

**Working Paper #15
UC-Data Archive and Technical Assistance
University of California
Berkeley California**

**Child Care Subsidies and
The Employment of Welfare Recipients**

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August 1999

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This research is based on data collected by the University of California Data Archive and Technical Assistance, Berkeley, California, under contract #21093 with the California Department of Social Services, Sacramento, California-Henry E. Brady, Principal Investigator. Interviews were conducted by the Survey Research Center, Berkeley, CA. Funding for this study was provided by the David and Lucille Packard Foundation and by the Urban Institute, Transitions Project. We have received useful comments and suggestions from Dan Black and Bruce Fuller. The opinions expressed herein are those of the authors only and do not represent those of our employers or sponsors.

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ABSTRACT

Changing patterns of maternal employment, coupled with stronger work requirements for welfare recipients, are increasing the demand for child care. For many families the cost of child care creates a financial burden; for very low income and welfare recipient mothers these costs may be an insurmountable barrier to employment or to economic self-sufficiency. Despite increased public spending in this area, the receipt of any child care subsidy appears to be a relatively rare and uncertain event. In this study we use data from a sample of low income single mothers (current and recent welfare recipients in California) to estimate first, their probability of receiving a child care subsidy and second, the effect of this probability on employment.

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INTRODUCTION

The rapid increase in the rate of employment of mothers with young children has been one of the most dramatic recent changes in the labor markets of the U.S. and other industrialized countries. Women are often described as being "pulled" into employment by greater economic opportunities and "pushed" out of the home both by economic necessity and, in the U.S., by changes in welfare rules that severely restrict the availability of alternative income. Growing numbers of mothers in the workforce, and earlier returns to employment after childbirth, are fueling a corresponding growth in demand for substitute child care. For many families, child care costs constitute a financial burden that substantially reduces the gains from a mother's employment. For very low income and former welfare recipient mothers, these costs are often an insurmountable barrier to employment or to economic self-sufficiency.

In response to the need for more and more affordable child care, both federal and state governments have increased spending on child care subsidies. The U.S. has historically provided very meager assistance with child care and there is evidence that, despite increases in funding, receipt of a child care subsidy remains a rare event for low income mothers. Several prior studies have estimated the likely effect of reducing child care costs on maternal labor supply. Yet few researchers have considered the antecedent question of how the chances of receiving a subsidy affects mothers' employment decisions. Given low rates of subsidy receipt, the answer to this question may be as important to our understanding of the employment of low income mothers as are estimates of their labor supply response to the level of subsidization.

In this paper we address this gap in the research by examining the impact of child care subsidy receipt on the labor supply of low-income single mothers. Using data from a two-wave panel survey of mothers who were current

or recent welfare recipients in California in 1995, we use a two-stage model to estimate (1) the probability that a single mother would receive a child care subsidy were she to use child care, and (2) the impact of the estimated probability of subsidization on her employment.

BACKGROUND

Maternal Employment and Child Care Costs

In recent decades women have entered the labor market in increasing numbers, with the sharpest growth among those with children under the age of six. Although mothers of young children are working in greater numbers, they continue to lag behind adults with fewer caregiving responsibilities in both the number of hours they work and in their wages (Gornick, Meyers and Ross 1998; Waldfogel 1997). Rates and hours of employment are especially low among mothers who are single and whose skills and educational attainments are limited. Many of these women rely fully or partially on welfare while their children are young (Blank 1997).

The causes of these differences in women's work and welfare experience are multiple and interacting. The evidence is unambiguous, however, that having young children in the home reduces both the probability that women will be employed and, among those who are employed, their hours of paid work (Connelly 1991; Leibowitz, Waite and Witsberger 1988). One explanation for this lies in the high cost of substitute child care. The average cost of full-time market based care is now estimated to be \$3,000 to \$5,000 per year for one child (Helburn et. al. 1995; Ribar 1992). Lower skilled and lower income women are more likely than their more advantaged counterparts to rely on informal, and presumably less expensive, care by friends or family members (Hofferth 1995). These women are also more likely to pay relatives who babysit than are more affluent women, and child care costs consume a greater proportion of the income of low skilled, low income women than that of those who are more advantaged (Hofferth 1995; Anderson and Levine 1994). Child care

lower the effective wage for any mother who purchases care during her working hours; for some low earners, these costs may discourage employment altogether (Blau and Ferber 1992; Michalopoulos, Robins and Garfinkel 1992; Ribar 1992). Considerable empirical research confirms the prediction that higher costs for child care are associated with lower labor force participation among mothers who have young children, and, among those who do work, fewer hours of employment (Blau and Robins 1991; Connelly 1991, 1992; Leibowitz, Klerman and Waite 1992; Leibowitz et al. 1988; Ribar 1992; Stolzenberg and Waite 1994).

Public Child Care Subsidies

Concern that child care costs create a barrier to employment, particularly for the single mothers and low-skilled workers most likely to depend on welfare, has spurred a considerable increase in public funding for child care assistance. Since the mid-1980s, federal and state governments have increased funding for welfare-linked child care subsidies (through AFDC and programs prior to 1996, now the TANF program); for working poor families (through the Federal Child Care and Development Block Grant and the At Risk Child care program); and for a variety of early childhood education services (from the federal Head Start program to state-funded Early Education and Pre-Kindergarten programs).

Although child care funding has grown the availability of subsidized arrangements or subsidies for private arrangements remains limited. Data from the early to 1990s, prior to the 1996 federal welfare reforms, suggests that relatively few mothers received child care subsidies. Hofferth (1995), for example, found that only 18 percent of employed child care users with incomes at or below poverty, and only 12 percent of those with near-poor incomes, received some form of direct financial assistance to offset their child care costs. Other estimates of subsidy receipt rates were similarly low, even when assessed only among those eligible for particular programs (Meyers and Heintze 1999; Kimmel 1998; Long and Clark 1997; U.S. General Accounting Office 1997).

Preliminary data from a number of studies conducted since the 1996 federal welfare reforms suggest that, despite dramatic increases in employment among former welfare recipients, only a minority of employed, low-income mothers are receiving public child care subsidies.

Low rates of subsidy recipiency can be explained, in large part, by limited resources. Access to most child care programs is strictly rationed and many states maintain long waiting lists for child care subsidies or places in subsidized programs. Even when resources have been expanded, however, recipiency rates have remained surprisingly low. Although the reasons for nonparticipation remain poorly understood, they appear to include the unwillingness of state governments to spend available funds, widespread lack of information among potentially eligible recipients, and the disincentive effects of high co-payments (Meyers and Heintze 1999; Office of Inspector General 1998).

Subsidies and Employment

Interest in expanding public child care subsidies has been fueled by the expectation that, if child care costs depress maternal employment, the provision of public child care subsidies will increase employment among women with young children. Simulations of the impact of a decrease in child care costs predict substantial increases in maternal employment, with the impact concentrated among women who face the steepest financial barriers to work. Cackley (U.S. General Accounting Office 1994) for example, estimates that reducing child care costs to zero would result in a 50 percent increase in the employment rate for poor women, a 33 percent increase among near-poor and a 15 percent increase among non-poor women. Other researchers have reached similar conclusions and have found evidence that the labor supply of low income, low skilled and single mothers more sensitive to child care costs than that of more advantaged mothers (Anderson and Levine 1998; Han and Waldfogel 1998; Kimmel 1995; Michalopoulos, Robins and Garfinkel 1992).

Several studies have estimated the impact of child care costs on mothers' employment and a handful have used these estimates to simulate the potential labor supply effects of various levels of child care subsidization. While these simulations have adjusted the cost of child care, they have not examined the questions of which families receive subsidies and how the chances of subsidy receipt themselves affect employment outcomes. Given the uncertainty regarding subsidy receipt, child care subsidies may be an "all or nothing" form of assistance for low income women. If so, simulations in which subsidies raise or lower the effective price of child care *for all women* are likely to miss the effect of uncertain receipt on women's employment decisions.

The failure of most researchers to examine subsidies directly is partly due to the limitations of datasets which do not provide complete information about employment, child care and subsidy arrangements. In one of the few studies to directly examine the impact of child care subsidies, Berger and Black (1992) compared the employment outcomes of low-income single mothers in Kentucky who received either a Title XX child care or a local government subsidy in 1989 to those of otherwise similar women who were on the waiting lists for these programs. They estimated that receiving a subsidy led to as much as a 25 percent increase in employment among low-income single mothers. As mothers on the waiting list may not be similar to those receiving subsidies, or to those who never applied for assistance, the authors re-estimated their model controlling for a variety of possible selection effects, concluding that program and behavioral effects may account for as much as one half of the observed increase in employment. Interestingly, the authors also found that while receipt of a subsidy increases the probability of employment, it does not affect hours of work among those employed.

Berger and Black's (1992) research reinforces our speculation that child care subsidies have a "threshold" effect on employment related to the chances

of being subsidized, as well as a net-price effect among those subsidized. While our data do not permit an investigation of the effects of subsidies on effective child care costs, we develop a model in which both the chances of being subsidized and the effects of those chances on employment are determined. We attempt to extend work such as that in Berger and Black (1992), employing broader measures of child care and subsidy use, extending the analysis to include potential users of child care and child care subsidies, and considering a different context, namely several counties from the state of California.

Policy Context

In 1995, when the data for this analysis were collected, the public child care system in California was large and complex. Programs managed through the Department of Public Instruction or the Department of Social Services provided assistance through a variety of mechanisms, including direct services (e.g. public preschool programs), vendor agreements with nonprofit centers, and vouchers and income disregards that reimbursed families for the purchase of private care. In most of the voucher and reimbursement programs, parents were able to obtain assistance for either market forms of care (e.g. in centers, pre-schools, family daycare homes or after-school programs) or for informal babysitting by friends and relatives.

A low income family with a child under the age of fourteen might have been eligible for one of at least seven different subsidies, broadly targeted on education and training support for adults, adult employment, or early childhood education. More specifically, two education and training subsidies were provided through the California JOBS program -- Greater Avenues to Independence (GAIN) -- and through Non-GAIN Education and Training programs. Under these two programs assistance was potentially available to any AFDC recipients who was enrolled in employment preparation activities such as job clubs, school or training programs. Although reimbursement rates in both

programs were generous, total federal funds were capped and required the state to provide matching funds. The effective availability of subsidies was thus limited, with priority given to applicants who were mandatory participants in the JOBS (GAIN) program under the rules of the 1988 Family Support Act.

Three employment subsidies were potentially available to current and former welfare recipients who went to work: the At Risk and Transitional Child Care (TCC) programs, for families leaving or outside the welfare system, and the AFDC disregard for current welfare recipients. Federal funds for the At Risk program were provided as a capped federal entitlement and openings were limited. Both the AFDC disregard and TCC, however, were open-ended entitlements technically available to any income-eligible child care user who was, respectively, either a current welfare recipient or an recipient who had left aid via employment in the prior 12 months.

Two forms of child education subsidies were also available to low-income families regardless of parents' educational or employment activities. Free pre-school programs were potentially available for income eligible children between the ages of 3 and 5 through the federal Head Start program and California Child Development programs. Free or low cost after-school care was available for some older children through state- and locally-funded school-based programs. Although eligibility depended only on income and the child's age, the actual availability of care also depended on state and local resources, which were typically very limited.

ANALYTIC FRAMEWORK

A large body of research has established that child care costs exert downward pressure on the employment of mothers with young children and that subsidies that reduce these costs should generate an increase in employment. The receipt of a subsidy appears to be a relatively rare and uncertain event, however, even for those low-income mothers who appear to be the targets of recent child care expansions. Yet few researchers have investigated the

factors that influence the chances of being subsidized, and the consequences of those chances with respect to employment outcomes.

In this study we use data from a sample of low income single mothers, all of whom were current and recent welfare recipients in California when interviewed, to address two questions: first, what are the chances that these mothers would receive a child care subsidy, were they to use child care; and second, how do variations in the likelihood of being subsidized affect these mothers' employment?

Thus our model has two key endogenous variables, employment status and expected receipt of a subsidy conditional on use of child care. Given the conditional – that is, the selective – nature of subsidization, we estimate a third equation for child care usage.

Of particular interest is the effect of possible subsidization on employment status. Appealing to standard economic theories of labor supply (e.g., Killingsworth 1990), the employment equation includes as covariates variables related to the market wage (such as educational attainment and participation in job preparation activities), to the value of time spent in nonmarket labor including child care (such as the number, ages, and health status of children), and other factors associated with opportunities for, and relative preferences for, time spent in market or in nonmarket activities (such as race, ethnicity, and nativity).

We do not have a direct measure of our respondents' perceived expectations regarding possible subsidization of child care costs, and therefore develop a proxy measure for those expectations using data on actual subsidy receipt among child care users. In formulating an equation for subsidy receipt, we include variables that reflect both demand and supply factors. Demand factors include both parents' need for subsidies and the skill and vigor with which they pursue them. Supply factors include the resources available for vouchers or direct services and the formal and

informal policies that direct their allocation by local welfare offices.¹

On the demand side, child care subsidy receipt is expected to increase with the potential cost of nonmaternal care. The most important factor in cost is the amount of child care used and this is determined by the mother's own activities: the more she is occupied with work or training activities, the more hours of care her children will require (Brayfield 1995; Hofferth and Wissoker 1992; Kisker and Silverberg 1991; Mason and Kuhlthau 1992). Demand is therefore likely to be greater among women who have higher human capital and potential for employment. Women with younger children are also expected to have greater and potentially more expensive care needs and therefore higher demands for subsidies (Cattan 1991; Ribar 1992). Mothers' tastes for alternative care arrangements have been found in other studies to vary with education, ethnicity and immigration status. In general, studies suggest that more poorly educated, immigrant mothers are less likely to put their children in substitute care than are more highly educated and native-born mothers. When they do use nonmaternal care, these women are more likely to rely on close family and friends who may provide less costly care (Fuller, Holloway, and Liang 1996; Lehrer 1983; Leibowitz et al. 1988; Mason and Kuhlthau 1992). We therefore anticipate that mothers with more education, and those born in the U.S., will be more likely to seek child care subsidies. An additional demand factor is the woman's own ability to negotiate the child care and welfare bureaucracies. Given the complexity of the system and difficulty of obtaining subsidies, we argue that women who know more about the AFDC system and rules, and who are more familiar with specific child care subsidies, will be more assertive in seeking—and more successful in obtaining—child care subsidies.

On the supply side, the most important factor is the relative availability of subsidies made available through various public sources. In the mid-1990s the level of subsidy resources was not highly variable across

localities within California, yet there were substantial waiting lists for many of these subsidies programs during this period. This suggests that the supply of subsidies fell short of the demand for them. As a result, effective supply reflected bureaucratic policies and practices used to allocate scarce benefits. Unlike overall resources, these bureaucratic practices were highly variable by location. We would therefore expect the probability of receipt to differ for women in different California counties. Bureaucratic rationing was also affected by policies affecting service priorities, particularly the provisions of the 1988 Family Support Act (FSA) which required states to enroll a proportion of all AFDC recipients into work or work-preparation activities. Local welfare offices routinely gave priority in awarding child care subsidies to recipients who could be enrolled in these activities, particularly to those who were members of the four groups of welfare recipients targeted by the Act.² Mothers falling into one of these groups are likely to have higher probabilities of subsidy receipt.³

ESTIMATION

We use a two-stage probability model to analyze the effect of child care subsidies on employment. In the first stage we model subsidy receipt conditional on child care usage. Using results from the first-stage model, we calculate the probability that each mother in the sample would be subsidized were she to use child care, and estimate, in a second-stage model, the effect of that probability on employment status. We use data from a two-wave panel survey of low-income families who were in, or exiting, the welfare system in California. Since all families in the sample had least one child under the age of 14, and all were current or recent welfare recipients, all were assumed to have been eligible for at least one of the subsidies described above.

Our econometric framework is an employment-status equation of the form

$$E^* = \hat{\alpha}_0 \check{\alpha}_S + X_0 \hat{\alpha}_0 + u_0, \quad (1a)$$

where $\check{\theta}_S = \Pr(S = 1) = E[S]$ is the probability of subsidy receipt, X_0 is an array of covariates, u_0 is a random disturbance, and \hat{a}_0 and $\hat{\alpha}_0$ are unknown coefficients. E , an observed discrete indicator of employment, equals one if the unobserved index $E^* > 0$, and equals zero otherwise. Assuming the u_0 are normally distributed, (1a) is a Probit equation.

$\check{\theta}_S$ represents a mother's beliefs regarding her chances of having her child care costs subsidized. We assume that mothers formulate such expectations taking into account their own past experiences, their observations of the experiences of others in their family and community, and other sources of information. We have no direct measure of $\check{\theta}_S$, however, and therefore attempt to develop a proxy for it, modeling actual subsidy receipt among the child care users in our sample. The actual-subsidy indicator S is observed only among mothers currently using child care and therefore potentially able to have their child care expenses subsidized. The majority of mothers who are not employed (i.e. for whom $E = 0$) do not use child care. Therefore we must anticipate selectivity bias among women for whom S is observed; that is, the unobserved factors associated with the receipt of a subsidy are likely to be correlated with the unobserved factors associated with the decision to be employed.

In order to address the problems of censored observations and selection bias discussed above, we replace $\check{\theta}_S$ in (1a) with a proxy value developed in an auxiliary analysis. Thus we estimate the equation

$$E^* = \hat{a}_1 \check{\theta}_S + X_1 \hat{\alpha}_1 + u_1 \quad (1b)$$

The estimated probability of subsidization, $\check{\theta}_S$, is calculated using coefficients estimated in the first stage of the analysis, a censored Probit (or, Probit with selection) model (Greene 1997). In this auxiliary model the

two binary dependent variables are indicators of child care use (C) and of subsidization (S). The model is censored since S is observed only when $C = 1$. The unknown parameters of these equations are $\hat{\alpha}_c$, the effects of covariates on C , $\hat{\alpha}_s$, the effects of covariates on S , and $\hat{\rho}$, the correlation between the disturbances of the two equations. $\hat{\delta}_s$ is computed as $\hat{O}(X_s \hat{\alpha}_s)$, where \hat{O} is the cumulative normal distribution and X_s is the array of explanatory variables included in the model.

To aid in identification of the parameters of equation (1b), the vector of exogenous variables predicting subsidy receipt ($\hat{\alpha}_2$) contains one variable that does not appear in the employment equation. Women's knowledge of the public child care system is assumed to play this role, insofar as it has little or no direct effect on women's employment decision, operating only through the probability of subsidy receipt.

Since $\hat{\delta}_s$ is an erroneous measure of δ_s we must anticipate that our estimate of $\hat{\alpha}_1$ may be biased towards zero. Furthermore, the standard errors of the second-stage coefficients must be corrected for sampling error. For this purpose we use the covariance matrix derived in Murphy and Topel (1985), equation 34.

DATA AND VARIABLES

Data

Data for this study were obtained from the AFDC Household Survey, administered to a stratified random sample of California AFDC recipients selected for the California Assistance Payment Demonstration Project (APDP). The survey was conducted through a joint effort of the state Department of Social Services and the University of California at Berkeley Data Archive and Technical Assistance Program. Survey respondents were selected in November 1992 from welfare administrative records from four California counties: Alameda, Los Angeles, San Joaquin and San Bernardino. These counties

represent a mix of rural and urban locations and they carry one-half of the California welfare caseload. The sample was stratified to include both one and two-parent families.

The principal adult female in the family (in general, the AFDC recipient) was surveyed by telephone approximately 18 months after initial sample selected and again 18 months later. During the first wave of interviews a total of 2,214 households were interviewed in English or Spanish, from a sampling frame of 3,824 (a 60 percent completion rate). The sample was surveyed for a second time 18 months later with 1,764 households responding (an 80 percent retention rate). All households were receiving AFDC when selected in 1992. By the time of the first wave of interviews, approximately 15 percent had left the AFDC program. By 1995, when the second wave of interviews was conducted, about 25 percent indicated that they no longer received welfare. The sample thus captures the experience of a cross-section of families connected to the welfare system: those receiving welfare at a point in time and those beginning a transition to independence.

Data analyzed in this paper are taken from the second wave of interviews. To restrict the analysis to potential child care users, only those families with at least one child under the age of fourteen are retained for analysis (n=1,514). To concentrate on those household most likely to be sensitive to child care subsidies, and the families of most central concern in welfare and child care reform policies, the sample is further restricted to single women (neither married and living with their spouse nor cohabiting). The final analysis sample include 903 single mothers with at least one child under the age of 14.

Outcomes

Three outcomes of interest are modeled: maternal employment (*E*), child care use (*C*), and receipt of a government child care subsidy (*S*). A woman is considered to be employed if she reported regular employment in the month

prior to the interview. Child care use is measured as the use of any nonmaternal care on a regular basis, including that provided as informal babysitting by family and friends, in regulated or unregulated family day care, or in centers, preschools, Head Start programs and the like. Child care use is measured for the youngest child in the family.⁴

Receipt of any form of government subsidy was determined using a series of questions about payment arrangements for babysitting and other child care for the youngest child in the prior month. Respondents were asked whether there was any charge for the care and, if so, whether they received any assistance from government or family and friends with the costs. Mothers who used market forms of care (day care centers, family child care, preschools or other center care) free of charge, or who received assistance from any government program to pay for either babysitting or market care, were coded as receiving a subsidy.⁵

Independent Variables

To avoid endogeneity of employment with child care and subsidy arrangements, our first stage estimation includes a measure of the mother's employment tenure during the period immediately prior to first wave interview, conducted approximately 18 months earlier. Measures of current caregiving responsibilities include the total number of resident children under age 18 and the presence of young children. Because patterns of child care utilization have been found in prior studies to vary with children's age group (rather than as a linear function of age), we code children's ages into indicators for the presence of any infants (between birth and age three) and the presence of any preschool-aged children (between three and five years of age.) A mother's tastes for nonmaternal care is captured by education (years of schooling) and a dummy variable indicating whether she was born outside the U.S. A variable indicating the number of non-parental adults residing with the family is included to capture any aid such adults may offer to meet child

care needs.

Bureaucratic rationing practices predicted to affect the availability of child care subsidies are represented by variables indicating the mother's county of residence and by a dummy variable indicating whether the respondent was a member of groups who were targeted for AFDC-linked subsidies under the FSA. To capture variation in mothers' ability to navigate the child care system, we include two knowledge scales. The first is a four-point scale measuring knowledge about AFDC employment-related rules, constructed from responses to four questions about whether a welfare recipient could work, how many hours he/she could work, and whether a recipient "who went to work" could retain cash benefits and Medicaid eligibility.⁶ The second is a five-point scale measuring more specific knowledge about child care subsidies. This was constructed from a series of questions that asked respondents whether they had tried to access benefits from each of five different programs for any of their children at any point in the prior year, or whether they "didn't know anything about this program".

Included in the employment equation is an exogenous measure of the mother's income in the absence of employment, namely the maximum AFDC benefit for her family.⁷ Her expected wage is proxied by her education and age. Limitations on mothers' ability to work are measured using self-reports about disability and health. Race and ethnicity are included as three dummy variables for African-American (non-Hispanic), Latina, and Other (with White, Non-Hispanic as the excluded variable). To capture specific barriers and resources that are relevant to the employment of low-income women, we include two lagged measures of employment supports measured approximately 18 months earlier: whether the woman was participating in any employment-related education or training activities and whether she owned a car. To capture the impact of caregiving responsibilities, we include dummy variables for the presence of infants (birth to age three) or preschoolers (age three to five),

with school-aged children the excluded category, and a variable for the severity of the most severely disabled child in the family (scaled from 0 for no limitations to 3 for a severe condition).

Because the sample was selected using a stratified design, several additional variables are included in all models to control for possible design effects. These include the basis of AFDC eligibility when the sample was selected (as a two-parent AFDC-U or one parent AFDC-FG case), and whether the woman was a participant in the experimental or control group of the "Work Pays" demonstration project that was being conducted in California at the time of sample selection.

FINDINGS

Sample Characteristics

The sample of single mothers used in this analysis closely resembles women in the welfare system more generally. Sample characteristics are displayed in Table 1. The average respondent was approximately 33 years old and had two children. One quarter reported that they had a disability or health condition that limited the amount or type of work that they could do and 22 percent had one or more children with disabilities or limiting health conditions. The majority (70 percent) were born in the U.S., and the sample was divided among African American (33 percent), Latina (46 percent) and White Non-Hispanic (18 percent) respondents. This represents a higher proportion of Latina women than in the AFDC program nationally, but the high proportion of Latina women is representative of California's program population (U.S. House of Representatives, 1996). Twenty-eight percent of sample families had a child under the age of three and 45 percent of families included a child between the ages of three and five. Again, these proportions are less similar to those nationally (where 24 percent of AFDC families contain an infant and 22 percent a pre-schooler) but are representative of California AFDC recipients.

<< Table 1 About Here >>

When contacted approximately 36 months after the sample was drawn from AFDC records, over three quarters of respondents (85 percent) were still receiving AFDC. Although most respondents continued to receive welfare, one quarter (27 percent) reported that they had been employed in the prior month in regular jobs. Among the 27 percent who were employed in the prior month, 56 percent (15 percent of the full sample) had also received welfare and 44 percent (12 percent of the full sample) had not.

Child Care Use and Subsidy Receipt

Use of nonmaternal child care was relatively high and, as is the case with other populations, the use of care varied with the age of the child and to the mothers' activities. Overall, 44 percent of all mothers reported using some form of babysitting, family day care, center care, early education or other care on a regular basis in the month prior to the interview (see Table 2). As would be expected, the use of child care was higher among mothers who had been employed. Among all employed mothers, 82 percent were child care users. Even among those who did not report employment, however, nearly one-third (31 percent) reported regular use of child care.

<< Table 2 About Here >>

In many respects, the respondents to this survey were the targets of the recent expansions in public child care subsidies: all were current or recent welfare recipients; all had dependent children; many were making a transition to employment; and, among those with employment, most were using child care on a regular basis. Despite this, few were actually receiving subsidies. Overall, 13 percent of these low income mothers had received a subsidy or a place in a subsidized child care program. The proportion receiving subsidies was nearly the same among employed (13.4 percent) and non-employed mothers (12.7 percent), reflecting the availability of subsidies associated with adult job training programs and early childhood education programs, neither of which

were restricted to employed parents. Because they were more likely to use child care, however, mothers who were employed were far more likely to be using child care and therefore to be using an unsubsidized arrangement. The balance in both groups reported no regular child care.

Model of Subsidy Receipt

Our attempts to estimate the first-stage censored Probit model of child care use and subsidy receipt by conventional means produced results in which the estimated value of $\bar{\pi}$, 0.9983, was very close to its limiting value. In such a situation reported convergence criteria and standard errors cannot be trusted. Further analysis revealed that our model satisfies the conditions given in Butler (1996) such that the maximum-likelihood estimate of $\bar{\pi}$ is precisely one.⁸ Consequently the results we report are based on Butler's (1996) respecification of the censored Probit likelihood function in which the restriction $\bar{\pi}=1$ is imposed a priori.

Results of the first stage estimation are reported in Table 3. Column 1 reports the coefficients of the equation for use of any child care. Findings are generally consistent with the prior literature in this area. Greater maternal human capital (education and work experience) and the presence of a preschool-aged child (between 3 and 5) are associated with a higher probability of using nonmaternal care; greater caregiving responsibilities (more children) is associated with a lower probability. Membership in one of the FSA target groups is strongly and negatively associated with child care use, which may reflect the presence of older children and lower child care needs among some of the priority groups (long-term welfare recipients and those with children about to "age out" of the system).

<< Table 3 About Here >>

Column 2 of Table 3 reports the coefficients of the subsidization equation. The pattern of results is consistent with our expectations, yet few variables reached statistical significance. Indicators of greater need for

assistance had a generally positive association with subsidy receipt. The age of the youngest child has a statistically significant effect: in comparison to mothers with school-aged children, mothers of preschoolers are more likely, and mothers of infants are less likely, to receive subsidies. This may reflect the structure of public child care programs, which provide substantially more options for preschoolers through public Head Start and early childhood education programs. The mother's years of education, being born in the U.S., and having some employment history are all positively but nonsignificantly associated with a greater likelihood of subsidy receipt.

Results for measures of parental knowledge or assertiveness (hypothesized to increase demand) were mixed. As expected, mothers who were more knowledgeable about child care subsidies were significantly more successful in obtaining help. General knowledge of the AFDC work rules, in contrast, was not a significant predictor. Evidence that local rationing practices varied was weak. Women in each of the four counties appeared about equally likely to receive a subsidy, if they were child care users. The sign on the coefficient for membership in one of the FSA target groups was positive, as expected, but did not reach statistical significance.

Since $\bar{n}=1$ the error terms in the C and the S equations collapse to a single variable. This suggests in turn that selection on unobservables, conditional on observed variables, is substantial. However, selection into child care use ($C=1$) does not automatically determine subsidy receipt ($S=1$). Evaluated at the sample mean, the estimated coefficients imply that the probability of using child care is 0.47, the (unconditional) probability of being subsidized is 0.14, and the probability of subsidization given child care usage is 0.30; all three values are very close to the sample means shown in Table 2.

Model of Employment

Table 4 reports the results of the second-stage employment equation.

Factors predicting maternal employment performed as hypothesized. Other family income, in the form of maximum AFDC benefits, significantly decreased the probability of employment. Because AFDC benefits increased with the number of resident children, this may also reflect greater caregiving responsibilities for these mothers. Most human capital measures had the expected association with the probability of employment. Women who had more years of education were significantly more likely to enter employment; those with limiting health problems were significantly less likely to do so.⁹ Age was positively but not significantly associated with employment. Greater caregiving responsibilities also had the expected negative relationship with maternal employment, although the association was less robust than expected. In comparison to women whose children were all over age six, those with any children under 2 or between the ages of 3 and 5 were less likely to be employed, although neither indicator reached statistical significance. The severity of children's chronic illnesses or disabilities was significantly, and negatively, associated with employment probabilities. Other work supports also mattered. Women who had been involved with some form of employment training 18 months earlier were much more likely to be employed, as were women who had owned a car.

<< Table 4 About Here >>

After controlling for these factors, the variable of central interest for this analysis -- the predicted probability of subsidy receipt -- had a significant and substantial impact on the probability that a mother was employed in the prior month. ** As noted above, measurement error in this variable is likely to bias its estimated coefficient towards zero, which gives us additional confidence in the statistical and substantive significance of this finding. To help interpret the magnitude of the subsidy effect, we simulated employment probabilities for the entire sample, setting other characteristics at their mean values while varying the probability of subsidy

receipt from zero to fifty percent. The resulting employment probabilities, shown in Table 5, can be interpreted as those of a population whose average characteristics are identical to those of the sample, but who face identical probabilities of receiving a child care subsidy. The results are dramatic. If mothers' likelihood of receiving a subsidy is set to zero, the employment probability for the sample as a whole is only 13 percent. Raising the likelihood of subsidization to 20 percent increases the predicated rate of employment to 25 percent. At the 50 percent point we begin to see a slight leveling off of effect; our estimates suggest that if one-half of women were able to obtain subsidies, nearly one-half would be employed. When all variables in the equation are fixed at the sample mean, the predicted probability of employment is 21 percent.

<<Table 5 About Here>>

SUMMARY AND CONCLUSION

Approximately three years after our sample of single welfare mothers was selected, just over one-quarter of mothers were observed to have paid employment. An even greater proportion, 44 percent, reported that they had used some form of child care for their youngest child in the prior month. Although these low-income mothers making the transition from welfare to work were top priority for receiving child care subsidies, and many appear to have been eligible for assistance, only 13 percent were observed to be using subsidized child care or receiving subsidies for privately purchased care. Although they were much more likely to be child care users, mothers who were employed were only slightly more likely to have received subsidized care than their non-employed counterparts who were using child care. As a result, 69 percent of employed mothers were using unsubsidized child care that they either paid for out-of-pocket or obtained without charge from family members.

The receipt of a child care subsidy was thus an uncommon event, even for

former welfare recipients who entered employment. When we estimate the probability of receiving a subsidy, accounting for selectivity of subsidy receipt, few characteristics of the family, other than the child's age, are found to differentiate the child care users who receive subsidies from those who do not. The most powerful predictor of subsidy receipt is a mother's own knowledge of the system, which may proxy both greater information and greater assertiveness in seeking benefits.

After controlling for human capital and family characteristics, the likelihood of subsidy receipt is found to have a large and significant impact on the likelihood of employment. Even in the absence of any subsidies, we estimate that as many as 12 percent of these women would go to work. If 10 percent were subsidized, we would expect the rate of employment to increase to between 17 and 18 percent. If one-half of women with these characteristics received subsidies, holding other factors constant, we would expect that one-half would enter employment. While this seems to suggest that employment could be made a virtual certainty were the chances of subsidization to approach 100 percent, this estimation cannot reliably be extended beyond the range we have described. It must be remembered that in our sample the average chance of being subsidized is only about 13 percent. To raise this to even 50 percent would require nearly a fourfold increase in the resources devoted to child care, a huge and unlikely change in the policy environment.

What our estimate does suggest is that child care subsidies may have a "threshold" effect that has not been considered in prior work. Anderson and Levine (1998), for example, estimate that for a single mother with a child under six and less than a high school education, a 50 cent per hour child care subsidy could increase employment from 25 to 33 percent. This simulation may poorly represent the realities for low income mothers in the current child care policy environment, however. Rather than all low-income women receiving a small hourly subsidy, a small proportion obtain care that is either fully

subsidized, or has at most a small co-payment, while the remainder absorb the full cost of child care themselves (unless they can arrange free care with family or friends). Our simulated labor supply response may be more usefully compared to that of Cackley (U.S. General Accounting Office 1994), who estimates that reducing child care costs to zero would lead to a 50 percent increase in employment among low-income women.

Ours is one of the few studies to provide both direct measures of the rate of child care subsidization and to estimate the role of subsidy receipt in the employment decisions of low-income, single mothers. Given that the employment of these mothers has been the primary target of recent changes in welfare and child care policies, these results have potentially important policy implications. The very low rate of child care subsidization in this population of low-income families suggests that efforts to expand assistance were not, as of the mid-1990s, reaching very many of the targeted families. About one-quarter of the current and recent welfare recipients in this sample had gone to work, and the great majority of those who worked (over 80 percent) used child care on a regular basis. But even among these mothers who were "doing the right thing" by going to work, only a fraction were receiving help with child care costs. As a result, many were absorbing the full costs of their child care. For these families, the consequence of the subsidy shortfall was likely to be a slide back into poverty. For the three-quarters of families in which the mother was *not* employed, the lack of child care subsidies may have contributed directly to non-employment and continued welfare receipt.

The passage of federal welfare reforms in 1996 increased pressure on low-income mothers to enter the workforce. There have been a number of promising developments in child care policy since then. The 1996 federal welfare reform bill combined funding from a number of separate programs into a single block grant (the Child Care and Development Block Grant or CCDBG) and

substantially increased the amount of federal funding for means-tested child care assistance. States have also been authorized to divert a portion of the funds from their federal block grant for welfare, the Temporary Assistance to Needy Families (TANF), to provide child care subsidies for low-income families. In addition, many states have taken steps to expand child care to more families by creating universal income-tested child care programs and/or by expanded early education and Pre-K programs.

States appear to be spending more on child care and, in many cases, to be increasing spending disproportionately for the population that was least served in the past -- low-income, working parents (Piecnyk, Collins and Kreader 1999). Despite these signs of progress, early findings about child care in the post-welfare-reform period suggest that rates of subsidy receipt are still low (Kimmel 1998; U.S. General Accounting Office 1997) and that many states continue to maintain long waiting lists for assistance. The findings from this study suggest that the failure of the supply of subsidies to keep pace with need may have two deleterious consequences. Some low-income mothers will go to work without subsidies, absorbing the full cost of child care themselves. And many others may fail to make the transition into employment, with very uncertain prospects for their short- and long-term economic welfare.

1. This model estimates the probability of child care subsidy receipt regardless of type of child care used. Prior efforts to model the relationship between subsidy receipt and choice of care arrangements have reached ambiguous conclusions about whether the receipt of a subsidy influences arrangement choice, e.g. by allowing parents to substitute higher quality care, or whether prior choices about the type of care arrangements influence families' use of subsidies. See for example. These dynamics are not expected to have significant bearing on our model of the probability that a family secures any type of a subsidized child care.

2. The FSA target groups were teen parents, long-term welfare recipients, mothers who were about to lose welfare eligibility because their oldest child was turning eighteen, and two-parent families (U.S. House of Representatives 1997). Since our sample is restricted to single parent families, only the first three of these conditions are relevant to this analysis.

3. There is evidence that patterns of child care usage are also sensitive to supply factors in the local child care market, such as the availability of various types of care and the stringency of local safety and quality regulation. While these contextual factors appear influence the type of care used, there is little evidence that they influence the probability of using any care or of receiving a subsidy.

4. Note that we do not include child care for other children in the family. This may lead us to underestimate both the cost of non-subsidized care and the probability of subsidy receipt. Care for the youngest child is assumed, however, to create the greatest barrier to employment.

5. Care provided without charge by family and friends, and private (family) assistance with the costs of market care, were not treated as subsidies. If children were in more than one type of care, e.g. in both a child care center and informal babysitting, the payment arrangement for the care used the most number of hours was considered.

6. Because the correct answers to these questions depend on a number of detailed assumptions (about earnings, family composition, etc.), respondents were given a point for venturing a response that could be correct dependent on the circumstances; respondents who indicated that they "didn't know" were given no points.

7. Note that this will also capture the size of the family as all sample members come from the same state (California) and are thus all eligible for the same level payment, depending on family size. Both the income effect and the caregiving effect (associated with more children) are expected to affect employment in the same direction.

8. These conditions are: the gradient of the log-likelihood with respect to $\tilde{\pi}$ is positive; and $\hat{\alpha}_c X_c > \hat{\alpha}_s X_s$ for all observations. $\tilde{\pi}=1.0$, while unusual, is nevertheless an admissible value, and does not rule out variability in S .

9. Note that the measure of health used is self-reported and is thus not necessarily independent of whether the respondent works. Those who are not working may report their health status as lower than those who work.

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Table 1
Sample Characteristics

Variable	Mean	SD
Age (years)	32.84	9.33
Years of Education	10.74	2.99
Born in the United States (%)	70.45	--
Non Hispanic White (%)	18.14	--
Non Hispanic African American(%)	32.54	--
Hispanic (%)	45.96	--
Other Race/Ethnicity (%)	2.85	--
Limiting Health Problem (%)	23.63	--
Number of Children Under 18	1.99	1.09
Presence of a Child Under 3 (%)	28.06	--
Presence of a 3 to 5 Year Old Child (%)	44.9	--
Any Disabled Children (%)	21.86	--
Undertook Job Preparation at Time 1(%)	35.19	--
Owned Car at Time 1 (%)	26.59	--
Maximum AFDC Benefits (\$)	906.64	214.50
Resident of Alameda County (%)	10.29	--
Resident of San Bernardino County (%)	13.82	--
Resident of San Joaquin County (%)	3.91	--
AFDC - FG Case (%)	97.47	--
Member of Experimental Group (%)	61.59	--
Received Welfare Last Month (%)	84.61	--
-- Employed (% of Welfare recipients)	17.53	--
Employed Last Month (%)	26.59	--
-- Received Welfare (% of Employed)	55.79	--

Note: Table based on weighted data; weighted n=1072

Table 2
Child Care and Payment Arrangements by Mother's Employment Status

Regular Care for Youngest Child	Mother Employed	Mother Not Employed	TOTAL
None	18.0%	69.4%	55.8%
Government Subsidized Child Care or Babysitting	13.4%	12.7%	12.9%
Parentally Financed Child Care or Babysitting	50.9%	5.8%	17.7%
Free Child Care or Babysitting	14.1%	11.3%	12.0%
Privately Subsidized Child Care or Babysitting (Friends/Family)	3.5%	0.8%	1.5%
TOTAL	100.0%	100.0%	100.0%

Note: Table based on weighted data; weighted n=1072

Table 3
Censored Probit Model of Child Care Use and Subsidy Receipt

	Use of Care (C)		Subsidy Receipt (S)	
	(1)		(2)	
	$\hat{\alpha}$	SE	$\hat{\alpha}$	SE
Constant	-0.584	0.366	-2.269	0.489***
Born in the United States (D)	-0.223	0.130*	0.018	0.166
Years of Education	0.048	0.021*	0.022	0.031
Work History	0.273	0.059***	0.072	0.065
Total Number of Children in Family	-0.105	0.051*	-0.026	0.063
Presence of a 3 to 5 Year Old Child (D)	0.323	0.094***	0.560	0.115***
Presence of a Child Under 3 (D)	-0.114	0.109	-0.703	0.160***
Number of Non-Parental Adults in Family	0.084	0.048*	-0.093	0.064
Knowledge of Subsidy System	0.070	0.038*	0.124	0.048**
Knowledge of AFDC Rules	0.155	0.064**	0.032	0.084
Member of FSA Preference Group (D)	-0.727	0.156***	0.189	0.179
Resident of Alameda County (D)	0.297	0.118**	0.172	0.141
Resident of San Bernardino County (D)	-0.044	0.132	-0.117	0.170
Resident of San Joaquin County (D)	0.080	0.120	-0.165	0.157
AFDC-FG Case (D)	0.001	0.138	0.237	0.176
Member of Experimental Group (D)	-0.054	0.090	0.147	0.114

* $p < .05$; ** $p < .01$; *** $p < .001$; D = dummy variable

Table 4
Probit Model of Employment Status

Variable	$\hat{\alpha}$	SE
Constant	-1.577	0.864
Age	0.059	0.045
Age Squared (divided by 100)	-0.091	0.001
Years of Education	0.070	0.026**
Born in the United States (D)	-0.159	0.170
Black (D)	-0.158	0.143
Hispanic (D)	-0.043	0.156
Other (Non-White) (D)	-0.218	0.263
Limiting Health Problems (D)	-0.764	0.152***
Presence of a 3 to 5 Year Old Child (D)	-0.369	0.169*
Presence of a Child Under 3 (D)	-0.119	0.184
Severity of Child's Disability	-0.156	0.057**
Maximum AFDC Benefit (in \$100s)	-0.081	0.000*
Undertook Job Preparation at Time 1	0.262	0.106*
Owned Car at Time 1	0.304	0.114**
Predicted Probability of Subsidy Receipt	2.293	1.000*
Resident of Alameda County (D)	-0.237	0.149
Resident of San Bernardino County (D)	0.012	0.145
Resident of San Joaquin County (D)	-0.235	0.151
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Table 5
 Predicted Probability of Employment at Selected Values
 of Probability of Being Subsidized

Pr[Subsidized] = Pr(S)	Pr[Employment Pr(S)]
0.0	0.129
0.1	0.183
0.2	0.250
0.3	0.328
0.4	0.415
0.5	0.506

Note: All other variables in employment equation held constant at sample average values.

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