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**Single Mother Work And Poverty Under Welfare Reform:  
Are Policy Impacts Different In Rural Areas?**

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**SINGLE MOTHER WORK AND POVERTY UNDER WELFARE REFORM:  
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Abstract

During the 1990s, employment increased and poverty declined for single mothers in rural and urban areas. Our results suggest that, holding demographics constant, changes in welfare and social policy during this decade contributed to employment increases—but not to poverty reduction—for both rural and urban single mothers. If rural and urban demographics had been the same, the policy changes would have increased employment and reduced poverty more in rural areas. Without demographic controls, however, estimated policy impacts were no better in rural places. This suggests that rural demographic changes limited the policy impact on rural single-mother work and poverty.

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**INTRODUCTION**

The implementation of the welfare reform law in 1996 and major expansions of tax credits, child care subsidies and health care programs in the 1990s increased pressure, incentives and supports for low income single mothers with children to enter the paid workforce. The rapid reductions in welfare caseloads and the expectation that there would be opportunities for revisions during reauthorization of the law in 2002 generated an impressive volume of studies attempting to explain the outcomes of welfare reform and evaluate the effectiveness of various policy choices in the new law [Schoeni and Blank, 2000; Blank, 2002]. Other changes in tax and social policy have also drawn attention of researchers. Meyer and Rosenbaum [2000], for example examine changes in tax policy, particularly the Earned Income Tax Credit, as well as changes in child care and training programs.

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There are reasons to expect that the impacts of these policy changes may not be as favorable in rural<sup>i</sup> areas as in urban areas. Unemployment and underemployment rates have historically been higher in nonmetropolitan than metropolitan areas<sup>ii</sup>, so the likelihood of getting a job is lower [Economic Research Service, 1997; Findeis and Jensen, 1998; Mills, 2001]. Work and family support services such as child care, transportation, health care and training are less available and accessible in sparsely settled and remote places, so the difficulty in preparing for, commuting to and keeping a job in rural areas is greater than in urban areas [Fletcher et al., 2002] Average earnings have been lower in rural areas, so getting a job is less likely to move a person out of poverty [Economic Research Service, 1997; Gibbs, 2001]. These differences may be due to both the different characteristics of the labor forces and the different types of jobs available in metro and nonmetro areas. Rural adults have lower average levels of formal education than urban adults, for example, and employment in rural areas is more concentrated in minimum wage and part-time jobs and more likely to involve routine work. Whatever the reasons for the differences, it is at least plausible that the outcomes of the social policy changes in the 1990s that moved more single mothers with children into the workforce and off of the welfare rolls were not as favorable in rural as in urban places.

A number of studies have attempted to sort out the impacts of welfare reform in rural versus urban areas [see Whitener et al., 2002 for a summary of some of these, and Duncan et al., 2002 for some lessons learned]. To our knowledge, however, there has been no study that has attempted to examine the differential rural/urban impacts of the social policy changes in the 1990s on employment and poverty outcomes for the target population of much of this legislation: single mothers with children.

## SINGLE MOTHER WORK AND POVERTY UNDER WELFARE REFORM

Our paper examines the impact of the changes in social policy of the 1990s on the employment and poverty outcomes of single mothers with children in rural and urban areas. We begin with brief reviews of the changes in social policy in the 1990s and of the literature on the impacts of the changes, focusing on the literature examining rural and urban impacts. We then outline a difference-in-difference approach to the analysis of this issue. While cognizant of the limitations of this approach, we felt that it offered the best option for generating reliable information about the impacts of this broad set of changes<sup>iii</sup> In the next section of the paper, we describe the data, the subsamples of the 1989-1990 and 2000-2001 March Supplement to the Current Population Survey comprised of single women between the ages of 18-54, with and without children. We discuss the limitations of our study design and data. We then present the findings of the difference-in-difference analysis, which looks for evidence of impact of social policy on the employment and poverty of rural and urban single mothers with children. We are particularly interested in whether these outcomes and impacts differ in rural versus urban places. We conclude the paper with a discussion of what these results imply about the need for, and focus of, place-based social policy.

## **SOCIAL POLICY CHANGES AFFECTING SINGLE MOTHERS WITH CHILDREN IN THE 1990S**

The 1990s produced significant changes in tax, welfare and other social policy that increased the pressure on, and the incentives for, single mothers to work for pay. The most important of these were:

- major expansions of the federal Earned Income Tax Credit (EITC) in 1991 and 1994, and expansions of state EITCs,

- the welfare reform law of 1996, a major restructuring of the welfare law that replaced Aid to Families with Dependent Children (AFDC) with Temporary Assistance to Needy Families (TANF),
- increases in the federal minimum wage from \$3.35 per hour in early 1990 to \$5.15 in 1997,<sup>iv</sup>
- expansion of Medicaid eligibility (importantly, to all children in families with incomes below the poverty line, and – for one year – to all women who left welfare for work) and funding,
- changes in child care subsidies, the most important of which were the creation of a Child Care and Development Block Grant out of a host of older programs, authority to use TANF funds for child care, and expansion of the Child Care Tax Credit for lower middle income families<sup>v</sup>.

Welfare reform ended the federal entitlement to cash assistance and provided a block grant to states to fund the TANF program. Receipt of federally-funded assistance became conditional on fulfilling work requirements and subject to time limits (a maximum lifetime limit of 60 months). States are allowed to impose requirements that are more stringent than the federal limits. As states reduced cash assistance, and as former recipients and those diverted from the program entered the workforce, states expanded their expenditures on child care, health care, transportation and training. These changes in the welfare law and the expanded work supports, and the worker shortages experienced during the economic boom of the 1990s, led to substantial increases in work and earnings among low income families, particularly those headed by single mothers. As Blank notes,

Combined, these changes constitute a revolution in public assistance programs within the United States over this past decade. Federal dollars available to support *working* low

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income families increased from \$11.0 billion in 1988 to \$66.7 billion in 1999. Dollars paid in cash welfare support to (largely nonworking) families headed by non-elderly, non-disabled adults rose from \$24 billion in 1988 to \$27 billion in 1992, then fell to \$13 billion by 1999 (all numbers in 2000 dollars). This suggests that the work incentives imbedded in the public assistance system should have increased markedly over this period: cash assistance became far less available, welfare recipients were pushed much harder to find employment and leave the rolls, the returns to low wage work rose, and the availability of work supports (child care and health insurance) increased to low income families [Blank, 2002, p.1108].

## **RURAL AND URBAN DIFFERENCES IN WELFARE POLICY IMPACTS AND OUTCOMES: A REVIEW OF SELECTED STUDIES**

Since the passage of welfare reform in 1996, there has emerged an impressive body of research evaluating the impact of this law and of the changes in social policy implemented during the 1990s. Blank [2002] provides a summary and critique of this literature, focusing particularly on econometric studies of impacts on caseloads, labor force participation, income, poverty, economic well-being, marriage and fertility, and on experimental studies of the impact of particular policy choices. Overall, these studies provide evidence that at least some of the significant declines in welfare caseload and increases in labor force participation among less-skilled mothers is due to the changes in the welfare and work support policy changes during the past decade. Some of the studies also provide evidence that some programs appear to have increased employment and reduced poverty. It is still too early to reach other than very preliminary conclusions about the impact of these reforms on marriage and fertility.

Little of this literature has examined the extent to which these impacts are affected by place of residence, by the circumstance of living in an urban or a rural area. There are certainly differences in opportunities to work, quality of jobs, and availability of work supports across the rural-urban continuum, and therefore reason to wonder whether outcomes might be less favorable in rural areas, as suggested in the introduction to this paper. A review of this literature in Weber et al. [2001] suggests a number of conclusions about differences in welfare-policy related outcomes in rural and urban areas:

- Declines in caseloads have generally been smaller in rural areas, and differences appear to be related to differences in state policy.
- Evidence on rural and urban differences in employment outcomes is mixed, with experimental evidence suggesting positive employment and earnings gains under welfare reform in urban areas but not in rural areas.
- There is some reason to believe that the ameliorative effect of public assistance for single mothers with children has declined since 1996, and that it has declined more in rural areas.
- For the most part, however, the impact of welfare reform on poverty was not very different in rural and urban areas.

Previous studies of rural and urban differences have examined selected outcomes of the changes in welfare policy and using data from the early years after the passage of the 1996 welfare law.<sup>vi</sup> By examining employment and poverty outcome indicators that address the intensity of employment and the severity of poverty, and using more recent data, we attempt in this paper to provide new and more compelling evidence on the hypothesis of rural-urban differences in the impacts of welfare reform and social policy changes of the 1990s.

**ESTIMATING IMPACTS OF SOCIAL POLICY: DIFFERENCE-IN-DIFFERENCE ANALYSIS**

“Estimating the overall effects of structural welfare reform of the type that has occurred in the 1990s – that is, a reform that bundles together a number of significant changes in the program whose joint impact is to change the basic nature of the welfare program(s) involved – is perhaps the most challenging question for evaluators” [Moffit and Ver Ploeg, 1999 p. 63]. Of the two methods (time series analysis and difference-in-difference analysis) most appropriate for evaluating the overall effects of the package of social policy, we employ difference-in-difference estimators, which compare changes in outcomes for a group expected to be affected by the policy changes with changes in outcomes for those unlikely to be affected by the policy changes. In our analysis we compare changes in work and poverty outcomes of single mothers during the 1990s with changes in those same indicators for a comparison group that was ineligible to participate in the major programs that changed: single women without children. In the usual difference-in-difference analysis of welfare reform, one first computes changes in outcomes (the “difference”) and then compares these differences between single mothers and single women without children (the “difference-in-difference”). If one is further interested in how these difference-in-differences compare between rural and urban areas, one then needs to generate “difference-in-difference-in-difference” estimators. Are the “differences-in-differences” between single mothers and single women without children different in rural and urban areas? We follow the lead of McKernan et al. [2002] in estimating differences-in-differences-in-differences.

A critical issue in assessing the validity of any nonexperimental method is the extent to which the comparison group is believed to be similar to the group affected by the policy change. “A key assumption in the method is that the evolution of outcomes of the groups affected by the

policy change (i.e. single mothers) would be the same as that of the comparison group in the absence of the policy change. A major threat to the credibility of this method is that the two groups are sufficiently different in their observed and unobserved characteristics (although observed characteristics can be controlled for) that these differences, and not the policy difference, account for the differences in outcomes” [Moffit and Ver Ploeg, 1999, p. 59]. How good is the assumption that the changes in work and poverty of single mothers over the 1990s would have been the same as that of single women without children if there had been no changes in social policy in this decade? McKernan et al. [2002, p. 266] provide some evidence that, for employment at least, the trends of single mothers and single women without children are similar before welfare reform, implying that single women without children and single mothers are comparable, at least with regard to changes in work behavior.

Another source of concern in using single women without children as a comparison group for single mothers in welfare reform evaluation is that welfare policy changes under TANF were intended to affect marriage and fertility decisions, and thus might affect whether a single woman ended up in the treatment or the comparison group, or even whether a woman ended up in our sample at all in 2000-2001 due to policy-induced marriage. Schoeni and Blank [2000] for example, analyze changes in outcomes for all women 15-64 years old, citing evidence that fertility and marital status are affected by welfare policy. They present results separately for women with different education levels, with the idea that women with least schooling are most likely to be affected by the welfare system.

Other researchers view the risks of focusing on single women as unimportant [McKernan et al., 2002, p. 266; Meyer and Rosenbaum, 2001, p. 19]. Our primary analysis examines single women only, although we consider the possibility of endogeneity of policy and fertility in an alternative specification. There appears to be stronger evidence of effects of

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welfare policy on fertility than on marriage, so we compare less educated and more educated single women as a specification test that allows for the possibility of fertility effects.

### DATA

We use data from the Current Population Survey (CPS), a monthly survey of about 50,000 U.S. households designed to be representative of the national population. The March Supplement to the CPS obtains information about earnings, employment, welfare participation and income, among other things. We use a subsample of the CPS that includes households headed by single women 18-54 years old for two time periods: 1989-90 and 2000-2001. These time periods bracket the major changes in social policy in the 1990s and, of particular importance, include four years after the implementation of welfare reform in all the states in 1997. These two time periods also represent the same point in the business cycle: the last two business cycle peaks were in 1990 (third quarter) and 2001 (first quarter)<sup>vii</sup>.

The subsample of female-headed households is subdivided into those living in metropolitan counties (“urban”) and those living in nonmetropolitan counties (“rural”). These groups are further subdivided into those living with children under 18 (“mothers”) and those with no children under 18 in the household (“childless women”)<sup>viii</sup>.

The rotation scheme of the CPS results in about half of the respondents in each March survey having been respondents in the prior March Survey. Since we are using data from March Supplements in successive years, we delete half of one year’s sample in order to insure that we are not including some respondents twice. We include the entire sample for the first year of each two-year period (1989 and 2000) and delete observations for the outgoing rotation in the second year (1990 and 2001) since this cohort had been surveyed the previous year. The resulting

sample sizes are shown in Table 1 for each of the four subsamples of single women for each time period. For 2000-01, there were 1,090 single mothers and 1,206 single childless women in the rural sample and 4,502 single mothers and 6,125 single childless women in the urban sample.

We examine public assistance and Earned Income Tax Credit receipt, employment and poverty for these subsamples. In order to provide some context for the discussion of the impact of the policy changes on work and poverty, we examine how receipt of welfare and amount of welfare income changed over the period for single mothers. Welfare receipt is determined by whether the respondent indicated that the family received any public assistance the previous calendar year (the CPS's FINCPAW variable).<sup>ix</sup> We also report the amount of public assistance (FPAWVAL) for those single mothers who receive it.

The CPS income measure does not include any Earned Income Tax Credit (EITC) received by the family and hence the computation of poverty status does not reflect EITC receipt [Lichter and Jensen, 2002]. The significant increases in the EITC program over the 1990s makes this a potentially important source of income for many single mother families. The CPS did not collect information on the EITC before 1992, and so we are unable to determine from the CPS the size of the changes in EITC payments over the period of our analysis. We do, however, report the size of the EITC for 2000-2001 to provide some indication of its importance to single mother families at the end of the decade.

We examine both employment status and intensity of employment. A respondent is considered employed if she indicated that she was either "working" or "with job, not at work". This variable (ALFSR) measures labor force status as of the interview week. For those who are employed, we examine intensity of employment using the CPS classification (A-WKSTA)

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indicating current work status, full-time (if they usually worked more than 35 hours per week) or part-time (those usually working 35 hours or less per week). We also consider whether they worked a full year (40 or more weeks) the previous year (by recoding WEXP).

The various social policy changes examined in this paper were intended to reduce economic hardship for single mother families with children. Perhaps the best single indicator of the success of these policies would be evidence that the policies induced reductions in the poverty rate for the target group. We examine both changes in the overall poverty rate for our subgroups, and changes in the depth of poverty. In spite of its well-known limitations, we use the official poverty rate as our poverty measure<sup>x</sup>. We also consider changes in the percent of households that are in deep poverty (incomes below 50 percent of the poverty threshold), poverty (0.5 to .99 of poverty threshold) and near poverty (1.0 to 1.5 of the poverty threshold).

There appear to be some important differences in the demographic characteristics of female headed households in metropolitan and nonmetropolitan areas that might affect the impact of welfare reform and other social policies (Table 1). Rural female heads are more likely to be white than urban female heads. Rural childless single female heads are more likely to have dropped out of high school and less likely to have completed college.

Table 1 also shows some changes over the decade in these characteristics, including increased levels of 'some college' and decreased levels of "high school dropout" for single mothers and childless women, increases in average age of single mothers and childless women in sample<sup>xi</sup>, and decreases in the proportions of single mothers who are black. For the most part the patterns of change do not appear to differ between urban and rural areas.

Finally, and importantly, there are significant and large differences in demographic characteristics between single mothers and childless single female household heads. Single

childless female heads are older, better educated and more likely to be white than single mothers. We explore the possibility that demographic differences affect our results by estimating probit models of employment and poverty that include demographic controls.

## **RESULTS: DIFFERENCE-IN-DIFFERENCE ANALYSIS WITH UNCONDITIONAL PROBABILITIES**

We first examine the changes in outcomes for single mothers in rural and urban areas between 1989-90 (pre-reform) and 2000-01 (post-reform) by calculating the unconditional probabilities of employment and poverty for rural and urban single female household heads with children under 18 for each time period. Then we estimate differences-in-differences by comparing these outcomes with those of rural and urban single female household heads without children: Were these changes in rural and urban areas due to the effect of the social policy changes? In the final section, we estimate the difference-in-differences-in-differences to answer the question: Were the impacts of policy changes different in rural v. urban areas?

### ***The Policy Effect: Women With vs. Women Without Children***

Single mothers with children under 18 reduced their use of public assistance dramatically during the 1990s: the percent of these mothers in rural areas receiving welfare declined from 31 to 15 percent. The percent of urban single mothers with children receiving welfare declined from 33 to 15 percent. Those receiving welfare saw large declines in the amount of welfare payments: the median rural welfare payment declined almost 50 percent in real terms from \$3,817 to \$1,944, while the median urban welfare payment declined 39 percent, from \$5,183 to \$3,160 (all dollar amounts in the paper are reported in 2000 dollars).

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In 2000-01 single mothers reported significant use of the EITC: 63.7 percent of rural single mothers and 58.0 percent of urban single mothers received Earned Income Tax Credit payments. The median EITC payment for rural single mothers was \$2,200, for urban mothers, it was \$2,066. The share of rural single mothers receiving EITC was four times the share receiving welfare, and the median EITC payment was about 10 percent larger than the median welfare payment in 2000-01.

We attempt to assess the extent to which the changes observed in single mother outcomes are due to the changes in social and tax policy during the 1990s by comparing these changes with those of a comparison group (single women without children under 18) that was largely ineligible for most of the policies outlined in an earlier section of this paper. To the extent that the assumptions underlying our analysis hold, difference-in-difference estimators provide estimates of the effect of these policies on the employment and poverty outcomes of the target population for most of these policies: single mothers with children. The differences highlighted below are found in Table 2.

***Employment.*** The 1990s saw increases in both work and full-year work among those working for both urban and rural single mothers. The percent of rural single mothers employed increased significantly (from 62 to 73 percent) during the decade, as did the percent of these with full year work (from 74 to 79 percent) (Table 2). The percent of urban single mothers employed increased significantly (from 62 to 75 percent) during the decade, as did the percent of these with full year work (from 77 to 82 percent). However, full-time work did not increase for either rural or urban single mothers.

The policy changes appear to have increased employment among both urban and rural single mothers. The “policy effect” on employment is significant in both urban and rural areas:

rural single mother employment increased by 16.6 percentage points relative to their childless counterparts and urban single mother employment increased by 15.5 percentage points relative to their childless counterparts. We caution that the policy relevance of these differences rests on the assumption that the observed declines in employment of women without children during the 1990s (-6.0 percentage points in rural areas and -2.4 percentage points in urban areas) would have been observed for single mothers in the absence of the policy changes. It is possible that our estimator overestimates the impact to the extent that the increase in single mother entry into the labor force may have affected employment of childless women.

The policy changes also significantly increased the percent of employed single mothers who worked full-year. Rural full year employment for single mothers increased by 5.9 percentage points and urban full-year employment increased by 4.1 percentage points because of the policy changes.

The policy changes of the 1990s do not appear to have affected the share of working single mothers who worked full-time in either rural or urban places: the share of working single women who worked full-time did not change significantly for any of the groups of single women.

**Poverty**. The 1990s also saw a significant reduction in poverty rates for both rural and urban single mothers. The poverty rate appears to have declined for urban single mothers, more than for rural single mothers. This decline was concentrated on those in deep poverty (those whose incomes are below 50 percent of their poverty threshold): the rate of deep poverty in urban areas declined by 7.0 percentage points from 22.4 percent to 15.4 percent. Rates of “near poverty” (incomes between the poverty threshold and 150% of threshold) increased 3 percentage points for urban single mother families during the 1990s from 14.2 to 17.2 percent.

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The impact of the social policy changes of the 1990s on single mother poverty was substantial in both rural and urban areas. These changes reduced poverty by 6.8 percent in rural areas and 9.5 percent in urban areas. And deep poverty was significantly reduced in urban areas: the policy changes led to a 7.9 percentage point reduction in single mother deep poverty in urban places.

### *Urban vs. Rural Policy Effect*

Whether the policy impacts differed between rural and urban areas is indicated by the figures in the right-most column of Table 2. Here the estimates of impact suggest similar impacts of the policies of the 1990s: the slightly greater impacts on employment and full year employment for rural than urban single mothers are not significantly different from one another. The impact of these policies on poverty and deep poverty appear, however, to have been quite a bit greater in urban areas than rural areas (poverty was reduced 2.7 percentage points more in urban areas and deep poverty reduced 4 percentage points more), but these impacts are also imprecisely estimated.

Our results from the unconditional difference-in-difference analysis are generally consistent with those studies cited earlier in the paper, although our estimated impacts tend to be larger because they are examined over a longer time period. Although earlier studies suggest that caseload declines have been greater in urban areas, we find that welfare receipt has declined greatly in both rural and urban areas (with no significant difference between urban and rural declines). We find, like McKernan et al. [2002], that the impact of the policy changes on employment is large in both urban and rural areas and that the rural urban difference is not significant.. McKernan et al. estimate that policy changes between 1995-96 and 1998-99 increased the employment of rural and urban single mothers by 6.7 and 8.7 percentage points

respectively. Our corresponding estimates for the 1989-90 to 2000-01 period are 16.6 and 15.5 percentage points. And, whereas other studies have found no differences in the impact of welfare reform on poverty in rural and urban areas, our results are weakly suggestive of a greater impact on poverty and particularly deep poverty in urban areas. As noted above, the impact on deep poverty in urban areas (-7.9 percentage points) is significant, but the impact on deep poverty in rural areas (-3.9 percentage points) is not significant, and the difference between these impacts (4 percentage points) is not statistically significant.

### *Alternative Specification*

To account for the possibility of endogeneity of fertility and policy changes, we compared changes in employment and poverty of single women with less and more education. Eligibility for welfare and many other social programs depends on income and family status. Since income is strongly related to education, better educated women are less likely to be eligible for these programs, even if they become single parents. Because education is arguably less likely to be changed in the short run by a woman's decisions than marriage or fertility, it is often considered to be more exogenous to policy than motherhood and marital status.

Under this hypothesis, the changes in social policy in the 1990s are expected to have had a greater impact on less educated than more educated women. Table 3 presents difference estimators for rural and urban single women with different levels of educational attainment. As expected, the results indicate that the employment rates of less-educated urban single women increased significantly more than those of better-educated urban single women during the 1990s. This difference is significantly greater for urban than rural areas. Less educated rural single women appear to have lost ground relative to their better educated rural counterparts, whereas less educated urban women appear to have gained on their better educated counterparts.

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Poverty rates declined *less* for rural less-educated single women than for more educated single women; by contrast, poverty rates and deep poverty rates declined significantly *more* for less educated urban women than for more educated urban women. The rural- urban difference in the differences in poverty rate reduction between better and less educated single women is significant.

The results for urban single women in Tables 2 and 3 reinforce each other, and suggest that welfare reform and the other social policy changes of the 1990s led to large and significant gains in employment and reductions in poverty and deep poverty for the women most likely to be affected by the policy changes. The policy changes had large impacts on employment and poverty for both the single mother population and less-educated single women.

The results for rural areas suggest policy effects on single mothers but not single less-educated women. The comparison of single mothers with single women without children suggests a large policy impact on employment and full-year employment in rural areas for those expected to be most affected by the policy changes, and also a reduction in poverty. The comparison of less-educated and better-educated single women in rural areas, however, suggests that the policy changes did not improve employment outcomes for less-educated single women expected under the alternative specification to be affected by policy and resulted in considerably worse poverty outcomes.

How might these results be explained? One possibility is that employment and poverty improvements observed for rural single mothers were concentrated among those with some college (about one fifth of welfare recipients had some college in both periods), and that rural single mothers without college education were less able to respond to the policy changes by getting jobs and moving out of poverty. It also might be the case that education is endogenous to

the policy change, and that policy-induced gains in education led to better poverty outcomes for single women in rural areas (whether or not they had children). While possible, this explanation of endogeneity of education and policy change seems less plausible than the explanation that already better-educated single mothers benefited most from welfare reform. Whether changes in educational attainment are endogenous or not, these changes might have had a greater impact on poverty and employment outcomes for rural women than any changes in fertility, given rural labor conditions.

The alternative specification rests on the assumption that better educated and less educated single women would have had the same employment and poverty outcomes over the 1990s in the absence of the policy changes. In the end, this seems less convincing than the assumption underlying the main specification that single mothers and childless women would have had similar outcomes.

## **RESULTS: CONDITIONAL DIFFERENCE-IN-DIFFERENCE ANALYSIS**

In this section of the paper, we investigate whether the differences in outcomes we observed in the previous section might have been affected by the differences in demographic characteristics among rural and urban single mothers and single females without children, and changes in these characteristics during the 1990s.

In order to explore the extent to which any differences in demographic characteristics among single women in rural and urban areas affect the findings of the difference-in-difference analysis, we estimate a set of probit models that include a vector of demographic characteristics along with the vector of binary variables indicating residence, the presence of children and time period and their interactions. The employment model is:

$$\Pr (E=1|\mathbf{x}) = F(\mathbf{XB})$$

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Where  $\Pr(E=1|\mathbf{x})$  is the probability that a single female head of household is employed, and  $\mathbf{X}$  is the vector of binary variables indicating rural or urban residence, presence of children under 18 years of age, and time period (pre- or post-reform) and their interactions; and demographic variables relating to age, education and race; and  $\boldsymbol{\beta}$  is the vector of unknown parameters estimated using Maximum Likelihood.

We also estimate a poverty model with the same set of independent variables:

$$\Pr(\text{Poverty}=1|\mathbf{x}) = F(\mathbf{X}\boldsymbol{\beta})$$

Where  $\Pr(\text{Poverty}=1|\mathbf{x})$  is the probability that a single female head of household is poor, and  $\mathbf{X}$  and  $\boldsymbol{\beta}$  are as in the employment equation.

Table 4 reports the unconditional probabilities from the difference-in-difference analysis of Table 2 in the first row of each set of outcomes (employment and poverty). In the second row for each outcome, Table 4 reports estimated probabilities using the probit model. The estimated probability of employment (or poverty) in each time period is calculated by computing a probability estimate for each observation in the sample using the parameter estimates from the probit analysis of employment (or poverty) and the values for the demographic characteristics for each observation, and averaging these individual probability estimates across the entire sample.

### ***The Policy Effect: Women With vs. Women Without Children***

***Employment.*** During the 1990s, the percent of rural single mothers who were employed increased significantly (from 62 to 73 percent), as did the percent of urban single mothers who were employed (from 62 to 75 percent). If one controls for demographics, there is no increase in the estimated probability that a rural or urban single mother would be employed over the

1990s. Stated another way, for a single mother of a given age, race and education, there was no change in the probability of employment over the 1990s.

Single women without children (both rural and urban) experienced significant decreases in employment during the 1990s. If one controls for the demographic characteristics of the single women, the decreases are much larger, suggesting that changes in the demographic profile (age distribution, race, education) of these women made them more employable over the decade.

The “policy effect” on employment is significant in both urban and rural areas, with and without controls for demographic characteristics. When one controls for demographic characteristics, however, the policy effect is smaller: controlling for demographics, rural single mother employment increased by 11.8 (instead of 16.6) percentage points relative to their childless counterparts and urban single mother employment increased by 7.3 (instead of 15.5) percentage points relative to their childless counterparts. This suggests that some part of the changes in outcomes for the treatment group and/or the comparison group attributed to the policy changes in the unconditional analysis are due to changes in the demographic composition of the groups. It also suggests that the policy changes did have some effect: even if the demographic characteristics had not changed, the policy changes would probably have improved the likelihood that the average single mother would be employed.

This inference about impacts rests on the assumption that the predicted declines in employment of women without children during the 1990s (-14.3 percentage points in rural areas and -7.3 percentage points in urban areas) would have been observed for single mothers with similar demographics in the absence of the policy changes. As suggested earlier in the difference-in-difference discussion, it is possible that our procedure does not take into account

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how single mother entry into the labor force may have affected employment of childless single women.

**Poverty.** Poverty rates are higher in rural areas than in urban areas, both in the absence of controls and when controlling for demographics. The unconditional difference results indicated that during the 1990s there was a significant reduction in the poverty rate for both urban and rural single mothers. The reduction for urban single mothers (-9.6 percentage points) was slightly larger than that for rural single mothers (-7.3 percentage points). When demographic characteristics are taken into account, however, predicted poverty rates *increased* over the decade for single mothers – an increase of 8.7 percentage points for rural single mothers and of 7.4 percentage points for urban single mothers. If the demographics of the populations had not changed, poverty rates would have increased significantly. Single mother poverty apparently went down in the 1990s because the characteristics of single mothers changed over the decade in a way that improved their prospects for moving out of poverty.

When demographics are controlled for, predicted poverty rates also increased significantly for single women without children. If there had been no changes in demographics, poverty rates would have increased 11.9 percentage points for rural single women without children and 5.7 percentage points for their urban counterparts. Observed poverty rates for single women without children, however, did not change much between the early and late 1990s. This suggests that demographics for single women without children changed in a way that facilitated movement out of poverty.

The unconditional difference-in-difference analysis suggested that the social policy changes of the 1990s reduced single mother poverty by 6.8 percentage points in rural areas and 9.5 percentage points in urban areas, with both estimates statistically significant. When the demographic characteristics are controlled for, however, the differences are not significantly

different from zero in either instance. If demographic characteristics had not changed (i.e., holding demographics constant), the social policy changes of the 1990s would have not have reduced poverty.

### ***Urban vs. Rural Policy Effect***

***Employment.*** While the unconditional difference-in-difference estimates suggested that employment impacts of the policies of the 1990s were not significantly different from one another in urban and rural areas, the conditional estimates from the probit analysis indicate that the impacts of these policy changes on employment were significantly different in rural and urban areas: the policy impact on employment was 4.5 percentage points higher in rural areas than in urban areas. The policy changes of the 1990s would have increased the likelihood of employment for single mothers with average demographic characteristics almost 5 percentage points more in rural places than urban places.

***Poverty.*** The unconditional difference-in-difference-in-difference estimates suggest similar impacts of the policies of the 1990s in both rural and urban places: the impacts on poverty for rural and urban single mothers are not significantly different from one another. The probit analysis, however, finds a significant 5.0 percentage point difference in the impacts between rural and urban areas: controlling for demographic characteristics, predicted poverty rates in rural areas went down 5.0 percentage points more in rural than in urban areas. If characteristics of the population had not changed during the 1990s in the way they did, the policies would have reduced poverty 5 percentage points more in rural than in urban areas. That the policy changes reduced observed poverty less in rural areas than in urban suggests that the demographic changes in the urban areas were more favorable to poverty reduction than in the rural areas.

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### WHAT HAVE WE LEARNED?

When demographic characteristics are controlled for, welfare reform and the other social policy changes of the 1990s increased employment but did not reduce poverty. The predicted impact on both employment and poverty is greater in rural than in urban areas. These policy changes increased estimated employment probabilities by 11.8 percentage points in rural areas and 7.3 percentage points in urban areas, and the 4.5 percentage point greater impact in rural areas is significant.

The impacts of the policy changes on single mother poverty were not significantly different from zero in either rural or urban areas: neither the 3.2 percentage point reduction in rural areas nor the 1.8 percentage point increase in urban areas was statistically significant at the .05 level. However, the 5.0 percentage point difference between rural and urban areas in the impacts was significant. The policy changes reduced poverty 5 percentage points more in rural areas, holding demographics constant.

The differences in results between the unconditional analysis and the analysis that controlled for demographic characteristics suggest that some of the policy impacts inferred from the analysis of unconditional differences-in-differences were due to demographic differences among the populations rather than the changes in policy. Likewise, the lack of difference in inferred policy impacts between rural and urban areas in the unconditional analysis appears to be due to differences in demographic characteristics of single female heads in those two areas. Given similar demographics, rural places would have seen greater employment and poverty impacts from welfare reform than urban areas.

It does not appear that social policy changes in the 1990s, in and of themselves, systematically disadvantaged rural areas. Yet employment and poverty impacts of these changes

were not significantly better for single mothers in rural areas: the estimated employment and poverty impacts of the policy changes were not larger than those for their urban counterparts, if demographics are not controlled for. It appears that there are some differences in personal characteristics, local labor market conditions, work barriers or availability of services that make it more difficult for the social policy changes to move single mothers in rural areas into employment and out of poverty. The evidence in this paper points to differences in age, race and education as contributors to the differential impact on single mothers in rural and urban places. Age and race are of course not alterable by public policy, but the barriers to work based on discrimination against older and minority workers are addressed in public policy. Perhaps more amenable to policy is improvement in educational attainment. Improving the educational attainment of rural single mothers would increase their earning power and improve their life-chances.

The fact that rural single mothers have higher rates of high school completion and some college than their urban counterparts, however, points to differences in local labor markets and local work barriers as contributing to the differential impacts. Some studies have addressed the extent to which differences in local labor market conditions between rural and urban places play a role in explaining differences in employment and poverty outcomes for rural and urban workers. Mills [2001] finds that local economic conditions have relatively weak effects on transition rates from unemployment to employment, although adjacency to metropolitan areas improves these rates for rural workers. Davis and Weber [forthcoming] find evidence that the effect of local job growth on employment outcomes may be stronger in urban than in rural areas.

Cotter [2002] in a multi-level analysis using 1990 Public Use Microdata Samples (PUMS) data, concludes that both labor market characteristics and household characteristics are important in explaining poverty. He concludes that “much of the difference in poverty [between

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metro and nonmetro areas] is attributable to the *context* of nonmetropolitan areas rather than the *composition* of nonmetropolitan Americans. Although labor market characteristics account for more than half of the difference in poverty between metropolitan and nonmetropolitan areas, residents of nonmetropolitan areas are still significantly more likely to be poor.” [p. 549].

The evidence presented here suggests that the social policies of the 1990s would have worked better in rural than in urban areas if age, race and educational characteristics had been the same. The fact that employment and poverty impacts were not better in rural areas suggests that there are differences between rural and urban areas, perhaps related to local labor market conditions and availability of services as well as demographic characteristics, that affect these outcomes. It would help in the design of policy to have a better understanding of how these differences affect the employment and poverty outcomes for disadvantaged populations. The PUMS data from the 2000 Census will provide a rich opportunity to pursue this research.

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**Table 1: Demographic Characteristics of Female Heads of Households in Nonmetropolitan and Metropolitan Areas: 1989-90, and 2000-01**

	Rural Female Headed Households				Urban Female Headed Households			
	Mothers with Children < 18		Women without Children < 18		Mothers with Children < 18		Women without Children < 18	
	Pre-reform	Post-reform	Pre-reform	Post-reform	Pre-reform	Post-reform	Pre-reform	Post-reform
<b>Educational Distribution<sup>(a)(b)</sup></b>								
% H.S. dropout	20.9	18.7	14.5	13.6	23.9	21.5	9.1	9.0
% H.S. Diploma	44.1	39.1	36.9	31.8	41.6	34.9	29.1	24.1
% Some college	24.4	31.5	22.0	32.5	22.4	31.0	26.0	31.5
% College degree+	10.7	10.7	26.6	22.0	12.1	12.7	35.8	35.4
	p<.001		p<.001		p<.001		p<.001	
<b>Median age<sup>(c)</sup></b>								
	34.0	36.0	39.0	43.0	34.0	36.0	36.0	40.0
<b>Race<sup>(a)(b)</sup></b>								
% White	74.4	75.7	84.6	83.5	60.6	61.9	79.5	74.2
% Black	22.9	20.4	13.2	14.0	36.5	34.3	16.9	21.0
% Others	2.8	3.9	2.3	2.5	3.0	3.7	3.6	4.8
	p<.001		p<.001		p<.001		p<.001	
<b>Mean # of children</b>								
	1.7	1.7	--	--	1.8	1.7	--	--
<b>Occupational distribution<sup>(a)(b)</sup></b>								
Professional, Tech, Managerial	21.7	25.7	33.4	31.4	23.8	26.7	39.9	44.1
Sales, Admin Support, Clerical	28.2	29.3	27.8	31.2	38.2	36.4	36.2	33.0
Service	27.5	28.1	18.9	21.0	22.4	24.3	14.4	15.0
All other "blue collar" jobs	22.6	16.9	19.9	16.4	15.3	12.6	9.5	7.9
	p<.05		n.s.		p<.001		p<.001	
N	1316	1090	1264	1206	4590	4502	5764	6125

- a) Chi-square tests for changes in educational distribution, racial composition, and occupational distribution, from the pre-reform to post-reform period for rural mothers, for rural childless women, and then repeated for urban mothers and urban childless women. The significance levels for these differences are shown in the table
- b) Chi-square tests for rural/urban differences in the pre-reform distributions for mothers were all statistically significant at the .001 level. Tests for pre-reform differences in these distributions between mothers and childless women were also statistically significant at the .001 level. Significance levels for these tests are not shown in the table.
- c) Non-parametric Kruskal-Wallis test for significance of difference in medians. All differences from the pre-reform to post-reform period for rural mothers, rural childless women, urban mothers and

urban childless women are significant at .001 level, as were pre-reform differences between rural and urban mothers, and pre-reform differences between mothers and childless women for both rural and urban areas.

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**Table 2: Impacts of Policy Changes on Employment and Poverty in Female-headed Households in Nonmetropolitan and Metropolitan Areas: 1989-90 and 2000-01**

	Rural Female Headed Households							Urban Female Headed Households							Rural Minus Urban (o)=(g)-(n)		
	Mothers with children			Women with no children <18				Policy Effect (g)=(c)-(f)	Mothers with children			Women with no children <18				Policy Effect (n)=(j)-(m)	
	Pre-reform (a)	Post-reform (b)	Change (c)=(b)-(a)	Pre-reform (d)	Post-reform (e)	Change (f)=(e)-(d)	Pre-reform (h)		Post-reform (i)	Change (j)=(i)-(h)	Pre-reform (k)	Post-reform (l)	Change (m)=(l)-(k)				
% Employed	62.2	72.8	10.6 ***	82.7	76.7	- 6.0 **	16.6***	62.2	75.3	13.1 ***	85.6	83.2	- 2.4 *	15.5***	1.1		
% Full-year	73.8	79.1	5.3 *	85.2	84.6	-0.6	5.9 *	76.7	81.5	4.8 ***	88.0	88.7	0.7	4.1*	1.8		
% Full-time	79.1	80.3	1.2	85.7	85.3	-0.4	1.6	81.2	81.7	0.5	88.6	88.3	-0.3	0.8	0.8		
% of families poor	50.2	42.9	- 7.3 **	22.4	21.9	-0.5	- 6.8 *	43.5	33.9	-9.6 ***	13	12.9	-0.1	- 9.5 ***	2.7		
% under .5 of poverty line	25.9	22.0	-3.9	8.3	8.3	0.0	-3.9	22.4	15.4	- 7.0 ***	5.2	6.1	0.9	- 7.9 ***	4.0		
% from .5 to .99 of poverty line	24.3	20.9	-3.4	14.1	13.5	-0.6	-2.8	21.1	18.5	- 2.6 *	7.7	6.9	-0.8	-1.8	-1.0		
% from 1.0 to 1.5 of poverty line	17.3	19.5	2.2	12.9	14.4	1.5	0.7	14.2	17.2	3.0 *	7.4	8.3	0.9	2.1	-1.4		
N	1,316	1,090		1,264	1,206			4,590	4,502		5,764	6,125					

\*p<.05

\*\*p<.01

\*\*\*p<.001

These percentages are raw percentages from the weighted CPS sample and are not adjusted for demographic characteristics. The hypothesis of no difference in probabilities was tested using a z-test of differences in proportions.

**Table 3. Alternative Specification: Impact of Policy Changes on Employment and Poverty in Nonmetropolitan and Metropolitan Areas:1989-90 and 200-01**

	Rural Female Headed Households							Urban Female Headed Households							Rural Minus Urban (o)=(g)-(n)	
	High School or Less			Some College				Policy Effect (g)=(c)-(f)	High School or Less			Some College				
	Pre-reform (a)	Post-reform (b)	Change (c)=(b)-(a)	Pre-reform (d)	Post-reform (e)	Change (f)=(e)-(d)	Pre-reform (h)		Post-reform (i)	Change (j)=(i)-(h)	Pre-reform (k)	Post-reform (l)	Change (m)=(l)-(k)	Policy Effect (n)=(j)-(m)		
% Employed	65.9	66.6	0.7	81.8	84.3	2.5	-1.8	64.4	69.7	5.3 ***	86.6	87.1	0.5	4.8 **	- 6.6*	
% Full-year	78.5	78.8	0.3	81.2	85.4	4.2	-3.9	80.3	80.9	0.6	86.4	88.8	2.4	-1.8	-2.1	
% Full-time	81.6	81.5	-0.1	84.0	84.3	0.3	-0.4	84.2	82.7	-1.5	87.2	87.4	0.2	-1.7	1.3	
% of families poor	44.0	43.9	-0.1	25.5	17.4	-8.1**	8.0**	40.3	36.5	-3.8**	12.7	11.1	-1.6	-2.2	10.2 **	
% under .5 of poverty line	22.9	21.2	-1.7	8.9	7.2	-1.7	0.0	20.7	16.5	-4.2***	4.9	5.3	0.4	-4.6 **	4.6	
% from .5 to .99 of poverty line	21.1	22.7	1.6	16.6	10.2	-6.4**	8.0**	19.5	19.9	0.4	7.7	5.9	-1.8	2.2	5.8	
% from 1.0 to 1.5 of poverty line	16.3	19.2	2.9	13.3	13.9	0.6	2.3	13.0	15.6	2.6 *	7.8	9.4	1.6	1.0	1.3	
N	1,487	1,163		1,061	1,099			5,154	4,527		5,077	5,987				

\*p<.05  
 \*\*p<.01  
 \*\*\*p<.001

The hypothesis of no difference in probabilities was tested using a z-test of differences in proportions.

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**Table 4: Probit Analysis of Impacts of Policy Changes on Employment and Poverty in Female-headed Households in Nonmetropolitan and Metropolitan Areas: 1989-90 and 2000-01**

	Rural Female Headed Households						Urban Female Headed Households						Rural Minus Urban (o)=(g)-(n)		
	Mothers with children			Women with no children <18			Policy Effect (g)=(c)-(f)	Mothers with children			Women with no children <18			Policy Effect (n)=(j)-(m)	
	Pre-reform (a)	Post-reform (b)	Change (c)=(b)-(a)	Pre-reform (d)	Post-reform (e)	Change (f)=(e)-(d)		Pre-reform (h)	Post-reform (i)	Change (j)=(i)-(h)	Pre-reform (k)	Post-reform (l)			Change (m)=(l)-(k)
<b>% Employed</b> (Unconditional probabilities) (%)	62.2	72.8	10.6 ***	82.7	76.7	- 6.0 **	16.6***	62.2	75.3	13.1 ***	85.6	83.2	- 2.4 *	15.5***	1.1
(Conditional on demographic characteristics) (%)	69.8	67.3	-2.5	86.2	72.0	-14.3 ***	11.8***	70.5	70.8	0.3	86.7	79.7	-6.9 ***	7.3 ***	4.5 *
<b>% of families poor</b> (Unconditional probabilities) (%)	50.2	42.9	- 7.3 **	22.4	21.9	-0.5	- 6.8 *	43.5	33.9	- 9.6 ***	13	12.9	-0.1	- 9.5 ***	2.7
(Conditional on demographic characteristics) (%)	39.9	48.6	8.7 ***	17.5	29.4	11.9 ***	-3.2	31.4	38.8	7.4 ***	12.4	18.0	5.7***	1.8	-5.0 *

\*p<.05  
\*\*p<.01  
\*\*\*p<.001

In the unconditional analysis the hypothesis of no difference in probabilities was tested using a z-test of differences in proportions. In the conditional analysis, the hypothesis of no difference in probabilities was tested using the delta-method [Greene, 2000, p. 330-332] in which the variance-covariance matrix is estimated using a second-order Taylor series approximation.

## NOTES

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<sup>i</sup> The terms “rural” and “nonmetropolitan,” and “urban” and “metropolitan:,” are often used interchangeably to refer to “nonmetropolitan” and “metropolitan” areas, respectively. We follow this convention. The Office of Management and Budget has defined as “Metropolitan” those counties that have a city of more than 50,000 people and/or have significant interdependence with a “core” city through commuting. “Nonmetropolitan” counties are those that do not meet these criteria.

<sup>ii</sup> There was a period in the early 1990s when employment growth rate was lower and the unemployment rate higher in metropolitan than in nonmetropolitan areas. See Gibbs [2001]. The reversal of rank of these indicators in the early 1990s represented a distinct reversal of historic patterns. See Economic Research [1997] and Mills [2001].

<sup>iii</sup> In selecting this approach, we considered the judgment of the National Research Council Panel on Data and Methods for Measuring the Effects of Changes in Social Welfare Programs [Moffit and Ver Ploeg, 1999] that “difference in difference methods have some credibility, particularly for large system wide changes” p. 61.

<sup>iv</sup> “By 2000, this left real minimum wages 10.8 percent above their levels in 1989” [Blank, 2002, p.6].

<sup>v</sup> See Blank [2002] for a fuller discussion of these changes.

<sup>vi</sup> The most recent data in Weber et al [2002] was for 1999.

<sup>vii</sup> See NBER website for dates of US business cycles: <http://www.nber.org/cycles.html>

<sup>viii</sup> “Childless” refers here to those who don’t have children under 18 in the home; these women may have older children, even older children living with them. “Childless” here does not indicate anything about a woman’s fertility history.

<sup>ix</sup> Public assistance as defined here includes money received from AFDC and TANF and other public assistance programs such as General Assistance, Emergency Assistance, Cuban/Haitian Assistance and Indian Assistance.

<sup>x</sup> “The official poverty income threshold (for families of various sizes) can be criticized on a number of counts: it miscalculates family economies of scale (i.e., equivalence scales); it fails to take into account – in-kind government transfers (e.g., food stamps); it does not account for geographical variations in cost of living or consumption; it is based on family rather than household income; and it does not adjust for taxes or other nonconsumption expenditures, such as child support payments [Citro and Michael, 1995; Short et.al. 1999]” [Lichter and Jensen, 2002] Lichter and Jensen estimate an Adjusted Poverty Rate that includes EITC payments in income, resulting in a lower poverty rate for both urban and rural areas.

<sup>xi</sup> Is the 2-year increase in median age of mothers surprising or out of the ordinary? We do not believe so for two reasons. First, the mean age at first birth for American mothers in the 1980s and 1990s was increasing at a rate of around 1.5 to 2.0 years per decade. Second, with the declining fertility rate, the average age of those who were mothers would increase. So, women were becoming mothers at later ages,

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and less often. Also, population age structure contributes to this picture, as observed by the trends in childless women. By 2000, the birth dearth of the early 1970s (Gen X) has entered the 18-54 age range, and hence a smaller fraction of 18-54 year olds are in the lower age brackets of that range. Thus, the 18-54 cohort appears to age as the boomers comprise a large portion of that age bracket (in the upper reaches of the 18-54 bracket) and the busters comprise a small fraction of the lower reaches of that 18-54 bracket [See Edwards, 2002].