

Child Care Assistance and Early Literacy

Preliminary Outcomes from the Pilot Years of FOCUS

August 2018



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Executive Summary

Introduction

It has become increasingly clear in recent decades that children's earliest years are a critical time for brain development, laying the foundation for their future learning and success. In New Mexico, child care assistance is the largest part of the early care and education system, serving about 20,000 low-income children each month. This is in addition to the many families who pay privately for care.

New Mexico policymakers have sought to improve the quality of New Mexico's child care sector through FOCUS on Young Children's Learning (FOCUS), a program that sets more rigorous standards for child care programs, and provides substantially higher reimbursement rates for children receiving child care assistance. This study takes a first look at whether differences in children's child care experiences during the transition to FOCUS have effects that can be detected in their later school performance.

The study examines children who received child care assistance subsidies during the phase-in of FOCUS, linking their child care assistance records to their later school performance. Children in the study received care in programs that were early adopters of FOCUS, as well as those who remained under the AIM HIGH system for longer. The study includes programs rated under both systems, and further research will be needed to determine whether outcomes look different after the full implementation of FOCUS.

This study does not serve as an evaluation of FOCUS, but rather as a baseline to inform child care policymaking, particularly as it relates to early literacy. School readiness is not the only goal of child care, which has wide-ranging goals including supporting adult employment and schooling, providing children with healthy meals, linking families to appropriate support services, and providing children with environments where they are physically safe and emotionally supported. A comprehensive assessment of child care's place in the early care and education system should consider all these dimensions. This study's scope is narrow, and concerned only with children's school readiness.

Findings

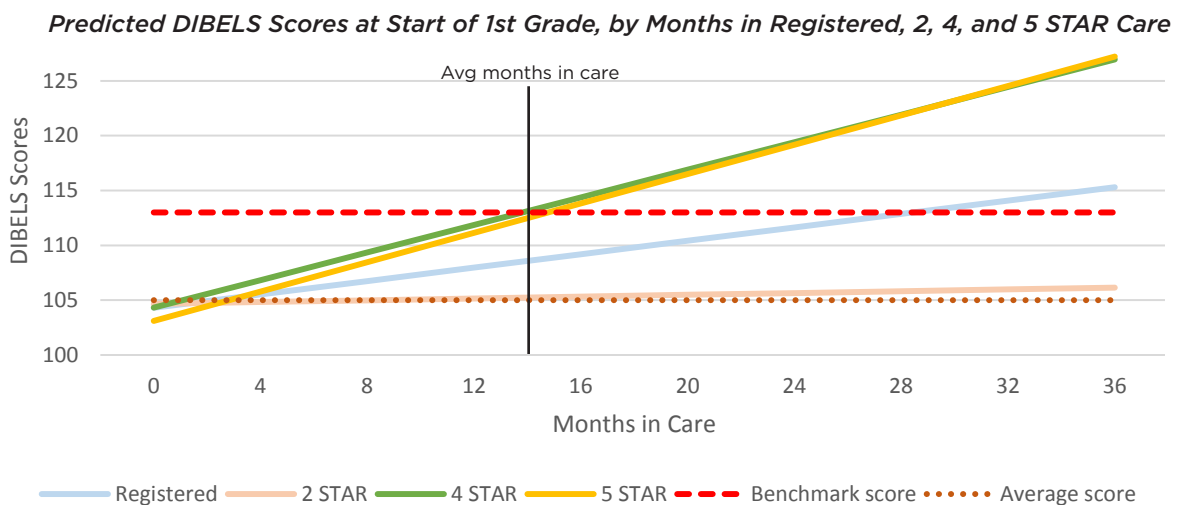
This study found statistically significant relationships between New Mexico children's child care assistance histories and their DIBELS scores in kindergarten, first, and second grade. The DIBELS is an assessment of early literacy. Specifically:

- For 4- and 5-STAR child care, increased months in child care are related to higher predicted DIBELS scores.
- This is also true of children in registered home care, although the increases related to registered home care are more modest.
- For 4- and 5-STAR care, each month in care appears to increase children's odds of reaching grade-level benchmarks on the DIBELS.

- Months spent in registered care exert smaller effects on children’s odds of reaching the DIBELS benchmark.
- Hispanic children have 2.82 times the odds, and Native Americans have 2.04 times the odds, of receiving only registered home care, compared to white children.
- White and Native American children are about 45 percent more likely than Hispanic children to receive only 5-STAR care.
- Compared to children who received only 5-STAR care, children who received only registered home care had a longer average total months in care (13.4 versus 8.5) and were more likely to have experienced PreK (34 percent versus 19 percent). These differences are statistically significant.
- 2-STAR and 3-STAR licensed care are not associated with early literacy gains in any of the models.

Policy Recommendations

- **Policy efforts that support continuity and duration of care should be emphasized and enhanced.** As New Mexico continues implementation of 12-month certification policies that allow families to receive child care assistance for a full year after initially establishing their eligibility, particular attention should be paid to any remaining barriers that cause families to lose their eligibility. This study suggests that longer duration of care in 4- and 5-STAR settings, as well as registered homes, supports children’s early literacy.
- **Continued support and incentives should be provided for licensed programs to move into the higher tiers of licensure.** This study finds 4- and 5-STAR care is associated with improvements in early literacy, and that 2- and 3-STAR care has no such associations.



- **Policymakers should consider implementing a tiered quality rating and improvement system for registered home providers, as well as additional supports for registered providers who wish to become licensed.** Registered care in large doses shows promise in supporting children’s early literacy, and highlights the importance of home-based care as a choice for families.

Conclusion

This study affirms some of the policy decisions New Mexico has made in the transition to FOCUS, particularly the shift to 12-month recertification (which was a federal mandate), and the substantially increased reimbursement rates that have driven the shift toward more high-quality programs. Although much work remains, these baseline data suggest that in the early years of FOCUS, children’s early literacy skills are enhanced by child care assistance in certain contexts.

Introduction

It has become increasingly clear in recent decades that children's earliest years are a critical time for brain development, laying the foundation for their future learning and success. States and cities have responded to these findings with a suite of policies and programs, including home visiting services for new parents, early intervention, pre-kindergarten, and increased attention to quality and access in the child care sector. In New Mexico, child care is the largest part of the early childhood system. The child care assistance program for low-income families serves about 20,000 children each month. This is in addition to the many families who pay privately for care, and who benefit from efforts to raise the overall quality of the choices available to families. Child care may be the only part of the early childhood system that many families access for their children, as it is a practical necessity for families in which all adults work.

Recognizing that a major share of early childhood care and education is delivered through the child care system, states have turned to Quality Rating and Improvement Systems (QRIS) in an effort to raise the quality of care that is available to children, and to provide ratings that distinguish higher- from lower-quality care. For children receiving child care assistance, QRIS systems are used to reimburse programs at a differential rate, with higher-rated providers receiving more money per child. This is intended to recognize that high-quality care is more expensive to provide, to incentivize programs to raise their quality, and to make high-quality care accessible to low-income children.

New Mexico has now fully implemented its third-generation QRIS, FOCUS On Young Children's Learning (hereafter, FOCUS). New Mexico has been a leader in QRIS efforts, adopting the first one in the nation in 1997, which awarded programs a rating of Bronze, Silver, or Gold, accompanied by differential reimbursement rates. The state transitioned to the AIM HIGH system in 1999, awarding programs between one and five stars based on various quality standards, with nationally accredited programs receiving the highest five-star rating. Beginning in 2012, New Mexico began transitioning to FOCUS, which sets higher quality standards than its predecessors and mirrors many of the standards and practices established in NM PreK, New Mexico's early learning program for 3- and 4-year-olds.

FOCUS has been phased in gradually as a voluntary pilot since 2012, with full implementation begun in 2018. During this phase-in, programs have joined the system and begun working to meet the higher standards outlined in FOCUS, including required staff trainings, lower staff-to-child ratios, and practices related to assessing and documenting children's learning and development. In recognition of the expenses associated with these efforts, reimbursement rates for FOCUS are substantially higher than they were under AIM HIGH.

This study takes a first look at whether differences in low-income children's child care enrollment histories during the transition to FOCUS have effects that can be detected in their later school performance. The study examines children who received child care assistance subsidies during the phase-in of FOCUS, linking their child care assistance records to their later school records. It is specifically focused on their test scores in early literacy.

FOCUS was still in early implementation when it served the children in this retrospective study. The sample of children in this study received child care assistance during the FOCUS pilot years, from 2012 to 2016. They received care in programs that were early adopters of FOCUS, as well as those who remained under the AIM HIGH system for longer. This study includes programs rated under both systems, and further research will be needed to determine whether outcomes look different after the full implementation of FOCUS.

This study does not serve as an evaluation of FOCUS, but rather as a baseline to inform child care policymaking, particularly as it relates to early literacy. School readiness is not the only goal of child care, which has wide-ranging goals including supporting adult employment and schooling, providing children with healthy meals, linking families to appropriate support services, and providing children with environments where they are physically safe and emotionally supported. A comprehensive assessment of child care's place in the early care and education system should consider all these dimensions. This study's scope is narrow, and concerned only with children's school readiness.

Literature and Context

Prior research finds inconsistent relationships between child care quality ratings and children's learning outcomes.¹ Studies of QRIS ratings in various places and contexts have sometimes found no effects on children's development. When effects are identified, they have tended to be modest and often appear for some developmental domains, but not others.² Scholars and advocates have noted that child development outcomes are just one measure of a QRIS, and that evaluating quality rating and improvement systems requires attention to their purpose and their role in an early childhood system.³ Some studies (including this one) approach QRIS research as a traditional evaluation of whether the program is having the desired effects on children and families. But a QRIS is also a framework for building and raising a broad, successful system of early care and education, which makes the task of assessing its success a more complicated one. For example, some states have identified development and professionalization of the early childhood workforce as a QRIS goal. While developing the workforce serves the long-term goal of providing higher quality care to children and improving their outcomes, it will

AT A GLANCE

What is Child Care Assistance:

New Mexico aims to help low-income families access care of their choosing through child care assistance, a program administered by the New Mexico Children, Youth and Families Department (CYFD). Private child care providers are reimbursed by the state for the cost of serving low-income families, who pay a portion of the cost.

Who is Eligible: *Assistance is available for children from age six weeks to age 13, with school-aged children eligible to receive before- and after-school care. To become eligible, parents must be working or attending school and must have incomes at or below 150 percent of the Federal Poverty Level (FPL). Once eligible, they can stay on assistance until their incomes exceed 200 percent of FPL. Families are also eligible if they receive or are transferring off of Temporary Assistance for Needy Families (TANF) or if they are involved with or at risk of involvement with Child Protective Services.*

What Eligible Families Receive:

Families who receive child care assistance access discounted or free care at any child care program that voluntarily participates. Assistance can be used at a range of care types, including care in centers, homes, and churches.

How it is Funded: *Child care assistance is funded through a combination of state general funds and the federal Child Care and Development Fund Block Grant. For fiscal year 2019, about \$134.2 million has been appropriated for the program across all funding streams.*

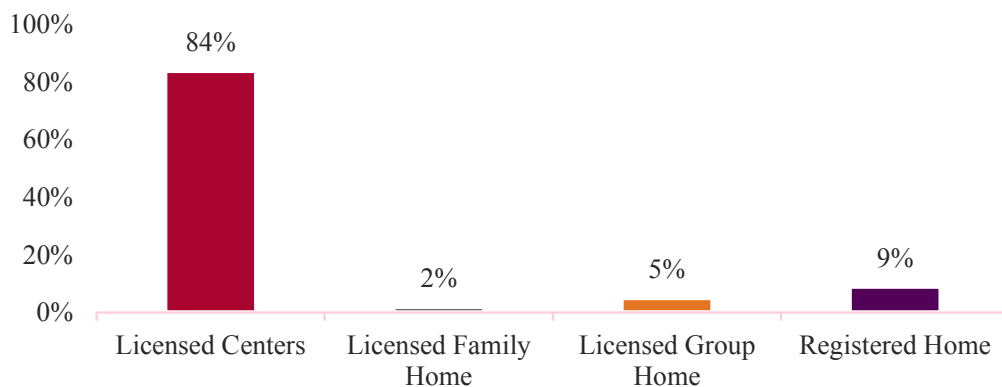
be important to measure workforce development and child outcomes separately, to consider reasonable time horizons for child-level effects to appear, and to holistically consider all the ways a strong system of early care and education may benefit children and families.

This study addresses a narrow question: How does length of time in care, by quality and type of care, relate to school readiness outcomes for New Mexico children receiving assistance? Even more narrowly, this study is mainly concerned with children’s scores on the DIBELS, an assessment of pre-literacy skills that is administered in the early grades. It is an important question, as early literacy is a cornerstone of academic success. However, it is not the only question. This study does not aim to provide a definitive answer to the question of whether New Mexico’s QRIS supports children’s readiness for school. Rather, it aims to provide data that may be useful to policymakers about what kinds of care, in what amounts, seem to be associated with early literacy gains. The sample of children considered is from the years of transition from AIM HIGH to FOCUS, and includes data from both rating systems. Findings should serve as a baseline for future work as FOCUS reaches mature implementation, more providers participate, and a larger sample of children who received care under FOCUS move on to public school.

The Child Care Landscape

This study is retrospective, and examines New Mexico’s early care and education system at a transitional time. To understand how these findings might help inform future policy, it is useful to examine the more recent child care landscape and, particularly, where families receiving child care assistance in New Mexico choose to access care. As of June 2017, a significant majority (84%) of children receiving assistance were cared for in licensed centers (Fig. 1). The remaining 16 percent were cared for in home-based care, either registered (9%) or licensed (7%). See Table 1 for a brief explanation of New Mexico’s care types.

Figure 1. Children Receiving Child Care Assistance, by Provider Type



Source: CYFD, June 2017

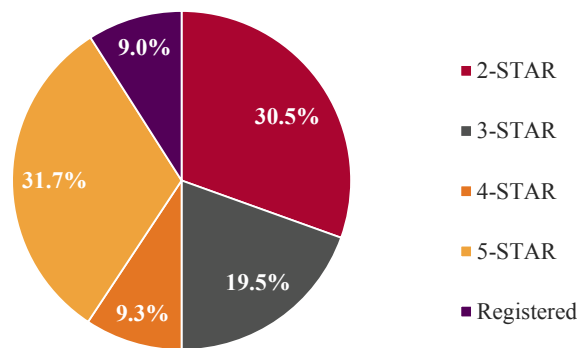
Table 1. Types of Child Care Settings

Type of Child Care Setting	Description
Family, Friends and Neighbors (Unlicensed and Unregistered)	Care is provided for up to four children in private homes. Providers do not participate in child care assistance or federal food assistance programs.
Registered Homes	Care is provided for up to four children in private homes. Providers must register with CYFD, and may receive child care assistance funds and federal food assistance. Providers must attend six annual hours of training, as well as first aid and CPR certification. They do not participate in the FOCUS quality rating and improvement system.
Licensed Family Homes	Care is provided in private homes for up to six children or up to four children under age 2 . Licensed by CYFD and included in the FOCUS quality rating and improvement system. Eligible for child care and food assistance.
Licensed Family Group Homes	Care is provided in private homes for seven to twelve children . Licensed by CYFD and included in the FOCUS quality rating and improvement system. Eligible for child care and food assistance.
Licensed Child Care Centers	Care is provided for larger groups of children in classroom settings. Licensed by CYFD and included in the FOCUS quality rating and improvement system. Eligible for child care and food assistance.

Source: Adapted from information presented by the New Mexico Child Care and Education Task Force, May 2014

Examined by STAR level, about 32 percent of children receiving child care assistance are cared for in 5-STAR settings (Fig. 2). That is the largest pool of children, though only slightly, with about 31 percent receiving 2-STAR care. These two licensure levels are the largest in terms of children served. Because these two care types serve the most children and represent the two ends of the licensed quality spectrum, this report will sometimes isolate those two care types for analysis. The next-largest grouping is 3-STAR care, serving about 20 percent of children receiving assistance, followed by 4-STAR care and registered homes (9% each).

Figure 2. Children Receiving Child Care Assistance, by STAR Quality Rating



Source: CYFD, June 2017

Data

Child-level data for this study were provided by CYFD and the Public Education Department (PED). CYFD provided monthly snapshots of child care enrollment for the study years, indicating where children received subsidized care each month and family characteristics such as monthly income, race/ethnicity, and single parent status. The PED provided child outcome data, including early literacy scores on the DIBELS, math and reading scores on the Partnership for Assessment of Readiness for College and Careers (PARCC), and variables measuring habitual truancy, special education status, and grade retention.

Because CYFD and PED do not share a common student identifier, the CCPI research team matched the datasets on name and date of birth. This resulted in a final dataset for analysis of 32,329 DIBELS observations of 7,899 unique children, who received child care assistance during the transition to FOCUS and also appear in public school data. The characteristics of the sample, shown in Table 2, are representative of the population of children receiving child care in New Mexico. Three-quarters of the children in the sample are Hispanic, with 12 percent white, 8 percent American Indian, 3 percent African American and 2 percent other races. Families in the sample have an average monthly income of \$1,491.49 (which equates to an approximate annual income of \$17,898). The average household size is 3.65, and 93 percent of households in the sample are identified as single-parent homes. For more information about the match process, see Appendix A.

THE TIERS OF QUALITY

State-regulated care in New Mexico begins with ensuring children are safe in all settings, and that programs can access federal funds to support healthy meals for children in care. As programs climb the tiers of FOCUS, more elements of quality are added, including higher standards for workforce training and education, lower child-to-adult ratios, expectations around high-quality interactions between caregivers and children, and screenings for delays or impairments in development, vision, hearing and other impediments to learning.

Table 2. Characteristics of the Study Sample

Variable	Observations	N individuals	Mean	Overall SD
Gender	32323	7898	0.50	0.50
Age	32329	7899	7.00	1.09
Race				
American Indian		625	8%	
African American		228	3%	
Caucasian		951	12%	
Hispanic		5927	75%	
Other		168	2%	
Monthly Copay	29482	7611	\$68.65	71.65
Monthly Income	29482	7611	\$1491.49	883.66
Family Size	29482	7611	3.65	1.25
Single Parent HH	32286	7891	93%	0.25
TANF recipient	32310	7895	35%	0.48
Food Stamp recipient	32310	7895	88%	0.33
Experienced PreK	32329	7899	25%	0.43
Total Months of Care	32329	7899	13.84	12.22

Methods

After the merging procedures described above, data were shaped to create multi-level regression models that measure the predicted effects for each additional month in a particular type of child care. For a given point in time, the model captures the cumulative total number of months in each type of care that a child has received, and uses outcome data to make predictions about the effect that each additional month can be expected to have on the outcome in question.

The public school outcomes variables examined for this study were a mix of continuous and binary variables. Continuous variables (those that are measured as a number) included DIBELS scores and PARCC scores. These were analyzed using panel linear regression. Binary variables (which are measured as a yes or no) included variables for whether students reached the DIBELS benchmark score, were habitually truant, were identified as having special needs, or were retained a grade. These variables were analyzed using logistic regression. For a more detailed methods description, see Appendix A.

Findings

DIBELS scores, which measure early literacy, are the only measure for which the data showed significant, consistent relationships between children's child care assistance history and their school readiness outcomes. Significant results were not found for grade retention, special education status, truancy, or for third-grade reading and math scores on the PARCC. For PARCC, only one cohort of children were considered, since the test is not administered until third grade. Only one group of children (third-graders in the 2015-16 school year) were the right age to have received child care assistance as young children during the transition to FOCUS, and also old enough to have been tested on the PARCC. For these outcome measures, findings were null or showed sporadic statistical significance that did not amount to meaningful conclusions.

The data did identify statistically significant relationships between children's child care assistance enrollment histories and their DIBELS scores in kindergarten, first, and second grade. The remainder of this section will be focused on the particulars of those relationships.

Early Childhood versus School-Aged Care

Child care assistance is available to children from infancy to age 13. The research sample included children with a wide range of ages, including older children who accessed assistance for care before or after school or during the summer. In order to isolate the effects of receiving different child care quality levels in early childhood, the research team divided the sample into children for whom all child care assistance months took place prior to kindergarten entry, and children for whom some child

WHAT IS THE DIBELS?

DIBELS stands for Dynamic Indicators of Basic Early Literacy Skills, and is a criterion-referenced assessment designed to provide teachers with ongoing information about their students' progress. It is administered at the beginning, middle, and end of the school year as a check on children's early literacy skills. This study examines DIBELS scores for kindergarten, first, and second grade. Students receive numeric, composite scores, which are related to thresholds denoting Benchmark, Below Benchmark, and Well Below Benchmark.

care assistance was received after the start of kindergarten. This allows for a more specific look at child care’s role in New Mexico’s early childhood system of systems. The analyses represented in Figures 3-6 are based on the early childhood-only portion of the sample. Preliminary analyses of the school-age population found that the effects of different quality levels of care are somewhat less clear for that age group, and are not explored in detail here.

DIBELS Composite Score

Findings in this section examine the relationship between months in care prior to kindergarten entry and children’s predicted total numeric score on the DIBELS at various points in time. For 4- and 5-STAR child care, increased months in child care is related to higher predicted DIBELS scores. Specifically, each additional month of 4- or 5-STAR care is predicted to increase a child’s DIBELS score by about two-thirds of a point (0.63 for 4-STAR and 0.67 for 5-STAR). These findings are statistically significant. While an increase of a partial point alone is not a meaningful change, it is the predicted increase for *each month* in child care assistance. As children accumulate months in high-quality care, these differences can stack up to meaningful score increases. Time in 2-STAR and 3-STAR child care settings does not show any significant relationship with DIBELS composite scores. Months spent in registered home care are also related to children’s school outcomes, although these effects are more modest. Each month in registered home care is predicted to result in an increase of 0.31 points on the DIBELS. These predicted effects are modeled in Figures 3-5, showing estimated scores at the starts of children’s kindergarten, first grade, and second grade years.

In general, this study groups AIM HIGH and FOCUS programs together, because children received care during a transitional time when many programs were in the process of adopting higher quality FOCUS standards, but had not yet been verified or recognized as FOCUS programs. In other words, FOCUS quality practices were being adopted in the field, but were not yet consistently reflected in the data.

Figure 3. Predicted DIBELS Scores at Start of Kindergarten, by Months in Care

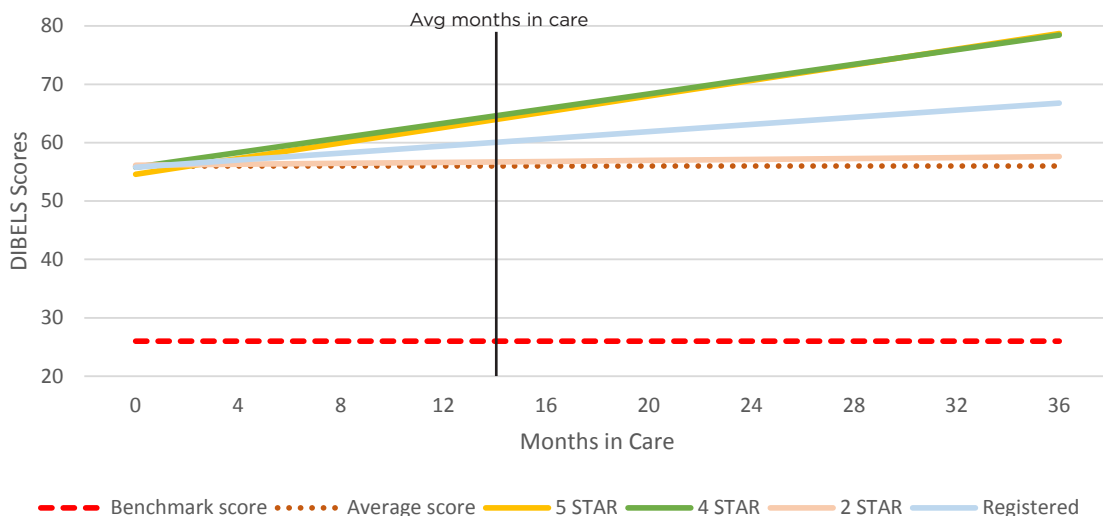


Figure 4. Predicted DIBELS Scores at Start of First Grade, by Months in Care

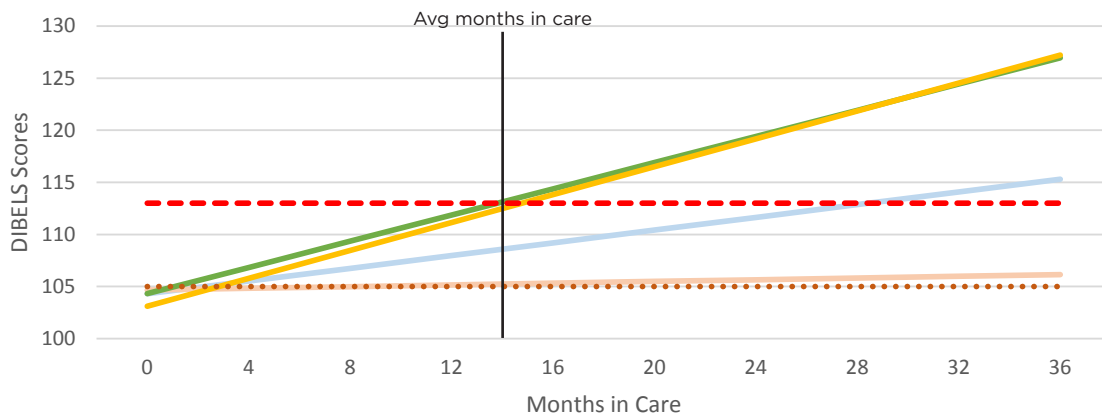
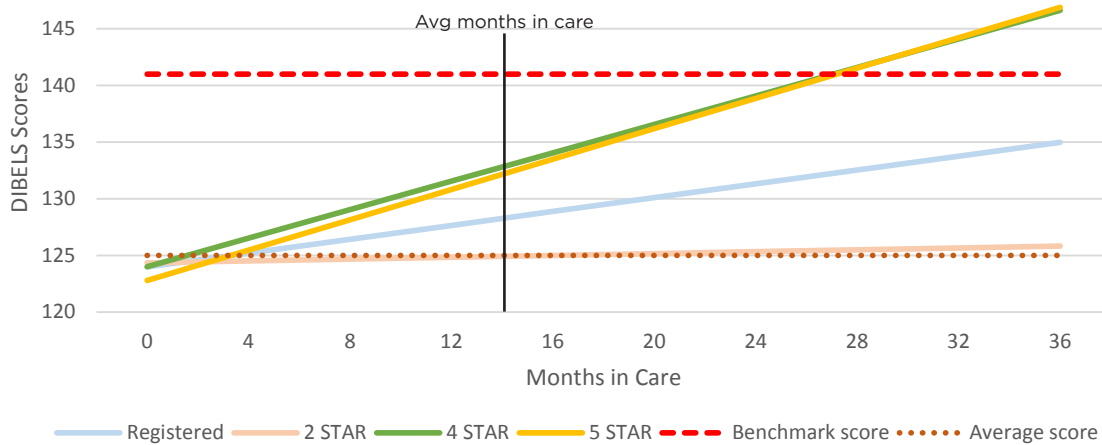


Figure 5. Predicted DIBELS Scores at Start of 2nd Grade, by Months in Care

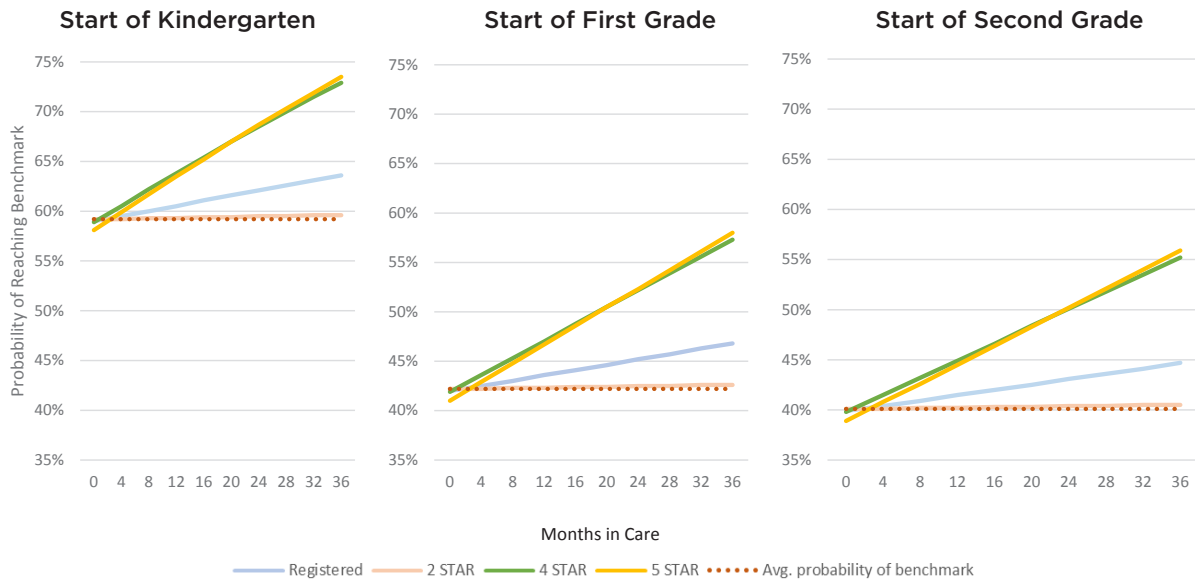


DIBELS Benchmark Attainment

In addition to the analyses of children’s raw DIBELS scores, this study also examined whether months in child care were related to children’s odds of reaching the benchmark DIBELS score for grade-level ability. Findings in this section attempt to address whether the increased composite scores discussed above are predicted to add up to a meaningful change in children’s grade-level literacy ability. Results in Figure 6 are expressed as predicted increases in children’s odds of reaching the score benchmark, for each additional month in child care.

Results for this measure also show statistically significant, positive effects for 4- and 5-STAR care. This suggests the gains found in the composite score model do push children in high-quality care toward meeting benchmark. This measure is more blunt than the composite score indicator, as it is based on a yes/no variable for each child of whether they reached grade-level benchmark at a given time. Months spent in registered care exert more modest effects on children’s odds of reaching the DIBELS benchmark.

Figure 6. Odds of Reaching DIBELS Benchmark, by Grade



Demographics

There are statistically significant differences in the demographics of families who choose different care types for their children. For the analysis in this section, children were grouped into those who had received only registered home care, only 2-STAR care, and only 5-STAR care (Table 3).

Table 3. Racial and Ethnic Differences in Care Received

	Only registered	Only 2-STAR	Only 5-STAR	Only registered & 2-STAR	Only 3- through 5-STAR
Distinct children ever experiencing type of care	1069	2532	957	4324	2271
Average monthly income	\$1527.77*	\$1,402.35	\$1335.13*	\$1,442.75	\$1367.56*
Average family size	3.81*	3.67	3.51*	3.71	3.50*
Average single parent household	92%	92%	93%*	93%	93%
Average TANF receipt	30%*	35%	33%*	34%	32%*
Average food stamp receipt	86%	87%	85%*	87%	86%*
Average experience of PreK	34%*	27%	19%*	29%	20%*
Total Months of Care	13.39*	9.39	8.53*	10.25	8.41*
% American Indian	8%	7%	10%*	7%	10%*
% Black / African-American	1%*	3%	3%	2%	3%*
% White	6%*	14%	17%*	11%	15%*
% Hispanic	84%*	74%	68%*	78%	69%*

Note: Asterisks in the “only registered” and “only 5-STAR” columns denote that the values are statistically significantly different from the values in the “only 2-STAR” column. In all cases, the “only registered” pool and “only 5-STAR” pool are significantly different from one another. In the “only 3- through 5-STAR” column, asterisks denote that values are significantly different from the values for the “only registered and 2-STAR” pool.

Hispanic children have 2.82 times the odds, and American Indian children have 2.04 times the odds, of receiving only registered home care in New Mexico, compared to white children. White and American Indian children are about 45 percent more likely than Hispanic children to receive only 5-STAR care.

Compared to children who received only 5-STAR care, children who received only registered home care had a longer average total months in care (13.4 versus 8.5) and were more likely to have experienced New Mexico PreK (34 percent versus 19 percent). They also have modestly higher monthly incomes and larger families. These differences are statistically significant.

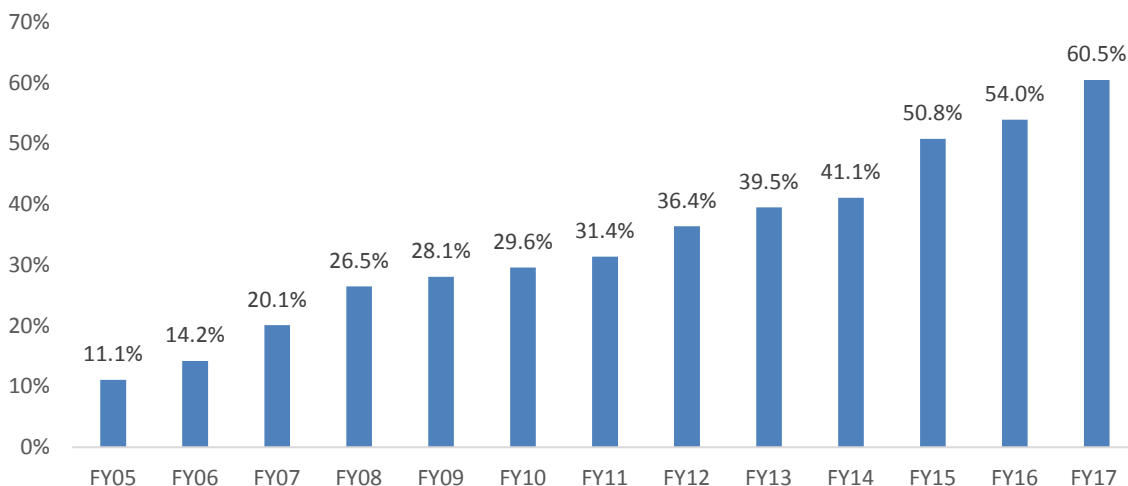
Discussion

Effects of 4- and 5-STAR Care

For 4-STAR and 5-STAR care, each month of child care is associated with a statistically significant increase in DIBELS scores. Although the monthly increases are modest, they can stack into meaningful increases as children accrue more months of care. This finding suggests that there are meaningful distinctions between lower- and higher-rated programs, at least in the domain of early literacy. Because the study does not find effects related to 2-STAR and 3-STAR care, policymakers may wish to consider how programs can best be incentivized to improve the quality of their care to achieve higher STAR ratings, and how programs already seeking to improve their quality can best be nurtured and supported.

Such efforts are currently underway through FOCUS, and New Mexico is already experiencing a shift in its provider landscape, with more children receiving care in high-quality settings (Fig. 6). Since 2005, the percentage of children receiving care in a 3- to 5-STAR setting has increased from 11 percent to 60 percent in June of 2017. This shows a clear trend, as more programs serving low-income children have begun implementing high-quality practices. An increasing number of child care assistance children are receiving care in high-quality settings, which this study suggests may have positive effects.

Figure 6. Percentage of Children Receiving Child Care Assistance in 3-5 STAR Settings



Source: CYFD, June 2017

These findings also provide empirical support for policies that help families access high-quality care consistently and in large doses, without losing their eligibility. Specifically, New Mexico has recently adopted a policy of 12-month recertification, which allows families to continue receiving child care for a full year after establishing their eligibility, even if their income or employment circumstances change. This policy came as a federal mandate, and aims to ensure that children have consistency in their care situations and are not pulled from care if a parent loses a job or has a break in their academic schedule. These findings, which suggest that more months in high-quality care yield better results for children, lend support to that policy.

Registered Home Care

Time in registered care is associated with modest gains in DIBELS scores. These gains are smaller than those associated with 4- and 5-STAR care, but suggest it may be more beneficial than lower-rated center care. This finding runs counter to what might be expected based on structural quality alone. Requirements for registered care are less rigorous than requirements for all levels of licensed care, and this care is reimbursed at a lower rate.

However, because registered home providers are only permitted to care for four non-relative children in their homes, their child-to-adult ratios are necessarily lower than the ratios found in centers. These ratios may drive modest school readiness gains in children through individualized attention and adult contact, even though educational requirements for registered home care are minimal. In addition, if children stay with the same registered care provider for a substantial length of time, they may form secure attachments with their care providers that contribute to these gains. These attachments may be particularly important in contexts where caregivers share children’s cultural and linguistic backgrounds. These findings highlight the importance of home-based care as a meaningful choice for families, and suggest that policymakers should consider additional supports for registered home providers. Such supports may include a tiered quality rating and improvement system for registered home providers, as well as additional supports for registered providers hoping to become licensed. The cultural importance of home-based care options for families is discussed in the next section.

WHAT IS A REGISTERED HOME?

Registered homes are home-based child care settings that are not licensed, but are registered with the state and are eligible to participate in the federal food program. They are reimbursed for providing care to children receiving subsidies, at a lower rate than licensed providers. Registered home providers may care for up to four non-relative children, and must meet health and safety requirements.

Demographics and Parental Choice

While all children in the research sample are low-income or otherwise qualified for child care assistance, there are statistically significant differences between the children accessing different types of care. The group of children who received care only in registered home settings (n=1069) is statistically different from the group of children who received only 5-STAR care (n=957). The registered-only group is higher-income than the 5-STAR group, is associated with larger households, is more likely to have experienced NM PreK, has more total months in care, and the composition of the group is more Hispanic and less white. While the effects

of income and PreK attendance are controlled for in the model, these differences between groups suggest a somewhat different profile of families who choose registered care for their families, compared to those who choose 5-STAR center-based care.

Although the entire study sample is largely Hispanic, the registered home group is even more so, with larger households and modestly higher incomes. These families are also more likely to choose NM PreK for their children, in combination with registered home care. Research suggests that Hispanic families are more likely than other ethnic groups to choose home-based care or relative care for their children, as opposed to center-based care. National research also suggests that Hispanic families, and Hispanic immigrant families in particular, may prefer home-based care especially for infants and toddlers. As children reach preschool age (3 or 4), more parents across cultures seek center-based care (including state pre-k or Head Start) to prepare children for school entry.⁴

These findings suggest that New Mexico must be attentive to home-based care as a critical part of the early care and education landscape. Even as policymakers work to make 5-STAR care widely accessible to low-income families and to raise awareness of the importance of quality, it is likely that a substantial segment of the population will continue to prefer for their children (especially infants and toddlers) to be cared for in home-based settings. Findings from the registered care data suggest that efforts to bring FOCUS quality elements and a tiered reimbursement system to the registered field could bolster a part of the field that is valued by parents and that shows promise for supporting children's development. Providing support and education for registered providers considering making the shift to licensed family child care may also be a useful avenue to support the development of quality and stability in home-based care. For this model, there were not enough licensed, home-based providers in the sample to separately examine the effects of these providers (who were included in the analysis based on their STAR level, but not separated by type of setting).

2- and 3-STAR Care

This study does not find any early literacy effects associated with 2- or 3-STAR care, which is where about half of children receiving child care assistance are enrolled. Under FOCUS, 2-STAR is the rating given to programs that have achieved basic licensure. The requirements for 2-STAR programs are focused on ensuring children are safe, are well cared-for, and in many cases are fed nutritious meals and snacks. As programs move up from 2-STAR to 5-STAR, additional staff trainings are required, child-to-adult ratios are lowered, and requirements are increased for facilitating and documenting children's learning. As FOCUS matures, it will be useful to track how long programs remain at 2- or 3-STAR licensure status. Because 3-STAR status is the first step out of basic licensure and into high-quality learning practices, it may be that 3-STAR is largely a temporary status denoting programs working their way toward 4- and 5-STAR status. It should also be noted that 2- and 3-STAR care likely benefits children and families in other ways, such as providing safety, nutrition, and enabling parents to work or attend school while children are in care. However, these care and education tiers do not appear to be associated with gains in early literacy.

Policy Recommendations

- **Policy efforts that support continuity and duration of care should be emphasized and enhanced.** As New Mexico continues implementation of 12-month certification policies that allow families to receive child care assistance for a full year after initially establishing their eligibility, particular attention should be paid to any remaining barriers that cause families to lose their eligibility. This study suggests longer duration of care in 4- and 5-STAR settings, as well as registered homes, supports children's early literacy.
- **Continued support and incentives should be provided for licensed programs to move into the higher tiers of licensure.** This study finds 4- and 5-STAR care are associated with improvements in early literacy, and that 2- and 3-STAR care have no such associations.
- **Policymakers should consider implementing a tiered quality rating and improvement system for registered home providers, as well as additional supports for registered providers who wish to become licensed.** Registered care in large doses shows promise in supporting children's early literacy, and highlights the importance of home-based care as a choice for families.

Conclusion

The child care system serves many functions for New Mexico's families. It provides children with a safe environment while their parents work or attend school, it often provides nutritious meals and snacks to children in care, and it can connect families to supports in their communities through developmental screening or other referrals. With the adoption and implementation of the FOCUS system, New Mexico policymakers have aimed to create a child care system that also prepares children for success in school. This study indicates that in some cases, it does. Specifically, children who are exposed to 4- and 5-STAR care are expected to perform better on their DIBELS assessments in the early grades with each additional month of high-quality care. The effects are modest, but accumulate to meaningful size as children receive additional months in care. The study also finds smaller effects for each month in registered home care.

This study provides baseline data, suggesting that higher ratings under FOCUS are accurately capturing differences in program quality, that longer care duration enhances children's early literacy, and that registered care provides some school readiness benefits to children. More research is needed to better understand these findings, particularly the findings related to registered care. A qualitative study including interviews and observations might be better positioned to address questions of why parents choose registered care, what kinds of relationships are formed over time between registered providers and the children they care for, and how these providers and families can best be supported.

This study affirms some policy choices New Mexico has made in the transition to FOCUS, particularly the shift to 12-month recertification (a federal mandate), and the substantially increased reimbursement rates that have driven the shift toward more high-quality programs. Although much work remains, these baseline data suggest that in the early years of FOCUS, children's early literacy skills are enhanced by child care assistance in certain contexts.

End Notes

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Appendix A: Data and Methods

Data

Data for this project were provided under the auspices of a three-way data-sharing memorandum of understanding between the University of New Mexico, CYFD, and PED. Both agencies delivered multiple datasets to a secure online vault. The time structure within PED files differed from CYFD files. Observations of children in PED data were at either the beginning, middle or end of year, whereas observations of children in CYFD data were monthly. All data came from the years 2011 to 2016.

The Cradle to Career Policy Institute team started with PED files, merging demographic indicators with truancy indicators using PED's unique student ID variable, along with school year. We then merged data on DIBELS test score outcomes into the existing file. In the process of these merges, records were dropped if they did not have any reliable identifier, such as the PED 9-digit student ID, or first and last name. Records were kept if they had one identifier (e.g., full name but not student ID number). Only a small percentage of students were dropped in this process. Up to this point, 98.9% of records were successfully matched.

Next, the data team merged in data for children who had experienced NM PreK during the study years. This was done in two stages. For children who experienced NM PreK administered by PED, the data were merged on the PED student ID number. For students who attended CYFD-administered PreK, these data were merged on name and date of birth. PARCC test score outcomes were then merged on the same variables to the existing file. All PED data sets had now been merged into a unified PED data set. At this stage, all child records without a first name, last name, and valid date of birth were dropped from the data. This generated a dataset of 122,740 observations over time of 76,859 children.

We then began combining the CYFD data. These data were provided in yearly spreadsheets, which contained monthly snapshots within. These data were re-shaped from long to wide, converting rows to columns so each column represented a given month from 2011 to 2016. The matching procedure within CYFD data was relatively straightforward, using CYFD unique child IDs, first and last name as the key matching variables.

From here, we began the process of merging the unified CYFD file and the unified PED file. Since the two agencies do not share a common identifying variable, the matching procedure used record-linkage software called Fine Grained Records Integration and Linkage Tool (FRIL) to match records based on first and last name and date of birth. Higher matching weight was assigned to the name variables. This process generated confidence scores for each record on the quality of that match. Scores of 100 indicated the records from both datasets were identical. Manually assessing the output data, we observed that the quality of the matches deteriorated significantly at confidence scores of about 80. Therefore, we manually reviewed the quality of the matches from 80 to 99 to obtain as many records as possible that were judged to be accurate matches. Many of the records in this pool were accurate matches that scored less than 100 because of differences in spelling, punctuation and other spacing or formatting issues between CYFD and PED. Through this process, we derived a final dataset for analysis of 32,329 observations of 7,899 unique children.

Methods

The final dataset from these merged files contained PED snapshots of children over time with columns containing CYFD child care data representing given months from 2011 to 2016. These data have an unbalanced panel structure in which not every child has the same amount of snapshots (or rows). To convert the columns of child care data to rows measuring amounts of child care experienced by a given snapshot, dosage variables were created for each snapshot measuring whether a child had experienced child care assistance in the appropriate time interval before each snapshot. We created six new columns to represent months in registered, 1-, 2-, 3-, 4-, and 5-STAR care respectively and copied the appropriate dosage variables into these new blank variables. These variables serve as the primary independent variables in the regression analysis.

During this process, we also included relevant control variables from the CYFD data such as monthly copays, monthly incomes, family sizes, single parents, TANF and SNAP (food stamp) recipients. Nested geographic layers were added to the model, to account for groupings by zip code, school, and school district. Similar to the dosage variables, we calculated variables that measured average or modal values of these family characteristics based on the time prior to a given snapshot. After inspecting and cleaning these control and demographic variables, we compared the characteristics of our sample to the characteristics of children receiving child care assistance, and found it representative.

We examined several PED-based outcome variables to see whether they were significantly associated with child care assistance dosage and quality. Three of the outcome variables – the DIBELS composite score and PARCC 3rd grade reading and math scores – were formatted continuously, meaning their values were numeric and ranged from zero to approximately 800. For these variables, panel linear regression was used. The other four outcome variables were formatted as binary indicators, meaning their values were either zero or one. These outcomes included the DIBELS benchmark, a measure of whether the student was in special education at a given snapshot, a measure of whether a student had been marked as habitually truant, and a measure of whether a student had been retained a grade. For these variables, logistic regression analysis was used.

PARCC scores were only available for one cohort (about 300 children), which reduced our faith in the representativeness and robustness of these results. Other exploratory analyses of the special education, truancy and retention variables showed non-significant results or showed sporadic statistical significance that did not amount to meaningful conclusions. Subsequent analyses focused on analyzing the DIBELS composite score and the associated DIBELS benchmark measure. The benchmark measure, pre-calculated by PED, determines whether a student's composite score is above or below the defined numerical threshold for a given period within a year. These outcome variables had the least missing data, and were the most representative in terms of capturing as many different cohorts of children as possible. In the following section, we describe the relationship between child care dosage and quality on DIBELS reading scores from the start of kindergarten to the end of 2nd grade.

Analytical Technique

Two different types of panel linear regressions were initially performed on the DIBELS composite score. Fixed effect regressions capture only the effect of variables that change within individuals over time, while between-effect regressions capture only the effect of variables that change between individuals at a given point in time. To specify a more parsimonious model and to try to capture the “best of both worlds,” we employ random-effect linear (and logistic) regressions, which use a matrix-weighting procedure to estimate an average effect size from both the fixed- and between-effect regressions. Though the trade-off is the blurring of results between the two models, we feel this is preferable to estimating two separate models, since we are able to talk about an “average effect size” that adequately captures both between- and within-individual effects. All variables included in the model will return a coefficient because they all either vary over time within children or vary within time across children, or both.

Successive models were specified with increasing lists of covariates that captured potentially important control variables. Our final models used the six independent dosage variables of time spent in different quality levels of care, along with an array of control variables including:

- whether or not a child had experienced 5-STAR FOCUS care at a given snapshot
- whether a child had experienced months in NECPA-accredited 5-STAR care
- academic grade and period of year (and an interaction term between these two variables, since composite scores and the likelihood of making benchmark depend on the specific combination of these two variables)
- whether a student was female
- a curvilinear effect for age in years (this was found to fit better than a linear term for age)
- a student’s race/ethnicity (White, American Indian/Alaska Native, Black/African-American, Hispanic or Other)
- whether a child had experienced care in Albuquerque in the time interval prior to test
- where the child attended elementary school, nested by school and district
- whether a child had experienced NM PreK at a given snapshot
- whether a child had been marked in PED records as having been in poverty
- the child’s family’s average monthly income in the time interval before a snapshot
- the child’s average family size in the time interval before a snapshot
- whether the child was ever part of a single-parent household
- whether the child’s family had ever received TANF
- and whether the child’s family had ever received food stamps

The final random-effect panel linear regression model for the DIBELS composite score presents coefficients that are in units of the dependent variable, in this case a single point on the DIBELS. Positive values indicate the predicted point increase for a one-unit change in the variable in question, holding all other variables constant. Negative values indicate the

associated predicted decrease in points. For the final random-effect logistic regression model for the benchmark measure, results are presented as odds ratios, which are exponentiated log odds. Odds ratios larger than one indicate the predicted increase in likelihood of the outcome for a one-unit change in the variable in question, holding all other variables equal. Odds ratios less than one indicate the predicted decrease in the likelihood of making benchmark, given a one-unit change in the predictor variable. These final models used 19,790 observations of 5,044 individuals, or 64% of the total matched sample of 7,899 children.

From the final models for both the DIBELS composite score and the DIBELS benchmark measure, we computed post-regression predictions of DIBELS composite scores and the likelihood of making benchmark for various specifications of time spent in different quality levels of care. Those predictions serve as the basis for the visualizations (graphs) of what the models mean.

