EXAMINING PROVIDER PARTICIPATION IN THE CHILD CARE SUBSIDY SYSTEM: A MIXED METHODS STUDY

by

Gerilyn Slicker

A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Human Development and Family Sciences

Spring 2022

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ACKNOWLEDGMENTS

I am grateful to the many people who supported and encouraged me during my time at the University of Delaware. I would like to express my sincerest gratitude to my advisor, Dr. Jason Hustedt. Thank you for your guidance, support, encouragement, and dedication to my success over the past five years. I could not have asked for a better mentor to support me through this process. I am so very thankful to have had the opportunity to work with you. I would also like to thank my dedicated committee members—Dr. Rena Hallam, Dr. Myae Han, and Dr. Christina Barbieri.

Thank you to Melissa Stoffers for your assistance in collecting and analyzing data for this project. I appreciate you taking an interest in this project and going above and beyond in every way to help make this dissertation a success. I also want to thank Cara Kelly, Deborah Drain, Julia Monaco, and Amanda Trattner for your assistance in helping to shape the final product. I would also like to thank all of the HDFS faculty and graduate students I have been able to learn from along the way.

I am also very grateful to all of the child care providers in Arkansas—not only for your participation in this project, but also for the work you do each day for children and families. Finally, thank you to Tonya Williams and the Arkansas Department of Child Care and Early Childhood Education for all of the support you provided that allowed me to carry out my project in Arkansas.

To my family, thank you for always encouraging me and supporting my dreams. Thomas, I could not be more thankful to have you as my teammate in this crazy and beautiful life we live. Your support means everything to me. Taylee Marie,

you provide me motivation for continuing this work each and every day. I love you more than you will ever know. Tylen Keats, thank you for being patient with me and helping me bring this project to the finish line. I am forever grateful to my three T's.

Finally, this project is supported by the Administration for Children and Families (ACF) of the United States (U.S.) Department of Health and Human Services (HHS) as part of a financial assistance award (Grant #90YE0248) totaling $50,000 with 100 percent funded by ACF/HHS. The contents are those of the author and do not necessarily represent the official views of, nor an endorsement by ACF/HHS, or the U.S. Government.

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ABSTRACT

Early care and education is not affordable for most U.S. families. The Child Care and Development Fund is a federal program that aims to help families from low-income backgrounds access more affordable care through child care subsidies which offset the cost of care. However, the number of child care providers that accept subsidies is declining, threatening families' access. This dissertation project is a three-phase mixed methods study aimed at understanding how early care and education centers make decisions about subsidy system participation, paying close attention to the influence of state policies and other factors amenable to policy intervention. Phase I is a mixed methods statewide study that examines how providers make decisions about accepting subsidies. In phase II, nationally representative data is used to examine predictors of subsidy density, or the proportion of children in a program using subsidies. Phase III uses a nationally representative sample of early care and education centers alongside state-specific subsidy policies to examine the unique influence of subsidy policies on provider participation in the subsidy system. This dissertation provides useful insights into how to implement state policies and practices that could incentivize providers' participation in the subsidy system, and as a result better serve families from low-income backgrounds.

Chapter 1

INTRODUCTION

Access to quality early care and education (ECE) is essential for both child development (Votruba-Drzal et al., 2013; Yoshikawa et al., 2013) and economic self-sufficiency for working families (Forry, 2009; Ha & Miller, 2015). Yet, ECE is not affordable for the majority of U.S. families, and especially for families from low-income backgrounds (Child Care Aware of America, 2019). The Child Care and Development Fund (CCDF) is a federal program that aims to assist families from low-income backgrounds with accessing ECE through the use of child care subsidies. Subsidies are government-issued funds that offset the high costs of ECE for eligible families. While variation in state-specific subsidy policies may impact the experiences of providers that accept subsidies (i.e., participate in the subsidy system), by participating in the subsidy system providers are taking on additional administrative and operational responsibilities while also being held to more regulations and monitoring. Though providers that accept subsidies are essential to the success of the CCDF program and to families' access to ECE, the number of ECE providers that accept subsidies has been continuously declining since 2010 (US Department of Health and Human Services [DHHS], Office of Child Care [OCC], 2021). And despite CCDF recommendations that states track providers' subsidy system participation (and barriers to participation), little is known about the factors that may influence ECE providers' participation in the subsidy system (Rohacek & Adams, 2017).

This multiphase mixed methods dissertation examines factors that are related to subsidy system participation for ECE centers. In 2019, 7.15 million children aged 0-5 (not yet in kindergarten) were served in ECE centers (Datta et al., 2021). This dissertation focuses on center-based ECE programs because of the nearly 1.4 million children using child care subsidies each month, approximately 75% of those CCDF funds are used to access ECE in centers (US DHHS OCC, 2021). Using secondary analyses of national datasets and primary quantitative and qualitative data collection in one state context, this dissertation highlights the importance of state-level implementation of CCDF policies and practices as related to ECE providers' willingness and ability to care for children using subsidies to access ECE.

Theoretical Frameworks

Bioecological theory

This study relies broadly on bioecological theory (Bronfenbrenner, 2005; Bronfenbrenner & Morris, 1998), which postulates that children's development occurs in multiple interconnected contexts within their environment. Though children's development is not directly examined in this study, a central goal of the CCDF is to promote children's school readiness and development through the expansion of access to ECE through child care subsidies for children from low-income backgrounds. As a result, bioecological theory informs the design of this dissertation.

Bioecological theory was adapted from Bronfenbrenner's (1979) ecological theory, where the primary emphasis was on four nested systems—comprising the ecological environment of a child—that impact a child's development. Bronfenbrenner (1979) explained four basic systems that comprise the ecological

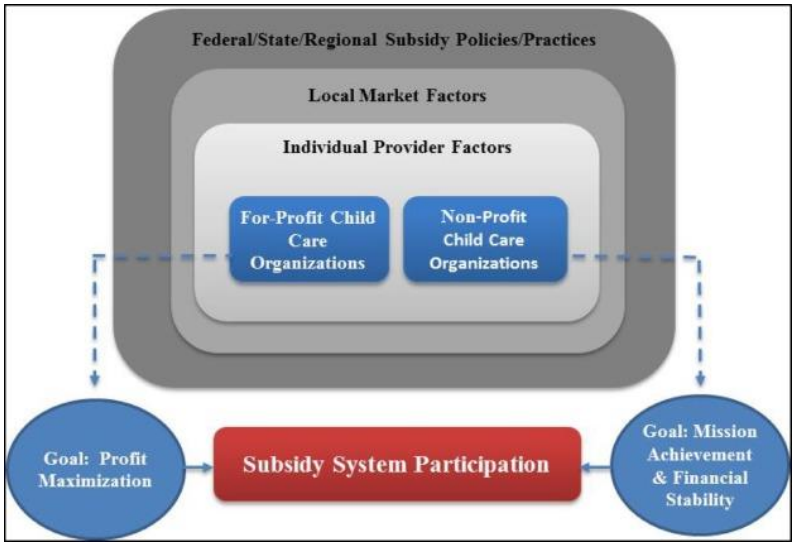
environment: 1) *microsystem*: child's interactions in the home, school, and neighborhood; 2) *mesosystem*: the interactions between multiple microsystems (i.e., the home-school relationship and its impact on child development); 3) *exosystem*: settings and institutions not directly experienced by the child, but that still contribute to their development (e.g., a parent's workplace may impact the parent's interactions with their child, subsequently impacting the child's development); 4) *macrosystem*: customs, attitudes, ideologies, values and laws of society (e.g., societal attitudes about education and the value of work). The theory was revised as the Process-Person-Context-Time (PPCT), where children's development was seen as a function of each of the separate elements mentioned in the model name (i.e., process, person, context, time), but a specific emphasis was placed on the importance of proximal processes. Proximal processes are interchanges that take place between a child and the objects, symbols, and persons in an external environment (Bronfenbrenner & Morris, 1998).

Specific to children attending ECE programs, the various systems bidirectionally influence children's experiences and development within ECE environments. Children are influenced by their families, ECE setting, peers, and neighborhoods and these systems all interact to influence children's development. More distal influences like CCDF policies and their impact on ECE programs are also very important to consider because, while these policies may not directly influence children from low-income backgrounds, they do impact the programs that serve them. For example, CCDF provider reimbursement rates influence the total funds providers can allocate to providing quality programming such as hiring well-educated teachers who are adept at engaging in quality interactions with children that support children's development. Provider reimbursement rates may also affect decisions that ECE centers

make about whether to participate in the subsidy system, and the degree of participation (subsidy density).

Conceptual Framework of Child Care Provider Subsidy System Participation

This dissertation will also closely rely on the Conceptual Framework of Child Care Provider Subsidy System Participation (Giapponi Schneider et al., 2017). This conceptual framework (see Figure 1) was developed based on previous literature related to providers' experiences in the subsidy system as well as literature from the field of business and was empirically supported using administrative data from Massachusetts. The conceptual framework considers several categories of predictors of subsidy system participation for ECE providers, including provider factors, local child care market factors, and federal/state/regional subsidy policies/practices. Each of these factors and the relevant findings from the Massachusetts study are highlighted in the following subsections.



Source: Giapponi Schneider et al., 2017

Figure 1 Conceptual Framework of Childcare Provider Subsidy Participation

Provider Characteristics

ECE providers and programs vary greatly in a number of important ways that may be associated with provider participation in the subsidy system. The testing of the conceptual model in Massachusetts found for-profit providers were more likely to accept subsidies than non-profit providers, center-based providers were more likely to accept subsidies than family child care providers, members of a network of ECE providers were more likely to accept subsidies than providers that were not part of a network, and accredited providers were more likely to accept subsidies than providers who were not accredited (Giapponi Schneider et al., 2017). Because the study relied on administrative data, the authors tested associations between a provider's licensed capacity (the total number of children the provider could enroll based on space,

teacher-child ratios, etc.) and the odds that the provider accepts subsidies and found that one additional available slot to enroll a child was associated with a 2% increase in odds of accepting subsidies. The number of years a provider was in business was not a significant predictor of subsidy system participation in the Massachusetts-specific study, though the authors recommended inclusion of this variable in future studies using other statewide and nationwide samples.

Local Child Care Market Factors

The Conceptual Framework of Child Care Provider Subsidy System Participation also includes local child care market factors, as the logic is that the location of the ECE facility may influence a provider's decision about subsidy system participation. In fact, results from the Massachusetts-based study show that the higher the median income of the provider's local area, the lower the odds that a provider will accept subsidies. The odds that a provider will accept subsidies decreases by 2% for each additional $1,000 increase in the median household income. On the other hand, as the number of providers in an area increases, so too does the likelihood of accepting subsidies.

State/Regional Policies and Practices

Previous research has shown that provider participation in the child care subsidy system varies across states (e.g., Adams et al., 2008) and researchers have speculated that some of this variation is likely a result of differing state subsidy policies (Adams et al., 2008; Giapponi Schneider et al., 2017; Minton et al., 2013). While the CCDF is a federal program, states have flexibility to, among other things,

set their own reimbursement rates, including whether or not to implement incentive programs like tiered reimbursement whereby providers are reimbursed at higher rates for caring for subsidized children when they earn higher quality ratings through a state's Quality Rating and Improvement System (QRIS).

Refining the Conceptual Model

Though many factors can influence a provider's decision to serve children receiving subsidy, subsidy policies and practices are among the most important to understand (Rohacek & Adams, 2017). Of course, context matters a great deal, too; for instance, if a provider has access to reliable private-paying families or outside funding sources, they may be more willing to accept children receiving subsidies because they have other sources of revenue on which they can rely to support their program.

While Giapponi Schneider and colleagues developed a conceptual model that includes the influence of federal, state, and regional policies and practices, the empirical testing of this model occurred in one state and, therefore, could not assess the influence of subsidy policies across states. In addition, the study did not consider the potential influence of other sources of federal, state, or local funding streams on provider decisions to participate in the subsidy system. State subsidy policies, such as a high reimbursement rate or other provider-friendly policies, may be particularly incentivizing to ECE providers when it comes to making decisions about caring for children receiving subsidies. In addition, should providers have experience working with other government agencies or have access to other sources of revenue that can offset the loss of revenue often associated with caring for children receiving subsidies, providers may make different decisions about serving children receiving subsidies.

This dissertation expands the body of empirical evidence supporting the Conceptual Framework of Child Care Provider Subsidy System Participation using both nationwide and another statewide sample of center-based ECE providers in Arkansas. Additional questions and variables are also considered. This dissertation relies on quantitative, qualitative, and integrated mixed methods data and analyses. The studies included in this dissertation propose minor revisions to the conceptual framework based on data collected and analyzed, highlighting the importance of the provider, community, and policy context in decisions about subsidy system participation. In carrying out these studies, this dissertation provides important information for policymakers looking to incentivize participation in the child care subsidy system in their states. This is especially true because policymakers are often faced with difficult decisions about how to most effectively allocate subsidy funds. They must weigh decisions about allocating funding toward expanding equitable access to ECE for families while also providing adequate funding and support for the ECE programs that serve eligible families. Given that funds are typically insufficient, the findings from this series of dissertation studies can provide guidance on the types of centers that could be targeted by states to serve (more) children using subsidies as well as the specific subsidy policies that should be prioritized in the state to maximize provider subsidy system participation.

Research Design

This dissertation uses a three-phase, mixed methods design (see Figure 2) to examine subsidy system participation amongst center-based ECE providers. This design allows for an examination of the topic using a series of sequentially aligned

methods that build upon one another to address the overall goal of the dissertation. The multiphase design is best suited for a topic that can be studied in phases, each with its own objective, but contributing to an overall research goal (Creswell & Plano Clark, 2018). Mixed methods designs are particularly useful for studying complex phenomena; they draw on the strengths of quantitative methods to establish more generalizable associations between variables and outcomes while simultaneously drawing on the strengths of qualitative methods in answering inquiries and describing real-life contexts (Plano-Clark, 2019). This dissertation integrates national- and state-level quantitative data and results with a collection of rich program-level qualitative data, an approach that provides a more complete understanding of the research problem than either approach alone.

Phase I, relying on a statewide partnership with the Arkansas CCDF agency, is a mixed methods study that illuminates experiences ECE centers have with center, community, and statewide contexts that may influence subsidy system participation in one state. An explanatory sequential mixed methods design was employed, beginning first with a survey of Arkansas ECE providers and followed by semi-structured interviews with a purposeful sub-sample of ECE centers. Phase II identifies the features of providers, communities, and funding sources related to the proportion of children receiving subsidies in the ECE center (i.e., subsidy density). This phase relies on a nationally representative sample of ECE centers in the 2012 National Survey of Early Care and Education (NSECE) as it considers the ways that subsidy density may be linked to child and peer diversity. Phase III merges data from the NSECE with state-level CCDF policy data from across the U.S. from the 2011 CCDF Policies Database to provide evidence about the unique predictive utility of state-level subsidy

policies on provider participation in the subsidy system. Overall, this dissertation provides useful insights into how to implement state policies and practices that could incentivize center-based providers' participation in the subsidy system, and as a result, better serve children from low-income backgrounds. The findings have important implications for increasing children's equitable ECE access.

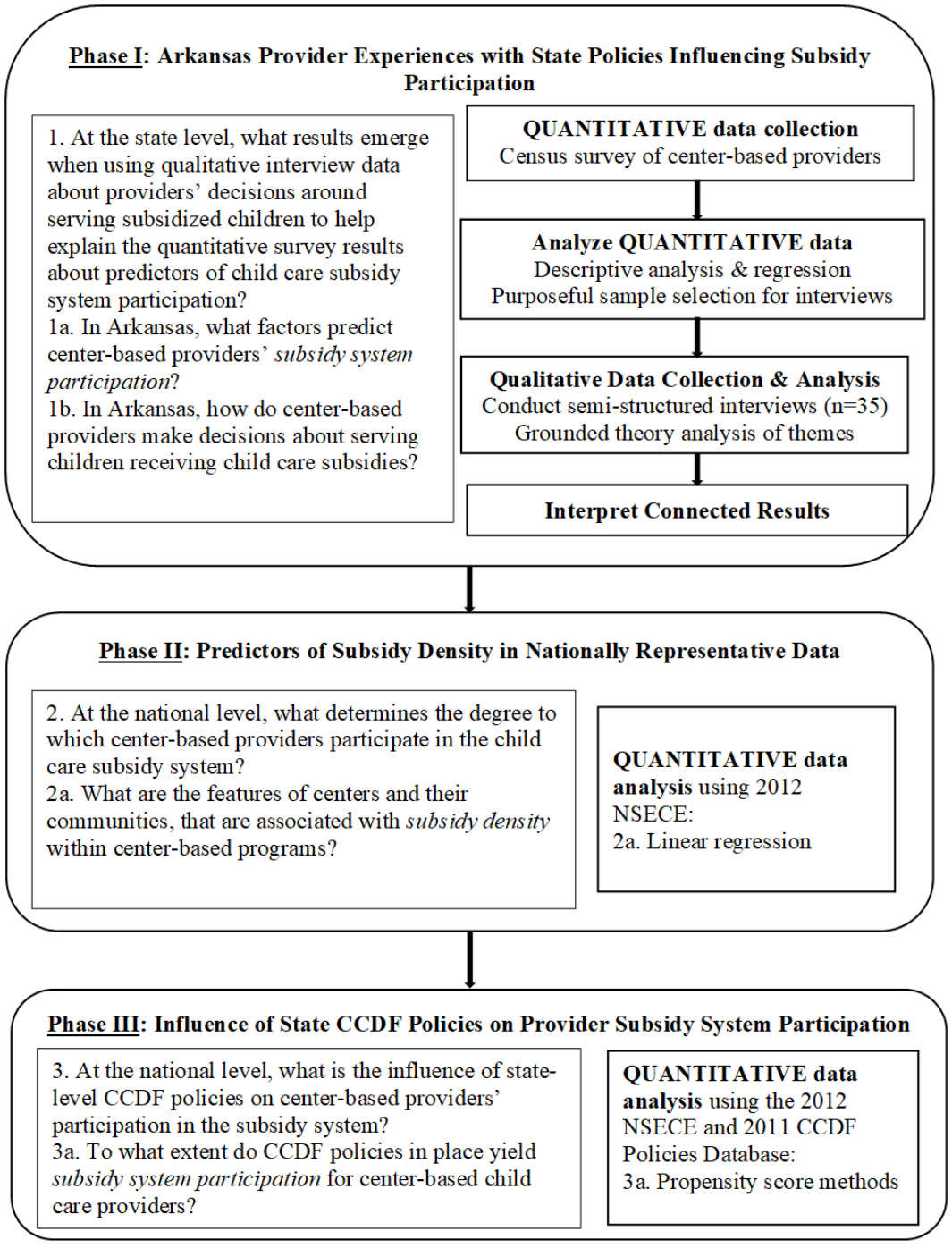


Figure 2 Research Design

The following three chapters will contain information for the studies carried out in each of the phases. Each of these chapters is structured as a separate academic journal article and includes all relevant background information, methods, results, and conclusions for each individual study. This final dissertation chapter is a concluding chapter that briefly summarizes the conclusions drawn across all three studies, as well as limitations and recommendations for future research.

Chapter 2

STUDY 1: PARTICIPATION OF EARLY CARE AND EDUCATION CENTERS IN THE CHILD CARE SUBSIDY SYSTEM: A STATEWIDE MIXED METHODS INVESTIGATION

Abstract

The number of early care and education centers that accept child care subsidies has declined, limiting access to early care and education for children and families from low-income backgrounds. This statewide explanatory sequential mixed methods study explores how centers make decisions about subsidy system participation. Quantitative results suggest the importance of provider and community characteristics, such as having infants and toddlers enrolled in the center and being located in an area of higher socioeconomic disadvantage, for ECE centers' participation in the subsidy system. Qualitative results, on the other hand, help to enhance our overall understanding of the decision-making process by emphasizing the importance of a center's overall operational and financial structure and state subsidy policies. Integrated findings suggest the importance of the combination of a variety of factors at the center, community, and state levels. Findings from this study point to ways that policymakers can incentivize early learning programs to accept child care subsidies.

Introduction

Early care and education (ECE) is unaffordable for many U.S. families, particularly those living in poverty (Baldiga et al., 2018). The Child Care and Development Fund (CCDF), which distributes child care subsidies to states that then provide them to eligible families, is one of the largest federal investments in ECE. Subsidies are government-issued funds that reduce the cost of ECE for eligible U.S. families living in poverty. Individual states have state-specific policies and practices that guide the administration of subsidies and are also required to use state funds to match federal contributions. Yet, there is concern at the federal level because the number of ECE providers accepting subsidies has been declining in recent years (U.S. DHHS, OCC, 2021), threatening families' access to ECE.

To ensure equitable access to ECE for children and families living in poverty and sustain the CCDF program, it is essential that there are enough providers that are willing to serve children using subsidies. Yet, little is known about what motivates providers to accept subsidies amidst the documented operational challenges associated with subsidy system participation for ECE providers (Adams et al., 2008; Sandstrom et al., 2018). While a growing body of both qualitative and quantitative work has explored challenges with subsidy system participation (Adams et al., 2008; OIG, 2019; Sandstrom et al., 2018), more limited research has sought to identify what motivates providers to accept subsidies, particularly because accepting subsidies results in a significant loss in revenue for ECE providers (Schulman, 2019). Prior quantitative research has identified some potential predictors of subsidy system participation, including specific features of providers (e.g., for-profit status) and their surrounding communities (e.g., community poverty; Giapponi Schneider et al., 2017;

Slicker & Hustedt, 2022). And while one mixed methods exploration has been conducted related to this topic (Adams et al., 2008), the study was carried out in 2003-2004, predating policy changes in the 2014 CCDF reauthorization. The present study, a statewide mixed methods study in Arkansas, identifies factors that may motivate ECE centers to accept subsidies. Given the prominence of both urban and rural communities, and the high child poverty rates in the state, the implications of this study are critically important for state policymakers looking to incentivize subsidy system participation.

Background

Access and Affordability of ECE

Research suggests that children experience a range of benefits that prepare them for kindergarten success as a result of attending ECE (Yoshikawa et al., 2013). Benefits are particularly evident for children from low-income backgrounds (Magnuson et al., 2007), despite limited availability of affordable ECE options. Working parents living in poverty are estimated to spend about 28% of their income on center-based ECE (Child Care Aware of America, 2019). This amount far exceeds the Department of Health and Human Services' (DHHS) recommendation for the maximum amount of a family's income that should be dedicated toward ECE costs (7%). Consequently, many federal and state programs aim to expand access to ECE for families living in poverty (e.g., Head Start, state and local pre-K). The Child Care and Development Fund (CCDF) is one of the largest sources of public funding for this purpose.

The Child Care and Development Fund (CCDF)

The Child Care and Development Fund (CCDF) was initially established as a workforce support for families living in poverty, but has evolved over the years to simultaneously prioritize children's school readiness and development. In the form of child care subsidies, CCDF distributes funds to families to offset the cost of care at a participating ECE provider of their choice. Eligible providers include both center- and home-based providers that meet state and local licensing requirements. The present study will focus on center-based providers, or ECE centers, because the majority (75%) of child care subsidies from CCDF are used for center-based ECE (Child Care State Capacity Building Center, 2017; Office of Child Care [OCC], Department of Health and Human Services [DHHS], 2017). Though the number of center-based ECE providers that accept subsidies has been steadily declining since 2010, CCDF served just under 1.4 million children in fiscal year 2019 (U.S. DHHS OCC, 2021). Yet, many children eligible for subsidies are not actually able to access them, with only 15 percent of eligible children receiving subsidies (Chien, 2015).

Though CCDF is a federal government program, it allocates funds to states, territories, and tribes for disbursement that best meet the unique needs of each state. CCDF is subject to a set of federal regulations, yet states administer the subsidies and set their own policies. These state-specific policies can impact ECE access for families as well as the ability to provide quality programming and serve children for ECE providers. As it relates to policies that directly impact providers, states set their own reimbursement rates for providers that serve children using subsidies. Though the 2014 reauthorization of CCDF recommends that states set their reimbursement rates at 75% of the market rate, only four states met that guideline in 2019 (Schulman, 2019).

States may also elect to have tiered reimbursement where there are higher subsidy reimbursement rates for providers that achieve higher quality ratings in the state's Quality Rating and Improvement System (QRIS). Thirty-two states offer tiered reimbursement policies (Dwyer et al., 2019). States may have other policies in place that make it easier for providers to accept subsidies such as payment for center closures due to professional development or inclement weather, payment when children are absent, or other policies that may support providers as they navigate the subsidy system. To date, research has been unable to investigate the influence of state-level subsidy policies on provider decisions around subsidy system participation, though researchers and policymakers speculate they could play a role (Rohacek & Adams, 2017).

Provider Participation in the Subsidy System

Though ECE providers are essential to the success of the CCDF program and the final CCDF rule requires states to track provider participation (and barriers to participation) in the subsidy system, little is known about what motivates ECE centers to accept subsidies. Providers that participate in the subsidy system take on additional responsibilities in the form of more paperwork and coordination with a state agency, among other things. Further, with insufficient and/or unreliable subsidy payments in many states across the country, ECE providers that accept subsidies can struggle to provide high-quality care and, in some cases, fail to have sufficient funds to keep their programs open (Adams et al., 2008; Schulman, 2018).

Qualitative Findings

Relatively recent qualitative research with a small sample of center-based ECE providers (n=29), carried out in New York and Illinois, has shed some light into some of the potential reasons that centers may want to participate in the subsidy system, including that it benefited the financial well-being of the center and/or that it fulfilled a program's mission to serve children of all backgrounds in their community (Sandstrom et al., 2018). Importantly, previous qualitative research suggests that for some ECE providers, particularly those operating in lower-income areas, subsidy reimbursement rates that are near the market rate may be an incentive for participation given that many families in the area are not able to afford the prices charged by programs (Sandstrom et al, 2018).

Quantitative Findings

Quantitative research, on the other hand, has largely focused on the challenges of subsidy system participation (e.g., OIG, 2019), but has also identified some potential provider and community predictors of subsidy system participation using secondary data (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). Quantitative research suggests that providers in higher income areas have lower odds of participating in the subsidy system (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). Quantitative data also suggests an association between subsidy system participation and the legal status, accreditation and/or quality rating, and network/school/church sponsorship (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022).

Need for Mixed Methods Research

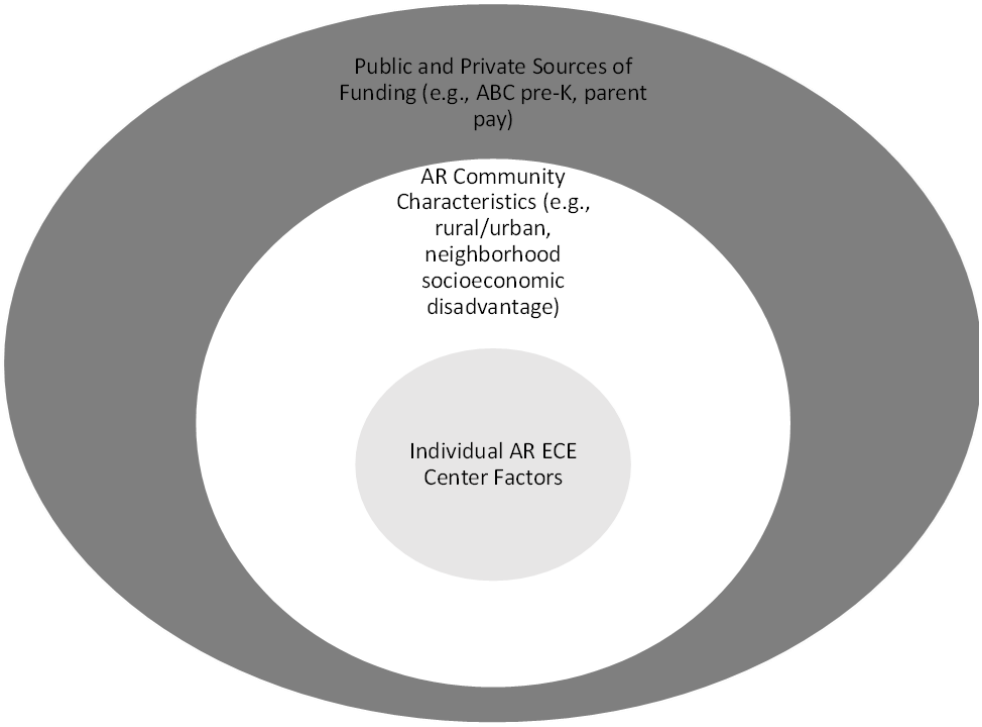
Findings from the quantitative research do not necessarily mirror those from the qualitative research (e.g., financial benefits, altruism/fulfilment of a mission), and instead focus on operational features and the location of the center. The discontinuity between qualitative and quantitative findings suggests a need for a statewide mixed methods investigation of subsidy system participation. It should be noted that there is one prior mixed methods study on this topic. The study focused on ECE providers' experiences within the subsidy system in five counties across four states using telephone surveys and focus groups (Adams et al., 2008); however, this study is dated. At the time the study was carried out (2003-2004), more than 60% of center-based providers served children receiving subsidies and more than 80% of providers were willing to accept subsidies. Since the collection of this data, the number of providers accepting subsidies has declined (Rohacek & Adams, 2017) and CCDF has been reauthorized with new requirements for ECE programs that accept subsidies. Findings from this mixed methods study were similar to the qualitative findings, indicating the importance of center finances and/or wanting to help families from low-income backgrounds (Adams et al., 2008). The previous findings along with external factors such as the decline in the number of providers accepting subsidies suggest a need for an updated mixed methods statewide investigation of subsidy system participation.

Conceptual Framework

This study relied on the Conceptual Framework of Child Care Provider Subsidy System Participation (Giapponi Schneider et al., 2017). Using administrative data from Massachusetts and relying on previous research on provider experiences in the subsidy system as well as research from the field of business, this conceptual

framework includes different categories of potential predictors of subsidy system participation. Specifically, the conceptual model included a series of provider factors– including the legal status (for-profit, non-profit), years of operation, and accreditation status– as potentially related to subsidy system participation for ECE providers. Another category of potential predictors included features of the local child care market. Specifically, the authors found that the median income and number of providers in the surrounding area were related to subsidy system participation. The conceptual framework also included a category "federal/state/regional subsidy policies/practices". The Massachusetts-based study was able to empirically test some regional policy variation, but could not assess the potential impact of state or federal subsidy policies.

Our previous work applying this conceptual framework to nationally representative data largely replicated the findings of the Massachusetts-based study, but did include some modifications to the conceptual framework (Slicker & Hustedt, 2022). Figure 3 is a visual representation of the conceptual framework, further modified for this study taking place in Arkansas. Specifically, we modified the child care market factors category to characteristics of the community at large, so as to capture more demographic variation in communities and how this may be related to subsidy system participation. We also modified the subsidy policies category to capture variation in sources of public and private funding, as we were not able to examine state-specific subsidy policies with our data. Our findings suggested that accepting private/parent payment was a predictor of subsidy system participation, while accepting pre-K funds was negatively associated with subsidy system participation.



Note. Adapted from the Conceptual Framework of Child Care Provider Subsidy Participation (Giapponi Schneider et al., 2017)

Figure 3 Original Conceptual Framework Applied to Arkansas ECE Centers

The Present Study

The purpose of this study was to gain an in-depth understanding of the decision-making process around subsidy system participation. This study relied on qualitative and quantitative data to further refine the conceptual framework described above and enhance our understanding of provider subsidy system participation using a diverse statewide sample of ECE centers. Relying on a partnership with the Division of Child Care and Early Childhood Education in Arkansas (DCCECE), an explanatory sequential mixed methods design was used to investigate what motivates ECE centers to serve children using child care subsidies.

Study Context

Given the large population of children and families living in Arkansas that would benefit from receiving child care subsidies and enhanced, equitable access to quality ECE generally, including families living in high poverty and rural areas, this state is an ideal setting for carrying out this study that could illuminate strategies to incentivize providers to participate in the subsidy system. Specifically, Arkansas has a high rate of child poverty (27% of all children under age 5 live below 100% of the federal poverty level; Annie E. Casey Foundation, Kids Count Data Center, 2019). Additionally, 34% of children under age 6 in low-income families have working parents, theoretically indicating that there is a large group of families eligible for subsidies (Annie E. Casey Foundation, Kids Count Data Center, 2019). Though Arkansas is home to a few major urban areas like Little Rock and Fayetteville, more than 40% of Arkansas residents live in rural counties. By contrast, only 14% of the U.S. population lives in nonmetropolitan areas. In addition, more than one third of children living in rural counties in Arkansas also live in poverty (University of Arkansas Division of Agriculture, 2019). Arkansas is also home to the world headquarters for Wal-Mart and other major employers such as Tyson Foods and Sam's Club, attracting diverse workers (and their families) from across the globe.

In Arkansas, the Child Care Assistance program, typically referred to as "vouchers", provides financial assistance for families to access ECE using funds available from CCDF. Arkansas distributes child care vouchers for families eligible for subsidies, serving an average of 8,400 children and 6,100 families per month (OCC, HHS, 2021). Arkansas has implemented state CCDF policies that have the potential to enhance the access and quality of ECE, including a relatively generous

subsidy reimbursement rate and tiered reimbursement policy and requiring all providers that serve children receiving subsidies to be enrolled in the state's Quality Rating and Improvement System (QRIS), Better Beginnings (Arkansas CCDF Plan FFY 2019-21). 63% of center-based programs in Arkansas are enrolled in the QRIS (Build Initiative & Child Trends, 2019). Better Beginnings distinguishes the quality of ECE programs with a 1, 2, and 3 star-rating system and all programs that accept subsidies must meet minimum licensing and Better Beginnings standards (i.e., have a 1-star rating). Arkansas is committed to ensuring equitable access to ECE by prohibiting expulsion for children who receive subsidies and has implemented a response system, BehaviorHelp, to support providers with child behavioral issues that may arise (Arkansas CCDF Plan FFY 2019-2021).

Arkansas also supports access to ECE for children from low-income backgrounds through access to Head Start and the Arkansas Better Chance (ABC) pre-K program, both of which operate at levels of quality that exceed Better Beginnings levels (Arkansas CCDF Plan FFY 2019-2021). The ABC pre-K program primarily serves three- and four-year old children and has been shown to be effective at increasing children's academic readiness for kindergarten (Hustedt et al., 2015). Families have the option of using vouchers to access additional hours of care outside of the 7-8 hours provided in Head Start and ABC programs.

Methods and Results

In this section, we will explain the methods and results of the quantitative, qualitative, and integration components of this mixed methods study. It should be noted that the structure of this "methods and results" section was deliberate and

designed to match the actual implementation of the explanatory sequential mixed methods design. Following the approach used in other mixed methods research studies (e.g., Farley-Ripple et al., 2019; Hallam et al., 2017), this section will begin with a description of the quantitative methods and results before moving into the qualitative methods and results and will conclude with a description of the methods of integration of the qualitative and quantitative data and presentation of the integrated results.

The present study applied an explanatory sequential mixed methods research design (see Figure 4). Using a mixed methods design allowed us to draw on the strengths of both qualitative and quantitative methods (Greene & Caracelli, 1997). Mixed methods studies use quantitative methods to establish more generalizable associations between variables while simultaneously drawing on the strengths of qualitative methods in describing real-life contexts (Plano-Clark, 2019). Specifically, we collected and analyzed quantitative survey data from a statewide sample of ECE centers and then carried out subsequent follow-up interviews that provide qualitative evidence using a grounded theory analytic approach to help explain the quantitative survey results. Data were analyzed separately and then merged to provide more comprehensive findings (Creswell & Plano Clark, 2018). Greater emphasis was placed on the quantitative (QUAN) component of the mixed methods study, so that the qualitative (qual) component was used as a mechanism for corroborating and further explaining the nuances of the findings from the quantitative design (QUAN+qual; Creswell & Plano Clark, 2018; Plano Clark, 2019).

This study answers the following research questions: 1) In Arkansas, what features of centers and their communities are associated with providers' subsidy system participation? (QUAN); 2) In Arkansas, how do center-based providers make

decisions about serving children receiving subsidies? (qual); and 3) In what ways does the decision-making process expressed by providers explain the relationships between features of centers and their communities with providers' subsidy system participation? (QUAN+qual)

Through the explanatory sequential mixed method design, the first research question is addressed with quantitative data from a statewide survey of ECE providers. The second research question is addressed through the voices and experiences of a subset of providers who explain their subsidy system participation decision-making process. Finally, the third question is addressed by integrating and comparing the qualitative and quantitative findings.

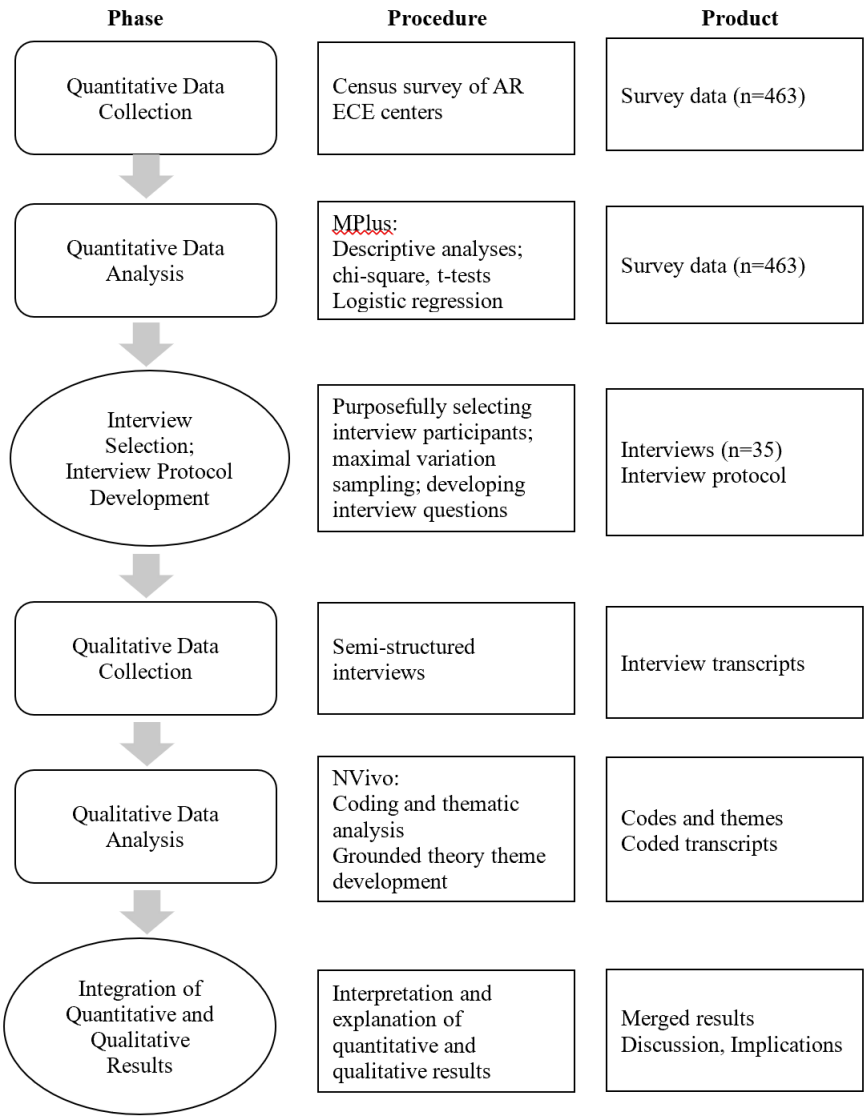


Figure 4 Visual Representation of the Explanatory Sequential Design

Quantitative (QUAN) Strand

In the quantitative strand, an electronic statewide census survey of center-based providers in Arkansas was conducted from January- February 2021 to answer the first research question. Survey questions and logistic regression models were

guided by the Conceptual Framework of Child Care Provider Subsidy System Participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022) to determine the association between centers' subsidy system participation and features of centers and their surrounding communities.

Participants

A census survey was distributed to all licensed center-based providers in the state of Arkansas. Relying on a partnership with the Arkansas DCCECE, a list of providers was acquired through the state's integrated data system, the Child Care Licensing and Accreditation System (CCLAS), which houses licensing, Better Beginnings, and subsidy data. The survey was distributed to 1,577 providers throughout the state who serve at least one child aged 0-5 and not yet in kindergarten. 275 email addresses were skipped as duplicates and 71 emails were sent but bounced, for a total of 1,231 surveys received by providers.

Procedures

The census survey was distributed electronically via Qualtrics to providers in Arkansas using email addresses in the CCLAS, which is updated annually and contains email addresses for nearly all providers. An electronic survey was selected to allow providers ample time to complete the survey at their convenience and, due to questions about the characteristics of children enrolled, consult program records. To reduce unit non-response, participants were compensated with a $10 gift card for completing the survey. Following recommendations similar to those provided by Dillman (2000), the survey was distributed and followed up with three reminder electronic communications over a period of six weeks. 755 partial and full responses

were received with a total of 463 complete surveys (38% response rate). Only complete surveys were analyzed in the present study. Table 1 provides a descriptive overview of survey respondents.

Table 1 Descriptive Information of Survey Respondents, by Subsidy System Participation

	Full Sample (n=463)	Providers in Subsidy System (n=211)	Providers not in Subsidy System (n=252)
Individual Provider Features			
Program Participates in QRIS*	76.0%	97.2%	58.3%
Highest Quality Rating	39.3%	35.1%	42.9%
Serves Children 0-3*	67.4%	82.9%	54.4%
Legal Status			
For-Profit*	36.9%	51.7%	24.6%
Non-Profit*	62.9%	48.3%	76.9%
Total Number of Children Enrolled (mean # of children)	73.16	78.33	68.94
Length of Operation (mean # of months) *	202.44	165.30	234.28
School Sponsored*	20.7%	10.4%	29.5%
Church Sponsored*	16.4%	9.0%	22.6%
Community Characteristics			
Area Deprivation Index (mean state decile)	5.29	5.36	5.24

Area Deprivation Index (mean national decile)	73.5	74.15	72.95
Community Urban Density			
Metro Area*	63.3%	87.2%	57.9%
Rural Area*	36.5%	30.3%	41.7%
Public and Private Funding Sources			
Program Receives Funds from Parent Pay*	61.6%	73.5%	51.6%
Program Receives Head Start Funding	11.4%	11.8%	11.1%
Program Receives Pre-K funding*	29.6%	22.7%	35.3%

Note. significant differences between participating and non-participating providers.
*p<0.05

Measures

The survey instrument contains questions that are similar to those in the National Survey of Early Care and Education (NSECE), which was used for a preliminary study investigating provider participation in the subsidy system (Slicker & Hustedt, 2022). Additional questions developed for this study include questions that address provider experiences with the Arkansas CCDF program and policies and were modeled after statewide market rate surveys. Questions were also developed in consultation with the Arkansas DCCECE. The survey was designed to take approximately 15-20 minutes to complete. The survey instrument was pilot tested with three providers to ensure clarity of wording. The survey instrument is included in Appendix A.

Participation in the Subsidy System

To perform the logistic regression, we relied on a dichotomous variable capturing whether a provider participated in the subsidy system. This variable was created using the response gathered from a question where respondents were asked if the center has any children supported by vouchers/subsidies.

Independent variables are captured in three broad categories reflected in the conceptual framework: provider factors, community characteristics, and program funding sources.

Provider Factors

The characteristics of centers included in this study include the center's legal status (for- or non-profit status), QRIS rating, whether the provider serves children under age 3, total enrollment, and length of operation. Survey respondents were asked to report if their program was for-profit or not-for-profit. Respondents were also asked if their program was enrolled in the state QRIS (Better Beginnings) and if yes, to report their quality rating/Better Beginnings level (ranging from 1-3). Providers were also asked a series of questions about their program's enrollment. Providers reported the total enrollment of children in their program that were under 3 years of age and ages 3-5 (not yet in kindergarten). The response reported for children under 3 years of age was used to create a dichotomous variable capturing whether the program served any children under age 3. The number reported for children under age 3 and the number of children ages 3-5 were combined to create a variable capturing total enrollment. Respondents also reported the length of time the program has been in

operation in years and months. Responses were converted into a continuous variable capturing the total number of months the program has been operating.

Community Characteristics

While this study relied almost exclusively on self-reported measures collected from centers in the surveys and interviews, two measures evaluating the surrounding community were collected using the center's location. This publicly-available information was gathered and double coded by research assistants.

This study relied on the Area Deprivation Index (ADI; University of Wisconsin School of Medicine and Public Health, 2015), which is a publicly available aggregate measure of neighborhood socioeconomic disadvantage. Using the center's zip code and Census tract, the ADI score was gathered and double coded by research assistants using the Neighborhood Atlas website (https://www.neighborhoodatlas.medicine.wisc.edu/). The ADI is a composite score calculated using a series of 17 measures from the US Census and American Community Survey, including measures of educational attainment, employment, housing quality, and income measures by Census block group (Kind et al., 2014). The ADI was developed and validated in the US and was recently refined and adapted to the Census block group level (Kind & Buckingham, 2018). The ADI is regularly used to link neighborhood disadvantage to a series of health outcomes, such as obesity and diabetes (Ludwig et al., 2011) and infant hearing loss (Lantos et al., 2018). Recently, the ADI has been applied to families enrolled in ECE programs (Hooper et al., revise/resubmit). The socioeconomic measures are used to create a national percentile and a state decile ranking. The state decile rankings range from 1 (lowest

disadvantage) to 10 (highest disadvantage), while the national rankings range from 1 (lowest disadvantage) to 100 (highest disadvantage).

This study also relied on the 2013 Rural-Urban Continuum Codes from the US Department of Agriculture's Economic Research Service (USDA Economic Research Service, 2013) to determine whether a center is located in an urban or rural area. This method of determining an urban/rural distinction is consistent with the state's method for CCDF reimbursement (Arkansas CCDF Plan, 2019-2021). Counties within metro areas with populations over 250,000 were classified as urban while counties with populations of 250,000 or lower were designated as rural. In Arkansas, there are 20 urban counties and 55 counties classified as rural.

Public and Private Sources of Funding

In the survey, providers were also asked to report the number of children using a variety of funding sources: vouchers/subsidies, Early Head Start/Head Start, Arkansas Better Chance (ABC) Pre-K, and Private/Parent Pay. Providers inputted the total number of children in each funding category and reported the total number of children who were under 3 years of age and ages 3-5 (not yet in kindergarten). A dichotomous variable was created to capture whether any child in either age group was served in each of the funding categories. Providers were reminded that if children were funded by multiple sources to include them in all relevant groups.

QUAN Analysis

To answer the first research question, the categories of independent variables described above were assessed descriptively. Specifically, chi-square tests were used for dichotomous variables and *t*-tests were conducted with continuous variables. These

analyses were used to determine statistically significant differences between providers that accept subsidies and those that do not.

Logistic regression was performed to answer the first research question examining the association between a series of center and community characteristics and subsidy system participation. The logistic regression models included variables previously established as predictors of subsidy system participation in nationwide and other statewide samples (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). The products of logistic regression are odds ratios, which in this study describe the expected chance of subsidy system participation given a change in the predictor. The equation for the logistic regression is as follows:

$$logit\ \{\Pr(Y_{i=}1|X_i)\} = \beta_0 + \beta_k\ x_{ki}$$

where *Y* is whether the provider (*i*) accepts subsidies. $\beta_k\ x_{ki}$ represents the vector of aforementioned provider, community, and funding source variables.

Analyses were performed in MPlus 8.2 (Muthén & Muthén, 2018). Missing data were handled with full-information maximum likelihood (FIML) estimation. Missing data ranged from 0 to 2% with sources of funding having the most missing values.

QUAN Findings

Descriptive Analyses

Table 1 provides descriptive information for survey respondents. Descriptive information is provided for the full sample as well as for subsets of centers that accept subsidies and those that do not. Of the sample of survey respondents, approximately 46% of centers accepted subsidies.

Descriptive results indicate that there are significant differences between providers that accept subsidies and those that do not on nearly all features of providers and communities included. Significant differences exist between providers that participate in the subsidy system and those that do not based on whether they participate in the QRIS (97% versus 58%), serve infants and toddlers (83% versus 54%), and have a for-profit status (52% versus 25%). There were also significant differences between providers, with higher percentages of school- (30% versus 10%) and church- (23% versus 9%) sponsored providers that do not accept subsidies. Findings also suggest that providers that do not participate in the subsidy system have been in operation longer, on average, than providers that participate in the subsidy system (234 months/~20 years versus 165 months/~14 years).

The center's location within the state of Arkansas is significantly different based on its urbanicity, but not as it relates to the neighborhood poverty level. Specifically, there are higher percentages of providers that participate in the subsidy system in metropolitan areas (87% versus 58%) and fewer percentages of providers operating in rural areas (30% versus 42%).

There are also significant differences between providers that accept subsidies and those that do not as it relates to the center's reported sources of public and private funding. Specifically, our findings suggest that providers that accept subsidies also accept funds from parent payment at higher rates than providers that do not accept subsidies (74% versus 52%). On the other hand, providers that do not accept subsidies report receipt of pre-K funds at higher rates than providers that accept subsidies (35% versus 23%).

Predictors of Provider Participation in the Subsidy System

Results from the logistic regression, depicting the characteristics of providers and their communities and funding sources that are associated with participation in the subsidy system, are presented in Table 2.

Results indicate that some features of centers and their communities are associated with subsidy system participation. Results suggest providers that have the highest quality rating in the state's QRIS are 3.7 times more likely to participate in the subsidy system (Confidence Intervals [CI]= 2.95-4.45, $p < 0.001$). Centers that serve infants and toddlers are 3.05 times more likely to participate in the subsidy system (CI=2.31-3.79, $p = 0.003$). Centers that operate in a socioeconomically disadvantaged area are 1.01 times more likely to participate in the subsidy system (CI= 1.00-1.03, $p = 0.03$). Providers that receive funds from parent pay are 4.80 times more likely to participate in the subsidy system (CI=4.05-5.55, $p < 0.001$). Conversely, having church (Odds Ratio [OR]=0.35, CI=-0.35-1.05, $p = 0.003$) or school (OR=0.22, CI=-0.74-1.17, $p = 0.002$) sponsorship was negatively associated with subsidy system participation. Finally, as the length of center operation increases, the likelihood of accepting subsidies decreases (Table 2).

Table 2 Results of the Logistic Regression

Variable	Logit coefficient	S.E.	p-value	Odds Ratio	95% Confidence Intervals	
Center Factors						
For Profit Legal Status (vs. non-profit)	0.38	0.27	0.16	1.47	0.94	2.00
Program has highest quality rating (vs. not having the highest quality rating)	1.31	0.38	<0.001*	3.70	2.95	4.45
Program serves infants and toddlers (vs. program does not serve 0–3-year-olds)	1.12	0.38	0.003*	3.05	2.31	3.79
Number of children enrolled	0.001	0.001	1.52	1.00	0.999	1.002
Length of operation	-0.002	0.001	0.013*	0.99	0.996	1.00
School sponsored (vs. not being sponsored by a school)	-1.54	0.49	0.002*	0.22	-0.74	1.17
Church sponsored (vs. not being sponsored by a church)	-1.05	0.36	0.003*	0.35	-0.35	1.05

Community Characteristics						
Neighborhood socioeconomic disadvantage	0.01	0.01	0.03*	1.01	1.00	1.03
Program is in an area with a high urban density (vs. being in a moderate urban density or rural area)	0.48	0.26	0.07	1.61	1.10	2.12
Public and Private Funding Sources						
Program receives any funds from parent pay (vs. not receiving any funds from parent pay)	1.57	0.38	<0.001*	4.80	4.05	5.55
Program receives any funds from Head Start (vs. not receiving any funds from Head Start)	-0.29	0.44	0.51	0.75	-0.11	1.61
Program receives any funds from public pre-K (vs. not receiving any funds from pre-K)	0.25	0.40	0.53	1.29	0.50	2.07

Note. Analyses were run using MPlus 8.2. Full information maximum likelihood (FIML) was used to address missing data. S.E.= standard error. *<0.05

Qualitative (qual) Strand

Participants

Consistent with an explanatory sequential mixed methods design, the analysis of the quantitative survey data was used to determine a purposeful sample of providers who completed the survey and indicated permission to be contacted for a follow-up interview to participate in the qualitative data collection (Creswell & Plano Clark, 2018). We employed maximal variation sampling (Brekenridge & Jones, 2009) so that a diverse group of providers was selected. Specifically, we interviewed providers who served a range of children using subsidies in the following categories: non-subsidy (0% subsidies), few subsidies (1-25% subsidies), mid-range subsidies (26-75% subsidies) and high subsidies (76-100% subsidies). We were also mindful of the location of the provider within Arkansas, ensuring representation from both higher and lower poverty areas as well as both urban and rural areas. As data was collected and analyzed, we identified emerging theoretical concepts and gaps in our understanding and pursued additional information to fill these gaps using theoretical sampling (Charmaz, 2006). For example, we identified that other funding sources may have been influential in subsidy participation and thus sought to sample participants who reported different funding sources, such as those that accepted Head Start funding or those that were funded solely through private pay. Table 3 provides a descriptive overview of the providers that completed interviews.

Following recommendations for appropriate sample sizes when employing grounded theory (Creswell & Poth, 2018), we aimed for approximately 30 provider interviews and were careful to ensure that data saturation was achieved. Ultimately,

web-based interviews were conducted with a purposeful sample of 35 providers across the state from April-July 2021. Some of these providers (n=5) represented multiple child care centers because they were owners of more than one center or were a representative of a network of providers, such as a regional Head Start program and school district-based pre-K programs. Our sample included 16 providers that did not accept subsidies and 19 providers that accepted subsidies at varying levels. Providers accepted a variety of funding sources including subsidies, pre-K, Head Start, private pay, and Medicaid. Providers also represented urban and rural areas of Arkansas: 21 providers were in urban areas and 14 providers were in rural areas.

Table 3 Descriptive Information of Interview Respondents, by Subsidy System Participation

	Full Sample (n=35)	Providers in Subsidy System (n=19)	Providers not in Subsidy System (n=16)
Individual Provider Features			
Program Participates in QRIS	91.4%	100%	81.3%
Highest Quality Rating	68.6%	68.4%	68.8%
Serves Children 0-3	77.1%	89.5%	62.5%
Legal Status			
For-Profit	42.9%	57.9%	25%
Non-Profit*	48.6%	31.6%	68.8%
Total Number of Children Enrolled (mean # of children)	57.2	63.2	51.0

Length of Operation (mean # of months)	173.0	135.3	212.2
School Sponsored	17.1%	15.8%	18.8%
Church Sponsored	8.6%	5.3%	12.5%
Community Characteristics			
Area Deprivation Index (mean state decile)	4.9	5.6	4.2
Area Deprivation Index (mean national decile)	70.1	76.0	64.0
Community Urban Density			
Metro Area	60.0%	63.2%	56.3%
Rural Area	40.0%	36.8%	43.7%
Public and Private Funding Sources			
Program Receives Funds from Parent Pay*	68.6%	89.5%	43.8%
Program Receives Head Start Funding	22.9%	21.1%	25%
Program Receives Pre-K funding	34.3%	31.6%	37.5%

Note. significant differences between participating and non-participating providers. *p<0.05

Procedures

Guided by the results from the quantitative strand, the semi-structured interview protocol was developed in consultation with the Arkansas DCCECE and approved by the University of Delaware's Institutional Review Board. The protocol was developed to understand how enrollment and subsidy system participation decisions were made. The protocol focused on three sub-topics: the local child care

market, subsidy system participation, and program enrollment. The child care market component of the protocol sought to learn about the demand for child care services and competition in the provider's area. The subsidy system participation component sought to understand provider's perceptions of and experiences with subsidies and the subsidy system. Finally, the program enrollment component of the protocol sought to understand who providers enroll in their programs. The protocol contained 15 statements in which the providers were asked to rate their level of agreement or disagreement. Each statement was read to the participant as well as posted with the rating scale in the chat function of the web-based video conferencing system. After each statement, the protocol included follow-up questions related to the statement to elicit further information. Pilot interviews were carried out with five participants to ensure that the interview protocol and questions were easily understood by participants and would gather essential information to further explain the quantitative results. The interview protocol is included in Appendix B.

Interviews were carried out via a web-based video conferencing system and lasted approximately 45 minutes, ranging from 26 minutes to 1 hour and 20 minutes. Permission was obtained from each provider to record the interview. One provider did not have access to a computer with a working microphone, so the interview was carried out via phone and was not recorded. In this case, extensive notes were taken. The interviews were carried out by the first author and a graduate research assistant. Six interviews were jointly conducted, and the remaining were conducted independently. Interviews were conducted until theoretical saturation was ascertained (Willig & Rogers, 2017). Participating providers were compensated with a $25 gift card.

Transcription of each recorded interview underwent two phases. First, an automated transcription was provided by the web-conferencing software. Second, each transcription was reviewed and edited by one of three graduate research assistants for accuracy.

Qualitative Analysis

The purpose of the qualitative data collection was to deepen our understanding of providers' experiences with the subsidy system and decision-making processes around subsidy system participation, so an inductive analysis strategy was employed to identify themes and patterns (Charmaz, 2008). Consistent with grounded theory, data was analyzed as it was collected (Willig & Rogers, 2017). The primary author and a minimum of one graduate research assistant reviewed each transcript and wrote analytic memos that contained important ideas, built connections between interviews, and identified potential coding categories. Memo-writing, a key feature of grounded theory, provides an opportunity to look for patterns and increase familiarity with the data (Charmaz, 1996).

Data was coded through an iterative process using post-priori or emergent codes (Creswell & Poth, 2018). To begin, transcripts were coded line-by-line with open codes, which are short, analytic, and active codes (Charmaz, 2008). We began by looking at a selection of interview transcripts, which were identified to represent providers from multiple funding and subsidy categories. Each transcript was reviewed by the primary author and at least one other graduate research assistant who pulled out in vivo codes or wrote a word or short phrase to reflect important points of the data. We continued to code transcripts line-by-line until the concepts being pulled from the

transcripts were repetitive. In total, 14 transcripts were coded line-by-line. In addition to line-by-line coding, we engaged in further memo writing. Memos were written by the coders when the content in the interview sparked an idea or connection.

At this point, we reflected on the most salient codes identified in the line-by-line coding. These codes were sorted and combined into categories that were used for focused coding (Thornberg et al., 2015; Willig & Rogers, 2017). Focused coding in NVivo (QSR International Pty Ltd, 2020) followed, whereby the most frequent codes were used to study, sort, and compare large amounts of data (Charmaz & Henwood, 2017). A codebook was created in NVivo using the most salient codes and descriptions of each code. As focused coding progressed, the first author and a graduate student research assistant continuously reflected on the ideas found within each transcript and communicated about changes to coding categories– such as additions or deletions. When disagreements between coders emerged, they were reconciled by discussion and mutual agreement.

Finally, after focused coding was completed for all transcripts, we reviewed the data and developed a theoretical framework. This included collapsing categorical codes into themes as well as revising and renaming codes to more clearly reflect the theoretical framework.

Qualitative Findings

Transcripts were thoroughly analyzed to answer research question two: how do center-based providers make decisions about serving children receiving subsidies? Several themes emerged and are highlighted in Table 4. The table also includes example quotes that were selected because they highlight the essence of the theme.

There were four meta-themes: *center operational features*, *community characteristics*, *center's financial structure and funding*, and *subsidy policies*.

The first meta-theme, *center operational features*, included a subset of themes that capture features of centers that influence the center's operation. For instance, some center administrators– largely those that accept vouchers– spoke of having administrative support personnel to assist them in their daily operations in some capacity (see Table 4 for sample quotes). Some administrators mentioned having an administrative staff person who assisted with billing or finances, which made it easier to accept and manage subsidies. On the other hand, some centers, particularly centers that did not accept subsidies, shared that center sponsorship played a role in subsidy system participation decisions. While centers that accept subsidies sometimes reported that a representative of the parent organization/network determined that they would participate in the subsidy system, the reverse was true for centers that do not accept subsidies. For instance, some centers shared that being part of a church-sponsored or school-sponsored program meant that someone higher up in the organization determined that all centers within that organization would not participate in the voucher system. Relatedly, centers that do not accept subsidies shared that staffing issues influenced their decision not to accept subsidies. Some centers mentioned not accepting subsidies because they did not adequately cover the expenses necessary to hire qualified staff, while other centers shared that they did not accept subsidies because the staff they currently have in place would negatively impact any evaluations or monitoring requirements that accompany subsidy system participation.

The second meta-theme, *community characteristics*, includes sub-themes that capture the relative poverty, socioeconomic status, and makeup of the surrounding

community. Not surprisingly, some providers that operated in higher income communities shared that they did not accept subsidies because families in the area would not qualify (see Table 4 for sample quotes). On the other hand, both providers that accept subsidies and those that do not accept subsidies shared that operating in an area of high poverty played a role in their decision. While providers that accept subsidies shared that subsidy system participation was essential due to the sheer number of families in the community that need subsidies to access ECE, providers that do not accept subsidies shared that their program had some other form of funding (e.g., Head Start, pre-K) that provided free access to ECE for families in the community. Relatedly, centers also shared that having a community-based mission statement in place influenced their decision around subsidy system participation. All centers that accept subsidies (19/19) mentioned that their mission was to serve the children and families in the surrounding community and that required accepting subsidies. There were also a handful of providers (6/16) that do not accept subsidies that shared that having a community-based mission statement actually deterred them from participating, often because they had other sources of public funding granting families free access to ECE (without a copayment requirement).

The third meta-theme, *center financial structure and funding*, emphasizes the consideration that centers give to the entire financial structure of the center as they weigh subsidy system participation decisions. While some centers shared that their ability to integrate other funding sources (e.g., grant funding, Head Start, pre-K) with subsidy payments allowed them to accept subsidies (5/19), it was more common to hear that other sources of funding– particularly public sources of funding (Head Start, pre-K) – led to programs making decisions not to participate (12/16). Center

administrators shared that because the center was able to be fully enrolled with children using other sources of funding, there was not a need to also accept subsidies. Center finances were reportedly very important to center administrators when considering whether to accept subsidies. Centers that accept subsidies shared that subsidy payments– both the specific amount and the reliability of the payment– led them to accept subsidies (9/19). Alternatively, centers that do not accept subsidies shared that insufficient subsidy payments were deterrents for subsidy system participation (6/16).

The last meta-theme, *subsidy policies*, emphasizes the importance of state-specific policy decisions on subsidy system participation. First, some centers that do not accept subsidies shared that their decision was largely influenced by their desire not to have governmental interference or regulations (5/16). Similarly, some centers that do not accept subsidies shared that they did not accept subsidies because they did not want to participate in the state's QRIS, which involves additional state/government interference and regulation (3/16). On the other hand, some centers viewed state-specific subsidy policies and practices as motivating factors in their subsidy system participation decisions. Specifically, some centers shared that the subsidy reimbursement rates from the state were sufficient and, in some cases, higher and more reliable than payments from parents in the community (14/19). In addition, the state's tiered reimbursement policy, whereby providers that had higher quality ratings in the state's QRIS receive higher subsidy payments, encourage the center to accept subsidies (15/19). Finally, Arkansas's policy that children who receive subsidies cannot be expelled deterred a handful of providers from accepting subsidies (3/16), but

the BehaviorHelp support system for challenging behaviors motivated some providers to enroll in the subsidy system (5/19).

Table 4 Qualitative Themes

Theme	Subsidy (n=19)	Non-Subsidy (n=16)
	Center Operational Features	
Administrative Support	n=10 *"I don't have to worry about facilities and paying a maintenance person…the school district…takes care of a lot"*	n=2 *"As an agency…I don't do any of the financial stuff"*
Sponsorship Impact	n=6 *"Above my pay grade [makes decisions about accepting subsidies] ...they're like…you keep doing this…keep up all your levels so you can do it"*	n=9 *"And as a church, we just never do anything with [subsidies]"* *"Our agency does not accept [subsidies]"*
Staffing Impact	n=0	n=4 *"And the staff, right now…I feel they're a little bit weak…and so I'm not wanting another evaluation"* *"If the [subsidies] don't cover the cost of the staff that work in the classroom, then we can't use the [subsidies]"*

Community Characteristics		
Community Poverty	n=9 *"Oh, in our area, you couldn't operate a child care center if you did not accept those child care vouchers, pretty much. Like parents who are willing and/or able to pay out of pocket is very slim"*	n=7 *"We are an extremely low-income area- it's part farming community, part just very low-income areas, so there is a lot of poverty…so [the school offers the free program] for people who live around the school"*
Higher Income Community	n=0	n=3 *"Incomes are definitely higher here…than they are in other parts of Arkansas…families don't quality [for vouchers]"*
Community Based Mission Statement	n=19 *"When we got ready to open this facility, that was our heart and passion…we want to offer [subsidies]. We want low-income families to have the same opportunities in the same quality child care that paying parents [have]"*	n=6 *"Because we are a low-income program, part of our mission is to provide everything for children…and asking parents to pay [a copayment] ...it is a problem for us"*
Center Financial Structure and Funding		
Funding Source Impact	n=5	n=12

	"We're able to offset our tuition with grant funding between what [subsidies] reimburses and what our actual cost is. If we could not fill the differential, we would not be providing [subsidies] at all"	*"Because the fact that we are [pre-K], so we are fully funded with that. And then we've been able to stay full with [pre-K]. And if they are going to qualify for [subsidies], they'll qualify for [pre-K], so there's kind of no real need to use [subsidies]"* *"We are able to do private pay and there are several other centers that are private pay as well, so it's kind of standard here. But it's also comforting to know that we do have…programs that are tailored towards the more low-income families, so we do know that those people in the community are still getting care"*
Center Finances	n=9 *"[Subsidy payments] affect the bottom line a little bit, but not too terribly much. And the thing about [subsidies] is that they are steady income. You know you're always going to get them on time. Private pay, sometimes, unfortunately, we have to hunt some parents down"*	n=6 *"It's in the dollars, black and white…We would love to reach out and serve the people [who use subsidies] ...it's a Catch 22: do you pay your bills or are you a Good Samaritan"*

	"Vouchers pay more, so I am pleased to take them. More than private pay." *"[Subsidies] mainly guarantees that I've got payment and it helps ensure my facility stays full"*	*"And we don't have that much of financial obligation to keep [people using subsidies] coming to us. I mean we like to take all the kids and help them…, but at the end of the day, owner wants to make money, you know, sustain the business and so forth"*
	Subsidy Policies	
Government Regulation Impact	n=0	n=5 *"It's a division of church and state. If we accept government funding, then there's government mandates. By not accepting those funds, that gives us the freedom to choose to do what we want to"*
Mandatory QRIS Participation	n=0	n=3 *"To kind of not have that regulation of [the QRIS] and… because we can keep our enrollment up [with private pay]. [QRIS] is just one less thing on our plate to have to worry about."*
Subsidy Reimbursements	n=14 *"With having that [subsidy] in that participant agreement with the state, it guarantees the center their finances"*	n=5

		"Because our tuition is - the rate the state pays is nowhere close…so we decided not to [accept subsidies]."
Tiered Reimbursement Rate	n=15 *"So, with [the QRIS], it influenced us to work harder to gain those stars and to make sure we uphold the standards of [the QRIS], because we know that the reward of having those stars, it increases our income through the [subsidies]"* *"Because the cost of care is not cheap. And I believe we would have lost money if we didn't already have the highest quality rating in the state. It would not have been affordable unless they had tiered that payment based on our quality rating"*	n=0
Expulsion Policy Impact	n=5 *"If you have a child that's acting out in the classroom, you call the behavior helpline. They send somebody that would help you get them on track, so you don't expel children"*	n=3 *"You can't dismiss a child if they're on vouchers. We don't have that financial obligation to keep those people coming"*

Integration of QUAN and qual

Effective integration of qualitative and quantitative methodologies, data, and analyses is essential to carrying out rigorous mixed methods research (Plano Clark, 2019; Teddlie & Tashakkori, 2006). Research question three, which focuses on the ways that the decision-making process expressed by providers (qual) helps to explain the relationship between subsidy system participation and features of centers and their communities (QUAN), guided the integration process. Integration of quantitative and qualitative data in explanatory sequential designs involves connecting the phases of the study so that the qualitative data can help explain the quantitative data (Creswell & Plano Clark, 2018). Through the data integration process, this study evaluates the coherence of the findings from both types of data and typically results in a matrix that displays the findings from both the quantitative and qualitative components of the study (Fetters et al., 2013).

Integrated Findings

Integrated results are presented in Table 5. This joint display table addresses the third research question by merging the quantitative and qualitative data through a weaving approach (Fetters et al., 2013). This approach involves the inclusion of both quantitative and qualitative findings together as themes or concepts (Fetters et al., 2013). This table shows the many instances in which the qualitative data provided partial or complete support for the quantitative findings (e.g., the influence of funding sources and community characteristics on subsidy system participation) while also revealing places where the qualitative and quantitative findings diverged (e.g., there was no qualitative support for the quantitative associations identified between a

center's decision to enroll infants and toddlers and its decisions around subsidy system participation). Importantly, the qualitative results introduced some new themes that were not captured in the quantitative findings, such as the importance of state-specific subsidy policies, including subsidy reimbursement, tiered reimbursement, mandatory QRIS participation, and expulsion policies.

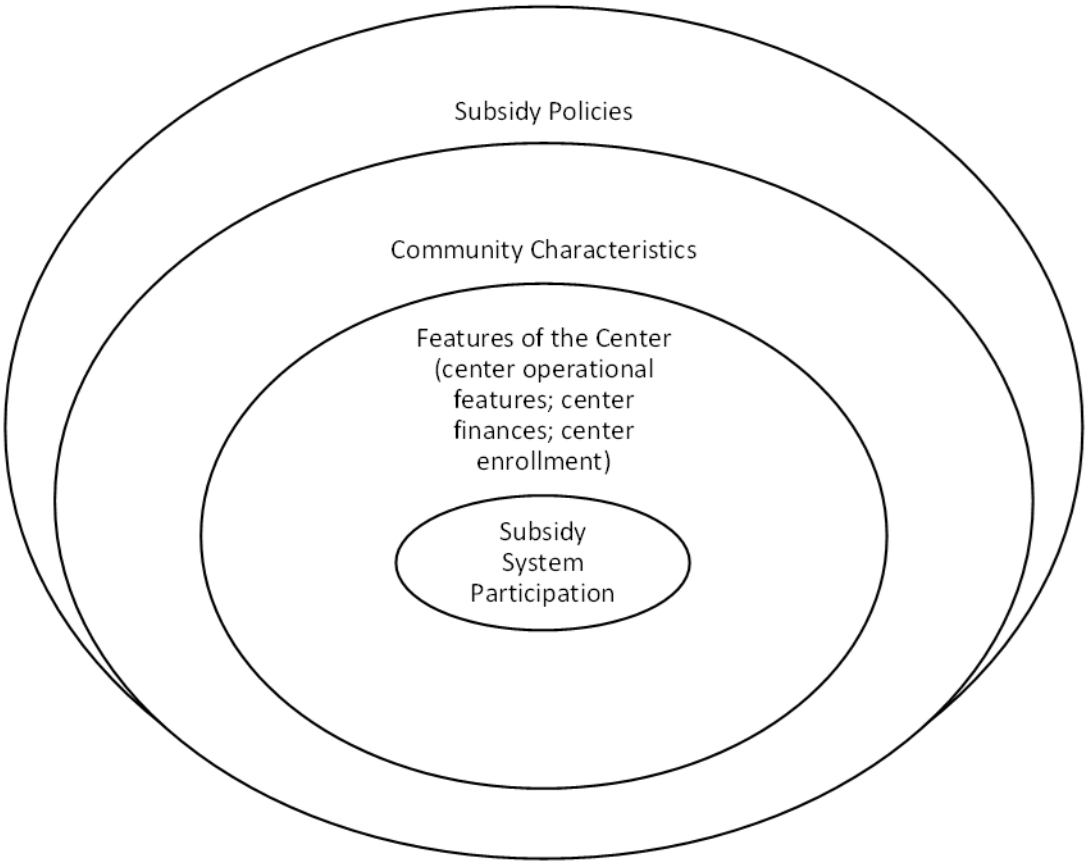
Table 5 Joint Display Table

Key Findings	Quantitative	Qualitative	Agreement, partial agreement, dissonance, no match
FEATURES OF THE CENTER			
Center (Operational) Features			
Legal Status	*ns*		Agreement (confirmation)
Length of Operation	++		No matching data
Center Sponsorship (i.e., school, church)	++	++	Agreement (confirmation)
Administrative Structure		++	No matching data
Staffing		++	No matching data
Center (Enrollment) Features			
Serves Infants & Toddlers	++		No matching data
Total Child Enrollment	*ns*		Agreement (confirmation)

Center's Financial Structure and Sources of Funding			
Funding Sources (e.g., parent pay, Head Start, pre-K)	++	++	Agreement (confirmation)
Center Finances		++	No matching data
FEATURES OF THE COMMUNITY			
Community Characteristics			
Urbanicity	*ns*		Agreement (confirmation)
Community Poverty	++	++	Agreement (confirmation)
Community Wealth	++	++	Agreement (confirmation)
Community Based Mission Statement		++	No matching data
FEATURES OF THE STATE			
Subsidy Policies			
Government Regulation		++	No matching data
QRIS Participation & Policy	++	++	Agreement (confirmation)
QRIS Rating	++	+ (tiered reimbursement)	Partial agreement (explanation)
Subsidy Reimbursements		++	No matching data
Expulsion Policy		++	No matching data

Note. When the exact information related to a particular finding was identified, a ++ symbol was used. If supporting information related to a particular finding was identified, a + symbol was used. If no information was identified in the dataset, the block was left blank. *ns*= non-significant finding in quantitative analysis.

Integrating the quantitative and qualitative findings suggest a need for further revisions to the conceptual framework guiding this study (see Figure 5). Specifically, the qualitative data collected in this study provided an opportunity to further define the *features of centers* that are related to subsidy system participation, including operational features, center finances, and a center's enrollment. Though originally included in the framework as its own category, the refined conceptual framework includes center finances as a feature of the center, as many providers spoke of center finances and funding also being tied to the ways that centers operate their businesses. The *community characteristics* category remains largely unchanged, as the qualitative results were aligned with the quantitative findings. A final important change to the conceptual framework is the inclusion of a *subsidy policies* category. While quantitative evidence suggested the importance of participation in the state's QRIS, the qualitative data suggested the need to consider the full range of state-specific subsidy policies on provider subsidy system participation decisions.



Note. Adapted from the Conceptual Framework of Child Care Provider Subsidy Participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022; Slicker & Hustedt, under review)

Figure 5 Revised Conceptual Framework: Predictors of Provider Subsidy System Participation

Discussion

Using an explanatory sequential mixed methods research design, our findings related to the first research question reiterate the important relationship between subsidy system participation and center and community characteristics identified in previous statewide and nationwide quantitative research (Giapponi Schneider et al.,

2017; Slicker & Hustedt, 2022). Qualitative findings from this statewide study in Arkansas addressing the second research question about how ECE centers make decisions about serving children receiving subsidies also identify the importance of the center's financial well-being and community-based mission statements, consistent with previous qualitative and mixed methods research (Adams et al., 2008; Sandstrom et al., 2018). In addition, our integrated results addressing the third research question related to how the subsidy system participation decision-making process helps to explain relationships between centers and their communities with subsidy system participation suggest a need to consider the influence of state-specific CCDF policies. Researchers and policymakers have speculated that state-level variation in the implementation of subsidy policies may be related to differential rates of subsidy system participation for providers (e.g., Giapponi Schneider et al., 2017), but this study is the first, to our knowledge, to provide mixed-methods research support identifying the influence of subsidy policies on subsidy system participation decisions in one state context.

Quantitative Findings

Previous research with a Massachusetts state sample and a nationwide sample suggests the importance of various features of the ECE center and a center's surrounding community for provider participation in the subsidy system (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). Quantitative findings addressing our first research question are largely consistent with these previous findings. Operating a center out of an area that is characterized by socioeconomic disadvantage appears to be an important source of motivation for subsidy system participation. Results also

suggest that centers accepting subsidies also enroll private-paying families alongside families using subsidies, but that the use of subsidies alongside other public sources of funding such as Head Start or pre-K funds is less typical. This finding is important given that Arkansas is interested in expanding the use of the integration of multiple sources of public funding as it aims to expand access to ECE for more families across the state (Arkansas CCDF Plan, 2019-2021; T. Williams, personal communication, May 18, 2020).

There is a need for future inquiries into the enrollment of children into programs, and specifically how serving infants and toddlers might be related to subsidy system participation. Though the quantitative findings of this study and our previous work (Slicker & Hustedt, 2022) suggest that serving infants and toddlers is associated with accepting subsidies, the qualitative interviews did not substantiate this finding. Providers did mention that competition from other programs receiving other sources of public funding (e.g., pre-K, Head Start) led to lower demand for 3- and 4-year-old slots. It is possible, then, that programs accepting subsidies may enroll more infants and toddlers because they face more competition for older children and need to keep their businesses open and meet the needs of the community by serving younger children that are not served in other publicly funded programs like Head Start and pre-K. It is also possible that this finding is actually about differences of program type. In other words, it is not that enrollment of infants and toddlers plays any role in decisions about accepting subsidies, but it is just that programs that do not serve infants and toddlers (e.g., pre-K, Head Start, school-based programs) are less likely to accept subsidies because of their program type and/or other sources of funding. Especially in

light of calls to expand access to pre-K for 3- and 4-year-olds, these findings are important to consider.

Qualitative Findings

In response to the second research question investigating how ECE centers make decisions about participating in the subsidy system, the qualitative interviews in this study highlight the administrative burdens associated with subsidy system participation in Arkansas, which is consistent with findings from previous research (Adams et al., 2008; Sandstrom et al., 2018). Our findings suggest that the perceived burden associated with subsidy system participation deterred some ECE centers from accepting subsidies in their programs, though this was a relatively small proportion of centers (2/16). Perhaps more importantly, our findings suggest that a significant number of centers accepting subsidies cited the importance of having assistance from administrative support staff and/or network representatives as they worked with families using subsidies. This finding may suggest having administrative support from the state CCDF agency and/or QRIS could assist providers with managing some of the administrative challenges ECE centers report, perhaps also incentivizing additional ECE centers to accept subsidies.

The qualitative findings related to staffing– specifically that center administrators are worried that their existing staff are not particularly strong and therefore wouldn't want additional government regulation or evaluations– are particularly concerning. Center directors spoke of how it was difficult to staff their building each day, particularly during the pandemic, and report having to hire teaching staff they may not otherwise hire so that they can serve enrolled families. While these

findings might be somewhat exacerbated by the pandemic, a survey of Arkansas center administrators conducted before the start of the pandemic revealed that more than three-quarters of respondents reported at least one staff vacancy among instructional staff within the previous six months (McKelvey et al., 2018). In the context of a recent increase to the minimum wage in Arkansas, several center administrators expressed sentiments like "*it makes it hard to hire anybody when McDonald's is paying the same, just about, to flip burgers or whatever*". On the other hand, providers mentioned that there were classrooms closed throughout the center because they didn't have adequate staff to be fully enrolled. These findings could suggest that subsidy-eligible families may not be able to enroll their children in programs due to inadequate staffing. This ECE staffing issue is particularly widespread (e.g., Doromal et al., 2021), has been exacerbated by the pandemic (e.g., Bassok et al., 2021; Delap et al., 2020), and requires national attention. Resolutions to this issue will likely require higher wages and better benefits for ECE teaching staff (Whitebook et al., 2018).

It is also important to note that qualitative findings suggested there were a few cases where misinformation may have played a role in the decisions ECE centers made about accepting subsidies. For instance, some ECE centers that accepted other sources of public funding (i.e., Head Start, pre-K) noted that they did not accept subsidies because they were unable to accept subsidies alongside the other funding received. Some providers mentioned that it would be "double dipping" to accept subsidies if they were a Head Start/pre-K program. In reality, accepting subsidies could provide an opportunity to offer wrap-around services for families attending these programs; while pre-K and Head Start programs provide seven to eight hours of

ECE, CCDF could provide extended time for up to ten hours of ECE (Arkansas CCDF Plan 2019-2021).

Integrated Findings

The integrated results from this study addressing the third research question suggest the socioeconomic disadvantage of the community (a QUAN finding) coupled with a community-based mission statement (a qual finding) are especially important motivational forces for providers that accept subsidies. Taken together, these findings may suggest that providers are motivated not only by business/profit margins, but also by a desire to serve the families living in the surrounding area. These findings suggest that reaching out to non-participating providers in areas of high poverty or high community need may be an important step for state CCDF agencies. It is possible that there are ECE providers in these areas that have an emphasis or mission statement related to serving children from low-income families and therefore could be incentivized to accept subsidies. It may also suggest that certain policies (such as higher reimbursement rates for providers in areas of high poverty) could also be useful in encouraging more provider subsidy system participation.

Integrated findings also suggest the importance of interactions between ECE centers and state agencies and policies as providers weigh decisions about subsidy system participation in Arkansas. For example, previous work suggests that having a quality rating or accreditation is positively associated with subsidy system participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). The present study extends these findings by showing that higher quality ratings are also associated with subsidy system participation in Arkansas. This finding is very encouraging, as it

may suggest that children that are using subsidies have access to higher quality ECE, which is consistent with previous research that finds that quality is higher in centers accepting subsidies unless those other programs accept Head Start or pre-K funds (Johnson et al., 2012; Johnson et al., 2019; Slicker et al., 2020).

This finding is also important to consider alongside the separate findings related to subsidy policies that are tied to Arkansas's QRIS. For example, our findings suggest that Arkansas's policy that providers that accept subsidies must be enrolled in the state QRIS can discourage some ECE centers from accepting subsidies. While this finding may mean that some subsidy-eligible children are potentially losing out on opportunities to attend ECE centers, the benefits of this policy may outweigh the challenges. Particularly in a state where the QRIS is implemented well and leads to children having access to higher quality ECE, a policy that requires QRIS participation for providers that accept subsidies may be very beneficial for young children's development (Soliday Hong et al., 2019).

Similarly, our finding that the tiered reimbursement policy is incentivizing subsidy system participation and motivating providers to earn the highest quality ratings is very encouraging. This finding is in contrast with a recent mixed methods study examining tiered reimbursement in Maryland, which found that center directors did not report being incentivized by tiered payments as it related to what QRIS rating they aimed to reach (Lee, 2021). It is important to note that in our study, when asked directly if tiered reimbursement impacted their decisions around accepting subsidies, many providers said that it did not. However, throughout the interview, providers made comments about working hard to earn the highest quality rating so they could get the highest reimbursement rate. These findings suggest that tiered reimbursement

may have an important positive impact on provider subsidy system participation and children's access to higher quality ECE in Arkansas. It is also possible that tiered reimbursement only incentivizes participation if the reimbursement rate is significantly different from the base reimbursement rate. In general, a policy that makes the tiered rate at least 75% of the market rate or higher is probably necessary (Schulman, 2019). According to the 2019 Arkansas CCDF Plan, the highest reimbursement rate for ECE centers in the most populous area of the state achieving a 3-star quality rating ranged from approximately 92% to 100% of the market rate, depending on the age of the child. This very generous tiered reimbursement policy may explain the motivation for provider participation in the subsidy system in Arkansas.

Our integrated results indicate that, coupled with a center's location and other revenue sources, the subsidy reimbursement rate appeared to play a significant role in subsidy system participation. This finding may, in part, be due to the relatively generous provider subsidy reimbursement rates in the state. According to the Arkansas 2019 CCDF Plan, the base reimbursement rate for centers in the most populous area in the state ranged from 80-87% of the 2014 market rate, depending on the age of the child. As previously mentioned, it is relatively rare that a state has a reimbursement rate at or above the 75th percentile of the market rate (Schulman, 2019). Yet, our findings from a state context with more generous reimbursement rates suggest the possibility that higher reimbursement rates may incentivize provider subsidy system participation.

Our findings may also suggest a need to adjust reimbursement rates based on the location of the center with more intentionality. It is important that reimbursement

rates are adequate and can help centers sustain program operations. For example, in urban areas with more community wealth, it may be important to find ways to incentivize providers that are able to keep their centers full with private paying families who can afford higher tuition rates, as there are still many subsidy-eligible families who are left unserved. By providing comparable reimbursement rates for providers or encouraging providers to implement sliding scale tuition payments, providers will not only serve more children from low-income backgrounds but may also increase the socioeconomic diversity of the center. These goals are admirable given that socioeconomic diversity in ECE settings result in a variety of positive academic and social outcomes for children (Weiland & Yoshikawa, 2014; Slicker & Hustedt, 2020).

Importantly, while some provider interviews discussed subsidy reimbursement and tiered reimbursement as benefits of subsidy system participation, others indicate a policy that children using subsidies cannot be expelled discouraged subsidy system participation. An expulsion policy like this one in Arkansas is important in order to ensure children have equitable access to ECE given research documenting the disproportionate application of exclusionary discipline for children of more disadvantaged socioeconomic backgrounds (Gilliam, 2008). Since implementing the exclusionary discipline policy and assistance for children with challenging behaviors through the state's BehaviorHelp system, there has been a reduction of reported expulsion, suspension, and other exclusionary discipline practices amongst center administrators (McKelvey et al., 2018). The fact that the exclusionary discipline policy can be a disincentive for providers to accept subsidies is somewhat troubling, but continuing to implement and strengthen the supports in place for effectively

addressing challenging behavior through a system like BehaviorHelp could have very positive impacts for young children.

Limitations and Future Directions

This statewide mixed methods study of subsidy system participation provides important insights into the decision-making process for centers who are weighing whether to accept subsidies; however, the study is not without limitations.

The findings of this study suggest the importance of state-specific subsidy policies on provider subsidy system participation decisions. However, this study took place in only one state context considering only one set of subsidy policies. In addition to having reimbursement rates above the market rate (and tiered reimbursement rates that exceed those already generous rates), Arkansas is also only one of 13 states that has a policy that mandates participation in the QRIS for ECE centers that accept subsidies (CCDF Policies Database, 2019). While these policies are not widespread, carrying out this study in a policy context that is more provider-friendly does provide a unique opportunity to learn more about the impact of generous policies on provider subsidy system participation. States weighing the decision to find effective ways to intersect their QRIS policies with subsidy policies may also find the results of this study particularly useful. Further, it must also be noted that Arkansas is more rural and lower income than most other states, limiting the generalizability of the results. Future research should examine the influence of other combinations of state-specific subsidy policies on provider subsidy system participation. Examining variation in state-specific CCDF policies using a nationwide sample of ECE providers could also

provide important insights into the potential combinations of subsidy policies that may incentivize subsidy system participation for ECE centers.

Another important consideration is that data collection for this study occurred during the COVID-19 pandemic. The pandemic has been incredibly stressful for Arkansas ECE providers; center administrators have reported both professional/business- related challenges as well as personal hardships and stress (McKelvey & Forsman, 2021), potentially impacting survey and interview responses. The majority of ECE centers in this study reported experiencing child enrollment-related challenges, at least early on in the pandemic. In response to the pandemic, the state made child care assistance (vouchers) available to essential workers, regardless of income level. Like CCDF subsidies in Arkansas, ECE centers refer to this form of child care assistance as "vouchers". While we were careful to distinguish between the two forms of vouchers in the survey and interview protocol and had language written into the questions to focus on subsidy system participation and enrollment prior to the pandemic, it is possible that there was confusion amongst providers when they were asked about participation in the voucher/subsidy system.

Future research should also consider subsidy density, or the proportion of children in a program that use subsidies. Previous research suggests ECE providers may limit the number of subsidies they accept in their programs to alleviate the financial burden associated with subsidy reimbursement rates that are not comparable to the market rate (Adams et al., 2008). Phase II of this dissertation will take an initial step by investigating the relationship between a series of center and community characteristics and subsidy density using data from the NSECE. In order to understand the ways in which CCDF can meet the needs of all eligible children and families,

understanding if/why providers may limit the number of subsidies they accept is important.

Conclusion

The present study was a statewide mixed methods investigation of provider participation in the child care subsidy system. Consistent with the explanatory sequential mixed methods design, our qualitative findings were used to corroborate and strengthen the analyses from the quantitative phase (Creswell & Plano Clark, 2018). Our integrated findings guided further revisions to the Conceptual Framework of Child Care Provider Subsidy System Participation (Figure 5). Taken together, the conceptual framework suggests a need to consider a variety of potential factors at the center, community, and state levels that may be impacting the decisions that ECE centers are making around subsidy system participation.

Our findings provide policymakers guidance for incentivizing subsidy system participation. While the present study takes place in a single state, given the prominence of both rural and urban communities and the large proportion of subsidy-eligible families in Arkansas, the findings of this study can provide policymakers with guidance for incentivizing subsidy system participation in other diverse state and local contexts. Specifically, Arkansas is home to some of the most widespread rural poverty (University of Arkansas Division of Agriculture, 2019), but also has very populous cities (e.g., Little Rock, Fayetteville). That being said, findings from this study have potential implications in other U.S. state and local contexts. In addition to features of

centers (including their financial and operational structures) and their communities, our findings suggest that the combination of subsidy policies is important and may impact provider decision-making around subsidy system participation. In order to ensure equitable access to ECE while also supporting providers that accept subsidies, having policies in place that adequately reimburse centers and are considerate of the needs of providers are essential.

Chapter 3

STUDY 2: PREDICTORS OF SUBSIDY DENSITY IN EARLY CHILDHOOD CENTERS AND LINKS TO PEER DEMOGRAPHIC DIVERSITY

Abstract

There are academic and social benefits for children that attend early care and education programs that are culturally and socioeconomically diverse. Yet, high levels of racial, ethnic, and socioeconomic segregation persist in early learning settings, concurrent with children's development of racial attitudes and biases. The present study considers child and peer diversity in a nationally representative sample of early care and education centers on the basis of *subsidy density*, or the proportion of children in a center that receive child care subsidies to access and afford early learning services. Our findings suggest specific features of centers, including the type of center and the center's child enrollment, as well as a center's location and funding structure are associated with subsidy density. Especially in light of the documented decline of centers that accept child care subsidies and evidence that centers may limit the number of subsidies they accept to sustain program operations, understanding features of early learning programs that are associated with subsidy density is critical to creating more equitable policies that encourage diverse, high-quality learning environments for young children.

Introduction

Evidence suggests socioeconomic and racial diversity in early care and education (ECE) has benefits for children's school readiness (Weiland & Yoshikawa, 2014) as well as general preparedness for living in a diverse society (Reid et al., 2015). Yet, levels of racial, ethnic, and socioeconomic segregation are higher in ECE settings than K-12 schools (Frankenberg, 2016), at the same time children are developing perceptions and biases on the basis of race, ethnicity, and socioeconomic status (McArdle & Acevedo-Garcia, 2018; Ramsey, 1991). Our study considers child and peer diversity in a nationwide sample of ECE centers on the basis of *subsidy density*, or the extent to which centers enroll children receiving child care subsidies to afford ECE. Child care subsidies are government-issued funds distributed through the Child Care and Development Fund (CCDF) that families can use to enroll their children in a participating ECE program of their choice. As a result, child care subsidies have the potential to diversify the composition of children in an ECE center, with the possibility that children from low-income backgrounds can attend ECE with higher income peers.

Though child care subsidies significantly offset the costs of ECE for families, they simultaneously impose additional responsibilities for ECE programs that accept them. Programs have reported financial and administrative challenges with accepting and managing subsidies (Rohacek & Adams, 2017); yet, little is known about the decision-making process around accepting subsidies for ECE centers. A preliminary study suggests certain features of centers—such as their financial structure—and their surrounding communities (i.e., neighborhood poverty level) may be predictors of subsidy system participation (Slicker & Hustedt, 2022). However, to our knowledge, previous research has not considered what center and community characteristics might

be related to the proportion of children in a center that use subsidies (i.e., *subsidy density*). In other words, a small body of prior research provides some insights into what may motivate a provider to accept child care subsidies (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022), but research has yet to explore what might influence providers' decisions around the number of subsidies accepted in a center. These decisions may shape the peer sociodemographic composition of the center and determine whether there is a demographic (mis)match amongst enrolled children. For example, given the prevalence of insufficient subsidy reimbursement payments (Schulman, 2019), it is possible that a center may elect to limit the number of children using subsidies (Adams et al., 2008) and enroll mostly families that pay to use ECE services. If the center charges high prices for services, it could mean that a center is largely populated by children from higher- income families with only a few children from lower-income families. Enrolling higher proportions of children using subsidies would provide an opportunity for more socioeconomic diversity and would ensure that more subsidy-eligible families are served. Especially in light of the documented decline of centers that accept Child Care and Development Fund (CCDF) subsidies (U.S. DHHS, OCC, 2019) and the possibility that centers limit the number of children using subsidies to sustain program operations, understanding features of ECE centers that are associated with subsidy density is critical to creating more equitable policies.

Access to ECE

There is a growing body of evidence that indicates that enrollment in high-quality early care and education (ECE) makes positive contributions to children's development, particularly for children from low-income backgrounds and some racial

and ethnic groups (e.g., Bassok, 2010; Magnuson et al., 2007; Yoshikawa et al., 2013). As the United States becomes an increasingly diverse society, there is potential for more culturally diverse ECE environments. This is particularly true if current efforts to broadly expand access to ECE at federal, state, and local levels are successful (e.g., the proposed Build Back Better Act).

To date, however, many children across the U.S. lack equitable access to ECE. Unequal access is typically experienced on the basis of income, race, ethnicity, and disability status. There are significant income-based gaps in ECE enrollment (e.g., Chaudry & Datta, 2017; Magnuson & Waldfogel, 2016), with families in the top income quintile being twice as likely to enroll their children in ECE than families in the bottom quintile (Malik, 2019). There is also variation in ECE participation by children's race and ethnicity. For example, children from Hispanic families are less likely to be enrolled in center-based ECE programs, while children who are Black, Asian and White enroll at higher rates (Reid et al., 2015). Additionally, families with children with disabilities often have difficulty accessing ECE due to the insufficient supply of quality programs that meet the specific needs of these children and their families (Henly & Adams, 2018; Weglarz-Ward et al., 2018). Further compounding the issue, children are likely attending ECE programs that are segregated by race, ethnicity, and socioeconomic status (Frankenberg, 2016).

Diverse Early Learning Environments

Segregated primary and secondary schools are a well-documented problem in the U.S.; yet, previous research suggests that levels of racial, ethnic, and socioeconomic segregation are actually higher in ECE settings than K-12 schools

(McArdle & Acevedo-Garcia, 2018). Children tend to attend ECE with peers who are predominantly of the same race and ethnicity (Fram & Kim, 2012). In fact, in a descriptive analysis of 11 state pre-K programs, Reid (2015) found that only about one third of students were enrolled in a racially diverse classroom, where somewhere between 20-70% of the students enrolled were non-White. Given that the design of many publicly-funded ECE programs is to serve children from socioeconomically disadvantaged backgrounds (e.g., Head Start, some local and state pre-K programs), ECE programs also tend to suffer from socioeconomic homogeneity. Further, the prevalence of neighborhood segregation influences ECE enrollment given that parents are likely to select ECE programs near their homes.

Yet, socioeconomically and racially diverse ECE environments provide students with both academic and social benefits (Slicker & Hustedt, 2020). Socioeconomic diversity has been linked to positive cognitive and language outcomes (Bagby et al., 2005; Miller et al., 2017; Reid & Ready, 2013; Schechter & Bye, 2007; Weiland & Yoshikawa, 2014). Importantly, while children from lower-income backgrounds typically experience the largest benefits in socioeconomically diverse learning environments, children from higher-income backgrounds perform similarly in diverse learning environments and more segregated settings where most children are from higher income backgrounds; as such, socioeconomically diverse early learning settings have the potential to reduce income-based achievement gaps (Slicker & Hustedt, 2020). Evidence is also emerging that socioeconomically diverse ECE environments support enhanced social-emotional outcomes (Slicker & Hustedt, 2020; Weiland & Yoshikawa, 2014). Racially diverse ECE environments have been linked

to higher language outcomes for children (Reid, 2015). Diverse ECE environments also prepare children for living and working in a diverse society (Reid et al., 2015).

The proportion of children in an ECE program that accept subsidies may also be an indicator of socioeconomic diversity. Limited evidence suggests that a center's other sources of funding (e.g., private/parent pay, sources of federal and state funding) may be related to whether or not a center accepts subsidies (Slicker & Hustedt, 2022). For example, if a center that accepts subsidies also accepts families using exclusively parent pay, it could be an indication that the center has some socioeconomic diversity because at least some of the children enrolled come from families that can afford the center's tuition while other families cannot afford ECE without the aid of public funds. The proportion of children using subsidies in a program may determine the degree to which there is a peer demographic (mis)match, based not only on child socioeconomic status, but also on other demographic characteristics such as a child's race or ethnicity. Understanding the provider and community features of ECE centers that influence subsidy density are critical to creating more equitable policies and systems that promote early learning. Further, having more diverse ECE environments at the time when children are developing awareness of racial and socioeconomic differences is important for facilitating the development of empathy and understanding in a diverse context.

Children's Understanding of Diversity

Children begin to notice cultural and socioeconomic differences and become aware of racial and ethnic identities in early childhood (e.g., Chafel & Neitzel, 2005; McArdle & Acevedo-Garcia, 2018; Ramsey, 1991). Children are able to make racial

distinctions by six months of age and can develop racial biases and prejudices between three- and five-years of age (Frankenberg, 2016). Previous research also suggests that children typically select friends with similar socioeconomic backgrounds (Ramsey, 1991; Weinger, 2000). However, children who have the opportunity to experience racially and socioeconomically diverse contexts accept and form friendships with peers with different racial, ethnic, and socioeconomic backgrounds (Aboud et al., 2012; Howes & Wu, 1990). These findings reiterate the importance of diverse ECE settings for young children; however, structural barriers that limit the access and affordability of ECE for particular groups of children persist.

Affordability of ECE

One reason families lack access to ECE is due to the extremely high cost of care. In 2016, the U.S. Department of Health and Human Services (DHHS) set a recommendation that families spend no more than 7% of their income on child care spending; yet, all states across the U.S. have average costs that far exceed that threshold (Child Care Aware of America, 2019). Working parents from low-income backgrounds spend about 28% of their income on ECE costs for their young children (Baldiga et al., 2018). As a result, there are several federal, state, and local initiatives to increase the affordability of ECE. A significant source of public funding comes from the Child Care and Development Fund (CCDF).

The Child Care and Development Fund

The CCDF is a federal program that aims to increase access to ECE for families from low-income backgrounds through the use of child care subsidies. In

1990, CCDF was authorized as a workforce support for families. Over time and with the reauthorization of CCDF in 2014, the program now has dual goals of promoting economic self-sufficiency for families and supporting children's development and readiness for kindergarten. The CCDF is a federal government program that distributes funding to states. States subsequently administer child care subsidies that offset the exorbitant costs of ECE to families living in poverty. The 2014 reauthorized law also provides guidance to states regarding prioritized populations of children and families for subsidies in the likely event that state funds are insufficient for serving all eligible families; these prioritized groups include children with disabilities, children with very low incomes, and children experiencing homelessness. Families may use subsidies to access ECE at a provider of their choice, provided they are willing to accept subsidies and they meet state and local requirements. Approximately 1.32 million children received CCDF assistance in fiscal year 2017 (U.S. DHHS OCC, 2019). Despite the approximately $8.6 billion investment from states and the federal government, only one in six subsidy-eligible children receives subsidies they can use to access ECE (U.S. GAO, 2016). While there are a number of potential reasons for persistent inequitable access, an important area of inquiry is the role of ECE providers, as their participation in the subsidy system is essential for the success of CCDF.

Provider Participation in the Subsidy System

The number of center-based providers that accept subsidies is declining (U.S. DHHS, OCC, 2019), threatening children's equitable access to ECE. Providers willing to serve children using subsidies to afford the cost of ECE are essential for breaking the cycle of ongoing educational inequalities. The body of literature investigating

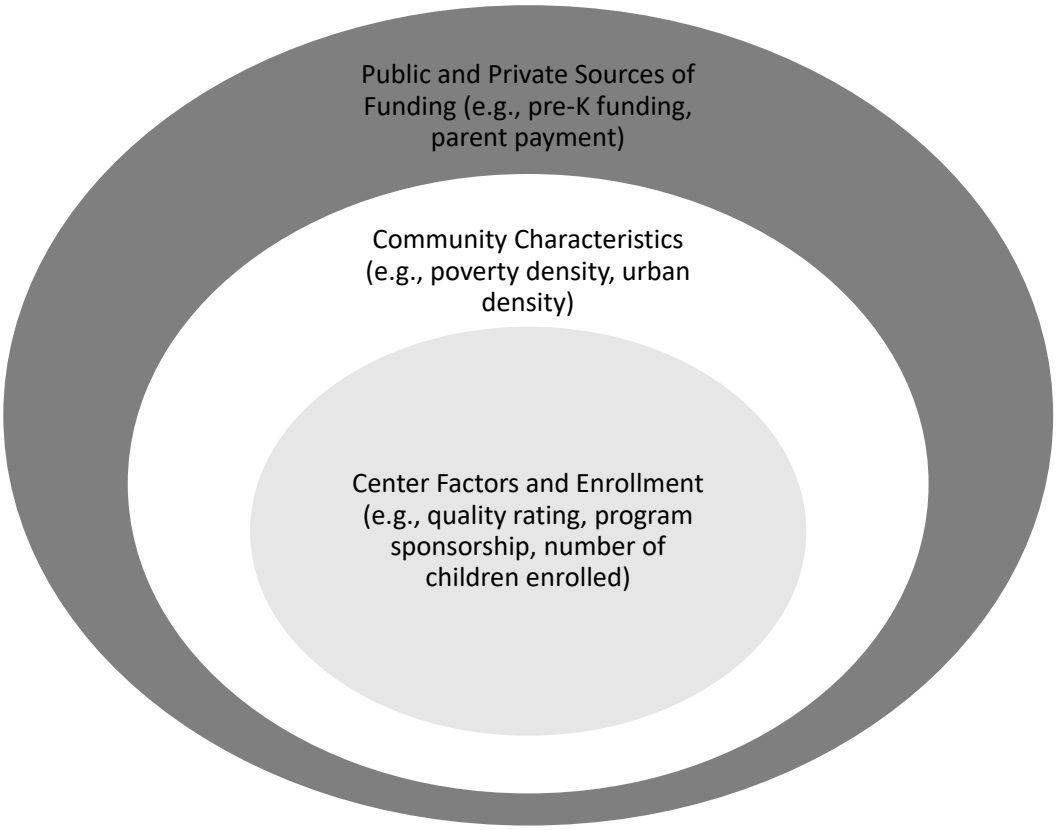
reasons that ECE centers may elect not to accept subsidies is sparse (Rohacek, 2012), though research shedding light on the challenges of subsidy system participation—such as administrative challenges for providers and issues with subsidy payments (Adams et al., 2008; Sandstrom et al., 2018)—may provide some insight. Research also suggests that providers may be accepting a significant loss in revenue because most states reimburse providers at rates that fall significantly below the market value (Schulman, 2019).

Furthermore, little is known about predictors of *subsidy density*, or the extent to which centers enroll children receiving subsidies. The CCDF Program (2016) has identified the decline in providers willing to accept subsidies as a national concern and has called for the development of strategies to increase the supply of providers that serve children using subsidies (Schumacher, 2015). The 2016 CCDF Final Rule, which provided states with guidance for how to implement the 2014 reauthorization of the CCDF program, also requires states to track provider participation in the subsidy system and identify common barriers to participation (CCDF Program, 2016). Further, the Final Rule recommends that states also track the proportion of children in each ECE center that receives subsidies and note whether the provider places any limits on that number, yet our understanding around these issues is quite limited. Research conducted prior to the reauthorization of CCDF suggests that ECE providers may limit the enrollment of children using subsidies as a strategy to sustain program operations amidst the insufficient subsidy reimbursement rates (Adams et al., 2008). While this strategy may be essential from a business perspective, it poses a potential equity issue and could negatively impact child diversity in an ECE program. Nevertheless, there remains a relative dearth of knowledge around how providers make decisions about

accepting subsidies and the extent to which they enroll children using subsidies in their programs.

Conceptual Framework

This study relies on the Conceptual Framework of Childcare Provider Subsidy System Participation (Giapponi Schneider et al., 2017). This framework has been empirically tested with administrative data in the single state of Massachusetts (Giapponi Schneider et al., 2017) and with nationally representative data (Slicker & Hustedt, 2022) to look at provider subsidy system participation, but it has not yet been used to examine subsidy density. In other words, while previous research has used this framework to examine whether providers serve *any* children receiving subsidies, it has not been used to examine the *proportion of children using subsidies* in ECE centers. The conceptual framework draws upon prior research on provider participation in the subsidy system and the field of business. The conceptual framework considers several categories of potential predictors of subsidy system participation (see Figure 6 for our adapted version of the conceptual framework).



Note. Adapted from the Conceptual Framework of Child Care Provider Subsidy Participation (Giapponi Schneider et al., 2017) and our previous work (Slicker & Hustedt, 2022)

Figure 6 Predictors of Provider Subsidy System Participation and Subsidy Density

Previous research testing this conceptual model suggests a variety of provider factors—including for-profit status and having accreditation—were significant predictors of subsidy system participation (Giapponi Schneider et al., 2017). Using a nationally representative sample of ECE centers, additional features of providers were identified as related to subsidy system participation, including the ages of children served and program sponsorship (Slicker & Hustedt, 2022). The Massachusetts-based

study also found that the higher the median income of a provider's local area, the lower the odds of subsidy system participation (Giapponi Schneider et al., 2017). Results from the nationwide study suggest ECE centers' other sources of public and private funding are associated with subsidy system participation (Slicker & Hustedt, 2022). The present study applies this conceptual model to a nationally representative sample of ECE centers to evaluate its usefulness as it applies to examining centers' subsidy density.

The Current Study

The purpose of this study is to better understand the reasons ECE centers might vary in their degree of participation in the subsidy system using a nationally representative sample of ECE centers. In other words, we aim to understand potential center and community influences on the number of children in a center that use subsidies. We also examine how variation in the extent to which providers accept subsidies may shape child and peer diversity in ECE centers. In order to ensure equitable early educational opportunities, it is important that centers in various community and sociodemographic contexts provide ECE experiences that could positively shape young children's development. In the context of a declining nationwide supply of ECE providers that accept subsidies, the results of this study may provide guidance for policymakers that incentivizes ECE centers not only to participate in the subsidy system, but to consider the degree of subsidy system participation.

Our study explores the following research questions: 1) How do centers of varying subsidy density differ on a series of child demographic, provider, and

community characteristics?; 2) What are the features of centers and their communities that are associated with subsidy density?

To answer the first research question, we present a descriptive portrait of ECE centers as it relates to features of providers and their communities. In addition, we highlight some important demographic characteristics of children served in ECE centers with varying subsidy density. To answer the second research question, we assess the relationship between subsidy density and features of providers, communities, and sources of public and private funding. This approach allows for a rich discussion of policy and practice implications as it relates to the child and peer diversity in ECE centers.

Method

Data Source and Study Sample

The sample was drawn from the National Survey of Early Care and Education (NSECE, 2012), which is sponsored by the Office of Planning, Research, and Evaluation in the U.S. Department of Health and Human Services. The NSECE includes a set of four surveys including: a household survey, a center-based provider survey, a workforce survey, and a home-based provider survey. The NSECE relies on a multistage probability design. In the first stage, 219 primary sampling units (i.e., counties or groups of counties) were selected. The second stage included provider clusters on one or more Census tracts. In the third stage, providers were drawn from available state and national administrative lists in all 50 states and Washington, D.C. This sample was supplemented with state administrative lists of license-exempt programs (e.g., Head Start, religious-based programs, state and local pre-K programs).

Data for the current study were drawn from the public-use center-based provider survey, which was conducted with ECE program directors (n=8,265). The analytic sample includes all providers who served at least one child aged 5 or under, not yet in kindergarten (n=7,771). The survey included questions related to characteristics of enrolled children, sources of public and private funding received, and center administration.

Measures

Subsidy Density

The dependent variable, subsidy density, is captured in a variable indicating the percentage of children in the program who are funded by subsidies. The subsidy density variable captures the proportion of children funded by "child care subsidy programs such as CCDF or TANF (including vouchers/certificates, state contracts)".

Independent variables are captured in three broad categories: provider factors, community characteristics, and funding sources.

Provider Factors

The key provider factors examined include the provider's legal status (for- or non-profit), whether the program has a quality rating, total enrollment and ages of children enrolled, length of operation, and whether the center is church-sponsored or school-sponsored. In the center-based provider survey, respondents were asked to report the legal status of their program (for-profit or non-profit) and whether their organization has an overall quality rating (e.g., accreditation or some other quality rating). Center directors also reported whether they served children in age categories

ranging from less than 12 months up to five years, as well as school-age children, and the number of children in all age groups served. Using these responses, the NSECE team created a variable capturing whether the provider serves any children 0-3 years of age. In addition, these enrollment totals were combined to create a variable capturing the total number of children served in the center. Finally, directors reported their program's length of operation (in months) and the NSECE team created a categorical variable with 16 categories ranging from 1: 0 to 6 months to 16: 26 years or more. For ease of interpretation and following the approach taken by previous research (e.g., Greenberg et al., 2018), we report descriptive information for three groups of providers: 0 months – 5 years, 6 years - 15 years, and 16 years or more.

Community Characteristics

Community characteristics include whether the center operates in an area of high poverty and high urban density. The NSECE team matched program addresses to 2010 U.S. Census data to measure the poverty and urban density of the area in which the program is located. Programs operating in communities with a ratio of 0.85 or higher in the urban to total population were classified as highly urban areas, while communities with 0.84 or below were classified as having a lower urban density. Similarly, the NSECE-created community poverty density variable classifies centers as operating in communities with a high density of poverty if more than 20% of the population is below the Federal Poverty Level (FPL), while communities with 20% or fewer residents live below the FPL were classified as having a lower poverty density.

Public and Private Sources of Funding

Finally, program funding is captured with the following variables: whether the program receives any funds from parent pay, Head Start, and public pre-K. In the NSECE, center-based survey respondents reported all of the public and private sources of revenue received by their program. In addition, directors reported the number of children who are funded by listed public funding sources. The NSECE team created variables capturing whether a center received Head Start and public pre-K funds. If respondents reported receipt of Head Start funds, the center was classified as a Head Start program. Similarly, centers that were classified as pre-K programs reported receiving at least some funds from public pre-K. Survey respondents were also asked about whether they received any revenues from tuition and fees paid by parents.

Analytic Plan

To answer the first research question, center demographics, provider factors, community characteristics, and funding sources were examined descriptively. *Chi-square* and one-way ANOVA analyses were conducted to identify statistically significant differences between groups of providers. Following the approach of similar research (Mendez et al., 2017), we create categories of providers based on the proportion of children served that use subsidies. Specifically, we note significant differences between providers that do not accept subsidies, providers that accept lower proportions of subsidies (25% or less), and providers that accept higher proportions of subsidies (26-100%), for each independent variable. Dividing centers in this way allows us to capture variability amongst centers that accept subsidies while also capturing important differences from centers that do not accept subsidies at all, which

comprise the majority of centers in the sample. Post hoc testing using the Games-Howell adjustment was conducted for all variables with a significant overall result to determine where the overall differences lie.

To answer the second research question, we used OLS regression to assess the relationship between provider factors, community characteristics, and sources of funding with subsidy density. The regression models were built through the use of variables previously established as predictors of provider subsidy system participation, including: has a quality rating; serves children 0-3; is a for-profit program; number of children enrolled; length of operation; is church-sponsored; is public-school sponsored; poverty density; urban density; receives parent pay; receives any funds from Head Start; and receives any funds from public pre-K (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022).

We applied the NSECE center-based sampling weight in all analyses. Analyses were performed in MPlus 8.2. (Muthén & Muthén, 2018). We used full-information maximum likelihood (FIML) estimation to handle missing data. Missing data on the variables ranged from 0 to 4% with the total number of children enrolled in the program having the most missing values.

Results

Descriptive Analyses

Table 6 depicts weighted descriptive statistics for the full sample and for subsets of providers that have varying degrees of subsidy density.

Table 6 Center Demographics, Provider Factors, Community Characteristics, and Funding Sources of ECE Centers

	Full Sample (n=128,676)	Non- Subsidy Centers (n=91,732; 71% of sample)	Lower-Subsidy Centers (n=19,421; 15% of sample)	Higher-Subsidy Centers (n=17,565; 14% of sample)
Center Demographics				
Percent of children with IEP*	8.7%	10.6%	4.6%	4.3%
Percent of Children by Race/ Ethnicity				
Hispanic children*	17.8%	19.2%	11.4%	17.9%
White children*	59.4%	61.8%	65.2%	41.7%
Black children*	20.3%	17.4%	16.2%	37.0%
Other Race *	11.5%	11.7% [a]	10.5%	12.0% [a]
Percent of children that speak a language other than English*	18.8%	21.3%	10.7%	15.9%
Center Factors				
Program has a Quality Rating*	46.9%	45.1% [b]	47.1% [b]	56.4%
Serves Children 0-3*	55.6%	42.9%	84.2%	89.1%

Legal Status				
For-Profit*	32.1%	23.0%	51.9%	58.2%
Non-Profit*	67.9%	77.0%	48.1%	41.8%
Mean Number of Children Enrolled*	n=58.9	n=55.2	n=74.5	n=59.0
Church-sponsored*	6.6%	7.7%	5.3%	2.5%
School-sponsored*	8.4%	10.1%	5.5%	2.7%
Community Characteristics				
Community Poverty Density				
High Poverty Density*	19.8%	19.6%	12.2%	29.6%
Moderate Poverty Density*	21.7%	21.5%	18.0%	26.6%
Low Poverty Density*	58.6%	58.9%	69.7%	43.8%
Community Urban Density				
High Urban Density*	54.6%	51.6%	60.0% [c]	63.3% [c]
Moderate Urban Density	26.2%	26.2%	28.2%	24.6%
High Rural Density*	19.2%	22.2%	11.8% [d]	12.1% [d]

		Funding Sources		
Program Receives Head Start Funding*	17.2%	20.2%	10.9% [e]	9.1% [e]
Program Receives Pre-K funding*	20.3%	22.1%	17.2% [f]	14.9% [f]
Program Receives Funds from Parent Pay*	68.3%	58.7%	94.8%	88.8%

Note. *= significant differences between non-subsidy, lower-subsidy and higher-subsidy providers at $p<0.05$. Common superscripts indicate pairs of groups that were not significantly different at $p<0.05$ in the post-hoc tests. Lower-subsidy centers= 25% or fewer children funded by subsidies. Higher-subsidy centers= 26-100% children funded by subsidies. The center-based provider sampling weight was used in all analyses.

Center Demographics

We find significant child demographic differences between centers serving different proportions of children using subsidies. Post hoc tests reveal that differences were significant across all groups of centers (non-subsidy, lower subsidy, and higher subsidy) for nearly all variables. Our results reveal that higher-subsidy centers have the highest proportions of Black children (37% Black) compared with non-subsidy centers (17.4% Black) and lower-subsidy centers (16.2% Black). On the other hand, lower-subsidy centers have the highest proportions of White children (65.2% White) compared with non-subsidy centers (61.8% White) and higher-subsidy centers (41.7% White). Centers that do not accept subsidies enroll higher proportions of children who are Hispanic (19.2% Hispanic, compared with 17.9% Hispanic in higher-subsidy

centers and 11.4% Hispanic in lower-subsidy centers), speak a language other than English (21.3%, compared with 15.9% in higher-subsidy centers and 10.7% in lower-subsidy centers), and have IEPs (10.6% IEPs, compared with 4.6% IEPs in lower-subsidy centers and 4.3% IEPs in higher-subsidy centers). There were not significant differences across all groups of centers for the "other race" variable. Specifically, though there was a significant difference between lower subsidy centers (10.5% "other race") with non-subsidy centers (11.7% "other race") and higher-subsidy centers (12% "other race"), non-subsidy centers and higher-subsidy centers were not significantly different from each other when it came to the proportion of children who were classified as "other race".

Center Factors

Results suggest there are significant differences between providers on all provider characteristics. Post hoc tests reveal that differences were significant across all groups of centers (non-subsidy, lower-subsidy, and higher-subsidy) with the exception of the variable capturing whether or not the program has a quality rating. Specifically, though there was a significant difference between centers that accept a higher proportion of subsidies (56.4% have a quality rating) with centers that accept a lower proportion of subsidies (47.1% have a quality rating) and centers that do not accept subsidies (45.1% have a quality rating), centers that do not accept subsidies and centers that serve a lower proportion of subsidies were not significantly different from each other. Our results suggest non-profit centers represent a higher proportion of non-subsidy centers (77%), compared with lower-subsidy centers (48.1% non-profit) and higher-subsidy centers (41.8% non-profit). We also find that school- (10.1%) and church-sponsored (7.7%) centers represent a higher proportion of non-subsidy centers,

as compared with lower-subsidy centers (5.5% school-sponsored and 5.3% church-sponsored) and higher-subsidy centers (2.7% school-sponsored and 2.5% church-sponsored). On the other hand, centers that are for-profit represent a higher proportion of centers serving children with subsidies; this is particularly true for centers that accept subsidies at a higher rate (58.2% for-profit) as compared to centers that accept subsidies at a lower rate (51.9% for-profit) and that do not accept subsidies at all (23% for-profit). Similarly, centers that serve infants and toddlers represent a higher proportion of centers serving children with subsidies, with higher-subsidy serving the largest proportion of infants and toddlers (89.1%) as compared to lower-subsidy centers (84.2%) and non-subsidy centers (42.9%). Finally, lower-subsidy centers tend to have larger numbers of children enrolled (mean enrollment=74.5 children) as compared to higher-subsidy centers (mean enrollment=59 children) and non-subsidy centers (mean enrollment=55.2 children).

Community Characteristics

The location of centers also seems to be important. Higher subsidy centers are located in areas of high poverty at the highest rates (29.6%), compared to non-subsidy centers (19.6%) and lower-subsidy centers (12.2%). It also appears to be the case that higher-subsidy centers are located in areas of moderate poverty density at the highest rates (26.6%), compared to non-subsidy centers (21.5%) and lower-subsidy centers (18%). In contrast, lower-subsidy centers are located in lower poverty areas at the highest rates (69.7%), compared to non-subsidy centers (58.9%) and higher-subsidy centers (43.8%). While results indicate that there were not significant differences between groups of centers in areas of moderate urban density, non-subsidy centers appear to be significantly different from centers that accept subsidy with lower

proportions of non-subsidy centers in areas of high urban density and higher proportions of non-subsidy centers in areas of high rural density.

Funding Sources

Finally, our descriptive results indicate centers that do not serve any children using subsidies report receiving Head Start and pre-K funds at higher levels compared to both lower and higher subsidy centers. On the other hand, lower-subsidy centers report accepting parent pay at the highest rates (94.8%), compared with higher-subsidy centers (88.8%) and non-subsidy centers (58.7%).

Predictors of Subsidy Density

Results of the regression analyses examining provider factors, community characteristics, and funding sources as predictors of a continuous variable capturing a center's subsidy density are presented in Table 7.

Results suggest certain features of ECE providers and communities are associated with subsidy density. Specifically, whether or not the program had a quality rating (ß= 3.252 , p <0.001) and served infants and toddlers (ß= 7.876 , p < 0.001) were positively related to subsidy density. Being a for-profit program (ß= 2.938 , p = 0.091) was marginally positively related to subsidy density. Having church sponsorship is negatively associated with subsidy density (ß= -12.500 , p < 0.001). In addition, our results suggest that as the total number of children enrolled in the program decreases, the proportion of families using subsidies increases (ß = -0.032 , p= 0.001). Further, we find programs operating in high poverty areas were more likely to have a higher density of subsidies (ß= 6.413 , p < 0.001).

We also find that center funding sources are related to subsidy density: receipt of Head Start (ß= -3.771 , $p = 0.009$) and pre-K funding (ß= -6.414 , $p < 0.001$) are negatively associated with subsidy density. On the other hand, receipt of parent payment is positively associated with subsidy density (ß= 6.043 , $p < 0.001$).

Table 7 Provider Factors, Community Characteristics, and Funding Sources Associated with Subsidy Density in ECE Centers

	ß	SE
Center Factors and Enrollment		
Program has a quality rating	3.252**	0.856
Serves children 0-3	7.876**	1.057
For-profit program	2.938^{+}	1.736
Number of children enrolled	-0.032**	0.010
Length of operation	-0.110	0.111
Church- sponsored	-12.500**	2.585
Public school- sponsored	-2.263	2.063
Community Characteristics		
High poverty density	6.413**	1.247
High urban density	1.342	0.957
Funding Sources		
Receives any funds from parent pay	6.043**	1.587
Receives any funds from Head Start	-3.771**	1.435
Receives any funds from public pre-K	-6.414**	1.184

R^2	0.177	0.017

Note. SE= standard error. * p<.05, ** p<.01, $^{+}$ p<.10

Discussion

Specifically, our results expand upon prior work identifying associations between provider subsidy system participation and a series of provider features, community characteristics, and sources of funding (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022), as we find these factors are also similarly related to subsidy density. Given CCDF's goals of enhancing equitable access to ECE that positively contributes to children's development, our study sheds some light on factors that may influence the proportion of subsidies accepted in a program and how that may be related to child diversity and peer demographic (mis)match in ECE centers.

Comparing ECE Centers by Subsidy Density

Our descriptive results highlight the diversity of U.S. ECE centers by looking specifically at variation by subsidy density. We compare centers using three categories: non-subsidy (0%), lower-subsidy (up to 25%), and higher-subsidy (26% or higher). Our findings suggest centers that accept subsidies, but do so fairly infrequently (i.e., lower-subsidy centers), tend to be the least diverse and operate in areas of lower poverty density, even when compared to programs that do not accept subsidies at all. This finding could, in part, be due to the fact that programs that admit families based on income eligibility criteria and offer free services to children living in poverty like Head Start and public pre-K programs are represented in the group of centers that does not accept subsidies at all. These findings reiterate the need to consider the impact of policies on child diversity in ECE programs, particularly given evidence showing that levels of racial, ethnic, and socioeconomic segregation are

higher in ECE settings than K-12 schools (Frankenberg, 2016), during the same time that children are developing racial attitudes and biases (McArdle & Acevedo-Garcia, 2018). By focusing on subsidy density, CCDF policies have the potential to enhance equity and diversity through increased access to ECE.

Though children with disabilities are a prioritized group of children for subsidies under the 2014 reauthorization of CCDF, our findings suggest that in 2012 when the data used for this study was collected, children with disabilities were served at higher rates in programs that do not accept subsidies than programs that accept subsidies. This finding is concerning, as families from low-income backgrounds that have children with disabilities typically struggle to find ECE (Henly & Adams, 2018). Given that families from low-income backgrounds are approximately 50 percent more likely to have a child with a disability (Simon et al., 2013), expanding equitable access to ECE to children with disabilities through subsidies is imperative. This finding may also indicate that some children with disabilities are served in other public non-subsidy programs, like Head Start or IDEA Part C funded programs. Future research with data collected after the reauthorization of CCDF may present a more optimistic picture, but continued emphasis on the prioritization of quality services for young children with disabilities in inclusive settings with typically developing peers is essential for both equity and children's development.

We also find that ECE centers that accept subsidies at varying levels differ in a variety of organization-specific ways. Specifically, expanding on previous findings that there are significant differences between providers that accept subsidies and those that do not on a series of provider factors, community characteristics, and sources of funding (Slicker & Hustedt, 2022), results from the present study suggest that there are

also significant differences between providers that accept subsidies at lower rates and those that accept subsidies at higher rates. For example, previous research suggests that there are significant differences between providers that accept subsidies and those that do not as it relates to having a quality rating (Slicker & Hustedt, 2022). While we find this to be true in this study as well, when we break down the centers that accept subsidies into lower-subsidy and higher-subsidy groups, we see that there is a significant difference between higher-subsidy centers and lower-subsidy centers, but that lower-subsidy and non-subsidy centers have quality ratings at relatively equal rates, which are significantly lower than higher-subsidy centers. In addition, in examining the variation between providers that accept subsidies at lower rates and those that accept subsidies at higher rates, we find that lower-subsidy centers also receive parent payment at higher rates than higher- subsidy centers.

Given evidence that children living in poverty and from culturally diverse backgrounds are served at lower rates in ECE centers (e.g., Reid et al., 2015), our finding that lower-subsidy centers, which have the least diverse child enrollment, are also serving more children overall is not necessarily surprising. This finding is, however, discouraging because it could suggest that fewer children are having the opportunity to interact with socioeconomically and culturally diverse peers and, consequently, miss out on opportunities for enhanced academic and social development (e.g., Reid et al., 2015; Weiland & Yoshikawa, 2014). On the other hand, it is encouraging that infants and toddlers appear to be served at higher rates in centers that accept subsidies (at both lower and higher rates), particularly given evidence that children are already aware of racial, ethnic, and socioeconomic differences and begin to form prejudices by three years of age (Aboud et al., 2012).

Also encouraging is our finding that ECE centers that accept subsidies have quality ratings at higher rates. Higher-subsidy ECE centers have a quality rating at significantly higher rates than programs that do not accept subsidies at all or significantly limit the number of subsidies in a program. These findings may suggest that some state Quality Rating and Improvement System (QRIS) policies and practices (e.g., required QRIS participation for subsidy participants, tiered reimbursement) may actually be incentivizing providers to accept subsidies at higher rates. However, additional research should explore this relationship between subsidy density and QRIS participation with newer data to assess the impact of revisions to quality requirements for CCDF participators as part of the 2014 reauthorization. It will also be important for future research to investigate whether programs that accept subsidies at higher rates tend to be programs that also have the highest quality rating in the state's QRIS.

Predicting Subsidy Density in ECE Centers

Expanding on the findings of Giapponi Schneider et al. (2017) and Slicker and Hustedt (2022), we find that being located in an area with high poverty density is positively associated with subsidy density. Given CCDF's central goal of serving children using subsidies at rates that can accommodate families' needs for affordable ECE, our finding that centers with higher subsidy density are more frequently located in high poverty areas is promising. These findings may also suggest that, even prior to the reauthorization of CCDF in 2014, providers may have been serving children with very low incomes from areas of high poverty (a prioritized population) at higher rates.

Our results also indicate that serving infants and toddlers is positively associated with subsidy density, which is promising given the concern that costs of caring for infants and toddlers may be too high to be fully covered by subsidy

payments (OIG, 2019). It could be that the financial burden associated with serving infants and toddlers—largely driven by the low staff-child ratios and specific space requirements—coupled with the fact that there are fewer other public funding sources available for infants and toddlers (NSECE Project Team, 2015) is somewhat offset with revenue from subsidies. Further, considering the Biden Administration's proposal for universal preschool for all 3- and 4-year-olds, our finding that serving infants and toddlers is positively associated with subsidy density is important. The infant and toddler care supply is much lower than for preschoolers (despite being in a critical period of development), particularly in lower-income areas (NSECE Project Team, 2015), suggesting CCDF may be supporting infants' and toddlers' ECE access at more equitable rates.

Understanding the relationship between subsidy density and a provider's overall funding structure is critically important, particularly given evidence that accepting subsidies, especially at higher rates, may be detrimental to a center's finances (Adams et al., 2008). Our finding that centers relying on Head Start and pre-K funds have lower proportions of children using subsidies suggest centers funded by Head Start or pre-K may not need to accept subsidies, as the funding from these sources is typically sufficient to sustain program operations. However, by integrating subsidy funds with Head Start or pre-K funds, providers could offer services that are better able to meet the demands of working families (i.e., extended hours, wrap-around services) and increase ECE quality and diversity (National Head Start Association, 2021). On the other hand, our findings suggest that providers accepting parent payment accept a higher density of subsidies in their program. These findings may suggest these centers rely on parent payment to supplement the often lower- than-

market-rate- level reimbursement rates providers receive for providing ECE for children using subsidies. An important caveat here is that this finding could reflect the fact that providers accepting subsidies also often collect a copayment from families in addition to the government-issued funds for children using subsidies. Future research should consider whether providers are also intentionally enrolling exclusively private paying families and the impact this decision has on a center's overall operating budget.

Limitations and Future Directions

Though this study makes important contributions to the body of knowledge around provider participation in the subsidy system, our approach is not without limitations. It must first be acknowledged that though our analyses rely on nationally representative data, the data pre-dates the 2014 reauthorization of CCDF. This is important because the reauthorization added many new requirements for ECE centers that accept subsidies and, consequently, could influence their decisions around subsidy system participation. Future research should rely on more recent data, such as the 2019 NSECE and/or the COVID-19 follow up survey. Additionally, the NSECE survey captures center directors' self-reported data, which could impact the reliability of the data entered, particularly as it relates to reports of the total number of children enrolled and receipt of specific sources of funding. Future research should consider the use of centers' regularly updated administrative data and/or qualitative data that could provide more in-depth information regarding the decision-making process around subsidy system participation and subsidy density for ECE providers.

Future research should also consider state- and local-level variation in ECE policy contexts. For example, certain state-level CCDF policies may be more provider

friendly and, thus, motivate providers to accept (more) subsidies. Some states offer reimbursement rates that are much closer to the market rate, for example. In addition, states vary in payment for child absences or center closures, which may play a role in provider subsidy system decisions.

Conclusion

The present study supports the continued need to explore ways that policies, such as CCDF, can support ECE providers in offering equitable, high-quality services available to all families. Using nationally representative data, our study identifies features of providers and communities that could be targeted for intervention as a mechanism for reducing educational inequalities, and to incentivize providers to accept child care subsidies at rates that can accommodate the demand and enhance the diversity of ECE centers. Our study highlights an important equity issue: ECE centers that are unwilling to accept subsidies (or accept them at very limited rates) threaten some children and families' access to ECE that can positively shape children's development. Further, while there are potential business-related motivations for limiting the number of subsidies accepted, doing so could negatively impact children's access to diverse, high-quality early learning experiences. Our findings suggest that in order to incentivize providers to accept subsidies, additional funding for centers may be necessary. Given that state subsidy reimbursement rates often fall below the market rate (Schulman, 2019), increased reimbursement rates for centers may motivate providers to accept subsidies at higher rates without negative repercussions to center finances. Alternatively, providing support and guidance to centers for integrating multiple sources of funding (e.g., accepting subsidies alongside Head Start funds) may

assist providers with navigating the complexities associated with simultaneously abiding by regulations and requirements for multiple sources of public funding. There are existing toolkits designed to assist centers as they navigate the integration of various sources of funding (e.g., Wallen & Hubbard, 2013); however, given that centers continue to report challenges in integrating multiple sources of funding (Government Accountability Office, 2016), additional support may be warranted.

To ensure children using subsidies have access to high quality ECE, the expansion of QRIS programming and policies that support centers in providing quality services at equitable rates for children using subsidies is essential. The adoption of a statewide policy that requires centers that accept subsidies to be enrolled in the state's QRIS—a policy that is true in only 13 states (Dwyer et al., 2021)—has the potential to increase access to high quality ECE for children using subsidies. This is particularly true if the state's QRIS has systems in place to support centers in navigating the administrative burdens associated with subsidy system participation as well as a focus on racial, ethnic, and socioeconomic equity. Recently, data was collected from state QRIS's related how the state's QRIS incorporates an approach to racial equity (Build Initiative & Child Trends, 2019). While the number of states reporting a specific approach to racial equity was limited in the most recent data collection, some states reported promising initiatives including: providing professional development related to respecting linguistic, ethnic, cultural, and gender-based differences (New Mexico) and incentives for hiring staff that reflect diverse family backgrounds (Wisconsin). Required enrollment in the state's QRIS, particularly if that QRIS has intentional supports in place to advance equity, could support enhanced access to diverse quality ECE environments for our youngest learners.

Recent calls to expand access to subsidized care for a more economically diverse group of families make our findings particularly important to consider. The success of these efforts would depend on providers that are willing to serve children and families who qualify for subsidized care. States would need to be attentive to provider and community characteristics that may impact centers' willingness to accept subsidies at expanded rates. Our results have implications for increasing the number of children using subsidies in a program and, consequently, socioeconomic, racial and ethnic peer diversity, all of which have been linked to positive academic and social outcomes for young children.

Chapter 4

STUDY 3: THE EFFECT OF STATE SUBSIDY POLICIES ON EARLY CARE AND EDUCATION PROGRAMS' DECISIONS TO ACCEPT CHILD CARE SUBSIDIES: EVIDENCE FROM NATIONALLY REPRESENTATIVE DATA

Abstract

The present study examined the effect of state-specific subsidy policies on center-based providers' participation in the child care subsidy system. Relying on a nationally representative sample of early care and education centers in the National Survey of Early Care and Education (NSECE, 2012) and state subsidy policies from the Child Care and Development Fund (CCDF) Policies Database (2011), propensity score matching was used to create comparable groups of providers that accept subsidies and providers that do not based on a series of center and community-level predictors of subsidy system participation. Logistic regression models using the matched sample demonstrate that state-specific variations in subsidy policies impact subsidy system participation. Specifically, as the state-issued base subsidy reimbursement rate increases, providers become more likely to accept subsidies. Other policies such as a tiered reimbursement system with higher reimbursement rates for programs earning higher quality ratings and policies that reimburse providers for days the child is absent appear to make providers more likely to participate in the subsidy system. Results suggest that there may be meaningful actions that states can take in their state-specific subsidy policy agenda that can incentivize more ECE centers to accept subsidies.

Introduction

Working families need access to affordable early care and education (ECE) programs for their children, both to ensure parents' ability to work and enhance children's readiness for school. However, affordable ECE is very difficult to locate, particularly for families from low-income backgrounds (Baldiga et al., 2018). The Child Care and Development Fund (CCDF) is a federal government program that provides child care subsidies to families living in poverty to offset the high cost of ECE. Subsidies are government-issued funds that families can use to access ECE at a participating ECE program of their choice. While subsidies have the potential to increase access to ECE for eligible families, fewer than one in six eligible children actually have access to subsidies to enroll in ECE programs (Child Care Aware of America, 2019). One factor influencing children's access to ECE is the persistent decline of ECE programs willing to accept subsidies (U.S. Department of Health and Human Services [DHHS], 2021).

The sustainability of CCDF and children's access to affordable ECE is threatened by insufficient numbers of ECE programs serving children using subsidies, yet little is known about the specific motivating factors and state policy contexts that may influence ECE programs' participation in the subsidy system. Due to limited federal and state funds, by accepting child care subsidies, ECE programs are often accepting a loss in revenue because state and local subsidy reimbursement rates typically fall far below the prices that private-paying families are being charged for ECE services (Schulman, 2019). Researchers and policymakers speculate that state-specific subsidy policies—such as the subsidy reimbursement rate—may influence ECE program participation in the subsidy system; however, there is an absence of

causal evidence that could provide policymakers with guidance about how to shape state policies in a way that incentivizes subsidy system participation amongst ECE programs. The present study relies on a database of state- specific CCDF policies (CCDF Policies Database, 2011) and a nationally representative sample of ECE centers (National Survey of Early Care and Education [NSECE], 2012) to examine the predictive utility of state subsidy policies on ECE programs' participation in the subsidy system. Using propensity score methods (PSM), this study will use a set of research-supported center and community covariates to match ECE centers, creating a "treatment group" (i.e., accepts subsidies) and a "control group" (i.e., does not accept subsidies). PSM are causal methods because they reduce selection bias and approximate an experimental design. Following the matching process, we determine if variation in subsidy policies across states shape decisions ECE centers make around enrolling children who use subsidies in their programs.

Background

The Child Care and Development Fund

The Child Care and Development Fund (CCDF), originally authorized in 1990, is a federal program with a goal of improving access to ECE for families from low-income backgrounds with children under the age of 13. At its inception, CCDF was established to primarily allow families to work, but over time and through the Child Care and Development Block Grant (CCDBG) Act of 2014—which reauthorized the CCDF program—CCDF has evolved to simultaneously prioritize the healthy development of children. As a result, CCDF now addresses both ECE access-related concerns of policymakers. CCDF allocates funds to states, territories, and tribes for

disbursement of funds in a way that meets the unique needs of families in the area. States use the funds to provide child care subsidies through vouchers to low-income families or contracts with ECE programs. CCDF aims to provide access to ECE with minimal costs to eligible families. In fiscal year 2019, CCDF served just under 1.4 million children (US DHHS OCC, 2021). Though CCDF is one of the largest federal investments in ECE, the program only served 11 percent of eligible children each month in 2011 and 2012 (U.S. Government Accountability Office [GAO], 2016), the time at which the data for the present study was collected.

State Subsidy Policies

States set their own CCDF policies and practices—though they must fall within specified federal parameters—permitting variation in implementation of CCDF across states. State subsidy agencies establish a series of policies ranging from those that determine what families qualify for subsidies, how often parents must recertify eligibility, the amount that parents must contribute toward ECE costs (i.e., copayments), and the amount the providers will be paid for serving children using subsidies (i.e., the subsidy reimbursement rate). These policies that states put into place simultaneously affect access to ECE for families and the ability to provide care and quality programming. Research suggests that variation in state subsidy policies can impact families' access to ECE (e.g., Weber et al., 2014), but has yet to establish the impact of state-specific subsidy policies on provider participation in the subsidy system (i.e., if the center accepts subsidies).

Causal Research on Subsidies

A well-documented causal relationship has been established between a set of CCDF policies that support stable ECE arrangements and continuity of subsidy use for families (Micalopoulos et al., 2010; Weber et al., 2014). For example, studies employing experimental designs, whereby the experimental group had access to more generous sets of subsidy policies (e.g., more generous eligibility policies, fewer out-of-pocket costs for families, and improvement in bureaucratic processes), have shown that more generous policies result in parents having access to more stable care arrangements and higher rates of satisfaction (Micalopoulos et al., 2010). Additional research has explored the types of ECE parents select as it relates to variation in subsidy policies. For example, a study found that the experimental group of families who had access to a set of policies that were family friendly – including access to caseworkers who provided information on ECE settings and fewer out-of-pocket expenses for families—more commonly selected center-based ECE as compared with other ECE options (Crosby et al., 2005). These studies suggest that variations in state-specific subsidy policies have the potential to impact subsidy system participation for eligible families.

State Subsidy Policies Impacting Providers

There are also a number of CCDF policies that directly impact providers. For instance, each state determines its own reimbursement rates for providers that serve children receiving subsidies. State subsidy reimbursement rates are highly variable across and, in some cases within, states. The rates vary based on a series of factors including the geographical location within the state, the type of program (i.e., center, home-based program), the age group of the child (i.e., infant, toddler, preschool), the

amount of care (i.e., full-time, part-time) or the quality of the program. In accordance with new guidelines from the 2014 reauthorization of CCDF, states and territories must establish these rates by conducting market rate surveys of the price of ECE in the state (or another approved method for calculating the state's reimbursement rate). The reauthorized CCDF law recommends that states set their reimbursement rates at 75 percent of the market rate. In other words, states that set reimbursement rates at 75 percent of the market rate would be giving families with access to subsidies the opportunity to access three out of four ECE programs without additional expenses beyond any family copayments (Office of the Inspector General [OIG], 2019). Yet, in 2019, only four states had subsidy reimbursement rates that met that guideline (Schulman, 2019). In a survey of state CCDF administrators, respondents shared that the state prioritized serving more children over higher provider reimbursement rates. If the state set the rate at 75% of the market rate, the reimbursement costs would exhaust subsidy funds sooner, leaving fewer funds available for enhancing ECE access for more families (OIG, 2019). At the same time, states must consider how the established reimbursement rate impacts ECE programs. Specifically, subsidy payment rates are likely to influence ECE programs' decisions about caring for children receiving subsidies—and insufficient rates are likely to discourage provider subsidy system participation (Schulman, 2019), but research is needed to determine the potential impact of reimbursement rates on provider participation in the subsidy system.

The state also has the option to set maximum amounts that could be paid to ECE programs that accept children using subsidies. States may provide higher reimbursement rates for providers who qualify for increased payment for meeting additional criteria established by the states. An increasingly common practice, for

instance, is to use a tiered reimbursement rating system that provides higher reimbursement rates for providers that achieve higher quality ratings in the state Quality Rating and Improvement System (QRIS). In some cases, states have a single higher payment rate while others have progressively higher payment rates for progressively higher levels of quality. Thirty-two states use a tiered reimbursement system in addition to their base rates for ECE centers (Dwyer et al., 2019). In the states with tiered rates, the difference in tiers for a 4-year-old range from 5-117 percent (Schulman, 2019). Importantly, even in the more than two-thirds of states with tiered reimbursement rates, the highest rates were still below the 75th percentile of market rates (Schulman, 2019).

Other variations in state CCDF policies include the number of days providers are reimbursed for children being absent (if any) and the number of days providers are reimbursed for being closed for holidays, professional development, or other scheduled or unscheduled reasons (if any). In 2011 (when the data for the current study was collected), 25 states had a policy that provided payments for days children are absent and 24 states had a policy to provide payments for days the program was closed (Minton et al., 2012). More recently, a report based on surveys from state CCDF administrators found that many states are implementing provider-friendly payment practices– such as paying providers for days a child is absent (41 states)—however, providers continue to cite unreliable and insufficient payments as challenges or barriers to participation in the subsidy system (OIG, 2019).

Further variation in state administration of subsidies includes how the states disburse funds. The majority of states use vouchers, which families can use at any participating ECE program (Minton et al., 2012). Contracts—which are direct

payments to ECE programs that are contractually obligated to the subsidy system—are used less frequently. However, previous research has shown that contracts have the potential to enhance administrative support and make revenue more reliable for participating ECE programs (Adams & Rohacek, 2002). Given that contracts have the potential to provide a more stable revenue source for ECE programs that accept subsidies, it is possible that the use of state contracts (vs. vouchers) may motivate ECE programs to participate in the subsidy system.

Since research has established a causal relationship between variation in state subsidy policies and families' access to ECE, it is also possible that variation in subsidy policies impacting ECE programs – including the subsidy reimbursement rate, tiered reimbursement, payment for absences/closures, or the use of subsidy contracts—may also be associated with higher rates of provider participation in the subsidy system. Yet, studies of this nature are absent from the research literature. Focusing on the implementation of state subsidy policies is critical because they are amenable to policy intervention and change. In other words, while many factors may influence provider participation in the subsidy system or families' access to ECE, features of state CCDF policies and practices are within the direct control of state-level policymakers.

Conceptual Framework

An adapted version of the Conceptual Framework of Childcare Provider Subsidy Participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022) will guide this study. This conceptual framework was originally developed and tested using administrative data for licensed ECE providers from Massachusetts. The

conceptual model considers several categories of possible predictors of subsidy system participation for ECE providers, including provider factors, local market factors, and subsidy policies/practices. Though the Massachusetts-based study found that a variety of provider and market factors –including the median income of the surrounding area, legal status, program size and type, and accreditation– were significant predictors of subsidy system participation, the study could not empirically test the influence of state variation in subsidy policies/practices despite including them in the conceptual framework.

In a more recent study using nationally representative data (Slicker & Hustedt, 2022), modifications were made to the conceptual framework to include a few additional provider features– including serving infants and toddlers, church or school sponsorship– as well as refinements to the child care market factors to capture community characteristics more broadly. Given that this study relied on publicly available nationally representative data, there was still no way to empirically test the impact of state-specific subsidy policies, but the study did consider the impact of private and public sources of funding (i.e., Head Start, pre-K). In the present study, the adapted conceptual framework (see Figure 7) will guide the selection of the independent variables used in the initial logistic regression that guides the propensity score matching process.

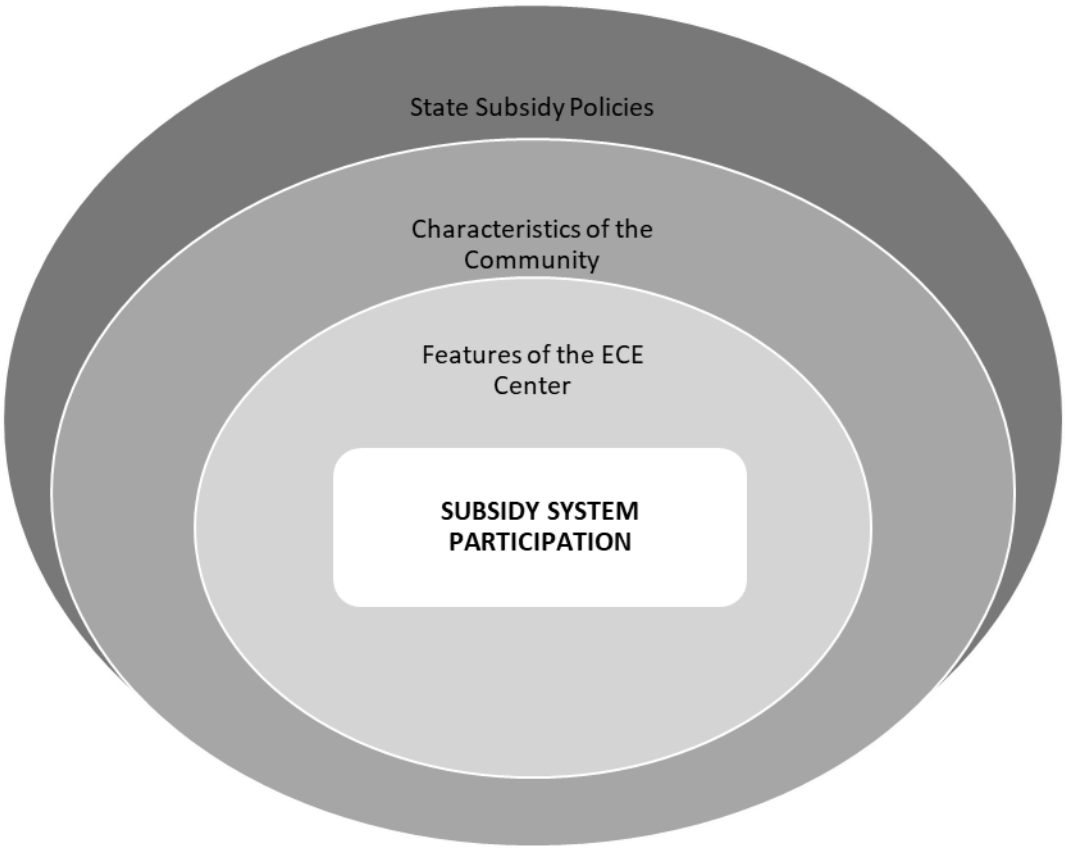


Figure 7 Conceptual Framework: Program, Community, and State Influences on Subsidy System Participation

Provider Participation in the Subsidy System

Given the steady decline in the number of ECE programs that accept subsidies (US DHHS, OCC, 2021), it is a federal priority to identify strategies to incentivize participation in the subsidy system for ECE providers (Schumacher, 2015; CCDF Program, 2016). The decline in the number of providers accepting subsidies is concerning both because it threatens the sustainability of CCDF, but also because it limits families' access to ECE. As part of the reauthorization of CCDF, states are

required to track provider participation in the subsidy system as well as barriers to participation (CCDF Program, 2016).

Research has highlighted the substantial challenges and barriers for ECE programs that participate in the subsidy system, including burdensome paperwork and administrative requirements, communication problems between subsidy agencies and providers, and late or incorrect payment rates (Adams et al., 2008; Rohacek & Adams, 2017; Sandstrom et al., 2018). Of particular concern is that since most states offer provider reimbursement rates that are significantly lower than the market rate (Schulman, 2019), providers may be accepting a significant loss in revenue by accepting subsidies.

Little is known about the specific factors that may influence whether providers accept subsidies (Rohacek, 2012), though the evidence is growing that certain programmatic and community characteristics are related to subsidy system participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). Specifically, operational features of an ECE program– such as the administrative/operational capacity, center finances, and child enrollment– have been shown to be associated with subsidy system participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). The findings from these studies relying on statewide and nationwide data also indicate that the characteristics of the community—such as the poverty level of the surrounding area—are associated with subsidy system participation.

However, the influence of state-level CCDF (i.e., subsidy) policies and practices on provider participation in the subsidy system is not known. CCDF policies and practices– such as provider reimbursement rates– could be conceptualized as more or less incentivizing for providers that are considering whether or not to accept

subsidies. For instance, research suggests providers were less likely to participate in the subsidy system if a large gap existed between their private pay family prices and subsidy reimbursement rates (Giapponi Schneider et al., 2017). On the other hand, if providers viewed subsidy payments as more reliable than payments from private-paying families, providers were more likely to serve children receiving subsidies (Adams et al., 2008; Sandstrom et al., 2018).

The Present Study

The present study will investigate the unique influence of state-specific subsidy policies (e.g., subsidy reimbursement rate, the presence of a tiered reimbursement policy) on provider subsidy system participation using a nationally representative sample of ECE centers from the restricted-use 2012 NSECE and matching their location with the state-specific subsidy policies in place using the 2011 CCDF Policies Database. Our study improves upon the methods used in previous research through the use of propensity score matching, allowing us to closely approximate a randomized experiment to estimate the predictive utility of state subsidy policies on provider participation in the subsidy system.

This national study focuses specifically on state subsidy policies, making it unique from previous research that has highlighted a series of center and community level predictors of subsidy system participation. Though important, these center and community factors are not always (immediately) amenable to policy intervention. The present study, on the other hand, uses a set of subsidy policies directly impacting ECE providers that a state could elect to implement and evaluates whether they predict provider subsidy system participation. The present study addresses the following

research question: To what extent do state subsidy policies in place yield subsidy system participation for ECE centers?

Method

Data Sources

The data for this study are drawn from the CCDF Policies Database and the restricted-use National Survey of Early Care and Education (NSECE). Data on ECE centers, including information about subsidy system participation as well as a series of provider and community characteristics come from the NSECE. State subsidy policies come from the CCDF Policies Database.

NSECE

The NSECE is a survey that is sponsored by the Office of Planning, Research, and Evaluation (OPRE) in the Administration for Children and Families (ACF) in the U.S. Department of Health and Human Services (DHHS). The NSECE provides a picture of ECE in the U.S. and contains 4 nationally representative surveys– the center-based provider, workforce, home-based provider, and household survey (NSECE Project Team, 2013). The data from this study are drawn from the 2012 center-based provider survey, which was conducted with ECE program directors licensed in the state in which they were located. Center-based providers were also drawn from all available state and national administrative lists, including license-exempt programs (e.g., Office of Head Start list of programs, YMCA programs, National Association for the Education of Young Children accredited programs, etc.) from various agencies in all 50 states and D.C. In total, 8,265 center-based providers completed the survey and were asked a series of questions related to the program's

enrollment and rates, workforce, and participation in government programs. The analytic sample for this study included only providers that enrolled at least one child five years of age or younger (and not yet enrolled in kindergarten, n=7,771).

CCDF Policies Database

The CCDF Policies Database (OPRE, 2008), maintained by the Urban Institute under funding from OPRE, is a separate database of child care subsidy policies for all 50 U.S. states and DC. The policies captured in the database are collected primarily through the states' caseworker policy manuals and then verified by the state administrators for accuracy. The database is updated yearly to reflect changes in state-level policies. The database includes policies for family eligibility, priorities and waiting lists, family payments, provider requirements, and reimbursement rates. This study examines policies directly impacting center-based ECE providers that were in place as of October 1, 2011 to match the timeframe when providers were surveyed for the NSECE.

Measures

The majority of the variables used in this study come from the NSECE with the exception of the state subsidy policies, which come from the CCDF Policies Database. To merge the two datasets, a state-level identifier from the restricted-use NSECE dataset was used.

Subsidy System Participation

The dependent variable, subsidy system participation, comes from a question in the NSECE that asked providers to report the percentage of children in the program

who are funded by “child care subsidy programs such as CCDF or TANF (including vouchers/certificates, state contracts)”. Subsidy system participation is a dichotomous variable that captures whether or not the provider serves at least one child funded by subsidies.

CCDF Policies

State specific variation in subsidy policies will be captured using a series of variables from the CCDF Policies Database. These variables will serve as the independent variables for the logistic regression following the propensity score matching process. The base subsidy reimbursement rate is the rate that providers are paid when the program accepts a child using subsidies. Consistent with the approach taken in previous research (Greenberg et al., 2018; Madill et al., 2018), we adjust the base reimbursement rate provided in the CCDF policies database using Regional Price Parities, developed by the Bureau of Economic Analysis, to capture state-to-state differences in cost of living. In addition, since some states have a higher reimbursement rate for certain ECE centers, typically based on the program earning a higher quality rating within the state’s Quality Rating and Improvement System (QRIS), a variable capturing whether the state has a tiered reimbursement policy is included. In addition, family fee policies are considered. Specifically, a variable capturing if the family is required to pay any difference between the ECE center’s parent-pay rate and the state’s reimbursement rate is included. Further, to capture variation in how states administer subsidies, we also have a variable indicating if the ECE program receives subsidy funds through the use of state contracts (vs. vouchers).

Finally, to capture additional state- specific variation in policies directly impacting ECE providers, we also include a few variables directly impacting centers. The CCDF Policies Database includes data about whether providers are paid for the days children are absent and whether providers are paid for the days the center is closed (for professional development, holidays, inclement weather, or other approved reasons) and these variables are also included in our study.

Covariates in Propensity Score Matching

There are three categories of covariates from the NSECE used in the propensity score matching to estimate ECE centers' propensity to accept child care subsidies. Each of the covariates included in this study for the propensity score matching process have been identified as predictors of subsidy system participation in previous research (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). The first category of independent variables is provider factors, which include the center's legal status, total child enrollment, if the program enrolls children under age 3, and if the program has a quality rating. In the center-based provider survey, respondents reported the legal status of their program (if the program was a for-profit/non-profit program). Previous research has identified for-for-profit status as a predictor of subsidy system participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). Respondents also reported the number of children enrolled in all age groups served (0-5, plus school age children) and these numbers were combined to create a variable capturing the total number of children. In previous research, as the number of children enrolled increased, subsidy system participation became less likely (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). Using responses about the number of children by age group,

the NSECE team also created a variable capturing whether the program enrolls any children under the age of 3 (infants and toddlers). In another study relying on NSECE data, programs that enrolled children under the age of 3 had higher odds of subsidy system participation (Slicker & Hustedt, 2022). Respondents also reported whether their program had an overall quality rating, including accreditation or some other form of a quality rating. Having a quality rating/accreditation has been shown to be positively associated with subsidy system participation (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022).

Several community characteristics are also included as covariates. To capture the urban density of the program's surrounding community, the NSECE team matched the program's address to the 2010 U.S. Census data. Communities with 0.85 or above in the ratio of urban to total population were classified as having a high urban density. Programs that operated in areas of a 0.84 or below were classified as having a lower urban density. This variable was included as a covariate given that families in urban areas use subsidies at higher rates than rural areas (Davis et al., 2010). The NSECE team also created a community poverty density variable whereby programs operating in communities with greater than 20% of the population living below the Federal Poverty Level (FPL) were considered to have a high density of community poverty. Programs operating in a community with 20% or fewer of the population living below the FPL were classified as having a lower density of community poverty. Previous research suggests that as the median income of an area increases, subsidy system participation decreases (Giapponi Schneider et al., 2017) and, similarly, that when a program operates in an area of high poverty density, odds of subsidy system participation are higher (Slicker & Hustedt, 2022).

Finally, public and private sources of funding were included as covariates for the propensity score matching. Centers were asked to report the sources of funding received as well as the number of children funded by a list of publicly funded sources. Providers reported whether or not the center received any revenues from tuition or fees paid by parents. Receipt of parent payment has been shown to be positively associated with subsidy system participation (Slicker & Hustedt, 2022). The NSECE Team also identified a center as a Head Start center if directors reported receiving any Head Start funds. Research suggests that receipt of Head Start funds is negatively associated with subsidy density (Slicker & Hustedt, under review). Similarly, if centers reported receiving any public pre-K funds, the centers were classified as a pre-K center. Previous research suggests that ECE centers that report receipt of public pre-K funds have lower odds of subsidy system participation (Slicker & Hustedt, 2022).

Analytic Approach

The goal of this study is to address the gap in the literature regarding the effects of state CCDF policies on provider subsidy system participation (i.e., whether or not the ECE center accepts child care subsidies). However, given the nature of the CCDF program and the variation in state policies, this question cannot be tested experimentally. That said, to answer our research question, we apply propensity score methods (PSM) to a sample drawn from a nationally representative dataset to approximate randomization. PSM involves generating probabilities that an individual will be in a 'treatment' or 'control' condition based on a collection of selected covariates and will be used to test predictors of state subsidy policies on provider subsidy system participation. We use PSM in a novel way in this study because we

estimate comparable “control” and “treatment” groups as our outcome and then estimate the predictive utility of specific variables on being in one of the two groups. Typically, studies employing PSM estimate the “treatment” and “control” groups with PSM and then compare those groups on outcome(s). In setting up our study this way, we are able to leverage causal methods to appropriately consider the impact of center- and community-level predictors of provider subsidy system participation, but present results that estimate the unique influence of state subsidy policies. Results from this study, then, can be used by state-level policymakers weighing the costs and benefits of implementing specific subsidy policies in their state.

PSM are causal methods because the covariates that predict receiving the treatment are carefully selected based on previous research (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022) and used to capture and reduce selection bias. A propensity score is the probability that an ECE center would be in a particular group (i.e., participate in the subsidy system) based on a set of covariates (Rosenbaum & Rubin, 1983). PSM reduces selection bias by balancing covariate distributions between the ‘treatment’ and ‘control’ groups (Leite, 2017) and has become a common choice for equating treatment groups with non-experimental data when random assignment is not possible (Bai & Clark, 2019; Thoemmes & Kim, 2011). In our study, the ‘treatment’ group consists of the ECE centers that participate in the subsidy system (n=2,640), while the ‘control’ group is comprised of all other ECE centers (n=5,131). The goal of PSM is to achieve an appropriate counterfactual; in our case, the appropriate counterfactual would be ECE centers that have a high likelihood of accepting subsidies (and thus being in the treatment group), but that do not accept subsidies. By carrying out this process, any differences between groups on the

dependent variables (i.e., subsidy system participation) can be more confidently attributed to variation in state CCDF policies in the logistic regression carried out after the matching process. Specifically, using a multistep process that involves multiple imputation (MI) and PSM (described below), the analytic sample is divided across 'treated' and 'control' subgroups (designated on the basis of subsidy system participation and matched based on the probability that centers accept subsidies) that will be used to determine state CCDF policies' predictive utility on subsidy system participation.

To carry out this study, we took the following steps. First, we used multiple imputation (MI) to address missing data. Second, we applied propensity score matching to find equal samples of providers that accept subsidies and those that do not using a series of research-supported center, community, and funding source covariates to approximate a random experiment. Then, logistic regressions were used to calculate odds ratios to estimate the likelihood of subsidy system participation for each of the state-specific subsidy policies included in the model.

Missing Data

Multiple imputation (MI) was used to handle missing data since the data were assumed to be missing at random (MAR; Acock, 2012). Since provider interviews were likely missing due to logistical constraints and not due to providers' potential responses, data are assumed to be MAR since the missingness may depend on the values of observed measures but not on unobserved measures (Graham, 2012). MI is the preferred method for handling missing data in propensity score methods (Leite, 2016).

We relied on the *mice* package in R (van Buuren & Groothuis-Oudshoorn, 2011), which uses chain equation to produce 20 imputed datasets. Missing data on the predictors ranged from 0 to 4% with the total number of children enrolled in the program containing the most missing values. We imputed 20 datasets, following recommendations by Graham et al. (2007).

Propensity Score Matching

Propensity score matching was used to identify an equivalent group of ECE providers that do not accept subsidies for each of the 20 imputed datasets.

The matching process was carried out with the MatchThem package (Pishgar et al., 2021) in R. Logistic regression determined the probability for subsidy system participation based on the covariates identified in the conceptual model guiding this study (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022), creating the propensity score based on multiple covariates (Bai & Clark, 2019). Next, propensity score matching– including nearest neighbor and caliper matching–were used to identify treatment (i.e., subsidy system participation/ accepts subsidies) and control (i.e., subsidy system non-participation/does not accept subsidies) on the basis of the proximity of their propensity scores (Caliendo & Kopeinig, 2008; Stuart, 2010). The nearest neighbor matching method involves choosing an individual in the treatment group and matching its propensity score with an individual in the comparison group that has its closest propensity score (West et al., 2014). To avoid a common problem with nearest neighbor matching whereby poor matches can occur because there is little overlap in the distribution of propensity scores in the treatment and control group, we also used caliper matching. A caliper, or maximum distance between propensity scores

in the two groups that is permitted for a match to be made, was specified following the recommendations of Cochran and Rubin (1973). We used a caliper of 0.2 standard deviations, per recommendations for ideal caliper distance (Stuart, 2010), to determine the closest match. A final method of matching, optimal matching, was also tested. Optimal matching matches treated individuals with untreated individuals by minimizing the total distance between the treated and untreated matched pairs for the entire sample, minimizing the reduction in sample size (Leite, 2017). Typically, optimal matching provides better matches than the other two matches, but given the large sample size available using NSECE data, results from optimal matching and nearest neighbor matching were similar (Bai, 2015). Each matching method described above was tested to determine the method with the greatest bias reduction. The following formula was used:

$$PBR_k = \frac{\left|B_{k,before\ matching}\right| - \left|B_{k,after\ matching}\right|}{\left|B_{k,before\ matching}\right|} x\ 100\%$$

where *PBR* is Percent Bias Reduction and *B* is bias. PBR larger than 80% is deemed effective. In the present study, the nearest neighbor matching with a 0.2 caliper provided the greatest bias reduction and was used as the matching method.

Logistic Regression

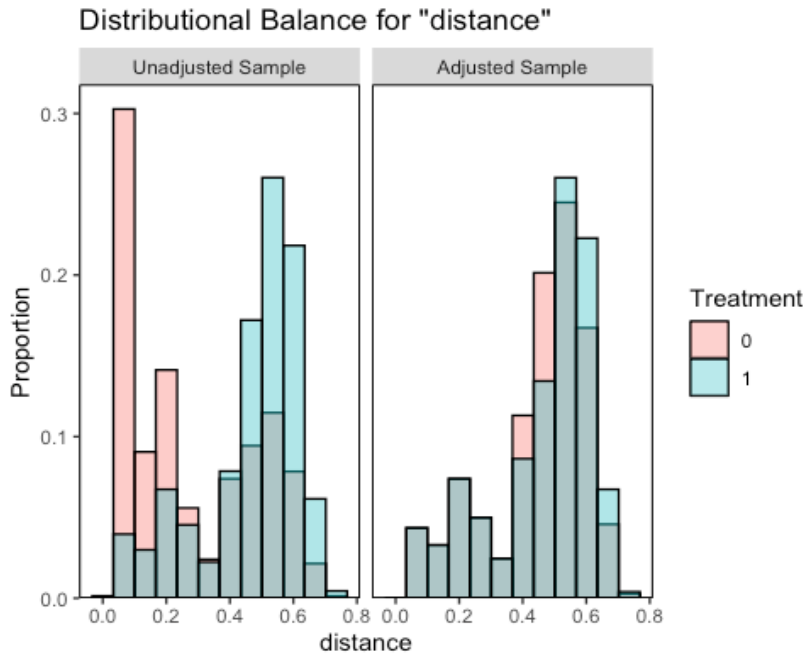
Following the matching process, we conducted logistic regression analysis to determine the predictive utility of state subsidy policies on provider participation in the subsidy system. By carrying out the matching process described above, any differences between groups on the dependent variable (i.e., subsidy system participation) can be more strongly attributed to variation in state CCDF policies. In other words, because we are able to divide the analytic sample across 'treated' and

'control' groups, the logistic regression analysis is used to determine state CCDF policies' relative impact on subsidy system participation.

Results

The NSECE includes 7,771 ECE centers, including 2,640 centers that accept subsidies and 5,131 centers that do not participate in the subsidy system. Across 20 imputed datasets, on average, ECE centers that accepted subsidies had a mean propensity score of 0.460 (SD=.162) and ECE centers that do not accept subsidies had a mean propensity score of 0.278 (SD=.188) before matching. Using 1:1 nearest neighbor matching with caliper (0.2) matching, we matched a total of 4,788 providers across 20 imputations. There were 2,983 unmatched providers and these providers were excluded in further analyses. After matching, participating providers had a mean propensity score of 0.457 (SD=.159) and non-participating providers had a mean propensity score of 0.442 (SD= .151). The percent bias reduction (PBR) was 91.9%, well above the 80% that is deemed effective. Figure 8 is a graphical display of the propensity score distributions in the treatment and control groups, and their overlap.

Figure 8 Histogram Depicting the Overlap of the Propensity Scores Before and After Matching



Note. Distance=propensity score. Treatment=0 represents the 'control' group of ECE programs that do not accept subsidies; Treatment=1 represents the 'treatment' group of ECE programs that accept subsidies. Unadjusted sample=sample before matching. Adjusted sample=sample after matching

Following the matching process, the balance on matched datasets was assessed using functions in the cobalt package in R and by running significance tests (t-tests for continuous variables and chi-square tests for dichotomous variables). Results of the significance tests are presented in Table 8.

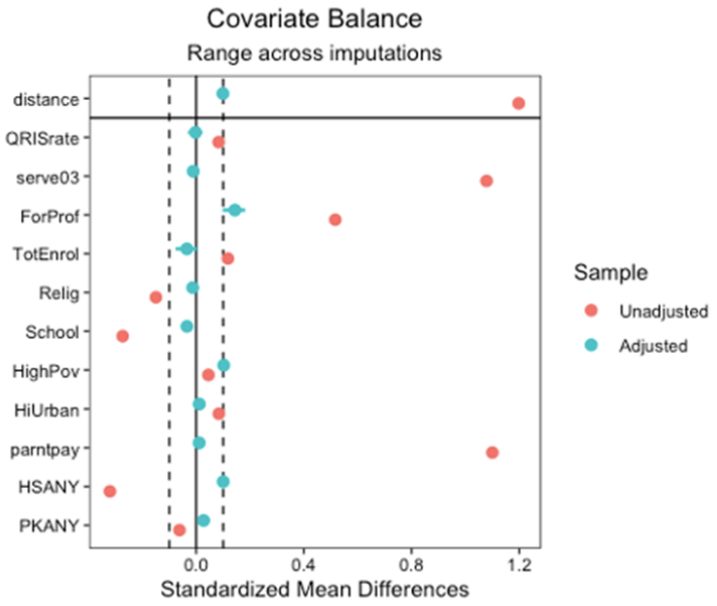
Table 8 Significance Test Results for Variables Used in the Matching Process

Variable	Before Matching				After Matching			
	Subsidy Providers n= 2640	Non-Subsidy Providers n= 5131			Subsidy Providers n=2394	Non-Subsidy Providers n=2394		
	n(%)/mean(SD)	n(%)/mean(SD)	X^2 / *t*	*p*	n(%)/mean(SD)	n(%)/mean(SD)	X^2 / *t*	*p*
For-Profit Program	1298(49.2)	1198(23.3)	532.94	<.001	1209(50.5)	1029(43.0)	27.18	<.001
Program has an overall quality rating	1363(51.6)	2431(47.4)	12.60	<.001	1176(49.1)	1200(50.1)	0.48	.488
Program serves 0-3 year olds	2283(86.5)	2545(49.6)	1007.47	<.001	2038(85.1)	2052(85.7)	0.33	.566
Number of children enrolled	69.6(46.1)	63.9(48.5)	-5.01	<.001	68.20(46.762)	68.96(46.540)	0.57	.570
School sponsorship	109(4.1)	491(9.6)	72.42	<.001	103(4.3)	120(5.0)	1.36	.244
Church sponsorship	130(4.9)	419(8.2)	27.90	<.001	128(5.3)	135(5.6)	0.20	.657

Program in an area with high poverty density	817(30.9)	1481(28.9)	3.63	.057	792(33.1)	687(28.7)	10.79	.001
Program in an area with high urban density	2296(87.0)	4318(84.2)	10.90	<.001	2084(87.1)	2077(86.8)	0.09	.764
Program receives funds from parent pay	2437(92.3)	3226(62.9)	764.15	<.001	2191(91.5)	2177(90.9)	0.51	.474
Program receives funds from Head Start	296(11.2)	1095(21.3)	121.69	<.001	287(12.0)	210(8.8)	13.31	<.001
Program receives funds from pre-K	545(20.6)	1189(23.2)	6.43	.011	529(22.1)	514(21.5)	0.28	.599

As Table 8 shows, there were significant differences in all measures before matching, but the matching process considerably reduced the number of significant differences. Results show that there were a few significant differences for each of the measures between the matched samples of ECE centers that accept subsidies and ECE centers that do not accept subsidies. However, because the standard mean difference was well below the standard cutoff of 0.01 for these comparisons these significant differences are not cause for concern.

Significance tests can be misleading due to changes in the sample size (Imai et al., 2008), so we rely on a more common metric for evaluating covariate balance– the standardized difference in means. The absolute standardized mean differences (ASMDs) and Kolmogorov-Smirnov (KS) statistics were used as metrics to evaluate the extent to which propensity score matching created groups with similar covariate distributions. KS statistics are useful for evaluating balance because they measure the greatest distance between the empirical cumulative distribution functions for each variable between the two groups, and values close to 0 denote balance (Austin & Stuart, 2015). ASMDs and KS values in our matching evaluation range from 0.0062 (center accepts parent payment) -0.0909 (center is a for-profit program). Evaluating the matches reveals that the covariates are well-balanced after matching because the ASMD and KS statistics for all covariates across the imputed datasets are closer to zero. In addition, these values are all less than 0.1, consistent with recommendations for ideal standardized differences in means (Stuart, 2010). The standardized difference in means metrics are presented as a "love plot" (Rudolph et al., 2014) in Figure 9, which depicts the balance on each covariate before and after matching. These methods for evaluating covariate balance suggest that matching was successful.



Note. Unadjusted= sample before matching; adjusted= sample after matching. Distance= propensity score; QRISrate=program has a quality rating; serve03=program serves infants and toddlers; ForProf=program is a for-profit program, TotEnrol=the total enrollment of the program; Relig=program is sponsored by a church or religious organization; School=program is sponsored by a school/district; HighPov=program operates in an area of high poverty density; HiUrban=program operates in an area of high urban density; parentpay=program accepts parent payments; HSANY= program accepts Head Start funds; PKANY= program accepts pre-K funds

Figure 9 Love Plot: Balance on Each Covariate Before and After Matching Across All 20 Imputations

Descriptive Statistics

Table 9 depicts the variables from the NSECE that were used in the matching process and their standard mean differences (SMD) before and after the matching process. The table includes a breakdown of these characteristics in both the unmatched and matched samples across 20 imputations. 2,394 subsidy providers were matched

with 2,394 non-subsidy providers. The SMD after matching was closer to zero than before matching on all variables, indicating that matching was successful.

Table 9 Covariates Used in the Matching Process

Variable	Before Matching SMD	After Matching SMD
Program has a quality rating	0.085	-0.020
Program serves 0-3 year olds	1.078	-0.017
For-Profit program	0.516	0.150
Total enrollment	0.124	-0.017
Church-sponsored	-0.150	-0.014
School-sponsored	-0.274	-0.036
Program in an area with high poverty density	0.045	0.095
Program in an area with high urban density	0.084	0.009
Program receives funds from parent pay	1.105	0.022
Program receives funds from Head Start	-0.321	0.102
Program receives funds from pre-K	-0.063	0.016

Note. SMD= standard mean differences before and after matching

Table 10 displays descriptive statistics for the state-specific subsidy policies from the CCDF Policies Database and is broken down by the ECE center's subsidy system participation status. It should be noted that the variables included in this table were not included as part of the matching process. Rather, these policy variables were used as our key predictors in the logistic regression analysis that occurred after matching to assess the unique influence of these policies on subsidy system participation (i.e., whether or not the ECE center accepts subsidies). Descriptive

comparisons indicate there were significantly fewer ECE centers that accepted subsidies in states with a policy that families were responsible for paying the difference between the private pay rate and the state subsidy reimbursement rate before and after matching. There were also smaller percentages of centers that accept subsidies located in states that have a policy to reimburse for center closures than centers that do not accept subsidies across the unmatched and matched samples.

Table 10 Subsidy Policies Impacting Sample, Before and After Matching

Policy Variable	Before Matching				After Matching			
	Subsidy Providers n= 2640	Non-Subsidy Providers n= 5131			Subsidy Providers n=2394	Non-Subsidy Providers n=2394		
	n(%)/mean(SD)	n(%)/mean(SD)	X^2 / *t*	*P*	n(%)/mean(SD)	n(%)/mean(SD)	X^2 / *t*	*P*
Base subsidy reimbursement rate, adjusted for RPP	599.5(132.4)	609.4(137.0)	3.08	.002	598.4(132.3)	602.2(138.7)	0.96	.338
Reimbursement for child absences	2483(94.1%)	4818(93.9%)	0.07	.788	2263(94.5%)	2257(94.3%)	0.14	.706
State subsidy contracts	1180(44.7%)	2457(47.9%)	7.12	.008	1065(44.5%)	1106(46.2%)	1.42	.234
Families responsible for paying difference between subsidy reimbursement rate and private pay rate	2184(82.7%)	4361(85.0%)	6.74	.009	1986(83.0%)	2044(85.4%)	5.27	.022
Tiered reimbursement	1218(46.1%)	2181(42.5%)	9.33	.002	1098(45.9%)	1052(43.9%)	1.79	.181

Reimbursement for center closures	1795(68.0%)	3972(77.4%)	80.81	<.001	1630(68.1%)	1889(78.9%)	71.92	<.001

Note. RPP = regional price parity

Effect of Subsidy Policies on Subsidy System Participation

The effect of the CCDF policies on subsidy system participation was examined using a logistic regression analysis and is displayed in Table 11. Predictors of provider subsidy system participation (1 = participate; 0 = did not participate) included: a continuous variable capturing the base subsidy reimbursement rate, adjusted for Regional Price Parity, and several dichotomous variables capturing the presence or absence of specific policies including a tiered reimbursement policy (0=no, 1=yes), a policy that reimburses ECE centers for child absences (0=no, 1=yes), a policy that provides subsidy reimbursement for center closures (0=no, 1=yes), a variable capturing if the family is required to pay any difference between the ECE center's parent-pay rate (0=no, 1=yes), and if the state uses contracts (vs. vouchers) as the mechanism for subsidy reimbursement (0=no, 1=yes, contracts). We screened for multicollinearity and found that the predictors were not highly correlated.

Table 11 Results of Logistic Regression

Policy Variable	Logit coefficient	S.E.	p-value	Odds Ratio	95% Confidence Intervals	
Base subsidy reimbursement rate, adjusted for RPP	0.001	0.001	0.036*	1.000	0.998	1.001
Tiered reimbursement	0.142	0.070	0.043*	1.152	1.015	1.289

Reimbursement for child absences	0.269	0.130	0.039*	1.309	1.054	1.565
Reimbursement for center closures	-0.659	0.073	<0.001***	0.517	0.373	0.661
State subsidy contracts	0.140	0.070	0.046*	1.151	1.013	1.289
Families responsible for paying difference between subsidy reimbursement rate and private pay rate	-0.055	0.083	0.508	0.946	0.783	1.110

Note. RPP = regional price parity. *** p<0.001, **p<0.01, *p<0.05

Results suggest that nearly all of the state- specific subsidy policies we included in our study influence the likelihood that an ECE center accepts subsidies (see Table 4). Specifically, the subsidy reimbursement rate and the policies that impact the amount of money providers receive for accepting subsidies appear to be very important factors for providers as they consider subsidy system participation. Results suggest that as the base reimbursement rate increases, subsidy system participation becomes more likely (Odds Ratio (OR)=1.000 Confidence Intervals [CI]: 0.998-1.001; p=0.036). Having a statewide tiered reimbursement policy that provides increased

reimbursement rates for higher quality programs increases the odds of subsidy system participation (OR=1.152, CI=1.015-1.289, p=0.043).

A few other subsidy payment policies directly impacting providers appear to influence subsidy system participation. Results suggest that if states reimburse ECE programs for days the child is absent, ECE programs are more likely to accept subsidies (OR=1.309, CI=1.054-1.565, p=0.039). On the other hand, when states reimburse ECE programs for center closures, ECE programs have lower odds of accepting subsidies (OR=0.517, CI=0.373-0.661, p<0.001).

Our results also suggest that the way a state administers subsidies may also influence provider decisions around accepting subsidies. When ECE centers have contracts with states (vs. vouchers), subsidy system participation becomes more likely (OR=1.151, CI=1.013-1.289, p=0.046).

Discussion

In an effort to provide clear policy recommendations for incentivizing ECE centers to accept subsidies, the present study uses propensity score methods to estimate the predictive utility of state-specific subsidy policies on provider participation in the subsidy system. Our results are timely and important given the continued decline in the number of providers that accept child care subsidies. While previous work has provided some initial recommendations for motivating subsidy system participation among ECE providers (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022), the center- and community-level associations with subsidy system participation are more difficult to translate into immediate state action. The findings presented here, on the other hand, have important policy implications that have the potential to increase subsidy system participation through modifications to a series of

state-specific subsidy policies. Consistent with suggestions that subsidy reimbursements may impact providers' participation in the subsidy system (Schulman, 2019), we find that subsidy policies that impact the amount of funds a provider receives for accepting subsidies are important to consider. Furthermore, given the documented administrative difficulties associated with subsidy system participation (Adams et al., 2008; Sandstrom et al., 2018), our results appear to suggest that the way the state administers subsidies is also predictive of provider subsidy participation.

Results from this study may suggest that the state subsidy reimbursement rate impacts provider participation in the subsidy system. Due to the small standard error for this particular finding, it should be interpreted with caution. Given that subsidy reimbursement rates were lower than the market rate paid by private-paying families in 47 states in 2019 (Schulman, 2019), it is possible that a higher reimbursement rate may make centers more likely to accept subsidies. These payments determine the salaries that centers can offer staff, the teacher-child ratio in the classroom (so long as it meets licensing and other state requirements), and the materials and supplies that can be purchased for use in classrooms. More research is needed to determine the relationship between subsidy system participation and the state reimbursement rate.

Our findings suggest the importance of tiered reimbursement policies, as the presence of a tiered reimbursement policy in the state increases the odds of provider subsidy system participation. This finding may suggest that having meaningfully higher reimbursement rates available for ECE centers meeting certain state-specified quality benchmarks is an incentive for ECE centers to accept subsidies. According to the CCDF Policies Database used for this study, at the time the data for this study was collected in 2011, 22 states and D.C. had tiered reimbursement policies in place and

the number of states with a tiered reimbursement policy has increased over time (Build Initiative & Child Trends, 2019). Interestingly our results seem to somewhat contradict the results of a recent statewide study on tiered reimbursement, which found that ECE centers were not motivated to achieve higher levels of quality given the presence of a tiered reimbursement policy (Lee, 2021). While the present study did not consider the relationship between a tiered reimbursement policy and a center's desire to attain a higher quality rating, our results could suggest that the presence of a tiered reimbursement policy is motivating to ECE centers on a national scale because the tiered payments are predictive of subsidy system participation.

Findings from the present study suggest that other subsidy policies that make it easier for ECE centers to manage and accept subsidies may also incentivize provider participation in the subsidy system. For example, our findings suggest that if providers are reimbursed for days that children are absent, they are more likely to accept subsidies. This is important to consider because, in many ECE programs, private paying families are expected to pay even when their child is sick or otherwise unable to attend. Only half of US states had a policy that reimbursed ECE centers when children were absent in 2011 (Minton et al., 2012). Having policies in place whereby ECE centers that accept subsidies do not receive payment for child absences could serve as a disincentive to accept subsidies when ECE centers could instead enroll a private-paying family and be guaranteed payment irrespective of a child's attendance.

Previous research suggests that contracts, which are direct payments to ECE programs that accept subsidies (as compared to vouchers), can be very beneficial to ECE programs. For instance, contracts can help to stabilize revenue and reduce the overall administrative burden for ECE programs (Adams & Rohacek, 2002; Matthews

& Schumacher, 2008). The findings in this study suggest that when centers are located in states where programs receive subsidy payments through state contracts, the odds of ECE centers participation in the subsidy system increases. In 2011, only 17 states and DC administered subsidies through state contracts (Minton et al., 2012), suggesting an opportunity for expansion of this policy to other states.

Our findings do not provide support for implementing other subsidy policies that theoretically could have incentivized providers to accept subsidies, such as continuing payments when centers were closed. In fact, when states provided payments for center closures, providers were *less* likely to accept subsidies. This finding should be interpreted with caution because the variable used for this analysis was a dichotomous variable capturing whether the state reimbursed the center for closures at all and did not capture variation in the type of closures (i.e., closures for state holidays, inclement weather, professional development) or the number of days a center could be reimbursed for center closures. For example, in 2011 both Mississippi and South Carolina were technically paid for center closures, but while Mississippi could receive payment for up to 11 holidays per year, South Carolina could only receive state subsidy payments if they also bill private paying families for center closures and there was seemingly no limit to the number of days centers could be reimbursed. Further caution when interpreting this finding should be exercised because 19 states had missing data on this policy variable.

In addition, a policy that requires families to pay any difference between the ECE center's parent payment rate and the state's reimbursement rate did not predict subsidy system participation. This finding is important because though the policy could theoretically benefit ECE programs financially, it has the potential to limit ECE

access for families who cannot afford to pay that difference. According to state subsidy policies in place in 2019, 32 states require the family to pay the difference between the parent payment rate and the subsidy reimbursement rate and an additional 7 states have a policy that a family "may" be asked to pay the difference (CCDF Policies Database, 2020). This finding suggests that there may be more effective state policies and practices for assisting ECE programs that accept subsidies to cover the difference between private pay rates and subsidy reimbursement rates than asking families to cover that difference.

Limitations and Future Directions

This study provides important evidence for the predictive utility of state-specific subsidy policies on provider participation in the subsidy system; however, there are limitations to our approach. First, though we use nationally representative data from the NSECE and the corresponding subsidy policies from the CCDF Policies Database, the data used for this study predate the reauthorization of CCDF in 2014. The reauthorization added requirements for programs that accept subsidies. Since the reauthorization, states have adjusted their subsidy policies and these modifications could have important implications for ECE centers as they weigh the decision to accept subsidies in their program. More recent data– such as the 2019 NSECE merged with the 2018 CCDF Policies Database, for example– would provide opportunities for examining the relationship between state subsidy policies and provider participation in the subsidy system under the new CCDF program. Future research should also examine the impact of CCDF policies for home-based ECE programs. The largest decline of ECE programs that accept subsidies in recent years has actually been amongst home-based providers (Adams & Dwyer, 2021). That said, it is important to

understand the unique considerations of home-based providers as related to subsidy system participation.

Though the present study has important implications for policymakers regarding specific subsidy policies that could be prioritized to incentivize provider participation in the subsidy system, states have a variety of policies to consider as it relates to subsidy administration. In fact, states often have to balance the aims of CCDF with the unfortunate reality that federal funding is often not sufficient to adequately serve all eligible children and families. An opportunity for future research could be to adopt an approach similar to previous research (Madill et al., 2018) by examining "packages" of multiple subsidy policies—including subsidy reimbursement rates and other policies directly impacting ECE programs alongside income and employment eligibility requirements and other policies impacting families – and their relationships with subsidy system participation.

Similarly, this study did not specifically consider the impact of state variation in policies that impact subsidy eligibility for families. It is important to note that, per federal CCDF guidelines, subsidies can be provided to children 13 or younger (19 if children have special needs) with parents/guardians who engage in an approved activity that qualifies for assistance (i.e., working, attending an educational program) with family incomes up to 85% of the state median income. As with provider policies, however, states have flexibility in determining their own specific family eligibility policies. For example, the maximum family income that allows a new family to become eligible for subsidies for a family of three ranges from $1,423 to $5,802 per month across states (Dwyer et al., 2021). Variation in family eligibility also means that subsidy-eligible families may or may not be eligible for other publicly funded

ECE in their state (e.g., Head Start, pre-K). While variation in these state subsidy policies for families may not directly impact ECE providers, future research may want to consider the impact of these types of policies on provider participation in the subsidy system.

While beyond the scope of this particular study, previous research suggests that the quality of ECE centers is also higher in states with subsidy payments for absent children, higher subsidy reimbursement rates, and tiered reimbursement, particularly when there is a larger gap between the highest and lowest reimbursement tiers (Greenberg et al., 2018). Future research should gather causal evidence about the relationship between subsidy policies that positively impact the financial structure of ECE centers (i.e., subsidy reimbursement rates) and the quality of care provided in the centers. Given that these policies impact provider participation in the subsidy system and have the potential to positively shape the quality of ECE services provided, policymakers may want to consider prioritizing these types of subsidy policies, particularly given that federal subsidy contributions, however generous, are typically not sufficient to reach all eligible families.

Conclusion

The present study relied on a nationally representative sample of ECE centers and the state-specific subsidy policies in place to examine the predictive utility of state subsidy policies on provider participation in the subsidy system. The findings point to several specific policies that predict subsidy system participation: tiered reimbursement, payment for child absences, and state subsidy contracts as the method of payment. In addition, our findings suggest that as the base subsidy reimbursement rate increases, subsidy system participation becomes more likely. State policymakers

evaluating all of their subsidy policies may want to consider prioritizing these items when making decisions about how to create their CCDF plans and policy agenda.

On the other hand, a state policy that requires families to cover the difference between the state reimbursement rate and the ECE center's private pay rate is not a significant predictor of subsidy system participation. In addition, we find that a policy that reimburses centers for center closures is negatively associated with subsidy system participation. Taken together, these findings may suggest that while providers must consider the financial well-being of the center as they weigh subsidy system participation, ECE centers may also be dissuaded by policies that have the potential to negatively impact working families by charging families more to cover the cost of care or limiting families' daily access to ECE by reimbursing centers for closing, even if it is for important purposes like providing professional development for teachers. These findings may mean that state-level policymakers should prioritize policies that are beneficial to providers, but not at the expense of families, as they try to implement subsidy policies in their state that incentivize provider participation in the subsidy system.

In the context of limited funds available for use by states as they administer the subsidy program, these findings may be important to keep in mind as states consider how to incentivize more ECE centers to accept subsidies. Our results suggest the importance of policies that increase the amount of state-issued funds an ECE center receives for providing care for children using subsidies (but not necessarily funds that come from/at the expense of families). These incentivizing policies include the actual reimbursement rate, but also policies that may provide supplemental funds to ECE centers such as tiered reimbursement and payment for child absences. In addition,

policies that support ECE centers as they manage subsidies, such as state subsidy contracts, also appear to be a source of motivation for accepting subsidies in spite of the additional administrative requirements for participating providers. Programs that are willing to accept subsidies are critical to ensuring equitable access to ECE for families living in poverty and, as a result, this study has implications for increasing access to ECE.

Chapter 5

CONCLUSION

The Child Care and Development Fund (CCDF) program (2016) has identified the decline in the number of early care and education (ECE) programs that accept child care subsidies as a national concern. Programs that accept subsidies are imperative to the success of the CCDF program and larger goals to increase equitable access to ECE for families living in poverty. Common challenges of CCDF participation for ECE programs– such as administrative burdens, late or incorrect subsidy payments, and other challenges with working with the state subsidy agency– have been documented (Adams et al., 2008; Sandstrom et al., 2018), yet little practical advice for policymakers looking to maximize provider subsidy system participation exists. This dissertation meets a critical need to understand the various factors at the center, community, and state levels that may incentivize (and discourage) subsidy system participation, with a specific focus on identifying factors amenable to policy action and intervention. Using a three-phase mixed methods design, the results of this dissertation provide an in-depth, comprehensive overview of ECE centers' participation in the child care subsidy system. Findings from this study highlight the interconnected systems and policies that ECE centers consider as they weigh decisions about accepting subsidies (and the extent to which they accept subsidies) in their programs. Specifically, centers consider important features of their own programs—including operational, financial, and enrollment characteristics—the needs of their surrounding community, and state subsidy program, policies, and context. Despite the complex nature of the decision-making process and the various factors at play, this

series of dissertation studies provides some initial policy implications and recommendations that can help states as they implement their CCDF agenda.

Major Findings

This dissertation begins with a statewide investigation of subsidy system participation in Arkansas in Phase I. Examining subsidy system participation in Arkansas allowed for the consideration of how ECE centers weigh decisions about accepting subsidies in a state that has a very high child poverty rate, a substantial rural population, and subsidy policies that are generally considered to be provider friendly (and thus encouraging of participation in the subsidy system for ECE programs, particularly those considered high-quality by the state QRIS' standards). Quantitative results from this study are largely consistent with previous literature suggesting the association between provider participation in the subsidy system and a series of factors at the center level–including operational, financial, and enrollment features– and community characteristics (Giapponi Schneider et al., 2017; Slicker & Hustedt, 2022). In particular, results may suggest that ECE centers looking to best meet the needs of the community—including enrolling underserved populations of children (e.g., infants and toddlers), as well as providing care for the larger proportions of subsidy-eligible children likely living in socioeconomically disadvantaged areas—have higher odds of subsidy system participation. Qualitative findings reiterate these quantitative results by emphasizing the importance of community-based mission statements in guiding decisions about subsidy system participation. At the same time, qualitative findings suggest that staffing shortages and a lack of administrative support may discourage subsidy system participation. Integrated findings from this study also suggest the importance of state-level subsidy policies on provider participation in the subsidy

system, establishing the need for the research carried out in Phase III. Finally, since this study involved primary data collection, results from this study provide contemporary evidence supporting the relationship between a series of center, community, and state factors with subsidy system participation. While implications of this study are most applicable in the state of Arkansas, the findings are largely consistent with results from other statewide and nationwide studies. This may suggest that the findings could be meaningful in other state contexts.

Phase II expands on the findings from the statewide study of subsidy system participation in Arkansas by using nationally representative data to examine *subsidy density*. In other words, Phase II looks beyond whether or not a provider accepts subsidies at all to consider the proportion of children in a center using subsidies. Results from this study suggest that the same features of centers and their communities that are associated with subsidy system participation for ECE centers also appear to be related to the proportion of children using subsidies in a program. For example, when an ECE center operates in a higher poverty area, the center appears to not only serve children using subsidies, but serve a greater proportion of children using subsidies. Interestingly, by considering the child and peer diversity of centers with varied subsidy density, findings suggest that centers that accept subsidies at lower rates and/or limit the number of subsidies accepted in a program appear to be the least racially, ethnically, and linguistically diverse child environments. Examining subsidy density is critical to the success of CCDF in light of evidence suggesting that ECE centers may limit the number of subsidies they accept to sustain program operations (Adams et al., 2008), but is also necessary for creating more equitable early learning environments amidst racially, ethnically, and socioeconomically segregated ECE

settings. This paper emphasizes the importance of the consideration of child and peer diversity in our understanding of equitable access to high-quality ECE for all children and families.

Phase III provides evidence of the predictive utility of state-specific subsidy policies on provider participation in the subsidy system. The results of Phases I and II assist in the development of a vector of covariates that are associated with subsidy system participation, an essential first step in carrying out the propensity score methods that occur in Phase III. The methods of Phase III allow for an investigation of the unique influence of state CCDF policies on subsidy system participation for ECE centers. While findings from all phases have implications for policymakers, the findings of this particular study have the most direct application to important subsidy policy decision-making happening at the state level. Findings suggest that certain subsidy policies– namely the subsidy reimbursement rate, tiered reimbursement, payment for child absences, and the use of state subsidy contracts – make it more likely that ECE centers participate in the subsidy system. Subsidy policies that ease the administrative burden of accepting subsidies and provide increased state-issued reimbursement for providers, while not increasing the physical costs or stressors for working families, appear to motivate provider participation in the subsidy system. In the context of limited government funding to implement state subsidy programs and enhance equitable access to ECE for children, the findings of this study are particularly important. See Table 12 for a cross-study comparison of findings.

Across studies, results highlight the business and operational considerations of centers as they weigh subsidy system participation. At the same time, findings suggest the importance of the poverty level of the surrounding area and, to some extent, the

greater needs of families in the community as sources of motivation for subsidy system participation. In some cases, these goals may be at odds. In these situations, providers may face difficult decisions that could result in electing not to accept subsidies at all, or to limit the number of subsidies the center accepts in order to ensure the center has adequate funds to operate. Nevertheless, findings from across all three studies indicate that providers in areas of high poverty or socioeconomic disadvantage are serving children using subsidies, and doing so at higher proportions. This is an important finding, given that the central goal of CCDF is to increase access to ECE for children and families living in poverty. Similarly, findings from across all three studies suggest that centers that have a quality rating have higher odds of subsidy system participation, and at least in Arkansas, that providers that had the highest quality rating were more likely to participate in the subsidy system. Consistent with the goals of the reauthorized CCDF, these findings may indicate that children using subsidies are accessing higher quality ECE programs. At the same time, the findings from across these studies could mean that state policies and practices have the potential to incentivize provider participation in the subsidy system by ensuring adequate reimbursement and funds for providers that accept subsidies. Results also suggest the potential of state-level efforts to assist providers with easing the administrative burden associated with subsidy system participation. Though the subsidy system – and ECE system in general—would benefit from increased funding, the findings from this study provide some initial recommendations for increasing provider subsidy system participation amidst existing insufficient funds allocated for this purpose.

Table 12 Cross-Phase Findings

Key Findings	Phase I (Arkansas Mixed Methods Study)	Phase II (Subsidy Density Study)	Phase III (CCDF Policies Database + NSECE Study)
FEATURES OF THE CENTER			
Center (Operational) Features			
Legal Status	QUAN- *ns* QUAL- no legal status theme	For-profit status positively associated with subsidy density	For-profit status positively associated with subsidy participation[1]
Length of Operation	QUAN- Shorter length of operation positively associated with subsidy participation QUAL- no length of operation theme	*ns*	*ns*[1]
Church Sponsorship	QUAN- Church sponsorship negatively associated with subsidy participation QUAL- (church) sponsorship theme	Church-sponsorship negatively associated with subsidy density	Church sponsorship negatively associated with subsidy participation[1]
School Sponsorship	QUAN-School sponsorship negatively associated with subsidy participation	*ns*	*ns*[1]

	QUAL- (school) sponsorship theme		
Administrative Structure	QUAN- N/A QUAL- administrative support theme	N/A	N/A
Staffing	QUAN- N/A QUAL- staffing theme	N/A	N/A
	Center (Enrollment) Features		
Serves Infants & Toddlers	QUAN- Serving infants & toddlers positively associated with subsidy participation QUAL - no infant & toddler theme	Serving infants & toddlers positively associated with subsidy density	Serving infants & toddlers positively associated with subsidy participation[1]
Total Child Enrollment	QUAN- *ns* QUAL- no child enrollment theme	Number of children enrolled negatively associated with subsidy density	Number of children enrolled negatively associated with subsidy participation[1]
	Center's Financial Structure and Sources of Funding		
Receives funds from parent pay	QUAN-receipt of parent payment positively associated with subsidy participation QUAL- funding source theme	Receipt of parent payment positively associated with subsidy density	Receipt of parent payment positively associated with subsidy participation[1]

Receives funds from Head Start	QUAN-ns QUAL- funding source theme	Receipt of Head Start funds negatively associated with subsidy density	*ns*[1]
Receives funds from pre-K	QUAN-pre-K funds negatively associated with subsidy participation QUAL- funding source theme	Receipt of pre-K funds negatively associated with subsidy density	Receipt of pre-K funds negatively associated with subsidy participation[1]
Center Finances	QUAN- N/A QUAL- center finance theme	N/A	N/A
	Community Characteristics		
Urbanicity	QUAN- *ns* QUAL- no urbanicity theme	*ns*	*ns*[1]
Community Poverty	QUAN- high neighborhood socioeconomic disadvantage positively associated with subsidy participation QUAL- community poverty theme	High poverty density positively associated with subsidy density	High poverty density positively associated with subsidy participation[1]
Community Wealth	QUAN- N/A QUAL- community wealth theme	N/A	N/A
Community Based Mission Statement	QUAN- N/A QUAL-community based mission statement theme	N/A	N/A

Subsidy Policies			
Government Regulation	QUAN- N/A QUAL- government regulation theme	N/A	N/A
QRIS Participation & Policy	QUAN-Having a quality rating is positively associated with subsidy participation QUAL-Mandatory QRIS participation theme	Having a quality rating is positively associated with subsidy density	Having a quality rating is positively associated with subsidy participation[1]
QRIS Rating	QUAN-Having a higher quality rating is positively associated with subsidy participation QUAL- Tiered reimbursement theme	N/A	Tiered reimbursement encourages subsidy participation
Subsidy Reimbursements	QUAN-N/A QUAL-Subsidy reimbursement theme	N/A	Higher reimbursement rate encourages subsidy participation
Reimbursement for Child Absences	N/A	N/A	Reimbursement for child absences motivates subsidy participation
Reimbursement for Center Closures	N/A	N/A	Reimbursement for center closures discourages

			subsidy participation
Expulsion Policy	QUAN- N/A QUAL- Expulsion policy theme	N/A	N/A

Note. [1] Results come from the logistic regression used before matching (and also Slicker & Hustedt, 2022)

Limitations and Directions for Future Research

While this in-depth investigation of provider subsidy system participation at the center, state, and national levels provides important information that can be used to encourage more centers to accept child care subsidies, it is not without limitations. In addition, there are several opportunities for future research to continue to examine provider participation in the subsidy system.

The datasets used in this study have important limitations. First, the nationally representative data is from 2012, which not only pre-dates important subsidy policy changes in the 2014 reauthorization of CCDF, but also does not account for the continued decline in provider subsidy system participation or a series of other important contemporary considerations for ECE centers (e.g., COVID-19, increased staffing shortages). On the other hand, the data from Arkansas was very recently collected. Yet, this data is from one single state context and only considers one particular combination of state subsidy policies alongside unique community and center contexts. That said, findings from this study may not be generalizable to other state contexts. On the other hand, the findings from Arkansas serve as a test of one bundle of state-specific subsidy policies, many of which would be considered

generous for providers and in line with recommendations from Phase III. Future research should use more recent nationally representative data (e.g., 2019 NSECE, NSECE COVID follow-up) and primary data collected in other state contexts with varied combinations of subsidy policies.

Further refinement of the conceptual framework that guided this study should continue and specifically consider family child care (FCC) programs. This is particularly important because the largest decline in ECE programs that accept subsidies has been amongst FCC programs (Adams & Dwyer, 2021). Opportunities to investigate decisions around subsidy system participation for FCC providers exist with the home-based provider survey of the NSECE (2012 and/or 2019), but should also include qualitative data collection at the state and program level, as there are likely to be factors unique to FCC programs that may impact subsidy system participation that could be captured with finer detail using qualitative methods.

While it is important to consider how subsidies and subsidy density more directly impact children and families, this was beyond the scope of the current series of studies. Nevertheless, future research should attempt to understand how program quality varies for centers that accept subsidies, and do so at varying levels (i.e., subsidy density). Limited previous research finds that the quality of programs that accept subsidies is typically higher than programs that only accept parent payment, but lower than programs that accept other sources of public funding such as Head Start or pre-K funds (e.g., Johnson et al., 2012; Johnson et al., 2019, 2020; Slicker et al., 2020).

Similarly, future research should consider the relationship between subsidy density and children's outcomes. Limited previous research has reported null or even

negative associations between subsidy use and children's academic and social development (e.g., Hawkinson et al., 2013; Herbst & Tekin, 2010; Johnson et al., 2013). Given that a central goal of CCDF is to increase access to ECE to enhance children's school readiness, it is important to understand how the decisions providers make around accepting subsidies impact equitable access to ECE that positively shapes children's development. This type of investigation could occur with data collected in another statewide study with program-level quality and child outcome data. It is also possible that an investigation specifically focusing on child outcomes at kindergarten entry (and beyond) could occur with the forthcoming release of the 2023-24 Early Childhood Longitudinal Study-Kindergarten Cohort nationally representative data.

Summary

In conclusion, this multiphase mixed methods study that relied on center-, state-, and national-level data makes a significant contribution to the limited research investigating what motivates ECE centers to accept child care subsidies. Findings across all three studies have important implications for policy and practice. It should first be noted that decision-making around subsidy system participation often involves multiple levels of considerations, including individual features of the center, the surrounding community, and state policies and practices. While some of these features are largely out of the control of policymakers (e.g., how long a center has been operating, the sponsorship of a program), awareness that these factors may play a role in the decisions centers make can help policymakers understand the types of centers

that could be targeted for (increased) subsidy participation. Specifically, policymakers may be able to use these findings to help shape policy in the state to incentivize more ECE centers to accept subsidies (and to do so at greater proportions). In addition, some findings have immediate implications because they are in the direct control of policymakers, such as the specific state-level subsidy policies that motivate ECE centers to accept subsidies. These findings are especially important to consider given that states typically have to make difficult decisions about specific subsidy policies that best meet the demands of eligible families and needs of participating providers, and have to do so with limited (and insufficient) funds. The specific design of this dissertation—including the data analysis at the program, state, and national levels as well as the multi-phase mixed methods approach—provide unique and important insights not previously understood and that could not be gathered in a less complex design. In designing the study in this way, much clearer implications for state subsidy programs and policymakers emerge. This dissertation highlights the importance of having a delicate balance of subsidy funds and policies aimed at improving access for families while also assisting programs that accept subsidies. This balance is important not only for effectively disbursing limited state subsidy funds, but also for incentivizing provider participation in the subsidy system. Across these three studies, findings highlight that ECE centers are not only trying to keep their businesses afloat, but also that they are motivated to meet the needs of the communities in which they operate. Subsidy policies and programmatic efforts that bear this in mind are likely to be the most effective at encouraging more providers to accept subsidies and to accept

subsidies at greater proportions. Efforts to increase equitable access to diverse, high-quality ECE for children and families in today's society rely on ECE programs that accept child care subsidies, and this series of studies provides some guidance for policymakers looking to incentivize subsidy system participation amidst the significant decline of participating ECE centers.

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Appendix A

STUDY 1 SURVEY

Screener

Do you currently work as an early childhood provider?

- Yes
- No (end survey; these providers would not be eligible to participate or receive a gift card).

What is the address and zip code where you work as an early childhood provider?

Street address:_____
City:_____
_____
Zip Code:_____
__

Is your program for profit, not for profit, or is it run by a government agency?

- For profit
- Not for profit
- Run by a government agency

Is your organization independently owned & operated, a franchise or part of a chain?

- Independently owned & operated
- Franchise
- Chain

How long has your program been operating in its current location? ___ Years and _____ Months

Local Child Care Market

1. In 2020, did your program turn away children who wanted to enroll because there was not an opening?

- Yes, the program has had to turn away children or place them on a waiting list in 2020.
- Prior to COVID-19 the program had to turn away children, but not now.
- No, the program has not had to turn away children or place them on a waiting list in 2020.

2. How would you characterize your program's enrollment **prior to the COVID-19 pandemic**?
   - Fully enrolled with a waiting list and/or a steady stream of families wanting to enroll
   - Fully enrolled, but would not have a family ready to enroll if there were suddenly an opening
   - Not fully enrolled, but not actively looking to enroll more families
   - Not fully enrolled and actively looking to enroll more families
3. During the COVID-19 pandemic, how would you characterize your program's enrollment?
   - Fully enrolled with a waiting list and/or a steady stream of families wanting to enroll
   - Fully enrolled, but would not have a family ready to enroll if there were suddenly an opening
   - Not fully enrolled, but not actively looking to enroll more families
   - Not fully enrolled and actively looking to enroll more families
4. In 2020, has a family asked your program to accept child care vouchers (subsidies) to pay for a child's enrollment in your program?
   - Yes, both before and during the COVID-19 pandemic
   - Yes, but **ONLY before** the COVID-19 pandemic
   - Yes, but **ONLY during** the COVID-19 pandemic
   - No
5. Has your program <u>ever</u> had a child whose enrollment was supported by vouchers (subsidies)?
   - Yes, this program currently serves at least one child supported by vouchers enrolled
   - Yes, this program served children supported by vouchers in the past, but does not currently have any children supported by vouchers enrolled (**skip to question 9**)
   - No (**skip to question 9**)
   - Unsure (**skip to question 9**)
6. Does your program limit the number of children with child care vouchers (subsidies) that you enroll at any one time?

- Yes. Please explain (what percent is supported by vouchers): _____ percent
- No

7. Does your program charge private pay parents more than you charge families with children who have vouchers (subsidies)?
   - Yes, we charge private pay families more
   - No, the rates are the same for private pay families
   - No, we charge private pay families less

8. Would your program stop serving families receiving vouchers (subsidies) if you could fill your program with private-paying families?
   - Yes
   - No

9. Please select the reasons that may prevent you from accepting vouchers (participating in the state subsidy program). (**Select all that apply**)
   - In the process of setting it up
   - Capacity is full with private pay
   - Program has a long waitlist of private pay families
   - No demand for subsidized care in the program's area
   - Voucher/subsidy reimbursement rates are too low
   - Required participation in QRIS (Better Beginnings)
   - Reimbursement received too long after service is provided
   - Too much administrative work involved
   - Disagree with policies associated with vouchers (subsidy program)
   - Challenges collecting co-payments from voucher recipient families
   - Turn-over among voucher recipient families
   - I don't know enough about the voucher program to participate
   - Significant family needs
   - Child behavioral challenges
   - Other (please explain: _____)

10. Which would make it more likely for your program to participate in the voucher system? (**Select all that apply**)
    - Higher rates of reimbursement for programs that accept vouchers
    - Opportunity for additional support services (example: technical assistance, assistance with child/family needs, referral services)

- Opportunity for additional resources including professional development
- Assistance with quality initiatives (example: assistance with participation in QRIS)
- Assistance with voucher management and administration
- Another arrangement (please explain: _____)
- None of the above

11. Is your program enrolled in the state QRIS, Better Beginnings?
    - Yes. Our program is a Better Beginnings Level _____
    - No (**skip to question 14**)

12. Did your program enroll for the first time in the state QRIS, Better Beginnings, during the COVID-19 pandemic?
    - Yes, our program began participating in Better Beginnings to be able to enroll children receiving vouchers.
    - Yes, our program began participating in Better Beginnings during the pandemic, but we did not do so to enroll children receiving vouchers.
    - No, our program was enrolled in Better Beginnings prior to the COVID-19 pandemic.

Question 13 below refers to the tiered reimbursement rate policy, which provides higher child care voucher payments to providers who earn higher quality ratings/ levels.

13. Does the tiered reimbursement policy influence your decision to serve children receiving vouchers (subsidy)?
    - No. Our program would serve the same number of children receiving vouchers (subsidy) regardless of whether or not there was a tiered reimbursement policy.
    - Yes. If the tiered reimbursement rate did not exist, our program would not be able to serve any children receiving vouchers (subsidy).
    - Yes. Our program serves more children receiving vouchers (subsidy) because of the higher reimbursement rates.
    - N/A. Our program does not serve children receiving vouchers (subsidy).

Revenue

14. What is the highest monthly rate you are currently charging families for full-time care, without any vouchers (subsidies)?

Under age 3: _____ (dollars per month)

Age 3-5 (not yet in kindergarten): _____ (dollars per month)

15. Sometimes a single child is funded by multiple public sources, such as a Head Start child supported by child care vouchers beyond the Head Start day. Please consider three public sources of funding: Head Start, Arkansas Better Chance [ABC]) pre-K funds, and child care vouchers (subsidies). In your program, do any children receive the following combinations of funding?

- Head Start (or Early Head Start) funds with child care vouchers, but no ABC funds
- ABC funds with child care vouchers, but no Head Start (or Early Head Start) funds
- Head Start (or Early Head Start) with ABC funds, but no child care vouchers
- Head Start (or Early Head Start) only
- Child care vouchers only
- ABC funds only
- None of these sources of public funding

16. Thinking about your entire budget for providing early care and education services to children under age 13, which of the categories below best describes your program?

*this question will have help text with examples of public dollars (e.g., federal or state) and private dollars (e.g., parent pay).

- No public dollars received
- Mostly private dollars with less than 33% public dollars
- Private dollars are > 33% and Public dollars are more than > 33%
- Mostly public dollars with less than 33% private dollars
- No private dollars received

Experience with the Voucher (Subsidy) System

In the table below, please check the box for the group of children you feel best represents the statement. If you currently serve ONLY children receiving vouchers or ONLY children funded exclusively by parent pay, please respond to the statement to the best of your knowledge.

17.

	Children funded by vouchers (subsidy)	Children funded by parent payment ONLY	No Difference
Payments for this group of children are higher	❒	❒	❒
Payments for this group of children are more reliable	❒	❒	❒
Payments for this group of children are harder to collect	❒	❒	❒
Payments for this group of children are more likely to be made on time	❒	❒	❒
The paperwork for this group of children is higher	❒	❒	❒
It is easier to fill vacancies for this group of children	❒	❒	❒

Program Enrollment

For this section, please consult your administrative records to provide the most accurate responses. Responses should reflect the enrollment on the day you are completing this survey. In cases where children are funded by multiple sources, please include them in all relevant groups. If there are no children funded by any of these sources, please enter a "0" in the box.

18. How many children do you care for in the following groups?

	Total Enrolled	Number Enrolled: Vouchers	Number Enrolled: Early Head	Number Enrolled: Arkansas Better	Number Enrolled: Private/	Number Enrolled: Other

			Start/Head Start	Chance (ABC) Pre-K	Parent Pay	
Under 3 years						
3-5, not yet in kindergarten						

How many school age (kindergarten and up) children do you care for?
☐

19. As compared with March 2020 (prior to the COVID-19 pandemic), do you care for more, less, or the same number of children in each of the following groups CURRENTLY?

	More enrolled NOW	Less enrolled NOW	No Difference	None enrolled before or now
Vouchers (subsidies)	❒	❒	❒	❒
Early Head Start/Head Start	❒	❒	❒	❒
Arkansas Better Chance (ABC) Pre-K	❒	❒	❒	❒
Private/Parent Pay	❒	❒	❒	❒
Other	❒	❒	❒	❒

20. Please answer the next questions about children in your program age 5 and under, not yet in kindergarten. If there are no children in any of these groups, please enter a "0" in the box. How many of the young children **currently** enrolled in your program:

Have an IEP/IFSP? _____ (number of children)

Are of Hispanic or Latino origin? _____ (number of children)

Are White? _____ (number of children)

Are Black or African American? _____ (number of children)

Are Asian? _____ (number of children)

Are Mixed race or you are not certain? _____ (number of children)

Are experiencing homelessness? _____ (number of children)

Provider Demographics

21. What is your role at the center (e.g., director, enrollment coordinator)?

☐

22. What is your age in years?

☐

23. Are you of Hispanic or Latino descent?
    - Yes
    - No

24. Which of the following are you? (**Select one or more**).
    - White
    - Black or African American
    - Asian
    - American Indian or Alaska Native
    - Native Hawaiian or Pacific Islander

25. What is the highest grade or level of schooling you've ever completed?
    - Some high school
    - High school or GED
    - Some college credit
    - Associate's degree (AA, AS)
    - Bachelor's degree (BA, BS)
    - Graduate degree (Master's or doctoral degree)

26. Which of the following <u>specialized training in early childhood</u> have you completed? (**Select all that apply**).
    - Child Development Associate (CDA)

- Some college credits in early childhood
- Associate's degree in early childhood
- Bachelor's degree in early childhood
- Graduate degree in early childhood
- None of these

27. What was your approximate total household income in 2019 before taxes or deductions?

- Less than $15,000
- $15,001 to $25,000
- $25,001 to $35,000
- $35,001 to $50,000
- $50,001 to $65,000
- $65,001 or more

Thank you for completing this survey.

Please enter an email address below to receive your electronic Amazon $10 gift card.

Are you willing to participate in a follow-up interview about how various policies and practices in place in Arkansas influence the enrollment of your program? The interview will be approximately 45 minutes long and will be conducted online at a later time. You will be asked questions about your decisions about whether or not to participate in the Arkansas voucher system. Upon completion of the interview, you will receive an additional $25 gift card.

- Yes
- No

If you are selected for a follow-up web-based interview, by clicking "I agree" below, you are indicating that you understand that your interview will be recorded, but that your name and all identifying information will be removed.

☐ I agree

☐ I do not agree

Appendix B

STUDY 1 INTERVIEW PROTOCOL

Interview Protocol

Thank you for participating in an interview today. Before we begin, I would like to verify that you are okay with me recording the interview for research purposes with your verbal consent. (Once verbal consent is received, start the recording).

Introduction

Thank you for agreeing to be in this research study and for your consent to record the interview. The goal of this study is to learn about how child care providers make decisions about enrolling children and families into their programs so that we can improve policies related to child care. All of the information you provide will be kept confidential. As a thank you, we are offering a $25 Amazon gift card for your time. The interview will take approximately 45 minutes. I will be taking some notes during the interview. Do you have any questions before we begin?

I have a series of questions that I am going to ask you, but first, I am going to confirm a few details with you.

Initial Questions (confirming survey responses to help with navigating the protocol)

1. Please confirm your program name, address, and your role in the organization
   (Describe role)
   Program Name:
   Address:
   Role:
2. Please confirm the sources of funding your program receives:
   - ❑ Arkansas Better Chance (ABC) Pre-K
   - ❑ Head Start/Early Head Start
   - ❑ Vouchers/CCDF/Subsidy
   - ❑ Parent pay
   - ❑ Other (please specify):

Introductory text: Again, the purpose of this study is to learn more about how child care providers make decisions about the enrollment of children and families in their programs. While this survey is not about the impacts of COVID-19, please let me know if any of your responses are impacted by the pandemic.

Each question will begin with a statement. Please rate your agreement with the statement on a scale of:
1- strongly disagree

2- somewhat disagree
3-neutral; do not agree or disagree
4- somewhat agree
5- strongly agree
Again, please tell me how much you agree with each statement under normal circumstances, not during COVID-19.

1. Local Child Care Market

The first set of questions are about the local child care market and its impacts on your program's enrollment. (If multi-site= "since you are the contact person for multiple sites, please answer these questions with all of your programs in mind. If there are specific differences in programs as it relates to the local child care market [e.g., if there are consistently open slots in one program but not another], please be sure to mention it.)

1. **Enrollment in our program is typically strong, with few open slots for families who want to enroll.**

   1 (strongly disagree) 2 3 (neutral) 4 5 (strongly agree)

   Please explain- why or why not?

   Potential follow-up questions: Have you ever had difficulty enrolling families in your program? Have you ever needed/used a waiting list? If multi-site program, is your response the same for all programs?
   - Are there a lot of providers in the surrounding area that offer similar child care services? (For programs that are not school-based: Do school-based programs in the area have an impact on your enrollment?)

   Are there any changes due to COVID-19? (*as applicable*) Are there specific groups of children and families (e.g., vouchers, ABC, Head Start, private pay) that continue to be enrolled at high rates? Are there specific groups of children and families that are enrolling at lower rates?
   a. Do you serve any children using essential worker vouchers to pay for services? If yes, do you also have families who use standard child care vouchers to pay for services?

2. **Our program prioritizes certain children and families for enrollment.**

   1 (strongly disagree) 2 3 (neutral) 4 5 (strongly agree)

   Please explain- why or why not?

   Potential follow-up questions: If so, which children and families are prioritized and why? (*If needed*) If there are multiple families who approach you about enrolling, how do you determine which family to enroll?

Are there any changes due to COVID-19?

3. **Our program enrolls mostly families that live in the surrounding neighborhood(s).**

1 (strongly disagree) 2 3 (neutral) 4 5 (strongly agree)

Please explain- why or why not?

Potential follow-up questions: If multi-site program, is your response the same for all programs?

- How would you describe the surrounding neighborhood and the families that live there?
- Are families in the area able to afford the prices you charge for care?
- Do most children enrolled in the program remain in the program for the year or is there a lot of movement/turnover? If so, how does that impact your program? (if applicable) Are families funded by certain methods (i.e., parent pay, ABC, vouchers, Head Start) more likely to move/leave your program?

Are there any changes due to COVID-19?

4. **The recent increases to the Arkansas minimum wage have affected my business or staffing practices.**

1 (strongly disagree) 2 3 (neutral) 4 5 (strongly agree)

Please explain- why or why not?

Potential follow-up questions: If so, what changes have you had to make? If not, is this because you were already paying above the minimum wage? Has the increase in the minimum wage changed any of your enrollment practices? Has the increase in minimum wage impacted your decision to participate in the voucher system?

B. Subsidy System Participation

The second set of questions are related to serving children and families who receive child care vouchers. The questions that follow are about vouchers for eligible low-income families and not children of essential workers (COVID-19 vouchers). (If multi-site= "since you are the contact person for multiple sites, please answer these questions with all of your programs in mind. If there are specific differences in programs as it relates to participation in the subsidy system [e.g., if there is a high volume of parents asking to use vouchers in one program, but not another], please be sure to mention it.)

5. **Families frequently ***ask*** *to use* vouchers to pay for care.**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions:
(*If needed*) Has any family asked your program to accept vouchers? If multi-site program, is your response the same for all programs?

Are there any changes due to COVID-19?

6. **The costs of operating our program impact our decisions around accepting child care vouchers.**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions:
Are there specific costs that contribute to your decision? If multi-site program, is your response the same for all programs?

- How do you make decisions about participating/not participating in the child care voucher program?

Are there any changes due to COVID-19?

7. **Voucher payments amounts (rates) impact our program's decision to accept child care vouchers.**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions:
In your opinion/experience, are voucher payments lower than payments received for other enrolled children (e.g., private pay, ABC, Head Start)? Why do you think this might be the case? In your opinion/experience, are voucher payments more reliable than payments received for other enrolled children? Why do you think that might be the case?

1. (*if provider accepts vouchers*) Does the voucher reimbursement rate impact the type/quality of services you can offer in your program?

2. (*if provider accepts vouchers*) Does your program charge private pay families more than you charge families that use vouchers? Why or why not?

Are there any changes due to COVID-19?

8. **Required participation in the Better Beginnings (QRIS) program influences our program's decision to accept child care vouchers.**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions:
(If applicable) Are there benefits to being enrolled in Better Beginnings that help you navigate the voucher system? Are there benefits specific to your program's rating (level 1, 2, 3)? Are there additional supports through Better Beginnings that would be helpful to your program as it navigates the voucher system?

Are there any changes due to COVID-19?

9. **(Based on what you've heard about the voucher system), There are benefits of caring for children who receive child care vouchers.**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions:
In your opinion, what are the benefits?

Are there any changes due to COVID-19?

10. **(Based on what you've heard about the voucher system), There are challenges associated with voucher system participation.**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions:
In your opinion, what are the challenges?

Are there any changes due to COVID-19?

11. **Our program's other sources of funding (e.g., ABC, private pay, Head Start) impact our decisions around accepting child care vouchers**.

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions:
(*If applicable*) You indicated that you serve children funded by ABC and/or Head Start as well as children who receive vouchers, what has your experience been like with integrating multiple funding streams? What are the benefits of having funds from multiple sources? What are the challenges?

Are there any changes due to COVID-19?

12. The following questions will only be asked based on whether or not providers accept vouchers:

For Voucher Participants...	**For Voucher Non-Participants...**
1. Do you limit the number of families using vouchers that your program enrolls at one time? Why or why not?	1. What are the barriers to participation in the voucher system? (*if more elaboration is needed on Q9*)
2. Does the tiered reimbursement policy have any impact on your decision to serve children receiving vouchers? (*if necessary*, would your program be able to enroll as many children that use vouchers if you were not eligible for higher reimbursement rates?)	2. What might make it more likely that your program would participate in the voucher system?
3. What supports do you wish were available to you to support your participation in the voucher system?	

C. Program Enrollment

This final set of questions are related to the children and families enrolled in your program. (If multi-site= "since you are the contact person for multiple sites, please answer these questions with all of your programs in mind. If there are specific differences in programs as it relates to enrollment [e.g., if you serve infants and toddlers in one center but not another], please be sure to mention it.)

12. **Our program enrolls children from diverse family backgrounds.**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions: If multi-site program, is your response the same for all programs?

- What family backgrounds are represented in your program (*if needed*, e.g., income, race, ethnicity, linguistic diversity)?
- Does your program engage in any special recruitment strategies to enhance the diversity of children and families enrolled in the program (e.g., sliding fee scale, recruitment outside of local neighborhoods, outreach to agencies to recruit children who are homeless, foster children,etc.)?

Are there any changes due to COVID-19?

13. **Our program enrolls children from multiple age groups (i.e., infants & toddlers, preschool-age children, school-age children).**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions: If multi-site program, is your response the same for all programs?

- How do you make decisions about enrolling and serving infants and toddlers? Does the cost of serving this age group impact your decision?
- (if applicable) How do you make decisions about enrolling school-age children?

1. (*if provider accepts vouchers*) Does the fact that you serve any specific age group influence your decision to participate in the voucher system?

Are there any changes due to COVID-19?

14. **Our program enrolls children with disabilities (i.e., children with IEPs/IFSPs, special needs).**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions: If multi-site program, is your response the same for all programs?

- How do you make decisions about enrolling and serving children with IEP/IFSPs?

1. (*if provider accepts vouchers*) Does your program receive higher reimbursement rates for children with disabilities? Does that impact your decision to participate in the voucher program?

Are there any changes due to COVID-19?

15. **Our program enrolls children who are homeless (i.e., children who do not have stable housing).**

1 (strongly disagree) *2* *3 (neutral)* *4* *5 (strongly agree)*

Please explain- why or why not?

Potential follow-up questions: If multi-site program, is your response the same for all programs?

- How do you make decisions about enrolling and serving children who are homeless? Since these families have unstable housing, how does this impact your program enrollment?

Are there any changes due to COVID-19?

Appendix C

IRB/HUMAN SUBJECTS APPROVAL

Institutional Review Board
210H Hullihen Hall
Newark, DE 19716
Phone: 302-831-2137
Fax: 302-831-2828

DATE:	September 10, 2020
TO:	Gerilyn Slicker
FROM:	University of Delaware IRB
STUDY TITLE:	[1635290-1] Examining Provider Participation in the Child Care Subsidy System
SUBMISSION TYPE:	New Project
ACTION:	DETERMINATION OF EXEMPT STATUS
EFFECTIVE DATE:	September 10, 2020
REVIEW CATEGORY:	Exemption category # *(2,4)*

Thank you for your New Project submission to the University of Delaware Institutional Review Board (UD IRB). According to the pertinent regulations, the UD IRB has determined this project is EXEMPT from most federal policy requirements for the protection of human subjects. The privacy of subjects and the confidentiality of participants must be safeguarded as prescribed in the reviewed protocol form.

This exempt determination is valid for the research study as described by the documents in this submission. Proposed revisions to previously approved procedures and documents that may affect this exempt determination must be reviewed and approved by this office prior to initiation. The UD amendment form must be used to request the review of changes that may substantially change the study design or data collected.

Unanticipated problems and serious adverse events involving risk to participants must be reported to this office in a timely fashion according with the UD requirements for reportable events.

A copy of this correspondence will be kept on file by our office. If you have any questions, please contact the UD IRB Office at (302) 831-2137 or via email at hsrb-research@udel.edu. Please include the study title and reference number in all correspondence with this office.