Does It Matter Where You Grow Up?

Evidence from the Moving to Opportunity Experiment

The Moving to Opportunity Experiment

- MTO was a randomized controlled experiment to study the impact of mobility, housing and neighborhood quality on economic welfare of low-income households.
- It was conducted by the US Department of Housing and Urban Development (HUD) between 1994 to 1998.
- It enrolled 4,604 low-income families and 15,892 individuals living in five US cities (Baltimore, Boston, Chicago, Los Angeles, and New York).
- It is the most comprehensive and ambitious housing experiment conducted by the U.S. government in the past three decades.

The Objective of the MTO

- In the 1990's, slightly less than ten million Americans live in extreme-poverty neighborhoods, places that also tend to offer few economic opportunities.
- Yet the effects on the well-being of residents of moving out of such communities into less-distressed areas remain uncertain.
- Those who planned the MTO experiment believed it could reduce the "social isolation" that was, argued leading scholars, a core feature of life in segregated, high-poverty ghetto neighborhoods.
- The objective was the test the hypothesis whether growing up in a low-quality neighborhood provided a serious impediment for the social mobility of disadvantaged households and individuals.
- The idea was to provide incentives in form of a restricted housing voucher – to relocated from a public housing community located in low-quality neighborhood to a subsidized private apartment in a much better neighborhood.
- The restricted housing voucher was only valid in neighborhoods that were deemed to be of sufficiently high-quality.

The Experimental Design of the MTO

- The MTO focused on households that lived in a public housing community at the start of the experiment.
- Households were randomized into three groups
 - The Low Poverty Voucher (LPV), which was offered a subsidized housing voucher that came with a requirement to move to a census tract with a poverty rate below 10 percent.
 - 2. The Traditional Voucher (TRV), which was offered a standard subsidized housing voucher with no additional contingencies
 - 3. The Control Group, which was not offered a voucher
- The proportion of individuals randomly assigned to the three groups at each site was changed during the course of the experiment.

Some Characteristics of the MTO Sample

- 22 percent of household heads were employed at baseline.
- 87 percent single-parent female-headed households
- Baltimore and Chicago samples are almost 100 percent black. LA and NY are roughly 50 percent black, 50 percent Hispanic.
- Three-quarters of household heads were on welfare at baseline and fewer than half had graduated from high school.
- On average these households had three children.
- 40% of MTO applicants had someone in the household victimized by a crime during the six months before the baseline survey.

Take-up Rates in the MTO

- Some 48% of the adults assigned to the LPV group and 63% of those assigned to the TRV group managed to relocate using an MTO voucher (the MTO "compliance rate").
- Note the low take-up rate of the LPV was clearly disappointing, i.e. the majority of the households that were offered a LPV were not interested in using it and preferred to stay in the public housing community, despite the fact they were also offered much counseling.
- While these figures are disappointing, they are generally similar to what has been found in previous studies of other housing voucher programs.
- One reason some families do not move is because they cannot find a unit that is affordable under the voucher program rules, within the time limit that the voucher program allows families to search for housing.
- The difficulty of finding affordable housing in the allowable time may have been particularly challenging for families in the LPV group, who were restricted to looking in low-poverty census tracts.

MTO's Effects on Neighborhood Conditions



Controls Movers







0.5 + +2%





+30%



Some of the key findings in the 10-15 year MTO data for adults according to Katz, Ludwig and Sanbonmatsu (2011):

- MTO had little to no effect on economic self-sufficiency of adults.
- MTO somewhat improved physical health and mental health in areas such as depression and psychological distress.

Key findings to date for youth include:

- MTO had no detectable effects on math and reading achievement of children.
- MTO had little impact on arrests.
- MTO had little to no measured effect on physical health.

Potential Flaws in the Design of the MTO

- Families in the LPV group had to stay in these neighborhoods for one year. If they moved before the year was up, they would lose their voucher. But after their initial one-year lease was up they could use their housing voucher to move again, including moves into a higher-poverty area.
- As a consequence, a significant fraction of the LPV households moved back to high poverty neighborhoods, some of them even to worse neighborhoods that they had lived in before.
- Many of the public housing projects in which MTO families were living at baseline were demolished through HUD's HOPE VI and other programs, which further contributed to control-group mobility.

The Vindication of the MTO

- Chetty, Hendren and Katz (2016) test whether MTO improved *long-term* economic outcomes for children who were young at the point of random assignment (RA)
- They provide very strong evidence for the positive impact of MTO.
- Specifically, moving to a less poor neighborhood in childhood (i.e., before the age of 13):
 - Increased future annual income by the mid-twenties by roughly \$3,500 (31%).
 - Raised both college attendance rates (by 5 percentage points) and quality of college attended.
- The age of the child moved was a critical factor: moving to a less poor neighborhood in the teenage years had no significant impact on later earnings or other adult outcomes.

MTO Data

- Restrict the MTO sample to the 13,213 individuals who are 21 or older in 2012.
- Focus on 8,603 MTO children, defined as individuals who were 18 years old or younger at the time of RA and residing at that time in a household that participated in MTO.
- Information on individual and household background characteristics
- Yearly information on the residential neighborhood (census tract) for each MTO participant

Tax Data

- Link the MTO data to data from federal income tax (IRS) records spanning 1996 to 2012 by SSN.
- Income, College attendance, College quality, Neighborhood characteristics in adulthood, Marital status and fertility, Tax filing and taxes paid
- Measure all monetary values in real 2012 dollars, adjusting for inflation using the Consumer Price Index.

Balance Tests and Summary Statistics

	< Age 13 at random assignment		Age 13–18 at random assignment			
	Control group mean (1)	Exp. versus control (2)	Sec. 8 versus control (3)	Control group mean (4)	Exp. versus control (5)	Sec. 8 versus control (6)
Linked to tax data (%)	86.4	-0.8 (1.4)	-0.4 (1.5)	83.8	1.5 (2.0)	-0.1 (2.2)
Child's age at random assignment	8.2	-0.1 (0.1)	$^{-0.0}_{(0.1)}$	15.1	0.1 (0.1)	-0.1 (0.1)
Household head completed high school $(\%)$	34.3	4.2* (2.4)	0.4 (2.6)	29.5	5.0 (3.1)	0.7 (3.3)
Household head employed (%)	23.8	1.0 (2.1)	$^{-2.2}_{(2.2)}$	25.3	3.0 (2.9)	-0.4 (3.0)
Household head gets AFDC/TANF (%)	79.5	0.6 (1.9)	1.8 (2.0)	75.0	-0.8 (2.9)	$^{-1.0}_{(3.0)}$
Household head never married (%)	65.1	-4.3* (2.3)	-3.1 (2.6)	53.0	-3.1 (3.2)	-6.3* (3.4)
Household head had teenage birth $(\%)$	28.6	-0.9 (2.2)	-0.3 (2.5)	29.1	-3.6 (2.9)	-2.5 (3.2)
Primary or secondary reason for move is to get away from gangs or drugs (%)	78.1	$^{-1.8}_{(2.1)}$	-4.4* (2.4)	77.7	3.1 (2.6)	-0.9 (2.9)
Household victims of crime in past five years $(\%)$	41.3	2.5 (2.4)	0.9 (2.7)	44.8	1.3 (3.3)	-3.3 (3.5)
Household head African American (%)	66.9	-0.4 (2.0)	-1.4 (2.1)	63.9	-1.9 (2.7)	-5.9** (2.8)
Household head Hispanic (%)	29.4	-0.3 (2.0)	-0.5 (2.1)		31.1 (2.7)	0.6 (2.7)
Child susp./expelled in past two years $(\%)$	4.9	0.7 (0.8)	0.4 (0.9)	17.6	1.0 (2.0)	0.4 (2.2)
Children in linked MTO-tax data	1,613	1,969	1,427	686	959	686

TABLE 1—SUMMARY STATISTICS AND BALANCE TESTS FOR CHILDREN IN MTO-TAX DATA LINKED SAMPLE

Summary of Balance Tests

- There is virtually no scope for differential attrition across the three treatment arms.
- The distribution of baseline covariates appears to be balanced in the linked MTO-IRS data.
- Considering these covariates has little impact on the qualitative conclusions.

Intent-To-Treat' Effects of the MTO Treatment

Estimate ITT effects of the MTO treatments, which are differences between treatment and control group means.

$$y_i = \alpha + \beta_E^{ITT} Exp_i + \beta_S^{ITT} S8_i + \gamma \mathbf{X}_i + \delta \mathbf{s}_i + \epsilon_i,$$
(1)

- ▶ y: an outcome
- Exp and S8: indicator variables for being randomly assigned to the experimental or LPV group and Section 8 or TRV group
- X: a vector of baseline covariates
- s: a set of indicators for randomization site
- All of their regressions are weighted to adjust for differences in sampling probabilities across sites and over time.
- Cluster the standard errors by family.

ITT Effects of the MTO Treatment

- An ITT analysis of the results of an experiment is based on the initial treatment assignment and not on the treatment eventually received.
- ► The estimates of β_E^{ITT} and β_S^{ITT} identify the causal impact of being *offered* a voucher to move through MTO.
- Since not all the families offered vouchers actually took them up, these ITT estimates understate the causal effect of actually moving to a different neighborhood.

The Impact of Treatment On the Treated'

Estimate the impacts of moving through MTO—the impact of TOT.

$$y_i = \alpha_T + \beta_E^{TOT} Take Exp_i + \beta_S^{TOT} Take S8_i + \gamma_T \mathbf{X}_i + \delta_T \mathbf{s}_i + \epsilon_i^T, \quad (2)$$

- TakeExp and TakeS8: indicators for taking up the experimental and Section 8 vouchers
- Instrument for TakeExp and TakeS8 using the randomly-assigned MTO treatment group indicators (Exp and S8) and estimate (2) using two-stage least squares.
- ▶ β_E^{TOT} and β_S^{TOT} : the causal effect of taking up the experimental and Section 8 vouchers and moving to a lower-poverty neighborhood.
- Note that the "TOT" is really a LATE for the compliers.

Voucher Take-Up and Neighborhood Characteristics during Childhood

	Housing voucher take-up (1)	Poverty rate in tract one year post- RA		Mean poverty rate in tract post-RA to age 18		Mean poverty rate in zip post-RA to age 18	
		ITT (2)	TOT (3)	ITT (4)	TOT (5)	ITT (6)	TOT (7)
Panel A. Children < age	13 at random as.	signment					
Exp. versus control	47.66*** (1.653)	-17.05*** (0.853)	-35.96*** (1.392)	-10.27^{***} (0.650)	-21.56^{***} (1.118)	-5.84^{***} (0.425)	-12.23^{***} (0.752)
Sec. 8 versus control	65.80*** (1.934)	-14.88^{***} (0.802)	-22.57^{***} (1.024)	-7.97^{***} (0.615)	$^{-12.06***}_{(0.872)}$	-3.43^{***} (0.423)	-5.17^{***} (0.622)
Observations	5,044	4,958	4,958	5,035	5,035	5,035	5,035
Control group mean	0	50.23	50.23	41.17	41.17	31.81	31.81
Panel B. Children age 13-	–18 at random a	ssignment					
Exp. versus control	40.15*** (2.157)	-14.00*** (1.136)	-34.70^{***} (2.231)	-10.04^{***} (0.948)	-24.66^{***} (1.967)	-5.51^{***} (0.541)	-13.52^{***} (1.113)
Sec. 8 versus control	55.04*** (2.537)	-12.21^{***} (1.078)	-22.03^{***} (1.738)	$^{-8.60***}_{(0.920)}$	-15.40^{***} (1.530)	-3.95^{***} (0.528)	-7.07^{***} (0.921)
Observations	2,358	2,302	2,302	2,293	2,293	2,292	2,292
Control group mean	0	49.14	49.14	47.90	47.90	35.17	35.17

TABLE 2—FIRST-STAGE IMPACTS OF MTO ON VOUCHER TAKE-UP AND NEIGHBORHOOD POVERTY RATES (*Percentage Points*)

Neighborhood Characteristics during Childhood

- The impacts of MTO-induced moves on the average neighborhood poverty experienced during childhood are about twice as large for the experimental group as for the Section 8 group.
- The effects of the MTO treatments on neighborhood conditions attenuate over time.
- While families who took up vouchers moved to similar neighborhoods irrespective of their children's age, the younger children got the improvements in neighborhoods starting at younger ages.

	Individual earnings	Individual earnings	College attendance	College attendance	Birth with no	Birth with no
	2008-2012 (\$)	2008-2012 (\$)	Age 18-20 (%)	Age 18-20 (%)	father present	father present
	ITT	TOT	ITT	тот	ITT	TOT
Children < age 13 at r	andom assignment					
Euro communicational	1,624.0**	3,476.8**	2.509**	5.233**	-4.807**	-9.958**
Exp. versus control	(662.4)	(1,418.2)	(1.143)	(2.382)	(2.352)	(4.881)
	1,109.3	1,723.2	0.992	1.499	-1.318	-1.996
Sec. o versus control	(676.1)	(1051.5)	(1.264)	(1.921)	(2.562)	(3.923)
Observations	8,420	8,420	15,027	15,027	2,409	2,409
Control group mean	11,270.3	11,270.3	16.5	16.5	33.0	33.0
Children age 13-18 at r	andom assignment					
Exp. versus control	-966.9	-2,426.7	-4.261**	-10.32**	4.253	10.35
	(854.3)	(2,154.4)	(1.712)	(4.221)	(3.626)	(8.782)
Sec. 8 versus control	-1,132.8	-2051.1	-3.014*	-5.464*	-0.701	-1.170
	(922.3)	(1,673.7)	(1.785)	(3.259)	(3.807)	(6.594)
Observations	11,623	11,623	5,100	5,100	1,158	1,158
Control group mean	15,881.5	15,881.5	15.6	15.6	41.5	41.5

Impacts of MTO on Children's Outcome

Summary of Main Results

- Assignment to the experimental voucher group led to significant improvements on a broad spectrum of outcomes in adulthood for children who were less than age 13 at RA.
- Children whose families were assigned to the Section 8 voucher group before they turned 13 generally have mean outcomes between the control and experimental group means.
- Moving to a lower-poverty neighborhood had slightly negative effects on older children's outcomes.

Implications

- Actively encouraging families to move to lower-poverty neighborhoods—either through counseling or by restricting their choice set—increases the impacts of housing vouchers on young children's *long-term* economic success.
- The exposure effects outweigh the disruption cost for children who move when young, but not for children who move at older ages.

Implication: Neighborhood Characteristics in Adulthood

	Poverty share in zip 2008–2012 (%) (1)	Mean income in zip 2008–2012 (\$) (2)	Black share in zip 2008–2012 (%) (3)	Single mother share in zip 2008–2012 (%) (4)
Panel A. Children < ag	e 13 at random assignr	nent		
Exp. versus control	-1.592^{***} (0.602)	1,345.9*** (489.5)	-2.852^{**} (1.417)	$^{-1.812**}_{(0.862)}$
Sec. 8 versus control	-1.394^{**} (0.699)	1,322.0** (558.6)	-5.654^{***} (1.714)	-3.087^{***} (1.001)
Observations	6,649	6,649	6,651	6,648
Control group mean	23.8	25,014.3	43.0	42.0
Panel B. Children age I	13–18 at random assigr	ıment		
Exp. versus control	-0.523 (0.643)	604.2 (478.5)	0.465 (1.654)	-0.294 (0.940)
Sec. 8 versus control	-0.928 (0.698)	442.0 (524.2)	-2.631 (1.715)	-1.856* (0.976)
Observations	9,149	9,149	9,149	9,148
Control group mean	23.6	25,170.5	39.6	40.1

TABLE 6—IMPACTS OF MTO OF	N CHILDREN'S NEIGHBORHOOD	CHARACTERISTICS IN ADULTHOOD
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Implication: Neighborhood Characteristics in Adulthood

- The improvements in neighborhood environments for the younger MTO children lead to better neighborhood and family environments for the next generation, the grandchildren of the original MTO parents.
- Subsidized housing vouchers produce durable benefits that persist into subsequent generations for children who moved to lower-poverty neighborhoods at young ages.

Age Pattern of Exposure Effects

Estimate models that interact age at move linearly with the treatment indicators to assess how the MTO treatment effects vary with children's age at move.

$$y_i = \alpha + \beta_{E0} Exp_i + \beta_{S0} S8_i + \beta_{EA} Exp_i \cdot AgeRA_i + \beta_{SA} S8_i \cdot AgeRA_i + sa_i\gamma + \epsilon_i$$
(3)

- AgeRA: the age at random assignment
- ▶ *sa_i*: randomization site indicators interacted with indicators for age at RA
- \blacktriangleright β_{E0} and β_{S0} : the ITT impact of being offered a voucher to move to a better neighborhood at birth
- \blacktriangleright β_{EA} and β_{SA} : the average reduction in the ITT effects per year of reduced exposure to the new area

Age Pattern of Exposure Effects: Findings

	Individual earnings	College quality	Married (%)	Zip
	2008-2012 (\$)	18-20 (\$)		poverty share (%)
	ITT	ITT	ITT	ITT
Experimental	-364.1*	-171.0***	-0.582**	0.261*
imes age at RA	(199.5)	(55.16)	(0.290)	(0.139)
Section 8	-229.5	-117.1*	-0.433	0.0109
imes age at RA	(208.9)	(63.95)	(0.316)	(0.156)
Experimental	4823.3**	1,951.3***	8.309**	-4.371**
	(2,404.3)	(575.1)	(3.445)	(1.770)
Section 8	2759.9	1,461.1**	7.193*	-1.237
	(2,506.1)	(673.6)	(3.779)	(2.021)
Observations	20,043	20,127	20,043	15,798
Control group mean	13,807.1	21,085.1	6.6	23.7

Age Pattern of Exposure Effects

Nonparametric Estimates by Age at Move

 ITT estimates of being assigned to the experimental voucher group by a child's age at RA



Age Pattern of Exposure Effects

- Beneficial impacts of the experiment treatment for all the outcomes, with the gains declining rapidly with age at RA
- The benefits of being offered an MTO experimental voucher increase with potential years of childhood exposure to better neighborhoods.

Policy Implications

- Targeting the vouchers so that families with young children are required to move to low-poverty areas may be important.
- Efforts to integrate disadvantaged families into mixed-income communities are likely to reduce the persistence of poverty across generations.
- Offering low-income families housing vouchers and assistance in moving to lower-poverty neighborhoods is likely to reduce government expenditure.

Caveats

- The MTO experiment only randomized voucher offers; it did not randomize the age at which children moved, which could be correlated with other unobservable factors.
- The ages at which children move are perfectly correlated with their length of exposure to a high-poverty neighborhood.