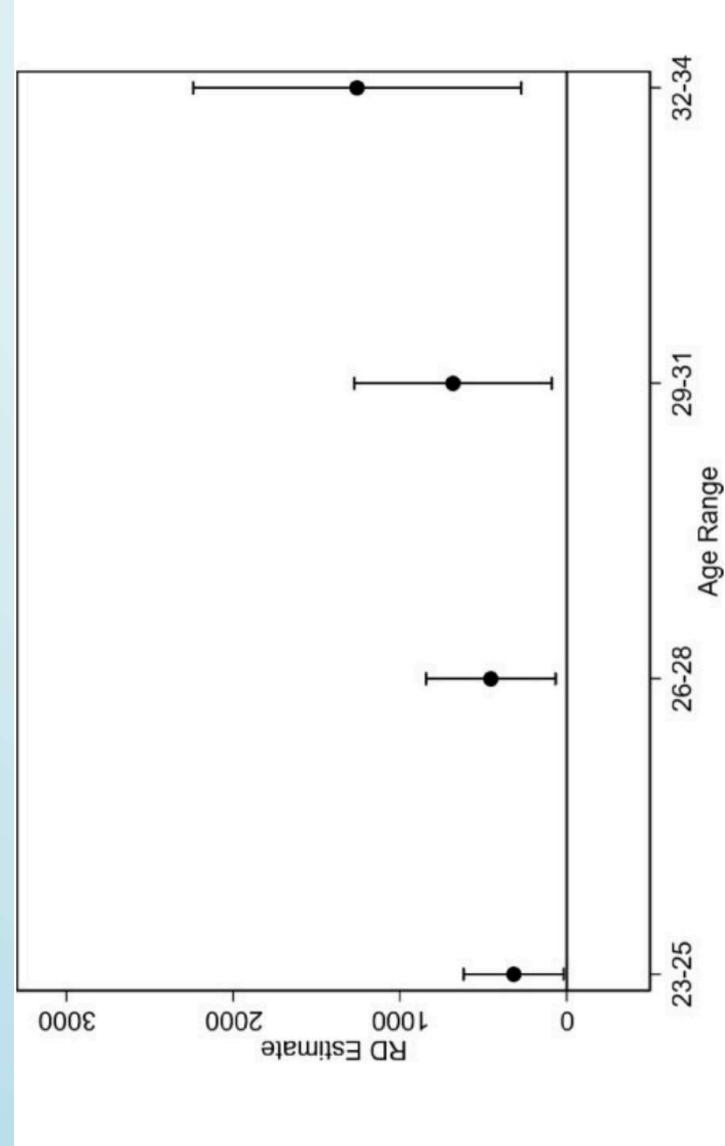


FIGURE V

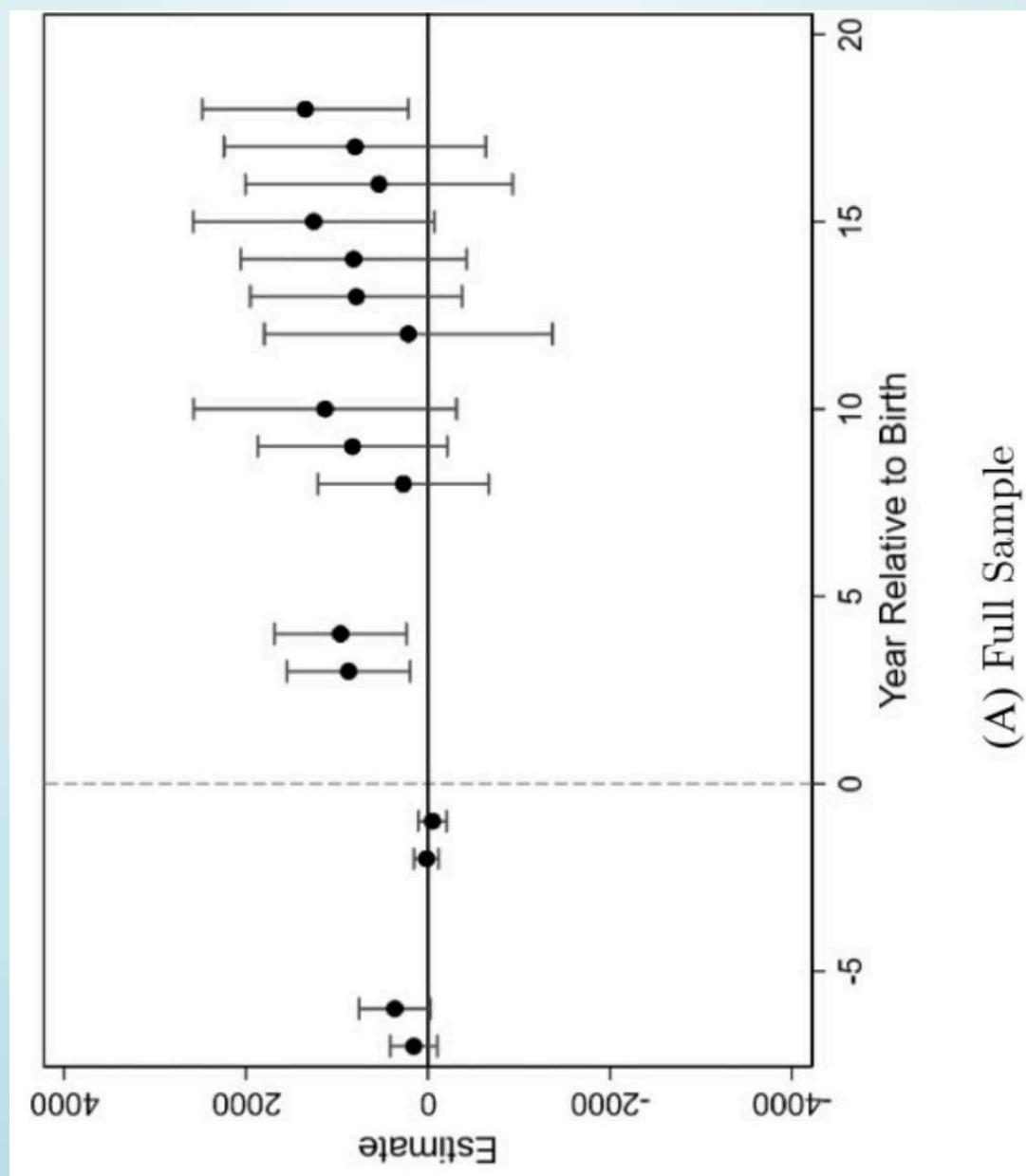
Effect of Cash Transfer Eligibility on Adult Earnings: By Age

The figure displays the basic regression discontinuity estimate ( $\beta_1$  from equation (1)) by age range. The sample changes across estimates because later cohorts are not yet observed at older ages. See Table 1 and the text for additional details on sample restrictions, specification, and construction of outcome variables. Census statistics approved for release under disclosure numbers CBDRB-FY2021-CES010-002, CBDRB-FY2021-CES010-003, and CBDRB-FY2021-CES010-010.

• Earnings by 26  
is predictive of  
future earnings  
(Haider and  
Solon 2006;  
Chetty et al.  
2011)

# Mechanism: Parents and family environment

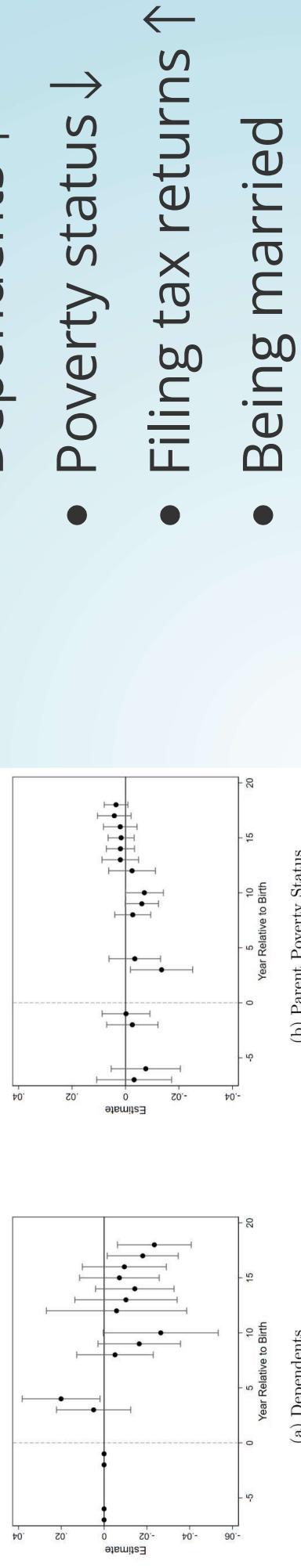
- Family earnings ↑ by 4% in 3, 4 years (Fig VI)



# Mechanism: Parents and family environment

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Figure A.XIII: Effects of Eligibility on Early Family Environment Before and After Birth



**Note:** The figure displays the basic regression discontinuity estimate ( $\beta_1$  from Equation 1) for parental outcomes at various years before (i.e., -6, -7, -2, and -1) and after the child's birth (i.e., 3, 4, 8, 9-10, and 12-18). Observed years are limited by tax data availability. See Table I and the text for additional details on sample restrictions, specification, and construction of outcome variables.

# Mechanism: Parents and family environment

1. Liquidity ↑ by 10%-20% during < 12 months old
  - Heightened expenses and reduced incomes for age < 1 year
  - Employment continuation through mobility: Car purchases, car parts/repair spending (existing studies)
  - Intergenerational elasticity of earning (IGE)  $\approx .3$ . So parental earnings impact  $(903.7 / 58250 = 1.55\%) \times IGE (1/3) \approx 5.16\%$  or  $1/3$  of impacts on child's future income is through parental earnings ↑

# Mechanism: Parents and family environment

2. Stress ↓ (no direct evidence shown in this paper)
  - Confirmed when additional incomes are provided to single mothers ([Schmidt, Shore-Sheppard, and Watson 2023](#))
  - Reduced stress changes in interactions with children ([Milligan and Stabile 2011; Evans and Garthwaite 2014](#))
  - Marital status stability

# Mechanism: Child human capital

- Outcome index  $\uparrow$  by  $.03\sigma$  per \$1 000 EITC
- Test scores grades 3-8  $\uparrow$  by  $.037\sigma$
- HS graduation  $\uparrow$  by  $.02\sigma$
- Suspension  $\downarrow$  by  $.02\sigma$

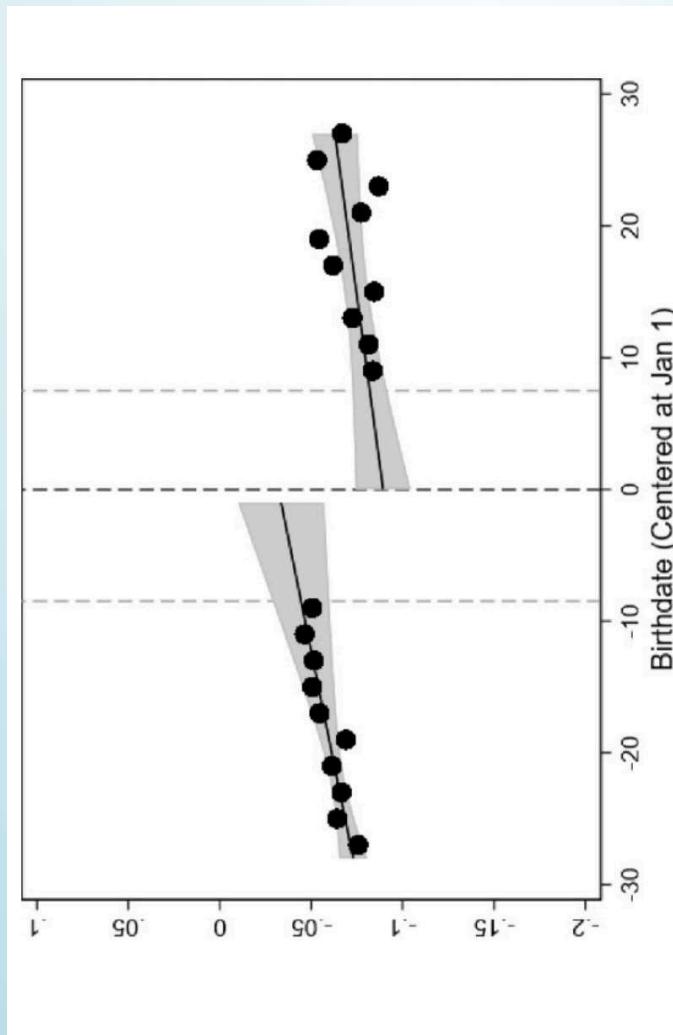


FIGURE VII

Effect of Cash Transfer Eligibility on Student Outcome Index (North Carolina)

The figure displays the mean student outcome index by two-day birthdate bin for FRL-eligible students born within 28 days of January 1 in 1993–1998 who entered a North Carolina public school by grade 5. Student outcome index is constructed as the mean of normalized test scores in grades 3–8, high-school graduation, and any suspension in middle or high school. The horizontal axis represents days relative to the January 1 birthdate cutoff. Birthdates to the left of the dotted line represent those where the child's family could have received additional resources from child-related tax benefits in the following year (if eligible based on income). The shaded area shows the 95% confidence interval.

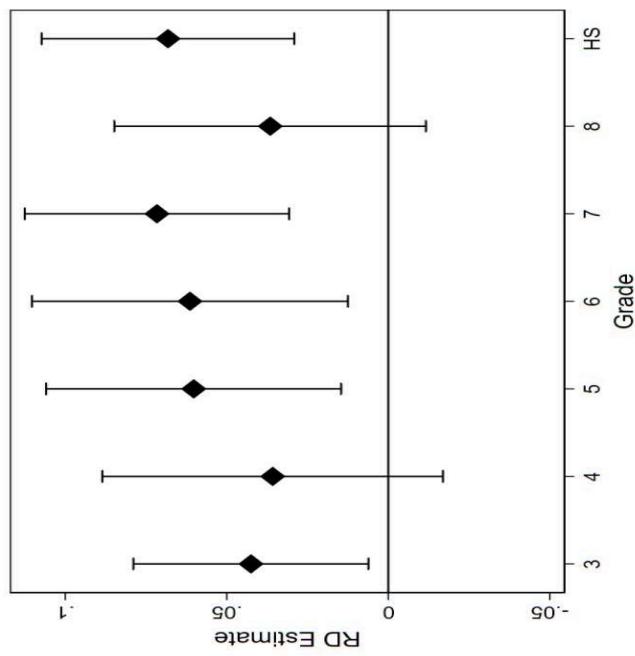
**Robust to donut size and RDD bandwidth (Tab A12)**  
**See also Tab VIII, Tab A13**

# Mechanism: Child human capital

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Figure A.XX: Effect of Cash Transfer Eligibility on Student Test Score Index Across Grades (North Carolina)

- Test scores impacts do not fade
- Suggests human capital channel at play
- Little gender difference
  - Due probably to less noise in outcomes than tax filing



Note: The figure displays the basic regression discontinuity estimates ( $\beta_1$  from Equation 1) across grades. The sample contains ever-FRL-eligible students born within 28 days of January 1 in years 1993 to 1998 who entered a North Carolina public school by grade 5. Test score index is constructed as the mean of normalized (mean zero, standard deviation one) math and reading test scores in the given grade. Algebra and English end-of-course tests are used for high school. The vertical bars illustrate the 95% confidence intervals.

# Mechanism: Child human capital

- $\sigma \uparrow = \$2500 \uparrow$  at age 28 per year ([Chetty, Friedman, and Rockoff 2014](#))
- $.037\sigma$  (per \$1000)  $\times$  \$2500 = \$92 per year per \$1000 spent
  - 9.2% is pretty high...
- "(C)ould entirely account for our observed wage effects ...  
\$353 per \$1000" (?)



# Conclusions

- Long lasting positive impacts of liquidity increase within 12 months after the birth of firstborns
  - Adult incomes, test scores, behavioral problems, HS graduation
  - Not evidence for later transfers or non-firstborns

# Conclusions

- NPV of tax receipts from added incomes > initial transfer
- From Sec IV.B: Impact as % earnings per \$1000 spent
  - Food stamps: .3% to 1%
  - Perry: Under 1%
  - EITC: 1% to 2%
- Previous studies on casino wins, lottery, adoption are on wealthier families, so their impacts are small

# 感想

- 成人所得への効果? かねてからうの疑問に答える画期的な研究
- さらに、NCデータを使って人的資本経由というメカニズムもある程度明らかにした
- 現金を親に渡すと子どもに使わない等の懸念が伝統的にあるが、現金でも結果が出ています、と示した
- 現金移転の方が効率的なので、保健や教育などで現物移転(ばか)り強調しそぎない方が良いかも
- 現金移転は教育に効果、現金で自動車を買うと非難されそう
- 外的妥当性: ETC無知層(ヒスノバニッケやアフリカ系)、途上国
- 親の知識水準に依存しそう

## References

- Akee, Randall K. Q., William E. Copeland, Gordon Keeler, Adrian Angold, and E. Jane Costello. 2010. "Parents' Incomes and Children's Outcomes: A Quasi-Experiment Using Transfer Payments from Casino Profits." *American Economic Journal: Applied Economics* 2 (1): 86–115. <https://doi.org/10.1257/app.2.1.86>.
- Bailey, Martha J., Hillary Hoynes, Maya Rossin-Slater, and Reed Walker. 2023. "Is the social safety net a long-term investment? Large-scale evidence from the food stamps program." *The Review of Economic Studies* 91 (3): 1291–1330. <https://doi.org/10.1093/restud/rdad063>.
- Buckles, Kasey S., and Daniel M. Hungerman. 2013. "Season of birth and later outcomes: Old questions, new answers." *The Review of Economics and Statistics* 95 (3): 711–24. [https://doi.org/10.1162/REST\\_a\\_00314](https://doi.org/10.1162/REST_a_00314).
- Cesarini, David, Erik Lindqvist, Robert Östling, and Björn Wallace. 2016. "Wealth, health, and child development: Evidence from administrative data on Swedish lottery players." *Quarterly Journal of Economics* 131 (2): 687–738. <https://doi.org/10.1093/qje/qjw001>.
- Chetty, Raj, John N. Friedman, Nathaniel Hilger, Emmanuel Saez, Diane Whitmore Schanzenbach, and Danny Yagan. 2011. "How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project Star \*." *The Quarterly Journal of Economics* 126 (4): 1593–1660. <https://doi.org/10.1093/qje/qjr041>.
- Chetty, Raj, John N. Friedman, and Jonah E. Rockoff. 2014. "Measuring the Impacts of Teachers." <http://teachergrowthproject.org/files/quarterly/TeacherGrowthProject.pdf>. American

- Economic Review* 104 (9): 2633–79. <https://doi.org/10.1257/aer.104.9.2633>.
- Evans, William N., and Craig L. Garthwaite. 2014. "Giving Mom a Break: The Impact of Higher EITC Payments on Maternal Health." *American Economic Journal: Economic Policy* 6 (2): 258–90. <https://doi.org/10.1257/pol.6.2.258>.
- Haider, Steven, and Gary Solon. 2006. "Life-Cycle Variation in the Association Between Current and Lifetime Earnings." *American Economic Review* 96 (4): 1308–20. <https://doi.org/10.1257/aer.96.4.1308>.
- Hoynes, Hilary, Diane Whitmore Schanzenbach, and Douglas Almond. 2016. "Long-Run Impacts of Childhood Access to the Safety Net." *American Economic Review* 106 (4): 903–34.
- Kling, Jeffrey R., Jeffrey B. Liebman, and Lawrence F. Katz. 2007. "Experimental Analysis of Neighborhood Effects." *Econometrica* 75 (1): 83–119. <https://doi.org/10.1111/j.1468-0262.2007.00733.x>.
- Milligan, Kevin, and Mark Stabile. 2011. "Do Child Tax Benefits Affect the Well-Being of Children? Evidence from Canadian Child Benefit Expansions." *American Economic Journal: Economic Policy* 3 (3): 175–205. <https://doi.org/10.1257/pol.3.3.175>.
- Schmidt, Lucie, Lara Shore-Sheppard, and Tara Watson. 2023. "The Effect of Safety Net Generosity on Maternal Mental Health and Risky Health Behaviors." *Journal of Policy Analysis and Management* 42 (3): 706–36. <https://doi.org/10.1002/pam.22481>.
- Schulkind, Lisa, and Teny Maghakian Shapiro. 2014. "What a Difference a Day Makes: Quantifying the Effects of Birth Timing Manipulation on Infant Health." *Journal of Health Economics* 33: 139–58. <https://doi.org/10.1016/j.jhealeco.2013.11.003>.

