



# Continuity of Subsidy Participation and Stability of Care in the Child Care Subsidy Program in Maryland

## Research Brief

Elizabeth E. Davis, Caroline Krafft, Rebecca Madill, and Tamara Halle  
University of Minnesota and Child Trends

### Introduction to the Maryland Child Care Administrative Data Analysis Cooperative Agreement

This research brief was developed as part of the Maryland Child Care Administrative Data Analysis Cooperative Agreement (MD CCADAC). The goal of the MD CCADAC is to use research to refine policies and practices in order to facilitate greater continuity and stability in subsidized child care, thereby making services more family-friendly and supportive of positive child outcomes. To achieve its goal, the MD CCADA is using child care subsidy administrative data from June 2007 onward to address three research objectives:

- (1) Describe longitudinal patterns in the continuity of subsidy spells and identify differences in these patterns by child, family, and community characteristics.
- (2) Examine the association between use of high quality care and continuity in subsidized care arrangements.
- (3) Examine whether Maryland's shift to a private, centralized subsidy case management system is associated with changes in the length of eligibility periods as well as voucher length.

This research brief presents the findings from the first research objective. The findings from the MD CCADA will have implications for children, parents, and child care providers as well as policymakers at the state and federal level. In addition, the MD CCADA aims to contribute to research methodology in the field of child care subsidy research by applying advanced statistical techniques to the analysis of child care subsidy data.

## ABSTRACT

In this study we analyzed administrative data on children receiving child care subsidies in Maryland between 2007 and 2014 in order to investigate the continuity of subsidy participation over time. The study found wide variation in subsidy continuity for different children, and overall patterns were fairly consistent across different years. The median spell length was 25 weeks, with a slight downward trend in recent years. One-quarter of subsidy participation spells were less than 12 weeks long, and almost one-quarter of spells lasted at least one year. After leaving, only about half of the children returned to the subsidy program, and of these, most returned within a year. Families receiving subsidy for training or education rather than employment had both shorter participation spells and shorter gaps between spells. Short spells of subsidy participation may undermine the achievement of the federal Child Care and Development Fund (CCDF) program goals of supporting families' economic self-sufficiency and supporting the healthy development of children.

## INTRODUCTION

The Child Care Subsidy program in Maryland provides financial assistance to help eligible low-income parents pay for child care while parents are working or participating in approved activities such as education or training. Parents choose a provider, which may be a licensed child care center, a registered family child care provider, or a legally unlicensed informal provider such as relative. In fiscal year (FY) 2014, an average of 18,000 children and 10,500 families received child care subsidies each month in Maryland (Maryland State Department of Education, 2014).

In the United States, child care subsidies provide important work support for low-income families, yet it is common for children to receive subsidies for only a short period of time. The instability of subsidy receipt has raised concerns about the instability of child care arrangements because research has shown links between instability of care and poor development outcomes for children (Adams & Rohacek, 2010; Sandstrom & Huerta, 2013; Tran & Weinraub, 2006). The purpose of this research brief is to examine the continuity of participation and stability of care for children participating in the Child Care Subsidy program in Maryland. To understand the experience of children receiving subsidies, we look at three measures of the dynamics of participation: how long children remain

continuously on subsidy; how long they remain with the same provider while subsidized; and once they leave, whether and how quickly they return to the subsidy program. We also examine characteristics of children and families that are related to the dynamics of participation and how subsidy spells and returns have changed over time.

## DATA AND METHODS OVERVIEW

The data used in this study were extracted from the Maryland CCATS (Child Care Administration Tracking System) and provided to the research team under a research data sharing agreement with the Maryland State Department of Education. All children in Maryland who received a child care subsidy for one or more weeks between June 2007 and September 2014 were included in the data. A child is considered to have received a child care subsidy in a given week when during that week she or he had a subsidized arrangement with a child care provider who was paid in part or in full by the Maryland subsidy program. Most of the analyses focus on “spells” of subsidy participation, where a spell is defined as a series of consecutive weeks receiving subsidy that ends only when a break of at least four weeks occurs. A spell with a specific provider is considered to end when a child does not receive subsidized care with that particular provider for at least four weeks.<sup>1</sup>

Some of the spells of subsidy receipt in the data began prior to the study period (before June 2007) and some continued after the end of the study period (September 2014). Spells beginning before the start of the study period are “left-censored.” These spells are excluded from the analysis because their final length cannot be known. Spells that continue past the end of the study period are called “right-censored” spells. Although we do not know the final length of these spells, we do know how long they have been so far. The analysis uses the Kaplan-Meier method to estimate the proportion remaining on a subsidy at each point in time, adjusting for right-censoring. Over the seven-year study period, 96,645 children began a spell of participation after June 2007, and these children are the focus of the analysis in the brief. The characteristics of these children and their families are described in Appendix Table A-1. See the Appendix for further details on the samples used in this brief.

In addition to examining spells of subsidy receipt and lengths of subsidized arrangements, we also investigate how often children return to the subsidy program after exiting and how quickly they do so. To examine children’s returns to the subsidy program, we rely on concepts similar to those underlying measures of subsidy participation. Akin to the idea of a spell of subsidy participation, we examine the length of gaps in participation, that is, the number of weeks in a row a child does not receive subsidy. This analysis included only gaps of four weeks or longer, consistent with our definition of an end of a spell of subsidy participation. When a child receives subsidy again for at least one week, the gap ends and this event is considered a return to subsidy. Because we are examining children who were receiving subsidy during the study period, no gaps are left-censored. Many gaps in participation, however, are right-censored, since many children have not returned to subsidy by the end of the study period, and may never do so. As with spells, the Kaplan-Meier method is used to account for these right-censored gaps.

Children may have multiple spells of subsidy participation or subsidized arrangements as well as multiple gaps observed in the data. Our analyses include all spells that are not left-censored and all gaps. The analyses thus represent the typical spell, arrangement spell, or gap—that is, how long a time we expect a child starting a span of subsidized child care to continue without a break, how long we expect a child starting a subsidized arrangement to remain in that arrangement, and how long a child who stops receiving subsidy typically remains without subsidized care.

---

<sup>1</sup> See Krafft, Davis, and Forry (2014) for a discussion of how the length of subsidy participation varies when different definitions of a break in subsidy participation are used.

## RESEARCH OBJECTIVES

The analysis summarized in this brief focused on three measures related to the dynamics of children's participation in the Maryland Child Care Subsidy program over time. As defined above, we examine the length, or duration, of three measures:

- 1) subsidy participation spells
- 2) subsidized arrangement spells
- 3) gaps in subsidy participation (if and how quickly children return to subsidized care after a break)

For each of these measures, we first provide descriptive information on the lengths for each measure, specifically the 25th, 50th (median) and 75th percentiles of the distribution of the lengths. We report what percentage of children end a spell, leave a subsidized arrangement, or return to subsidy at given intervals (e.g., by 13 weeks, 26 weeks, 52 weeks etc.). For each measure we also report how these percentages vary over time and for subgroups of children with different characteristics.

## FINDINGS

### 1. Length of continuous spells of subsidy participation

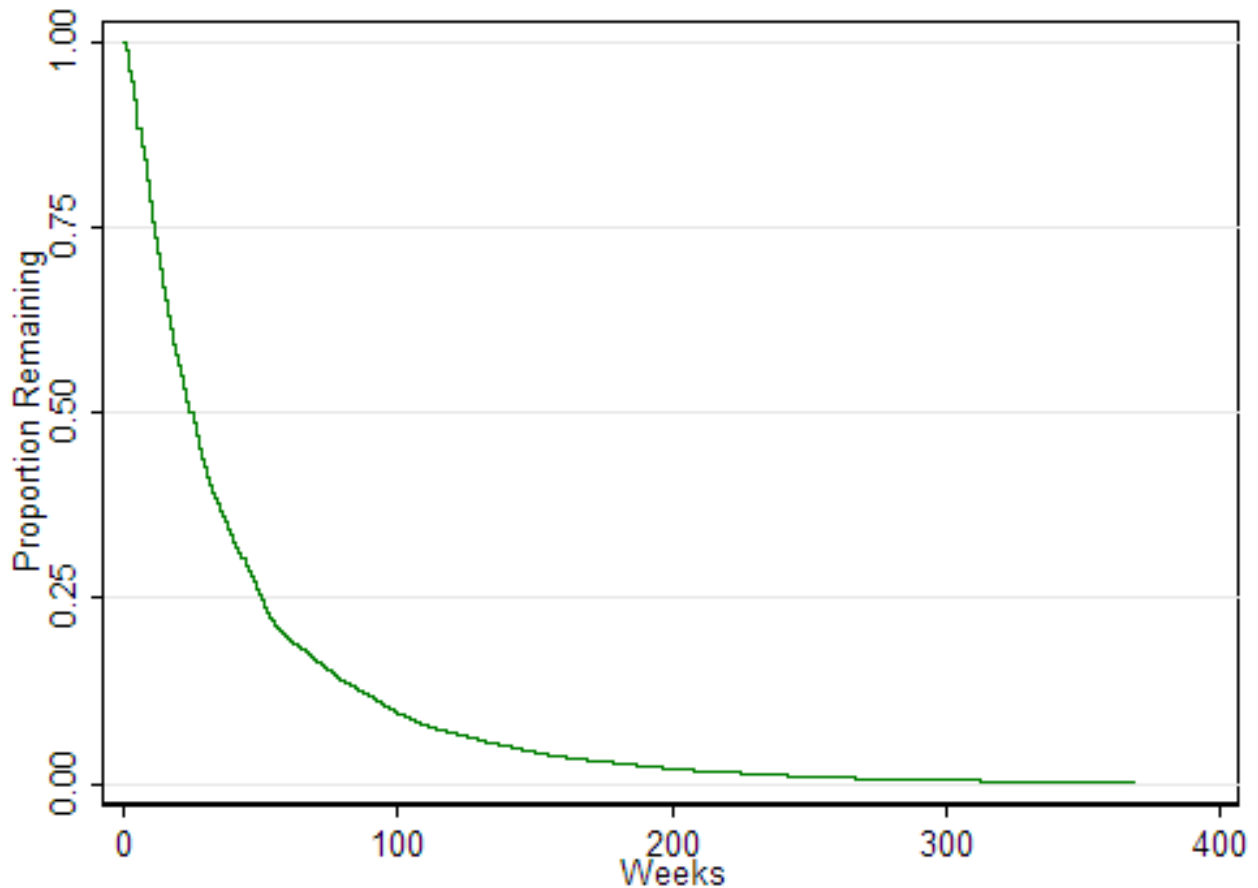
*For how long do children receive subsidies?*

Figure 1 shows the proportion of children continuing to participate in the subsidy program by the number of weeks since starting the participation spell (e.g., four weeks after starting, five weeks after starting, etc.).<sup>2</sup> It is evident from the figure that some children leave the subsidy program quickly, after a few weeks, while others have quite long continuous spells of participation extending one or two years or more. One-quarter of children have subsidy spells less than 12 weeks long and another quarter have spells of 50 weeks or more. The median spell length is 25 weeks, just short of half a year. Although our results are not directly comparable with results from other studies (because they use monthly data), a study done in 2014 found the median spell length in Maryland was slightly longer than the median across 35 states (Swenson, 2014).

---

<sup>2</sup> Recall that because the definition of a break in subsidy participation is based on having at least four weeks without subsidy, periods of no subsidized care that lasted one to three weeks are counted as part of the continuous spell of subsidy participation. A previous study using a one-week break to define subsidy participation finds similar results in terms of the overall pattern of subsidy spells, although there were more short spells and so the median spell length was about 20 weeks instead of 25. More information about the technical issues with regards to using one- vs. four-week breaks can be found in Krafft, Davis, and Forry (2014).

**Figure 1. Proportion of children continuously receiving a child care subsidy in Maryland, by number of weeks since starting spell**



Source: Authors' calculations based on Maryland child care subsidy administrative data.

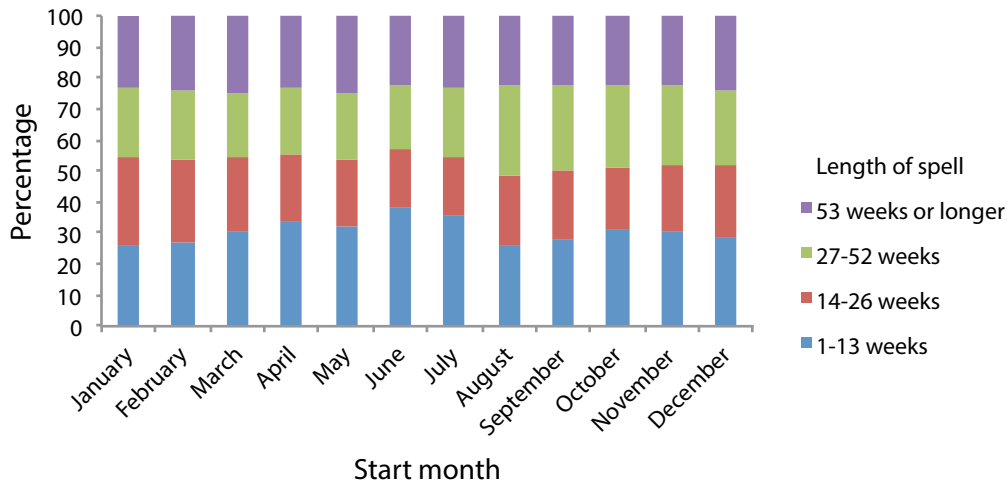
Note: Spell lengths were measured using the Kaplan-Meier method and include all non-left-censored spells for all children.

#### *Does the duration of child care subsidy participation vary by start month?*

While the length of children's subsidy spells did not vary dramatically by the calendar month in which the spell began, there were a few differences which were likely due to changing child care needs during the school year and summer months. More children had short spells (26 weeks or fewer) when their spells began in June or July (see Figure 2). In contrast, more children had longer spells (27 weeks or more) when their spells began in August, September and October.<sup>3</sup> This seasonality in spell lengths was not surprising given that child care needs change during the school year and summer, even for children less than five years old who may have school-age siblings or who are in school-year programs.

<sup>3</sup> Throughout the brief, we test the statistical significance of differences across characteristics using a Cox proportional hazards model, which accounts for multiple characteristics, and we note these differences in footnotes. After accounting for other characteristics, compared to children starting participation in January, children starting in April, June, July, October, November, and December had statistically significant differences in the probability of exit.

**Figure 2. Length of subsidy spells in weeks, by calendar start month**



Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Spell lengths were measured using the Kaplan-Meier method and include all non-left-censored spells for all children.

*How has the duration of child care subsidy participation changed over time?*

With seven years of data, we were able to investigate whether the continuity of subsidy participation in Maryland has shifted over time (Table 1). For the most part, the pattern has been relatively stable over time, with 25% of spells typically ending by 12 weeks, 50% ending by 26 weeks, and 75% ending in less than one year. However, there was some trend towards shorter spells of subsidy participation over the time period. Notably, spells that began in 2011, 2012 and 2014 had a median of only 21-22 weeks compared to 25-26 weeks in most other years.<sup>4</sup>

**Table 1. Distribution of spell lengths (in weeks) of children continuously receiving subsidy, by start year**

Start year	25 <sup>th</sup> percentile	50 <sup>th</sup> percentile (median)	75 <sup>th</sup> percentile
2007	12	27	50
2008	12	26	53
2009	12	26	51
2010	12	25	51
2011	10	22	46
2012	9	21	48
2013	11	26	51
2014	10	21	.
All years	11	25	50

Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Spell lengths were measured using the Kaplan-Meier method and include all non-left-censored spells for all children. The 75th percentile is missing for 2014 because at the end of the study period (September 2014) less than 75% of children who had started a spell of subsidy participation in 2014 had completed that spell.

<sup>4</sup> After accounting for other characteristics, compared to spells that started in 2007, children were significantly less likely to exit subsidy if their spell started in 2008, 2009, or 2013, while children whose spells started in 2011 and 2014 were significantly more likely to exit (there were no significant differences in 2010 or 2012).

*Does the continuity of child care subsidy participation vary with child or family characteristics?*

Certain characteristics of the child and family were associated with variation in subsidy continuity. Families that received Temporary Cash Assistance (TCA) were more likely to exit and therefore tended to have shorter spells of subsidy participation than those not receiving TCA. After 13 weeks, only 64% of families on TCA continued to receive subsidy compared to 74% of families not on TCA. After a year, 20% of families on TCA were still on subsidy compared to 26% of those not on TCA.<sup>5</sup>

For federal reporting purposes, families are identified as receiving subsidy for one of four reasons: employment; training or education; a combination of employment and training or education; and “other” (including protective services). The continuity of subsidy participation varied for families depending on their reason for receiving subsidy. Families whose reason for subsidy was employment were less likely to exit (and so had longer spells) than those whose reason was employment and training or education.<sup>6</sup> Nearly three-quarters (71%) of employed families were still receiving subsidy after 13 weeks compared to 69% of those with both employment and training, and 67% for those with just training or education. After one year, the percentage of families still receiving subsidy was 25% for employed families compared to 19% for those who had started receiving subsidy for training or education.

Single parents were slightly less likely to exit subsidy and so had slightly longer spells than two-parent families.<sup>7</sup> There were no differences in subsidy continuity by gender, and little difference by race or ethnicity, but younger children had longer spells than older children.<sup>8</sup> Three-quarters of infants were still receiving subsidy at 13 weeks compared to 72% of toddlers, 70% of preschool-age children, and 66% of school-age children. After a year, 30% of those who started a spell as an infant were still on subsidy compared to 20% of school-age children. Overall these patterns of relationships between subsidy continuity and family or child characteristics were consistent with earlier studies in Maryland and studies in other states (Davis, Krafft, & Tout, 2014; Forry, Welti, Davis, Krafft, & Daneri, 2012; Grobe, Weber, & Davis, 2008; Meyers, Peck, Davis, et al., 2002; Swenson, 2014).

---

<sup>5</sup> After accounting for other characteristics, children from families that received TCA were significantly more likely to exit subsidy than those that did not receive such benefits. Note that whether or not the family received TCA is based on their status in the first month of the child care subsidy spell. They may have left TCA (or started receiving TCA) during the subsidy spell.

<sup>6</sup> Compared to those in employment and training or education, those in employment only were significantly less likely to exit subsidy; those in training or education were significantly more likely to exit subsidy; and those with other reasons were not statistically significantly different, after accounting for other characteristics.

<sup>7</sup> Compared to two parent families, children in single parent families were significantly less likely to exit subsidy after accounting for other characteristics.

<sup>8</sup> After accounting for other characteristics, there were no significant differences by gender. However, after accounting for other characteristics, white children and Hispanic children were significantly less likely to exit subsidy compared to black children. There were not significant differences for children of other races/ethnicities. Additionally, there were significant differences by child age (older children were significantly more likely to exit than infants).

**Table 2. Percentage of children continuously receiving subsidy, by number of weeks since starting spell**

Number of weeks since starting spell:	13	26	52	104	156
<b>Gender</b>					
Male	69	47	23	9	4
Female	70	47	23	9	4
<b>Race/ethnicity</b>					
Black	70	47	23	9	4
White	70	48	24	10	4
Hispanic	69	46	21	8	4
Other	66	44	20	7	3
<b>Age</b>					
Infant	75	54	30	14	7
Toddler	72	49	26	10	4
Preschooler	70	46	21	7	3
School age	66	43	20	7	3
<b>Parents</b>					
Two parents	68	44	20	7	3
Single parent	70	47	23	9	4
<b>TCA receipt</b>					
No TCA/TCC	74	53	26	10	5
TCA	64	41	20	7	3
<b>Reason for subsidy</b>					
Employment and training/education	69	45	21	8	3
Employment	71	49	25	10	4
Training/education	67	41	19	6	2
Other	64	41	19	7	3
<b>Total</b>	70	47	23	9	4

Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Spell lengths were measured using the Kaplan-Meier method and include all non-left-censored spells for all children.

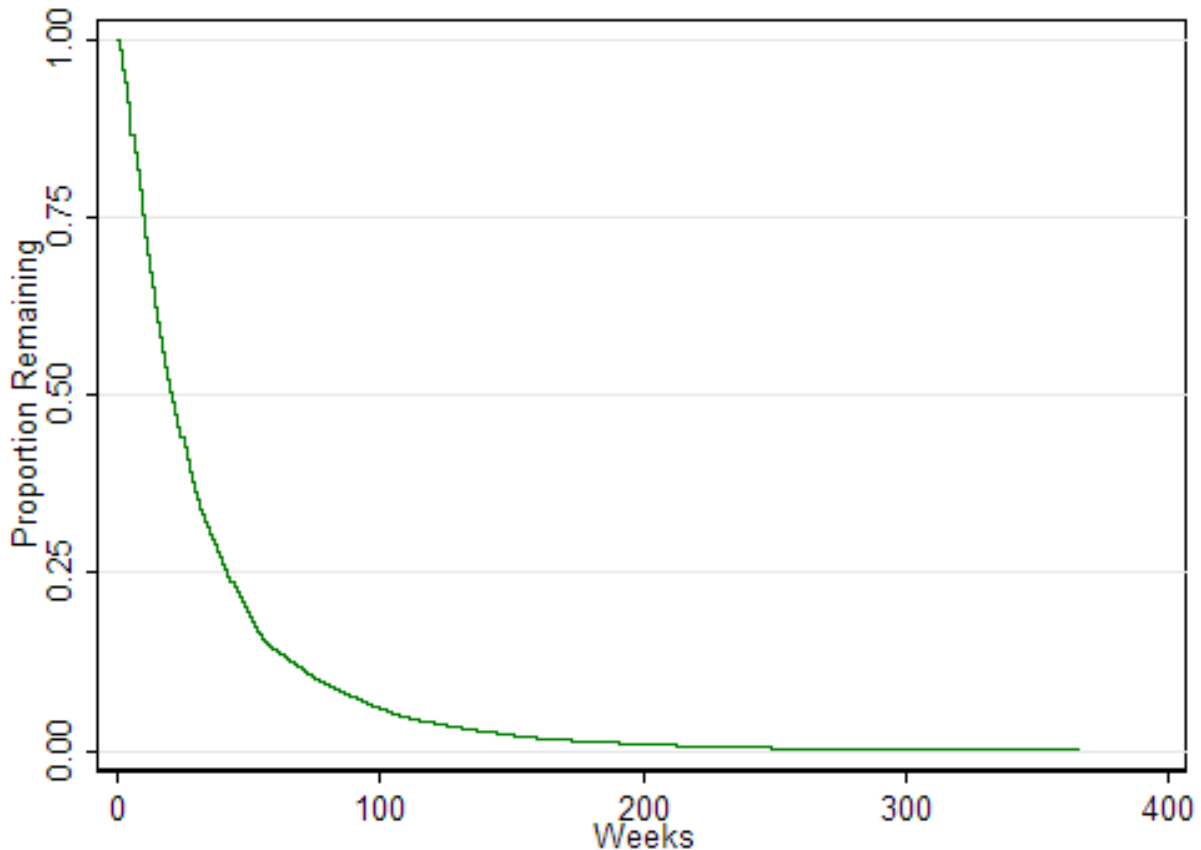
## 2. Continuity of subsidized care arrangements

*For how long do children stay in a particular caregiving arrangement while receiving subsidy?*

Within a spell of subsidy participation, children may have more than one provider, either at the same time or because the parent moved the child from one provider to another. Whereas Research Objective 1 investigated the length of a subsidy spell, Research Objective 2 investigates the stability of subsidized care *arrangements*

within a spell of subsidy participation (i.e., the length of time in the same arrangement).<sup>9</sup> As shown in Figure 3, the proportion of children continuing in a subsidized arrangement follows a similar pattern as in Figure 1, which showed the proportion remaining on subsidy. One-quarter of children had left the subsidized provider by 10 weeks, and the median subsidized arrangement lasted 21 weeks. Thus the length of subsidized arrangement spells was slightly shorter than subsidy participation spells themselves.

**Figure 3. Proportion of subsidized arrangements continuing by week**



Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Spell lengths were measured using the Kaplan-Meier method and include all non-left-censored spells for all provider-child combinations.

Subsidized arrangements in licensed family child care tended to be longer than those in centers, with informal arrangements falling in between. More than two thirds (67%) of subsidized family child care arrangements lasted at least 13 weeks, compared to 64% of subsidized center arrangements. By 26 weeks, only 40% of center arrangements continued compared to 43% of family child care arrangements. The difference persisted over time, with 20% of family child care arrangements lasting one year compared to 16% of center-based subsidized arrangements.<sup>10</sup>

<sup>9</sup> The administrative data provides information on providers only while participating in the subsidy program.

<sup>10</sup> After accounting for other child and family characteristics, compared to centers, children were significantly less likely to exit family care and significantly more likely to exit informal care.



**Table 3. Percentage of arrangements continuing, by type of arrangement and number of weeks since starting spell**

Number of weeks since starting spell:	13	26	52	104	156
<b>Type</b>					
Center	64	40	16	5	2
Family	67	43	20	7	3
Informal	66	39	15	5	2
<b>Total</b>	65	41	17	5	2

Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Spell lengths were measured using the Kaplan-Meier method and include all non-left-censored spells for all provider-child combinations.

*How many different arrangements do children have during a single spell of subsidy participation?*

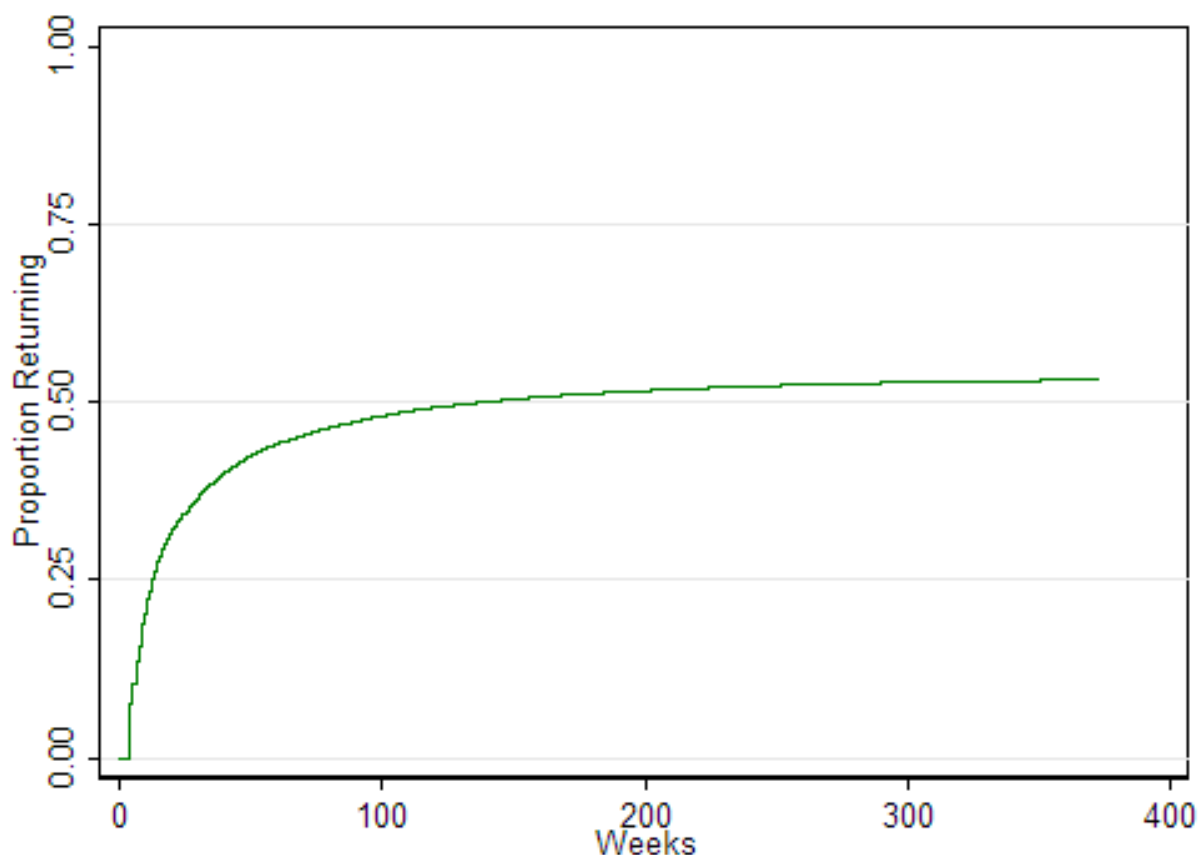
Over all the weeks of subsidy data, children had on average 1.2 providers during a single spell of subsidy participation, which includes both children using more than one provider concurrently and children who switched from one provider to another during the spell. Most children (84%) had only one provider during a subsidy participation spell, 12% had two providers, and 3% had three providers. Only 1% of children had four or more providers during a single subsidy participation spell.

### **3. Returning to subsidy**

*When children stop receiving subsidy, how likely are they to start again?*

In order to analyze whether children return to the subsidy program and how quickly, we calculated the proportion returning after a gap in participation of at least four weeks. Figure 4 shows the cumulative proportion of children who have returned at each point in time. Many children do not return for another spell of participation, while some return quickly. After exiting subsidy, 26% returned within 13 weeks, 35% within 26 weeks and 43% within one year. One-quarter of children returned to the subsidy program within 12 weeks, but the proportion returning does not reach 50% until 139 weeks (over 2.5 years). Returns to subsidy after two years are very unusual.

**Figure 4. Proportion of children returning to subsidy by number of weeks since start of gap**



Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Spell lengths were measured using the Kaplan-Meier method and include all gaps for all children.

#### *Do returns to subsidy vary with child or family characteristics?*

Certain subgroups of children and families were more likely to return to subsidy. Families receiving TCA at the time of subsidy exit were considerably more likely to return to subsidy than those not receiving TCA. About one-quarter of each group (TCA and no TCA/TCC) had returned by 13 weeks, but after one year, 55% of those who had been on TCA at the time of subsidy exit returned to subsidy compared to 45% of those not on TCA.<sup>11</sup> Families in education and training (who may have been on TCA) were also more likely to return to subsidy compared to families whose reason for subsidy was employment.<sup>12</sup> Black and Hispanic families were more likely to return to subsidy quickly, as were single parents.<sup>13</sup> Infants were more likely to return to subsidy compared to children in other age groups.<sup>14</sup> There were no differences in returns by gender.<sup>15</sup>

<sup>11</sup> After accounting for other characteristics, those who had been receiving TCA were significantly more likely to return to subsidy.

<sup>12</sup> Controlling for other characteristics, compared to those whose reason was employment and training or education, those whose reason had been employment only were significantly less likely return, but other reasons and education and training only were no different.

<sup>13</sup> After accounting for other characteristics, compared to blacks, whites were significantly more likely to return, Hispanics significantly less likely to return, and other races/ethnicities were no different. Compared to children in two-parent families, children in single-parent families were significantly more likely to return.

<sup>14</sup> Compared to infants, all older age groups were significantly less likely to return.

<sup>15</sup> There were also no significant differences by gender after accounting for other characteristics.

**Table 4. Percentage of children returning to subsidy within various weeks, by characteristics at start of break**

Number of weeks since starting gap:	13	26	52	104	156
<b>Gender</b>					
Male	26	35	43	48	51
Female	26	35	43	48	51
<b>Race/ethnicity</b>					
Black	27	36	45	50	53
White	23	30	36	39	41
Hispanic	27	33	39	44	45
Other	24	33	40	45	47
<b>Age</b>					
Infant	31	42	52	60	64
Toddler	29	40	50	57	60
Preschooler	27	37	44	49	52
School age	24	32	39	43	45
<b>Parents</b>					
Two parents	25	32	38	42	44
Single parent	26	36	43	49	51
<b>TCA receipt</b>					
No TCA/TCC	26	33	40	45	47
TCA	27	38	48	55	58
<b>Reason for subsidy</b>					
Employment and Training/Education	28	38	45	50	52
Employment	26	34	41	46	48
Training/Education	29	39	49	55	58
Other	27	38	48	55	57
<b>Total</b>	26	35	43	48	51

Source: Authors' calculations based on Maryland child care subsidy administrative data.

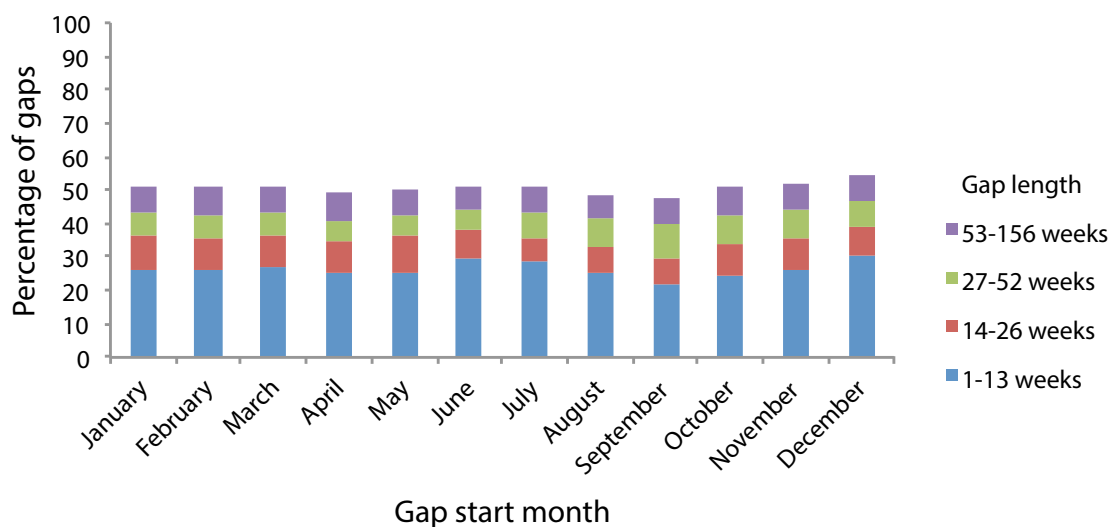
Note: Spell lengths were measured using the Kaplan-Meier method and include all gaps for all children.

#### *Does the length of child care subsidy participation gaps vary by gap start month?*

Given that there was seasonality in the start and length of subsidy participation spells, it was not surprising to find that there was also seasonality in the patterns of returns to the subsidy program. The percentage of children who returned to the subsidy program after exiting was lowest for those who exited in September (47%) and highest in December (54%). When children left subsidy in June, July, or December, 29-30% of them returned within 13 weeks. The percentage returning within 13 weeks was lower—between 25% and 27%—in most other months.<sup>16</sup> This seasonality suggests that some of the instability in subsidy participation may be related to school-year and summer changes in child care, but it may also be related to seasonal changes in parental employment.

<sup>16</sup> After accounting for other characteristics, compared to breaks starting in January, children were significantly less likely to return for breaks starting in April, September, or October, but significantly more likely to return after breaks starting in June or December.

**Figure 5. Percentage of children returning to subsidy by length of gap in participation and gap start month**



Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Gap lengths were measured using the Kaplan-Meier method and include all gaps for all children.

*How has the rate of return to the Child Care Subsidy program changed over time?*

The percentage of children returning to the subsidy program in Maryland has not changed dramatically over the seven years of study. One-quarter of the children who exit returned in about 12 or 13 weeks, and about half returned at some point during the following few years. But about half of children in all years did not return.<sup>17</sup>

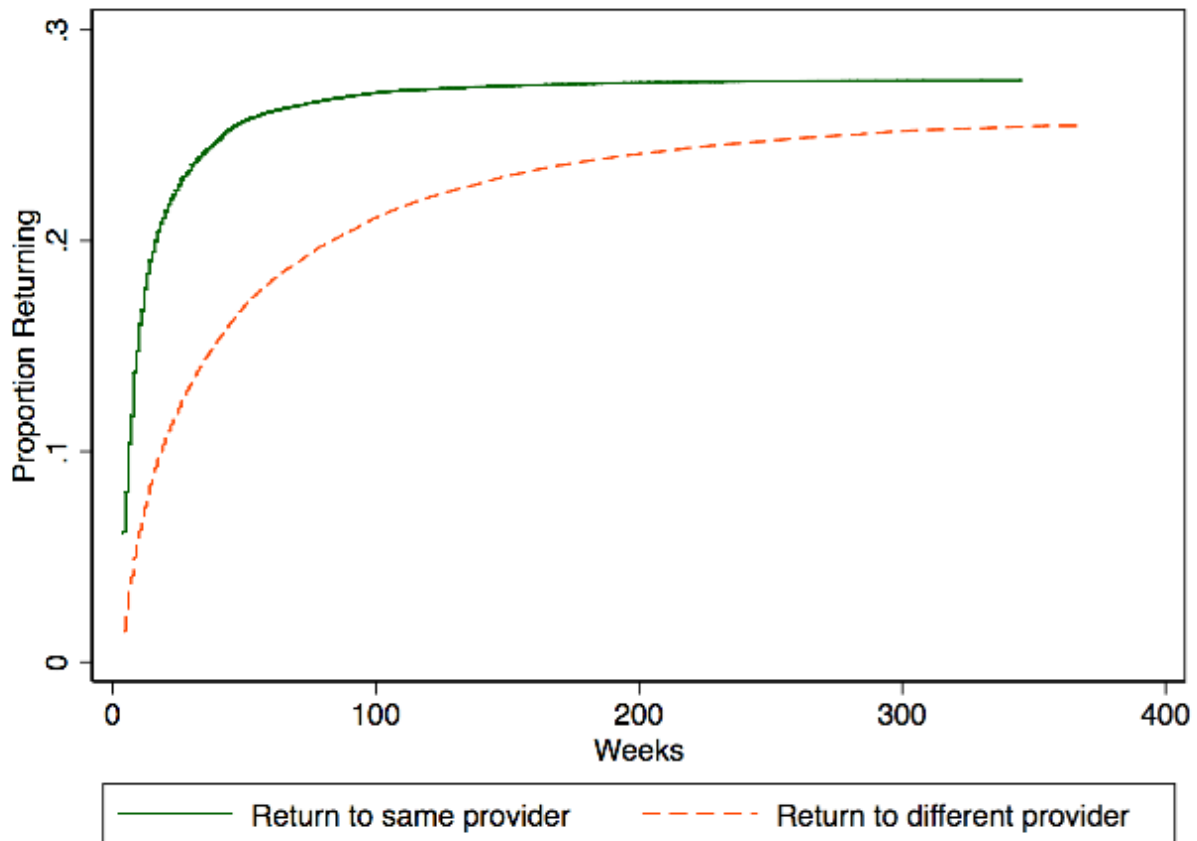
*Do children return to the same provider or a different one?*

When children return to the subsidy program after a break, some return to the same arrangement that was being subsidized at the time of the child's exit from the subsidy program.<sup>18</sup> Others have a different arrangement when they return to subsidy. As shown in Figure 6, children who return to the same arrangement tended to do so more quickly than those who returned with a different arrangement. Of those who exited, 18% returned to the same provider within 13 weeks, compared to 8% of those who returned to subsidized care with a different provider. Both lines in Figure 6 level off, which indicates that fewer children returned as the time since exit grew. The steeper line for returns to same provider indicates that while children returned more quickly to the same provider, few children returned to the same provider after a break of a year or more.

<sup>17</sup> After controlling for other characteristics, compared to children whose breaks started in 2007, children in later years were all significantly less likely to return, although the differences in 2013 and 2014 were smaller than earlier years.

<sup>18</sup> They may have, in fact, remained in this arrangement during the break in subsidy but the administrative data only includes information about a child's care while receiving the child care subsidy.

**Figure 6. Proportion of children returning to subsidized care with the same or a different provider, by number of months since start of break**



Source: Authors' calculations based on Maryland child care subsidy administrative data.

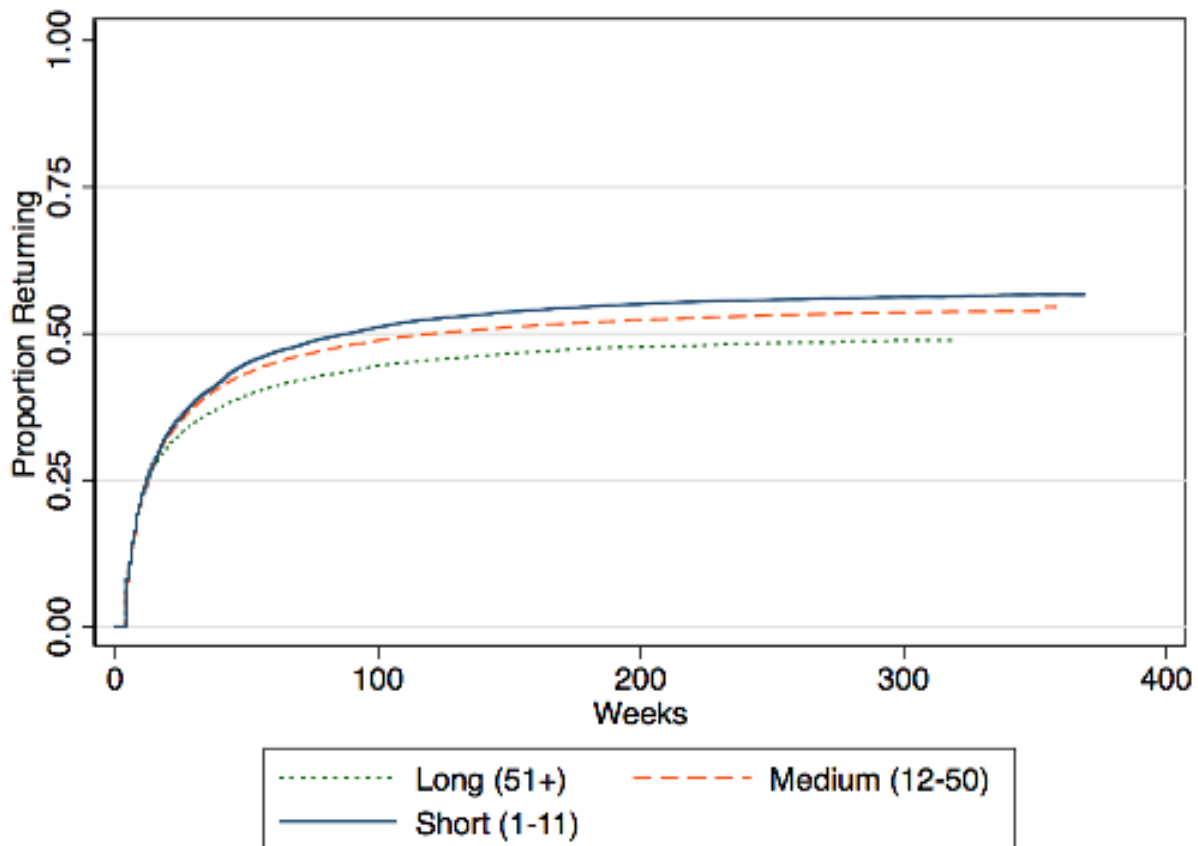
Note: Gap lengths were measured using the Kaplan-Meier method and include all gaps for all children.

*Does the probability of return vary by the length of time previously spent receiving subsidy?*

A rapid return to the subsidy program after a quick exit (i.e., a short participation spell followed by a short gap) may be indicative of multiple disruptions in the child's life and care arrangements. In Figure 7, we plot the percentage returning to the subsidy program dividing children into three groups based on the length of the preceding subsidy spell.<sup>19</sup> Children whose spell of subsidy participation was short, defined as lasting between one and 11 weeks, returned to the subsidy program more often in the long run, compared to those with longer subsidy spells. While patterns were very similar in the short run, with 25% of children returning in 12 weeks regardless of the preceding spell length, there were some differences in the long run. After 52 weeks, 45% of those with short (1-11 week) spells returned, 44% of those with medium (12-50 week) spells returned, and 40% of those with long (51+ week) spells returned.

<sup>19</sup> Only when the preceding spell is not left-censored is the gap included in this analysis.

**Figure 7. Proportion of children returning to subsidized care by length of preceding spell and week since subsidy exit**



Source: Authors' calculations based on Maryland child care subsidy administrative data.

Note: Gap lengths were measured using the Kaplan-Meier method and include all gaps when the preceding spell is not left-censored for all children.

## SUMMARY AND CONCLUSIONS

In order to better understand the experiences of families and children receiving child care subsidies in Maryland, we analyzed data on weekly subsidy participation to investigate the patterns of subsidy continuity. Data for these analyses came from 2007 to 2014, which was prior to important changes in the administration of the Maryland Child Care Subsidy program.

**Length of continuous spells of subsidy participation.** We asked several questions related to the stability of children's care. First, we examined the length of children's spells of subsidy participation. It is useful to know the typical length of subsidy spells within Maryland, as a short subsidy spell may indicate that a child is unable to stay in a particular care arrangement. Research indicates that less stable arrangements are associated with poorer child outcomes (Adams & Rohacek, 2010; Sandstrom & Huerta, 2013; Tran & Weinraub, 2006). We found that a child in Maryland who received subsidized child care typically participated for 25 weeks (just shy of six months).

Why do so many children exit the Child Care Subsidy program within six months? One reason may be the complicated eligibility re-determination process. The administrative process is difficult for many families, and families' eligibility may change due to employment and income changes (Grobe, Weber, & Davis, 2008; Ha & Meyer, 2010; Michalopoulos, Lundquist, & Castells, 2010). For example, researchers found that families were more likely to exit around the same time that they must recertify their eligibility (Grobe, Weber, & Davis, 2008).

Maryland has already taken steps to improve the likelihood that families do not exit the subsidy system due to the burden of the redetermination process. Maryland has a policy of allowing 12-month eligibility redetermination periods; however, recent analyses showed that eligibility redetermination periods were often shorter than 12 months (Davis, Krafft, Forry, & Tout, 2014). Maryland has also recently changed their subsidy administration process by shifting from county-based caseworkers to a private, centralized system of subsidy administration. Future studies will be needed to compare the length of subsidy spells before and after these important changes to Maryland's subsidy program. Future research should also examine whether families were still eligible for subsidized care when they exited the subsidy program.

**Length of continuous spells in a particular subsidized arrangement.** To better understand the stability of care for subsidized children, we asked how long a child typically stayed with a *particular caregiving arrangement* while receiving subsidy. We found that in Maryland the typical subsidized child care arrangement lasted for 21 weeks or less (about 5 months). Again, the length of time with a particular provider is important because it indicates whether children have unstable caregiving experiences.

It is important to note that administrative data has certain limitations when examining the length of time children spend in a particular arrangement. That is, administrative data only include data on children's *subsidized* arrangements. We cannot know if a child stayed with the same provider after exiting the subsidy program. Some providers may reduce the price—or even provide free care—for parents who no longer receive subsidies. Alternately, some parents may increase their income and be able to pay for care without a subsidy. Future studies may be able to obtain data from integrated, longitudinal early childhood data systems in order to have a more complete picture of children's child care experiences both in and out of the subsidy system.

Characteristics of the child care program may influence the length of time that a child spends in a particular subsidized arrangement. Using program accreditation status as a proxy for program quality, future analyses will examine whether there is a link between the quality of the child care program and the length of time that a child spends in an arrangement. It may be that accredited programs foster continuity because they offer families more support. It is also possible that parents who choose accredited care will not be able to afford these high-quality care arrangements long-term, and will thus have less continuity in care arrangements.

**Children's exits from and returns to subsidy participation.** We found that about half of the children who left subsidy returned for another spell of subsidy participation within two years. It is important to examine the frequency of return because children who have short spells of subsidy participation, short gaps, and quick returns—so-called “cyclers”—are likely to have disruptive caregiving experiences. Indeed, we found considerable variation in the length of subsidy participation spells and in gaps between spells for those who return. Some children participated continuously for a year or more: almost one-quarter of spells lasted at least a year. Yet many spells were short: one-quarter of spells were less than 12 weeks long. Some children experienced a short spell of subsidy participation, a short gap, and a quick return to subsidy participation. These “cyclers” often returned to the same provider. After leaving the subsidy program, 26% of children returned within 13 weeks (with 18% returning to the same provider). Only about half of children returned to the subsidy program, however, so a large number of children had only one spell of subsidy participation in the seven years of data.

Due to the limitations of administrative data, we cannot know why children did not return to the subsidy program. In some cases, exiting the subsidy program may be due to a move to Maryland's free pre-kindergarten program. Future research should investigate the impact that Maryland's pre-K program has had on children's experiences in child care. Specifically, it will be interesting to know whether subsidy-eligible children are, indeed, moving to public pre-K or other arrangements after they exit and do not return to the subsidy system. Further, it would be useful to know whether or not the care children receive in subsidized community-based programs is comparable in quality to other child care in the community, including public pre-K. Again, integrated, longitudinal early childhood data systems will make it possible to examine the type of care children receive both in and out of the subsidy system.

**Child characteristics and subsidy experiences.** Families with certain characteristics had more unstable subsidy use: Families on TCA and those receiving subsidy for training or education had both shorter spells and shorter gaps between spells. Those with a short spell of participation returned more quickly than those with longer spells. Children in single-parent families had longer spells but were more likely to return. Most of these differences were not very large, however.

**Subsidy patterns over time.** The patterns of subsidy dynamics in Maryland have been relatively stable over the past seven years. There was an overall trend toward a shorter median spell length between 2007 and 2014, although 2013 was an exception (with a median spell length of 26 weeks, the same as in 2008). In addition, families were slightly less likely to return in more recent years than in 2007.

**Conclusion.** The federal Child Care and Development Fund (CCDF), which provides funding to states for child care subsidy programs, has dual goals of supporting families' economic self-sufficiency and supporting healthy development of children. Short spells of subsidy participation may undermine the achievement of both of these program goals. As described above, administrative data allows us to observe the patterns of subsidy participation and returns, but we have little information on why families leave the subsidy program and why some of them return quickly while others do not. Understanding these reasons will provide further information about whether and when disruptions in subsidy participation may negatively impact families and children. Other studies have identified a number of factors related to subsidy exits, including job loss, changes in hours of work, changes in family composition, and eligibility redetermination requirements (Grobe, Weber, & Davis, 2008; Ha & Meyer, 2010; Michalopoulos, Lundquist, & Castells, 2010). In addition, opportunities for families to move children to other publicly funded child care programs, such as public pre-kindergarten, may be affecting subsidy participation patterns. Future research should continue to explore these possibilities, as well as new questions such as the particular characteristics of the child care programs that may influence the length of time that a child spends in a particular subsidized arrangement.

Overall, the patterns of subsidy continuity in Maryland were similar to those in other states and relatively stable over time. In part because of concerns over short spells of subsidy use demonstrated by research in a number of states, congressional reauthorization of the Child Care and Development Block Grant Act in 2014 set additional program goals to improve child care quality and the continuity of care. It will be important to monitor the length of subsidy spells in Maryland in the years ahead to track the effects of changes in the subsidy eligibility re-determination process and program changes based on the 2014 federal legislation.



## REFERENCES

- Adams, G., & Rohacek, M. (2010). *Child Care Instability: Definitions, Context, and Policy Implications*. Washington, DC: Urban Institute.
- Davis, E. E., Krafft, C., Forry, N., & Tout, K. (2014). *Implementation of 12-Month Child Care Subsidy Eligibility Redetermination: A Case Study from Maryland*. Bethesda, MD: Child Trends.
- Davis, E. E., Krafft, C., & Tout, K. (2014). *Stability of Subsidy Use and Continuity of Care in the Child Care Assistance Program in Minnesota*. Bethesda, MD: Child Trends.
- Forry, N. D., Welti, K., Davis, E. E., Krafft, C., & Daneri, P. (2012). *Subsidy Continuity in Maryland*. Bethesda, MD: Child Trends.
- Grobe, D., Weber, R. B., & Davis, E. E. (2008). Why Do They Leave? Child Care Subsidy Use in Oregon. *Journal of Family and Economic Issues*, 29(1), 110–127.
- Ha, Y., & Meyer, D. R. (2010). Child Care Subsidy Patterns: Are Exits Related to Economic Setbacks or Economic Successes? *Children and Youth Services Review*, 32(3), 346–355.
- Krafft, C., Davis, E. E., & Forry, N. D. (2014). *Continuity of Child Care Subsidy Receipt: Why Definitions of Spells and Gaps Matter*. Bethesda, MD: Child Trends.
- Maryland State Department of Education. (2014). Office of Child Care: Operational Data and Reports. Retrieved from [http://www.marylandpublicschools.org/MSDE/divisions/child\\_care/Reports.htm](http://www.marylandpublicschools.org/MSDE/divisions/child_care/Reports.htm)
- Meyers, M. K., Peck, L. R., Davis, E. E., Collins, A., Kreader, J. L., Georges, A., Weber, R. B., Schexnayder, D., Schroeder, D., & Olson, J. A. (2002). *The Dynamics of Child Care Subsidy Use: A Collaborative Study of Five States*. National Center for Children In Poverty, Columbia University, Mailman School of Public Health.
- Michalopoulos, C., Lundquist, E., & Castells, N. (2010). *The Effects of Child Care Subsidies for Moderate-Income Families in Cook County, Illinois*. OPRE 2011-3, Washington, DC: Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services.
- Sandstrom, H., & Huerta, S. (2013). *The Negative Effects of Instability on Child Development: A Research Synthesis. Low-Income Working Families Discussion Paper No. 3*.
- Swenson, K. (2014). *Child Care Subsidy Duration and Caseload Dynamics: A Multi-State Examination*. U.S. Department of Health and Human Services, Office of the Assistant Secretary for Planning and Evaluation.
- Tran, H., & Weinraub, M. (2006). Child Care Effects in Context: Quality, Stability, and Multiplicity in Non-Maternal Child Care Arrangements during the First 15 Months of Life. *Developmental Psychology*, 42(3), 566–82.

## APPENDIX 1. SAMPLE AND NUMBER OF OBSERVATIONS

This study is based on data from the Maryland Child Care Subsidy program. Specifically, data were extracted from the Maryland CCATS (Child Care Administration Tracking System) and were shared by the Maryland State Department of Education under a research agreement. The data included weekly information on subsidy receipt and covered the period from June 25, 2007 to September 28, 2014. In this section we describe the samples and number of observations for each of our three outcomes: subsidy participation spells, subsidized arrangement spells, and gaps in subsidy participation.

For the analysis of subsidy participation spells, there are 7,632,280 observations, where an observation is a child-week, that is, weeks in which a child received subsidized child care services. In the study period we observe 109,371 unique children who received a child care subsidy for at least one week, 12,726 of whom had only left-censored spells. Once we exclude these children, the remaining 96,645 unique children are the sample we analyze in this study. There are 6,318,801 observations on the child-week level in our analysis sample once left-censored spells are excluded. This approach uses “entrants” into subsidy to represent the subsidy program caseload.<sup>20</sup> We use the characteristics of the child and family in the first week of each spell in describing the relationships between duration of subsidy receipt and child and family circumstances. The characteristics of the caseload at a particular week are likely to be different because the children who remain on subsidy for longer periods of time appear in the data for more weeks and may have different characteristics.

When examining arrangement continuity, we are essentially analyzing how long a child will typically spend in subsidized care with a provider. In these analyses, a particular combination of week, provider, and child is treated as a unique observation. After excluding left-censored arrangements (those that began prior to June 25, 2007), we observe 168,777 unique child-provider combinations. For arrangement continuity, we have 6,690,212 observations, where an observation is a unique combination of child, provider, and week. In describing the characteristics of providers, we use the characteristics from the first week of the arrangement spell.

When we analyze gaps in subsidy participation and whether or not children return to the subsidy program—as was the case for spells of subsidy receipt—we use weekly data. There is no left censoring in this sample because we are observing children after they exit the subsidy program and thus the start of all gaps is observed. The gap data include 102,007 unique children who had received subsidy for at least one week in the study period but then did not receive subsidy for at least four weeks. These data include 19,953,286 observations, specifically child-weeks for children who have exited subsidy. We discuss the duration of gaps and the chances of returning for subgroups using the characteristics of the child and family in the last week of subsidy receipt before exit because we do not have data after they exit subsidy.

---

<sup>20</sup> Some “entrant” children would have participated in the program at some time prior to June 25, 2007. Thus, the spells included in the study are not necessarily the first spells they ever had, just the not-left-censored spells in the study period. The approach, of using “entry cohorts” into the program (i.e. excluding children who only had left-censored spells of participation) is standard in studies of program participation duration.

**Table A-1 Characteristics of children participating in subsidy at start of non-left-censored spells (percentage)**

<b>Gender</b>	
Male	50
Female	50
<b>Race/ethnicity</b>	
Black	80
White	15
Hispanic	4
Other	1
<b>Age</b>	
Infant	16
Toddler	19
Preschooler	28
School age	37
<b>Household size</b>	
1	3
2	23
3	31
4	23
5+	20
<b>Parents</b>	
Two parents	7
Single parent	93
<b>TCA receipt</b>	
No TCA/TCC	57
TCA	43
<b>Reason for subsidy</b>	
Employment and Training/Education	8
Employment	70
Training/Education	19
Other	3
<b>Total</b>	<b>100</b>

Source: Authors' calculations based on Maryland child care subsidy administrative data.

**Table A-2 Characteristics of subsidized arrangements at start of non-left-censored arrangement spells (percentage)**

Type of care	
Centers	52
Family	32
Informal	16
<b>Total</b>	<b>100</b>

Source: Authors' calculations based on Maryland child care subsidy administrative data.

### Definitions of terms used in this study

**Spell:** A "spell" measures the length of time that a child participated in the subsidy program without a break. For this study, a spell of child care subsidy participation was defined as the number of consecutive weeks in which the child received subsidized child care (care paid in part or full through the Maryland subsidy program). A spell ended when the child did not receive any subsidized child care for the following four consecutive weeks.

**Arrangement spell:** An arrangement spell measures the length of time (in weeks) that a provider was paid by the Child Care Subsidy program for care for a particular child. An arrangement spell ends when the provider was not paid for care for that child for at least four consecutive weeks.

**Gap:** A gap is the length of time (measured in weeks) after the child leaves the subsidy program until he or she returns to the program by again receiving subsidized care for at least one week. If the child has not returned to the subsidy program during the study period, the gap has no observed end (it is "right-censored").

**Left-censored spell:** A spell that includes the first four weeks of the study period and therefore may have begun prior to the study period. These spells were excluded from the study.

**Right-censored spell:** A spell that includes the last four weeks of the study and therefore may continue past the end of the study period. These spells were included in the study, and appropriate statistical methods were used to account for the right censoring.

## ACKNOWLEDGMENTS

This project is being conducted under the Maryland Child Care Administrative Data Analysis Cooperative Agreement funded by the Office of Planning, Research and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services (Grant Number 90YE0148). The authors wish to acknowledge the contributions of Nicole Forry and Kate Welti to the project, particularly in conducting preliminary analysis on subsidy stability in Maryland and providing advice on research design and objectives. The authors also wish to acknowledge the important contributions of research partners at the Maryland State Department of Education (MSDE) and RESI of Towson University. Candy Miller and Rolf Grafwallner at MSDE provided substantive leadership for the project, and John Spears at RESI of Towson University prepared the subsidy data sets analyzed in this brief and provided guidance on appropriate use of the data.