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ADULT WOMEN

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Effects of Welfare Reform on Educational Acquisition of Young Adult Women
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ABSTRACT

Education beyond traditional ages for schooling is an important source of human capital accumulation among adult women. Welfare reform, which began in the early 1990s and culminated in the passage of the Personal Responsibility and Work Opportunity Reconciliation Act in 1996, has promoted work rather than educational acquisition for this group. Exploiting variation in welfare reform across states and over time and using relevant comparison groups, we undertake a comprehensive study of the effects of welfare reform on adult women's human capital acquisition. We first estimate effects of welfare reform on high school dropout of teenage girls, both to improve on past research on this issue and to explore compositional changes that may be relevant for our primary analyses of the effects of welfare reform on the educational acquisition of adult women. We conduct numerous specification checks and explore the mediating role of work. We find robust and convincing evidence that welfare reform has significantly decreased the probability of both high school and college attendance among young adult women—by 20-25 percent. This result indicates that the gains from welfare reform in terms of increases in employment and reductions in caseloads have come at a cost in terms of lower educational attainment among adult women at risk for relying on welfare.

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Introduction

A major goal of the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996 was to move recipients and potential recipients of cash assistance into the labor force. The legislation ended entitlement to welfare benefits under Aid to Families with Dependent Children (AFDC) and replaced AFDC with Temporary Assistance for Needy Families (TANF) block grants to states. Among the features of TANF and many pre-PRWORA state waiver programs,¹ which together constitute “welfare reform,” were time limits on the receipt of welfare benefits, work requirements as a condition of receiving welfare, and sanctions for non-compliance with program rules. PRWORA also strengthened child support enforcement and made it easier for married and cohabiting couples to qualify for welfare benefits. The PRWORA legislation granted considerable discretion to states in establishing welfare eligibility and program rules. As a result, there is substantial state policy variation within the broad national regime of time-limited cash assistance for which work is required.

In terms of reducing caseloads, welfare reform (including the pre-PRWORA waivers) has been successful; welfare rolls have declined by over 50% since their peak in 1994 and at least one-third of the caseload decline can be explained by welfare reform (see Grogger & Karoly 2005). At the same time, employment rates of low-skilled mothers rose dramatically (Ziliak 2006), and at least some of that increase was a result of welfare reform (Schoeni & Blank 2000). The effects on family structure are less dramatic. A large literature on the effects of welfare reform on marriage and a smaller one on cohabitation reveal mixed findings, and the literature on non-marital childbearing and female headship indicates slightly negative but inconsistent effects

¹ Although welfare reform is often dated to the landmark 1996 PRWORA legislation, reforms actually started taking place in the early 1990s when the Clinton Administration greatly expanded the use and scope of “welfare waivers” to allow states to carry out experimental or pilot changes to their AFDC programs, with random assignment required for evaluation. Waivers were approved in 43 states, ranging from modest demonstration projects to broad-based statewide changes, and constituted the first phase of welfare reform. Many policies and features of state waivers were later incorporated into PRWORA.

of welfare reform (Blank 2002, 2007; Moffitt 1992, 1995, 1998; Grogger & Karoly 2005; Gennetian & Knox 2003; Peters, Plotnick & Jeong 2003; Ratcliffe et al. 2002).

The “work first” approach under welfare reform de-emphasized education and training and thereby represented a departure from previous approaches that encouraged human capital formation as a strategy for achieving self-sufficiency. The work first paradigm may have emerged because few studies indicated that the education-based strategy was successful in advancing self-sufficiency. The work first approach is targeted to adult mothers, for whom education and training generally do not count as required work activities. In contrast, minor mothers are still subject to the human capital approach. In particular, PRWORA requires minor mothers to attend high school or training in order to receive TANF and does not impose time limits or work requirements if they are full-time students.

The vast majority of mothers on welfare are adults (USDHHS 2008). Almost 30% of adults in the U.S. engaged in some form of work-related education (broadly defined to include courses at the workplace or courses and degree programs in other locations) in 2004-2005, and those in their childbearing years were more likely than older adults to engage in such activities (O’Donnell 2006). In 2000, 7.7% of females enrolled in grades 9-12 were age 21 or older (U.S. Census Bureau 2008a); in 2005, 80% of females taking vocational courses were age 25 years or older (U.S. Census Bureau 2008b); and in 2006, 40% of all female college students were age 25 years or older (U.S. Census Bureau 2008c). Thus, educational activities are not uncommon for working-age females. Despite being a seemingly important source of human capital accumulation, adult education has not been widely researched by economists.

Relatively few studies have investigated the effects of welfare reform on human capital acquisition, and all but one of those focused on teenage mothers (the group for whom the human capital approach was applied). As far as we know, only one published study has investigated the

effects of welfare reform on human capital acquisition of adult women in the U.S., despite the facts that the vast majority of mothers on welfare are adults, educational acquisition is commonplace among young adult women, economic theory suggests that broad-based work requirements and the de-emphasis on education and training would alter the costs and benefits of pursuing education for this group, and low educational attainment suppresses wages and raises the future incidence of unemployment as well as duration of unemployment spells (e.g., Mincer 1993).

Exploiting variation in welfare reform across states and over time and using relevant comparison groups, we undertake a comprehensive study of the effects of welfare reform on adult women's educational acquisition. We first estimate effects of welfare reform on high school dropout of teenage girls, both to improve on past research on this issue and to explore compositional changes that may be relevant for our primary analyses of the effects of welfare reform on the educational acquisition of adult women. A number of alternative models are estimated as specification checks, and the mediating role of work is explored. The results indicate whether the work first approach targeted to adult mothers has been increasing employment at the possible expense of future earnings and productivity, or whether it is actually accomplishing the goals of the (competing) human capital approach.

Background

Theoretical Framework

We base our analyses on Becker's classic work, *Human Capital* (1975), in which schooling is an investment undertaken if the present value of the future stream of benefits exceeds the present value of the current and future costs. In Equation 1 below, Y^{Ed} represents the benefits of education, which may include not only increased wages, but also greater productivity in the home and increased nonpecuniary benefits in the labor market. Additionally, the extent to

which the individual finds schooling enjoyable (or unpleasant) is factored into the net consumption benefits. Y^{NoEd} denotes the income/benefit stream if the educational activity had not been undertaken. The costs of education, C , include both the opportunity cost of the individual's time and the out-of-pocket expenses of schooling such as tuition, books, transportation, and child care. T is the total number of years the woman will benefit from the investment, and r refers to the discount rate, which incorporates both the market interest rate and individual's rate of time preference. Looking forward, the individual will engage in an educational activity if the net present value (PDV) is positive.

$$(1) \quad PDV = \sum_{t=1}^T \left[(Y_t^{Ed} - Y_t^{NoEd}) - C_t \right] / (1+r)^t$$

This model implies that individuals are more likely to invest in education when they are young, are likely to be successful in school, enjoy schooling, have a low opportunity cost of time, and have a low rate of time preference (i.e., tend not to “live for today”). Welfare reform could affect several of the arguments in Equation 1. For adult women, work requirements may increase the time cost of attending school (in C), which would decrease schooling. However, there are potential opposing effects that could increase schooling: (1) By shortening the length of time a woman can expect to receive welfare and by requiring her to work as a condition of receiving benefits, the length of time (T) for which higher market wages associated with schooling (in Y^{Ed}) are earned will increase. (2) Welfare reform could result in a lower rate of time preference (which would be consistent with “culture of poverty” arguments). (3) Employment may provide access to educational opportunities (e.g., vocational training), decreasing the costs and increasing the benefits of pursuing education.

Empirical Studies

Corman (1983) pointed out decades ago that the human capital literature tended to (incorrectly) assume that individuals attend school as early as possible and that adult education is

an anomaly. Since then, there have been several studies focusing on education of non-traditional aged students. Leigh & Gill (1997) found that the returns to community college education (both degree-granting and vocational programs) are about the same for returning adult students as for traditional-age students. Monks (1997) found that earnings gains are lower for adult than traditional-age students, although the returns could be comparable if costs are lower for the older students. A study by Boudett, Murnane & Willett (2000) is particularly relevant to the issue of welfare reform, as it examines adult education among female high school dropouts and finds that: (1) almost two-thirds of female high school drop-outs receive some form of adult education in the decade following dropping out, and (2) adult education has a positive impact on the earnings of female high school dropouts, but that (3) adult education does not provide enough of an earnings gain to pull this group out of poverty.

Hao & Cherlin (2004), Kaestner, Korenman & O'Neill (2003), Offner (2005), and Koball (2007) all estimated difference-in-difference models to assess the impact of welfare reform on high-school attendance or drop-out among female teens. Offner, using the March Current Population Surveys (CPS) from 1989 to 2001 and comparing female teens in low and higher income families, found that welfare reform resulted in increased high school attendance. The use of income to define target and comparison groups is potentially problematic, however, because welfare reform could have affected income and therefore changed the composition of the target and comparison groups over time. Kaestner and colleagues, using the NLSY to compare teens in 1979 and 1997, found that welfare reform reduces drop-out. Hao and Cherlin, concerned about cohort effects in the Kaestner study, compared older and younger teens (who had different exposure to the legislation) in the 1997 NLSY and found no effect of welfare reform on dropout. Both studies used multiple sets of reasonable target and control groups, but the timing of the NLSY makes it less than ideal to study welfare reform, as it predates most reforms by almost 15

years (1979) or takes place very soon after PRWORA (1997). As a result, the comparison groups either have to be from very different cohorts as in the Kaestner study or from very similar cohorts as in the Hao study, likely “contaminating” the control group. Koball examined two cohorts closer in time, by combining a pre-welfare cohort from the National Education Longitudinal Study and a post-welfare cohort from the NLSY. However, she focused on teen mothers rather than all teenage girls. Her results were consistent with those of Offner and Kaestner et al. in that she found that welfare reform significantly reduced drop-out. Overall, the available evidence suggests that welfare reform has had favorable effects on educational enrollment of teenage girls.

The potential effects of welfare reform on education among adult women have been largely neglected by the research community. The lone (published) exception is a study by Jacobs & Winslow (2003) that examined the effect of welfare receipt and parenthood/marital status on college attendance at two points in time, using two different data sets. First, the authors used data from the 1995 and 2000 March CPS to study young (< 25 year old) female high school graduates. A positive feature of this set of analyses is that they included TANF policies vis-à-vis education. A drawback is a data constraint that allowed the authors to study only young women. Second, they used data from the 1995 and 1999 National Household Education Surveys (NHES) to study female high school graduates of all ages. Drawbacks of the NHES analyses, which were acknowledged by the authors, are a lack of state identifiers in the data and a poorly measured parenthood status variable. Drawbacks of both sets of analyses are the use of widely spaced cohorts (increasing the likelihood that the effects of other changes not related to welfare reform are attributed to welfare reform) and the use of 1995 as the base year (when pre-PRWORA waivers had already been implemented in 19 states).

In the CPS analyses, Jacobs and Winslow did not find changes in the effects of welfare receipt on college attendance between 1995 and 2000 but did find that, holding welfare receipt constant, single mothers were less likely to attend college in 2000 than in 1995. Particularly relevant for our analyses, they found that women living in states that were more supportive of college attendance for welfare recipients were more likely to attend college. The NHES results in this study contradict those from the CPS. In the NHES analyses, the authors found that welfare recipients were significantly less likely to go to college in 1999 than in 1995, but that holding welfare receipt constant, single mothers were more likely to attend college in 1999 than in 1995. While this study provides some insights, it only considers college enrollment and does not present definitive findings on the effects of welfare reform on that outcome. Finally, it does not account for major standards-based reforms in education that occurred during the same time period may have changed the composition of high school graduates. The No Child Left Behind Act of 2001 strengthened a two-decade trend in state implementation of minimum standards for high school graduation. By 2005, almost half of the states implemented “exit exams” for high school students. According to Dee & Jacob (2007) these exams resulted in some students dropping out of high school who would have otherwise received a diploma, while improving the academic performance of other students. A rigorous study of the effects of welfare reform on education must account for these changes.

In sum, there is a dearth of existing work on the effects of welfare reform on adult women’s educational attainment despite strong reasons that there could be effects. Since human capital acquisition for adults is multi-faceted, it is important to not only investigate post-secondary degree programs for high school graduates, but also to consider activities such as adult basic education and high school completion that may not result in a college degree but still

enhance human capital. Finally, relevant trends besides welfare reform must be accounted for when examining the effects of welfare reform on adult educational acquisition.

Data

We use data from the Current Population Survey (CPS), a large-scale nationally representative monthly survey of approximately 57,000 households that is conducted by the Bureau of the Census for the Bureau of Labor Statistics. The CPS is a consistent source of information on employment, demographic factors, educational attainment, family relationships and other characteristics of the civilian non-institutionalized population. The October CPS contains information on current high school enrollment, current college enrollment (full- and part-time), and current enrollment in trade school, General Education Development (GED) preparatory programs, and other educational activities. We use October CPS data from 1992 through 2005 to estimate the effects of welfare reform on high school attendance, college attendance, full time college attendance, and any educational enrollment (high school, college, trade school, General Education Development (GED) preparatory programs, and other educational activities). For analyses of high school dropout, high school enrollment is the relevant outcome. For analyses of adult women's educational acquisition, we focus on current high school attendance and any school attendance (for those with less than a high school degree) and current college attendance and full-time college attendance (for those who graduated high school but not college).

Our research design exploits the substantial variation across states in the timing of the enactment of pre-PRWORA waivers and TANF. We follow the convention in the prior literature with respect to the construction of the key independent variables capturing the shifts in welfare-related policies (reviewed in Blank 2002). The welfare reform measures can be classified into two phases. The first represents federal waivers granted to states to experiment with AFDC rules

prior to PRWORA. Since 1962, the Secretary of Health and Human Services has had the authority to waive federal welfare rules if a state proposed experimental or pilot programs that furthered the goals of AFDC. Some waivers increased the amount of earnings that recipients were allowed to keep while maintaining welfare eligibility; others expanded work requirements to larger groups, established term limits for cash assistance, permitted states to issue sanctions to recipients who failed to meet work requirements, or allowed states to eliminate increases in benefits to families who had additional children while on welfare.

We construct an indicator to reflect the fraction of the year that a given state in time period t had a statewide waiver in place that substantially altered the nature of AFDC with respect to time limits, Job Opportunities and Basic Skills training (JOBS) work exemptions, JOBS sanctions, increased earnings disregards, family caps, or work requirements.² The second welfare reform construct represents the implementation of TANF programs post-PRWORA. Similar to the construction of the indicator for an AFDC waiver, an indicator will reflect the fraction of the year that a given state had implemented TANF in time period t .³

Since the welfare indicators are measured at the state level, we incorporate additional state-specific socioeconomic measures in the analyses to capture time-varying trends within areas. State unemployment rate and per capita personal income are derived from figures provided by the Bureau of Labor Statistics. Welfare caseloads, defined as the total number of welfare recipients in a state, are obtained from the Department of Health and Human Service's Administration for Children and Families Office of Family Assistance.⁴ All models further

² For instance, the indicator for Maryland, which enacted a major waiver on March 1, 1996, is coded as 0.83 for 1996 to reflect the ten months that the waiver was in place for that year. 29 states enacted such waivers, across various months, between 1992 and 1996.

³ States enacted TANF differentially throughout 1996 and 1997, with California being the last state to implement on January, 1, 1998. Information on state implementation of major AFDC waivers and TANF is obtained from the Assistant Secretary for Planning and Evaluation at the U.S. Department of Health and Human Services: http://aspe.hhs.gov/HSP/Waiver-Policies99/policy_CEA.htm.

⁴ Specifically, the data can be found at: <http://www.acf.hhs.gov/programs/ofa/caseload/caseloadindex.htm>.

include indicators for whether a given state in a given year had a strict high school exit exam (testing material at or above the 9th grade level) or a less strict exam (below the 9th grade level), with the reference category being no high school exit exam. For women who completed high school, we use the existence of the exam during their eighteenth year. For those who did not complete high school, we use the contemporaneous existence of the exam in their state. These data are derived from the Appendix provided by Dee & Jacob (2007). Information on the maximum state-mandated age for compulsory school attendance, which is used to restrict the sample for the models of high school dropout, is obtained from the Education Commission of the States and the National Center for Education Statistics.⁵

Methods

The primary aim of this study is to evaluate the impact of welfare reform on adult women's educational attainment. We employ a quasi-experimental research design – akin to a pre- and post-comparison with treatment and control groups – in conjunction with multivariate regression methods. Under certain conditions, described below, this research design will yield causal estimates of the effects of welfare reform on our outcomes of interest. We conduct various specification and robustness checks to assess the validity of the identification assumptions underlying this methodology.

Consider the following regression model which links changes in educational outcomes to changes in the welfare caseload:

$$(2) \quad E_{ist} = \tilde{\alpha}_1 + \gamma(Caseload_{st}) + X_{ist}\tilde{\beta} + Z_{st}\tilde{\delta} + State_s\tilde{\lambda} + Year_t\tilde{\varphi} + (State_s * t)\tilde{\phi} + \mu_{ist}$$

Equation 2 posits that the educational outcome (E), for the i^{th} woman residing in state s during year t , is a function of the welfare caseload in that state, a vector of individual characteristics (X)

⁵ Specifically, the data can be found from the Education Commission of the States' Clearinghouse Notes, "Compulsory School Age Requirements," March 1992, March 1994, March 1997, and 2005, and from http://nces.ed.gov/programs/digest/d04/tables/dt04_148.asp

such as age, race, ethnicity, highest grade completed, and urban residence, a vector of time-varying state characteristics (Z) such as economic conditions and educational policies, state fixed effects ($State_s$), year fixed effects ($Year_t$), and state-specific time trends ($State_s * t$). The parameter μ represents an individual classical error term.

One problem with Equation 2 is the implicit assumption that changes in welfare caseloads are due solely to welfare policy. In fact, research suggests that much of the drop in caseloads was not policy-related, especially prior to TANF implementation in 1996. While the welfare caseload fell dramatically in the 1990s, only part of the decline (≤ 50 percent) was due to welfare reform legislation (Blank 2002). Changes in economic conditions and other factors also played an important role. This can be summarized in the following equation.

$$(3) \quad Caseload_{st} = \hat{\alpha}_1 + \rho_1(AFDCWaiver_{st}) + \rho_2(TANF_{st}) + Z_{st}\hat{\delta} + State_s\hat{\lambda} + Year_t\hat{\phi} + (State_s * t)\hat{\phi} + \psi_{ist}$$

Thus, welfare caseloads depend on state and federal welfare policies, measured here by indicators reflecting the fraction of the year that a given state has enacted a major *AFDC Waiver* and *TANF*, time-varying state characteristics (Z) such as economic conditions and other policy changes, as well as time-invariant unobserved state factors ($State$) and unobserved national and state trends. Substituting Equation 3 into Equation 2 results in the following estimable model, which directly links changes in welfare policies to changes in educational outcomes.

$$(4) \quad E_{ist} = \alpha_1 + \pi_1(AFDCWaiver_{st}) + \pi_2(TANF_{st}) + X_{ist}\beta + Z_{st}\delta + State_s\lambda + Year_t\phi + (State_s * t)\phi + \varepsilon_{ist}$$

There are several benefits to estimating Equation 4. First, it bypasses having to estimate the structural model described by Equation 3, which has been problematic in the literature. Estimating Equation 2 is also problematic since it does not separate out the changes in welfare caseloads due to changes in policies versus other factors. Equation 4 is therefore more policy-relevant as it represents the reduced-form model directly linking welfare policy measures to key

outcomes. Thus, it provides direct estimates of the impact of welfare reform policies (π_1 and π_2). Equation 4 further addresses a major identification problem that is present in any policy analysis – that is, disentangling the effects of policy shifts from other factors that may also vary over time. In addition to individual characteristics (X), the specification controls for a vector of state-varying factors (Z) such as state-level economic conditions (state personal income, unemployment rate) and other concurrent policy shifts (high-school exit exams). A full set of state and year fixed effects will control for any remaining unobserved time-invariant state-level differences and also overall time trends; the state-trend interactions control for unobserved systematically-varying state-specific factors.

Linking welfare caseloads to welfare policy underscores the point that the population of interest, that which is affected by changes in caseloads, is *all* women at risk of being on public assistance, and not just current or former program participants (Kaestner & Tarlov 2006). Changes in the welfare caseloads result from changes in exit rates as well as entry rates. This addresses some of the limitations from leavers' studies, which focus solely on individuals who have left welfare. These studies find it difficult to differentiate individuals who leave public assistance voluntarily from those who left because of welfare reform policies. They also do not consider the experiences of individuals who have been diverted from public assistance as a result of policy shifts. *Potential* welfare recipients are shown to behave strategically in their use of welfare benefits when faced with time-limits and other regulatory constraints (DeLeire et al. 2006; Grogger 2004). Thus, in order to identify the population effect of welfare reform on key outcomes, the appropriate sample is *all* women at risk of being on public assistance. Traditionally, the welfare caseload has consisted primarily of low-educated, unmarried mothers. We can therefore estimate Equation 4 for this at-risk population group, which we refer to as the target group. In this difference-in-differences (DD) framework, the impact of welfare reform is

identified using the substantial variation in the timing and incidence of welfare reform across states.

While the specification in Equation 4 includes interactions between the state indicators and linear time trends to control for unobserved state-specific factors, the possibility of omitted variables remains. This problem can be addressed by also considering a comparison group -- individuals who are similar in many ways to the target group but are unlikely to participate in public assistance programs and therefore not likely to be affected by welfare reform policies. The assumption underlying this methodology is that in the absence of welfare reform changes, outcomes would be similar across the target and comparison groups. Equation 4 can also be estimated for the comparison group, as follows:

$$(5) \quad E_{ist}^* = \alpha_1^* + \pi_1^*(AFDCWaiver_{st}) + \pi_2^*(TANF_{st}) + X_{ist}\beta^* + Z_{st}\delta^* + State_s\lambda^* + Year_t\phi^* + (State_s * t)\phi^* + v_{ist}$$

Since the comparison group is not at risk of being on public assistance, outcomes for these individuals should not be affected by changes in welfare policies. Thus, the coefficients (π_1^* and π_2^*) on *AFDC Waiver* and *TANF* in Equation 5 should be zero. If these parameters are not zero, this provides evidence that there are omitted factors associated with both educational outcomes and welfare policies. We can therefore subtract these estimates from the corresponding estimates in Equation 4 in order to derive the impacts of welfare reform on educational outcomes, accounting for the omitted factors. This becomes a difference-in-difference-in-differences (DDD) methodology, which is standard in the economics literature on evaluating the effects of welfare reform and other state policies (e.g., Kaestner & Tarlov 2006; Bitler, Gelbach & Hoynes 2005; Blank 2002). The impact of welfare reform is identified using the substantial variation in the timing and incidence of welfare reform across different states over time, comparing changes in outcomes between target and comparison groups. The third 'D' in the

DDD framework thus exploits a “control group,” which looks highly similar to the target group, as a counterfactual comparison.

The DDD effects can also be obtained directly, by combining Equations 4 and 5 into a single specification estimated for the pooled sample of the target and comparison groups.

$$(6) \quad E_{ist} = \alpha' + (\alpha_1 - \alpha_1^*)Target_i + (\pi_1 - \pi_1^*)(AFDCWaiver_{st} * Target_i) + (\pi_2 - \pi_2^*)(TANF_{st} * Target_i) + \pi_1^*(AFDCWaiver_{st}) + \pi_2^*(TANF_{st}) + X_{ist}\beta' + Z_{st}\delta' + State_s\lambda' + Year_t\phi' + (State_s * t)\phi' + \eta_{ist}$$

Equation 6 represents the baseline DDD specification that will be estimated to identify the effects of welfare reform on key educational outcomes. In the above equation, *Target* represents a dichotomous indicator equal to one if the individual is in the target group (population at risk of being on welfare) and zero if the individual is in the comparison group (population not at risk of being on welfare). The DDD estimates of the effects of welfare reform are the coefficients of the interaction terms between the policy measures (*AFDC Waiver* and *TANF*) and the *Target* group indicator.

The only assumption necessary for the DDD effect to represent an unbiased estimate is that in the absence of welfare reform, unobserved state-varying factors would affect the target and comparison groups similarly. If this assumption is valid, then π_1^* and π_2^* will capture the impact of the unmeasured factors that are correlated with welfare reform. We implement several checks to assess the validity of the comparison groups. Ideally, the target and comparison groups would look similar prior to the policy shift, after controlling for all observed individual and state-level characteristics. The adjusted (conditional) difference in the level of educational outcomes for the two groups prior to welfare reform is given by the coefficient $(\alpha_1 - \alpha_1^*)$ of the *Target* indicator in Equation 6. Checking the magnitude and statistical significance of this coefficient serves as a test of the similarity between the target and comparison groups prior to the policy shift. By definition, the comparison group should also not be affected by the welfare policies.

Thus, the coefficients of *AFDC Waiver* and *TANF*, which reflect the impact of welfare reform on individuals who are at low-risk of being on welfare, should also be relatively small in magnitude and insignificant.

The choice of target and comparison groups is integral to a valid implementation of the DDD methodology. Following the literature, we employ target and comparison groups that are conventionally defined. Identifying the target group for our analyses—individuals who are at risk of relying on public assistance—is relatively straightforward. As indicated earlier, welfare reform is likely to have its strongest behavioral impacts on unmarried mothers with low levels of education and their children. The exact specifications of the target and comparison groups that we use for various educational outcomes are described below.

Our analyses consist of several steps. First, we consider how welfare reform affected high school dropout among teenage girls, paying careful attention to the identification of an appropriate comparison group. We define the target group as females between the ages of 15 and 20 (19 in some specifications) living in low-educated (less than college) unmarried-parent households. The comparison group consists of males of a similar age group living in low-educated unmarried-parent households.⁶ While there is some literature on how welfare reform has affected teenage high-school dropout rates, previous studies have used potentially problematic target groups (Offner 2007) or comparison cohorts that were very widely spaced (Kaestner et al. 2003), very narrowly spaced (Hao & Cherlin 2004), or excluded potential recipients (Koball 2007).

Next, we address the primary research question of this paper: What are the effects of welfare reform on adult women's educational acquisition? To investigate how welfare reform

⁶ For all sample restrictions, unmarried is defined as widowed, divorced, separated, never married, or other non-married; for married, the spouse can be present or absent.

has affected adult women's high school attendance, we compare unmarried mothers ages 21 to 49 years with less than a high school education (target group) to unmarried women in the same age and education groups but have no children (comparison group). We focus on women ages 21 and older since, as discussed earlier, the incentives to attend and finish high school are very different for this group than for younger women.⁷ To investigate how welfare reform has affected college attendance among adult women who are at risk of being on welfare, we compare unmarried mothers ages 24-49 years with less than a college education (target group) to unmarried women in the same age range and educational group but have no children (comparison group).⁸

The third step of the analysis involves an extensive set of model specification checks and an exploration of potential mechanisms. Before undertaking any of the analyses, however, it was necessary to establish the validity of our comparison groups.

If the comparison groups are valid counterfactuals, then they should look very similar to the relevant target groups with respect to both levels and trends prior to the policy shift. Table 1 shows the mean educational outcomes for the various target and comparison groups prior to welfare reform. For analyses of teen dropout, in addition to the baseline periods defined below for adult women, we also examine years prior to the enactment of TANF (1992 to 1995), since welfare policy to discourage teen dropout was an explicit feature of PRWORA but not of most waivers. For analyses of adult women, we captured pre-reform observations two separate ways: (1) Focusing on the first year of the sample period, 1992, which pre-dated welfare reform,⁹ and

⁷ We specifically exclude women who are 19 and 20 years of age from this analysis of older adult women, since some of those young adults may have repeated a grade or enrolled in school at a later age and therefore still be in the process of completing high school. We modify the samples to exclude and include 20 year old women to gauge the sensitivity of our results to the age cut-off.

⁸ We omit women between the ages of 21-23 when analyzing college attendance, as they may still be in college and erroneously counted as low-educated women at-risk of being on welfare. We explored alternative age restrictions before inferences were drawn.

⁹ Only three states implemented major AFDC waivers in 1992, and they all did so relatively late in the year: CA in December, and MI and NJ in October. We exclude these three states from the reported 1992 means.

(2) restricting the sample to state-year cells in which neither AFDC waivers nor TANF had yet been implemented. Panel A compares high school dropout rates for females and males ages 15-20 (and 15-19) living in unmarried-parent low-educated households. Prior to the implementation of major waivers or TANF, high-school dropout rates were virtually identical between males and females in these households, with no statistically significant differences.

Panel B presents means for high-school and college attendance in 1992 for the relevant target and comparison groups. Differences in the prevalence of current high school attendance and full-time college attendance are insignificant between the target and comparison samples. While the difference in current college attendance is statistically significant at the 10 percent level, the magnitude is relatively small. As expected, unmarried women with no children are slightly more likely (about one percentage point) than unmarried mothers of the same age and education to attend college. This small observed difference in the unconditional means is reduced to zero and becomes insignificant after adjusting for observed covariates. Panel B also presents the means for any school attendance (high school or college) for the relevant target and comparison groups. The small, statistically significant, difference is also eliminated when adjusting for observed covariates. Panel C documents the group means using the alternative definition of baseline: all state/year cells prior to the implementation of AFDC waivers or TANF. The results are similar to those reported for 1992.

Figure 1 further validates the counterfactual by documenting very similar *trends* within both the target and comparison groups in the baseline periods. Figure 1a reassuringly shows that for each of the years prior to TANF, both males and females had similar high school dropout rates, as well as changes in those rates from year to year. Figure 1b suggests the same for high school and college attendance between unmarried mothers and unmarried women with no children. Similarities between the groups in terms of both *levels* and *trends* in the educational

outcomes, even before any adjustment for observed covariates, add a note of confidence to the validity of the assumptions underlying our methodology.

Results

Effects of welfare reform on high school dropout among young women

Table 2 presents estimates from the DDD specification, corresponding to Equation 6, with respect to dropping out of high school. The sample is restricted to individuals who were above the maximum state-mandated age for compulsory school attendance in a given year.¹⁰ Specification 1 indicates that TANF implementation reduced the probability of dropping out of high school by about 2.4 percentage points (9 % relative to the baseline mean for the target group) among females ages 15-20 living in low-educated unmarried-parent households. The effect is robust to controlling for state-specific trends (specification 2), lagged measures of the state's economy (specification 3), and lagged measures of the state's welfare caseload (specification 4).

The results indicate that, in contrast to TANF, state AFDC waivers had no significant effect on high school dropout. This is empirically validating since the AFDC waivers generally did not shift incentives with regards to schooling. This is not the case for PRWORA, which prohibits states from spending TANF funds on minor, unmarried custodial parents who do not live with their parents or in another adult supervised setting, or are not participating in high school or other equivalent training programs. In addition, the new regime may lead young women from disadvantaged families, who have traditionally been at risk for welfare receipt, to continue with their schooling in order to reduce their risk of requiring cash assistance in the future (Kaestner, Korenman & O'Neill 2003). Since the direct schooling-incentives embedded in TANF specifically target unmarried minor mothers, and unmarried low-educated women have

¹⁰ The legal dropout age ranged from 14 to 18 between 1992 and 2005 and was not constant within states over this period. Nine states (CA, CT, IN, KS, LA, MN, MS, NE, and NV) and DC raised the maximum school attendance age over the sample period.

also had the highest risk of receiving public assistance, we may expect that the marginal effect of TANF on high school dropout would be larger in magnitude among unmarried young women. The estimates in specification 5, which excludes married women from the sample, confirm this. Among young unmarried women from low-SES households, welfare reform reduced the probability of dropping out of high school by about 3.2 percentage points (about 13 % relative to the baseline mean for the target group).

The final column presents estimates for the sample of individuals ages 15 through 19, and indicates that the marginal effect of TANF increases in magnitude relative to the sample that includes women 20 years of age. This may be because of the differential schooling incentives of welfare reform for younger versus older females. For a young adult woman with a low level of education, there are potentially two competing effects at play. On the one hand, the incentives to stay in high school when young may raise the probability of continuing and finishing school even after young women cross the threshold of majority age. Young women may view their future prospects differently and see that there is a lower return to not graduating from high school in the post-reform period. On the other hand, being subjected to work requirements in order to receive welfare creates a strong incentive for young adult women to substitute work for schooling. Thus, as the minor transitions into adulthood, the incentives to remain in school are supplanted by incentives to work in order to continue receiving or bank welfare benefits.

The validity of the maintained counterfactual assumption underlying the DDD analysis can be assessed by examining the coefficient of the *Target* indicator in the multivariate model. The fact that it is statistically insignificant, and relatively small in magnitude in all specifications, suggests that the target and control groups were similar prior to the policy shift conditional on observed covariates. This finding mirrors the figures reported in Table 1, which showed that the unconditional differences between the two groups were also small and insignificant. Further

validation is provided by examining the marginal effects of the policy measures (*AFDC Waiver* and *TANF*). Their insignificance suggests that welfare reform did not have any discernible effect on outcomes for the comparison group, which is reassuring since the comparison groups were defined to be similar to the target groups but unlikely to be affected by the policy.

Overall, we find that welfare reform, specifically TANF, reduced female teen dropout by between 9 and 13 percent. This range is very similar to the estimates in the Offner (2007) study, which used a potentially problematic target group based on income, but lower than those in the Kaestner, Korenman & O’Neill (2003) study, which used less problematic target groups but compared two cohorts very widely spaced over time.

Effects of welfare reform on educational enrollment among adult women

Table 3 presents our main estimates of the impact of welfare reform on adult women’s educational acquisition, and Tables 4 through 8 present estimates from alternative model specifications. The results from specification 1 in Table 3 suggest that, among unmarried low-educated mothers between the ages of 21 and 49, TANF significantly reduced the probability of attending high school by 1.1 percentage points. The effect magnitude for any school attendance (which, in addition to high school, includes trade school, GED preparatory programs, training and other school programs) is slightly smaller at 0.9 percentage point (25 % relative to the target group’s baseline mean), though it is imprecisely estimated. The small increase in the standard error makes the point estimate statistically insignificant. The results are not sensitive to controlling for state-specific linear trends (specifications 2 and 4). Welfare reform has also had an adverse effect on college enrollment among high-school educated unmarried mothers (ages 24-49).¹¹ States that implemented major waivers to AFDC witnessed a two percentage points (22 % relative baseline target group mean) decrease in the probability of current college attendance,

¹¹ The results are robust to alternative upper and lower age cut-offs, up to +/- one year for the lower age cut-off and up to +/- 4 years for the upper age cut-off.

on average, relative to states that did not introduce welfare experiments into their AFDC programs. There is a small adverse effect of TANF on college attendance as well, though this is imprecisely estimated. The next set of specifications considers full-time college attendance (with the reference category being not enrolled in college at all). Full-time college attendance, being a time-intensive pursuit, would be especially responsive to time and work constraints imposed by welfare reform. Estimates suggest that AFDC waivers and TANF reduced full-time college enrollment by about 1.1 percentage points (22 % relative to the baseline mean) and about 0.6 percentage point (13 %), respectively, among low-educated unmarried mothers.

The estimates from Tables 2 and 3 underscore the differential schooling incentives embedded in the welfare reform policies. The results indicate that welfare reform has significantly increased the probability of staying in high school among teen mothers, by 9-13 percent, while it has significantly decreased the probability of both high school and college attendance among adult women, by 20-25 percent (marginal effects evaluated at the baseline means for the target group).

Auxiliary analyses

We conducted an extensive set of supplemental analyses to explore potential issues of compositional selection (Table 4) and policy endogeneity (Tables 5 and 6), to explore the mechanisms underlying our estimated effects (Tables 7 and 8), and to account for potential lagged effects of welfare reform (results not shown in tables).

Compositional Selection

When the target and comparison groups are defined according to characteristics, such as education, parental status, and marital status, which may themselves be affected by welfare reform, potential bias due to compositional selection is a concern. Selection bias with respect to parental and marital status is unlikely since prior research has found weak to no effects of

welfare reform on those as outcomes. However, there may be selective composition with respect to classifying an individual as low- or high-educated if educational attainment is affected by shifts in welfare policies, which is the key question addressed in this study. The results from Table 2 suggest that welfare reform has increased high school enrollment among teens. In this case, an analysis of college enrollment among low-educated (high school, but not college, graduates) unmarried mothers may impart a positive bias to the estimated effect of welfare reform on college enrollment due to the selection of women whose high school attainment was positively impacted by the reform.

We address the sensitivity of the estimates to selective sample composition by conducting two specification checks. In specifications 1-4 of Table 4, an alternate sample is utilized to bypass selection by limiting the analysis to women whose high school attainment was not affected by TANF or early state experimentation with welfare reforms. Specifically, the sample is restricted to individuals who are at least 21 years of age in the year their state implemented an AFDC waiver or TANF, whichever came first. The coefficient magnitudes decline slightly by about 5-8 % (as expected), but the conclusions are not materially affected; states that implemented major waivers to AFDC witnessed a 21 percent decline in the probability of current college attendance and full-time college attendance. The final two specifications in Table 4 integrate and broaden the separate analyses for high school attendance (among less than high school educated adult women) and college attendance (among adult women who are high school, but not college, graduates). These models examine enrollment in any type of education (high school, college, or other training programs) among low-educated women, defined broadly as those with less than a college education. This broader definition of low-educated women, based only on college graduation, alleviates selection since the reform measures have affected the

probability of completing high school (as shown in Table 2).¹² While the models do not separately estimate the effect on high school and college attendance, the relative magnitudes are robust; AFDC waivers reduced school enrollment by a statistically significant 1.8 percentage points among low-educated adult women with children, which translates into a relative 23 percent decline (evaluated at the baseline target group mean). These alternate specifications suggest that overall the results are not sensitive to selective sample composition.¹³

Policy Endogeneity

The DDD research design is a quasi-experimental setup that exploits the natural experiments implicit in the timing of state implementation of welfare reform. While 29 states had implemented major AFDC waivers prior to TANF implementation, it is possible that the specific timing of the implementation may be dependent on the state's economic conditions and welfare history. For instance, Blank (2002) notes that the rapid caseload decline after 1994 was preceded by a strong increase in caseloads in the early 1990s. Part of the earlier increase may be a result of the 1990-1991 recession. Thus, state experimentation with welfare reform through waivers may have been related to prior increases in the caseload and prior economic conditions. This suggests that there may be lagged unobservable time-varying state factors related to the state's economy and its welfare caseloads that may be correlated with the state's decision of whether and when to implement major waivers to AFDC and the timing of TANF implementation.

We account for this possibility by expanding the baseline specifications. Models presented in Table 5 control for lagged state-level economic indicators including one- and two-year lags of the state-level unemployment rate and real personal income per capita. All models

¹² While college completion may also be affected by welfare reform policies, selection on college attainment is less material for two reasons. First, at any point in time, college graduates are at a much lower risk of being on welfare. Second, the question of how welfare reform affects school enrollment is by definition a question that relates to only a selected group – low-educated women who are at an elevated risk of public assistance. It is not meant to generalize to, and would not be relevant for, women with a college degree or above.

¹³ We are not aware of any prior research that has addressed this potential source of selection, perhaps because scant attention has been paid to the potential effects of welfare reform on educational attainment of adults.

control for state-specific linear trends, which account for unobserved systematically-varying factors within each state over the sample period. The marginal effects remain robust to these controls with respect to both magnitudes and statistical significance. Table 6 accounts for the possibility that states may have specifically experimented with major waivers to AFDC as a response to changes in their welfare caseloads. In addition to lagged economic conditions, these specifications further control for the one- and two-year lags of the state's welfare caseloads.¹⁴ The estimates are not significantly affected and remain robust across all specifications.

We further check for potential bias due to policy endogeneity by assessing the importance of lead effects of welfare reform. Models are estimated by extending Equation 6 to include one-year leading measures of welfare reform policy in the same DDD context. Specifically, the models include the interactions between the lead policy variables and the target group indicator, in addition to the other covariates specified in Equation 6. Significant lead DDD policy effects may indirectly inform on specification bias with respect to two sources: 1) changes in outcomes are driving the implementation of welfare reform policies within states over time implying that policy is endogenous to the outcomes, and 2) there are anticipatory effects wherein individuals are modifying their behaviors in anticipation of welfare reform. In all specifications, the main DDD effects remain robust to adding the leads. Furthermore, the point estimates of the lead DDD coefficients are statistically insignificant and relatively small in magnitude. Since the inclusion of both contemporaneous and lead policy measures may be collinear, an alternative check was also implemented. Equation 6 was re-estimated with all contemporaneous measures of welfare reform substituted with their one-year leads. In the presence of significant lead policy effects, the DDD estimates in this alternative specification would be larger in absolute magnitude. If there are no substantial lead effects, then the DDD estimates would be smaller in

¹⁴ Results are not sensitive to alternate lag structures.

absolute magnitude. In all specifications across all samples and outcomes, the marginal effects declined in size, confirming that leading welfare reform measures are not significantly correlated with educational outcomes. These results corroborate the estimates from Tables 5 and 6, which also confirm that the effects are not sensitive to additional controls that account for unobserved state-varying factors that may be driving welfare reform policies.

The Role of Work

The estimates discussed thus far represent the “reduced-form” effects of welfare reform—that is, the total effect of welfare reform on educational attainment, operating through a variety of potential (and possibly competing) mechanisms. Work is the centerpiece of the policy shift and there is strong consensus that welfare reform has indeed increased employment and decreased caseloads as intended. We broadly test the work mechanism through stratification analyses which exploit (1) how states specifically differ in their treatment of educational activities post-PRWORA and (2) the strength of work incentives in state’s TANF plans.

Adverse effects of welfare reform on education that appear to operate through work should be stronger in states that do not permit or limit education as an authorized work activity for adults. To explore this hypothesis, Table 7 presents estimates for states stratified by the degree to which educational activities are permitted to fulfill work requirements. Panel A limits the sample to states that either never allow post-secondary or other education to substitute for work requirements, or impose substantial time limits on the duration of the educational activities.¹⁵ None of these states allow schooling, as a stand-alone activity, to satisfy work requirements. Across all measures of school enrollment, the adverse effects of welfare reform

¹⁵ Specifically, we examined these policies at two points in time (1999 and 2002), and designated states as “strict” if they did not allow education as a stand-alone activity and they did not allow schooling to be combined with other work activities for more than one year. Twenty-two states (AZ, CO, CT, FL, ID, IN, KS, LA, MA, MD, MI, MS, ND, NM, NY, OH, OK, OR, SD, TX, WA, WI) and D.C. fall into this category. The data, available on the State Policy Documentation Project website, can be found at: <http://www.spdp.org/tanf/postsecondary.PDF> and http://clasp.org/publications/postsec_table_i_061902.pdf

policies on education are the strongest for this sample of restrictive states. For instance, specification 5 suggests that AFDC waivers lowered the probability of school attendance by a statistically significant 2.7 percentage points (34 % relative to the baseline mean) among low-educated unmarried mothers. For states that support schooling as an authorized work activity in some form (Panel B), the adverse effects of welfare reform on high school, college, or other schooling is much mitigated. These states either allow schooling to count fully towards work activities, evaluate schooling in a case-by-case basis, or impose limits on the duration of schooling that are in excess of one year. While the marginal effects continue to be negative, they are much smaller in magnitude and also statistically insignificant in all cases. For example, AFDC waivers reduce the probability of school enrollment by 1.3 percentage points (17 %) and the effect is not statistically significant. These results provide support for the hypothesis that welfare reform reduced schooling among adult women through policies which emphasized work at the expense of education.

The final specifications in both panels of Table 7 stratify the sample based on an index of the overall strength of work incentives in a given state. Specifically, Model 6 in Panel A includes only states that have strong work incentives as measured by low benefit generosity, high earnings disregards, strict sanctions for non-compliance, and strict time limits (Blank & Schmidt 2001).¹⁶ Individuals in these states face a much stronger push towards work, which may have come at the expense of educational activities. The marginal effects confirm this and suggest that welfare reform (in the form of AFDC waivers) decreased school attendance by 2.4 percentage points (26 % relative to the baseline target sample mean). In contrast, among individuals who reside in states with weaker work incentives, the adverse effects of welfare reform on

¹⁶ The educational policy and work incentives measures are based on TANF and not AFDC Waivers. Ideally, these detailed state measures would reflect both phases of welfare reform. Unfortunately, uniform data on educational policy and work incentives under AFDC waivers are not available. That said, the relevant TANF provisions are likely reflective of the general sentiment in a state toward work versus educational activities.

educational activities are also weaker. Specifically, estimates from specification 6 in Panel B indicate that welfare reform decreased school attendance by 16 % in those states and the effect is not statistically significant.

The push to work is the key hypothesized pathway by which welfare policies may affect education and social behaviors, and the stratified analyses in Table 7 are consistent with this hypothesis. Associated with changes in employment are changes in personal and household income, though total income post-welfare reform may increase or decrease as earnings substitute for cash benefits. Thus, depending on whether the income effect is negative or positive, the effect of time constraints from market work may be exacerbated or counteracted. In order to shed light on these different pathways, Table 8 presents estimates from models that incorporate the role of time (as proxied by hours worked) and income constraints as mediating factors.

The specifications in Table 8 include indicators of hours worked in the past week (reference category being non-employed) and a continuous measure of household income, as well as interactions between these labor supply measures and the target group indicator to allow the effects of labor supply to differ between the target and comparison groups. The models indicate a significant non-linear relationship between hours worked and school attendance. Up to about 19 hours of work per week, intensity of labor supply has positive or no effects on school attendance relative to individuals who do not work.¹⁷ This may be due to potential simultaneity between the labor supply decision and school enrollment. In addition, increases in personal income associated with higher hours worked may, up to a point, lead to a positive income effect on schooling. Individuals who work more than about 19 hours weekly have a lower propensity to attend high school and college; there is also a dose-response relationship, with the negative link

¹⁷ Estimating an alternate specification that controls for continuous hours worked and its quadratic term leads to an inflection in the hours worked - school enrollment relationship at about 19 to 20 hours. Thus, the dichotomous indicators for hours worked are defined to account for this inflection and to control for a non-parametric non-linear relationship.

between work and schooling becoming stronger with more hours worked. Household income generally has a negative impact on the probability of being currently enrolled in school for the target group.¹⁸

More importantly, accounting for labor supply, especially hours worked, substantially mediates the impact of welfare reform on education.¹⁹ There is no longer a statistically significant effect of TANF on school attendance among unmarried mothers with less than a high school education. It is plausible that work constraints are particularly consequential for the group with less than a high school education. For these women, there may be very large costs or minimal benefits to completing high school. For some, linking schooling to welfare by allowing education activities to count towards work may have been the only motivation for staying in or continuing high school. When the welfare-schooling link was weakened by PRWORA by de-emphasizing schooling as an authorized work activity for adult women, many would have been pushed to substitute work for school in order to remain eligible for benefits. For low-skilled women, high school enrollment is likely a time-intensive activity and would be expected to be quite elastic to work and time constraints. Thus, most or all of the adverse effect of welfare reform on schooling appears to be due to the increase in employment among the target group. It is possible that some of these women may have substituted from formal high school programs to less time-intensive schooling such as other training or GED preparatory programs. However, the diminution of the marginal effect of TANF on any schooling suggests that this substitution from more intensive schooling to less intensive schooling was not a significant outcome.

¹⁸ All specifications reported in Table 7 control for interactions between the target indicator and the labor supply measures. The marginal effects of hours worked and household income reported in the table refer to those for the target group. In order to be concise, marginal effects of hours and income are not reported for the comparison group. Generally, the negative link between hours worked and school enrollment is stronger for the target group, and the income effect on school enrollment tends to be positive for the comparison group.

¹⁹ Excluding household income does not significantly increase the magnitudes of the marginal effects, suggesting that the attenuation of the effect is mostly due to the effects of work.

Among high school graduates with less than a college education, hours worked also mediates the negative effect of welfare reform on college attendance. In contrast to the less than high school educated women, the diminution of the effect magnitudes is smaller. Thus, while it appears that hours of work and household income explain some of the adverse effects of welfare reform on college enrollment, there are likely to be other effects at play. Personal income, which may be a more relevant indicator than household income of material resources impacted by welfare reform, is not adequately observed in the October CPS. Furthermore, the reforms may have led to changes in living arrangements, such as the formation of extended family households, which may impact the demand for time-intensive activities such as schooling. Overall, these results suggest that at least part of the negative impact of TANF and AFDC waivers on adult women's educational attainment was due to added time constraints resulting from increased work requirements.

Lagged Effects

It is possible that there is a lag between welfare reform and the full response on educational outcomes due to adjustments over time in family inputs, binding term limits over time, and learning within the family. To address this possibility, alternative DDD specifications were estimated, substituting the contemporaneous welfare reform measures with their one-year lags. In the presence of a significant lagged effect, the DDD estimates in this recoded specification would be larger in absolute magnitude. If there are no substantial lags in the policy response, then the DDD estimates in these specifications would decline in absolute magnitude. Among less than high school educated women, the marginal effect of welfare reform on high school attendance and other schooling was slightly larger in magnitude (by about 10 %), suggesting a small lagged response to policy. However, among high school graduates with less than a college education, the marginal effect declined in size suggesting no significant lags in the

effect of welfare reform on post-secondary educational activities.²⁰ Overall, the estimates in the lagged-response models remained robust in terms of statistical significance and the direction of the effects.

Conclusion

This study makes three major contributions. First, it contributes to the sparse literature on adult education by identifying welfare policy as a strong determinant of human capital acquisition among poor adult women and underscores that policies not specifically focusing on education can be important determinants of educational attainment.

Second, we produced the most compelling evidence to date on the effects of welfare reform on teen dropout. Specifically, we found that welfare reform has significantly increased the probability of young women staying in high school, by between 9 and 13 percent. The opposing effects for teen and adult mothers underscore the differential educational incentives for the two groups that are built into welfare reform.

Third, and most importantly, we found robust and convincing evidence that welfare reform has significantly decreased the probability of high school and college attendance among adult women, by 20-25 percent. This fills an important gap in the welfare reform literature and suggests that the gains from welfare reform in terms of increasing employment and reducing caseloads have come at a cost—lower educational attainment among women at risk for relying on welfare. This finding has negative implications for poor mothers' ability to attain self-sufficiency and experience upward mobility, as self-sufficiency is rare among unmarried mothers under the post-welfare reform regime, even among the majority who are employed (Teitler, Reichman & Nepomnyaschy 2004). While past attempts at increasing self-sufficiency through

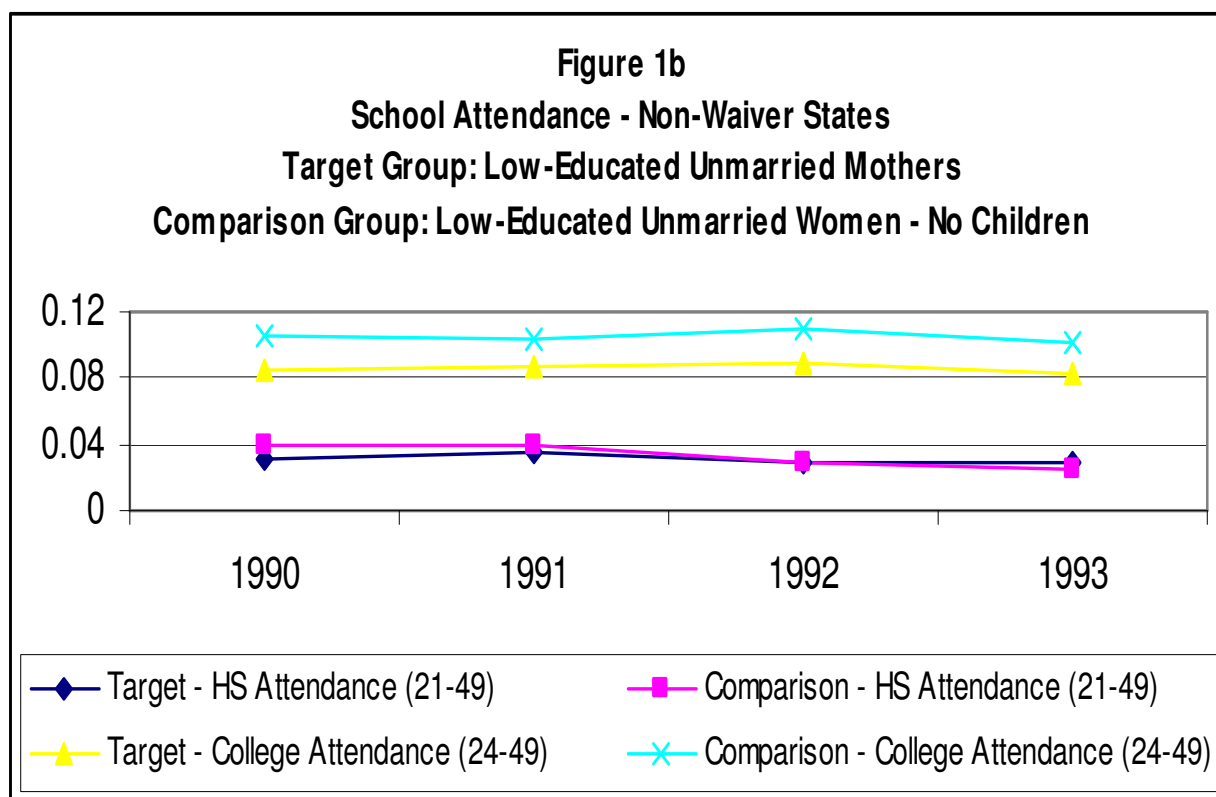
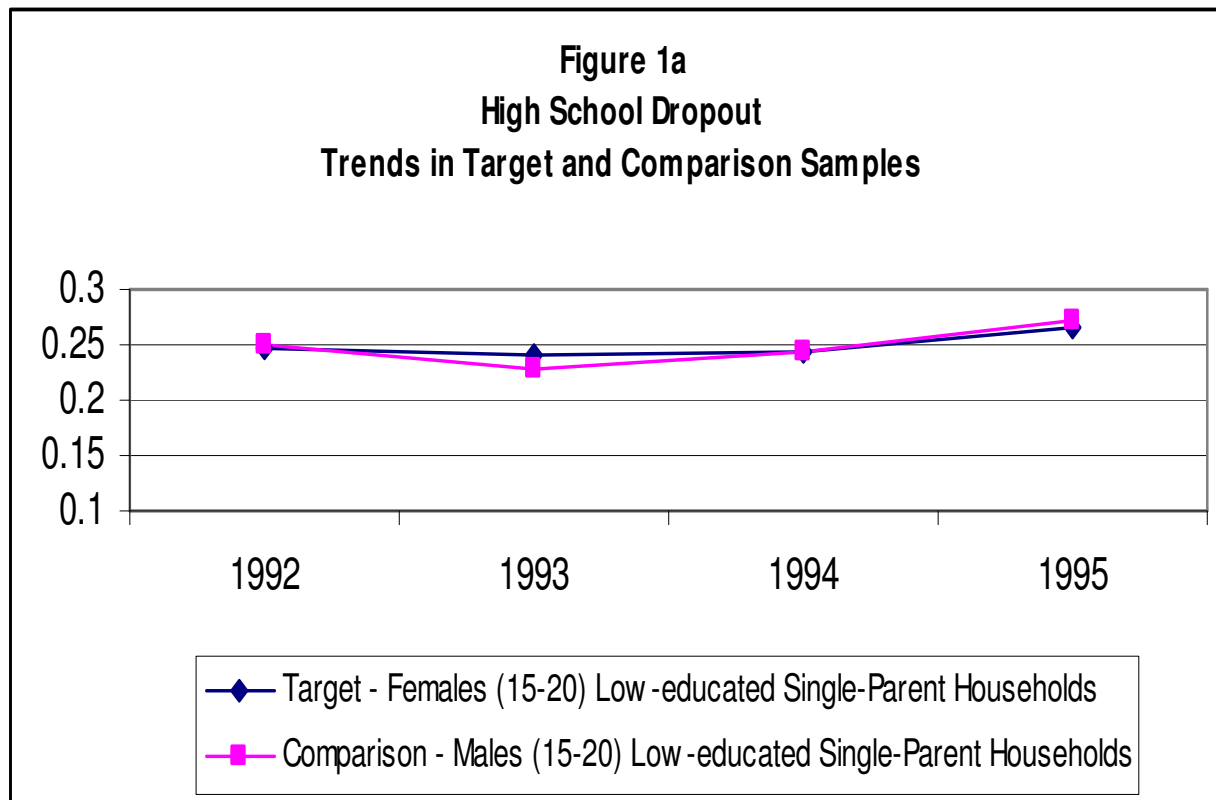
²⁰ Results are available upon request.

human capital formation may not have met with success, our results suggest that self-sufficiency will become even more elusive than it has been in the past.

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Data Source: October CPS

Table 1
Baseline Means - Target and Comparison Groups

Panel A: High School Dropout

	Target Group	Comparison Group	Target Group	Comparison Group
Sample	Females 15 - 20 Unmarried-Parent Household Household Education < College	Males 15 - 20 Unmarried-Parent Household Household Education < College	Females 15 - 19 Unmarried-Parent Household Household Education < College	Males 15 - 19 Unmarried-Parent Household Household Education < College
	Waiver = 0 & TANF = 0			
High School Dropout	0.255	0.256	0.253	0.244
	1992 (Non-Waiver States)			
High School Dropout	0.249	0.249	0.251	0.224
	Pre-TANF (1992 - 1995)			
High School Dropout	0.250	0.248	0.250	0.233

Panel B: School Attendance - 1992 (Non-Waiver States)

	Target Group	Comparison Group
Sample	Unmarried Mothers < High School Graduate Age 21-49	Unmarried Women - No Children < High School Graduate Age 21-49
Current High School Attendance	0.029	0.028
Any School Attendance	0.035	0.030
Sample	Unmarried Mothers High School Graduate, < College Graduate, Age 24-49	Unmarried Women - No Children High School Graduate, < College Graduate, Age 24-49
Current College Attendance	0.089	0.104*
Full-time College Attendance	0.047	0.048
Sample	Unmarried Mothers < College Graduate, Age 24-49	Unmarried Women - No Children < College Graduate, Age 24-49
Any School Attendance	0.078	0.091**

Panel C: School Attendance - Waiver = 0 & TANF = 0

	Target Group	Comparison Group
Sample	Unmarried Mothers < High School Graduate Age 21-49	Unmarried Women - No children < High School Graduate Age 21-49
Current High School Attendance	0.034	0.026
Any School Attendance	0.039	0.031
Sample	Unmarried Mothers High School Graduate, < College Graduate, Age 24-49	Unmarried Women - No children High School Graduate, < than College Graduate, Age 24-49
Current College Attendance	0.092	0.104***
Full-time College Attendance	0.051	0.051
Sample	Unmarried Mothers < College Graduate, Age 24-49	Unmarried Women - No Children < College Graduate, Age 24-49
Any School Attendance	0.082	0.094***

Note: Asterisks denote that the difference in means between the target and comparison groups is statistically significant as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

Table 2
Effects of Welfare Reform on High School Dropout
October CPS 1992 - 2005

Sample	Age 15 - 20 Unmarried-Parent Household (HH) Household Education < College Graduate				Unmarried Age 15 - 20 Unmarried-Parent HH Household Education < College Graduate	Age 15 - 19 Unmarried-Parent HH Household Education < College Graduate
	1	2	3	4	5	6
Specification						
Target	-0.0116 (0.0099)	-0.0128 (0.0099)	-0.0128 (0.0099)	-0.0130 (0.0099)	-0.0152 (0.0105)	-0.0068 (0.0115)
AFDC Waiver	0.0071 (0.0182)	-0.0109 (0.0208)	-0.0109 (0.0207)	-0.0049 (0.0208)	-0.0037 (0.0209)	0.0078 (0.0241)
AFDC Waiver*Target	0.0006 (0.0207)	0.0012 (0.0208)	0.0013 (0.0208)	0.0022 (0.0208)	-0.0123 (0.0216)	0.0085 (0.0250)
TANF	0.0309 (0.0312)	0.0218 (0.0311)	0.0202 (0.0319)	0.0090 (0.0339)	0.00967 (0.0342)	0.0334 (0.0427)
TANF*Target	-0.0236* (0.0124)	-0.0228* (0.0125)	-0.0228* (0.0125)	-0.0225* (0.0125)	-0.0316** (0.0130)	-0.0295** (0.0148)
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes
State Indicators	Yes	Yes	Yes	Yes	Yes	Yes
State Covariates	Yes	Yes	Yes	Yes	Yes	Yes
Lagged State Economic Indicators ^a	No	No	Yes	Yes	Yes	Yes
Lagged State Welfare Caseloads ^b	No	No	No	Yes	Yes	Yes
State-Specific Trends	No	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0369	0.0381	0.0381	0.0381	0.0354	0.0412
Observations	26,999	26,999	26,999	26,999	23,860	17,507

Notes: Coefficient estimates from linear probability models are presented. Standard errors are adjusted for arbitrary correlation within state-year cells and reported in parentheses. All target groups are females and comparison groups are males. All models control for age indicators, race indicators, indicators for Hispanic and unknown Hispanic ethnicity, indicator for no parents in household, age and age-squared of the oldest household member, state fixed effects and year fixed effects. State covariates include state-level unemployment rate, real state personal income per capita, and indicators for state high school exit exam requirements. Significance is denoted as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

^a Lagged state economic indicators are the one- and two-year lags of the state-level unemployment rate and real personal income per capita.

^b Lagged state welfare caseloads are the one- and two-year lags of the number of welfare recipients for the state.

Table 3
Effects of Welfare Reform on School Attendance of Adult Women
Baseline DDD Models
October CPS 1992 - 2005

Sample	Unmarried < High School Graduate Age 21 - 49			Unmarried High School Graduate < College Graduate Age 24 - 49			
	Current High School Attendance	Any School Attendance	4	Current College Attendance	6	7	8
Specification	1	2	3	4	5	6	7
Target	0.0035 (0.0044)	0.0036 (0.0045)	0.0031 (0.0047)	0.0031 (0.0047)	-0.0037 (0.0039)	-0.0032 (0.0039)	0.0028 (0.0028)
AFDC Waiver	0.0028 (0.0072)	0.0084 (0.0080)	-0.0007 (0.0084)	0.0064 (0.0090)	0.0075 (0.0070)	0.0061 (0.0071)	-0.0045 (0.0050)
AFDC Waiver*Target	-0.0046 (0.0095)	-0.0047 (0.0095)	-0.0002 (0.0102)	-0.0002 (0.0102)	-0.0201** (0.0083)	-0.0211** (0.0083)	-0.01078* (0.0062)
TANF	0.0048 (0.0136)	0.0053 (0.0138)	0.0067 (0.0186)	0.0080 (0.0190)	-0.0133 (0.0135)	-0.0135 (0.0141)	-0.01104 (0.0073)
TANF*Target	-0.0113** (0.0054)	-0.0121** (0.0055)	-0.0091 (0.0061)	-0.0098 (0.0061)	-0.0033 (0.0046)	-0.0039 (0.0047)	-0.00606* (0.0034)
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State-Specific Trends	No	Yes	No	Yes	No	Yes	No
Adjusted R-squared	0.0173	0.0187	0.0191	0.0202	0.0960	0.0961	0.0755
Observations	18,905	18,905	18,905	18,905	80,901	80,901	76,881

Notes: Coefficient estimates from linear probability models are presented. Standard errors are adjusted for arbitrary correlation within state-year cells and reported in parentheses. All target groups have children and comparison groups do not have children. All models control for age, age-squared, race indicators, indicators for Hispanic and unknown Hispanic ethnicity, indicators for highest grade attended, residence in a metro area, residence in a center city within a metro area, residence in suburban area, state fixed effects and year fixed effects. State covariates include state-level unemployment rate, real state personal income per capita, and indicators for state high school exit exam requirements. Significance is denoted as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

Table 4
School Attendance of Adult Women
Alternative Specification—Addressing Potential Compositional Selection by Increasing Age Ranges
October CPS 1992 - 2005

Sample	Unmarried High School Graduate, < College Graduate Age 24 - 49						Unmarried < College Graduate Age 24 - 49	
	Current College Attendance		Full-Time College Attendance		Any School Attendance			
	1	2	3	4	5	6		
Outcome Specification Target	-0.0053 (0.0039)	-0.0049 (0.0039)	0.0018 (0.0028)	0.0017 (0.0029)	-0.0035 (0.0033)	-0.0031 (0.0033)		
AFDC Waiver	0.0104 (0.0069)	0.0080 (0.0071)	-0.0021 (0.0049)	-0.0031 (0.0052)	0.0035 (0.0062)	0.0041 (0.0063)		
AFDC Waiver*Target	-0.0189** (0.0088)	-0.0195** (0.0088)	-0.0107* (0.0063)	-0.0108* (0.0063)	-0.0175** (0.0076)	-0.0183** (0.0075)		
TANF	-0.01456 (0.0130)	-0.0130 (0.0142)	-0.0143* (0.0079)	-0.0126 (0.0088)	-0.0120 (0.0121)	-0.0120 (0.0127)		
TANF*Target	0.0051 (0.0047)	0.0046 (0.0048)	0.0007 (0.0034)	0.0007 (0.0034)	-0.0030 (0.0040)	-0.0035 (0.0040)		
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
State Indicators	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
State Covariates	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
State-Specific Trends	No	Yes	No	Yes	No	Yes	Yes	
Adjusted R-squared	0.0820	0.0822	0.0620	0.0624	0.0962	0.0963		
Observations	73,591	73,591	70,181	70,181	97,276	97,276		

Notes: Coefficient estimates from linear probability models are presented. Standard errors are adjusted for arbitrary correlation within state-year cells and reported in parentheses. All target groups have children and comparison groups do not have children. All models control for age, age-squared, race indicators, indicators for Hispanic and unknown Hispanic ethnicity, indicators for highest grade attended, residence in a metro area, residence in a center city within a metro area, residence in suburban area, state fixed effects and year fixed effects. State covariates include state-level unemployment rate, real state personal income per capita, and indicators for state high school exit exam requirements. Significance is denoted as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

^a Sample is restricted to individuals who 21 years of age or older in the first full year that a state implemented an AFDC waiver or the first full year that a state implemented TANF if it did not have an AFDC waiver in place.

Table 5
School Attendance of Adult Women
Alternative Specification—Addressing Potential Policy Endogeneity by Controlling for
Lagged Economic Indicators
October CPS 1992 - 2005

Sample	Unmarried < High School Graduate Age 21 – 49		Unmarried High School Graduate < College Graduate Age 24 - 49		Unmarried < College Graduate Age 24 - 49
	Current High School Attendance	Any School Attendance	Current College Attendance	Full-Time College Attendance	Any School Attendance
Specification	1	2	3	4	5
Target	0.0037 (0.0045)	0.0032 (0.0047)	-0.0032 (0.0039)	0.0031 (0.0028)	-0.0032 (0.0033)
AFDC Waiver	0.0074 (0.0081)	0.0056 (0.0091)	0.0056 (0.0070)	-0.0064 (0.0052)	0.0033 (0.0062)
AFDC Waiver*Target	-0.0047 (0.0095)	-0.0003 (0.0102)	-0.0209** (0.0083)	-0.0111* (0.0062)	-0.0181** (0.0075)
TANF	0.0061 (0.0134)	0.0098 (0.0182)	-0.0124 (0.0137)	-0.0095 (0.0077)	-0.0102 (0.0123)
TANF*Target	-0.0121** (0.0055)	-0.0098 (0.0061)	-0.0039 (0.0047)	-0.0065* (0.0034)	-0.0036 (0.0040)
Year Indicators	Yes	Yes	Yes	Yes	Yes
State Indicators	Yes	Yes	Yes	Yes	Yes
State Covariates	Yes	Yes	Yes	Yes	Yes
State-Specific Trends	Yes	Yes	Yes	Yes	Yes
Lagged State Economic Indicators ^a	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0190	0.0205	0.0961	0.0757	0.0963
Observations	18,905	18,905	80,901	76,881	97,276

Notes: Coefficient estimates from linear probability models are presented. Standard errors are adjusted for arbitrary correlation within state-year cells and reported in parentheses. All target groups have children and comparison groups do not have children. All models control for age, age-squared, race indicators, indicators for Hispanic and unknown Hispanic ethnicity, indicators for highest grade attended, residence in a metro area, residence in a center city within a metro area, residence in suburban area, state fixed effects and year fixed effects. State covariates include state-level unemployment rate, real state personal income per capita, and indicators for state high school exit exam requirements. Significance is denoted as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

^a Lagged state economic indicators are the one- and two-year lags of the state-level unemployment rate and real personal income per capita.

Table 6
School Attendance of Adult Women
Alternative Specification—Addressing Potential Policy Endogeneity by Controlling for
Lagged Welfare Caseloads
October CPS 1992 - 2005

Sample	Unmarried < High School Graduate Age 21 - 49		Unmarried High School Graduate < College Graduate Age 24 - 49		Unmarried < College Graduate Age 24 - 49
	Current High School Attendance	Any School Attendance	Current College Attendance	Full-Time College Attendance	Any School Attendance
Specification	1	2	3	4	5
Target	0.0037 (0.0045)	0.0032 (0.0047)	-0.0033 (0.0039)	0.0031 (0.0028)	-0.0032 (0.0033)
AFDC Waiver	0.0064 (0.0087)	0.0028 (0.0095)	0.0039 (0.0073)	-0.0071 (0.0053)	0.0013 (0.0065)
AFDC Waiver*Target	-0.0047 (0.0095)	-0.0004 (0.0102)	-0.0206** (0.0083)	-0.0110* (0.0062)	-0.0180** (0.0075)
TANF	0.0023 (0.0140)	0.0075 (0.0182)	-0.0085 (0.0134)	-0.0082 (0.0080)	-0.0065 (0.0119)
TANF*Target	-0.0121** (0.0055)	-0.0098 (0.0061)	-0.0038 (0.0047)	-0.0065* (0.0034)	-0.0035 (0.0040)
Year Indicators	Yes	Yes	Yes	Yes	Yes
State Indicators	Yes	Yes	Yes	Yes	Yes
State Covariates	Yes	Yes	Yes	Yes	Yes
State-Specific Trends	Yes	Yes	Yes	Yes	Yes
Lagged State Economic Indicators	Yes	Yes	Yes	Yes	Yes
Lagged State Welfare Caseloads ^a	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0190	0.0205	0.0961	0.0757	0.0963
Observations	18,905	18,905	80,901	76,881	97,276

Notes: Coefficient estimates from linear probability models are presented. Standard errors are adjusted for arbitrary correlation within state-year cells and reported in parentheses. All target groups have children and comparison groups do not have children. All models control for age, age-squared, race indicators, indicators for Hispanic and unknown Hispanic ethnicity, indicators for highest grade attended, residence in a metro area, residence in a center city within a metro area, residence in suburban area, state fixed effects and year fixed effects. State covariates include state-level unemployment rate, real state personal income per capita, and indicators for state high school exit exam requirements. Lagged state economic indicators are the one- and two-year lags of the state-level unemployment rate and real personal income per capita. Significance is denoted as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

^a Lagged state welfare caseloads are the one- and two-year lags of the number of welfare recipients for the state.

Table 7
School Attendance of Adult Women
Stratified Samples by TANF Educational Policy and Work Incentives Index
October CPS 1992 – 2005

Panel A	School Enrollment is not Supported as Work Requirement ^a					Strong Overall Work Incentives ^b
	Sample	Unmarried < High School Graduate Age 21 – 49		Unmarried High School Graduate < College Graduate Age 24-49		
Outcome	Current High School Attendance	Any School Attendance	College Attendance	Full-Time College Attendance	Any School Attendance	Any School Attendance
Specification	1	2	3	4	5	6
Target	0.00600 (0.00628)	0.00309 (0.00668)	-0.00098 (0.00552)	0.00624 (0.00417)	-0.00075 (0.00473)	-0.0008 (0.0061)
AFDC Waiver	0.02643 (0.02170)	0.02345 (0.02257)	0.01300 (0.01043)	-0.01008 (0.00842)	0.00841 (0.00960)	0.0178 (0.0114)
AFDC Waiver*Target	-0.01320 (0.02820)	-0.00406 (0.02588)	-0.03624*** (0.01185)	-0.01453 (0.00941)	-0.02678** (0.01239)	-0.0238* (0.0124)
TANF	0.02541* (0.01342)	0.04740*** (0.01594)	-0.00710 (0.01378)	-0.00067 (0.00930)	0.00009 (0.01187)	0.0224 (0.0180)
TANF*Target	-0.01922** (0.00764)	-0.01450** (0.00869)	-0.00533 (0.00657)	-0.00958* (0.00495)	-0.00465 (0.00570)	-0.0038 (0.0073)
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes
State Indicators	Yes	Yes	Yes	Yes	Yes	Yes
State Covariates	Yes	Yes	Yes	Yes	Yes	Yes
State-Specific Trends	Yes	Yes	Yes	Yes	Yes	Yes
Lagged State Economic Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0200	0.0223	0.0954	0.0753	0.0956	0.0926
Observations	9,312	9,312	39,291	37,414	47,288	29,289

Panel B	School Enrollment is Supported as Work Requirement					Weak or Mixed Work Incentives
	Sample	Unmarried < High School Graduate Age 21 – 49		Unmarried High School Graduate < College Graduate Age 24-49		
Outcome	Current High School Attendance	Any School Attendance	College Attendance	Full-Time College Attendance	Any School Attendance	Any School Attendance
Specification	1	2	3	4	5	6
Target	0.00059 (0.00620)	0.00387 (0.00658)	-0.00610 (0.00548)	-0.00157 (0.00382)	-0.00645 (0.00463)	-0.0043 (0.0040)
AFDC Waiver	0.00183 (0.00962)	-0.00111 (0.01021)	0.00197 (0.00999)	-0.00480 (0.00698)	-0.00063 (0.00897)	-0.0020 (0.0074)
AFDC Waiver*Target	-0.00075 (0.00975)	-0.00111 (0.01122)	-0.01373 (0.01075)	-0.00594 (0.00779)	-0.01295 (0.00947)	-0.0147 (0.0094)
TANF	-0.02284 (0.01490)	-0.02634 (0.01633)	-0.00911 (0.01869)	-0.00587 (0.00862)	-0.01025 (0.01584)	-0.0119 (0.0130)
TANF*Target	-0.00432 (0.00767)	-0.00595 (0.00840)	-0.00165 (0.00653)	-0.00192 (0.00468)	-0.00145 (0.00560)	-0.0033 (0.0048)
Year Indicators	Yes	Yes	Yes	Yes	Yes	Yes
State Indicators	Yes	Yes	Yes	Yes	Yes	Yes
State Covariates	Yes	Yes	Yes	Yes	Yes	Yes
State-Specific Trends	Yes	Yes	Yes	Yes	Yes	Yes
Lagged State Economic Indicators	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0184	0.0183	0.0968	0.0762	0.0968	0.0971
Observations	9,593	9,593	41,610	39,467	49,988	67,987

Notes: Coefficient estimates from linear probability models are presented. Standard errors are adjusted for arbitrary correlation within state-year cells and reported in parentheses. All target groups have children and comparison groups do not have children. All models control for age, age-

squared, race indicators, indicators for Hispanic and unknown Hispanic ethnicity, indicators for highest grade attended, residence in a metro area, residence in a center city within a metro area, residence in suburban area, state fixed effects and year fixed effects. State covariates include state-level unemployment rate, real state personal income per capita, and indicators for state high school exit exam requirements. Lagged state economic indicators are the one- and two-year lags of the state-level unemployment rate and real personal income per capita. Significance is denoted as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

^a Sample is limited to states which do not completely allow post-secondary education to substitute for the state's work requirement.

^b Sample is limited to states which have low benefit generosity, high earnings disregards, strict sanctions, and strict time limits, as defined in Blank & Schmidt (2001).

Table 8
School Attendance of Adult Women
Assessing Hours Worked & Income as Potential Mediators
October CPS 1992 - 2005

Sample	Unmarried < High School Graduate Ages 21 - 49		Unmarried High School Graduate < College Graduate Age 24 - 49		Unmarried < College Graduate Age 24 - 49
	Current High School Attendance	Any School Attendance	Current College Attendance	Full-Time College Attendance	Any School Attendance
Specification	1	2	3	4	5
Hours Worked (1-19) ^a	0.0013 (0.0106)	0.0121 (0.0132)	0.0570*** (0.0102)	0.0437*** (0.0091)	0.0475*** (0.0087)
Hours Worked (20-31)	-0.0238*** (0.0053)	-0.0297*** (0.0062)	-0.0200*** (0.0061)	-0.0378*** (0.0050)	-0.0205*** (0.0050)
Hours Worked (32 - 40)	-0.0239*** (0.0039)	-0.0281*** (0.0046)	-0.0545*** (0.0041)	-0.0700*** (0.0034)	-0.0511*** (0.0034)
Hours Worked (> 40)	-0.0233*** (0.0055)	-0.0324*** (0.0061)	-0.0647*** (0.0051)	-0.0754*** (0.0039)	-0.0612*** (0.0044)
Household Income ^b	-0.0005*** (0.0002)	-0.0005*** (0.0002)	-0.0001 (0.0001)	-0.0002* (0.0001)	-0.0002* (0.0001)
Target	0.0183*** (0.0058)	0.0209*** (0.0059)	0.0067 (0.0061)	-0.0006 (0.0051)	0.0090* (0.0047)
AFDC Waiver	0.0041 (0.0096)	0.0014 (0.0105)	0.0037 (0.0074)	-0.0074 (0.0050)	0.0006 (0.0065)
AFDC Waiver*Target	-0.0011 (0.0112)	0.0015 (0.0121)	-0.0175** (0.0083)	-0.0089 (0.0059)	-0.0151** (0.0075)
TANF	0.0015 (0.0126)	0.0065 (0.0167)	-0.0124 (0.0125)	-0.0163* (0.0083)	-0.0104 (0.0102)
TANF*Target	-0.0064 (0.0055)	-0.0046 (0.0062)	-0.0011 (0.0048)	-0.0023 (0.0034)	-0.00003 (0.0040)
Year Indicators	Yes	Yes	Yes	Yes	Yes
State Indicators	Yes	Yes	Yes	Yes	Yes
State Covariates	Yes	Yes	Yes	Yes	Yes
State-Specific Trends	Yes	Yes	Yes	Yes	Yes
Lagged State Economic Indicators	Yes	Yes	Yes	Yes	Yes
Lagged State Welfare Caseloads	Yes	Yes	Yes	Yes	Yes
Adjusted R-squared	0.0192	0.0223	0.1133	0.1145	0.1119
Observations	16,804	16,804	71,479	67,846	86,032

Notes: Coefficient estimates from linear probability models are presented. Standard errors are adjusted for arbitrary correlation within state-year cells and reported in parentheses. All target groups have children and comparison groups do not have children. All models control for age, age-squared, race indicators, indicators for Hispanic and unknown Hispanic ethnicity, indicators for highest grade attended, residence in a metro area, residence in a center city within a metro area, residence in suburban area, state fixed effects and year fixed effects. State covariates include state-level unemployment rate, real state personal income per capita, and indicators for state high school exit exam requirements. Lagged state economic indicators are the one-year and two-year lags of the state-level unemployment rate and real personal income per capita. Lagged state welfare caseloads are the one-year and two-year lags of the number of welfare recipients for the state. Significance is denoted as follows: *** $p \leq 0.01$, ** $0.01 < p \leq 0.05$, * $0.05 < p \leq 0.10$.

^a Reference category is individuals who are not working. Marginal effects for hours worked are reported for the target group. All models also include interaction terms between the indicators for hours worked and the comparison group indicator to allow the marginal effects to differ between the target and comparison groups.

^b Household income is measured in thousands of dollars, adjusted by the national consumer price index. Marginal effect for income is reported for the target group. All models also include an interaction term between household income and the comparison group indicator to allow the marginal effect to differ between the target and comparison groups.