Welfare Reform and Indirect Impacts on Health

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I. Introduction

Beginning in the early 1990s, many states used waivers to reform their Aid to Families with Dependent Children (AFDC) programs. This state experimentation resulted in landmark legislation which in 1996 eliminated AFDC and replaced it with Temporary Assistance for Needy Families (TANF). TANF—like the earlier AFDC program—provides cash grants to low income families with children and is a key element of the nation's economic safety net. The roots of this reform lie in long time concern that AFDC led to reductions in work, decreases in marriage, and increases in nonmarital births among low income women.

The stated goals of welfare reform are to increase work, reduce dependency on welfare, reduce births outside marriage, and to increase the formation of two parent families. Evaluating the impacts of state and federal welfare reform is the subject of a large and growing literature.[1] In this paper, we summarize what is known about the impacts of welfare reform on health insurance, health care utilization, and health status.

We begin, in the next section, with a description of the key policy changes over this period. The central changes in the TANF program were aimed at increasing work and decreasing welfare dependence and include: work requirements, lifetime time limits, financial sanctions, and enhanced earnings disregards.[2] In Section III, we outline the pathways by which welfare reform may affect health. The direct pathway is through health insurance—reform leads to reductions in welfare participation which is expected to reduce health insurance coverage (employer-provided coverage may increase but by less than Medicaid coverage declines). The other pathways are more indirect—for example welfare reform may impact families' economic

[1] For example, see comprehensive reviews by Blank (2002) and Grogger and Karoly (2005).
[2] The new welfare programs include other changes which we document in Section II. Especially relevant for health, many states expanded "transitional" Medicaid coverage which is received when leaving welfare.

resources, time endowment, and levels of stress which may then affect health care utilization and health status.

The early studies on this issue documented very low rates of health insurance coverage following federal reform. For example, Garrett and Holahan (2000) found that one year after leaving welfare, one-half of women and almost one-third of children are uninsured.[3] This "leaver" analysis provides an important profile of the well-being of families departing the welfare rolls. However, such leaver analysis is not appropriate for identifying the impact of welfare reform on health insurance coverage. This important identification issue is assessed more fully in Section IV where we discuss the methodologies that have been used to estimate impacts of welfare reform.

In section V, we provide a comprehensive review of the literature on the impacts of welfare reform on health. The literature includes nonexperimental estimates (typically state-panel models using variation in the timing and presence of reform across states) and experimental estimates (randomized experimental evaluations of state waiver programs). To illustrate the main findings from the literature, in Section VI we present estimates of the impact of reform on health insurance, health utilization, and health status using data from five state-waiver experiments (Connecticut, Iowa, Florida, Minnesota, and Vermont).

The findings from the literature, illustrated using our experimental treatment effects, show that welfare reform had modest and mixed impacts on health outcomes. The most consistent finding is that welfare reform led to a reduction in health insurance coverage; we find no large impact on insurance coverage. Importantly, the range of estimates both in the literature and in our exploratory analysis is far smaller than the early leaver studies implied. For example,

[3] Other leaver studies documented similar rates of coverage (Ellwood and Lewis 1999; Guyer 2000; Moffitt and Slade 1997; Pollack et al., 2002).

if we normalize the impact by the control group means, we find that reform led to no impact on current coverage, or, in Connecticut a small increase, with the estimates ranging from -2 percent to 6 percent. The impacts on health care utilization and health status tend to be more mixed and fewer are statistically significant. Some studies find evidence of a modest decrease in utilization and small changes in health behaviors. Our findings suggest no consistent impact on utilization and perhaps improvements in child health status for children 2–9 at the beginning of the experiments.

II. Welfare Reform in the 1990s

Beginning in the early 1990s, many states were granted waivers to make changes to their AFDC programs. About half of the states implemented some sort of welfare waiver between 1993 and 1995 (Office of the Assistant Secretary for Planning and Evaluation, DHHS, 2001). Following this period of state experimentation, PRWORA was enacted in 1996, replacing AFDC with TANF. PRWORA originally indicated that all states had to have their TANF programs in place and have implemented TANF by July 1, 1997, although subsequently this deadline was relaxed (Administration of Children and Families, DHHS, 2002). All states implemented PRWORA in a 17 month period between September 1996 and January 1998 (Crouse, 1999; Administration for Children and Families, DHHS, 1997).

The main goals of welfare reform are to increase work, reduce dependency on welfare, reduce births outside marriage, and to increase the formation of two parent families. While waiver and TANF policies varied considerably across states, the reforms were generally welfare-tightening and pro-work. More specifically, the welfare-tightening elements of reform include

work requirements, financial sanctions, time limits, family caps, and residency requirements.[4] The loosening aspects of reform include liberalized earnings disregards (which promote work by lowering the tax rate on earned income while on welfare), increased asset limits, increased transitional Medicaid coverage, and expanded eligibility for two-parent families. Importantly, welfare reform—either the goals or resulting policies—had little directly to do with health or health insurance.

During this period of welfare reform, however, other policies were expanding public health insurance for low-income families. Historically, eligibility for Medicaid for the non-elderly and non-disabled was tied directly to receipt of cash public assistance. In particular, the AFDC income eligibility limits adopted by a state would also be used for Medicaid, and AFDC conferred automatic eligibility for Medicaid. Thus, a family that received AFDC benefits would also be eligible for health insurance through Medicaid. Conversely, if a family left AFDC, its members generally would lose Medicaid coverage.[5] However, in a series of federal legislative acts beginning in 1984, states were required to expand Medicaid coverage for infants, children, and pregnant women beyond the AFDC income limits, leading to large increases in eligibility (Gruber 1997). These are known as the poverty-related or OBRA Medicaid expansions. By 2001, these expansions mandated that all children in families with income up to the Federal poverty limit were eligible for Medicaid, provided they met other requirements.

PRWORA further weakened the link between AFDC and Medicaid by requiring states to cover any family that meets the pre-PRWORA AFDC income, resource, and family composition eligibility guidelines (Haskins 2001). This so-called 1931 program (named after the relevant

[4] Family caps prevent welfare benefits from increasing when a woman gives birth while receiving aid. Residency-requirement policies mandate that unmarried teen parents who receive aid must live in the household of a parent or other guardian.

[5] States could and did set up Medically Needy programs that allowed states to provide Medicaid benefits to families above the AFDC income cutoff if they had high medical expenses. States were also required to provide transitional Medicaid coverage for families leaving AFDC due to an increase in earnings.

section of the Social Security Act, as amended by PRWORA) also allowed states to expand eligibility for parents beyond the 1996 AFDC/Medicaid limits. Aizer and Grogger (2003) report that by 2001 about half the states had taken advantage of this program and expanded Medicaid access for parents above the welfare income cutoffs. PRWORA also contained language restricting immigrant access to means-tested transfer programs (including Medicaid). As discussed in Borjas (2003), many states responded by providing immigrant access to Medicaid using newly created, state-funded "fill-in" programs.

Lastly, in 1997, Congress established the State Children's Health Insurance program (SCHIP), which allows states to provide public health insurance to children up to 200 percent of the poverty level (and subsequently to higher levels).[6]

III. Welfare Reform and Expected Impacts on Health

Despite the lack of a direct connection between welfare reform and health, there are many indirect pathways through which welfare reform may affect health outcomes.

First, welfare reform reduces welfare caseloads, leading to a decline in Medicaid coverage. The AFDC caseload has declined more than 60 percent since its peak in 1994 (U.S. Department of Health and Human Services 2002).[7] During this time period, the number of nondisabled adults and children on Medicaid also fell. Between 1995 and 1997, the number of nondisabled adults on Medicaid fell by 10.6 percent, with larger reductions among cash welfare recipients (Ku and Bruen 1999). The noncash-assistance Medicaid caseload (especially

[6] We will not discuss the literature on the effects of SCHIP, but its existence makes it more difficult to assess the impacts of reforms for coverage of children using nonexperimental data spanning the period after SCHIP was implemented.

[7] The literature on welfare reform includes an ongoing debate on what has contributed to this decrease in the welfare caseload. The leading candidate besides welfare reform itself is the booming economy of the late 1990s. Teen pregnancy rates also began to fall before TANF implementation.

children), on the other hand, grew, reflecting the separation of AFDC eligibility from Medicaid eligibility described above.

This expected loss in public coverage may be offset by increased private coverage due to increases in mother's employment or coverage from another family member (crowd-in). However, these low-skill workers are likely to be employed in industry-occupation cells with traditionally low rates of employer-provided health insurance (Currie and Yelowitz 2000). In sum, the first prediction is that welfare reform should be associated with a decrease in Medicaid coverage, an increase in private insurance, and likely a decrease in overall insurance.

This pathway of decreased insurance coverage may lead to changes in health. A decline in insurance may then lead to less health service utilization—for example less preventive care and prenatal care (Nathan and Thompson 1999). This decline in health care utilization may subsequently impact health outcomes.[8]

Second, welfare reform may impact families' economic resources. While the evidence is less clear on this topic, research suggests that welfare reform has led to an overall increase in the incomes of low-skill families.[9] However, Bitler, Gelbach, and Hoynes (Forthcoming) find that reform has heterogeneous impacts across the income distribution, with some evidence of reductions at the lowest income levels. These changes in a family's economic well-being could then have impacts on health care utilization and health status (as well as health insurance coverage).

Third, reform-induced increases in employment may lead to changes in a parent's time endowment which in turn can affect choices about health care utilization, diet, and health

[8] There is an ongoing debate about the magnitude of the causal effects of health insurance coverage on health, summarized in Levy and Meltzer (2004).

[9] For recent summaries of the experimental and nonexperimental studies of welfare reform and family income, see the reviews by Blank (2002), Grogger and Karoly (2005), and Moffitt (2002).

(Haider, Jacknowitz, and Schoeni 2003). Fourth, welfare reform could lead to increases (or decreases) in stress, which in turn can affect health.

Discussion of these pathways illustrates that the impacts of welfare reform on health insurance coverage and health care utilization are more direct than the impacts on health status. This interpretation is consistent with the health production model in Grossman (2001). In particular, health is a durable capital stock that will change slowly with investment (time, nutrition, exercise, health services). Health services, on the other hand, are goods consumed each period and therefore would be expected to change more quickly in response to changes in prices, income, and time constraints. This is important to keep in mind when examining the impacts of reform on these different health outcomes.

IV. Empirical Identification of the Effects of Welfare Reform on Health

Three challenges to identifying the impact of TANF are often raised in the literature (Blank 2001). First, at the same time welfare reform was occurring, the U.S. economy boomed. As documented in Hines, Hoynes, and Krueger (2001) the expansion of the 1990s led to important gains for disadvantaged families, especially in the last years of the decade. For example, the unemployment rate for African-Americans fell to the lowest level ever recorded and low-skill groups experienced the first increase in real wages since the 1970s. These gains in the economic position of disadvantaged families may, of course, have independent impacts on health. Second, all states implemented their TANF between September 1996 and January 1998. This relatively short implementation period leaves less scope for identifying impacts of TANF through differences in the timing of TANF implementation across states. Identifying the impacts of welfare waivers, however, is considerably more straightforward, as there is variation across states and over time in the implementation of waivers. Third, welfare reform is multi-

dimensional and consists of many different policy changes. In the end there is no single waiver program or TANF program—there are 50 state TANF programs, one in each state. This makes it difficult to learn about the importance of any specific policy change.

In the face of these challenges, there are several different methodologies used in the literature. The first is experimental—by federal law all states implementing welfare waivers were required to evaluate their waivers, mostly using experimental methods. In these experimental evaluations, individuals were randomly assigned into the treatment (welfare) and control (AFDC) groups. Using the data from these experiments, the treatment effect of reform can be simply calculated as the difference between mean outcomes in the treatment and control groups. Importantly, all experimental analyses relate to welfare waiver programs—there is no experimental evidence of the effects of state TANF programs.[10]

The second approach is non-experimental. One common approach is to estimate state panel models such as:

$$y_{ist} = R_{st}\beta + X_{ist}\delta + L_{st}\alpha + \gamma_s + \nu_t + \varepsilon_{ist}.$$

In this prototype model, the outcome variable is y_{ist} and the welfare reform variable is R_{st}. The model also includes controls: state-level labor market and other policy variables (L_{st}), individual covariates X_{ist} (if applicable), as well as state (γ_s) and time (ν_t) fixed effects. In one common version of this model, R_{st} is a dummy variable equal to one if waivers and/or TANF are implemented in this state-year observation. In this case, identification comes from variation in the presence and timing of reform across states.

Because of the lack of variation in the timing of TANF implementation across states, many studies extend the above model to a difference-in-difference model:

[10] There are states that adopted their waiver programs as their TANF programs, when federal law was passed. Therefore some of the welfare waiver experimental studies do, then, estimate impacts of TANF.

$$y_{ist} = R_{st}\beta_1 + TREAT_{ist} * R_{st}\beta_2 + TREAT_{ist} * \beta_3 + X_{ist}\delta + L_{st}\alpha + \gamma_s + \nu_t + \varepsilon_{ist}.$$

The parameter of interest is now β_2 and is identified using the difference in trends post-reform between the treatment and control groups. Various comparisons are used in the literature including comparing single women with children to childless women, single women with children to married women with children, and low educated single women with children to highly educated single women with children. Other nonexperimental studies add variation in the waiver and TANF reform variables by using detailed characteristics across states such as the length of the time limit or the severity of the sanctions.

Another variation of the basic model above is to replace the reform variable R_{st} with a measure of the welfare caseload (or per capita caseload) in the state-year cell C_{st}. This approach seeks to take advantage of the variation in the declines in welfare caseloads across states and over time. There are potential problems with interpreting such estimates as the effect of reform, however. The literature has shown that welfare reform accounts for only part of the fall in caseloads—other important factors are labor market opportunities and other policies such as the Earned Income Tax Credit (examples of this literature include Council of Economic Advisors, 1997, 1997; Wallace and Blank, 1999; Ziliak et al., 2000; and Klerman and Haider, 2004).[11]

A third approach in the literature is a "leaver analysis"—consisting of national or state-level studies that examine the characteristics of families leaving welfare. The leaver studies provide an accurate snapshot of the experiences of those families that have left welfare. However, such studies cannot identify causal impacts of welfare reform (Blank 2002). First, there is no way to identify why the families left welfare—was it due to welfare reform or other factors? Second, a significant fraction of the decline in welfare caseloads is due to reductions in

[11] Another possible problem with using caseloads to identify the causal impact of reform on other outcomes is that the caseload and the outcomes of interest may themselves be affected by unobserved factors.

initial entry into welfare (Grogger et al., 2003) and the leaver studies would never capture this group. Finally, there is no control, no before period, and no comparison to exits from welfare in the pre-reform period.

Overall, the experimental and nonexperimental approaches have advantages and disadvantages. Experimental studies have the appeal of random assignment, but have limitations related to the inability to obtain nationally representative estimates and to account for effects of changes in entry behavior that result from welfare reform. Nonexperimental analyses have the advantage of being nationally representative, but the usual concerns exist—that underlying trends in the outcome variables of interest could lead to spurious estimates of policy effects. A further disadvantage of nonexperimental analyses is that one is limited by available data at the state level. A further advantage of the experimental analyses in the context of this study is that many state welfare waiver experiments collected data that allow for a somewhat richer analysis of health outcomes than would be possible with large survey sample data sets such as the Current Population Survey. However, the small sample sizes in these surveys are a limitation relative to the large sample sizes in typical nonexperimental analyses.

V. What Do We Know from the Existing Literature?

The literature on the impacts of welfare reform is quite large. Here, we focus our review on what is known about the impacts of welfare reform on health.[12] Our review summarizes evidence from both experimental and nonexperimental analyses. We organize our summary into

[12] We focus here on the impacts of welfare reform on health. A related literature finds that pre-reform public assistance programs lead to improvements in health. Currie and Cole (1993) find that AFDC participation leads to improvements in birth outcomes (higher birth weight). Currie and Grogger (2002) find that higher pre-PRWORA welfare participation rates are associated with more prenatal care and improved birth outcomes. Fishback et al., (2005) find that increases in public assistance spending during the New Deal led to lower infant mortality, lower suicide rates, fewer deaths from diarrhea and infectious diseases, and higher birth rates.

two sections, the first examines the impacts of welfare reform on health insurance and the second examines the impacts of reform on health utilization and health status.

The nonexperimental literature utilizes national survey data that allows for identification of state-year cells. Such national datasets include the Current Population Survey (CPS), Behavioral Risk Factor Surveillance System (BRFSS), and Vital Statistics detailed natality files. The main source of data for experimental evaluations of welfare waivers is state administrative data. These data, for example, are used to calculate impacts of reform on employment, earnings, welfare use, public assistance payments, and in a few cases Medicaid enrollment. Relevant for this project, however, these administrative data have (in some experiments) been augmented by surveys of the treatment and control groups where additional family and child outcomes (including health insurance coverage, utilization, and status) are measured.

A. Health insurance coverage

A relatively large set of studies examine the impacts of welfare reform on health insurance. The studies examine the impact of reform on public health insurance coverage (Medicaid), private health insurance coverage (such as employer-provided coverage or individually purchased coverage), and any insurance coverage. The discussion above suggests that reform should lead to overall reductions in health insurance—through decreases in public coverage and increases in private coverage—as families move off welfare and into work. We summarize the main findings of this literature.

- Welfare reform led to small reductions in health insurance coverage

The literature is generally consistent with the prediction that reform is associated with a reduction in health insurance coverage. Among the nonexperimental studies, Bitler, Gelbach, and Hoynes (2005) use the BRFSS and find that state waivers and TANF implementation led to reductions in any insurance coverage for single women, with the largest impacts for Hispanic

single women. The study uses a state pooled panel model with dummies for waivers and TANF implementation and estimates a difference-in-difference model (with married women as controls) to control for other contemporaneous impacts on health insurance. Kaestner and Kaushal (2004) use the CPS to estimate a difference-in-difference model and find that declines in the AFDC caseload are associated with reductions in Medicaid, increases in employer-provided health insurance, and overall increases in uninsurance for single mothers and their children. They measure welfare reform using the AFDC/TANF caseload—the idea being that reform leads to reductions in the caseload which leads to changes in health insurance (and other outcomes as we will see below). These estimates may reflect other factors other than reform that are leading to changes in the caseload.

The results using household survey data are consistent with Medicaid caseload analyses. Ku and Garrett (2000) examine the impact of pre-PRWORA welfare waivers on Medicaid caseloads and find that waivers led to (statistically insignificant) declines in the adult and child Medicaid caseload.

Grogger, Klerman, and Karoly (2001) review the experimental literature and find small, typically insignificant and somewhat mixed impacts of welfare reform on the health insurance coverage of adult recipients and their children. In these studies, surveys are used to measure health insurance coverage at some point after random assignment (typically 3–4 years, depending on the particular study).

In contrast to the above studies, DeLeire et al., (Forthcoming) conclude that welfare reform leads to *increases* in health insurance coverage for low educated women. They use the CPS and examine the impacts of waiver and TANF implementation and argue that reform could lead to increases in insurance if there are spillover effects of reform on nonrecipients. Indeed,

because of these possible spillovers they consider the "treatment" group to be all women regardless of marriage or presence of children.[13]

Overall, while the literature is somewhat mixed, the balance of evidence is toward finding decreases in insurance following reform. It is difficult to compare specific estimates across the studies—due to different measurement of public coverage (Medicaid or any public insurance) and differences in samples and control groups—but consistently the measured impacts are relatively small. For example, Bitler et al., (2005) find that TANF led to an insignificant 4 percentage point reduction in insurance coverage among low educated single women with children. This is in stark contrast to the very large rates of uninsurance reported in the leaver studies (for example, Garrett and Holahan, 2000). As discussed above, leaver studies are not useful for estimating the impacts of the policy change that is the focus of this report.

- Concurrent Medicaid expansions mitigated these declines in insurance coverage

Borjas (2003) and Royer (2003) find that more restrictive Medicaid policies did not reduce health insurance coverage among immigrants, because the loss in public coverage was offset by increases in private insurance coverage.[14] Aizer and Grogger (2003) and Busch and Duchovny (2003) use the CPS to examine parental Medicaid expansions through the 1931 program. Aizer and Grogger (2003) find that these Medicaid expansions led to increases in health insurance coverage of women (with some crowd-out of private insurance coverage). They also find that expanding parental coverage leads to increases in the health insurance coverage of children—possibly arising from an increase in benefits relative to costs associated with taking up coverage.

[13] Large spillover effects seem to be inconsistent with the small estimated impacts of welfare reform on marriage and fertility (see, for example, Bitler et al., 2004; and the review in Grogger and Karoly, 2005).
[14] Royer also examines impact on pregnant immigrants and finds a temporary reduction in prenatal care, but no effect on birth outcomes.

B. Health utilization and health outcomes

The BRFSS allow for measures of utilization (indicators for recent checkups, Pap smears, breast exams, and whether one needed care but found it unaffordable), health behaviors (smoking, drinking, and exercise), and health status (obesity, lost work days, and self reported health status). Another source of nonexperimental data is the detailed natality files—which as a census of birth certificates includes data on prenatal care and birth outcomes (birth weight, gestation). Many state waiver experiments include surveys designed to obtain richer family and child outcomes.

- Welfare reform had small, mixed impacts on health care utilization and outcomes

The nonexperimental literature finds small, mixed and often insignificant impacts on health. Currie and Grogger (2002) and Kaestner and Lee (Forthcoming) use the detailed natality data and find that declines in welfare caseloads during the waiver period (Currie and Grogger) and TANF period (Kaestner and Lee) are associated with declines in prenatal care and small increases in the incidence of low birth weight for low-education women.

Bitler, Gelbach, and Hoynes (2005) use the BRFSS and find significant but small reductions in health care utilization such as the probability of having gotten a checkup, Pap smear, or breast exam in the last year. They also find (insignificant) increases in the likelihood of needing care but finding if unaffordable. Kaestner and Tarlov (Forthcoming) also use the BRFSS and find no association between reductions in welfare caseloads and health behaviors (smoking, drinking, diet, and exercise) and health status (weight, days in poor health, and general health status).

The experimental estimates of the impact of reform on health are summarized in several reviews including Grogger and Karoly (2005); Grogger et al., (2001); Morris et al., (2001); and Gennetian et al., (2002). (Estimates are also available from the final reports for each state's

evaluation.) Much of the experimental evidence examines impacts on children ages 5–12.[15] Health utilization measures include when the child last saw a dentist or doctor, whether any children have had ER visits since random assignment, whether the child has a place to go for routine care, and whether various types of medical care were unaffordable. Health outcomes include parent-rated child general health status as well as indices of maternal depression and child behavior problems. The estimates from these child surveys are mixed, with an equal number of unfavorable and favorable impacts of reform on health (Grogger and Karoly, 2005).

- There is some evidence that the impacts varied across groups and with different types of welfare reform

Bitler, Gelbach, and Hoynes (2005) find that the negative impacts of reform on health insurance and outcomes are larger for Hispanics. This would be as expected if a large share of Hispanics were affected by the immigrant provisions of PRWORA or were deterred from applying for public insurance by concerns about program use affecting eventual citizenship or permanent residency applications. Borjas (2003) finds, using a differences-in-differences-in-differences strategy, that reform was associated with a decrease in the share of immigrants with public coverage but that this was offset by an increase in private coverage.

The experimental studies of child well-being find that any improvements in behaviors tend to be concentrated among young children while there are more likely to be negative impacts on behaviors for adolescent children (Morris et al., 2001 and Gennetian et al., 2002). The experimental literature also finds that improvements are more likely to be present with welfare reforms that lead to increases in income (such as those with generous earnings disregards). We will discuss this more in the next section.

[15] DHHS funded a number of state experimental evaluations to allow them to examine longer run impacts of reform on various school and health outcomes for children who were 2–9 at the time of random assignment, and thus approximately 5–12 at the time of the surveys.

VI. Illustrating Impacts of Reform from Experimental Data

Overall, the summary of the literature above suggests that welfare reform most likely led to decreases in insurance with more mixed evidence for health utilization and health outcomes. Here we explore these findings by presenting estimates on the impact of reform from five state welfare waiver evaluations. In particular, we analyze public-use data from five states: Connecticut, Florida, Iowa, Minnesota, and Vermont. As discussed above, each state waiver (but no TANF program) was evaluated using randomized experiments. Further, state waivers varied significantly in terms of their policy scope and many of the state waivers did not include time limits or enhanced earnings disregards (two of the key policies included in TANF). Accordingly, we have chosen these five states because their waivers span eventual TANF policies. In addition, many state evaluations relied only on administrative data and are less useful for examining impacts on health. These five state evaluations all included surveys designed to measure impacts on family and especially child outcomes.

Below we describe the five state's policies and experimental data in more detail. We then present the estimates of the effects of the policy changes on health insurance, health utilization, and health status.

A. Description of the Policies in the Five States

Table 1 presents the policies for the welfare waivers in the five states and AFDC (which is the control group program in each case). We document three central policies that are required in TANF programs: time limits, work requirements, and financial sanctions. We also include earnings disregards as these changes have been quite common in TANF programs and are very important for determining how reform affects family income.

Very few welfare waivers included time limits. In our set of states, Connecticut's Jobs First (CT-JF) and Florida's Family Transition Program (FL-FTP) have time limits. There were some other states that included time limits, one of which (Indiana) had public-use data available, but we excluded Indiana due to limited data on health outcomes. All of the state waivers had work requirements that were stricter than the pre-existing AFDC program. The states varied in terms of who was exempt from work requirements (typically, this is based on the age of the youngest child in the family) and whether the program was focused on employment (had a "work first" policy) or aimed recipients towards education and training.

The earnings disregards determine the rate at which benefits are reduced as earnings increase. In the AFDC program, after three months all earnings over a basic deduction level were "taxed" at 100%. This high benefit reduction rate played a central role in the adverse work incentives in the pre-reform system. All of the states (except Vermont—VT-WRP) had more generous disregard policies compared to AFDC. The most generous states in our sample are CT-JF (where all earnings below the poverty line were disregarded) and Minnesota (MN-MFIP). FL-FTP and Iowa (IA-FIP) had somewhat less generous reforms. Financial sanctions (which are triggered when a client does not comply with the work requirements or other rules) also varied across the states, with the most stringent policy in FL-FTP. Pre-existing AFDC policy provided 12 months of transitional Medicaid assistance to families leaving welfare. This was expanded by CT-JF (to 2 years) and VT-WRP (to 3 years).

The final row of the table shows how the states vary in terms of the level of the maximum welfare grant at the time of random assignment. Florida and Iowa are less generous in terms of their maximum grant while Connecticut and Vermont are quite generous.

The experiments in VT-WRP and MN-MFIP had two treatments—incentives only and full treatment. The incentives-only policies included the enhanced earnings disregards but not

the work requirements. In our analysis below, we analyze both treatments in MN-MFIP but present the full treatment only for VT-WRP. (The Vermont incentives-only program was only mildly more generous than the preexisting AFDC program, and thus would not be expected to have significantly different impacts than AFDC.). Also important to note, FL-FTP had a two-tiered policy that assigned one treatment to the "job ready" (which included a shorter time limit and a work first employment program) and another to the "non job ready" (which included a longer time limit and more emphasis on education and training). We evaluate the average treatment effect across both groups.

Overall, CT-JF and FL-FTP are the most "TANF like" of the reform states, due to the presence of the time limit. CT-JF and MN-MFIP are states whose waivers were most likely to lead to increases in income and welfare use (at least before time limits bind in CT-JF) due the enhanced earnings disregards. VT-WRP was probably the most "gentle" of the reforms with a weaker work requirement, no time limit, and the longest transitional Medicaid benefits.

B. Description of evaluations and our samples in the five states

Table 2 describes the details of each of the five experiments and the samples that we use in our analysis. We begin with the timing of the experiment (random assignment and follow up period), the geographic range of the experiment (state-wide or partial state), and the sample size for the single-parent component of the evaluation (used in the final reports in each state). Most of the state caseloads consist primarily of single-parent families and this is reflected in the evaluations that also primarily focus on single-parent families.

All of the impacts on health come from the surveys which are given to a (random) subset of the full sample.[16] We indicate in Table 2 the timing of the surveys, the cohorts that faced the surveys, and the response rate on the surveys. The surveys tend to be fielded to specific cohorts between 3 and 4 years after random assignment. For example, in CT-JF there is survey data on 2,424 single-parent recipients who entered the experiment between April 1996 and February 1997. This number is a bit more than half of the full sample size for the evaluation. The information on health comes from the *adult* survey and the *focal child* survey (with the exception being VT-WRP which does not have a focal child survey). The focal child is one child who is between the ages of 5 and 12 at the time of the survey. Only one child is chosen (randomly if there is more than one child of the correct age) and there is no child survey information if there is no child in that age range. That explains why the number of observations for the child survey is less than the number for the adult survey.[17]

We also indicate in the table the samples that we use in our analysis. We have focused on samples of single parents (at the time of random assignment).[18] For some states, this is simply the full sample (CT-JF and FL-FTP), as the public-use data are only for single parents. In MN-MFIP, we present estimates for long-term welfare single parent welfare recipients living in urban counties. This is the group that was highlighted in the state's final report.[19] Because we consider both incentives only and full treatment in MN-MFIP, we report sample sizes for both

[16] In states conducting the focal-child evaluations, single parents with children of the appropriate age were oversampled for the adult survey as well. The data for these states include sample weights to make the survey data representative of the overall population in the survey (these weights adjust for initial differences in sampling ratios for Connecticut, Iowa, and Minnesota).

[17] The table mentions the maximum number of available observations. Because of item non-response, the actual Ns are lower than this for many outcomes. We chose to use a different number of observations for each outcome to maximize sample. Item non-response is generally low for most of our outcomes.

[18] Some of the evaluations do not include data for two-parent families. We wanted a sample that was consistent across states to the extent possible.

[19] It also has the advantage that there were no changes in the random assignment ratios across the time period, mitigating the need for controls beyond the treatment indicator. Long term recipients are those on welfare for at least 24 of the past 36 months.

treatments. We have chosen our IA-FIP sample to include single females in early cohorts.[20] Finally, for VT-WRP, we include only those receiving the "full" treatment.

C. Results

We present our results in five figures. In each case we present an unconditional "percent effect" estimator which is simply 100 times the treatment group mean minus the control group mean divided by the control group mean. This is weighted to be representative of the full experimental population at that point in time where sampling probabilities varied (for Connecticut, Iowa, and Minnesota). An alternative estimator, used often in the evaluation literature, is the standardized "effect size" which is the treatment mean minus the control mean divided by the standard deviation of the control group. For those who prefer that measure, we have companion appendix tables for each of the figures that present the effect size (as well as the difference, standard error of the difference (calculated to be robust to heteroskedasticity), the control group mean, and the number of observations). Note that in our experiment, there is no need to differentiate between the intent to treat and average treatment effect. Everyone in the treatment group is treated—everyone faces the new welfare reform program. This is in contrast to, for example, the Moving to Opportunity Program where the treatment is voluntary (Kling et al., 2005).[21]

[20] To be precise, we include single females 18 and up or 16–17 with a preschool child, who were in a cohort randomly assigned at least 57 months before the survey. The final report includes separate outcomes for ongoing recipients and applicants in three cohorts. Because we wanted the applicant sample to have been exposed to the new program or AFDC for as long as the ongoing recipients, we restricted the analysis to the earlier applicants. This was not an issue for the four other states, as the surveys in the other evaluations were only administered to narrow cohorts of participants. Also, in 1997, Iowa implemented TANF, and applied the new policies to the control group. Thus the treatment-control program differences are much smaller for later cohorts.

[21] In the MTO study, persons were randomly assigned to a treatment group (who was offered a housing voucher to move to a low poverty neighborhood) and a control group (no offer). The intent to treat comes in because only a subset of persons in the treatment group accepted the offer. Here, everyone has applied to obtain, and been deemed eligible for welfare, although a small share of each group does not take up welfare.

To begin, Figure 1 presents the impacts of welfare reform on quarterly employment, quarterly welfare participation, and quarterly income. These estimates are important "first stage" outcomes. For example, we may expect states with smaller reductions in welfare participation to have smaller reductions in health insurance coverage. Treatment group members in states whose reforms led to large increases in income may show fewer adverse or more beneficial health outcomes compared to treatment group members in states whose reforms led to decreases in income.

Each of these three outcomes is averaged over all quarters between random assignment and the time of the survey. (The companion table is Appendix Table 1a.) We also have calculated these employment, welfare, and income impacts for the quarter that the survey was fielded (this measure is unavailable for Iowa). The impacts for the quarter of the survey are presented in Appendix Table 1b. While an argument could be made in support of either time frame, we focus on the entire period up to the survey to reflect the fact that the health care utilization data refer to some look-back period and the health status variables are stock measures that adjust over a longer time period.

Figure 1 consists of 3 panels, where each panel corresponds to a different outcome (quarterly employment, welfare participation, and income (earnings plus cash assistance plus food stamps plus General Assistance for MN-MFIP only). Within each panel, we present percent effects for each of the states where the outcome is available. There are a maximum of six estimates—one each for CT-JF, FL-FTP, IA-FIP, and VT-WRP and two for MN-MFIP (incentives only treatment and full treatment). Each estimate is shown as a bar, and at the end of the bar we provide the percent effect along with the significance of the treatment control differences (* denotes significant at the 10% level, ** significant at the 5% level, and *** significant at the 1% level). Later figures differ only in how many panels are presented. The

sample for the estimates in Figure 1 is persons completing the survey who also have administrative data for all three outcomes.[22]

The results for the "first stage" in Figure 1 show that all of the programs led to statistically significant increases in quarterly employment relative to AFDC. Effects on employment seem to be larger in the states with more generous earnings disregards. Effects for quarterly welfare participation are more mixed. Welfare participation is significantly higher than under AFDC in Minnesota and somewhat higher in Connecticut, while lower in Florida.[23] Finally, Panel C presents impacts on quarterly income from administrative sources (earnings plus cash welfare plus food stamps plus General Assistance for MN-MFIP only). Total quarterly income was significantly higher for the treatment group members in Connecticut and Minnesota, and about the same for the other states. These findings may suggest various patterns for the impacts on health insurance coverage, health care utilization, and health status, depending on the importance of the various pathways for reform to affect these outcomes. For example, if the most important factor leading to public insurance coverage is ongoing welfare participation, Figure 1 suggests that we would find increases in coverage with reform for Minnesota and possibly Connecticut. If, instead, employment is important, it has other implications.

Appendix Table 1b presents quarterly impacts for the quarter of the survey. Normalized effects on employment are somewhat smaller for this quarter than for the full time period, and insignificant and small for Florida. Normalized effects on cash assistance receipt for the quarter of the survey are larger in magnitude for the quarter of the survey than for the average, and for the time limit states, are negative at the quarter of the survey (likely reflecting the effects of the

[22] The exception to this is Iowa, where it is impossible to merge the administrative and survey information using the public-use data. For Iowa, we have tried to match our survey sample as closely as possible.

[23] The difference between Connecticut and Florida reflects the fact that Connecticut had a much more generous earnings disregard. Further, while the Connecticut time limit was a short 21 months, in practice, extensions to the time limit were fairly common. Florida's time limit was also relatively short (for the work-ready, 24 months out of 60), while the survey in Florida was administered 4 years out.

time limits). Effects on income are about the same, except for Connecticut, where they are positive over the longer time period, but negative and insignificant for the survey quarter.

Figure 2 presents the estimates of the effect of reform on the head's health insurance coverage.[24] Reform led to increases in public insurance coverage in MN-MFIP and CT-JF—this seems to be a direct result of longer stays on welfare (Figure 1). Public insurance coverage fell (though not significantly) in the other states. Having other nonpublic insurance but no public insurance shows the opposite pattern. In both cases, MN-MFIP full treatment leads to larger (in magnitude) impacts, consistent with the larger first stage effects discussed above. The bottom line is that reform leads to increases in head's overall insurance coverage in CT-JF, with insignificant, small, and mixed impacts for the other states. One interesting outcome available in some states is the presence of spells of uninsurance since random assignment. This shows large and significant decreases (a positive outcome) for Minnesota, perhaps reflecting increased welfare participation (Figure 1).

The results for children's insurance coverage, presented in Figure 3, show small (1–2 percent) and insignificant impacts on any insurance coverage. Similar to the results for adults, public insurance coverage increases for CT-JF and MN-MFIP (and IA-FIP) and decreases for the other states, although the effects are smaller and fewer are significant compared to the adults. We would expect smaller impacts on child coverage given the other available programs.[25] Again, the measure of any spells of uninsurance for any child shows positive effects for Minnesota (negative estimates).

Figure 4 presents estimates for utilization, access, and affordability of care for the sample of focal children 5–12 (and their families for doctor or dentist care being unaffordable). These

[24] In this and all subsequent figures, there is an appendix table with the same number that provides the supporting data and alternative estimator.

[25] For example, many of these low-income children would be eligible for Medicaid via the poverty or OBRA expansions (children under about 15 in families with income up to 100% of poverty).

results are very inconclusive. Few of the estimates are significant and for most variables there are an equal number of positive and negative estimates. For example, the variable "focal child has seen a doctor in the past two years" has one significant positive estimate, with the rest insignificant and very close to zero. There are some large negative estimates for the outcome "someone in the family could not afford to see a dentist or doctor"—however none of these are significant.

Finally, Figure 5 presents the results for health outcomes for the focal child sample including mother's risk for depression (a positive effect is an adverse impact), child's having behavioral problems (a positive effect is an adverse impact), and for the parent reporting the child was in excellent or very good health (a positive effect is a good outcome).[26] These estimates consistently point to welfare reform leading to improvements in health status, although few estimates are statistically significant. For example, 4 of 5 estimates indicate that the risk of maternal depression decreases (the exception is CT-JF), 4 of 5 estimates indicate that the child behavior index improves (the exception is FL-FTP), and 3 of 5 estimates indicate that child health status improves (the exceptions are IA-FIP and MN-MFIP full treatment).

Given that we estimate effects for many outcomes, we need to be concerned about the possibility that the separate tests are sometimes wrongly rejecting the null of no impact. To address this concern about multiple inference, we have also constructed summary measures for the types of outcomes within each table for each state which allow us to test the effect of the treatment on each set of outcomes. For each set of outcomes (for example, quarterly employment, welfare receipt, and income since random assignment for figure 1), the summary measure is defined as the average of the standardized outcomes (after having converted all

[26] The mother being at risk for depression is determined by her score being at least 16 (out of a possible 60) on the 20-item Center for Epidemiological Studies Depression scale. The child having behavioral problems is determined by whether the child's Behavioral Problem Index score was in the worst 25 percent. General health is reported on a five-point scale: excellent, very good, good, fair, or poor.

outcomes to be positive when they are good and normalizing them by the control group standard deviation). So, for the example, the summary measure would be the average of the quarterly employment, quarterly income, and 1 minus quarterly welfare receipt (assuming, as per the intent of reform, that ongoing welfare receipt is a negative thing), each normalized by its control group standard deviation. This new averaged variable is then regressed on treatment status for each state. Tests on this summary measure are then robust to over-testing. This does not entirely resolve the issue of multiple inference as there are still five such summary measures. It is important to consider hypotheses about these summary measures as members of a family of hypotheses. This involved calculating cutoffs for test statistics such that probability is less than a set amount (say 0.05) that at least one of the tests in the family would exceed the cutoff under a joint null of no effects. A familiar but quite conservative such test (if the test statistics are highly correlated) is the Bonferroni adjustment, in which the adjusted p-value is the observed p-value times the number of outcomes examined. More powerful tests remove hypotheses from the family of nulls if they are rejected. An alternative from the biostatistics literature used in recent papers by Kling and Liebman (2004) and Anderson (2005) involves calculating family-wise error adjusted significance levels, using the Westfall and Young free step-down resampling method (Westfall and Young, 1993). We have also implemented this method to adjust our summary measure *p*-values for the multiple inference, using 1000 draws from the null distribution of no impact of each summary measure (for more details, see algorithm 2.8 in Westfall and Young, 1993).

We now discuss the results of our five summary measures for each of the states, reported in Appendix Table 6. The table reports the treatment-control difference in summary measures for each state and figure, along with the standard error, the family-wise error adjusted *p*-values

for each state, and the N for each summary measure.[27] Each summary measure is for a single table and state, and averages all (normalized) reported outcomes for a state. The normalized outcomes are then all for positive outcomes (so the summary measure treatment-control difference is positive if the reform caused an improvement in the summary measure). For the employment, welfare, and income summary measure (Figure 1), lack of welfare receipt is considered "good." For the adult and child/family health insurance coverage summary measures (Figures 2 and 3), public coverage and lacking any spells of coverage are considered "good." For the health care utilization summary measure (Figure 4), not having been unable to afford to see the doctor or dentist is considered good. Finally, for the health status summary measure (Figure 5), the child's mother not being at risk for depression and the child not having a high Behavioral Problem Index measure are considered "good."

Adjusting for the family-wise error rate definitely makes a difference in the overall interpretation of the results. For example, for the Figure 1 summary measure, the treatment-control differences for IA-FIP, MN-MFIP full, FL-FTP, and CT-JF are all positive and significant at the 5 percent level if the *p*-value is unadjusted for the multiple testing. However, when multiple inference has been controlled for, only FL-FTP and CT-JF have significant treatment-control differences in the summary measure, and only Florida's is significant at the 5 percent level. For the adult health insurance measures in Figure 2, the summary measure treatment-control difference is only statistically significant for CT-JF (and it is positive, suggesting an improvement in health insurance coverage for the head). None of the child/family health insurance summary measures (Figure 3) are significant, although both the MN-MFIP incentives only and CT-JF measures are both positive and come close to statistical significance

[27] The Ns reported are less than the maximum possible N because an observation will be missing if it is missing for any of the outcomes. A small share of observations is missing for each set of outcomes.

(p=0.107 and 0.103 respectively). Again, none of the Figure 4 or Figure 5 summary measure treatment-control differences are statistically significant, although all but one are positive. Thus, considering all the measures within each domain suggests a similar interpretation to the one we have from considering them one at a time. CT-JF had a positive and significant effect on income, employment, and leaving welfare and also on better adult insurance coverage outcomes. Effects for child/family insurance, utilization, and health status are small and insignificant in general.

VII. Conclusion

This paper explores the relationship between welfare reform and health. We examine both state welfare waivers and TANF implementation. We first present a comprehensive review of the literature and summarize what is known about impacts of welfare reform on health insurance coverage, health care utilization, and health status. There is a growing literature on this subject, although there are few clear findings. Most studies find that welfare reform leads to reductions in health insurance coverage, although some studies find the opposite. Results for utilization and health status fairly consistently find negative impacts but the estimates are very small and rarely statistically significant.

We then go on to present estimates from five experimental evaluations of state welfare waivers. We present percent effects—100 times the difference in means between the treatment and control group divided by the control group mean. Given the random assignment to the treatment and control groups, this is an unbiased estimate of the welfare reform. Overall, the results are suggestive that reform leads to small changes in health insurance and improvements in health. The results for health utilization are less conclusive. One should be very cautious about using these results to make conclusions about TANF as these are a few select states, and only

two of the states had waivers with time limits (which are clearly an important piece of TANF policy).

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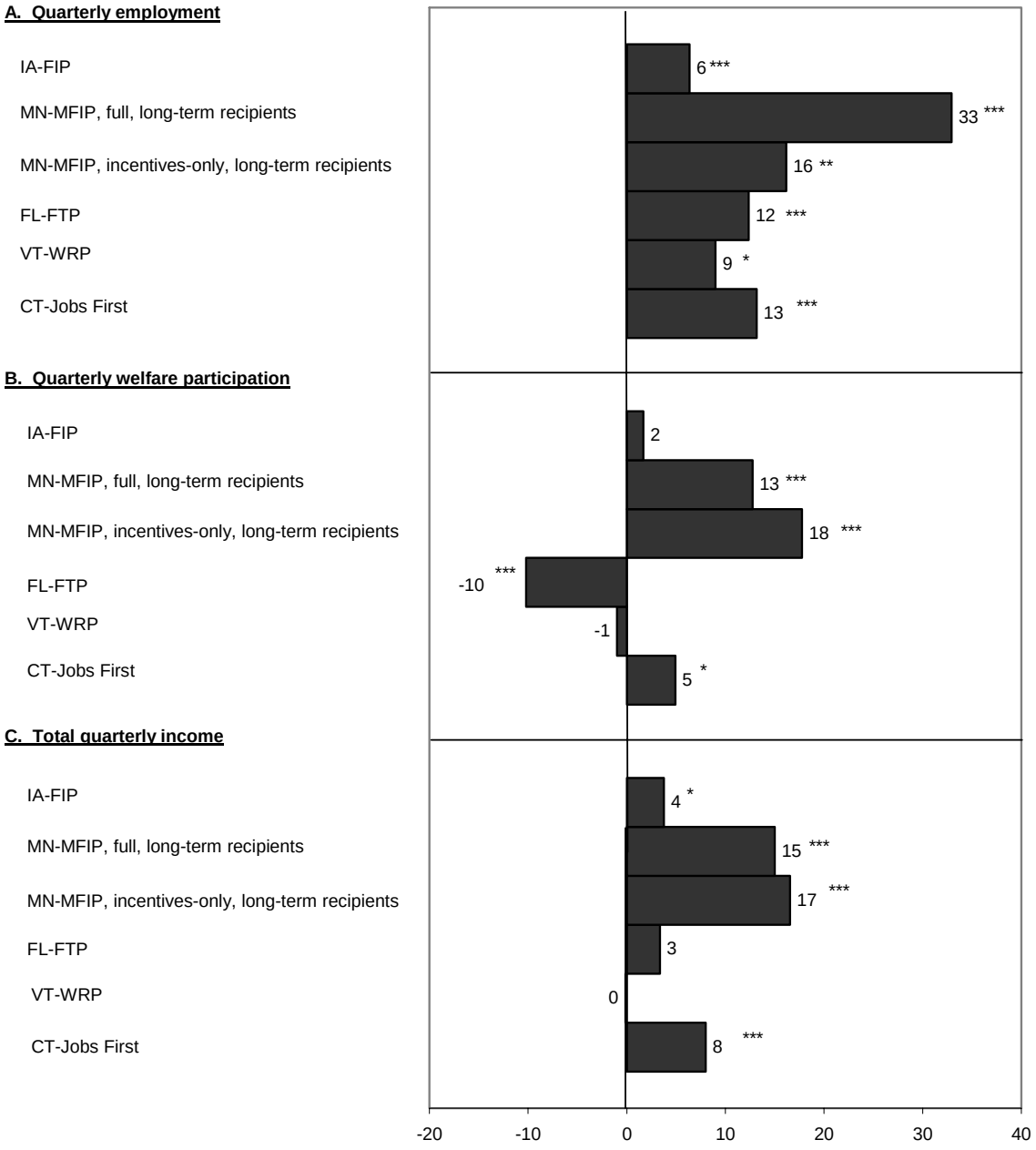
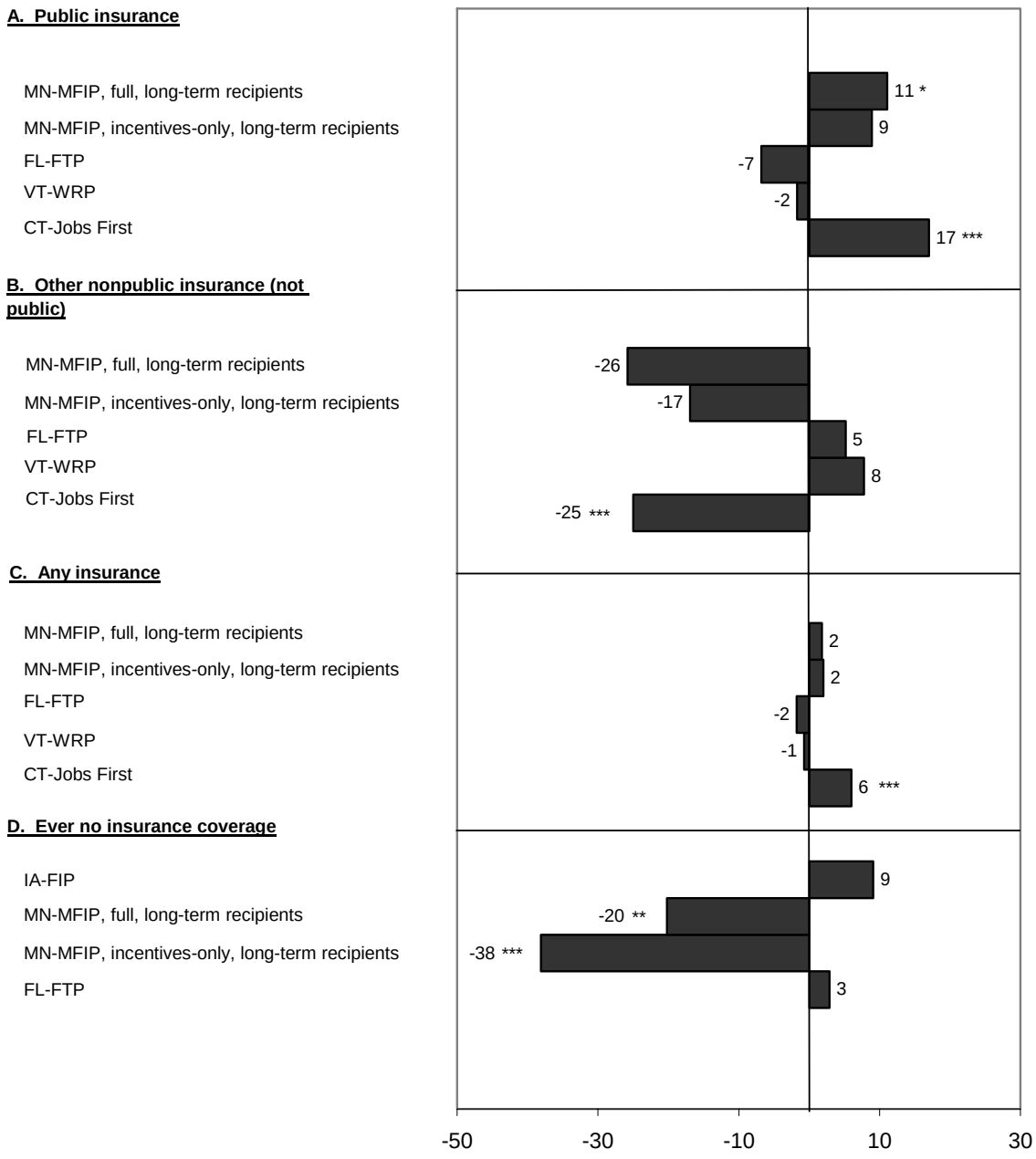
Figure 1
Impacts of Welfare Reform on Employment, Welfare, and Income from Experimental Studies, Averages from Random Assignment to Quarter of Survey (Percent Effects)



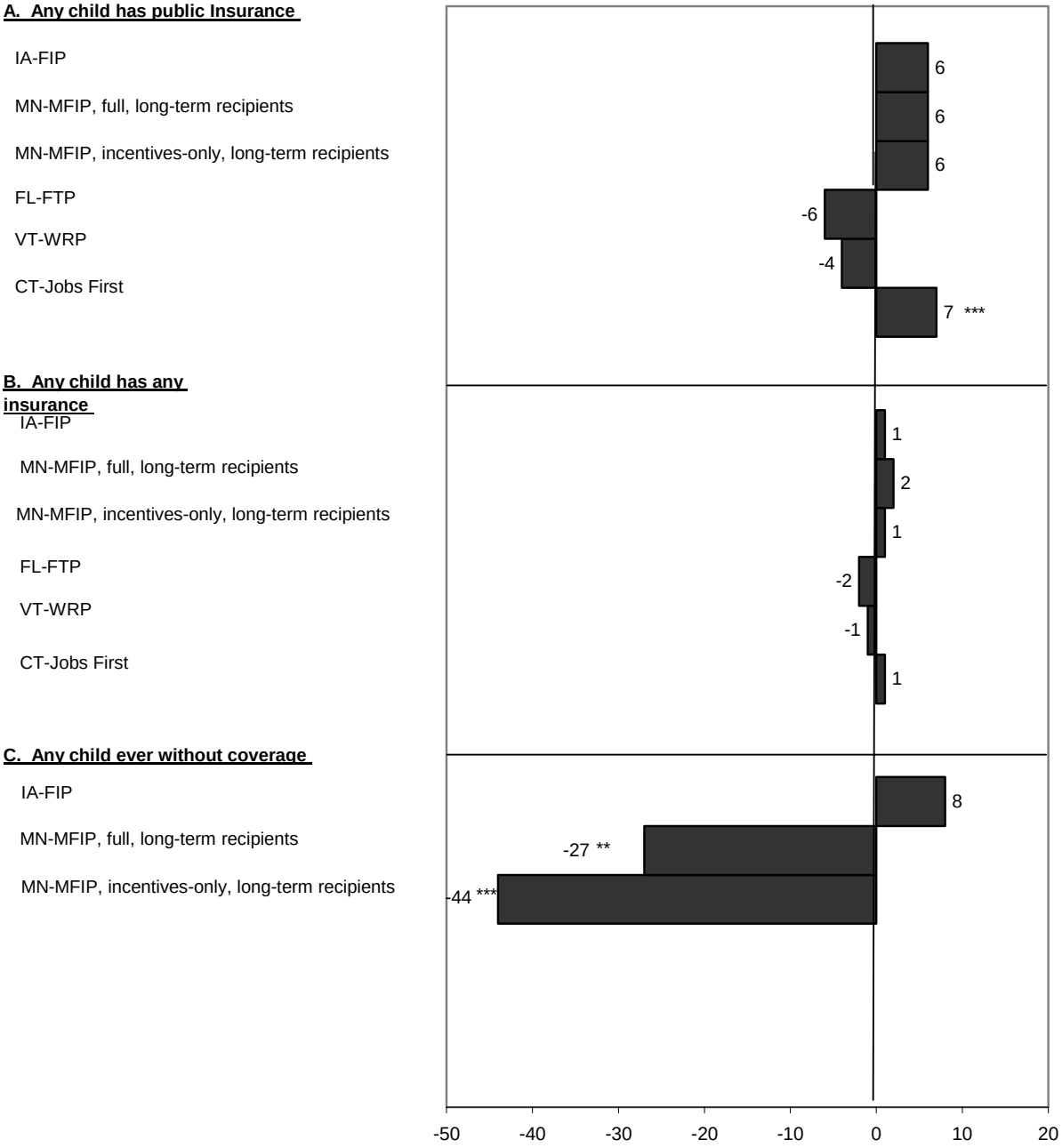
Note: The impacts are reported for quarterly averages from the time of random assignment through the quarter when the survey was conducted. For CT-Jobs First, the survey was done 36 months after random assignment began; for VT-WRP, 42 months; for FL-FTP, 48 months; for MN-MFIP, 36 months; and for IA-FIP, 5-6 years (we report the 6 year average). Effect sizes reported are the treatment-control difference divided by the control mean. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Figure 2
Impacts of Welfare Reform on Head's Health Insurance from Experimental Studies (Percent Effects)



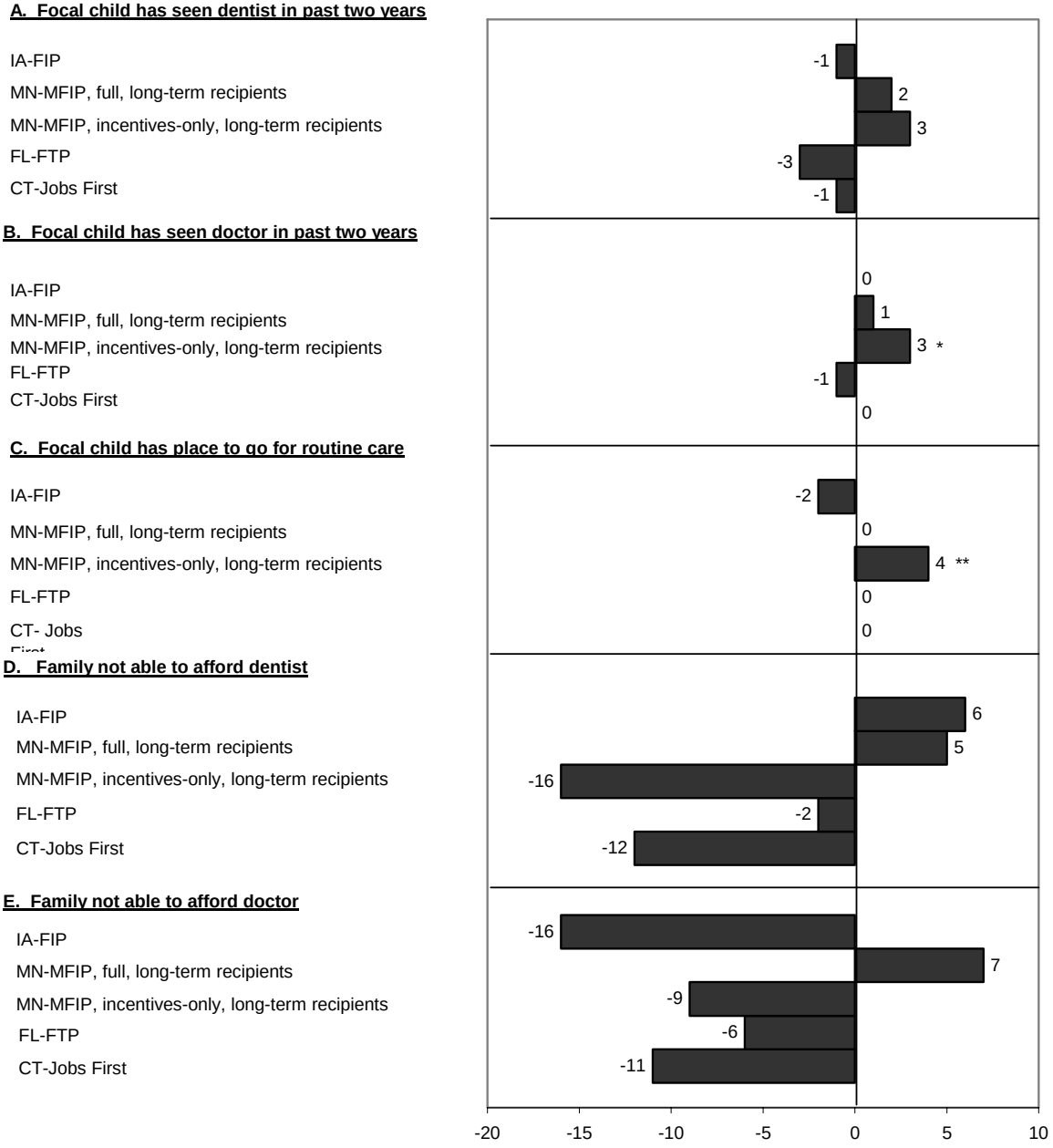
Note: The impacts are reported at the time of a follow-up survey administered to some recipients at some time after random assignment. For CT-Jobs First, the survey was done 36 months after random assignment began; for VT-WRP, 42 months; for FL-FTP, 48 months; for MN-MFIP, 36 months; and for IA-FIP, 5-6 years. Effect sizes reported are the treatment-control difference divided by the control mean. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Figure 3
Impacts of Welfare Reform on Child or Family Health Insurance from Experimental Studies
(Percent Effects)



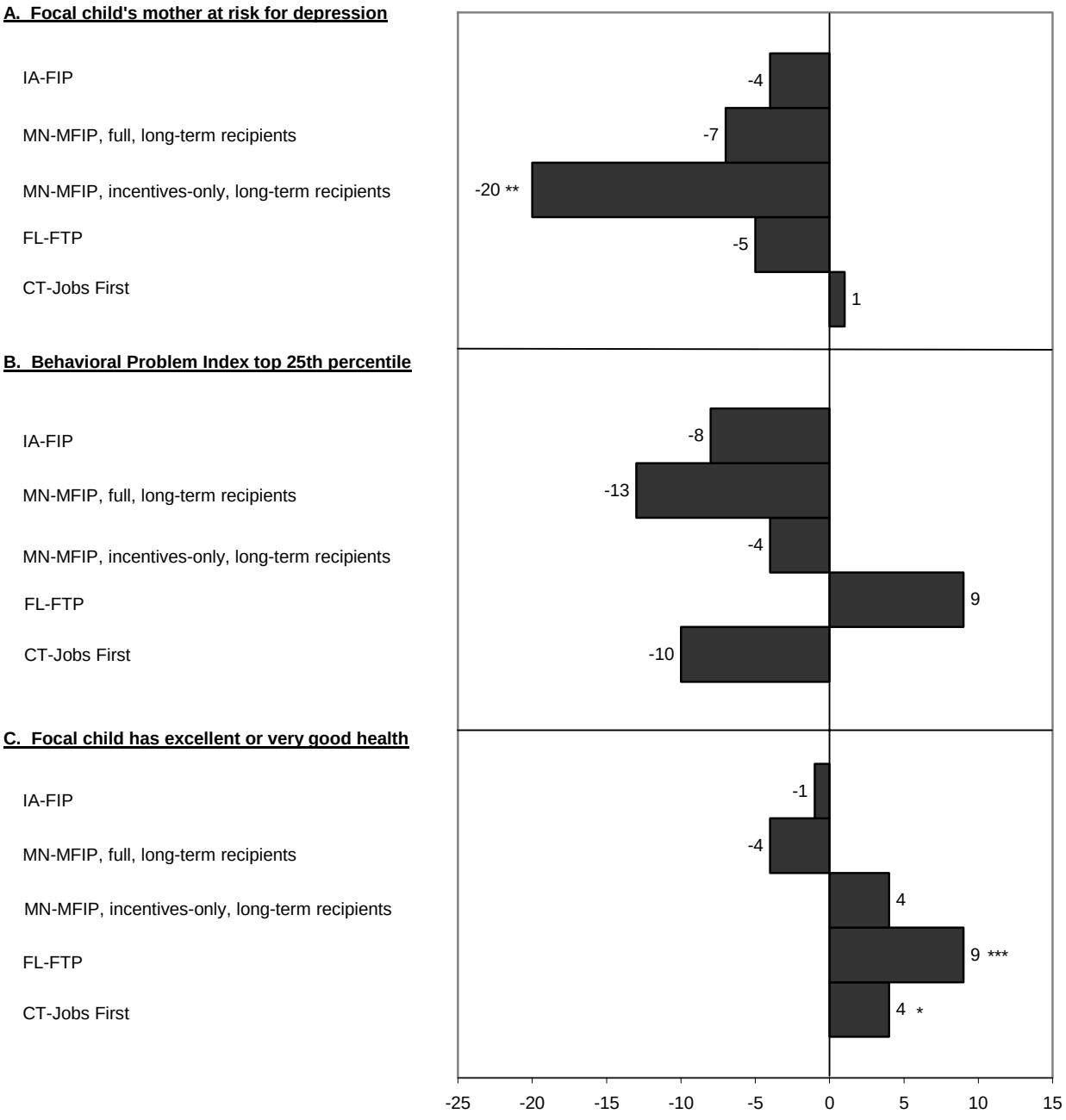
Note: The impacts are reported at the time of a follow-up survey administered to some recipients at some time after random assignment. For CT-Jobs First, the survey was done 36 months after random assignment began; for VT-WRP, 42 months; for FL-FTP, 48 months; for MN-MFIP, 36 months; and for IA-FIP, 5-6 years. Effect sizes reported are the treatment-control difference divided by the control mean. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences. Values for IA are for any coverage within the family, those for other states are for any coverage for any child.

Figure 4
Impacts of Welfare Reform on Child and Family Health Care Utilization, Access and Affordability of Care from Experimental Studies (Percent Effects)



Note: The impacts are reported at the time of a follow-up survey administered to some recipients at some time after random assignment. For CT-Jobs First, the survey was done 36 months after random assignment began; for VT-WRP, 42 months; for FL-FTP, 48 months; for MN-MFIP, 36 months; and for IA-FIP, 5-6 years. Effect sizes reported are the treatment-control difference divided by the control mean. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences. Outcomes in panels A., B., and C. are for focal child, those in panels D. and E. are for family but for sample of focal children.

Figure 5
Impacts of Welfare Reform on Child and Mother Health Outcomes from Experimental Studies
(Percent Effects)



Note: The impacts are reported at the time of a follow-up survey administered to some recipients at some time after random assignment. For CT-Jobs First, the survey was done 36 months after random assignment began; for VT-WRP, 42 months; for FL-FTP, 48 months; for MN-MFIP, 36 months; and for IA-FIP, 5-6 years. Effect sizes reported are the treatment-control difference divided by the control mean. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Table 1: Policies in Welfare Reform Experiments and Preexisting AFDC Program

	Connecticut Jobs First (JF)	*Florida Family Transition Program (FTP)*	*Minnesota Family Investment Program (MFIP)*	*Iowa Family Investment Program (FIP)*	*Vermont Welfare Restructuring Project (WRP)*	*AFDC*
General		Two tiered system based on job readiness	Two tiered system for long term/short term recipients; Two treatments incentives only and full	Control group subject to TANF rules in 97	Two treatments: incentives only and full (we only consider full treatment)	
Time Limit	21 months with 6 months extensions	24 months (of every 60) for job ready; 36 (of every 72) months for others	None	None	None	None
Work Requirements	Mandatory work first, exempt if child < 1 year	Mandatory job search & employment for job ready; education and training for others; exempt if child < 6 months	Mandatory employment and training for long term; exempt if child < 1 year	Employment and training; exempt if child < 6 months (eliminated in 97)	Half time work required after 30 months on aid	Education/training; Exempt if child < 3 years
Earnings Disregards	All earnings disregarded until poverty line	$200 + 50% of remaining earnings	38% of earnings disregarded up to 140% of poverty; maximum grant increased by 20% if working	40% of earnings disregarded (all earnings disregarded for 1st 4 months of work if "new worker" through 97)	$150 + 25% of remaining earnings	$120 + 33%: Mo. 1–3 $120: Mo. 4–12 $90: Mo. > 12
Financial Sanctions	Cut in grant for 1st and 2nd offense; 3 mo. suspension for 3rd	Adult portion of grant eliminated until compliant (until 6/97)	10% reduction in grant	3 months reduced benefits, 6 months no benefits	None	Minimal
Selected other policies	Two years transitional Medicaid	One year transitional Medicaid	One year transitional Medicaid	One year transitional Medicaid	3 years transitional Medicaid	One year transitional Medicaid
Benefit level, family of 3 at start of experiment	$636	$303	$532	$426	$640	N/A

Sources: Bloom et al., (2000); Bloom et al., (2002) ; Fraker et al., (2002);; Gennetian et al., (2005) ; and Scrivener et al., (2002).

Table 2: Welfare Reform Experiments and Samples

	Connecticut Jobs First (JF)	*Florida Family Transition Program (FTP)*	*Minnesota Family Investment Program (MFIP)*	*Iowa Family Investment Program (FIP)*	*Vermont Welfare Restructuring Project (WRP)*
Timing of Experiment RA: random assignment FO: follow-up	RA: 1/96–2/97 FO: 4 years	RA: 5/94–2/95 FO: 4 years	RA: 4/94–3/96 (urban counties through Q3 1995) FO: 2–4 years (through 6/98)	RA: 9/93–3/96 FO: 6–7 years	RA: 6/94–12/96 FO: 6 years
Geographic range	Statewide waiver Evaluation in 2 offices	Partial state waiver Evaluation in 1 county	Partial state waiver Evaluation in 7 counties (3 urban counties)	Statewide waiver Evaluation in 9 counties	Statewide waiver Evaluation in 6 districts
Sample Size for Evaluation	4,803 single parent cases	2,815 single parent cases	9,217 single parent cases, 2,615 long term urban recipients	7,823 single parent cases	5,469 single parent cases 4,381 single parents for full WRP
Timing of survey	Collected 3 years after RA to cohort entering experiment between 4/96 and 2/97	Collected 4 years after RA to cohort entering experiment between 8/94 and 2/95	Collected 3 years after RA to cohort entering experiment between 4/94 and 10/94	5–6 years after RA to cohorts entering before 4/96 for recipients	Collected 42 months after RA to cohort entering experiment between 10/94 and 6/95
Survey Response rate	80%	80%	80%	72%	80%
Sample used in our analysis	All single parent cases	All single parent cases	Long-term single-parent recipients in incentives only urban group (on welfare at least 24 of past 36 months) N=1,769 Long-term single-parent recipients in full urban group N=1,780	Single females 18 and older or 16–18 at RA with a pres-school child N=1,996 (Note: survey sample as here completing survey between 4 years 10 months to 5 years 11 months after RA)	Full WRP single parent cases N=4,381
Maximum number of observations when using adult survey data	2,424	1,729	718 (incentives only) 724 (full MFIP)	1,201	842
Maximum number of observations when using focal-child survey data	1,469	1,108	573 (incentives only) 587 (full MFIP)	683	NA (no focal child survey)

Sources: Bloom et al., (2000); Bloom et al., (2002) ; Fraker et al., (2002); Gennetian et al., (2005); and Scrivener et al., (2002).

Appendix Table 1a
Impacts on Employment, Welfare and Income, Averaged over Period from Random Assignment to Survey

	Difference	Std. Err., Difference	Mean (Controls)	Std. Dev. (Controls)	Percent Effect	Effect Size	N
A. Quarterly employment							
IA-FIP	0.033***	0.010	0.52	0.35	6.37%	0.095	7,823
MN-MFIP full	0.132***	0.029	0.40	0.36	32.92%	0.372	724
MN-MFIP inc. only	0.065**	0.030	0.40	0.36	16.17%	0.183	718
FL-FTP	0.058***	0.016	0.47	0.34	12.36%	0.169	1,729
VT-WRP	0.043*	0.025	0.46	0.37	9.28%	0.116	842
CT-JF	0.067***	0.017	0.51	0.38	13.16%	0.174	2,397
B. Quarterly cash welfare receipt							
IA-FIP	0.008	0.009	0.47	0.34	1.68%	0.023	7,823
MN-MFIP full	0.091***	0.025	0.72	0.34	12.76%	0.270	724
MN-MFIP inc. only	0.127***	0.024	0.72	0.34	17.77%	0.376	718
FL-FTP	-0.044***	0.015	0.43	0.33	-10.20%	-0.133	1,729
VT-WRP	-0.006	0.025	0.61	0.36	-0.98%	-0.017	842
CT-JF	0.029*	0.015	0.59	0.37	4.95%	0.079	2,397
C. Average quarterly income							
IA-FIP	83.23*	46.66	2215.24	1651.09	3.76%	0.050	7,823
MN-MFIP full	366.82***	88.79	2443.30	1133.39	15.01%	0.324	724
MN-MFIP inc. only	404.10***	97.66	2443.30	1133.39	16.54%	0.357	718
FL-FTP	58.85	55.91	1750.35	1101.99	3.36%	0.053	1,729
VT-WRP	-2.84	72.42	2376.29	1030.16	-0.12%	-0.003	842
CT-JF	209.93***	71.43	2658.18	1517.52	7.90%	0.138	2,397

Source: Authors' tabulations of public-use data. Shown are average quarterly employment rates, averages for any cash welfare receipt during quarter (to be comparable to the employment rates), and average quarterly income (cash welfare plus food stamps plus general assistance (MN only) plus earnings) for the period from random assignment to the quarter during which the survey was done (except for IA, when it is an average over the entire follow-up period). Statistics are for all observations completing the adult survey that also had data for the full period, except for Iowa, where they are for approximately the same cohorts as the survey data (the IA public use data does not contain the appropriate information to link the survey and administrative records). Numbers are weighted to be representative of survey design where relevant. Standard errors are robust to heteroskedasticity. Percent effect is 100 times the treatment-control difference divided by control mean (also shown in figure 1), effect size is treatment-control difference divided by control standard deviation. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Appendix Table 1b
Impacts on Employment, Welfare and Income, Quarter of Survey

	Difference	Std. Err., Difference	Mean (Controls)	Std. Dev. (Controls)	Percent Effect	Effect Size	N
A. Quarterly employment							
IA-FIP	NA						
MN-MFIP full	0.071*	0.040	0.50	0.50	14.13%	0.142	724
MN-MFIP inc. Only	0.064	0.041	0.50	0.50	12.72%	0.128	718
FL-FTP	0.009	0.024	0.54	0.50	1.69%	0.018	1,729
VT-WRP	0.102***	0.034	0.53	0.50	19.28%	0.204	842
CT-JF	0.050**	0.022	0.57	0.50	8.69%	0.100	2,414
B. Quarterly welfare receipt							
IA-FIP	NA						
MN-MFIP full	0.117***	0.040	0.56	0.50	20.97%	0.235	724
MN-MFIP inc. only	0.137***	0.039	0.56	0.50	24.65%	0.276	718
FL-FTP	-0.082***	0.017	0.20	0.40	-40.77%	-0.204	1,729
VT-WRP	-0.029	0.034	0.42	0.49	-6.86%	-0.058	842
CT-JF	-0.121***	0.021	0.40	0.49	-30.26%	-0.248	2,414
C. Average quarterly income							
IA-FIP	NA						
MN-MFIP full	337.97**	146.04	2616.34	1829.27	12.92%	0.185	724
MN-MFIP inc. only	512.71***	158.42	2616.34	1829.27	19.60%	0.280	718
FL-FTP	49.53	89.20	1799.48	1759.93	2.75%	0.028	1,729
VT-WRP	2.26	129.79	2527.20	1869.25	0.09%	0.001	842
CT-JF	-144.57	107.24	2974.01	2384.00	-4.86%	-0.061	2,414

Source: Authors' tabulations of public-use data. Shown are average quarterly employment rates, averages for any cash welfare receipt during quarter (to be comparable to the employment rates), and average quarterly income (cash welfare plus food stamps plus general assistance (MN only) plus earnings) for the quarter during which the survey was done (except for IA where we do not report values because no quarterly number is available). Statistics are for all observations completing the adult survey that also had data for all the outcomes. Numbers are weighted to be representative of survey design where relevant. Standard errors are robust to heteroskedasticity. Percent effect is 100 times the treatment-control difference divided by control mean, effect size is treatment-control difference divided by control standard deviation. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Appendix Table 2
Impacts on Head's Health Insurance, Survey Data

	Difference	Std. Err., Difference	Mean (Controls)	Std. Dev. (Controls)	Percent Effect	Effect Size	N
A. Public insurance							
IA-FIP	NA						
MN-MFIP full	0.072*	0.038	0.65	0.48	11.07%	0.152	712
MN-MFIP inc. only	0.058	0.038	0.65	0.48	8.93%	0.122	709
FL-FTP	-0.025	0.023	0.37	0.48	-6.77%	-0.052	1,725
VT-WRP	-0.012	0.032	0.70	0.46	-1.71%	-0.026	840
CT-JF	0.099***	0.021	0.60	0.49	16.69%	0.203	2,418
B. Other nonpublic insurance (not public)							
IA-FIP	NA						
MN-MFIP full	-0.044	0.028	0.17	0.38	-25.77%	-0.117	707
MN-MFIP inc. only	-0.029	0.028	0.17	0.38	-16.86%	-0.076	704
FL-FTP	0.013	0.021	0.25	0.43	5.24%	0.030	1,723
VT-WRP	0.011	0.024	0.14	0.35	7.84%	0.031	837
CT-JF	-0.055***	0.018	0.22	0.41	-25.23%	-0.133	2,402
C. Any insurance							
IA-FIP	NA						
MN-MFIP full	0.015	0.030	0.84	0.37	1.82%	0.042	708
MN-MFIP inc. only	0.016	0.030	0.84	0.37	1.96%	0.045	705
FL-FTP	-0.011	0.023	0.62	0.49	-1.78%	-0.023	1,723
VT-WRP	-0.006	0.025	0.84	0.37	-0.71%	-0.016	837
CT-JF	0.046***	0.017	0.82	0.39	5.65%	0.119	2,403
D. Ever no insurance coverage							
IA-FIP	0.049	0.032	0.54	0.50	9.13%	0.098	1,190
MN-MFIP full	-0.079**	0.039	0.39	0.49	-20.15%	-0.161	723
MN-MFIP inc. only	-0.149***	0.037	0.39	0.49	-38.15%	-0.305	717
FL-FTP	0.011	0.023	0.38	0.49	2.87%	0.023	1,729
VT-WRP	NA						
CT-JF	NA						

Source: Authors' tabulations of public-use data. Shown are survey estimates of insurance coverage for the recipient for month before survey, or of having had any spell of non-coverage since random assignment. Statistics are for all observations completing the adult survey that had data for the outcome. Numbers are weighted to be representative of survey design where relevant. Standard errors are robust to heteroskedasticity. Percent effect is 100 times the treatment-control difference divided by control mean (also shown in figure 2), effect size is treatment-control difference divided by control standard deviation. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Appendix Table 3
Impacts on Child or Family Health Insurance, Survey Data

	Difference	Std. Err., Difference	Mean (Controls)	Std. Dev. (Controls)	Percent Effect	Effect Size	N
A. Public insurance							
IA-FIP	0.031	0.033	0.49	0.50	6.32%	0.062	1,106
MN-MFIP full	0.045	0.036	0.72	0.45	6.34%	0.100	697
MN-MFIP inc. only	0.044	0.036	0.72	0.45	6.14%	0.097	696
FL-FTP	-0.037	0.026	0.61	0.49	-6.06%	-0.076	1,471
VT-WRP	-0.029	0.029	0.82	0.39	-3.58%	-0.076	774
CT-JF	0.055***	0.019	0.78	0.42	7.14%	0.132	2,135
B. Any insurance							
IA-FIP	0.006	0.026	0.80	0.40	0.80%	0.016	1,105
MN-MFIP full	0.017	0.027	0.86	0.34	1.97%	0.049	698
MN-MFIP inc. only	0.008	0.029	0.86	0.34	0.90%	0.022	697
FL-FTP	-0.017	0.020	0.82	0.38	-2.07%	-0.045	1,468
VT-WRP	-0.013	0.022	0.90	0.30	-1.45%	-0.044	772
CT-JF	0.005	0.010	0.95	0.22	0.57%	0.025	2,141
C. Any child ever without coverage							
IA-FIP	0.035	0.034	0.43	0.50	8.12%	0.071	1,004
MN-MFIP full	-0.094**	0.038	0.35	0.48	-27.08%	-0.197	698
MN-MFIP inc. only	-0.154***	0.036	0.35	0.48	-44.32%	-0.323	697
FL-FTP	NA						
VT-WRP	NA						
CT-JF	NA						

Source: Authors' tabulations of public-use data. Shown are survey estimates of insurance coverage for any child of the recipient for the month before survey, or of any child having had any spell of non-coverage since random assignment. Statistics are for all observations completing the adult survey that had data for the outcome and had a child in their household at the time of the survey. Numbers are weighted to be representative of survey design where relevant. Standard errors are robust to heteroskedasticity. Percent effect is 100 times the treatment-control difference divided by control mean (also shown in figure 3), effect size is treatment-control difference divided by control standard deviation. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Appendix Table 4
Impacts on Child and Family Health Care Utilization, Access and Affordability of Care, Survey Data

	Difference	Std. Err of Difference	Mean (Controls)	Std Dev. (Controls)	Percent Effect	Effect Size	N
A. Focal child has seen dentist in past two years							
IA-FIP	-0.005	0.021	0.93	0.25	-0.54%	-0.020	683
MN-MFIP full	0.022	0.025	0.89	0.31	2.47%	0.071	570
MN-MFIP inc. only	0.029	0.024	0.89	0.31	3.25%	0.094	558
FL-FTP	-0.023	0.023	0.85	0.36	-2.68%	-0.064	1,063
VT-WRP	NA						
CT-JF	-0.013	0.012	0.96	0.21	-1.41%	-0.065	1,459
B. Focal child has seen doctor in past two years							
IA-FIP	0.004	0.014	0.97	0.17	0.40%	0.023	683
MN-MFIP full	0.008	0.018	0.95	0.22	0.79%	0.034	570
MN-MFIP inc. only	0.027*	0.016	0.95	0.22	2.83%	0.121	559
FL-FTP	-0.012	0.011	0.97	0.16	-1.22%	-0.072	1,065
VT-WRP	NA						
CT-JF	0.002	0.004	0.99	0.07	0.16%	0.021	1,461
C. Focal child has place to go for routine care							
IA-FIP	-0.021	0.015	0.97	0.17	-2.14%	-0.123	682
MN-MFIP full	0.001	0.019	0.95	0.23	0.11%	0.005	570
MN-MFIP inc. only	0.034*	0.016	0.95	0.23	3.59%	0.149	559
FL-FTP	0.004	0.018	0.90	0.30	0.41%	0.012	1,067
VT-WRP	NA						
CT-JF	-0.004	0.006	0.99	0.11	-0.37%	-0.035	1,460
D. Family not able to afford dentist							
IA-FIP	0.009	0.031	0.17	0.37	5.62%	0.025	682
MN-MFIP full	0.010	0.033	0.20	0.40	5.19%	0.026	587
MN-MFIP inc. only	-0.031	0.032	0.20	0.40	-16.01%	-0.079	573
FL-FTP	-0.007	0.029	0.35	0.48	-2.14%	-0.016	1,107
VT-WRP	NA						
CT-JF	-0.019	0.019	0.17	0.37	-11.51%	-0.051	1,468
E. Family not able to afford doctor							
IA-FIP	-0.017	0.025	0.11	0.31	-15.68%	-0.055	682
MN-MFIP full	0.009	0.028	0.13	0.33	7.14%	0.027	587
MN-MFIP inc. only	-0.012	0.027	0.13	0.33	-9.11%	-0.035	573
FL-FTP	-0.014	0.025	0.22	0.42	-6.43%	-0.035	1,107
VT-WRP	NA						
CT-JF	-0.014	0.017	0.12	0.33	-11.17%	-0.042	1,469

Source: Authors' tabulations of public-use data. Shown are survey estimates for the focal child of the recipient of having seen a doctor or dentist during the two years before the survey, for the focal child of the recipient for having a place to go for routine care, and for the focal child sample, whether the family had someone who could not see a doctor or dentist because they could not afford it during the last year. Statistics are for all observations completing the focal child survey that had data for the outcome. Numbers are weighted to be representative of survey design where relevant. Standard errors are robust to heteroskedasticity. Percent effect is 100 times the treatment-control difference divided by control mean (also shown in figure 4), effect size is treatment-control difference divided by control standard deviation. No focal child survey was completed in Vermont. Focal child sample is children 5–12. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Appendix Table 5
Impacts on Child and Mother Health Outcomes, Survey Data

	Difference	Std. Err., Difference	Mean (Controls)	Std. Dev. (Controls)	Percent Effect	Effect Size	N
A. Focal child's mother at risk for depression							
IA-FIP	-0.012	0.038	0.30	0.46	-3.88%	-0.025	676
MN-MFIP full	-0.036	0.044	0.55	0.50	-6.51%	-0.072	525
MN-MFIP inc. only	-0.112**	0.044	0.55	0.50	-20.27%	-0.226	507
FL-FTP	-0.018	0.029	0.39	0.49	-4.70%	-0.038	1,091
VT-WRP	NA						
CT-JF	0.005	0.025	0.34	0.47	1.45%	0.010	1,436
B. Behavioral Problem Index in top 25th percentile							
IA-FIP	-0.023	0.037	0.28	0.45	-8.27%	-0.052	683
MN-MFIP full	-0.038	0.040	0.30	0.46	-12.73%	-0.083	510
MN-MFIP inc. only	-0.012	0.041	0.30	0.46	-4.13%	-0.027	493
FL-FTP	0.023	0.027	0.26	0.44	8.70%	0.052	1,100
VT-WRP	NA						
CT-JF	-0.028	0.023	0.28	0.45	-9.92%	-0.063	1,450
C. Focal child has excellent or very good health							
IA-FIP	-0.012	0.029	0.85	0.36	-1.39%	-0.033	683
MN-MFIP full	-0.029	0.036	0.78	0.42	-3.74%	-0.070	570
MN-MFIP inc. only	0.031	0.034	0.78	0.42	4.01%	0.075	559
FL-FTP	0.069***	0.026	0.73	0.45	9.43%	0.154	1,068
VT-WRP	NA						
CT-JF	0.033*	0.020	0.81	0.39	4.11%	0.086	1,466

Source: Authors' tabulations of public-use data. Shown are survey estimates for the focal child of the recipient sample of whether the mother was at risk for depression (score of 16 or higher on 20-item Center for Epidemiological Studies-Depression scale (worst score was 60)), whether the focal child's Behavioral Problem Index score was in the worst 25th percentile, and whether the mother reported the child's general health was excellent or very good. Statistics are for all observations completing the focal child survey that had data for the outcome. Numbers are weighted to be representative of survey design where relevant. Standard errors are robust to heteroskedasticity. Percent effect is 100 times the treatment-control difference divided by control mean (also shown in figure 5), effect size is treatment-control difference divided by control standard deviation. No focal child survey was completed in Vermont. Focal child sample is children 5–12. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.

Appendix Table 6
Summary Measure Impacts on Adult, Child, and Family Measures, Survey Data

	Difference	Std. Err of Difference	FWE Adjusted *p*-value	N
A. Summary measure, employment, off welfare, and income				
IA-FIP	0.041	0.020	0.181	7,823
MN-MFIP full	0.113	0.051	0.115	724
MN-MFIP inc. only	0.021	0.054	0.698	718
FL-FTP	0.110***	0.030	0.000	1,729
VT-WRP	0.046	0.048	0.671	842
CT-JF	0.078*	0.034	0.099	2,397
B. Summary measure, head's HI coverage				
IA-FIP	-0.049	0.032	0.409	1,190
MN-MFIP full	0.070	0.059	0.551	707
MN-MFIP inc. only	0.118	0.059	0.125	704
FL-FTP	-0.021	0.051	0.900	1,723
VT-WRP	-0.007	0.038	0.849	837
CT-JF	0.060*	0.025	0.099	2,402
C. Summary measure, child/family HI coverage				
IA-FIP	0.001	0.050	0.993	1,105
MN-MFIP full	0.114	0.062	0.235	697
MN-MFIP inc. only	0.144	0.064	0.107	696
FL-FTP	-0.066	0.053	0.489	1,468
VT-WRP	-0.052	0.060	0.671	771
CT-JF	0.067	0.032	0.103	2,134
IA-FIP	-0.013	0.045	0.993	681
D. Summary measure, child/family utilization, access, and affordability				
MN-MFIP full	0.015	0.058	0.857	570
MN-MFIP inc. only	0.117	0.055	0.123	558
FL-FTP	-0.018	0.045	0.900	1,060
VT-WRP	NA			
CT-JF	0.006	0.024	0.801	1,453
E. Summary measure, child/mother health				
IA-FIP	0.015	0.054	0.993	676
MN-MFIP full	0.030	0.062	0.857	509
MN-MFIP inc. only	0.120	0.062	0.125	492
FL-FTP	0.065	0.044	0.435	1,048
VT-WRP	NA			
CT-JF	0.051	0.036	0.263	1,421

Source: Authors' tabulations of public-use data. Shown are survey estimates for summary measures for each state for each of the variables presented in figures 1–5. Each summary measure is the average of the outcomes on each figure (normalized by each outcome's control standard deviation), after converting each outcome to be positive

when good (welfare participation is considered bad, but any kind of HI good). For the figure 1 summary measure, the sample is adults completing the survey with non-missing administrative data (for IA only, it is instead the same cohort as the survey). For the figure 2 summary measure, the sample is adults completing the survey with non-missing HI data. For the figure 3 summary measure, the sample is adults with a child in the HH at the time of the survey completing the survey with non-missing child/family HI coverage data. For the figures 4 and 5 summary measures, the sample is survey recipients with a focal child completing the survey, with non-missing data on health care utilization, access, and affordability or health outcomes, respectively. Numbers are weighted to be representative of survey design where relevant. Standard errors are robust to heteroskedasticity. Difference is treatment control difference in each summary measure. FWE adjusted *p*-value is *p*-value for comparison in row, adjusted for joint testing across all summary measures in the state. No focal child survey was completed in Vermont. Focal child sample is children 5–12. Significance levels (*** 1%, ** 5% and * 10%) are for treatment-control differences.