ABSTRACT

Title of Dissertation:	A MIXED METHODS STUDY OF MARYLAND'S MONETARY INCENTIVES TO IMPROVE CHILD CARE
	Erica S. Lee, Doctor of Philosophy, 2019
Dissertation directed by:	Professor Peter Reuter School of Public Policy

In 2016, 1.37 million children received subsidies under the U.S. Department of Health and Human Services' $8.7 billion Child Care Development Fund, though care is often low-quality. One way a state can incentivize providers to offer higher quality care is by providing larger child care subsidies to higher quality providers through a tiered reimbursement system. This research used a sequential explanatory equal status mixed method design to answer the question, *Does Maryland's tiered reimbursement system incentivize child care providers to attain a rating on Maryland's Quality Rating and Improvement System (QRIS) that results in a higher reimbursement rate?*

The first stage of research consisted of multilevel logistic regressions to determine the association between child care centers' and family child care providers' reliance on subsidy payments and whether the provider was rated highly enough on Maryland's QRIS (called Maryland EXCELS) to receive an incentive payment. The

regressions used administrative data from the Maryland State Department of Education and demographic data from the U.S. Census. The analyses included all providers in Maryland that received payments from Maryland's Child Care Subsidy Program in January 2018. The second stage of research consisted of 14 interviews with child care center directors across five counties to understand how they made decisions about which EXCELS rating to attain, how tiered reimbursements factored into their decisions, and general experiences with EXCELS.

Results from my quantitative research found that for both child care centers and family providers, a greater subsidy density (i.e., number of children receiving a child care subsidy divided by the provider's licensed capacity) was associated with a greater likelihood of a provider being rated higher quality (level 3 or higher in EXCELS) and receiving a tiered child care payment. However, results of my qualitative research found that few center directors reported that EXCELS payments factored into their decision on what EXCELS level to reach and none of the centers were singularly motivated by the bonuses. Rather, directors reported being intrinsically motivated to improve EXCELS ratings or motivated by technical assistance providers. Challenges to improving EXCELS ratings included a lack of capacity and difficulty finding qualified staff.

A MIXED METHODS STUDY OF MARYLAND'S MONETARY INCENTIVES TO IMPROVE CHILD CARE

by

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Dissertation submitted to the Faculty of the Graduate School of the
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Dedication

My dissertation is dedicated to my mother and father.

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I thank my parents for instilling a love of learning in me and always listening to my newest travails. I particularly thank my mother who met me in College Park

once a week for 10 weeks to care for my infant daughter when I went to class during my second semester in the program. My mother inspires me in many ways and I appreciate that she never expected me to earn a PhD like she did—but as soon as I wanted to do so, she was on board and helped as much as she could.

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List of Abbreviations

ACS	American Community Survey
AYP	Adequate Yearly Progress
CCDF	Child Care Development Fund
CCRC	Child Care Resource Center
CCSP	Child Care Subsidy Program (Maryland's program)
CLASS	Classroom Assessment Scoring System
ECERS-R	Early Childhood Environment Rating Scale-Revised
ECPP	Early Childhood Program Participation
ERS	Environmental Rating Scale
ESEA	Elementary and Secondary Education Act
FCCERS-R	Family Child Care Environment Rating Scale-Revised
HHS	U.S. Department of Health and Human Services
MCCRN	Maryland Child Care Resource Network
MFN	Maryland Family Network
MSDE	Maryland State Department of Education
NAEYC	National Association for the Education of Young Children
NCLB	No Child Left Behind Act
NSECE	National Survey of Early Care and Education
OR	Odds Ratio
PBAS	Performance Based Accountability Systems
QAS	Quality Assurance Specialist
QRIS	Quality Rating and Improvement System
RTT-ELC	Race to the Top-Early Learning Challenge

Chapter 1: Introduction

High-quality early care and education programs, particularly preschool, can improve children's school readiness, especially for disadvantaged children (Karoly & Auger, 2016; Phillips et al., 2017). However, not all early care and education programs are high-quality, nor are all programs equally effective (Phillips et al., 2017). In fact, low-income children receiving child care subsidies funded by the federal Child Care Development Fund (CCDF) are often served by lower quality providers (Jones-Branch, Torquati, Raikes, & Pope Edwards, 2004; Raikes, Raikes, & Wilcox, 2005). Two ways to incentivize early care and education providers to improve their quality are the supports available through participation in states' Quality Rating and Improvement Systems (QRIS) and through tiered child care subsidy reimbursements that are tied to QRIS ratings. QRIS are state-run rating systems designed to assess, improve, and communicate the quality of early care and education providers. Tiered reimbursement systems are state-run systems that provide higher child care subsidies to higher quality providers, often based on reaching particular rating levels on their state's QRIS. Thirty-nine states have at least one QRIS (QRIS Compendium, 2017) and 38 states have a tiered reimbursement system (Schulman & Blank, 2016).

In general, incentive systems are based on the underlying assumption that people are entirely self-interested (Bowles, 2016). While the developers of QRIS and tiered reimbursement systems would likely agree that the child care workforce is not entirely self-interested, aspects of the systems are based in this basic economic theory. QRIS assume that child care providers will be incentivized to improve quality,

in part, because parents will choose high-quality providers. Tiered reimbursement systems assume that child care center directors and family child care providers will respond to financial incentives by changing their behavior and improving their quality.

This chapter describes my research question and my contribution to the field, the U.S. Department of Health and Human Services' (HHS) CCDF, the general theory behind QRIS, and tiered reimbursement systems across the United States. Chapter 2 discusses literature around child care subsidies, QRIS, parental search for child care, and tiered reimbursement systems; incentive systems, in general; education incentives and parental choice in K–12 education; and health care ratings, patient choice, and incentives. Chapter 3 describes Maryland's QRIS—called Maryland EXCELS—and Maryland's Child Care Subsidy Program (CCSP), which is partially funded by the CCDF. Chapter 4 details my research design, data sources, and methods. Chapter 5 discusses descriptive results on providers' participation in Maryland EXCELS and the CCSP and results from the quantitative and qualitative analyses. Chapter 6 integrates the quantitative and qualitative results and discusses limitations, future research, and policy implications.

Research Question and Contributions

To understand whether tiered reimbursement systems work as theory predicts in a single state, I conducted a two-stage mixed methods study to answer the research question, *Does Maryland's tiered reimbursement system incentivize child care providers to attain a rating on Maryland's QRIS that results in a higher reimbursement rate?* My research is a sequential explanatory equal status design, in

which I analyzed quantitative data, used the results to select the child care center directors for my qualitative data collection, analyzed the qualitative data, and, finally, interpreted all of the data together (Creswell, Plano Clark, Gutman, & Hanson, 2003). In the first stage of my research, I conducted multilevel logistic regressions to determine the association between centers' and family child care providers' reliance on child care subsidy payments and whether the provider had a rating on Maryland EXCELS of 3 or higher, which results in a tiered payment and being a "higher quality" provider.[1] Reasons that my quantitative analysis might not show a positive association between reliance on child care subsidy payments and the likelihood of being a higher quality provider include (1) providers are not aware of the tiered payments, (2) the incentive amount is too small, (3) providers lack capacity to meet the higher quality standards, and (4) providers have intrinsic motivation to meet higher quality standards.

To better understand how these mechanisms may work, in the second stage of my research, I interviewed 14 child care center directors in five counties. Interview topics included their knowledge of the tiered reimbursement system (to understand the first possible mechanism); the EXCELS rating level they would like to meet, how they settled on that goal, and challenges to improving their EXCELS rating (to understand the second and third possible mechanisms); and how tiered reimbursements factored into their decision (to understand the fourth possible mechanism). If my quantitative analysis found that incentives work as theory

[1] In this research study, a "higher quality" provider in Maryland is defined as a provider that is rated EXCELS level 3 or higher, which would result in a tiered payment for providers serving children in the CCSP.

predicted, the qualitative data would provide additional detail as to why it might have worked, including data on the supports that providers found helpful.

Maryland is a good case to study due to its relatively low subsidy rate, its relatively large incentive at level 3 of its QRIS, and its requirement that providers be enrolled in its QRIS to receive subsidy payments. Historically, Maryland has had relatively low subsidy reimbursement rates: in 2016 it was one of 13 states that had rates that were at least 33 percent lower than the 75th percentile of market rate for 4-year-olds served in centers (as described below, CCDF guidance is to set rates at the 75th percentile of market rate) (Schulman & Blank, 2016). Specifically, in 2016, Maryland's reimbursement rate for a 4-year-old in a center in a particular region was \$546, \$325, less than the \$871 at the 75th percentile of market rate.[2] With lower relative subsidy reimbursement rates than most states, providers in Maryland may be especially in need of the tiered payment.

Like only seven other states, Maryland offers its first tiered payment at level 3 of its QRIS, as opposed to level 1 or 2. Among those eight states, Maryland offers the highest level 3 tiered payment: 22 percent for child care centers serving children under age 2 (QRIS Compendium, 2017). Hence, Maryland offers a relatively large tiered payment for reaching level 3 and nothing until level 3 is reached. Finally, Maryland is one of eight states that requires that at least some providers participate in its QRIS in order to serve children receiving child care subsidy. In Maryland, all providers that serve children in its CCSP are required to participate in its QRIS. The

[2] These specific amounts are for reimbursements in the counties of Anne Arundel, Calvert, Carroll, Charles, and Prince George's.

requirement to participate in Maryland EXCELS removes selection bias into the QRIS *among providers who serve children in the CCSP*. The lack of selection bias combined with the sharp incentive at level 3 makes Maryland an ideal case to study whether its tiered reimbursement incentivizes providers participating in the CCSP to reach level 3.

However, the same factors that make Maryland an important case to study also make Maryland an outlier. If I found that Maryland's tiered reimbursement system served as an incentive to improve quality, the few states with tiered reimbursement systems similar to Maryland may also have systems that work similarly well. Positive and negative results from Maryland would be less applicable to most states. For example, if the results are positive, the incentive may work due to factors that other states do not have, such as mandatory participation and lack of tiered payments for reaching lower levels of a QRIS. If results are positive, states may want to conduct their own analyses and, depending on their results, consider a system that is similar to Maryland's. On the other hand, if I found that Maryland's system did not incentivize providers to reach level 3, it is possible that systems that offered tiered payments at levels 1 and 2 would, ultimately, incentivize providers to reach higher quality levels.

As discussed in Chapter 2, Maryland's validation study of EXCELS found that independent observation tools did not differentiate among EXCELS ratings (Swanson et al., 2017). Maryland's validation study did not assess the association between rating levels and child outcomes, though validation studies of other states' QRIS generally found that QRIS ratings were not associated with developmental

gains for children (Tout et al., 2017). I assumed that the goal of MSDE's tiered child care reimbursement system is to improve the subsidized quality of care in Maryland *as measured by EXCELS rating*. That is, whether or not the care in a level 3 provider is demonstrably better than care in a level 2 provider, Maryland's tiered reimbursement system provides an incentive for a level 2 provider to improve to a level 3. Therefore, my research analyzed whether the incentive encouraged providers to become "higher quality" and attain a rating that resulted in a tiered reimbursement. Despite tiered reimbursement systems existing for two decades, there is very little research on how providers respond to the systems (Adams et al., 2003; Gormley & Lucas, 2000; Greenberg et al., 2018), and no research analyzing how providers in a single state respond to tiered reimbursement systems that are tied to a QRIS. My research is the first in-depth look at how a tiered reimbursement system functions in a single state and it is an important contribution to the field by determining whether a tiered reimbursement system functions as theory predicts. The goal of tiered reimbursement systems is to improve the quality of early care and education for disadvantaged children. If Maryland's systems does not meet that goal, Maryland and other similar states should reconsider the structure of their tiered subsidy system or consider if non-financial supports, such as technical assistance, would result in an increase in the number of higher quality providers.

Additionally, my research will contribute to the larger field of public incentive systems designed to improve the quality of a service. As will be discussed in my literature review, there is research on the effectiveness of systems that provide incentives based on health outcomes and education accountability systems that

include sanctions for poor performance. In both health care and K–12 education, performance is based on outcomes (e.g., hospital re-admission rate, student test scores, graduation rates). There are not readily available outcomes for the child care field, and Maryland's QRIS is based entirely on inputs that the Maryland State Department of Education (MSDE) believes will influence child outcomes. Given ongoing interest in paying for performance (e.g., Social Impact Partnership to Pay for Results Act) and recent interest in evidence-based policy-making from the federal level (e.g., Commission on Evidence-Based Policymaking and evidence standards in the Elementary and Secondary Education Act, as authorized by the Every Student Succeeds Act), state and local governments may take a fresh look at a wide wage of program logic models and determine where incentives could be used most efficiently to improve outcomes. Depending on the challenges around creating an outcome-based incentive system for a particular program, governments may determine an incentive system aimed, at least in part, at improving inputs is the best option.

For example, effective transition planning is essential for adolescents returning from juvenile justice facilities to public schools (Griller Clark, Mathur, Brock, O'Cummings, & Milligan, 2016). While one could imagine a system in which the juvenile justice facilities were held accountable for whether their formerly incarcerated individuals graduated, one can easily imagine that most factors affecting graduation rates would be outside of the facilities' control. Instead, a state could provide a monetary incentive to juvenile justice facilities that created evidence-based transition supports related to successful schooling outcomes. My mixed methods

research will contribute to the knowledge of how individuals think about and react to input-based incentive systems.

Child Care and Development Fund

In an average month of fiscal year 2016, HHS' $5.68 billion CCDF supported approximately 823,600 families and 1,370,700 children (Office of Child care, 2016a; Office of Child Care, 2018a). The goals of the CCDF are to "promote economic self-sufficiency and to help children succeed in school and life through affordable, high-quality early care and afterschool programs" (Office of Child Care, 2016b). States use CCDF funds to provide vouchers to low-income families to help pay for child care while parents work or attend school or job training. In most states, including Maryland, the vouchers do not cover the full cost of care, as families are charged a co-payment, depending on family income, provider type, and child age. In 2016, 10 states (Maryland was not one of them) did not require any co-payments from families with income under 100 percent of the federal poverty guidelines (Halder & Tran, 2018).

States determine the amount of the voucher and the amount is informed by a market rate survey conducted every two years. The CCDF program guide states to set vouchers at an amount that would allow recipients to access care at the 75th percentile of market rate prices (i.e., the voucher and co-pay would cover the price of 75 percent of providers), though states have considerable discretion when setting voucher amounts. As states receive a set amount of money through CCDF and state budgets, a state must decide whether to serve more children with smaller vouchers or fewer children with larger vouchers. Between 2001 and 2016, the number of states that set

their reimbursement rates at the 75th percentile dropped from 22 to one. Further, in 13 states, the reimbursement rate for four-year-olds in center-based care was at least 33 percent lower than the 75th percentile of the market rate (Schulman & Blank, 2016). A U.S. Government Accountability Study (2016) found that in the average month in 2011–12, approximately 8.6 million children were eligible for subsidies under the CCDF program based on state policies and about 1.5 million children actually received subsidies.

Quality Rating and Improvement Systems

In the late 1990s, states began to incentivize child care providers funded through the CCDF to improve quality through the use of tiered reimbursement payments that typically paid higher rates for accredited providers. States realized how difficult it was for providers to become accredited, and by 2005 10 states had adopted statewide QRIS to assess, improve, and communicate providers' quality of care.

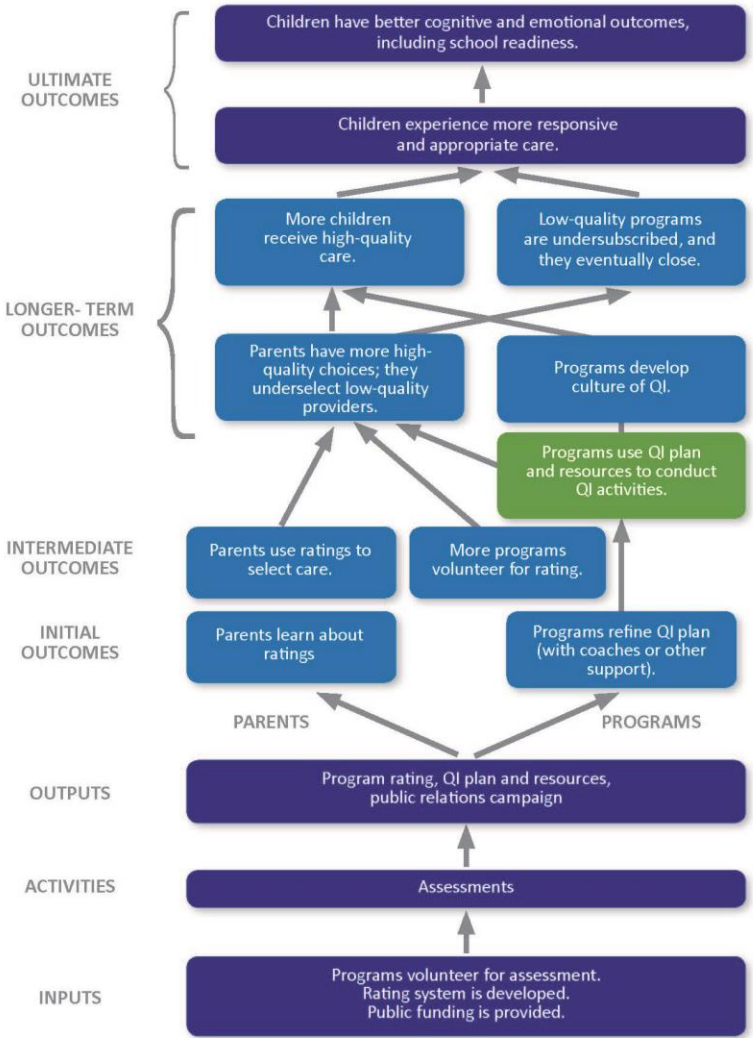
Low-quality child care providers could proliferate for a number of reasons, including well-meaning providers not knowing how to improve their services and parents' inability to discern a low-quality provider from a high-quality provider. The former possibility is a challenge to the "supply" of the child care market functioning properly: some providers would improve their quality if they had assistance to do so. The latter possibility is a challenge to the "demand" of the child care market functioning properly: parents do not have the information necessary to seek and demand high-quality child care.

QRIS are accountability systems designed to improve the quality of child care by defining quality standards, providing incentives and supports for provider

improvement, and making quality transparent to providers and parents. QRIS are designed with the end goal of better preparing children for school, but unlike K–12 accountability systems, QRIS do not include child outcomes as part of the accountability. Rather, the systems focus on assessing and improving structural inputs, such as staff qualifications, curriculum, and the length of the day (Zellman & Perlman, 2008). Zellman and Perlman (2008) developed the logic model in Figure 1., which emphasizes the market-based aspects of the QRIS system: Inputs and initial outcomes include providers being assessed and developing improvement plans, initial and intermediate outcomes include parents learning about and using ratings, and longer-term outcomes include improving formerly low-quality providers and closing persistently low-quality providers that become undersubscribed.

QRIS could also work to increase the supply of higher quality providers through the organizational theory of isomorphism—the idea that organizations, including nonprofits, mimic each other and become more similar over time (DiMaggio & Powell, 2983; Leiter, 2008). Normative isomorphism may be especially relevant to child care providers responding to a QRIS in that a QRIS creates a structure for professionalization of the child care market (i.e., quality ratings). That is, as child care providers notice other providers participating in and increasing levels in a QRIS, providers may feel the need to mimic one another. Isomorphism could also help explain why provider may lump together in a few rating levels in a state's QRIS.

Figure 1. Quality Rating and Improvement System Logic Model



Source: Zellman & Perlman, 2008.

QRIS were an important part of the Barack Obama administration's early learning policies and programs. The U.S. Department of Education (ED) and HHS co-administered the Race to the Top-Early Learning Challenge (RTT-ELC) grant program, which awarded 4-year grants totaling almost $1 billion dollars to 19 states to improve early learning programs for young children. Maryland received an RTT-ELC grant worth almost $50 million in 2012, the year of the first cohort of RTT-ELC

grantees. As part of their grants, states designed or improved QRIS and, through 2016, compared with the year before grant receipt, the 19 RTT-ELC grantees had increased the number of early learning programs in their QRIS by 92 percent (from 37,630 to almost 72,000) and increased the number of programs in the top tiers of their QRIS by 162 percent (from 9,025 to almost 24,000) (Caron et al., 2017). In its RTT-ELC application, Maryland defined its "top tiers" of EXCELS as levels 4 and 5 (MSDE, 2016a).

QRIS are voluntary systems, though, as of 2017, Maryland and seven other states required that certain providers participate in their QRIS to receive child care subsidy payments. Whereas some of the seven states only required child care centers (and not family child care providers) to participate to receive subsidies and others only required participation if a child care provider received a certain amount of funds, as of July 2015, Maryland required that all of its providers participate in Maryland EXCELS to receive child care subsidy payments.

QRIS rate providers on a number of factors, such as staff qualifications, curricula, and health and safety indicators. In fact, in August 2017, the American Academy of Pediatrics issued a policy statement on the importance of high-quality early education and child care and included a recommendation for pediatricians to support QRIS in their state and encourage the inclusion of robust child health and safety standards (Donoghue & AAP Council on Early Childhood, 2017). There are three common ways for states to rate providers: In a *block structure* all of the quality elements in one level must be met before a provider may receive the next level's rating. In a *points structure* a provider receives points for each quality indicator and

their total points correspond to a rating. A *hybrid structure* assigns a weight to each indicator based on evidence of the indicator's relationship to quality and multiplies the weight by the level achieved in a block structure (i.e., a level of 3 and a weight of 1.5 equals 4.5 points). Currently, 39 states have at least one QRIS (there are 3 local QRIS in Florida), with 17 states using a block system, 6 states using a points system, and 16 states using a hybrid system (QRIS Compendium, 2017).

A recent study examining QRIS implementation in seven Midwest states found that each state offered at least one incentive for providers to participate in the QRIS and most states offered more than one incentive (Faria, Greenberg, Hawkinson, & Metzger, 2016). Like Maryland, five states linked QRIS participation and rating to a tiered child care subsidy reimbursement rate and four states offered a one-time cash award for receiving a high rating or increasing a rating level.

As elaborated on in the following chapter, research on QRIS has found that QRIS capture meaningful differences in provider quality; provider quality increased over time, but, generally, QRIS ratings were not associated with developmental gains for children. However, none of the studies had large enough child-level sample sizes across *all possible* ratings, indicating that small sample sizes may have contributed to the inability to detect differences in child outcomes between rating levels. Given that the published research on QRIS covers relatively newly implemented systems, it is possible that more mature systems' ratings will be associated with developmental gains for children. Even if higher rated providers do not increase children's measured outcomes, compared to lower rated providers, higher rated providers often meet higher standards regarding the provision of health screenings and healthy food and

increased family engagement—important outcomes in and of themselves. Because QRIS are the current tools that states use to measure and improve the quality of child care and early learning programs, my research takes the importance of QRIS as a policy mechanism as a given, and I focus on how tiered child care reimbursement systems function in the current QRIS environment.

Tiered Child Care Reimbursement Systems

One way to incentivize quality is to offer higher child care reimbursement rates (i.e., tiered payments) to providers that are higher quality. In 2016, 38 states provided tiered payments, often based on a provider's ratings in its state's QRIS (Schulman and Blank, 2016). Across the states, tiered reimbursement rates vary by the age of the child, the type of provider, and the provider's rating. As will be described in detail in Chapter 3, Maryland offers different tiered reimbursement rates for child care centers and family child care providers, different rates for children under age 2 and age 2 and older, and different rates depending the provider's rating. While a particular provider would only need to know the rates associated with their type of provider and their rating level, the additional payments are percentages of a base rate and are not especially easy to calculate without a calculator. The systems are quite complex and states need to spend resources to ensure that providers understand how the tiered system functions.

The differences between base rates and tiered rates vary widely across states. For center-based care provided to 4-year-olds, the difference between the highest and lowest tiered reimbursement rates in a state varied from $31 in New Jersey to $350 in New Mexico; the percentage difference between the highest and lowest tiered

reimbursement rates in a state varied from 5 percent in Connecticut and Hawaii to 74 percent in Oklahoma (Schulman & Blank, 2016). For center-based care provided to 4-year-olds in Maryland in 2016, the difference in reimbursement rate between the base rate and highest tier was $142,[3] with 14 states having larger differences than Maryland (Schulman & Blank, 2016).

In 2017, eight states with tiered reimbursement systems, including Maryland, did not offer a higher reimbursement to providers until a provider reached at least a level 3 on the state's QRIS (some of these states had 4-level QRIS and others, like Maryland, had 5-level QRIS). Of these eight states, Maryland offered its centers serving infants the largest percentage increase for reaching level 3: 22 percent. Two of the eight states offered percentage increases of five percent for reaching level 3. Four states offered tiered payments of 5 percent for providers simply reaching level 1 in their QRIS (QRIS Compendium, 2017). Therefore, Maryland is unique in offering such a sharp incentive for providers to reach a level 3 on its QRIS, making it an important state to study.

Even with the tiered child care reimbursement rates, only six states' highest reimbursement rates exceed the 75th percentile for the cost of child care in their state and 10 states' highest reimbursement rates are at least 25 percent below the cost to provide care at the 75th percentile in their state (Schulman and Blank, 2016). While tiered payments could be used to help defray the cost of increasing quality, Schulman and Blank (2016) note that the minimal rate difference may not cover these costs. To

[3] This specific amount is for reimbursements in the counties of Anne Arundel, Calvert, Carroll, Charles, and Prince George's.

address this line of inquiry, my interviews will include questions about how providers use their tiered subsidy payments.

Summary

This study is an important contribution to the literature on how to improve the quality of early care and education. There is little research, and no state-level research, on whether tiered child care subsidy reimbursements function as theory predicts. Research shows the importance for children, especially disadvantaged children, to receive high-quality early care and education (Karoly & Auger, 2016; Phillips et al., 2017). Through the CCDF, the federal government provides over $5.5 billion for child care, and it is necessary to understand actions states can take to maximize available funding for high-quality early care and education.

Chapter 2: Literature Review

While there is little research on how child care providers respond to tiered child care subsidy reimbursements, there is research on the quality of care and outcomes for children that participated in subsidized child care, QRIS, and how parents search for child care. As explained below, each of these topics informs the theory behind tiered reimbursement systems. In addition to discussing the literature on child care, this chapter discusses research on incentive systems, in general, and the effectiveness of incentives in the K–12 education and health care fields and parent and patient choice in those fields.

Early Care and Education

While children, especially those eligible to receive subsidized care, that receive high-quality early care and education experience positive outcomes (Karoly & Auger, 2016; Phillips et al., 2017), many children that receive subsidized care are not receiving care from high-quality providers (Jones-Branch, Torquati, Raikes, & Pope Edwards, 2004; Raikes, Raikes, & Wilcox, 2005). Likely due to the lack of quality care, Herbst and Tekin (2010) found that subsidy receipt was associated with reduced school readiness. One strategy a state can employ to improve the quality of early care and education is through a QRIS. QRIS have been found to improve the quality of care (Karoly, 2014; Tout et al., 2017), though research tends to find that parents do not choose care based primarily on a provider's quality or rating on a QRIS (Dechausay & Anzelone, 2016; Kim & Fram, 2009). If parents are not demanding high-quality care, then a state's tiered child care subsidy reimbursement system becomes an even more important mechanism for improving care. The literature

reviewed in this section covers quality of care and outcomes for children that participated in subsidized child care, QRIS, how parents search for child care, and concludes with research on tiered reimbursement systems.

Subsidy Use, Quality of Care, and Outcomes

Research indicates that center-based care is of higher quality than in-home care (Bassok, Fitzpatrick, Greenberg, & Loeb, 2016) and that disadvantaged communities—geographically defined by zip codes—are more likely to have low-quality center-based care (Bassok & Gaslo, 2016; Hatfield et al., 2015). Researchers have found that subsidy receipt is associated with enrollment in child care centers, which results in parents choosing higher-quality care than non-participants (Krafft, Davis, & Tout, 2017; Rigby et al., 2007; Ryan, Rigby, & Brooks-Gunn, 2011). However, this does not mean that children using subsidies are in especially high-quality care. Ryan et al. (2011) found that families that used their subsidies for center-based care purchased lower quality center-based care than comparable non-participants, though families that purchased family-based care purchased higher quality care that non-participants. Similarly, Chipty (1995) found that increases in subsidy use increases the quality of family-based day care.

Multiple researchers have found that centers that serve children receiving subsidies are of lower quality (Jones-Branch, Torquati, Raikes, & Pope Edwards, 2004; Raikes, Raikes, & Wilcox, 2005). In a descriptive study on the associations between child care funding and quality in North Carolina (as rated by the state's QRIS), researchers found that centers that received above average CCDF funds were of higher quality compared to centers that received average or below average funding,

regardless of community affluence (Hatfield et al., 2015). However, the quality of centers that received below-average CCDF funds differed by community affluence, with centers in communities of less affluence having lower quality than centers in communities of higher affluence (Hatfield et al., 2015). Hatfield et al. (2015) suggest that a qualitative study could help understand why programs respond differently to QRIS.

Other research has found that subsidy receipt before kindergarten is associated with reduced school readiness. Herbst and Tekin (2010) found that subsidy receipt was associated with lower reading and math scores and greater behavior problems at kindergarten entry. One explanation to which their data lent some support was that children who received subsidies have intense exposure to low-quality care (Herbst & Tekin, 2010). A study specifically of young children with or at risk for special needs that used propensity score matching found that subsidized care had significant negative effects on early literacy and numeracy, and no effects on communication, impulsivity, hyperactivity, or prosocial behavior (Sullivan et al. 2018).

Quality Rating and Improvement Systems

With the understanding of the importance of quality early care (Karoly & Auger, 2016; Phillips et al, 2017), state policy-makers designed QRIS to improve the quality of early care in their states. Recent research found that the implementation of a QRIS induced a shift from parental care to non-parental child care settings, though the impacts differed by mother's education level. Specifically, mothers with a high school education or less were more likely to shift to informal child care, while mothers with more than a high school diploma were more likely to use formal center-

and family-based programs (Herbst, 2016). One explanation that Herbst offered for this result was that QRIS participation could lead programs to increase prices, resulting in a market that prices low-income parents out of the formal child care market. He notes that universally raising the child care subsidy may not solve the issue and suggests that tiered reimbursement may be preferable.

As mentioned in the previous chapter, QRIS take a variety of structures, and researchers have examined how the structure underpinning QRIS relates to overall ratings. Using a hypothetical QRIS model with sample data, researchers found that the distribution of ratings is significantly related to the structure. For example, the researchers found that fewer than 20 percent of programs achieved a rating of 3 or 4 (the highest rating) in a block structure, but over 70 percent of programs achieved a rating of 3 or 4 in a points or hybrid structure (Tout, Chien, Rothenber, & Li, 2014). Other researchers used California's QRIS data to run simulations and found that the distribution of rating levels varies by rating approach (American Institutes for Research & RAND, 2015). Similarly, researchers found that when Michigan made a change to its QRIS rating calculation, approximately one-third of programs had a higher self-assessment rating under the new version (Michigan's QRIS is comprised of a self-assessment and an independent observation) (Faria, Hawkinson, Greenberg, Howard, & Brown, 2015).

Most research on QRIS focuses on validating the systems and determining whether higher-rated programs are, in fact, of better quality and whether those programs produce better outcomes for children. In a review of 14 QRIS validation studies conducted without RTT-ELC funding between 1999 and 2011, Karoly (2014)

found that the studies provided evidence that the ratings in QRIS captured meaningful differences in program quality, program quality increased over time (though the studies could not attribute the improvement to the existence of the QRIS), and QRIS ratings, generally, were not associated with developmental gains for children.

Tout et al. (2017) synthesized 10 validation studies, conducted between 2014 and 2017 using RTT-ELC funds, and found similar findings to Karoly (2014). Specifically, in the nine validation studies that examined the relationship between QRIS rating and observed quality, programs with higher QRIS ratings tended to be rated higher on independent observations, though differences were small, and not significant on all measures that states used. Seven validation studies (not Maryland's) analyzed whether QRIS ratings were associated with outcome measures of child development. Given the research on the role that QRIS structures play in ratings, it is not surprising that results were not consistent across states and measures. However, results tended to find associations between QRIS and child development. The social/emotional domain produced the most positive associations with QRIS score. However, Tout et al. noted that none of the states' validation studies had large enough sample sizes across *all possible* ratings, indicating that small sample sizes may have contributed to the inability to detect differences between rating levels. Findings that improved quality may not lead to improved child outcomes echoes Flodgren et al.'s (2011) findings that health care incentives did not improve patient outcomes.

Maryland's validation study of EXCELS examined whether programs with higher EXCELS ratings demonstrated higher quality on a variety of observation tools, including the Classroom Assessment Scoring System (CLASS), Early Childhood

Environment Rating Scale-Revised (ECERS-R), and Family Child Care Environment Rating Scale-Revised (FCCERS-R). The study found that the CLASS did not differentiate among Maryland EXCELS levels. Specifically, programs rated at all EXCELS levels scored similarly well on the CLASS negative climate, emotional support, and classroom organization factors and scored similarly poorly on instructional support. Fewer than half of the Environmental Rating Scale (ERS) subscales differentiated among Maryland EXCELS levels. Due to the lack of differentiation, the authors of the validation study recommended that MSDE consider collapsing Maryland EXCELS levels four and five into one level. Unlike the validation studies mentioned above, Maryland's validation study did not examine the association between EXCELS ratings and child outcomes (Swanson et al., 2017).

Parental Search for Child Care

QRIS are 4- or 5-level rating systems that are, by design, easy for parents to understand. If parents cared about "quality" and believed that the QRIS properly rated quality, one would expect that parents would use QRIS in making determinations about child care. However, research shows that parents choose their child care provider for a wide variety of reasons, only one of which is "quality." The nationally representative 2012 National Household Education Survey of Early Childhood Program Participation (ECPP) of parents of children not yet in kindergarten found that, among parents who tried to find child care, the following factors most often rated as "very important" when selecting care arrangements: reliability (88 percent of respondents), learning activities (81 percent), time with other children (71 percent) and availability of care program (71 percent). Less important were number of

children in care group (46 percent of respondents said this was "very important"), cost (49 percent), and location (59 percent). With the exception of "reliability," parents who were below the poverty threshold rated each factor about 10–15 percentage points higher than their peers above the poverty threshold. Parents in poverty most often rated learning activities as very important (92 percent, compared with 78 percent for their peers) and least often rated number of children in care group as important (54 percent compared to 45 percent) (Mamedova & Redford, 2015).

The 2012 ECPP results indicate that parents value a number of factors when deciding on a program, and quality (e.g., "learning activities") is only one of many factors—especially for parents in poverty. In fact, a latent class and multinomial logistic regression analysis of the 2005 round of the ECPP identified four classes of parents based on their scores on seven indicators of child care priority: (1) rank all seven indicators as very important (35 percent), (2) emphasize learning and quality-focused factors (37 percent), (3) prioritize practicality factors (18 percent), and (4) do not rank any indicators as highly important (Kim & Fram, 2009). Further, the study found that, after controlling for socio-demographic factors, parents that emphasized learning factors were more likely to choose a child care center, while parents that emphasized practicality factors were more likely to choose family child care or friend and neighbor care.

The 2012 National Survey of Early Care and Education (NSECE) found that almost two-thirds of parents who searched for care considered more than one program. Over half of these parents used friends and family as a source of information (63 percent). The next most common sources of information were

community service or resource and referral list (15 percent) or the yellow pages, newspapers or bulletin boards (14 percent). When choosing care, around thirty percent of parents of preschool children considered the type of care (35 percent), fees charged (33 percent), content of the program (31 percent), and hours of care (29 percent); only 6 percent of parents considered the licensing status of the programs (NSECE Project Team, 2014a). Findings from the NSECE indicate that parents considered many factors when choosing care and their primary mode to collect information on care was through friends and family.

Studies in Minnesota and Indiana have similar findings to the national studies. The Minnesota study found that parents of children in QRIS-rated programs most frequently learned about the program from a relative, friend, coworker, or neighbor (one-third of respondents). Twenty-eight percent of parents reported their primary reason for choosing their child care program was that the program was of high-quality and 15 percent reported their primary reason was that the program was close to home (Tout et al., 2011). The Indiana study found that around 90 percent of parents with children ages 0 to 6 reported that the level of trust (92 percent) and the level of comfort (89 percent) with the child care program was very important when choosing a program. Only one-third of parents reported it was important that the program was close to home. Additionally, two-thirds of parents reported that the QRIS rating would be "important" or "very important" when making future care decisions and about half of the parents reported they would be willing to pay more for a higher-rated program (Center for Families, 2012).

Despite Indiana parents reporting that a QRIS rating would be important in their decision-making process, in practice, parents tended not to choose programs with QRIS ratings. A recent experiment in Indiana tested whether parents on the CCDF waitlist would be more likely to use a QRIS-rated program if they were (a) provided with a redesigned packet and individualized child care referrals or (b) received the same packet as in (a), but also received a personal phone call. The experiment found that the brochure, alone, did not increase the overall percentage of families who chose a QRIS-rated program, though the packet and the personal call increased the percentage of families who chose a QRIS-rated program by 2.1 percentage points (a 17 percent increase) (Dechausay & Anzelone, 2016).

A study in North Carolina found that providers experienced reduced enrollments three to five years after receiving a lower quality rating on the ERS, a component that factors into a provider's QRIS rating. The authors interpreted this result to mean that parents were less willing to enroll children with providers that received a lower ERS rating and, likely, had a lower QRIS rating (Bassok, Dee, & Latham, 2017).

Taken together, the literature indicates that the quality of care (e.g., the content of a program or its learning activities) matters to parents, but parents also care about other factors when making their choice of care. Additionally, parents often rely on friends and family as their primary source of information about programs. With the exception of Bassok, Dee, and Latham (2017), research indicates that the demand side of the QRIS logic model is not working as theory predicted and parents are not, in fact, demanding high-quality care. If parents are not demanding high-quality care,

care will only be improved through the supply side of the QRIS logic model: state support and tiered reimbursements.

Child Care Tiered Reimbursement Systems

Despite researchers noting the importance of studying the relationship between a state's tiered reimbursement system and the quality of care for children receiving subsidies, including how the relationship may differ by provider type (e.g., Adams, Snyder, & Tout, 2003; Blau, 2007; Forry, Daneri, & Howarth, 2013; Rigby et al., 2007), there is little published research analyzing this question. Greenberg et al. (2018) used regression models to analyze whether state subsidy payment rates and provider-friendly policies that increased the level and stability of funding and reduced administrative costs were associated with increased provider quality. Two of the policies analyzed were each state's use of a tiered reimbursement system and the differences between reimbursement rates in the lowest and highest tiers. The authors ran separate models for child care centers and family child care providers and analyzed whether policies were associated with an increased quality rating, as measured by a state's QRIS, national accreditation bodies, and child care resource and referral agencies. Policy data were from 2012 HHS administrative data and quality data where from the 2012 NSECE. The authors found that a center simply residing in a state with a tiered reimbursement system was not associated with a quality rating, but a $100 difference between payments in the lowest and highest tiers of a tiered reimbursement was associated with 63 percent higher likelihood of centers earning a quality rating. Results were similar for family child care providers, though even more pronounced: a $100 difference between payments in the lowest and

highest tiers was associated with a tripling of the likelihood of earning a quality rating. Cannon et al. (2017) recommended that states adequately invest in tiered reimbursement systems to ensure that the incremental reimbursement tied to each rating level covers the cost of higher quality care. Given the dearth of research on tiered reimbursement systems, states would also need to invest in evaluations to understand whether their tiered reimbursement system is appropriately funded.

In 2000, before it was common for states to have tiered reimbursement systems, 18 states (not Maryland) offered higher child care subsidy reimbursement rates for child care providers that were nationally accredited. The rate differential ranged from 5 to 20 percent across states. A study that examined data from child care centers in 10 states that applied for accreditation from the National Association for the Education of Young Children (NAEYC) found mixed results (positive or null) for whether the introduction of the differential reimbursement rates resulted in an increase in the number of centers applying for accreditation. The authors note that sometimes financial incentives were not enough on their own and many of the states offered workshops and on-site support to help with the accreditation process (Gormley & Lucas, 2000). Another study that included interviews with a small sample of providers indicated that the cost of advancing in a tiered reimbursement system may not be worth the extra payment (Adams et al., 2003).

Incentive Systems

There is a deep literature base on performance incentives, and this short review will focus on whether incentive systems, in general, and performance based accountability systems (PBAS), in particular, have been found to improve

performance, whether incentives crowd out intrinsic motivation, and what size incentives produce the desired outcomes. In general, incentive systems have been found to improve the measured performance (Cameron, Banko, & Pierce, 2001; Shaw & Gupta, 2015; Strechter et al., 2010). For example, a RAND study of nine PBAS—one of which was QRIS—found that "under the right circumstances, a PBAS can be an effective strategy for improving the delivery of services to the public" (Strechter et al., 2010, p. xviii). The "right circumstances" include a widely held goal, measures that are unambiguous, measures that organizations have control over, meaningful incentives, and support for improvement. In contrast, Strechter et al. (2010) found that potential pitfalls to successful PBAS include unrealistic timelines and failure to communicate the incentive system to those involved. Strechter et al. also note that incentives, as opposed to sanctions, are more commonly used when participation in a PBAS in voluntary.

While there is some research that incentives could crowd out intrinsic motivation, in general, research syntheses have found that incentives do not hurt intrinsic motivation (Cameron, Banko, & Pierce, 2001; Shaw & Gupta, 2015). In addition to the general findings across incentive systems, Cameron, Banko, and Pierce (2001) found that when rewards are offered for meeting or surpassing a score on a task of high interest, there was a positive effect on task interest. The authors hypothesized that, "one possible explanation for the positive effect of this type of reward contingency is that rewards signify competence, self-efficacy, or ability at the task, and people enjoy doing activities that reflect their competence" (p. 23). James (2005) produced a principal-agent model that shows that if rewards are seen as

"controlling," one's intrinsic motivation could be crowded out by the incentive. James showed that if incentives are too large or if the intrinsic motivation is also the source of the incentive (e.g., an agent is intrinsically motivated to act in the interest of the principal, who then introduces incentives), the incentive system could be seen as "controlling." The model also showed that the higher one's intrinsic motivation, the harder it is for an incentive system to crowd out one's intrinsic motivation. As many child care providers may be intrinsically motivated to provide quality care to young children, these finding indicate that it is unlikely that their intrinsic motivation to provide quality care would be crowded out by the tiered reimbursement system. In fact, if they wanted to be viewed as competent, highly-skilled child care providers, the tiered reimbursement system gives the opportunity to be viewed as such.

While incentives that are too large could crowd out intrinsic motivation, literature on performance payments for individuals in large organizations found that pay increases need be at least 5 percent to achieve positive behavior responses (Mitra, Tenhiala, & Shaw, 2016). Further, Strechter et al. (2010) note that the size of the incentive in a PBAS is important, as it needs to be large enough to support the effort involved with meeting the desired performance, but not so large that the incentive outweighs the value obtained from the desired performance. These guidelines are rather wide, and my research on tiered reimbursements will add to the literature on the sizes of incentives, as well as whether the incentive system works as theory predicts.

Education Incentives and Parental Choice in K–12 Education

While there is little research on monetary incentives for the early care and education field, incentives have been more widely studied in the K–12 education field, including "stick" incentives such as school accountability and "carrot" incentives such as additional payments to teachers who become National Board certified. After discussing research on a small number of the K–12 incentives, this section discusses the research on how parents choose a school for their child. Just as policy-makers hope that parents use QRIS ratings to make child care decisions, policy-makers hope that parents use school report cards to make schooling decisions.

Incentives

Federal and state governments provide a wide range of incentives to the education field, ranging from school accountability (e.g., if a school does not perform well, the state will intervene) to teacher incentives (e.g., pay a teacher more to work in a hard-to-staff school or subject, pay more to become National Board certified, or offer bonus payments based on a teacher evaluation system) to student incentives (e.g., pay students for grades). When analyzing whether the incentive system "worked," researchers and policy makers are interested in whether the system resulted in the intended behavior (e.g., better schools, as measured through test scores; better qualified teachers; or higher student grades) and whether there were unintended negative consequences.

Unintended negative consequences could take a variety of forms. For instance, under the Elementary and Secondary Education Act (ESEA), as amended by the No Child Left Behind Act (NCLB) of 2001, schools that failed to make Adequate Yearly

Progress (AYP; predominately based on falling short on math or reading tests) for two consecutive years had a number of consequences befall them. A study of Wisconsin schools that failed to meet AYP due to performance in a specific subject (i.e., math or reading) showed strong improvement in that subject the following year, though no positive effect in the other subject the following year. While this result showed that schools responded appropriately to the incentive (i.e., focus on the subject in which you performed poorly), a policy-maker would likely have preferred that the school work (close to) equally hard on both subjects. Also against the likely wishes of policy-makers, the study found evidence that the schools focused on marginal students around the cutoffs in subject areas (Chakrabarti, 2014). The AYP accountability system is a classic example of "what gets measured, gets done."

At the individual level, some states or school districts provide incentives to K–12 teachers that are National Board certified. A study of a policy in Washington that awarded bonuses to National Board-certified teachers in high-poverty schools found that the policy increased the percentage of such teachers in high-poverty schools by about 4 to 8 percent for the first five years (Cowan & Goldhaber, 2018). However, as can happen when paying for "inputs," the policy did not result in increased student test scores. Thus, the incentive increased the desired input, but the policy-makers' likely overall goal was not attained.

A study of financial incentives for students found that paying second grade students to read books significantly increased the reading achievement for English-speaking students. However, the study also found that monetary incentives for good performance on interim assessments and classroom grades (for 4th, 7th, or 9th graders)

did not improve student outcomes. The author speculated the mixed results could be do the immediate reward for an input (i.e., reading a book) as opposed to needing to study over a number of weeks to receive a reward for an output (i.e., assessment or grades) (Fryer, 2011). While some scholars worry that providing children with monetary incentives for school work may harm intrinsic motivation (e.g., Bowles, 2016; Kohn, 1996), Fryer and Allan (2011) contend that their research did not show a loss of motivation, though there was same fade-out of the effects of the second grade reading program one year after it ended. Fryer and Allan also advised that, for incentive programs to work, "don't be cheap" (p. 20).

Parental Choice

The ESEA, as amended by NCLB, included accountability provisions that allowed students to transfer to a higher performing school (in the same school district) if they attended a school that did not make AYP on reading or mathematics tests for two consecutive years. In 2006–07, almost 7 million students were eligible to transfer schools, yet only one percent of students did so. One reason for the low transfer rate was that parents were unaware of their choice, despite districts having notified parents: In a sample of parents in eight urban districts, only 20 percent of parents of students eligible to transfer schools indicated they had been notified of the option (U.S. Department of Education, 2009).

Even when aware of the choice to change schools, a parent cannot make an informed choice about her child's school if she cannot find or understand schools' accountability data. Since the 2001 authorization of the ESEA, states and districts have been required to produce state and local "report cards" with specific data (e.g.,

standardized test scores, graduation rates, school safety data) for every school. Almost a decade after states and districts were required to issue report cards, a study found that parents did not find the report cards easy to understand (Garcia, 2011). A 2018 survey found that over 40 percent of parents had not looked for school or district reports cards in the past 12 months. Of those, 40 percent were not aware the resources existed and about one-third did not where to find the report cards. The report went on to say that, in 2017, many report cards were written at a reading level requiring some college to understand; only nine states translated their report cards into a language other than English (Data Quality Campaign, 2018a).

The ESEA requires certain data elements to be present on school report cards, but states have discretion in how the data are reported. A 2018 survey found that parents reported that a school's overall performance rating, like an A–F letter grade, helps them make decisions related to their child's education (Data Quality Campaign, 2018b). A recent randomized controlled trial presented hypothetical school data in a variety of formats to parents to understand how the depth and organization of information was related to parents' understanding of the information, the satisfaction with the data display, and the (hypothetical) elementary school choice parents made for their child. The results indicated that parents chose academically higher-performing schools if the schools were sorted by academic performance, used A–F icons, or used simpler displays with less information (Glazerman et al., 2018). Similarly, a study in Charlotte-Mecklenburg found that parents were more likely to choose a school with higher tests scores when presented only with information on schools' tests scores compared with information on test scores and estimated odds of

admission (Hastings, Van Weelden, & Weinstein, 2007). The authors concluded that the effect was due to lowered information costs. This research indicates that parents need easy-to-understand information and an overall performance rating helps that with their understanding. A QRIS, with its summative start or check rating system, should be easy for parents to understand.

There is also research from the K–12 literature that finds that academic quality or report card data is only one factor that parents use when choosing a school. For example, Olsen and Hendry (2012) conducted a one-year case study that included interviews with parents and participant observation at a foreign language immersion magnet school in Baton Rouge, Louisiana to understand the school choice process. The authors concluded that parents did not make objective, data-driven decisions about schools. Rather, parents obtained information from a wide range of informal networks and sought to understand the school's curriculum and the degree of student diversity. Similarly, a 2017 survey of black and Latino parents found that, in addition to a child's report card, over 60 percent of parents thought that teachers' and other parents' opinions of the school was a "very important" piece of information in determining if the school was effectively education their child (Leadership Conference Education Fund, 2017).

Health Care Ratings, Patient Choice, and Incentives

The health care market has standard metrics (e.g., hospitals' mortality rates and readmission rates) that, if made public, could allow patients to choose care based on quality of outcomes. In theory, consumers will select higher quality care, health care providers will compete with one another by increasing quality, and the end result

will be more high-quality health care. In support of theory, Pope (2009) found that as hospitals increased their rank in the US News and World Report hospital rankings, hospitals experienced an increase in non-emergency, Medicare patient volume. A study in the Netherlands found that angioplasty patients were more likely to choose higher-rated hospitals based on a variety of measures available on a single website (Varkevisser, van der Geest, & Schut, 2012). These two studies indicate that patients consider quality when choosing a hospital and a study in England found that a hospital's quality was positively associated with the quality of its rivals for about half of 16 quality measures (there were no significant negative associations) (Gravelle, Santos, & Siciliani, 2014). This last finding indicates that hospitals are competing with each other.

In addition to evidence that consumers choose hospitals based on quality, there is evidence that consumers choose health plans based on quality ratings. For example, a study of ratings disseminated by the National Committee for Quality Assurance to employees choosing a health plan found that the ratings had a meaningful influence on employees' choices, particularly for individuals choosing a plan for a first time (Jin & Sorensen, 2005). Similarly, a study of HMO report cards in 1999 and 2000 to 40 million Medicare enrollees found that consumers used both the report cards and market-based sources when choosing an HMO (Dafny & Dranove, 2008).

While it appears that patients may be "demanding" high-quality health care, policy makers have tried to increase the "supply" of high-quality care through program incentives. A review of 17 studies published through 2005 found that the

majority of the studies found partial or positive effects of financial incentives on measures of quality (Peterson et al., 2006). Similarly, a Cochrane Collaboration systematic review found that financial incentives generally improved aspects of care, but there was little evidence for improved patient outcomes (Flodgren et al., 2011). After reviewing the evidence on incentives and describing new incentives under the Affordable Care Act, Doran, Maurer, and Ryan (2017) note that it will be crucial to continue improving the design of incentive programs.

Taken together, the research on health care markets indicates that patients use available metrics when choosing their health program, programs are aware of this and compete with one another on metrics, incentives tend to increase the quality of care, but incentives may not improve patient outcomes. There are multiple reasons to suspect, though, that the health care market and the child care market are quite different from one another. One reason that people may value ratings more for health care than ratings for child care is the potentially severe and immediate consequences to choosing a lower-quality health care program (e.g., death or longer hospitalizations). Families could choose a lower-quality child care provider, realize their "error" by observing their child in the provider's care, and move the child to a new provider before lasting damage was caused to their child. As noted below, families choose care, in part, for convenience factors, because they will have to use this care arrangement multiple times per week for months. Patients do not frequent health care programs with this regularity, so convenience is less of a factor (of course, convenience is a key factor for emergency procedures). Because needing child care is such a common event, families in search of care can rely on friends and family for

child care recommendations. Medical needs are often more personalized and a patient may not have friends or family with their same medical condition from whom to seek advice, thus heightening the importance of independent rating systems.

Summary

The research reviewed in this chapter makes clear the importance of providing high-quality care to disadvantaged children and that QRIS are improving providers' quality of care. While QRIS are improving the quality of care, research tends to indicate that the demand side of the QRIS logic model is not working as theory predicted and parents are not, in fact, demanding high-quality care. If parents are not demanding high-quality care, care will only be improved through the supply side of the QRIS logic model: state support and tiered reimbursements, and there is very limited research on tiered reimbursement systems. However, there is a deep literature base on performance incentives, including in the health care field, which leads one to be optimistic as to the effect of a tiered reimbursement system on improving quality of care. Importantly, literature on intrinsic motivation indicates that child care providers' intrinsic motivation to provide quality care would not be crowded out by the tiered reimbursement system. And, if a provider wanted to be viewed as competent and highly-skilled, the tiered reimbursement system gives the opportunity to be viewed as such.

Chapter 3: Key Features of Maryland EXCELS and Maryland's Tiered Reimbursement System

This chapter describes the key features of Maryland's QRIS, called Maryland EXCELS and Maryland's tiered reimbursement system. Descriptions of Maryland EXCELS, particularly the technical assistance available to the providers, were informed by interviews with three MSDE officials and seven technical assistance providers covering each of the counties included in my qualitative analysis.

Maryland EXCELS

Between 2009 and 2011, MSDE's Division of Early Childhood Development worked with experts to develop Maryland EXCELS, a QRIS for child care centers and family child care providers. Maryland EXCELS contains standards that cover five core "disciplines": Licensing and Compliance (3 standards), Staff Qualifications and Professional Development (1 standard), Accreditation and Rating Scales (3 standards), Developmentally Appropriate Learning and Practice (9 standards), and Administrative Policies and Practices (15 standards).[4] Requirements to meet each standard increase for each of the five EXCELS levels. A provider's ratings on each of the five disciplines are available to the public on the Maryland EXCELS website, though a provider's overall rating is equal to the lowest of its individual ratings. Recall that about 44 percent of QRIS are block systems, like Maryland EXCELS.

While there are fewer standards in the first three disciplines than the last two, there are some key features of the first three disciplines that are important to note. A

[4] Standards for child care centers, family child care providers, and school-age only centers are available at https://www.marylandexcels.org/commitment-to-quality/maryland-excels-standards/. School-age only centers have 6 standards in the Developmentally Appropriate Learning and Practice discipline.

provider will receive a rating of 1 in Licensing and Compliance (and for their overall rating) if the provider has more than one inspection in the last 12 months with findings of non-compliance in Injurious Treatment; Child Protection; Supervision; or Capacity, Group Size, and Staffing. Once 12 months has passed from the non-compliant inspection, the provider can re-publish its EXCELS ratings. The Staff Qualifications and Professional Development standard requires that, beginning at level 2, 60 percent of lead staff hold certain credentials, with the type of credential (tied to training, formal education, and experience) increasing at each level.[5] Finally, Accreditation and Rating Scales standards require that a level 4 provider complete an accreditation self-study and request a validation visit from an accreditor. Only fully accredited providers may be rated level 5 in Accreditation and Rating Scales.

Participation Requirements

One of the requirements of the four-year $50 million RTT-ELC grant that MSDE received in 2012 was to create a timeline for ensuring children of high needs were receiving high-quality care. According to an MSDE official, a small group of stakeholders, including presidents of child care associations, discussed what "high-quality" meant and what was a reasonable timeline to ensure kids were enrolled in high-quality care. One MSDE official explained that it was important to require that children receiving CCSP subsidies attend a provider that is committed to quality. While being enrolled in EXCELS does not guarantee a provider's commitment to quality, providers do have to meet standards that go beyond licensing and

[5] MSDE issues Maryland Child Care Staff Credentials for seven different levels (1–4, 4+, 5–6). An EXCELS level 5 requires that 60 percent of lead staff hold a credential of 4+ or higher.

compliance. The MSDE official felt the requirement to be enrolled in a provider participating in EXCELS would result in children having a greater chance at receiving developmentally appropriate education and being prepared to enter kindergarten. The small committee discussed various timelines, some as long as eight years, before deciding that it made sense to require providers that received CCSP reimbursements be enrolled in Maryland EXCELS almost as soon as the system was fully functional. The stakeholders urged the requirement be implemented "sooner, not later," and in 2012 MSDE announced that, beginning on July 1, 2015, providers needed to be enrolled in Maryland EXCELS in order to receive a CCSP reimbursement for child care services. Louisiana, Maine, Pennsylvania, Rhode Island, Washington, and Wisconsin have similar requirements and Nebraska requires that providers be enrolled in their QRIS once they serve a significantly large number of children who receive subsidies (QRIS Compendium, 2017).

As Maryland EXCELS went "live" on July 1, 2013, MSDE and its partners had two years to ensure that all providers that received CCSP reimbursements—or who may want to receive them in the future—were enrolled in Maryland EXCELS before the new requirement went into effect on July 1, 2015. Multiple MSDE officials and technical assistance providers reported that some providers initially thought Maryland EXCELS was "just one more thing to do" and the requirement to be enrolled to receive CCSP reimbursements would go away. MSDE's effort focused on "getting everyone in," and, within a year after launch, over 3,379 providers were enrolled in Maryland EXCELS, beating its goal by about 2,000 providers (MSDE, 2016a). Additionally, as the July 1, 2015 deadline approached, according to an MSDE

official, almost 90 percent of all providers that were receiving subsidies were enrolled in EXCELS.

Once enrolled in Maryland EXCELS, providers have one year to meet standards in each discipline (which requires uploading documents to a secure website) and "publish" their quality rating on the public EXCELS website. If a provider does not publish its rating after one year, MSDE changes the provider's status to "non-participating" in Maryland EXCELS and the provider can no longer receive CCSP reimbursements (though if the provider uploaded documents and published its rating, it would be in "participating" status again). An MSDE official acknowledged that with the focus on enrolling providers in Maryland EXCELS, some providers did not "know what they were getting into." The official explained that other states required providers to participate in an orientation prior to enrolling in their QRIS. With the July 2015 deadline looming, MSDE did not have that luxury to ensure understanding of the entire system. Consequently, numerous providers did not understand the process to publish a rating within a year of enrollment and were moved to "non-participating" status one year after enrolling in Maryland EXCELS. MSDE and their Quality Assurance Specialists (QAS) worked quickly to help these providers publish a rating to ensure families in the CCSP did not endure a disruption in care. Now, QAS annually remind providers of the need to renew their published rating, but some providers will still not publish their rating and be moved to non-participating status. QAS report that they quickly work with providers who call for assistance to move back to participating status, as no one wants care to be disrupted for CCSP families.

Participation Incentives

Aside from the requirement that providers receiving CCSP reimbursements participate in Maryland EXCELS, MSDE also offered one-time bonuses to incentivize participation and improved quality. Between July 2013 (when Maryland EXCELS began) and December 2015, and again between October 2018 and September 2019, MSDE offered increasingly larger one-time bonuses to providers upon attainment of EXCELS levels. The amount of the bonus depended on whether the provider was a child care center or a family child care provider and the provider's licensed capacity. For example, a family child care provider's one-time bonus for reaching Level 3 was $300 and a center with licensed capacity of over 100 would receive $1,200. The bonus for family child care providers was $1,000 for a level 5 rating and the bonus for a center with a licensed capacity of over 100 was $4,500 (see Table 1; Maryland EXCELS, 2014). For the most recent time period, MSDE gave the level 5 bonuses to providers that republished at a level 5. In 2014, Maryland was one of the 25 states that provided a quality award or bonus (QRIS Compendium, 2017).

Table 1. Maryland EXCELS Provider Bonuses

EXCELS Level	Family Child Care Provider, Capacity 1–8	Family Child Care Provider, Capacity 9–12	Child Care Center, Capacity 1–50	Child Care Center, Capacity 51–100	Child Care Center, Capacity 101+
1	$50	$50	$50	$100	$150
2	$150	$200	$250	$500	$750
3	$300	$400	$400	$800	$1,200
4	$500	$800	$1,000	$2,000	$3,000
5	$800	$1,000	$1,500	$3,000	$4,500

Source: Maryland EXCELS, 2018; Maryland EXCELS, 2014

As of 2017, 72 percent of Maryland's licensed child care centers participated in EXCELS and 40 percent of licensed family child care providers participated. Twelve state QRIS had higher participation rates for licensed child care centers and 14 state QRIS had higher participation rates for licensed family child care providers (Tout et al., 2018).

Technical Assistance

Maryland helps child care providers improve quality by providing face-to-face and online training and technical assistance to improve quality and meet EXCELS standards. MSDE supports three types of technical assistance providers: Program Coordinators, QAS, and Technical Assistance Specialists employed by regional Child Care Resource Centers (CCRCs). In October 2017, Maryland had 28 Program Coordinators, whose role is to help providers navigate the EXCELS website, review all materials submitted to meet a certain standard, verify or ask for additional information, and provide a rating based on submitted material (MSDE, 2017a). Beginning in fall 2018, Program Coordinators began to review materials for the highest EXCELS level the documents could achieve, instead of only reviewing the documents against the EXCELS level standards the provider was aiming to meet. For example, even if a provider was trying to move from a level 2 to a level 3 (and did not have staffing levels necessary to move to a level 4 or level 5), Program Coordinators would review parent handbooks and staff handbooks to see whether the materials met level 4 or level 5 standards. A QAS reported she was excited to see how providers would respond when they realized that some of their documents already met higher EXCELS levels.

In May 2018, Maryland supported 15 QAS, each assigned to specific jurisdictions (MSDE, 2018a). According to interviewed QAS, their role is to provide training on how, specifically, providers can meet EXCELS standards. QAS provide this training though monthly workgroups and one-on-one telephone or in-person (i.e., "house call") support. Interviewed QAS tended to provide stories and share experiences about working with family child care providers—which all QAS felt needed more assistance and "hand-holding" than centers. Some family providers do not have access to computers, scanners, or high-speed internet, making the monthly workgroups especially important. One QAS relayed a story about a family provider who wrote out all answers by hand and the QAS would type and scan materials for the provider.

While technological challenges were relatively easy to overcome, QAS reported that they needed to build trust with the family providers and "if you go negative on them, they shut down." Multiple QAS shared examples of building trust by discussing EXCELS standards for discipline policies. Family providers—who may not have had a written discipline policy—would struggle to write a policy to level 1 EXCELS standards. QAS provided examples of good discipline policies and asked the providers what they currently do when a child acts out. A QAS reported that she tries "to get them to the aha moment by asking them questions….Tell them, 'you know how to do this.…Answer the question like you would on a tour. Write it down. That's your words and it is meaningful to you and you can speak to it.'" In describing how QAS begin the conversations with providers, QAS used supportive and encouraging language such as "I am going to empower you, equip you, and elevate

you," and "I am going to be [your] biggest cheerleader and I am going to explain this to you, so you are not sitting by yourself in your house staring at a computer screen and not having a clue about what to do."

Using some of its CCDF funds, MSDE contracts with the Maryland Family Network (MFN) to administer the Maryland Child Care Resource Network (MCCRN), which consists of a centralized child care referral service plus 12 statewide regional offices. MCCRN provides training to child care providers and the child care workforce to help them improve the quality of care they provide. Trainings and workshops are offered in-person and on-line. Annually, about 28,000 individuals (not an unduplicated count) attend in-person trainings and workshops and individuals complete 3,000 on-line workshops (Maryland Family Network, 2018). Among other topics, trainings cover all licensing requirements, learning domains that support kindergarten readiness, caring for children with disabilities, behavioral concerns, and serving high-need children, such as those who parents are deployed or incarcerated.

MCCRN, through its local CCRCs, provide one-on-one technical assistance to help providers use research-based practices that will improve the quality of child care. According to interviewees, CCRC technical assistance often included spending many hours with a provider (often a family child care provider) to help them understand and implement research-based practices. Such training is "intimate" in that the provider spends time in the provider's home, understanding their program, modeling research-based practices, and helping the provider implement the practices. The goal of such technical assistance is to have the provider sustain the practice and not need further assistance on that specific practice. In Fiscal Year 2017, the CCRCs conducted almost

1,000 technical assistance cases (i.e., a series of quality improvement activities with a single provider) (Maryland Family Network, 2018).

Interviewees reported that QAS and CCRC staff try to coordinate technical assistance and have the CCRC technical assistance providers help improve quality and the QAS focus on how to document that quality to meet EXCELS standards. While the technical assistance provided by CCRCs is not solely focused on meeting EXCELS quality standards, the technical assistance providers are aware of EXCELS standards. And, to the extent that QAS are providing models of discipline or inclusion policies and contracts to providers, they are providing similar information that a CCRC technical assistance provider may provide. EXCELS recently developed its own trainings on discipline and inclusion, and how to meet EXCELS standards in these areas. Despite coordination among the technical assistance providers, a CCRC official was aware of a few instances in which a provider would receive assistance on the same issue from a QAS, a CCRC technical assistant, as well as a Program Coordinator. Given the limited resources to serve over 8,500 providers—almost 4,400 of which participated in EXCELS in January 2018—interviewees acknowledged a need to continue to better coordinate support.

Monitoring

Another role of a QAS is to conduct scheduled monitoring visits to providers participating in EXCELS to assess whether the provider is meeting EXCELS standards for about 10 observable standards. The QAS use the provider's uploaded materials and observe whether the policies are being implemented as stated; monitoring visits do not lower a provider's rating. QAS observe providers outside of

their region and submit a report to MSDE. MSDE then shares the report with the provider and the provider's regional QAS. The regional QAS will then help the provider create an improvement plan to increase quality. Monitoring visits started in 2017 with QAS monitoring 25 providers (chosen at random) every other month, increasing to 45 providers per cohort the following year.

Monitoring visits are important because, as multiple interviewees noted, EXCELS is a paper-based on-line system. One interviewee noted, "providers can write what they want," and another commented that without monitoring, "it is hard to say that a schedule or lesson plan is great and being implemented well." Additionally, an MSDE official noted that a challenge of the EXCELS system—and any QRIS system—is getting providers to truly embrace quality improvement. The MSDE official stated that, "QRIS is like teaching to the test," and believed that providers are doing wonderful things if they meet standards, but providers should not only focus on the measured standards.

Parent Outreach and Advertising

The MCCRN also operates LOCATE, a telephone referral service to help parents find and evaluate child care. According to an MFN official, a referral specialist takes about 20 minutes to ask questions to ascertain the caller's needs, explain different types of child care, provide guidelines for selecting quality care (not specifically related to EXCELS), and, then, conduct a search of their database to develop a list of five to ten child care providers that fit the caller's needs. If any of the providers are in EXCELS, the referral specialist will then explain EXCELS to the caller. The database that referral specialists use is populated by licensing,

credentialing, and EXCELS databases, as well as results from an optional annual database questionnaire that asks providers other things that parents may want to know when choosing a provider. For example, the questionnaire includes questions on fees, hours of operation, the education background of the provider, languages spoken, schools near the provider, experience with children with disabilities, whether other people live in a home-based provider, or if there are pets in a family child care provider's home. The MFN official stressed that the referral specialists do not make recommendations. Annually, LOCATE helps about 4,600 parents seeking child care for about 6,500 children (Maryland Family Network, 2018).

In addition to LOCATE referral specialists telling families who call the referral service about EXCELS, MSDE and its QAS are working to help parents understand Maryland EXCELS. According to interviewees, MSDE's marketing and outreach campaign has included staffing information booths at county fairs, preschool fairs, and health expos; partnering with the Baltimore Orioles and minor league baseball teams; advertising on billboards, buses, and radio; and providing window stickers and yard signs to EXCELS participants. One QAS related a story of staffing a booth at a preschool fair where she offered help to parents who looked "shell-shocked" from visiting all of the booths. She explained EXCELS to the parents, and noted that all of the providers that were wearing red ribbons were participating in EXCELS. She advised parents to go and visit a provider to see if it is the right fit, but that EXCELS can help parents make this "hard" choice. This same QAS went on to explain that MSDE intentionally rolled out EXCELS in two phases (i.e., focus on the providers, then focus on the parents) so as to ensure that a substantial number of

providers were enrolled in EXCELS and parents could find providers that met their needs. However, as will be discussed in more detail in the Results Chapter, interviewed center directors thought that very few of the parents at their centers were aware of or understood EXCELS.

Maryland's Child Care Subsidy Program

In each month of fiscal year 2016 Maryland served approximately 18,500 families and 24,600 children through its CCSP, which is how Maryland administers the $88 million in federal funds it received though the CCDF (Office of Child Care, 2018a; Office of Child Care, 2016c). Families may use vouchers to pay for care in a licensed child care center, registered family child care home, or informal care (e.g., care by a relative, non-relative care in the child's home, or care provided by a non-relative in their own home for less than 20 hours a month). In 2016, 3 percent of children served by Maryland's CCSP received care in informal care settings (i.e., the child's home), 34 percent received care in a family child care home, and 63 percent received care in a child care center. Compared with the national average, children in Maryland were less likely to be in a center: 63 percent of children were served by centers in Maryland and 72 percent of children were served by centers across the nation (Office of Child Care, 2018b). Note that Maryland requires that any provider who serves a single non-relative child be licensed by the state. Some states do not require family child care providers to be licensed until they serve four or more children (Rigby, Ryan, & Brooks-Gunn, 2007).

Based on a family's income, the number of children in child care, the ages of children in child care, the county in which the family resides, and the type of care

(i.e., informal, child care center, or family child care provider), Maryland determines the maximum voucher amount and any co-payment that the family must pay the provider. A provider may only receive a payment from the state that is equal to (or less than) the fee charged to private-pay families. Additionally, providers are allowed to charge families for the difference between the total amount of the voucher and co-pay and the price the provider charges for private-pay families.

While the CCDF program encourages states to set vouchers at the 75th percentile of market rate prices, Maryland decided to serve more children with smaller vouchers and its voucher rates were set at the 9th percentile of market rate prices from June 2016 to June 2018 (i.e., the rate covers 9 percent of providers; MSDE, 2016b). Beginning in July 2018, Maryland increased its payment rate to, at a minimum per subsidy payment region, the 20th percentile of market rate prices. In Baltimore City, the payment rate is set as high as the 46th percentile of market rate prices for infants and toddlers in home-based child care. Additionally, 2018 state legislation required that the percentile of subsidy reimbursement, at minimum per subsidy payment region, reach the 30th percentile in 2020, the 45th percentile in 2021, and the 60th percentile in 2022 (MSDE, 2018b). As an example of what these percentiles mean, for a 4-year-old in a center in Baltimore City, the 9th percentile is $540 (per month), the 20th percentile is $549, the 45th percentile is $645, the 60th percentile is $686, and the 75th percentile is $760 (MSDE, 2017b). Based on the 2017 market rate survey, by 2022, the difference between Baltimore City's subsidy rate for a 4-year-old in a child care center and the HHS recommended rate would be $74, a difference of 10 percent.

Maryland's Tiered Reimbursement System

Maryland has offered its tiered reimbursement to providers since 2001. Beginning on July 1, 2013, the tiered reimbursements were based on Maryland EXCELS. Child care centers and family child care providers[6] that are rated level 3, 4, or 5 receive a certain percentage of additional payment from the state (see Figure 2). According to a MSDE official, the tiered payments (called EXCELS payments in Maryland) for family child care providers are smaller than for child care centers because MSDE expected that money would go further for a family child care provider. In Maryland there are no restrictions on what a provider may do with the additional money, though MSDE encourages providers to put the money back into the program, including by offsetting the cost of child care for families receiving a subsidy, providing salary and benefits enhancements to staff, or making quality improvements to the program (MSDE, 2013).

As an example of how the EXCELS payment works, a child care center with a rating of 5 would receive an additional 26 percent of the maximum voucher for a child 2 years of age or older (provided the total amount does not exceed the fee charged to private-pay families). The exact amounts of the tiered payment vary by location. In 2016, a center serving a 4-year-old with the highest rating in Prince George's County, Maryland would receive an additional $142,[7] or 26 percent more than the base rate. This bonus would bring the total payment to $687 per month,

[6] Informal care (e.g., care by a relative, non-relative care in the child's home, or care provided by a non-relative in their own home for less than 20 hours a month) is not included in Maryland EXCELS and Maryland's tiered rating system.

[7] The dollar amounts reported are specific to Maryland's Region W, which includes Ann Arundel, Calvert, Carroll, Charles, and Prince George's Counties.

which is still 21 percent below the cost to provide care at the 75th percentile ($871) (Schulman & Blank, 2016).

Table 2. Maryland's Tiered Payment Schedule

Tiered Payments	Maryland EXCELS Level		
	Level 3	Level 4	Level 5
Family Child Care			
Under 2 years of age	11%	22%	29%
2 years of age and over	10%	21%	28%
Child Care Center			
Under 2 years of age	22%	37%	44%
2 years of age and over	10%	19%	26%

Source: MSDE (2013).

Unlike some states, Maryland does not provide tiered payments until a provider reaches level 3 (as opposed to providing smaller tiered payments to lower-quality providers, perhaps to incentivize participation in the state's QRIS). According to an MSDE official, at the time this decision was made, MSDE felt that the EXCELS level 3 standards were indicative of a provider striving for quality. For providers that did not want to proceed on a path to accreditation (which is required as part of the levels 4 and 5 EXCELS standards), level 3 indicated a meaningful difference in quality from level 2.

QAS reported that their work used to focus on enrolling providers in EXCELS and now it has shifted to focus on improving the quality of providers already in EXCELS. One way they are trying to incentivize providers to improve quality is by ensuring providers are aware of EXCELS payments. MSDE and QAS send out emails to providers explaining EXCELS payments and explain the tiered payments in

workshops or when providing one-on-one technical assistance. However, one QAS reported that the outreach is most effective when it is personalized:

> *We'll go into the system and tell them the actual amount [of EXCELS payment they could receive]. …'Do you see that column [on your statement] that says EXCLES and there is nothing there? There's a dollar amount that goes in automatically once you publish as a level 3.' That astounds them. …Until they see a dollar amount, it does not connect.*

Other QAS noted that the tiered reimbursement system prior to EXCELS did not automatically provide tiered payments and some providers may still have bad memories of that system. Additionally, MSDE changed to a centralized subsidy system in 2013 and some providers did not initially get paid on time. While all of the "bumps in the road" with subsidy and tiered payments have been smoothed out, an MSDE official acknowledged that they had more work to do to ensure that providers are aware that the challenges have been addressed.

Summary

Maryland has relatively low subsidy reimbursement rates which likely impede providers' ability to provide high-quality care. In the coming years Maryland intends to substantially increase their reimbursement rates. While the rates have remained low, Maryland has not stood by idly. To help improve the quality of care, Maryland has operated EXCELS for more than five years and, since July 2015, required providers that receive CCSP payments participate in EXCELS. To encourage participation and improvement in EXCELS, Maryland has offered extensive technical assistance to providers, including ensuring providers serving children in the CCSP are aware of EXCELS payments for reaching level 3. The next chapter will discuss my

methodology to study whether Maryland's tiered reimbursement system works as theory predicts and acts as an incentive to improve the quality of providers.

Chapter 4: Research Design, Data Sources, and Methods

Based on prior research on QRIS and how parents search for child care, I assumed that parents were not using Maryland EXCELS to demand higher quality care (i.e., a child care provider with a rating of 3 or higher in EXCELS). Therefore, child care providers would only be incentivized to improve quality through state support and tiered subsidy reimbursements. State support includes training, technical assistance, and financial incentives to individual child care workers to improve their qualifications. While state support is available to all providers, tiered reimbursements are only incentives for providers who serve children receiving child care subsidies. Many of the standards in the five EXCELS domains have a fixed cost, regardless of the number of children that are served (e.g., working towards accreditation status by conducting self-assessments of quality, implementing developmentally appropriate curriculum, and implementing high-quality administrative policies). Though the costs to meet other standards are not fixed (e.g., the cost of employing higher-quality staff will increase as more staff need to be employed and some aspects of developmentally appropriate learning activities have per child costs), my hypothesis was that, after controlling for provider and zip code demographic characteristics, providers serving a higher proportion of children receiving subsidies (i.e., providers with higher "subsidy densities") would be more likely to have an EXCELS rating of level 3 or higher (i.e., a rating that would result in a tiered reimbursement and a center being of "higher quality"). By serving a higher proportion of children receiving subsidies, providers would receive relatively larger increase in their CCSP payments, enabling them to better cover the fixed costs associated with higher quality care.

Although Maryland's validation study of EXCELS found that independent observation tools did not differentiate among EXCELS ratings, I assumed that the goal of MSDE's tiered child care reimbursement system is to improve the subsidized quality of care in Maryland *as measured by EXCELS rating*. That is, whether or not the care in a level 3 provider is demonstrably better than care in a level 2 provider, Maryland's tiered reimbursement system provides an incentive for a level 2 provider to improve to a level 3. Therefore, my research analyzed whether the incentive encouraged providers to attain a rating that resulted in a tiered reimbursement.

Research Design

I conducted a two-stage mixed methods study to answer the research question, *Does Maryland's tiered reimbursement system incentivize child care providers to attain a rating on Maryland's QRIS that results in a higher reimbursement rate?* In the first stage of my research, I conducted multilevel analyses to determine the association between centers' and family child care providers' reliance on CCSP payments and whether the provider had an EXCELS rating of 3 or higher. In the second stage of my research, I interviewed child care center directors in five counties to understand how they made decisions about which EXCELS rating to attain, how tiered reimbursements factored into their decisions, supports they used to improve their EXCELS rating, and challenges to improving their EXCELS rating.

Leech and Onwuegbuzie (2009) define mixed methods research studies as those that collect, analyze, and interpret quantitative and qualitative data in a single study. My research is a sequential explanatory equal status design, in which I analyzed quantitative data, used the results to select the child care center directors for

my qualitative data collection, analyzed the qualitative data, and, finally, interpreted all of the data together (Creswell, Plano Clark, Gutman, & Hanson, 2003). My research is an "equal status" design because I did not preference either the quantitative or qualitative stages of my study. Rather, I interpreted all of the data together to answer my research question.

Though my quantitative data included all licensed child care providers in Maryland—and my regressions included all providers receiving CCSP payments in January 2018—the design is not strong enough to make a generalizable causal inference on its own. However, when combined with the qualitative analysis, the interview data allowed me to "triangulate" my results (Greene, Caracelli, & Graham, 1989). My interviews enabled me to understand how child care directors considered the tiered reimbursements when determining what EXCELS level to attain. A second reason for my qualitative research, therefore, was to "expand" upon the quantitative results and help me understand *why* directors chose the EXCELS level they chose—reasons that may not be directly tied to the tiered reimbursements (Bryman, 2006). The results of my qualitative research can be used by another researcher to conduct a representative survey to draw more generalizable conclusions about the processes underlying improvement among Maryland's child care providers (Yin, 2009).

Quantitative Data and Analysis

During the first major stage of the study, I solicited data from MSDE, identified relevant census-based data, and constructed an analytic strategy for analyzing the data. I specified a number of relevant statistical models for testing my

hypothesis, including a set of models that would allow me to test the robustness of my results to different model specifications.

Quantitative Data Sources

MSDE provided me with administrative data for all providers that were licensed by MSDE's Division of Early Childhood in January 2018. For all licensed providers, I received data on their address, county, and year first licensed. For all licensed providers, for each of July 2013, January and July 2014, January and July 2015, January and July 2016, January and July 2017, and January 2018, I received licensed capacity (by five age groups), EXCELS participation, overall EXCELS rating, EXCELS rating by domain, number of children using the CCSP (by under 2 and age 2 and over), subsidy payments (dollar value; by under 2 and age 2 and over), and EXCELS payments (dollar value; by under 2 and age 2 and over). Though MSDE provided me with five categories for licensed capacity, in my analyses I combined the first two (6 weeks–17 months and 18–23 months) and last three (2–5 years, 5–15 years, and 16+), to represent the age groups with different EXCELS payments. To create the covariate licensed slots/children under 5, for each zip code I totaled the number of licensed slots in the first three categories (i.e., 6 weeks–5 years, not yet in kindergarten) and divided it by the number of children under age 5 living in the zip code. This variable over-represented the number of slots/child, as the numerator included slots licensed for 5-year-old children still in preschool, but the denominator does not include children aged 5. I created a dummy variable for school-age only providers (i.e., before and after school providers), by identifying providers that were *only* licensed to serve children ages 5–15. MSDE could not provide me with data on

the auspice of the providers (i.e., for-profit, non-profit, or government-run), nor could it identify which providers were Head Start grantees. Table 3 contains the data sources for my zip code covariates, mostly from the U.S. Census Bureau's 2016 American Community Survey (ACS) 5-year estimates.

Table 3

Zip Code Covariates and Census Data Tables

Zip Code Covariates	Data Table
Count and percent of the population that is under 5, 5–9, and 10–14	3 variables Table S0101
Percent of the population that is under 5 and in poverty within the previous 12 months	Table S1701
Percent of the population birth to 14 that is white, black, Asian, and Hispanic	4 variables Tables B01001B; D; H; I
Percent of females ages 25 or older with a bachelor's degree	Table S1501
Percent of females ages 20 to 64, with children under age 6 in labor force	Table S2301
Unemployment rate	Table S2301
Percent of population in urban area (v. rural area)	2010 U.S. Census Table P2

Note. Unless specified, all data tables are from the 2016 ACS 5-year estimates.

Regression Analyses

To quantitatively test my hypothesis that tiered reimbursements incentivize providers to reach EXCELS level 3, I conducted two-level logistic regressions, with providers (level 1) nested within counties (level 2), separately for child care centers and family child care providers. It is necessary to nest providers within counties to account for the unobserved county-level characteristics that affect quality outcomes (e.g., counties in Maryland have different MSDE-funded technical assistance contacts and counties have different cost-of-living-adjusted CCSP reimbursement rates). The dependent variable (η_{ij} in the estimating equation below) is the probability that

provider *i* in county *j* had an EXCELS rating of level 3 or higher, the independent (continuous) variable (X_1) is a provider's subsidy density, and a host of provider and location (i.e., demographic characteristics of zip codes) covariates controlled for observed differences between providers. My use of zip codes as a provider's "community" or "service area" was consistent with similar analyses by Bassok and Gaslo (2016) and Hatfield et al. (2015). The models below were informed by discussions I had with staff from the MSDE to better understand how the CCSP and EXCELS operates.

The independent variable of interest is the percentage of children a provider serves that receive a subsidy and my analysis is restricted to providers with subsidy density greater than 0 in January 2018. As providers that do not receive CCSP funds are not required to participate in EXCELS, those that chose to participate in EXCELS may be quite different than providers that do not participate in EXCELS, as well as different from providers that serve children in the CCSP. Subsidy density is defined as the percentage of licensed slots filled by children in the CCSP. For most providers, this study's definition of subsidy density is likely lower than if the variable could have been calculated with a denominator of enrollment. For 21 child care centers and 230 family child care providers, my definition of CCSP density is over 1.0 and certainly higher than if the variable could have been calculated with a denominator of enrollment.[8] A provider could enroll more children than its licensed capacity if all children are not attending for five full days each week (e.g., some children may attend on Monday and Wednesday and another group of children may attend on Tuesday

[8] One of the robustness analyses I ran capped subsidy density at 1.0.

and Thursday). However, MSDE does not collect data on enrollment, so licensed slots is the best available option to use as a denominator to create the subsidy density variable. I also created subsidy density variables for January 2018 for the two age categories with differing tiered reimbursement rates: younger than 2 years and 2 years and older.

It is necessary to conduct analyses separately for child care centers and family child care providers because provider types have very different business models and the tiered reimbursement rates are structured differently for the provider types (see Table 2). Because tiered reimbursements are larger for child care centers, I hypothesized that child care centers would be more sensitive to the incentives than family child care providers. Tiered subsidies are over twice as large for child care centers serving children under 2 compared with children age 2 and over (22 percent tiered reimbursement compared with a 10 percent tiered reimbursement for EXCELS level 3 centers), so I hypothesized that centers serving higher proportions of children under 2 will be more incentivized to improve quality.

The basic model (1) is a two-level model that nests providers in counties and does not include any covariates. Model (2) is a two-level model and includes provider covariates (i.e., year first licensed, time enrolled in EXCELS, licensed capacity by age group, and a dummy for a school-age only provider; $\boldsymbol{X}_2$). It is necessary to control for when a provider is first licensed and the time enrolled in EXCELS as it takes time to progress through EXCELS. For example, a newly-licensed provider that just enrolled in EXCELS would need time to complete all of the paperwork and ERS self-assessment needed to publish at a level 3 and be of higher quality. School-age

programs have slightly different EXCELS standards and MSDE officials and TA providers noted that challenges that school-age programs have in increasing their EXCELS ratings. Therefore, it is necessary control for whether a program is a school-age program.

Model (3), the main model, adds zip code covariates (i.e., licensed slots/child, under 5 poverty, race/ethnicity, females with at least a bachelor's degree, mothers in labor force, unemployment rate, and percent rural; $\boldsymbol{X}_3$) at level 1 (see Table 4). As QRIS theory assumes there is a market for care, the covariate of licensed slots/child is a proxy for the availability of licensed slots in a zip code. Theory would predict that if there are fewer licensed slots/child, there is less incentive for the providers to improve care, as parents have fewer options. The other zip code covariates I include are common to those included by other researchers that have found that disadvantaged communities are more likely to have lower quality care (Bassok & Gaslo, 2016; Hatfield et al., 2015). While level 2 of the model is unspecified, it does control for unobserved differences in county characteristics that might influence relationships associated with centers and zip code locations. The estimating equation for model (3) is:

$$\text{Level 1: } \eta_{ij} = \beta_{0j} + \beta_{1j}X_{1ij\,(Density)} + \boldsymbol{\beta}_{2j}\boldsymbol{X}_{qij\,(Provider\ Characteristics)} + \boldsymbol{\beta}_{3j}\boldsymbol{X}_{qij\,(Zip\ Code\ Characterisics)}$$

$$\text{Level 2: } \beta_{0j} = \gamma_{00} + u_{0j}$$

Model (3) addressed whether, on average across all providers of the same type, serving a higher percentage of children receiving subsidies was associated with a greater likelihood of attaining an EXCELS rating of level 3 or higher. As tiered

reimbursements also vary by the age of the children served in child care centers, in model (4), I replaced the subsidy density variable with variables that represent subsidy density, by the age bands with different reimbursement rates: under 2 years and 2 years and older. Finally, in model (5), I replaced the subsidy density variable with three variables that represented combinations of a provider having a subsidy density that was above or below the average subsidy density for providers and for whether the provider was located in a zip code with above or below average child poverty. Model (5) included dummy variables for (a) providers with high density located in high-poverty zip codes, (b) providers with low density located in high-poverty zip codes, and (c) providers with high density located in low-poverty zip codes. Based on Hatfield et al.'s (2015) study of the associations between child care funding and QRIS ratings in North Carolina, I expected that providers with below average subsidy densities that were located in high-poverty areas would be less likely than centers with below average subsidy densities that were located in low-poverty areas to be rated at EXCELS level 3 or above.

All models were run using the xtlogit command, grouping at the county level, with random effects in STATA 15.1. All models were run with group-mean centered variables.

Table 4
Independent Variables Included in Models

Independent variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Level 1 (β_{0j})	X	X	X	X	X
Subsidy density	X	X	X		
Subsidy density, by age band (2 variables)				X	
High/low subsidy density (dummy) x High/low child poverty (dummy)					X
Provider covariates					
Year provider first licensed		X	X	X	X
Length of EXCELS participation		X	X	X	X
Licensed capacity, by age group		X	X	X	X
School-age provider (dummy variable)[9]		X	X		X
Zip-code covariates					
Licensed slots per child under 5			X	X	X
Under 5 poverty (%)			X	X	
Race/ethnicity (%)			X	X	X
Females with at least a BA (%)			X	X	X
Mothers in labor force (%)			X	X	X
Unemployment rate			X	X	X
Urban v. rural (% rural)			X	X	X
Level 2 (γ_{00})	X	X	X	X	X

Robustness Analyses

I ran six robustness analyses with different key independent variables (see Table 5). In model (6), I capped subsidy density at 1.0. While it is possible for a provider to have a subsidy density of over 1.0, this capped independent variable will reduce the pull of outliers and may help correct for any data errors. In fact, one of the child care center directors I interviewed worked at a center that was part of a small franchise of three centers. She told me each of two locations had about 50 percent of children participating in the CCSP, but MSDE administrative data showed that one of the centers had zero children participating in the CCSP and the other center had more

[9] School-age providers can only be centers, so this variable is excluded from the regressions for family providers.

children in the CCSP than it was licensed to serve. When I asked MSDE about this oddity, MSDE responded that it was not typical, nor expected, for a franchise to combine CCSP counts into a single center.

Table 5

Key Independent Variables in Robustness Models

Model	Independent Variable
(6)	Subsidy density – capped at 1.0
(7)	Avg. subsidy density
(8)	Avg. subsidy density – capped at 1.0
(9)	ln subsidy dollars
(10)	ln avg. subsidy dollars
(11)	High/low subsidy dollars x high/low child poverty

In model (7), I created an average subsidy density variable that averaged subsidy density for those providers that served at least 1 child in the CCSP program in each of July 2015, January and July 2016, January and July 2017, and January 2018. Model (8) caps the average subsidy density variable at 1.0. I chose July 2015 as the earliest month because that was the month that, in order to receive CCSP payments, providers must have been enrolled in EXCELS. The dependent variable remains whether a provider is higher quality in January 2018. A provider likely made decisions that affected its January 2018 EXCELS rating thinking about the typical number of children receiving CCSP, not only the number of children expected to receive CCSP in January 2018. The draw-back to models (7) and (8) is that the sample is smaller than models (3) and (6), as only providers that served children receiving CCSP for all six time periods are included in the analyses.

Capping subsidy density at 1.0 in model (6) reduced the subsidy density of 21 centers and 230 family child care providers. The maximum uncapped subsidy density

for centers was 4.5 and the maximum uncapped subsidy density for family child care providers was 8.0. Over 25 percent of family child care providers had subsidy densities of at least 1.0 in January 2018.

Models (9) and (10) use as the independent variable, respectively, the natural log of subsidy dollars received (not including EXCELS payments) and the natural log of the average subsidy dollars received from the same months as model (7). Similar to model (5), model (11) included dummy variables for (a) providers with high subsidy dollars located in high-poverty zip codes, (b) providers with low subsidy dollars located in high-poverty zip codes, and (c) providers with high subsidy dollars located in low-poverty zip codes. The advantage to using subsidy density as the key independent variable is that it indicates providers' relative reliance on the CCSP, regardless of the licensed capacity of the provider. However, as providers may be more aware of the exact dollar amount of their monthly tuition that is due to children participating in the CCSP, it is worth examining whether the results are similar when using the natural log of subsidy dollars and subsidy density. See Appendix Table A.1 and A.2 for raw and group-mean centered key independent variables for child care centers and Appendix Tables A.3 and A.4 for raw and group-mean centered key independent variables for family child care providers, respectively.

Qualitative Data and Analysis

During the second major stage of the study, I developed a semi-structured interview protocol, identified and recruited center directors to interview, and developed an analytic strategy to analyze the interview data. The identification of center directors was informed by the quantitative analysis I conducted in the first

stage of this study. The semi-structured protocols were informed by interviews with three staff at the MSDE and seven technical assistance providers to better understand Maryland EXCELS, including the supports provided by technical assistance providers, and Maryland's tiered reimbursement system.[10] The final protocol incorporated suggestions from my dissertation committee, HHS staff that work on the CCDF, and MSDE staff, as well as insights gained from a pilot interview with one center director.

Identification and Recruitment of Interview Sample

I focused on child care center directors because 70 percent of children in the CCSP in January 2018 received care in centers. Because in-person interviews, compared with telephone or on-line interviews, better allow one to develop a rapport with interview subjects, I conducted in-person interviews in five counties in central Maryland: Anne Arundel, Charles, Howard, Montgomery and Prince George's Counties. The economic, racial, and ethnic demographics of those counties (and the children who are eligible to be enrolled in the CCSP program) represent Maryland's diversity (see Table 6). Together, the five counties comprise almost half of Maryland's population. These five counties account for 45 percent of all centers that received CCSP reimbursements in January 2018 and 44 percent of providers receiving CCSP payments that were rated level 3 or higher (see Tables 9 and 12).

[10] Before conducting any interviews or collecting administrative data from MSDE, I gained Institutional Review Board (IRB) approval through an expedited review process.

Table 6

Demographic Characteristics of Maryland and Select Counties

Variable	Maryland	Anne Arundel County	Charles County	Howard County	Montgomery County	Prince George's County
Percentage white	58%	75%	46%	58%	58%	20%
Percentage black	30%	17%	46%	19%	17%	65%
Percentage Asian	6%	4%	4%	18%	14%	4%
Percentage Hispanic	9%	8%	6%	7%	17%	15%
Poverty rate, below age 5	15%	7%	15%	7%	10%	15%
Total population	5,774,000	538,000	147,000	287,000	972,000	863,000

Note. Race and total population from 2010 U.S. Census; Poverty rate from 2015 American Community Survey 5-year estimates.

Because my quantitative analyses found that a center's subsidy density was positively and significantly associated with the likelihood that a child care center would be higher quality, I aimed to conduct more interviews with centers that were on the higher end of the distribution for subsidy density. While my regressions found that centers at the higher end of the distributions were more likely to be of high quality, centers along the entire distribution were rated high quality and, of course, some providers on the higher end of the subsidy density distributions were not of high quality. Therefore, my original goal was to interview eight center directors that led lower quality centers and 10 directors of higher quality centers. With the exception of two centers that were higher quality, for each higher quality center, I identified a center with an EXCELS rating of 1 or 2 in its same zip code, that had participated in EXCELS for a similar period of time, and had a similar subsidy density. Because

centers with high subsidy density situated in high-poverty zip codes were more likely than similar centers with low subsidy density and in a low-poverty zip code to be higher quality, I also aimed to select providers located in zip codes with various poverty levels. Additionally, centers that only served school-age children were less likely to be higher quality centers; therefore, I identified two sets of centers providing care to school-age children only.[11]

Ten of the 18 center directors had email addresses listed on their websites, and I sent them an introductory email with the MSDE letter of support as an attachment (see Appendix B). For seven centers, I could not find an email address, and I mailed the same introductory letter and MSDE's letter of support. One of the center's I planned to interview was part of a large afterschool organization and my initial contact was via a telephone call to the organization. A few days after the initial contact, I called each center director. Until I received a confirmation or decline, I called each center every few days, for a minimum of 10 calls. Of the initial 18 centers, one owner declined because his center director who was knowledgeable about EXCELS just left and he was too busy; one director declined because she was too busy and she did not serve many children in the CCSP; and four directors were ultimately unresponsive in scheduling an interview. To replace the two centers that outright declined to participate, I recruited an additional two centers to participate, though I had to contact three centers to find two that would participate (one center director declined because she was working on an application for a Head Start grant

[11] One of the sets of afterschool programs were in different schools, but run by the same organization. Thus, I only contacted and interviewed one person at the organization-level to gain an insight for these programs.

and did not have time). After scheduling an interview with one center director at a franchise location, she suggested I also contact someone at the larger organization, and I ended up interviewing her, as well.

The final sample consisted of 14 interviews with three school-age child care providers with multiple locations (only one of which was a for-profit provider), one corporate child care provider with multiple locations, and 10 child care center directors (one of which was a non-profit provider)[12] (see Table 7). Of the 10 child care center directors, two were directors of individual corporate child care center locations, four were directors or owners in small franchises (three or four locations), and four were directors or owners of single-location child care centers. Specifically, I spoke with two owners of small franchises and two owners of single-location centers. Of the 10 child care center directors, seven were rated EXCELS level 3 or higher and three were rated EXCELS level 1 or 2 at the time of the interviews (conducted in September–November 2018). The school-age providers and the corporate provider had individual centers that, collectively, had ratings across the EXCELS continuum, though one school-age provider did not have any higher quality centers. Almost all of the individual centers had a subsidy density of at least 24 percent. In contrast, across all school-age centers, relatively few children received child care subsidy, though a few locations had high percentages of children on subsidy. Across all of the corporate provider's locations, less than 3 percent of children receive child care subsidy (i.e., most locations were in the first quartile of subsidy density).

[12] I did not consider auspice when selecting interviewees. While MSDE could not provide me with information on providers' auspices, the 2012 NSECE estimated that 32 percent of child care centers were for-profit, 50 percent were not-for-profit, 14 percent were run by a government agency, and about 3 percent had "other" auspices (NSECE Project Team, 2014b).

Table 7 also includes the characteristics of centers whose directors did not participate in an interview. Compared with interview participants, non-participants tended to have lower EXCELS ratings, with five of the non-participating center directors from centers rated 1 or 2 and two from centers rated 3. Though my original goal was to interview two centers in the same zip code, this goal was relaxed as center directors declined or did not respond to calls. The final sample included only two sets of child care centers in the same zip code. (In Table 7, the horizontal lines demarcate centers in the same zip code.)

Table 7

Center and Location Characteristics for Potential Center Director Interview Sample

Center Director	Participate in Interview	EXCELS Level	Subsidy Quartile	Child Poverty Quartile	County
Center Director 1	Y	3	3	3	Charles
Center Director 2	Y	1	4	3	Charles
Center Director 3	Y	5	1	1	Howard
Center Director 4		1	1	1	Howard
Center Director 5	Y	3	4	1	Howard
Center Director 6		3	3	1	Howard
Center Director 7	Y	3	4	2	Montgomery
Center Director 8		1	4	2	Montgomery
Center Director 9	Y	3	4	2	Montgomery
Center Director 10		1	4	2	Montgomery
Center Director 11	Y	2	4	1	Montgomery
Center Director 12		3	4	1	Montgomery
Center Director 13		1	4	3	Prince George's
Center Director 14	Y	2	4	3	Prince George's
Center Director 15	Y	3	4	3	Prince George's
Center Director 16		2	4	4	Prince George's
Center Director 17	Y	3	4	3	Prince George's
School-age provider 1	Y	Mostly 3, new centers 1			–
School-age provider 2	Y	1–3, mostly 3			–
School-age provider 3	Y	1–2, mostly 1			Multiple
Corporate provider 1	Y	1–5, mostly 3			Multiple

Note. – indicates the provider may have been able to be identified if its county was named. EXCELS levels are from the time of the interview, from September–November 2018. Subsidy quartiles are from January 2018. For the Center Directors, the lines demarcate centers in the same zip code. The subsidy density quartiles are as follows: 25%, 0.030; 50%, 0.083; 75%, 0.243. The poverty quartiles are as follows: 25%, 6.9; 50%, 14.3; 75%, 23.3.

Interview Procedures and Analysis

I prepared for the interviews by examining the providers' overall EXCELS ratings, CCSP longitudinal data, and the provider's website. I conducted the focused interviews with semi-structured protocols (see Appendix C). Before each interview

started, I asked respondents for signed consent to participate in and audio record the interview. Four center directors did not consent to be audio recorded. For directors that did not consent to being recorded, I took notes during the interview and immediately typed up my notes into an electronic version of the interview protocol. For directors that consented to being recorded, I took minimal notes during the interviews, instead spending my energy listening to the center director. On the same day as the interview, I wrote general impressions, emergent themes, and key takeaways from the recorded interview. For all recorded interviews, I transcribed the interview into an Excel document with one column per protocol question and one row per respondent. I did not share my transcripts or detailed notes with the interviewees as a "member check" that would have enabled the interviewees to correct any misunderstandings (Cho &Trent, 2006). After transcribing the interviews, I coded the responses and copied responses by theme from the Excel document and pasted them into a thematic outline based on the interview protocol. I analyzed the qualitative data for consistencies across all providers and among providers with shared characteristics, such as subsidy density, poverty of the zip code in which the center was based, school-age providers, whether the provider was part of a large or small franchise (or neither), and EXCELS rating.

Summary

This chapter discussed my sequential explanatory equal status mixed methods study to answer the research question, *Does Maryland's tiered reimbursement system incentivize child care providers to attain a rating on Maryland's QRIS that results in a higher reimbursement rate?* The chapter described my two-level logistic regression

models, as well as the data included in the models. The chapter also described my interview sample and interview procedures. The next chapter will discuss findings for each of the two stages of my study and the final chapter will integrate the findings from the two stages.

Chapter 5: Results

This chapter presents results from descriptive analyses on EXCELS participation and ratings, descriptive analyses of dependent and independent variables, regression analyses, and interviews with center directors.

Quantitative Results

To better situate findings from my regression analyses and interviews, it is helpful to understand how EXCELS participation and EXCELS ratings have changed over time. Following these descriptive data, I assess the differences in provider characteristics and differences in the zip codes in which providers are located for providers that did and did not participate in EXCELS and for providers that did and did not receive CCSP payments in January 2018. Finally, this section presents findings from my regression models. As mentioned in Chapter 4, results need to be presented separately for child care centers and family child care providers. Within each section, results for child care centers are presented before results for family child care providers, followed by a comparison of findings for child care centers and family child providers.

EXCELS and CCSP Participation and Ratings

EXCELS payments only act as an incentive to providers that are enrolled in EXCELS, and only for those provider that serve children in the CCSP. This section discusses the trend in EXCELS participation over time, variations in CCSP participation across Maryland jurisdictions, and the trend in the percentage and number of providers receiving CCSP reimbursements that are higher quality.

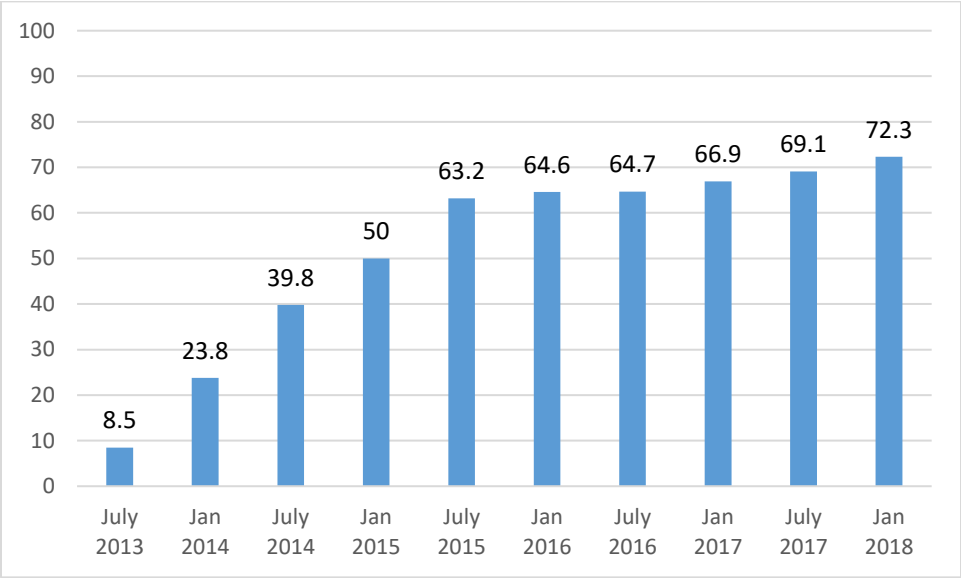
Child care centers.

Maryland EXCELS exited piloting and opened to all child care centers and family child care providers in July 2013. Recall that MSDE required all providers that served children in the CCSP to participate in EXCELS by July 2015. Between July 2013 and July 2015, the percentage of participating centers increased from 9 percent to 63 percent. The increase in participation rate was much smaller over the next two-and-a-half years, eventually reaching 72 percent in January 2018 (see Figure 2). Of the 1,954 centers that participated in EXCELS in January 2018, 52 percent of the centers received a CCSP reimbursement from MSDE in that same month (see Appendix Table A.5). EXCELS participation rates varied across Maryland's 24 jurisdictions, ranging from 34 percent of centers participating in St. Mary's County (15 of 44 centers) to 100 percent of centers participating in Somerset County (9 of 9 centers) (see Appendix Table A.5). Similarly, the percentage of participating centers that received a CCSP reimbursement from MSDE in January 2018 ranged from 23 percent in Garret County (3 of 13 participating centers) to 84 percent in Cecil County (21 of 25 participating centers). In absolute terms, Montgomery County had the most licensed child care centers (497) and the most child care centers participating in EXCELS (310; Prince George's was next with 308), while Prince George's had the most centers receiving CCSP payments in January 2018 (181). In Baltimore City and Baltimore, Montgomery, and Prince George's Counties, over 100 child care centers received CCSP payments and the participation rate into CCSP ranged from 45 percent in Montgomery to 62 percent in Baltimore City. Taken together, the varying

participation rates indicate that centers were differentially inclined to participate in EXCELS and the CCSP program based, in part, on their county.

Figure 2

Percentage of Centers Participating in EXCELS, July 2015–January 2018



The goal of EXCELS is for all children to receive quality care, including those in the CCSP. Between July 2013 and January 2018, the percentage[13] and number of participating centers that were higher quality increased fairly steadily from 4 percent (9 centers) to 27 percent (522 centers) (see Appendix Figure D.1). As shown in Figure 3, the number and percentage of centers that participated in EXCELS, received a CCSP reimbursement, and were higher quality also increased fairly steadily, from 5 percent (6 centers) in July 2013 to 26 percent (257 centers) in January 2018. This increase resulted in 34 percent of CCSP center participants being served in centers

[13] The percentages in Appendix Figures D.1 and D.2 used a denominator of all participating centers, including centers that had not yet published an EXCELS rating.

that were rated level 3 or higher in January 2018, an increase from 24 percent in July 2016[14] (see Table 8).

Similar to how EXCELS participation rates varied across Maryland's 24 jurisdictions, the percentage[15] of centers that are higher quality ranges from 12 percent (35 centers) of centers with published ratings in Prince George's County to 80 percent in Worcester County (8 centers; see Appendix Table A.6). Among providers that received CCSP payments in January 2018, neither of the two centers in Kent County were rated level 3 or higher and all six of the centers in Talbot County were rated level 3 or higher (see Table 9). In 11 jurisdictions, a higher percentage of providers that received CCSP reimbursements were higher quality compared with the percentage of all providers that were rated level 3 or higher.[16] Seven jurisdictions had at least 13 higher quality child care centers that received CCSP reimbursements in January 2018 and 12 jurisdictions had fewer than five higher quality centers that received CCSP reimbursements. Almost one-quarter of all higher quality centers that received CCSP reimbursements were located in Montgomery County. Such differences between counties further justify the use of two-level model regressions, with providers nested within counties, to analyze these data.

[14] The percentages do not include children served by providers that had not published an EXCELS rating. July 2016 is used as the comparison to allow providers one year to publish a rating after the July 2015 requirement to participate in EXCELS.
[15] The percentages in Tables A.6 and 9 used a denominator of only centers with a published EXCELS rating.
[16] The 11 jurisdictions were Allegany, Caroline, Carroll, Frederick, Garrett, Montgomery, Prince George's, Queen Anne's, St. Mary's, Talbot, Washington, and Wicomico.

Figure 3

Percentage and Number of Participating Centers Receiving Subsidies Rated Level 3 or Higher in EXCELS, July 2013–January 2018

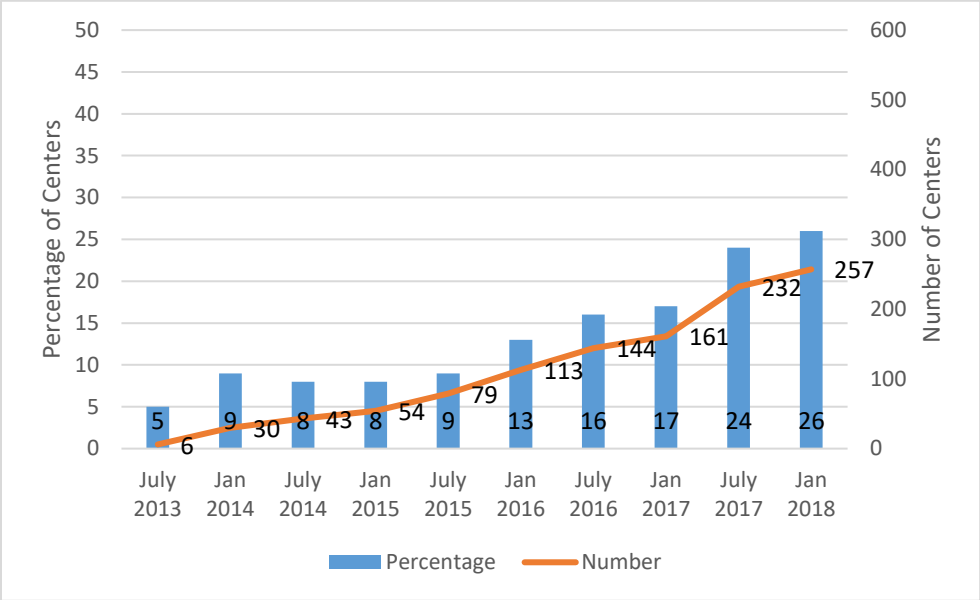


Table 8

Percentage of Children Receiving Child Care Subsidy, by Center Rating, July 2016 and January 2018

EXCELS Level	Percentage of Children, July 2016	Percentage of Children, Jan 2018
1	66%	57%
2	10%	9%
3	19%	27%
4	1%	3%
5	3%	4%

Note. Only centers with a published rating are included in this table.

Table 9

EXCELS Ratings Distribution for Centers Receiving Subsidies, by County, January 2018

County	Level 1	Level 2	Level 3	Level 4	Level 5	Total Centers	Centers Rated 3–5	Percent Centers Rated 3–5
Allegany	3	0	1	2	1	7	4	57%
Anne Arundel	25	7	13	1	1	47	15	32%
Baltimore City	98	18	28	2	0	146	30	21%
Baltimore Co.	107	14	25	3	3	152	31	20%
Calvert	10	4	1	1	1	17	3	18%
Caroline	1	0	1	0	2	4	3	75%
Carroll	14	2	8	2	3	29	13	45%
Cecil	13	2	4	0	0	19	4	21%
Charles	25	4	2	0	1	32	3	9%
Dorchester	2	1	2	1	0	6	3	50%
Frederick	19	1	10	0	4	34	14	41%
Garrett	1	0	1	0	1	3	2	67%
Harford	18	4	5	1	1	29	7	24%
Howard	29	9	6	0	3	47	9	19%
Kent	2	0	0	0	0	2	0	0%
Montgomery	53	18	45	7	9	132	61	46%
Prince George's	124	26	22	0	2	174	24	14%
Queen Anne's	2	1	0	1	1	5	2	40%
Saint Mary's	2	0	1	0	0	3	1	33%
Somerset	3	0	2	0	0	5	2	40%
Talbot	0	0	1	0	5	6	6	100%
Washington	6	9	2	1	4	22	7	32%
Wicomico	10	3	4	4	1	22	9	41%
Worcester	2	0	3	0	1	6	4	67%
Total	569	123	187	26	44	949	257	27%

Note. The denominator only includes centers with a published rating.

Family child care providers.

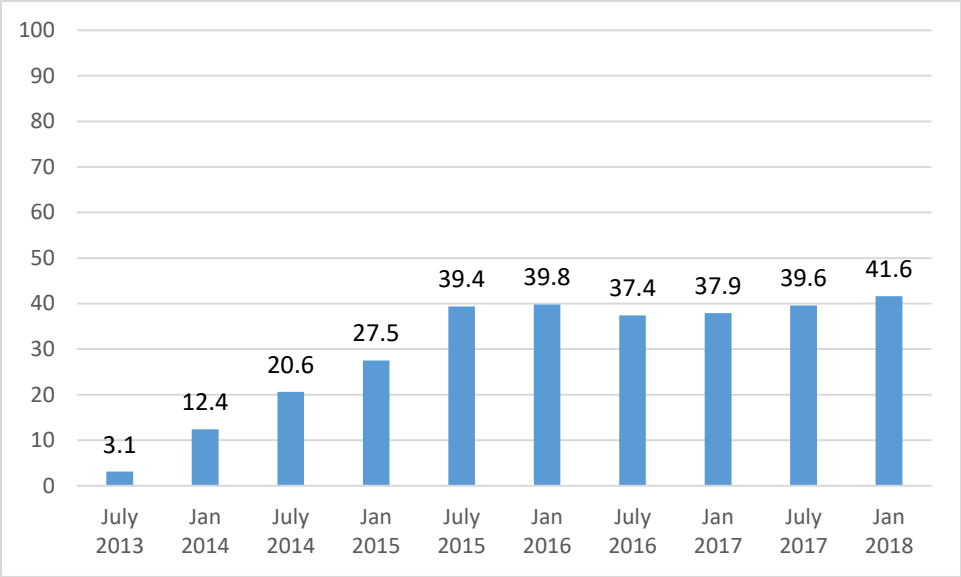
Between July 2013 and July 2015, the percentage of participating family child care providers increased from 3 percent to 39 percent. One year after the July 2015 requirement that providers who receive CCSP reimbursements participate in EXCELS, the participation rate fell to 37 percent, when some providers did not meet the requirement to publish a rating within one year of joining EXCELS. By January 2018, the participation rate had climbed back to 42 percent (see Figure 4). Of the 2,418 family child care providers that participated in EXCELS in January 2018, 44 percent of the providers received a CCSP reimbursement from MSDE in that same month (see Appendix Table A.7).

EXCELS participation rates varied across Maryland's 24 jurisdictions, ranging from 19 percent of family child care providers participating in St. Mary's County (35 of 180 providers) to 85 percent of providers in Baltimore City (447 of 528 providers) (see Appendix Table A.7). The percentage of participating family child care providers that received a CCSP reimbursement from MSDE in January 2018 ranged from about 22 percent in Frederick County (17 of 79 participating providers) and Garret County (2 of 9 participating providers) to 69 percent in Baltimore City (310 out of 447 participating providers). In absolute terms, Montgomery County had the most licensed family child care providers (877), while Baltimore City had the most family providers participating in EXCELS (447) and the most family providers receiving CCSP payments in January 2018 (310). Baltimore and Prince George's counties had, respectively, 161 and 151 family providers receiving CCSP payments in January 2018, and one other jurisdiction had more than 78 (Montgomery County).

Between July 2013 and January 2018, the number of family child care providers of higher quality increased fairly steadily from 3 providers to 204 (see Appendix Figure D.2). Between July 2013 and January 2018, the percentage of family child care providers participating in EXCELS that were of higher quality increased from 2 to 8 percent.

Figure 4.

Percentage of Family Child Care Providers Participating in EXCELS, July 2013–January 2018



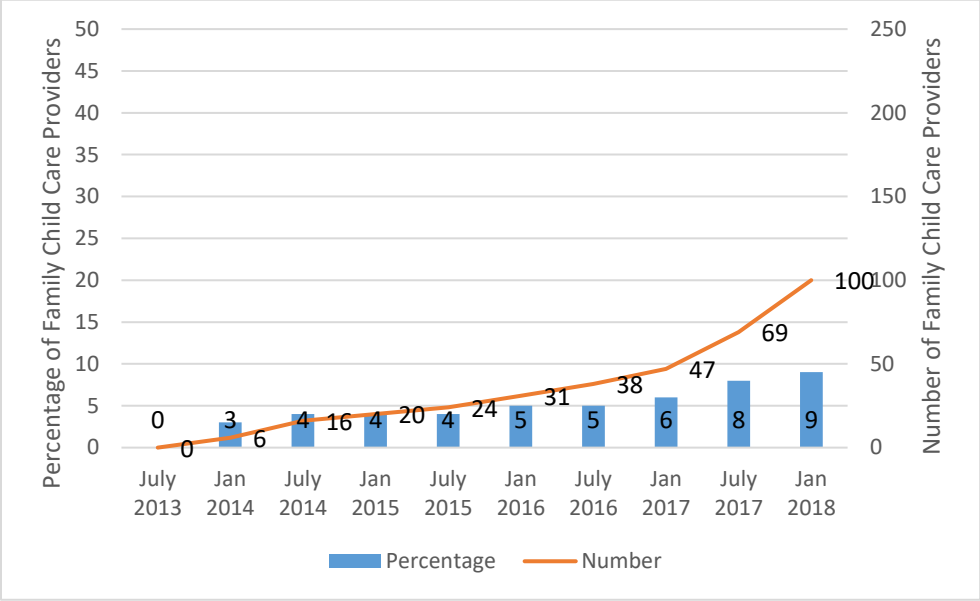
As shown in Figure 5, the number and percentage[17] of family child care providers that received a CCSP reimbursement and were rated level 3 or higher has also increased fairly steadily, from zero providers in July 2013 to 9 percent in January 2018. This increase resulted in 13 percent of CCSP family-provider participants being

[17] The percentages in Figure 5 used a denominator of all participating family child care providers, including providers that had not yet published an EXCELS rating.

served by providers that were rated level 3 or higher in January 2018, an increase from 6 percent in July 2016[18] (see Table 10). Recall that 34 percent of CCSP center participants were served by a center rated level 3 in January 2018.

Figure 5

Percentage and Number of Participating Family Child Care Providers Receiving Subsidies Rated Level 3 or Higher in EXCELS, July 2013–January 2018



[18] The percentages do not include children served by providers that had not published an EXCELS rating. July 2016 is used as the comparison, to allow providers one year to publish a rating after the July 2015 requirement to participate in EXCELS.

Table 10

Percentage of Children Receiving Child Care Subsidy, by Family Child Care Provider Rating, July 2016 and January 2018

EXCELS Level	Percentage of Children, July 2016	Percentage of Children, Jan 2018
1	87%	82%
2	7%	5%
3	3%	10%
4	<1%	<1%
5	2%	3%

Note. Only family providers with a published rating are included in this table.

Similar to how the percentages of centers rated level 3 or higher ranged across Maryland's 24 jurisdictions, the percentage[19] of family child care providers that were rated higher quality ranges from zero family child care providers (out of 13) in Talbot County to 29 percent in Dorchester County percent (3 providers; see Appendix Table A.8). Among providers that received CCSP payments in January 2018, none of the family child care providers in Calvert, Kent, or Talbot Counties were rated higher quality (see Table 11). In Caroline, Cecil, Dorchester, Garrett, and Somerset Counties, over one-quarter of the family child care providers that received CCSP payments were rated higher quality. In 12 jurisdictions, a higher percentage of family child care providers that received CCSP reimbursements were rated higher quality compared with the percentage of all providers that were rated level 3 or higher.[20] Three jurisdictions had at least 10 higher quality family child care providers that received CCSP reimbursements in January 2018 and 19 jurisdictions had five or

[19] The percentages in Tables A.8 and 11 used a denominator of only family child care providers with a published EXCELS rating.

[20] The 12 jurisdictions were Allegany, Baltimore, Baltimore City, Caroline, Carroll, Cecil, Charles, Garrett, Howard, St. Mary's, Somerset, and Wicomico.

fewer higher quality family providers that received CCSP reimbursements. Almost 40 percent of all higher quality family providers that received CCSP reimbursements were located in Baltimore City or Baltimore County.

Table 11

EXCELS Rating Distribution for Family Child Care Providers Receiving Subsidies, by County, January 2018

County	Level 1	Level 2	Level 3	Level 4	Level 5	Total Providers	Providers Rated 3–5	Percent Providers Rated 3–5
Allegany	16	0	2	0	0	18	2	11%
Anne Arundel	48	1	0	0	2	51	2	4%
Baltimore City	253	17	22	0	2	294	24	8%
Baltimore Co.	128	10	6	1	8	153	15	10%
Calvert	10	0	0	0	0	10	0	0%
Caroline	7	1	2	0	1	11	3	27%
Carroll	5	0	1	0	0	6	1	17%
Cecil	5	0	2	0	0	7	2	29%
Charles	28	1	1	0	1	31	2	6%
Dorchester	10	1	4	0	0	15	4	27%
Frederick	12	2	1	0	0	15	1	7%
Garrett	1	0	0	1	0	2	1	50%
Harford	39	2	2	0	0	43	2	5%
Howard	18	2	1	0	2	23	3	13%
Kent	2	0	0	0	0	2	0	0%
Montgomery	59	3	3	0	8	73	11	15%
Prince George's	128	5	7	0	2	142	9	6%
Queen Anne's	2	2	0	0	1	5	1	20%
Saint Mary's	12	0	1	0	0	13	1	8%
Somerset	6	2	3	0	0	11	3	27%
Talbot	6	0	0	0	0	6	0	0%
Washington	20	1	3	0	2	26	5	19%
Wicomico	22	1	6	0	1	30	7	23%
Worcester	7	0	1	0	0	8	1	13%
Total	844	51	68	2	30	995	100	10%

Note. The denominator only includes centers with a published rating.

Summary.

A smaller proportion of family child care providers (42 percent) than child care centers (72 percent) participated in EXCELS in January 2018, though a similar number of both types of providers participated (1,066 family providers and 1,007 centers). When compared with the percentage of child care centers receiving CCSP that are higher quality (27 percent), a lower proportion of family child care providers receiving CCSP are higher quality (9 percent) and the difference has widened over time. While the percentages of higher quality family child care providers were about half the percentages for child care centers in July 2015 (4 percent compared with 9 percent for centers), by January 2018, over three times as many centers were higher quality. This results in a much higher proportion of children in the CCSP served by centers to be in higher quality care (about one-third of children), compared with children in the CCSP served by family providers (about 13 percent of children).

Descriptive Analyses of Dependent and Independent Variables

Because EXCELS is a voluntary program for centers and family child care providers that do not receive CCSP payments, it is worth understanding how characteristics of providers differ depending on whether the provider participated in EXCELS and, if it participated in EXCELS, whether the provider received CCSP payments in January 2018. Among providers that received CCSP payments in January 2018 (i.e., the sample included in the regression analyses), this section also analyzes differences between providers that are and are not higher quality.

Child Care Centers.

There were a number of differences between participating centers and non-participating centers and centers that receive CCSP payments and those that did not (see Table 12). Specifically, centers that participated in EXCELS were more likely to be school-age programs (28 percent compared with 12 percent) and were licensed to serve more children age 2 and over (56 children compared with 45) and fewer children under age 2 (9 children compared with 15 children). Centers that participated in EXCELS were located in zip codes with greater poverty (15 percent of children under 5 in poverty compared with 11 percent) and unemployment (6.9 percent compared with 5.9 percent), higher percentages of blacks (33 percent compared with 22 percent), lower percentages of Asians (6 percent compared with 8 percent), lower percentages of females with at least a bachelor's degree (21 percent compared with 24 percent), and fewer early care and education licensed slots per child under 5 (0.46 compared with 0.54). There were no differences between the year the center was first licensed, and, by zip code, the percentage of Hispanics, the percentage of mothers with children under 6 in the labor force, and rurality.

Differences between the 28 percent of centers that did not participate in EXCELS and the 72 percent of centers that participated seem to be primarily driven by characteristics of the half of participating centers that received CCSP payments. That is, differences similar to those discussed in the previous paragraph were found when comparing centers that did and did not receive CCSP payments in January 2018. Centers that received CCSP payments were located in zip codes with higher poverty (17 percent of children under 5 in poverty compared with 13 percent) and

unemployment (7.5 percent compared with 6.4 percent), higher percentages of blacks (39 percent compared with 27 percent), lower percentages of Asians (5 percent compared with 7 percent), lower percentages of females with at least a bachelor's degree (20 percent compared with 23 percent), less rural (a mean of 10 percent of zip codes were rural compared with 13 percent), and fewer early care and education licensed slots per child under 5 (0.40 compared with 0.52).

In contrast, while there were differences in licensed capacity for those that participated in EXCELS and those that did not, there was no difference in licensed capacity between centers that did and did not receive a CCSP reimbursement. Additionally, while school-age programs were more likely to be enrolled in EXCELS, school-age programs were less likely to have received CCSP reimbursements (21 percent compared with 35 percent). This could be due to the fact that school-age programs are often part of large franchises that may choose to enroll all of their programs in EXCELS even if many of them do not typically serve children enrolled in the CCSP. Finally, there was also not a statistically significant difference between the percentages of centers that were higher quality.

Table 12

Means of Independent and Dependent Variables for Participating Centers and Centers Receiving CCSP Payments

	All Centers		Of Participating Centers	
	Do not participate (n=747)	Participate (n=1,954)	Do not receive CCSP payments (n=947)	Receive CCSP payments (n=1,007)
Higher Quality Provider (EXCELS 3–5)			0.280	0.255
Year First Licensed	2009.0	2008.8	*2008.6*	*2009.0**
School-age programs	*0.116*	*0.276***	*0.347*	*0.209***
Length of participation (6-month chunks)			*6.78*	*7.17***
Licensed Capacity Under 2	*15.0*	*9.1***	9.4	8.8
Licensed Capacity 2+	*45.2*	*56.0***	55.4	56.5
Licensed slots per child under 5 in Zip Code	*0.54*	*0.46***	*0.52*	*0.40***
Pct Pov < 5 in Zip Code	*10.96*	*14.83***	*12.65*	*16.86***
Pct Asian in Zip Code	*0.075*	*0.060***	*0.067*	*0.054***
Pct Black in Zip Code	*0.220*	*0.330***	*0.268*	*0.388***
Pct Hispanic in Zip Code	0.083	0.084	0.081	0.087
Pct Female with BA+ in Zip Code	*23.8*	*21.1***	*22.5*	*19.7***
Pct Mothers with kids <6 in labor force in Zip Code	77.2	77.5	77.3	77.7
Unemployment rate in Zip Code	*5.85*	*6.98***	*6.38*	*7.54***
Pct rural	0.127	0.113	*0.128*	*0.100***

Note. Italicized numbers and asterisks indicate a statistically significant difference between not higher quality and higher quality providers. * indicates significance at the 0.05 level and ** indicates significance at the 0.01 level.

There are a number of differences between the characteristics of centers that received CCSP payments in January 2018 that were and were not rated of higher quality, though few differences in the characteristics of their zip codes.[21] Based on

[21] Unlike in the descriptive analyses presented earlier in the chapter, child care centers that are participating in EXCELS, but not yet published, are included in this analysis (and the regression analyses) as centers that were lower quality. Additionally, four centers were dropped for the regression analyses, as they were missing demographic zip code data.

group-mean centered data used in my regression analyses, higher quality centers had higher subsidy densities, were older centers, had participated in EXCELS longer, had higher capacity, and were less likely to be school-age programs. Higher quality centers were located in zip codes that had higher percentages of females with a bachelor's degree and were less likely to be in rural zip codes (see Table 13; see Appendix Table A.9 for differences in raw means between higher quality centers and lower rated centers).

My regressions will test whether the different subsidy densities between higher quality (i.e., EXCELS ratings 3–5) and lower quality (i.e., EXCELS ratings 1–2) centers remains after controlling for center and zip code characteristics. The finding that higher quality centers were older centers and had participated in EXCELS longer aligns with the fact that it takes time to progress in EXCELS. Although there were few differences in zip code characteristics—once using group-mean centered data at the county level—it is still important to keep these variables in my regression models because, based on prior research and theory, they are often associated with center quality.

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Table 13

Means of Group-Mean Centered Independent and Dependent Variables, by Centers' Quality Status

	Lower Quality (n=748)	Higher Quality (n=255)
Density	*-0.018*	*0.052***
Year First Licensed	*0.384*	*-1.127***
School-age programs	*0.026*	*-0.076***
Length of participation (6-month chunks)	*-0.349*	*1.023***
Under 2 licensed capacity	*-0.492*	*1.444**
2+ licensed capacity	*-2.538*	*7.446***
Licensed slots per child under 5 in Zip Code	-0.002	0.006
Pct Pov < 5 in Zip Code	0.161	-0.473
Pct Asian in Zip Code	-0.001	0.002
Pct Black in Zip Code	0.003	-0.008
Pct Hispanic in Zip Code	-0.000	0.002
Pct Female with BA+ in Zip Code	*-0.284*	*0.834***
Pct Mothers with kids <6 in labor force	-0.055	0.163
Unemployment rate in Zip Code	0.104	-0.305
Pct rural	*0.104*	*-0.305***

Note. Italicized numbers and asterisks indicate a statistically significant difference between lower quality and higher quality providers. * indicates significance at the 0.05 level and ** indicates significance at the 0.01 level.

Family child care providers.

For family child care providers, there were differences between providers that did and did not participate in EXCELS for all of the variables examined, except for the percentage of mothers with children under 6 in the labor force (see Table 14). Family child care providers that participated in EXCELS were slightly newer providers (with a mean year first licensed of 2010.0, compared with 2009.4) and licensed to serve slightly more children under age 2 and slightly fewer children age 2 and older. Providers that participated in EXCELS were located in zip codes with greater poverty (19 percent of children under 5 in poverty compared with 12 percent) and unemployment (7.9 percent compared with 6.2 percent), higher percentages of

blacks (41 percent compared with 26 percent) and Hispanics (8.9 percent compared with 8.3 percent), lower percentages of Asians (5 percent compared with 6 percent), lower percentages of females with at least a bachelor's degree (19 percent compared with 21 percent), less rural (a mean of 10 percent of zip codes were rural compared with 16 percent), and fewer early care and education licensed slots per child under 5 (0.36 compared with 0.40).

Similarly, there were differences in the characteristics of participating family child care providers that received CCSP payments in January 2018 and those that did not receive CCSP payments, though there was not a statistically significant difference between the percentages of providers that were higher quality. Family child care providers that received CCSP payments were older providers (with a mean year first licensed of 2009.5, compared with 2010.4 for providers that did not receive CCSP payments), had participated in EXCELS longer (6.6 6-month time periods compared with 5.8 6-month time periods), and were slightly smaller. Providers that received CCSP payments were located in zip codes with higher poverty (22 percent of children under 5 in poverty compared with 16 percent) and unemployment (8.9 percent compared with 7.2 percent), higher percentages of blacks (49 percent compared with 35 percent), lower percentages of Asians (4 percent compared with 6 percent) and Hispanics (8 percent compared with 10 percent), lower percentages of females with at least a bachelor's degree (17 percent compared with 20 percent), less rural (a mean of 8 percent of zip codes were rural compared with 12 percent), and had fewer early care and education licensed slots per child under 5 (0.35 compared with 0.37).

Table 14

Means of Independent and Dependent Variables for Participating Family Child Care Providers and Providers Receiving CCSP Payments

	Family Child Care Providers		Of Participating Family Child Care Providers	
	Do not participate (n=3,394)	Participate (n=2,418)	Do not receive CCSP payments (n=1,352)	Receive CCSP payments (n=1,066)
Higher Quality Provider (EXCELS 3–5)			0.077	0.094
Year First Licensed	*2009.4*	*2010.0***	*2010.4*	*2009.5***
Length of participation (6-month chunks)			*5.80*	*6.60***
Licensed Capacity, Under 2	*3.11*	*3.17***	*3.23*	*3.10***
Licensed Capacity, 2+	*1.74*	*1.67***	*1.71*	*1.61***
Licensed slots per child under 5 in Zip Code	*0.395*	*0.364***	*0.373*	*0.354**
Pct Pov < 5 in Zip Code	*11.6*	*18.6***	*15.6*	*22.3***
Pct Asian in Zip Code	*0.063*	*0.052***	*0.062*	*0.040***
Pct Black in Zip Code	*0.260*	*0.410***	*0.350*	*0.485**
Pct Hispanic in Zip Code	*0.083*	*0.089**	*0.099*	*0.077***
Pct Female with BA+ in Zip Code	*21.7*	*18.8***	*20.1*	*17.1***
Pct Mothers with kids <6 in labor force	77.6	77.6	77.7	77.3
Unemployment rate in Zip Code	*6.19*	*7.93***	*7.18*	*8.87***
Pct rural	*0.162*	*0.099***	*0.115*	*0.080***

Note. * and italicized numbers indicate a statistically significant difference, at the 0.05 level.

Based on group-mean centered data used in my regression analyses, there were fewer differences between the 9 percent of family child care providers receiving CCSP payments that were higher quality and the 91 percent of providers that were lower quality. Higher quality family child care providers had higher subsidy densities, had participated in EXCELS longer, and had higher under 2 capacity. There were no differences in zip code characteristics (see Table 15; see Appendix Table A.10 for differences in raw means between higher quality centers and lower quality family child care providers).

Table 15

Means of Group-Mean Centered Independent and Dependent Variables, by Family Child Care Providers' Quality Status

	Lower Quality (n=967)	Higher Quality (n=99)
Density	*-0.022*	*0.213***
Year First Licensed	0.067	-0.651
Length of participation (6-month chunks)	*-0.198*	*1.931***
Under 2 licensed capacity	*-0.030*	*0.291***
2+ licensed capacity	*-0.006*	*0.058*
Licensed slots per child under 5 in Zip Code	0.000	-0.003
Pct Pov < 5 in Zip Code	0.023	-0.225
Pct Asian in Zip Code	-0.000	0.001
Pct Black in Zip Code	-0.001	0.005
Pct Hispanic in Zip Code	-0.000	0.002
Pct Female with BA+ in Zip Code	0.022	-0.214
Pct Mother's with kids <6 in labor force	-0.076	0.742
Unemployment rate in Zip Code	0.015	-0.148
Pct rural	0.003	-0.034

Note. Italicized numbers and asterisks indicate a statistically significant difference between lower quality and higher quality providers* indicates significance at the 0.05 level and ** indicates significance at the 0.01 level.

Summary.

For both child care centers and family child care providers that participated in EXCELS, a similar percentage of providers (within provider type) that did and did not receive CCSP payments in January 2018 were higher quality. Also, similar across the types of providers, providers that received CCSP payments were slightly older and were located in more disadvantaged and less rural zip codes with fewer licensed slots per child under 5. For both types of providers that received CCSP payments, using group-mean centered data at the county level, higher quality providers had higher subsidy densities and had participated in EXCELS longer. While none of the zip code characteristics were related to a family child care provider's higher quality

status, higher quality centers were located in zip codes that had higher percentages of females with a bachelor's degree and were less likely to be in rural zip codes. My regressions will test whether the different subsidy densities between higher quality and lower quality providers remain after controlling for center and zip code characteristics. The finding that higher quality providers had participated in EXCELS longer aligns with the fact that it takes time to progress in EXCELS. Although there were few differences in zip code characteristics it is still important to keep these variables in my regression models because they are often associated with center quality.

Regression Results

This final section to the quantitative results discusses the findings of my two-level regression analyses and robustness checks. Model (1) does not include any covariates, model (2) includes provider covariates, and model (3) includes provider and zip code covariates. Models (4) and (5) are extensions of model (3). Results are presented as odds ratios (OR). Unless otherwise noted, only statistically significant results (at least at the 0.05 level) are characterized as "associations."

Child Care Centers.

Model (1) is a two-level model, with centers nested in counties, that only includes the independent variable of interest, subsidy density. Without any provider or zip code characteristics, a higher CCSP density was associated with a decreased likelihood of a center being higher quality (OR=0.9) (see Table 16). However, once provider-characteristics were included in model (2), a higher CCSP density was associated with a much larger increased likelihood of a center being rated higher

quality (OR=3.5). That is, holding all provider characteristics equal within counties, the odds of being a higher quality center for a center with subsidy density of 1.0 (i.e., a center that serves a number of children enrolled in the CCSP equal to the center's licensed capacity) were 3.5 times that of center with a subsidy density of just over 0.0 (i.e., a very large center that serves 1 child enrolled in the CCSP). Model (3) adds zip code characteristics to model (2) and found that a higher CCSP density was associated with an increased likelihood of a center being rated higher quality (OR=4.9). Model (3) is preferred over model (2) because it is based on theory and research that the level of disadvantage in a zip code is associated with the quality of care.

Model (4) extends model (3) by including variables for subsidy density by age band, as the two age bands have different EXCELS payment rates. Model (4) found that the subsidy density of children 2 and older was statistically significant (OR=3.5), while the subsidy density for children under 2 was not statistically significant, though the odds ratio was still greater than 1.0 (OR=1.3). When included as a continuous variable, poverty was not associated with the likelihood of a center being higher quality. Model (5) analyzed whether the effect of having subsidy density in the top or bottom half of the distribution differs whether poverty is in the top or bottom half of the distribution. Model (5) found that, compared with centers that had a subsidy density in the bottom half of the distribution (i.e., subsidy density less than 8.3 percent) and were located in relatively low-poverty zip codes (i.e., child poverty less than 14.3 percent), centers with higher subsidy density located in high-poverty zip codes were more likely to be higher quality (OR=2.0). Compared with centers that

had a low subsidy density located in low-poverty zip codes, centers with low subsidy density in high-poverty zip codes or centers with high subsidy density in low-poverty zip codes were no more likely to be rated higher quality.

Results from robustness analyses produced similar results, with odds ratios ranging from 4.5 to 6.7 when measuring subsidy density in various ways (see Appendix Table A.11). Specifically, model (6) capped subsidy density at 1.0, which reduced the subsidy densities of 21 child care centers and found that the odds ratio increased to 6.7. This finding indicates that findings from the preferred model (3) were influenced by those 21 centers and those centers reduced the likelihood that a center with high subsidy density would be rated of higher quality. Model (7) averaged the subsidy density of six months between July 2015 and January 2018 and found an odds ratio of 4.5, similar to the odds ratio of 4.9 from model (3). Model (8) capped the average subsidy density of 17 centers and found a similar odds ratio (6.3) to model (6).

Table 16

Odds Ratio Estimates for Centers

Independent Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Subsidy density	0.879**	3.488**	4.865**		
	(0.274)	(1.144)	(1.783)		
Under 2 subsidy density				1.308	
				(0.451)	
2+ subsidy density				3.454**	
				(1.701)	
Low subsidy density, high poverty					1.289
					(0.379)
High subsidy density, low poverty					1.159
					(0.311)
High subsidy density, high poverty					1.954*
					(0.603)
Year program first licensed		0.983	0.986	0.968	0.986
		(0.026)	(0.026)	(0.035)	(0.026)
Length of EXCELS participation		1.448**	1.470**	1.334**	1.441**
		(0.079)	(0.082)	(0.093)	(0.078)
Under 2 licensed capacity		1.006	1.004	1.004	1.004
		(0.006)	(0.007)	(0.013)	(0.007)
2+ licensed capacity		1.005**	1.005*	1.007*	1.003
		(0.002)	(0.002)	(0.003)	(0.002)
School-age program		0.738	0.692	12.336	0.615*
		(0.177)	(0.170)	(22.238)	(0.150)
Licensed slots per child under 5			0.747	1.086	0.779
			(0.294)	(0.620)	(0.307)
Under 5 poverty (%)			1.006	1.025	_
			(0.014)	(0.019)	
Asian (%)			0.509	474.363	1.037
			(1.295)	(1771.699)	(2.701)
Black (%)			0.853	1.809	0.982
			(0.548)	(1.500)	(0.628)
Hispanic (%)			4.722	2.277	2.530
			(6.753)	(4.765)	(3.615)
Females with at least a BA (%)			1.059*	1.049	1.060**
			(0.025)	(0.034)	(0.025)
Mothers in labor force (%)			1.007	1.013	1.007
			(0.011)	(0.016)	(0.011)
Unemployment rate			0.930	0.884	0.956
			(0.060)	(0.072)	(0.054)
Rural (%)			0.807	0.682	0.826
			(0.549)	(0.629)	(0.555)
2-level model	X	X	X	X	X

Note. * indicates significance at the 0.05 level and ** indicates significance at the 0.01 level. Standard errors are in parentheses. n=1003. Rho is statistically significant at the 0.05 level for all models. For model (1) rho=0.102; for model (2) rho=0.139; for model (3) rho=0.151; for model (4) rho=0.104; and for model (5) rho=0.142.

A final set of robustness checks used the natural log of the center's total CCSP receipt (not including EXCELS payments). While odds ratios of the natural log are more difficult to interpret, model (9) used data from January 2018 and found an odds ratio of 1.3 and model (10) used data averaged over July 2015 and January 2018 and found an odds ratio of 1.2. Results from models (9) and (10) indicate that centers that receive more CCSP funds (controlling for the licensed capacity of the center, among other variables) were more likely to be higher quality. Finally, results from model (11) were almost identical to those of model (5), indicating that, compared with centers that received CCSP dollars in the bottom half of the distribution and were located in relatively low-poverty zip codes, centers with higher CCSP dollars located in high-poverty zip codes were more likely to be higher quality (OR=1.8).

Across the various models, few covariates were statistically associated with higher quality centers. The length of EXCELS participation and the percentage of females with at least a bachelor's degree were positively associated with higher quality centers. Licensed capacity for children 2 and older was statistically associated with higher quality centers, but not meaningfully, as the odds ratios ranged from 1.004 to 1.007. Considering few of the zip code covariates differed between centers that were higher quality and those that were lower quality, it is not surprising that the zip code covariates were not associated with a center's higher quality rating in the models. While most provider characteristics did differ between centers that were higher quality and those that were lower quality, their associations were no longer significant after controlling all of the covariates.

Family child care providers.

Without any provider or zip code characteristics in model (1), a higher CCSP density was associated with a decreased likelihood of a family child care provider being higher quality (OR=0.4) (see Table 17). However, once provider-characteristics were included in model (2), a higher CCSP density was associated with an increased likelihood of a provider being higher quality (OR=1.5). That is, holding all provider characteristics equal within counties, the odds of being a higher quality family child care provider with subsidy density of 1.0 were 1.5 times that of provider with a subsidy density of just over 0.0.[22] Model (3) adds zip code characteristics to model (2) and found that a higher CCSP density was associated with an increased likelihood of a center being rated higher quality (OR=1.5).

Model (4) extends model (3) by including variables for subsidy density by age band, as the two age bands have different EXCELS payment rates. Model (4) found that the subsidy density of children 2 and older was statistically significant (OR=1.1), while the subsidy density for children under 2 was not statistically significant, though the odds ratio was still in the same direction (OR=1.5). Finally, Model (5) found that, compared with providers that had a subsidy density in the bottom half of the distribution (i.e., subsidy density less than 60.0 percent) and were located in relatively low-poverty zip codes (i.e., child poverty less than 19.9 percent), providers with higher subsidy density located in high-poverty zip codes were more likely to be higher quality (OR=2.4). Compared with centers that had a low subsidy density

[22] The minimum raw subsidy density for family child care providers was 0.143.

located in low-poverty zip codes, centers with low subsidy density in high-poverty zip codes or centers with high subsidy density in low-poverty zip codes were no more likely to be rated higher quality.

Results from robustness analyses produced similar results, though key independent variables were not statistically significant for models (8) and (10) (see Appendix Table A.12). Model (6) capped subsidy density at 1.0, which reduced the subsidy densities of 230 family child care providers and found that the odds ratio increased to 2.6, from model (3)'s odds ratio of 1.5. Similar to the results from child care centers, this finding indicates that model (3)'s results were influenced by those 230 family child care providers and, holding all else equal, they were less likely to be of higher quality than providers with a subsidy density of 1.0 or lower. Model (7) averaged the subsidy density of six months between July 2015 and January 2018 and found an odds ratio of 1.5—the same as the odds ratio for model (3). Model (8) capped the average subsidy density of 252 family child care providers and subsidy density was not significantly associated with the likelihood of being higher quality, though the odds ratio was similar in magnitude (OR=1.8).

Table 17

Odds Ratio Estimates for Family Child Care Providers

Independent Variable	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)
Subsidy density	0.382**	1.532**	1.522**		
	(0.123)	(0.226)	(0.224)		
Under 2 subsidy density				1.475	
				(0.496)	
2+ subsidy density				1.136*	
				(0.062)	
Low subsidy density, high poverty					1.076
					(0.453)
High subsidy density, low poverty					1.391
					(0.519)
High subsidy density, high poverty					2.396*
					(1.041)
Year program first licensed		1.078*	1.074*	1.078*	1.082*
		(0.037)	(0.037)	(0.037)	(0.037)
Length of EXCELS participation		2.093**	2.080**	2.098**	2.076**
		(0.192)	(0.191)	(0.194)	(0.189)
Under 2 licensed capacity		1.467**	1.460**	1.387*	1.409
		(0.211)	(0.211)	(0.199)	(0.203)
2+ licensed capacity		1.916	2.035	2.047	1.905
		(0.737)	(0.790)	(0.900)	(0.720)
Licensed slots per child under 5			0.997	1.009	1.136
			(0.932)	(0.946)	(1.029)
Under 5 poverty (%)			0.997	0.996	_
			(0.018)	(0.018)	
Asian (%)			1.544	1.073	1.628
			(8.704)	(6.148)	(9.089)
Black (%)			1.045	1.0704	0.980
			(0.931)	(0.956)	(0.870)
Hispanic (%)			0.184	0.170	0.177
			(0.497)	(0.463)	(0.456)
Females with at least a BA (%)			0.967	0.968	0.981
			(0.032)	(0.032)	(0.034)
Mothers in labor force (%)			1.002	1.001	1.004
			(0.016)	(0.016)	(0.016)
Unemployment rate			0.926	0.926	0.928
			(0.073)	(0.074)	(0.066)
Rural (%)			0.049*	0.048*	0.059*
			(0.061)	(0.061)	(0.063)
2-level model	X	X	X	X	X

Note. * indicates significance at the 0.05 level and *** indicates significance at the 0.01 level. Standard errors are in parentheses. n=1,066. Rho is statistically significant at the 0.05 level for model (2), where rho=0.117. For all other models, rho is not statistically significant. For model (1) rho=0.041; for model (3) rho=0.089; for model (4) rho=0.093; and for model (5) rho=0.072.

A final set of robustness checks used the natural log of the provider's total CCSP receipt. While odds ratios of the natural log are more difficult to interpret, model (9) used data from January 2018 and found a statistically significant odds ratio of 1.5. Model (10) found that the natural log of total CCSP receipt averaged between July 2015 and January 2018 was not statistically associated with the likelihood of being of higher quality, though the odds ratio was similar in magnitude. Finally, results from model (11) found that, compared with family child care providers that received CCSP dollars in the bottom half of the distribution and were located in relatively low-poverty zip codes, providers with higher CCSP dollars located in high-poverty zip codes were more likely to be higher quality (OR=2.4).

Across the various models, few covariates were statistically associated with higher quality providers. The length of EXCELS participation, time since first licensed, licensed capacity under 2, and percentage of a zip code that is rural were positively associated with higher quality family child care providers. Considering few of the zip code covariates differed between family providers that were higher quality and those that were lower quality, it is not surprising that the zip code covariates were not associated with a center's higher quality rating in the models.

Summary.

Results from my quantitative research found that for both child care centers and family child care providers, a greater subsidy density was associated with a greater likelihood of a provider being rated higher quality and eligible to receive a tiered child care payment. Additionally, for both types of providers, the subsidy density of children 2 and older was associated with a greater likelihood of being of

higher quality, while the subsidy density of children under age 2 was not statistically associated with the likelihood of being of higher quality. Together, these quantitative findings indicate that Maryland's tiered child care reimbursement system appears to be incentivizing providers that serve a higher proportion of children on child care subsidy to become higher quality providers, and that the incentive is largely due to the subsidy density of children 2 and older. Child care centers typically serve many more children that are 2 or older, so it makes sense that the subsidy density of older children would be the driver of increased quality.

In general, odds ratios were much larger for child care centers than for family child care providers, likely because there is a much larger possible spread of subsidy densities for child care centers than family child care providers. Family child care providers had a maximum licensed capacity of 7, with 82 percent of family child care providers being licensed for four or five children in January 2018. Additionally, compared with child care centers, a much smaller percentage of family child care providers were higher quality, and 40 percent were located in Baltimore City and Baltimore County. The clustering of higher quality family child care providers in these two jurisdictions likely was the cause of rho not being statistically significant once zip code demographic characteristics were added in model (3)—there was simply not much variation between higher quality providers once these characteristics were included.

While the findings supported the theory of tiered reimbursement, I briefly wanted to note a few specific findings and their relation to prior research or theory. First, based on Hatfield et al.'s (2015) study of the associations between child care

funding and QRIS ratings in North Carolina, I expected that centers with below average subsidy densities that were located in high-poverty areas would be less likely than centers with below average subsidy densities that were located in low-poverty areas to be higher quality. However, my research did not find a difference between the likelihood of being higher quality for a center (or a family child care provider) with low subsidy density based on the poverty of its zip code. The differing results may be due to Hatfield et al. (2015) using a more comprehensive measure of "concentrated affluence" (i.e., percentage of families with incomes $75,000 or higher, percentage of adults with a college education, and percentage of civilian labor force employed in professionals or managerial occupations) than my measure of poverty.

Maryland's tiered reimbursement system has higher tiered percentages for (a) in child care center, children under 2 compared with children 2 and over and (b) for children served in child care centers compared with family child care providers. Therefore, I hypothesized that a child care center's subsidy density for children under 2 would have a higher odds ratio and be more predictive of higher quality status than a provider's subsidy density for children 2 and over. My results did not support my hypothesis, as I found that, for centers, the subsidy density of children 2 and older was statistically significant (OR=3.5), while the subsidy density for children under 2 was not statistically significant. Additionally, I hypothesized that child care centers would be more sensitive to the incentives than family child care providers. My results supported my hypothesis and found a larger odds ratio for a center's subsidy density variable (OR=4.9) than for a family child care provider's subsidy density variable (OR=1.5). Considering that the licensed capacity in centers for children under 2 was

much smaller (about 8 children in lower quality centers and 10 children in higher quality centers; see Table A.9) than for children 2 and older (about 53 children in lower quality centers and 66 in higher quality centers), it is logical that centers reacted more to the subsidy density of older children.

Qualitative Results

While I intentionally interviewed directors of centers that varied by subsidy density and surrounding poverty, responses did not vary based on these characteristics. In the following results, I indicate whether respondents are child care center directors or from larger organizations and, when it seems like helpful context, the EXCELS rating of respondents.

All of the interviewed center directors reported serving school-age children, though only one center that was not a school-age center reported a waiting list for school-age children. Aside from the school-age centers, all of the other centers served preschool children and two centers reported waitlists for these classrooms. Consistent with representative research, six of the nine centers that cared for infants had infant waitlists. One of the centers that had waitlists for infant and toddlers was the newest center in the interview sample, which opened in May 2016.

Three child care center directors—all from centers with an EXCELS rating of 3—reported their centers served especially vulnerable populations. Two centers served a relatively high number of children in foster care, which, reportedly, comes with additional monitoring visits from the foster care system and delayed payments. A third center reached out to shelters and partnered with the county to provide child care to parents who were in training and work programs. The third center also

provided almost 50 children with transportation between the child care center and a transit station, understanding that parents could not easily access the child care center. These center directors seemed to especially enjoy serving vulnerable populations, reporting that they provided diapers and winter coats to children and helped parents find food, housing, and electric assistance. One of the center directors owns three sites; she was especially proud of the center that served the neediest families.

Parents' Child Care Choices

For the demand-side of QRIS to work, parents must be aware of EXCELS and use EXCELS to make decisions. As described below, center directors did not believe most parents were aware of EXCELS. Rather, directors thought parents learned of their center through word-of-mouth and made decisions on which center to choose based on personal recommendations or positive relationships they witnessed while visiting the center.

Parents' knowledge of EXCELS.

Center directors did not believe EXCELS ratings (or the EXCELS website) factor into parents' choice of child care. Directors reported that parents of children participating in the CCSP knew to ask if the center *participated* in EXCELS, but directors did not think parents knew what it meant for a provider to participate in EXCELS, beyond knowing that the provider could serve children in the CCSP. Two directors thought that well-educated parents were aware of EXCELS ratings even though they did not think the ratings were a factor into the decision to choose a center. One director noted that well-educated parents check licensing violations

before making a child care decision and the EXCELS rating is on the licensing website.

Five directors (three at centers rated 3 and two at centers rated 2) routinely told prospective parents about their participation and rating in EXCELS. As one center director reported, parents seemed to like the idea of EXCELS once explained to them, but EXCELS did not factor into their decision making:

> *I tell them I'm in Maryland EXCELS, level 3, and they're like, "OK, what's that?" [laughs] I'm being honest. "What does that mean?" [I say,] "It's a quality rating program so it helps us know what we are supposed to do. It has great resources. It helps me take a look at some of the things I'm supposed to offer in the center. It makes me take a look at the things that the staff is doing to make sure we are doing what the kids need." And they're like, "OK, that's good, but I just want to know if the kids are happy." I'm being honest with you. "All that is great, I'm glad you're participating, but are they happy?"*

A second of the five center directors reported always asking if prospective families were aware of EXCELS, but none ever were. She went on to say that, "We do it and we are proud to do it…but as far as parents recognizing it—once they are in here, they're happy and they don't care what your status is." This director and one other stated that MSDE needed to do a better job of marketing EXCELS to parents.

While the process differs by county, in general, school-age child care programs are required to compete for their spots in schools every few years. None of the individuals at the three central offices for the school-age child care programs thought that EXCELS ratings factored into winning their spots. When asked if EXCELS may be a factored into the decision, one respondent replied, "Absolutely not. School system principals and administrators have no clue." Rather, individuals reported that the relationships they had built in schools helped them win spots. For

example, another respondent explained that her organization works hard to build good relationships with principals, so if a principal moves to a school that does not have their afterschool program, the principal may bring in the organization to run the afterschool program.

Information parents used to make child care choices.

Rather than using the EXCELS website to learn of centers, center directors over-whelming reported that parents learned of their centers through word-of-mouth. Only one center director of a corporate chain did not mention word-of-mouth as how parents learned of their centers. The corporate child care provider had a marketing department that included TV commercials, radio advertisements, and social media, such as individual Facebook pages for each center location. Three or fewer directors reported that parents learned of their centers through flyers, social media, and center websites. One center director enlisted a technology company to conduct a mobile campaign in which advertisements for the child care center would pop up if a user searched for "child care" and the city in which the center is located. The director reported that he has seen an increase in traffic to his website.

Word-of-mouth and personal relationships also emerged as memorable reasons for why parents chose a center. Two directors recalled stories of parents who had prior relationships with their centers. A director with 20 years of experience at her center (with an EXCELS rating of 2) recalled that she had "parents tell me, 'I remember when I was a child, I was with you, so I feel like bringing them to you again.'" One of the directors who cared for a lot of foster children noted that the social worker who originally visited the center ended up enrolling her infant in the

center. Two other center directors relayed stories of parents that liked the relationships they witnessed or heard about while touring the center. In one instance, the director of a center with an EXCELS rating of 3 recalled:

> *There was one situation where a parent toured…the fours classroom. The parent was impressed by the interaction her child had with another child. They automatically became besties. And, the parent said, "I think my child will like it here." Boom. And they enrolled. It's important that the child is happy.*

A director of a center with an EXCELS rating of 3 relayed a story about a prospective parent trusting the recommendation of a current parent at the center:

> *I had one parent who came to tour and she didn't know [whether to enroll]. And as she was leaving, a parent was coming in and she said, "Hey, how long has your child been going here?" And the parent was just way over the top: "My child has been going there since he was born and they are great people. And [we] love it." And she literally turned around and came back in and said she wanted to enroll.*

Finally, the same center director who had a media marketing campaign and believed that well-educated parents checked the licensing website before making child care decisions, thought that parents chose his center because of reviews on websites such as Google, Yelp, and Facebook.

In addition to recommendations, center directors reported that parents chose their center because the center offered a safe and clean environment; had engaging, caring staff; and/or felt like a community or a home-away-from-home. Three center directors thought parents chose their center, in part, because of parents' ability to check-in on their children, either through open door policies or through cameras installed throughout the center. One center director explained that she told prospective parents they did not need an appointment to visit the center, as the center staff should always be doing the right things. Only two center directors thought that

parents chose their center because of the center's curricular offerings: one center director thought that the curriculum (focused on play-based learning) was a second motivation behind the center's nurturing environment and a second center director thought that English-speaking families liked that bilingual Spanish-speaking staff incorporated Spanish into the curriculum. EXCELS does not clearly have an impact on any of these factors, though licensing ensures a safe environment and required professional development may result in more engaged staff.

Center directors also mentioned more practical reasons parents may choose their center, such as price and convenience. A director of a center with an EXCELS rating of 3 thought parents initially chose a center because of the price, though she noted that some parents would leave her center to save $20 a week and then end up coming back because their child was not receiving the same quality of care. This same director began offering part-time options after the 2008 recession and multiple families avail themselves of the part-time option. Providers of afterschool programs that were located in schools thought parents chose their program because of the convenience and affordability. Similarly, one center with an EXCELS rating of 2 was under-enrolled and the director attributed part of the enrollment drop to the local schools having cheaper options for school-age care.

EXCELS Payments

For EXCELS payments to act as an incentive to improve care, providers must be aware of the payments. In fact, all but one of the interviewed directors was aware of Maryland's tiered reimbursement program, though one did not learn of it until she was almost through all of the requirements to achieve a level 3 (she learned of the

payments while working on the ERS with a QAS). The one center director that was not aware of the payments was rated a level 1 in EXCELS and, during her interview, asked me what "was the point of EXCLES" and whether the EXCELS rating matters. As she had waitlists for all of her ages, the EXCELS rating appeared not to "matter" to her clientele, many of which participated in the CCSP.

Three interviewees affiliated with for-profit centers reported that EXCELS payments factored into their decision on what EXCELS level to reach or how quickly to reach it and none of the centers were singularly motivated by the payments. None of the four owners I interviewed reported being motivated by EXCELS payments. One director of a center that opened in 2016 and is in the 3rd quartile of subsidy density learned of EXCELS payments through a discussion with a QAS who used a monthly CCSP invoice to explain exactly how much additional money the center could receive. The director remembers thinking, "Hey, let's try to do that" and reported that the payments were a "major motivation" to increase her EXCELS rating and within two-and-a-half years of opening, her center was rated level 3. However, the director also reported that her original goal was to become an accredited center, indicating that the EXCELS payments may have been only part of the motivation for improving in EXCELS. A second center director in the 3rd quartile of subsidy density had recently experienced a decrease in the number of children participating in the CCSP, and she reported that she would like to achieve a level 3 to receive additional money through the EXCELS payments. However, this center has been a level 2 for over two years so it does not appear that the incentive is very motivating. Finally, one interviewee in a large corporate chain reported that the EXCELS payments were part

of the reason the chain decided on a goal of level 3 for all of its centers, with the other reason being a level 3 was the highest a center could go without working towards accreditation. Interestingly, across all centers of this corporation, fewer than 3 percent of children receive child care subsidies. In contrast, three other interviewees specifically reported that they wanted to reach an EXCELS level 3 (or higher) to "do the right thing for children" or because of "a passion that all kids have a right to good quality child care. They didn't get to choose what their parents' income was going to be."

With the exception of one afterschool provider, all directors of centers rated EXCELS level 3 or higher were appreciative of the EXCELS payments. Directors most commonly reported spending their EXCELS payments on supplies, such as toys and books. One director reported spending her EXCELS payments on staff incentives, such as staff dinners or gift cards for holiday door decorating contests. Another director spent her EXCELS payments on enrichment activities with outside instructors, such as yoga or music, for which most child care centers charge parents extra money. This same director—in the third quartile of subsidy density—expressly noted that she did not use EXCELS payments on staff salaries because the bonuses were not a reliable source of income. None of the directors reported used the EXCELS payments to offset the cost of child care for families receiving a subsidy. The one afterschool provider that did not appreciate the EXCELS payments was a government agency that found it difficult to account for the additional payments to the accounting department. She said she would opt out of the EXCELS payments if MSDE gave her that option.

Changes Due to EXCELS

Almost all directors reported that they participated in EXCELS because it was required to serve children receiving child care subsidy. One school-age provider with multiple locations said she hated that MSDE tied subsidies—which were already a "real pain"—to the voluntary EXCELS program. The provider felt that all of her centers were already of high-quality so she did not see the immediate benefit to her program. In fact, all of the locations entered EXCELS at a level 3. This provider's annoyance with EXCELS was atypical. More commonly, responses were similar to the following, from a provider rated level 3:

> *If I can be candid, we were required to [participate]. Since we were required to, we dived right into it. I think it does showcase our centers, our staff qualifications…it is time consuming. It's a lot of documentation. I found it kind of rewarding at the end. It kind of opened—peeled our layers back to let the public know what our policies are for discipline. It kind of made us think about some of the stuff. Stuff that was always there, but to actually document and get it into policy.*

Though directors may have initially participated in EXCELS because it was required, about half of the center directors reported that they participated in EXCELS to improve their program. And, almost all directors reported making changes to their programs due to EXCELS, especially around their curriculum and staffing.

Curriculum.

Four directors reported making changes to their curriculum to meet higher EXCELS standards, two reported improving their learning centers, and one stopped watching TV on Friday afternoons. To reach EXCELS level 2 (or 3), a center's lesson planning process must be "guided" by certain curricula. To reach EXCELS level 4, a

center must demonstrate "implementation of a curriculum that is aligned" with certain curricula (a sub-set of those for levels 2 or 3). And, to reach EXCELS level 5, a center must implement a state-recommended or recognized curriculum (a sub-set of those for level 4).[23] Two directors, at centers rated levels 2 and 3, reported that they each had originally developed their own curriculum and EXCELS helped them get a more organized curriculum. An after-school provider with multiple locations (rated levels 1 and 2) throughout Maryland spent several weeks in the summer of 2018 revising its curriculum to meet standards. The provider was very intentional and workgroups of program directors (who oversee the site directors) worked carefully to ensure the curriculum aligned with EXCELS standards.

Finally, a director of a faith-based center reported that she was experimenting this school year with a particular curriculum that MSDE had recently added to its list of recommended or recognized curricula. The newly added curriculum has optional faith-based lessons and she reported it was the first state recommended or recognized curricula with faith-based options. If the director decides to continue with the curriculum, she plans to try to improve in EXCELS from a level 3 to a level 4 or 5. The director reported that she and her staff really liked the curriculum, so far, and felt that it helped build language and had helpful parent engagement aspects.

Staffing.

[23] Developmentally Appropriate Learning and Practice standard 4 states that for level 2 or 3, "MSDE *Health Beginnings: Supporting Development and Learning from Birth through Three Years of Age*, Maryland Model for School Readiness (MMSR), or state recommended or recognized curriculum guides the lessons planning process." Level 4 states, "Implementation of a curriculum that is aligned with the MMSR and/or sate-recommended or recognized curriculum." Level 5 states, "Implementation of a state-recommended or recognized curriculum."

Four directors reported being more aware of whether potential new staff were enrolled in Maryland's credentialing program or were willing to be. The Maryland Child Care Credential Program is a voluntary "quality incentive program that recognized child care providers for exceeding the requirements of State licensing regulations. It is a career ladder that directs an individual to build knowledge and skills in a cumulative manner from introductory training to advanced level education" (MSDEc, 2018). The EXCELS staff qualifications standard is tied directly to the Maryland credential program.[24] Two directors of EXCELS level 3 centers were focused on finding staff with the right credentials: one reported that when someone quits, she immediately checks their credential level to know what credential level she will need to find as a replacement. The second was trying to find staff that are already credentialed, instead of having to train them, but she acknowledged that it is hard to find credentialed staff. A director of an EXCELS level 5 center explained that she looks for staff with a degree in early childhood education (or willing to go back to school) and that are part of Maryland's credential program (or are willing to participate). Finally, the afterschool provider who was unhappy that EXCELS was tied to CCSP acknowledged that EXCELS encouraged her to add a 3 percent bonus for staff that are credentialed. She reported that participation in the credential system

[24] Specifically, 60 percent of staff at an EXCELS level 2 program must hold a Maryland Child Care Staff Credential at Level 2 or higher; 60 percent of staff need a Level 3 credential in an EXCELS level 3 program; 60 percent of staff need a Level 4 credential in an EXCELS level 4 program; and 60 percent of staff need a Level 4+ credential in an EXCELS level 5 program. Credential Level 3 requires 90 clock hours of child care training, while a Level 4 requires 135 clock hours of training broken down very specifically by category (or a National Child Development Associate degree), and Level 4+ requires the same 135 clock hours and college credit in a relevant field.

has helped her hold staff accountable for training and professional development (as credentials require annual training for renewal).

Continuous improvement.

Two program directors reported focusing on "continuous improvement" quite intentionally. To achieve an EXCELS level 3, a center must conduct a self-assessment with the ERS and create a process for continuous quality improvement, informed by the ERS. While the ERS is only required to be conducted once, one program director of a level 3 center reported that she continued to refer to the ERS training books to "see where we are and what we still need to do. I sit in the classroom and observe. How can I help my teachers get better? I use the books just as an everyday tool."

An interviewee at a corporate child program reported that she conducted the ERS for all of the center locations, presented the results to the CEO, and used the data to determine which centers needed to be refurbished:

> *Because Maryland EXCELS is saying that this [ERS] is a good platform to use to determine quality, we did it and I can literally sit and tell him [the CEO] exactly what numbers we're getting in room arrangement [and] in space and furnishing. And because our numbers were all pretty low, we went and had a huge initiative…I spent the entire year refurbishing 15 centers. And we put in $1 million to go through and refurbish the centers. Because I am coming back to the CEO and he is saying, "Why are these numbers so low?" And, I'm saying "Because they don't have materials." "What do you mean they don't have materials?" "They don't have musical instruments. In science, there is one magnifying glass and...kids play with things, or things go home in pockets, or things get broken or you miss one puzzle piece and the whole puzzle is gone." So because Maryland EXCELS is saying this is a process we want you to do, we have then been able to rate our quality through actual numbers and go through and refurbish*

> *the centers that needed it the most. And we spent a great deal of time and a lot of money bringing those low centers up to a higher quality.*

The interviewee reported that the corporation is planning to refurbish all of the school-age programs and she plans to conduct the ERS twice each year in each center.

Five interviewees specifically mentioned how much they appreciate the EXCELS program and how it has helped improve their quality. For example, one director of an EXCELS level 3 provider said, "You learn so much from EXCELS—things you wouldn't even think about. It's, literally, crazy how much you actually learn. I think although we may have the amount of kids we have, I may not feel as successful if we didn't start EXCELS—not successful but more confident in our program." The interviewee at the corporate child care program reported that she has the benefit of traveling to national child care conferences and "when you say you are from Maryland, people are like, 'Oh!' I think that nation-wide Maryland is seen as one of the pinnacles of quality programming and it's because of EXCELS and our accreditation."

Summary.

Though directors may have initially participated in EXCELS because it was required, almost all directors reported making changes to their programs due to EXCELS, particularly around curriculum, staffing, and continuous improvement. Changes around staffing included ensuring that new staff were credentialed at the same level of departing staff. As will be discussed in the section on challenges, finding credentialed staff was a challenge for many of the directors.

Supports for EXCELS

QAS were instrumental in helping directors understand EXCELS standards, decide upon a goal for an EXCELS level, support directors in moving up EXCELS levels, and, ultimately, for providing a positive experience with EXCELS. All of the directors appreciated the work of QAS (and some mentioned the CCRC staff) and their trainings, workshops, and individual support. Directors reported that the workshops were offered at convenient times and locations. One interviewee commented that, "The training they provided was excellent. You can read the website and read the materials, but having someone break it down as to how it benefits the associates and how it benefits the centers. Eye-opening—that aha moment—now I get it!" Another director reported that without the "great support team," she would have "stayed away a little bit longer." Echoing what the QAS reported about their role, one director reported that the QAS "wanted us to be successful. 'I'm going to help you do this'—almost to the point—'if I have to come sit at your center.' They were very motivated to get you in." Another director recalled that a QAS motivated her to reach EXCELS level 3 because she quickly reached level 1. Similarly, one director of a center rated level 1 recalled that, because she was not very good with computers, a QAS helped her with the initial application. She also appreciated the reminders to re-publish and help she received when she did not re-publish in time. Finally, she was also appreciative that "they are not pushy" and have not pushed her to move to a level 2.

One center director and two after-school providers with multiple locations reported they required staff to attend EXCELS trainings to better understand the EXCELS standards and process and scholarships available to staff to improve their qualifications. One center director reported that her staff benefited from hearing about quality from an impartial trainer:

> *Then they come back and say, "OK you really were telling us the truth…." Because sometimes they think that we are making up stuff for them to do. But, once they hear it from someone else—they learn the proper way to do a lesson plan, how to set up your classroom, quality things you should be offering, how to talk to a parents, less screen time, the importance of doing things that meet a child's needs and that every child is not on the same level.*

One after-school provider required all of the site directors to attend a training in the summer of 2014, so the directors knew what was going to happen over the coming year as the centers enrolled in EXCELS. A second afterschool provider that was trying to move centers up from levels 1 and 2 required that all staff attend EXCELS training over the summer of 2018. The training included information on EXCELS and scholarships available for staff to further their education. The director reported that the staff were "really excited" about the scholarship opportunities.

Two directors reported using the scholarship funds to receive their own Associates' degree in prior years. One of the directors encouraged her staff to use the funds and get their degree. She believed the scholarship raised "our teachers' awareness of the importance of what they do. Also, when they are going to school, they are motivated, so their classrooms are being run better, and they are putting into practice what they are learning, and you see a big difference in how they feel about

their whole job here." She hoped that MSDE would continue to offer the scholarship funds.

Challenges to Improving EXCELS Rating

While center directors were appreciative of MSDE-provided supports to improve their EXCELS rating, directors reported a number of challenges to improving ratings. Directors reported that it was challenging to move beyond a level 3 in the staffing and accreditation domains. Additionally, directors of centers not affiliated with large chains experienced challenges finding the time to complete EXCELS requirements.

Staffing.

While some staff were reportedly excited about furthering their education, the majority of center directors reported that staffing requirements were a barrier to moving beyond a level 3 in EXCELS. While one director noted that her staff loves trainings and credentialing is not a challenge in moving beyond level 3 (her current level and her goal is a 5), three center directors and all three afterschool providers noted a lack of interest or passion among staff to attend trainings and increase their credential level. As one director explained, her staff do not have the same passion she had when she entered the child care field:

> *I think we have to figure out a way to get them trainings so they don't have to give up their weekends. Because working with children, you do need your downtime. But you have to end up giving up some of your weekends because parents hate when you close to do trainings…. It's a different generation then when I came into child care. When I came in, I had passion for it, I liked it, I said this was my livelihood so if I had to go on the weekends, I didn't grumble about it, I went. But, this is a different generation coming in. They want their personal time. I'm not*

> *saying it in a bad way, but that's the way it is. Me, I enjoyed going to trainings and meeting people because this was my passion. All of them, this is not their passion and they grumble and complain. They like what they do, but it's not their passion. And, then you have moms that are single.*

Another director reported that his staff had the training to be credentialed, but the staff did not complete the paperwork to get credentialed. He felt they were "being lazy" and did not become credentialed because "it doesn't excite them." A third director of a center at EXCELS level 2, had staff that had been working with her for 15 or 20 years and she did not expect them to go back to the school to earn college credit or a degree. This director's concern with staffing may show a misunderstanding of the credential program, as she mentioned that her experienced staff have 90 hours of training—indicating that they would probably qualify as a Credential Level 3, which is what is required to move to a level 3 in EXELS. The director of the newest center in the interview sample was confused, in general, by the credentialing requirements.

The interviewee at the corporate child care center noted that the credentialing requirement is "what's going to keep some accredited centers from being a level 5." She went on to explain the supports the corporate center provides to the staff:

> *We're trying to do everything we can to support our teachers to become the highest level they can. So, we go around and talk to them about the child care professional development fund. We will pay for it. Here at [corporate center], we have a tiered program. If you get this highest level, you get bonuses. We have gold, silver, and bronze. I think we try to match credentialing levels [bonuses].*

Similarly, one of the afterschool providers offers a "nice raise" to staff that earn Associate's degrees and the provider pays for their staff to earn the degree. However, the interviewee was not happy with the uptake rate. She noted that some of the afterschool locations had the physical space to serve more children, but the locations had waitlists simply because they did not have enough qualified staff.

Similarly, other afterschool providers felt their challenges to securing trained staff were even greater than typical child care centers, as school-age child care requires a split shift (e.g., from 7–9 am before school and 3–6 pm after school), and none expected their sites to be able to advance beyond a level 3 in EXCELS. Two afterschool providers noted that their staff were relatively young, perhaps trying to decide if school-age care (as opposed to caring for younger children) is the right fit for them or passing the time for "a couple months and then something else comes down the pike." One afterschool provider noted that the qualifications for an afterschool teacher and director are similar except for one additional course requirement for a director. She thought that some teachers appreciated the opportunity to move up in the child care field, but she still dealt with a lack of qualified staff and staff turnover.

Another challenge mentioned by five interviewees was the challenge of keeping qualified staff—what one director referred to as a "cost-benefit analysis." One director noted that soon after a staff member earns a bachelor's degree (which is beyond what is required by EXCELS), she would leave for the public school system where her pay vastly increased. This director and a second director noted that it is difficult for them to offer a competitive salary to someone with a degree, as the

parents of the children they serve cannot afford higher tuition: “We are the balancing act. Parents have their parameters, government [has] their parameters, and we are in the middle trying to find great people who will work with kids for a little bit of money.” Another director noted the challenge of keeping qualified staff in his Baltimore County locations when he believed a center in Howard County could offer higher pay, in part due to Howard County centers receiving a higher reimbursement rate for children on child care subsidy compared to Baltimore County centers. Finally, the corporate child care center interviewee noted that her corporation participates on the board of the Maryland State Child Care Association, which lobbies the Maryland legislature for higher wages for child care professionals, with the goal of having a more stable workforce.

Accreditation.

Three interviewees reported that accreditation was a challenge to increasing EXCELS levels, with two directors expressly mentioning the challenge in paying for accreditation. One director at a level 3 center noted that, “accreditation requires you to have a lot of stuff. And a lot of stuff costs a lot of money. And we do not charge a co-pay, so we base our finances off what the county gives us…. We are working through it; [it is] just taking longer.” One afterschool provider noted that accreditation standards were too difficult for the sites to meet, as the sites are located in school buildings and some accreditation requirements (e.g., temperature, windows, art work) are outside of the site director’s control.

Capacity constraints.

Five of the eight child care center directors not affiliated with large child care providers reported that the time required for EXCELS was burdensome, as did one of the center directors that was part of a national chain. The center director that was part of a national chain did not receive any assistance from the corporation for EXCELS, perhaps because her corporate coordinator only oversaw one center in Maryland and was not familiar with EXCELS. In contrast, the corporate provider and the three afterschool providers included in my interview sample all had a staff member in the central office who was responsible for uploading EXCELS documents, such as staff and parent handbooks, into the EXCELS system. For three of the large providers, the central office exclusively worked in the EXCELS system, though in one of the large providers, site directors entered site-specific information, such as staffing, into EXCELS. The four large providers appreciated that all of their sites' materials were reviewed by a single QAS, which helped ensure consistency across sites. An owner of three centers was aware of the assistance the large corporations provide, and he noted it was much more difficult for him to find the time for EXCELS: "What I've noticed is these big daycare centers, they have hundreds of centers and they have a special team to help their centers get to a 5. They can afford that. We cannot even finish up the workload that we have here: vouchers, invoices, payments, balance sheets, complaints, child health, teachers calling out."

Instead of relying on central staff, center directors of small franchises worked with their franchise colleagues to develop EXCELS documents, such as staff and parent handbooks, so the documents are consistent across sites. One owner of three centers hired an administrator who devoted much of her initial time to EXCELS

documentation for the three centers. Another owner of three centers (who thought his staff were "lazy" for not getting their credentials) recently contracted with a former credentialing specialist to assist his staff in getting their credentials. A third director who was not technologically-savvy relied on a relatively young staff member to help with EXCELS and she acknowledged that if she did not have this staff member to help, she would have had to hire someone else.

Three of the directors who noted the time burden of EXCELS also reported they were frustrated by the redundancy of the requirements as EXCELS levels increased. For example, moving up an EXCELS level for a specific standard may require additional specificity in the staff handbook and these directors wished the standard would have required that specificity in the lower levels, when they were first revising their policies: "Kind of seems like a waste of time if we met this in level 2 and 3 and all you need for 4 and 5 is to add an extra sentence."

Finally, one director of a center rated level 2 was frustrated with the amount of time it took for MSDE to review uploaded documents in the EXCELS system. While she understood that "they have a lot of centers, not only me," she was frustrated because "if I started working on EXCELS today, or this week, I don't want to work on EXCELS next week. I took this week to do it." As a director of a small center, she has other work to do and it is hard to find the time to devote to EXCELS. Three months prior to our interview, a QAS canceled a visit to help conduct the ERS and the director has not made the effort to contact the QAS to re-schedule, as she "disconnected" herself from the EXCELS work after the cancellation.

Summary.

Directors reported that it was challenging to move beyond an EXCELS level 3 in the staffing and accreditation domains, partly due to resource constraints. One of the challenges with staffing was the ability to find quality staff willing to work for the low wages typical of the child care workforce. Similarly, a challenge to gaining accreditation was the cost involved with improving a center to meet accreditation standards and the cost of accreditation itself. Finally, directors of centers not affiliated with large chains experienced challenges finding the time and capacity to complete EXCELS requirements.

Accuracy of EXCELS Ratings

About half of the interviewees felt their EXCELS ratings were an accurate representation of their quality. For example, a provider with multiple locations that ranged from EXCELS levels 1–5 thought that EXCELS appropriately differentiated the center locations. Two center directors of level 3 centers explained they tried very hard to ensure their center met all of the EXCELS standards, so, therefore, their ratings were valid. The responses of these two center directors indicated they believed that EXCELS validly measured quality.

In contrast, an afterschool provider whose locations were all EXCELS level 3 (except for new locations, that were EXCELS level 1) felt that some of the level 3 centers with new directors were probably not providing care that she thought was indicative of a level 3 center. Two center directors did not feel that their EXCELS rating of 3 accurately captured their (high) quality, and both were working to improve their rating. Similarly, another afterschool provider with centers rated levels 1 and 2 did not think that EXCELS accurately measured quality, particularly because

EXCELS was just a paper-based system. This interviewee's concern about EXCELS being a paper-based system echoes concerns from MSDE and technical assistance providers. Additionally, four interviewees indicated that EXCELS could benefit from increased monitoring, including two afterschool providers who felt like the relationship component of child care was not accurately measured by EXCELS. The afterschool provider with centers rated EXCELS 1 and 2 stated that,

> *Paperwork does not measure quality…. We make paperwork to fit the standard. That's not a measure of quality, because I can put the documents together. It's really seeing how the parents are engaged, how the children are engaged, how the associates and teachers are engaged with the program. What are the outcomes of the projects we are doing. That's the measure of quality. Not this piece of paper that shows I am checking the box to meet this particular standard. [You] have to be in the program to see that*.

A center director at a level 3 center was also concerned about the relationship component of quality: "The quality of care you have to feel when you come through the door, the quality of teachers." This director and another were also concerned that the EXCELS level 1 providers may not take the EXCELS standards seriously and their programming may not reflect care that is any higher than the licensing standard.

Summary

Results from my qualitative research found that center directors did not believe that EXCELS ratings factored into parents' choice of child care, supporting my assumption. Importantly, all but one of the interviewed directors were aware of the EXCELS payments—a prerequisite for an incentive program to work—though one director did not learn of the EXCELS payments until she was almost finished with her level 3 requirements. Few center directors reported that EXCELS payments factored into their decision on what EXCELS level to reach or how quickly to reach it

and none of the centers were singularly motivated by the bonuses. Interestingly, one interviewee in a large corporate chain reported that the EXCELS payments were part of the reason the chain decided on a goal of level 3 for all of its centers, with the other reason being a level 3 was the highest a center could go without working towards accreditation. However, across all centers of this chain, fewer than 3 percent of children receive child care subsidies. All directors, except for the director of a government-run afterschool program, were appreciative of the EXCELS payments. Directors most commonly reported spending their EXCELS payments on supplies, such as toys and books. One director in the third quartile of subsidy density expressly noted that she did not use EXCELS payments on staff salaries because the bonuses were not a reliable source of income.

Maryland is one of seven states that requires that child care centers participate in EXCELS to serve children receiving child care subsidy. Perhaps not surprisingly, almost all directors reported that they decided to participate in EXCELS because it was required to serve children receiving child care subsidy. Directors reported that QAS were instrumental in helping directors understand EXCELS standards and decide upon a goal for an EXCELS level and supporting directors in moving up EXCELS levels. Directors were very appreciative of the support provided by QAS though trainings, workshops, and individual support. Though directors may have initially participated in EXCELS because it was required, with the support of the QAS, directors reported making numerous changes to their programs to improve their EXCELS levels, especially around their curriculum and staffing. Staffing was the most commonly named challenge by directors to improving their EXCELS rating.

Other challenges included accreditation and the time needed to complete EXCELS requirements. About half of interviewed program directors felt like their EXCELS rating was an accurate measure of their center's quality. Four directors thought that the EXCELS program could benefit from increased monitoring.

Summary

Results from my descriptive analyses found that 52 percent of child care centers and 44 percent of family child care providers that participated in EXCELS received a CCSP reimbursement from MSDE in January 2018. When compared with the percentage of child care centers receiving CCSP that are higher quality (27 percent), a lower proportion of family child care providers receiving CCSP are higher quality (9 percent) and the difference has widened over time. This results in a much higher proportion of children in the CCSP served by centers to be in higher quality care (about one-third of children), compared with children in the CCSP served by family providers (about 13 percent of children). For both types of providers, the percentage of CCSP recipients served by higher quality providers has increased over time. For both child care centers and family child care providers that participated in EXCELS, a similar percentage of providers (within provider type) that did and did not receive CCSP payments in January 2018 were of higher quality. For both types of providers that received CCSP payments, using group-mean centered data at the county level, higher quality providers had higher subsidy densities.

Results from my quantitative research found that for both child care centers and family child care providers, a greater subsidy density was associated with a greater likelihood of a provider being rated higher quality and eligible to receive a

tiered child care payment. This result indicates Maryland's tiered reimbursement is working as intended, though most children served by the CCSP are still in lower quality care. However, the results of my qualitative research did not provide the same results. While all but one of the interviewed directors were aware of the EXCELS payments, few center directors reported that EXCELS payments factored into their decision on what EXCELS level to reach or how quickly to reach it and none of the centers were singularly motivated by the bonuses. Rather, directors reported being intrinsically motivated to improve EXCELS ratings or motivated by QAS. Possible reasons for the convergent findings and implications for policy and future research will be discussed in the next and final chapter.

Chapter 6: Discussion

My research used a mixed method study to understand if Maryland's tiered reimbursement system incentivized child care centers and family child care providers to reach a level of quality on Maryland EXCELS (a QRIS system) that resulted in a tiered payment and, for child care directors, why the system was or was not an incentive. My research on Maryland's tiered child care reimbursement system greatly expands upon the minimal research on tiered child care reimbursement programs. This chapter integrates the quantitative and qualitative findings, discusses limitations in the study design, suggests future research, and discusses policy implications.

Integration of Results

The results from my quantitative analyses show that, for both types of providers, serving a higher proportion of children in the CCSP was associated with an increased likelihood of reaching EXCELS level 3 and receiving an EXCELS payment. This result indicates Maryland's tiered reimbursement is working as theory predicts. However, the results of my qualitative research did not provide the same result: few child care center directors reported being motivated by the EXCELS payments. Rather, directors reported being self-motivated to improve quality or were motivated by QAS. I frame the discussion of these divergent findings around the four possible reasons identified in Chapter 1 that the tiered reimbursement system may not work as intended: (1) providers are not aware of the tiered payments, (2) the incentive amount is too small, (3) providers lack capacity to meet the higher quality standards, and (4) providers have intrinsic motivation to meet higher quality standards. As the divergence is most important with regard to the intrinsic motivation, the bulk of the

discussion focuses on the fourth identified reason a tiered reimbursement system could potentially not work.

Providers Unaware of Tiered Payments

For EXCELS payments to act as an incentive to improve care, providers must be aware of the payments. As described in the previous chapter, all but one of the interviewed directors were aware of the tiered reimbursement system, though one did not learn of it until she was almost through all of the requirements to achieve a level 3. QAS reported spending time with center directors and family child care providers to calculate the exact EXCELS payment they would receive if they reached EXCELS level 3. One of the directors I interviewed recalled a QAS using a monthly CCSP invoice to explain exactly how much additional money the center could receive. The director remembered thinking, "Hey, let's try to do that!" Thus, the qualitative data showed that providers were aware of the tiered payments—a finding that is an alignment with the overall quantitative findings.

Incentive Amount Too Small

None of the four center directors that were rated EXCELS level 1 or 2 or the central staff of centers with multiple locations stated that the incentives were too small. Two directors of programs rated EXCELS level 3 mentioned the amounts of their EXCELS payments during the course of the interviews. One interviewee correctly identified exactly how much her EXCELS payments were for each CCSP participant, while the other one (incorrectly) stated, "maybe they [MSDE] added a dollar to each voucher or something like that." Both indicated that they did not view these amounts as especially generous and, not surprisingly, neither of these directors

reported being motivated by the EXCELS payments to reach level 3. Both of these center directors, as well as many others, were appreciative of the EXCELS payments and tended to spend the payments on supplies. The limited qualitative data on the size of the incentive indicates that center directors may view the incentives as small, but helpful and worthwhile—indicating alignment with the quantitative findings. Another way to understand the relative size of an incentive is think about the effort needed to earn the incentive, to which I will now turn.

Lack of Capacity

Five of the eight child care center directors not affiliated with large child care providers reported that the time required for EXCELS was burdensome, as did one of the center directors that was part of a national chain. In contrast, the corporate provider and the three afterschool providers all had a staff member in the central office who was responsible for uploading EXCELS documents, such as staff and parent handbooks, into the EXCELS system. An owner of three centers was aware of the assistance the large corporations provide, and he noted it was much more difficult for him to find the time for EXCELS. To provide assistance in moving beyond a level 3 in EXCELS, he had recently contracted with a former credentialing specialist to assist his staff in completing paperwork requirements for their Maryland child care credentials. Another owner of three centers hired an administrator who devoted much of her initial time to EXCELS documentation for the three centers.

There was even less capacity among owners/directors of single centers. Of the three center directors I interviewed that were rated EXCELS level 1 or 2, two were owners/directors of single centers and both experienced real capacity challenges. One

of the owners was not proficient with computers and relied on a young staff member to help with EXCELS. The owner and her assistant experienced challenges with getting organized and finding time to complete the documents to move from a level 2 to a level 3. Another owner/director of a single center reported that she was motivated by the EXCELS payments to reach level 3. However, she has had a difficult time finding the time to devote to the paperwork and ERS needed to move to level 3 and she has been a level 2 center for two years.

A final indication that lack of capacity may be a challenge in reaching EXCELS level 3 is that five of the seven non-participating center directors I contacted for interviews were from centers rated 1 or 2. Some refused to participate because they did not have time for an interview. One owner noted that his director just left, and she was the one who dealt with EXCELS. It seems likely that centers that did not consent to an interview had even less capacity than those whose directors could make time for an interview.

The qualitative findings indicate that directors found it difficult to spend the time on EXCELS that is necessary to reach a level 3. While owners of franchises may have the resources to hire someone to assist with EXCELS, owners/directors of single centers are unlikely to have the resources to hire help. My quantitative models did not control for whether a center was part of a franchise or a national chain. However, larger centers had a statistically significant slightly increased likelihood of being higher quality (OR=1.005 for the continuous variable capacity ages 2 and older). Larger centers may have more office staff to assist with EXCELS documentation.

Together, these results suggest that lack of capacity could keep some centers from reaching level 3, regardless of the size of the tiered payment.

Intrinsic Motivation

The qualitative findings indicate that, instead of being motivated to improve quality to earn an EXCELS payment, center directors had intrinsic motivation to provide the best care they could. For example, three center directors reported that they wanted to reach an EXCELS level 3 (or higher) to "do the right thing for children" or because of "a passion that all kids have a right to good quality child care. They didn't get to choose what their parents' income was going to be."

The qualitative findings are not surprising, considering relevant organizational psychology theories. Under the theory of person-vocation fit, an individual will choose a vocation (i.e., a broad occupation) that fits with his or her skills, needs, and beliefs (Kristof, 1996; Vogel & Feldman, 2009). Grant's (2007) job impact framework proposes that certain jobs enable people to make a prosocial difference. Among other propositions, the framework proposes that "the greater the frequency, duration, physical proximity, depth, and breadth of contact with beneficiaries provided by the job, the stronger the employee's affective commitment to beneficiaries" (p. 402) and "the stronger the employee's motivation to make a prosocial difference, the greater the employee's effort, persistence, and helping behavior" (p. 404). Child care is not a well-paying field (Thomason et al., 2018) and child care center directors are likely drawn to the field out of their personal beliefs and interest. In fact, a random sample of teachers (not directors) in child care centers in four midwestern states found that they identified with their work as a "personal

calling" (Torquati, Raikes, & Huddleston-Casas, 2007, p. 266). For people eager to make a prosocial difference, child care offers the ability to directly impact the development of young children. For centers that serve infants, directors will watch many of the infants grow into young children, knowing their center helped nurture and shape the children. Knowing the impact their center has, it would not be surprising if center directors were intrinsically motivated to provide the best quality care they could.

The question remains, however, if center directors were intrinsically motivated, and not motivated by the incentive payment, why would providers with higher subsidy densities be more likely to reach EXCELS level 3? As already touched upon, perhaps all providers are similarly internally motivated, but providers that serve few children in the CCSP simply do not have the capacity to reach level 3. Another possibility could be that providers who are the most internally motivated to provide care to disadvantaged children are also the providers who are the most internally motivated to provide higher quality care. In that case, subsidy density would be a proxy for the intrinsic motivation to make a prosocial difference.

Another possible explanation is that the center directors were, perhaps unconsciously, providing socially desirable answers (Paulhus, 2002). I tried to minimize this possibility by asking directors why they settled on an EXCELS rating, why they are (or, are not) currently working to improve their EXCELS rating, and then asking if the director was aware of the EXCELS payments. The three interviewees that reported that EXCELS payments motivated them to improve in EXCELS mentioned this after I asked about their awareness of EXCELS payments.

For some of the other directors, after asking the protocol questions, it was natural to ask if EXCELS payments were a motivation to improve their EXCELS rating. When asked outright, all of these directors said that EXCELS payments were not a motivation for improving their EXCELS rating.

While I have included a number of hypotheses as to why the divergence between the quantitative and qualitative findings occurred, further research (discussed below) is needed to better understand how intrinsic motivation relates to monetary incentives to reach EXCELS level 3. Fortunately, there is little reason to think that monetary incentives would crowd out intrinsic motivation (Cameron, Banko, & Pierce, 2001; Shaw & Gupta, 2015) and EXCELS payments may even be an additive incentive in that they validate the hard work that providers are doing to provide quality care (Cameron, Banko, & Pierce, 2001).

Limitations

A key limitation of using administrative data for my quantitative analysis is that I could not determine *why* the incentives were associated with higher density. For example, the quantitative analysis could not account for whether providers were aware of the incentive payments or how intrinsic motivation may have contributed to the outcomes. A benefit of mixed methods research is that I have qualitative data for child care center directors on these topics. The interview results also confirmed prior research that parents are not using the QRIS to select care, thus confirming my key assumption that demand forces are not encouraging providers to improve their EXCELS rating.

However, a limitation of my focused interviews is that center directors of lower quality providers were less likely to agree to speak with me.. As already noted, the center directors that participated in the interviews tended to have higher EXCELS ratings than the directors who did not participate and likely would have had different experiences with EXCELS and the tiered reimbursement system. Additionally, my interviews were confined to center directors. This design succeeded in securing a high participation rate among center directors (59 percent), compared with a 10 percent participation rate that Hallam et. al (2017) achieved for focus groups with family child care providers' experiences with QRIS in Delaware and Kentucky. However, given that a lower proportion of family child care providers that serve children in the CCSP are higher quality (9 percent compared with 27 percent for child care centers), family child care providers likely have quite different experiences and thoughts about EXCELS and EXCELS payments. In fact, the regression results indicate that the tiered reimbursement system is not as much of an incentive for family child care providers, as compared with child care centers.

Future Research

These limitations and my findings make clear that additional research is needed on how tiered reimbursement systems function. Ideally, interviews should be conducted with family child care providers and more directors from lower quality child care centers to better understand why these providers are not reaching EXCELS level 3 and the supports that may result in improvement. To attempt to unpack the processes by which Maryland's tiered reimbursement system may improve the quality of child care, future research should survey child care center directors and family

child care providers on their understanding of EXCELS payments (including their amounts), motivation, and capacity. These data, when combined with administrative data, would allow an analysis of how motivation and capacity moderate a provider's quality status.

Additional data that should be collected from providers via survey include enrollment and (for centers) auspice (i.e., for-profit, not-for-profit, or government-run status). Auspice would allow an analysis of whether for-profit status is associated with a larger response to incentives; the three interviewees who reported that EXCELS payments were (somewhat) motivating were all affiliated with for-profit centers. Enrollment data would enable an analysis of the association between a provider's open capacity (i.e., licensed capacity minus enrollment) and their response to incentives. Enrollment data would also allow for a more accurate "subsidy density" independent variable.

Future research could also examine whether subsidy density, motivation, and capacity are associated with separately reaching EXCELS levels 3, 4, and 5. As the vast majority of higher quality providers in January 2018 were rated at level 3, there were too few providers at levels 4 or 5 to permit a quantitative analysis. As Maryland EXCELS matures, more providers will reach these higher levels.

Maryland is a rather unique state to study in that all providers that receive CCSP payments are required to participate in EXCELS and tiered payments are not earned until a provider reaches level 3. While my research is the first to examine a state-level tiered reimbursement system, future research should examine states with different structure. For example, some states offer small tiered payments at level 1 as

an incentive to participate in their entirely voluntary QRIS. The underpinning theory of such a system is quite different from the theory underpinning Maryland EXCELS and its tiered reimbursement system.

Finally, one of the findings from my qualitative research was that finding credentialed teachers was especially challenging, resulting in difficulty in increasing EXCELS levels. Maryland's credentialing program offers one-time and annual monetary incentives, depending on the credential level. Future research on incentives should examine whether Maryland's credential bonuses actually incentivize staff to undertake the additional effort required to increase their credential level.

Policy Implications

The findings from my quantitative and qualitative research should give pause to any state that does not currently have a tiered reimbursement system and is considering implementing one. Before implementing such a system, a state should conduct focus groups and surveys to better understand why providers are not currently receiving high ratings on their state's QRIS. If capacity constraints are a concern, the state should consider if funds could be better spent on technical assistance, rather than tiered payments. Recall that some child care center directors reported that the QAS were instrumental in providing support and encouragement to increase EXCELS levels. If staff qualifications are a concern, the state should consider if funds would be better spent on career ladders and supports.

For states that already have a tiered reimbursement system, my research suggests those states should examine their systems to assess whether they work as theorized. But my contradictory results do not suggest that states should necessarily

change what they are doing. Even if both my quantitative and qualitative research had indicated that the system was not functioning as an incentive, states would have to think carefully about how to revise their system without "taking away" from higher quality providers. Whether or not Maryland's tiered reimbursement system caused providers to become high-quality, providers appreciated the EXCELS payments once they earned them. As with all policy, providers would not like to lose their benefit—especially when they feel they are a higher quality provider who earned their payment.

Finally, while my quantitative results indicate that the tiered reimbursement system works as theory predicts, most children participating in the CCSP are still being served by lower quality providers. and incentivizes providers to attain an EXCELS rating of 3 or higher, most children participating in the CCSP are still being served by lower quality providers. Additionally, most of the children participating in the CCSP in higher quality providers are in "marginally" higher quality providers. Specifically, 27 percent of child care centers serving children in the CCSP (with a published EXCELS rating) are higher quality, and 73 percent of higher quality centers were rated level 3 in January 2018. Even more pronounced, only 10 percent of family child care providers serving children in the CCSP are higher quality, and 68 percent of higher quality family providers were rated level 3. If a state's goal is to provide all disadvantaged children with high-quality care, a state must understand that a tiered reimbursement system—and its associated QRIS—cannot be the only avenue by which to improve the quality of child care. As mentioned above, states need to

consider, at minimum, providers' capacity to improve and career ladders to address staffing challenges.

My findings have some specific implications for how Maryland implements its tiered reimbursement system. EXCELS payments are a percentage of an individual child's CCSP payment. CCSP payment rates vary across the state, based on the cost of living in the area, especially the cost of rent and the cost to staff the location. However, directors reported spending their EXCELS payments on supplies, such as toys and books, whose prices are not sensitive to the location of a center. Additionally, though the EXCELS payments are over twice as large for child care centers serving children under 2 compared with children age 2 and older, the subsidy density of children 2 and older was associated with a center being high-quality, while the subsidy density for children under 2 was not. Given these findings, Maryland should consider providing three levels of identical bonuses to providers across the state, regardless of type, location, or age.

Between FY 2018 and FY 2022, Maryland intends to increase its subsidy reimbursement from meeting the 11th percentile of the market rate to meeting the 60th percentile of the market rate. By no longer tying the EXCELS payment amounts to the amount of the child care subsidy, Maryland could provide more technical assistance through QAS to improve quality, monitor more child care centers to ensure quality, and undertake a more effective marketing campaign to ensure that parents are aware of EXCELS. Maryland should consider setting the EXCELS payment, for each EXCELS level, for FY 2020–FY 2022 at the highest amount a provider could receive

in FY 2019 or setting a uniform EXCELS payment at a lower rate, but ensuring that no provider received less than they did in FY 2019.

Summary

My research is the first in-depth study of a state's tiered reimbursement system and greatly expands the limited research base. My mixed method research found that Maryland's tiered reimbursement system produces outcomes as theorized, but I was unable to identify exactly why the results occurred. Center directors did not report that the EXCELS payments were especially motivational. Rather, some center directors reported they were intrinsically motivated to provide high-quality care. Further survey research is needed to understand how intrinsic motivation may moderate the outcomes derived from tiered reimbursement systems in Maryland and other states.

Appendix A: Supporting Tables

Table A.1

Descriptive Statistics for Raw Key Independent Variables for Centers

Variable	Minimum	25%	50%	75%	Maximum	Mean	SD
Density	0.003	0.030	0.083	0.243	4.455	0.199	0.313
Under 2 Subsidy Density	0.000	0.000	0.154	0.500	2.600	0.314	0.415
2+ Subsidy Density	0.000	0.025	0.077	0.233	3.916	0.189	0.288
Density-Capped	0.003	0.030	0.083	0.243	1.000	0.188	0.241
Average Density	0.001	0.022	0.070	0.256	4.242	0.192	0.316
Average Density-Capped	0.001	0.022	0.070	0.256	1.000	0.181	0.238
ln Subsidy Amount	3.82	6.21	7.23	8.22	10.73	7.28	1.31
Average ln Subsidy Amount	2.86	6.13	7.20	8.32	10.56	7.14	1.57

Note. n=1,003 for the following variables: Density, Density-Capped, and ln Subsidy Amount. n=551 for Under 2 Subsidy Density. n=981 for 2+ Subsidy Density. n=865 for Average Density and Average ln Subsidy Amount.

Table A.2

Descriptive Statistics for Group-Mean Centered Key Independent Variables for Centers

Variable	Minimum	25%	50%	75%	Maximum	Mean	SD
Density	-0.459	-0.111	-0.058	0.038	4.245	0.000	0.285
Under 2 Subsidy Density	-0.713	-0221	-0.073	0.105	1.887	0.000	0.360
2+ Subsidy Density	-0.561	-0.110	-0.056	0.038	3.731	0.000	0.258
Density-Capped	-0.427	-0.103	-0.053	0.052	0.891	0.000	0.208
Average Density	-0.505	-0.114	-0.054	0.040	4.019	0.000	0.286
Average Density-Capped	-0.439	-0.101	-0.051	0.059	0.840	0.000	0202
ln Subsidy Amount	-3.316	-0.903	-0.010	0.822	3.577	0.000	1.216
Average Subsidy Amount	-4.491	-0.854	0.106	0.996	3.542	0.000	1.477

Note. n=1,003 for the following variables: Density, Density-Capped, and ln Subsidy Amount. n=551 for Under 2 Subsidy Density. n=981 for 2+ Subsidy Density. n=865 for Average Density and Average ln Subsidy Amount.

Table A.3

Descriptive Statistics for Raw Key Independent Variables for Family Child Care Providers

Variable	Minimum	25%	50%	75%	Maximum	Mean	SD
Density	0.143	0.250	0.600	1.000	8.000	0.777	0.721
Under 2 Subsidy Density	0.000	0.000	0.200	0.333	4.000	0.259	0.339
2+ Subsidy Density	0.000	0.500	1.000	2.500	20.000	1.882	2.072
Density-Capped	0.143	0.250	0.600	1.000	1.000	0.601	0.317
Average Density	0.024	0.267	0.569	1.042	6.278	0.746	0.666
Average Density-Capped	0.024	0.267	0.569	1.000	1.000	0.587	0.344
ln Subsidy Amount	3.02	6.13	6.74	7.33	9.43	6.70	0.87
ln Average Subsidy Amount	3.77	6.03	6.81	7.34	9.81	6.64	0.99

Note. n=1,066 for the following variables: Density, Density-Capped, and ln Subsidy Amount. n=1,063 for Under 2 Subsidy Density. n=1,049 for 2+ Subsidy Density. n=882 for Average Density and Average ln Subsidy Amount.

Table A.4

Descriptive Statistics for Group-Mean Centered Key Independent Variables for Family Child Care Providers

Variable	Minimum	25%	50%	75%	Maximum	Mean	SD
Density	-1.081	-0.400	-0.154	0.217	6.967	0.000	0.683
Under 2 Subsidy Density	-0.382	-0.244	-0.013	0.143	3.654	0.000	0.331
2+ Subsidy Density	-3.444	-0.965	-0.368	0.632	16.555	0.000	1.906
Density-Capped	-0.588	-0.242	0.016	0.268	0.615	0.000	0.297
Average Density	-1.245	-0.376	-0.116	0.253	5.211	0.000	0.607
Average Density-Capped	-0.735	-0.256	0.015	0.223	0.656	0.000	0.305
ln Subsidy Amount	-3.655	-0.551	-0.006	0.639	2.644	0.000	0.838
ln Average Subsidy Amount	-3.477	-0.529	0.120	0.653	2.810	0.000	0.924

Note. n=1,066 for the following variables: Density, Density-Capped, and ln Subsidy Amount. n=1,063 for Under 2 Subsidy Density. n=1,049 for 2+ Subsidy Density. n=882 for Average Density and Average ln Subsidy Amount.

Table A.5

Number and Percentage of Centers Participating in EXCELS and Serving Children on Subsidy, by County, January 2018

County	Total Centers	Centers Participating in EXCELS	Centers Serving Children on Subsidy	Percentage Participating Centers	Of Participating Centers, Percentage Serving Children on Subsidy
Allegany	22	17	8	77%	47%
Anne Arundel	236	155	51	66%	33%
Baltimore City	303	247	154	82%	62%
Baltimore Co.	385	287	161	75%	56%
Calvert	50	38	18	76%	47%
Caroline	10	7	4	70%	57%
Carroll	83	70	33	84%	47%
Cecil	36	25	21	69%	84%
Charles	72	53	33	74%	62%
Dorchester	12	9	6	75%	67%
Frederick	114	82	34	72%	41%
Garrett	15	13	3	87%	23%
Harford	87	66	30	76%	45%
Howard	179	130	50	73%	38%
Kent	7	5	2	71%	40%
Montgomery	497	310	141	62%	45%
Prince George's	385	308	181	80%	59%
Queen Anne's	17	11	6	65%	55%
Saint Mary's	44	15	6	34%	40%
Somerset	9	9	5	100%	56%
Talbot	18	13	8	72%	62%
Washington	61	39	22	64%	56%
Wicomico	40	34	24	85%	71%
Worcester	19	11	6	58%	55%
Total	2,701	1,954	1,007	72%	52%

Table A.6

EXCELS Rating Distribution for Centers, by County, January 2018

County	Level 1	Level 2	Level 3	Level 4	Level 5	Total Centers	Centers Rated 3–5	Percent Centers Rated 3–5
Allegany	9	0	1	2	3	15	6	40%
Anne Arundel	62	16	52	2	7	139	61	44%
Baltimore City	154	26	41	2	4	227	47	21%
Baltimore Co.	172	24	57	4	11	268	72	27%
Calvert	16	11	4	2	3	36	9	25%
Caroline	2	0	3	0	2	7	5	71%
Carroll	31	7	15	2	10	65	27	42%
Cecil	16	2	5	0	0	23	5	22%
Charles	39	5	4	0	3	51	7	14%
Dorchester	3	1	2	1	2	9	5	56%
Frederick	41	9	11	5	8	74	24	32%
Garrett	5	1	1	0	5	12	6	50%
Harford	31	14	11	1	7	64	19	30%
Howard	69	25	13	1	13	121	27	22%
Kent	2	0	0	1	2	5	3	60%
Montgomery	130	39	87	12	17	285	116	41%
Prince George's	196	57	32	0	3	288	35	12%
Queen Anne's	6	1	0	1	2	10	3	30%
Saint Mary's	6	2	2	0	1	11	3	27%
Somerset	4	0	3	0	2	9	5	56%
Talbot	2	1	1	0	7	11	8	73%
Washington	12	15	3	1	7	38	11	29%
Wicomico	19	3	4	4	2	32	10	31%
Worcester	2	0	4	0	4	10	8	80%
Total	1,029	259	356	41	125	1810	522	29%

Table A.7

Number and Percentage of Family Child Care Providers Participating in EXCELS and Serving Children on Subsidy, by County, January 2018

County	Total Providers	Providers Participating in EXCELS	Providers Serving Children on Subsidy	Percentage Participating Providers	Of Participating Providers, Percentage Serving Children on Subsidy
Allegany	53	35	19	66%	54%
Anne Arundel	492	146	60	30%	41%
Baltimore City	528	447	310	85%	69%
Baltimore Co.	815	339	161	42%	47%
Calvert	102	40	10	39%	25%
Caroline	73	30	12	41%	40%
Carroll	132	31	8	23%	26%
Cecil	90	33	8	37%	24%
Charles	206	80	36	39%	45%
Dorchester	50	27	16	54%	59%
Frederick	331	79	17	24%	22%
Garrett	14	9	2	64%	22%
Harford	283	104	45	37%	43%
Howard	329	97	27	29%	28%
Kent	19	4	2	21%	50%
Montgomery	877	332	78	38%	23%
Prince George's	797	354	151	44%	43%
Queen Anne's	77	18	5	23%	28%
Saint Mary's	180	35	15	19%	43%
Somerset	22	17	11	77%	65%
Talbot	39	15	7	38%	47%
Washington	175	76	27	43%	36%
Wicomico	97	53	31	55%	58%
Worcester	31	17	8	55%	47%
Total	5,812	2,418	1,066	42%	44%

Table A.8

EXCELS Rating Distribution for Family Child Care Providers, by County, January 2018

County	Level 1	Level 2	Level 3	Level 4	Level 5	Total Providers	Providers Rated 3–5	Percent Providers Rated 3–5
Allegany	29	0	2	0	0	31	2	6%
Anne Arundel	88	8	5	1	9	111	15	14%
Baltimore City	368	24	26	0	4	422	30	7%
Baltimore Co.	259	19	8	1	9	296	18	6%
Calvert	29	2	2	0	3	36	5	14%
Caroline	17	2	5	0	1	25	6	24%
Carroll	19	3	2	0	1	25	3	12%
Cecil	24	2	3	0	0	29	3	10%
Charles	54	3	1	0	2	60	3	5%
Dorchester	16	1	7	0	0	24	7	29%
Frederick	52	7	3	0	2	64	5	8%
Garrett	6	0	1	1	0	8	2	25%
Harford	83	5	4	0	2	94	6	6%
Howard	68	10	3	0	3	84	6	7%
Kent	3	0	1	0	0	4	1	25%
Montgomery	217	22	6	2	36	283	44	16%
Prince George's	272	17	14	0	5	308	19	6%
Queen Anne's	9	2	2	0	1	14	3	21%
Saint Mary's	26	0	1	0	0	27	1	4%
Somerset	12	2	3	0	0	17	3	23%
Talbot	12	1	0	0	0	13	0	0%
Washington	50	3	6	0	4	63	10	21%
Wicomico	36	3	6	0	3	48	9	19%
Worcester	11	2	1	1	1	16	3	19%
Total	1,760	138	112	6	86	2102	204	10%

Table A.9

Means of Raw Independent and Dependent Variables, by Centers' Quality Status

	Not High-Quality (n=748)	High-Quality (n=255)
Density	0.189	0.228
Year First Licensed	*2009.5*	*2007.8***
School-age programs	*0.232*	*0.141***
Length of participation (6-month chunks)	*6.76*	*8.32***
Under 2 licensed capacity	8.30	10.15
2+ licensed capacity	*53.40*	*65.86***
Licensed slots per child under 5 in Zip Code	0.393	0.419
Pct Pov < 5 in Zip Code	17.13	15.82
Pct Asian in Zip Code	*0.051*	*0.064***
Pct Black in Zip Code	*0.419*	*0.304***
Pct Hispanic in Zip Code	0.084	0.096
Pct Female with BA+ in Zip Code	*19.06*	*21.17***
Pct Mothers with kids <6 in labor force	77.8	77.37
Unemployment rate in Zip Code	*7.78*	*6.87***
Pct rural	0.092	0.117

Note. Italicized numbers and asterisks indicate a statistically significant difference between not high-quality and high-quality providers.* indicates significance at the 0.05 level and ** indicates significance at the 0.01 level.

Table A.10

Means of Raw Independent and Dependent Variables, by Family Child Care Providers' Quality Status

	Not High-Quality (n=967)	High-Quality (n=99)
Density	*0.756*	*0.978***
Year First Licensed	2009.6	2009.0
Length of participation (6-month chunks)	*6.39*	*8.61***
Under 2 licensed capacity	*3.08*	*3.38***
2+ licensed capacity	1.60	1.71
Licensed slots per child under 5 in Zip Code	0.353	0.357
Pct Pov < 5 in Zip Code	22.03	23.49
Pct Asian in Zip Code	0.039	0.043
Pct Black in Zip Code	0.490	0.438
Pct Hispanic in Zip Code	0.077	0.077
Pct Female with BA+ in Zip Code	17.11	16.61
Pct Mother's with kids <6 in labor force	77.39	76.78
Unemployment rate in Zip Code	8.92	8.52
Pct rural	0.077	0.098

Note. Italicized numbers and asterisks indicate a statistically significant difference between not high-quality and high-quality providers. * indicates significance at the 0.05 level and ** indicates significance at the 0.01 level.

Table A.11

Odds Ratio Estimates for Centers, Robustness Analyses

Independent Variable	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)	Model (11)
Subsidy density – capped at 1.0	6.724** (3.015)					
Avg. subsidy density		4.501** (1.672)				
Avg. subsidy density – capped at 1.0			6.311** (2.999)			
ln subsidy dollars				1.273** (0.099)		
ln avg. subsidy dollars					1.181* (0.085)	
Low subsidy dollars, high poverty						1.286 (0.536)
High subsidy dollars, low poverty						1.287 (0.383)
High subsidy dollars, high poverty						1.767 (0.536)
Year provider first licensed	0.978 (0.026)	0.973 (0.029)	0.966 (0.028)	0.984 (0.026)	0.958 (0.030)	0.988 (0.026)
Length of EXCELS participation	1.452** (0.080)	1.570** (0.105)	1.544** (0.102)	1.433** (0.079)	1.507** (0.098)	1.440** (0.078)
Under 2 licensed capacity	1.004 (0.007)	1.004 (0.007)	1.004 (0.007)	1.001 (0.007)	1.001 (0.007)	1.003 (0.006)
2+ licensed capacity	1.005* (0.002)	1.003 (0.002)	1.004 (0.002)	1.002 (0.002)	1.001 (0.002)	1.002 (0.002)
School-age program	0.703 (0.173)	0.692 (0.179)	0.707 (0.184)	0.733 (0.185)	0.706 (0.191)	0.608* (0.153)
Licensed slots per child under 5	0.759 (0.299)	0.746 (0.301)	0.759 (0.306)	0.790 (0.311)	0.787 (0.316)	0.762 (0.299)
Under 5 poverty (%)	1.006 (0.014)	1.004 (0.015)	1.004 (0.015)	1.008 (0.014)	1.007 (0.015)	–
Asian (%)	0.462 (1.175)	1.573 (4.173)	01.374 (3.637)	0.361 (0.918)	1.149 (3.034)	1.212 (3.151)
Black (%)	0.799 (0.510)	0.556 (0.372)	0.505 (0.337)	0.774 (0.495)	0.513 (0.344)	1.021 (0.651)
Hispanic (%)	3.524 (5.018)	5.123 (7.640)	3.676 (5.458)	2.807 (3.982)	2.914 (4.310)	2.482 (3.552)
Females with at least a BA (%)	1.060** (0.025)	1.066** (0.026)	1.067** (0.026)	1.055* (0.024)	1.063** (0.025)	1.059* (0.025)
Mothers in labor force (%)	1.008 (0.011)	1.010 (0.012)	1.011 (0.012)	1.007 (0.011)	1.010 (0.011)	1.008 (0.011)
Unemployment rate	0.941 (0.057)	0.985 (0.063)	0.997 (0.063)	0.939 (0.057)	0.994 (0.063)	0.957 (0.054)
Rural (%)	0.779 (0.531)	0.831 (0.581)	0.794 (0.555)	0.815 (0.550)	0.776 (0.538)	0.808 (0.544)
2-level model	X	X	X	X	X	X

Note. * indicates significance at the 0.05 level and ** indicates significance at the 0.01 level. Standard errors are in parentheses. For models (6), (9), and (11), n=1,003. For models (7), (8), and (10), n=865. Rho is statistically significant at the 0.05 level for all models. For model (6) rho=0.148; for model (7) rho=0.163; for model (8) rho=0.160; for model (9) rho=0.144; for model (10) rho=0.142; and for model (11) rho=0.142.

Table A.12

Odds Ratio Estimates for Family Child Care Providers, Robustness Analyses

Independent Variable	Model (6)	Model (7)	Model (8)	Model (9)	Model (10)	Model (11)
Subsidy density – capped at 1.0	2.575* (1.077)					
Avg. subsidy density		1.539* (0.294)				
Avg. subsidy density – capped at 1.0			1.810 (0.802)			
ln subsidy dollars				1.457** (0.220)		
ln avg. subsidy dollars					1.256 (0.197)	
Low subsidy dollars, high poverty						0.631 (0.292)
High subsidy dollars, low poverty						0.802 (0.286)
High subsidy dollars, high poverty						1.857 (0.764)
Year provider first licensed	1.082* (0.037)	1.105** (0.044)	1.107** (0.044)	1.077* (0.036)	1.099* (0.044)	1.077* (0.037)
Length of EXCELS participation	2.078** (0.190)	2.397** (0.270)	2.382** (0.266)	2.068** (0.189)	2.358** (0.264)	2.283** (0.190)
Under 2 licensed capacity	1.447** (0.210)	1.488** (0.226)	1.464** (0.225)	1.348* (0.191)	1.408* (0.210)	1.356* (0.193)
2+ licensed capacity	1.923 (0.732)	2.124 (0.874)	1.925 (0.781)	1.896 (0.721)	1.899 (0.767)	1.779 (0.700)
Licensed slots per child under 5	1.084 (1.010)	0.860 (0.842)	0.916 (0.894)	1.078 (1.007)	0.902 (0.880)	1.229 (1.117)
Under 5 poverty (%)	0.997 (0.018)	0.996 (0.019)	0.996 (0.019)	0.997 (0.018)	0.996 (0.019)	_
Asian (%)	1.1096 (6.272)	3.744 (21.950)	4.125 (24.046)	1.013 (8.696)	3.631 (21.116)	2.433 (13.476)
Black (%)	1.019 (0.909)	1.245 (1.156)	1.187 (1.100)	1.072 (0.957)	1.160 (1.073)	1.057 (0.941)
Hispanic (%)	0.191 (0.511)	0.139 (0.923)	0.165 (0.464)	0.190 (0.510)	0.144 (0.407)	0.182 (0.468)
Females with at least a BA (%)	0.968 (0.032)	0.955 (0.033)	0.955 (0.033)	0.969 (0.032)	0.956 (0.033)	0.977 (0.033)
Mothers in labor force (%)	1.000 (0.016)	0.997 (0.018)	0.996 (0.018)	1.001 (0.016)	0.995 (0.018)	1.003 (0.016)
Unemployment rate	0.924 (0.073)	0.900 (0.073)	0.902 (0.073)	0.925 (0.073)	0.902 (0.073)	0.918 (0.066)
Rural (%)	0.048* (0.061)	0.019** (0.027)	0.019** (0.026)	0.055* (0.070)	0.023** (0.031)	0.047** (0.059)
2-level model	X	X	X	X	X	X

Note. * indicates significance at the 0.05 level and ** indicates significance at the 0.01 level. Standard errors are in parentheses. For models (6), (9), and (11), n=1,066. For models (7), (8), and (10), n=882.Rho is not statistically significant at the 0.05 level for any of the models. For model (6) rho=0.084; for model (7) rho=0.046; model (8) rho=0.046; for model (9) rho=0.084; for model (10) rho=0.053; and for model (11) rho=0.059.

Appendix B: MSDE Letter of Support

MARYLAND STATE DEPARTMENT OF EDUCATION
PREPARING WORLD CLASS STUDENTS

Karen B. Salmon, Ph.D.
State Superintendent of Schools

200 West Baltimore Street • Baltimore, MD 21201 • 410-767-0100 • 410-333-6442 TTY/TDD • msde.maryland.gov

Dear Child Care Center Program Director,

This letter is attached to an email from a University of Maryland doctoral student, Erica Lee, who is conducting research on Maryland EXCELS and Child Care Subsidy reimbursements. Erica has explained her research to Maryland State Department of Education (MSDE) staff and interviewed staff as part of her research. Erica will present her results to MSDE staff and the findings may help inform future policy.

While MSDE has not directed Erica's research in any way, we hope that you will grant her an interview to learn about your experiences with Maryland EXCELS and Child Care Subsidy reimbursements, supports to improve EXCELS ratings, and challenges to improve EXCELS ratings. Erica has not told MSDE staff of the directors she intends to interview and we understand that she will summarize responses across child care program directors in her presentation to us. While we hope you choose to participate in an interview, we will never learn of your choice.

Thank you for considering taking time during this busy time of the year to talk with Erica.

Respectfully,

Lindi M Budd

Lindi Mitchell Budd
Maryland EXCELS Branch Chief

Appendix C: Interview Protocols

MSDE Staff Interview Protocol

Career background

1) Please tell me your current role and how long you have been in that role. What other positions have you held related to early care and education?

Tiered reimbursement system

2) Maryland has had a tiered reimbursement system since 2001. Can you tell me why Maryland created a tiered reimbursement system in 2001? What was the theory and goal of the system?

3) Tiered reimbursement systems vary quite a bit across states. Tell me how Maryland decided to create the system it created. Tell me about the process Maryland went through to create the system. For example, do you know how the rates were determined?

4) Did Maryland consider revising the tiered reimbursement system when it created Maryland EXCELS? Why or why not?

5) Do you believe the tiered reimbursement system is functioning as intended? Why or why not?

History, theory, and use of Maryland EXCELS

6) Tell me why Maryland created Maryland EXCELS. What is the theory and goal of the system?

7) Quality Rating Improvement Systems vary quite a bit across states. Tell me how Maryland decided to create the system it created. Tell me about the process Maryland went through to create EXCELS.

8) How has Maryland encouraged providers to participate in EXCELS?

9) Tell me how Maryland decided to require certain providers, such as those that receive child care subsidies, to participate in EXCELS.

10) How has Maryland encouraged parents to use EXCELS? How has Maryland worked with Child Care Resource and Referral Centers to help educate parents about EXCELS? What are the usage rates of the EXCELS web-site?

Provider engagement with Maryland EXCELS

11) How does the EXCELS participation rate compare to Maryland's expectations, say, five years ago? Are there certain types of providers that have participated at higher/lower rates than Maryland expected? To what do you attribute the differences in reality versus expectations?

12) Are providers improving their EXCELS rating at the rate that Maryland expected? Are there certain types of providers that have improved at greater/lesser rates than Maryland expected?

13) To what do you attribute the differences in reality versus expectations for EXCELS progression? Are there certain domains that have proved more challenging for providers/certain types of providers? How has Maryland tried to address those challenges?

14) Are providers that serve children receiving child care subsides improving their quality as expected? Does the tiered reimbursement appear to be sufficient to cover the expenses associated with improving in EXCELS?

Concluding thoughts

15) If you had the opportunity to re-design Maryland's tiered reimbursement system or EXCELS, what aspects of the systems would you consider changing? How so?

16) Are there any additional challenges or successes to Maryland's tiered reimbursement system or EXCELS that you have not already shared?

Quality Assurance Specialist and Technical Assistance Provider Interview Protocol

Career background

1) Please tell me your current role and how long you have been in that role. What other positions have you held related to early care and education?

Technical assistance to child care providers and child care provider engagement with Maryland EXCELS

2) Tell me about the different types of technical assistance you offer to child care providers to improve their quality and, specifically, to improve their EXCELS rating. Are there certain types of providers that seek out your assistance to improve EXCELS ratings more than other types of providers?

3) How does the EXCELS participation rate compare to your expectations? Are there certain types of providers that have participated at higher/lower rates than Maryland expected?

4) To what do you attribute the differences in reality versus expectations for EXCELS participation? How do you encourage providers to participate in EXCELS?

5) Are providers improving their EXCELS rating at the rate that you expected? Are there certain types of providers that have improved at greater/lesser rates than you expected?

6) To what do you attribute the differences in reality versus expectations for EXCELS progression? Are there certain domains that have proved more challenging for providers/certain types of providers? What assistance do you offer to address those challenges?

7) Tell me about the information you give to providers about Maryland's tiered reimbursement system.

8) Are providers that serve children receiving child care subsides improving their quality as expected? Does the tiered reimbursement appear to be sufficient to cover the expenses associated with improving in EXCELS?

9) How do you think child care providers settle on an end goal for a Maryland EXCELS level?

Concluding thoughts

10) Are there any additional challenges or successes to Maryland's tiered reimbursement system or EXCELS that you have not already shared?

Child Care Center Directors Interview Protocol

Career background

1) Please tell me your current role and how long you have been in that role. What other positions have you held related to early care and education?

Center information

2) Tell me a little about your child care center's enrollment.
    - What age children do you serve? Do you have a waitlist for children; if so, what ages?
    - Do you have a sense of how far most of the children travel to your center? For example, do you know if most parents live or work near your center?

3) How do you think parents learn of your center and why do parents choose your center?
    - Do you think your Maryland EXCELS rating factors into their decision? What makes you think this way?
    - Can you share any specific stories of how parents choose your center?

4) What is your estimate for the number or percentage of the children you serve that receive Child Care Subsidy/Purchase of Care vouchers?

Maryland EXCELS experience

5) Tell me about why you decided to participate in Maryland EXCELS.
    - When you first decided to participate, what was the highest quality rating you thought you'd reach?
    - How did your expectations change as you became more familiar with Maryland EXCELS?

6) Tell me about your experiences to improve your quality rating.
    - How has your rating changed over time?
    - What challenges have you experienced in improving your Maryland EXCELS rating?
    - What training, technical assistance, or financial incentives have you used? Did these supports adequately address your challenges? How did you use the training or technical assistance that you received?

7) How has Maryland EXCELS influenced your decision-making (e.g., staffing, training, curriculum)?

8) Are you currently working to improve your Maryland EXCELS rating? Why/why not?

EXCELS payments (formerly known as Tiered Reimbursement)

9) Are you aware that Maryland offers EXCELS payments to providers receiving Child Care Subsidy/Purchase of Care reimbursements that have published at EXCELS levels 3, 4, or 5? If so, how did you learn of EXCELS payments?

10) If you have received EXCELS payments, on average, what is your monthly EXCELS payment? On what have you spent the money?

11) *[If not already answered from the previous section]* If you have not received EXCELS payments, are you interested in improving your Maryland EXCELS rating to a level 3? Why/why not? What do you need to do to improve your Maryland EXCELS rating to a level 3?

Concluding thoughts

12) Do you think your Maryland EXCELS rating is an accurate portrayal of the quality of your center? If Maryland had not developed the EXCELS system, would you be working to improve the quality of your program? Why/why not?

13) Given our discussion, is there anything else you'd like to share to help me understand your experiences with Maryland EXCELS and EXCELS payments for Child Care Subsidy/Purchase of Care?

Appendix D: Supporting Figures

Figure D.1

Percentage and Number of Participating Centers Rated Level 3 or Higher in EXCELS, July 2013–January 2018

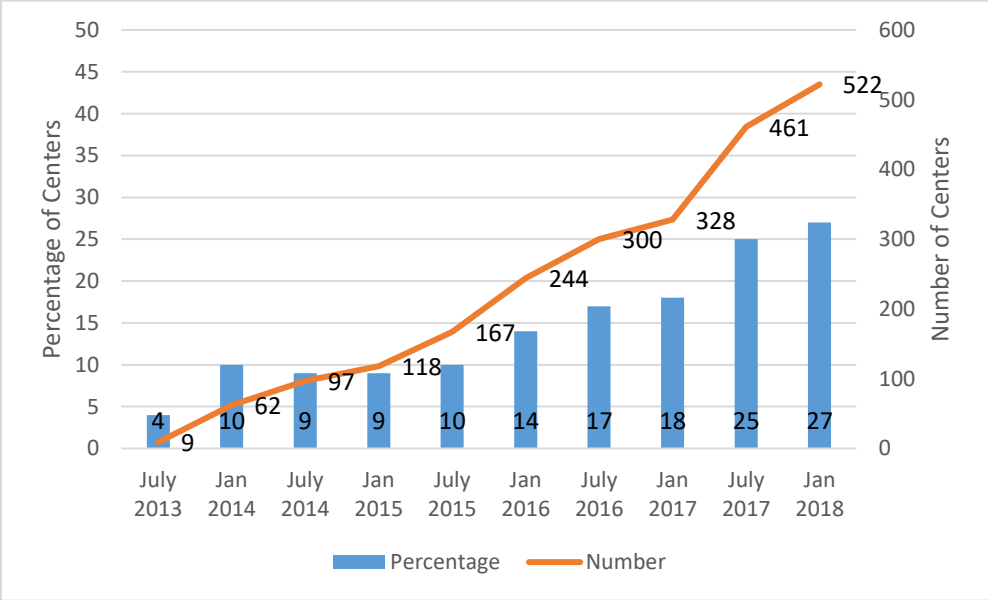
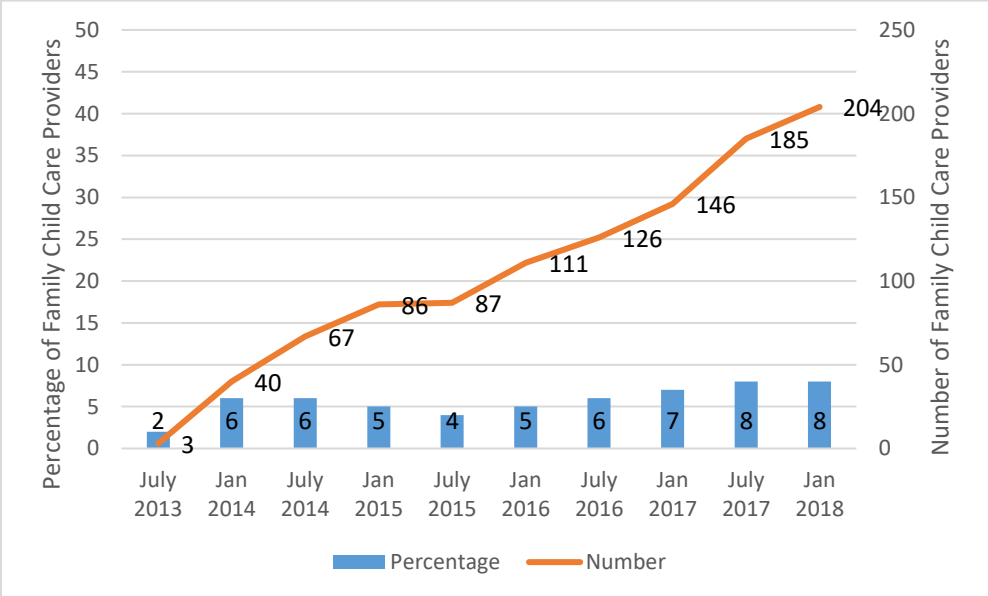


Figure D.2

Percentage and Number of Participating Family Child Care Providers Rated Level 3 or Higher in EXCELS, July 2013–January 2018



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