

What Explains Short Spells on Child-Care Subsidies?

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ABSTRACT Child-care assistance is a critical safety net program that directly benefits families and society. But short spells and program churning raise concerns about the effectiveness of the child-care subsidy program to support stable employment and contribute to long-term family economic stability. On the basis of data that link administrative child-care assistance records with survey data on a sample of subsidy recipients in Illinois and New York, we examine demographic, employment, child-care, and subsidy program characteristics associated with the risk of experiencing child-care subsidy instability. As we hypothesized, these factors relate to exit risk, confirming and extending past research on determinants of subsidy instability. The study contributes new policy-relevant knowledge about how employment instability and public benefit rules and practices shape clients' program experiences and in turn how subsidy (in)stability may operate as a mechanism through which stable employment and economic security are ultimately achieved or threatened.

INTRODUCTION

Nonparental child care is a critical support for working families with young children. Over three-fourths of children age 5 spend time in child-care and early education settings—from centers, nurseries, and preschools to licensed family child-care homes and unlicensed home-based settings—while their

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parents work (Laughlin 2013). The care-work industry has become a vital social institution (Misra 2007) that not only cares for and educates children but also enables parental employment and contributes to the economic stability of American households. A robust early care and education sector delivers important benefits to the broader economy through increased employment, spending, and productivity (Warner, Ribeiro, and Smith 2003), and the returns on high-quality early childhood investments have been frequently noted (e.g., Heckman 2006; Duncan and Magnuson 2013).

Without considerable public investment, however, these benefits may go unrealized because child-care costs are prohibitive for many families. A 2015 report by Child Care Aware finds that the average annual cost of enrolling two children in center care (e.g., \$22,415 in northeastern states, \$13,861 in southern states) surpasses annual median household rental payments in all states and exceeds estimated annual housing costs for homeowners in 24 states and the District of Columbia. The same report calculates the annual expense for one child enrolled in full-time center-based care to be roughly equal to 1 year of tuition at a typical 4-year public college (Child Care Aware 2015). Center-care arrangements are more expensive than licensed family child-care programs and unlicensed informal care, but these home-based arrangements can also represent a significant household expense. Overall, census data show that low-income families spend less for child care than more economically advantaged families. However, notwithstanding their lower absolute expenses, as a share of household income, families in poverty with at least some child-care expenses spend almost four times more than their nonpoor counterparts: 30 percent compared to 8 percent of their household income (Laughlin 2013).

In recognition of the high cost of child care and its importance as a work support, the Child Care and Development Fund (CCDF) was developed to increase the availability of affordable, high-quality child care for low-income families.¹ Funded through the Child Care Development Block Grant (CCDBG), government child-care assistance (also called subsidized child care or child-care subsidies) aims to support the employment of low-income parents, the healthy development of their children, and ultimately

1. The focus of this study is on child-care assistance through the CCDF. Public investments in early care and education such as Head Start and public preschool are directly targeted at children's developmental needs. They may also serve to support parental employment; however, eligibility for these programs is not conditioned on labor market participation, and their hours of operation may not align with parental employment schedules.

family economic independence by reducing financial barriers to child-care access (Lynch 2014; Matthews et al. 2015). As such, the child-care assistance program is a critical safety net program and a vital part of the child-care and early education infrastructure. By enabling parents with limited economic means to enter and remain in the labor market, it not only supports low-income families directly but may have broader economic influence by reducing public expenditures in the long run, with corresponding societal benefits (Beede and Bloom 1990; Robins 1991; Warner et al. 2003). Since their creation in 1996 as part of welfare reform, CCDF child-care subsidies have helped millions of families pay for child care, actively participate in the labor market, and enroll their children in early education programs. CCDBG was reauthorized in 2014, with several changes designed to improve access to affordable, high-quality, stable care for low-income families.

Consistent with the goals of the CCDF program, several studies demonstrate a positive link between child-care subsidies and parental employment (e.g., Crawford 2006; Blau and Tekin 2007; Goerge et al. 2009; Ha 2009; Herbst 2010; Ahn 2012). Stable subsidy use is also related to more stable employment, more work hours, and higher earnings (Danziger, Ananat, and Browning 2004; Ha 2009; Ha and Miller 2015). Child-care subsidies are also associated with increased enrollment in center care (Weinraub et al. 2005; Burstein and Layzer 2007; Ryan et al. 2011; Ertas and Shields 2012), and, although findings are mixed, some studies link subsidies to the use of higher-quality arrangements (Johnson, Ryan, and Brooks-Gunn 2012; Krafft, Davis, and Tout 2017). Yet, studies also find that subsidy spells are generally brief and participants cycle off and on the program, often returning with a new provider (Meyers et al. 2002; Ha and Meyer 2010; Ha, Magnuson, and Ybarra 2012; Weber, Grobe, and Davis 2014; Pilarz, Claessens, and Gelatt 2016). While some exits are precipitated by income gains suggestive of upward economic mobility, many families remain income eligible after leaving the program. Short spells and dynamic program use raise concerns about the effectiveness of the child-care subsidy program to support stable employment and children's healthy development and contribute to long-term economic stability for families with unstable use. Program instability also dampens the potential for child-care subsidies to leverage broader economic and societal influences. If subsidies help families to access and maintain the child care necessary for stable labor market attachment, why is subsidy duration so short for many child-care subsidy recipients?

Existing knowledge is limited regarding the determinants of subsidy instability—the factors that account for short spells on the program. Such

knowledge could usefully guide state policy makers in their ongoing efforts to implement policy directives and achieve federal CCDF goals. Moreover, as new federal policy priorities take shape with the new administration, and momentum to limit spending on means-tested programs including child-care assistance increases, a sound evidence base on the determinants of subsidy (in)stability and its consequences will be necessary to address program critics and protect the program's future.

In this article, we consider three domains that we hypothesize may contribute to program instability: factors related to the subsidy program itself, parental employment situations, and children's care arrangements. To test the contribution of these factors to subsidy instability, we use a unique data set that links survey data from subsidy recipients with longitudinal administrative payment records from the child-care subsidy program. The sample originates from two sites in Illinois (Cook County and a seven-county region in southwestern Illinois) and two sites in New York (Nassau County and Westchester County). The regions represent diverse policy and geographic contexts. We observed families' participation in the program for 18 months post program entry and focus on first exits from the program as our measure of subsidy instability. We conducted a telephone survey an average of 14 months after entry into the program that gathered data about child care, employment, and subsidy experiences since entering the program. We use Cox-proportional hazard models to estimate the independent association of factors related to families' demographic characteristics and each of the three domains (subsidy program, employment, child care) to the risk of leaving the subsidy program during the 18-month observation period.

BACKGROUND

CHILD-CARE ASSISTANCE PROGRAM

The CCDF serves 1.4 million children in the United States monthly (US Department of Health and Human Services 2015). The primary source of government-funded child-care assistance, the CCDF was established as part of the 1996 Personal Responsibility and Work Opportunity Reconciliation Act. The program is primarily funded through the federal CCDBG, but to expand access to more low-income families several states also contribute funds from the Temporary Assistance for Needy Families (TANF) block grant, general revenue, and other government funding sources such as Title XX. In 2014, \$11.3 billion of government funds were spent on child-care assistance

(Matthews and Walker 2016). Still, an estimated 85 percent of eligible families are not served by CCDBG-funded programs (Chien 2015).

To be eligible for child-care assistance according to federal rules, parents must be employed or participate in qualifying education or training programs and have incomes below 85 percent of the state median income (SMI). Parents who qualify may use the subsidy to reimburse licensed and license-exempted providers in centers and homes, including relative caregivers. States have substantial discretion, however, in determining specific program rules and eligibility requirements, which results in substantial variation in subsidy programs across states and localities. In practice, most states cap eligibility at between 40 and 65 percent of SMI (or 125–200 percent of the federal poverty line), and many states maintain wait lists for entry onto the program (Schulman and Blank 2014). The length of time families are approved to receive a subsidy before having to recertify their eligibility for the program also varies across states, typically from 6 to 12 months. As of October 2013, about half of the states and territories set eligibility periods at 6 months; most others had a 12-month period (Minton, Durham, and Giannarelli 2014). States typically require clients to provide proof of employment before program enrollment. Until recently, a family could lose its eligibility for assistance immediately after exiting a job or, in some states, after exhausting a limited job search grace period without re-employment. Families are typically limited to a certain number of hours of subsidized care per week to match parents' total hours of work, school, or training, with some additional time for transportation.

Recent changes to the CCDBG program were fueled by concerns that short spells and dynamic program use interfered with the economic stability and child development goals of the program. Specifically, the 2014 reauthorization of CCDBG set new regulations to extend program duration and promote continuity of child-care services to support stable employment and children's developmental outcomes. New requirements include lengthening eligibility periods to a minimum of 12 months unless a family's income exceeds 85 percent of SMI, continuing assistance at recertification for families whose income is above the state's initial eligibility limit but is still below 85 percent of SMI, requiring states to allow a grace period of 3 months for a job search after a job exit, taking into account irregular fluctuations in earnings in determining eligibility, and other policies designed to reduce administrative burden and improve timeliness of provider payments (see Matthews et al. [2015] for a fuller description of the 2014 CCDBG

reauthorization). These new regulations have the potential to promote policies that increase program continuity, but the strategies that state agencies develop in response and the actual implementation of the regulations are still unclear as many states have been granted waivers to delay implementation of key provisions.² Moreover, the successful implementation of the law will likely depend on adequate funding to support it. Although the CCDBG law authorizes increases in CCDF revenue over time, actual block grant funding levels are determined as part of the annual appropriations process and may exceed or be less than the amount authorized in the law (Administration for Children and Families 2015).

FACTORS CONTRIBUTING TO SUBSIDY INSTABILITY

Child-care subsidies have the immediate goal of helping parents meet their employment and caregiving responsibilities, primarily through reducing the cost of care and offering parents greater choice in providers. Through this mechanism, the program ultimately aims to advance parental employment outcomes, children's developmental well-being, and families' economic stability (Lynch 2014; Matthews et al. 2015). Research suggests that only a minority of low-income, eligible families use CCDF subsidized care (Collins et al. 2000; Goerge et al. 2009; Chien 2015), and although the length of subsidy spells varies by state, they are generally short. Swenson (2014) analyzes child-care subsidy data available from 35 states and finds that median spell duration ranges from 4 to 8 months for the majority of states. Other research on subsidy dynamics shows many families who exit return to the program shortly after exiting, and subsequent spells are again short (Meyers et al. 2002; Ha and Meyer 2010; Ros, Claessens, and Henly 2012; Pilarz et al. 2016).

Short spells and dynamic program use raise concerns about the effectiveness of the child-care subsidy program to support stable employment, contribute to long-term family economic stability, and achieve broader so-

2. All states and territories were required to submit to the federal Office of Child Care a 3-year implementation plan covering June 1, 2016–September 30, 2018. States requesting waivers to statutory provisions must identify a timeline for compliance and are expected to come into full compliance with the law by 2018 (Administration for Children and Families 2016). Although the reauthorization of CCDBG occurred after the current study was complete, study findings have immediate relevance as states reform their programs in accordance with the new law.

cial and economic returns on government investment. Moreover, high-quality early childhood programs contribute to positive child development (e.g., Heckman 2006; Duncan and Magnuson 2013); however, instability in program use can thwart its ability to do so. A growing awareness of these patterns of subsidy use motivates recent research on the factors that contribute to subsidy instability (e.g., Grobe et al. 2016; Pilarz et al. 2016.) In this article, we add to these studies by investigating whether and how parents' experiences with the child-care subsidy program, their employment experiences, and their child-care arrangements contribute to subsidy exits. There is considerable instability in these three domains of low-income families' lives (Adams, Rohacek, and Danziger 2010; Sandstrom and Huerta 2013), which we reason can interfere with and contribute to instability in child-care assistance use.

Program Rules and Administration as Contributors to Subsidy Exits

Literature in public management on the troublesome administrative aspects of public programs, or what Heinrich (2016) refers to as the bite of administrative burden, can inform subsidy instability research. Research documents the frustration induced by bureaucratic encounters and efforts to navigate the application process of welfare programs such as TANF and other means-tested programs (Soss 1999, 2000; Moynihan, Herd, and Rigby 2016). Findings are mixed regarding whether and how welfare program rules affect client behavior and outcomes (Grogger and Karoly 2005; Cadena, Danziger, and Seefeldt 2006; Brodtkin and Majmundar 2010; Kim and Fording 2010; Reingold and Smith 2012; Hetling, Kwon, and Saunders 2015). Some studies show that administrative practices can influence clients' claiming behavior for benefits (Heinrich 2016) and result in what Brodtkin and Majmundar (2010) refer to as administrative exclusion from programs. Other studies associate welfare policy characteristics with caseload declines, employment outcomes, and even material hardship, although findings are inconsistent across studies (Cherlin et al. 2002; Grogger and Karoly 2005; Cadena et al. 2006; Danielson and Klerman 2008; Farrell et al. 2008; Hetling et al. 2015).

In the case of child-care subsidies, both formal policy parameters and informal agency practices have been associated with client experiences and outcomes. A few studies suggest that the length of the subsidy eligibility period is one key factor influencing subsidy duration. In their five-state comparison study, Meyers and colleagues (2002) find that subsidy recipients in

states that require applicants to recertify their program eligibility after a shorter period of time had, on average, shorter subsidy spells than recipients in states that did not require as frequent recertification. More recently, using administrative data from Illinois and New York, we find that the average duration of client subsidy spells tended to cluster around the length of the eligibility period in each of the four regions under study (Pilarz et al. 2016). Specifically, the median survival time on the program is 6 months in southwestern Illinois; 9 months in Cook County, Illinois; 12 months in Nassau County, New York; and 10 months in Westchester County, New York. Grobe, Weber, and Davis (2008) find that being in the last month of an eligibility period more than doubled the likelihood of exiting the subsidy program in Oregon, providing additional evidence that many subsidy exits are concentrated around the point when program recertification is required (see also Weber et al. 2014; Davis, Krafft, and Forry 2016; Grobe et al. 2016).

Beyond the duration of the eligibility period, research is mixed on whether and how eligibility requirements, program rules, and bureaucratic encounters shape families' experiences with child-care subsidies and contribute to subsidy exits. For example, Meyers and colleagues (2002) do not find that factors such as generosity of reimbursement rates, co-payment levels, and income thresholds consistently relate to subsidy spell length or the likelihood of successful program recertification in the five states they studied. Other studies on the relationship between program generosity and subsidy continuity are equivocal regarding the importance of these factors (Witte and Queralt 2005; Schexnayder and Schroeder 2008; Weber et al. 2014). A few qualitative studies suggest that bureaucratic aspects of the claiming process do matter. For example, under the Assessing the New Federalism project over a decade ago, researchers interviewed state and local child-care administrators, caseworkers, parents, and providers in 12 states and uncovered the multiple points at which parents must take action to get and retain their subsidies, the relative ease or difficulty parents have in completing the required steps depending on the local agency's policies and practices, and the cumulative burden these requirements placed on parents (Adams, Snyder, and Sandfort 2002).

Implementation challenges and administrative difficulties in meeting and maintaining eligibility can create instability in families' lives by placing employment and child care in jeopardy, as well as by cutting short time on the subsidy program (Adams et al. 2002; Shlay et al. 2004; Adams, Snyder, and Banghart 2008). Moreover, as discussed below, subsidy exits may be

hastened because of program rules that do not align with parents' job schedules or that prohibit families from maintaining their subsidy enrollment during short bouts of unemployment (Johnson-Staub, Matthews, and Adams 2015; Grobe et al. 2016). More research is needed to better understand the ways in which program characteristics and administrative practices may create instability for families, including contributing to premature subsidy exits.

Employment Experiences as Contributors to Subsidy Exits

As we note above, there is reason to believe that the employment circumstances of low-income families may interact with program rules and contribute to the duration of subsidy spells. Qualitative and mixed-methods studies provide evidence that employment circumstances such as these complicate subsidy involvement (Sandstrom and Chaudry 2012; Grobe et al. 2016; Henly, Sandstrom, and Pilarz 2017). Whether a parent is able to maintain enrollment in the subsidy program after job loss may depend on whether program rules allow him or her to stay on the subsidy while searching for a job, whether he or she is aware of these rules, and his or her success at finding a new job within the time frame allowed for job search activities. At the time of the current study, only 21 states and the District of Columbia included "job search" as an approved employment-related activity for families applying for or continuing to receive a child-care subsidy (Forry et al. 2014).

In their quantitative analysis of Wisconsin administrative data, Ha and Meyer (2010) find that job loss and low earnings substantially account for subsidy exits. Weber and colleagues (2014) also find that job loss and work hour reductions (of at least 33 percent), as measured with administrative unemployment insurance data from Oregon, are related to subsidy instability. This finding is underscored in a subsequent paper that also shows that employment loss increases the risk of exiting the Oregon subsidy program (Grobe et al. 2016).

Precarious work schedules and nonstandard work hours may also contribute to subsidy exits. Jobs with unpredictable and varying hours that require employees to work at various times of day and with limited control over their work schedules can create considerable instability in working parents' lives at work and at home (Henly, Shaefer, and Waxman 2006; Clawson and Gerstel 2014). Such schedules are common in the general population of working adults, including young adults with caregiving responsi-

bilities (Lambert, Fugiel, and Henly 2014) and among employed child-care subsidy recipients (Grobe et al. 2016; Illinois Action for Children 2016). Erratic work schedules can interfere with working parents' ability to coordinate child-care arrangements and plan activities outside of work, including scheduling and attending appointments (Chaudry 2004; Henly and Lambert 2005, 2014; Scott, London, and Hurst 2005; Sandstrom and Chaudry 2012). Families with precarious and nonstandard work schedules also face a restricted range of child-care providers, as most licensed centers and homes are not open evenings, weekends, and overnight, and many do not accommodate families who have variable scheduling needs (National Survey of Early Care and Education Project Team 2015). Several studies document the disproportionate use of family, friend, and neighbor care (especially relative care) among parents employed in nonstandard and variable hour jobs (Henly and Lyons 2000; Presser 2003; Han 2004). It is possible that these providers have fewer resources and less knowledge of the subsidy system and therefore may provide less assistance to parents with the subsidy application and recertification process.

In addition, the burden of applying for, maintaining, and recertifying eligibility for the subsidy program is greater in most states for workers whose employment schedules vary or whose hours fluctuate from week to week. States typically adopt more onerous reporting requirements in these cases, for example, by requiring an employer signature to verify work hours and in some cases by requiring more frequent employment verification and recertification. These factors may contribute to difficulties maintaining benefits once on the program and, by extension, may lead to shorter subsidy spells.

Child-Care Arrangements as Contributors to Subsidy Exits

Prior research suggests that the type of subsidized care (e.g., center, licensed family child-care home, informal care) may be related to spell lengths and subsidy exits; however, the findings are inconsistent across studies, and they suggest that this relationship may vary across state and local contexts and may depend on the provider-family relationship (Meyers et al. 2002; Grobe et al. 2008; Ha and Meyer 2010; Pilarz et al. 2016).

Providers can support subsidy maintenance by reminding parents about recertification deadlines, helping them complete paperwork, facilitating contacts with the subsidy office, and troubleshooting when problems occur between a family and the subsidy office. As we suggest above, child-care

centers may be better equipped than home-based providers to offer these kinds of supports. Thus, we might expect subsidy spells to be longest for center-care users. But, there is limited research available on the prevalence of subsidy-specific supports in centers or homes, and studies of home-based care find that the more informal, family-like setting of these arrangements creates unique opportunities for sensitive and engaging relationships to develop between providers, children, and families (Porter et al. 2010; Forry et al. 2012). Thus, it could be that the closer relationships that develop between parents and providers in licensed and license-exempt home-based settings, as compared to centers, also afford opportunities for supporting parents through the subsidy process.

Families that have difficulties finding care to satisfy their children's needs or their own employment schedules may ultimately use less stable care arrangements and experience subsidy instability. Prior research finds that parents' perceptions of care quality and satisfaction with their care arrangements are positively associated with a lower likelihood of changing child-care providers (Davis et al. 2014), but whether child-care changes heighten the risk of exiting the subsidy program has not been studied to our knowledge. Child-care complications that result in a parent leaving a child-care arrangement require subsidized parents to not only search for a new provider but also complete additional paperwork in order to maintain subsidy benefits during the child-care change. Thus, changing providers may increase families' risk of leaving the subsidy program because of difficulty finding another provider or administrative hassles that may result from reporting the child-care change to the subsidy office.

STUDY HYPOTHESES

We posit that there is an elevated risk of leaving the subsidy program when program rules require more frequent eligibility recertification and when parents report administrative burden. We also expect a greater risk of subsidy exit in the face of both job loss and precarious and nonstandard work schedules. Finally, we expect that parents experiencing child-care difficulties will have an increased risk of subsidy exit. However, we do not have a priori expectations about whether the type of child care a family uses is associated with the risk of exiting the subsidy program, as both centers and home-based providers may support parents in their efforts to maintain

subsidy enrollment. We do expect that regardless of child-care type, parents who view their providers as flexible and safe will have a lower risk of leaving the subsidy program.

METHOD

We draw from data that are part of a broader project titled Determinants of Subsidy Stability and Continuity of Child Care. The study is in four diverse regions, including two communities in Illinois (Cook County—a large, dense metropolitan area—and a seven-county region in southwestern Illinois that includes both a small city and several rural counties) and two suburban counties, Westchester and Nassau, in New York. We selected these sites to learn about diverse policy, demographic, and geographic contexts, not to draw a sample that is representative of the states of Illinois and New York overall.

As is true across the country, the child-care subsidy program only serves a minority of eligible participants in each of the four sites. In 2011–12, at the time of the current study, clients in the two New York counties faced an income eligibility limit of 200 percent poverty and an eligibility period of 12 months; in Illinois, the income eligibility was set at 185 percent poverty, and clients faced a 6-month eligibility period. None of the regions maintained a wait list. Like most states, the regions of focus in this study also require participants to notify program personnel of job, household structure, residential, and income changes that affect program eligibility. Nassau County clients do not have a grace period after job loss; in Westchester County and the two Illinois regions, clients have 30 days to search for a job after experiencing a job loss, although qualitative research suggests that this subsidy rule was not widely understood among families (Henly et al. 2017; see Henly et al. [2015] for a fuller description and rationale of the study sites and how the two areas in each state compare to the overall state child-care subsidy population).

The larger study includes an analysis of administrative program data over an 18-month period, a telephone survey of a random sample of subsidy participants drawn from the administrative data, and a qualitative interview study with a subsample of survey respondents (Henly et al. 2015). For this study, we report findings based on analyses of linked administrative and survey data, each described here in fuller detail.

SAMPLING STRATEGY

Sampling Frame

The sampling frame for the survey is based on child-care subsidy payment records. We sampled families who were new entrants into the subsidy program—meaning they had not received a subsidy in the previous 2 years—and who received their first subsidy payment for services rendered between August 2011 and February 2012 in the two Illinois sites and between March 2011 and December 2011 in the two New York sites. We sampled from a greater number of months in New York because of smaller caseloads in the two counties and in order to achieve a sufficient sample size. To be included in the sampling frame, families also had to be using the subsidy for at least one non-school-age child who was not yet age eligible for kindergarten at the time of program entry or in fall 2011.

In Illinois, inclusion in the sampling frame required that the family used the subsidy for employment, including employed TANF recipients. Any Illinois cases who were in school, in training, or receiving TANF but were not employed are not in the sampling frame. In New York, only preventive and protective cases (i.e., foster care) are excluded, which accounts for an estimated 7 percent of new entrants in New York. The relatively large size of the TANF child-care program in New York makes research on the subsidy stability of TANF recipients especially desirable to New York policy administrators. Thus, all New York TANF cases are included in the sampling frame regardless of parental employment. Among families that meet the sampling criteria, including TANF families, 90 percent were employed, 6 percent were in school or training, and 3 percent were on transitional TANF. These sampling procedures yield a sampling frame of 5,902 families in the two Illinois sites and 1,819 families in the two New York sites. From this sampling frame, we selected the survey sample.

Survey Recruitment

In New York, given that the sampling frame is smaller, we attempted to contact all 1,819 families.³ In Illinois, using a random process, we identified

3. Another reason for fielding all 1,819 families in New York is because the recruitment conditions were more restrictive in New York than in Illinois. Specifically, New York required the receipt of written consent before conducting the telephone survey. Recruitment was less burdensome in Illinois, where verbal consent was allowed.

1,000 representative cases to field from the 5,902 in the full sampling frame to ensure an adequate response rate.

Our aim was to recruit participants for a telephone survey that would take place several months after their entry into the program and at least 2 months after the length of the eligibility period stated in the policy (6 months in Illinois, 12 months in New York). This intentional recruitment delay for the survey component allows for the collection of self-reported client information about experiences while on the subsidy program and factors that may have contributed to an exit for respondents who did not remain enrolled beyond the first full eligibility period. Respondents completed the survey approximately 14 months after their first month of subsidy receipt.

SURVEY SAMPLE

The full survey sample includes 616 respondents, 424 in Illinois and 192 in New York. This represents an overall response rate of 65 percent of all fielded cases with valid contact information and 22 percent of all fielded cases. Because child-care and employment characteristics are central to our analyses, for analytic purposes we excluded from our sample one case from Cook County, two from Nassau County, and one from Westchester County with missing data on child-care and employment histories ($N = 612$).

A nonresponse analysis that compares the sampling frame to these 612 survey respondents on key variables available from subsidy payment records is provided in tables A1 and A2 in the online appendix. Briefly, in Illinois and New York, we find no significant differences between survey respondents and nonrespondents in terms of household income, subsidy co-payment amount, or the age or sex of the youngest child on the subsidy case. In New York, we do find significant differences with respect to study site and case type: 45 percent of the sampling frame is from Westchester County, but Westchester County recipients make up 52 percent of the survey sample. In contrast, 55 percent of the sampling frame is from Nassau County, which constitutes only 48 percent of the survey sample. Despite no observable differences in household income, the New York survey sample overrepresents low-income employment cases relative to their proportion in the sampling frame (70 percent in survey sample, 65 percent in sampling frame). Compared to the New York sampling frame, New York respondents also had longer subsidy spells (14 months, as compared to 11 months in the sampling frame) and were less likely to exit the subsidy

program during our observation period (55 percent in survey sample, as compared to 67 percent in sampling frame). These differences suggest that our results may overstate the length of subsidy spells for families in the two New York counties. It is possible that losing cases with shorter spells limits variation in our dependent variable and makes it more difficult to detect significant associations between predictor variables and the hazard of subsidy exit.

The caseload in southwestern Illinois makes up a much smaller percentage (12 percent) of the sampling frame relative to the more populous Cook County (88 percent). In order to achieve a sufficient sample size in southwestern Illinois, cases from this region were oversampled. As a result, Cook County respondents and cases whose focal child was Latina are somewhat underrepresented in the survey sample relative to their proportion in the sampling frame, whereas southwestern Illinois respondents and cases whose focal child was African American are slightly overrepresented relative to their proportion in the sampling frame (see table A2). When comparing respondents to nonrespondents who were invited to participate in the study, we find that families in southwestern Illinois were less likely to participate in the survey relative to families in Cook County. (This is due at least in part to additional fielding efforts in Cook County described in more detail in Henly et al. [2015].) Also, white families were less likely and African American families were more likely to respond affirmatively. There are no statistically significant differences between respondents and nonrespondents in terms of spell length or likelihood of exiting during our observation period. Therefore, it is unclear whether or how these sample differences might shape our results.

Because our analyses link survey responses to administrative records (see below), we asked survey respondents for consent to link their records. Thirteen percent of respondents declined this linkage, although we use self-reported data on subsidy exits from 33 nonconsenting respondents. In the sections below, we describe how this might influence the study results.

LINKED SURVEY-ADMINISTRATIVE DATA

We link administrative data from longitudinal subsidy payment records to the survey responses of all consenting respondents (87 percent of survey respondents). We identify the youngest subsidized child on each case as the focal child. The administrative data contain information on child and family characteristics from the child-care subsidy application, including children's

dates of birth, household income at the time of application, children's races and ethnicities, and children's genders. The data also include payment files containing information on the dates when child-care services were rendered, the type of care of the subsidized provider(s), and family co-payment amounts. In New York, the data also contain information on the type of case to which the family was assigned during each service period (TANF, low-income employment, or Title XX), and in Illinois, where all cases were low-income employment cases, we have information on whether a family was receiving TANF in the month of entry to the subsidy program. For the sake of analysis and consistency across sites, we recoded the type of care measures for the family into three categories: center-based care, family child care, and informal care (i.e., license-exempt, in-home care provided by relatives or nonrelatives). We assigned families with multiple subsidized arrangements the most formal type of care used by the family.

The survey covers a range of topics. For the purposes of this study, the relevant survey domains include information on subsidy use and experiences, child-care history and experiences with provider, job characteristics and employment history, household composition, and demographic characteristics (see Henly et al. [2015] for a complete description of the survey instrument).

MEASURES

Dependent Variable

We used monthly administrative data on program service dates to create start and end dates of families' first subsidy spells. In order to observe families for a consistent period across the two states, we created an 18-month observation period for each family, starting with their first month of subsidy receipt and ending 18 months later. We define a subsidy spell as a period of one or more consecutive months in which a family received subsidized child care followed by a subsidy exit, meaning 1 or more consecutive months of nonreceipt of subsidized care. We define a subsidy exit as at least a 1-month break in subsidy receipt because even 1 month without subsidized care can have meaningful consequences for children and families.⁴

4. As the definition of a subsidy break is somewhat arbitrary, in supplemental analyses we also consider a subsidy exit as a 2-month break in subsidy receipt. The study findings are substantively unchanged whether a 1- or 2-month break is used.

For families who did not experience a subsidy exit within the 18-month observation window, their first subsidy spell is right censored, as we did not observe the end of their spell.

We constructed subsidy spells at the family level,⁵ meaning that in cases in which there were multiple children in the family, the beginning of the spell is the first month in which any child began receiving a subsidy, and the last month in the spell is the last month in which at least one child received a subsidy. For example, if one child in the family began receiving a subsidy in August 2011 and another child began receiving a subsidy in December 2011, we would code the family's spell as beginning in August 2011.

As noted above, for survey respondents who did not give consent for data linking, we rely on self-reported responses to a survey item asking whether they left the subsidy program at some point since enrolling and, if so, the date of exit. For these cases, we use self-reported dates to code families' subsidy exit dates. This process provided data for 33 additional cases from the nonconsenting respondents. The final analytic sample includes 558 survey respondents for whom we have information on the month of subsidy exit.

To assess potential self-report bias induced by using the 33 survey responses on subsidy exit information (Krafft, Davis, and Tout 2015), we compared the self-reported subsidy exit dates from the survey data with administratively recorded exit dates among those who consented for data linking. We find that 91 percent of those who reported an exit in the survey data also exited the subsidy in the administrative data, while 58 percent of those who did not report exiting the subsidy in the survey also did not exit in the administrative data. Among those who exited the subsidy (according to the administrative data), the subsidy spell length shows a 76 percent match (± 3 months) between the survey and administrative data. Given the strong congruence between self-reported and administratively recorded exit dates, particularly for those who exited the subsidy, we include participants who did not consent to linkage but reported a subsidy exit within the 18-month observation window ($n = 33$).⁶ We have added the comparison in table A3 in the online appendix.

5. We rely on family-level spells because of administrative data constraints.

6. All multivariate analyses were conducted with and without these 33 cases of self-reported subsidy exit. Results were substantively the same in both cases (results available from authors by request). In this article, we report results from analyses run with the larger data set.

The key dependent variable for the multivariate analysis is the month in which the respondent exited the program during the 18-month observation window (“no exit during 18 months” is a valid value). The month of exit from the program is defined as the last month the family receives the subsidy. For example, a family with a 6-month first spell exited in month 6.

Independent Variables

We describe below all independent variables included in our models. Unless otherwise noted, we construct these variables on the basis of respondents’ survey responses.

Study Site. We include a set of dummy variables representing each study site, drawn from administrative records. Westchester County, which at the time of data collection had a 12-month eligibility period and no interim employment verification requirement, is the reference category because the two Illinois sites both had a 6-month eligibility period and Nassau County had a 12-month eligibility period with an interim 6-month employment verification requirement.

Subsidy Program Experiences. The survey includes several items that assess families’ experiences with the subsidy program. To assess difficulty with the subsidy application process, we constructed a variable derived from the mean of two items: “I found the application form easy to understand” (1 = strongly agree to 4 = strongly disagree) and “I found it hard to assemble all the different pieces of information I needed to prove my eligibility” (reverse scored, recoded as 1 = strongly disagree to 4 = strongly agree). Higher scores indicate greater difficulty with the subsidy application process. We also measure delays in application processing by using respondents’ agreement on a four-point scale (reverse scored, recoded as 1 = strongly disagree to 4 = strongly agree) to a single item asking whether it “took a long time for my application to be approved.” Finally, we use two items related to families’ experiences while receiving a subsidy. The first item is a dichotomous variable indicating whether the respondent reported that his or her provider ever had a problem receiving a payment from the program. The second item measures whether the subsidy program covered child care for all of the respondent’s weekly work hours (1 = less than half hours covered to 4 = all hours covered). We do not include items about respondents’ experiences with recertification because some respondents left

the program before or exactly at the end of an eligibility period and did not attempt to recertify program eligibility; thus, recertification data are not relevant for the full sample.

Employment Characteristics. A set of variables describe the respondents' employment situation: held same job before entering subsidy program, number of weekly work hours at program entry, and early job loss, defined as leaving the job held at program entry within the first 6 months of subsidy receipt (or before exiting the subsidy program, for respondents who left the subsidy program within the first 6 months). We also include six indicators of work schedule characteristics for the job the respondent held at program entry. Nonstandard shift-work is a cumulative measure of the number of different types of nonstandard shifts (weekend, evening hours after 6 p.m., and overnight hours) the respondent reported typically working. The range is 0 (no nonstandard work) to 3 (all three types of nonstandard shifts are regularly worked). To assess variability in job hours, we create a dichotomous indicator of whether the number of hours of work varies a lot or sometimes versus not at all. To assess job schedule unpredictability, we construct two dichotomous variables that assess limited advance notice of work hours (1 week or less notice vs. more than 1 week) and unexpected hours, a measure that indicates whether the respondent either sometimes or very often has to go into work unexpectedly or stay later than she is scheduled (vs. almost never or once in a while). Finally, we create two dichotomous measures of schedule control: no input into schedule (vs. a little, some, or a lot of input) and limited ability to take time off, indicating the respondent has a very difficult time taking time off during the day to attend to family matters (other categories are not difficult at all, not too difficult, and somewhat difficult).

Child-Care Experiences. We create several different measures capturing families' child-care experiences using both administrative records and survey responses. As noted above, we rely on family-level information when using the administrative records, and our survey responses are specific to the focal child. We use child-care subsidy payment records to determine the type of subsidized care at program entry (center, family child care, informal care). Using the survey data, we include a variable indicating whether the focal child's provider was used before the subsidy start and whether the focal child's provider offered nonstandard hours of care, including early mornings as well as evenings, weekends, and overnight hours. We also include

a variable that indicates whether the subsidized provider was the focal child's primary provider (used the most hours per week) on the basis of survey information we collect about all subsidized and nonsubsidized arrangements that a family used at the start of the subsidy.

We created an index of provider flexibility based on the mean of three survey items. On a four-point scale, respondents rated whether the focal child's provider's schedule covered the hours of care needed, whether the provider was willing to work with them around work schedules, and whether the respondent relied on the provider to be flexible around the hours of care it provided. Items are reverse scored (recoded as 1 = strongly disagree to 4 = strongly agree), so that higher scores on the index indicate more flexibility ($\alpha = .68$). We also created a scale reflecting difficulties with finding child care that is the mean of four items rated on a four-point scale of agreement. The items include "it was difficult to find a child-care provider that fit with your work schedule," "you felt under time pressure to find a child-care provider," "you had trouble finding a child-care provider that was eligible for the child care assistance program," and "it was hard to find a high-quality provider with the characteristics you were looking for" ($\alpha = .81$). Higher scores on the original items suggest disagreement with the statements. However, each item is reverse scored before calculating the mean score; thus, higher scores reflect greater agreement (recoded as 1 = strongly disagree to 4 = strongly agree) and hence greater difficulty in finding a provider. Finally, we include an item gauging perceived provider safety that asks on a five-point scale (rarely to always) whether the respondent usually felt the focal child was safe and secure with his or her provider. Given that the responses are heavily weighted to the high end of this scale, we created a binary measure indicating whether the respondent frequently or always felt the child was safe and secure (vs. usually, sometimes, or rarely).

Covariates. We control for several factors that previous research finds to be associated with subsidy spell length, including parent's race/ethnicity (Grobe et al. 2008; Ha 2009; Davis et al. 2014), age of the focal child (Grobe et al. 2008; Davis et al. 2014), parental education level (Ha 2009), and the co-payment amount (Grobe et al. 2008) as a proxy for income.⁷ We also

7. Co-payment rates are a function of household size and income. The co-payment value increases for more economically advantaged families. Because we include the value of the co-payment in the regression model, we do not also include household income.

include several additional control variables that may reasonably influence the risk of subsidy exit, including the number of subsidized children in the family, whether the family received TANF, whether the respondent was an immigrant, and household structure (lives with partner and a child or children, lives with other adults and a child or children, lives without partner, lives alone with a child or children). Child-care subsidy payment records provide information on co-payments, the number of subsidized children, and TANF receipt, all taken at program entry. The other covariates are taken from the survey and based on the time of the interview. Finally, we control for seasonality in the child-care subsidy program using participants' month of entry into the subsidy program taken from subsidy payment records. We group entrants as winter (January and February), spring (March, April, and May), summer (June and July), and late fall (November and December), with the reference group being early fall entrants (August, September, and October), which is the largest group.

ANALYTIC APPROACH

We first present descriptive statistics on all key independent variables and control variables for members of the overall sample and the subsamples who did and did not exit the subsidy program during the 18-month observation period. Before conducting the multivariate subsidy exit models, we ran a test of variance inflation factors (VIF) to detect whether multicollinearity across the independent variables was of concern. Values of the VIF are low and within acceptable bounds (see Allison 2012), indicating that it is appropriate for us to include all independent variables in the model simultaneously.⁸ We next present results of a Cox proportional hazards model that examines whether our key independent variables—subsidy program experiences, employment, and child care—are related to families' risk of exiting the subsidy program. We use a Cox regression

8. Paul Allison (2012) advises that VIF values should not be greater than 2.5 unless the variable is a control variable in the model, an interaction term, or an indicator (dummy) variable representing a categorical variable with more than three categories and especially if the reference category is small. Allison notes that in these three cases, multicollinearity is not of concern even with high VIF values. In our case, all VIFs are under 2 with the exception of the region variable—a categorical variable with a small reference category (Westchester) and three dummy variables with VIFs at 1.9 (Nassau), 2.8 (southwestern IL), and 3.7 (Cook). Thus, multicollinearity is not a concern for our model.

model because we are interested in identifying factors related to the event of the subsidy exit within a particular observation period (18 months), and it allows us to adjust for the right censoring of subsidy spells in the data (Singer and Willett 2003). The Cox proportional hazards model estimates the hazard (or risk) ratios for each independent variable in the multivariate model. The hazard ratio can be interpreted as the risk of exiting the subsidy program relative to the baseline (or reference) group. A hazard ratio below 1 indicates a lower risk, and above 1 indicates a higher risk of exiting the program. We conducted all analyses using the full analytic sample, rather than separately by state or region, given the large number of covariates in our model relative to the survey sample size and because we have no a priori reason to assume interactions between key independent variables and state or region, with the exception of the TANF variable.

In a second model, we reestimated the full regression model with the inclusion of an interaction term for state (Illinois or New York) and TANF (yes or no). TANF clients in New York, but not Illinois, faced a different eligibility period than their non-TANF counterparts (6 months instead of 12 months). Moreover, as an artifact of the sampling strategy, New York TANF clients did not receive the subsidy for employment but rather for job training or another activity, whereas Illinois respondents on TANF used the subsidy to support employment.

ANALYTIC CONSIDERATIONS

The models are not meant to test whether subsidy exits were the result of losing eligibility for the subsidy. The key variables of concern—related to subsidy program administration, employment circumstances including job loss, and child-care characteristics—could result in program ineligibility, but this is not necessarily the case, and the data do not allow us to know this. Thus, the findings indicate whether these characteristics are related to an elevated risk of leaving the program but cannot shed light on whether respondents were ineligible for a subsidy when they exited.

As with all nonexperimental methods, the empirical models described above are insufficient for detecting causal relationships. The respondents who did not report problems with the subsidy program or with their jobs or child-care arrangements may be different in unmeasured ways that matter for their ability to maintain a subsidy. Thus, all model coefficients should be interpreted as associations and not causal effects.

Our analytic approach—to sample new program entrants and follow each participant for an 18-month observation period—is consistent with event history and survival analyses methods (Allison 1995, 2010). Some extant child-care subsidy literature that also employs Cox proportional hazard models employs a different sampling approach, which follows new entrants and spells for the same fixed period, from 24 months (Meyers et al. 2002; Grobe et al. 2008) to 4 (Grobe et al. 2016) and even 5 years (Davis et al. 2016). Our findings are not directly comparable to these studies. Importantly, our strategy results in a sample that is representative of new entrants who entered the subsidy program in the months we sampled—although it is not representative of all new entrants in 2011–12.

RESULTS

SAMPLE CHARACTERISTICS

Overall, child-care payment records indicate that 68 percent of survey respondents exited the subsidy program during the 18-month observation period. Illinois survey respondents were more likely to leave the subsidy program than New York respondents during the observation period. The Kaplan-Meier survival curves displayed in figure 1 show how quickly respondents left the program across the four sites, adjusting for right censoring in families' first subsidy spells. As expected given differences in administrative program rules across the sites, Illinois survey respondents left the program more quickly than the New York respondents. This pattern of results is consistent with an analysis of administrative case records for the full sampling frame from which the survey was drawn (Pilarz et al. 2016).

Table 1 provides descriptive statistics for the overall sample, the subsample of respondents who exited the subsidy program, and the subsample remaining in the program during the 18-month observation period. Regarding demographic variables, over one-half of the respondents were from Cook County, 13 percent from southwestern Illinois, and a third from the two New York counties. Over 80 percent are respondents of color (half self-identified as African American, about a quarter as Hispanic or Latino, and 6 percent as some other race or ethnicity). Seventeen percent identified as white. Just under half reported some college education but lacked a bachelor's degree, 16 percent had a bachelor's degree or higher education, and 35 percent reported no more than a high school education. Most re-

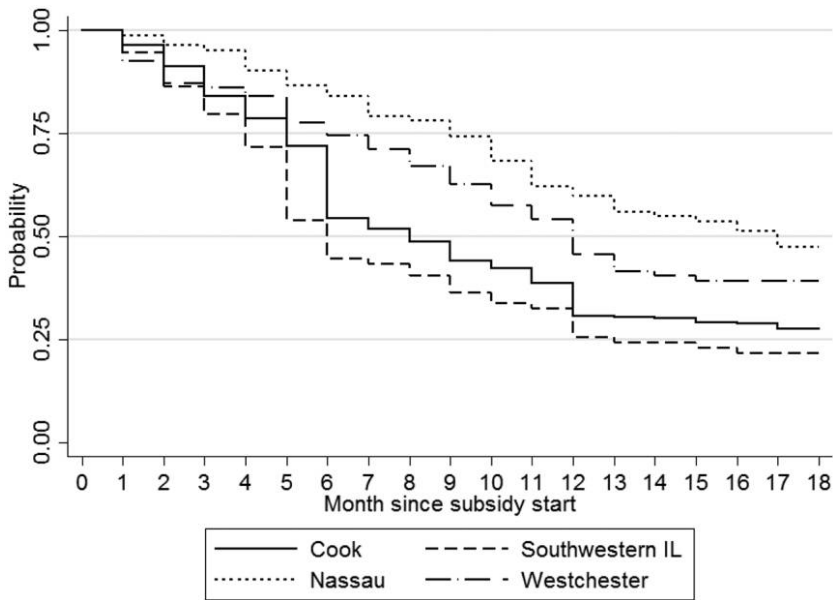


FIGURE 1. Kaplan-Meier survival curves demonstrating duration of subsidy receipt for Illinois and New York survey respondents by site.

spondents (over 80 percent) were single, reporting that they lived alone with their children (57 percent) or with other adults (25 percent), and the remaining 18 percent reported living with a partner (married or cohabiting). Those who exited the subsidy during the 18-month observation period were more likely to live with a partner than those who remained. The mean age of the respondents is about 29 years ($SD = 7.1$). The average family had 1.4 children receiving subsidized care, with the youngest about 2 years old ($SD = 1.3$). Those who exited were more likely to have a younger child ($M = 1.8$, $SD = 1.2$).

Regarding subsidy experiences, the average of the two items assessing difficulty with the subsidy application process is 1.8 ($SD = 0.8$) on a four-point scale. A modest level of agreement was expressed on the four-point scale, indicating that the application approval process was slow ($M = 2.7$, $SD = 1.3$). Respondents who exited the subsidy during the 18-month observation period reported greater difficulty with the application process and more delays in the application process than those who remained. Thirty percent of respondents reported experiencing a problem with providers receiving timely payments.

TABLE 1. Bivariate Descriptive Statistics by Subsidy Exit across the 18-Month Observation Window

	Overall Sample	Any Exit	No Exit
Study site (%):***			
Cook	55	48	59
Southwestern IL	13	9	15
Nassau	15	22	11
Westchester	17	21	15
Demographic variable:			
Parent race (%):			
White	17	17	16
Nonwhite	83	83	84
Parent's highest level of education (%):			
High school/less than high school	35	35	34
College (including associate's degree)	49	48	50
Bachelor's degree or higher	16	17	16
Household structure (%):*			
No partner, no adults	57	55	62
No partner with adults	25	24	27
With partner	18	21	11
Immigrant (born in other countries; %)	23	21	27
TANF child care (%)	13	14	12
Number of subsidized children (mean)	1.4 (.7)	1.4 (.7)	1.5 (.7)
Parent's age (mean)	29.1 (7.1)	28.9 (7.2)	29.6 (7.0)
Focal child age at subsidy start (mean)*	2.0 (1.3)	2.0 (1.4)	1.8 (1.2)
Co-pay amount for the second month of subsidy (mean \$)	54 (65.9)	58 (69.6)	46 (56.7)
Subsidy variable:			
Difficulty in application process (mean of two items, range 1-4)*	1.8 (.8)	1.8 (.9)	1.6 (.8)
Took a long time for my application to be approved (mean, range 1-4: strongly disagree to strongly agree)*	2.7 (1.3)	2.8 (1.3)	2.5 (1.3)
Ever have a problem receiving a payment for the program (%)	30	32	27
Work hours covered by the subsidy program (mean, range 1-4)	3.6 (.7)	3.6 (.6)	3.6 (.8)
Employment variable:			
Early job loss (left in first 6 months; %)*	15	18	10
Hours work per week (mean)	33.8 (9.6)	33.3 (10.4)	34.8 (7.8)
Had a job before the subsidy (%)	83	84	81
Number of nonstandard shifts (0-3; mean)	1.2 (1.1)	1.2 (1.0)	1.2 (1.0)
Variation of work schedule (%):			
Worked the same number of hours	65	67	63
Hours vary sometimes/a lot	35	33	38
How far in advance know days/hours to work (%):			
1 week or less	40	39	41
More than a week	60	61	59
How often have to go into work unexpectedly or stay more (%):			
Almost never/once in a while	67	65	70
Sometimes/very often	33	35	30
Input in work schedule (%): [†]			
A little/some/a lot of input	67	65	73
No input in work schedule	33	35	27
Take off during working hours for family matters (%):			
Not difficult/not too difficult/somewhat difficult	76	74	80
Very difficult	24	26	20

TABLE 1 (continued)

	Overall Sample	Any Exit	No Exit
Child-care variable:			
Type of care (%):			
Informal care (unlicensed)	18	17	18
Family home care (licensed)	22	25	31
Center care	58	58	51
Difficulty finding a subsidized provider (mean of four items, range 1–4)	1.7 (.9)	1.8 (.9)	1.7 (.9)
Used the same provider before the subsidy start (%)	46	48	41
Subsidy used for primary provider at start (%)**	89	86	94
Provider flexibility index (mean of three items, range 1–4) [†]	3.5 (.7)	3.5 (.7)	3.6 (.6)
Provider offers any nonstandard hours of care (morning, evening, night, or weekend; %)	66	66	67
Feel safe and secure about provider (frequently/always; %)*	89	87	92
<i>N</i>	558 (100%)	381 (68%)	177 (32%)

Note.—Type of care variables come from administrative data. Chi-square test was conducted for categorical variables and *t*-test was conducted for continuous variables to examine the distribution between those who exited and those who remained in the subsidy program. SD in parentheses. TANF = Temporary Assistance for Needy Families.

- [†] *p* < .10.
- * *p* < .05.
- ** *p* < .01.
- *** *p* < .001.

The vast majority of respondents (over 80 percent) reported holding a job before obtaining the subsidy, reflecting that work is a condition of subsidy eligibility in most cases. Fifteen percent of respondents reported experiencing job loss within the first 6 months of subsidy enrollment. Respondents who exited during the 18-month observation period were more likely to experience early job loss (18 percent), compared to those who stayed on the program (10 percent). Note that this variable indicates whether a respondent left a job before a subsidy exit and does not address whether he or she was subsequently reemployed during the observation period. Respondents also reported a high level of agreement that their subsidized care covered their work hours (*M* = 3.6, *SD* = 0.7).

On average, respondents reported working about 34 hours per week (*SD* = 9.6), although over one-third reported that their hours varied a lot or sometimes. Two-thirds (66 percent) of respondents worked at least one nonstandard shift (not shown in table 1), and the average respondent worked 1.2 different types of nonstandard shifts, including during the evening, night, and weekend, although the variation is quite large (*SD* = 1.1). Forty percent reported having limited advance notice of work hours, one-third reported

“very often” or “sometimes” working unexpected hours, and two-thirds reported that working unexpected hours happens “once in a while” or “almost never.” One-third also reported having no input into their work schedules, and 24 percent reported that it was “very difficult” to take time off during the day to attend to family matters. Those who exited were marginally more likely to report no input into their work schedule.

Subsidy payment records indicate that center-based care is the most common type of care (58 percent), whereas 22 percent used licensed family home care and 18 percent used informal care. Forty-six percent of respondents reported having used the same provider before enrolling in the subsidy program. The index for difficulty finding a child-care provider indicates that the mean across the four items is 1.7 ($SD = 0.9$). Eighty-nine percent of respondents said that they frequently or always felt their child was safe and secure while in the care of their providers, and those who exited the child-care subsidy were less likely to report feeling safe and secure about their care providers. Two-thirds of providers reportedly offered non-standard hours, disproportionately early mornings (not shown on table 1). On the three-item provider flexibility index, respondents reported a high degree of provider flexibility ($M = 3.5, SD = 0.7$), and those who exited reported a marginally lower level of provider flexibility. Eighty-nine percent reported using the subsidy for their primary care provider, and those who exited were less likely to have used it as a primary arrangement.

RESULTS OF MULTIVARIATE ANALYSES

The multivariate results that adjust for the full set of covariates are presented in table 2. As expected, they reveal important differences by study site in the risk of leaving the subsidy program during the 18-month observation period. Compared to families in Westchester County who had a 12-month eligibility period, Illinois families—who faced a 6-month eligibility period—had an increased hazard of exiting the program. Cook County, Illinois, families had a 29 percent greater risk and southwestern Illinois families had a 90 percent greater risk of leaving the subsidy program during the 18-month window as compared to families in Westchester County, New York. Despite the 6-month employment verification requirement in Nassau County, which we expected might heighten the risk of early program exit, these families nevertheless had a lower hazard of leaving the subsidy program as compared to those in Westchester County.

TABLE 2. Cox Proportional Hazards Model of the Likelihood of Exit from Subsidy Program within 18 Months of Entry

Independent Variable	Hazard Ratio	SE
Study site (ref. = Westchester):		
Cook	1.29**	.13
Southwestern IL	1.90***	.24
Nassau	.68***	.06
Demographic variable:		
Parent's age	.99	.01
Race (ref. = white):		
Nonwhite	1.25	.21
Education (ref. = high school diploma or less):		
Some college/associate's degree	1.00	.09
Bachelor's degree or higher	1.16 [†]	.09
Immigrant status	.72***	.06
Household structure (ref. = single, no adults):		
Single, living with adults	.98	.05
Living with partner	1.50**	.18
Age of focal child at subsidy start	1.09***	.02
Number of subsidized children at subsidy start	.94	.04
Family receives TANF	1.20	.27
Family child care co-payment (measured in \$10 increments)	1.03	.01
Subsidy experience variable:		
Difficulty with application process	1.12***	.04
Took a long time for application to be approved	1.09*	.05
Provider ever had a problem receiving payment from program	1.09	.11
Work hours covered by subsidy	.94**	.02
Employment variable:		
Number of hours worked per week	.99***	.001
Early job loss (within first 6 months of subsidy receipt)	1.46***	.16
Number of nonstandard shifts	.99	.02
Work hours vary a lot/sometimes	.78 [†]	.11
Unexpected work (very often/sometimes has to go into work unexpectedly or stay later than scheduled)	1.22*	.11
Limited advance notice of work hours (1 week or less notice)	.99	.08
No input into work schedule	1.24***	.07
Very difficult to take off working during the day to attend to family matters	.99	.04
Had a job before the subsidy	1.12**	.04
Child-care variable:		
Type of subsidized provider at start (ref. = center):		
Licensed family child care	.87*	.05
Informal care	.84	.11
Difficulty finding a provider	1.10 [†]	.05
Used the same provider before the subsidy start	1.02	.08
Subsidy used for primary provider at start	.55***	.07
Provider flexibility index	1.03	.08
Provider offers any nonstandard hours of care (morning, evening, night, or weekend)	.95	.11
Respondent feels child is safe and secure with provider	.70***	.06

Note.—Sample is restricted to 558 respondents for whom month of subsidy exit is known. Model includes controls for the season of entry into the subsidy program, although seasonality coefficients are not shown. TANF = Temporary Assistance for Needy Families; ref. = reference group.

[†] $p < .10$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Several subsidy characteristics relate to the risk of leaving the subsidy program during the 18-month observation window. In particular, those who reported that the subsidy covered more work hours had a lower risk of leaving the subsidy program. Perhaps in these cases the subsidy had more value to clients, and they expended greater effort to maintain it. As expected, respondents who reported finding the application process difficult or that it took a long time for the application to be approved had a greater risk of leaving the subsidy program during the 18-month observation period.

Employment characteristics are also related to the risk of leaving the subsidy program. Respondents who experienced early job loss had a 46 percent greater hazard of leaving the program during the 18-month observation period. Survey respondents who worked more hours per week had a somewhat lower risk of exiting the program, but respondents who reported holding a job that required them to work unexpected hours and schedules over which they had no control had a higher risk of exiting the program. Somewhat unexpectedly, respondents reporting variable work hours had a marginally lower risk of exiting the subsidy program than those without variable work hours, and those working nonstandard hours showed no elevated risk of leaving the subsidy program during the observation period.

Those who used the subsidy to help pay for their primary child-care provider (i.e., the provider who cared for the child for the most hours in a week) had a lower risk of leaving the subsidy program. The hazard of leaving the subsidy program was lower for respondents who used a licensed home-based provider (compared to a center) and who reported that their child always or frequently felt safe and secure with his or her provider (compared to rarely, sometimes, or usually). Respondents who reported that they had difficulty finding a child-care provider had a marginally greater risk of leaving the subsidy program during the 18-month observation window.

We also find important demographic differences in the hazard of leaving the program during the 18-month window. In particular, immigrants had a lower hazard of exiting as compared to nonimmigrants. Respondents with a bachelor's degree (compared to those with no more than a high school diploma) had a greater risk of leaving the program, perhaps because they earned too much to qualify for continuous assistance. As with prior studies (Witte and Queralt 2005; Grobe et al. 2008; Ha and Meyer 2010), those whose children were older at the start of the subsidy program also had a somewhat greater risk of leaving the subsidy program. Compared

to respondents living alone with their children, those living with a partner had a 50 percent greater hazard of leaving the program.

TESTING INTERACTIONS BETWEEN STUDY SITE AND TANF USE

Families who received TANF did not show a greater hazard of leaving the subsidy program than non-TANF recipients, in contrast to some past studies (Meyers et al. 2002; Witte and Queralt 2005; Ha and Meyer 2010).⁹ To address that finding further, and especially because TANF recipients entered the sample through a different selection process in the two states, we next assess the interaction of TANF by state. These results demonstrate that respondents with TANF experienced statistically significantly different risks of leaving the subsidy program in Illinois and New York (these results are not shown in table 2). In particular, the hazard of leaving the subsidy program during the 18-month period is almost twice as great for TANF recipients relative to non-TANF recipients in New York. In Illinois, however, TANF recipients in our sample had a slightly lower risk of exiting the subsidy program during the observation window than their non-TANF counterparts (see fig. 2). This difference in behavior between the TANF and non-TANF groups by state (likely an artifact of our sampling procedure) may explain why a main effect for TANF is not observed in the full regression model.

DISCUSSION

At their best, child-care and early education programs support parental labor market involvement and contribute to children's healthy development and long-term success. Beyond direct benefits to children and families, these programs can realize economic and social effects more broadly by generating income, employment, and spending; expanding the tax base; and reducing long-run societal costs (Beede and Bloom 1990; Warner et al. 2003). To maximize these benefits, public investment is critical because subsidies enable a broader segment of society to use child-care programs

9. Given that the sample selection criteria for TANF recipients were slightly different in the two states, which may have created a bias that affected our main study results, we reran all multivariate analyses excluding the subset of respondents enrolled in TANF. This did not result in any substantive changes in the key study findings. These results are available from the authors by request.

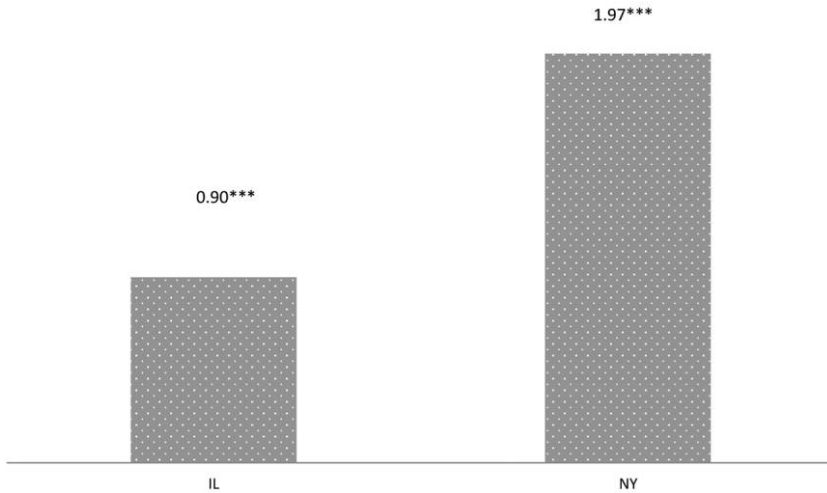


FIGURE 2. Hazard ratio for TANF relative to non-TANF participants by state. Comparison group is non-TANF. Hazard ratios are adjusted for all model covariates. The interaction analysis indicates that hazard ratios between two states are significantly different. *** $p < .001$.

that would otherwise be financially out of reach. Yet, child-care assistance use is often unstable, with families experiencing short spells on the program and frequent returns. Program instability and churning raise concerns about the effectiveness of the child-care subsidy program at supporting stable employment and contributing to the long-term economic security and stability of families, as well as positive child development. This article sheds light on the factors that explain exits from the subsidy program, contributing to greater understanding of instability in the very mechanisms that are designed to stabilize the lives of low-income families. By highlighting factors that contribute to subsidy instability, these findings may usefully inform policy discussions undertaken during a new federal administration with distinct policy priorities, as well as supporting the ongoing efforts of states actively engaged in CCDBG program reform.

We find support for our hypothesis that the risk of leaving the subsidy program is higher when program rules require more frequent eligibility recertification. Specifically, using a different study design and focusing on different geographic regions, our findings reinforce those of prior studies (e.g., Meyers et al. 2002; Grobe et al. 2008; Weber et al. 2014; Davis et al. 2016) that demonstrate the importance of the subsidy eligibility period for un-

derstanding subsidy stability. We find that in the two New York counties, where subsidy clients were granted 12 months of assistance before recertification of eligibility is required, subsidy spells are considerably longer than in the two Illinois regions, where clients faced a 6-month eligibility period. These differences in subsidy duration hold even after accounting for administrative hassles that individual families experience and a host of important demographic, employment, and child-care covariates that also contribute to subsidy exits. This finding suggests that the new CCDBG law requiring states to adopt 12-month eligibility periods may result in increased subsidy spell length in states that previously authorized shorter eligibility periods. Such an interpretation requires caution, however, because our study does not examine the causal effect of a change in eligibility period but rather compares communities with diverse characteristics that also have eligibility periods of different lengths. Thus, differences in labor market characteristics, child-care markets, or program delivery factors that are not accounted for by our model covariates may explain the longer subsidy spells in the New York counties. Moreover, even with a 12-month eligibility period defined in policy, families may experience different policy conditions on the ground. For example, research by Davis and colleagues (2016) in Maryland reveals considerable local variation in the time families have before needing to recertify their eligibility, even within a state that has a 12-month eligibility period.

Beyond the duration of the eligibility period, our findings support the hypothesis that program instability is due to factors related to administrative hassles of program participation. Specifically, we extend the qualitative work of Adams and colleagues (Adams et al. 2002, 2008; see also Lowe and Weisner 2004) by documenting quantitative associations between burdensome aspects of subsidy enrollment and program exits. We find that subsidized families who reported that they had challenges with the subsidy application process and long wait times for application approval have an elevated risk of leaving the program. This result is a cause for concern because we know from our descriptive survey results that a high percentage of respondents report these kinds of experiences. In our multivariate models, we were unable to include items about problems with the recertification process given that not all survey respondents stayed in the program long enough to recertify their eligibility. But participants in the companion qualitative study reported a range of problems with the recertification process—from poor communication by the subsidy office about deadlines, to

difficulties completing paperwork, to delays in administrative processing—that provide clues about the kinds of recertification challenges that can result in a loss of benefits (Henly et al. 2017). The reauthorized CCDBG law encourages states to simplify administrative processes and improve consumer friendliness of services, for example, by eliminating midterm reporting requirements, by providing grace periods to assemble materials, and by offering multiple methods for clients to apply and recertify their eligibility for benefits. To the extent that states effectively implement these new CCDBG rules, reduced administrative burden may likely result, which could reasonably contribute to longer subsidy spells. Increased subsidy stability could, in turn, mitigate the other sources of instability in low-income families' lives.

The current study identifies families who experienced job loss in the early months of subsidy receipt (on the basis of self-reported survey data) and finds, as hypothesized, that these families faced an increased risk of subsidy exit during the observation period. The self-reported measure of employment instability used in this study differs from measures used in previous studies (Ha and Meyer 2010; Weber et al. 2014; Grobe et al. 2016); however, the overall finding is consistent with these studies. Subsidy exits associated with job loss may be due to program ineligibility or lack of understanding of program rules related to job search grace periods. Illinois subsidy rules allow parents 30 days to search for a job after an employment exit before losing program eligibility, but qualitative interviews reported elsewhere (Henly et al. 2017) suggest that few Illinois study respondents were aware of this provision, assuming they were no longer eligible for subsidized care after exiting a job. Thus, as states implement the job search grace period that is a requirement under the reauthorized CCDBG law, successful communication of the policy to clients will be important in order for it to effectively promote subsidy stability.

As with prior research on the work schedules of low-income workers and working parents (Henly et al. 2006; Sandstrom and Chaudry 2012; Clawson and Gerstel 2014; Lambert et al. 2014; Grobe et al. 2016), the jobs of child-care subsidy recipients in this study frequently involved nonstandard and variable hours, last-minute and unexpected work shifts, and limited schedule control. The current study is the first quantitative study that we know of to consider the independent association of these work schedule parameters to the risk of subsidy exit. As hypothesized, we find that both unexpected shifts and limited schedule control increase the risk of

subsidy exit, even net of the rich set of covariates included in the models. Contrary to our hypothesis, we do not find that variable hours and limited advance notice heighten the risk of subsidy exit. The latter null finding is somewhat surprising, especially given research that indicates that parents with variable and unpredictable schedules have difficulties finding child care to match their work schedules and have trouble meeting subsidy rules and maintaining subsidies (Grobe et al. 2016; Henly et al. 2017). It is possible that variable hours and limited advance notice create hassles for parents and child-care providers alike but not sufficiently to interfere with subsidy maintenance.¹⁰ Nevertheless, as noted above, we do find that jobs requiring unexpected work shifts and that granted workers limited schedule control are associated with elevated risks of subsidy exit. These findings suggest that beyond child-care reforms such as the reauthorized CCDBG law, there may be promise in the adoption of new laws to address work schedules themselves. Legislating stricter regulation of employer scheduling practices is unlikely to be favored at the federal level by the current administration. However, there are several legislative initiatives currently underway across municipalities and states that are designed to improve scheduling practices in precarious job sectors. San Francisco and Seattle, for example, have both enacted legislation that requires some employers to provide greater advance notice and to compensate workers for last-minute schedule changes. The outcomes of these efforts are as of yet unknown, but future research might evaluate whether new scheduling regulations stabilize subsidy program participation in addition to improving workers' employment and economic outcomes.

Given the problems that many low-wage workers confront in getting sufficient hours (Lambert, Haley-Lock, and Henly 2012), it is of concern that respondents with fewer work hours face a greater risk of subsidy exit (see also Grobe et al. 2008). This finding suggests that participants in low-hour jobs may not find the reduced value of the subsidy sufficient to justify the difficulties of maintaining enrollment, or perhaps low-hour jobs are

10. Given that our models include all variables in the regression simultaneously, it could also be that some of the work schedule items do not heighten the risk of exit above and beyond the other job characteristics, particularly job loss, since families with the most difficulties managing work and child care may leave their jobs altogether. However, multicollinearity was not an obvious concern based on the VIF values, as reported in the Method section.

unique in other ways (unaccounted for in our multivariate models) that complicate continued program enrollment. In the case of the two New York counties that have a 20-hour minimum work requirement, participants who were near that minimum hour level may have been at increased risk of dipping below it during the observation period and losing their eligibility for assistance.

We hypothesized and find that, regardless of child-care type, parents who experienced fewer child-care problems and viewed their child to be safe with his or her provider had a lower risk of leaving the subsidy program. It may be that parents who are at ease about their children's well-being are less likely to leave their work or change providers and therefore also more likely to remain on a subsidy. This finding is also consistent with Davis and colleagues' study (2014) that finds that parents' satisfaction with their child-care providers is related to a lower likelihood of changing care providers, although their study does not examine the link between provider satisfaction and subsidy instability.

We expected but did not find that parents would be at greater risk of subsidy exit if they used less flexible providers and providers who only offered standard hour care. It is possible that selection accounts for the lack of relationship observed. That is, participants who need flexible providers and providers who can watch children outside of daytime hours may be those who have them; those with less flexible providers and standard hour providers may not need them to maintain their subsidy because either their jobs do not require them or they have family members to respond to work demands (Emlen, Koren, and Schultze 2000).

Given mixed findings in extant research, we did not have a priori expectations about whether the type of child care per se would contribute to the risk of exiting the subsidy program. The findings reveal that controlling for our extensive set of covariates, including parental views of safety and flexibility of the child-care provider, families who used family child care, as compared to center users, had a lower risk of exiting the subsidy program. We find no difference in risk of exit between users of informal care and centers. It is worth noting that Pilarz and colleagues (2016), who conducted an analysis of administrative child-care subsidy payment records for a much larger sample of cases in the same four regions, also found that center users had shorter spells than those using family child care in the two Illinois regions; however, they did not find this to be true for the two New York counties. In New York, subsidy spells for users of informal care tended to be

shorter than subsidy spells for those in centers and family child care. It could be that because in the current study, the Illinois survey sample is larger than the New York sample, the Illinois respondents are driving the results around child-care type that we observe. Alternatively, it could be that the additional controls available from the survey and that are included only in the current study explain the differences found across the two studies. Regardless, future research would benefit from greater attention to the kinds of subsidy-related supports that providers across sectors offer to parents. Such knowledge could guide technical assistance efforts directed at centers, family child-care homes, and informal care arrangements to enable providers regardless of type to help families with program compliance and to support them to maintain subsidy enrollment when household, job, and residential circumstances that may threaten subsidy stability change.

Our observations of TANF-state interactions suggest that TANF operates differently in Illinois (where TANF recipients have a lower hazard of leaving the program than non-TANF recipients) than in New York (where TANF recipients face an increased risk of exit), but this is quite possibly an artifact of the study design. Specifically, all TANF participants in the Illinois sample were using the TANF program for employment reasons (due to the study's sampling strategy), but in the New York sample, many of the TANF participants were enrolled in job training or other work-readiness programs that were by design short-term or temporary placements. Had we sampled Illinois TANF recipients who use the subsidy program for reasons other than employment, we might have also found higher risks of exit relative to their non-TANF counterparts, as other studies have found (Meyers et al. 2002; Witte and Queralt 2005; Ha and Meyer 2010).

One strength of our sample is the inclusion of subsidy recipients who are immigrants, a demographic group whose subsidy use has received relatively limited attention to date. Past research suggests subsidy-eligible immigrants are less likely than their native-born counterparts to use government child-care assistance, including CCDF subsidies (Durfee and Meyers 2006; Walker and Schmit 2016). Our findings suggest that for immigrants who find their way onto the subsidy program, their spells are longer in duration than their nonimmigrant counterparts. In additional analyses not reported here, we find that the immigrant sample is also at lower risk of leaving their child-care provider during the study period (perhaps because of their longer subsidy spells) and that they disproportionately use the subsidy for center care, even though immigrants in the general population

may underutilize centers (Karoly and Gonzalez 2011). Of course, the immigrants with child-care subsidies in our sample likely differ in important ways from the general population of subsidy-eligible immigrants. They may enter the subsidy program after having found a stable child-care arrangement with a center that encourages and supports their subsidy use. In fact, in our companion qualitative study, immigrant participants spoke frequently about receiving support with the application and recertification process from their child-care providers. Overall, while the reasons for the longer immigrant subsidy spells that we observe are unclear, it is promising that child-care assistance may be helping the children of these parents experience greater stability in early care and education arrangements.

This study extends our understanding of instability in subsidy use by examining a rich set of employment, child-care, and subsidy experiences that can put families at risk of exiting the subsidy program. It is important, however, to note several limitations. First, the study does not address all the domains of instability that low-income families experience and that could affect their ability to maintain enrollment in child-care assistance. Residential instability is of particular concern (Desmond 2016), especially given high housing costs in and around Chicago and New York City. While our survey does not address housing instability per se, it does include a measure indicating whether the respondent moved and how many times he or she moved in the 12 months before the survey. In supplemental analyses (available by request from the authors), we find that adding this measure of residential mobility does not substantively change the results regarding key predictor variables, and moving one or two or more times (compared to not at all) does not heighten the risk of exiting the subsidy program during our observation period.

Second, as has already been noted, we are unable to test causal relationships between key explanatory factors—employment, child-care, and subsidy program experiences—and subsidy exits. Although we employed conventional tests in an effort to address sample selection and nonresponse, we nevertheless suggest that caution be taken in interpreting the results. We include several covariates in our models, yet there remain unobserved characteristics of families that could confound these associations and introduce bias. For example, families that are at an elevated risk of leaving the subsidy program may be less motivated to use child-care assistance and less committed to labor market involvement while their children are young. If this is the case, then our results may overstate the associations

between job loss and the risk for subsidy exits. Moreover, we are unable to tease out the contribution of subsidy program policies independent of the demographic and economic context of the local site in which they operate. As a result, the longer spells in New York counties may be at least partially explained by demographic and economic differences between the New York and Illinois sites.

A third limitation of this study is that measures of our key explanatory variables were self-reported and collected retrospectively. Thus, our estimates could suffer from recall bias if respondents who had difficulty accurately remembering their employment, child-care, and subsidy experiences differed systematically from those who did not. Importantly, our dependent variable—subsidy exit—is not subject to recall bias as it is based on administrative payment records (Krafft et al. 2015). Regarding subsidy exit, our data are limited to an 18-month observation period, which is sufficient for observing families through at least one eligibility and recertification cycle but is insufficient for examining families' lifetime use of the program. Over a longer period, we would observe more families exiting the program and would also be able to examine factors associated with families' reentry into the program, which is an important topic for future research.

As noted earlier, the results of this study are not directly comparable to past studies of subsidy spells because we follow each individual new entrant for the same length of time (18 months from individual entry onto the program) rather than using a fixed period and follow all new entrants who used the program at any point during that fixed period (e.g., Meyers et al. 2002; Grobe et al. 2008). We are unable to reestimate spell lengths using the methods of these prior subsidy studies because the period during which we sample new entrants is too short (ranging from 7 to 10 months across study sites), whereas prior studies have used a substantially longer period, from 24 months to 5 years (see, e.g., Davis et al. 2016; Grobe et al. 2016). Notwithstanding these methodological differences, this study confirms and extends past research on subsidy instability in important ways.

We provide evidence that, beyond client demographics, factors related to the subsidy program, parental jobs, and child-care arrangements all pose risks to subsidy stability. The study offers new knowledge about how employment instability and public benefit rules and practices shape clients' program experiences and, in turn, how subsidy (in)stability may operate as a mechanism through which stable employment and economic security are ultimately achieved or threatened. It is part of a growing body of sub-

sidy research, conducted in states and municipalities with diverse demographic, policy, and economic contexts, that while not directly generalizable beyond its geographically specific context, is contributing nuanced and policy-relevant knowledge about the dynamic nature of subsidy use and its potential as a stabilizing force in low-income families' lives. Policies that support continuity of subsidy receipt hold promise to also stabilize children's care environments, improve the education and employment outcomes of parents, and contribute more broadly to economic growth and societal well-being.

NOTE

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