

OIAA RESEARCH BRIEF: UNDERSTANDING PATTERNS OF SUBSIDY USE, INSTABILITY, AND ASSOCIATIONS WITH KINDERGARTEN READINESS

Part 1: Introduction

Background and Purpose

In Washington state, the Working Connections subsidized child care program, along with the Seasonal Child Care and Child Welfare Child Care programs, supports children from low-income households, fostering their early learning and development while enabling families to maintain employment. Within these programs it is important to monitor patterns of child care subsidy use and related effects, as some populations may experience persistent interruptions in monthly payments, reflecting potential instability in children's lives (Henly et al., 2015). Evidence indicates that the consistency of children's subsidized care arrangements and deeper economic instability these patterns may reflect have important implications for children's development (Sandstrom & Huerta, 2013). However, it is not clear from the literature whether any negative effects associated with child care instability, or its underlying drivers extend to kindergarten readiness as a distinct outcome.

The recent passage of the Fair Start for Kids Act (FSKA) in July 2021 has intensified interest in child care continuity as part of broader efforts to enhance access to child care and pre-K. In Washington state, researchers at the Department of Children Youth & Families (DCYF) have begun to evaluate the impacts of FSKA as part of a multi-year effort. [The year one evaluation](#) examined impacts of FSKA policy interventions on kindergarten readiness but the available data did not allow for a focused look at child care stability as a potential driver. This brief summarizes research, drawing on newly available data,

Box 1: Defining Instability

While instability in child care is a multifaceted concept that encompasses many dimensions (see, Pilarz, Claessens, & Gelatt, 2016 for a review), throughout this report we define *instability* in subsidized child care as the occurrence of two or more subsidy spells during a given observation period, with a subsidy spell characterized as one or more continuous months of subsidy receipt. For example, payment data may indicate the following pattern of subsidy receipt over an 8-month period:

Jan	Feb	March	April	May	June	July	Aug
First Payment	Payment	Payment	No record	Payment	Payment	No record	Last Payment

Based on this hypothetical example, we can observe that this child experienced three separate subsidy spells between their first and last month of subsidy receipt, the first occurring between January and March, the second occurring between May and June, and the third occurring in the month of August. Another way to say this, is that the child experienced two interruptions in subsidized child care (indicated by one or more months of non-subsidy receipt occurring between two subsidy spells).

which examines patterns of subsidy participation and stability and their connection to kindergarten readiness as measured by the Washington Kindergarten Inventory of Developing Skills (WaKIDS) assessment. This information provides a foundation for targeted interventions and policy improvements in the subsidized child care space and aims to inform ongoing evaluative efforts of existing investments through FSKA.

Key Findings

In interpreting the results reported here, it is important to note that the identified relationships are not necessarily causal. The statistical association between child care instability and outcomes may reflect underlying and unobserved factors or life events that ultimately led to the occurrence of instability.

Predictors of Child Care Subsidy Interruptions

1. **Income-level.** Indicators of socio-economic status are strongly associated with the likelihood of experiencing two or more subsidy spells (see Box 1 for definition) between a child's first and last month of subsidy receipt. Specifically, indicators related to income level and homelessness are the strongest predictors of instability.
2. **Race and ethnicity.** Children who are Black or Hispanic are more likely to have experienced multiple subsidy spells prior to kindergarten entry, compared to children who are white.
3. **Bilingual status.** Children who participate in bilingual programming upon kindergarten entry are less likely to have experienced multiple spells in child care subsidy prior to kindergarten entry.

Associations Between Subsidy Interruptions and Kindergarten Readiness

4. **Multiple subsidy spells.** Children who experienced two or more subsidy spells were significantly less likely to be ready for kindergarten.
5. **Compounding interruptions.** An examination of potential compounding effects of numerous subsidy spells on kindergarten readiness revealed that greater numbers of spells were associated with an increasingly lower likelihood of kindergarten readiness.

Data

This study uses data from the WaKIDS linked dataset, which is provided to DCYF annually from the Education and Research Data Center (ERDC) in the Office of Management and Budget (OMB). The WaKIDS linked dataset contains child-level records of all entering kindergarteners for a given year which are linked to past participation in DCYF early learning programs including, but not limited to, the Early Childhood Education and Assistance Program (ECEAP), and subsidized child care - Working Connections Child care (WCCC); Seasonal Child care (SCC); and Child Welfare Child care (CWCC). For this study, we draw upon the 2019 kindergarten entry cohort linked dataset which contains 80,034 unique child records. Of these children, 13,058 had attended a form of subsidized child care prior to kindergarten entry. Our sample population for this study is comprised of children who were born no earlier than January 1, 2013 and received at least two months of subsidized care prior to kindergarten entry (N=12,858). Constraining the data in this way ensured that each child in the sample had at least one opportunity for an interruption to occur between months of service.

Measures

Subsidized Child Care Enrollment Patterns and Instability

This study examines monthly patterns of subsidy receipt using longitudinal data obtained through the Barcode subsidy payment administrative data system. From these data, we are able to derive various measures which include:

1. Total months served in subsidy during the observation period.
2. Age in months at first month of subsidy receipt.
3. Type of subsidy received (WCCC, SCC, CWCC)
4. Length of longest subsidy spell (defined as a continuous stretch of consecutive months in which family received a subsidy without a “break” [one month or more] in which they did not receive subsidy).
5. Number of subsidy spells.

In this study, we draw upon patterns of subsidy use (measures 1-4 above) as a means of contextualizing patterns of instability (measure 5). Descriptive data is presented for all five measures in Part Two of this report.

Kindergarten Readiness

This study seeks to examine the relationship between patterns of subsidy use and instability and later kindergarten readiness. The Office of Superintendent of Public Instruction (OSPI) defines readiness as meeting or exceeding a predetermined readiness threshold on six of six domains of the WaKIDS assessment. These six domains are Cognitive, Mathematics, Language, Literacy, Social-Emotional, and Physical. For each domain, children receive a scale score which corresponds to an established threshold indicating whether or not the child performed at the level of a typical kindergarten-aged child on that domain. Taken together, a child is said to be ‘ready for kindergarten’ if they meet the scale score readiness threshold on six of six domains. We use this dichotomous measure as our dependent variable for inferential analysis.

Part 2: Examining Patterns of Subsidy Use and Predictors of Instability Program Involvement

Table 1 reveals the rate by which children in the 2019 kindergarten entry cohort with prior subsidy involvement were enrolled in various subsidy programs as well as one or two years of ECEAP. Working Connections Child care was the form of subsidy care utilized by nearly the entire population (99%), with a much smaller percentage of children utilizing CWCC (6%) and SCC (3%). A modest percent of subsidy users were also enrolled in ECEAP during the two years leading up to kindergarten entry, 2017-18 (12%) and 2018-19 (20%).

Table 1: Previous Subsidy and ECEAP Program Involvement (2019 Entering-Kindergarteners)

<i>Early Learning Program</i>	<i>%</i>	<i>n</i>
Working Connections Child Care (WCCC)	99%	12,969
Child Welfare Child Care (CWCC)	6%	792
Seasonal Child Care (SCC)	3%	376

ECEAP 2017-18	12%	1,575
ECEAP 2018-19	20%	1,570

Patterns of Subsidy Use

Table 2 below provides descriptive information on patterns of subsidy usage among the study sample. For example, we can also see that on average, children are slightly more likely than not to experience more than one subsidy spell (51%).

Table 2: Patterns of Previous Subsidy Use (2019 Entering-Kindergarteners)

Measure	M or %	SD	Min	Max
Total months	24.95	(17.2)	2	78
Length of longest spell (months)	19.70	(14.8)	1	78
Age of entry (months)	35.7	(6.98)	1	70
Number of spells	1.88	(1.13)	1	10
Number of spells, >1	51%			
Number of spells, 2-3	42%			
Number of spells, 4-5	8%			
Number of spells, >6	1%			

Part 3: Factors Associated with Instability

Analysis

Utilizing a multilevel logistic regression model, we were able to examine the association between child care instability (specifically, children’s likelihood of experiencing multiple subsidy spells) and various demographic, socio-economic, risk factor, and programmatic indicators present in the linked data. These factors were also utilized as statistical controls to better isolate the effect of each individual variable on instability.

Results

Notably, socio-economic status, as reflected by participation in the free or reduced priced lunch program and by homelessness, emerged as the strongest predictors of instability. The odds of having two or more subsidy spells were 66% greater for children in the free lunch program compared to children receiving no food assistance in kindergarten. Additional factors associated with increased instability included race (children who are Black) and ethnicity (children who are Hispanic). For example, the odds of having two or more subsidy spells were 41% greater for children who are Black compared to children who are White (the reference group) after holding all other relevant factors constant. Factors associated with decreased instability included age and bilingual status at kindergarten entry, with

younger children and those involved in a bilingual program being less likely to have multiple subsidy spells during the observation period. Odds ratios for all indicators are displayed in Figure 1 below.

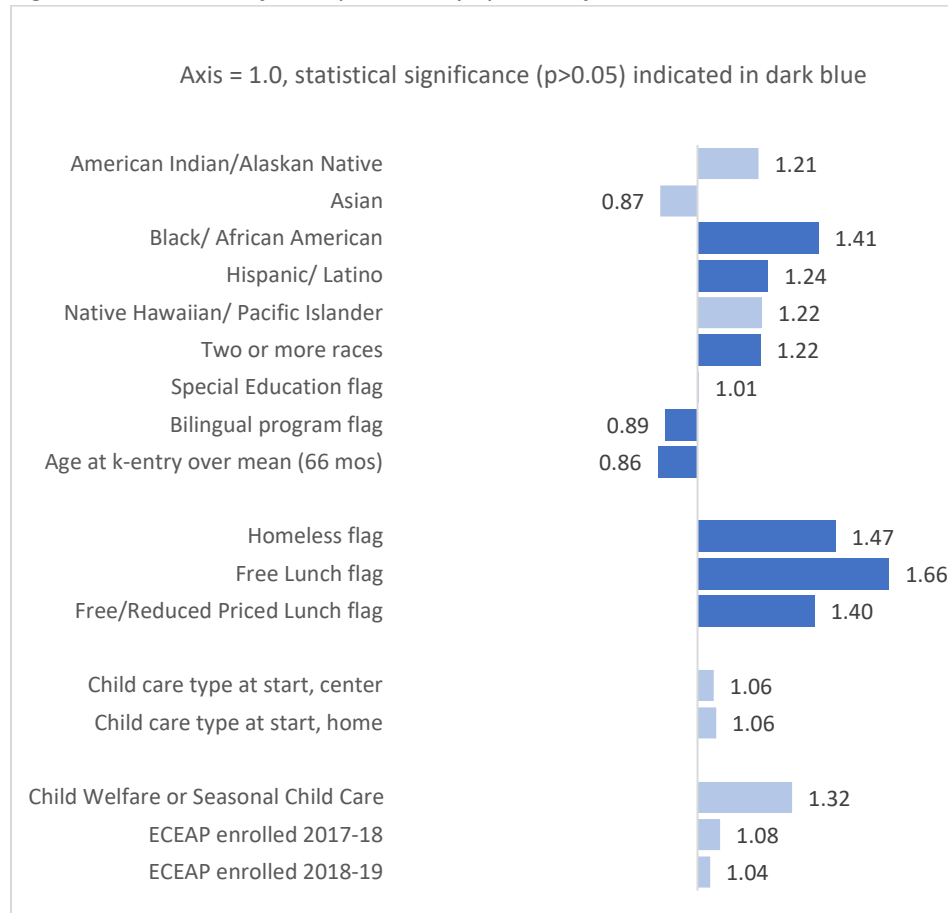
Box 2: Explanation of Odds Ratios

EXAMPLE: In a hypothetical population, 5% of children who are male had at least one absence in the school year compared to 3% of children who are female.

- Odds Ratio = $(0.05/(1-0.05))/(0.03/(1-0.03)) = 1.7$

In this hypothetical population, the odds of having at least one absence are 70% higher for males relative to females in the sample. Note that the odds ratios reported below are regression-adjusted to identify the independent association between our dependent and independent variables.

Figure 1: Likelihood of multiple subsidy spells, adjusted odds ratios



Note: Racial/ethnic comparisons use White as the reference group.

Part 4: Examining the Relationship Between Instability and Kindergarten Readiness

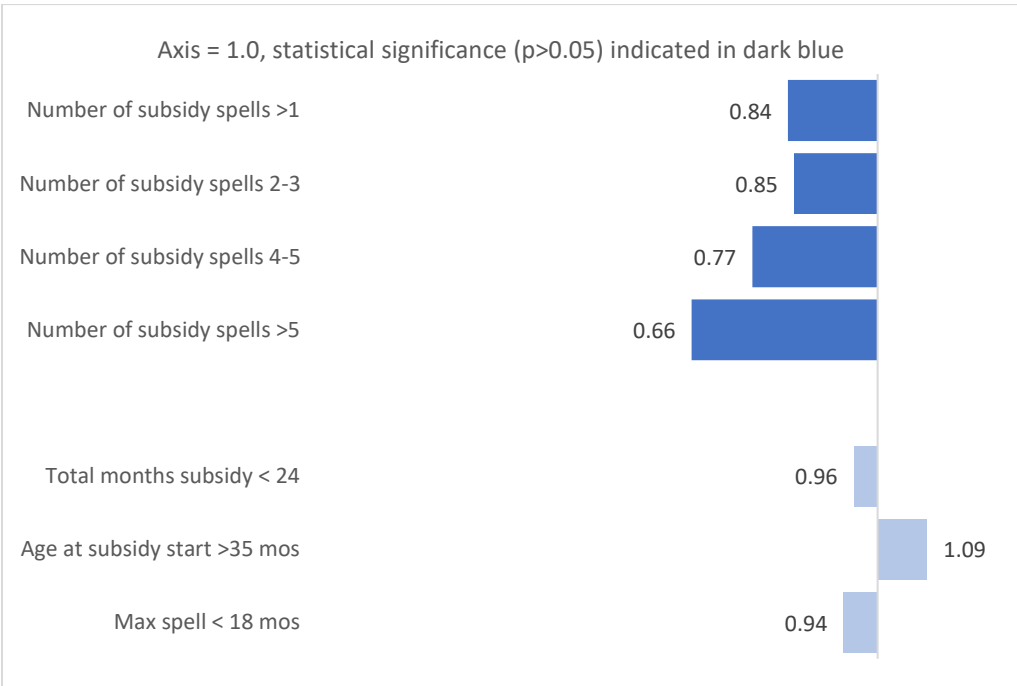
Analysis

A multilevel logistic regression was utilized to analyze the relationship between patterns of child care subsidy receipt and the likelihood of being ready for kindergarten on all six domains of the WaKIDS assessment. The model controlled for a range of demographic, socio-economic, risk factor, and programmatic features that were found to be associated with either child care instability or kindergarten readiness.

Results

The analysis uncovered several key findings related to kindergarten readiness and the impact of multiple subsidy spells. Firstly, children who experienced two or more subsidy spells demonstrated a significantly lower likelihood of being prepared for kindergarten (16% less likely than children with just one subsidy spell). Secondly, the analysis revealed a compounding effect, indicating that a higher number of subsidy spells was associated with a reduced likelihood of kindergarten readiness. Children who experienced two or three subsidy spells were 15% less likely to be ready for kindergarten compared to children with just one subsidy spell (i.e. children without a break in their subsidy care). This percentage increases to 23% for children who experienced four or five subsidy spells and 34% for children experiencing over five spells. Lastly, it is noteworthy that factors beyond subsidy spells, such as total months of subsidy enrollment and age at subsidy start, did not exhibit a significant influence on kindergarten readiness (see Figure 2).

Figure 2: Likelihood of kindergarten readiness, adjusted odds ratios



Conclusion

This study draws on a multiprogram, cross-system linked dataset which, for the first time, has allowed for an examination of the association between patterns of subsidy use and later kindergarten readiness in Washington state.

Key Takeaways

Two key findings that emerged from these analyses were (1) instability in subsidized child care was moderately related to socio-economic status and certain demographic characteristics of children, after controlling for relevant factors, and (2) instability was moderately predictive of later kindergarten readiness after controlling for socio-economic status and a range of other demographic, programmatic, and risk indicators. A supplemental analysis revealed that the effect of instability on kindergarten readiness was stronger the more spells that occurred.

Limitations

There are three major limitations to consider when interpreting the results of this study. First, it is important to note that the identified relationships are not necessarily causal. The statistical association between child care instability and outcomes may reflect underlying and unobserved risk factors or life events that ultimately led to the occurrence of instability.

Second, this study draws upon a limited dataset which does not allow us to see ECE involvement that occurred beyond subsidy and ECEAP involvement, or indeed even during this involvement. It is important to keep in mind that Head Start, Family Friend and Neighbor and private pay child care are more than likely part of the mixed delivery experience for many children in the examined population. Capturing a fuller view of ECE involvement would allow for a more contextualized and nuanced understanding of subsidy involvement and related outcomes for children.

Finally, this study did not account for periodic changes to subsidized child care policy or funding structures that were implemented in Washington state over the course of specified observation period. For example, changes to minimum co-pay requirements, or reauthorization periods may impact the rate at which interruptions occur or the populations that are most susceptible to experiencing them. These limitations underscore the importance of continued development of the WaKIDS linked dataset, as well as other data systems that draw upon administrative subsidy data, to include more nuanced information surrounding subsidy and other ECE program involvement. The hope is that this study, by providing a more generalized view of the subsidized child care landscape in Washington state, can provide a jumping off point for more in depth and focused research on the topic moving forward.

Implications for DCYF

This study lays the groundwork for the Department to enhance its capacity to track subsidy interruptions within the context of other subsidy involvement patterns and to connect these experiences to key child outcomes. Aligning with the agency's strategic priority to promote kindergarten readiness through an integrated B-8 system, and related efforts to evaluate impacts of the FSKA legislation, the findings highlight several key points of emphasis:

Monitoring subsidy instability:

- Recognizing subsidy instability as a potential standalone risk factor or an indicator of underlying risk can aid the agency in identifying populations in need of support.

Understanding socioeconomic or demographic drivers of instability:

- While the current study was able to identify associations between socioeconomic/demographic characteristics and features of subsidy instability, these relationships are not yet sufficiently understood. Further research should be conducted to examine *why* such differences exist before any attempts to address them are warranted.

Understanding systemic drivers of instability:

- Future research can help to further the agency's understanding of instability by exploring the degree to which this outcome is related to aspects of the ECE environment, such as child care quality, rates of provider churn, rates of ECE access, or otherwise relevant ECE policy changes.

Understanding the association with kindergarten readiness:

- Future research should examine whether efforts to reduce subsidized child care instability can positively impact kindergarten readiness as a standalone intervention, or if such effects are only possible by addressing deeper underlying risk factors associated with instability (e.g. housing instability, divorce, or job loss).

References

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Appendix

Methodology: Identifying patterns of child care subsidy participation

This study uses Washington’s child care subsidy warrant data covering a period from January 2013 through August 2019. These data were linked to kindergarten enrollment records so that the final sample would include all 2019 entering-kindergarteners who received some form of subsidy voucher between kindergarten-entry and their birthdate. Children with birthdates prior to January 2013 were excluded from the dataset.

To identify patterns of subsidy participation amongst the study sample, subsidy data, which in its original form is stacked by month of subsidy receipt, was collapsed to obtain various metrics:

Subsidy start – Children’s child care subsidy records began upon first receipt of a subsidy voucher following their birthdate. Subsidy receipt is captured in the data monthly.

Subsidy end – Children’s child care subsidy records end when no monthly records of subsidy receipt occur for the remainder of the study period.

Subsidy spell – A “spell” of participation is defined as a series of one or more months in which a child received care paid for by subsidy voucher. A spell starts the month a child’s child care is paid for by a subsidy voucher and ends the first time a child is not associated with a subsidy payment for one or more months.

Instability –For the purposes of this study, “instability” is defined as having multiple spells within the study period.



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