HOW DID WELFARE REFORM AFFECT THE HEALTH INSURANCE COVERAGE OF WOMEN AND CHILDREN?

John Cawley, Cornell University and NBER
Mathis Schroeder, Cornell University
Kosali I. Simon[1], Cornell University and NBER

May 25, 2004

Paper to be presented at the
Frontiers in Health Policy Research Conference
Washington, D.C.
June 24, 2004

Abstract

There is tremendous interest in understanding the effects of welfare reform enacted by the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996. Our interest lies in one possible consequence of welfare reform: the loss of health insurance coverage.

This paper advances the literature by utilizing the 1992-1996 panels of the Survey of Income and Program Participation (SIPP), matching type of insurance coverage at a specific point in time to the presence of waivers from AFDC or TANF implementation in each state at a specific point in time. We utilize a difference in differences method. Specifically, we look at the difference before and after welfare reform in the insurance coverage of women and children who were likely to be eligible for welfare compared to those who were likely to be ineligible for welfare.

[1] Corresponding author. 106 MVR Hall, Department of Policy Analysis and Management, Cornell University, Ithaca NY 14853. (607) 255-7103 (office) (607) 255-4071 (fax) Email: kis6@cornell.edu

Introduction

Since the 1990s, welfare caseloads have fallen considerably, at least in part due to welfare reform as enacted in the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) of 1996. PRWORA intended to leave Medicaid eligibility unaffected, but studies suggest that administrative problems may have undermined that intention and led to rising rates of uninsurance. In fact, there are several pathways through which welfare reform may have directly or indirectly affected individuals' health insurance coverage. First, former welfare recipients who enter the labor force because of welfare reform may raise their incomes to the extent that they lose Medicaid eligibility; for those who are not offered employer-provided insurance or who do not take it up, this may result in uninsurance. Second, a disadvantage of moving people off of the welfare rolls is that it makes it more difficult for them to enroll in Medicaid. Prior to the passage of PRWORA in 1996, all individuals on welfare were automatically provided Medicaid coverage. After the passage of PRWORA, those who are deterred from applying for welfare may never enroll in Medicaid, even if they are eligible, because they never interact with a welfare case officer who could notify them of their eligibility and/or enroll them.

On the bright side, those who responded to PRWORA by entering the labor force may acquire employer-provided coverage and hence switch from Medicaid to private coverage. PRWORA may also have affected health insurance coverage by encouraging single mothers to marry. This could push their family incomes above Medicaid eligibility thresholds; on the other hand, it could also increase their access to privately-provided

insurance. It seems clear that, for individuals at risk of being on welfare prior to PRWORA, welfare reform lowered the probability of publicly-provided coverage and raised the probability of private coverage. The net effect is ambiguous but we hypothesize that PRWORA reduced the probability of health insurance coverage through any source among those previously eligible for welfare.

Three studies to date offer important evidence on this question. Each asks a research question that differs from ours in various degrees, but each focuses on related issues and yields important insights into our research question.

Kaestner and Kaushal (2003) ask a research question that is closely related: to what extent did the overall decline in welfare caseload between 1996 and 1999 affect the insurance status of the pre-1996 welfare population, and to what extent did the change in caseload due to welfare reform have a differential impact than the change in caseload due to other factors? Their focus on estimating this differential impact represents an important distinction between their paper and ours, as our interest lies in the absolute impact of welfare reform on insurance, not limited to its impact through the change in caseload.

Kaestner and Kaushal examine the Current Population Survey data for 1993-2000 and identify the impact of welfare reform on health insurance status by exploiting variation across states in the implementation of waivers from AFDC (prior to 1996) and TANF (1996 and thereafter). They estimate a difference-in-differences model, comparing the change in insurance status before and after welfare reform among the treatment group (women and children likely to be eligible for Medicaid) to the control group (women and children unlikely to be eligible for Medicaid), controlling for welfare caseload. They

conclude that the overall decline in caseload of 42 percent from 1996-1999 was responsible for increases in uninsurance of 2-9 percent among women, and of 6-11 percent among children, who were eligible for welfare prior to PRWORA. Further, they infer that changes in caseload due to welfare reform had less adverse impact on the probability of insurance than changes in caseload due to other factors.

Bitler, Gelbach, and Hoynes (2003) also study the extent to which welfare reform affected the probability of insurance, but do so as part of a broader research question: how did welfare reform affect health care utilization and self-reported health status among the welfare-eligible population? They study data from the Behavioral Risk Factor Surveillance System (BRFSS) for 1990-2000, and their identification strategy is similar to that of Kaestner and Kaushal: they exploit variation across states in the timing of AFDC waivers and TANF implementation. However, they do not use a difference-in-differences (or treatment-control) approach and do not study the impact of welfare reform as it operates through changes in caseloads. Bitler, Gelbach, and Hoynes define three different groups that are likely to be eligible for welfare: Hispanic working-age females, black working-age females, and working-age female high school dropouts; they find different impacts of welfare reform for each group. A state waiver from AFDC is associated with a lower probability of any insurance among Hispanic working-age females, but not black working-age females or working-age females who are high-school dropouts. The implementation of TANF in a state had no impact on the probability of insurance in any of those three groups. In the Hispanic and high-school dropout samples, both AFDC waivers and TANF were associated with an increase in the probability of being uninsured and not employed.

The conclusion of Bitler, Gelbach, and Hoynes (2003) that welfare reform especially decreased the probability of insurance among Hispanics is somewhat at odds with the findings of Borjas (2003), who concludes that while welfare reform decreased the probability of Medicaid coverage among immigrants, this decrease was fully offset by employer-provided coverage as a result of increased labor supply. Borjas (2003) studies 1995-2001 CPS data using a difference-in-differences approach. Specifically, he identifies the impact of welfare reform by exploiting variation across states in generosity to immigrants after PRWORA, and compares changes in insurance experienced by non-citizens to those of naturalized citizens and natives.

This paper builds on the previous literature in the following ways. First, it matches detailed health insurance coverage in a specific month to the welfare policies prevailing in the individual's state during that month. Not only are we measuring the incidence of health insurance coverage, but also whether that coverage was through an employer, a privately purchased insurance plan, or a public source, and whether it was held in the person's own name. The previous studies either lacked detailed insurance information, lacked information on children's insurance, or did not know insurance status by month. The CPS, which was used by Kaestner and Kaushal (2003) and Borjas (2003), contains detailed information on the type of health insurance coverage, but refers only to whether that type of coverage was held at some point during the previous year; i.e. it is not specific to a particular month. The BRFSS, which was used by Bitler, Gelbach, and Hoynes (2003), has insurance data for adults specific to a particular month, but it is not detailed (that is, it does not indicate whether the insurance is publicly or privately provided, or in whose name it is held).

The second contribution of this paper is the use of longitudinal data, which allows us to control for person-specific fixed effects. This is important because we can compare the impact of policies on individuals holding constant their unobserved characteristics.

Data

The Survey of Income and Program Participation (SIPP) is a nationally representative sample of Americans over the age of 15 that consists of a series of four-year panels starting in 1984 with sample sizes ranging from approximately 12,000 to 40,000 households.[2] The SIPP interviews households at 4-month intervals for up to 4 years, collecting data on the month just completed and each of the three prior months after the last interview. Evidence suggests that the data suffers from recall bias, so we limit our analysis to the data specific to the month just completed prior to the interview. As a result, we have up to twelve observations for each individual in the SIPP. This paper uses data from the 1992-1996 panels of the SIPP covering the period 1992-1999.

Each interview contains information on the respondent's insurance coverage and the source of their coverage for a particular month. We study the following outcomes in the SIPP: an indicator variable for whether one has health insurance coverage through any source, an indicator for whether the individual is covered by Medicaid or SCHIP, and an indicator for whether one receives health insurance coverage through an employer. For women, we also examine whether such employer-provided coverage is in one's own name or through a spouse. The SIPP also contains information on job status and demographic characteristics that may influence insurance status (e.g. age, race, gender, education, marital status, and family size). The set of regressors used in each regression

[2] There are also interview records for children in the household, based on parent's reports.

includes: highest grade completed, age, number of children, marital status, indicator variables for each individual, and indicator variables for each year and state. Summary statistics of the SIPP data appear in Appendix Table 1.

Publicly available state identifiers permit the merger of state policies and macroeconomic variables with the SIPP. We focus on two policy variables: an indicator for the implementation of a waiver from Federal AFDC regulations, and an indicator for implementation of TANF. We also control for other state-level characteristics, including current unemployment rate, its twelve-month lag, real per capita income, the real effective state minimum wage, real state maximum welfare benefit for a family of three, the Earned Income Tax Credit, and state's Medicaid/SCHIP generosity.

The data on the timing of AFDC waivers and TANF implementation come from ASPE (1999). Appendix Table 2 lists the date of implementation of AFDC waivers and TANF. If a state either never applied for an AFDC waiver, or was never granted one, no date is listed. If a state received multiple waivers, the table lists the earliest date of implementation. AFDC waivers were implemented between 1992 and 1996. If a state had a waiver application approved, but the waiver was never implemented, we code the state as not having had a waiver. TANF implementation took place between late 1996 and January 1998. We use ASPE's "actual" TANF implementation date when it differs from the official implementation date.

Our measure of Medicaid/SCHIP generosity for children is a simulated measure of public health insurance eligibility as in Currie and Gruber (1996). Specifically, we simulate the fraction of children under age 18 who would have been eligible for public health insurance had their families lived in a given state in a given year (after adjusting

financial variables for inflation), using the 1996 March Current Population Survey. This produces an index that measures the generosity of public assistance health insurance in a given state in a given year. We create a similar index for pregnant women.

Unemployment rates are calculated at the state by month level from the Bureau of Labor Statistics, Local Area Unemployment Series. State per capita income data were calculated by the Bureau of Economic Analysis and are adjusted for inflation and reported in year 2000 dollars. The maximum cash welfare benefit for a family of three is taken from The Green Book, various editions. The minimum wage by state comes from Neumark and Washer (2000) which we crosschecked, and updated for the most recent years, using the Monthly Labor Review. EITC rates come from various sources including Neumark and Washer (2000) for years 1990-1994, the Center for Budget and Policy Priorities website for the years 1995-2000, and the Green Book. Summary statistics of the state-level variables appear in Appendix Table 3.

Methods

There are several challenges to identifying the effect of welfare reform on insurance coverage. First, there may be unobserved heterogeneity correlated with both individual insurance coverage and state welfare policies. For example, more progressive states may do more in unobserved ways to promote insurance coverage, and may have declined to seek an AFDC waiver and may have been the last to implement welfare reform. We address this problem using a difference-in-differences approach. Specifically, we measure the difference between a treatment and a control group in the change in health insurance coverage in response to welfare reform. Our identifying assumption is that the

unobserved state heterogeneity is common between the treatment and the control group in each state, and therefore it is eliminated by differencing between the two groups.

The second challenge in identification is choosing the correct treatment group. Ideally it would consist of all individuals who were affected by welfare reform. This group is difficult to define, because some individuals may have entered the labor force, or married, or not had children because of welfare reform, and may now seem far from being eligible for TANF or Medicaid. However, some recent literature suggests that welfare reform did not significantly affect rates of marriage or fertility. Kaushal and Kaestner (2001) find that marriage rates for U.S. citizens were unchanged by welfare reform; this is consistent with the findings of Bitler et al. (forthcoming), who conclude that welfare reform neither promoted new marriages nor led to increased dissolution of existing marriages. Kearney (2002) and Joyce et al. (2003) both find no consistent evidence to suggest that fertility has changed as a result of welfare reform.

A related problem is choosing the right control group. This should consist of individuals who were unaffected by welfare reform, but are otherwise similar to the treatment group. An added difficulty is that welfare reform may have indirectly affected the health insurance coverage of even individuals who have never been eligible for TANF or Medicaid. This could occur if members of the treatment and control groups are competitors for the same jobs. One goal of welfare reform was to encourage welfare recipients to seek work, which would shift out the supply curve for labor, which ceteris paribus would result in lower total wages, possibly taking the form of reduced benefits like health insurance. Thus outcomes of the control group may be indirectly affected by the treatment.

We define treatment and control groups for both women and children. Among women, we define the treatment group as unmarried mothers aged 16-44 with 12 or fewer years of schooling. We define the control group of women as married mothers aged 16-44 with 12 or fewer years of schooling. Thus, the only difference between the treatment and control groups is that members of the control group are married.

The treatment group for children includes those whose mothers are in the women's treatment group. The control group for children includes those whose mothers are in the women's control group.

The top half of Table 1 compares welfare receipt and insurance coverage among women in the treatment group to those in the control group. If our treatment group is appropriately defined, a large percentage of women in the treatment group should be receiving welfare before PRWORA; likewise, if our control group is appropriately defined, only a small percentage of women in it should be receiving welfare before PRWORA. Table 1 suggests that the definitions of the treatment and control groups are appropriate; roughly half of women in the treatment group are receiving cash welfare benefits in 1992 and 1995, whereas only roughly 2 percent of the control group is on cash welfare in those years. It is also reassuring that the fraction of group members covered by Medicaid is much higher for the treatment group than the control group of women.

The bottom half of Table 1 compares insurance coverage among children in the treatment group to those in the control group. The pattern of Medicaid coverage across treatment and control groups is similar for children and women. Prior to PRWORA, roughly three-quarters of treatment group children were covered by Medicaid, compared to 12-15 percent of the control group. Taken together, the results in Table 1 for women

and children suggest that our definition of the treatment group is accurately capturing those who would have been eligible for welfare prior to PRWORA, and our control group is capturing those who would not have been eligible.

In order to compare changes in insurance in response to welfare reform across our treatment and control groups, we pursue a difference-in-differences approach and estimate models of the following form:

$$Y_{ist} = \alpha + X_{it}\beta + Z_{st}\gamma + P_{st}\delta + TREAT_{ist}\phi + P_{st} * TREAT_{ist}\lambda + \varepsilon_{ist}$$

where *i* indexes people, *s* states, and *t* time. *Y* stands for one of three indicator variables that reflect insurance status, specifically: whether person *i* has any health insurance coverage at time *t*, whether person *i* is covered by own employer insurance at time *t*, whether person *i* is covered by dependent employer health insurance at time *t*, and whether person *i* is covered by public insurance at time *t*. *X* represents a set of time-varying individual characteristics; e.g. family size and mother's age. *Z* represents a set of state-level characteristics that vary over time; specifically: an index of Medicaid eligibility, unemployment rate and its one year lag, effective real minimum wage, EITC rate, per capita income, and real maximum cash welfare benefit. *P* represents a set of variables reflecting welfare policy, specifically: an indicator for whether state *s* had an AFDC waiver at time *t*, and an indicator for whether state *s* had implemented TANF at time *t*. *TREAT* is an indicator that equals one if the respondent is a member of the treatment group, and equals zero if the respondent is a member of the control group. The coefficient λ on the interaction term *P*TREAT* is our measure of the effect of welfare reform on insurance status. The error term ε is assumed to be correlated within states, so

we cluster the standard errors by state in the manner recommended by Bertrand, Duflo, and Mullainathan (2004).

Unlike Kaestner and Kaushal (2003), we do not control for AFDC/TANF caseload in our regression. Whether this variable belongs in the set of regressors depends on how one thinks welfare reform affected health insurance. If it affected it solely through decreasing caseload, then one could instrument for caseload using welfare reform. If reform affected insurance through other channels than caseload, one should regress coverage on the reform measures directly. There are several reasons that caseload does not fully reflect the impact of welfare reform on insurance. First, beneficiaries are allowed to work a certain number of hours, accept employer-provided health insurance if offered, and remain in the caseload under TANF rules. Second, significant numbers of working poor families are ineligible for TANF but the children are eligible for Medicaid, especially after eligibility expansions in the 1990s. We investigate how welfare reform affected insurance coverage in all ways rather than just through declines in caseload so we omit caseload from the set of regressors and focus on the policy variables.

We estimate a linear probability model controlling for time, state, and person fixed effects, in order to eliminate the influence of unobserved time-invariant heterogeneity that may be correlated with both welfare reform policies and the probability that individuals enjoy health insurance coverage. For example, less progressive states may have sought AFDC waivers early and implemented TANF as soon as possible, and may also have unobserved policies (e.g. anti-union) that are associated with a lower probability that its residents have health insurance.

Our identification comes from individuals who experience a change in welfare policy in their state. That is, only SIPP respondents who experience both a 0 and a 1 value in either the waiver or TANF indicators contribute to identification. Using such respondents, our measure of the impact of the policy on insurance coverage is the difference between the treatment and control groups in the change in insurance status that is correlated with a change in welfare policy. Our estimated effects of an AFDC waiver and of TANF implementation should be interpreted as the average treatment effect over the period during which there is variation within respondents over time in the presence of a waiver or the implementation of TANF.

Results

Before presenting the results of our difference-in-differences model, we first examine the unconditional trends in uninsurance among the treatment and control groups around the time of PRWORA. Figure 1 plots rates of uninsurance among women in the treatment and control groups from January 1996 to January 2000; recall that states implemented TANF between late 1996 and January 1998. The data points in each Figure in this paper were calculated using a four-month moving average, which ensures that SIPP respondents (who are interviewed every fourth months) are all represented in each data point.

Figure 1 indicates that, among women, the rate of uninsurance is always higher in the treatment group than in the control group, but the gap between them increases during and after the implementation of TANF. While this trend is unconditional, it suggests that welfare reform increased uninsurance among welfare-eligible women.

Figure 2 shows that in 1996, the treatment and control groups of children had at times identical rates of uninsurance. However, in early 1997 the rate of uninsurance among the treatment group rises above that of the control group, and between 1998 and 2000 the gap between them grows. Again, while unconditional, this trend suggests that welfare reform increased rates of uninsurance among welfare-eligible children. Appendix Figures 1-8 plot the rates of various types of insurance coverage, separately by women and children, for 1992-2000.[3]

Table 2 presents the difference-in-differences results for women. Each column of Table 2 corresponds to a separate regression concerning the type of insurance coverage: coverage through any source, through Medicaid, through one's own employer, and through someone else's employer. Each cell of Table 2 contains a linear probability coefficient and standard error (which has been clustered to correct for correlations over time within states). The parameters of greatest interest are the coefficients on the interaction between treatment group and the policy changes; these are our difference-in-differences estimates. The coefficient on the interaction between treatment group and AFDC waiver indicates that such waivers lowered the probability of insurance coverage among welfare-eligible women by 3.8 percent; this is statistically significant at the 5 percent level. In addition, TANF implementation lowered the probability of insurance coverage by 7.8 percent among welfare-eligible women; this is statistically significant at the 1 percent level. This change in coverage through any source is the result of a 6.6 percent decrease in the probability of Medicaid coverage, a 3.5 percent increase in the

[3] Marquis and Moore (1990) and Kalton and Miller (1991) document "seam bias" in the SIPP; that is, when one panel of the SIPP ends and another begins, there is often a jump in the mean values of variables. For example, in Appendix Figure 1, seam bias creates the appearance of a jump in rates of insurance around 1996, when the 1993 panel ceased and the 1996 panel began. In order to avoid the distraction of panel effects, Figures 1 and 2 use only data from the 1996 panel.

probability of coverage through one's own employer, and a 4.7 percent decrease in the probability of coverage through a spouse's employer. While it is not surprising that TANF implementation decreased the probability that women are covered by Medicaid (given increased administrative hurdles to take up) or that TANF implementation increased the probability of coverage through one's own employer (given that PRWORA increased incentives to enter the labor force), it is surprising that TANF implementation is associated with a lower probability of coverage through a spouse's employer. An intention of PRWORA was to increase incentives for marriage, and this would presumably lead to an increase in the likelihood that women are covered through their husband's employer. However, our finding is consistent with the findings of Kaushal and Kaestner (2001) and Bitler et al. (forthcoming), who conclude that welfare reform did not affect marriage rates among women in our treatment group.

Interestingly, in Table 2 the main TANF effect is a 1.7 percent increase in the probability of coverage in both the treatment and control groups of women; since the control group is not eligible for TANF, this should most likely be interpreted as the change in the probability of coverage between the pre-1996 and post-1996 period, that is, as a time effect rather than a policy effect. (This time effect isn't entirely picked up by year fixed effects because TANF implementation varied across states.) Eliminating such changes over time that are common to the treatment and control groups is one reason to estimate a difference-in-differences model.

Table 3 presents the difference-in-difference results for children. On the whole, the insurance coverage of children appears less sensitive to welfare reform than that of women. The probability of coverage for children is unaffected by AFDC waivers.

TANF implementation is associated with a 2.8 percent decrease in the probability that a welfare-eligible child is covered by any health insurance and a 3.5 percent decrease in the probability that such a child is covered by Medicaid. Recall that our model controls for state Medicaid eligibility, which was generally expanded in the late 1990s, so this coefficient reflects the change in coverage just due to TANF implementation, holding constant Medicaid eligibility.

Discussion

Using a difference-in-differences approach to estimate the impact of welfare reform on insurance coverage, we find that AFDC waivers prior to 1996 and the implementation of TANF after 1996 raised the probability that welfare-eligible women lack health insurance coverage. Specifically, TANF implementation is associated with a 7.8 percent increase in the probability that a welfare-eligible woman was uninsured. Welfare reform had less of an impact on the health insurance coverage of children. We find no evidence that AFDC waivers increased the probability that welfare-eligible children were uninsured. However, TANF implementation was associated with a 2.8 percent increase in the probability that a welfare-eligible child lacked health insurance.

We next compare our findings to those of Kaestner and Kaushal (2003), but first wish to emphasize that we are measuring different things, and thus the comparison is not perfect. Specifically, Kaestner and Kaushal estimate the impact of welfare reform on uninsurance solely through changes in welfare caseload; in contrast, we estimate the total impact of welfare reform on uninsurance. Their results imply that the decline in caseload after TANF implementation was associated with an increase in uninsurance of roughly 1-

3 percent among previously welfare-eligible women.[4] Our estimate of the total impact is a rise in uninsurance of 7.8 percent. Their estimates imply that TANF, through changes in caseload, was associated with a decline in women's Medicaid participation of roughly 2-3 percent. Our estimate of the total impact is a decline in women's Medicaid participation of 6.6 percent.

Kaestner and Kaushal's estimates also imply that TANF implementation, through changes in caseload, was associated with a decrease in children's Medicaid participation of roughly 1-2 percent. Our estimates suggest a total decrease in children's Medicaid participation of 2.8 percent. Their estimates also imply that TANF implementation, through changes in caseload, was associated with an increase in uninsurance among welfare-eligible children of roughly 2-4 percent; this is similar to our estimate that the total impact of TANF was to raise uninsurance among such children by 3.5 percent.

The differences between our estimates and those of Kaestner and Kaushal (2003) are likely due to the difference in focus. We estimate the overall impact of TANF on insurance coverage, while Kaestner and Kaushal focus on the impact of TANF through changes in welfare caseload.

These findings are relevant for policymakers because PRWORA was not intended to increase rates of uninsurance; in fact, an intention was to leave Medicaid eligibility unaffected. Our results suggest that an unintended consequence of welfare reform was to adversely impact the health insurance coverage of economically vulnerable women and children. There are several reasons that uninsured children are a great policy concern

[4] On pp. 976-77 of Kaestner and Kaushal (2003), the authors list the change in insurance coverage associated with the 42 percent decline in welfare caseload since 1999. They attribute a third of that decline to welfare policy, so we multiply their total estimated changes in insurance by a third to derive the implied impact on insurance of welfare reform operating through changes in caseload.

(IOM 2002a, 2002b). Uninsured children may receive less medical treatment than the insured (Ibid). Uninsured children may also impose costs on the health care system by receiving care in relatively inefficient ways; for example, a parent may take an uninsured child to the emergency room for a condition that could have been effectively treated with an office visit (Weissman, Gastonis, and Epstein, 1992).

We plan to pursue the following extensions to this work. First, we are investigating additional ways of parameterizing welfare reform. While previous studies control for when AFDC waivers or TANF were implemented, farsighted individuals may change their behavior before the policies take effect. Thus, we will experiment with controlling for passage of PRWORA and each state's *approval* date for implementing welfare waivers or TANF and compare them to this paper's results using the *implementation* date of welfare waivers or TANF. Second, while the previous studies estimated linear probability models, we will estimate a logit model because it has well-known advantages over the linear probability model (Maddalla, 1983). Third, we will experiment with defining the treatment and control groups differently. Another possible treatment group would include all women who are high school dropouts.

Works Cited

Assistant Secretary for Planning and Evaluation (ASPE), 1999. "State Implementation of Major Changes to Welfare Policies 1992-1998". Report written by Gil Crouse and available at http://aspe.hhs.gov/hsp/Waiver-Policies99/policy_CEA.htm. Access date 2004.

Bertrand, Marianne, Esther Duflo, and Sendhil Mullainathan. 2004. "How Much Should We Trust Differences-in-Differences Estimates?" *Quarterly Journal of Economics*, 119(1): 249-276.

Bitler, Marianne, Jonah B. Gelbach, and Hilary W. Hoynes. 2003. "Welfare Reform and Health." Unpublished manuscript.

Bitler, Marianne, Jonah B. Gelbach, Hilary W. Hoynes and Madeline Zavodny. 2004. "The Impact of Welfare Reform on Marriage and Divorce" *Demography*, forthcoming.

Borjas, George J. 2003. "Welfare Reform, Labor Supply, and Health Insurance in the Immigrant Population." *Journal of Health Economics*, 22: 933-958.

Council of Economic Advisors. 1999. "The Effects of Welfare Policy and the Economic Expansion on Welfare Caseloads: An Update."

Currie, Janet, and Jonathan Gruber. 1996. "Health Insurance Eligibility, Utilization of Medical Care, and Child Health." *Quarterly Journal of Economics*, 111: 431-66.

Committee on Ways and Means, U.S. House of Representatives. Various years. *The Green Book.* U.S. Government Printing Office: Washington D.C.

Institute of Medicine, Board on Health Care Services, Division of Health Care Services. 2002a. *Health Insurance is a Family Matter*. Washington DC: National Academy Press.

Institute of Medicine, Board on Health Care Services , Division of Health Care Services 2002b. *Care Without Coverage: Too Little, Too Late*. Washington DC: National Academy Press.

Joyce, Ted, Robert Kaestner and Sanders Korenman. 2003. "Welfare Reform and Non-Marital Fertility in the 1990s: Evidence from Birth Records." *Advances in Economic Analysis & Policy*, Volume 3 Issue 1

Kaestner, Robert, and Neeraj Kaushal. 2003. "Welfare Reform and Health Insurance Coverage of Low-Income Families." *Journal of Health Economics*, 22: 959-981.

Kaestner, Robert, and Neeraj Kaushal. 2001. "Immigrant and Native Responses to Welfare Reform" *NBER Working Paper* #8541.

Kalton, Graham, and Michael E. Miller. 1991. "The Seam Effect with Social Security Income in the Survey of Income and Program Participation." *Journal of Official Statistics* 7(2): 235-245.

Kearney, Mellisa Schettini. 2002. " Is There an Effect of Incremental Welfare Benefits on Fertility Behavior?" NBER Working Paper 9093.

Marquis, K. H., and J. Moore. 1990. "Measurement Errors in the SIPP Program Reports." *Proceedings of the Bureau of Census Annual Research Conference*, pp. 721-745.

Neumark, David and William Washer. 2000. "Using the EITC to Help Poor Families: New Evidence and a Comparision with the Minimum Wage." *NBER Working Paper.*

Weissman JS, Gastonis C, Epstein AM. 1992. Rates of avoidable hospitalization by insurance status in Massachusetts and Maryland. *Journal of the American Medical Association.* 268(17): 2388-2394.

U.S. Department of Commerce, Bureau of Economic Analysis. 2004. "National Economic Accounts." World wide web content. http://www.bea.doc.gov/bea/dn1.htm

U.S. Department of Labor, Bureau of Labor Statistics. 2004. "Labor Force Statistics from the Current Population Survey." World wide web content. http://data.bls.gov/servlet/SurveyOutputServlet?series_id=LNS14000000

Ziliak, James P., David N. Figlio, Elizabeth Davis, and Laura Connolly. 2000. "Accounting for the Decline in AFDC Caseloads: Welfare Reform or Economic Growth?" *Journal of Human Resources*, 570-586.

Table 1
Comparison of Treatment and Control Groups
In the Survey of Income and Program Participation

	1992		1995		1999	
	Treatment Group	**Control Group**	**Treatment Group**	**Control Group**	**Treatment Group**	**Control Group**
Women's Welfare Receipt	51.24%	2.00%	48.12%	2.33%	21.00%	1.22%
Women's Health Insurance						
Any	86.03%	82.72%	81.39%	81.41%	71.45%	80.15%
Medicaid	64.63%	7.29%	63.31%	8.94%	44.12%	7.76%
Employer Health Insurance	22.08%	67.92%	18.77%	65.16%	28.78%	68.11%
Employer Health Insurance in Own Name	17.07%	24.91%	13.91%	23.00%	23.44%	23.29%
Children's Health Insurance						
Any	86.97%	81.70%	88.18%	79.72%	77.32%	80.79%
Medicaid	74.10%	11.92%	78.24%	15.08%	58.49%	15.49%
Employer Health Insurance	13.09%	62.91%	9.09%	57.78%	18.50%	61.28%

Notes: The treatment group is defined to capture individuals affected by AFDC waivers and TANF implementation and the control group to capture individuals not affected by these policy changes. Among women, the treatment group is defined as unmarried mothers and the control group as married mothers, both with high school education or less and 16-44 years old. Among children, treatment and control groups are defined as children of women in the treatment and control group, respectively.

Table 2
Difference in Differences Estimates
of the Effect of AFDC Waivers and TANF
on the Health Insurance Status of Women

Dependent Variable	Any Coverage	Medicaid Coverage	Employer Provided Insurance	
			In own name	In someone else's name
AFDC Waivers	0.005	-0.006	-0.001	0.010
	(0.007)	(0.005)	(0.007)	(0.007)
AFDC Waivers * Treatment Group	-0.038**	-0.019	-0.015	-0.010
	(0.016)	(0.016)	(0.009)	(0.010)
TANF	0.017***	0.003	-0.007	0.019***
	(0.006)	(0.005)	(0.006)	(0.006)
TANF * Treatment Group	-0.078***	-0.066***	0.035***	-0.047***
	(0.015)	(0.010)	(0.013)	(0.010)
Treatment Group	-0.070	0.062	0.000	-0.130*
	(0.086)	(0.064)	(0 .041)	(0 .071)
Number of Observations	92161	92161	92161	92161

Notes:

1) The treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old.
2) All estimations include unemployment and its twelve-month lag, the state's real maximum benefit for a family of three, state real per capita income, real minimum wage, Earned Income Tax Credit, Medicaid eligibility for pregnant women, state and year effects, age, age squared, indicator for high school dropouts, and number of own children in the household.
3) Standard errors are corrected for clustering within states.
4) * significant at 10%; ** significant at 5%; *** significant at 1%

Table 3
Difference in Differences Estimates
of the Effect of AFDC Waivers and TANF
on the Health Insurance Status of Children

Dependent Variable	Any Coverage	Medicaid Coverage	Employer Provided Insurance
AFDC Waivers	-0.002	-0.012	0.012
	(0.005)	(0.009)	(0.009)
AFDC Waivers * Treatment Group	-0.009	0.011	-0.007
	(0.018)	(0.026)	(0.021)
TANF	0.000	-0.013	0.011
	(0.009)	(0.009)	(0.012)
TANF * Treatment Group	-0.028*	-0.035*	0.015
	(0.016)	(0.019)	(0.023)
Treatment Group	0 .047	0.138**	-0.109*
	(0 .061)	(0 .070)	(0 .066)
Number of Observations	160843	160843	160843

Notes:

1) The treatment group is defined as children of unmarried mothers, the control group as children of married mothers, where the mothers obtained high school education or less and are 16-44 years old.
2) All estimations include unemployment and its twelve-month lag, the state's real maximum benefit for a family of three, state real per capita income, real minimum wage, Earned Income Tax Credit, Medicaid eligibility for a child of 14 years, state and year effects, age, and age squared.
3) Standard errors are corrected for clustering within states.
4) * significant at 10%; ** significant at 5%; *** significant at 1%

Appendix Table 1
Descriptive Statistics of the SIPP sample

	Women		Children	
	Treatment	**Control**	**Treatment**	**Control**
Age	27.13	33.78	6.73	9.22
	(6.98)	(6.44)	(5.41)	(5.67)
High school dropout	0.460	0.266		
	(0.50)	(0.44)		
High school diploma only	0.540	0.734		
	(0.50)	(0.44)		
Race				
White - non Hispanic	0.312	0.698	0.213	0.650
	(0.46)	(0.46)	(0.41)	(0.48)
Black - non Hispanic	0.461	0.071	0.514	0.079
	(0.50)	(0.26)	(0.50)	(0.27)
Hispanic	0.203	0.187	0.252	0.225
	(0.40)	(0.39)	(0.43)	(0.42)
Asian - non Hispanic	0.011	0.035	0.012	0.036
	(0.10)	(0.18)	(0.11)	(0.19)
Other - non Hispanic	0.014	0.009	0.010	0.010
	(0.12)	(0.10)	(0.10)	(0.10)
Health Insurance				
Any	0.786	0.810	0.831	0.799
	(0.41)	(0.39)	(0.37)	(0.40)
Medicaid	0.564	0.085	0.687	0.141
	(0.50)	(0.28)	(0.46)	(0.35)
Employer provided in own name	0.185	0.237		
	(0.39)	(0.43)		
Employer provided in someone else' name	0.046	0.424	0.133	0.584
	(0.21)	(0.49)	(0.34)	(0.49)
Number of own children in the household	1.483	1.911		
	(1.33)	(1.13)		
Household Size	2.783	4.028	3.637	4.612
	(1.14)	(1.09)	(1.43)	(1.23)
Female			0.493	0.480
			(0.50)	(0.50)
Number of Observations	18796	73384	26706	140998

Notes:

1) Means from the 1992, 1993 and 1996 panels of the SIPP.
2) All means weighted, standard deviations in parentheses.
3) The treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old. Treatment and control groups for children are defined as children of women in the treatment and control group, respectively.
4) Sample sizes may contain multiple observations per individual.
5) Average education is not listed for children, as most of them are still in high school.

Appendix Table 2
Implementation Dates of AFDC Waivers and TANF, by State

State	Earliest Major Waiver		TANF Implemented	
	Approved	Implemented	Official	Actual
Alabama			11-15-96	
Alaska			7-1-97	
Arizona	5-22-95	11-1-95	10-1-96	
Arkansas	4-5-94	7-1-94	7-1-97	
California	10-29-92	12-1-92	11-26-96	1-1-98
Colorado			7-1-97	
Connecticut	8-29-94	1-1-96	10-1-96	
Delaware	5-8-95	10-1-95	3-10-97	
Dist. of Columbia			3-1-97	
Florida	6-26-96		10-1-96	
Georgia	11-1-93	1-1-94	1-1-97	
Hawaii	6-24-94	2-1-97	7-1-97	
Idaho	8-19-96		7-1-97	
Illinois	11-23-93	11-23-93	7-1-97	
Indiana	12-15-94	5-1-95	10-1-96	
Iowa	8-13-93	10-1-93	1-1-97	
Kansas	8-19-96		10-1-96	
Kentucky			10-18-96	
Louisiana	2-5-96		1-1-97	
Maine	6-10-96		11-1-96	
Maryland	8-14-95	3-1-96	12-9-96	
Massachusetts	8-4-95	11-1-95	9-30-96	
Michigan	8-25-92	10-1-92	9-30-96	
Minnesota			7-1-97	
Mississippi	9-1-95	10-1-95	10-1-96	7-1-97
Missouri	4-18-95	6-1-95	12-1-96	
Montana	4-18-95	2-1-96	2-1-97	
Nebraska	2-27-95	10-1-95	12-1-96	
Nevada			12-3-96	
New Hampshire	6-18-96		10-1-96	
New Jersey	7-20-92	10-1-92	2-1-97	7-1-97
New Mexico			7-1-97	
New York			12-2-96	11-1-97
North Carolina	2-5-96	7-1-96	1-1-97	
North Dakota			7-1-97	
Ohio	3-13-96	7-1-96	10-1-96	
Oklahoma			10-1-96	
Oregon	7-15-92	2-1-93	10-1-96	
Pennsylvania			3-3-97	
Rhode Island			5-1-97	
South Carolina	5-3-96		10-12-96	
South Dakota	3-14-94	6-1-94	12-1-96	
Tennessee	7-25-96	9-1-96	10-1-96	
Texas	3-22-96	6-1-96	11-5-96	
Utah	10-5-92	1-1-93	10-1-96	
Vermont	4-12-93	7-1-94	9-20-96	
Virginia	7-1-95	7-1-95	2-1-97	
Washington	9-29-95	1-1-96	1-10-97	
West Virginia	7-31-95	2-1-96	1-11-97	
Wisconsin	6-24-94	1-1-96	9-30-96	9-1-97
Wyoming			1-1-97	

Notes:

1) If the first two columns are blank, that indicates that the state either did not apply for, or if it applied was not granted, a waiver from AFDC.
2) The policy variables used in this paper are based on the implementation dates of AFDC waivers and the actual date of TANF implementation when it differs from the official date.

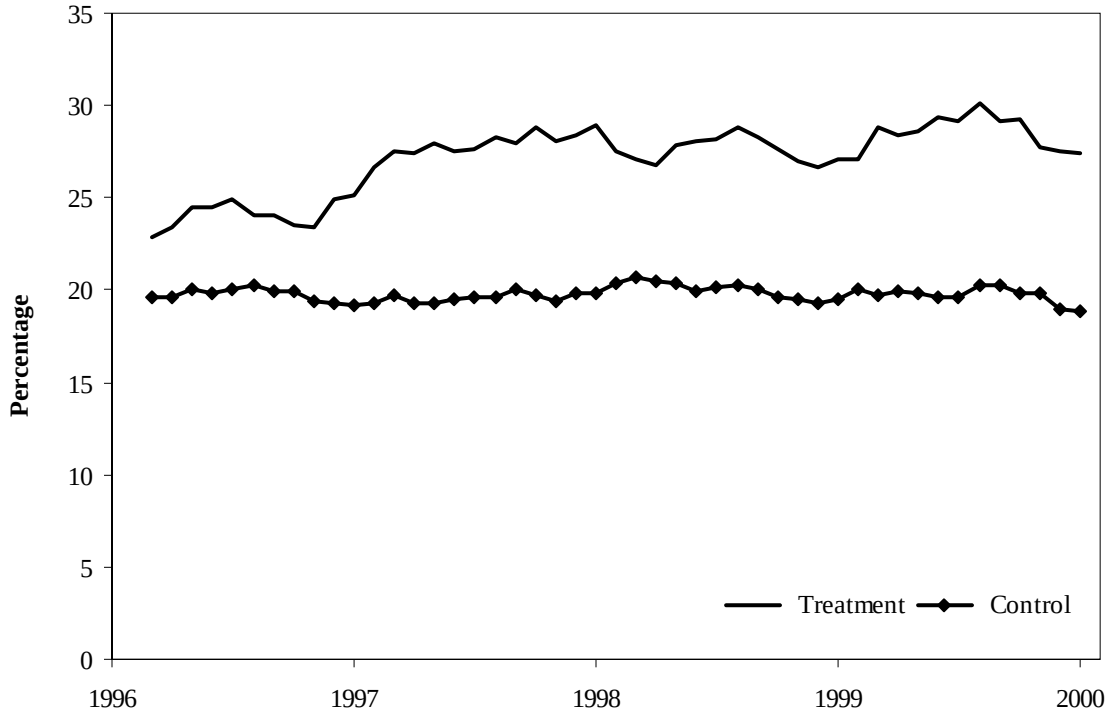
Appendix Table 3
Descriptive Statistics of State Policies
By Treatment and Control Groups

	Women		Children	
	Treatment	**Control**	**Treatment**	**Control**
AFDC Waiver	0.218	0.222	0.228	0.231
	(0.41)	(0.42)	(0.42)	(0.42)
TANF	0.359	0.332	0.360	0.350
	(0.48)	(0.47)	(0.48)	(0.48)
State Unemployment Rate	5.737	5.789	5.805	5.775
	(1.61)	(1.66)	(1.63)	(1.65)
Medicaid Eligibility	0.386	0.384	0.356	0.307
	(0.08)	(0.08)	(0.15)	(0.16)
Real Minimum Wage	2.991	2.989	2.993	2.994
	(0.19)	(0.19)	(0.19)	(0.19)
Earned Income Tax Credit	0.338	0.331	0.338	0.335
	(0.09)	(0.09)	(0.09)	(0.09)
Real Maximum Cash Welfare Benefit	436	434	444	440
	(173)	(171)	(177)	(174)
State Real Per Capita Income	26782	26447	26972	26549
	(3579)	(3357)	(3655)	(3347)
Number of Observations	18796	73384	26706	140998

Notes:

1) Data from various sources, see text for details.
2) All means weighted, standard deviations in parenthesis.
3) The Treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old. Treatment and control groups for children are defined as children of women in the treatment and control group, respectively.
4) Sample sizes may contain multiple observations per individual.
5) Medicaid eligibility is for pregnant women and children of age 14, respectively.

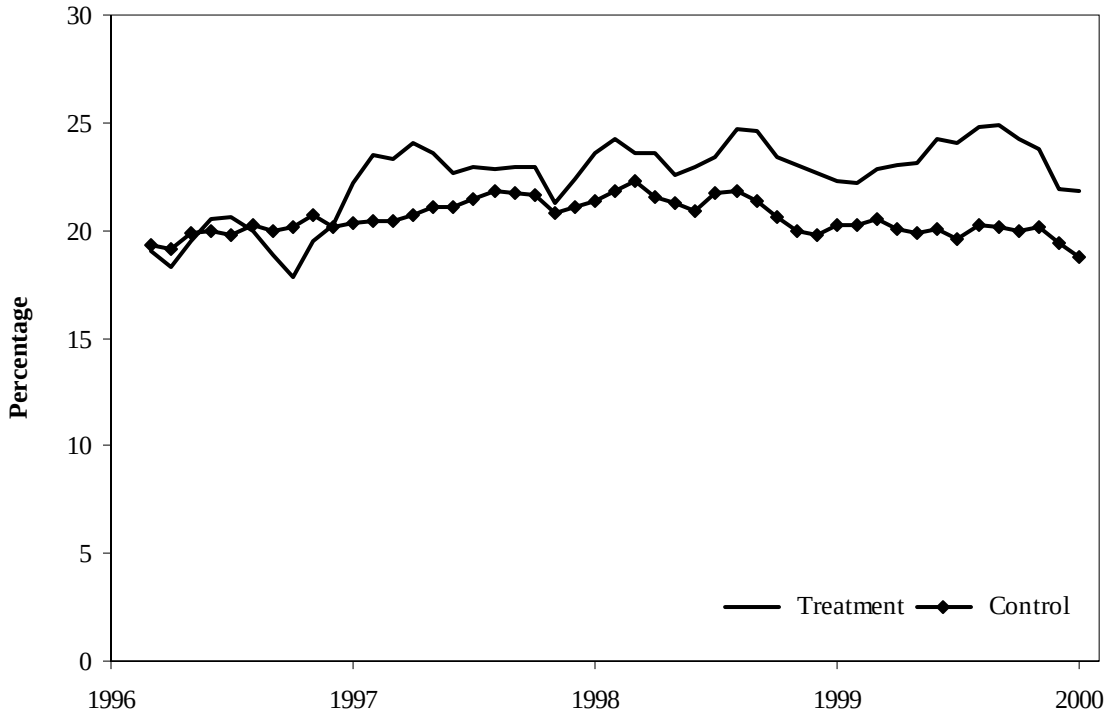
Figure 1
Weighted Uninsurance Rates for Treatment and Control Groups of Women, 1996-1999



Notes:

1) Data: Source: SIPP 1996 panel.
2) The Treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

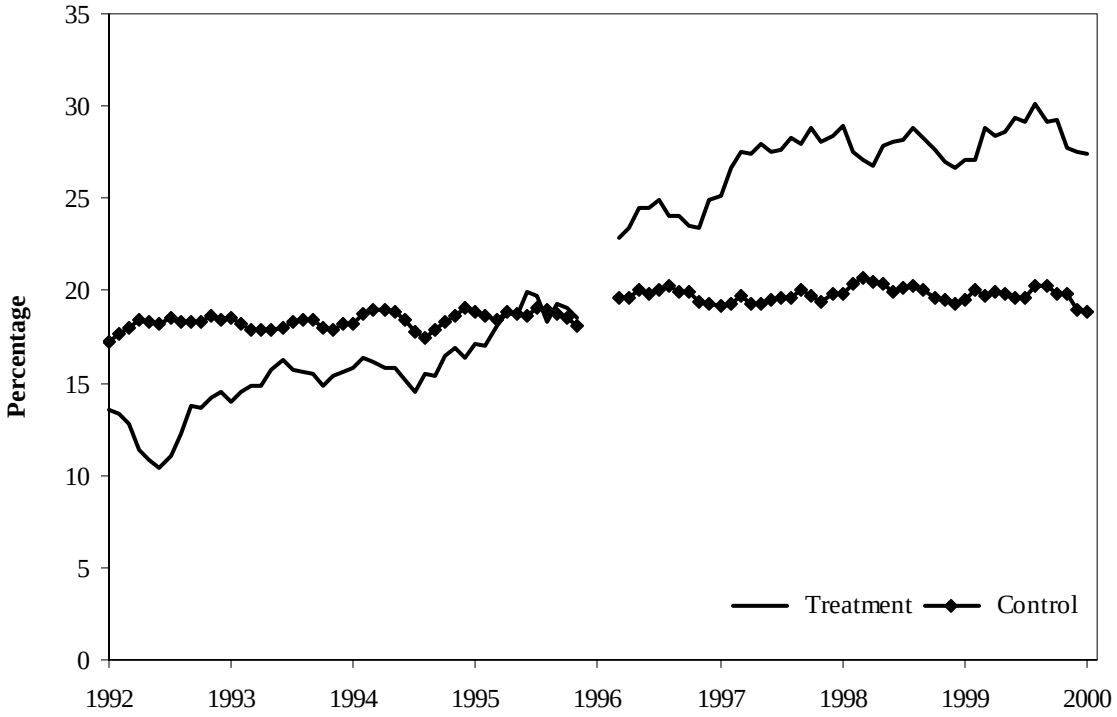
Figure 2
Weighted Uninsurance Rates for Treatment and Control Groups of Children, 1996-1999



Notes:

1) Data: Source: SIPP 1996 panel.
2) The Treatment group is defined as children of unmarried mothers, the Control group as children of married mothers, both less than 15 years old, where the mothers have high school education or less and are 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

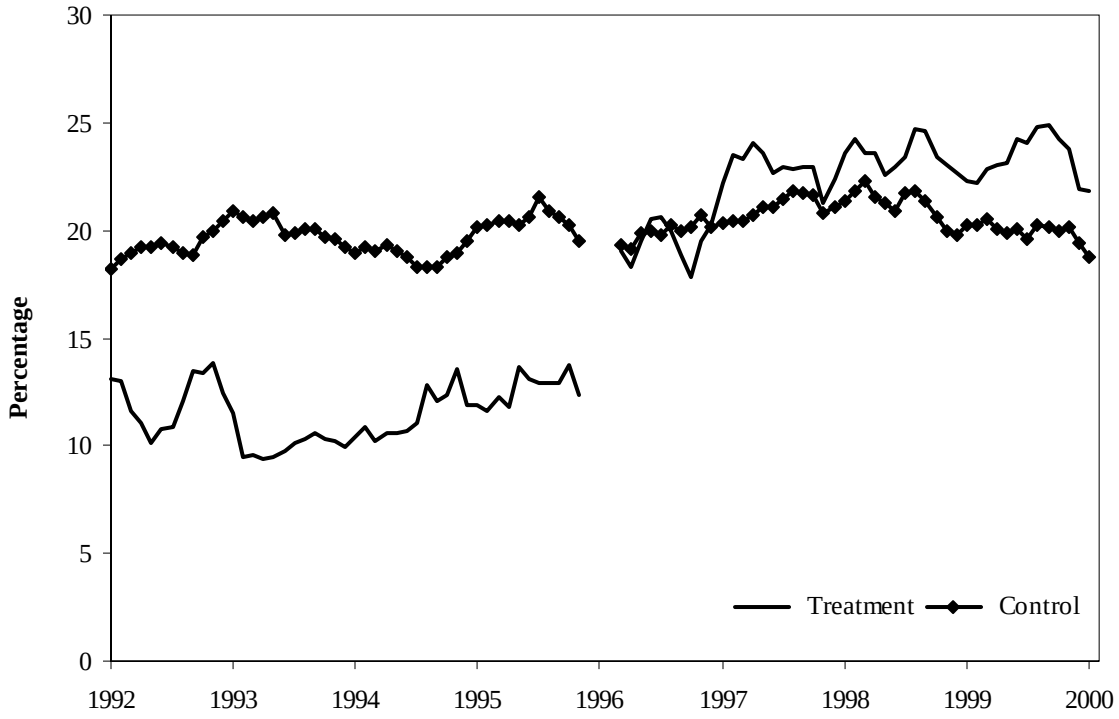
Appendix Figure 1
Weighted Uninsurance Rates for Treatment and Control Groups of Women, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

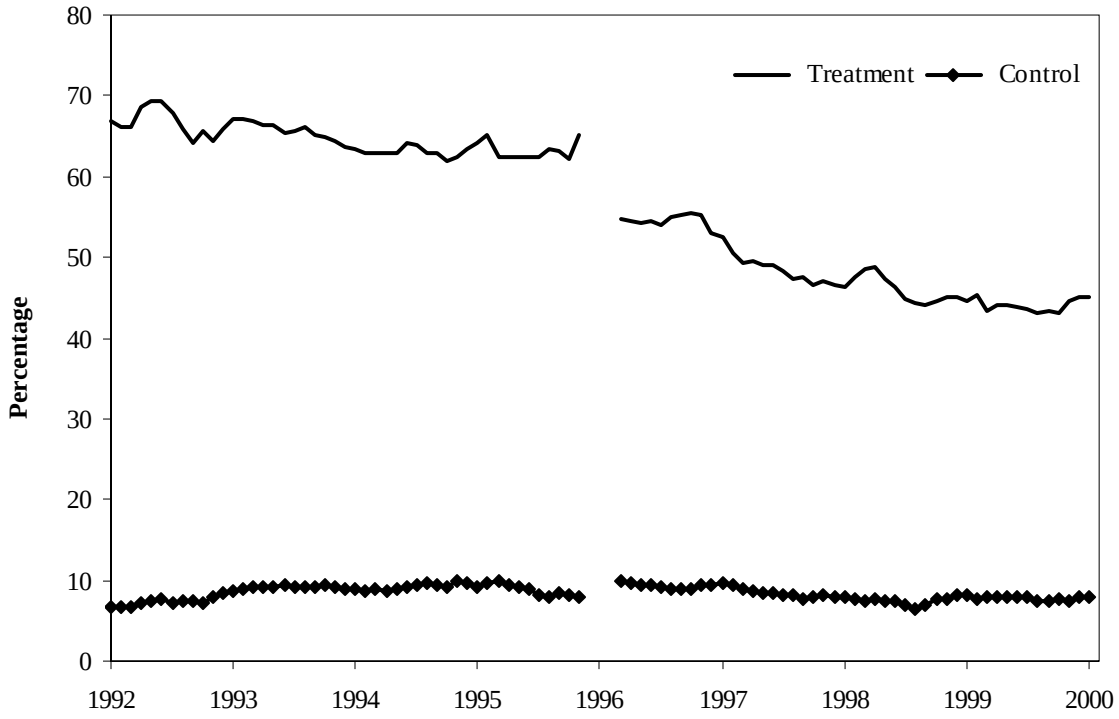
Appendix Figure 2
Weighted Uninsurance Rates for Treatment and Control Groups of Children, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as children of unmarried mothers, the Control group as children of married mothers, both less than 15 years old, where the mothers have high school education or less and are 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

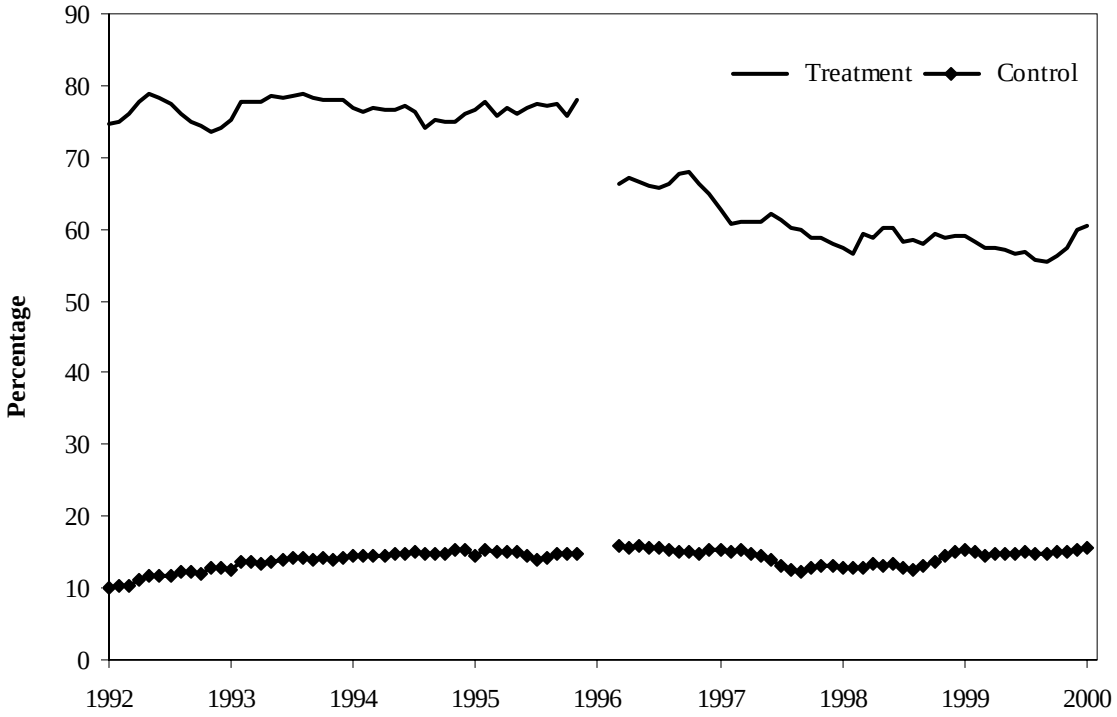
Appendix Figure 3
Weighted Medicaid Coverage Rates for Treatment and Control Groups of Women, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

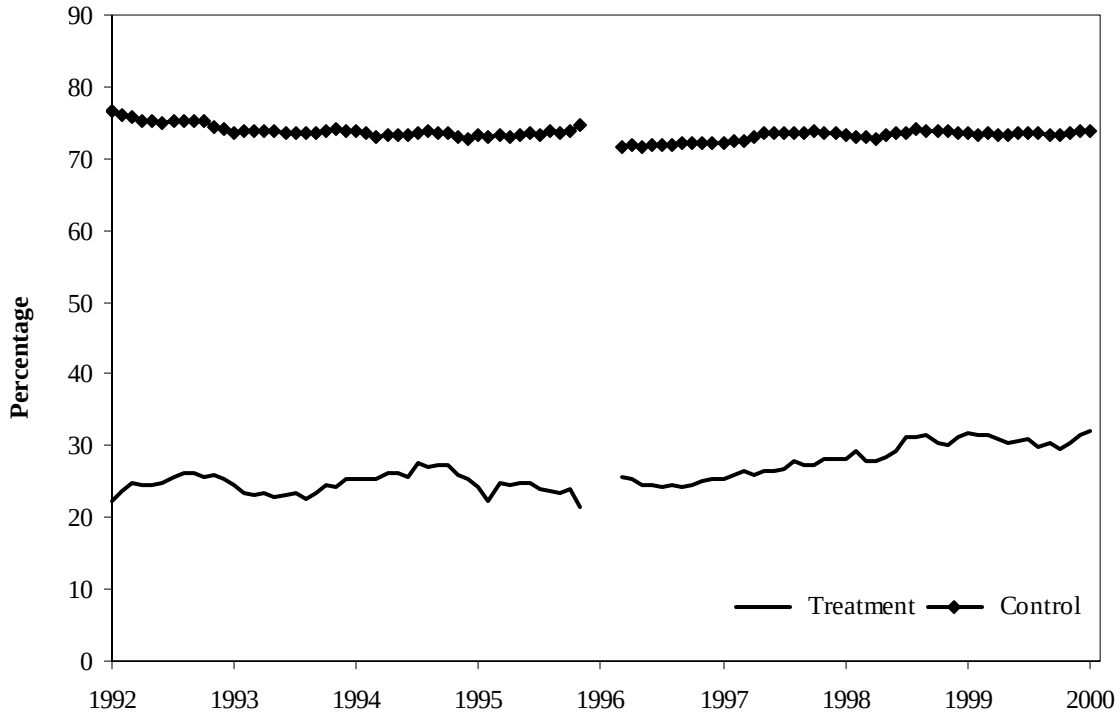
Appendix Figure 4
Weighted Medicaid Coverage Rates for Treatment and Control Groups of Children, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as children of unmarried mothers, the Control group as children of married mothers, both less than 15 years old, where the mothers have high school education or less and are 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

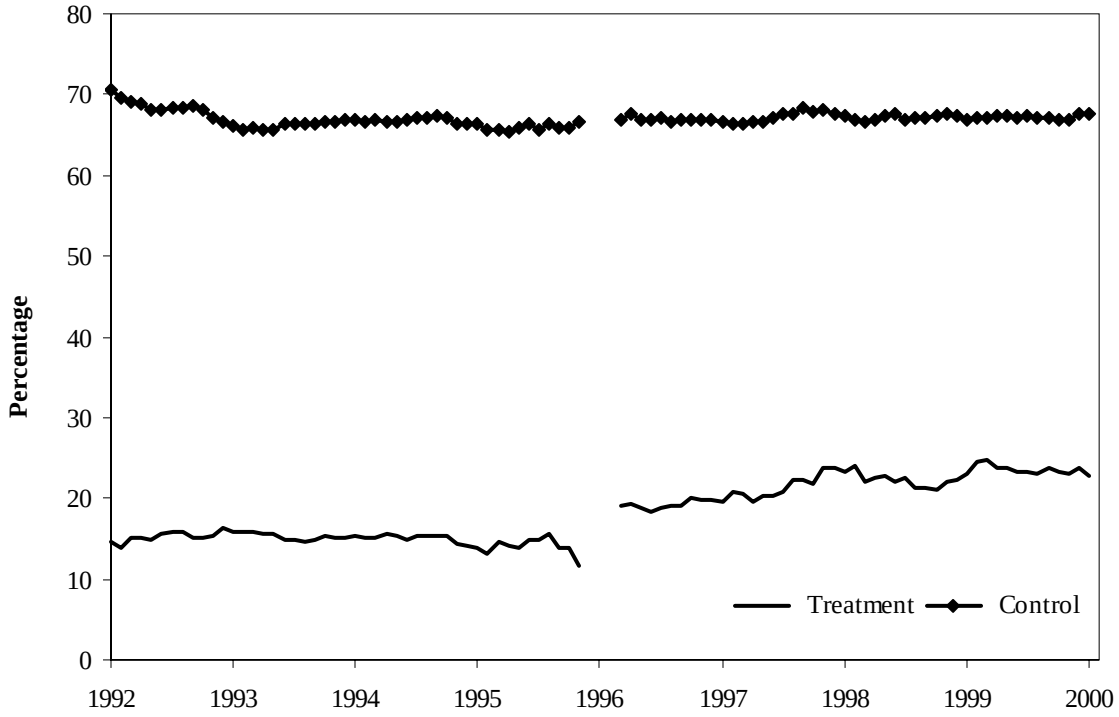
Appendix Figure 5
Weighted Private Coverage Rates for Treatment and Control Groups of Women, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

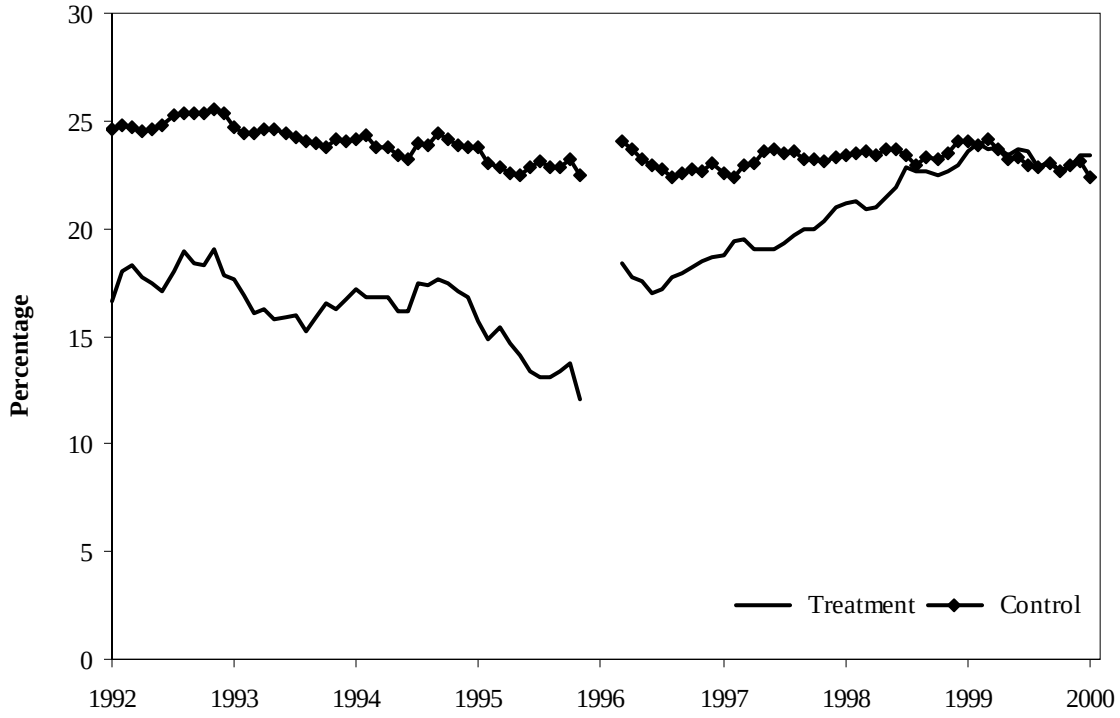
Appendix Figure 6
Weighted Private Coverage Rates for Treatment and Control Groups of Children, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as children of unmarried mothers, the Control group as children of married mothers, both less than 15 years old, where the mothers have high school education or less and are 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

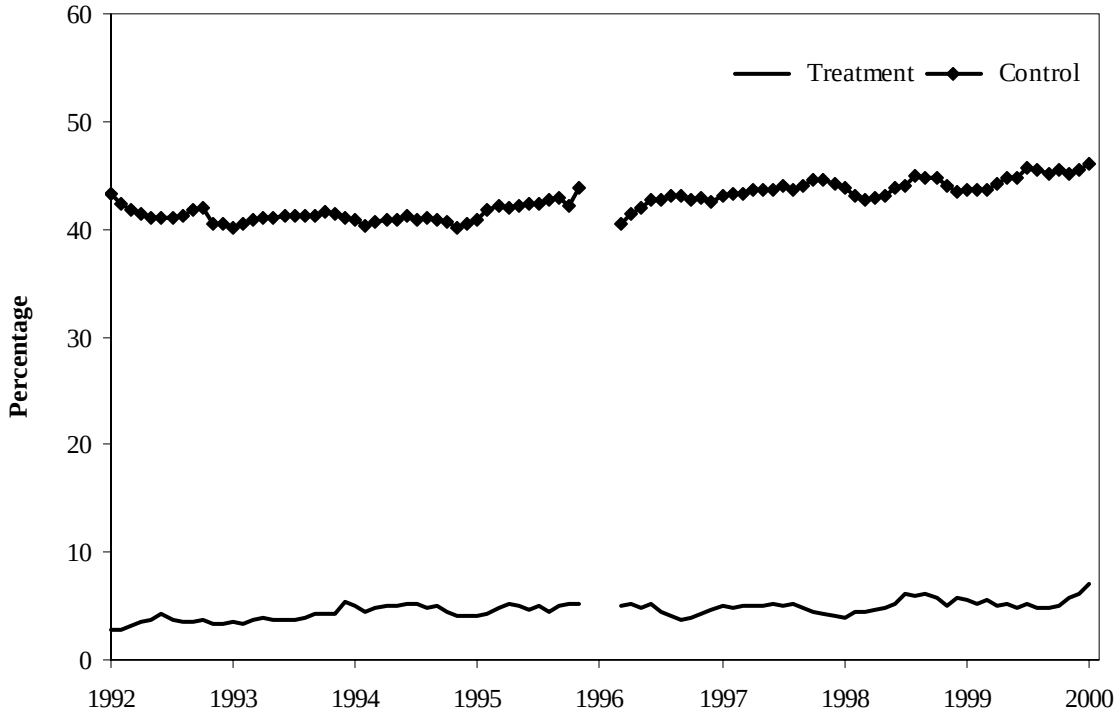
Appendix Figure 7
Weighted Rates of Coverage Through Own Employer
for Treatment and Control Groups of Women, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.

Appendix Figure 8
Weighted Rates of Coverage Through Employer of Spouse or Parent for Treatment and Control Groups of Women, 1992-1999



Notes:

1) Data: Source: SIPP 1992-1996 panels.
2) The Treatment group is defined as unmarried mothers, the control group as married mothers, both with high school education or less and 16-44 years old.
3) Each data point is the moving average of four means of uninsurance incidence: The mean of the current month, the mean of the month before and the means of the two following months.