

Measuring the Long-run Impact of Cash Transfers

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Drawing on
Macours, Barham, Maluccio, Tembo (2025)

Long term impacts of cash transfers

- Cash transfers (unconditional or conditional) have been expanding worldwide, starting from 1997
 - CCTs: Policy innovation in 1997 with early rigorous evaluations that became national social programs, and scaling globally
 - In SS Africa, a lot of targeted, often unconditional cash transfers (both national programs for vulnerable populations and NGOs)
- Aimed at short-term poverty alleviation + long term mobility
 - For those targeting human capital => long-term effects once children grow up ~ breaking the intergenerational transmission of poverty
 - For those targeting productive investments: multi-year returns to investments
- More generally, for all transfers independent of prime objective, distinguish between different channels through which cash transfers can have long-term effects (which can differ between programs)

Theory of change for long-term effects

1. One-time gains in human capital are maintained in the long-term if there is self-productivity ("skills beget skills"), but not necessarily if there are dynamic complementarities (~ Heckman)
 - A function of
 - The nature (and magnitude?) of the human capital gains
 - Years of schooling, versus learning, cognition or socio-emotional skills, nutritional status, health...
 - Timing of interventions, in light of potential sensitive (or critical) ages in childhood
 - Vulnerability to subsequent shocks
 - The remaining constraints to subsequent human capital investments
 - Constraints limiting returns to human capital
 - Human capital gain of others in the same (labor) markets
 - Some of these are fixed at time 0, many others change over time and space
 - And people move!

Theory of change for long-term effects

2. Interventions may permanently relax prior constraints to investments (whether by design or not)
 - Liquidity constraints
 - Change asset accumulation during the period of transfers, can lead to long-term returns to those assets
 - Consumption smoothing
 - Similar but through providing insurance
 - Changes in households' human capital or productive investments through
 - Relaxing of information constraints and changes in beliefs
 - Changes in social equilibrium: intrahousehold but also within extended families and communities
3. These are likely to differ between interventions/contexts but also between households benefitting from same intervention
 - Long-term also means more time for heterogeneity to be amplified
 - Likely a wide variety of pathways

Roadmap

- Given complexity of ToC, one study can't provide a full answer
 - Of course that's always true
 - Here particularly because of methodological challenges
- Methodological challenges and how to address them
- 3 Case studies as illustration
- Reviewing lessons from global evidence (to date)?
- Discussion on open questions
- Drawing on
 - work on CCTs, mostly in LAC (focus on human capital) but also some in Asia
 - Work on UCT in SSA (focus on wider set of productive investments and multiplier effects)

Methodological challenges for long-term impact estimates (1)

1. Selection and attrition

Want to estimate impact on a population that is representative of (universe of) treatment and control group as defined before the program started

- Challenge comes from young people moving around
 - Cannot be assumed away or ignored: People moving around is exactly what we expect to happen with investment in human capital (~ literature on rural/agricultural productivity gap)
- Transfers can affect trajectories, from progress through school to job search, marital choices, job search – and differentially so for different types of people
 - => complicates obtaining comparable treatment and control groups
 - => **Internal validity concerns**

Methodological challenges for long-term impact estimates (2)

1. Selection and attrition (cont)

- And even if those remaining appear to have comparable baseline characteristics, those that cannot be found possibly the most relevant to understand treatment
 - => **external validity concerns**
 - E.g. given likely treatment effect heterogeneity, a zero result for those staying in rural villages of origin can be consisted with overall positive treatment effects
- Selection concerns beyond attrition
 - Incomplete administrative data
 - Fertility and mortality
 - Directly affect population that can be observed, even if all possible data are available
 - If transfers affect fertility or mortality (e.g. through health), treatment and control groups are no longer comparable => particular challenge for 2nd generation effects
 - At minimum: clarity on assumptions and good diagnostics are needed, also to decide on appropriate attrition selection corrections

Methodological challenges for long-term impact estimates (3)

2. Limits to what we can identify

- Many experimental evaluations not designed to estimate long-term impacts
 - Most first-generation RCTs on cash transfers were phase-in designs
 - ⇒ Can only estimate differential impacts on long-run
 - ⇒ Need to make assumptions on how those relate to absolute impacts
 - ⇒ Also limit statistical power
 - ⇒ Focusing on differential exposure during sensitive ages can help
- Non-experimental estimates (e.g. dif-in-dif, RDD) in most cases also estimate differential estimates at best
 - As control groups get phased in, eligibility criteria changed, etc
 - Clarity on identifying assumptions is key

Methodological challenges for long-term impact estimates (4)

3. Limits to what we can measure

- Human capital can affect large range of intermediary and final outcomes
 - Multiple hypotheses testing versus ignoring important channels
 - For part of the outcomes of interest: need to wait long enough
 - Inferring impacts during transition into adulthood complicated, exactly because changes in human capital can imply young adults are on different trajectories
 - One (temporary and incomplete) way around censoring of outcomes : collect data that allow defining variables in function of having a certain outcome by a certain age
- For returns to productive investment: want to measure at household level, but household composition changes over time

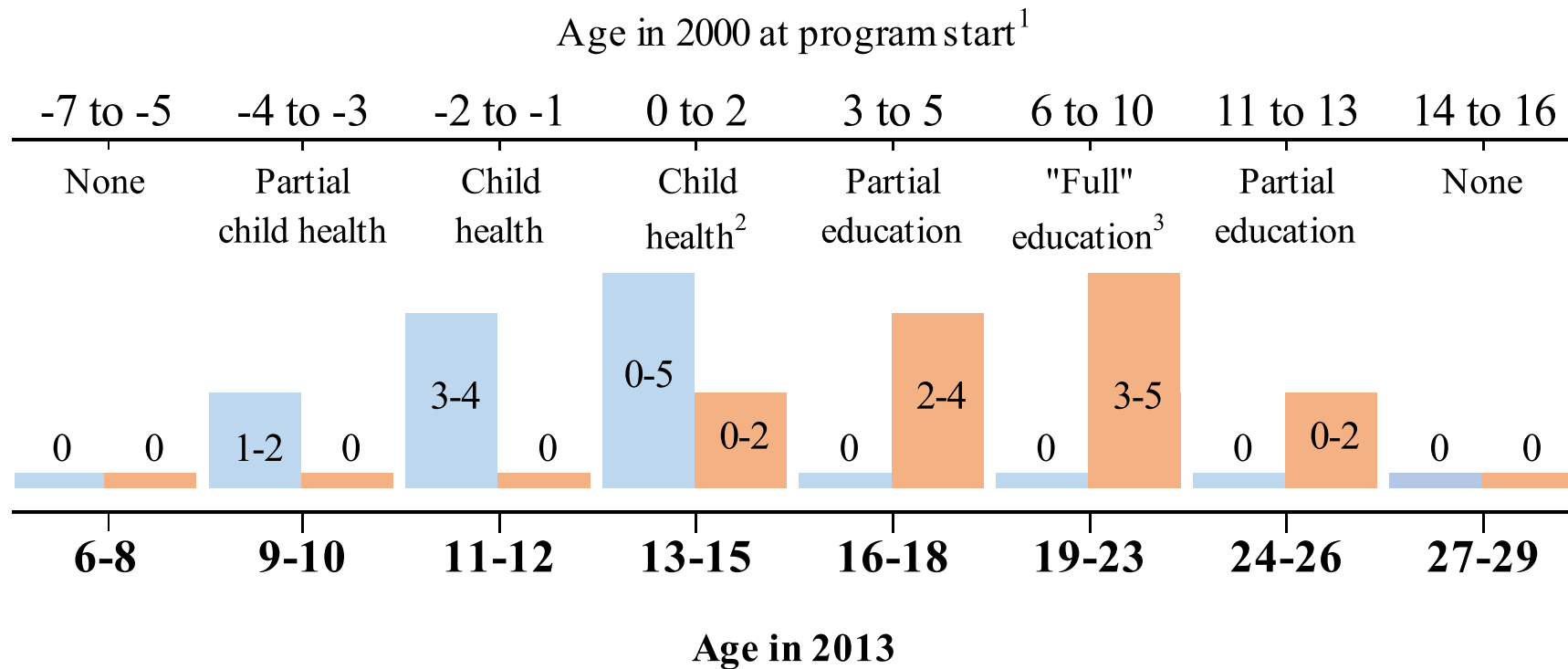
Addressing the attrition challenge with existing data sources

- Use administrative data that by design allows to track “everybody”
 - Individual census data (Parker and Vogl, 2019, Molina Millan et al, 2019)
 - School records/test scores, in countries where those are considered complete
 - Comparison between Baez and Camacho (2011) and Duque, Rosales-Rueda, and Sanchez (2018) both with official exams scores at end of high school points to importance of accounting for school progression (see discussion in Molina Millan et al, 2019)
- Still need to match back to initial treatment status
 - Easier if there are national identifiers
 - But often there are concerns on imperfect matches
 - Or if there is geographical targeting and information on place of birth/residence during childhood
- And still need to account for other selection
 - Due to international migration
 - Mortality
 - Fertility responses
 - (Accumulated) delays in schooling
 - ...
- Set of outcomes will be limited => can't characterize full ToC

Long-term impact CCT in Honduras with individual-level census 13 years later

- 5-year CCT program with health, nutrition and primary school components 2000-2005, randomized at municipal level, control never phased in
 - Can study absolute effects, for wide age range of children, to shed light on sensitive/critical periods
 - Limited number of municipalities (20 treatment, 20 control): concerns about power and risk of accidental imbalances => randomization inference
- Individual-level census data in 2013 with municipality of birth
 - ⇒ Such info is not always available, and even less likely when randomization is at lower level
- Household level info on international migrants
- Census
 - provides power to look at “rare” outcomes : early teenage pregnancy, migration, university-level education
 - Limits outcomes to those in the census : no income, job characteristics, cognition, learning, pathways, etc
 - Restricts heterogeneity to gender and indigenous : in a way useful as it ties our hands
 - As different cohorts are observed at different points of life cycle, comparison not straightforward

Exposure at different stages in childhood



Potential years of nutrition and health component exposure (postnatal)

Potential years of education component exposure

Multiple Hypothesis corrections for tests different ages groups, and test of differences between age groups

Main take-aways from analysis long-term impact CCT in Honduras

- Long-term gains in schooling for non-indigenous who benefited at different ages in childhood from different components of the CCT
 - 0.6 years on average, +50% in secondary school completion and university
 - More limited for indigenous, pointing to differential constraints to human capital accumulation (i.e. early in ToC) between groups
 - Including cohorts not directly exposed => sustained change in households human capital investment behavior
 - Liquidity (through savings) and/or behavioral change
- Migration results suggest non-linear relationship HK and migration
 - Negative impact on domestic migration for selected cohorts
 - Positive effect on international migration among males
 - ⇒ Suggestive of more limited returns in national labor market (~ remaining constraints)
 - ⇒ Also suggest that in the absence of complete data, direction of bias difficult to predict

Addressing the attrition challenge with (targeted) intensive tracking surveys

- Collect long-term follow-up data, designed (and hence budgeted) to try to obtain information on “everybody”
 - Combination of methods
 - Starting from good diagnostics of many possible reasons for attrition and piloting of tracking methods.
- In this case: match with initial treatment status automatic
- Some selection will remain
 - But can be characterized to inform assumptions underlying different attrition correction methods
- Can collect info on larger set of outcomes along ToC
 - But trade-offs exist
 - Info known to proxy respondents
 - Limits of phone surveys (confidentiality, trust (?), length, selective coverage, limits outcomes (no observations, tests, ...))
 - Bandwidth field teams : concentrated on tracking people or on collecting complex set of outcomes

Long-term impact CCT in Nicaragua with 10-year tracking survey

- Fixed-term 3-year CCT program with health, nutrition and education(primary school) components (2000-2003), randomized at community level, control receiving transfers 3 years later
 - Study differential effects of exposure during sensitive/critical periods
 - Note: sensitive/critical periods can differ for different components of human capital: education versus nutrition in pre-teen years
- Individual-level primary data collection in 2010 with in person tracking of national and international migrants
 - Wide range of outcomes along the ToC : schooling, cognition&learning, socio-emotional outcomes, labor market, fertility and marriage market
 - But limits to power
 - And even when you try very hard, and focus tracking efforts, not all can be found (remaining attrition between 4 and 22%)

Main take-aways from analysis long-term impact CCT in Nicaragua

- Differential exposure at sensitive ages in early childhood (in utero)
 - Differences in cognition 10 years later, but catch-up in nutritional status
- Differential exposure at sensitive primary school ages
 - Boys: Linear pathway from increased education, to learning, to off-farm labor participation (~ domestic migration) and higher incomes
 - Girls: Early education gains but also later menarche in early treatment group (nutrition shock of end transfers) => later family formation and childbearing => labor market gains despite no differential on learning

Case study: Long-term impact CCT in Mexico with 20-year tracking survey

- Quick refresher on Progresa
 - Program and design
- Method and data
 - Attrition and tracking
 - Descriptives: Geographic mobility
- Differential impacts early childhood cohort
 - 18-20 years old in 2017 (young adults)
- Differential impacts school cohort
 - 29-35 years old in 2017 (adults)
 - Interpretation income and mobility results

Quick refresher on Progresas: design

- First large national CCT program designed with rigorous evaluation design as part of first phase. Original design:
 - Sizable transfers (to mothers) of eligible (poor) households in marginal villages, conditional on health check-ups (0-5 year olds) + school enrollment/attendance grade 4-6+ lower secondary) + information sessions
- Scaled up nationally and much beyond, as Oportunidades/Prospera
- Initial experimental design: 506 villages
 - Original “treatment” (2/3): transfers start May 1998
 - Original “control” (1/3): transfers only start Nov 1999
- Initial take-up: 97%; afterwards, all families continue until they graduate

Use initial experimental variation for differential long-term impacts

2 cohorts for whom differential timing of start exposure was at (st)ages important for human capital formation

- Children exposed in utero or very-early in life (first 1000 days) compared to 18 months later

⇒ 18-20 years old in 2017 (*early childhood cohort*)

- Children at transition from primary to secondary school in 1998 => short-term evidence showed impacts on lower secondary school completion

- Learning(?) & higher educational level
- Lower secondary school often outside of village
- Different networks

⇒ 29-35 years old 2017 (*school cohort*)

Process Tracking Survey 2017

Two phases

Phase I: May-August

- Revisit original villages and local tracking
- With support of program - video
- Interview target individual
- Proxy interview with mother (other original hh member)
- Contact information
- In person and by phone

Phase II: September-December

- Intensive search of all remaining cases
- Invitation letters
- Validation of information collected by phone
- In person and by phone
- Rural and urban areas
- Use of migration networks

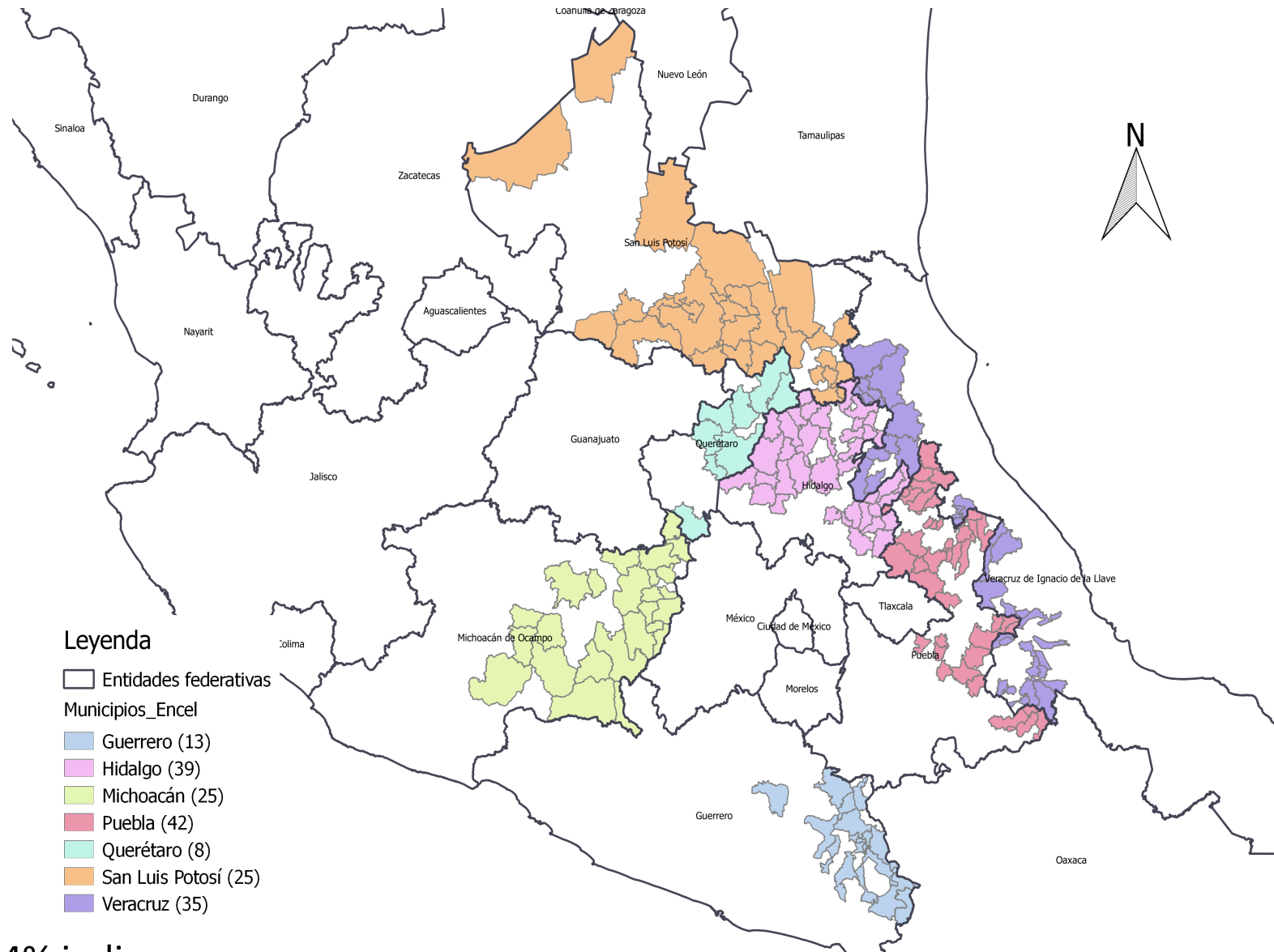
Interview rates

	Survey conducted			Survey not conducted		
	Face-to-face, by phone or proxy	Face-to- face or by phone	Face-to- face	Death	Refused	Migrant/ unknown
School cohort	94.1%	82.4%	39.7%	1.9%	1.1%	2.9%
Early childhood cohort	92.7%	85.9%	54.6%	2.5%	1.4%	3.4%
All	93.2%	84.7%	49.5%	2.3%	1.3%	3.2%

Attrition is balanced and correlates of attrition also broadly similar between treatment and control

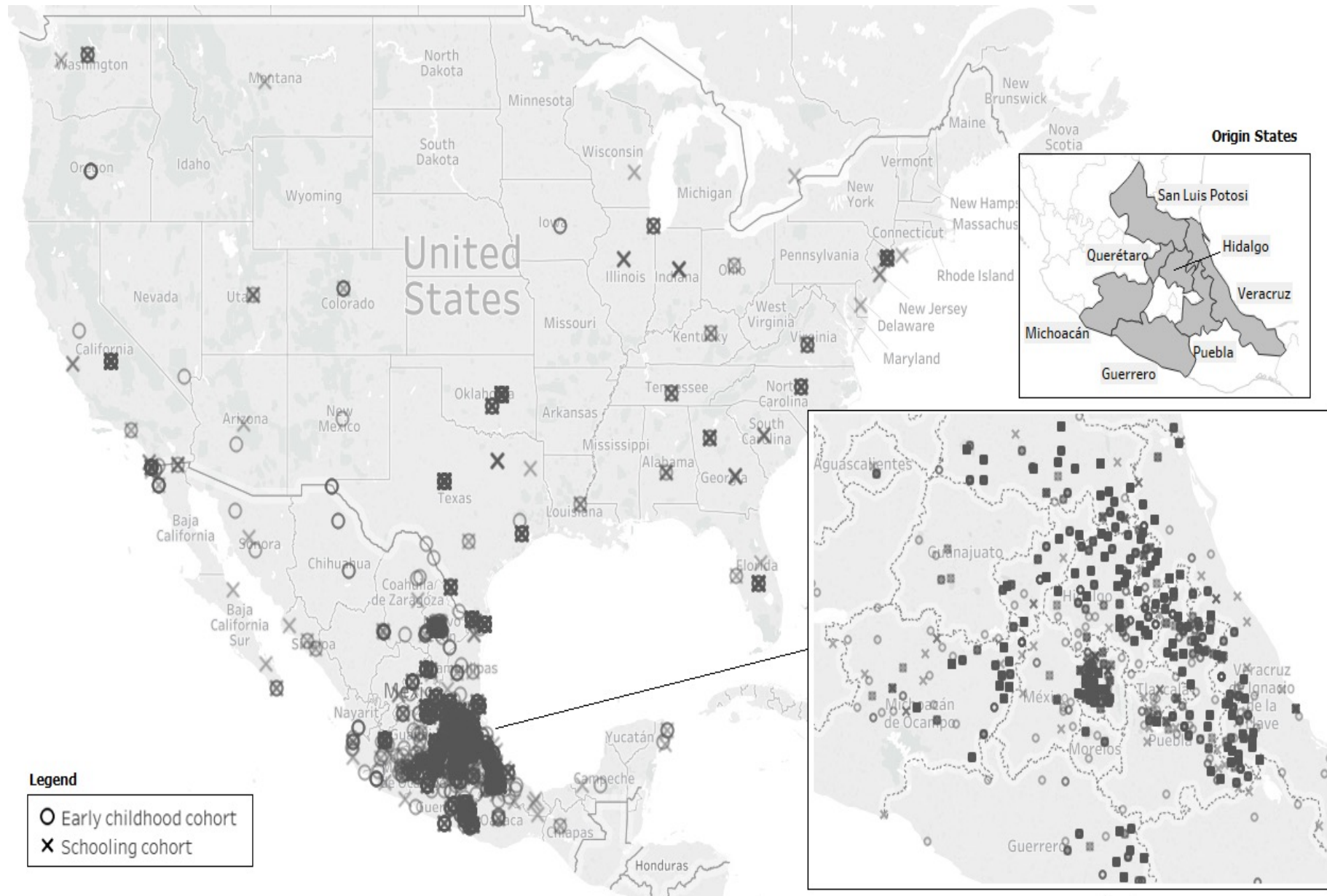
=> ~ Both groups spend a long time in the program

Where were they in 1997?



44% indigenous

And by 2017?



Where are former beneficiaries in 2017?

Location in 2017	School cohort			Early childhood cohort		
	N	% all	% found	N	% all	% found
USA	2,231	0.12	0.11	4,317	0.03	0.03
<i>In Mexico, by type of location</i>						
Metropolitan areas	2,231	0.18	0.18	4,317	0.14	0.13
Other urban area	2,221	0.28	0.28	4,306	0.28	0.28
Semi-urban municipality	2,221	0.30	0.31	4,306	0.37	0.39
Rural municipality	2,221	0.13	0.13	4,306	0.17	0.18
<i>With respect to place of origin</i>						
State of origin	2,245	0.60	0.61	4,350	0.75	0.77
Municipality of origin	2,245	0.47	0.48	4,350	0.63	0.66
Locality of origin	2,245	0.34	0.36	4,350	0.52	0.55

Note: Mexican destinations cover 30 different Mexican states (out of 32). US destinations include 28 US States + Canada (1 observation)

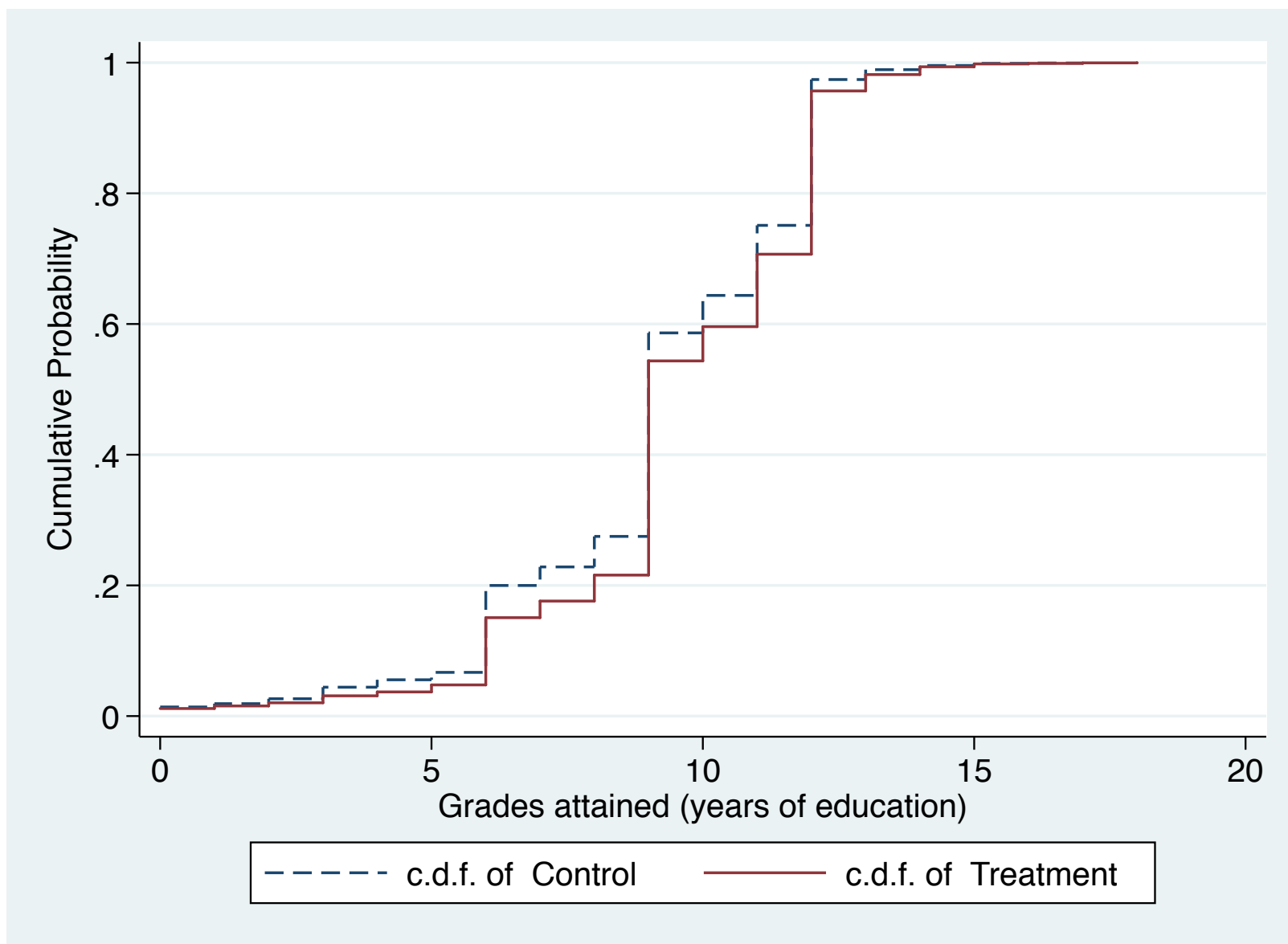
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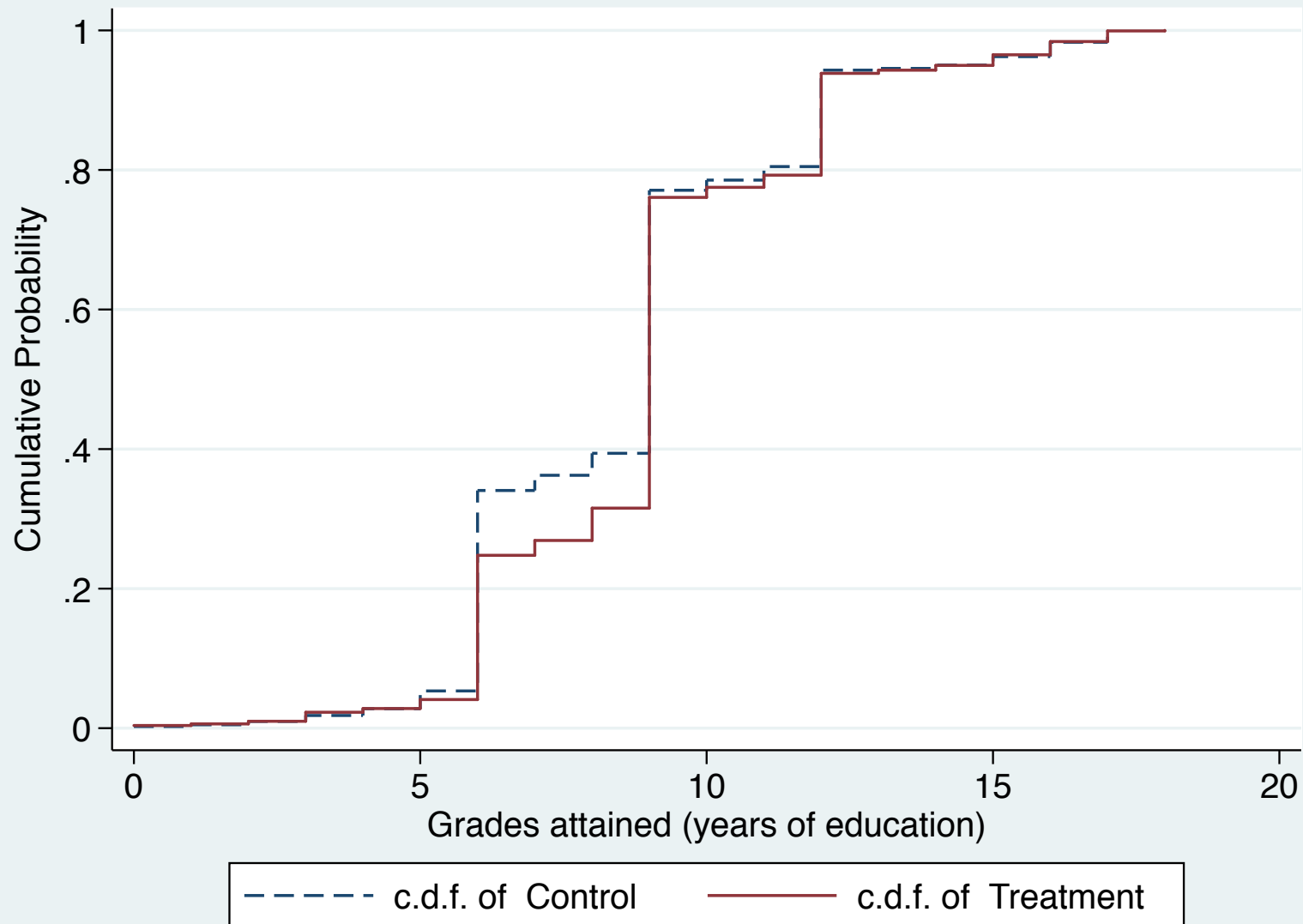
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Impact estimates

Education - early childhood cohort



Educational attainment school cohort



Income school cohort

	Labor income last 12 months		Has US\$ income	Has labor income
	PPP, Mx pesos	Log (conditional)		
ITT all	8761* (5083)	0.157*** (0.059)	0.041*** (0.012)	0.000 (0.024)
Control mean	57045	11.02	0.044	0.649
ITT female	7593* (4133)	0.246*** (0.106)	0.024** (0.011)	-0.018 (0.032)
Control mean	24241	10.757	0.016	0.382
P-value dif gender	0.83	0.33	0.24	0.85

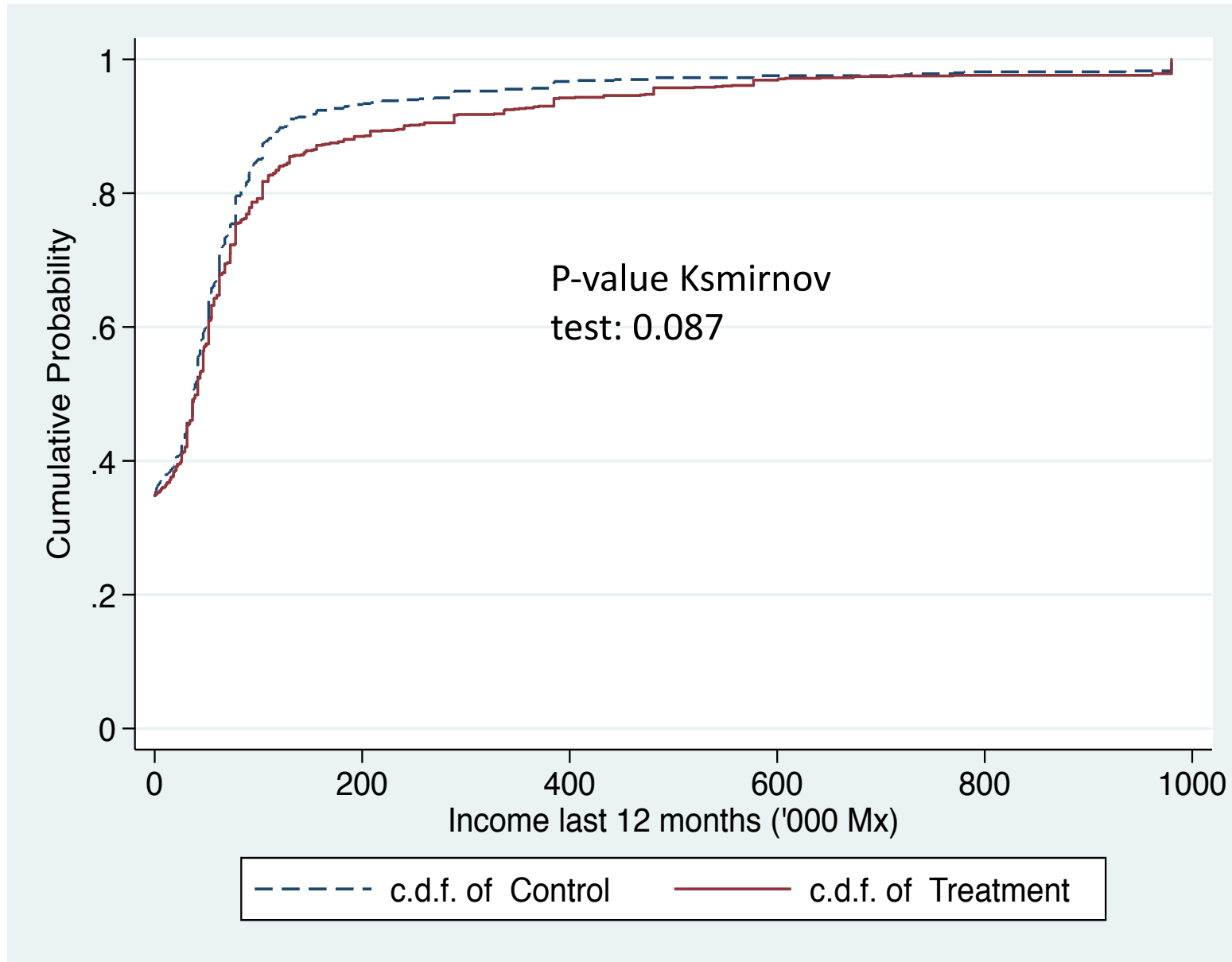
N =1834. Absolute income in Mx pesos, PPP adjusted for US residents, trimmed at 1%. S.E. in parentheses, clustered by village. Strata controls *** p<0.01, ** p<0.05, * p<0.1

Income school cohort

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Income distribution



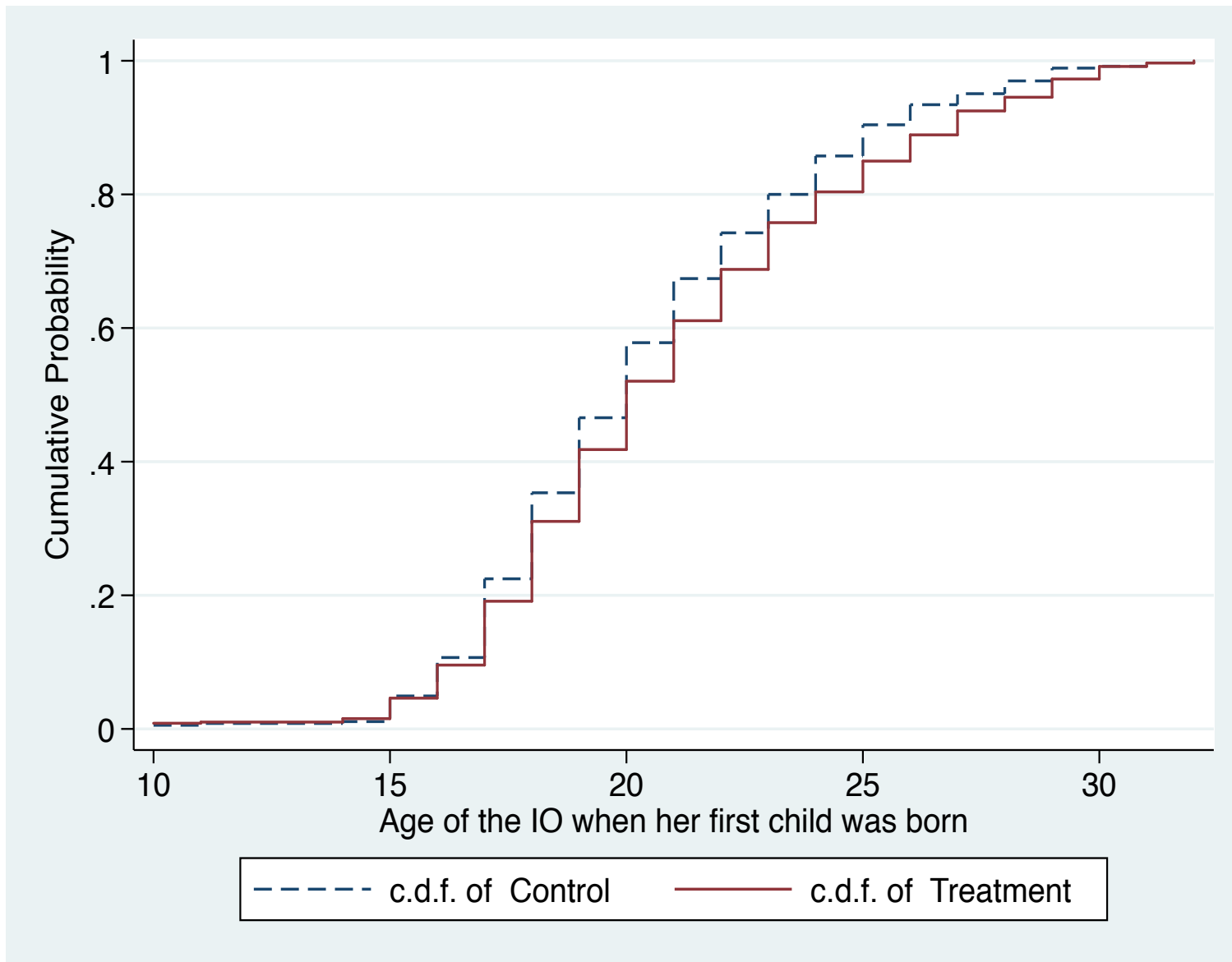
Geographic mobility & destination school cohort

	Ever migrated to the USA	Distance origin village to destination	Living in village of origin	Last schooling in village of origin	Log population 2017 municipality (Mexico)
ITT all	0.050** (0.021)	77.82** (32.5)	-0.062** (0.030)	-0.090*** (0.034)	-0.295* (0.17)
Control mean	0.153	203.8	0.438	0.501	10.23
	Migrated to (2017): USA	Metropolitan areas	Other urban municipality	Semi-urban municipality	Rural municipality
ITT all	0.037*** (0.013)	-0.047* (0.026)	0.018 (0.025)	0.030 (0.019)	0.026** (0.011)
Control mean	0.046	0.195	0.187	0.108	0.027

N =1834. S.E. in parentheses, clustered by village. Strata controls *** p<0.01, ** p<0.05, * p<0.1

Marriage & fertility

Age of first child: women



Some key take-aways from analysis long-term impact CCT in Mexico

⇒ Importance of geographic mobility to understand returns to human capital

- External validity? Context of labor market frictions and high overall increase in educational attainment
 - Holds for many low and middle-income countries

⇒ For exposure in early childhood: even waiting 20 years doesn't allow to understand returns

⇒ But upward shift at all levels of education (and income expectations) indicative of longer-term gains

What does the global evidence tell us
(to-date) ?

Taking stock of long-term impact CCTs by lifecycle stage

	Lifecycle stage at intervention start		
Time to follow-up	Early childhood (~0-6)	School age (~7-17)	Young adults (~18-25)
5-10 years	<i>School age</i>	<i>School age & young adult</i>	<i>Adult</i>
	Colombia, Ecuador, El Salvador, Honduras, Mexico, Nicaragua Indonesia, Malawi, Morocco,	Colombia, Ecuador, Honduras, Mexico Nicaragua Cambodia, Indonesia, Malawi, Morocco, Pakistan	Mexico
11-15 years	<i>School age & young adult</i>	<i>Young adult & adult</i>	<i>Adult</i>
	Honduras , Mexico	Honduras , Mexico	Mexico
16-20 years	<i>Young adult</i>	<i>Adult</i>	
	Mexico	Mexico	

Evidence on human capital investments and adult returns

- Strong evidence that cash transfers lead to higher educational attainment & higher levels of schooling
 - final education often surpasses the grade level directly targeted by eligibility criteria => points to shifts in educ. investment behavior
 - both for those exposed during school-going ages and those exposed in early childhood
- But mixed evidence on cognitive gains (early childhood) and learning outcomes (school-going ages)
 - Even within the same country => points to need to understand age-appropriate grade progression and selection into grade-level exams
- Positive impacts on long-term labor market outcomes (13-20 years in Mexico)
 - Even if medium-term impacts were more limited => confirming the methodological challenges
 - Implies that (more often observed) lack of medium-term results is unlikely to be informative for long-term results

Evidence on long-term impacts through productive investments

- Strong multiplier effects of regular national cash transfers
 - Asset accumulation in Mexico and Zambia leading to consumption increases larger than transfers (but not in Indonesia)
 - But
 - Gains don't materialize for all (~ substantial heterogeneity)
 - When transfers stop: impacts fade
- Very limited long-term impacts of lump-sum transfers (~ 200 USD) in various African settings
- More questions than answers on this topic => room for more work!

General open research questions (1)

- Relatively less long-term evidence available on UCTs compared to CCTs
- Relatively less long-term evidence outside of Latin American region
- Long-term insights on program design:
 - Do alternative designs with different short-term effects necessarily lead to long-term differences?
 - Do programs lose effectiveness over time?
 - How relevant are long-term evaluations of past to future policy direction in rapidly changing world?

General open research questions (2)

- Labor market and life trajectories:
 - Does information on entry jobs help understand longer-term employment outcomes?
 - Do other non-labor market outcomes, including mental health, aspirations, stress, and networks change and/or play important roles?
 - How are CT-linked earnings being invested for future income-generation?
- Are there community-wide effects resulting from changes in social and behavioral outcomes for individuals?
- What about the next generation (i.e., children of beneficiaries exposed as children)?

What does all this mean for policy today?

Despite skepticism in many circles: clear evidence of long-term returns to social transfers

- Long-term returns to increases in education, health and nutrition
 - With better human capital, young people are more likely to figure out for themselves where to find opportunities (vote with their feet)
 - Even if returns likely would be higher (or costs related to migration lower) with fewer labor market frictions
- Multiplier effects through productive investments of transfers
 - Transfers don't only increase short-term consumption, but get used for asset accumulation, with potential longer-run returns
 - Though such longer-run returns don't always materialize
 - physical assets can deplete
- Conditionalities can help shift investment to human capital
 - On the short-run: Doesn't have to be a "hard" conditionality – social messaging alone can matter
 - On the longer-run: spillovers to non-targeted children and sustained shifts in health and education investment after the end of transfers

Over to you now!

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