## For Online Publication Only

## Online Supplement to:

# Welfare Reform and the Intergenerational Transmission of Dependence\*

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This supplementary appendix provides additional information on the data and results reported in our paper "Welfare Reform and the Intergenerational Transmission of Dependence". We begin with data description in Section S.1, and then, in Section S.2, we present our approach to misclassification. Section S.3 discusses in detail the intergenerational changes in program access, while providing formal and numerical answers about its effect on the intergenerational transmission parameter. As referenced throughout the paper, this supplement also introduces additional results that explore the sensitivity of our main findings. In Section S.4, we investigate the role of possible mechanisms for intergenerational welfare participation effects before and after reform. Section S.5 presents first-stage results and detailed sensitivity analysis on the instrumental variables results presented in the manuscript. Section S.6 offers additional empirical evidence obtained by estimating variants of the difference-in-difference-type specification presented in equation (3) as well as a placebo-type test of the randomness of the timing of welfare reform implementation. Section S.7 examines the impact of longitudinal survey weights and biennial interviewing on the main estimates presented in Table 4. Section S.8 investigates the relevance of attrition for estimates of intergenerational transmission of welfare participation. Section S.9 includes extensions of models related to exposure timing and potential life-cycle bias. Lastly, Section S.10 investigates the sensitivity of results to maternal selection based on state-price variation and AFDC/TANF benefit generosity.

To summarize the empirical evidence presented in this supplementary appendix, we find that our results are robust to variations of the model of intergenerational transmission of welfare presented in the manuscript. In particular, the qualitative results of welfare reform are consistent: there is a causal influence from mother's welfare participation to daughter's participation, and reform attenuates this intergenerational transmission for the AFDC/TANF program, but not for participation in the wider safety net or other outcomes of the daughter in adulthood.

#### S.1. Data Description

We use data from the Panel Study of Income Dynamics (PSID), with a specific focus on linked mother-daughter pairs obtained over the survey years 1968-2013. In addition to being the longest running longitudinal data available, the data have been found to be robust over time to changes in sample composition (Fitzgerald, Gottschalk, and Moffitt, 1998). For our main analyses, we use a sample of 2,961 daughters that can be linked to their mothers' welfare histories over time—before, across, and after welfare reform—and we also focus on a subset of daughters observed *within* welfare regimes, 1,254 before and 476 after. This section provides an overview of the data (S.1.1), followed by a detailed within-regime comparison of daughter and mother characteristics before and after welfare reform (S.1.2), and concluding with a discussion of AFDC/TANF benefit standards over time (S.1.3).

The oversample of low-income families in the PSID allows for more precise estimation of welfare participation, yet this unrepresentative sample will yield biased causal estimates if—after conditioning on control variables—the selection probability remains endogenous to daughter's welfare participation, or if there exist heterogeneous transmission effects relative to the oversampled population (see Solon, Haider, and Wooldridge, 2015).<sup>1</sup> Some examples in the literature have addressed endogenous sampling directly by controlling on observed characteristics (Corcoran et al., 1992; Pepper, 2000), or by restricting the estimation sample to the SRC only (Lee and Solon, 2009). Others have used weights for estimators that are based on frequency counts (Solon et al., 1988; Page, 2004), as a sensitivity check (Solon, 1992), or in the main estimation (Hoynes and Schanzenbach, 2012). A primary concern for our estimates is the potential heterogeneity of welfare participation transmission by race coupled with overrepresented low-income, minority families, and our model maintains a fairly parsimonious structure that may not adequately account for this source of bias. Therefore, we provide weighted estimates in all of our estimation results.<sup>2</sup>

#### S.1.1. PSID Sample

Our intergenerational sample consists of mother-daughter pairs that are observed for at least five years while the daughter is living in the same household during the critical exposure period spanning the ages of 12-18, and that the daughter is observed at least five years as the head of her own family unit. Selecting adolescence and teenage years as the observation window for childhood exposure pervades the welfare transmission literature (Solon et al., 1988; Gottschalk, 1996; Pepper, 2000; Page, 2004). Part of this stems from data needs; that is, if we require observing early childhood as well as enough years in adulthood, then we will impose greater demands on the data in terms of length of time in the panel and in turn end up with fewer mother-daughter observations. The other reason for focusing on adolescent and teenage years is that cognitive, emotional, and physiological development are sufficiently advanced for the potential of "welfare learning" from the parent.<sup>3</sup> We follow convention and focus on the ages 12-18 as a key period of welfare exposure for our baseline models, and then we explore how the estimates change as the length of exposure changes. A daughter is considered an adult at first childbirth or when

<sup>&</sup>lt;sup>1</sup> See PSID documentation for background on survey selection procedures and sample weight construction.

<sup>&</sup>lt;sup>2</sup> We use the daughter's current core longitudinal weight. Section S.7.1 shows that the main results are robust to use of mother's weight during daughter's childhood. The results are also robust to unweighted regression, or restriction to the SRC subsample.

<sup>&</sup>lt;sup>3</sup> It remains an open question in the literature which stage of childhood development is most important for the potential of welfare learning. Research shows that economic deprivation in early childhood has more deleterious effects in terms of achievement and health in early adulthood than does similar deprivation during adolescence (Duncan et al., 1998; Ziol-Guest et al., 2012; Elango et al., 2016).

establishing a new family unit if she is at least age 14, though she may continue to live at home as a subfamily.<sup>4</sup> This yields a panel sample of 2,961 mother-daughter pairs spanning 56,068 observation years of the daughter as an adult. On average we observe mothers and daughters co-residing for 13 years during childhood, and the daughter for 24 years during her adulthood. These long observation windows help mitigate both measurement error in program participation as well as life-cycle bias in age of participation.

Table S.1-1 contains weighted summary statistics of the key variables from the entire sample of daughters used in estimation, both pooled and separated into the pre- and post-welfare reform eras. We supplement the PSID data with program data from official reports by the U.S. Department of Health and Human Services (USDHHS), and our dates for the implementation of welfare reform are based on Crouse (1999). Unless otherwise noted, dollar amounts of benefits and incomes are deflated by the 2012 personal consumption expenditure (PCE) deflator. While panel A of Table S.1-1 shows all adult observations for daughters before and after reform, note that the generationally-linked data for mothers shown in panel B corresponds to time periods that may cross over welfare reform implementation years. Further, because these samples continuously follow daughter-mother pairs, it is important to recognize that these descriptive statistics are unadjusted for life-cycle comparisons or attrition, which are addressed within our panel estimates and robustness checks throughout this supplement.

While 4.4 percent of daughters receive AFDC/TANF (Aid to Families with Dependent Children, or Temporary Assistance for Needy Families) as an adult in the pooled sample period, the odds of participation are nearly 70 percent lower after welfare reform, falling from 8 percent to 2.5 percent. On the other hand, there is much more stability over time in participation in any of the three means-tested programs, with 13.2 percent receiving AFDC/TANF, food stamps/SNAP (Supplemental Nutrition Assistance Program), or SSI (Supplemental Security Income) before reform and 11.2 percent afterwards. Almost all of the additional uptake in welfare use is from SNAP. Daughters are 28 years old on average before reform and 39 after reform, highlighting the long observation windows we observe families compared to prior research. The average real maximum AFDC/TANF benefit standard facing daughters was \$372 before welfare reform but fell to \$277 in the post-reform era.

<sup>&</sup>lt;sup>4</sup> Our estimates are robust to an alternative definition of adulthood using only daughters at least 18 years old.

A. Daughter's characteristics as an adult	Before	After	Pooled
Currently receiving welfare?			
AFDC/TANF	0.080	0.025	0.044
	(0.271)	(0.157)	(0.206)
AFDC/TANF, SNAP, SSI	0.132	0.112	0.119
	(0.338)	(0.315)	(0.323)
Age	28.245	38.666	35.041
C C C C C C C C C C C C C C C C C C C	(5.572)	(9.009)	(9.400)
Number of children	1.249	1.186	1.208
	(1.169)	(1.273)	(1.238)
State-level policy/economy measures when daughter	. ,		. ,
observed as an adult			
AFDC/TANF benefit standard	0.372	0.277	0.310
(in thousands of 2012 dollars)	(0.333)	(0.268)	(0.296)
EITC maximum credit	1.280	2.812	2.279
(in thousands of 2012 dollars)	(1.144)	(2.100)	(1.966)
Poverty rate	0.154	0.139	0.144
	(0.041)	(0.033)	(0.037)
Unemployment rate	0.066	0.061	0.062
1 5	(0.019)	(0.022)	(0.021)
AFDC/TANF recipiency rate	0.046	0.019	0.029
1 5	(0.015)	(0.015)	(0.020)
B. Mother's characteristics	Before	After	Pooled
Any prior welfare?*		After only; Any prior*	
AFDC/TANF	0.269	0.066; 0.272	0.271
	(0.444)	(0.248); $(0.445)$	(0.444)
AFDC/TANF, SNAP, SSI	0.428	0.190: 0.437	0.433
, ,	(0.495)	(0.392); (0.496)	(0.496)
Age (average for prior observation years)	42.472	59.357	45.103
	(8.841)	(10.512)	(8.626)
State-level policy/economy measures when daughter			()
observed during ages 12-18			
AFDC/TANF benefit standard, average	0.736	0.393	0.724
(in thousands of 2012 dollars)	(0.334)	(0.213)	(0.336)
AFDC/TANF benefit standard, maximum	0.913	0.476	0.904
(in thousands of 2012 dollars)	(0.363)	(0.226)	(0.365)
Mean daughter-as-child observations	(*****)	(**)	13.164
Mean daughter-as-adult observations			23.828
Number of daughters	2212	2372	2961
Total observations	25331	30737	56068

TABLE S.1-1. DESCRIPTIVE STATISTICS

*Notes:* Sample averages are weighted by the daughter's PSID core longitudinal weights for both daughters' and mothers' statistics. Mothers' statistics before/after reform reflect her observed history during potential welfare participation years, and the pooled statistics correspond to the daughter's current observation year in the estimation sample. Abbreviations: Aid to Families with Dependent Children/Temporary Assistance for Needy Families (AFDC/TANF), Food Stamps/Supplemental Nutrition Assistance Program (SNAP), Supplemental Security Income (SSI), and Earned Income Tax Credit (EITC).

The bottom panel of Table S.1-1 should be interpreted with caution given the longitudinal nature of the data since every daughter in the before period is also followed after reform unless she leaves the sample, and daughters' observations are linked to the mothers' observations whether or not the mother remains in the sample. Panel B shows that about 27 percent of mothers received any prior AFDC/TANF transfers before welfare reform, and 6.6 percent received any prior AFDC/TANF transfers only during the period after reform, while those figures jump to 43 and 19 percent, respectively, if the mother received any prior AFDC/TANF, SNAP, or SSI. Note that it is possible for the mother to first participate in

welfare after the daughter forms her own family unit. For AFDC/TANF participation, this can occur only if the mother has children (or dependents) under age 18 remaining in the household other than the focal daughter. Learning thus can occur from direct exposure while the daughter resides in the household with her mother, or from indirect "word of mouth" once the daughter forms her own family unit as discussed in the manuscript.

Table S.1-1 is one way of summarizing these data, however, describing data across generations is complicated when grouping observations before/after welfare reform. For example, given the construction of the mother's welfare participation variable as any prior participation, the after-reform statistics shown are not directly comparable with the before period. Therefore, for transparency, we show mother's statistics for "any prior welfare participation" in the after-reform period as any prior within the after period only as well as the cumulative measure of any prior participation. Also, note that daughter observations before/after reform include many daughters observed in both time periods, which differs from showing observations that are contained exclusively within welfare regimes. Of the 2961 daughters observed in Table S.1-1, 589 are observed *only* before reform, 1623 are observed both before and after, and another 749 are observed as adults only after reform. See Section S.1.2 for further refinements of within-regime samples corresponding to a balanced-window comparison of mothers and daughters by reform era.

As discussed in Section II of the paper, states began reforming AFDC in earnest starting in 1992, four years prior to passage of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA). States had to submit requests for waivers from Federal rules to the U.S. Department of Health and Human Services, e.g., to introduce a time limit on benefits or to expand asset limits for eligibility. If the waiver was approved, then there was generally a lag between the time of approval and when the policy was implemented. Indeed, some approved waivers were never implemented (Grogger and Karoly, 2005). We thus use the implementation date of the waiver as the date when reform is first in place, and the variable remains on for each year thereafter. For those states that did not implement waivers we use the implementation date of their TANF program. While the major AFDC waiver implemented in Michigan and New Jersey as of October 1992, and the latest implementation of TANF was in New York as of November 1997. In our data, the implementation of welfare reform is encoded as the earliest year in which at least 3 quarters of the year are observed after *state-wide* reform, implying that the reform spans 1993-1998.

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#### S.1.2. Welfare Selection Pre- and Post-Reform by Within-Regime Balanced Observation Windows

Table S.1-2 investigates further whether an expanded set of characteristics for daughters considered in the empirical analysis changed after the reform. We present descriptive statistics that focus on the sample of daughters observed within welfare reform eras, before and after, according to the estimation samples used in Table 1 of the manuscript. The top panel contains sample means of daughters regardless of their mothers' participation status in AFDC/TANF, while the bottom panel is conditional on mothers participating in AFDC/TANF when the daughter was aged 12-18. The first three columns refer to the pre-reform period for daughters who (i) did not receive any welfare in adulthood ages 19-27, (ii) received at least some AFDC/TANF and possibly SNAP or SSI, and (iii) received SNAP and/or SSI but not AFDC/TANF. The second three columns are for the same set of groups, but refer to sample averages in the post-reform era. The last four columns, (7)-(10), show reform differences-in-differences by welfare participation type relative to no welfare participation, both unconditionally and conditional on mother's age and state-level assistance program generosity, unemployment, and AFDC/TANF recipiency. To make the time periods before/after reform more comparable, the before era is restricted to years from 1985 onward. As shown in Table 1, there are 1254 daughters observed before reform and 476 after, and the lower panel highlights that there are 397 daughters whose mothers received any AFDC in the before period and 83 daughters whose mothers received any TANF after reform.<sup>5</sup>

The patterns pre/post reform are similar in that daughters not on any welfare are the most advantaged, followed by those on SNAP or SSI alone, and the most disadvantaged are those with some AFDC/TANF. There are some notable differences in that post reform the fraction married is much lower, though this is true for those never on welfare as well as those on welfare. Daughters who select into welfare participation appear to have more children after reform relative to the pre-/post-reform differences between daughters who did not participate in welfare during ages 19-27. Our main estimates are robust to controlling for both marital status and number of children (see Table S.5-7 in Section S.5.4). There is a secular rise in educational attainment, but there are also increases in below-poverty earnings and non-employment for those not participating in AFDC/TANF. This seems especially true among daughters on SNAP and/or SSI alone, which could help account for the intergenerational mechanism on these programs persisting after reform. It also underscores the importance in our causal model in equation (3) of the manuscript to separate out the poverty trap from welfare trap and motivates the inclusion of control variables and the use of IVs. We present sensitivity estimates in the manuscript and this supplement for daughters' geographic mobility (Tables 5 and 6), educational attainment (Table 7),

<sup>&</sup>lt;sup>5</sup> Note that the 1254 daughters observed before reform may also remain in the larger panel sample in later years, but these within-regime pre-reform daughters are observed from ages 19-27 prior to reform being implemented in either the mother's or daughter's state of residence.

potential mechanisms of transmission (Section S.4), and controls for her mother's poverty status and education (Table S.5-6).

		Pre-reform	1	Post-reform			Difference-in-differences			
	No	Any	SNAP SSI	No	Any	SNAP SSI	Any AFD	C/TANF	SNAP S	SSI only
	welfare	AFDC	only	welfare	TANF	only	Uncond.	Cond.	Uncond.	Cond.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	A. Unconditional on mother's welfare participation									
Number of	0.560	1.653	1.222	0.346	2.100	1.313	0.662	0.553	0.305	0.233
children	(0.691)	(0.858)	(0.873)	(0.540)	(0.891)	(1.273)	[0.001]	[0.009]	[0.167]	[0.257]
Married/	0.673	0.408	0.637	0.431	0.382	0.117	0.215	0.209	-0.279	-0.300
cohabiting	(0.415)	(0.410)	(0.419)	(0.435)	(0.418)	(0.254)	[0.104]	[0.087]	[0.001]	[0.001]
Family income,	51.055	20.652	30.457	59.377	30.403	27.188	1.429	1.077	-11.591	-16.253
thousands	(34.055)	(19.416)	(20.368)	(38.434)	(22.070)	(28.236)	[0.857]	[0.954]	[0.148]	[0.063]
No family	0.008	0.302	0.076	0.026	0.223	0.255	-0.096	-0.121	0.162	0.167
earnings	(0.075)	(0.324)	(0.191)	(0.091)	(0.312)	(0.281)	[0.235]	[0.108]	[0.020]	[0.006]
Earnings	0.068	0.626	0.355	0.120	0.587	0.580	-0.091	-0.101	0.174	0.206
< 100% FPL	(0.177)	(0.347)	(0.325)	(0.264)	(0.324)	(0.393)	[0.311]	[0.245]	[0.047]	[0.012]
Earnings	0.224	0.813	0.664	0.217	0.836	0.712	0.030	-0.004	0.055	0.052
< 200% FPL	(0.313)	(0.280)	(0.315)	(0.322)	(0.218)	(0.340)	[0.669]	[0.798]	[0.510]	[0.609]
Same state	0.762	0.792	0.840	0.739	0.964	0.642	0.195	0.223	-0.174	-0.177
as birth	(0.393)	(0.371)	(0.344)	(0.407)	(0.132)	(0.464)	[0.001]	[0.006]	[0.137]	[0.063]
High school	0.486	0.827	0.708	0.215	0.686	0.634	0.130	0.132	0.198	0.194
or less	(0.483)	(0.339)	(0.424)	(0.352)	(0.421)	(0.421)	[0.328]	[0.266]	[0.065]	[0.062]
Observations	730	389	135	247	81	148				
			В. С	Conditional	on mother	participating	g in AFDC/	TANF		
Number of	0.791	1.817	1.472	0.715	2.121	1.285	0.380	0.582	-0.111	0.352
children	(0.783)	(0.843)	(0.849)	(0.833)	(0.887)	(1.018)	[0.376]	[0.208]	[0.898]	[0.603]
Married/	0.672	0.289	0.570	0.449	0.481	0.128	0.415	0.561	-0.220	-0.102
cohabiting	(0.406)	(0.386)	(0.484)	(0.503)	(0.435)	(0.228)	[0.127]	[0.065]	[0.346]	[0.785]
Family income,	43.986	16.404	23.251	49.876	30.403	22.095	8.109	-0.647	-7.047	-16.750
thousands	(22.932)	(18.225)	(15.700)	(16.313)	(22.010)	(7.560)	[0.710]	[0.804]	[0.517]	[0.262]
No family	0.024	0.436	0.123	0.010	0.333	0.381	-0.090	-0.205	0.272	0.292
earnings	(0.126)	(0.358)	(0.243)	(0.056)	(0.315)	(0.334)	[0.494]	[0.182]	[0.073]	[0.108]
Earnings	0.143	0.740	0.450	0.062	0.746	0.731	0.087	0.021	0.363	0.439
< 100% FPL	(0.268)	(0.318)	(0.364)	(0.157)	(0.228)	(0.236)	[0.385]	[0.697]	[0.008]	[0.012]
Earnings	0.353	0.881	0.771	0.134	0.908	0.790	0.245	0.169	0.238	0.236
< 200% FPL	(0.367)	(0.248)	(0.341)	(0.308)	(0.109)	(0.190)	[0.026]	[0.291]	[0.133]	[0.240]
Same state	0.809	0.870	0.844	0.813	0.941	0.482	0.068	-0.079	-0.365	-0.256
as birth	(0.363)	(0.307)	(0.336)	(0.357)	(0.137)	(0.499)	[0.556]	[0.898]	[0.146]	[0.311]
High school	0.717	0.850	0.906	0.204	0.819	0.848	0.482	0.550	0.456	0.636
or less	(0.434)	(0.309)	(0.261)	(0.408)	(0.282)	(0.268)	[0.011]	[0.002]	[0.013]	[0.000]
Observations	109	235	53	<u> </u>	32	32				

TABLE S.1-2. DAUGHTER'S AVERAGE PRE- AND POST-REFORM WITHIN-REGIME SOCIOECONOMIC CHARACTERISTICS

*Notes:* Sample means (and medians for family income) are shown by daughters observed either before the mother's or daughter's state ever implements welfare reform, or years after reform since the daughter was age 12 at least. Standard deviations are shown in parentheses, and p-values based on 1000 bootstrap replications are shown in brackets. These statistics correspond to the samples used in Table 1 of the manuscript in which daughters are observed during adulthood ages 19-27. Panel B is conditional on any mother's AFDC/TANF participation during the daughter's critical exposure ages 12-18. The difference-indifferences are shown unconditionally based on estimates in columns (1)-(6) as well as conditional on the mother's age and age squared along with average state-level measures of AFDC/TANF and EITC benefit generosity, SPM poverty rates, unemployment rates, and AFDC/TANF recipiency rates.

Table S.1-3 investigates whether mothers' characteristics during the daughters' critical exposure ages 12-18 changed after the reform. This informs whether there was differential selection on observables of mothers onto AFDC versus TANF. We provide characteristics of mothers before and after reform by whether they did not participate in welfare at all when daughters were aged 12-18, or if they participated in any AFDC/TANF versus only SNAP or SSI and not AFDC/TANF (following format in Table S.1-2). Note that there are 274 mothers who participated in AFDC at any time when daughters were aged 12-18 before reform, and 66 mothers receiving any TANF after reform (these counts are lower than the 397 daughters before and 83 after whose mothers participated because some of those daughters were siblings sharing the same mother). Table S.1-3 shows that differences by AFDC/TANF participation and reform regime, shown in columns (7)-(8), are small and statistically insignificant at the 5-percent level with the exception of fewer children under age 18 and economically relevant decreases in marital status, family income, and relatively lower education among cash assistance recipients. We use inverse-weighting by number of daughters in the sample in Tables 1 and 2, Figure 3, and Figure S.5-4, and we explore the role of family structure in Table S.5-7. We evaluate later in Figure S.5-4 whether changes in composition by education or income affect our main results. When we estimate equation (3) by subsets of daughters with mothers who have similar education and income, we find similar results.

		Pre-reform	ı		Post-reform			Difference-in-differences			
	No	Any	SNAP SSI	No	No Any SNAP SSI		Any AFD	C/TANF	SNAP SSI only		
	welfare	AFDC	only	welfare	TANF	only	Uncond.	Cond.	Uncond.	Cond.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
Number of	2.053	3.114	2.746	1.714	2.420	2.515	-0.355	-0.597	0.109	-0.092	
children	(1.206)	(1.780)	(1.399)	(0.881)	(0.998)	(1.657)	[0.162]	[0.000]	[0.776]	[0.656]	
Married/	0.917	0.593	0.839	0.837	0.326	0.594	-0.187	-0.157	-0.165	-0.111	
cohabiting	(0.241)	(0.451)	(0.333)	(0.333)	(0.446)	(0.460)	[0.061]	[0.094]	[0.067]	[0.217]	
Family income,	64.813	28.745	38.435	65.198	20.522	29.848	-8.609	-6.101	-8.972	-9.123	
thousands	(35.717)	(20.328)	(23.410)	(46.381)	(21.459)	(15.256)	[0.063]	[0.171]	[0.058]	[0.036]	
No family	0.022	0.275	0.071	0.034	0.377	0.227	0.090	0.091	0.144	0.124	
earnings	(0.113)	(0.367)	(0.187)	(0.115)	(0.334)	(0.268)	[0.179]	[0.146]	[0.007]	[0.016]	
Earnings	0.080	0.647	0.398	0.096	0.716	0.528	0.053	0.043	0.113	0.114	
< 100% FPL	(0.200)	(0.392)	(0.378)	(0.203)	(0.332)	(0.376)	[0.462]	[0.537]	[0.197]	[0.161]	
Earnings	0.263	0.855	0.793	0.237	0.860	0.824	0.031	-0.011	0.057	0.044	
< 200% FPL	(0.359)	(0.273)	(0.294)	(0.320)	(0.257)	(0.270)	[0.596]	[0.925]	[0.403]	[0.550]	
Same state	0.901	0.924	0.862	0.732	0.752	0.779	-0.003	-0.013	0.086	0.056	
as birth	(0.280)	(0.250)	(0.327)	(0.430)	(0.427)	(0.417)	[0.965]	[0.867]	[0.374]	[0.505]	
High school	0.633	0.822	0.891	0.283	0.611	0.413	0.139	0.201	-0.128	-0.081	
or less	(0.483)	(0.383)	(0.313)	(0.451)	(0.491)	(0.495)	[0.211]	[0.105]	[0.222]	[0.354]	
Observations	480	274	113	251	66	84					

TABLE S.1-3. MOTHER'S AVERAGE PRE- AND POST-REFORM WITHIN-REGIME SOCIOECONOMIC CHARACTERISTICS

*Notes:* Sample means (medians for family income) are shown by mother-daughter pairs observed either before the mother's or daughter's state implements welfare reform, or years after reform since the daughter was age 12 at least. Standard deviations are shown in parentheses, and p-values based on 1000 bootstrap replications are shown in brackets. These statistics correspond to the samples used in Table 1 of the manuscript. The difference-in-differences are shown unconditionally based on estimates in columns (1)-(6) as well as conditional on the mother's age and age squared along with average state-level measures of AFDC/TANF and EITC benefit generosity, SPM poverty rates, unemployment rates, and AFDC/TANF recipiency rates.

This evidence is consistent with results found in the literature that shows that there are few substantive differences in the composition of the TANF caseload compared to the AFDC caseload. Moffitt and Stevens (2001) conducted a comprehensive review of this using both national data from the Current Population Survey Annual Social and Economic Supplement, as well as administrative data from Maryland, and conclude (p. 38):

"Our analysis indicates that, after controlling for the effects of the economy, there is little evidence in national CPS data that welfare reform has affected the composition of the caseload in its labor market skill distribution, indirectly implying therefore that leavers have been equally distributed across all skill types."

#### S.1.3. AFDC/TANF Benefit Standards

Identification of equation (3) in the paper relies on real cross-state over time variation in the AFDC/TANF maximum benefit guarantee for families of 2, 3, or 4 or more persons in the years when the mother's daughter is in the critical exposure ages of 12-18 years old. This variation is most directly identified using a within- and between-state decomposition of the instruments in our PSID sample families. In Table S.1-4, we present five such decompositions. The first two are based solely on yearly state-level program data for the AFDC/TANF maximum benefit for a 4-person family, while the next three are based on the actual instruments assigned to the mothers in the PSID estimation sample during the daughters' critical years. Panels A, C, and D inflation-adjust the benefits using the 2012 PCE deflator, while panels B and E adjust for state-specific price differences using the panel from 1982 to 2012 from Carrillo, Early, and Olsen (2014), and the state-year price indices for 1967-1981 from Berry, Fording, and Hanson (2000), again with 2012 as the base year.

Panels A and B of Table S.1-4 show the decomposition for state-level, program-driven variation in the maximum guarantee for a 4-person family, which begins to unpack the contribution of exogenous policy changes to our instrument. We see substantial within variation in the pre-reform sample period, but this falls during the post-welfare reform era. Comparing pure program variation to individual-level variation for benefit levels corresponding to a family of 4, panel C shows similar pre-reform variation to panel A, though panel C also suggests that post-reform daughters will have mothers with more instrument variation because the mothers may be observed before, crossing over, or after the timing of reform. Panel D shows that instrument values by family size (instead of using a family of 4 benefits) do not imply more variation necessarily, yet family sources of within-variation in the actual sample play a role for identification in the post-reform period. The table further shows that across all years and mothers in the pre-reform era, 39% of the variation of the instrument is within-state using the aggregate price index, and this increases to 44% when using the state-over-time price index. The within-share in the estimation sample is actually greater in the post-welfare reform era.

	Mean	Std. dev.	Within-state	Between-state					
	(1)	(2)	(3)	(4)					
	A. Fami	A. Family of 4 benefits adjusted for inflation (state-level)							
Pre-reform: 1967-1991	849.27	316.62	22%	78%					
Post-reform: 1992-2012	562.17	213.60	11%	89%					
	B. Family of 4 b	enefits adjusted for	state-year price vari	ation (state-level)					
Pre-reform: 1967-1991	833.80	265.60	26%	74%					
Post-reform: 1992-2012	564.34	179.14	14%	86%					
	C. Fai	mily of 4 benefits a	djusted for inflation	(PSID)					
Pre-reform: 1967-1991	854.92	353.74	22%	78%					
Post-reform: 1992-2012	765.77	346.97	35%	65%					
	D. Bene	efits by family size	adjusted for inflation	n (PSID)					
Pre-reform: 1967-1991	735.94	343.10	39%	61%					
Post-reform: 1992-2012	626.22	323.62	53%	47%					
	E. Benefits by f	amily size adjusted	for state-year price	variation (PSID)					
Pre-reform: 1967-1991	744.65	307.92	44%	56%					
Post-reform: 1992-2012	631.11	295.87	57%	43%					

TABLE S.1-4. AFDC/TANF BENEFIT STANDARD DECOMPOSITION BY STATES OVER TIME

*Notes:* The AFDC/TANF benefit standard evaluated in panels C and D is the maximum guarantee for a family of 4, which is adjusted for inflation to 2012 dollars using the PCE or state-index.

To further explore the time-series variation in the maximum benefit guarantees, in Table S.1-5 we provide a summary of nominal and real year-to-year percent changes in 4-person AFDC/TANF benefits during the pre- and post-reform periods. The table shows the smallest, largest, and average year-to-year percent changes, along with the fraction of states with yearly changes in excess of 10% in absolute value.

The AFDC program saw some of the largest changes in real benefit values during the 1970s, with a peak in 1979. During our observation sample, many states experienced large year-to-year changes in benefit levels. For example, Mississippi doubled its maximum benefit from \$60 to \$120 in 1978, and several states had increases in benefits during the 1970s that were greater than a one-third increase: Alaska, Delaware, West Virginia, Missouri, Kentucky, Indiana, Arkansas, and Wisconsin. Another 15 states had at least a one-fifth increase over that same time period. In addition to our inflation-adjusted estimates throughout, we provide evidence for variation in benefits by state-year adjustments for prices in Table S.1-5 panel C, and we test our main results' sensitivity to state price differences in Section S.10. About 16 percent of states raised nominal benefits in the pre-reform era compared to 4 percent after, and in real state-year-adjusted terms, 10 percent of states had a change of 10% in year-to-year benefit values pre-reform compared to about 3.5 percent after.

	Yearly	Percent of states with more than				
	Minimum	Mean Maximum		10% yearly change		
	A. Nominal changes					
Pre-reform: 1967-1991	-28.1%	4.1%	102.7%	15.9%		
Post-reform: 1992-2012	-27.7%	0.6% 60.6%		4.3%		
		B. Adjusted	l for aggregate infla	ation		
Pre-reform: 1967-1991	-33.9%	-1.2%	93.6%	9.3%		
Post-reform: 1992-2012	-28.7%	-1.2%	58.8%	3.4%		
		C. Adjusted fo	r state-year price v	ariation		
Pre-reform: 1967-1991	-32.8%	-1.0%	95.8%	10.2%		
Post-reform: 1992-2012	-31.6%	-1.2%	59.2%	3.5%		

TABLE S.1-5. SUMMARY OF YEAR-TO-YEAR CHANGES IN FOUR-PERSON AFDC/TANF BENEFIT STANDARD

*Notes:* The AFDC/TANF benefit standard evaluated above is the maximum guarantee for a family of 4. The inflation-adjusted values are in 2012 dollars. The aggregate inflation is from the PCE, while state indices are from Berry, Fording, and Hanson (2000) and Carrillo, Early, and Olsen (2014).

While the percent changes in any given year are modest, the table shows that there is wide variation, and importantly, half of all states at some point had at least a 25 percent year-to-year increase in benefits in the sample period, 1967–2012, suggesting substantial within-state variation in the instrument over time that is fundamental to identification of mothers' participation.

#### S.2. Misclassification Bias Corrections

In this section, we demonstrate that potential misclassification of mother's prior participation does not lead to inconsistent estimates of the intergenerational transmission of welfare participation if (i) the probability that a mother reports accurately is greater than zero, and (ii) the mother is observed over a relatively long period. We also present the reporting rates used for estimation of models with misclassification.

Estimates based on equation (3) rely on self-reported data for a daughter's welfare participation at time t and her mother's self-reported participation at any time prior to t. Consider the main estimation equation,

$$y_{ist}^{d} = \alpha + \beta' \mathbf{x}_{ist}^{d} + \delta y_{is,\forall j < t}^{m} + \gamma R_{st}^{m} + \theta R_{st}^{m} y_{is,\forall j < t}^{m} + \mu_{s}^{d} + \kappa_{t}^{d} + v_{ist}^{d}$$

where  $y_{is,\forall j < t}^m = \max\{y_{is,t-1}^m, y_{is,t-2}^m, y_{is,t-3}^m, ...\}$ . Let the true participation status be denoted  $\tilde{y}_{ist}^d$  for daughter at time t,  $\tilde{y}_{ist}^m$  for mother at time t, and  $\tilde{y}_{is,\forall j < t}^m$  for mother at any time prior to time t.

In principle, both  $y_{ist}^d$  and  $y_{ist}^m$  can be affected by misclassification error. However, misclassification in  $y_{is,\forall j < t}^m$  does not lead to inconsistent results as long as individuals have some positive probability of accurately reporting welfare participation at time t. To fix ideas, consider for simplicity t = 3 with  $j \in \{1,2\}$  and let the contemporaneous probability of accurately reporting participation be defined as

$$q = P(y_{ist}^m = 1 | \tilde{y}_{ist}^m = 1) > 0,$$

for all t. In this case, the mother's measure of any prior participation at t = 3 will be accurately reported with probability

$$P(y_{is,\forall j<3}^{m} = 1 | y_{is,\forall j<3}^{m} = 1) = P(y_{is1}^{m} = 1 | \tilde{y}_{is1}^{m} = 1) + P(y_{is2}^{m} = 1 | \tilde{y}_{is2}^{m} = 1) - P(y_{is1}^{m} = 1 | \tilde{y}_{is1}^{m} = 1)P(y_{is2}^{m} = 1 | \tilde{y}_{is2}^{m} = 1, y_{is1}^{m} = 1, \tilde{y}_{is1}^{m} = 1)$$

Denoting  $P(y_{is2}^m = 1 | \tilde{y}_{is2}^m = 1, y_{is1}^m = 1, \tilde{y}_{is1}^m = 1) = r$ , it follows that,

$$P(y_{is,\forall j<3}^m = 1 | \tilde{y}_{is,\forall j<3}^m = 1) = q (2-r) > q = P(y_{is3}^m = 1 | \tilde{y}_{is3}^m = 1).$$

We can now generalize the argument assuming, again for simplicity in exposition, that q = r. The probability of accurately reported welfare participation in any prior period under the above conditions can be expressed (based on the inclusion-exclusion principle for the union of finite events (Billingsley, 1995, p. 24)) as

$$Q_t(q) \equiv P(y_{is,\forall j < t}^m = 1 | \tilde{y}_{is,\forall j < t}^m = 1) = \sum_{j=1}^{t-1} (-1)^{j-1} {\binom{t-1}{j}} q^j, \text{ where } {\binom{t-1}{j}} = \frac{(t-1)!}{j! (t-1-j)!}$$

which is increasing in the number of time periods observed. For our analysis, the mother's minimum number of time periods is five years, and for the average reporting rate for 1970-2002 (see Table S.2-1 and Meyer, Mok, and Sullivan, 2015), the probability is  $Q_5(q = 0.649) \approx 0.995$ , or for the minimum reporting rate over that time period,  $Q_5(q = 0.339) \approx 0.873$ . Given that mothers are observed for about 13 years on average prior to the daughter's participation decision, the probability that a mother accurately reports any prior participation tends to 1, as shown in Figure S.2-1.



FIGURE S.2-1. PROBABILITY OF ACCURATELY REPORTING WELFARE PARTICIPATION

*Notes:* Given a propensity, q, to report welfare participation accurately in a given year, the probability of reporting accurately when questioned over t years is shown by  $Q_t(q)$  where the values of q are taken as the average and minimum reporting rates for mothers over the years 1970 to 2002.

We focus instead on misclassification in the binary dependent variable for the daughter's current welfare status. The probability that a daughter reports participating in welfare can be written as

$$P(y_{ist}^{d} = 1) = P(y_{ist}^{d} = 1 | \tilde{y}_{ist}^{d} = 1) P(\tilde{y}_{ist}^{d} = 1) + P(y_{ist}^{d} = 1 | \tilde{y}_{ist}^{d} = 0) P(\tilde{y}_{ist}^{d} = 0),$$

where false negatives are defined as  $\tau_{1,ist} \coloneqq P(y_{ist}^d = 0 | \tilde{y}_{ist}^d = 1)$  and false positives are defined as  $\tau_{0,ist} \coloneqq P(y_{ist}^d = 1 | \tilde{y}_{ist}^d = 0) = 0$  by assumption. This assumption is standard in the literature as false positive reports are relatively small, and these misreports typically correspond to individuals who mistake the source or timing of actual welfare participation. Note that whereas q is assumed fixed for the purposes of exposition above, false negatives here can be shown equivalently as  $\tau_{1,ist} = 1 - q_{ist}$ . Therefore, using equation (3) and  $\tau_{1,ist}$ , we can rewrite the daughter's probability of reported welfare participation as

$$P(y_{ist}^d = 1) = [1 - \tau_{1,ist}][\alpha + \beta' \boldsymbol{x}_{ist}^d + \delta y_{is,\forall j < t}^m + \gamma R_{st}^m + \theta R_{st}^m y_{is,\forall j < t}^m + \mu_s^d + \kappa_t^d].$$

We estimate the previous equation in two steps. The first step estimates misclassification probabilities based on estimates of AFDC/TANF reporting rates in the PSID by Meyer et al. (2015) considering that  $E(\tau_{1,ist}) = \tau_{1t}$ . In the second stage, we estimate the parameters of interest,  $(\delta, \gamma, \theta)$ , by estimating the model of  $y_{ist}^d$  on weighted independent variables including a weighted intercept  $[1 - \hat{\tau}_{1t}]\alpha, [1 - \hat{\tau}_{1t}]\mu_s^m, [1 - \hat{\tau}_{1t}]\mu_s^d$ , and  $[1 - \hat{\tau}_{1t}]\kappa_t^d$ . Table S.2-1 shows PSID reporting rates for dollar amount in transfers and number of cases for AFDC/TANF and SNAP (obtained from Meyer et al., 2015). The estimation parameter used in misclassification bias correction estimates,  $(1 - \hat{\tau}_{1t})$ , is the imputed reporting rate (or the greater of the two reporting rates for daughter's broader safety net estimates). This imputed rate is equal to the reporting rate for transfers in the first column inflated by the average ratio of the reporting rates for transfers and cases given the years with available data, which is approximately 1.118 for AFDC/TANF and 0.992 for SNAP. In years where we are missing both rates for amounts and cases, we linearly interpolate between observed years and use a two-year moving average for the last years.

		AFDC/TANF	7	Food stamps/SNAP			
	Meyer et a	l. (2015)	Estimation	Meyer et a	Estimation		
Year	Transfers	Cases	parameter	Transfers	Cases	parameter	
1975	0.646		0.722	0.779		0.773	
1976	0.662		0.740	0.734		0.740	
1977	0.630		0.704	0.754		0.748	
1978	0.661		0.739	0.772		0.766	
1979	0.642		0.717	0.782		0.776	
1980	0.700		0.782	0.761	0.782	0.782	
1981	0.699		0.781	0.761	0.780	0.781	
1982	0.679		0.759	0.832	0.841	0.826	
1983	0.708		0.791	0.808	0.817	0.802	
1984	0.631		0.705	0.830	0.784	0.824	
1985	0.594		0.664	0.817	0.786	0.811	
1986	0.587		0.656	0.818	0.841	0.812	
1987	0.555		0.620	0.871	0.846	0.864	
1988	0.620		0.693	0.862	0.847	0.855	
1989	0.576		0.644	0.982	0.845	0.974	
1990	0.586		0.655	0.857	0.770	0.850	
1991	0.612		0.684	0.756	0.681	0.750	
1992	0.600		0.671	0.731	0.720	0.725	
1993	0.528	0.605	0.590	0.621	0.700	0.616	
1994	0.474	0.569	0.530	0.662	0.686	0.657	
1995	0.493	0.539	0.551	0.632	0.652	0.627	
1996	0.541	0.572	0.605	0.572	0.604	0.605	
1997			0.508	0.509	0.522	0.508	
1998	0.369	0.403	0.412	0.563	0.561	0.559	
1999			0.387	0.654	0.535	0.649	
2000	0.323	0.445	0.361	0.617	0.583	0.612	
2001			0.350	0.592	0.573	0.587	
2002	0.303	0.343	0.339	0.744	0.595	0.738	
2003	0.387	0.458	0.432	0.685	0.719	0.680	
2004	0.487	0.510	0.544	0.718	0.807	0.712	
2005	0.285	0.285	0.318	0.688	0.635	0.683	
2006	0.395	0.365	0.441	0.693	0.758	0.688	
2007			0.472	0.742	0.794	0.736	
2008	0.450	0.497	0.503	0.777	0.791	0.771	
2009			0.486	0.704	0.764	0.699	
2010	0.419	0.504	0.468	0.648	0.713	0.643	
2011			0.477			0.671	
2012			0.473			0.657	

TABLE S.2-1. PSID REPORTING RATES FOR MISCLASSIFICATION BIAS CORRECTION

*Notes:* PSID reporting rates for dollar amount in transfers and number of cases for AFDC/TANF and food stamps/SNAP are estimated in Meyer et al. (2015).

#### S.3. Changes in Participation after Reform: Understanding the Mechanical Effect

In this section, we carefully review the implications that AFDC/TANF participation decreases after welfare reform. First, we explore the role of welfare reform on daughter's participation in AFDC/TANF apart from the intergenerational component as well as the connections between our empirical approaches in Tables 1 and 4 in the manuscript. Then, we demonstrate (mathematically and by using simulations) that the difference-in-difference parameter that is interpreted as the causal effect of the reform is not affected by intergenerational changes in participation. Lastly, we provide a close comparison between results in Table 1 and Table 4, providing a decomposition of reform effects on AFDC/TANF participation and a detailed interpretation of our main empirical findings.

#### S.3.1. Models With and Without Year Effects

We first show that the reduction in the probability of participating in the period after is captured by the effect after the reform in our model (3). The left panel in Figure S.3-1 shows that the unconditional effect of welfare reform on daughter's welfare participation is negative, as expected. When we include year effects (also shown in the figure), we see that the estimate of interest becomes positive, and the year effects are negative, in particular after the reform is introduced. Note too that the year effects decrease over time, as expected. If one were to ignore state effects and look at the year effects alone before 1992 and the year effects plus the welfare reform effect after 1997, then the estimates suggest that reform does not matter in the pre-reform period and that the total effect after reform is negative and has a magnitude similar to the expected drop in welfare participation. To illustrate and emphasize this important point more clearly, the right panel shows year fixed effects in a model of participation on SNAP or SSI, and they are positive and increasing, as expected.

Further, we provide complementary evidence for netting out the mechanical effect. Table 1 results show a descriptive before/after comparison to motivate the idea that the policy changes intergenerational correlations within regime such that mothers and daughters face similar welfare policy environments. Table 4 continues to net out the intergenerational differences in program access through the difference-in-difference framework, and the results are consistent across a wide range of specifications, including a quadratic in state trends as well as time-varying state-level policy and macroeconomic variables along with characteristics of mothers and daughters. Tables 1 and 4 of the main paper provide very similar results.

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FIGURE S.3-1. ESTIMATES OF THE EFFECT OF REFORM AND YEAR EFFECTS ON DAUGHTERS' AFDC/TANF VERSUS SNAP OR SSI PARTICIPATION



*Notes:* The reform effects on daughter's welfare participation are shown unconditionally and conditioning on year effects only. Estimates include PSID longitudinal weights, and 95-percent confidence intervals are shown based on state clustering.

To investigate whether changes in intergenerational program access across regimes before and after reform may bias our difference-in-difference specification, we re-estimate the least squares models and provide new evidence in Table S.3-1. Specifically, Table S.3-1 reproduces our within-regime approach from Table 1 applied to our difference-in-difference framework as in Table 4. Because the within-regime restriction limits post-reform daughter observation years, the model is estimated without time effects; however, this specification issue is only relevant to the coefficient on the after-reform indicator.

In Table S.3-1 columns (1)-(3) and (5)-(7), we use the same within-regime restrictions applied to all adult daughter observations for ages 19-27 as in Table 1, first in a before/after setting (1254 daughters before, 476 after), and then pooled together in the difference-in-difference setting (1730 combined daughters observed within-regime, 9678 total observations). In columns (4) and (8), we show the difference-in-difference estimates where we use all mother-daughter pairs, those observed within-regime and those who cross over regime periods, which corresponds to our baseline sample in the manuscript (2961 daughters total, 56068 observations).

Daughter's outcome variable:		AFDO	C/TANF		1	AFDC/TAN	F, SNAP, SSI	
			Difference-in- difference				Differe diffe	nce-in- rence
Estimation sample:	Within- regime: Before	Within- regime: After	Within- regime: Before/after	Within and across regimes	Within- regime: Before	Within- regime: After	Within- regime: Before/after	Within and across regimes
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.170	0.050	0.167	0.145	0.243	0.272	0.233	0.226
	(0.023)	(0.022)	(0.022)	(0.013)	(0.023)	(0.061)	(0.024)	(0.018)
After welfare reform			-0.002	0.038			-0.065	0.002
			(0.024)	(0.009)			(0.044)	(0.013)
Mother's participation ×			-0.123	-0.100			0.032	-0.041
after welfare reform			(0.032)	(0.015)			(0.061)	(0.017)
Percent change in levels		-71%	-74%	-69%		12%	14%	-18%
p-value		0.000	0.000	0.000		0.720	0.612	0.011
Number of daughters	1254	476	1730	2961	1254	476	1730	2961
Observations	7703	1975	9678	56068	7703	1975	9678	56068

TABLE S.3-1. INTERGENERATIONAL TRANSMISSION OF MOTHER'S AFDC/TANF PARTICIPATION BY ESTIMATION SAMPLE: FULL PSID SAMPLE AND WITHIN-REGIME WELFARE REFORM OBSERVATIONS

*Notes:* Columns (1)-(3) and (5)-(6) correspond to the sample of daughters in Table 1 of the manuscript, which is restricted to only daughters observed within welfare regime yet shown here with multiple observations for daughters at different ages and circumstances. Columns (4) and (8) correspond to the baseline sample in Table 4. All specifications use our baseline set of control variables except for year effects given the gap in crossover years and concentration in post-reform years later in the sample, which has negligible effect on our parameters of interest but changes the after-welfare reform estimate. See notes for Tables 1 and 4 for details.

The table shows two clear results. First, taking advantage of the longitudinal nature of the PSID does not affect the estimate of the AFDC/TANF intergenerational correlation coefficient. The before/after change in columns (1) and (2) is 0.170-0.050 = -0.120, which is similar to the change in estimates in Table 1 columns (1)-(2): -0.132, a -63% change in levels. Second, more importantly, the difference-in-difference specification in column (3)—using only within-regime daughters—offers estimates that are again similar to our baseline sample estimates in column (4). The effect of mothers' AFDC/TANF participation on daughters' participation after reform is 0.044 in column (3) and 0.045 in column (4). If anything, this evidence suggests that using the full panel of daughters attenuates the intergenerational effect given that the percent change falls in magnitude from -74 to -69 percent from column (3) to (4). This difference may be related to window bias in the restricted sample.

In sum, while the evidence strongly suggests that "crossover" mother-daughter pairs do not explain the reduction in AFDC/TANF intergenerational transmission in our difference-in-difference results, these additional observations are important for us to properly address econometric issues such as selection and misclassification. It is also important to note that our model allows for learning and updating information that implies that the welfare reform regime "crossover" observations provide variation to identify our main parameters: daughters can reinterpret the benefits and costs of reform differently based on family experience with welfare. While welfare experience cannot be unlearned (in the sense of the mother's welfare participation variable being any prior participation), welfare reform can change the influence of that experience on daughters' decisions.

#### S.3.2. A Mathematical Explanation and Simulation Evidence

We offer now a mathematical explanation why the mechanical effect is not the driver of our transmission results. For simplicity, consider equation (3) and two periods, before and after welfare reform:  $R = \{0,1\}$ , without independent variables and individual effects. Also, to simplify the exposition, assume that participation is exogenous (e.g.,  $y^m$  and v are independent). Thus, the daughter's welfare participation equation can be written as,

$$y^d = \alpha + \delta y^m + \gamma R^m + \theta R^m y^m + v.$$

The difference-in-differences effect of welfare reform on the intergenerational transmission of welfare participation is given by

$$\theta = \left[ E(y^d | y^m = 1, R^m = 1) - E(y^d | y^m = 1, R^m = 0) \right] - \left[ E(y^d | y^m = 0, R^m = 1) - E(y^d | y^m = 0, R^m = 0) \right].$$

It is known that we can rewrite the model as:

$$y_0^d = \alpha + \delta y_0^m + v_0,$$

for the pre-reform period, and

$$y_1^d = \alpha + \delta y_1^m + \gamma + \theta y_1^m + v_1 = (\alpha + \gamma) + (\delta + \theta) y_1^m + v_1,$$

for the post-reform period. Therefore,

$$E(y_0^d | y_0^m) = \alpha + \delta y_0^m, \quad \text{and}$$
$$E(y_1^d | y_1^m) = (\alpha + \gamma) + (\delta + \theta) y_1^m.$$

Suppose now that welfare participation in the post-reform period reduces mothers' participation probability by some fraction *c*, where 0 < c < 1, and reduces daughters' probability without changing the intergenerational transmission effect directly. To that end, we assume that  $\gamma < 0$ . Therefore,  $E(y_0^m) = \pi$ ,  $E(y_1^m) = c\pi$ , and note that, by the Law of Iterated Expectations,

$$E(y_0^a) = \alpha + \delta \pi$$
, and  
 $E(y_1^d) = (\alpha + \gamma) + (\delta + \theta)c\pi$ .

Because of the reform, participation decreased for both mothers and daughters. Note, however, that there is no effect on the intergenerational transmission effect:

$$[E(y_1^d | y_1^m = 1) - E(y_0^d | y_0^m = 1)] - [E(y_1^d | y_1^m = 0) - E(y_0^d | y_0^m = 0)] = [((\alpha + \gamma) + (\delta + \theta)) - (\alpha + \delta)] - [(\alpha + \gamma) - \alpha] = \theta$$

Therefore, as long as our model

$$y^{d} = \alpha + \delta y^{m} + \gamma R^{m} + \theta R^{m} y^{m} + v_{z}$$

includes  $R^m$  to control for the changes in the baseline probability and that the probability of mother's participation is not either 0 or 1, equation (3) can be used to identify the effect of the reform on daughters' welfare participation.

To illustrate the result described mathematically above, we provide a simple Monte Carlo experiment. We simulate welfare participation for the baseline estimation sample using different scenarios for the policy parameter  $\theta$  and the baseline participation. We present different variations of the data generating process described by the difference-in-difference model. In the first scenario, the participation of both daughters and mothers is lower in the period after reform. In the second scenario, while the participation of daughters is lower in the period after reform, the participation of mothers in the period after is equal to the period before the reform. In scenario 1a, welfare reform reduces both mother's and daughter's participation, and we assume  $\theta = 0$ . In scenario 1b, we set  $\theta = -0.125$ . Scenario 2 only changes the daughter's participation probability while keeping the mother's probability constant across periods, and again, 2a corresponds to  $\theta = 0$ , and 2b corresponds to  $\theta = -0.125$ . We select parameter values that reasonably approximate the observed statistics of the estimation sample:  $\pi = 0.25$ , c = 0.5,  $\alpha = 0.05, \gamma = -0.05, \delta = 0.2$ , and we use the sample values of the welfare reform indicator, R. Moreover, mother's welfare participation is generated as  $\tilde{y}^m = 1(u < \pi(1-R) + c\pi R)$  in Scenario 1, and  $\tilde{y}^m = 1(u < \pi)$  in Scenario 2, where u is a uniform random variable,  $\mathcal{U}[0,1]$ . The daughter's participation is determined by  $\tilde{y}^d = 1(v < \alpha + \gamma R + \delta \tilde{y}^m + \theta R \tilde{y}^m)$ , where v is also distributed as  $\mathcal{U}[0,1]$ . Scenario 1b closely represents the case of welfare reform and the other cases are presented for completeness and to emphasize that our framework is general and accommodates different scenarios.

Figure S.3-2 shows simulation results for the true percentage change in intergenerational transmission which is 0 in scenarios 1a and 2a, and  $100 \times (\theta/\delta) = -62.5$  percent in scenarios 1b and 2b. In the cases where the true reform effect on intergenerational transmission is assigned a zero parameter value, the difference-in-difference estimates show that there are no mechanical effects confounding the true null result (Scenarios 1a and 2a). However, when we set  $\theta = -0.125$ , the results, as expected, indicate a clear reduction in intergenerational transmission of about 62.5 percent.

FIGURE S.3-2. PERCENT CHANGE TO THE INTERGENERATIONAL TRANSMISSION OF WELFARE PARTICIPATION: SIMULATIONS GIVEN ASSUMPTIONS ON MECHANICAL REFORM EFFECTS AND DIFFERENCE-IN-DIFFERENCE ESTIMATES



*Notes:* The estimates shown above are based on 1000 replications using the baseline estimation sample with randomly assigned welfare participation given different model assumptions on the effects of first-generation welfare participation and the impact of welfare reform.

### S.3.3. Effect of the Reform: Levels, Baseline Changes, and a Decomposition

When we estimate the percent change in levels of daughters' welfare participation after reform, we use a simple percent-change formula,  $\hat{\theta}/\hat{\delta}$  (the estimated difference-in-difference interaction effect of reform and mother's participation,  $\hat{\theta}$ , divided by the estimated intergenerational effect of the mother,  $\hat{\delta}$ ). In the manuscript, we denote  $\hat{\theta}/\hat{\delta}$  as 'percentage change in levels'. To adjust conservatively for mechanical changes in the daughters' welfare participation probabilities before and after reform, we consider alternative ways to express the effect sizes relative to changes in estimated participation probabilities for each time period.

One consideration would be to show how much larger the percent change in intergenerational transmission is relative to the percent change in participation probabilities across welfare regimes:

$$\hat{\Delta}_{1} = \frac{\frac{\hat{\theta}}{\hat{\delta}} - \frac{\hat{p}_{1} - \hat{p}_{0}}{\hat{p}_{0}}}{\frac{\hat{p}_{1} - \hat{p}_{0}}{\hat{p}_{0}}} = \frac{\hat{\theta}}{\hat{\delta}} \cdot \frac{\hat{p}_{0}}{\hat{p}_{1} - \hat{p}_{0}} - 1.$$

The daughter's estimated probability of welfare participation is  $\hat{p}_1$  in the post-reform period, and  $\hat{p}_0$  represents the mean probability over the whole time period,  $\hat{p}_0 = \bar{p}$ , following the assumptions of the

difference-in-differences model (Table 4). Alternatively, we can rescale the intergenerational effect over baseline probabilities:

$$\hat{\Delta}_2 = \frac{\frac{\hat{\delta} + \hat{\theta}}{\hat{p}_1} - \frac{\hat{\delta}}{\hat{p}_0}}{\frac{\hat{\delta}}{\hat{p}_0}} = \frac{\hat{\delta} + \hat{\theta}}{\hat{\delta}} \cdot \frac{\hat{p}_0}{\hat{p}_1} - 1.$$

(For context, we provide  $\hat{\Delta}_2$  in Table 4, 'percent change over baseline'.) Note that these variations on rescaling the intergenerational effects are mathematically very similar.

Table S.3-2 provides estimates of  $\hat{\Delta}_1$  and  $\hat{\Delta}_2$  for Table 4. Comparing percent changes in transmission relative to participation probabilities, our estimates show that the reform effect on intergenerational transmission was 59 percent larger than relative changes in the participation probability for AFDC/TANF (Table S.3-2 column (4)). Using the percent change over baseline estimates presented in column (5), we obtain a 44 percent decrease over the baseline odds of participation, which is reported in Table 4. If we consider results adjusted for underreported welfare participation, we find a reform effect that was 84 percent larger than relative changes in participation, or a 32 percent decrease over baseline odds. The results, again, are complementary and help illustrate the intergenerational effect sizes.

	Base period	Post-reform	Change	$\widehat{\Delta}_1$	$\widehat{\Delta}_2$				
	(1)	(2)	(3)	(4)	(5)				
	Table 4, column (2): Difference-in-difference IV estimates								
Mother's participation effect	0.268	0.085	-0.183	58.67	-44.19				
Daughter's participation probability	0.044	0.025	-0.019						
	Table 4, o	column (4): Miscla	ssification-correcte	ed IV estimate	s				
Mother's participation effect	0.425	0.208	-0.218	84.27	-32.42				
Daughter's participation probability	0.078	0.056	-0.022						
		1 1 0	11 0 00 11	1 0 1					

TABLE S.3-2. PERCENT CHANGE AFTER WELFARE REFORM

Notes: The estimates in columns (3)-(5) correspond to calculations made before rounding. See Table 4 notes for details.

The daughter's change in participation probability is inclusive of the entire sample of daughters, regardless of whether their mothers participated. The percent change in intergenerational effects is specific to the subset of daughters whose mothers did participate. Therefore, the percent change in levels,  $100 \times (\hat{\theta}/\hat{\delta})$ %, is arguably the correct measure for interpreting our difference-in-differences-type estimates.

Finally, we now ask the following important question: How much of the reduction of a daughter's participation probability can be attributed solely to the behavioral effect, as opposed to the mechanical effect? By employing equation (3), we provide a decomposition that implies a quantitative answer, which

complements the findings in Table S.3-2. To that extent, we consider a simple version of equation (3) with two periods, before and after welfare reform. The daughter's welfare participation equation can be written as,

$$y_{ist}^{d} = \alpha + \delta y_{is,\forall j < t}^{m} + \gamma R_{st}^{m} + \theta R_{st}^{m} y_{is,\forall j < t}^{m} + v_{ist}$$

Using conditional expectation functions, under the established assumptions, we have that

$$\begin{split} E(y_{ist}^d = 1 | R_{st}^m = 1) - E(y_{ist}^d = 1 | R_{st}^m = 0) = \\ \gamma - \delta \, E(y_{is,\forall j < t}^m = 1 | R_{st}^m = 0) + (\delta + \theta) \, E(y_{is,\forall j < t}^m = 1 | R_{st}^m = 1) \,, \end{split}$$

where  $\gamma$  represents the change in the baseline probability over time, affecting all daughters regardless of whether previous generations participated on welfare. Further, the total effect of welfare reform on daughter's participation probability can be decomposed into mechanical effect, reduced exposure, and reduced transmission among those exposed:

$$\underbrace{\gamma}_{\substack{\text{Mechanical}\\ \text{effect}}} + \underbrace{\delta\left(E\left(y_{is,\forall j < t}^m = 1 \middle| R_{st}^m = 1\right) - E\left(y_{is,\forall j < t}^m = 1 \middle| R_{st}^m = 0\right)\right)}_{\text{Reduced exposure}} + \underbrace{\theta \ E\left(y_{is,\forall j < t}^m = 1 \middle| R_{st}^m = 1\right)}_{\text{Reduced transmission}}$$

Considering non-parametric estimates of the conditional moments in Table 1, we have

$$-0.049 = 0.044 - 0.093 = \gamma - \delta E(y_{is,\forall j < t}^m = 1 | R_{st}^m = 0) + (\delta + \theta) E(y_{is,\forall j < t}^m = 1 | R_{st}^m = 1).$$

Moreover, based on columns (1) and (2) of Table 1,  $\hat{\delta} = 0.210$ ,  $\hat{\delta} + \hat{\theta} = 0.078$ , and

$$\hat{E}(y_{is,\forall j < t}^{m} = 1 | R_{st}^{m} = 0) = 0.181,$$
$$\hat{E}(y_{is,\forall j < t}^{m} = 1 | R_{st}^{m} = 1) = 0.149.$$

Using these estimates, we obtain that  $\hat{\gamma}$  is equal to -0.022, which accounts for 46 percent of the reduction of the baseline probability after reform. Further, it follows that,

$$\frac{\hat{\theta} \,\hat{E} \left( y_{is,\forall j < t}^m = 1 \middle| R_{st}^m = 1 \right)}{E(y_{ist}^d = 1 \middle| R_{st}^m = 1) - E(y_{ist}^d = 1 \middle| R_{st}^m = 0)} = \frac{-0.132 \times 0.181}{-0.049} = 0.405,$$

implying that 40 percent of the reduction of welfare participation in AFDC/TANF can be attributed specifically to a reduction of intergenerational transmission after reform. The remaining 13 percent of the total reform effect on daughter participation came from reduced exposure because the mothers were less likely to participate. Using estimates from Table 4 columns (1) and (2), we get analogous results of 50 to

91 percent, respectively, of reduced welfare participation after reform attributed to a reduced transmission across generations.

#### S.4. An Investigation on Possible Mechanisms

We find that AFDC/TANF participation decreased after welfare reform, while participation in the broader safety net did not. The results in Table 6 of the main text also demonstrate that there is a strong tie between mother's AFDC/TANF participation and other daughter outcomes in adulthood, and this link persisted after welfare reform. A question arises then of whether some of the influence of mother's welfare usage affects the daughter's welfare participation indirectly through other socioeconomic outcomes of the daughter such as labor supply, marriage, fertility, and human capital. A fully structural intergenerational model of mother's welfare participation on the joint choice of these outcomes is beyond the scope of the current analysis. However, we still are interested in identifying some of these potential mediating mechanisms. In this section, we propose a recursive system of equations to identify the direct effect of mother's welfare participation choices that could occur through other socioeconomic domains, while controlling for potential endogeneity of those outcomes using the control function approach in a quasi-maximum likelihood framework.

#### S.4.1. Models and Parameters

Consider a slight modification of our equation (3) in the manuscript of daughter's welfare participation as

$$y_{ist}^{d} = \alpha + \delta y_{is,\forall j < t}^{m} + \gamma R_{st}^{m} + \theta R_{st}^{m} y_{is,\forall j < t}^{m} + \xi M_{ist}^{d} + \varphi R_{st}^{m} M_{ist}^{d} + \boldsymbol{\beta}' \boldsymbol{X}_{ist}^{d} + \boldsymbol{\nu}_{ist}^{d},$$
(S.1)

where, as before,  $y_{ist}^d$  indicates whether daughter *i* residing in state *s* at time period *t* participates in welfare,  $y_{is,\forall j < t}^m$  indicates if her mother participates in welfare in any prior period,  $R_{st}^m$  is an indicator variable for welfare reform,  $X_{ist}^d$  is the vector of control variables described in Section V, including mother's state effects, daughter's state effects, and time effects, and  $v_{ist}^d$  is the error term. The variable  $M_{ist}^d$  represents a possible mechanism through which mother's welfare indirectly influences the daughter's welfare choice, such as the daughter's labor supply choice, marriage, fertility, or human capital. We permit this mechanism to have differential effects after welfare reform, and thus we include the interaction term  $R_{st}^m M_{ist}^d$ . In this model we not only have to confront the endogeneity of mother's welfare participation  $y_{is,\forall j < t}^m$ , but also the potential endogeneity of the mechanism  $M_{ist}^d$ . Moreover, we

wish to isolate the direct effect of the mother's welfare participation on the daughter's welfare decision from the indirect influence operating through the mechanism.

To identify the direct and indirect parameters of interest, we propose the following recursive system of equations:

$$y_{is,\forall j < t}^{m} = b_{10} + \boldsymbol{b}_{11}' \boldsymbol{Z}_{ist}^{m} + b_{12} R_{st}^{m} + \boldsymbol{b}_{13}' \boldsymbol{X}_{ist}^{d} + V_{1,ist},$$
(S.2)

$$R_{st}^{m} y_{is,\forall j < t}^{m} = b_{20} + \boldsymbol{b}_{21}' R_{st}^{m} \boldsymbol{Z}_{ist}^{m} + b_{22} R_{st}^{m} + \boldsymbol{b}_{23}' \boldsymbol{X}_{ist}^{d} + V_{2,ist},$$
(S.3)

$$M_{ist}^{d} = c_{10} + c_{11}' H_{ist}^{d} + c_{12} y_{is,\forall j < t}^{m} + c_{13} R_{st}^{m} + c_{14} R_{st}^{m} y_{is,\forall j < t}^{m} + c_{15}' X_{ist}^{d} + V_{3,ist}$$
(S.4)  
+  $\lambda_{31} V_{1,ist} + \lambda_{32} V_{2,ist}$ ,

$$R_{st}^{m}M_{ist}^{d} = c_{20} + c_{21}^{\prime}R_{st}^{m}H_{ist}^{d} + c_{22}y_{is,\forall j < t}^{m} + c_{23}R_{st}^{m} + c_{24}R_{st}^{m}y_{is,\forall j < t}^{m} + c_{25}^{\prime}X_{ist}^{d} + V_{4,ist}$$
(S.5)  
+  $\lambda_{41}V_{1,ist} + \lambda_{42}V_{2,ist}$ ,

$$y_{ist}^{d} = d_{10} + d_{11}y_{is,\forall j < t}^{m} + d_{12}R_{st}^{m} + d_{13}R_{st}^{m}y_{is,\forall j < t}^{m} + d_{14}M_{ist}^{d} + d_{15}R_{st}^{m}M_{ist}^{d} + d_{16}X_{ist}^{d} + V_{5,ist}$$
(S.6)  
+  $\lambda_{51}V_{1,ist} + \lambda_{52}V_{2,ist} + \lambda_{53}V_{3,ist} + \lambda_{54}V_{4,ist}.$ 

Equations (S.2) and (S.3) are the same first stage regressions used in Table 4 of the paper, and equations (S.4) and (S.5) represent a model for outcome variable  $M_{ist}^d$  and its interaction with after reform, which each include a vector of state and time-varying policy observables  $H_{ist}^d$  to assist with identification along with latent errors controlling for the endogeneity of mother's welfare participation ( $V_{1,ist}$  and  $V_{2,ist}$ ). Finally, equation (S.6) is the equation of interest, and it is a rewritten version of equation (3) augmented by latent errors controlling for the endogeneity of mother's welfare and its interaction with welfare reform ( $V_{1,ist}$  and  $V_{2,ist}$ ), and the daughter's potential mechanism and interaction with reform ( $V_{3,ist}$  and  $V_{4,ist}$ ).

Importantly, the system of equations in (S.2)-(S.6) rests on the recursive structure whereby the decision-making is sequential, with the daughter's decisions on labor supply, marriage, fertility, or human capital preceding her welfare participation choice. However, those decisions are assumed to be correlated with the mother's welfare participation, and thus we include the series of latent unobserved error terms in each of equations (S.4)-(S.6). System of equations methods of this form have a long tradition in economics and other social sciences (Heckman, 1978; Heckman and Robb, 1985; Muller, Judd, and Yzerbyt, 2005; Imbens and Newey, 2009; Blundell and Matzkin, 2014; among others). For example, in the framework considered in Muller et al. (2005), the direct intergenerational effect of mother's participation on daughter's welfare is  $d_{11}$ , while the indirect intergenerational effect of mother's participation on daughter's welfare via the outcomes  $M_{ist}^d$  and  $R_{st}^m M_{ist}^d$  is  $c_{12}d_{14} + c_{22}d_{15}$ . Then, the total effect of mother's participation on daughter's welfare via the sum of the direct and indirect effects, i.e.,

 $d_{11} + c_{12}d_{14} + c_{22}d_{15}$ . The Muller et al. model is based on the assumption that the mechanism is exogenous to the outcome of interest, but we extend that framework to the case of endogenous mechanisms. We next discuss the derivation of total, direct, and indirect effects in our model that includes endogenous variables, and then turn our attention to estimation.

After solving for  $V_{1,ist}$  and  $V_{2,ist}$  in equations (S.2) and (S.3) and replacing them in equations (S.4) and (S.5), we obtain

$$M_{ist}^{d} = \Psi_{30} + c_{11}' H_{ist}^{d} + \Psi_{31} y_{is,\forall j < t}^{m} + \Psi_{32} R_{st}^{m} + \Psi_{33} R_{st}^{m} y_{is,\forall j < t}^{m} + \Psi_{34}' X_{ist}^{d} + \Psi_{35}' Z_{ist}^{m}$$
(S.7)  
+  $\Psi_{36}' R_{st}^{m} Z_{ist}^{m} + V_{3,ist}$ ,

$$R_{st}^{m}M_{ist}^{d} = \Psi_{40} + \boldsymbol{c}_{21}^{\prime}R_{st}^{m}\boldsymbol{H}_{ist}^{d} + \Psi_{41}y_{is,\forall j < t}^{m} + \Psi_{42}R_{st}^{m} + \Psi_{43}R_{st}^{m}y_{is,\forall j < t}^{m} + \Psi_{44}^{\prime}\boldsymbol{X}_{ist}^{d} + \Psi_{45}^{\prime}\boldsymbol{Z}_{ist}^{m}$$
(S.8)  
+  $\Psi_{46}^{\prime}R_{st}^{m}\boldsymbol{Z}_{ist}^{m} + V_{4,ist},$ 

where the  $\Psi$  coefficients represent composites of the underlying parameters such that our parameters of interest in these equations can be summarized as  $\Psi_{31} = c_{12} + \lambda_{31}$ ,  $\Psi_{33} = c_{14} + \lambda_{32}$ ,  $\Psi_{41} = c_{22} + \lambda_{41}$ , and  $\Psi_{43} = c_{24} + \lambda_{42}$ . We solve for the unobserved errors in equations (S.2), (S.3), (S.7) and (S.8), and then we substitute them in equation (S.6) to arrive at:

$$y_{ist}^{d} = \Phi_{0} + \Phi_{1} y_{is,\forall j < t}^{m} + \Phi_{2} R_{st}^{m} + \Phi_{3} R_{st}^{m} y_{is,\forall j < t}^{m} + \Phi_{4} M_{ist}^{d} + \Phi_{5} R_{st}^{m} M_{ist}^{d} + \Phi_{6}' X_{ist}^{d} + \Phi_{7}' H_{ist}^{d}$$
(S.9)  
+  $\Phi_{8}' R_{st}^{m} H_{ist}^{d} + \Phi_{9}' Z_{ist}^{m} + \Phi_{10}' R_{st}^{m} Z_{ist}^{m} + V_{5,ist},$ 

where the  $\Phi$  parameters are reduced form coefficients. It follows that the direct intergenerational effect of mother's welfare participation on daughter's welfare participation is

$$\Phi_1 = d_{11} + \lambda_{51} - \lambda_{53}(c_{12} + \lambda_{31}) - \lambda_{54}(c_{22} + \lambda_{41}).$$

The indirect effect of mother's welfare participation on daughter's welfare participation may depend on some mechanism before/after reform,  $M_{ist}^d$  and  $R_{st}^m M_{ist}^d$ , which is given by

$$\Phi_4\Psi_{31} + \Phi_5\Psi_{41} = (d_{14} + \lambda_{53})(c_{12} + \lambda_{31}) + (d_{15} + \lambda_{54})(c_{22} + \lambda_{41}).$$

Thus, the total intergenerational effect on welfare participation can be written as

$$\Phi_1 + \Phi_4 \Psi_{31} + \Phi_5 \Psi_{41} = [d_{11} + d_{14} c_{12} + d_{15} c_{22}] + [\lambda_{51} + d_{14} \lambda_{31} + d_{15} \lambda_{41}],$$
(S.10)

where the first term in brackets represents the change in the probability of daughter's participation associated with the observed variables and the last term in brackets is the change associated with the latent variables in equations (S.2)-(S.6). In the case of no selection, we have that  $\lambda_{31} = \lambda_{41} = \lambda_{51} = 0$ , and therefore, the total effect is equal to the first term in brackets, which is interpreted as the total effect in models under exogeneity. Similarly, one can obtain the total effect of mother's participation after welfare reform on daughter's welfare use:

$$\Phi_3 + \Phi_4 \Psi_{33} + \Phi_5 \Psi_{43} = [d_{13} + d_{14} c_{14} + d_{15} c_{24}] + [\lambda_{52} + d_{14} \lambda_{32} + d_{15} \lambda_{42}], \quad (S.11)$$

where the direct effect after reform is  $\Phi_3 = d_{13} + \lambda_{52} - \lambda_{53}(c_{14} + \lambda_{32}) - \lambda_{54}(c_{24} + \lambda_{42})$ , and the indirect effect after reform is  $\Phi_4\Psi_{33} + \Phi_5\Psi_{43} = (d_{14} + \lambda_{53})(c_{14} + \lambda_{32}) + (d_{15} + \lambda_{54})(c_{24} + \lambda_{42})$ .

## S.4.2. Estimation

We adopt a control function approach for estimation of the system of equations (see, e.g., Heckman and Robb, 1985; Imbens and Newey, 2009). However, estimation of the model is not straightforward, because the endogenous variables are dichotomous and the model includes state effects, time effects, and survey weights. To provide results as close as possible to our main estimates in Table 4, we first regress the observed variables on mother's state effects, daughter's state effects, and time effects, weighted by the daughter's longitudinal weight. We then obtain the residuals from those regressions and use the residuals in place of the original variables in equations (S.2)-(S.6).

The system is then estimated in two additional steps. First, we take advantage of the recursive structure of the model to estimate the control functions. Specifically, we first estimate equations (S.2) and (S.3) using a linear probability model to obtain the parameter estimates  $\hat{b}_{10}$ ,  $\hat{b}'_{11}$ ,  $\hat{b}_{12}$ ,  $\hat{b}'_{13}$ ,  $\hat{b}_{20}$ ,  $\hat{b}'_{21}$ ,  $\hat{b}_{22}$ , and  $\hat{b}'_{23}$ , and then we generate  $\hat{V}_{1,ist}$  and  $\hat{V}_{2,ist}$  using a probit link function. In the same manner, using  $\hat{V}_{1,ist}$  and  $\hat{V}_{2,ist}$ , we estimate equations (S.4) and (S.5) and generate the additional control variates  $\hat{V}_{3,ist}$  and  $\hat{V}_{4,ist}$ . Second, we replace the latent error terms by their estimated counterparts  $\hat{V}_{1,ist} - \hat{V}_{4,ist}$  in equation (S.6) and estimate the system of equations by a quasi-maximum likelihood (QML) method with clustered standard errors at the state level, which is consistent with the clustering approach adopted in Section V of the manuscript.

#### S.4.3. Empirical Results

In selecting daughter outcomes as potential mechanisms, we were motivated by the welfare reform literature to consider: whether the daughter has no family earnings, whether the daughter is unmarried and non-cohabiting, whether the daughter had a child when she was a teenager, and whether the daughter has less than a high school education. In terms of the exogenous variables, we include additional state-level factors that are time-varying,  $H_{ist}^d$ , which may differ by outcome. For instance, the earnings outcome includes variables for the maximum weekly amount of unemployment benefits, whether the state minimum wage is above the federal minimum, whether there are prevailing wage laws, whether it is a right-to-work state, whether there is a state temporary disability insurance program, and

whether there are fair employment laws. For outcomes related to marriage or childbirth, we use variables for whether there is a no-fault divorce policy, whether the Ten Commandments are allowed in schools, citizen ideology measure, the percentage of evangelical residents, whether counseling is mandated before an abortion, whether pharmacies can dispense emergency contraception without a prescription, whether cities/municipalities are prohibited from passing rent control laws, whether there is a state-level equivalent to the Equal Rights Amendment, and a measure of the median and variance of policy liberalism. For the daughter's high school completion, we control for state-year price-adjusted public education expenses per capita as well as whether the Ten Commandments are allowed in schools. A further description of these variables is included in Section S.6 below.

Table S.4-1 compares IV results for our parameters of interest (panel A) to simultaneous equation model results considering the role of potential mechanisms (panel B). Because some data are missing on the mechanisms, in panel A we replicate our baseline models from Table 4 in the paper but we use the comparison sample of nonmissing mechanism observations for each mechanism. In panel B we present the total effect of mother's welfare participation and its interaction with welfare reform just as in panel A, but under the total effect we also present the direct effect and indirect effect as derived in equations (S.10) and (S.11). The first four columns show results for daughters' participation on AFDC/TANF, while the last four columns show results for participation on AFDC/TANF, SNAP, or SSI.

There are two findings of particular note. First, even with inclusion of the mechanisms and a different estimation procedure in panel B compared to panel A, the results are remarkably similar, underscoring once again the robustness of our baseline results. For example, in panel A using the IV approach as in the main paper, the before-reform effect of mother's AFDC/TANF participation on the daughter's AFDC/TANF participation in column (1) is 0.265, and the reform effect is -0.180, resulting in a 68% decline in transmission levels. The corresponding estimates in panel B including the mechanism variable of no daughter earnings and estimated with the quasi-MLE with control functions approach are 0.233 and -0.169, respectively, resulting in a 72% decline in transmission levels. Second, with the exception of daughter's earnings, the other potential mechanisms of marriage, teen childbirth, and low education have minor indirect transmission effects on daughter's welfare participation decision. There does appear to be an indirect pathway through daughter's labor supply choice, which is consistent with these programs being means-tested transfers. For instance, if the mother participated in AFDC/TANF, the daughter is 23 percentage points more likely to participate on AFDC/TANF as an adult, with 10 percentage points attributed to the indirect intergenerational effect (44 percent of the overall effect). This result implies that a mother's welfare use affects her daughter's welfare use and likelihood of future employment, which also contributes to her dependence on cash assistance. However, welfare reform attenuated that indirect pathway. The total effect of mother's welfare on the daughter after reform is 0.064

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(=0.233-0.169), the post-reform direct effect is 0.050 (=0.131-0.081), and the post-reform indirect effect is the difference of the total and direct effects of 0.014, or about 22% of the total effect. A similar result obtains in column (5) when we consider participation in the wider safety net.

Daughter's outcome:		AFDC	C/TANF		AFDC/TANF, SNAP, SSI			
Potential mechanism:	No	Un-	Had	Less than	No	Un-	Had	Less than
	family	married/	teenage	high	family	married/	teenage	high
	earnings	cohabit.	childbirth	school	earnings	cohabit.	childbirth	school
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Α	. Baseline I	V estimates f	or samples w	ith nonmissi	ng mechanis	m observatio	ns
Mother's participation	0.265	0.265	0.265	0.266	0.295	0.293	0.295	0.297
	(0.049)	(0.049)	(0.049)	(0.049)	(0.073)	(0.073)	(0.073)	(0.073)
Mother's participation	-0.180	-0.179	-0.179	-0.180	0.044	0.045	0.044	0.042
× after reform	(0.046)	(0.046)	(0.046)	(0.046)	(0.074)	(0.074)	(0.074)	(0.074)
Percent change in levels	-68%	-67%	-68%	-68%	15%	15%	15%	14%
p-value	[0.000]	[0.000]	[0.000]	[0.000]	[0.595]	[0.588]	[0.592]	[0.609]
	В	. Decomposi	ition with po	tential mecha	nisms via sir	nultaneous e	quation mod	els
Mother's participation								
Total effect	0.233	0.254	0.249	0.306	0.329	0.364	0.350	0.399
	(0.022)	(0.020)	(0.024)	(0.027)	(0.034)	(0.024)	(0.027)	(0.024)
Direct effect	0.131	0.209	0.210	0.335	0.201	0.290	0.282	0.401
	(0.018)	(0.018)	(0.024)	(0.028)	(0.031)	(0.024)	(0.032)	(0.023)
Indirect effect	0.102	0.045	0.039	-0.029	0.128	0.074	0.068	-0.002
	(0.016)	(0.015)	(0.013)	(0.011)	(0.013)	(0.018)	(0.017)	(0.009)
Mother's participation × af	ter reform							
Total effect	-0.169	-0.158	-0.169	-0.192	-0.102	-0.099	-0.107	-0.108
	(0.034)	(0.036)	(0.034)	(0.041)	(0.046)	(0.043)	(0.042)	(0.042)
Direct effect	-0.081	-0.113	-0.161	-0.181	-0.032	-0.047	-0.125	-0.151
	(0.024)	(0.027)	(0.029)	(0.036)	(0.035)	(0.039)	(0.031)	(0.041)
Indirect effect	-0.088	-0.046	-0.008	-0.011	-0.070	-0.053	0.018	0.043
	(0.016)	(0.017)	(0.016)	(0.019)	(0.016)	(0.020)	(0.024)	(0.016)
Number of daughters	2931	2931	2931	2953	2931	2931	2931	2953
Observations	55095	55120	55256	55561	55095	55120	55256	55561

TABLE S.4-1. THE POTENTIAL ROLE OF MECHANISMS IN REFORM EFFECTS ON INTERGENERATIONAL WELFARE PARTICIPATION

*Notes:* All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, controls for the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12-18. Panel A presents IV estimates as in Table 4 based on the subsample of observations with nonmissing mechanism data and control function estimates; robust standard errors with state clustering are shown in parentheses, p-values in brackets. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The simultaneous equation results in panel B include additional controls for each mechanism; cluster-robust standard errors shown in parentheses are obtained using the delta method. The estimates in panel B are performed after demeaning the variables by state and year effects as well as incorporating control functions for endogeneity of mother's participation and the additional daughter outcome along with their interactions with welfare reform. Daughters' PSID core longitudinal weights are used in estimation.

In conclusion, the investigation of possible mechanisms presented in this section allows the intergenerational dependence parameter to be decomposed into direct and indirect effects, capturing how mother's welfare use impacts daughter's welfare participation via other aspects of daughter's adulthood. We derive intergenerational effects that can be consistently estimated in the presence of selection, a

fundamental challenge to identification we face in our work. Our results suggest that the pathway from mother's welfare participation on the daughter's welfare participation is largely direct, and is not confounded through indirect channels of marriage, fertility, and education choices of the daughter. We do find some evidence of an indirect pathway via daughter's labor supply choice. Interestingly, welfare reform essentially eliminated the contribution of this indirect effect of mother's participation with an 86 percent decrease, meaning post reform mother's direct transmission of knowledge of the program had the greatest influence on the daughter's welfare choice. The role of earnings in the daughter's wider safety net participation followed a similar pattern except that reform did not change the direct effect of mother's welfare participation, a result that could be associated with program substitution. These decomposition estimates should be seen as complementary to, and consistent with, the estimated IV results in the manuscript.

#### S.5. Instrumental Variables: Additional Results and Sensitivity Analysis

This section presents a detailed analysis on the instrumental variables approach to equation (3). We begin the section presenting first-stage results associated with the estimates shown in Table 4. We then investigate the quality and exogeneity of the instruments, perform a falsification test, and investigate the interpretation of our findings. We end this section by reporting the sensitivity of our IV results to including additional control variables.

#### S.5.1. First-Stage Results

Table S.5-1 offers first-stage results for the IV estimates of the mother's AFDC/TANF participation decision presented in Table 4 columns (2) and (4) of the paper. These results correspond to a model for daughters' AFDC/TANF participation. The first stage corresponding to the daughter's broader welfare participation (Table 4 columns (6) and (8)) is no different except for small effects when using a different misclassification correction when accounting for SNAP reporting rates as well as AFDC/TANF. As expected, AFDC/TANF is a strong predictor of the probability of mother's welfare participation, and the evidence is consistent with the commonly accepted premise that mother's welfare participation decision responds positively to greater average state-level AFDC/TANF benefit standards.

Endogenous variable:	Mother's p	participation	Mother's participation $\times$ after reform			
	(1)	(2)	(3)	(4)		
Average AFDC/TANF	0.542	0.546	-0.079	-0.051		
	(0.091)	(0.098)	(0.031)	(0.023)		
Reform × average AFDC/TANF	0.281	0.306	0.885	0.889		
	(0.100)	(0.092)	(0.123)	(0.122)		
Maximum AFDC/TANF	-0.314	-0.328	0.189	0.132		
	(0.142)	(0.141)	(0.061)	(0.046)		
Reform × maximum AFDC/TANF	-0.183	-0.202	-0.809	-0.811		
	(0.090)	(0.083)	(0.100)	(0.100)		
Misclassification correction	No	Yes	No	Yes		
F test of excluded instruments	16.522	14.795	21.283	21.806		
p-value	0.000	0.000	0.000	0.000		
Weak IV test statistic	23.157	21.969	23.157	21.969		
p-value	0.000	0.000	0.000	0.000		
Number of daughters	2961	2961	2961	2961		
Observations	56068	56068	56068	56068		

TABLE S.5-1. FIRST-STAGE INSTRUMENTAL VARIABLES ESTIMATES FOR MOTHER'S AFDC/TANF PARTICIPATION DECISION

*Notes:* Robust standard errors with state clustering are shown in parentheses. Both models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12-18. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation (see Section S.2 for details). Daughters' PSID core longitudinal weights are used in estimation.

#### S.5.2. Policy Instruments and Macroeconomic Variables

Table S.5-2 compares estimates for the parameters of interest in equation (3) obtained from using different sets of instrumental variables, which are key to identifying the effect of mother's participation given her possible selection into welfare. In all the variations of the model, we instrument for mother's previous welfare participation using the policy parameters defined by the state AFDC/TANF benefit guarantee. We include instruments defined by family size (as in Table 4) and family of four. The table also shows results by using other state-by-year instruments, including the overall application denial rate for AFDC/TANF, the application denial rate for procedural reasons, the rate at which wrongful denials are overturned through favorable hearing claims, and the state unemployment rate over daughter's critical exposure ages 12-18. The first three of these are indicators for how administratively stringent the states application procedures are and are potentially strong instruments, the sample sizes vary between specifications (1)-(4), and in specifications (5)-(8) we use a restricted sample of daughters who were ages 16-35 in 1991 because of more severe data limitations on instruments. Regardless, across the 8 columns in Table S.5-2, we obtain similar conclusions regarding transmission effects both before and after welfare reform as in Table 4.

-	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
	All daughters				Daughters aged 16-35 in 1991				
Mother's participation	0.268	0.475	0.305	0.326	0.331	0.456	0.297	0.320	
	(0.049)	(0.156)	(0.047)	(0.048)	(0.062)	(0.183)	(0.055)	(0.057)	
After welfare reform	0.069	0.114	0.080	0.088	0.097	0.114	0.088	0.093	
	(0.021)	(0.054)	(0.023)	(0.019)	(0.028)	(0.064)	(0.024)	(0.025)	
Mother's participation ×	-0.183	-0.298	-0.217	-0.243	-0.274	-0.315	-0.247	-0.262	
after welfare reform	(0.046)	(0.132)	(0.048)	(0.039)	(0.058)	(0.155)	(0.055)	(0.053)	
Instrumental variables (measured when daughter aged 12-18):									
AFDC/TANF (by family size)	Yes	No	Yes	Yes	Yes	No	Yes	Yes	
AFDC/TANF (for family of 4)	No	Yes	No	No	No	Yes	No	No	
AFDC/TANF application denial rate	No	No	Yes	Yes	No	No	No	No	
Unemployment rate	No	No	No	Yes	No	No	No	No	
AFDC/TANF procedural denial rate	No	No	No	No	No	No	Yes	Yes	
AFDC/TANF favorable claims rate	No	No	No	No	No	No	No	Yes	
Weak IV test statistic	23.157	6.327	25.680	28.010	17.857	5.061	20.117	22.647	
p-value	0.000	0.097	0.001	0.003	0.000	0.167	0.005	0.020	
Hansen J statistic	1.315	1.122	10.853	11.902	2.435	3.085	4.459	8.550	
p-value	0.518	0.571	0.093	0.292	0.296	0.214	0.615	0.575	
Percent change in levels	-68%	-63%	-71%	-75%	-83%	-69%	-83%	-82%	
p-value	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	
Number of daughters	2961	2961	2951	2951	1422	1422	1422	1422	
Observations	56068	56068	55873	55873	32988	32988	32988	32988	

 TABLE S.5-2. INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION

 WITH ALTERNATIVE INSTRUMENTAL VARIABLES

*Notes:* Given the limited data availability of procedural denial and favorable claims across years, estimates in columns (5)-(8) use a restricted sample of daughters who were ages 16-35 in 1991. Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables vary by column and include average and maximum [or minimum for denial rates] measures of indicated variables, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

It is natural that the IV measures vary by family size according to state benefit standards because this variation is most closely associated with the mother's welfare participation decision in the first generation. In Table S.5-2, fixing the instrument measurement for a family of four removes some of the identifying variation associated with family differences. Here, we explore how much identifying variation may be associated with potential within-family changes in number of children and state of residence during the critical exposure period when a daughter is aged 12 to 18. For example, a daughter at age 12 may have older siblings that age out of the family unit during this period, or a family may relocate across states (although cross-state mobility is fairly limited among lower-income families). In Figure S.5-1, we provide a comparison of our main IV results from Table 4 column (2) in the manuscript to different IV constructions based on constant family size and state of residence during the critical exposure period. Specifically, we take the family size and/or state when the daughter is aged 12 and construct IV measures of the average and maximum AFDC/TANF benefit standard accordingly over the years when the daughter is aged 12 to 18, that is, based purely on state-level policy changes. Age 12 is the beginning of the critical exposure period over which our main IVs are defined. Figure S.5-1 shows that holding state of residence constant makes little difference, and point estimates when holding family size constant are generally larger in magnitude and less precise, yet there is no loss in qualitative interpretation for our main results.



FIGURE S.5-1. IV ESTIMATES OF WELFARE TRANSMISSION AND REFORM EFFECTS BY HOLDING FAMILY SIZE AND STATE OF RESIDENCE CONSTANT WHEN DETERMINING AFDC/TANF BENEFIT STANDARD LEVELS

*Notes:* Estimates corresponding to Table 4 column (2) are represented by dashed lines and shaded regions indicating 95-percent confidence intervals. Estimates for instrument variations are shown for measures that hold constant the number of children or state of residence when the daughter is age 12, and these characteristics are used for determining the average and maximum state-level AFDC/TANF benefit standard in each year during the critical exposure period, daughter's ages 12 to 18.

In a previous version of the manuscript, we also instrumented for mother's prior welfare use with the combined federal and state EITC along with the state AFDC/TANF benefit guarantee. The maximum federal EITC is set by the U.S. Congress to vary by the number of qualifying children in the family and the state portion is set by state legislatures typically as a fixed percentage of the federal credit. A higher EITC means that work is more attractive than welfare since EITC eligibility is work conditioned. However, it is unclear that EITC payments during childhood can be excluded from a daughter's participation decision as an adult. For instance, EITC payments can increase the daughter's likelihood of finishing high school, and that can affect welfare use as an adult. Table S.5-3 demonstrates that when both the AFDC/TANF benefit guarantee and EITC are used as instruments (still controlling for contemporaneous measures for the daughter as an adult), the main conclusions of our study do not change and the results are qualitatively similar to Table 4 in the paper.
	(1)	(2)	(3)	(4)	(5)	(6)
	A. Se	cond-stage est	timates for dat	ughter's AFD	C/TANF partie	cipation
Mother's participation	0.291	0.290	0.296	0.268	0.341	0.288
	(0.051)	(0.153)	(0.053)	(0.049)	(0.146)	(0.053)
After welfare reform	0.077	0.081	0.079	0.069	0.100	0.078
	(0.020)	(0.048)	(0.021)	(0.021)	(0.046)	(0.021)
Mother's participation ×	-0.204	-0.222	-0.212	-0.183	-0.285	-0.212
after welfare reform	(0.046)	(0.130)	(0.045)	(0.046)	(0.123)	(0.047)
Daughter's welfare benefit standard			. ,	0.119	0.105	0.115
(in thousands)				(0.021)	(0.033)	(0.021)
Daughter's maximum EITC credit				-0.005	-0.003	-0.004
(in thousands)				(0.002)	(0.003)	(0.002)
AFDC/TANF instrumental variables	Yes	No	Yes	Yes	No	Yes
EITC instrumental variables	No	Yes	Yes	No	Yes	Yes
Weak IV test statistic	22.459	6.156	23.533	23.157	7.642	24.291
p-value	0.000	0.104	0.001	0.000	0.054	0.001
Hansen J statistic	1.006	3.117	3.696	1.315	2.563	2.953
p-value	0.605	0.210	0.718	0.518	0.278	0.815
Percent change in levels	-70%	-76%	-71%	-68%	-84%	-74%
p-value	0.000	0.000	0.000	0.000	0.000	0.000
	B. Fir	st-stage estima	ates for mothe	r's prior AFD	C/TANF parti	cipation
Average AFDC/TANF	0.579		0.576	0.542	-	0.538
6	(0.097)		(0.097)	(0.091)		(0.091)
Reform × average AFDC/TANF	0.247		0.225	0.281		0.265
C	(0.098)		(0.103)	(0.100)		(0.108)
Maximum AFDC/TANF	-0.341		-0.342	-0.314		-0.313
	(0.146)		(0.145)	(0.142)		(0.141)
Reform × maximum AFDC/TANF	-0.164		-0.148	-0.183		-0.175
	(0.089)		(0.099)	(0.090)		(0.103)
Average EITC		0.076	0.038		0.091	0.050
		(0.047)	(0.042)		(0.047)	(0.042)
Reform × average EITC		0.034	-0.001		0.016	-0.018
		(0.046)	(0.047)		(0.047)	(0.049)
Maximum EITC		-0.021	-0.016		-0.025	-0.020
		(0.033)	(0.031)		(0.034)	(0.031)
Reform × maximum EITC		-0.019	-0.002		-0.013	0.005
		(0.035)	(0.036)		(0.036)	(0.037)
F test of excluded instruments	16.215	3.723	9.032	16.522	3.558	9.100
p-value	0.000	0.010	0.000	0.000	0.012	0.000
Number of daughters	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068

TABLE S.5-3. SECOND- AND FIRST-STAGE INSTRUMENTAL VARIABLES ESTIMATES AND THE ROLE OF EITC

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables vary by column and include average and maximum measures of indicated variables, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

## S.5.3. Mother's Future Participation and IVs: A Falsification Exercise

As extensively discussed in the manuscript, the OLS evidence of persistence in welfare participation could be attributed to a poverty trap as opposed to a welfare trap. Our consistent approach to estimation of the effect of welfare reform uses the variation of mother's participation that is related to her welfare status separately from conditions related to her poverty status by using policy instruments. Because low-income adult daughters are likely to have low-income mothers, and low-income mothers are likely to have low-income daughters, the "effect" of future participation of mothers on daughter's current participation is likely to be associated with the poverty trap and not with a welfare trap.

We begin this section by presenting results from a falsification exercise that includes mother's future welfare participation in the equation for daughter's current participation. The causal transmission effect of future welfare participation on current participation is zero. However, mother's future participation at t + s for s > 1 and daughter's participation at t are likely to be correlated because daughter's and mother's incomes are correlated over time. The poverty trap drives this dependence, and the use of the policy instruments in our difference-in-difference-type specification is expected to consistently estimate a zero effect.

Using Table S.5-4, we investigate whether the mother's future welfare use in any year from t + 5to t + 11 correlates with her daughter's welfare use at time t. We created a window for future participation that begins 5 years in the future and spans 7 years. For instance, a daughter's participation in 1990 would be compared to her mother's participation any time from 1995-2001. We only use observations for which the mother is observed for those years, which explains the smaller number of daughters shown in all columns of the table. We present OLS results in columns (1) and (4), and IV results for mothers' AFDC/TANF participation in the other columns. Columns (2) and (5) present IV results based on the set of instruments used in Table 4, in addition to the new instrumental variables used for future mother's participation in column (5). Mother's future instrumental variables are defined by the state AFDC/TANF benefit guarantee considering an equivalent window size to prior instrument measures over the critical exposure period for daughter's ages 12-18. Columns (3) and (6) present IV results based on the set of instruments used in Table 4 in addition to the application denial rate for procedural reasons and the rate at which wrongful denials are overturned through favorable hearing claims (see Table S.5-2). These alternative policy instruments have fewer observations available yet are potentially strong instruments for separating the welfare trap from the poverty trap, and they lead to similar conclusions as our baseline set of IVs in columns (2) and (5).

	(1)	(2)	(3)	(4)	(5)	(6)
Mother's prior participation	0.186	0.294	0.274	0.142	0.327	0.314
_	(0.023)	(0.093)	(0.086)	(0.022)	(0.121)	(0.119)
After welfare reform	0.023	0.044	0.033	0.017	0.057	0.051
	(0.012)	(0.022)	(0.022)	(0.012)	(0.027)	(0.027)
Mother's prior participation	-0.104	-0.184	-0.135	-0.082	-0.268	-0.238
$\times$ after welfare reform	(0.031)	(0.087)	(0.077)	(0.027)	(0.133)	(0.128)
Mother's future participation				0.010	0.410	0.302
				(0.025)	(0.496)	(0.422)
Mother's future participation				-0.018	-0.553	-0.534
$\times$ after welfare reform				(0.028)	(0.671)	(0.520)
Mother's prior × future participation				0.255	-0.379	-0.236
				(0.063)	(0.641)	(0.578)
Mother's prior $\times$ future $\times$				-0.041	0.886	0.818
after welfare reform				(0.058)	(0.891)	(0.714)
Baseline instrumental variables	No	Yes	Yes	No	Yes	Yes
Additional instrumental variables	No	No	Yes	No	No	Yes
Weak IV test statistic		16.756	22.783		8.067	13.979
p-value		0.001	0.019		0.327	0.527
Hansen J statistic		2.086	10.734		8.121	18.411
p-value		0.352	0.379		0.229	0.189
Percent change in levels	-56%	-63%	-49%	-58%	-82%	-76%
p-value	0.000	0.000	0.005	0.000	0.000	0.000
Number of daughters	1665	1665	1586	1665	1665	1586
Observations	15034	15034	14828	15034	15034	14828

TABLE S.5-4. INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION CONTROLLING FOR MOTHER'S FUTURE WELFARE PARTICIPATION

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. The baseline instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, and interactions of each with an indicator for welfare reform. Column (5) includes additional instruments for the mother's future participation using the baseline instrument measures based on the AFDC/TANF procedural denial and AFDC/TANF favorable claims when the daughter is aged 12-18. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

The OLS estimates suggest that among mothers who previously participated in welfare, future participation significantly increases the likelihood of daughter's current participation by 26 percentage points (column 4). This point estimate is naturally biased and a probable explanation is failure of controlling for a lack of economic opportunities, which creates dependence between mother's and daughter's unobserved characteristics in the specification. On the other hand, using the policy instruments, we find IV estimates equal to -0.379 (column 5) and -0.236 (column 6) that are not statistically significantly different from zero.<sup>6</sup> The results for the broader safety net, which are not

<sup>&</sup>lt;sup>6</sup> The IV estimates of mother's prior participation effect and the reform effect on transmission remain statistically significant when controlling for future participation, at least at the 10-percent level for the reform effect in column (6), and at the 1-percent level for the transmission effects in columns (4)-(6).

presented here to save space, suggest similar conclusions. Overall, these results offer suggestive evidence that our IV approach seems to attenuate, and possibly eliminate, biases in the estimation of the impact of the welfare reform. That is, the use of policy instruments leads to an approach that is identified by variation in the mother's participation related to her welfare status and not to her poverty status.

## S.5.4. Interpretation of Results and Heterogeneous Effects

Recall that in the first columns of Table 4, we find that the IV estimate of mother's participation is larger than the OLS estimate. One explanation of this result is that the model includes heterogeneous effects. Our sample includes a subpopulation of mothers who are not likely to be affected by the instruments because their family income is above the poverty line over the entire period of analysis. As shown below, our estimates do have a causal interpretation in spirit of Local Instrumental Variables (which is LATE as in Imbens and Angrist (1994) for continuous IV).

Let  $V^d$  denote a vector of control variables x and effects  $\mu^m$ ,  $\mu^d$ , and  $\kappa^d$ , say  $V^d = (x', 1, 1, 1)'$ . We write equation (3) as

$$y^{d} = \alpha + \delta y^{m} + \gamma R^{m} + \theta R^{m} y^{m} + \rho' V^{d} + v,$$

where  $\boldsymbol{\rho} = (\boldsymbol{\beta}', \mu^m, \mu^d, \kappa^d)'$ . Assume that a mother's participation decision is represented by,

$$y^m = \Pi B^m + \phi R^m + \Phi' V^d + \varepsilon$$

where  $B^m$  denotes the mother's welfare benefit standard during the critical period and  $\Phi$  is a vector of coefficients. The identifying assumption is that the state benefit for mothers during the critical period is uncorrelated with the residual participation of daughters:  $v = y^d - E(y^d | B^m, R^m, V^d)$ . Consider

$$\Pr(y^m = 1 | B^m, R^m, \mathbf{V}^d) = E(y^m | B^m, R^m, \mathbf{V}^d) = \Pi B^m + \phi R^m + \Phi' \mathbf{V}^d$$

It follows that

$$E(y^{d}|B^{m}, R^{m}, V^{d}) = \alpha + \delta E(y^{m} = 1|B^{m}, R^{m}, V^{d}) + \gamma R^{m} + \theta R^{m} E(y^{m} = 1|B^{m}, R^{m}, V^{d}) + \rho'^{V^{d}}$$
$$= \alpha + (\delta + \theta R^{m})(\Pi B^{m} + \phi R^{m} + \Phi' V^{d}) + \gamma R^{m} + \rho' V^{d}.$$

We now evaluate  $E(y^d | B^m, R^m, V^d)$  before and after the reform. Consider the following equations:

$$E(y^{d}|B^{m}, R^{m} = 1, \mathbf{V}^{d}) = \alpha + (\delta + \theta)(\Pi B^{m} + \phi + \Phi' \mathbf{V}^{d}) + \gamma + {\boldsymbol{\rho}'}^{\mathbf{V}^{d}}, \text{ and}$$
$$E(y^{d}|B^{m}, R^{m} = 0, \mathbf{V}^{d}) = \alpha + \delta(\Pi B^{m} + \Phi' \mathbf{V}^{d}) + {\boldsymbol{\rho}'}^{\mathbf{V}^{d}}.$$

Then,

$$E(y^d|B^m, R^m = 1, \mathbf{V}^d) - E(y^d|B^m, R^m = 0, \mathbf{V}^d) = \theta(\Pi B^m + \phi + \Phi'\mathbf{V}^d) + \delta\phi + \gamma.$$

The partial derivative with respect to the continuous instrument is equal to

$$\frac{\partial \left[ E\left(y^{d} | B^{m}, R^{m} = 1, \mathbf{V}^{d}\right) - E\left(y^{d} | B^{m}, R^{m} = 0, \mathbf{V}^{d}\right) \right]}{\partial B^{m}} = \theta \Pi$$

Also, considering the participation equation for mothers, we obtain

$$\frac{\partial E(y^m | B^m, R^m, V^d)}{\partial B^m} = \Pi$$

Therefore, the parameter  $\theta$  can be interpreted in a *causal* way provided that the conditions on  $B^m$  are satisfied, because:

$$\theta = \frac{\partial \left[ E\left( y^d | B^m, R^m = 1, V^d \right) - E\left( y^d | B^m, R^m = 0, V^d \right) \right] / \partial B^m}{\partial E\left( y^m | B^m, R^m, V^d \right) / \partial B^m}$$

It is interesting to note that the parameter is related to the local instrumental variable (LIV) and marginal treatment effect (MTE, Heckman and Vytlacil, 2005) parameters in program evaluation, although these parameters are derived for a potential outcome framework not applicable here. More recently, Kennedy, Lorch, and Small (2019) investigated the case of continuous instrumental variables and binary endogenous treatments, and they offered an interpretation of the parameter of interest that is consistent with our framework (see remark 3 in Kennedy et al.). The formulation provides a clear interpretation. We estimate the change in the probability of welfare participation of daughters whose low-income mothers are affected by changes in benefits.

Using Figure S.5-2, we investigate empirically the relationship between mothers' welfare participation and the main policy instrument of AFDC/TANF benefit generosity. As expected, mothers exposed to higher ADFC/TANF benefits were more likely to participate on welfare, with the exception of mothers whose average family income is more than twice the poverty line.

FIGURE S.5-2. MOTHER'S WELFARE PARTICIPATION RELATIVE TO AFDC/TANF BENEFIT LEVELS



Percentile of benefit standard

*Notes:* Linear probability estimates are shown for the mother's indicator for any prior AFDC/TANF participation conditional on an average measure of AFDC/TANF benefit standard while the daughter is aged 12-18 along with the baseline controls of state and year effects as well as the daughter's quadratic in age. The predicted probabilities are estimated for subsamples by whether the mother had any prior family income below the federal poverty line, no prior income below poverty and any income below 200 percent of the poverty line, or no prior income below 200 percent of the poverty line. Dashed lines represent 95-percent pointwise confidence intervals with state-level clustering.

Based on the groups defined in Figure S.5-2, we show descriptive statistics for three income groups in the first three column of Table S.5-5. We have (1) mothers with any prior income below 100% poverty line, (2) mothers with no prior income below 100% poverty and some income below 200% poverty, and (3) mothers with no income below 200% poverty. Then, we present descriptive statistics by welfare participation status in the last two columns. As expected, the analysis shows that there are some differences in terms of characteristics across income levels and poverty status. However, based on the evidence in Figure S.5-2, the relevant comparison is between mothers with any income below 100% poverty line (column 1), representing the group of mothers mostly affected by the change in benefits, and the average AFDC/TANF welfare participant (column 4). We find that these mothers have a similar number of children, similar family income, they are likely to live in the same state as birth, and their educational attainment is similar. The identified subpopulation for our IV estimates is low-income mothers who are likely to participate, and they do not seem, in general, more advantaged than the average welfare recipient.

		By poverty status		By welfare part	ticipation status
	Any income below 100% poverty (1)	Lowest income between 100- 200% poverty (2)	No income below 200% poverty (3)	Any AFDC/TANF (4)	No AFDC/TANF (5)
Years on any welfare	4.481	0.660	0.091	6.166	0.339
5	(5.308)	(1.486)	(0.319)	(5.345)	(1.069)
Number of children	2.796	2.639	2.189	3.077	2.367
	(1.404)	(1.386)	(1.221)	(1.645)	(1.185)
Married	0.720	0.891	0.970	0.643	0.928
	(0.379)	(0.242)	(0.125)	(0.405)	(0.197)
Family income (median)	39.226	61.268	91.552	35.131	73.327
	(33.459)	(27.679)	(41.957)	(27.263)	(42.017)
No family earnings	0.147	0.018	0.005	0.188	0.016
	(0.242)	(0.087)	(0.035)	(0.268)	(0.073)
Earnings < 100% poverty	0.437	0.090	0.014	0.503	0.086
	(0.364)	(0.172)	(0.058)	(0.375)	(0.178)
Earnings < 200% poverty	0.687	0.422	0.063	0.770	0.283
	(0.341)	(0.330)	(0.145)	(0.305)	(0.328)
Same state as birth	0.842	0.827	0.903	0.868	0.850
	(0.329)	(0.337)	(0.264)	(0.299)	(0.322)
High school or less	0.633	0.584	0.471	0.719	0.511
	(0.482)	(0.493)	(0.500)	(0.450)	(0.500)
Black, non-Hispanic	0.312	0.072	0.034	0.407	0.056
	(0.463)	(0.259)	(0.181)	(0.491)	(0.229)
White, non-Hispanic	0.611	0.878	0.943	0.498	0.909
	(0.488)	(0.327)	(0.232)	(0.500)	(0.288)
Hispanic	0.067	0.034	0.013	0.086	0.023
	(0.250)	(0.181)	(0.114)	(0.280)	(0.150)
Mother-daughter pairs	1724	739	498	1426	1535

TABLE S.5-5. MOTHER CHARACTERISTICS BY AFDC/TANF POLICY INFLUENCE ON WELFARE PARTICIPATION

*Notes:* Standard deviations are shown in parentheses. Columns are defined by the mother's total family income during the years a daughter was a child living at home (column (2) excludes any mothers with prior income below poverty). Years on any welfare includes SNAP or SSI participation. Mothers' average PSID core longitudinal weights are used in estimation.

Another way to illustrate the heterogeneity of intergenerational effects is by comparing OLS and IV results by income status of mothers, where lower income mothers are more likely to be marginal AFDC/TANF participations depending on state benefit generosity. Figure S.5-3 shows that the IV estimates of the mother's transmission effects are increasing in subsamples by mothers having income below lower thresholds of poverty, whereas the OLS estimates are generally flat across these same groups. Once again, the evidence supports the hypothesis of heterogeneous effects, which can explain the differences between the OLS and IV estimates in Table 4 of the manuscript.



FIGURE S.5-3. OLS AND IV ESTIMATES OF WELFARE TRANSMISSION EFFECTS BY SUBSAMPLES OF INCREASINGLY MARGINAL PARTICIPANTS

Sample by mother ever below X% poverty

Sample by mother ever below X% poverty

*Notes:* The subsamples are restricted by whether the mother ever previously had income below the given federal poverty thresholds, where "Any" corresponds to the baseline estimates for the full sample as shown in Table 4 columns (1) and (2). The models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, controls for the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12-18. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. Daughters' PSID core longitudinal weights are used in estimation.

Motivated by the heterogeneity of transmission by mother's characteristics, we return to estimation of the baseline IV model of Table 4 by including mother's variables for race and ethnicity, age at first birth, and variables related to her lifetime earnings ability. The controls for mother's race and ethnicity include indicators for White non-Hispanic, Black non-Hispanic, other non-Hispanic, and Hispanic. The controls for mother's lifetime earnings ability include an indicator if the mother's educational attainment is less than or equal to 12 years, and an indicator for mother's family income has ever been below 200 percent the official poverty threshold by family size. Regarding controls for mother's welfare choice for the same reasons that the mother's welfare participation is likely to be endogenous. Table S.5-6 shows that the results presented in Table 4 are little changed when we add controls for mother's background like education and income. Lower income mothers are associated with higher levels of dependence across generations, yet the effect of welfare reform is similar across specifications.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.268	0.259	0.269	0.271	0.333	0.256	0.334	0.333
	(0.049)	(0.064)	(0.048)	(0.049)	(0.091)	(0.061)	(0.090)	(0.108)
After welfare reform	0.069	0.073	0.070	0.068	0.073	0.073	0.073	0.079
	(0.021)	(0.020)	(0.022)	(0.021)	(0.023)	(0.021)	(0.023)	(0.024)
Mother's participation ×	-0.183	-0.189	-0.183	-0.183	-0.204	-0.187	-0.203	-0.212
after welfare reform	(0.046)	(0.046)	(0.047)	(0.045)	(0.054)	(0.047)	(0.053)	(0.054)
Mother's controls:								
Race/ethnicity	No	Yes	No	No	No	Yes	No	Yes
Age at first birth	No	No	Yes	No	No	Yes	No	Yes
Education	No	No	No	Yes	No	No	Yes	Yes
Poverty status	No	No	No	No	Yes	No	Yes	Yes
Weak IV test statistic	23.157	20.087	24.131	22.956	19.548	21.369	19.346	17.233
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001
Hansen J statistic	1.315	1.562	1.316	1.293	1.088	1.613	1.080	1.385
p-value	0.518	0.458	0.518	0.524	0.580	0.446	0.583	0.500
Percent change in levels	-68%	-73%	-68%	-67%	-61%	-73%	-61%	-64%
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068

TABLE S.5-6. IV ESTIMATES OF INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION WITH CONTROLS FOR MOTHER'S CHARACTERISTICS

*Notes:* Robust standard errors with state clustering are shown in parentheses. Controls for mother's characteristics, used where indicated, include race/ethnicity indicators for White non-Hispanic, Black non-Hispanic, other non-Hispanic, and Hispanic; a quadratic in mother's age at first birth; an indicator if the mother's educational attainment is less than or equal to 12 years; and, an indicator for mother's mean income-to-poverty ratio is below 2 based on prior family income relative to the official poverty threshold by family size. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

As an additional examination of how mother/daughter characteristics can matter for interpreting IV estimates of welfare transmission and reform effects, Table S.5-7 explores the role of family structure in each generation. For our main results, we treat family structure decisions as endogenous (see, e.g., Section VI in the manuscript and Section S.4), yet we momentarily abandon this assumption here to examine changes in the coefficients of interest by introducing mother or daughter marital status and number of children as control variables. Needless to say, these results should be interpreted with caution. Column (1) of Table S.5-7 shows the main IV estimates from Table 4 column (2) in the manuscript, and the remaining 7 columns show how the estimates vary by controlling for family structure. The mother's marital status and number of children under age 18 are measured as averages when the daughter was aged 12-18, and the daughter's measures are an indicator for current marital status and indicators for 1, 2, 3, or 4 or more children. Controlling for the family size corresponding to the daughter's adolescence leads to larger magnitudes in both welfare transmission and the reduction after reform, and the percent change in levels after reform is somewhat attenuated while still around -60 percent.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.268	0.267	0.239	0.239	0.381	0.240	0.371	0.395
	(0.049)	(0.050)	(0.047)	(0.047)	(0.160)	(0.050)	(0.161)	(0.193)
After welfare reform	0.069	0.069	0.067	0.068	0.088	0.061	0.083	0.086
	(0.021)	(0.021)	(0.020)	(0.019)	(0.044)	(0.019)	(0.043)	(0.043)
Mother's participation ×	-0.183	-0.184	-0.185	-0.185	-0.231	-0.163	-0.220	-0.234
after welfare reform	(0.046)	(0.046)	(0.044)	(0.043)	(0.097)	(0.043)	(0.097)	(0.097)
Family structure:								
Mother: Marital status	No	Yes	No	Yes	No	No	No	Yes
Daughter: Marital status	No	No	Yes	Yes	No	No	No	Yes
Mother: Number children	No	No	No	No	Yes	No	Yes	Yes
Daughter: Number children	No	No	No	No	No	Yes	Yes	Yes
Weak IV test statistic	23.157	25.222	23.140	25.187	7.399	23.153	7.242	6.605
p-value	0.000	0.000	0.000	0.000	0.060	0.000	0.065	0.086
Hansen J statistic	1.315	1.295	1.894	1.874	0.410	1.605	0.297	0.283
p-value	0.518	0.523	0.388	0.392	0.815	0.448	0.862	0.868
Percent change in levels	-68%	-69%	-77%	-78%	-61%	-68%	-59%	-59%
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068

TABLE S.5-7. IV ESTIMATES OF INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION CONTROLLING FOR FAMILY STRUCTURE IN BOTH GENERATIONS

*Notes:* Robust standard errors with state clustering are shown in parentheses. Mother's marital/cohabitation status and number of children are averaged during co-residence years with the daughter before adulthood. The daughter's marital status is in the current year, and her number of children are given by indicator variables for 1, 2, 3, or 4 or more children in the family unit. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

Lastly, Figure S.5-4 reproduces the main results from Table 4 of the manuscript under a variety of modifications to the model represented in column (2) using the same instrumental variables. The figure shows estimates that vary by: subsample (full sample of daughters, daughters of low-educated mothers, or daughters of low-income mothers); weights (PSID sample weights, or sample weights along with inverse weights by number of daughters per mother in the sample); and, control variables (main controls used in Table 4, main controls without daughter's fixed state effects and with daughter's maximum AFDC/TANF or EITC eligibility levels given for a fixed family size instead of varying by daughter's family structure, or main controls without the daughter's fixed or time-varying state-level controls). The main estimates from Table 4 column (2) are shown in black with a horizontal dashed line and shaded 95-percent confidence intervals in order to make easier comparisons across the sensitivity estimates. While the point estimates present some small variation in magnitude from the main results, especially in the low-income sample, the relative effect of welfare reform on intergenerational transmission of AFDC/TANF remains stable.



FIGURE S.5-4. IV ESTIMATES OF WELFARE TRANSMISSION AND REFORM EFFECTS BY VARIATIONS ON MODEL SPECIFICATIONS

Specifications by sample, weights, and controls

*Notes:* The left-most estimates represent the main IV results in Table 4 column (2), along with the point estimates shown by the dashed lines and shaded regions indicating 95-percent confidence intervals. See Table 4 for details. Instruments are given for mothers' state AFDC/TANF benefit levels by family size. Weights indicate: A. daughters' PSID sample weights, and B. sample weights combined with inverse weights for number of adult daughters per mother in the sample. Control variables indicate: 1) main set of controls used in Table 4; 2) controls without fixed state effects and daughters' AFDC/TANF or EITC benefits by fixed family sizes instead of varying by daughters' family structures; and, 3) controls without any fixed or time-varying state-level variables for the daughters' states of residence.

### S.5.5. Daughter's Race and Mother's Transmission

There is a vast literature on the socioeconomic differences between Black and White families (see, for example, Smith and Welch, 1989; Donohue and Heckman, 1991), but with the notable exceptions of Gottschalk (1996) and Pepper (2000), whether or not there are racial differences in the transmission of intergenerational welfare has received less attention compared to other outcomes. The issue is salient in part because the risk of out-of-wedlock births is at least two times higher among Black families than White, as is the risk of poverty in childhood. Further, welfare participation patterns may be influenced by differential transmission of financial security and economic outlook across generations, which are related to structural inequalities in asset-building, education, and labor market outcomes (Darity, Dietrich, and Guilkey, 2001; Darity, 2005; Fryer, 2007).

Daughter's race:	Bl	ack	W	hite
	(1)	(2)	(3)	(4)
Mother's participation	0.124	0.340	0.068	0.335
	(0.021)	(0.184)	(0.013)	(0.155)
After welfare reform	0.048	0.048	0.021	0.080
	(0.032)	(0.157)	(0.007)	(0.050)
Mother's participation $\times$	-0.086	-0.090	-0.060	-0.250
after welfare reform	(0.042)	(0.202)	(0.015)	(0.158)
Instrumental variables	No	Yes	No	Yes
Weak IV test statistic		8.887		5.534
p-value		0.031		0.137
Hansen J statistic		5.423		0.147
p-value		0.066		0.929
Percent change in levels	-69%	-27%	-89%	-75%
p-value	0.009	0.635	0.000	0.000
Number of daughters	1331	1331	1147	1147
Observations	25514	25514	19926	19926

TABLE S.5-8. HETEROGENEOUS INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION, BY DAUGHTER'S RACE

*Notes:* Robust standard errors with state clustering are shown in parentheses. Samples are restricted to daughters whose race is either indicated as Black or White, and whose mothers ever had family income below 200 percent of the federal poverty line. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

Table S.5-8 presents OLS and IV results for the transmission of AFDC/TANF from mother to daughter estimated separately by race where the daughter identifies as either Black or White. Given racial disparities in the propensity to be poor, we compare transmission effects for a subsample in which the mothers ever previously had income below 200 percent of the federal poverty line. The first two columns of Table S.5-8 suggest that the pre-reform effect of welfare transmission was similar in magnitude among Black daughters relative to White daughters. However, the transmission channel was reduced by a greater magnitude among White daughters after welfare reform (-0.250 compared to -0.090, a statistically insignificant difference with a p-value of 0.534). While the IV estimates by race are less precise than full-sample estimates, the results are qualitatively comparable to baseline estimates in Table 4 of the manuscript.

#### S.5.6. Cross-sectional IV Results Within Welfare Regimes, Pre- and Post-Reform

While the manuscript motivated the main results with cross-sectional correlations within welfare regimes, that is, without mother-daughter pairs that cross over the implementation timing of welfare reform, identifying transmission effects with IV estimation is more complicated. The variables  $y^d$  and  $y^m$  are likely to depend on a time varying variable that correlates with welfare program access, as suggested

by the evidence in Figure 1. Benefits are also likely to be correlated with this time varying confounder, as suggested by evidence presented in Figure 4. Therefore, the IV estimator in a model without year effects is likely to be biased. On the other hand, the IV approach within a panel model with year effects is consistent, and it allows more precise identification based on the instruments' deviations from fixed state and year effects as well as time-varying macroeconomic and policy changes.

For completeness, we reproduce Table 1 in the manuscript using an IV approach for crosssectional averages given single observations of mother-daughter pairs (shown here in Table S.5-9). As in Table 1, the estimates are produced without and with inverse weights for the number of daughters per mother. Consistent with the results in the manuscript (see, e.g., Table 4), the IV estimate in column (1) is larger than the corresponding OLS estimate in Table 1. Not surprisingly, the IV estimates are less precisely estimated due to a small number of mother-daughter pairs observed after the reform, and the Hansen J test does not offer support for the validity of the instruments in the period after reform, which is likely to be related to the omission of properly controlling for year effects. Despite the aggregation and small samples, the qualitative pattern that emerges from the cross-sectional IV results clearly suggest that the intergenerational transmission of AFDC/TANF decreased after the reform.

Daughter outcome, ages 19-27:		AFDC	/TANF		AFDC/TANF, SNAP, SSI			
Welfare reform timing:	Before	After	Before	After	Before	After	Before	After
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.407	0.251	0.449	0.269	0.594	0.523	0.611	0.651
when daughter aged 12-18	(0.121)	(0.156)	(0.110)	(0.144)	(0.155)	(0.299)	(0.134)	(0.316)
Inverse daughter weights?	No	No	Yes	Yes	No	No	Yes	Yes
Effect of welfare reform		-0.156		-0.180		-0.071		0.041
p-value		0.565		0.629		0.978		0.949
Percent change in levels		-38%		-40%		-12%		7%
p-value		0.713		0.752		0.993		0.976
Weak IV test statistic	30.198	6.425	29.635	5.380	30.198	6.425	29.635	5.380
p-value	0.000	0.040	0.000	0.068	0.000	0.040	0.000	0.068
Hansen J statistic	2.354	4.434	2.571	3.847	2.686	10.350	2.060	10.545
p-value	0.125	0.035	0.109	0.050	0.101	0.001	0.151	0.001
Number of daughters/observations	1254	476	1254	476	1254	476	1254	476

 TABLE S.5-9. IV ESTIMATES OF INTERGENERATIONAL WELFARE PARTICIPATION EFFECTS

 WITHIN WELFARE REGIMES PRE- OR POST-REFORM

*Notes:* Robust standard errors are shown in parentheses. Estimation is restricted to daughters who can be observed at least 5 years during the critical exposure period, ages 12-18. Daughters observed before reform include only those mother-daughter pairs in which neither experiences welfare reform through the daughter's age 27. The after-reform sample is defined by daughters who are observed during the welfare reform era from age 12 onward. Estimates are conditional on a quadratic in mother's age and daughter's state-level controls averaged over the daughter's adult observation years. Daughter's welfare participation variable is the average participation during ages 19-27, and mother's welfare participation is 1 if she participates in any year when the daughter is aged 12-18 and 0 otherwise. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. P-values are obtained by a bootstrap procedure with 1000 replications.

## S.6. Difference-in-Difference-Type Approach: A Sensitivity Analysis

In this section, we re-estimate the main equation (3) of the text under different assumptions. We first examine whether identification of the parameter of interest is driven by latent trends and confounders not controlled for in the baseline model. We then subject the baseline difference-in-difference-type estimates to a number of specification checks, including a placebo-type falsification exercise and further null reform effects on means-tested welfare transmission beyond AFDC/TANF participation.

### S.6.1. Robustness to State-Level Trends and Other Confounders

We begin this section by examining whether the identification of the transmission parameter and the effect of the reform are driven by unobserved state-specific time trends or other state-time variables not properly controlled for in equation (3). Following closely Wolfers (2006), we augment the model estimated in Table 4 with linear and quadratic state trends and present the results in Table S.6-1. The table shows that the IV estimates of the AFDC/TANF transmission effect and the welfare reform effect are just slightly attenuated. For instance, the pre-reform transmission estimate in column (2) is only 6.7% smaller than the 0.268 estimate in Table 4. It is clear that controlling for state-specific time trends does not substantively change the results.

Daughter's outcome variable:		AFDC	/TANF		AFDC/TANF, SNAP, SSI			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.144	0.250	0.240	0.401	0.228	0.318	0.302	0.410
	(0.013)	(0.050)	(0.022)	(0.088)	(0.019)	(0.076)	(0.025)	(0.103)
After welfare reform	0.034	0.055	0.049	0.067	0.004	-0.005	0.006	-0.018
	(0.008)	(0.019)	(0.013)	(0.031)	(0.012)	(0.028)	(0.017)	(0.039)
Mother's participation ×	-0.096	-0.152	-0.131	-0.168	-0.043	0.016	-0.024	0.098
after welfare reform	(0.015)	(0.046)	(0.030)	(0.084)	(0.018)	(0.077)	(0.025)	(0.110)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Misclassification correction	No	No	Yes	Yes	No	No	Yes	Yes
Weak IV test statistic		23.288		21.770		23.288		22.149
p-value		0.000		0.000		0.000		0.000
Hansen J statistic		0.537		0.531		1.973		2.125
p-value		0.764		0.767		0.373		0.346
Percent change in levels	-67%	-61%	-55%	-42%	-19%	5%	-8%	24%
p-value	0.000	0.000	0.000	0.008	0.008	0.841	0.326	0.444
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068

TABLE S.6-1. SENSITIVITY OF RESULTS TO THE INCLUSION OF LINEAR AND QUADRATIC STATE-SPECIFIC TRENDS

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation. Daughters' PSID core longitudinal weights are used in estimation.

The results presented in Table S.6-1 complement the evidence presented in Figure 5 in the manuscript in which we performed an event-type investigation for a model of transmission effects interacted with years before and after reform in models with linear and quadratic state-specific trends. We did not find significant differences in the dynamic version of our equation (3) with or without state-specific trends.

Next, we investigate the potential role of additional state-level factors that are time-varying and may be correlated with both welfare generosity and welfare participation. All tables in the manuscript include (along with daughter's and mother's characteristics) daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, daughter's state and year effects, and mother's modal state effects. Moreover, Figures 5 and 6 of the manuscript present results with state-specific trends (linear and quadratic). As an additional robustness check, we investigate whether the omission of other state time-varying factors changes our conclusions. Table S.6-2 provides evidence of how robust our main estimates are to the inclusion of a wide range of state-level controls in addition to our baseline controls:

- population growth rate [population demographics],
- the maximum weekly amount of unemployment benefits [labor market conditions],
- whether the state minimum wage is above the federal [labor market conditions],
- the income share of the top 10 percent of earners [labor market conditions],
- whether there are prevailing wage laws [labor market conditions],
- whether a right-to-work state [labor market conditions],
- whether there is a state temporary disability insurance program [other state policies],
- whether there are fair employment laws (protecting racial status) [other state policies],
- whether counseling is mandated before an abortion [other state policies],
- whether pharmacies can dispense emergency contraception without a prescription [other state policies],
- whether cities/municipalities are prohibited from passing rent control laws [other state policies],
- whether there is a state-level equivalent to the Equal Rights Amendment (protecting gender status) [other state policies],
- whether there is a no-fault divorce policy [other state policies],
- whether the Ten Commandments are allowed in schools [other state policies],
- state sales tax rate and tax on cigarettes [other state policies],
- citizen ideology measure [demographics],
- the percentage of evangelical residents [demographics],
- a measure of the median and variance of policy liberalism [demographics],
- the Gini coefficient,
- total state expenditures per capita, and
- total public welfare expenditures per capita.

These state-level data were obtained from the Correlates of State Policy project at Michigan State University Institute for Public Policy and Social Research (Berry et al., 1998; Caughey and Warshaw, 2015; Frank et al., 2015; Jordan and Grossmann, 2016; Sellers, 2017); and, expenditure data from the U.S. Census Bureau's Annual Survey of State Government Finances.

Daughter's outcome variable:		AFDC	/TANF			AFDC/TAN	F, SNAP, S	SI
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.144	0.260	0.238	0.412	0.226	0.298	0.296	0.373
	(0.013)	(0.049)	(0.021)	(0.086)	(0.018)	(0.073)	(0.024)	(0.100)
After welfare reform	0.038	0.065	0.052	0.079	0.002	-0.014	-0.011	-0.047
	(0.009)	(0.020)	(0.017)	(0.033)	(0.013)	(0.028)	(0.020)	(0.039)
Mother's participation ×	-0.099	-0.169	-0.133	-0.193	-0.041	0.043	-0.018	0.150
after welfare reform	(0.015)	(0.044)	(0.029)	(0.081)	(0.017)	(0.074)	(0.024)	(0.105)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Misclassification correction	No	No	Yes	Yes	No	No	Yes	Yes
Weak IV test statistic		22.556		21.238		22.556		21.472
p-value		0.000		0.000		0.000		0.000
Hansen J statistic		1.048		0.928		1.959		2.016
p-value		0.592		0.629		0.376		0.365
Percent change in levels	-69%	-65%	-56%	-47%	-18%	15%	-6%	40%
p-value	0.000	0.000	0.000	0.001	0.011	0.598	0.467	0.269
Number of daughters	2929	2929	2929	2929	2929	2929	2929	2929
Observations	55197	55197	55197	55197	55197	55197	55197	55197

TABLE S.6-2. INTERGENERATIONAL TRANSMISSION OF MOTHER'S AFDC/TANF PARTICIPATION INCLUDING A WIDE RANGE OF ADDITIONAL STATE-LEVEL CONTROL VARIABLES FOR THE DAUGHTER'S STATE OF RESIDENCE

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Additionally, each specification controls for a wide range of time-varying state-level characteristics described above. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation (see Section S.2 for details). Daughters' PSID core longitudinal weights are used in estimation.

The main results from Table 4 of the manuscript are indeed robust when considering either statespecific time trends or controlling for a broad array of time-varying state-level policy characteristics. Our standard specifications control for both the daughter's current state of residence and her mother's modal state of residence during the daughter's childhood, yet it is possible that there is a distinction between state-level policy variation belonging to the mother's state versus daughter's state of residence for those cases where the two are different. Table S.6-2 shows evidence controlling for the daughter's state of residence, which may influence her welfare participation decision or other related outcomes. In Table S.6-3, we repeat a similar exercise considering state-level policy variation with respect to the mother's state of residence. In this case, the state-level variation is occurring relative to the state in which the welfare reform indicator is defined and the covariates are averaged during the years when the daughter was aged 12-18. Generally, the IV results in Table S.6-3 are somewhat larger in magnitude compared to Table S.6-2, however, the interpretations are consistent with our main results, especially in terms of the percent change in AFDC/TANF transmission after reform.

Daughter's outcome variable:		AFDC	/TANF		AFDC/TANF, SNAP, SSI				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Mother's participation	0.142	0.276	0.237	0.446	0.229	0.323	0.299	0.410	
	(0.013)	(0.051)	(0.021)	(0.090)	(0.019)	(0.076)	(0.025)	(0.104)	
After welfare reform	0.037	0.066	0.053	0.082	0.006	-0.002	-0.007	-0.032	
	(0.009)	(0.021)	(0.017)	(0.036)	(0.013)	(0.027)	(0.020)	(0.039)	
Mother's participation ×	-0.097	-0.172	-0.132	-0.198	-0.045	0.010	-0.023	0.104	
after welfare reform	(0.016)	(0.047)	(0.030)	(0.086)	(0.018)	(0.076)	(0.025)	(0.108)	
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes	
Misclassification correction	No	No	Yes	Yes	No	No	Yes	Yes	
Weak IV test statistic		23.060		21.735		23.060		22.050	
p-value		0.000		0.000		0.000		0.000	
Hansen J statistic		0.545		0.452		0.714		0.782	
p-value		0.761		0.798		0.700		0.676	
Percent change in levels	-68%	-62%	-56%	-44%	-20%	3%	-8%	25%	
p-value	0.000	0.000	0.000	0.002	0.005	0.899	0.354	0.416	
Number of daughters	2899	2899	2899	2899	2899	2899	2899	2899	
Observations	55049	55049	55049	55049	55049	55049	55049	55049	

TABLE S.6-3. INTERGENERATIONAL TRANSMISSION OF MOTHER'S AFDC/TANF PARTICIPATION CONTROLLING FOR A WIDE RANGE OF ADDITIONAL STATE-LEVEL VARIABLES BY MOTHER'S STATE OF RESIDENCE

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Additionally, each specification controls for a wide range of average state-level characteristics corresponding to the mother's state of residence when the daughter was aged 12-18 (see description in the text above). Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation (see Section S.2 for details). Daughters' PSID core longitudinal weights are used in estimation.

#### S.6.2. Timing of Welfare Reform

Next, we present a set of figures and tables to investigate the timing of the reforms. We begin by showing changes in the ratio of average benefits to the statutory maximum guarantee for a typical recipient family (single parent with two children). This statistic offers a measure of how much states pay out to families conditional on eligibility, which could vary by state differences in program generosity, perhaps as a proxy for accessibility, or an indication of the depth of poverty among eligible families. Figure S.6-1 shows that there are no discernible differences in trends by groups of states who implemented reform earlier compared to later.

FIGURE S.6-1. STATE AFDC/TANF BENEFIT-TO-GUARANTEE RATIOS BY DATE OF WELFARE REFORM IMPLEMENTATION AND CURRENT YEAR



*Notes:* State-level benefit-to-guarantee ratios represent the average family benefit by state divided by the statutory maximum guarantee for a single-parent family with two children, which are shown grouped by year of state-wide welfare reform implementation.

We next explore the sensitivity of our findings by varying the definition of a post-welfare reform state. Recall that the definition of reform in the baseline specification is that mother's reform indicator only turns on when she is observed in a state-year after reform, though some mothers may have left the sample before reform and thus the indicator remains "before reform" even after the TANF years begin. We consider alternative reform-timing definitions based on dates reported in Crouse (1999) and Grogger and Karoly (2005), as well as using the earliest implementation in either the mother's or daughter's state of residence to define the reform variable.

Figure S.6-2 offers a visualization of the variation in welfare reform implementation dates in panel A, and in panel B, a visualization of reform implementation under various alternative definitions based on Crouse (1999) as well as Grogger and Karoly (2005). In panel A, the effective year of reform implementation represents states that introduced reform for at least 75 percent of the year, which corresponds to the definition used in estimation throughout. In panel B, the number of states with welfare reform by year is compared based on the actual implementation date and the effective implementation as shown in panel A, and additional rules are shown such as at least 50 percent of the year is after implementation, or waiver approval instead of reform implementation, as well as two measures from Grogger and Karoly (2005) based on the first reform implementation (labeled "Grogger-Karoly") or the second implementation if states introduced more than one reform ("GK-adjusted").



FIGURE S.6-2. WELFARE REFORM IMPLEMENTATION DATES AND ALTERNATIVE DEFINITIONS

*Notes:* In panel A, the actual implementation dates are represented by the "Monthly" and "Yearly, actual" bars, whereas the "Yearly, effective" bars indicate the number of states with at least 75 percent of the year under the implemented welfare reform policies. In panel B, "Implemented" denotes the Crouse (1999) implementation year; "Implemented-50" or "-75" denotes at least 50 or 75 percent of the year after implementation, respectively; "Approved" denotes the Crouse (1999) approval year; "Approved-50" or "-75" denotes at least 50 or 75 percent of the year after approval; "Grogger-Karoly" denotes the first year Grogger and Karoly (2005) list a state reform; "GK-adjusted" denotes the second year a reform bundle is listed if a state introduces reform more than once during the waiver period.

Next, we re-estimate the difference-in-difference-type model based on these varying definitions of reform timing using instrumental variables, with results shown in Table S.6-4. For these estimates, we add two more reform definitions: one defined by at least 75 percent of the year after reform based on the *daughter's* state of residence (DR), and the other defined by the earliest reform by either the daughter's or mother's state of residence (DR/R). Note that column (2) corresponds to our baseline results in Table 4 column (2) with the exception that the reform indicator equals 1 based on the mother's last observed state of residence if her current state variable is missing at the time of reform (otherwise, in the main results, the reform indicator remains 0). The correlation between these alternative measures and the baseline reform ranges between 0.77 and 0.82.

We present results using Table S.6-4, which shows estimates of the parameters of interest by different definitions in the timing of implementation of the reforms. Recall that the effect of mother's participation is 0.268 (s.e. 0.049) and the effect of the reform is -0.183 (s.e. 0.046) in Table 4 column (2) of the manuscript. Looking at the estimates in Table S.6-4, we find that the IV estimates are larger in

absolute value, with no substantive differences in terms of point estimates and the percent change of the transmission effect across all specifications of reform.

Reform date:	Impl.	Impl-75	Approv.	Appr-75	GK-2005	GK-adj	DR	DR/R
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mother's participation	0.322	0.301	0.330	0.309	0.319	0.318	0.307	0.310
	(0.077)	(0.069)	(0.081)	(0.072)	(0.076)	(0.075)	(0.071)	(0.070)
After welfare reform	0.075	0.067	0.072	0.067	0.069	0.066	0.069	0.065
	(0.022)	(0.020)	(0.023)	(0.022)	(0.022)	(0.021)	(0.023)	(0.022)
Mother's participation ×	-0.235	-0.215	-0.245	-0.222	-0.234	-0.236	-0.223	-0.224
after welfare reform	(0.078)	(0.069)	(0.081)	(0.073)	(0.076)	(0.076)	(0.072)	(0.070)
Correlation with	0 790	0.826	0 779	0.814	0 796	0 794	0.811	0.818
baseline reform	0.790	0.820	0.779	0.014	0.790	0.774	0.011	0.010
Weak IV test statistic	21.500	21.588	21.370	21.450	21.602	21.940	21.560	22.309
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	2.377	2.190	2.877	2.624	2.688	2.905	2.857	2.840
p-value	0.305	0.335	0.237	0.269	0.261	0.234	0.240	0.242
Percent change in levels	-73%	-71%	-74%	-72%	-73%	-74%	-73%	-72%
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068

TABLE S.6-4. IV ESTIMATES OF WELFARE TRANSMISSION BY VARIATION IN RELEVANT DATE OF REFORM

*Notes:* See Table 4 notes. All specifications above differ from the baseline reform definition by which the mother's reform indicator only turns on when she is observed in a state-year after reform, though some mothers may have left the sample before reform and thus the indicator remains "before reform" even after the TANF years begin. "Impl." denotes the Crouse (1999) implementation year; "Impl-75" denotes at least 75 percent of the year after approval; "GK-2005" denotes the first year Grogger and Karoly (2005) list a state reform; "GK-adj" denotes the second year a reform bundle is listed if a state introduces reform more than once during the waiver period; "DR" denotes the first state-year the daughter experiences reform using the Crouse (1999) Impl-75 rule; and, "DR/R" denotes the earliest year either the mother or daughter experiences reform using the Crouse (1999) Impl-75 rule.

The specific definition of welfare reform timing does not make any substantive difference for interpreting the effect of reform on intergenerational transmission. However, we are relying on the assumption that welfare reform timing is exogenous for identifying changes in welfare participation. In Table S.6-5, we explore this assumption by focusing on the waiver time period, 1992-1997, and estimating the effects of various state-level characteristics on either the approval of a welfare reform waiver (see Crouse, 1999) or the implementation of reform (see Grogger and Karoly, 2005). For each definition of reform timing, we use policy and macroeconomic variables corresponding to the baseline estimation controls (AFDC/TANF benefit standard, AFDC/TANF recipiency rate, federal/state EITC maximum, SPM poverty rate, and the unemployment rate). We also show variations that include lags of these variables as well as specifications with a wide range of time-varying state-level policies (see Section S.6.1 for descriptions), and all of the specifications further include state and year fixed effects along with state-specific trends. Relatively few of these variables are statistically significant. For the year of implementation, shown in column (8), there are 2 variables (out of 54) significant at the 5-percent level when additional variables and lags are

included. The results show that the probability that a state adopts the reform is not correlated with contemporaneous and lag values of state time-varying factors and policy changes.

	Approval year					Implementation year				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
AFDC/TANF benefit	0.543	-0.656	0.578	-0.735	0.350	0.449	0.553	0.281		
standard	(1.181)	(0.831)	(1.085)	(1.029)	(0.873)	(1.059)	(0.994)	(1.468)		
	[0.648]	[0.434]	[0.597]	[0.478]	[0.690]	[0.674]	[0.580]	[0.849]		
Lagged AFDC/TANF		1.637		1.569		-0.442		-0.486		
benefit standard		(0.654)		(0.913)		(1.319)		(1.284)		
		[0.016]		[0.092]		[0.739]		[0.707]		
AFDC/TANF	0.153	3.826	-0.393	2.372	-13.773	-14.701	-14.689	-11.482		
recipiency rate	(8.085)	(10.174)	(8.917)	(12.657)	(7.354)	(10.086)	(8.684)	(13.172)		
	[0.985]	[0.708]	[0.965]	[0.852]	[0.067]	[0.151]	[0.097]	[0.388]		
Lagged AFDC/TANF		-2.299		-3.397		2.343		-1.911		
recipiency rate		(11.435)		(15.132)		(11.113)		(14.622)		
		[0.841]		[0.823]		[0.834]		[0.897]		
EITC federal/state	0.071	0.117	0.018	0.002	0.059	-0.264	0.022	-0.287		
maximum credit	(0.173)	(0.291)	(0.192)	(0.372)	(0.126)	(0.315)	(0.162)	(0.335)		
	[0.682]	[0.689]	[0.925]	[0.995]	[0.643]	[0.405]	[0.892]	[0.396]		
Lagged EITC federal/		0.011		-0.037		0.402		0.450		
state maximum credit		(0.253)		(0.416)		(0.296)		(0.357)		
		[0.966]		[0.929]		[0.181]		[0.213]		
SPM poverty rate	-2.359	-2.048	-2.022	-1.814	0.596	0.871	0.746	0.730		
	(1.627)	(1.730)	(1.689)	(1.658)	(1.530)	(1.668)	(1.764)	(1.897)		
	[0.153]	[0.242]	[0.237]	[0.279]	[0.699]	[0.604]	[0.674]	[0.702]		
Lagged SPM poverty		-1.120		-1.054		-1.837		-1.763		
rate		(1.210)		(1.406)		(1.114)		(1.211)		
		[0.359]		[0.457]		[0.105]		[0.152]		
Unemployment rate	0.028	0.028	0.014	0.020	0.036	0.051	0.030	0.022		
	(0.046)	(0.054)	(0.048)	(0.055)	(0.040)	(0.057)	(0.043)	(0.058)		
	[0.542]	[0.609]	[0.769]	[0.714]	[0.372]	[0.377]	[0.481]	[0.709]		
Lagged unemployment		-0.019		-0.021		-0.013		-0.013		
rate		(0.049)		(0.062)		(0.051)		(0.058)		
		[0.694]		[0.732]		[0.798]		[0.817]		
Include lagged measures?	No	Yes	No	Yes	No	Yes	No	Yes		
Additional state controls?	No	No	Yes	Yes	No	No	Yes	Yes		
State-year observations	300	300	300	300	300	300	300	300		

TABLE S.6-5.         WELFARE REFORM TIMING CORRELATIONS WITH	
POLICY AND MACROECONOMY VARIABLES, 1992-1997	

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications include controls for fixed state and year effects as well as a state-year trend. AFDC/TANF benefits levels and EITC credits are measured in thousands of 2012 dollars. Approval years in columns (1)-(4) are taken directly from Crouse (1999), and the implementation years in columns (5)-(8) denote the first year Grogger and Karoly (2005) list a state reform. When additional state controls are noted in columns (3)-(4) and (7)-(8), we include a set of 24 time-varying state-level variables and, in columns (4) and (8), their lagged values; some variables are dropped for collinearity. The description of these variables can be found in Section S.6.1.

In order to evaluate our assumption of conditionally random timing of reform implementation, we conclude this subsection on timing by performing a falsification exercise in the form of a placebo-type test. Now, our primary objective is to evaluate the cross-state variation in states implementation of welfare reform, which allows us to quasi-experimentally separate out the effect of a mother's

participation in welfare during her daughter's childhood on the daughter's participation as an adult. Previous work has shown that a state's decision to apply for an AFDC waiver was not an endogenous response to caseload size (see Ziliak et al., 2000), as appears to be the case in Figure S.6-1 and Table S.6-5, but we perform this test for completeness. Moreover, as shown in Table S.6-4, variations in the definition of reform implementation dates do not affect the main findings of our study.

As explained in detail below, we randomly generate welfare reform dates to then estimate the parameters of interest using the same methods within an equivalent class of models. We are not aware of a similar placebo-type test in the literature, although our idea is somewhat related to the recent work of Hagemann (2019). Consider the model introduced in equation (3) for  $t \in \{1, 2, ..., T\}$ :

$$y_{ist}^d = \alpha + \beta' \boldsymbol{x}_{ist}^d + \delta y_{is,\forall j < t}^m + \gamma R_{st}^m + \theta R_{st}^m \boldsymbol{y}_{is,\forall j < t}^m + \mu_s^d + \kappa_t^d + \nu_{ist}^d,$$

where  $y_{ist}^d$ ,  $y_{is,\forall j < t}^m$ ,  $x_{ist}^d$ ,  $\mu_s^m$ ,  $\mu_s^d$ ,  $\kappa_t^d$ , and  $v_{ist}^d$  are defined as before. Recall that  $R_{st}^m$  is an indicator variable that takes a value of 1 when the state of residence of the mother implements welfare reform and 0 otherwise. Let  $t_s^*$  be the year when the reform is implemented in state *s*. Note that for  $t_s < t_s^*$ ,  $R_{st}^m = 0$ , and for  $t_s > t_s^*$ ,  $R_{st}^m = 1$ . In what follows, we drop the dependence of  $t_s^*$  on *s* for notational convenience. Lastly, we split years before and after the reform into two sets: before-reform years  $B = \{1, 2, ..., t^* - 1\}$ , and after-reform years  $A = \{t^*, t^* + 1, ..., T\}$ .

Let  $a_t = \alpha + \kappa_t^d$ . Note that for  $t \in B$ , the parameter  $\delta$  can be estimated by instrumental variables using the following regression model,

$$y_{ist}^d = a_t + \beta' \boldsymbol{x}_{ist}^d + \delta y_{is,\forall j < t}^m + \mu_s^d + \nu_{ist}^d$$

while, for  $t \in A$ , the parameter  $\Delta = \delta + \theta$  can be estimated by instrumental variables using the following regression model,

$$y_{ist}^d = b_t + \beta' \mathbf{x}_{ist}^d + \Delta y_{is,\forall j < t}^m + \mu_s^m + \mu_s^d + \nu_{ist}^d$$

where  $b_t = a_t + \gamma$ . Consequently, one can identify and consistently estimate  $\theta$  considering the difference  $\Delta - \delta$  obtained by estimating the last two equations. This relies on the assumption that  $t^*$  is conditionally random, or alternatively, that the timing of the reform does not depend on the participation of daughters and mothers, and/or there are no latent state-trends that generate dependence between daughter's participation and the timing of the reform. If  $t^*$  is conditionally random, the procedure is consistent, and consequently, we should obtain results similar to Table 4.

For the implementation of the approach, consider  $T^*$  years indicating the cardinality of the sets *B* and *A*, where  $T^*$  represents the number of years before and after a state implements welfare reform at

time  $t^*$ . We perform our baseline estimation on a sample of daughter-mother pairs randomly drawn from only one time period before welfare reform,  $t_b \in B$ , and one period after,  $t_a \in A$ , and we repeat this estimation for randomly drawn years over R = 1000 samples. The estimator of our parameters of interest,  $\{\delta, \gamma, \theta\}$ , can be obtained by averaging  $\{\widehat{\delta, \gamma, \theta}\}_r$  for  $r = \{1, 2, ..., R\}$ . The equations can be estimated separately, as introduced above, or jointly using a difference-in-difference-type specification. Because our interest is to compare the results with Table 4, we adopted the second approach, although the results for  $\delta$  and  $\theta$  were similar for both approaches. To further explore the sensitivity of our placebo test, we allow the window of observations before/after reform to vary in length with  $T^* \in \{5, 10, 15\}$ .

The results are shown in Table S.6-6, where IV test statistics, number of daughters, and observations are taken as mean values across R samples. The table shows that OLS results based on the conditional independence condition on the timing of the reform estimates converge to our Table 4 column (1) estimates as  $T^*$  increases. Moreover, the IV estimates are similar to the baseline reform effects. Overall, Table S.6-6 presents evidence that is largely consistent with the estimates presented in columns (1) and (2) of Table 4.

Reform randomization window:	5 years before/after		10 years b	efore/after	15 years before/after	
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's participation	0.123	0.218	0.132	0.220	0.147	0.236
	(0.014)	(0.031)	(0.013)	(0.059)	(0.026)	(0.072)
After welfare reform	0.025	0.040	0.037	0.054	0.046	0.058
	(0.017)	(0.033)	(0.020)	(0.035)	(0.096)	(0.048)
Mother's participation ×	-0.068	-0.111	-0.083	-0.118	-0.101	-0.133
after welfare reform	(0.019)	(0.072)	(0.018)	(0.076)	(0.029)	(0.084)
Instrumental variables	No	Yes	No	Yes	No	Yes
Weak IV test statistic		20.237		20.646		20.362
p-value		0.000		0.000		0.000
Hansen J statistic		2.361		1.777		1.748
p-value		0.409		0.514		0.527
Number of daughters	2958	2958	2760	2760	2495	2495
Observations	4036	4036	3637	3637	3193	3193

 $TABLE\ S.6-6.\ PLACEBO\ ESTIMATES\ FOR\ A\ DIFFERENCE-IN-DIFFERENCE-TYPE\ MODEL$ 

*Notes:* Estimates shown above correspond to our baseline specifications in Table 4 columns (1)-(2) estimated only for daughters observed for a randomly drawn year before and random year after welfare reform within the timespan indicated above, either 5, 10, or 15 years pre-/post-reform. All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, controls for the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12-18. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit statistic is a Kleibergen-Paap (2006) rank statistic. Statistics are constructed based on 1000 bootstrap replications with state-level clustering with standard errors shown in parentheses. Daughters' PSID core longitudinal weights are used in estimation.

## S.6.3. Heterogeneity of Policy Effects State Policy Environment

States differed in the timing of implementation and in the degree of aggressiveness in implementation of welfare reform, both in the waiver era and after TANF. Since the Welfare Reform Act was signed into law in 1996, the majority of states implemented reform in 1996 or 1997. Therefore, we define the 19 states that had already implemented waiver reforms by 1995 as early reformers. (See Figure S.6-2 panel A to see which states implemented reform by year.) While there is no agreed upon measure of strictness in the literature, we follow Grogger and Karoly (2005, Table 4.2) and define strict states as those whereby all main studies surveyed agree that the sanctions policy adopted by the state during 1992-1996 was strict (there were 13 states that met this criteria). Ziliak (2007) examined five different categories of welfare reform aggressiveness and concluded that the latter measure was the best proxy for strict policy reforms.

We repeat our main estimation separately by indicators for these measures of welfare reform timing or stringency to test whether there were differences in intergenerational transmission in those states that adopted reforms earlier or adopted relatively stricter reforms. The sets of states whose reforms are defined as early (19 states) or strict (13 states) by these criteria have little overlap: only Mississippi, Nebraska, and Virginia are categorized as both early and strict. Table S.6-7 reports estimates corresponding to the effects of interest based on state reform timing and aggressiveness. The AFDC/TANF transmission mechanisms between mother and daughter before welfare reform were generally smaller in late reform states than in early reform states, and in less-strict-reform states than in strict-reform states, yet these differences are statistically insignificant at all conventional levels. The timing and strictness of welfare reform also do not appear to be related to differential effects on intergenerational welfare participation. If anything, welfare reform may have made states more similar in terms of welfare dependence in the post era. After reform, daughters in early implementation states are about 7.5 percentage points more likely to participate in cash assistance if their mothers did, which is similar to the closer to the 8.7 percentage point effect in late-reform states (columns (2) and (4)). Likewise, the post-reform transmission effect is about 8.1 percentage points in strict-reform states and 8.7 points in less strict states.

Daughter's outcome:		AFDC	/TANF		AFDC/TANF, SNAP, SSI			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
			1	A. Welfare r	eform timin	g		
	Ea	ırly	La	ate	Ea	rly	Late	
Mother's participation	0.154	0.294	0.137	0.253	0.218	0.275	0.234	0.339
	(0.027)	(0.068)	(0.010)	(0.074)	(0.026)	(0.117)	(0.025)	(0.101)
After welfare reform	0.031	0.065	0.045	0.079	-0.012	-0.034	0.021	0.019
	(0.016)	(0.038)	(0.008)	(0.024)	(0.018)	(0.036)	(0.018)	(0.041)
Mother's participation ×	-0.100	-0.219	-0.107	-0.167	-0.023	0.056	-0.062	0.034
after welfare reform	(0.028)	(0.074)	(0.017)	(0.061)	(0.020)	(0.104)	(0.026)	(0.129)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Weak IV test statistic		10.027		10.841		10.027		10.841
p-value		0.018		0.013		0.018		0.013
Hansen J statistic		0.517		3.260		4.872		1.192
p-value		0.772		0.196		0.088		0.551
Percent change in levels	-65%	-74%	-78%	-66%	-11%	20%	-27%	10%
p-value	0.000	0.000	0.000	0.002	0.232	0.654	0.008	0.800
Number of daughters	1566	1566	1843	1843	1566	1566	1843	1843
Observations	25870	25870	30198	30198	25870	25870	30198	30198
			B. W	/elfare refor	m aggressiv	eness		
	Strict	reform	Less	Less strict		Strict reform		strict
Mother's participation	0.149	0.291	0.143	0.245	0.266	0.409	0.214	0.268
	(0.011)	(0.067)	(0.017)	(0.065)	(0.027)	(0.139)	(0.021)	(0.082)
After welfare reform	0.049	0.089	0.034	0.057	0.017	0.005	-0.004	-0.026
	(0.017)	(0.028)	(0.011)	(0.022)	(0.026)	(0.068)	(0.017)	(0.025)
Mother's participation ×	-0.113	-0.210	-0.100	-0.158	-0.075	0.035	-0.034	0.067
after welfare reform	(0.019)	(0.052)	(0.019)	(0.049)	(0.041)	(0.143)	(0.018)	(0.075)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Weak IV test statistic		6.150		20.321		6.150		20.321
p-value		0.105		0.000		0.105		0.000
Hansen J statistic		0.003		1.902		0.465		1.408
p-value		0.998		0.386		0.793		0.495
Percent change in levels	-76%	-72%	-70%	-64%	-28%	9%	-16%	25%
p-value	0.000	0.000	0.000	0.000	0.045	0.817	0.054	0.454
Number of daughters	945	945	2143	2143	945	945	2143	2143
Observations	16933	16933	39135	39135	16933	16933	39135	39135

TABLE S.6-7. HETEROGENEOUS INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION BY STATE TYPE

*Notes:* "Early" means implementation occurred in years 1992-1995 (19 states) and "Late" in years 1996-1997 (32 states) according to Crouse (1999). Welfare reform aggressiveness is defined by whether state reforms were considered strict (13 states) according to criteria in Grogger and Karoly (2005). Robust standard errors with state clustering are shown in parentheses. All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, daughter's state and year effects, and mother's modal state effects. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

# S.6.4. Transmission of Other Means-Tested Program Participation

Our difference-in-difference design implies that welfare reform changed transmission of AFDC/TANF participation without reducing transmission of participation in a broader set of meanstested assistance programs (Table 4 in the manuscript). Here we provide further evidence on the transmission patterns across these other welfare programs, which confirms the null effect of the 1990s welfare reform on means-tested programs besides AFDC/TANF. We focus on descriptive correlations without a causal interpretation in order to abstract away from IV complications for each individual means-tested program (whereas elsewhere we instrument for mother's AFDC/TANF welfare participation effects), and we also provide partial correlations conditioned on our baseline set of control variables used throughout (see, for example, Table 4). Table S.6-8 shows OLS estimates for participation in: 1) AFDC/TANF, SNAP, SSI; 2) SNAP, SSI; 3) SNAP; and, 4) SSI. For all of these categorical definitions of welfare transmission, welfare reform has no statistically significant effect on the correlations. The OLS coefficient estimates of mother's participation after reform are small (compared to AFDC/TANF), and there is little difference between the correlations by SNAP or SSI versus SNAP alone.

		·							
Daughter's outcome:	AFDC	TANF,	CNLAT	0.01				CCI	
5	SNAP	, or SSI	SNAF	or SSI	SN	SNAP		51	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
			A. Moth	er's AFDC/	TANF part	icipation			
Mother's participation	0.257	0.226	0.239	0.210	0.224	0.196	0.051	0.045	
	(0.022)	(0.018)	(0.022)	(0.019)	(0.020)	(0.017)	(0.015)	(0.012)	
After welfare reform	-0.012	0.002	-0.010	-0.003	-0.013	0.004	0.006	-0.013	
	(0.008)	(0.013)	(0.007)	(0.013)	(0.007)	(0.013)	(0.003)	(0.009)	
Mother's participation ×	-0.039	-0.041	-0.029	-0.032	-0.024	-0.031	-0.003	0.005	
after welfare reform	(0.021)	(0.017)	(0.021)	(0.016)	(0.019)	(0.015)	(0.015)	(0.012)	
Conditional on baseline controls:	No	Yes	No	Yes	No	Yes	No	Yes	
Percent change in levels	-15%	-18%	-12%	-15%	-11%	-16%	-6%	11%	
p-value	0.053	0.011	0.143	0.039	0.191	0.037	0.825	0.713	
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961	
Observations	56068	56068	56067	56067	55891	55891	56058	56058	
	В	Mother's	welfare par	ticipation co	orrespondin	ig to daught	ter's outcon	ne	
Mother's participation	0.194	0.161	0.191	0.159	0.184	0.154	0.084	0.075	
	(0.013)	(0.012)	(0.015)	(0.012)	(0.015)	(0.013)	(0.027)	(0.020)	
After welfare reform	-0.017	-0.011	-0.014	-0.014	-0.014	-0.005	0.005	-0.010	
	(0.007)	(0.014)	(0.006)	(0.014)	(0.006)	(0.012)	(0.004)	(0.009)	
Mother's participation ×	-0.014	-0.016	-0.010	-0.012	-0.009	-0.014	-0.005	-0.001	
after welfare reform	(0.014)	(0.015)	(0.014)	(0.016)	(0.017)	(0.015)	(0.024)	(0.019)	
Conditional on baseline controls:	No	Yes	No	Yes	No	Yes	No	Yes	
Percent change in levels	-7%	-10%	-5%	-8%	-5%	-9%	-5%	-1%	
p-value	0.297	0.273	0.493	0.416	0.589	0.335	0.842	0.961	
Number of daughters	2961	2961	2961	2961	2961	2961	2952	2952	
Observations	56068	56068	56067	56067	55891	55891	55820	55820	

TABLE S.6-8. CONDITIONAL AND UNCONDITIONAL INTERGENERATIONAL CORRELATIONS OF WELFARE PARTICIPATION BY PROGRAM

*Notes:* Robust standard errors with state clustering are shown in parentheses. Estimates in panel A column (2) correspond to Table 4 column (5) in the manuscript. Daughter's and mother's welfare participation are indicators for current or any prior participation, respectively, and the definition of welfare program is for each varies by specification as indicated. Conditional estimates include baseline controls per Table 4: a quadratic in age for both daughter and mother, state-level policy controls for the daughter, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12 to 18. Daughters' PSID core longitudinal weights are used in estimation.

#### S.7. Survey Weights and Biennial Interviewing

In this section, we investigate the robustness of results to the use of daughters' and mothers' survey weights and the change in the frequency of PSID interviews starting in 1997.

## S.7.1. Survey Weights

As mentioned in Section IV of the manuscript, the large number of mothers and daughters linked over the PSID survey years is comprised of both the Survey Research Center (SRC) and Survey of Economic Opportunity (SEO) subsamples. Our sample includes about 52 percent of daughters (48 percent of observations) from the SEO subsample, and 48 percent of daughters (52 percent of observations) from the SRC subsample. We use the core longitudinal weights throughout the analysis to correct for the oversample of low-income and minority families in the SEO. In Table S.7-1, we re-estimate the baseline specifications from Table 4 in the manuscript without using the daughter's PSID core longitudinal survey weights, first for the full baseline sample including the SEO, which oversamples low-income and minority families, and then for only the SRC subsample, which is nationally representative (for detailed discussion related to the SEO sample, see Brown, 1996).

Estimation sample:	SRC	SRC and SEO (full baseline sample)				SRC sample only			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Mother's participation	0.203	0.402	0.322	0.650	0.113	0.214	0.181	0.300	
	(0.014)	(0.057)	(0.021)	(0.085)	(0.020)	(0.067)	(0.034)	(0.110)	
After welfare reform	0.073	0.149	0.090	0.196	0.033	0.059	0.051	0.074	
	(0.011)	(0.035)	(0.019)	(0.053)	(0.011)	(0.023)	(0.019)	(0.036)	
Mother's participation $\times$	-0.149	-0.274	-0.192	-0.365	-0.087	-0.180	-0.118	-0.201	
after welfare reform	(0.015)	(0.058)	(0.030)	(0.091)	(0.022)	(0.068)	(0.039)	(0.112)	
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes	
Misclassification correction	No	No	Yes	Yes	No	No	Yes	Yes	
Weak IV test statistic		21.604		22.023		19.170		18.662	
p-value		0.000		0.000		0.000		0.000	
Hansen J statistic		1.365		0.968		4.084		4.488	
p-value		0.505		0.616		0.130		0.106	
Percent change in levels	-74%	-68%	-60%	-56%	-77%	-84%	-65%	-67%	
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	
Number of daughters	2961	2961	2961	2961	1422	1422	1422	1422	
Observations	56068	56068	56068	56068	28917	28917	28917	28917	

TABLE S.7-1. INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION ESTIMATED WITHOUT PSID LONGITUDINAL WEIGHTS

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation.

Relative to Table 4, the percent change results in Table S.7-1 are qualitatively little changed when we do not weight the estimates in the full sample (columns (1)-(4)) or when we drop the SEO oversample of low-income families and estimate without weights for the SRC (columns (5)-(6)). The unweighted estimates are larger in magnitude when including the SEO low-income oversample, while the SRC-alone

estimates are smaller in magnitude, suggesting that weights are needed for the estimates to be more comparable to the nationally-representative SRC subsample estimates.

Recall that our specifications are based on the fact that the outcome variable is at the daughter level and, importantly, at the daughter's current year, whereas the mother's variables are aggregated over prior observation years with the instrumental variables defined during the daughter's critical ages of 12 to 18 years old. In an intergenerational context, it may be reasonable to compare the sensitivity of estimates to the use of the mother's survey weights. Current-year survey weights for mothers are only available for 79 percent of observations based on their ongoing availability in later surveys. Alternatively, we could use an average of the mother's weights during the critical exposure period when the daughter is aged 12-18, or an average over all of the mother's prior observed weights. Note that the survey weights for mothers are closely correlated with their daughters' longitudinal weights used in our main estimation: 0.708 for contemporaneous years, 0.857 for the critical exposure period average, and 0.916 for averages over all prior years. Table S.7-2 shows that the IV results using mothers' weights are consistent with the main results shown in Table 4 of the manuscript.

Daughter's outcome variable:		AFDC	/TANF		AFDC/TANF, SNAP, SSI			
Survey weights used:	Daughters' current (1)	Mothers' current (2)	Mothers' critical (3)	Mother's avg. prior (4)	Daughters' current (5)	Mothers' current (6)	Mothers' critical (7)	Mother's avg. prior (8)
Mother's participation	0.268	0.308	0.290	0.282	0.299	0.337	0.315	0.295
	(0.049)	(0.068)	(0.050)	(0.052)	(0.073)	(0.074)	(0.069)	(0.073)
After welfare reform	0.069	0.059	0.072	0.070	-0.014	-0.023	-0.013	-0.015
	(0.021)	(0.018)	(0.021)	(0.021)	(0.028)	(0.019)	(0.026)	(0.025)
Mother's participation ×	-0.183	-0.198	-0.190	-0.190	0.040	0.063	0.074	0.070
after welfare reform	(0.046)	(0.065)	(0.051)	(0.050)	(0.074)	(0.077)	(0.075)	(0.073)
Weak IV test statistic	23.157	19.439	21.907	22.018	23.157	19.439	21.907	22.018
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Hansen J statistic	1.315	2.052	0.706	1.156	2.050	1.109	1.439	1.528
p-value	0.518	0.358	0.702	0.561	0.359	0.574	0.487	0.466
Percent change in levels	-68%	-64%	-65%	-67%	13%	19%	23%	24%
p-value	0.000	0.000	0.000	0.000	0.621	0.477	0.394	0.417
Number of daughters	2961	2894	2961	2961	2961	2894	2961	2961
Observations	56068	44309	56068	56068	56068	44309	56068	56068

TABLE S.7-2. IV ESTIMATES OF INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATION COMPARING THE USE OF DAUGHTERS' VERSUS MOTHERS' PSID CORE LONGITUDINAL WEIGHTS

*Notes:* Robust standard errors with state clustering are shown in parentheses. All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, daughter's state and year effects, and mother's modal state effects. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic.

#### S.7.2. Biennial Interviews

The PSID carried out annual interviews from 1968 to 1996, and changed to biennial interviews from 1997 onward. Therefore, our data on welfare participation includes both responses for the prior

observation year (T-1) and, after 1997, for the two-year retrospective (T-2). This might have an impact on the accuracy of answers, and in particular, might exacerbate issues associated with misclassification. Thus, we now examine the sensitivity of our findings to the change in the frequency of PSID interviews.

Observation years:	Even year	s (T1 only)	Odd years	(T1 & T2)	All years	
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's participation	0.149	0.291	0.140	0.244	0.145	0.268
	(0.012)	(0.052)	(0.013)	(0.049)	(0.013)	(0.049)
After welfare reform	0.039	0.073	0.037	0.064	0.038	0.069
	(0.009)	(0.023)	(0.009)	(0.020)	(0.009)	(0.021)
Mother's participation ×	-0.106	-0.201	-0.094	-0.164	-0.100	-0.183
after welfare reform	(0.015)	(0.052)	(0.015)	(0.045)	(0.015)	(0.046)
Instrumental variables	No	Yes	No	Yes	No	Yes
Weak IV test statistic		23.100		23.141		23.157
p-value		0.000		0.000		0.000
Hansen J statistic		0.969		1.807		1.315
p-value		0.616		0.405		0.518
Percent change in levels	-71%	-69%	-67%	-67%	-69%	-68%
p-value	0.000	0.000	0.000	0.000	0.000	0.000
Number of daughters	2961	2961	2961	2961	2961	2961
Observations	28276	28276	27792	27792	56068	56068

TABLE S.7-3. TRANSMISSION ESTIMATE SENSITIVITY TO T2-YEAR	1
RETROSPECTIVE DATA AFTER SURVEY YEAR 1997	

*Notes:* After 1997, biennial PSID survey questions include one- and two-year retrospectives, T-1 and T-2. Columns (1) and (4) represent only the T-1 questions for the even observation years (from odd survey years 1969-2013). Columns (2) and (5) represent the odd observation years, which include T-1 questions for even survey years 1968-1996, and T-2 questions in the biennial survey years 1999-2013. Columns (3) and (6) use all available data and correspond to our baseline estimates in Table 4. The models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, controls for the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12-18. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

Table S.7-3 presents results of comparing T-1 years and T-2 years as applied to the entire PSID time period. Here, we are defining even years as the even observation years corresponding to the odd survey years 1969-2013, which are the T-1 years of reported economic activity in the prior year. The odd years represent observations from the even survey years 1968-1996 and the T-2 retrospective data from survey years 1999-2013. The columns for all years, (3) and (6), correspond to our baseline OLS and IV estimates of Table 4 in the manuscript. If we assume that the T-1 series is more reliable, then using T-2 years attenuates the magnitude of our results toward zero. However, the size of this potential bias is small.

#### S.8. Sample Attrition

The high annual PSID response rates have been critical to the success and continued use of the survey since its creation. In long panel studies, however, the representativeness of the sample can be

compromised if a significant number of respondents attrit from the survey over time. In studies using the PSID, outcomes for daughter-mother pairs are known to suffer from some degree of attrition bias (Fitzgerald, Gottschalk, and Moffitt, 1998; Ziliak and Kniesner, 1998; and Fitzgerald, 2011), and relatively high attrition rates have been found among low-income adult children with low-income parents (Schoeni and Wiemers, 2015). The core longitudinal weights are designed to address attrition based on selection on observables, and we explore this assumption in more detail here.

We begin our investigation by documenting how attrition affects the number of years an adult daughter is observed in our sample. Figure S.8-1 shows the percentage of daughters who respond to the survey in our sample by the attrition status of the daughter. Recall that the baseline sample restriction requires all adult daughters to be observed at least 5 years (to attenuate measurement issues as discussed in Section IV), so the probability of observing a daughter for 5 consecutive years is 100 percent as shown in the figure. In our sample, daughters are observed for 24 years on average, although a significant number of daughters are observed over a longer period. It is also interesting to see that about half of the daughters who attrit are observed 15 years, which illustrates the relatively high annual response rates and the advantage of using the PSID for the study of intergenerational welfare dependence.



FIGURE S.8-1. UNCONDITIONAL ESTIMATES OF THE PROBABILITY OF RESPONDING TO THE PSID SURVEY BY ATTRITION STATUS

Years of daughter-as-adult observations

*Notes:* Daughters in the main estimation sample are restricted to a minimum of five years of observation as an adult. The "Attrition sample" represents daughters who ever attrit compared to those who never attrit.

Although the use of the PSID survey weights can reduce potential biases arising from the attrition of daughters observed in Figure S.8-1, we now investigate if this possibly non-random attrition is an important threat to identification of the parameters of interest. We first provide descriptive evidence for the full sample of daughters and the sample of daughters who never attrit from the PSID sample. We end the section by providing evidence on the transmission effect estimated by inverse probability weighting (IPW) (see, among others, Robins, Rotnitzky, and Zhao, 1995; Fitzgerald, Gottschalk, and Moffitt, 1998; Wooldridge, 2007), and investigate the sensitivity of transmission results to different assumptions on the missing data process.

As it is standard in the literature (see, e.g., Fitzgerald et al., 1998; Schoeni and Wiemers, 2015), we present descriptive statistics associated with the observable characteristics of daughters and mothers. Table S.8-1 shows the sample mean and standard deviation for the full sample of daughters, the sample of daughters who never attrited, and the sample of daughters who attrited anytime between 1968 and 2012. The first three columns show descriptive statistics obtained by PSID survey weights, while the last three columns show values obtained by combining survey weights and inverse probability weighting. The probability model for the binary variable indicating whether the daughter never attrits includes the independent variables used in model (3), an indicator for whether the daughter belongs to the SEO subsample, and the logarithm of daughter's family income (in 2012 dollars). For the weights in Table S.8-1 columns (4)-(6), we estimate a linear probability model that incorporates survey weights to avoid possible biases arising from the overrepresented low-income SEO subsample. Later, for comparison, we show results obtained by estimating first-stage probabilities based on a logit link function and sample averages of the observable variables.

We take two important conclusions from Table S.8-1. First, there are small differences between the group of all daughters and the daughters who never attrit (columns (1) and (2)). Consistent with the literature, survey weights appear to be important when practitioners combine SRC and SEO subsamples, and the use of these weights can help reduce observable differences between pairs of daughters and mothers classified by attrition status. Second, when we consider weighting observations by the inverse probability of remaining in the survey, in addition to using survey weights, the differences remain small for most of the variables, but there are some minor improvements when comparing the full sample to those who do not attrit.

The descriptive evidence presented in Table S.8-1 led us to perform an additional robustness check, although it is reassuring that the composition of the subsample of daughters appears to be similar across groups. We also estimate equation (3) in the paper using the inverse probability of remaining in the survey in addition to using survey weights. These results are reported in detail in Table S.8-2 and also graphically in Figure S.8-2.

	PSI	D survey wei	ghts	PSID su	PSID survey weights + IPWs			
	All	Never	Ever	All	Never	Ever		
	daughters	attrited	attrited	daughters	attrited	attrited		
	(1)	(2)	(3)	(4)	(5)	(6)		
			Daughter's c	haracteristics				
Current AFDC/TANF	0.044	0.040	0.061	0.045	0.040	0.056		
participation	(0.206)	(0.195)	(0.239)	(0.207)	(0.195)	(0.229)		
Age	35.041	36.061	31.242	34.658	35.992	31.824		
	(9.400)	(9.543)	(7.747)	(9.273)	(9.519)	(8.021)		
Number of children	1.208	1.217	1.173	1.200	1.214	1.169		
	(1.238)	(1.248)	(1.201)	(1.236)	(1.247)	(1.212)		
Family income	76.576	77.190	74.697	77.384	77.125	77.846		
	(106.685)	(90.879)	(144.700)	(120.657)	(91.494)	(159.843)		
Same state as birth	0.723	0.714	0.754	0.726	0.716	0.747		
	(0.448)	(0.452)	(0.430)	(0.446)	(0.451)	(0.435)		
Married	0.682	0.682	0.683	0.682	0.682	0.682		
	(0.466)	(0.466)	(0.465)	(0.466)	(0.466)	(0.466)		
Non-teen birth	0.806	0.802	0.822	0.809	0.800	0.831		
	(0.395)	(0.398)	(0.383)	(0.393)	(0.400)	(0.375)		
High school or less	0.484	0.448	0.564	0.493	0.449	0.552		
	(0.500)	(0.497)	(0.496)	(0.500)	(0.497)	(0.497)		
			Mother's ch	aracteristics				
Any prior AFDC/TANF	0.271	0.282	0.229	0.262	0.281	0.222		
participation	(0.444)	(0.450)	(0.420)	(0.440)	(0.449)	(0.416)		
Age	45.103	45.283	44.433	44.997	45.248	44.462		
	(8.626)	(8.846)	(7.717)	(8.513)	(8.831)	(7.770)		
Number of children	1.649	1.602	1.823	1.654	1.604	1.760		
	(1.125)	(1.095)	(1.216)	(1.122)	(1.092)	(1.175)		
Family income	72.169	72.156	72.216	72.599	72.286	73.264		
	(83.142)	(89.581)	(52.644)	(80.494)	(90.271)	(54.150)		
Same state as birth	0.635	0.619	0.693	0.641	0.621	0.684		
	(0.481)	(0.486)	(0.461)	(0.480)	(0.485)	(0.465)		
Married	0.804	0.800	0.821	0.808	0.801	0.823		
	(0.309)	(0.308)	(0.310)	(0.307)	(0.307)	(0.306)		
Non-teen birth	0.712	0.704	0.742	0.718	0.704	0.746		
	(0.453)	(0.457)	(0.438)	(0.450)	(0.457)	(0.435)		
High school or less	0.630	0.621	0.661	0.630	0.622	0.647		
	(0.483)	(0.485)	(0.474)	(0.483)	(0.485)	(0.478)		
Survey of Economic	0.152	0.104	0.329	0.163	0.105	0.286		
Opportunity sample	(0.359)	(0.306)	(0.470)	(0.369)	(0.306)	(0.452)		
Observations	56068	41498	14570	56068	41498	14570		

TABLE S.8-1. MOTHER AND DAUGHTER CHARACTERISTICS BY DAUGHTER ATTRITION STATUS

*Notes:* Standard deviations are in parentheses. Daughters' PSID core longitudinal weights are used to obtain the descriptive statistics in the first three columns and daughters' PSID core longitudinal weights combined with inverse probability weighting (IPW) are used to obtain the last three columns.

Table S.8-2 shows results obtained two different first-stage methods. In columns (3)-(4), we estimate the inverse probability weights by a logit model, while in columns (5)-(6), we estimate the weight using a linear probability model. In each model, we use survey weights in the first stage to correct for possible inconsistencies arising from the overrepresentation of low-income families in the SEO sample, yet this choice is inconsequential to the qualitative findings. The binary response variable in the

first stage is defined as 1 if the daughter never attrits, and 0 otherwise. The independent variables are: mother's welfare participation, a linear and quadratic in age of the mother and daughter, indicators for number of children, policy and economic variables for the daughter, an indicator for whether the daughter belongs to the SEO subsample, the logarithm of the daughter's family income (in 2012 dollars), and indicators for daughter's state and mother's modal state.

The main empirical takeaway from our regression results presented in Table S.8-2 is that the main findings of our investigation are not significantly different if one addresses the possibility of attrition. The results in the last column of Table S.8-2, also shown in Figure S.8-2, demonstrate that the baseline estimates in Table 4 are not sensitive to imposing restrictions in the proportion of daughters who ever attrit that are included in the estimation sample. This can be explained by the large proportion of daughters who are observed over the entire duration of the sample (approximately 65 percent, implying an attrition rate of roughly 35 percent) and by the similar average characteristics of the daughters by attrition status, as shown in Table S.8-1.

	Bas	eline	At	trition inverse p	robability weig	hts
	Table 4	estimates	Logit fi	rst stage	LPM fi	rst stage
	(1)	(2)	(3)	(4)	(5)	(6)
Mother's participation	0.145	0.268	0.154	0.373	0.137	0.257
	(0.013)	(0.049)	(0.023)	(0.080)	(0.015)	(0.049)
After welfare reform	0.038	0.069	0.046	0.136	0.036	0.073
	(0.009)	(0.021)	(0.016)	(0.052)	(0.011)	(0.025)
Mother's participation ×	-0.100	-0.183	-0.118	-0.351	-0.091	-0.188
after welfare reform	(0.015)	(0.046)	(0.028)	(0.096)	(0.016)	(0.046)
Instrumental variables	No	Yes	No	Yes	No	Yes
Weak IV test statistic		23.157		19.341		19.159
p-value		0.000		0.000		0.000
Hansen J statistic		1.315		4.081		2.946
p-value		0.518		0.130		0.229
Percent change in levels	-69%	-68%	-77%	-94%	-66%	-73%
p-value	0.000	0.000	0.000	0.000	0.000	0.000
Number of daughters	2961	2961	1935	1935	1935	1935
Observations	56068	56068	41498	41498	41498	41498

TABLE S.8-2. WELFARE TRANSMISSION ESTIMATES AND THE EFFECT OF ATTRITION

*Notes:* Robust standard errors with state clustering are shown in parentheses. Daughters' PSID core longitudinal weights are used estimates for columns (1)-(2) and in both the first and second stages for columns (3)-(6). All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic.

Lastly, in Figure S.8-2, we investigate the sensitivity of our results to attrition by varying the proportion of daughters who attrited over time. We report results on IV estimates of mother's participation and reform interaction based on different samples of daughters based on what proportion have attrited by a certain year up to the 34.6 percent attrition rate observed in the full sample. We also show results for the full sample based on an estimator that uses inverse probability weighting in addition to survey weights. We use the following variables in the first-stage model of the daughter being a panel non-attriter: an indicator for whether the daughter belongs to the SEO subsample, the logarithm of daughter's family income (in 2012 dollars), mother's welfare participation, and the socioeconomic, policy and economic variables used in Table 4. The main estimates are not sensitive to reweighting adjustments for potential attrition bias.



FIGURE S.8-2. SENSITIVITY OF IV ESTIMATES TO ATTRITION IN MODELS WITH INVERSE PROBABILITY WEIGHTS

Proportion of daughters who attrited

*Notes:* Results above using survey weights only are estimated for samples restricted by the proportion of attrition sample allowed where the baseline results correspond to a 34.6 percent attrition rate. These results are compared to an estimate of transmission effects for the baseline sample when using survey weights and inverse probability weights for attrition. 95-percent pointwise confidence intervals are shown based on state-clustered estimates for the estimates with survey weights only. All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, controls for the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12-18. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform.

#### S.9. Exposure Timing and Life-Cycle Windows

This section presents two extensions to the empirical analysis presented in our manuscript. We first investigate whether within-generation differences in age drive the baseline results. Lastly, we estimate intergenerational transmission effects by extending the minimum number of mother-daughter observation pairs in our sample.

In Table 5, we showed estimates of the baseline specifications of Table 4 restricted to the observation window of the daughter-as-adult through age 27 and the mother over the age range from 25 to 45. By imposing this restriction, we ensured that within-generation differences in age do not drive the results. In this section, we extend the evidence presented in Table 5 first by reproducing these estimates for the daughter's broader safety net outcome including food and disability participation as well as estimates using Lee-Solon-type (2009) age adjustments (Table S.9-1), and then by restricting the samples to different observation windows of the mother within the span of ages 25 to 45 in eight different specifications (see Table S.9-2). Accounting for life-cycle bias in intergenerational effects on the daughter's broader safety net participation produces findings that are consistent with the main results of the manuscript and the life-cycle-adjusted estimates for AFDC/TANF participation shown in Table 5.

	Mothers ag daughters i	es 25 to 45, up to age 27	Lee-Solon- age adj	type (2009) ustment
	(1)	(2)	(3)	(4)
Mother's participation	0.253	0.517	0.208	0.267
	(0.022)	(0.109)	(0.022)	(0.078)
After welfare reform	0.003	0.026	-0.002	-0.060
	(0.030)	(0.052)	(0.010)	(0.039)
Mother's participation ×	-0.020	-0.029	-0.012	0.161
after welfare reform	(0.039)	(0.133)	(0.023)	(0.107)
Instrumental variables	No	Yes	No	Yes
Weak IV test statistic		18.249		19.560
p-value		0.000		0.052
Hansen J statistic		7.615		11.528
p-value		0.022		0.318
Percent change in levels	-8%	-6%	-6%	60%
p-value	0.588	0.826	0.601	0.272
Number of daughters	2086	2086	2961	2961
Observations	15718	15718	56068	56068

TABLE S.9-1. INTERGENERATIONAL TRANSMISSION FROM MOTHER'S AFDC/TANF PARTICIPATION TO DAUGHTER'S AFDC/TANF, SNAP, OR SSI PARTICIPATION ADJUSTING FOR POTENTIAL LIFE-CYCLE BIAS

*Notes:* Robust standard errors with state clustering are shown in parentheses. All models control for a quadratic in age for both daughter and mother, state-level policy controls for the daughter, and state and year effects for the daughter as well as state effects for the mother's modal state when the daughter is aged 12 to 18. Additional controls for Lee-Solon-type age adjustments include a quartic on mother's mean age during prior years of potential welfare participation, a quartic on daughter's current age detrended by 25, and mother's participation indicator interacted with the quartic on daughter's detrended age. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform; Lee-Solon-type estimates additionally include the baseline set of instrumental variables interacted with a quartic in daughter's detrended age. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

In Table S.9-2, we explore the sensitivity of our main estimates to using restricted age windows for observing each generation. The interquartile range for mother's age during critical exposure is 36 to 45 in the full sample, 36 to 45.5 for pre-reform observations, and 35.5 to 43 for post-reform observations. We use the ages 25 to 45 in Table 5 of the manuscript for satisfying weak IV test requirements for this smaller sample, yet the estimates of the effect of reform on transmission are robust to the choice of mother's age range, as can be seen in Table S.9-2. The transmission effects are somewhat larger in magnitude compared to our baseline results (as also seen in columns (1) and (2) of Table 5 in the paper and Table S.9-1 above), yet the percent reduction after reform is fairly consistent around 40 percent in levels.

Mother's age range:	25-35	25-40	25-45	30-35	30-40	30-45	35-40	35-45		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
		A. Ordinary least squares								
Mother's participation	0.194	0.190	0.206	0.196	0.194	0.211	0.233	0.237		
	(0.035)	(0.023)	(0.020)	(0.042)	(0.024)	(0.020)	(0.025)	(0.021)		
After welfare reform	0.044	0.058	0.067	0.039	0.055	0.065	0.062	0.065		
	(0.024)	(0.021)	(0.021)	(0.025)	(0.022)	(0.022)	(0.023)	(0.023)		
Mother's participation ×	-0.109	-0.113	-0.125	-0.099	-0.109	-0.123	-0.144	-0.135		
after welfare reform	(0.044)	(0.033)	(0.033)	(0.057)	(0.038)	(0.037)	(0.044)	(0.041)		
Percent change in levels	-56%	-60%	-61%	-51%	-56%	-58%	-62%	-57%		
p-value	0.001	0.000	0.000	0.015	0.000	0.000	0.000	0.000		
		B. Instrumental variables								
Mother's participation	0.395	0.434	0.457	0.415	0.480	0.491	0.481	0.527		
	(0.104)	(0.118)	(0.102)	(0.114)	(0.129)	(0.108)	(0.121)	(0.113)		
After welfare reform	0.053	0.107	0.115	0.052	0.104	0.117	0.085	0.105		
	(0.038)	(0.043)	(0.045)	(0.038)	(0.047)	(0.046)	(0.047)	(0.048)		
Mother's participation ×	-0.129	-0.207	-0.216	-0.138	-0.202	-0.227	-0.146	-0.209		
after welfare reform	(0.102)	(0.093)	(0.106)	(0.116)	(0.105)	(0.108)	(0.146)	(0.144)		
Weak IV test statistic	16.741	16.032	18.249	15.214	13.272	13.061	6.402	9.557		
p-value	0.001	0.001	0.000	0.002	0.004	0.005	0.094	0.023		
Hansen J statistic	1.418	1.652	2.950	1.608	0.935	2.254	0.831	0.893		
p-value	0.492	0.438	0.229	0.448	0.627	0.324	0.660	0.640		
Percent change in levels	-33%	-48%	-47%	-33%	-42%	-46%	-30%	-40%		
p-value	0.169	0.006	0.011	0.191	0.026	0.010	0.281	0.094		
Number of daughters	1384	1798	2086	1370	1793	2084	1745	2063		
Observations	10433	13504	15718	10330	13461	15697	13123	15547		

TABLE S.9-2. IV ESTIMATE ROBUSTNESS TO MOTHERS' AGES AROUND CRITICAL EXPOSURE FOR AFDC/TANF TRANSMISSION TO DAUGHTERS-AS-ADULTS THROUGH AGE 27

*Notes:* Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.
In Table S.9-3, we examine the windows problem by extending the minimum requirement that the pairs be observed for at least 10 and 15 years, respectively. There we see that the reduction in the level of mother's transmission after welfare reform is at least as large as that reported in Table 4 of the manuscript (and reproduced in column (1) of Table S.9-3). When the minimum number of observations is extended to 15 years, there is still a 62 percent decrease in transmission for IV estimates in column (5).

Number of family observations:	$N_F \ge 5$		N <sub>F</sub>	≥ 10	$N_F \ge 15$		
	(1)	(2)	(3)	(4)	(5)	(6)	
Mother's participation	0.268	0.425	0.315	0.533	0.264	0.436	
	(0.049)	(0.085)	(0.070)	(0.128)	(0.068)	(0.120)	
After welfare reform	0.069	0.086	0.096	0.139	0.075	0.096	
	(0.021)	(0.034)	(0.030)	(0.048)	(0.027)	(0.046)	
Mother's participation ×	-0.183	-0.218	-0.261	-0.382	-0.165	-0.205	
after welfare reform	(0.046)	(0.083)	(0.068)	(0.121)	(0.061)	(0.108)	
Misclassification correction	No	Yes	No	Yes	No	Yes	
Weak IV test statistic	23.157	21.969	21.021	18.528	16.132	16.942	
p-value	0.000	0.000	0.000	0.000	0.001	0.001	
Hansen J statistic	1.315	1.384	3.707	3.396	0.311	0.169	
p-value	0.518	0.500	0.157	0.183	0.856	0.919	
Percent change in levels	-68%	-51%	-83%	-72%	-62%	-47%	
p-value	0.000	0.000	0.000	0.000	0.001	0.028	
Number of daughters	2961	2961	2466	2466	1806	1806	
Observations	56068	56068	43733	43733	28903	28903	

TABLE S.9-3. IV ESTIMATES OF THE INTERGENERATIONAL TRANSMISSION OF AFDC/TANF PARTICIPATIONBY MINIMUM NUMBER OF MOTHER-DAUGHTER FAMILY OBSERVATIONS,  $N_F$ 

*Notes:* The minimum number of mother-daughter family observations, denoted  $N_F$ , represents years when the mother is observed living with the daughter before her daughter has formed her own family unit (the baseline minimum restriction used throughout is  $N_F \ge 5$ ). Robust standard errors with state clustering are shown in parentheses. All specifications control for daughter's state and year effects and mother's modal state effects in addition to daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, daughter's state AFDC/TANF benefit standard, daughter's EITC federal/state maximum credit, state-level poverty rate, AFDC/TANF recipiency rate, and unemployment rate. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard, which are defined over the daughter's critical exposure ages 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation. Daughters' PSID core longitudinal weights are used in estimation.

## S.10. State-Price Variation in Benefits and Maternal Selection

Did welfare reform change the participation selection based on benefit generosity? We begin by addressing AFDC/TANF benefit generosity with respect to cost-of-living differences across states and time, and then we explore potential differences in transmission effects and welfare reform by high- and low-generosity states.

In Tables S.1-4 and S.1-5, as well as Figure 4, we showed that there is substantial within-state variation over time in the AFDC/TANF benefit standard. Here we explore whether the baseline estimates using the aggregate personal consumption expenditure (PCE) deflator in Table 4 are robust to the use of

the state-price index. Recall that in the paper we deflate the values by the aggregate price index, under the assumption that state fixed effects, and in some models state trends as well, control for permanent and slowly trending differences across states, including cost-of-living differences.

	Baseline estimates [Table 4]				State-price adjusted estimates			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	A. Daughter's outcome variable: AFDC/TANF							
Mother's participation	0.145	0.268	0.240	0.425	0.144	0.259	0.239	0.418
* *	(0.013)	(0.049)	(0.021)	(0.085)	(0.013)	(0.043)	(0.021)	(0.077)
After welfare reform	0.038	0.069	0.053	0.086	0.038	0.065	0.052	0.084
	(0.009)	(0.021)	(0.017)	(0.034)	(0.009)	(0.019)	(0.016)	(0.032)
Mother's participation ×	-0.100	-0.183	-0.135	-0.218	-0.100	-0.173	-0.135	-0.212
after welfare reform	(0.015)	(0.046)	(0.030)	(0.083)	(0.015)	(0.043)	(0.030)	(0.078)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Misclassification correction	No	No	Yes	Yes	No	No	Yes	Yes
Weak IV test statistic		23.157		21.969		22.921		21.763
p-value		0.000		0.000		0.000		0.000
Hansen J statistic		1.315		1.384		1.366		1.001
p-value		0.518		0.500		0.505		0.606
Percent change in levels	-69%	-68%	-57%	-51%	-69%	-67%	-56%	-51%
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068
		B. D	aughter's ou	itcome varia	ble: AFDC/	TANF, SNA	.P, SSI	
Mother's participation	0.226	0.299	0.296	0.369	0.225	0.286	0.295	0.356
	(0.018)	(0.073)	(0.024)	(0.100)	(0.018)	(0.071)	(0.024)	(0.097)
After welfare reform	0.002	-0.014	-0.013	-0.050	0.001	-0.018	-0.013	-0.053
	(0.013)	(0.028)	(0.020)	(0.039)	(0.013)	(0.028)	(0.020)	(0.039)
Mother's participation ×	-0.041	0.040	-0.017	0.152	-0.041	0.052	-0.017	0.159
after welfare reform	(0.017)	(0.074)	(0.025)	(0.105)	(0.017)	(0.073)	(0.025)	(0.104)
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes
Misclassification correction	No	No	Yes	Yes	No	No	Yes	Yes
Weak IV test statistic		23.157		22.273		22.921		22.016
p-value		0.000		0.000		0.000		0.000
Hansen J statistic		2.050		2.271		3.901		4.186
p-value		0.359		0.321		0.142		0.123
Percent change in levels	-18%	13%	-6%	41%	-18%	18%	-6%	45%
p-value	0.011	0.621	0.480	0.266	0.012	0.534	0.498	0.251
Number of daughters	2961	2961	2961	2961	2961	2961	2961	2961
Observations	56068	56068	56068	56068	56068	56068	56068	56068

TABLE S.10-1. INTERGENERATIONAL TRANSMISSION OF MOTHER'S AFDC/TANF PARTICIPATION WITH BENEFIT STANDARDS THAT ARE PRICE-ADJUSTED BY STATE AND YEAR

*Notes:* Robust standard errors with state clustering are shown in parentheses. All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, daughter's state and year effects, and mother's modal state effects. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. The misclassification correction uses reporting rates in the PSID to address potential misreporting for the daughter's welfare participation (see Section S.2 for details). Daughters' PSID core longitudinal weights are used in estimation.

In Table S.10-1 we include price-adjustments for AFDC/TANF benefits that account for both inflation over time as well as state-level variation in purchasing power (for daughters' control variables and for mothers' instrumental variables). The price indices are based on a panel from 1982 to 2012 from Carrillo, Early, and Olsen (2014), and we use a second data source to supplement our state-year price indices for 1967-1981 from Berry, Fording, and Hanson (2000). The OLS results are nearly identical to our main results in Table 4 of the manuscript, and the IV results are as well. In short, our baseline estimates are robust to geographic price differences at the state level.

Next, we identify the top and bottom states by real state-year price-adjusted maximum benefit generosity, both in the full time period and within welfare reform regimes. Our definition of less/more generous is based on the lower/upper half of states by real benefits, and further, low-/high-benefit states denotes the lower/upper third of real benefits. That is, a low-benefit state is one with average real benefits in the lower third of the distribution of all states. Figure S.10-1 shows states' benefit generosity before and after reform, which also shows that the definition of generosity is consistent across regime timing.



FIGURE S.10-1. STATES ORDERED BY AFDC/TANF BENEFIT GENEROSITY Adjusted for State and Year Price Variation

States (including D.C.), rank-ordered

*Notes:* States with average real benefits below/above the median are considered less/more generous, and states in the lower tercile are considered low-benefit while states in the upper tercile are considered high-benefit.

States that are historically less generous in terms of state-year-adjusted benefit values are predominantly located in the South, which is not the case with our measure of welfare reform strictness based on Grogger and Karoly (2005). Figure S.10-2 illustrates the geographic variation for each type.

While the 12 strict reform states are relatively dispersed geographically, states with less generous real benefits include all Southern states except Virginia. The majority of Mountain-West states are also less generous, and the Northeastern and Pacific-West states are all categorized as more generous.



FIGURE S.10-2. GEOGRAPHIC VARIATION BY WELFARE REFORM STRICTNESS AND BENEFIT GENEROSITY

A. Stricter reform states

B. Less generous benefit states



*Notes:* States are classified as implementing strict reforms according to the Grogger and Karoly (2005) definition, and benefit generosity is determined by average benefit standards over the full sample period (adjusted for state and year price variation) above or below the median. In panel B, the darkened states are all in the lower half of states by generosity, and the darkest ones are in the lower third of low-benefit states.

To complement the state variation shown in Figure 4 of the manuscript, we depict benefit generosity and reform strictness over time in Figure S.10-3. The figure shows year-to-year percent changes in real AFDC/TANF benefit standards categorized by state strictness or generosity. The key takeaway from this figure is that the states implementing larger positive or negative changes over time are no more represented by either reform strictness or benefit generosity.



FIGURE S.10-3. YEAR-TO-YEAR PERCENT CHANGE IN REAL (2012 DOLLARS) STATE-LEVEL AFDC/TANF BENEFIT STANDARD FOR A FAMILY OF FOUR, BY REFORM STRICTNESS AND BENEFIT GENEROSITY

*Notes:* States are classified as implementing strict reforms according to the Grogger and Karoly (2005) definition, and benefit generosity is determined by average benefit standards over the full sample period (adjusted for state and year price variation) above or below the median.

Lastly, we focus on possible maternal selection effects on the intergenerational transmission estimates. The largest average reduction in benefits after reform occurred in the high-benefit states (see Figure S.10-1). It is possible then that this change could have an effect on the composition of mothers in those states. For instance, a smaller proportion of relatively high-income mothers are expected to participate in the period after reform than in the period before reform. To examine the issue of possible selection of mothers, we estimate the model in Table 4 by considering mother-daughter pairs in highbenefit states (i.e., states associated with the largest possible changes in maternal composition by income status) and low-benefit states (i.e., states associated with the smallest changes).

Daughter's outcome:	AFDC/TANF				AFDC/TANF, SNAP, SSI				
State AFDC/TANF generosity:	Low		High		Low		High		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
Mother's participation	0.153	0.264	0.183	0.391	0.283	0.387	0.207	0.469	
	(0.019)	(0.042)	(0.045)	(0.196)	(0.026)	(0.056)	(0.054)	(0.194)	
After welfare reform	0.065	0.112	0.007	0.020	-0.033	-0.007	-0.011	-0.013	
	(0.017)	(0.038)	(0.016)	(0.038)	(0.037)	(0.060)	(0.024)	(0.042)	
Mother's participation ×	-0.109	-0.199	-0.101	-0.208	-0.006	-0.030	-0.039	-0.084	
after welfare reform	(0.022)	(0.063)	(0.047)	(0.162)	(0.030)	(0.083)	(0.028)	(0.177)	
Instrumental variables	No	Yes	No	Yes	No	Yes	No	Yes	
Weak IV test statistic		12.336		8.080		12.336		8.080	
p-value		0.006		0.044		0.006		0.044	
Hansen J statistic		3.546		2.439		2.032		1.685	
p-value		0.170		0.295		0.362		0.431	
Percent change in levels	-71%	-75%	-55%	-53%	-2%	-8%	-19%	-18%	
p-value	0.000	0.000	0.000	0.002	0.830	0.714	0.050	0.565	
Number of daughters	1287	1287	701	701	1287	1287	701	701	
Observations	24441	24441	13679	13679	24441	24441	13679	13679	

TABLE S.10-2. INTERGENERATIONAL TRANSMISSION OF MOTHER'S AFDC/TANF PARTICIPATION BY STATE BENEFIT GENEROSITY

*Notes:* Robust standard errors with state clustering are shown in parentheses. State benefit generosity is determined by average benefit standards over the full sample period (adjusted for state and year price variation) in the lower or upper third of states and DC. All models control for daughter's age, age squared, mother's average age during potential welfare observation years, mother's average age squared, the daughter's state AFDC/TANF benefit standard, EITC federal/state maximum credit, state-level SPM poverty rate, AFDC/TANF recipiency rate, unemployment rate, daughter's state and year effects, and mother's modal state effects. Instrumental variables include average and maximum measures of the mother's AFDC/TANF benefit standard when the daughter is aged 12-18, and interactions of each with an indicator for welfare reform. The weak IV test statistic is a Kleibergen-Paap (2006) rank statistic. Daughters' PSID core longitudinal weights are used in estimation.

Recall that all variants of the model considered in the manuscript include mother's state effects, which controls for permanent state differences including differences between high- and low-benefit states. However, maternal selection is likely to be time varying, as discussed in the previous paragraph. Using Table S.10-2, we evaluate the robustness of our findings to possible changes in maternal composition that may correspond to state benefit generosity. The table shows higher intergenerational dependence in high-benefit states than in low-benefit states, as expected. However, the intergenerational estimates for AFDC/TANF fall by similar amounts across specifications at around 20 percentage points lower daughter participation among those whose mothers received cash assistance. The percent changes after reform are 75 percent in low-benefit states and 53 percent in high-benefit states, which means that high-benefit states have higher dependence still after reform.

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