

Why Do They Leave? Child Care Subsidy Use in Oregon

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Abstract This study fills an important gap about child care subsidy participation by exploring why parents leave the subsidy program in Oregon. Descriptive analyses using administrative data showed unexpectedly high levels of employment stability and low levels of family mobility. Many families appeared to remain eligible after exit based on earnings and participation in other means-tested assistance programs. Estimates from a Cox regression model showed that subsidy policies were associated with exits. Being in the last month of an eligibility period increased the likelihood of exiting the subsidy program by two to three times. This result suggests that lengthening eligibility period could increase the stability of subsidy usage and possibly subsidized child care arrangements.

Keywords Child care subsidy · Cox regression model · Eligibility periods · Employment stability

Child care assistance has emerged as a major support for low-income working parents and an increasingly important part of the nation's welfare policy. In fiscal year 2006, the federal Child Care Bureau provided states approximately \$4.8 billion of Child Care and Development Funds (CCDF), and in addition, states spent their own general funds and often Temporary Assistance for Needy Families (TANF) savings. As changes in welfare reform policy have increased the need for work support programs and both federal and

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state government spending have grown, the importance of assessing how well child care subsidy programs support low-income families has increased. Evaluating the program's effectiveness in serving the targeted population requires that we understand two related aspects of participation, the decision to participate (entering) and the decision to end participation (leaving the program).

A number of studies have examined take-up rates into the child care subsidy program and found that many parents who appear to be eligible for child care subsidies do not use them (e.g., Meyers and Heintze 1999; Witte and Queralt 2003). Lee et al. (2004) estimated that half of the single mothers leaving TANF became eligible for subsidy during a follow-up period, yet the take-up rate for subsidies never exceeded 35%. Collins et al. (2000) found that no more than one quarter of eligible children in 16 states received child care subsidies. Research has shown that a lack of information about subsidy programs is a common barrier to using subsidies (e.g., Meyers and Heintze 1999). Other studies have shown that even families who know about the subsidy program may incorrectly believe they are not eligible or may believe that using a subsidy requires that they use a particular type of care or particular provider (Shlay et al. 2004).

By asking what predicts program exits this study fills an important gap in our knowledge about subsidy participation. To the authors' knowledge, no other studies have investigated why parents leave the child care subsidy program. Although some reasons for not taking up the subsidy may be the same as for exiting, some are not. For example, a lack of information about the program is less likely to be a major problem for parents who are using the subsidy.

The importance of understanding why parents exit the subsidy program is highlighted by prior findings of short durations (Meyers et al. 2002). Previous research on the dynamics of participation in child care subsidy programs found short spells of subsidy use across the five states studied. The median length for receipt of subsidy ranged from 3 months in Oregon to 7 in Texas (Meyers et al. 2002). While half the families returned for another period of subsidy use, it was typically for another short spell (Meyers et al. 2002). The short spells of subsidy use typical for many families raised concerns that child care arrangements may also be of short duration. Indeed, Weber (2005, Unpublished doctoral dissertation) found that children's (subsidized) child care arrangements were shorter, on average, than their subsidy spells. Half of all subsidized arrangements in Oregon ended within 3 months for children observed for up to 3 years, and only 18% of the arrangements with the same provider were resumed (Weber 2005, Unpublished doctoral dissertation). This compares to findings from two studies using national representative samples that found about 50% of children under age 13 were in the same arrangement after one year (Blau and Robins 1998; Hofferth et al. 1991). Research has shown that multiple changes in arrangements can result in negative impacts on a child's development (Huston et al. 2002; Loeb et al. 2004). Stable child care and stable maternal employment have also been found to be associated, although the direction of the relationship is not clear (Blau and Robbins 1991; Hofferth and Collins 2000; Meyers 1997; Miller 2003).

Understanding the reasons parents leave the Oregon subsidy program after only a few months is important given the possible implications for stability of child care arrangements on child development and parental employment. The major goal of welfare reform is to get parents employed (Bok and Simmons 2002) and the Child Care Bureau's goals for CCDF are to promote healthy child development and family self-sufficiency. Short spells of subsidy use do not support employment or development.

Policy Context

Oregon's child care subsidies were managed by the Department of Human Services (DHS). The largest, the Employment Related Day Care program (ERDC), served low-income families (not participating in TANF) who were eligible for a child care subsidy because of employment. Parents in job readiness activities may have received child care subsidies as part of their TANF participation. States have used five major policy levers in managing the voucher portion of subsidy programs: (a) maximum rates paid to providers, (b) co-pay amounts that parents must pay, (c) eligibility ceilings, (d) eligibility periods, and (e) subsidy management policies.

Maximum Rates Paid to Providers

States have established subsidy payment rates, the maximum amount the subsidy agency paid a child care facility providing care for an eligible child. Oregon maximum payment rates were set in 1995 at the 75th percentile of the 1992 Market Rate Survey. As of the 2006 Market Rate Study, the maximum rate was adequate to purchase about 26% of child care slots statewide (Grobe et al. 2006). Although differences in methods of measuring the amount of access that the maximum payment rate provides precluded state comparisons, it was likely that Oregon's rates gave parents less access to the child care market than did the rates in other states. In addition, Oregon was the only state that paid family, friend, and neighbor providers the same rate as that paid to family child care providers regulated by the child care licensing agency.

Eligibility and Co-pay Amounts

Factors used to determine subsidy eligibility during the study period were: (a) child(ren) under age 13, (b) parent employed or in job readiness activity, and (c) income at or below 185% of the Federal Poverty Limit (FPL). In 2001, 23 states set eligibility at less than 185% FPL (Schulman and Blank 2005), but some allowed a higher limit once the family was on the subsidy program. Parents had to pay a portion of their child care cost, a co-pay. Oregon families who had a co-pay amount began at \$25 for the lowest income families and increased rapidly after family income exceeded 100% FPL. At 100% FPL Oregon had the ninth highest co-pay among states and the District of Columbia in 2001 (Schulman and Blank 2005). At 150% of FPL, Oregon had the highest co-pay, although families at that level were not eligible for a subsidy in nine states (Schulman and Blank 2005).

Eligibility Periods

Caseworkers in Oregon were directed to set the period for recertification of subsidy eligibility between 3 and 6 months for the ERDC program. Six-month eligibility periods were more common in other states and some had 12-month eligibility periods. Oregon parents who received a subsidy in conjunction with a TANF grant had their recertification date set as a part of their broader TANF eligibility determination.

Subsidy Program Management and Child Care Regulation

Oregon did not maintain a waiting list for child care subsidy participation; all eligible families who applied for a subsidy received it. In Federal Fiscal Year 2001 approximately 20% of children eligible for the subsidy under Oregon rules received a subsidy. The majority (95%) of child care assistance was managed through the voucher system. Oregon child care licensing rules stated that providers who care for three or fewer children or for children from one family were exempt from regulation as were centers that offer care for less than four hours per day or that were operated by public entities.

Conceptual Framework

The conceptual framework for this study assumed that the decision to exit the subsidy program was based on a sequential family decision-making process, whereby employment decisions preceded the decision to exit subsidy. Mills et al. (2001) provided an example of a sequential participation model for the Food Stamp program. Parents first evaluate the stability and earnings of their employment or job readiness activities in conjunction with the decision to continue to participate in the subsidy program. Within this decision are a complex set of other realities, which include their housing stability, their ability to manage family resources (Urban and Olson 2005), and the extent of their social support (Simmons et al., 2007). They then decide whether or not to exit the subsidy program taking into consideration their eligibility status and whether the hassle of continuing to participate is worth it. This approach is similar to the cost-benefit view of program participation first espoused by Moffitt (1983), where the cost of participation included stigma. Currie (2006) reviewed a number of extensions to Moffitt's model including the influence of transaction costs on non-participation decisions.

With a primary focus on the question of why parents leave the subsidy program this study considered three hypotheses. First, did parents leave the subsidy program due to instability in other aspects of their lives that impact their child care arrangements or eligibility for subsidy? For example, Miller (2003) found that employment instability could lead to child care instability. Loss of a job, changes in hours of work, moving to a new community, or changing child care providers all could have disrupted receipt of a child care subsidy. These changes may have required paperwork or a visit to the caseworker (Adams et al. 2002).

The second hypothesis was that families left the subsidy program because they were no longer eligible for a subsidy. Eligibility for a child care subsidy in Oregon depended primarily on family income, age of child, and parental employment or participation in job-readiness activities.

The third hypothesis was that parents left the subsidy system due to the hassle of retaining the subsidy over time. Adams et al. (2002) extensively documented how the policies and practices within the child care subsidy systems in 12 states impacted parents' access to subsidies. They found that "subsidies could be complex to get and retain" (p. 77) because of the various subsidy program requirements associated with changes in TANF participation, employment, and/or child care providers. Parents were more or less likely to bear the costs and hassle of continued participation in the subsidy program depending on the value of the child care subsidy.

Data Sources and Study Population

The data came from a number of Oregon administrative data sources. Forty-eight months of data were obtained from four Oregon data systems for the study period from October 1997 through September 2001: child care subsidy program, Unemployment Insurance wage data, TANF program, and the Client Maintenance System.

The population of interest included 27,628 families with at least one child who entered the child care subsidy program between October 1998 and September 2000, were single-adult families, and received a subsidy for at least one month. More than 90% of Oregon subsidy users were single-adult families and for comparability with other studies this study included only single-adult families (Schaefer et al. 2005). All the children ($n = 48,125$) from each single-adult family were included in the study population. The study observed these families for 3 years, October 1998–September 2001, allowing us to view parents' behavior at least 12 months after they began their first observed child care subsidy spell. In addition, program information was available on these families a year prior to the beginning of the observation period. Thus, the study period covered 4 years from October 1997 to September 2001. This study defined a subsidy spell as a period of receipt of subsidized child care services (measured in months) which ended when there was a full calendar month in which no child in the family received subsidized care.¹ The data reflected months in which subsidized child care services were actually received, not when payment occurred, so that an interruption of even one month indicated a break in the continuity of subsidized child care.

Demographic Characteristics of the Study Population

The description of the demographic characteristics of the study population was based on responses in the first month of the family's first observed subsidy spell. Table 1 shows a mean of almost two (1.80) children in the household, with slightly fewer (1.68) children who received subsidized child care. The mean age of the youngest child in the family at the beginning of the first observed subsidy spell was almost three and a half years old (40 months). The oldest child was, on average, 5 years of age (61.9 months). The vast majority of the single-adult families were headed by women (95%) who were around 28 years of age, and, on average, had less than a high school education. Average monthly household income was \$595. At the first month of their first observed subsidy spell, 56% of parents were employed, and 30% were receiving TANF. Forty-eight percent of the study population had at least one month of TANF receipt in the 5 years prior to the study period. These families had an average of 16 months of TANF receipt for this five-year time period. Over half (59.4%) of the primary child care arrangements were in the home of a non-related caregiver, 20% in center care, 15% with relatives, and 6% with non-related in-home providers. Almost all of the study population spoke English (98%), and the majority (78%) were Caucasian. Hispanic families comprised 9.1% of the sample, and Black families represented 8.9%.

¹ We call this a family subsidy spell and define it as continuous receipt of a subsidy for any child in the family. A family spell is distinct from a child spell. A child spell is defined as continuous receipt for an individual child and is typically used in studies focused on child outcomes (e.g., child care arrangement stability). Family subsidy spells are used in this study because our question of interest focuses on parent outcomes. Thus, it was important to capture the spells related to the length of time a parent participates in the subsidy program.

Table 1 Characteristics of the study population (first month of first observed subsidy spell) ($N = 27,628$)

Variable	<i>N</i> Missing	Mean/frequency	Std. Dev	Minimum	Maximum
Number of children in household	108	1.80	0.01	1	8
Number of children with child care subsidy in household	0	1.68	0.01	1	8
Age of youngest child (months)	0	40.1	0.20	0	214
Age of oldest child (months)	0	61.9	0.20	0	214
Parent's age (years)	69	27.53	0.04	14	71
Parent's education level (years)	5374	11.20	0.01	0	17
Monthly household income	0	\$595	3.67	0	\$3291
Employed (yes = 1)	0	55.6	0.01	0	1
On TANF (yes = 1)	0	29.9	0.01	0	1
TANF receipt prior to Oct. 1997	14,457	47.67%			
Average number of months		15.8	11.8	1	44
Type of care	1468	20.3%			
Center care		59.4%			
Home-based facility		5.5%			
In-home provider		14.8%			
Relative care					
English is primary language (yes = 1)	0	0.98	0.01	0	1
Race/ethnicity of family ^a	25				
Asian		1.3%			
Black		8.9%			
Hispanic		9.1%			
Native American		1.7%			
Pacific Islander		0.01%			
White		78.1%			
Other/unknown		0.75%			

^a Variance in reported race in the family's first observed spell showed 95.5% of families had children with the same race, and 4.5% of families had children representing different races

Results

The results section is structured around the three hypotheses, describing the specific methods and results related to each hypothesis, and concludes by estimating parents' probability of exit from the subsidy program.

Stability Patterns Over Time

Our first hypothesis posited that some families did not retain child care subsidies due to instability of employment or family mobility. In this analysis we examined patterns in the dynamics of employment, program participation, and zip code of residence in order to assess the connection between employment or residential instability and subsidy receipt.

Data and Methods

The dynamics of employment and program participation were compared using spell length, cumulative months, and number of spells. The median spell length was estimated by maximum likelihood assuming a log-normal distribution and adjusting for those spells that had not been completed by the end of the study period (September 2001).² The spell length estimates were based on the first observed spell for each family that entered the program during the observation period. This approach avoided the problem of “left-censored” spells, those underway when the study began. We also calculated cumulative months of subsidy use, TANF use, participation in state programs (such as medical assistance), and quarters of employment (i.e., non-zero wages) between October 1998 and September 2001. These data covered the same 3 years for all families in the sample, regardless of when the subsidy spell began for the family. Most of the parents had data for wages and/or program participation throughout the three-year period. Quarterly employment data were matched with monthly subsidy data by replicating the quarterly employment data for each of the months in that quarter. This approach may have produced either an over- or under-estimation of employment in a particular month as the employee’s hours may have varied month-to-month in the quarter.

We also counted the number of job changes over the period, and number of zip code changes as a measure of family mobility. Number of job changes was first calculated by identifying the employer with the largest wages in each quarter, and then determining whether that employer’s ID number matched the previous quarter’s employer with the largest wages. A non-match of employer ID numbers from a previous quarter to the present indicated a job change.

Findings

Families experienced considerable variation in the dynamics of subsidy use, TANF participation, and employment during the 3-year period. Subsidy and TANF spells ranged in length from 1 to 36 months, and while a few families had no reported earnings, others had earnings in every quarter of the 3 years. Given this heterogeneity, we grouped the families based on their stability of employment and examined differences in the stability of program participation and community of residence for these groups (Table 2).

About half (49%) of the parents were stably employed (had wages recorded in nine or more of the quarters). Of these 13,553 families, 56% had two or fewer job changes in the 3 years. These parents exhibited the most stability in terms of employment and jobs. The other 44% of families had nine or more quarters of wages, but had more than two job changes in the 3 years. These parents were considered to have unstable jobs, but stable employment (because they had more than 2 years of wages). The least stable employment groups were the parents with fewer than nine quarters of earnings reported. These parents were divided into those with little or no employment (fewer than five quarters out of 12), and those with limited employment (between five and eight quarters of earnings).

² Results using other distributional assumptions and, alternatively, a semi parametric model (Kaplan–Meier) were similar. See Allison (1995) for a description of estimating parametric or accelerated failure time (AFT) models using *proc lifereg* in SAS.

Table 2 Characteristics of employment stability groups over three-year observation period

	Employment stability group				All
	Little or no employment	Limited employment	Stable employment/unstable jobs	Stable employment/stable jobs	
Number of families	6,471	7,604	5,902	7,651	27,628
Percentage of families	23.4	27.5	21.4	27.7	100
Subsidy use					
Mean number of subsidy spells	1.8	2.0	2.2	1.9	2.0
Median subsidy spell length (months)	3.0	3.9	4.4	5.9	4.2
Mean cumulative subsidy months	7.7	10.6	13.4	15.2	11.8
Employment					
Median employment spell length (months) ^a	5.9	11.1	28.9	≥36	14.4
Mean cumulative months ^a of earnings	6.1	19.7	32.2	33.2	22.9
Employment months covered by subsidy ^b	116%	54%	42%	46%	61%
Percentage with no job changes	47.8	13.4	0	31.2	22.1
Mean number of job changes	0.7	2.1	4.3	1.0	2.0
Mean quarterly earnings	\$1,355	\$2,126	\$2,608	\$3,444	\$2,457
TANF receipt					
Percentage with no TANF receipt (in 3 yrs)	31.1	39.9	56.2	70.7	49.9
Median TANF spell length for those with a TANF spell (months)	8.3	6.1	4.4	5.1	5.5
Family mobility					
Mean number of zip code changes	1.3	1.3	1.4	0.7	1.2
DHS client					
Mean cumulative months as DHS client	23.4	25.6	26.3	24.7	25.0

^a Employment quarters converted to months by multiplying by three

^b A percentage >100 indicates subsidy use while not employed and in training or job search programs

Overall, the findings in Table 2 show relatively high levels of employment stability (mean of 23 cumulative months of employment of the 36 observed months) and low levels of family mobility (mean of 1.2 zip code changes over the months observed as a Department of Human Services [DHS] client). Subsidy leavers in Oregon exhibited greater employment stability than those exiting TANF. Studies of TANF leavers found on average that about 60% were employed in the first quarter after exiting TANF, but only about 30% were employed in all four quarters after exit (Acs and Loprest 2004). In contrast, nearly three quarters of parents who exited the Oregon child care subsidy program were employed in the first quarter after exit, and 43% worked each of the four quarters after exit. Those with more stable employment tended to use the subsidy program more than those with less employment stability, but even those with stable employment frequently did not use the subsidy program consistently. In addition, there was a wide range in variation of subsidy use within all four employment groups, suggesting that subsidy spells were not closely related to employment stability. Most surprisingly, many of the families were served for more months in other programs administered by the subsidy program agency than the subsidy program. Families had a mean of 25 months as a DHS client during the 36 observed months as compared to a mean of less than 12 months of subsidy use. Clearly, loss of a job, job changes, and family mobility disrupted subsidy use for some families but these reasons do not appear to explain many subsidy exits.

Eligibility Status After Exit

In addressing our second hypothesis we investigated whether short spells of subsidy use were due to changes in eligibility status after exit. While we did not have complete data on whether families remained eligible, we used earnings and program participation information to assess whether the families appeared to be eligible for the subsidy program once they left.

Data and Methods

The sample for this analysis included 25,124 families. From the initial study population of 27,628 we removed those families whose first observed subsidy spell (a) began before the observation period (left censored; 407 cases deleted), (b) extended beyond the observation period (end or right censored), thus these families did not have a subsidy exit to observe (1,573 cases deleted), or (c) extended into the last quarter of the observation period (524 cases deleted). Given that employment data is quarterly, it was important to observe at least one quarter of employment data after exit from the subsidy program.

The indicators included combinations of employment status, TANF receipt, and medical assistance (e.g., Oregon Health Plan). Participation was determined the month or quarter immediately after subsidy exit, and at 6 months (second quarter) after exit. Receipt of subsidy was added as an indicator in the 6-month time period. An additional indicator was *disconnected in this month/quarter*. This indicator tracked those families that did not appear to have received any program assistance and were not employed at a particular point-in-time. It does not mean that families had completely disconnected from the study.

Findings

Table 3 shows the indicators for all families at the follow-up time periods after exit from the subsidy program. At each point-in-time, between half and three quarters of parents

Table 3 Employment and program indicators for all parents after exit (*n* = 25,124)

Employment and program indicators	Immediately after exit from first observed subsidy spell			6 months after exit from first observed subsidy spell		
	Subtotal	Subtotal	Total (%)	Subtotal	Subtotal	Total (%)
On subsidy			NA			24.3
Employed		NA			80.0	
Not on TANF or medical	NA			2.5		
On TANF or medical	NA			97.5		
Not employed		NA			20.0	
TANF only	NA			0		
Medical only	NA			5.9		
Multiple programs	NA			94.1		
Not on subsidy			100			75.7
Employed		74.2			55.5	
Not on TANF or medical	17.2			39.5		
On TANF or medical	82.8			60.5		
Not employed		22.2			25.5	
TANF only	0			0		
Medical only	16.6			27.3		
Multiple programs	83.4			72.7		
Disconnected in this month		3.6			18.9	

were employed without or in conjunction with participation in state programs. This finding is consistent with the stability pattern findings, and indicates that many families were still working after exiting their first observed subsidy spell.

We further investigated the group of employed parents to determine if they appeared to remain income eligible. For those parents employed but not on subsidy, quarterly earnings increased from the first quarter after exit to the fourth (Table 4). However, even at the highest average quarterly earnings (\$3,128), the monthly earnings for a family would only be approximately \$1,043. Corresponding to this pattern, slightly more parents were outside the 185% poverty level eligibility criteria (\$24,056 per year for a family of three) by the 4th quarter after exit than immediately after subsidy exit. Based on earnings relative to the poverty threshold, the majority of families appeared to remain eligible for child care assistance.

Analysis of parent behavior after subsidy exit raised a major question: Did parents who appeared to remain eligible but did not use child care subsidies participate in other programs managed by DHS? One might assume that if parents were willing to do the paperwork required of one program, they would be more likely to do so for another. Yet, returning to Table 3, we see that a sizeable portion of parents who were employed but not on subsidy, were receiving TANF and/or medical assistance (60.5% 6 months after exit); suggesting that child care subsidy policies may somehow make the program appear not worth the effort needed to remain in it.

Table 4 Estimated income eligibility for families employed but not on subsidy after exit

	Point-in-time: 1st quarter after subsidy exit ($N = 11,178$)	Point-in-time: 2nd quarter after subsidy exit ($N = 10,540$)	Point-in-time: 4th quarter after subsidy exit ($N = 9,146$)
	Mean (Std. Dev)	Mean (Std. Dev)	Mean (Std. Dev)
Sum of quarterly earnings at point- in-time	\$2751 (\$2058)	\$2985 (\$2093)	\$3128 (\$2175)
Difference in earnings from point- in-time after subsidy exit to last quarter of subsidy spell	\$-100 (\$914)	\$222 (\$1738)	\$455 (\$1922)
% With earnings 185% above poverty in quarter after exit (2001 level: \$27,065/yr)	4.2%	4.5%	4.7%

Policy Levers

Our third hypothesis was that parents were leaving the subsidy program because of the *hassle* factor; that is, because of the time and effort it took to remain eligible. Our data allowed us to explore the effect of three major subsidy policy levels on program exits. The value of the subsidy to a family was affected by two of these, maximum payment rates and co-pay amounts; higher payment rates and lower co-pays increased the value of the subsidy to the family and thus how much hassle it was worth. The provider fee (up to the maximum rate) minus the co-pay was the amount paid to the child's care provider by the state. The family subsidy value was the actual amount paid by the state for all children in a family in a given month. It represented the monetary value associated with participation in the program. Eligibility period was the third policy lever studied. How often parents must get their eligibility redetermined affects the amount of effort required to remain in the program.

Data and Methods

The sample for this analysis included the 27,628 single-adult families. Since over 99% of children had two or fewer providers in a month, we only captured the payments made to the first and second providers in a month. The value of the subsidy to the family was the sum of payments made to both the primary and secondary provider for all children in the family.

Findings

In the last month of the first observed spell, the value of the subsidy ranged from less than a dollar to \$2,586 with a mean value of \$289. For half of the families the value was greater than \$223. These amounts suggest that families in the subsidy program received substantial value in terms of payments to the provider. As the value of the subsidy increased, the length of time on subsidy also increased. A descriptive analysis of median length of spell by quartiles of subsidy value showed a clear pattern of longer spells associated with higher values. Median spell length ranged from 2.9 months for those in the lowest quartile of

subsidy value to 4.5 months for those in the highest quartile (with a subsidy value greater than \$393 per month). In addition, increases in the length of both eligibility periods and subsidy periods over the same time period indicated that they may be related. Furthermore, over half of subsidy exits coincided with the end of an eligibility period. This relationship was explored further in the probability of exit model described next.

Probability of Exit from the Subsidy Program

Using a variety of descriptive analyses, we have explored three hypotheses of why parents leave the subsidy program. Over half of parents had relatively stable employment and continued to reside in the same community, so instability in these other parts of their lives did not explain a substantial portion of exits. Many families appeared to remain eligible after exit based on earnings and participation in other means-tested assistance programs. It appeared that subsidy policies may be associated with exits. Even with an average subsidy over \$200 per month, parents may have perceived the effort required to maintain a subsidy as greater than the value of the subsidy itself. Having found descriptive evidence supporting the hypotheses for why parents exit the subsidy program, we next used a Cox regression model to understand the factors influencing probability of exit from the subsidy program.

Data and Methods

The probability of exit model estimated the relationship between various factors and the likelihood that the parent left the subsidy program in a particular month, given that she had received a subsidy in the prior month. The dependent variable was a binary indicator which equaled one *if the family exited the subsidy program that month* (that is, there was no subsidy receipt in the next month). The model was estimated using a Cox regression model (an appropriate method for continuous time data) with time-varying covariates. The PHREG procedure in the SAS statistical software program was used for this estimation. We estimated the model using the first observed spell for the sample of 25,124 families described in the Eligibility Status After Exit section. The model was also estimated for the subset of families who received a subsidy from the Employment Related Day Care (ERDC) program in their last month of their first observed subsidy spell (14,705 families).

The probability of exit from the subsidy program was expected to be related to demographic characteristics of the family, characteristics of the care, local economic conditions, employment changes, and policy and program characteristics. Specifically, the model controlled for the demographic characteristics of the family by including race/ethnicity and parent's education level. Previous studies found mixed findings on the relationship of education and subsidy use (Blau and Tekin 2001; Burstein et al., forthcoming). We also included factors that may have influenced child care choices such as age of youngest and oldest child and the regulation status of the facility. Age likely influenced exits because child care needs change as children get older. We expected more families to exit the subsidy program as the youngest child got older, or if they had older children in the household who may have been perceived as being able to care for younger children. Although studies have found families that take up a subsidy were more likely to use center care (Burstein et al., forthcoming; Shlay et al. 2004), in Oregon home-based care provided by non-relatives was the most common type of arrangement. In an earlier study of five

states, spell length did not vary by type of care (Meyers et al. 2002). We used the regulatory status of child care facilities rather than type of care in the model. Number of children and number of subsidized children in the household were highly correlated with the policy variable subsidy value, and type of care was highly correlated with regulatory status of facilities; thus, were not included in the model.

The family-level dataset was linked with data on community characteristics to control for other changes occurring during this time period. For example, data on child care availability (slots per 100 children) were obtained from the Oregon Child Care Resource and Referral Network. Data from the Census and the Bureau of Labor Statistics provided information on local economic conditions; such as, employment growth rate. These data were matched with the county of residence of the family by month. Dummy variables for the type of county were included to control for time-invariant differences in economic and community characteristics. County types were based on Census definitions of major metropolitan area (the omitted category), core counties in a small metropolitan area, metropolitan counties, and rural counties.

Employment changes may also have influenced parents' decisions to leave the subsidy program. An increase or decrease in quarterly hours worked may have affected eligibility status; thus, influencing the probability of exiting the subsidy program. Quarterly earnings were not included in the model given a high correlation with co-payment amount.

The model also included policy and program characteristics; such as, (a) eligibility group (being in ERDC versus job readiness or assessment), (b) redetermination month (an indicator of whether or not a particular subsidy spell month coincided with the end of the eligibility period), (c) family co-payment amount, and (d) family subsidy value (amount of child care payment paid by state to providers). We expected that the end of an eligibility period and an increase in the parents' portion of the child care payment would lead families to exit the subsidy program. Conversely, those who were receiving a subsidy and were employed would be less likely to exit than those in job assessment, and those receiving a higher subsidy value would also be less likely to exit, all else equal.

Findings

Table 5 provides the results of the Cox regression models for the probability of exit including family and program characteristics, employment outcomes, and county economic variables. The first column provides estimates of the hazard ratios for each covariate for the model using all parents, and the second includes only those parents receiving employment-related subsidies (ERDC). A hazard ratio greater than one indicates that increases in the covariate are associated with a higher probability of exit (controlling for other covariates). Conversely, a hazard ratio less than one indicates a lower probability of exit (and a corresponding longer length of subsidy spell, all else equal).

Quite a few family, economic and program characteristics were associated with higher rates of exit from the subsidy program, but the largest estimated hazard ratio by far was the end of the eligibility period. For all parents, those who were in the last month of their eligibility period (i.e., the redetermination month) were 2.6 times more likely to exit the subsidy program than those not in the redetermination month (controlling for other covariates). Because parents receiving subsidies through job-readiness programs were not assigned a redetermination month, we also estimated the model for only those families who were assigned a redetermination month (parents receiving ERDC). These

Table 5 Probability of exit proportional hazard model results

Variable	Hazard ratio	
	All families (<i>n</i> = 25,124)	Employment related day care (ERDC) (<i>n</i> = 14,705)
Youngest child, months	1.002**	1.002**
Oldest child, months	1.001**	1.001**
Family Black	0.974	0.979
Family Hispanic	1.075*	1.040
Parent's education level (continuous)	0.993	0.993
Eligibility group: ERDC	0.750**	
Redetermination month	2.622**	3.278**
County employment growth rate, percentage	1.008**	1.011**
County is core of small metro area	0.887**	0.951
County is micropolitan	0.914**	0.990
County is rural	1.026	1.135*
Child care supply (slots per 100 children under 13)	0.992**	0.990**
Family co-pay amount	1.001**	1.001**
Subsidy value	0.999**	0.999**
Quarterly hours worked	0.999**	0.999**
Primary provider is regulated	0.921**	0.891**

* $p < .05$; ** $p < .01$

participants were 3.3 times more likely to exit when they were in the last month of their eligibility period.

Other policy factors of significance included subsidy value, co-pay amounts, and being in employment-related subsidized care versus job readiness or assessment. As expected, increases in subsidy value and being in employment-related subsidized care reduced the likelihood of exiting the program. The higher the subsidy value, the harder parents were likely to try to maintain eligibility and/or recertify their eligibility. The results suggested that if the amount of a family's subsidy value increased by \$100 the probability of exiting the subsidy program decreased by 10%. The estimated change in hazard for each one unit increase in the covariate can be calculated as $100 * (\text{hazard ratio} - 1)$ (Allison 1995). An increase in the co-pay amount to be paid by parents was associated with an increased likelihood of exit in both models. Increasing co-pay by \$100 increased the likelihood of exit by an estimated 10%.

Participating in the subsidy program was also significantly influenced by the age of the youngest and oldest child, being Hispanic, quarterly hours worked, and using a regulated provider. Families were more likely to exit the subsidy program as their youngest and oldest children got older. In the All Families model, being in a Hispanic family was associated with a higher probability of exit from subsidy. An increase in quarterly hours worked led to a lower probability of exit in both models. Results from both exit models in this study also suggested that using a regulated provider was associated with a lower probability of exit from subsidy. Parent's education level was not a significant factor in predicting exit from the program.

The probability of exiting the subsidy program also depended on characteristics of the county in which the family lived. Families in small metro and micropolitan³ counties were less likely to exit than families living in a major metropolitan area; while families in rural counties were more likely to exit, but only in the ERDC model. Exits were also related to county employment growth. If employment was growing in the county, families were more likely to exit, perhaps because of improved economic circumstances. An increase in supply of child care (as measured by number of slots per 100 children under age 13) was also associated with a lower probability of exit from subsidy. This result suggests that availability of child care impacts parents' ability to use the subsidy program.

Although many factors influenced whether families left the child care subsidy program, these results suggest that a key factor driving exits was the end of an eligibility period. For parents who continued to be employed and were likely to remain eligible, the effort of having to reestablish their eligibility at three or four month intervals frequently led to disruption of subsidy participation.

Significance of the Study and Policy Implications

Previous research on the dynamics of participation in child care subsidy programs found that in five states the duration of use was quite short. In Oregon half of all subsidy spells ended by 3 months. While half the families returned for another period of subsidy use, it was typically for another short spell (Meyers et al. 2002). The short spells of subsidy use raise concerns about the impact on the stability of child care arrangements; and thus, on children's social and emotional development and parents' employment stability. Both employment stability and arrangement stability are likely to contribute to positive outcomes for families and children.

The primary focus of this study was to explore three main hypotheses on why parents leave the subsidy program:

1. Instability in other aspects of their lives, such as employment changes or family mobility, disrupts participation in the subsidy program.
2. Parents are no longer eligible for subsidy (particularly due to increased income).
3. Parents perceive the cost in time and effort of maintaining a subsidy is greater than the benefit of the subsidy.

While some of the families who exit the subsidy program in Oregon have unstable employment or frequent moves to new zip codes, overall, the families using the subsidy program are far more stable than expected. Some families probably do not need child care or a child care subsidy because the parent loses her employment. On the other hand, over half of the families are stably employed (two out of the 3 years). These families have received subsidies and so have knowledge of the program and have needed help paying for the care at least once in the past. Less than 5% of families earn more than 185% of the federal poverty threshold (the level for subsidy eligibility during the observation period) after exiting the subsidy program, and so most are likely to have remained income-eligible

³ The Office of Management and Budget defines metropolitan counties to include an urbanized area of 50,000 population or more plus outlying counties with close economic or social ties to the central county. Non-metropolitan counties are divided into two groups: micropolitan and non-core. Micropolitan counties include at least one urban cluster of 10,000–49,000 people, plus outlying counties with strong economic and social relationships to the central county. All other counties are considered non-core.

for a subsidy. In addition, many of these families continue to participate in other DHS assistance programs, particularly medical assistance. Continued participation in other programs suggests both that the family continues to be income-eligible for subsidy, and that they are willing to participate in some programs.

For families with unstable employment or frequent moves, there may not be changes in the subsidy program that would increase retention of child care subsidies—in these cases, instability in other areas may be leading to short subsidy spells. But for the large number of families who are relatively stable in terms of employment and other program participation, the short spells of subsidy raise policy concerns. Other studies have shown that parents report that retaining subsidies, and other assistance is more hassle than it is worth (Adams et al. 2002; Alfred 2005; Shlay et al. 2004), and this study finds that being in the last month of an eligibility period increases the likelihood of exiting the subsidy program by two to three times. Some families return after a short break by reestablishing their eligibility, but many do not. Weber (2005, Unpublished doctoral dissertation) found that children seldom return to the same provider when beginning a new subsidy spell. Disruptions in subsidy use may be related to disruptions in the child–caregiver relationship that is so central to child development. Evidence that child care stability supports both children’s developmental outcomes and parental employment would argue for improving subsidy stability for those participants who remain eligible. The connection between length of eligibility period and length of subsidy receipt suggests that lengthening eligibility period could increase the stability of subsidy usage and possibly subsidized child care arrangements.

Study Limitations and Future Research Directions

The findings of this study are descriptive, establishing associations between subsidy use and factors such as employment stability and end of eligibility period. An experimental research design would allow stronger conclusions to be drawn about causality. In addition, the study sample includes only families who chose to participate in the subsidy program in Oregon at least once, by definition it excludes those who did not. Therefore, the findings must be interpreted as conditional on participating in the subsidy program. Given that families chose to participate, the study identifies the factors associated with exiting the subsidy program. Under different program parameters and economic conditions, different families might choose to participate, though they may respond in similar ways if they do.

A key question is whether the stability patterns and importance of eligibility period found in this study are similar in other states. State policies on length of eligibility periods differ, and states may give caseworkers more or less discretion in setting eligibility periods for families receiving child care subsidies. In addition, state policies differ regarding maximum payment rates to providers and parent co-pays, and this will lead to differences across states in the value of the subsidy to families. Policy differences across states suggest that similar research is needed elsewhere to explore the relationship between subsidy use and employment and policy factors.

Another potentially interesting research direction is to delve deeper into the participation of families in multiple work support programs including child care subsidies, particularly food stamps. The current study does not include food stamp data, yet nearly all families (93%) receiving child care subsidies in Oregon also receive food stamps (M. Anderson, personal communication, April 21, 2006). Food stamp eligibility periods typically are longer than those for subsidy. Studying the relationship between food stamp exits

and child care subsidy exits will increase understanding of the role eligibility periods play and how low-income working families access various work support programs.

Surveys of parents who are not using child care subsidies have suggested that parents' lack of knowledge of the program or of their eligibility prevents some from participating. In addition, studies have shown that the process of applying or recertifying eligibility is considered burdensome by some parents. Surveys have not focused on parents who have left the subsidy program; therefore, they did not ask about reasons for leaving the subsidy program. This study finds that many parents who (a) appear to be income-eligible, (b) are steadily employed, and (c) use a subsidy at least once, exit the program. Observing parents' actions (using administrative data) provides important information on parents' response to policy and economic conditions; however, surveys of parents would provide a more complete picture of the factors determining why parents who are eligible do not continue to use a subsidy. This information is important for policymakers designing policies that support employment and child development.

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