Is the Social Safety Net a Long-Term Investment? Large-Scale Evidence from the Food Stamps Program

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Online Appendix

I. DATA DETAILS CENSUS/ACS

Allocated Values: We treat as missing any variable that is allocated. An important exception to this rule arises for allocations of age, sex, relationship to household head, and marital status. Because the family interrelationship assignment relies on the location of individuals within a household, we follow IPUMS and use these variables to construct the family interrelationship variable. After these relationship variables are constructed, we treat these four variables as missing if they are allocated.

Top-coded Values: For each income measure, we follow IPUMS and designate as the top code the 99.5th percentile of the (weighted) income measure distribution. Following IPUMS, this top-coding is done at the state-year level, identifying those at the 99.5th percentile and above separately for each state and year. Any observation greater than or equal to the top code is replaced with the state-year mean among all observations above the top code. This top-coding is done on the sample after eliminating allocated income variables. Aggregate income measures (e.g., earned income: the sum of wage and business/farm income) are constructed after the top code adjustment. We follow the same procedure for gross rent, which is the sum of rents and the cost of electricity, water, gas, and fuel. In particular, we separately top code each component and then construct gross rent as the sum of the top-coded components. We also follow the same procedure for housing values in years 2000 and 2008-2013; in years 2001-2007, housing values are only reported in intervals, which eliminates the need for top-code adjustments.

Imputation of Categorical Variables: Only categorical values of certain variables appear in some years. For example, from 2008-onwards, weeks worked last year is reported in intervals: 1-13, 14-26, 27-39, 40-47, 48-49, and 50-52. Using data from 2000-2007, we calculate the average number of weeks worked for each interval, and use this imputed mean in our analysis. We use the same method to impute means for housing value (2001-2007), and education (for 2000-2007,

education is binned for grades 1-4, 5-6, and 7-8).

Real Values: All monetary variables are expressed in in 2015 dollars, adjusting for inflation using the Consumer Price Index.

Unit of observation: For computational reasons, all models are estimated on data collapsed to cells using Census or ACS weights. For the event study (equation 1) and spline (equation 2) models, cells are defined as birth-year x birth-county x survey year. For the exposure model (equation 3) the cells are birth-year x birth-month x birth-county x survey year. We collapse separately for all sex and race categories combined as well as by four sex x race subgroups (male-female-white-nonwhite). Sometimes, we do not have a cell for each combination, because the distribution of race is not even across all counties or there are no births in a given county for a specific month-year-race combination. In addition, a handful of counties are dropped from the analysis if we do not have information on when Food Stamps started (these are indicated in yellow in Figure 1).

Weighting the Data: In our main estimates we weight by the number of observations in each cell. We have also explored alternative weighting using the sum of the person weights (the recommended census/ACS weights) in the cell, which yield similar estimates. In accordance with the Census policy of minimizing disclosures, we have only disclosed our preferred set of estimates.

Creating Indices: We ignore observations with missing values on *any outcome of interest* when aggregating to indices so indices will have the same number of observations in our sample for all outcomes. This is in accordance with Census policy to minimize implicit samples in disclosure.

Incarceration and Group Quarters: Incarceration is assigned using the group quarters variable. Group quarters are separated between the institutionalized and noninstitutionalized. We proxy for incarceration using the institutionalized indicator (National Research Council 2012, Ch. 2). This data is available for the 2006-2013 in the ACS. The group quarters question is included in the 2000 Census but this variable is unfortunately not available in the RDC.

Appendix Table 1 shows that the mean incarceration rate for our nonwhite male sample is 14 percent, whereas tabulations of the public use 5-year 2010 ACS yield estimates more along the lines of 6 percent. Our higher incarceration rate is due to two factors. First, and most importantly, while we use Census and ACS survey weights to construct cell means, we use the number of observations represented in each cell to weight the regression and to construct global means. That works well for most of our outcomes, but the nature of group quarter survey design yields person weights for incarcerated individuals that are lower than non-incarcerated individuals. For example, in the public use 2016 ACS, institutionalized men 25-54 have a person weight of 61 on average compared to 112 for non-institutionalized men of this age. As a result, when the number of observations is used as a weight for each cell, institutionalized individuals are upweighted relative to their incidence in the population. Second, we construct our sample to include only "full information" observations: in particular, we drop all observations that are missing or allocated for any of our outcome variables. As discussed in Section III we do this to minimize disclosure risk (e.g. to maintain one sample across the outcomes). However, we cannot impose this restriction on the institutionalized (group quarters) sample because they are enumerated in the Census but not

subject to the full survey. Thus this also upweights the incarcerated sample. These two factors explain the higher than expected incarceration rate. These factors have no impact on other variables in our analysis. And the estimated models for incarceration are qualitatively similar if we incorporate survey weights (using the sum of the weights instead of the number of observations) and yields a mean that is more consistent with other sources.

II. COUNTY CONTROL VARIABLES

In robustness checks (Table 6), we examine the sensitivity to adding county-time varying variables to our models. In Table 1, we use a longer list of county variables for a balance test on our design. These variables are assigned at the county-by-year-of-birth level.

A. Other War on Poverty Programs

We use data from Bailey and Duquette (2014) and Bailey and Goodman-Bacon (2015) to account for the launch of other War on Poverty programs. They collected data on the OEO's community programs from the National Archives Community Action Program (NACAP) files as well as from some administrative sources.

For Head Start, they compared data with Ludwig and Miller (2007) and Barr and Gibbs (2018) on county-level Head Start program expenditures over 1965-1980 and also compared their figures against state-level administrative reports. The resulting database contains information on (1) the county where a program delivered services, which allows each federal grant to be linked to birth counties and (2) the date that each county received its first program services grant, which typically provides the year that programs began operating.

For Community Health Centers, they entered information from annual Public Health Service (PHS) Reports. This database contains information on (1) the county where CHCs delivered services, which allows each federal grant to be linked to county-level mortality rates; (2) the date that each county received its first CHC services grant (this excludes planning grants), which provides a consistent proxy for the year that each CHC began operating; and (3) information on CHC grants between 1978 and 1980 from the National Archives Federal Outlays (NAFO) files.

For WIC we use data from Hoynes, Page, and Stevens (2011) who collected data on the county-by-county rollout of the WIC program from several directories and congressional filings that provide lists of local agencies that provided WIC services. The rollout occurred between 1974 and 1980. This information is available for years 1974, 1975, 1978, 1979, and 1989.

For each of these programs, we construct an indicator variable capturing whether the county had a given War on Poverty program in place that year.

B. REIS County Transfer Spending

We use data from Hoynes and Schanzenbach (2009) and Almond et al. (2011) to control for other social safety net spending at the county level. Hoynes and Schanzenbach (2009) use data from the Bureau of Economic Analysis Regional Economic Information System (REIS) to

construct four per capita county transfer variables: cash public assistance benefits (AFDC, Supplemental Security Income, and General Assistance), medical spending (Medicare, Medicaid, and military health care), cash retirement and disability payments (Old-Age Survivors Insurance, Disability Insurance, and other), and all transfers. The data are available digitally beginning in 1969. Almond et al. (2011) extended the REIS data to 1959 by hand-entering data from microfiche for 1959, 1962, and 1965 to 1968. We linearly interpolate within counties to fill in the gaps (1960, 1961, 1963, and 1964).

C. County Employment, Income, and Population

County income is real per capita county income and is available from the Bureau of Economic Analysis and County Business Patterns (Ody and Hubbard 2011, Bureau of the Census 2006) and available for 1969-1980. County employment comes from Bureau of Economic Analysis Local Area Employment Indicators for 1969-1980. County population is available from SEER from 1969-1980 and is interpolated between decennial censuses for years prior to 1969.

D. County Mortality Data

We use data from Almond et al. (2011) who create county-by-year measures of infant mortality for 1959-1980 using the Vital Statistics Detailed Cause of Death data. The data encompass the universe of death certificates (except in 1972, when they are a 50-percent sample); we use information on age of the decedent and the year and county of death. We then construct infant mortality (deaths in the first year), neonatal mortality rate (deaths in the first 28 days) and post-neonatal mortality (deaths in months 2-12) each expressed per 1,000 live births. Vital statistics data on births (per year and county) are used to construct the denominator for live births.

Adult mortality rates (deaths per 1,000) comes from Bailey and Bacon-Goodman (2015).

E. 1960 County Control Variables

To capture trends across counties over time, we control for 1960 County Characteristics interacted with linear trend in birth cohort. Following Hoynes and Schanzenbach (2009) we use the 1960 City and County Data Book, which compiles data from the 1960 Census of Population and Census of Agriculture, is used to measure economic, demographic, and agricultural variables for the counties' pretreatment (before Food Stamps is rolled out) period. In particular, we use the percentage of the 1960 population that lives in an urban area, is Black, is less than 5 years old, is 65 years or over, has income less than $3,000 (in 1959 dollars), the percentage of land in the county that is farmland, and log of the county population.

III. ADDITIONAL ROBUSTNESS

In addition to the robustness analyses discussed in the text, we have explored the sensitivity of our findings to other specifications. We examined whether the findings were robust to excluding observations with missing values on any outcome variable. We also estimated models where the dependent variable was the share of the cell missing as an outcome variables. There was no relationship between Food Stamp rollout and the incidence of missing values. We estimated models with different weighting procedures, including counties that could not be easily linked to

GNIS FIPS codes, and using different birth-years in our sample. In accordance with Census guidelines to minimize implicit samples and disclosure burden, we have not disclosed these results from the RDC.

IV. LIFE EXPECTANCY ESTIMATES

In our main estimates, we use the social security NUMINDENT file to estimate the probability of surviving to 2012. For our cost-benefit analysis, it is valuable to extend this survival analysis to calculate measures of life expectancy. Here we describe that process, following methods in Chetty et al. (2016).

We estimate life expectancy conditional on reaching age 40 by first using Gompertz functions to estimate mortality rates by age for different subgroups of the population. We then sum over these mortality rates to arrive at group-specific life expectancy estimates. The steps below cover this process in more detail.

1. We first create a "group" variable (sex×birth-year×county-of-birth) and calculate raw mortality rates for each age by dividing the number of individuals in each group×age cell by the number of deaths at that age during our sample window (Decennial Census and ACS yields a 2000-2013 sample window).

2. We then estimate a Gompertz function, which imposes that the mortality rate m is an exponential function of age a in the following expression $m(a) = e^{\alpha+\beta a}$. We use maximum likelihood to estimate these models, allowing for different mortality gradients (α and β) by sex, county, and birth year.

   We restrict this analysis to ages 30-63, as the oldest individuals in our sample to receive Food Stamps would have been 63 in 2013 (birth cohort 1950). We then predict mortality rates for ages 40-90 within each group.

3. For mortality rates at ages over 90, we use estimates from the NCHS and the SSA. The NCHS provides estimates of mortality rates by sex×race for those ages 90-100. For ages 101-111, we use estimates (by sex) from the SSA. We use year 2000 SSA mortality estimates, and averages of the NCHS mortality rates from 2001 to 2011. We append these mortality rates onto the age 40-90 mortality rates estimated in step 2.

4. The Gompertz function together with the NCHS and SSA data give us mortality rates by age (m_a) for each group. We then calculate life expectancy as follows:

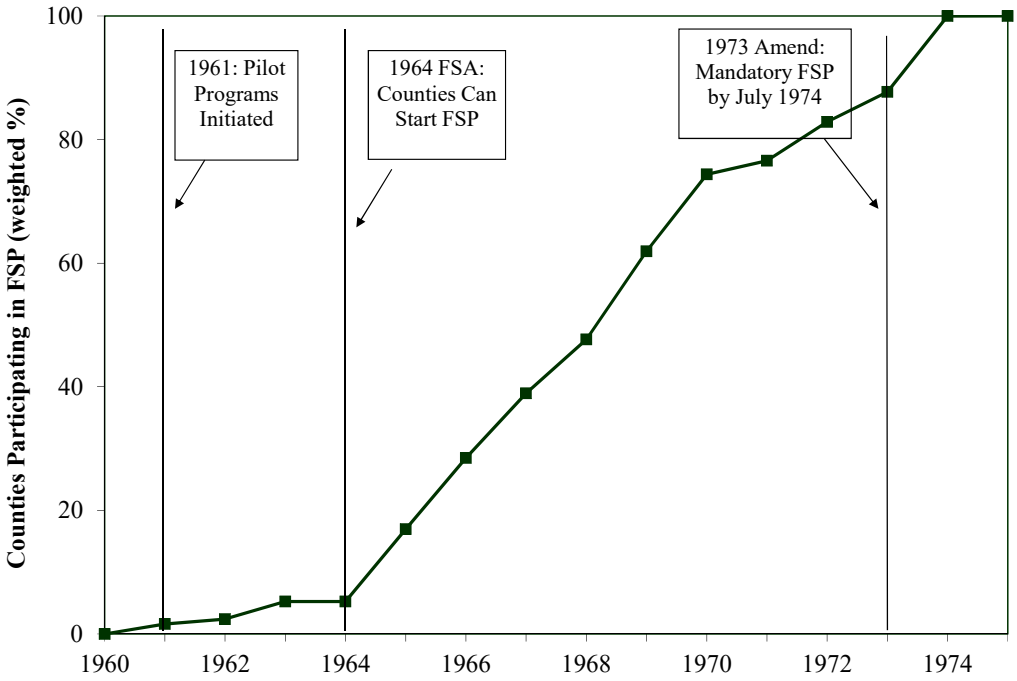
   a. Calculate $l_a = \prod_{a=40}^{a-1}(1 - m_a)$. This is the "survivorship" to age a.
   b. Calculate $L_a = \frac{l_a + l_{a+1}}{2}$. This is "midpoint survivorship;" the proportion of the population that makes it to the midpoint of age a.
   c. Calculate life expectancy $LE = \sum_{a=40}^{a=119}(L_a * m_a * age)$.

   We then merge these life-expectancy measures back onto the Census microdata by the group identifiers (sex×birthyear×county)

Appendix Table 3 presents results from using this measure of life expectancy as the dependent variable in our standard exposure specification from the text (model 3). Our preferred ITT estimates from Column (3) suggest that exposure to Food Stamps from conception to age 5 increases life expectancy by 0.198 years on average. The TOT analogue corresponds to an increase in life expectancy of 1.2 years (0.198/0.16).

Appendix Figures and Tables

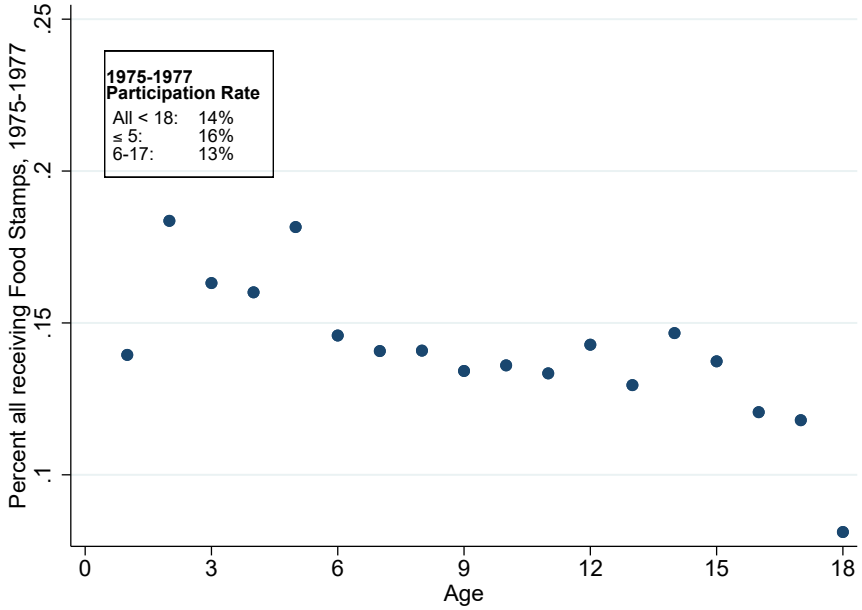
Appendix Figure 1: Population Weighted Share of Counties With a Food Stamps Program, by Year



Notes: This graph shows the population weighted share of counties that had a Food Stamps program by year, based on tabulations from administrative data from the U.S. Department of Agriculture from various years by Hoynes and Schanzenbach (2009).

Appendix Figure 2: Childhood Use of Food Stamps in the Panel Study of Income Dynamics

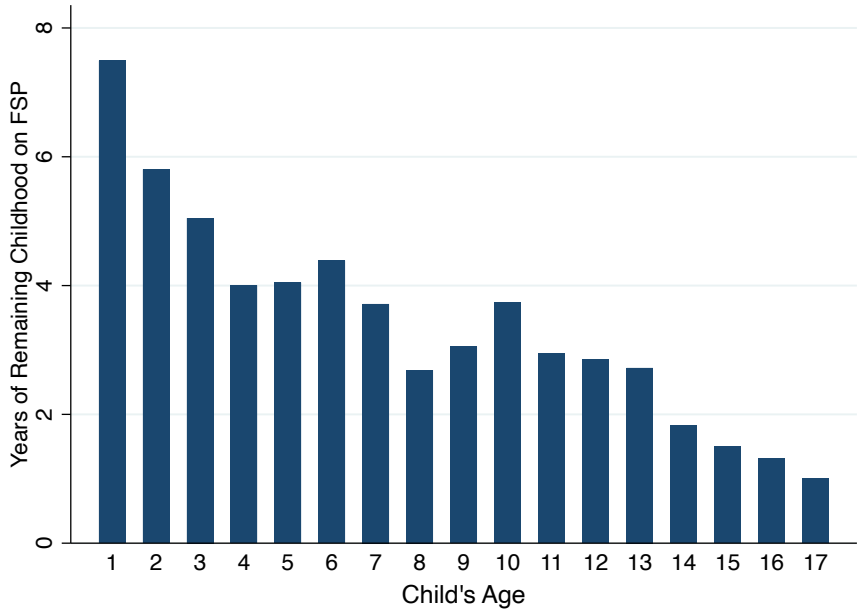
(A) Child Participation Rates in Food Stamps, by Age



Source: Panel Study of Income Dynamics, pooling data from years 1975 to 1977.

Note: We use this period because 1975, 1976, and 1977 are the first three years in which Food Stamps were universally available.

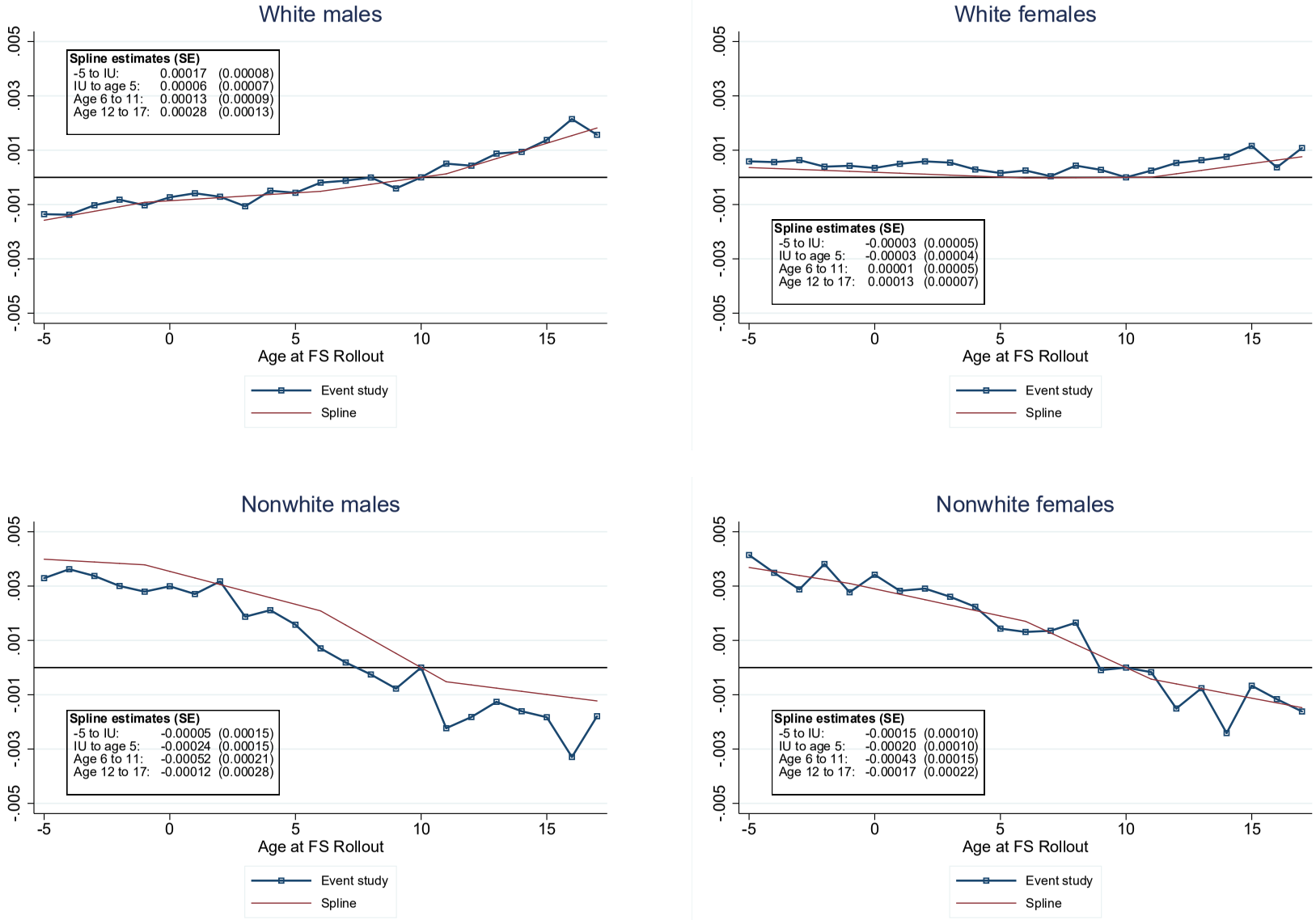
(B) Number of Years of Food Stamps Receipt, by Age at First Use



Source: Panel Study of Income Dynamics, 1972-1999

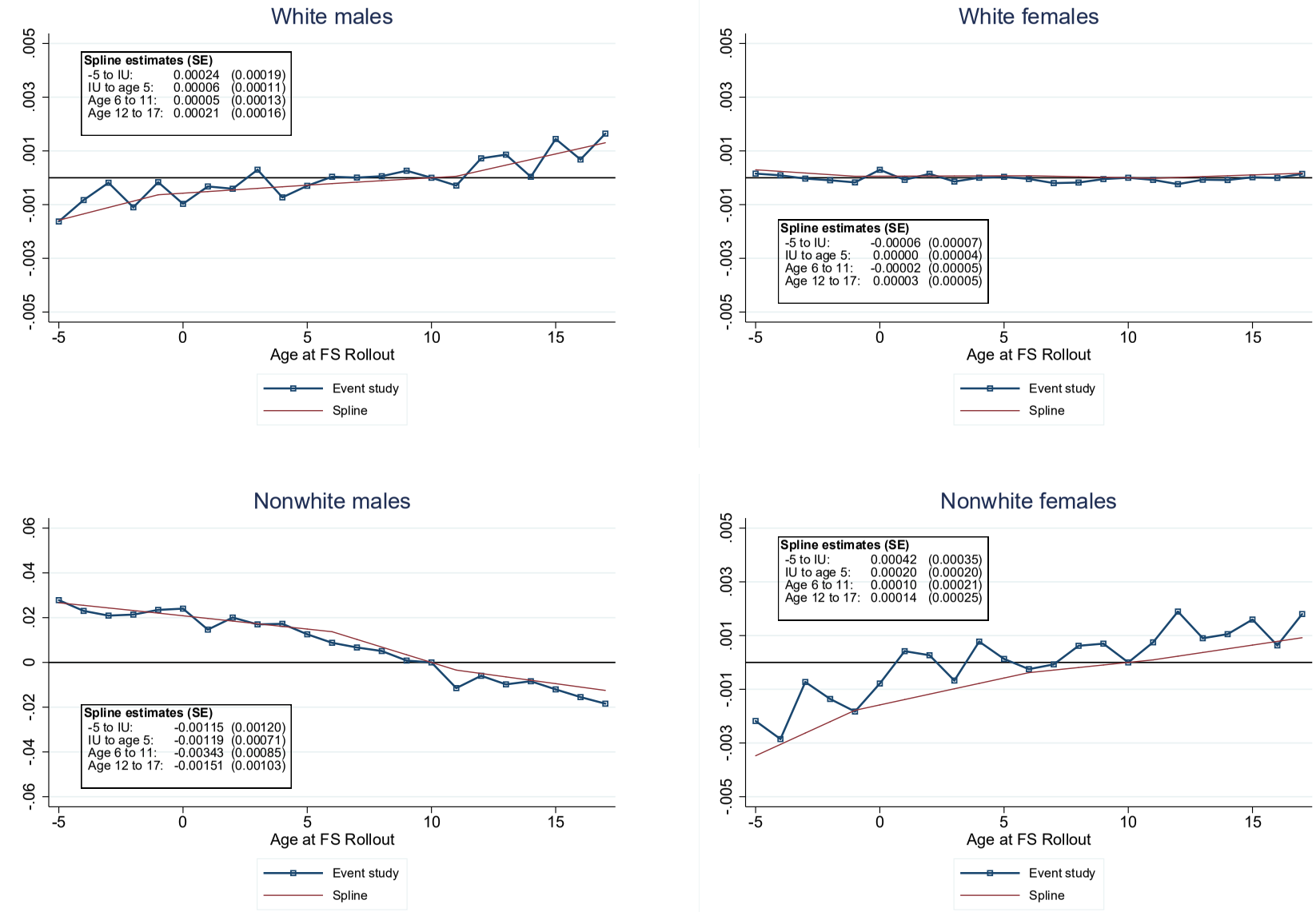
Note: We limit our sample to children who were first observed being on the Food Stamps Program between 1972 and 1975. We start this period in 1972 because the PSID begins in 1968, and we wanted to assure that there was no participation in the prior four years. We end this period in 1975 to target the rollout period. The results are similar when we change the sample to include children who were first observed on the Food Stamp Program between 1972 and 1981, although the results are slightly less noisy due to the larger sample size.

Appendix Figure 3: Event-Study and Spline Estimates of the ITT Effects of Food Stamps Exposure on Survival to 2012 by a Cohort's Age when the Program Launched, by Race and Sex



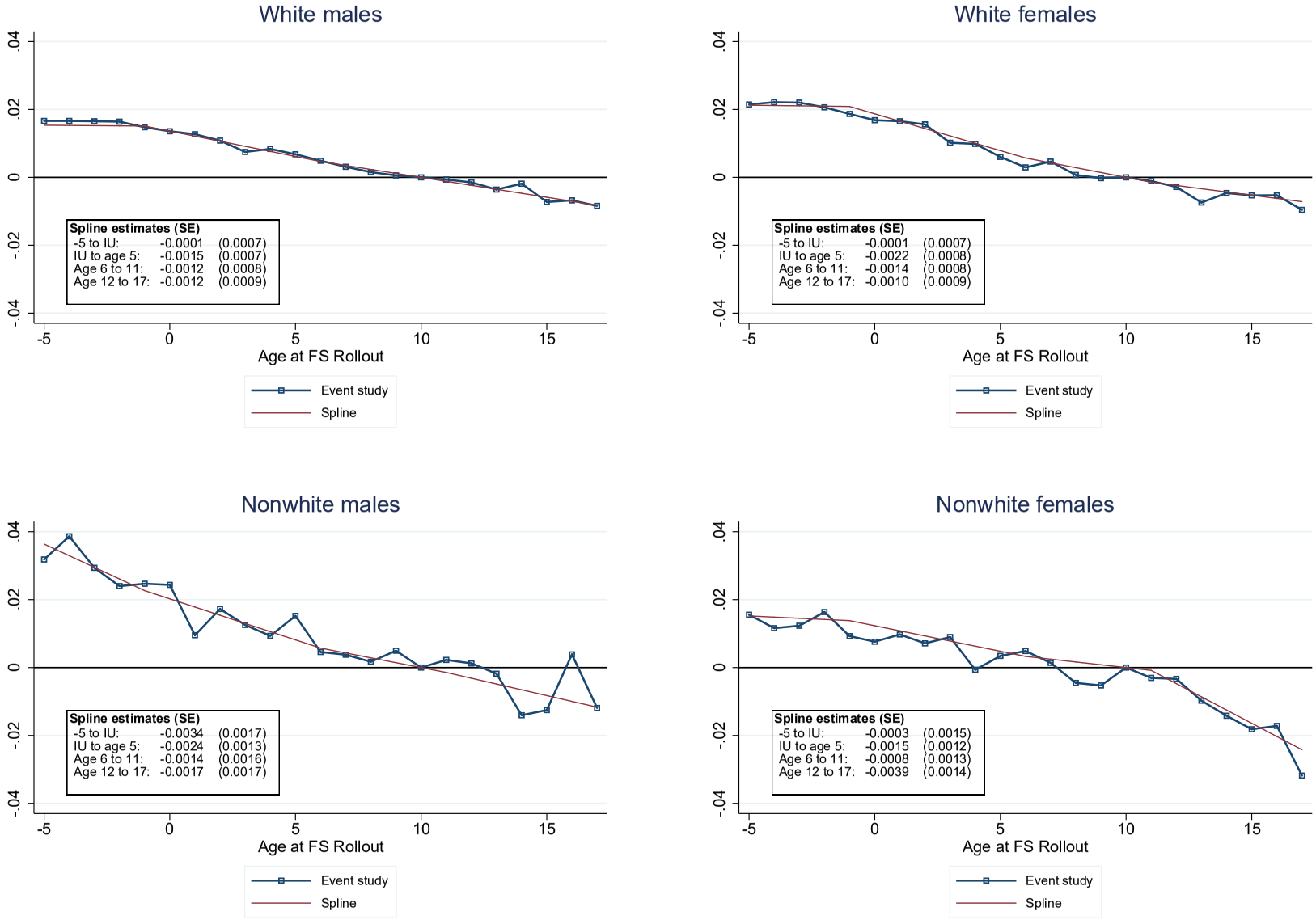
Notes: The panels plot event-study and spline estimates for survival to 2012 using the specifications in equations (1) and (2) separately by race and sex. All models include fixed effects for birth-county, survey year, and birth-state×birth-year as well as 1960 county characteristics interacted with a linear trend in year of birth. Survival to 2012 is expressed in percentage point units.The survival estimates are based on the 114 million U.S. individuals born in the U.S. between 1950 and 1980 for whom we observe place of birth. See Figure 5 for more on sample, specification and data.

Appendix Figure 4: Event-Study and Spline Estimates of the ITT Effects of Food Stamps Exposure on Non-Incarceration by a Cohort's Age when the Program Launched, by Race and Sex



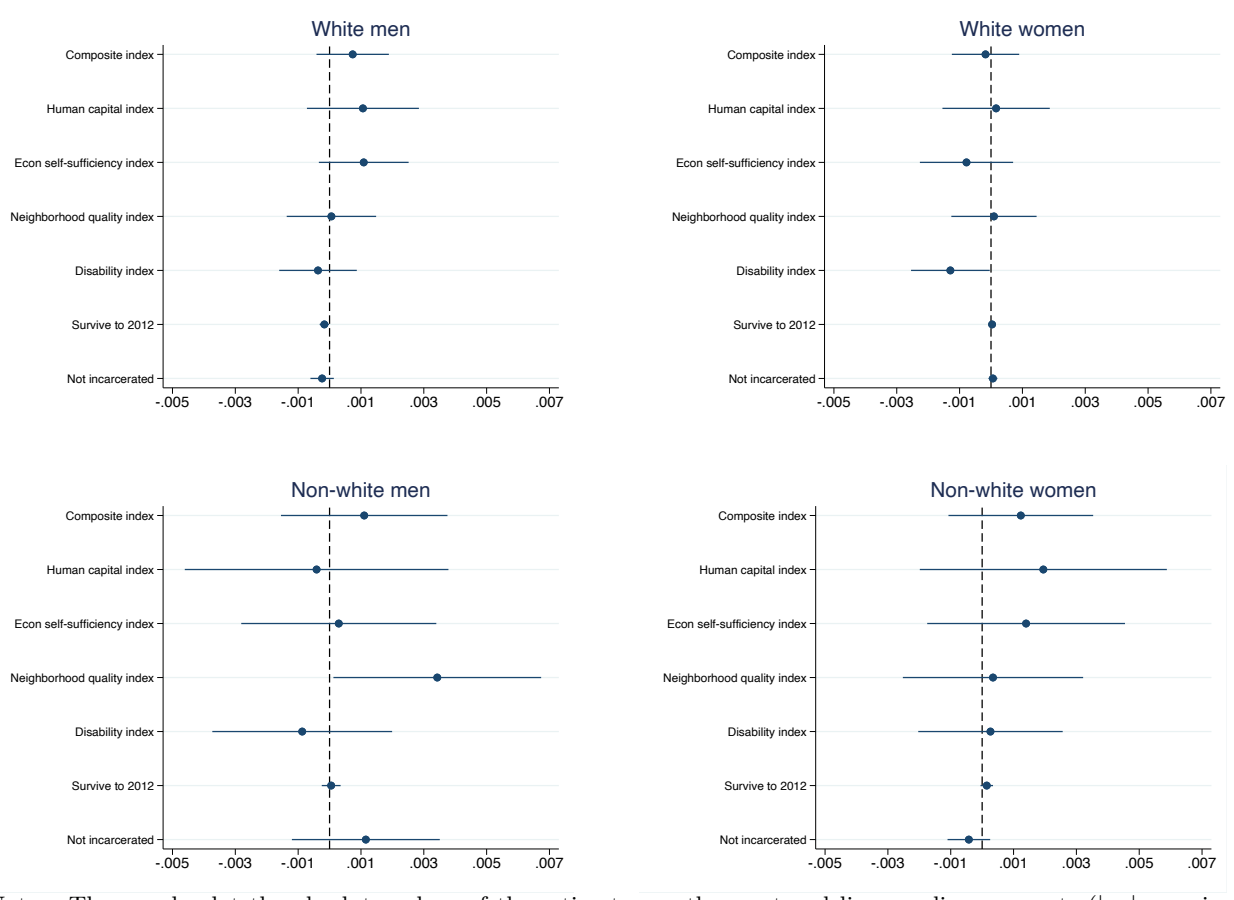
Notes: The panels plot event-study and spline estimates for non-incarceration in the 2006-2013 ACS using the specifications in equations (1) and (2) separately by race and sex. All models include fixed effects for birth-county, survey year, and birth-state×birth-year as well as 1960 county characteristics interacted with a linear trend in year of birth. Not incarcerated is expressed in percentage point units. See Figure 5 for more on sample, specification and data.

Appendix Figure 5: Event-Study and Spline Estimates of the ITT Effects of Food Stamps Exposure on the Neighborhood Quality Index by a Cohort's Age when the Program Launched, by Race and Sex



Notes: The panels plot event-study and spline estimates for the standardized index of neighborhood quality using the specifications in equations (1) and (2) separately by race and sex. All models include fixed effects for birth-county, survey year, and birth-state×birth-year as well as 1960 county characteristics interacted with a linear trend in year of birth. See Figure 5 for more on sample, specification, and data.

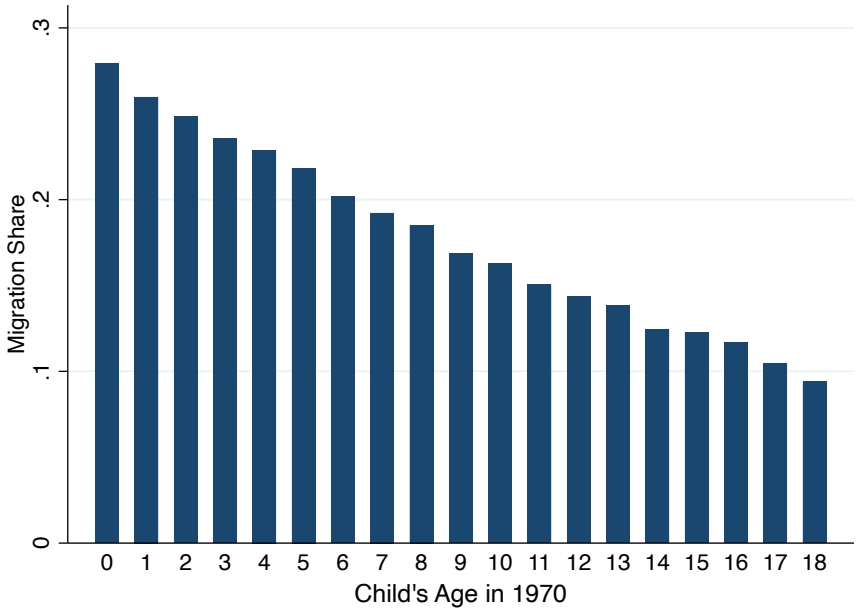
Appendix Figure 6: Spline Summary Estimates of the Pre-Trend of the ITT Effects of Food Stamps for Well-Being Indices, Survival, and Non-Incarceration, by Race and Sex



Notes: The panels plot the absolute values of the estimates on the pre-trend linear spline segments ($|\omega_1|$ covering ages -5 to -2) from equation (2) for our different outcomes and sub-groups, along with the 95% confidence intervals. The indices are standardized in terms of standard deviations, but "Survive to 2012" and "Not incarcerated" are in percentage point units. See Figure 5 for more on sample, specification, and data.

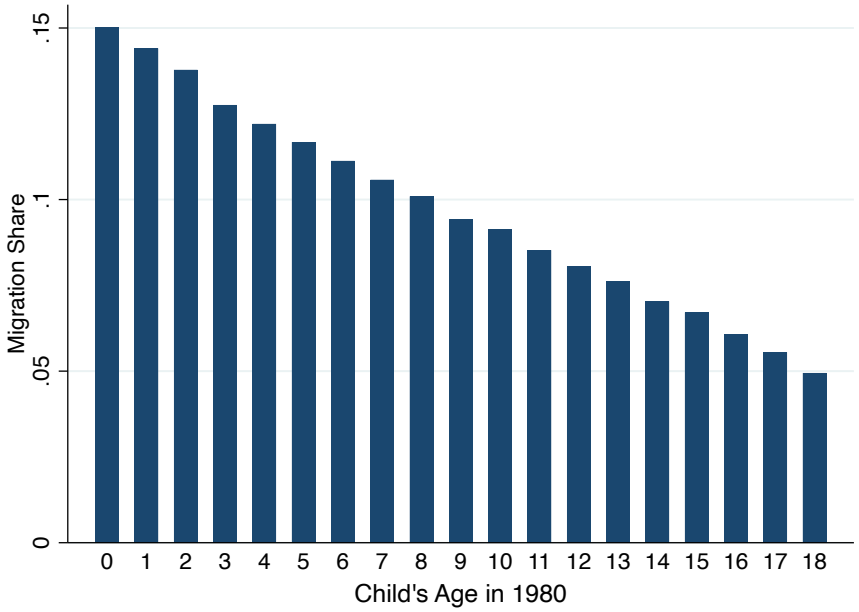
Appendix Figure 7: Five-Year Childhood Migration Rates

(A) Five-Year Childhood Migration Rates by Age of Child, 1970 Decennial Census



Source: 1970 Decennial Census.

(B) Five-Year Childhood Migration Rates by Age of Child, 1980 Decennial Census



Source: 1980 Decennial Census.

Notes: Using publicly available data from the 1970 and 1980 decennial census, the figure plots, by child age, the share of children who lived in a different county five years prior to the census year. We limit the sample to those with the child's mother (or the head of household, if no mother was present) had less than a high school degree. We use the migration of the mother (or head of household, if no mother was present) as a proxy for migration of the child. We present the results by the child's age in 1970 or 1980.

Appendix Table 1: Outcome Means, Whole Sample and by Race and Sex

Title	All	White males	White females	Nonwhite males	Nonwhite females
Yrs schooling	13.760	13.750	13.910	13.140	13.370
HS/GED or more	0.930	0.928	0.949	0.866	0.886
Some college or more	0.665	0.648	0.700	0.561	0.635
4 yrs college or more	0.328	0.332	0.350	0.227	0.256
Graduate degree or more	0.031	0.038	0.026	0.026	0.022
Professional occupation	0.372	0.363	0.405	0.260	0.325
In labor force	0.857	0.932	0.796	0.862	0.788
Worked last yr	0.876	0.942	0.826	0.868	0.808
# wks worked last yr	41.810	46.200	38.460	41.090	37.220
Usual hrs worked/wk	36.460	42.590	31.240	37.450	31.580
Log labor income	10.570	10.860	10.300	10.560	10.260
Log non-labor income, excl public source	7.355	7.221	7.393	7.641	7.753
Log fam income to pov	5.851	5.943	5.865	5.622	5.427
Not in pov	0.903	0.934	0.904	0.849	0.782
-1 x Log(public source income)	-9.039	-9.177	-9.037	-9.001	-8.738
Labor income > 0	0.871	0.939	0.819	0.860	0.799
Family income > 0	0.975	0.982	0.974	0.962	0.954
Log house value	12.090	12.100	12.120	11.890	11.860
Log gross rent	6.844	6.875	6.874	6.808	6.757
Home ownership	0.785	0.814	0.819	0.636	0.599
Single family residence	0.859	0.869	0.869	0.795	0.809
Log mean fam income to pov (tract)	5.891	5.920	5.926	5.689	5.656
-1 x teen pregnancy rate (tract)	-0.040	-0.037	-0.036	-0.059	-0.062
-1 x share single HOH (tract)	-0.436	-0.422	-0.420	-0.519	-0.531
-1 x child pov rate (tract)	-0.211	-0.197	-0.196	-0.303	-0.319
Mean home ownership (tract)	0.742	0.758	0.762	0.641	0.632
Log median value of home (tract)	11.990	12.010	12.010	11.840	11.800
Log median gross rent (tract)	6.823	6.823	6.826	6.796	6.775
Absolute upward mobility (CH)	42.250	42.620	42.580	40.420	40.080
Mean fam income (tract) > 0	0.941	0.944	0.944	0.919	0.916
No work disability	0.914	0.918	0.927	0.859	0.868
No ambulatory difficulty	0.950	0.956	0.952	0.933	0.924
No cognitive difficulty	0.968	0.971	0.969	0.957	0.955
No independent learning difficulty	0.963	0.970	0.968	0.934	0.927
No vision/hearing difficulty	0.981	0.979	0.985	0.973	0.979
No self-care difficulty	0.987	0.989	0.987	0.981	0.977
Not incarcerated	0.984	0.981	0.997	0.859	0.989
Survive to 2012	0.956	0.945	0.972	0.932	0.963
Number of observations	17,400,000	7,423,000	7,817,000	951,000	1,204,000
Number of cells	4,272,000	2,684,000	2,781,000	561,000	668,000
Number of counties	3,000	3,000	3,000	2,900	2,900

Notes: The table provides means of each of the outcome variables reported in the paper, for the whole sample, and by race and sex category. Sub-index outcomes are not normalized; indices are normalized. For details on sample and data, see Table 3.

Appendix Table 2: Sensitivity of the Exposure Model to Control Variables

	(1)	(2)	(3)
Panel A: Human Capital			
%IU - Age 5	0.0094	0.0140	0.0103
	(0.0037)	(0.0036)	(0.0035)
Number of observations	17,400,000	17,400,000	17,400,000
Number of cells	4,272,000	4,272,000	4,272,000
Number of counties	3,000	3,000	3,000
R^2	0.123	0.125	0.127
Panel B: Economic Self-Sufficiency			
%IU - Age 5	0.0017	0.0018	0.0043
	(0.0015)	(0.0014)	(0.0016)
Number of observations	17,400,000	17,400,000	17,400,000
Number of cells	4,272,000	4,272,000	4,272,000
Number of counties	3,000	3,000	3,000
R^2	0.057	0.057	0.058
Panel C: Neighborhood Quality			
%IU - Age 5	0.0014	0.0068	0.0115
	(0.0035)	(0.0041)	(0.0036)
Number of observations	17,400,000	17,400,000	17,400,000
Number of cells	4,272,000	4,272,000	4,272,000
Number of counties	3,000	3,000	3,000
R^2	0.375	0.378	0.379
Panel D: Physical Disability			
%IU - Age 5	-0.0015	-0.0001	0.0014
	(0.0021)	(0.0016)	(0.0013)
Number of observations	16,800,000	16,800,000	16,800,000
Number of cells	2,796,000	2,796,000	2,796,000
Number of counties	3,100	3,100	3,100
R^2	0.050	0.052	0.053
Panel E: Survive to 2012			
%IU - Age 5	0.0000	-0.0003	0.0007
	(0.0005)	(0.0005)	(0.0003)
Number of observations	114,000,000	114,000,000	114,000,000
Number of cells	943,000	943,000	943,000
Number of counties	3,000	3,000	3,000
R^2	0.684	0.692	0.696
Panel F: Not Incarcerated			
%IU - Age 5	0.0008	0.0007	0.0008
	(0.0004)	(0.0004)	(0.0004)
Number of observations	7,705,000	7,705,000	7,705,000
Number of cells	2,591,000	2,591,000	2,591,000
Number of counties	3,000	3,000	3,000
R^2	0.025	0.026	0.027
State X birth year FE	X	X	X
Cty_{60} x linear cohort		X	X
FE county, birth year, survey year			X

Notes: We report the same estimates as in Table 2, but for each of our 6 main outcomes (the four well-being indices, survival to 2012, and non-incarceration).

Appendix Table 3: Estimated ITT Effects of Food Stamps Exposure between Conception and Age 5 on Life Expectancy

	(1)	(2)	(3)
%Age 0 - Age 5	0.2320	0.1524	0.1977
	(0.0558)	(0.0449)	(0.0287)
FE county, birth year, survey year	X	X	X
Cty_{60} x linear cohort		X	X
State X birth year FE			X
Number of observations	17,300,000	17,300,000	17,300,000
Number of cells	1,322,000	1,322,000	1,322,000
Number of counties	3000	3000	3000
R^2	0.830	0.842	0.848

Notes: Each column provides estimates from the exposure model in equation (3), using as the outcome our estimate of life expectancy (see text and Online Appendix for more details on how we construct this measure based on our survival outcome). The data are collapsed into cells at the birth-county×birth-year×survey-year level, and the reported coefficient is on the exposure variable: the share of years between age 0 and age 5 that a cohort is exposed to Food Stamps based on when the program began in the cohort's county of birth. All columns include fixed effects for birth-county, birth-year, and survey year. Column 2 adds 1960 county characteristics interacted with a linear trend in year of birth. Column 3 adds birth-state×birth-year fixed effects. Standard errors are clustered by county of birth and indicated in parentheses. The number of observations, number of cells and number of counties are rounded to the nearest 1,000 for disclosure purposes.

Appendix Table 4: Romano-Wolf P-Values Associated With Estimates in Table 4

Title	All	White males	White females	Nonwhite males	Nonwhite females
Human capital					
Yrs schooling	0.0099	0.0099	0.0099	0.9901	0.9802
HS/GED or more	0.1188	0.5842	0.4950	0.9901	0.8515
Some college or more	0.0099	0.0099	0.0198	0.9901	0.9802
4 yrs college or more	0.0099	0.0099	0.0099	0.7822	0.8515
Graduate degree or more	0.4257	0.8614	0.2079	0.7822	0.8515
Professional occupation	0.0297	0.0297	0.2079	0.7327	0.9802
Economic self sufficiency					
In labor force	0.7723	0.1980	0.0495	0.7228	0.6436
Worked last yr	0.4653	0.9505	0.1584	0.2574	0.6931
# wks worked last yr	0.3465	0.6040	0.1485	0.0297	0.6931
Usual hrs worked/wk	0.3465	0.0594	0.1485	0.5347	0.9703
Log labor income	0.0099	0.0099	0.7723	1.0000	0.7426
Log non-labor income, excl public source	0.4653	0.9505	0.7723	0.9010	0.6931
Log fam income to pov	0.0099	0.0099	0.0198	1.0000	0.7426
Not in pov	0.0099	0.9010	0.6931	0.5941	0.9703
-1 × Log(public source income)	0.3465	0.9505	0.7723	1.0000	0.9703
Labor income > 0	0.3762	0.9406	0.3267	0.2277	0.7426
Family income > 0	0.0990	0.9505	0.7723	0.3960	0.9703
Neighborhood quality					
Log house value	0.5050	0.9109	0.6733	1.0000	0.7129
Log gross rent	0.4950	0.7624	0.6733	1.0000	0.8911
Home ownership	0.0396	0.3168	0.0396	0.9901	0.9901
Single family residence	0.1584	0.7624	0.0495	0.2079	0.5842
Log mean fam income to pov (tract)	0.0495	0.2178	0.0099	0.9901	0.9802
-1 × teen pregnancy rate (tract)	0.2574	0.9109	0.6733	0.9802	0.9901
-1 × share single HOH (tract)	0.0396	0.0594	0.0099	1.0000	0.9901
-1 × child pov rate (tract)	0.0396	0.1584	0.0297	0.9802	0.8218
Mean home ownership (tract)	0.0297	0.1287	0.0297	1.0000	0.9802
Log median value of home (tract)	0.2574	0.8416	0.1089	0.9901	0.9703
Log median gross rent (tract)	0.2475	0.3168	0.3168	1.0000	0.9901
Absolute upward mobility (CH)	0.1881	0.2574	0.6436	1.0000	0.0099
Mean fam income (tract) > 0	0.0594	0.2574	0.1089	0.6337	0.8515
FE county, survey year	X	X	X	X	X
$Cty_{60}\times$ linear cohort	X	X	X	X	X
State × birth year FE	X	X	X	X	X
Number of observations	17,400,000	7,423,000	7,817,000	1,028,000	1,310,000
Number of cells	4,272,000	2,684,000	2,781,000	561,000	668,000
Number of counties	3,000	3,000	3,000	2,900	2,900

Notes: This table reports the Romano-Wolf p-values associated with estimates reported in Table 4.

Appendix Table 5: Estimated ITT Effects of Food Stamps Exposure in Early (Conception to Age 5) and Later Childhood (Ages 6 to 18) on Non-Incarceration for Nonwhite Males

	Not Incarcerated
%IU - Age 5	0.0053
	(0.0046)
%Ages 6-18	0.0241
	(0.0087)
FE county, survey year	X
Cty_{60} x linear cohort	X
State x birth year FE	X
Number of observations	494,000
Number of cells	338,000
Number of counties	2700
R^2	0.067

Notes: This table provides results from estimating an augmented version of the exposure model (equation 3) that includes two exposure variables—(i) the share of months of Food Stamps exposure between conception and age 5 and (ii) the share of months of Food Stamps exposure between ages 6 and 18. The outcome is non-incarceration and the sample is limited to nonwhite males.

Appendix Table 6: Spline Estimates of the Estimated ITT Effects of Food Stamps Exposure on Well-Being Indices, by Race and Sex

	All	White males	White females	Nonwhite males	Nonwhite females
Panel A: Composite					
Pre-trend: -5 to IU	-0.0004	-0.0007	0.0002	-0.0011	-0.0012
	(0.0005)	(0.0006)	(0.0005)	(0.0014)	(0.0012)
IU to age 5	-0.0017	-0.0016	-0.0008	-0.0012	-0.0017
	(0.0007)	(0.0006)	(0.0006)	(0.0010)	(0.0010)
Age 6 to 11	-0.0003	-0.0008	0.0002	-0.0006	-0.0006
	(0.0008)	(0.0006)	(0.0007)	(0.0012)	(0.0012)
Age 12 to 17	-0.0005	-0.0011	-0.0001	0.0007	-0.0024
	(0.0009)	(0.0007)	(0.0008)	(0.0013)	(0.0011)
Panel B: Human captial					
Pre-trend: -5 to IU	-0.0004	-0.0011	-0.0002	0.0004	-0.0019
	(0.0007)	(0.0009)	(0.0009)	(0.0021)	(0.0020)
IU to age 5	-0.0021	-0.0023	-0.0016	-0.0005	-0.0019
	(0.0008)	(0.0008)	(0.0007)	(0.0017)	(0.0015)
Age 6 to 11	-0.0004	-0.0012	0.0002	0.0008	0.0004
	(0.0010)	(0.0009)	(0.0010)	(0.0021)	(0.0018)
Age 12 to 17	-0.0005	-0.0013	-0.0001	0.0021	-0.0019
	(0.0011)	(0.0011)	(0.0011)	(0.0021)	(0.0018)
Panel C: Economic Self-Sufficiency					
Pre-trend: -5 to IU	-0.001	-0.001	0.001	0.000	-0.001
	(0.0006)	(0.0007)	(0.0008)	(0.0016)	(0.0016)
IU to age 5	-0.0008	-0.0010	0.0014	-0.0008	-0.0016
	(0.0005)	(0.0006)	(0.0007)	(0.0009)	(0.0011)
Age 6 to 11	0.0002	0.0000	0.0019	-0.0011	-0.0015
	(0.0006)	(0.0006)	(0.0007)	(0.0010)	(0.0012)
Age 12 to 17	-0.0004	-0.0008	0.0006	0.0016	-0.0014
	(0.0007)	(0.0006)	(0.0008)	(0.0012)	(0.0012)
Panel D: Neighborhood quality					
Pre-trend: -5 to IU	-0.0002	-0.0001	-0.0001	-0.0034	-0.0003
	(0.0007)	(0.0007)	(0.0007)	(0.0017)	(0.0015)
IU to age 5	-0.0022	-0.0015	-0.0022	-0.0024	-0.0015
	(0.0010)	(0.0007)	(0.0008)	(0.0013)	(0.0012)
Age 6 to 11	-0.0008	-0.0012	-0.0014	-0.0014	-0.0008
	(0.0011)	(0.0008)	(0.0008)	(0.0016)	(0.0013)
Age 12 to 17	-0.0005	-0.0012	-0.0010	-0.0017	-0.0039
	(0.0012)	(0.0009)	(0.0009)	(0.0017)	(0.0014)
Panel E: Physical Disability					
Pre-trend: -5 to IU	0.0007	0.0004	0.0013	0.0009	-0.0003
	(0.0005)	(0.0006)	(0.0006)	(0.0015)	(0.0012)
IU to age 5	0.0003	0.0004	0.0005	-0.0009	0.0014
	(0.0004)	(0.0004)	(0.0004)	(0.0009)	(0.0009)
Age 6 to 11	0.0009	0.0008	0.0010	0.0008	0.0016
	(0.0004)	(0.0005)	(0.0004)	(0.0011)	(0.0010)
Age 12 to 17	0.0008	0.0005	0.0009	0.0007	0.0005
	(0.0004)	(0.0005)	(0.0005)	(0.0011)	(0.0011)
Panel F: Survive to 2012					
Pre-trend: -5 to IU	0.0000	0.0002	0.0000	-0.0001	-0.0001
	(0.0000)	(0.0001)	(0.0001)	(0.0002)	(0.0001)
IU to age 5	-0.0001	0.0001	0.0000	-0.0002	-0.0002
	(0.0001)	(0.0001)	(0.0000)	(0.0001)	(0.0001)
Age 6 to 11	-0.0001	0.0001	0.0000	-0.0005	-0.0004
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)
Age 12 to 17	0.0001	0.0003	0.0001	-0.0001	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0003)	(0.0002)
Panel G: Not incarcerated					
Pre-trend: -5 to IU	0.0000	0.0002	-0.0001	-0.0012	0.0004
	(0.0001)	(0.0002)	(0.0001)	(0.0012)	(0.0003)
IU to age 5	0.0000	0.0001	0.0000	-0.0012	0.0002
	(0.0001)	(0.0001)	(0.0000)	(0.0007)	(0.0002)
Age 6 to 11	-0.0001	0.0001	0.0000	-0.0034	0.0001
	(0.0001)	(0.0001)	(0.0000)	(0.0009)	(0.0002)
Age 12 to 17	0.0002	0.0002	0.0000	-0.0015	0.0001
	(0.0001)	(0.0002)	(0.0000)	(0.0010)	(0.0002)

Notes: This table reports the spline estimates for each of our main outcomes, for the whole sample and separately by race and sex categories. See notes under Figure 4 for more details.

Appendix Table 7: Estimated ITT Effects of Food Stamps Exposure between Conception and Age 5 on Higher Percent Urban and Higher Number of Four Year Colleges in Adult County

	All	White males	White females	Nonwhite males	Nonwhite females
Panel A: Higher Percent Urban in Adult County					
%IU - Age 5	0.0017	0.0027	0.0022	-0.0008	0.0073
	(0.0016)	(0.0020)	(0.0019)	(0.0041)	(0.0047)
R^2	0.42	0.313	0.337	0.379	0.373
Panel B: Higher Number of Four-Year Colleges in Adult County					
%IU - Age 5	0.0020	0.0034	0.0030	-0.0011	0.0057
	(0.0014)	(0.0017)	(0.0017)	(0.0040)	(0.0039)
R^2	0.328	0.244	0.257	0.301	0.299
FE county, survey year	X	X	X	X	X
Cty_{60} x linear cohort	X	X	X	X	X
State x birth year FE	X	X	X	X	X
Number of observations	17,400,000	7,423,000	7,817,000	951,000	1,204,000
Number of cells	4,272,000	2,684,000	2,781,000	561,000	668,000
Number of counties	3,000	3,000	3,000	2,900	2,900

Notes: This table reports estimates of the exposure model (equation 3) using two outcomes, reported in the two panels. Specifically, using information on individuals' adult counties of residence and birth counties, we have merged in information on urbanicity (percent urban population from the 2010 National Historic Geographic Information System, or NHGIS) and the number of 4-year colleges using data from the Integrated Postsecondary Education Data System, which is published by the National Center for Education Statistics. We then created two outcomes: (i) an indicator equal to 1 for individuals for whom the adult county has a higher percent urban population than the birth county, and 0 otherwise, and (ii) an indicator equal to 1 for individuals for whom the adult county has a higher number of 4-year colleges than the birth county. Note that these indicators are set to 0 for individuals who do not move counties (i.e., their birth and adult county are the same). See notes under Table 3 for more details about the model and sample.

Appendix Table 8: The Effect of Childhood Food Stamps Exposure on Migration in PSID Data

	(1)	(2)	(3)	(4)
	1968-1970 Birth Sample		1965-1970 Birth Sample	
	Moved to another county by age 5	Moved to another county with FSP by age 5	Moved to another county by age 5	Moved to another county with FSP by age 5
Share of Age 0-5 with FSP (Using County of Birth)	0.046 (0.837)	0.190 (0.379)	0.125 (0.060)	0.133 (0.022)
FE birth-county, survey year	X	X	X	X
Birth year FE	X	X	X	X
Number of observations	785	785	1648	1648
Mean DV	0.224	0.195	0.185	0.142
R^2	0.567	0.561	0.415	0.443

Source: Public and Restricted Panel Study of Income Dynamics.
Notes: Using the Panel Study of Income Dynamics, we explore the impact of geographic mobility on measurement error and directed migration. The restricted PSID allows us to observe the county and state of residence for most individuals in the PSID sample, starting in 1968. This means we can see the county of birth for those born in or after 1968. Our two samples include children born between 1965-1970 and 1968-1970. In selecting these two year of birth samples, we balance the need for sufficient sample size with the limitation of county of residence being observed starting in 1968. Additionally, because Food Stamps is available in all counties in 1975, there is no potential for endogenous or directed migration after that. Therefore we provide estimates for two samples, one that includes 785 children born in 1968-1970, with full information on residence from birth to age 5. The second expands to 1648 children born 1965-1970. In both cases we limit to births up to 1970 since our exposure by age 5 (1975) is the key variable.