

THE TRANSITION FROM WELFARE TO WORK

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INTRODUCTION

We consider how the market for child care services, child care vouchers, and welfare reforms affect the transition of welfare recipients from welfare to work. In particular, we are interested in identifying which factors encourage single mothers to move directly from welfare to work (i.e., to “work first”) and which factors encourage single mothers to pursue schooling or job training options before entering the labor market (i.e., to “school first”). The difference in these potential transition paths is important when considering economic self-sufficiency. Being able to obtain a job is necessary to achieve self-sufficiency, but accepting a low-wage, low-skill job in order to exit welfare quickly may not be the best route for the long term. Receiving further education or job retraining may be required before one can obtain a job that allows for self-sufficiency. Although our data prevent us from observing the earnings of single mothers after they have made the transition from public assistance, we are able to analyze the effect child care vouchers and welfare reforms have on the decisions of single mothers when deciding to pursue work or education in preparation for exiting the welfare system.

As Blank [2002] points out, a major gap in the literature on welfare reform is the failure to consider how the availability, cost, and quality of child care as well as how early care and education policies affect the transition from welfare to work. While paucity of data usually prohibits measuring all three aspects of the child care market,¹ our work starts to address these shortcomings by relying on data from child care resource and referral agencies.

Our work also extends the welfare reform literature by considering how the availability and funding of child care vouchers (the major child care policy implemented as part of welfare reform) and early childhood education programs (including Head Start) designed to care for and educate low-income children affect the transition from welfare. Our data also span the introduction of time limits, allowing us to comment on the effect time limits have on the decision to work.

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We use two data sets to examine the factors that lead eligible welfare recipients to use child care vouchers and what activity – work or schooling – is facilitated by the use of child care vouchers.² To briefly preview our results, we find that the availability and quality of child care are positively related to transiting directly from welfare to work. Similarly, increased availability of both child care vouchers and Head Start and Pre-K programs are associated with an increased probability of making the transition from welfare directly to work. We also examine how work requirements and time limits influence the decision to work first versus to school first. The data reveal a pattern of behavior that is consistent with the incentives provided by Massachusetts' "work first" welfare reform coupled with its time limit regulation that favors schooling by mothers with infants. Specifically, those households with school-aged children are subject to both time limits and work requirements, and we find they are most likely to work first. In contrast, mothers with infants are subject to neither time limits nor the work requirement, and we find this group is more likely to receive more education before seeking employment.

The paper is structured as follows. The next section describes Massachusetts' welfare reforms. We introduce the data in the next section, and discuss our estimation strategy in the section following that. The subsequent section contains a discussion of the factors associated with eligible welfare mothers' use of child care vouchers, while the section following that one presents results on the factors influencing the transition from welfare to work. We conclude with a discussion of our empirical results and their policy implications concerning child care, early care and education programs, and welfare reform.

MASSACHUSETTS' WELFARE REFORM

In April of 1995, the Commonwealth of Massachusetts requested a welfare reform waiver from the federal government. Massachusetts' proposal included job training, a work requirement, time limits, medical assistance, and centralization of the public assistance system. The waiver was granted in full except for time limits. Overseen by the newly formed Department of Transitional Assistance, these reforms were initiated on November 1, 1995. As part of its welfare reform Massachusetts provided child care vouchers to welfare recipients that were working or participating in approved education or training.

President Clinton signed the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) the following August. PRWORA replaced the previous AFDC program with block grants from the federal government to the states, known as TANF (Temporary Assistance to Needy Families). Although some restrictions were placed on the TANF block grants, states were given considerable leeway in setting eligibility requirements as well as the benefit level. Two novel components of PRWORA were work requirements and time limits. Massachusetts met the work requirements of PRWORA, and, with its passage, was also able (and now required) to implement time limits. PRWORA also consolidated all child care funding into a block grant (the Child Care Development Fund) and substantially increased funding available for child care subsidies. As with TANF, states were granted considerable latitude to develop child care subsidy programs that best fit their circumstances.

In Massachusetts, anyone subject to the time limit is permitted to receive TAFDC (as the TANF program is called in Massachusetts) funds for a maximum of 24 months in any consecutive 60 months. Anyone subject to work requirements must be, within 60 days of receiving TAFDC funds, actively involved in some type of work activity for at least 20 hours per week. If the person fails to find a job, she is required to perform 20 hours of community service per week. Although there are some other exceptions, the Massachusetts program is straightforward. A TAFDC recipient is exempt from the time limits and the work requirement if her youngest child is under the age of two. The clock on time limits starts ticking on the youngest child's second birthday. The recipient remains exempt from the work requirement, however, until her youngest child turns six years-old and enters the first grade. It is important to note that these are separate requirements. If one receives benefits while her youngest child is two and three, thus exhausting her time limits, the time limit deadline comes into effect and benefits are terminated even though the recipient would otherwise remain exempt from work for the next two years. Massachusetts' welfare reforms, therefore, promote training and education for those with children under two years-old. Recipients with a youngest child at least two but not yet six years-old are exempt from work but are subject to time limits. Thus, they are allowed to pursue education/job training if they so choose, but this is possibly a risky proposition as they will not receive public assistance monies after two years of support. Finally, households with a youngest child at least six years-old face a "work first" welfare system, as these recipients are subject to both time limits and the work requirement.

Massachusetts' job training and education program, the Employment Services Program (ESP), is available for free to all TAFDC recipients. The ESP includes continuing a high school education, obtaining a GED, or even enrolling in a state-funded college for up to two years. While the ESP is available to all TAFDC clients, those subject to the work requirement must be working at least 20 hours a week. Thus, educational or training programs offered by the ESP must be attended in addition to working. Pursuing schooling (unlike job training or on-the-job training, which are less time intensive), therefore, becomes more difficult once the individual faces the work requirement.

In addition to offering employment services, the Massachusetts Office of Child Care Services also offers vouchers to purchase formal or informal child care to anyone receiving TAFDC monies and participating in approved activities (e.g., work, schooling, actively seeking employment, job training). The state-legislated reimbursement rate varies by age of the child, the type of care, location, and the amount of child care provided. The Massachusetts state legislature has limited the amount of regional variation in reimbursement rates for political reasons. This means that vouchers are more attractive to providers in locations with lower market prices (e.g., the western part of Massachusetts) and are less attractive to providers in areas with higher market prices (e.g., Boston). Thus, higher market prices are associated with lower availability of child care for families wishing to use a voucher.

Former TAFDC recipients are also provided with child care vouchers for a year after they leave TAFDC if they earn less than 75 percent of the state median income. Former TAFDC recipients, however, are required to pay part of the cost of the care

purchased with their voucher. In practice, Massachusetts provides vouchers to former TAFDC recipients as long as they are working and remain income-eligible.

Having access to a voucher, however, does not always lead one to use the voucher. Some mothers will not be able to find a provider who accepts the voucher – only about forty percent of group facilities accept vouchers. Others may not be able to find care during the hours they need or for the age of their child. Others may gain access to free child care such as with Head Start or a Community Partnership for Children (Massachusetts Pre-K program). Finally, some voucher-eligible mothers may be unaware of the program and therefore fail to apply for a voucher.

DATA

We use two data sets for our work. These data sets allow us to examine both the factors that lead eligible welfare recipients to use child care vouchers and how welfare recipients use child care vouchers to foster work or schooling. One data set, which we call the TAFDC/OCCS data set, comes from the Massachusetts Office of Child Care Services (OCCS) and contains information from monthly interviews on over three thousand current and former TAFDC recipients who used a child care voucher between July 1996 and August 1997. The other data set, which we call the DOR data set as it was provided by the Massachusetts Department of Revenue (DOR), is a 20 percent random sample of child care voucher-eligible, single mothers who received public assistance in 1997.

The TAFDC/OCCS Data Set

We combined data from several state agencies in Massachusetts to create the TAFDC/OCCS data set. We began with the OCCS monthly billing files for child care vouchers from the five largest child care resource and referral agencies (CCR&Rs) in Massachusetts from July 1996 through August 1997. We match these data to the monthly files of the Department of Transitional Assistance (DTA) which tracks those enrolled in Massachusetts' Employment Services Program. Merging these data produces a longitudinal data set containing 14 months of data. We add to this individual data, information on local child care programs,³ welfare policies, labor market conditions, and other economic factors that vary either by geographic region and/or time. While not perfect, we believe these data more effectively capture local labor and child care markets than most previous studies. Table 1 reports summary statistics for the 20,704 monthly observations of 2,881 single mothers who hold at most a high school education in the TAFDC/OCCS data set.

We restrict the sample to single mothers with at most a high school degree to focus on a sample of households that face similar labor market conditions. Almost 55 percent of our voucher recipients worked during the previous week.⁴ Of our 20,704 monthly observations, almost 70 percent come from households that remain in our sample from the month we first see them through the end of our sample period, and almost 90 percent come from households that remain in our sample until at least June, which corresponds with the end of the school-year. Thus, most of the mobility in our

sample comes from households that start using vouchers, not from households that stop. Reasons for leaving the sample, however, could be many, including moving out of the sample area, getting married, or a change in one's work hours or schedule (e.g., to night work) that makes child care difficult or impossible to schedule.

TABLE 1
Descriptive Statistics for the TAFDC/OCCS Data Set.

	Mean	Median	Std Dev	Min	Max
<i>Individual Characteristics</i>					
Worked positive hours last week.	0.546	1	0.498	0	1
Age of mother.	28.4	27	7.1	15.7	56
Mother has no high school degree.	0.453	0	0.498	0	1
Mother has a high school degree or GED.	0.547	1	0.498	0	1
English is spoken in the household.	0.950	1	0.218	0	1
English is not spoken in the household.	0.050	0	0.218	0	1
Household race is black.	0.419	0	0.493	0	1
Household race is Hispanic	0.324	0	0.468	0	1
Household race is white, non-Hispanic.	0.257	0	0.437	0	1
Number of household dependents.	2.603	1	0.945	1	8
<i>Child Care Market Characteristics</i>					
Family care slots per 100 kids.	5.106	5.503	1.596	1.304	7.427
Group care slots per 100 kids by age of child.	6.553	6.655	4.214	0	24.743
State contracted slots per 100 kids.	1.445	1.667	0.502	0.034	2.675
Percent group centers NAEYC accredited.	0.167	0.164	0.141	0	1
Median weekly price of care by age group	80.44	71.36	27.62	45	225
<i>Child Care Voucher System</i>					
State daily reimbursement rate.	25.61	28.5	8.00	14	38
State & federal subsidy per poor child in \$100.	4.466	4.34	0.285	4.34	5.11
Probability of using a voucher.	0.470	0.477	0.142	0.030	0.803
Probability of using a voucher after welfare reform.	0.337	0.398	0.245	0	0.798
<i>Early Education Programs</i>					
CPC funding per poor child in town.	5.088	3.523	3.348	0	53.126
Head Start exists in township.	0.426	0	0.494	0	1
Youngest child is school eligible.	0.258	0	0.437	0	1
<i>Welfare Reform and Policy Variables</i>					
Youngest child is under 2 years-old.	0.272	0	0.445	0	1
Youngest child is 2 to 5 years-old.	0.541	1	0.498	0	1
Youngest child is at least 6 years-old.	0.187	0	0.390	0	1
Time limits imposed on Dec. 1, 1996.	0.714	1	0.452	0	1
Time limits * youngest child is under 2.	0.183	0	0.387	0	1
Time limits * youngest child is 2 to 5.	0.391	0	0.488	0	1
Time limits * youngest child is over 5 years-old.	0.139	0	0.346	0	1
Time trend.	8.185	9	3.870	1	14
Welfare office is consolidated.	0.400	0	0.490	0	1
October 1996 minimum wage increase.	0.849	1	0.358	0	1
Economic revitalization dollars per worker.	419	18.59	527	0	2,349
<i>Labor Market and Community Characteristics</i>					
Retail and service jobs per worker in town.	0.551	0.561	0.064	0.205	0.808
Average hourly wage of cashier in MSA.	6.699	7	0.346	6.2	7
DET Job Center exists in township.	0.546	1	0.498	0	1
Median household income in zip code.	26,446	25,440	6,377	13,721	70,928

Notes: There are 20,704 monthly observations for 2,881 single mothers with at most a high school degree. See the data appendix⁶ for a complete description of sources and the creation of variables.

As seen in Table 1, the TAFDC/OCCS data set contains a rich set of individual characteristics, measures of the child care market (costs, quality and availability), measures reflecting the policies and availability of early care and education (vouchers, Pre-K and Head Start),⁵ characteristics of Massachusetts' welfare program, and variables characterizing the local labor market. A complete description of the variables and data sources is available in the data appendix.⁶

The DOR Data Set

The Massachusetts' Department of Revenue provided us with a twenty percent sample of welfare recipients in 1997 who were eligible for child care vouchers. The data provided to us, however, contained only a limited set of individual characteristics. After further limiting ourselves to single mothers with at most a high school education who reside in one of the five CCR&R service areas that the TAFDC/OCCS data come from, we are left with 6,626 voucher-eligible individuals.

Table 2 provides descriptive statistics for the DOR data. Almost 37 percent of income-eligible mothers use a voucher. The age of the mother, the percent with a high school degree, and the number of dependents are roughly the same as in the TAFDC/OCCS data set. The most striking difference between the data sets is the racial composition. Although the percent of mothers who are black is roughly the same, the DOR data contains a much greater percentage of whites, while the TAFDC/OCCS data contains a much greater percentage of Hispanics.

TABLE 2
Descriptive Statistics for the DOR Data Set.

	Mean	Median	Std Dev	Min	Max
Probability of using a voucher.	0.3679	0	0.4823	0	1
Age of mother.	29.0	28.5	6.7	16	50
Age of youngest child (in months).	63.3	58.8	42.2	0	156
Mother has no high school degree.	0.4337	0	0.4956	0	1
Mother has a high school degree or GED.	0.5231	1	0.4995	0	1
Household race is black.	0.3456	0	0.4756	0	1
Household race is Hispanic	0.1601	0	0.3668	0	1
Household race is white, non-Hispanic.	0.4943	0	0.5000	0	1
Number of household dependents.	2.0660	2	1.2053	1	10
Household resides in Boston.	0.3885	0	0.4842	0	1
Household resides in Boston MSA.	0.5278	1	0.4965	0	1

Source: Twenty percent random sample of assistance recipients in the five Child Care Resource Agency areas that match the TAFDC/OCCS data set who were voucher-eligible in Massachusetts in 1997. Assembled by the Massachusetts' Department of Revenue.

Notes: There are 6,626 observations.

ESTIMATION

How should the transition from welfare to work be estimated? Ideally, we would have a sample of voucher-eligible individuals, observe who was offered a voucher (and when), and then estimate a nested-logit model in which individuals first choose whether to use a voucher and then choose whether to use the voucher for work or for schooling. Unfortunately, such a sample is not available.

Rather, we follow a procedure put forth by Pagan [1984; 1986]. We begin by using the DOR data to estimate a Probit model of the probability that an eligible welfare recipient will use a child care voucher. The parameter estimates from the Probit estimation are then used to predict the probability that each welfare recipient in the TAFDC/OCCS data set would use a voucher. Finally, a fixed-effects model of the probability that an individual in the TAFDC/OCCS data set will either be working or in school is estimated. The probability of using a voucher is controlled for during this second stage of estimation in order to account for the fact that the TAFDC/OCCS data set contains only families that use vouchers (i.e., to control for the sample selection issue).

There are two remaining estimation issues concerning the first stage of the estimation. First, only variables that are common to both data sets can be included in the probability of voucher use model. This limits the voucher-use specification. Second, exclusion restrictions are needed to identify the probability of voucher use equation from the probability of working versus schooling equation. While we could rely on functional form differences for identification, the literature indicates that such identification is questionable. Fortunately, we have access to a particularly attractive instrument – the local CCR&R agency designated to serve each family. Massachusetts' CCR&R agencies administer the child care voucher program in their service area and help families find appropriate child care. The CCR&Rs are very diverse – while some CCR&Rs are sophisticated and efficient, others are far less so. Moreover, local Department of Employment and Training offices, not CCR&Rs, help welfare recipients find employment and training/education opportunities. Thus, affiliation with a particular CCR&R will affect voucher use but will not affect one's employment versus schooling decisions. This makes CCR&R affiliation an ideal instrument for identification.

The next step in the estimation procedure is to include the predicted probability of voucher use (or the Mills ratio) when estimating a fixed-effects logit model of the working versus schooling decision. The error term of the logit specification that we estimate includes an individual fixed-effect, a time fixed-effect, and a random component.⁷ In carrying out the estimation, we calculate robust standard errors to adjust for the heteroskedasticity imparted by the unbalanced panels of households, as we observe households for varying lengths of time as they enter and leave the child care voucher program.

Typically, when estimating how child care costs affect female labor supply, the sub-sample of working mothers is used to predict a wage and a cost of care for all mothers in the sample. Labor market participation is then estimated for the entire sample by including the predicted wage and price of child care for each mother.⁸ Anderson and Levine [2000] and Hotz and Kilburn [1992], however, demonstrate that the results from this procedure are sensitive to the empirical specification and exclusion restrictions.

We take a different approach. We limit consideration to single mothers with at most a high school degree so that the employment opportunities and potential wage offers faced by the mothers in our sample are likely to be similar. Moreover, the extent to which employment opportunities and wages differ across these individuals is likely to be due either to observed individual characteristics, to unobserved individual characteristics that will be captured by the fixed-effects model, or to conditions in the local labor market. Thus, in lieu of estimating a wage for each mother, we include the conditions that determine that wage. Likewise, in place of including the actual

or predicted child care costs paid by each mother, which is nothing for most mothers in our sample, we include the median cost of child care.⁹

RESULTS FOR THE PROBABILITY OF USING A CHILD CARE VOUCHER EQUATION

The probability of using a voucher equation is modeled as a Probit regression that includes age of the mother, age of the child, education, race, number of dependents, whether the mother lives in Boston and/or the Boston metropolitan area, and CCR&R agency. The regression results are reported in Table 3.

TABLE 3
Probability of Using a Voucher (Probit Regression)

	Coef.	St. Error	p-value
Age of mother.	-0.0515	0.0219	0.019
Age of mother squared.	0.0003	0.0004	0.404
Age of youngest child (in months).	0.0130	0.0016	0.000
Age squared of youngest child (in months).	-0.0001	0.0000	0.000
Mother has no high school degree.	-0.3462	0.0347	0.000
Household race is black.	0.3427	0.0448	0.000
Household race is Hispanic	0.2640	0.0516	0.000
Number of household dependents.	0.0991	0.0152	0.000
Household resides in Boston.	0.0298	0.0914	0.744
Household resides in Boston MSA.	0.1159	0.1399	0.407
CCRA=Child Care Choices of Boston	0.1036	0.0953	0.277
CCRA=Child Care Search	0.3600	0.1462	0.014
CCRA=New England Farm Workers Council	0.5726	0.1471	0.000
CCRA=Child Care Works	0.5588	0.1455	0.000
Constant	0.1743	0.3398	0.608
Number of Observations	6,626		
Pseudo R-squared	0.0944		
Log-likelihood	-3947		

Source: Twenty percent random sample of assistance recipients (Massachusetts Department of Revenue). The CCRA omitted from the regression is the Child Care Resource Center.

We find that voucher use increases with the age of the mother, and at an increasing rate. Families with preschoolers are also more likely to use vouchers than families with only school-age children. Specifically, the probability that a family uses vouchers increases with the age of the youngest child up to 65 months, after which age the probability of voucher use starts to decrease. More uneducated mothers are less likely to use a voucher, while blacks and Hispanics are more likely to use one. Voucher use increases as the number of children in the household increases. And the probability of voucher use varies substantially across CCR&Rs, as should be the case if CCR&Rs are valid instruments for identification.

The parameter estimates in Table 3 are used to predict the probability of voucher use for each observation in the TAFDC/OCCS data set. The Mills ratio is also calculated for each observation in order to provide an alternative sample selection adjustment in the work/schooling model that we discuss in the next section.

RESULTS FOR THE WORK VERSUS SCHOOLING EQUATION

Table 4 reports the coefficient estimates and *t*-statistics from a fixed-effects logit model specifying the decision to use one's voucher while working (dependent variable = 1) or while pursuing more schooling (dependent variable = 0). Model 1 includes the predicted probability of receiving a child care voucher, while Model 2 includes the Mills ratio. Because of the logit specification, the point estimates give the direction of the impact of the explanatory variable, but do not provide estimates of the magnitude.¹⁰ In order to make the magnitude of the predicted effects clearer, Table 5 reports the difference in the estimated probability of choosing to work over schooling under several different scenarios for a base-case individual.¹¹

TABLE 4
Fixed-Effects Regression Results: Predicting the Probability of Working.

	Model 1		Model 2	
	Coef.	t - stat	Coef.	t - stat
Family care slots per 100 kids.	-0.290**	-2.182	-0.293**	-2.204
Group care slots per 100 kids.	0.067***	3.040	0.070***	3.165
State contracted slots per 100 kids.	0.792***	3.668	0.801***	3.707
Percent group centers accredited.	1.364***	3.583	1.364***	3.580
Median weekly cost of care.	0.011***	3.174	0.011***	3.073
State daily reimbursement rate	0.044***	4.310	0.044***	4.350
State & federal subsidy per poor child.	0.531***	3.574	0.527***	3.548
Probability of using a voucher.	5.336***	3.495		
Probability of using a voucher after reform.	-0.099	-0.322		
Mills ratio			0.007	0.126
Mills ratio after reform.			-0.001	-0.057
CPC funding per poor child.	0.035*	1.935	0.036**	1.983
Head Start exists in township.	1.031**	2.065	1.053**	2.106
Youngest child is school eligible.	-0.015	-0.216	-0.002	-0.028
Youngest child is under 2 years-old.	-1.803***	-5.695	-1.911***	-6.064
Youngest child at least 2, not yet 6 yrs old.	-0.887***	-4.297	-0.876***	-4.230
Time limits imposed on Dec. 1, 1996.	-0.045	-0.246	-0.156	-1.211
Time limits * youngest child is under 2.	-0.161	-1.124	-0.054	-0.381
Time limits * youngest child is 2 to 6.	-0.200	-1.569	-0.131	-1.035
Time trend.	0.173***	14.420	0.170***	14.232
Welfare office is consolidated.	-2.459***	-3.600	-2.488***	-3.638
October 1996 minimum wage increase.	-0.235***	-3.247	-0.240***	-3.318
Economic revitalization dollars per worker.	3.8E-04**	2.372	3.7E-04**	2.338
Retail and service jobs per worker.	2.121	0.754	2.202	0.784
Average cashier hourly wage in MSA.	-1.714	-0.847	-1.338	-0.662
DET Job Center exists in township.	-1.011***	-3.031	-1.039***	-3.114
Median household income in zip code.	3.1E-05***	3.187	3.1E-05***	3.150
Number of observations.	20,704		20,704	
Number of families.	2,881		2,881	
Wald Test (chi-squared degrees of freedom)	1,587.4	(50)	1,574.9	(50)

Note: The dependent variable in each regression equals one if the mother is working and equals zero if she uses her voucher to pursue more schooling. Each regression also includes dummy variables for township, welfare office, Boston neighborhood, and metropolitan statistical area. Table 3 reports the estimated Probit regression results used to calculate the probability of voucher use and the Mills ratio. Statistical significance is conveyed at the 10%, 5%, and 1% levels with *, **, and *** respectively.

The availability, quality, and cost of child care all are significant predictors of choosing to “work first.” Increasing the availability of group care from 10 to 15 slots per 100 children is associated with increasing the probability of working by 7.8 percentage points. Increasing the percent of slots nationally accredited from fifteen to twenty-five percent increases the probability that a mother will choose work over schooling by 3.3 percentage points. And increasing the median market price of care from \$80 to \$120 is associated with increasing the probability of working by 10 percentage points, though this effect is not statistically significant for the base-case individual.¹²

TABLE 5

Predicted Differences in the Probability of Working from Table 4 (Model 1).

Child Care Effects		
Group care capacity increases from 10 to 15 slots per 100 kids.	(predicted effect)	0.078**
	(t-statistic)	3.874
NAEYC accredited group centers increases from 15% to 25%.		0.033**
		3.798
Median cost of weekly care increases from \$80 to \$120.		0.100
		1.132
Voucher Effects		
State reimbursement rate increases from \$27 to \$36 per day.		0.092**
		6.878
State & federal child care subsidy increases from \$434 to \$511 per poor child in township.		0.095**
		11.061
Probability of using a voucher increases from 0.5 to 0.6.		0.121**
		27.211
Early Childhood Education Effects		
CPC funding increases from \$40 to \$50 per poor child.		0.087*
		2.253
A local Head Start program exists.		0.213**
		2.652
Youngest child is eligible for a schooling program and the program is in session.		-0.004
		-0.215
Welfare Reform Effects		
Youngest child is under 2 years-old compared to being 2 to 5 years-old.		-0.224**
		-2.800
Youngest child is at least 6 years-old compared to being 2 to 5 years-old.		0.189**
		3.764
Imposition of the time limit:		
When the youngest child is under 2 years-old.		-0.046
		-0.785
When the youngest child is 2 to 6 years-old.		-0.060
		-0.937
When the youngest child is at least 6 years-old.		-0.008
		-0.244

Note: Reported below the marginal effect for each change is the appropriate t-statistic. Statistical significance at the 1% level is conveyed by ** and at the 5% level is conveyed by *. See footnote 10 for a description of the base-case individual.

Characteristics of the voucher system are also important. Increasing the state reimbursement rate from \$27 to \$36 per day (which indirectly increases the availability of voucher care) increases the probability of working by 8.7 percentage points. Increasing voucher funding from \$434 to \$511 per poor child is associated with moth-

ers increasing their probability of working by 9.5 percentage points. These results are similar to results using data for Miami-Dade County in Florida [Queralt et al., 2000; Witte et al., 2000]. Finally, if the probability of using a voucher increases from 50 to 60 percent, the probability of working over schooling increases by 12.1 percentage points. This may be indicative of the high value placed on vouchers by workers as they tend to need more hours of child care than those in schooling. Blau and Tekin [2003] and Meyers et al. [2002] also find that an increased probability of receiving a voucher is strongly related to labor market activities.

Early childhood education opportunities also affect the decision to work first. Increasing the local funding of Community Partnerships for Children (Massachusetts' Pre-K program) from \$40 to \$50 per poor child increases the probability of working by 8.7 percentage points. Working first is also highly related to having a local Head Start program, with mothers being 21.3 percentage points more likely to choose work when a Head Start program exits in their town. A bit unexpectedly, having one's youngest child age-eligible for a publicly provided schooling program (Head Start, kindergarten, or elementary school) appears to have little effect on the decision to work.

Some of our most important findings concern the effect of time limits.¹³ Prior to time limits, mothers with children under the age of two are 22 percentage points more likely to enroll in education programs as compared to mothers with a youngest child at least two but not yet six years-old. In contrast, mothers whose youngest child is at least six years-old are 19 percentage points more likely to choose working over schooling than mothers with a youngest child at least two but not yet six years-old. The last three entries in Table 5 show that the imposition of time limits largely did not affect behavior regardless of the age of the youngest child.

These results are exactly what one would expect following the imposition of both work requirements and time limits. That is, under Massachusetts' age-sensitive rules for time limits and the work requirement, one would expect that a mother who is exempt from both time limits and the work requirement (because her youngest child is under two years-old) would be more able to pursue education programs. At the other end of the spectrum, a mother with a youngest child at least six years-old would be more likely to choose employment as she is required to work within 60 days of receiving benefits.

There are at least three explanations why behavior before time limits were imposed matched anticipated behavior under time limits. First, work requirements were in place for our entire sample period. Thus, one interpretation of the results is that the decision to work is strongly affected by work requirements and more so the closer one gets to facing the requirement, but time limits change behavior very little. As most education/training programs, with the possible exception of pursuing a college degree, are of short duration, the decision to enroll in such a program could well be unaffected by a two-year limit on benefits. A second explanation rests with the timing of our sample. Because our data span only five months preceding time limits, it is possible that welfare recipients could have anticipated this change and had already started to make decisions accordingly. Third, instead of being long-sighted (as suggested by the second possibility), TAFDC recipients could be short-sighted, and have not yet responded to time limits as none of them in our sample have exhausted their two-year clock on benefits.

DISCUSSION OF RESULTS AND POLICY IMPLICATIONS

To begin to fill a gap in the literature, we have estimated the effects the child care market, child care vouchers, early care and education programs, and welfare reforms policies have on the transition from welfare to work. Although we consistently find that increased availability and quality of child care are positively related with the decision to work first than to school first, our most important findings concern the voucher system and the design of welfare reform.

Our results concerning the child care market and the voucher system are important, in part, because of the tied-choices a single mother faces when trying to reduce her reliance on assistance. For example, a child care voucher may offer an opportunity to begin a regularly scheduled job or to obtain more job training, but it also requires finding someone to accept the voucher. If group care centers are more likely to accept vouchers, but are also more likely to require full-time care, the mother's choice set may not be as diverse as it appears as she may have to utilize full-time care, transport her child to the group center, etc. in order to use her voucher. [Blau and Tekin, 2003; Connelly and Kimmel, 2003].

We find that eligible welfare mothers are more likely to use child care vouchers if they are older and better educated, have a child not yet in kindergarten, have a larger family, and live in a large city. Moreover, increasing the probability of receiving a voucher and increased funding of vouchers are both strongly associated with the decision to transit off of welfare directly into work. Thus, child care vouchers are an important feature of work-based welfare reform, the success of which will require continuing to assist mothers in meeting their child care obligations. Unfortunately, the recent reauthorization of PRWORA increases funding for child care vouchers by only \$200 million per year for 2006-2010, and states will only receive these additional funds if the states provide matching funds. Even if states fully match federal funds, however, the additional child care funds will not insure that child care funding keeps pace with inflation and will be far less than CBO estimates suggest will be needed to allow mothers to meet the new work requirements [Greenberg and Parrott, 2006].¹⁴

In contrast to federal policy, many state and local policies currently have "Tiered Quality" programs that seek to improve the quality of child care.¹⁵ States are also increasing funding for their Pre-K programs and better integrating Pre-K programs with the child care voucher programs. Our results indicate that quality improvements and greater funding for Pre-K will increase the likelihood of welfare mothers transitioning to work.

In addition to valuing child care, however, successful welfare reform must also focus on the quality of jobs and worker productivity. Thus, while welfare recipients are using expanded child care services to more aggressively pursue work, public policy should also be concerned with increasing human capital in low-wage workers in order to help them obtain higher paying jobs. Evidence from Rhode Island, for example, suggests that increased training and education can lead to greater self-sufficiency than a "work first" welfare program [Witte and Queralt, 2003]. States wishing to pursue Rhode Island's approach might consider making education/training a substitute for work for a period of time (e.g., two to four years). Unfortunately, such policies will be more difficult to implement with the more strenuous work requirement under the recent PRWORA reauthorization [Greenberg and Parrot, 2006]

Our results suggest that well-designed welfare reform can help to encourage long-term self-sufficiency. Massachusetts remains the only state in the Union to exempt mothers from the work requirement as long as their youngest child is under six years-old. Our results suggest that this policy strongly encourages schooling by the mother. In fact, we observe a pattern of behavior in our data that exactly matches what one would expect under a system of time limits (applied to everyone without children under the age of two) and work requirements (applied to everyone without children under the age of six). Compared to mothers with a youngest child at least two years-old but not yet six years-old, we find that mothers with children under two years in age are much more likely to pursue schooling options in place of working whereas mothers with a youngest child at least six years-old are more likely to choose to work. Thus, the design of welfare policy matters in how single mothers transit from welfare to work. Although federal work requirements appear to be successful in reducing caseloads, such work-based incentives may not be in the best interest of families if the goal is to achieve long-term self-sufficiency. Policy reforms that encourage schooling and job training prior to work, such in Rhode Island, may be more likely to produce former welfare recipients who are more skilled, more highly paid, and less likely to return to welfare in the future.

NOTES

This study is a product of the Wellesley Child Care Policy Research Partnership, Chapin Hall's Three State Study, and the Child Care Bureau's Child Care Policy Research Consortium. Our work was supported by Wellesley College under Grant #90YE0026 and by Chapin Hall under a grant from the Child Care Bureau, Administration for Children and Families (ACF), Department of Human Services (DHHS). The support of these organizations in no way implies their concurrence with our results. We are particularly indebted to Maggie Queralt for sharing with us her unmatched knowledge of Massachusetts' welfare reform and child care voucher programs, and allowing us access to her data. Comments by three referees and the editor substantially improved the paper. We also thank Mark An, Tasneem Chipty, David Cutler, Stephen Drinkwater, Nada Eissa, Olivia Mitchell, Casy Mulligan, Isaac Rischall, and John Karl Scholz. We also thank Lisa Bagley (Massachusetts Department of Revenue), Donna Carvelli (Massachusetts Department of Education), Bettejane McCracken (Massachusetts Department of Transitional Assistance), and Rod Southwick (Massachusetts Office of Child Care Services) for helping us assemble the data. All errors are our own.

1. See Anderson and Levine [2000] and Blau [2001] for reviews of the child care literature. Connelly and Kimmel [2003] find that increased child care costs have a large effect on welfare reciprocity and a more mild negative effect on employment. Walker [1991; 1992] provides discussions of the market for informal child care.
2. Unfortunately, we are not able to investigate whether welfare recipients who opt for schooling or job training before working ultimately do better by receiving a higher wage. Witte and Queralt [2003], using data from Rhode Island, find that former welfare recipients who received additional schooling or job training before exiting welfare earned a higher wage on average and were less likely to require further public assistance in bad economic times.
3. Although cost, quality, and availability of child care affect the decision to use these services, it is also likely that demand for services affects the supply. If so, our reduced form model is incorrectly specified. This concern is somewhat mitigated as we focus only on the child care decisions of the very poor, whereas the supply of child care services responds to the demand of all households. Also, our measures of availability are determined by the available slots in May of 1996, which predates our data by two months. The extent to which demand by poor single mothers results in more high-quality providers or affects the median cost of care is less clear.

4. A mother is classified as working if she worked positive hours the previous week, regardless of her participation in education/job training programs. Of the 11,304 observations that report positive hours worked, 278 also participated in an education or job-training program. Our results are not overly sensitive to how we code these observations.
5. One measure of quality is the percent of group centers that are NAEYC accredited. At first, NAEYC accreditation may not seem to be a good measure of quality since such care is likely too expensive for voucher recipients. This is not the case in Massachusetts, however, as many accredited providers participate in the child care voucher program.
6. A data appendix is available on-line at http://campus.lakeforest.edu/~lemke/welfare_to_work_data_appendix.pdf. The data appendix describes the data sources, variable creation and estimation procedures in more detail and reports all of the regression results.
7. When using explanatory variables that are collected at “macro-levels,” such as zip code and township, criticisms concerning correlated behavior over time apply [Moulton, 1990]. We allow for a flexible enough error term in a fixed-effects setting to correct for this possible correlation. See the data appendix⁶ for complete details.
8. Michalopoulos et al. [1992] and Ribar [1995] stand out as two exceptions that undertake structural estimation.
9. This approach is similar to that of Blau and Hagy [1998] and Blau and Robbins [1988]. Blau and Hagy take the price of care to be an average of the prices charged by different providers in the same city. Blau and Robbins take the price of care to be the average price paid by the working women within the same SMSA or county.
10. We have also estimated the model using a traditional and an unstructured covariance random-effects estimator. Hausman tests suggest that the random effects models are mis-specified in that the explanatory variables are correlated with the individual effects. The random-effects results are presented in the data appendix.⁶
11. The base case individual has a 50 percent chance of receiving a voucher. Her youngest child is between 2 and 5 years-old. Her local welfare office is not consolidated. There is no job center. Her neighborhood has 5 family care, 10 group care, and 2 state contracted slots available for every 100 children. The daily reimbursement rate is \$27. NAEYC accredits 15 percent of all group slots. The median weekly price of child care is \$80. The state and federal child care subsidy per poor child is \$434. Time limits have yet to be imposed. The local CPC budget is \$50 per poor child. There is no Head Start program. And her youngest child is not age-eligible for any public school.
12. This result seemingly runs counter to the literature (and intuition) which finds that increased cost of care is associated with decreased utilization. The literature, however, generally uses data for random samples of families, not for current and former welfare recipients who are presently using child care vouchers. Thus, one interpretation of our result, as it applies to former TAFDC recipients who continue to receive a voucher but must pay part of the cost of care, is that the increased cost of care leads to utilization of child care to foster working rather than to foster schooling. But even this interpretation is too strong for current TAFDC recipients as they do not pay any of the cost. The local price of child care does not directly affect current TAFDC recipients as welfare recipients using a child care voucher in Massachusetts (and in most states) do not pay any part of the cost of child care. The local cost of care, however, might affect the supply of providers willing to accept a voucher. (See the second section.)
13. The debate over whether time limits affect welfare case loads remains unresolved. Whereas Ziliak et al. [2000] find that time limits have little effect, Grogger [2003, 2004] and Grogger and Michalopoulos [2003] find strong negative effects when controlling for the age of the youngest child.
14. Head Start appropriations for fiscal year 2006 are below actual expenditures for fiscal year 2005. Thus, Head Start will not be in a position to take up the slack left by the limited increase in funding for child care vouchers. See <http://www.acf.hhs.gov/programs/hsb/research/2006.htm>.
15. See <http://nccic.org/poptopics/statetqs.pdf> for a discussion of tiered quality strategies. Also, our work does not address integrating the three major early care and education programs in the US, i.e., child care vouchers, Head Start and Pre-K. Witte and Trowbridge [2005], however, suggest that integrating these programs will lead to efficiencies that could allow more early care and education programs to be made available even within existing budgets. Such an increased availability of care would certainly ease the transition from welfare to work.

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