

## **ONLINE APPENDIX**

# **The Changing Safety Net for Low Income Parents and Their Children: Structural or Cyclical Changes in Income Support Policy?**

Revised July 2017

## **Data Appendix**

We provide additional discussion of our Current Population Survey (CPS) data construction, with a focus on how CPS respondents are followed over a two-year period. The data construction procedure links households across surveys, resulting in a 2-year “matched” CPS panel, allowing for analysis differing from that based upon the traditional cross-section design of the CPS. To help ensure we are matching ASEC households properly, we follow the procedure recommended by the Census Bureau and extended by Madrian and Lefgren (1999). Specifically, we match individuals based on eight variables: month in sample (months 1–4 for year 1, months 5–8 for year 2); gender; age; race; state of residence; line number (unique person identifier); household identifier; and household number. We delete observations as incorrect matches if the age of the person falls, or if it increases by more than two years (owing to the staggered timing of the initial and final interviews). In addition, we drop observations if state of residence changes since the CPS is an address-based survey and thus does not follow movers, whether in-state or out-of-state. The implication of the latter is that we are capturing non-moving survey respondents over a two-year period, which is likely to result in an understatement of participants of transfer programs, at least among nonworking transfer households who tend to move at higher frequency. As discussed briefly below and in the main paper, we attempt to control for these possible influences by re-weighting the data. Due to major survey redesigns in the mid-1980s and mid-1990s, we cannot match across the 1985–1986 and 1995–1996 waves, yielding 30 years of matched data.

Because our interest is on individuals at risk of transfer-program participation with dependent children, the overall baseline sample consists of individuals between the ages of 20 and 55. This yields 694,278 matches across the 30-year sample, or 23,190 on average per year

for a 55 percent average match rate (see Appendix Table 1) for our two-year (biennial) panels. This rate is in line with others who have utilized matched samples from the ASEC, and as noted by Feng (2008), is actually artificially low because of the inclusion of the SCHIP oversample beginning in 2000 who are not eligible for a ASEC-to-ASEC match but are included in the denominator in Appendix Table 1.<sup>1</sup> We further restrict the main analysis sample to those individuals who are the head of household in both years and who have at least one never-married child under age 18 in both years. These two restrictions reduce the sample to 176,072 matched pairs, with head of household having the largest effect on the sample size. Appendix Table 2 compares demographic characteristics of the matched and unmatched ASEC sample. While we find the samples to be qualitatively similar on demographics, the matched sample is slightly older, better educated, and less likely to be Hispanic. There are fewer female headed families and more married families in the biennial merged ASEC as well. As such, this suggests that our findings with respect to the role of the economy could be attenuated via a slightly more socio-economically advantaged sample. To control for this possible selection bias, we adjust the ASEC person weight by the inverse probability of selection into the second year of the sample, which is a general approach to control for selection on observables in missing data (Wooldridge 2007).<sup>2</sup>

## **Analytical Appendix Tables**

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<sup>1</sup> When the Census Bureau added the SCHIP oversample to the CPS they were not necessarily assigned unique household ID numbers and thus many households shared ID numbers. A second household identifier was added to the survey starting in 2006, which in combination with the original household ID, improves identification of the same household (Feng 2008).

<sup>2</sup> Specifically we estimate a logit model of the probability of a match from year 1 to year 2 as a function of the demographics in Appendix Table 2 such as age, education, gender, race, ethnicity, marital status, metro status, and state fixed effects. We then divide the ASEC supplement weight by the fitted probability of a match.

To augment the results reported in the paper, we provide an exhaustive set of appendix analyses—including descriptive statistics and regression analyses. The main results point towards structural economic factors and policy choices over a roughly 30-year period as drivers of biennial participation in SNAP, EITC, and the CTC. Still, there are additional questions governing biennial program participation that can and should be addressed. Here, we summarize and highlight some of these figures and tables, while others are discussed in the main text of the paper. First, in Appendix Tables 9 and 10, we augment the baseline counterfactual simulations using 2000-2012 regressions for SNAP alone and SNAP with EITC/CTC by adding native born status as a demographic control variable. Here, we find no meaningful differences in the predicted role of policy, the economy, or demographics.

Next, as discussed in the main paper, the ASEC does not collect information on EITC/CTC participation, and thus we relied on estimates of eligibility from NBER's TAXSIM model. To put the programs on equal footing, we estimate separate models for SNAP eligibility for the full sample of families. Because the ASEC does not collect asset information, we confine our analysis to gross-income eligibility. We report the parameter estimates from the simulated SNAP eligibility model alongside the original estimates based on actual participation from Table 1 in Appendix Table 11. We find that the two models are qualitatively similar, although simulated biennial SNAP participation is slightly overstated among the young, less educated, and racial and ethnic minorities. Most notably, Hispanic ethnicity has no quantitative or statistical effect on actual SNAP participation, while simulated eligibility is 7 percentage points higher than for non-Hispanics. State business cycles are still a large positive predictor of SNAP, but it underpredicts eligibility relative to actual SNAP use. In Appendix Table 12, we re-estimate the joint SNAP and EITC/CTC models, but now rely on eligibility for both programs rather than blending

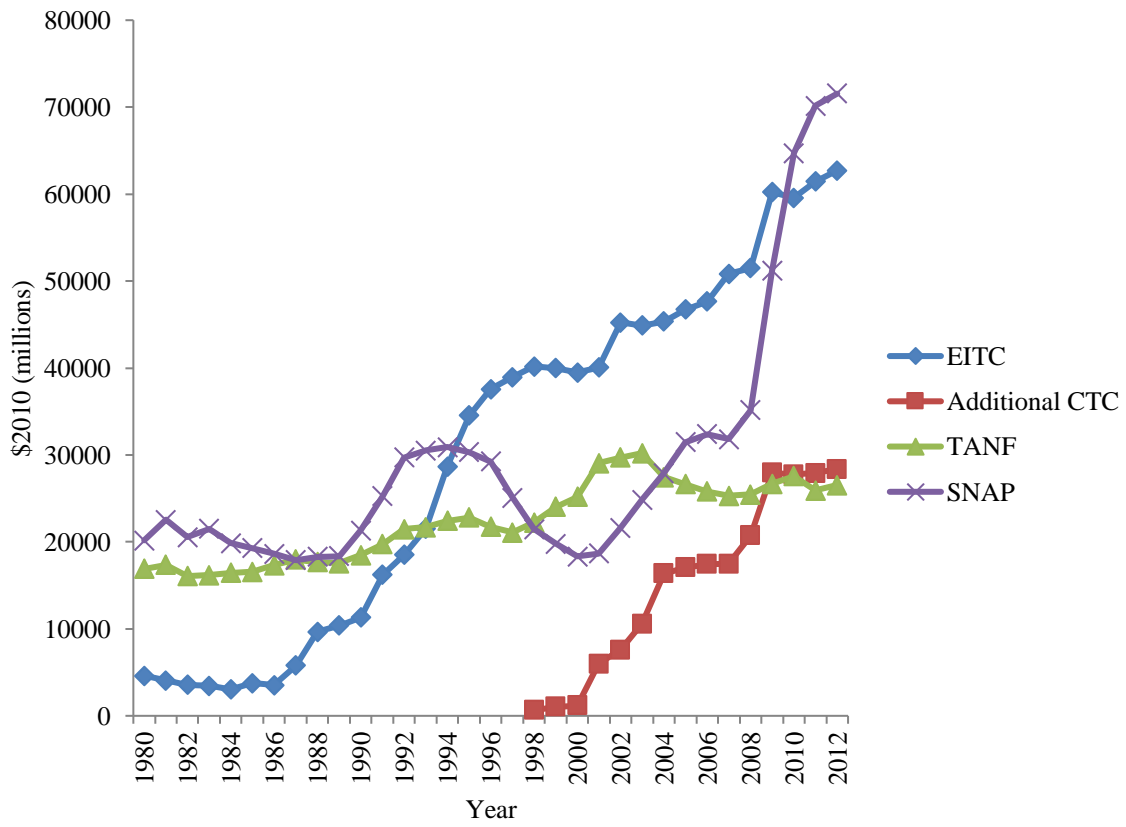
actual SNAP participation with simulated EITC/CTC use. We find the models to again be qualitatively similar, with the caveat that demographics and structural economic components are more strongly associated with joint eligibility. Two exceptions are with respect to EITC and SNAP generosity: the eligibility models predict that higher EITCs increase participation, but higher SNAP benefits do not. The opposite is true for models of joint program participation using actual SNAP participation. As in our baseline models, we apply our 1980-2012 SNAP alone and SNAP and EITC/CTC regression models to simulate joint program eligibility based upon 2000 values of the labor market, policy, and demographics. We report, in Appendix Table 13, a smaller role for structural economic variables – though they still dominate over policy and demographics. This is the case for both SNAP alone and SNAP and EITC/CTC models.

Additional sensitivity checks investigate the potential role of underreported program participation in the CPS. We adjust the SNAP participation regressions and counterfactual simulations with parameters reflecting the degree of survey data underreporting from Meyer, Mok, and Sullivan (2015). Their comparison of survey versus administrative data on participation allows for a set of adjustment factors reflecting SNAP program underreporting in the CPS. In Appendix Table 14, we show the results of our SNAP alone counterfactual simulations augmented with participation adjustments that predict higher SNAP participation. Overall, these adjusted results yield higher changes in participation rates over the 2000s—139 versus 104 percent—which compared to the baseline in Table 4 is explained slightly more by policy versus structural economic variables for all but single mother families.

Appendix Tables 15-17 conclude our sensitivity checks by expanding the focus of our programs to include cash welfare and disability. First, in Appendix Table 15, we repeat our exercise from Appendix Table 4 where we examine transition rates into and between programs

from year 1 to year 2, now inclusive of AFDC/TANF. Next, in Appendix Table 16 we examine the predictors of joint participation in SNAP, EITC, CTC, and AFDC/TANF. We find that the diminished role of and participation in cash welfare after the mid-1990s is reflected in our analysis—transition rates within TANF alone fall from 10.2 percent in the 1980s to roughly 4 percent by the 2000s—and the parameter estimates are attenuated across-the-board upon including AFDC/TANF. The state share part-time work is the largest predictor of participation in all four programs, and education is a smaller, negative predictor as well. This attenuation of the results is more severe when assessing the predictors of biennial participation in SNAP, EITC, CTC, TANF, and SSI, in Appendix Table 17. This stems from the fact that since the 1980s joint participation in these five programs over a two-year period has declined by half, which is in stark contrast to the rising joint participation in the work-based safety-net programs of EITC, CTC, and SNAP emphasized in the main analysis.

**Appendix Figure 1. Trends in Real Spending on Selected Safety Net Programs**



**Appendix Table 1: Number and Rate of Merges by 1st Year of CPS. CY 1980-2011**

Year	# Merged CPS Observations	# CPS Observations	Merge Rate
1980	25,476	43,092	59.1%
1981	25,872	39,422	65.6%
1982	25,503	39,916	63.9%
1983	24,611	39,582	62.2%
1984			
1985	23,813	38,901	61.2%
1986	24,415	38,781	63.0%
1987	22,689	38,829	58.4%
1988	23,234	36,094	64.4%
1989	25,184	39,908	63.1%
1990	25,003	39,516	63.3%
1991	24,839	39,071	63.6%
1992	18,669	39,378	47.4%
1993	16,698	34,822	48.0%
1994			
1995	21,293	32,939	64.6%
1996	21,384	33,514	63.8%
1997	21,536	33,515	64.3%
1998	21,641	33,660	64.3%
1999	21,245	30,394	69.9%
2000	25,252	55,069	45.9%
2001	24,688	54,864	45.0%
2002	25,518	54,926	46.5%
2003	21,943	52,912	41.5%
2004	22,745	51,604	44.1%
2005	22,862	51,957	44.0%
2006	23,291	51,208	45.5%
2007	23,367	50,362	46.4%
2008	23,630	50,945	46.4%
2009	23,306	51,476	45.3%
2010	22,483	49,922	45.0%
2011	22,088	48,651	45.4%
Average # of Matches	23,190	43,058	55.3%



**Appendix Table 2. Pre and Post Family Head Summary Statistics (weighted)**

Variables	All Heads- Unmatched		All Heads- Matched	
	Mean	SD	Mean	SD
Ages 20-27	0.155	0.362	0.123	0.328
Ages 28-35	0.313	0.464	0.318	0.466
Ages 36-44	0.347	0.476	0.381	0.486
Ages 45-55	0.185	0.388	0.178	0.383
Less than High School	0.173	0.379	0.151	0.358
High School Diploma	0.327	0.469	0.332	0.471
Some College	0.263	0.440	0.253	0.435
College Graduate	0.237	0.425	0.264	0.441
Black	0.146	0.353	0.142	0.349
Other Race	0.056	0.229	0.055	0.229
Hispanic	0.177	0.381	0.133	0.340
Household Size	3.928	1.262	4.004	1.232
Number of Own Kids < age 18	1.879	0.967	1.933	0.965
Female Head	0.436	0.496	0.364	0.481
Married Head	0.703	0.457	0.757	0.429
Lives in Metro Area	0.791	0.406	0.783	0.412
Lives in Central City	0.266	0.442	0.244	0.430

Notes: Summary statistics from CPS ASEC for calendar years 1980-2012 and are based on year 1 of matched CPS, unless indicated otherwise. The unit of analysis for all summary statistics is the head of household. Each of the columns summarize all household heads. Statistics for unmatched sample are weighted using person level sampling weights. Statistics for matched sample are weighted using person level sampling weights adjusted for probability of year 2 selection.

**Appendix Table 3. Family Head Summary Statistics**

Variables	All Heads		Low Income		Low Education		Single Mother	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
SNAP Both Years	0.084	0.277	0.302	0.459	0.139	0.345	0.287	0.452
EITC/CTC Both Years	0.163	0.370	0.533	0.499	0.233	0.423	0.386	0.487
SNAP & EITC/CTC Both Years	0.037	0.189	0.137	0.344	0.058	0.234	0.109	0.311
Ages 20-27	0.123	0.329	0.244	0.429	0.173	0.378	0.216	0.411
Ages 28-35	0.318	0.466	0.360	0.480	0.335	0.472	0.324	0.468
Ages 36-44	0.381	0.486	0.287	0.452	0.340	0.474	0.330	0.470
Ages 45-55	0.178	0.382	0.109	0.312	0.153	0.360	0.130	0.337
Less than High School	0.152	0.359	0.351	0.477	0.313	0.464	0.219	0.413
High School Diploma	0.333	0.471	0.399	0.490	0.687	0.464	0.370	0.483
Some College	0.253	0.435	0.200	0.400	(omitted)	(omitted)	0.286	0.452
College Graduate	0.262	0.440	0.050	0.218	(omitted)	(omitted)	0.126	0.331
Black	0.143	0.350	0.273	0.445	0.174	0.379	0.370	0.483
Other Race	0.055	0.229	0.055	0.227	0.041	0.199	0.041	0.198
Hispanic	0.134	0.340	0.250	0.433	0.195	0.396	0.155	0.362
Household Size	4.002	1.233	4.135	1.548	4.074	1.330	3.308	1.296
Number of Own Kids < age 18	1.933	0.965	2.270	1.169	1.991	1.025	1.848	0.999
Female Head	0.366	0.482	0.586	0.492	0.380	0.485	1.000	0.000
Married Head	0.756	0.430	0.486	0.500	0.704	0.457	(omitted)	(omitted)
Lives in Metro Area	0.784	0.412	0.735	0.441	0.734	0.442	0.822	0.382
Lives in Central City	0.244	0.430	0.340	0.474	0.261	0.439	0.378	0.485
2-Year Real Average State Median Wage	14.497	2.142	14.128	2.094	14.175	2.131	14.494	2.131
Near Poverty Both Years	0.263	0.440	1.000	0.000	0.407	0.491	0.606	0.489
Near Poverty Year 1 Out of Near Poverty Year 2	0.079	0.269	(omitted)	(omitted)	0.093	0.290	0.083	0.275
State Share Not in Labor Force	0.118	0.032	0.123	0.033	0.120	0.033	0.120	0.032
Full Year Worker Both Years	0.599	0.490	0.302	0.459	0.521	0.500	0.381	0.486
Part Year Worker Both Years	0.105	0.307	0.177	0.382	0.118	0.323	0.151	0.358
Not in Labor Force Both Years	0.085	0.279	0.216	0.412	0.118	0.323	0.182	0.386
Full Year Worker Year 1 Part Year Worker Year 2	0.070	0.254	0.076	0.265	0.076	0.266	0.074	0.262
Full Year Worker Year 1 NILF Year 2	0.008	0.089	0.012	0.110	0.010	0.097	0.012	0.111

**Appendix Table 3 Continued**

Variables	All Heads		Low Income		Low Education		Single Mother	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Part Year Work Year 1 Full Year Work Year 2	0.076	0.266	0.091	0.288	0.084	0.278	0.091	0.287
Part Year Work Year 1 NILF Year 2	0.025	0.157	0.059	0.236	0.033	0.178	0.053	0.224
NILF Year 1 Full Year Work Year 2	0.007	0.084	0.012	0.110	0.009	0.095	0.012	0.109
NILF Year 1 Part Year Work Year 2	0.021	0.142	0.049	0.216	0.026	0.160	0.043	0.204
State Unemployment Rate	0.063	0.021	0.066	0.022	0.065	0.022	0.064	0.021
State Minimum Wage	6.523	0.678	6.540	0.686	6.501	0.668	6.528	0.681
EITC Subsidy Rate	0.264	0.126	0.266	0.130	0.248	0.128	0.271	0.123
Any Welfare Reform Waiver	0.055	0.211	0.054	0.210	0.050	0.202	0.054	0.210
TANF Implementation	0.439	0.491	0.432	0.490	0.382	0.481	0.468	0.494
Max SNAP Benefit (\$100s)	4.746	0.863	4.637	0.967	4.695	0.861	4.095	1.032
Implementation of EBT Card	0.370	0.470	0.369	0.471	0.318	0.454	0.402	0.478
Broad-Based Eligibility	0.112	0.308	0.125	0.323	0.094	0.285	0.130	0.329
Call Centers	0.140	0.347	0.146	0.354	0.116	0.320	0.156	0.363
Combined Applications	0.094	0.289	0.106	0.304	0.081	0.270	0.115	0.315
Initiate by Phone	0.060	0.237	0.069	0.254	0.048	0.214	0.071	0.258
Short Certification	0.431	0.495	0.418	0.493	0.384	0.486	0.456	0.498
Noncitizens SNAP-eligible	0.122	0.323	0.120	0.322	0.108	0.308	0.121	0.323
Requires Fingerprinting	0.138	0.345	0.158	0.365	0.129	0.335	0.150	0.357
Compulsory Disqualification	0.136	0.334	0.133	0.331	0.115	0.310	0.148	0.347
Online Application	0.099	0.299	0.105	0.307	0.081	0.273	0.110	0.313
Simplified Reporting	0.212	0.403	0.218	0.408	0.175	0.375	0.244	0.425
Vehicle Assets Excludable	0.167	0.368	0.176	0.376	0.137	0.339	0.190	0.387
Outreach (\$100mill)	0.295	0.980	0.328	1.063	0.254	0.910	0.335	1.035
Governor is Democrat	0.469	0.499	0.469	0.499	0.472	0.499	0.474	0.499
State Has Refundable EITC	0.121	0.326	0.111	0.314	0.097	0.295	0.134	0.341

Notes: Summary statistics span 1981-2012 and are based on year 1 of matched CPS, unless indicated otherwise. The unit of analysis for all summary statistics is the head of household. Each of the columns summarize household heads falling within one of four categories: All, Low Income, Low Education, Single Mother. Low income household heads have earnings at or below 2 times the federal poverty threshold. All dollar figures are in 2010 dollars, using the personal consumption expenditures deflator. NILF denotes individual family heads that are not in the labor force for a particular year. Statistics are weighted using person level sampling weights adjusted for probability of year 2 selection.

**Appendix Table 4. Two-Year SNAP and EITC/CTC Transition Rates and Relative Frequency**

Transition Rates, All Years				
	None Year 2	EITC/CTC Year 2	SNAP Year 2	EITC/CTC-SNAP Year 2
None Year 1	91.4%	7.0%	0.8%	0.8%
EITC Year 1	35.3	54.9	2.2	7.6
SNAP Year 1	19.8	8.3	52.0	19.9
EITC/CTC-SNAP Year 1	11.5	23.4	13.6	51.4
Transition Rates, 1980-1989				
None Year 1	93.4%	4.7%	1.1%	0.8%
EITC/CTC Year 1	43.2	45.9	3.3	7.7
SNAP Year 1	23.0	5.9	54.0	17.1
EITC/CTC-SNAP Year 1	16.2	17.3	19.6	46.9
Transition Rates, 1990-1999				
None Year 1	91.7%	7.0%	0.6%	0.7%
EITC/CTC Year 1	35.5	55.8	2.1	6.7
SNAP Year 1	15.0	8.7	55.3	21.1
EITC/CTC-SNAP Year 1	10.7	24.9	11.9	52.5
Transition Rates, 2000-2012				
None Year 1	89.2%	9.3%	0.7%	0.8%
EITC/CTC Year 1	32.4	57.6	1.8	8.2
SNAP Year 1	19.6	11.7	45.4	23.2
EITC/CTC-SNAP Year 1	8.9	26.4	11.0	53.6

Note: Rows for transition rates represent share of year 1 survey respondents that fall into one of four categories in year 2: None (no programs), EITC/CTC alone, SNAP alone, or EITC/CTC and SNAP. Transition rate rows add up to 100 percent.

**Appendix Table 5. Linear Probability Estimates of Biennial SNAP Participation during 2000s**

VARIABLES	All Families	Low-Income Families	Low-Education Families	Single Mother Families
<b>Family Level</b>				
Ages 28-35	-0.0797** (0.006)	-0.0795** (0.009)	-0.0887** (0.010)	-0.1087** (0.015)
Ages 36-44	-0.1025** (0.008)	-0.0951** (0.011)	-0.1116** (0.011)	-0.1543** (0.016)
Ages 45-55	-0.0949** (0.008)	-0.0884** (0.012)	-0.0961** (0.011)	-0.1535** (0.019)
High School Diploma	-0.0886** (0.007)	-0.0780** (0.013)	-0.0867** (0.007)	-0.1588** (0.012)
Some College	-0.1207** (0.009)	-0.1204** (0.017)		-0.2227** (0.015)
College Graduate	-0.1389** (0.009)	-0.2006** (0.020)		-0.3092** (0.016)
Black	0.0631** (0.006)	0.0917** (0.016)	0.0863** (0.014)	0.0910** (0.013)
Other Race	0.0212** (0.006)	0.0191 (0.018)	0.0119 (0.011)	0.0306 (0.022)
Hispanic	0.0001 (0.009)	-0.0335 <sup>†</sup> (0.019)	0.0013 (0.012)	0.0163 (0.016)
Household Size	-0.0257** (0.003)	-0.0428** (0.006)	-0.0307** (0.005)	-0.0467** (0.007)
Number of Own Kids < Age 18	0.0582** (0.003)	0.0761** (0.006)	0.0739** (0.005)	0.0996** (0.008)
Female Head	0.0268** (0.003)	0.0556** (0.011)	0.0498** (0.006)	
Married Head	-0.1363** (0.008)	-0.1564** (0.012)	-0.1662** (0.010)	
Lives in Metro Area	-0.0134** (0.005)	-0.0151 (0.015)	-0.0160 <sup>†</sup> (0.009)	-0.0514** (0.017)
Lives in Central City	0.0164** (0.005)	0.0142 (0.018)	0.0186 <sup>†</sup> (0.010)	0.0265* (0.012)
<b>State/Federal Level</b>				
State Unemployment Rate (UR)	0.4901 (0.420)	1.8687 (1.318)	0.9431 (0.790)	1.3442 (1.430)
1 Year Lagged State UR	-0.0666 (0.529)	-0.5432 (1.758)	0.3440 (1.040)	-0.6942 (1.755)
2 year Lagged State UR	1.0035** (0.321)	3.0688** (1.130)	1.0327 (0.642)	3.4367** (1.111)
State % Full Year Worker	-0.0298 (0.087)	0.1640 (0.319)	0.0398 (0.151)	-0.1096 (0.274)
State % Part Year Worker	-0.0832 (0.095)	-0.1533 (0.367)	-0.1971 (0.160)	-0.5374 (0.325)
State % Not in Labor Force	-0.0201 (0.099)	-0.2386 (0.283)	-0.0538 (0.193)	-0.4321 <sup>†</sup> (0.247)
State Median Wage	-0.0004 (0.002)	0.0053 (0.007)	0.0009 (0.004)	0.0027 (0.006)
State Minimum Wage	-0.0021 (0.004)	-0.0065 (0.016)	-0.0137 (0.009)	0.0001 (0.016)
EITC Subsidy Rate	-0.4355** (0.066)	-0.2673 (0.237)	-0.2212 <sup>†</sup> (0.115)	-0.1127 (0.265)

State Has Refundable EITC	-0.0005 (0.006)	-0.0089 (0.023)	-0.0114 (0.013)	0.0113 (0.020)
Any Welfare Reform Waiver				
TANF Implementation				
Max SNAP Benefit (\$100s)	0.0318** (0.005)	0.0395** (0.008)	0.0276** (0.008)	0.0312** (0.008)
Implementation of EBT Card	-0.0003 (0.006)	0.0096 (0.022)	-0.0020 (0.014)	0.0116 (0.022)
Broad-Based Eligibility	-0.0033 (0.005)	-0.0258 (0.016)	-0.0136 (0.011)	0.0084 (0.023)
Short Certification	-0.0013 (0.004)	-0.0061 (0.015)	-0.0102 (0.010)	-0.0097 (0.016)
Requires Fingerprinting	0.0105 (0.007)	0.0291 <sup>†</sup> (0.015)	0.0025 (0.010)	0.0132 (0.024)
Compulsory Disqualification	0.0030 (0.007)	0.0196 (0.018)	0.0113 (0.013)	-0.0022 (0.021)
Simplified Reporting	0.0126* (0.005)	0.0417* (0.020)	0.0300** (0.009)	0.0184 (0.021)
Vehicle Assets Excludable	-0.0042 (0.006)	0.0021 (0.015)	-0.0045 (0.010)	-0.0190 (0.017)
Outreach (\$100 millions)	-0.0019 (0.002)	-0.0060 (0.006)	-0.0039 (0.003)	-0.0105 <sup>†</sup> (0.005)
Noncitizens SNAP-eligible	-0.0132 (0.010)	-0.0836** (0.028)	-0.0322 <sup>†</sup> (0.019)	0.0000 (0.023)
Governor is Democrat	0.0019 (0.003)	0.0128 (0.012)	0.0050 (0.008)	0.0082 (0.012)
Observations	74,119	15,330	27,859	12,422
R-squared	0.180	0.145	0.196	0.193

Standard errors in parenthesis control for heteroskedasticity and within-state autocorrelation. All models control for fixed state and time effects. <sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ .

**Appendix Table 6. Linear Probability Estimates of Biennial Joint SNAP and EITC/CTC Participation during 2000s**

VARIABLES	All Families	Low-Income Families	Low-Education Families	Single Mother Families
<b>Family Level</b>				
Ages 28-35	-0.0525** (0.006)	-0.0566** (0.009)	-0.0565** (0.009)	-0.0586** (0.016)
Ages 36-44	-0.0665** (0.008)	-0.0683** (0.015)	-0.0686** (0.011)	-0.0792** (0.018)
Ages 45-55	-0.0653** (0.008)	-0.0869** (0.014)	-0.0663** (0.010)	-0.0931** (0.019)
High School Diploma	-0.0418** (0.006)	-0.0282* (0.012)	-0.0415** (0.006)	-0.0536** (0.014)
Some College	-0.0572** (0.007)	-0.0322† (0.018)		-0.0713** (0.017)
College Graduate	-0.0712** (0.006)	-0.0893** (0.018)		-0.1187** (0.015)
Black	0.0285** (0.006)	0.0348* (0.015)	0.0395** (0.010)	0.0372** (0.012)
Other Race	0.0088† (0.005)	-0.0087 (0.018)	-0.0033 (0.009)	-0.0017 (0.019)
Hispanic	0.0040 (0.008)	-0.0208 (0.016)	0.0060 (0.011)	0.0043 (0.014)
Household Size	-0.0129** (0.002)	-0.0209** (0.004)	-0.0156** (0.003)	-0.0241** (0.007)
Number of Own Kids < Age 18	0.0379** (0.003)	0.0479** (0.005)	0.0494** (0.003)	0.0626** (0.007)
Female Head	0.0134** (0.002)	0.0253* (0.011)	0.0234** (0.005)	
Married Head	-0.0614** (0.008)	-0.0459** (0.011)	-0.0616** (0.010)	
Lives in Metro Area	-0.0067† (0.004)	0.0033 (0.012)	-0.0061 (0.007)	-0.0336* (0.014)
Lives in Central City	0.0054 (0.004)	-0.0034 (0.014)	0.0061 (0.007)	0.0052 (0.010)
<b>State/Federal Level</b>				
State Unemployment Rate (UR)	0.4696† (0.240)	1.6082† (0.918)	0.9246* (0.447)	1.1501 (0.879)
1 Year Lagged State UR	-0.2774 (0.350)	-1.0285 (1.253)	-0.1605 (0.618)	-1.7411 (1.241)
2 year Lagged State UR	0.8600** (0.295)	2.8148** (1.026)	1.0769* (0.442)	3.8800** (1.209)
State % Full Year Worker	-0.0697 (0.064)	-0.0572 (0.234)	-0.0397 (0.122)	-0.3643* (0.181)
State % Part Year Worker	-0.0713 (0.080)	-0.1943 (0.321)	-0.0870 (0.130)	-0.7447** (0.250)
State % Not in Labor Force	-0.0654 (0.090)	-0.3738 (0.297)	-0.1991 (0.199)	-0.4463 (0.296)
State Median Wage	0.0004 (0.001)	0.0034 (0.006)	-0.0006 (0.003)	0.0075 (0.005)
State Minimum Wage	0.0052 (0.004)	0.0231 (0.015)	0.0039 (0.006)	0.0302* (0.014)
EITC Subsidy Rate	-0.3237**	-0.4462*	-0.2761*	-0.6217**

	(0.061)	(0.186)	(0.106)	(0.207)
State Has Refundable EITC	0.0007	-0.0014	-0.0059	0.0154
	(0.005)	(0.020)	(0.010)	(0.017)
Any Welfare Reform Waiver				
TANF Implementation				
Max SNAP Benefit (\$100s)	0.0141**	0.0247**	0.0100	0.0236*
	(0.004)	(0.007)	(0.006)	(0.009)
Implementation of EBT Card	-0.0067	-0.0184	-0.0200	-0.0165
	(0.006)	(0.019)	(0.013)	(0.025)
Broad-Based Eligibility	0.0000	-0.0129	-0.0110	0.0003
	(0.005)	(0.015)	(0.009)	(0.022)
Short Certification	0.0006	0.0017	-0.0035	0.0001
	(0.003)	(0.012)	(0.009)	(0.012)
Requires Fingerprinting	0.0159**	0.0465**	0.0236**	0.0312
	(0.005)	(0.012)	(0.006)	(0.029)
Compulsory Disqualification	0.0008	0.0145	0.0079	-0.0033
	(0.006)	(0.018)	(0.011)	(0.020)
Simplified Reporting	0.0065 <sup>†</sup>	0.0199	0.0142*	0.0122
	(0.004)	(0.013)	(0.006)	(0.016)
Vehicle Assets Excludable	0.0032	0.0239 <sup>†</sup>	0.0089	0.0208
	(0.004)	(0.013)	(0.009)	(0.017)
Outreach (\$100 millions)	0.0003	0.0021	0.0022	0.0065
	(0.002)	(0.006)	(0.003)	(0.005)
Noncitizens SNAP-eligible	-0.0078	-0.0378 <sup>†</sup>	-0.0124	0.0335 <sup>†</sup>
	(0.007)	(0.022)	(0.011)	(0.019)
Governor is Democrat	0.0014	0.0079	0.0024	-0.0013
	(0.003)	(0.009)	(0.006)	(0.011)
Observations	74,119	15,330	27,859	12,422
R-squared	0.089	0.066	0.089	0.087

Standard errors in parenthesis control for heteroskedasticity and within-state autocorrelation. All models control for fixed state and time effects. <sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ .



**Appendix Table 7. Counterfactual Simulations of Changes in Biennial Participation in SNAP from 2000-2012, using 1980-2012 regressions with Flexible Head Status**

All Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
104	36	70	34	72	90	15
Low-Income Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
56	7	89	18	69	54	8
Low-Education Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
110	55	54	51	57	52	36
Single-Mother Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
38	-23	155	8	79	53	-19

Source: Authors' calculations based on parameter estimates of two year SNAP participation allowing for head of family status to change (not shown). Simulations hold identified variables fixed and allow others to vary over time. In each case, the year effects are allowed to vary over time. Shares do not sum to 100% since some factors are omitted.

**Appendix Table 8. Counterfactual Simulations of Changes in Biennial Participation in SNAP and EITC/CTC from 2000-2012, using 1980-2012 regressions with Flexible Head Status**

All Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
103	89	23	5	95	90	9
Low-Income Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
54	33	42	-29	155	41	24
Low-Education Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
106	63	43	6	94	52	39
Single-Mother Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
38	33	21	-67	274	48	-12

Source: Authors' calculations based on parameter estimates of two year SNAP and EITC/CTC participation allowing for head of family status to change (not shown). Simulations hold identified variables fixed and allow others to vary over time. In each case, the year effects are allowed to vary over time. Shares do not sum to 100% since some factors are omitted.

**Appendix Table 9. Counterfactual Simulations of Changes in Biennial Participation in SNAP from 2000-2012, using 2000-2012 regressions (with Native Born)**

All Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
104	-14	111	53	55	101	-.3
Low-Income Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
56	-9	115	42	31	64	-7
Low-Education Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
110	34	76	94	19	65	23
Single-Mother Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
38	-52	250	18	52	53	-23

Source: Authors' calculations based on parameter estimates with controls for native born status (not shown). Simulations hold identified variables fixed and allow others to vary over time. In each case, the year effects are allowed to vary over time. Shares do not sum to 100% since some factors are omitted.

**Appendix Table 10. Counterfactual Simulations of Changes in Biennial Participation in SNAP and EITC/CTC from 2000-2012, using 2000-2012 regressions (with Native Born)**

All Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
104	-79	163	12	90	84	14
Low-Income Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
54	-56	195	-5	108	45	19
Low-Education Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
107	-63	151	52	53	46	44
Single-Mother Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
38	-108	344	-52	233	40	5

Source: Authors' calculations based on parameter estimates with controls for native born status (not shown). Simulations hold identified variables fixed and allow others to vary over time. In each case, the year effects are allowed to vary over time. Shares do not sum to 100% since some factors are omitted.

**Appendix Table 11. Linear Probability Estimates of Biennial SNAP Eligibility, All Heads**

VARIABLES	Actual	Simulated
<b>Family Level</b>		
Ages 28-35	-0.0860** (0.004)	-0.1070** (0.004)
Ages 36-44	-0.1092** (0.006)	-0.1416** (0.005)
Ages 45-55	-0.0962** (0.006)	-0.1197** (0.005)
High School Diploma	-0.1179** (0.005)	-0.1734** (0.007)
Some College	-0.1434** (0.006)	-0.2262** (0.008)
College Graduate	-0.1527** (0.006)	-0.2403** (0.007)
Black	0.0831** (0.007)	0.0976** (0.008)
Other Race	0.0317** (0.007)	0.0570** (0.005)
Hispanic	0.0077 (0.016)	0.0672** (0.012)
Household Size	-0.0219** (0.002)	-0.0200** (0.003)
Number of Own Kids < Age 18	0.0557** (0.002)	0.0866** (0.003)
Female Head	0.0484** (0.003)	0.0617** (0.003)
Married Head	-0.1539** (0.007)	-0.2024** (0.007)
Lives in Metro Area	-0.0141** (0.003)	-0.0349** (0.004)
Lives in Central City	0.0212** (0.005)	0.0280** (0.006)
<b>State/Federal Level</b>		
State Unemployment Rate (UR)	0.1703 (0.182)	-0.0681 (0.135)
1 Year Lagged State UR	-0.0757 (0.220)	0.2602 (0.228)
2 year Lagged State UR	0.5362** (0.122)	0.3015** (0.140)
State % Full Year Worker	-0.0316 (0.036)	-0.1082* (0.041)
State % Part Year Worker	0.0620 (0.051)	0.1108* (0.046)
State % Not in Labor Force	0.2015** (0.065)	0.2179** (0.073)
State Median Wage	-0.0007 (0.001)	-0.0020† (0.001)
State Minimum Wage	-0.0029 (0.002)	-0.0032 (0.003)
EITC Subsidy Rate	-0.4042** (0.062)	-0.3798** (0.067)
State Has Refundable EITC	-0.0044	0.0041

	(0.005)	(0.004)
Any Welfare Reform Waiver	-0.0052	0.0013
	(0.005)	(0.007)
TANF Implementation	-0.0268**	-0.0004
	(0.008)	(0.012)
Max SNAP Benefit (\$100s)	0.0286**	0.0114*
	(0.003)	(0.005)
Implementation of EBT Card	0.0006	0.0005
	(0.004)	(0.004)
Broad-Based Eligibility	0.0026	-0.0008
	(0.005)	(0.004)
Short Certification	-0.0009	0.0016
	(0.004)	(0.005)
Requires Fingerprinting	-0.0002	-0.0007
	(0.005)	(0.003)
Compulsory Disqualification	0.0036	0.0021
	(0.004)	(0.003)
Simplified Reporting	0.0128*	-0.0024
	(0.006)	(0.005)
Vehicle Assets Excludable	0.0024	0.0058
	(0.005)	(0.005)
Outreach (\$100 millions)	-0.0033**	-0.0023**
	(0.001)	(0.001)
Noncitizens SNAP-eligible	-0.0005	-0.0069
	(0.005)	(0.008)
Governor is Democrat	0.0055**	0.0019
	(0.002)	(0.002)
Observations	176,072	176,072
R-squared	0.229	0.303

Standard errors in parenthesis control for heteroskedasticity and within-state autocorrelation. All models control for fixed state and time effects. <sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ .

**Appendix Table 12. Linear Probability Estimates of Biennial Joint SNAP and EITC/CTC Eligibility, All Heads**

VARIABLES	Actual	Simulated
<b>Family Level</b>		
Ages 28-35	-0.0385** (0.005)	-0.0498** (0.005)
Ages 36-44	-0.0500** (0.006)	-0.0722** (0.006)
Ages 45-55	-0.0482** (0.005)	-0.0672** (0.005)
High School Diploma	-0.0405** (0.004)	-0.0797** (0.007)
Some College	-0.0498** (0.004)	-0.1078** (0.008)
College Graduate	-0.0594** (0.004)	-0.1214** (0.007)
Black	0.0295** (0.004)	0.0407** (0.007)
Other Race	0.0112** (0.004)	0.0234** (0.007)
Hispanic	0.0053 (0.008)	0.0569** (0.010)
Household Size	-0.0041** (0.001)	-0.0028 (0.002)
Number of Own Kids < Age 18	0.0196** (0.002)	0.0338** (0.003)
Female Head	0.0134** (0.001)	0.0197** (0.002)
Married Head	-0.0554** (0.004)	-0.0792** (0.006)
Lives in Metro Area	-0.0097** (0.003)	-0.0242** (0.003)
Lives in Central City	0.0016 (0.003)	0.0047 (0.004)
<b>State/Federal Level</b>		
State Unemployment Rate (UR)	-0.0235 (0.127)	-0.1103 (0.109)
1 Year Lagged State UR	-0.1321 (0.159)	-0.0349 (0.216)
2 year Lagged State UR	0.3515** (0.100)	0.3836** (0.137)
State % Full Year Worker	-0.0477 (0.030)	-0.0571 (0.044)
State % Part Year Worker	0.0441 (0.043)	0.1424** (0.042)
State % Not in Labor Force	-0.1143* (0.055)	-0.1208 (0.073)
State Median Wage	-0.0035** (0.001)	-0.0058** (0.001)
State Minimum Wage	0.0005 (0.002)	-0.0001 (0.002)
EITC Subsidy Rate	0.0066 (0.051)	0.2157** (0.066)

State Has Refundable EITC	0.0001 (0.003)	0.0049 (0.004)
Any Welfare Reform Waiver	0.0009 (0.005)	0.0049 (0.006)
TANF Implementation	-0.0112 (0.008)	0.0097 (0.012)
Max SNAP Benefit (\$100s)	0.0068** (0.002)	-0.0003 (0.002)
Implementation of EBT Card	-0.0020 (0.003)	-0.0018 (0.004)
Broad-Based Eligibility	0.0032 (0.004)	0.0005 (0.004)
Short Certification	-0.0006 (0.003)	-0.0011 (0.005)
Requires Fingerprinting	0.0033 (0.004)	0.0013 (0.005)
Compulsory Disqualification	0.0018 (0.004)	0.0022 (0.003)
Simplified Reporting	0.0095* (0.004)	-0.0033 (0.005)
Vehicle Assets Excludable	0.0053 (0.004)	0.0040 (0.004)
Outreach (\$100 millions)	0.0005 (0.001)	-0.0000 (0.002)
Noncitizens SNAP-eligible	-0.0058 (0.004)	-0.0005 (0.005)
Governor is Democrat	0.0037** (0.001)	0.0000 (0.002)
Observations	176,072	176,072
R-squared	0.076	0.119

Standard errors in parenthesis control for heteroskedasticity and within-state autocorrelation. All models control for fixed state and time effects. <sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ .



**Appendix Table 13. Counterfactual Simulations of Changes in Biennial SNAP or SNAP and EITC/CTC Eligibility from 2000-2012, using 1980-2012 regressions**

All Families - SNAP Eligibility						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
58	29	54	69	-10	54	8
All Families - SNAP and EITC/CTC Eligibility						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
38	19	52	27	27	27	28

Source: Authors' calculations based on eligibility parameter estimates in Appendix Tables 11-12. Simulations hold identified variables fixed and allow others to vary over time. In each case, the year effects are allowed to vary over time. Shares do not sum to 100% since some factors are omitted.

**Appendix Table 14. Counterfactual Simulations of Changes in Biennial Participation in SNAP from 2000-2012, using 1980-2012 regressions with Meyer-Mok-Sullivan Adjustments**

All Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
139	99	39	79	50	139	1
Low-Income Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
82	40	54	38	56	83	3
Low-Education Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
146	106	32	87	43	86	20
Single-Mother Families						
Actual Change (%)	State Labor Market Fixed at 2000 Levels		Policies Fixed at 2000 Levels		Demographics Fixed at 2000 Levels	
	Predicted Change	Share	Predicted Change	Share	Predicted Change	Share
61	14	79	30	54	84	-17

Source: Authors' calculations based on parameter estimates with adjustments for reported SNAP receipt from Meyer, Mok, and Sullivan (2015). Simulations hold identified variables fixed and allow others to vary over time. In each case, the year effects are allowed to vary over time. Shares do not sum to 100% since some factors are omitted.

**Appendix Table 15. Two-Year SNAP, EITC/CTC, and TANF Transition Rates**

Transition Rates, All Years									
	<i>Year 2</i>	None	EITC/CTC	SNAP	TANF	EITC/CTC-SNAP	EITC/CTC-TANF	SNAP-TANF	EITC/CTC-SNAP-TANF
<i>Year 1</i>									
None		91.3	6.9	0.5	0.2	0.6	0.1	0.2	0.2
EITC/CTC		35.3	54.5	1.2	0.2	5.9	0.5	0.8	1.4
SNAP		31.9	11.2	28.0	1.0	16.3	0.6	7.7	3.2
TANF		48.8	11.9	3.5	8.7	3.1	3.0	15.4	5.5
EITC/CTC-SNAP		12.6	26.4	7.1	0.2	44.1	0.7	2.4	6.5
EITC/CTC-TANF		22.5	35.7	3.0	3.6	8.2	8.7	5.9	12.5
SNAP-TANF		8.2	4.6	6.4	2.5	4.0	1.3	56.9	16.2
EITC/CTC-SNAP-TANF		8.0	14.7	4.1	1.2	17.4	2.2	17.0	35.5
Transition Rates, 1980-1989									
<i>Year 1</i>									
None		93.4	4.6	0.7	0.3	0.5	0.1	0.2	0.3
EITC/CTC		43.4	45.6	1.5	0.4	4.8	0.6	1.4	2.2
SNAP		44.8	8.1	22.5	1.2	12.5	0.6	6.9	3.4
TANF		46.7	7.6	2.1	10.2	3.4	3.1	20.1	6.8
EITC/CTC-SNAP		21.0	20.4	8.5	0.7	37.7	0.9	3.5	7.4
EITC/CTC-TANF		24.3	23.8	1.9	3.3	7.9	14.0	8.4	16.4
SNAP-TANF		8.0	3.0	3.6	3.8	1.7	1.5	62.4	16.1
EITC/CTC-SNAP-TANF		9.8	10.8	3.0	1.2	9.2	2.5	23.9	39.5
Transition Rates, 1990-1999									
<i>Year 1</i>									
None		91.5	6.8	0.3	0.3	0.5	0.1	0.2	0.2
EITC/CTC		35.4	55.3	0.7	0.2	4.7	0.7	1.1	1.8
SNAP		29.5	13.6	23.1	1.3	14.2	0.7	12.9	4.7
TANF		49.2	13.6	3.7	9.9	2.1	4.2	12.6	4.7
EITC/CTC-SNAP		12.8	29.2	5.5	0.0	40.8	0.7	2.0	9.0
EITC/CTC-TANF		23.1	40.9	4.8	3.8	4.3	5.9	7.0	10.2
SNAP-TANF		7.6	5.3	5.6	1.1	4.9	1.1	57.2	17.1
EITC/CTC-SNAP-TANF		6.7	16.5	3.0	1.5	17.9	2.3	14.3	37.8
Transition Rates, 2000-2012									
<i>Year 1</i>									
None		89.1	9.2	0.5	0.1	0.7	0.0	0.1	0.1
EITC/CTC		32.3	57.3	1.4	0.2	7.0	0.4	0.4	1.0
SNAP		22.8	12.7	34.7	0.7	20.2	0.5	6.0	2.4
TANF		53.5	20.1	6.9	3.8	3.8	1.3	7.5	3.1
EITC/CTC-SNAP		9.1	27.4	7.4	0.1	48.2	0.7	2.0	5.0
EITC/CTC-TANF		19.3	45.3	2.5	3.7	13.0	5.0	1.2	9.9

**Appendix Table 15 Continued**

	<i>Year 2</i>	None	EITC/CTC	SNAP	TANF	EITC/CTC-SNAP	EITC/CTC-TANF	SNAP-TANF	EITC/CTC-SNAP-TANF
SNAP-TANF		10.4	8.2	17.4	1.5	9.7	0.7	37.5	14.6
EITC/CTC-SNAP-TANF		7.1	18.2	7.4	0.8	30.0	1.4	9.8	25.4

Note: Rows reflect year 1 and columns reflect year 2. Rows for transition rates represent share of year 1 survey respondents that fall into one of eight categories in year 2: (1) None (no programs), (2) EITC/CTC alone, (3) SNAP alone, (4) AFDC/TANF alone, (5) EITC/CTC and SNAP, (6) EITC/CTC and AFDC/TANF, (7) SNAP and AFDC/TANF, or (8) EITC/CTC, SNAP, and AFDC/TANF. Transition rate rows add up to 100 percent.

**Appendix Table 16. Linear Probability Estimates of Biennial SNAP, EITC/CTC, and AFDC/TANF Participation**

VARIABLES	All Families	Low-Income Families	Low-Education Families	Single Mother Families
<b>Family Level</b>				
Ages 28-35	-0.0111** (0.002)	-0.0127** (0.004)	-0.0134** (0.003)	-0.0172** (0.006)
Ages 36-44	-0.0142** (0.002)	-0.0159** (0.005)	-0.0154** (0.003)	-0.0248** (0.006)
Ages 45-55	-0.0125** (0.002)	-0.0141** (0.005)	-0.0138** (0.003)	-0.0208** (0.005)
High School Diploma	-0.0118** (0.001)	-0.0109** (0.002)	-0.0110** (0.001)	-0.0173** (0.004)
Some College	-0.0147** (0.001)	-0.0132** (0.003)		-0.0221** (0.003)
College Graduate	-0.0157** (0.001)	-0.0261** (0.003)		-0.0364** (0.004)
Black	0.0114** (0.002)	0.0167** (0.005)	0.0151** (0.003)	0.0185** (0.004)
Other Race	0.0028† (0.002)	0.0047 (0.005)	0.0050 (0.003)	-0.0051 (0.008)
Hispanic	-0.0042** (0.001)	-0.0112* (0.005)	-0.0055* (0.002)	-0.0068† (0.003)
Household Size	-0.0007 (0.001)	0.0023 (0.002)	0.0008 (0.001)	0.0012 (0.003)
Number of Own Kids < Age 18	0.0054** (0.001)	0.0032 (0.002)	0.0064** (0.001)	0.0142** (0.004)
Female Head	0.0094** (0.001)	0.0244** (0.002)	0.0151** (0.001)	
Married Head	-0.0187** (0.002)	-0.0193** (0.004)	-0.0202** (0.003)	
Lives in Metro Area	-0.0018 (0.001)	-0.0013 (0.004)	-0.0018 (0.002)	-0.0075 (0.005)
Central City	0.0036** (0.001)	0.0035 (0.004)	0.0028 (0.002)	0.0053 (0.004)
<b>State/Federal Level</b>				
State Unemployment Rate (UR)	0.0037 (0.071)	0.0099 (0.254)	-0.0500 (0.114)	-0.0581 (0.283)
1 Year Lagged State UR	-0.0473 (0.089)	-0.2256 (0.314)	-0.0171 (0.127)	-0.1460 (0.434)
2 year Lagged State UR	0.0941 (0.067)	0.2998 (0.240)	0.1568 (0.106)	0.1220 (0.358)
State % Full Year Worker	0.0072 (0.012)	0.0612 (0.045)	0.0124 (0.020)	0.0783 (0.051)
State % Part Year Worker	0.0375† (0.020)	0.1252† (0.075)	0.0705* (0.031)	0.1024 (0.096)
State % Not in Labor Force	0.0251 (0.023)	0.1101 (0.083)	0.0500 (0.043)	0.0842 (0.097)
State Median Wage	-0.0009† (0.000)	-0.0029† (0.002)	-0.0016† (0.001)	-0.0039† (0.002)
State Minimum Wage	-0.0005	-0.0029	-0.0020†	0.0019

	(0.001)	(0.003)	(0.001)	(0.004)
EITC Subsidy Rate	-0.0863**	-0.0569	-0.0990**	-0.1706*
	(0.020)	(0.060)	(0.034)	(0.078)
State Has Refundable EITC	-0.0006	-0.0039	-0.0022	-0.0012
	(0.001)	(0.005)	(0.002)	(0.005)
Any Welfare Reform Waiver	0.0002	-0.0031	0.0040	-0.0028
	(0.003)	(0.011)	(0.005)	(0.012)
TANF Implementation	-0.0097**	-0.0251	-0.0021	-0.0462**
	(0.003)	(0.018)	(0.007)	(0.015)
Max SNAP Benefit (\$100s)	0.0034**	0.0028	0.0019	-0.0006
	(0.001)	(0.002)	(0.002)	(0.004)
Implementation of EBT Card	0.0011	0.0026	0.0035	0.0093
	(0.002)	(0.008)	(0.003)	(0.009)
Broad-Based Eligibility	-0.0023*	-0.0098*	-0.0060**	-0.0014
	(0.001)	(0.004)	(0.002)	(0.005)
Short Certification	-0.0017	-0.0093*	-0.0029	-0.0081 <sup>†</sup>
	(0.001)	(0.004)	(0.002)	(0.004)
Requires Fingerprinting	0.0063**	0.0253**	0.0122**	0.0207**
	(0.001)	(0.004)	(0.003)	(0.005)
Compulsory Disqualification	0.0018	0.0049	0.0046 <sup>†</sup>	0.0028
	(0.001)	(0.005)	(0.002)	(0.005)
Simplified Reporting	0.0010	0.0042	0.0039 <sup>†</sup>	0.0070
	(0.002)	(0.005)	(0.002)	(0.007)
Vehicle Assets Excludable	-0.0006	-0.0031	0.0007	-0.0043
	(0.001)	(0.003)	(0.001)	(0.004)
Outreach (\$100 millions)	0.0001	-0.0001	0.0004	0.0017*
	(0.000)	(0.001)	(0.000)	(0.001)
Noncitizens SNAP-eligible	0.0009	0.0012	0.0019	-0.0000
	(0.002)	(0.008)	(0.002)	(0.008)
Governor is Democrat	0.0008	0.0031	0.0031*	0.0018
	(0.001)	(0.003)	(0.001)	(0.003)
Observations	176,072	39,596	80,574	27,522
R-squared	0.031	0.034	0.034	0.037

Standard errors in parenthesis control for heteroskedasticity and within-state autocorrelation. All models control for fixed state and time effects. <sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ .

**Appendix Table 17. Linear Probability Estimates of Biennial SNAP, EITC/CTC, AFDC/TANF, and SSI Participation**

VARIABLES	All Families	Low-Income Families	Low-Education Families	Single Mother Families
<b>Family Level</b>				
Ages 28-35	0.0001 (0.000)	0.0001 (0.000)	0.0000 (0.000)	0.0006 (0.001)
Ages 36-44	0.0002 (0.000)	0.0011 (0.001)	0.0000 (0.000)	0.0018** (0.001)
Ages 45-55	0.0005 (0.000)	0.0029 <sup>†</sup> (0.002)	0.0009 (0.001)	0.0030 <sup>†</sup> (0.002)
High School Diploma	-0.0002 (0.000)	0.0004 (0.001)	-0.0001 (0.000)	-0.0001 (0.001)
Some College	-0.0005 (0.000)	-0.0001 (0.001)		-0.0006 (0.001)
College Graduate	-0.0007 <sup>†</sup> (0.000)	-0.0011 (0.001)		-0.0018 (0.001)
Black	0.0004 (0.000)	0.0000 (0.001)	0.0005 (0.001)	0.0006 (0.001)
Other Race	0.0001 (0.000)	-0.0003 (0.001)	0.0003 (0.001)	0.0002 (0.001)
Hispanic	-0.0005** (0.000)	-0.0017** (0.001)	-0.0004 (0.000)	-0.0006 (0.001)
Household Size	0.0004 (0.000)	0.0011 (0.001)	0.0007 (0.000)	0.0015 (0.001)
Number of Own Kids < Age 18	0.0002 (0.000)	-0.0001 (0.001)	0.0002 (0.000)	0.0013 (0.001)
Female Head	0.0007** (0.000)	0.0025* (0.001)	0.0010* (0.000)	
Married Head	-0.0005* (0.000)	0.0002 (0.001)	-0.0005 (0.000)	
Lives in Metro Area	0.0000 (0.000)	0.0006 (0.001)	0.0001 (0.000)	0.0008 (0.001)
Central City	0.0005* (0.000)	0.0010 (0.001)	0.0007 <sup>†</sup> (0.000)	0.0018* (0.001)
<b>State/Federal Level</b>				
State Unemployment Rate (UR)	-0.0205 <sup>†</sup> (0.012)	-0.0715 (0.043)	-0.0484* (0.023)	-0.1051 (0.068)
1 Year Lagged State UR	0.0152 (0.011)	0.0513 (0.043)	0.0394 <sup>†</sup> (0.021)	0.0936 (0.079)
2 year Lagged State UR	0.0061 (0.008)	0.0257 (0.029)	-0.0014 (0.011)	-0.0009 (0.055)
State % Full Year Worker	0.0005 (0.003)	0.0032 (0.012)	0.0014 (0.006)	0.0118 (0.013)
State % Part Year Worker	0.0005 (0.003)	0.0018 (0.012)	-0.0004 (0.007)	0.0094 (0.017)
State % Not in Labor Force	0.0062 (0.004)	0.0231 (0.017)	0.0104 (0.009)	0.0171 (0.023)
State Median Wage	0.0001 (0.000)	0.0005 (0.000)	0.0002 (0.000)	0.0001 (0.000)
State Minimum Wage	0.0001	0.0002	0.0001	0.0008

	(0.000)	(0.001)	(0.000)	(0.001)
EITC Subsidy Rate	-0.0056	-0.0069	-0.0027	-0.0033
	(0.004)	(0.012)	(0.005)	(0.015)
State Has Refundable EITC	0.0001	0.0003	0.0001	0.0007
	(0.000)	(0.001)	(0.001)	(0.001)
Any Welfare Reform Waiver	-0.0007	-0.0028	-0.0018	-0.0017
	(0.001)	(0.002)	(0.001)	(0.002)
TANF Implementation	0.0007	0.0034	-0.0013	0.0074
	(0.001)	(0.005)	(0.002)	(0.006)
Max SNAP Benefit (\$100s)	-0.0001	0.0000	-0.0003	-0.0017
	(0.000)	(0.000)	(0.000)	(0.001)
Implementation of EBT Card	0.0004	0.0015	0.0005	0.0011
	(0.000)	(0.002)	(0.001)	(0.002)
Broad-Based Eligibility	0.0003	0.0012	0.0005	0.0014
	(0.000)	(0.001)	(0.001)	(0.001)
Short Certification	0.0003*	0.0010*	0.0007**	0.0005
	(0.000)	(0.000)	(0.000)	(0.001)
Requires Fingerprinting	-0.0003	-0.0008	-0.0000	-0.0022**
	(0.000)	(0.001)	(0.000)	(0.001)
Compulsory Disqualification	-0.0000	-0.0002	-0.0000	-0.0003
	(0.000)	(0.001)	(0.000)	(0.001)
Simplified Reporting	-0.0002	-0.0005	-0.0003	0.0003
	(0.000)	(0.001)	(0.001)	(0.001)
Vehicle Assets Excludable	-0.0001	-0.0002	-0.0002	-0.0005
	(0.000)	(0.001)	(0.000)	(0.001)
Outreach (\$100 millions)	0.0000	0.0000	-0.0000	0.0001
	(0.000)	(0.000)	(0.000)	(0.000)
Noncitizens SNAP-eligible	0.0004 <sup>†</sup>	0.0015	0.0009 <sup>†</sup>	0.0008
	(0.000)	(0.001)	(0.001)	(0.001)
Governor is Democrat	-0.0001	-0.0002	0.0001	0.0003
	(0.000)	(0.001)	(0.000)	(0.001)
Observations	176,072	39,596	80,574	27,522
R-squared	0.003	0.006	0.004	0.011

Standard errors in parenthesis control for heteroskedasticity and within-state autocorrelation. All models control for fixed state and time effects. <sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ .