

RESEARCH REPORT

Evaluation of Delaware Stars for Early Success

Year 2 Report

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Preface

In June 2013, the Delaware Office of Early Learning contracted with the RAND Corporation to conduct an independent evaluation of Delaware Stars for Early Success, the state’s quality rating and improvement system (QRIS) for early learning and care programs. The purpose of the RAND evaluation is to support Delaware in its efforts to design and implement an effective, robust system for measuring and reporting on the quality of early learning and care programs in home and center settings. The evaluation further aims to inform efforts to improve the quality of programs in ways that are beneficial for participating children and their families. The project entails a series of interrelated research tasks that will provide objective and rigorous empirical evidence of the extent to which rating tiers reflect relevant differences in the quality of home- and center-based programs and whether the system is operating effectively in terms of technical assistance (TA), financial support, and other features.

In support of the overall evaluation goals, this report summarizes several research activities conducted in the second year of the project to inform the validation of the Delaware Stars QRIS that will conclude in the fall of 2015. Specifically, this report features an analysis of state administrative data to assess provider participation rates in Delaware Stars and quality rating outcomes for participating providers, as well as a description of the financial incentives and TA received by Delaware Stars providers. The findings of this second-year report will be of interest to stakeholders in Delaware, as well as those in other states that are involved in designing, implementing, or evaluating child care QRISs.

The findings from the first year of the evaluation are found in: *Evaluation of Delaware Stars for Early Success: Year 1 Report* by Heather L. Schwartz, Lynn A. Karoly, Vi-Nhuan Le, Jennifer Tamargo, and Claude Messan Setodji (2014).

This research was conducted jointly in RAND’s Education and Labor and Population units. Additional information about RAND is available at www.rand.org.

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Summary

Delaware was awarded a Race to the Top–Early Learning Challenge (RTT–ELC) grant in December 2011, which provided funding to the state to increase access to and improve the quality of early learning programs for infants, toddlers, and preschoolers. As part of the grant, Delaware is required to evaluate its quality rating and improvement system (QRIS)—Delaware Stars for Early Success—and the RAND Corporation was selected as the evaluator to validate the Delaware Stars QRIS.

This report, from the second year of the evaluation, addresses the following research questions:

- *Program participation and quality ratings:* Are more programs and children participating in Delaware Stars in October 2014 as compared with January 2014? Is the distribution of providers across counties and star levels similar at both time points? Are programs advancing at similar rates in the rating system?
- *Financial incentives:* Are providers using the available financial incentives? What financial incentives do providers participate in, and what is the value of the financial incentives they receive? How does participation in financial incentives and the value of those incentives vary with Delaware Stars ratings and other characteristics?
- *Technical assistance:* How many visits from a technical assistance (TA) provider are programs receiving, on average? What is the typical duration of a visit? Do the length and number of visits differ by provider characteristics?

To address these questions, we rely on administrative data from the Delaware Stars system that provide information on Delaware Stars programs, their ratings, their use of several financial incentives, and their receipt of TA.

In the remainder of this summary, we discuss our findings with respect to the research questions pertaining to program participation, financial incentives, and TA. We conclude with several recommendations for ways to make the Delaware Stars administrative data system even more useful for evaluation purposes.

Participation in Delaware Stars and Rating Outcomes

The Year 1 report of the RAND evaluation examined participation in Delaware Stars as of January 2014. In this report, we access updated data, as of October 2014, to determine whether additional programs are entering the system and whether programs are progressing through the rating tiers. Our analyses, focused on providers serving infants, toddlers, and preschool-age children, produced the following key findings:

- Between January 2014 and October 2014, there was a net gain of 23 providers in Delaware Stars, with additions among both licensed family child care (FCC) providers and licensed centers.
- With 455 providers in Delaware Stars as of October 2014, the overall participation rate among licensed FCCs and centers increased from 36 to 39 percent. Centers continued to participate at a higher rate (73 percent), compared with small or large FCCs (23 percent and 38 percent, respectively). However, the share of children enrolled in licensed programs that are enrolled in Delaware Stars providers remained stable at 66 percent.
- Compared with January 2014, more providers had moved to higher rating tiers. As of October 2014, 45 percent of Delaware Stars programs were at the top two rating levels: Star 4 or Star 5. Among children enrolled in a Delaware Stars program, 62 percent were in a Star 4 or Star 5 program.
- As more programs reached the Star 4 or Star 5 level through the regular rating process, the share of programs rated at those levels through an alternative pathway fell to 20 and 39 percent, respectively.
- About one in three Delaware Stars providers were participating in Stars Plus, a cohort of programs that receive more-intensive technical assistance (TA) and other supports. Because a majority of these programs are FCCs, Stars Plus has a relatively smaller reach, with just 22 percent of children in Delaware Stars programs enrolled with a provider in Stars Plus.
- An updated analysis of the timing of transitions from one rating level to the next found similar patterns to what was reported for Year 1. In particular, programs transition most rapidly out of Starting with Stars to Star 2 and from Star 3 to Star 4. Some providers at Star 2 move quickly to Star 3, but a substantial share of programs remain at that level for 18 months or more. Likewise, the transition from Star 4 to Star 5 is a more gradual process.

Financial Incentives

Providers that participate in Delaware Stars are eligible for several financial incentives once they have advanced beyond the Starting with Stars rating level. For this report, we were able to access data for four of the five main types of financial incentives available to qualifying Delaware Stars programs:

- **Quality Improvement (QI) Grants**, available to Star 2, Star 3, and Star 4 programs, ranging from \$500 to \$5,000, depending on provider type and size
- **Infrastructure Fund** grants that can be awarded to programs at the Star 2 level or above to purchase technology or fund capital improvements

- **Tiered Purchase of Care (POC) reimbursements** available to programs at the Star 3 level or above, provided on a per-child basis for those enrolled in POC
- **Compensation, Retention, and Education (CORE) awards**, ranging from \$500 to \$6,000 for qualifying early childhood professionals in programs at the Star 3 to Star 5 levels who advance on the Delaware Early Childhood Career Lattice or are recruited to or retained in a Delaware Stars program.

Financial incentives totaling \$15.3 million across these four programs were paid to providers or staff between October 2013 and September 2014, with the largest share coming from tiered POC reimbursements (61 percent, or \$9.4 million). Because of data limitations, our analysis does not include one other financial incentive mechanism related to Delaware Stars: T.E.A.C.H. Early Childhood® scholarships available to early childhood professionals pursuing an associate's or bachelor's degree or qualifying early childhood certification.

Our examination of the administrative data for the four types of financial incentives covering the 12-month period from October 2013 to September 2014 generated the following results regarding receipt of each type of financial incentive and the dollar value received:

- The highest participation rate, measured as the share of providers participating in a financial incentive during the year, was for QI Grants (55 percent of programs), followed by tiered POC reimbursements (45 percent), CORE awards (28 percent), Infrastructure Fund technology awards (27 percent), and Infrastructure Fund capital awards (9 percent).
- On average, Delaware Stars programs received approximately \$27,000 per program in combined incentives.
- These averages mask important variation. In particular, centers received, on average, about \$45,000 in financial incentives, compared with approximately \$3,000 for small FCCs and \$8,000 for large FCCs. Viewed in terms of resources invested per enrolled child in Delaware Stars, the differences by provider type remain sharp, with large FCCs receiving the largest amount of incentives per child. Specifically, we calculate that small FCCs received about \$486 per enrolled child, compared with \$816 per child for large FCCs and \$652 per child for centers. The difference was largely attributable to tiered POC reimbursements, since large FCCs in Delaware Stars had the highest percentage of total children enrolled in the POC program. After removing POC reimbursements, the average incentive per enrolled child was \$232, \$298, and \$265 in small FCCs, large FCCs, and centers respectively.
- There is also variation in financial incentive receipt and amounts by Delaware Stars status, but some of this results from the structure of the incentive programs. For example, Star 2 programs are not eligible for CORE awards, so the overall value of their financial incentives is less than those received by Star 3 to Star 5 programs. Programs rated through an alternative pathway were all Star 4 or Star 5 providers and therefore more likely to receive CORE awards.

- Participation in financial incentives and the amount received did vary significantly by provider type, but these figures not vary significantly by county of location once we controlled by program type and Delaware Stars status (regular versus alternative pathway and Stars Plus status).

Technical Assistance

A key element of the Delaware Stars rating system is the provision of TA to the programs at all levels of the rating system. Trained generalist and specialist TA providers work with programs to create a quality improvement plan (QIP), support them as they get ready for environment rating scale (ERS) assessments, and provide coaching and support on best practices and behavioral techniques and strategies. Specialist TA providers are available to assist programs in the areas of the ERS assessments, infant and toddler care, health and nutrition, and curriculum and assessment. We used administrative data for the 12-month period from October 2013 to September 2014 to examine the average number of onsite visits by generalist and specialist TAs, their duration, and the cumulative annual hours of TA that providers received and how patterns varied by provider characteristics. Our analyses revealed the following key findings:

- Overall, Delaware Stars providers received the expected amount of annual TA based on the program guidelines, with 27 onsite visits averaging 103 minutes in duration and totaling 41 annual hours.
- On average, providers above the Starting with Stars level that were not in a Stars Plus cohort or rated through an alternative pathway received about 14 to 24 onsite visits annually, depending on their rating level. Combined, these visits amounted to 18 to 39 hours of TA supports in a year.
- Visits and annual hours were lower for Starting with Stars programs (four annual visits for five annual hours, on average), as expected for that entry-level group. The number of visits and annual hours peaked at the Star 3 level (24 visits for 38 annual hours) and then tapered off at the Star 5 level.
- TA supports measured in annual hours were slightly higher for centers, on average, than FCCs (43 hours versus 38 to 39 hours). Visits and annual hours were also considerably higher for Stars Plus programs—49 annual visit for 73 annual hours—consistent with the objective for that more intensive set of supports.
- Using multivariate regression analysis, we found no significant differences in annual TA hours by county, but the pattern of differential supports by star level, program type remained, and Stars Plus status remained.

Advancing Administration Data Analyses

Administrative data have the potential to provide important information about the operation of a QRIS, such as program participation rates, rating levels and changes in ratings over time, and the share of children enrolled in participating programs overall and by rating level. Administrative data can also be used to understand which providers are accessing financial incentives or TA and whether there are meaningful differences in how resources are allocated based on provider characteristics. Data can also be combined to examine whether financial incentives or TA supports influence how rapidly providers move up the rating tiers.

At the same time, there are a number of limitations with the Delaware Stars data system that constrain how much can be learned. Challenges include the lack of a common provider identification across data files, key indicators that are not regularly updated, and inconsistent recording of event dates. In order to fully exploit the potential for administrative data to support the evaluation of Delaware Stars, we make the following recommendations:

- Integrate all information in the Delaware Stars database, where possible.
- If separate data systems are maintained by different entities, always use the Office of Child Care Licensing license number to identify providers and facilitate matching across databases.
- Record the date of all actions in a consistent way, such as changes in Delaware Stars ratings, the payment of financial incentives, and delivery of TA supports.
- Clearly define the type of TA support provided (e.g., coaching, professional development, consultation).
- Define enrollment and capacity and refresh enrollment figures for all licensed programs on a periodic basis.
- Identify key status variables (e.g., Head Start status, accreditation, school-age-only providers) and ensure that those indicators are routinely updated in the central Delaware Stars database and are as accurate as possible.
- Establish clearer lines of authority for refreshing and reviewing data in the Delaware Stars database.

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Abbreviations

CACFP	Child and Adult Care Food Program
CDA	Child Development Associate
CORE	Compensation, Retention, and Education (award)
ECAP	Early Childhood Assistance Program
ECE	early care and education
ECERS–R	Early Childhood Environment Rating Scale–Revised
ERS	environment rating scale
FCC	family child care
FCCERS–R	Family Child Care Environment Rating Scale–Revised
ITERS–R	Infant/Toddler Environment Rating Scale–Revised
NAEYC	National Association for the Education of Young Children
OCCL	Delaware Office of Child Care Licensing
OEL	Delaware Office of Early Learning
OLS	ordinary least squares
POC	Purchase of Care
QI	Quality Improvement (grant)
QIP	quality improvement plan
QRIS	quality rating and improvement system
RTT–ELC	Race to the Top–Early Learning Challenge
TA	technical assistance

Chapter 1. Introduction

Delaware Stars for Early Success (hereafter Delaware Stars) is Delaware’s quality rating and improvement system (QRIS), which began in 2007. The main purpose of the QRIS is to raise the quality of early care and education (ECE) and school-age programs within the state.¹ Delaware obtained a Race to the Top–Early Learning Challenge (RTT–ELC) grant in December 2011 to further improve the quality of ECE programs and to increase the enrollment of children from birth to five in high-quality programs. Part of the requirements of an RTT–ELC grant is an evaluation of the QRIS, and the Delaware Office of Early Learning (OEL) has contracted with RAND to conduct that evaluation.

RAND’s evaluation addresses research questions in four main areas:

- *Delaware Stars ratings and program quality*: Do quality tiers reflect differential levels of program quality? What is the relationship between program characteristics and quality?
- *The Delaware Stars system and program quality improvement*: Does technical assistance (TA) help providers meet the standards and move up in Delaware Stars?
- *Delaware Stars ratings and child developmental outcomes*: Do children in higher-rated programs experience greater gains? What dimensions of Delaware Stars are most relevant for child outcomes?
- *Delaware Stars system performance*: How well do the Delaware Stars system components operate? Is Delaware Stars properly financed? What do parents, as consumers, understand about Delaware Stars?

Components of the Delaware Stars QRIS Validation Study

To address the research questions, the RAND study involves several components. The first report from the project (Schwartz et al., 2014) centered on the following questions:

- What do we know from prior QRIS validation research? What lessons can inform the design of the Delaware Stars evaluation?
- What is the extent of participation in Delaware Stars on the part of home- and center-based providers, and what do the ratings reveal about dimensions of program quality?
- What are the experiences of system administrators, providers, and families with Delaware Stars? What aspects of the system are working well, and what challenges do stakeholders identify?

¹ Throughout the report, we use the terms *program* and *provider* interchangeably when referring to a center or family child care setting.

- What can we learn from existing national data about the relationship between the dimensions of quality in the Delaware Stars QRIS and child developmental outcomes?

These questions were addressed through a literature review, an analysis of administrative data, interviews and focus groups, and a “virtual pilot” that employed national data. For convenience, we refer to this report as the *Year 1 report* throughout this document.

In this second report, we provide an updated set of analyses of Delaware Stars participation and quality rating outcomes included in the first report. We advance on the earlier analyses by examining administrative data on the financial incentives of Delaware Stars and the TA provided to participating programs. Specifically in this report we address the following research questions:

- *Program participation and quality ratings*: Are more programs and children participating in Delaware Stars in October 2014 as compared with January 2014? Is the distribution of providers across counties and star levels similar at both time points? Are programs advancing at similar rates in the rating system?
- *Financial incentives*: Are providers using the available financial incentives? What financial incentives do providers participate in and what is the value of the financial incentives they receive? How does participation in financial incentives and the value of those incentives vary with Delaware Stars ratings and other provider characteristics?
- *Technical assistance*: How many visits from a TA provider are programs receiving on average? What is the typical duration of a visit? Does the length and number of visits differ by provider characteristics?

In the final phase of the evaluation, we will report on analyses based on primary data collected for a sample of Delaware ECE providers and their enrolled children. These data will allow us to examine the central questions for validating Delaware Stars, such as the relationship between program quality and program characteristics and the relationship between program ratings and child developmental gains. The results of the validation study will be available in December 2015.

In the remaining sections of this introductory chapter, we provide a brief overview of the Delaware Stars rating system and highlight the changes that have been implemented in 2014 and those that will be enacted in 2015 and 2016.

Description of the Delaware Stars Rating System

In 2007, Delaware implemented a pilot QRIS statewide, and in 2009, the state legislature passed a bill authorizing the QRIS in state law (see Schwartz et al., 2014, for a complete overview). Participation by child care providers in the QRIS is voluntary. To attract licensed ECE providers into the QRIS, incentives are available, such as higher levels of reimbursement for the child care assistance subsidy, known as Purchase of Care (POC), and compensation for ECE professionals. The rating system includes both ECE providers and school-age care providers, but because the

focus of the RTT–ELC grant and the associated RAND evaluation is on ECE providers, we limit our discussion to those aspects of the QRIS pertaining to infants, toddlers, and preschool-age children. Additional detail on the system is provided in Appendix A and at the Delaware Stars website.

Various types of licensed ECE programs can take part in the QRIS, such as small (up to six enrolled children) and large (seven to 12 enrolled children) family child care (FCC) providers, and private and public center-based care providers.² To be eligible to participate in Delaware Stars, programs must have been licensed for at least six months and be in good standing with the Delaware Office of Child Care Licensing (OCCL), POC, and the Child and Adult Care Food Program (CACFP).

Table 1.1 displays the requirements for early childhood providers to advance through the five star levels of the QRIS. With the exception of alternative pathway programs, all ECE programs that elect to enter Delaware Stars begin at the first star level, Starting with Stars. At the Starting with Stars level, a Delaware Stars TA provider meets with the program director to create a quality improvement plan (QIP) that outlines what standards the program will focus on to advance in the star-rating system. The beginning star level also requires providers to complete an orientation and professional development session. Once all those requirements are met, programs are eligible to move up to Star 2.

To advance from Star 2 to Star 3 and beyond, programs must meet a threshold level for the relevant environment rating scale (ERS) and verify that they meet a sufficient number of points-based quality standards in four domains: Family and Community Partnerships, Qualifications and Professional Development, Management and Administration, and Learning Environment and Curriculum.³ Providers can choose from an array of standards they wish to be rated on, with more points being required to attain the higher star levels. (However, as described in the next section, Delaware Stars started to phase in a set of required standards [called *essential standards*] to achieve the Star 4 or Star 5 level in January 2015.) Although the points-based standards are differentiated by program type (small FCCs, large FCCs, and centers), all provider types are required to achieve the same number of points and minimum ERS scores to advance to Star 3, Star 4, or Star 5 (see Table 1.1).

Several types of programs are eligible to be rated through an alternative pathway, namely Public Schools 619 programs, the stand-alone Head Start program and Early Childhood Assistance Program (ECAP), and programs accredited by the National Association for the

² Public schools, including charter schools, are license-exempt but are still eligible to take part in Delaware Stars.

³ As shown in Table 1.1, ERS assessments differ by program type and age level: Home-based providers are assessed using the Family Child Care Environment Rating Scale–Revised (FCCERS–R; Harms, Cryer, and Clifford, 2007), and center-based care providers that serve infants and toddlers use the Infant/Toddler Environment Rating Scale–Revised (ITERS–R; Harms, Cryer, and Clifford, 2006), whereas centers that serve preschool age children use the Early Childhood Environmental Rating Scale–Revised (ECERS–R; Harms, Clifford, and Cryer, 2005).

Education of Young Children (NAEYC). As shown in Table 1.1, these programs can enter the rating system at Star 4 or higher and advance by meeting the ERS threshold only.

Table 1.1. Rating Tier Requirements for All Provider Types and Alternative Pathway Requirements

Star Level	Common Requirements for All Provider Types	Alternative Pathway Requirements		
		Public School 619 (Part B) Preschool Programs	Stand-Alone Head Start/ ECAP	NAEYC-Accredited Programs
Starting with Stars	<ul style="list-style-type: none"> • Eligible provider 	—	—	—
Star 2	<ul style="list-style-type: none"> • Orientation • “Building on Quality” session • TA visit • QIP 	—	—	—
Star 3	<ul style="list-style-type: none"> • ERS ≥ 3.4 • 40 or more points 	—	—	—
Star 4	<ul style="list-style-type: none"> • ERS ≥ 4.4 • 60 or more points 	• ERS ≥ 4.4	• Orientation	—
Star 5	<ul style="list-style-type: none"> • ERS ≥ 5.4 • 80–100 points 	• ERS ≥ 5.4	• ERS ≥ 5.4	• Orientation

SOURCE: Delaware Institute for Excellence in Early Childhood (n.d.).

NOTES: The ERS thresholds for each star level took effect on July 1, 2014. Also, as of that date, the ERS is calculated without the Personal Care Routines subscale. Public School 619 (Part B) preschool programs are publicly funded preschool programs for children with disabilities, ages three to five. ECAP is the state-funded comprehensive child development program for four-year-olds from low-income families. — = not applicable.

Changes to the Delaware Stars Rating System

In 2014, Delaware enacted several significant changes to the Delaware Stars rating system, with additional changes to be phased in through 2015 and 2016 (Delaware Institute for Excellence in Early Childhood, 2014a, 2014b). These changes pertain to the number, wording, and points for the points-based standards; the ERS cut scores required for star levels; the shift toward several required standards; and the financial incentives available. Table 1.2 summarizes the key enhancements made to the rating system and when each of the changes takes effect.

Effective July 2014, OEL introduced clarifications and wording changes to a number of the points-based standards from which ECE providers may choose for the star award rating process. In some cases, the standards were restructured and the points allocated for each standard were revised. The most significant changes in the structure of the standards occurred in the Learning Environment and Curriculum domain, where the revised standards place greater emphasis on child developmental screenings; observations of children’s progress; the use of formative child assessments; implementation of a written comprehensive curriculum aligned with the state’s early learning standards; implementation of a supplemental curriculum to support literacy, mathematics learning, development of social-emotional skills, or healthy lifestyles; use of

observations and formative assessments, together with the curriculum, to inform teaching and learning; and support for children with diverse needs. In the case of small and large FCCs, five points were shifted from the Qualifications and Professional Development domain to the Family and Community Partnership domain.

Table 1.2. Key Enhancements to the Delaware Stars Rating System

Enhancement	Family Child Care	Centers	Effective Date
Number, wording, and points for points-based standards	<ul style="list-style-type: none"> Reduced the number of points-based standards by four standards, two standards, and three standards for small FCCs, large FCCs, and centers, respectively Revised the wording of some standards Changed the number of points assigned to some standards 		July 1, 2014 ^a
Distribution of total points across domains	<ul style="list-style-type: none"> Shifted five points from the Qualifications and Professional Development domain to the Family and Community Partnership and Learning Environment and Curriculum domains 	No changes made	July 1, 2014 ^a
ERS subscales and cut scores	<ul style="list-style-type: none"> Removed the Personal Care Routine subscale of the ERS Increased cut points for ERS to 3.4 for Star 3, 4.4 for Star 4, and 5.4 for Star 5 		July 1, 2014
Financial incentives	<ul style="list-style-type: none"> Increased tiered reimbursement amounts for Star 4 and Star 5 programs serving infants, toddlers, and preschool-age children Linked Quality Improvement (QI) Grant amounts to enrollment Added financial incentives for infant enrollment in Star 4 and Star 5 programs Eliminated merit awards 		July 1, 2014
Essential standards for all provider types	<ul style="list-style-type: none"> Phasing in required standards in the Learning Environment and Curriculum domain to achieve Star 4 or Star 5: <ul style="list-style-type: none"> Annual child developmental screening Formative child assessment a minimum of two times per year A comprehensive curriculum that is aligned with the Delaware Early Learning Foundations Use of information from children's observations, comprehensive curriculum and formative assessments, the Delaware Early Learning Foundations, and families to design daily activities, lesson plans, and individualized goal plans 		January 1, 2015 January 1, 2016 July 1, 2016 July 1, 2016
Essential standards for centers	No changes made	<ul style="list-style-type: none"> Phasing in required standards in the Qualifications and Professional Development domain to achieve Star 4 or Star 5: <ul style="list-style-type: none"> Administrator completes the Delaware Administrator Credential Curriculum coordinator obtains the Curriculum and Assessment credential 	July 1, 2015 July 1, 2016

SOURCES: Delaware Institute for Excellence in Early Childhood (2014a, 2014b).

^a According to a personal communication from the Delaware Institute for Excellence in Early Childhood, the changes in the number, wording, and points for the standards were published as effective on July 1, 2014, but they did not go fully into effect until the beginning of October 2014. No programs that were assessed prior to October 2014 were verified using the new version of the points-based standards.

Also effective July 2014, Delaware removed the Personal Care Routines subscale (which pertains to such practices as hand washing and diapering) from the ERS. The Personal Care Routines subscale had consistently been the lowest-rated domain for Delaware Stars providers and was viewed by OEL as unnecessarily distracting providers' focus from improving the quality of the learning environment. The items in the Personal Care Routines subscale were also duplicative of OCCL regulations and created confusion for ECE programs. Given the expected higher ERS average scores once this domain was eliminated, the ERS cut score for Star 3 to Star 5 was increased by 0.4 points at each star level.

The most significant change to the standards will be phased in over time: a shift from a complete- to a partial-choice model for programs at the two highest star levels. Starting in January 2015 and continuing through July 2016, programs will be required to meet several “essential standards” to reach (or reverify at) the Star 4 and Star 5 level. For example, four standards will become required for all program types within the Learning Environment and Curriculum domain. The standards include the use of child developmental screenings, the use of child formative assessments to inform instruction, the use of a developmentally appropriate curriculum, and child observations tied to curriculum and assessment. Two other required standards are being phased in for centers in the Qualifications and Professional Development domain, namely a requirement that center administrators have an administrator credential and the curriculum coordinator has the curriculum and assessment credential. During the phase-in period, Delaware Stars is offering a variety of supports to programs to assist them in meeting these required standards (Delaware Institute for Excellence in Early Childhood, 2014b).

Finally, with respect to financial incentives, Delaware eliminated the merit award—a one-time small financial incentive (\$300 to \$500) for each star level achieved past Star 3—in favor of increased funding for tiered POC reimbursements for Star 4 and Star 5 programs and for program QI Grants that are now tied to program enrollment. Two additional financial incentives were first distributed in December 2014. These incentives include an augmentation to the POC reimbursement, only available for programs at Star 4 and Star 5, based on a program's total infant enrollment. The infant enrollment incentive was added because of the known shortage of high-quality care for infants. A curriculum incentive was also available to programs at star levels 3, 4, and 5 for programs working on the comprehensive curriculum standard.

Road Map for the Report

We begin in Chapter Two with an update of the administrative data analyses presented in the Year 1 report, which examined participation rates of providers and children in Delaware Stars, as well as star-level movements made by providers. We discuss any changes we saw from the first year of the evaluation to the second, and the implications of those differences. Chapter Three describes new analyses of financial incentives provided to programs participating in Delaware Stars. Specifically, we examine the number and amount of financial incentives programs receive.

Chapter Four focuses on the TA provided to programs, including the number and length of TA visits. A final chapter concludes with a summary of the findings and lessons learned.

Chapter 2. Participation in Delaware Stars and Rating Results

As noted in the first report (Schwartz et al., 2014), a key marker of success of the Delaware Stars program is the participation rate of eligible providers and children in the system. It is also important to understand how providers are progressing (if at all) through the star levels, which, in theory, would indicate that providers are increasing the quality of care provided to children. In this chapter, we use administrative data provided by OEL to examine provider and child participation rates in the rating system and movements in star levels.

We also draw comparisons between the results presented in this report to those in the Year 1 report to determine whether programs are progressing in the star rating system and whether more providers are participating in or dropping out of Delaware Stars.⁴ (In Appendix B, we provide the parallel tables from the Year 1 report to facilitate comparisons with this Year 2 report.) We examine participation in Delaware Stars and rating outcomes using data as of October 14, 2014, which is a nine-month update from the analysis in the Year 1 report. These were the most-current data available across each data source at the time we assembled them. Prior to presenting the results from the analyses, we describe the data sources and analytic approach.

Data and Approach

The main source of administrative data is the Delaware Department of Education's Delaware Stars database, which is maintained by OEL. For convenience, we refer to this database as the *Delaware Stars database* throughout the report. This database is intended to be a comprehensive source of data about Delaware Stars, and it is a repository into which refreshed OCCL data are uploaded daily, as well as TA and verification data from the Delaware Institute for Excellence in Early Childhood. The database was created in 2012, but it contains data on programs from as early as 2007. The data extracts that we employ contain records up through October 14, 2014.

For analyses included in these and other chapters, we augmented the Delaware Stars database with separate files on ERS ratings, financial incentives awarded or paid, and the programs participating in Stars Plus, a cohort of programs serving a large proportion of children with POC subsidies that receives additional TA and professional development and is eligible for special grants.

⁴ The Year 1 report also included an analysis of ERS scores and the points-based standards that programs met to qualify for Star 3, Star 4, or Star 5 ratings. However, because the revised rating system structure, effective as of July 1, 2014, applies to new programs and to existing programs only as they are reverified or move up a star level, most programs in the QRIS had been rated under the pre-2014 structure as of the date of our data extract. For this reason, we do not present results in this report for either the ERS scores or the points-based standards.

Inclusion and Exclusion Criteria

Because the goal of the RTT–ELC evaluation is to validate Delaware Stars for early childhood providers, our analysis focuses solely on the providers that serve infants, toddlers, and preschool-age children. For this reason, we excluded 123 providers that serve only school-age children, and our analysis in this chapter is limited to the 1,131 licensed program providers in Delaware, as of October 14, 2014, that served infants, toddlers, and preschoolers. In addition, our universe of providers includes 24 license-exempt school district preschool programs that participate in Delaware Stars, for a total of 1,155 providers.⁵

Of the 1,155 licensed or school-based ECE providers, we identified 455 programs (431 licensed and the 24 license-exempt school district programs) as enrolled in Delaware Stars as of October 14, 2014.⁶ Finally, to determine if Delaware Stars programs were rated via an alternative pathway—by being a public school, a Head Start stand-alone program, an ECAP, or an NAEYC-accredited program—we conducted an extensive Internet search and consulted with staff at OEL and the Delaware Institute for Excellence in Early Childhood to ensure that our counts were as complete and accurate as possible, as of October 14, 2014.

Provider Participation in Delaware Stars

To understand whether Delaware Stars is meeting the goal of increasing providers in the system, we first examined the number of providers that were active in Delaware Stars as of October 14, 2014. Table 2.1 displays information regarding the number of early childhood programs that did and did not participate in Delaware Stars as of that date. (See Table B.1 for the comparable results from the Year 1 report.) The first portion of the table presents the number of licensed programs in Delaware, including Delaware Stars programs broken out by provider type and county. The second section provides the percentage distribution of providers that participated in Delaware Stars.

⁵ Because school-based preschool programs are license-exempt, the OCCL database does not include the universe of such providers. However, those school-based providers that are enrolled in Delaware Stars are included in the Delaware Stars database, so we consider them to be part of our eligible providers.

⁶ We cross-referenced provider information from the Delaware Stars database and data collected through the Delaware Institute for Excellence in Early Childhood about programs in Delaware Stars and provided to us by OEL. There were seven total discrepancies about a program's star level between the two data sources: The Delaware Stars database identified 453 participating programs as of October 14, 2014, whereas the Delaware Institute for Excellence in Early Childhood data source identified 455 programs as of the same date. Since the Delaware Institute for Excellence in Early Childhood data appeared to be most current in capturing program status changes, such as license standing or program status, we resolved each discrepancy in favor of the Delaware Institute for Excellence in Early Childhood data. Using this method, we verified a total of 455 programs participating in Delaware Stars as of October 14, 2014.

Participation Rates

As of October 2014, there were 455 providers in Delaware Stars, an increase of 23 providers from January 2014, when 432 providers were in the system. Increases occurred in all three provider types, so there was little change in the distribution of participating providers. As in January 2014, roughly four in ten providers in Delaware Stars were small or large FCCs, while the other six were centers. Between January and October 2014, the number of providers increased in both Kent and New Castle counties, but the distribution of providers across counties remained fairly stable. Just as in January 2014, most Delaware Star programs as of October 14, 2014, were located in New Castle County (65 percent), which is where the majority of Delaware's population resides.

Notably, there was a decline in licensed small FCCs from January 2014 (771 programs) to October 2014 (722 programs). Fifty-six of the small FCC programs that exited the system were not in Delaware Stars, and seven programs entered the star rating system. For the other provider types, few differences in the total number of licensed programs exist. Three additional centers were licensed in October 2014, compared with January 2014, and no differences existed for the number of large FCCs.

Table 2.1. Participation of Providers in Delaware Stars and Ratings, as of October 2014, by Provider Type

Indicator	Small FCCs	Large FCCs	Centers	Total
Licensed Delaware providers (N)				
Total	722	73	360	1,155
Not in Delaware Stars	558	45	97	700
In Delaware Stars	164	28	263	455
In Delaware Stars, by county				
Kent County	27	3	55	85
New Castle County	116	20	162	298
Sussex County	21	5	46	72
Distribution of providers in Delaware Stars (%)				
Total	36.0	6.2	57.8	100.0
By county				
Kent County	31.8	3.6	64.7	18.7
New Castle County	38.9	6.7	54.4	65.5
Sussex County	29.2	6.9	63.9	15.8
Participation rate of providers in Delaware Stars (%)				
Total	22.7	38.4	73.1	39.4
By county				
Kent County	19.2	42.9	79.7	39.2
New Castle County	28.0	41.7	70.7	43.1
Sussex County	12.7	27.8	74.2	29.3

SOURCE: Authors' analysis of Delaware Stars administrative data, as of October 14, 2014.

NOTES: School-age-only providers have been excluded. Percentage distributions might not add to 100 because of rounding.

The last portion of Table 2.1 displays the provider participation rate in Delaware Stars. Overall, the number of licensed programs that have opted to participate in Delaware Stars increased from 36 percent in January 2014 to 39 percent in October 2014, with all provider types increasing their participation rates. By far the highest participation rate was for center-based care programs (73 percent), with similar rates reported in the Year 1 report statewide and by county. The participation rate for large FCCs increased the most from January to October 2014—from 26 percent to 38 percent—but this stems from the small number of large FCCs overall in Delaware, with nine large FCC programs out of 73 total joining Delaware Stars. The lower rate of FCC participation in Delaware reflects the initial focus on recruiting centers into the QRIS and is a pattern found in many other states' QRISs (Tout et al., 2011).

Examining provider participation rates by county, the same pattern held in October 2014 as in January 2014. The highest overall participation rate occurred in New Castle County (43 percent). However, Kent and Sussex counties both had higher participation rates among centers, and Kent County had a similar participation rate for large FCCs as New Castle County.

Delaware Stars Ratings and Stars Plus Participation

Table 2.2 reports the distribution of Delaware Stars programs by rating level and alternative pathway, with the first two portions of the table providing the count and percentage of programs for each provider type by rating level and alternative pathway (Public School 619 programs, Head Start programs and ECAPs, and NAEYC-accredited programs). Table 2.2 also records the number of programs enrolled in a Star Plus cohort. (See Table B.2 for the comparable results from the Year 1 report.)

Across all Delaware Stars providers as of October 14, 2014, the majority (76 percent) were clustered between Star 2 and Star 4, with 10 percent at the Starting with Stars level, and the remaining 14 percent at Star 5. Compared with January 2014, there was a marked upward shift in provider ratings, with 76 more programs at the Star 3 to Star 5 levels. This shift was especially pronounced for centers, where programs have had more time in the system to advance to higher rating tiers. But even for FCCs, there has been upward movement. Indeed, it is notable that six small FCCs reached the Star 5 level for the first time as of October 2014, and two additional large FCCs reached this top tier as well.

Table 2.2 also records the number of programs enrolled in a Star Plus cohort (a figure not included in the Year 1 report). As of October 2014, 145 providers, or approximately 32 percent of Delaware Stars programs, were in a Stars Plus cohort. As seen in Table 2.2, small FCCs and centers made up the majority of Stars Plus providers, although small and large FCCs participated in Stars Plus at similar rates: 44 percent and 42 percent, respectively, compared with centers, at 23 percent (figures not shown).

Table 2.2. Distribution of Delaware Stars Providers According to Rating Level or Alternative Pathway, as of October 2014, by Provider Type

Indicator	Small FCCs	Large FCCs	Centers	Total
Delaware Stars providers (N)				
Total	164	28	263	455
By rating level				
Starting with Stars	19	6	20	45
Star 2	74	10	53	137
Star 3	29	3	38	70
Star 4	36	6	97	139
Star 5	6	3	55	64
Stars Plus	72	12	61	145
Rated via alternative pathway ^a				
Star 3 providers	0	0	0	0
Star 4 providers	0	0	28	28
Star 5 providers	0	0	25	25
Distribution of Delaware Stars providers (%)				
Total	100.0	100.0	100.0	100.0
Starting with Stars	11.6	21.4	7.6	9.9
Star 2	45.1	35.7	20.2	30.1
Star 3	17.7	10.7	14.5	15.4
Star 4	22.0	21.4	36.9	30.6
Star 5	3.7	10.7	20.9	14.1
Stars Plus	49.7	8.3	42.1	31.9
Delaware Stars providers rated via alternative pathway (%)^a				
Star 3 providers	0.0	0.0	0.0	0.0
Star 4 providers	0.0	0.0	28.9	20.1
Star 5 providers	0.0	0.0	45.5	39.1

SOURCE: Authors' analysis of Delaware Stars administrative data, as of October 14, 2014.

NOTES: School-age-only providers have been excluded. Percentage distributions might not add to 100 because of rounding.

^a Applies to Public School 619 programs, stand-alone Head Start programs and ECAPs, and NAEYC-accredited providers.

Table 2.2 further shows that approximately 29 percent of Star 4 centers and 46 percent of Star 5 centers were rated via an alternative pathway, representing 20 percent of Star 4 programs (28 out of 139 programs) and 39 percent of Star 5 programs (25 out of 64 programs) in Delaware Stars. These percentages are lower than the Year 1 report, when 32 percent of Star 4 programs (33 out of 102 programs) and 66 percent of Star 5 programs (23 out of 35 programs) achieved their ratings via an alternative pathway (see Table B.2). This pattern is to be expected given that the number of providers eligible for an alternative pathway is relatively stable, and most were recruited to participate in Delaware Stars when the QRIS first began. Naturally, over time, we would expect to see a larger share of programs reaching the highest star levels by meeting ERS and points-based standards, as opposed to alternative pathways.

Child Participation in Delaware Stars

The administrative data also allow us to examine the enrollment of children in Delaware Stars programs, as we did in the Year 1 report (see Table B.3 in the appendix). As in our earlier analysis, we present counts and percentage rates of children enrolled in licensed FCCs and centers serving infants, toddlers, and preschool-age children for each provider type, and by Delaware Stars participation and county. The enrollment figures reported in this section should be viewed as approximate counts of the children enrolled with licensed providers in Delaware, as of October 2014. The enrollment data we accessed for Delaware Stars programs were updated regularly by TA staff, but the enrollment numbers for programs not in Delaware Stars are based on original OCCL licensure data, which are not regularly updated with current enrollment figures. In addition, although we exclude school-age-only providers, the enrollment counts recorded might include school-age children if a provider serves both those children who have yet to enter kindergarten and those already in elementary school.

As seen in Table 2.3, of the approximately 29,000 children enrolled in licensed programs serving infants, toddlers, and preschool-age children, about 19,000, or 66 percent, were enrolled in a Delaware Stars program. This rate is the same as what we reported for January 2014. Overall, about 75 percent of children enrolled in centers were in programs participating in Delaware Stars, a rate little changed from January 2014. By contrast, the child participation rate in Delaware Stars for FCCs showed more growth between January 2014 and October 2014, specifically from 21 percent to 24 percent for small FCCs and from 26 percent to 35 percent for large FCCs. These patterns were consistent with the higher relative growth of FCCs in Delaware Stars in the first nine months of 2014, compared with center-based programs. Similar to the Year 1 report, and to be expected, the participation rates largely followed the results of programs participating in Delaware Stars, presented in Table 2.2.

Similar numbers and percentages of children were enrolled in Delaware Stars by county compared with January 2014 counts, with the highest child participation rate in Delaware Stars programs in New Castle County (68 percent). With the exception of small FCCs in Sussex County and centers in New Castle County, all provider types for all counties saw an increase in the percentage of children participating in a Delaware Stars program, consistent with the increasing number of programs participating in Delaware Stars across the counties.

The largest change between January 2014 and October 2014 was the enrollment numbers by star levels, which is to be expected given the increase in programs in the higher tiers of the rating system. Overall, among children enrolled in a Delaware Stars program, 62 percent were enrolled in a Star 4 or Star 5 program as of October 2014, compared with 45 percent as of January 2014. During that period, the share of children in Starting with Stars programs remained at about 5 percent, while the share at Star 2 fell from 33 to 17 percent, and the share at Star 3 remained stable at 17 percent. Thus, the typical child (the child at the median) was in a Star 4 program as of October 2014.

Table 2.3. Participation of Children in Delaware Stars Programs, as of October 2014, by Provider Type

Indicator	Small FCCs	Large FCCs	Centers	Total
Children enrolled in licensed programs (N)				
Total	4,380	824	24,060	29,264
Not in Delaware Stars programs	3,331	536	5,990	9,857
In Delaware Stars programs	1,049	288	18,070	19,407
In Delaware Stars programs, by county				
Kent County	185	19	3,597	3,801
New Castle County	703	205	12,281	13,189
Sussex County	161	64	2,192	2,417
In Delaware Stars programs, by rating level				
Starting with Stars	82	54	718	854
Star 2	474	115	2,678	3,267
Star 3	211	22	2,967	3,200
Star 4	233	58	6,990	7,281
Star 5	49	39	4,717	4,805
In Delaware Stars programs, by Stars Plus				
In Stars Plus	490	143	3,567	4,200
Not in Stars Plus	559	145	14,503	15,207
Distribution of children enrolled in Delaware Stars programs (%)				
Total	5.4	1.5	93.1	100.0
By county				
Kent County	1.0	0.1	18.5	19.6
New Castle County	3.6	1.1	63.3	68.0
Sussex County	0.8	0.3	11.3	12.5
By rating level				
Starting with Stars	0.4	0.3	3.7	4.4
Star 2	2.4	0.6	13.8	16.8
Star 3	1.1	0.1	15.3	16.5
Star 4	1.2	0.3	36.0	37.5
Star 5	0.3	0.2	24.3	24.8
By Stars Plus				
In Stars Plus	2.5	0.7	18.4	21.6
Not in Stars Plus	2.9	0.7	74.7	78.4
Participation rate of children in Delaware Stars programs (%)				
Total	24.0	35.0	75.1	66.3
By county				
Kent County	21.2	25.3	84.4	73.0
New Castle County	30.1	41.2	73.1	67.2
Sussex County	13.7	25.5	73.0	54.5

SOURCE: Authors' analysis of Delaware Stars administrative data, as of October 14, 2014.

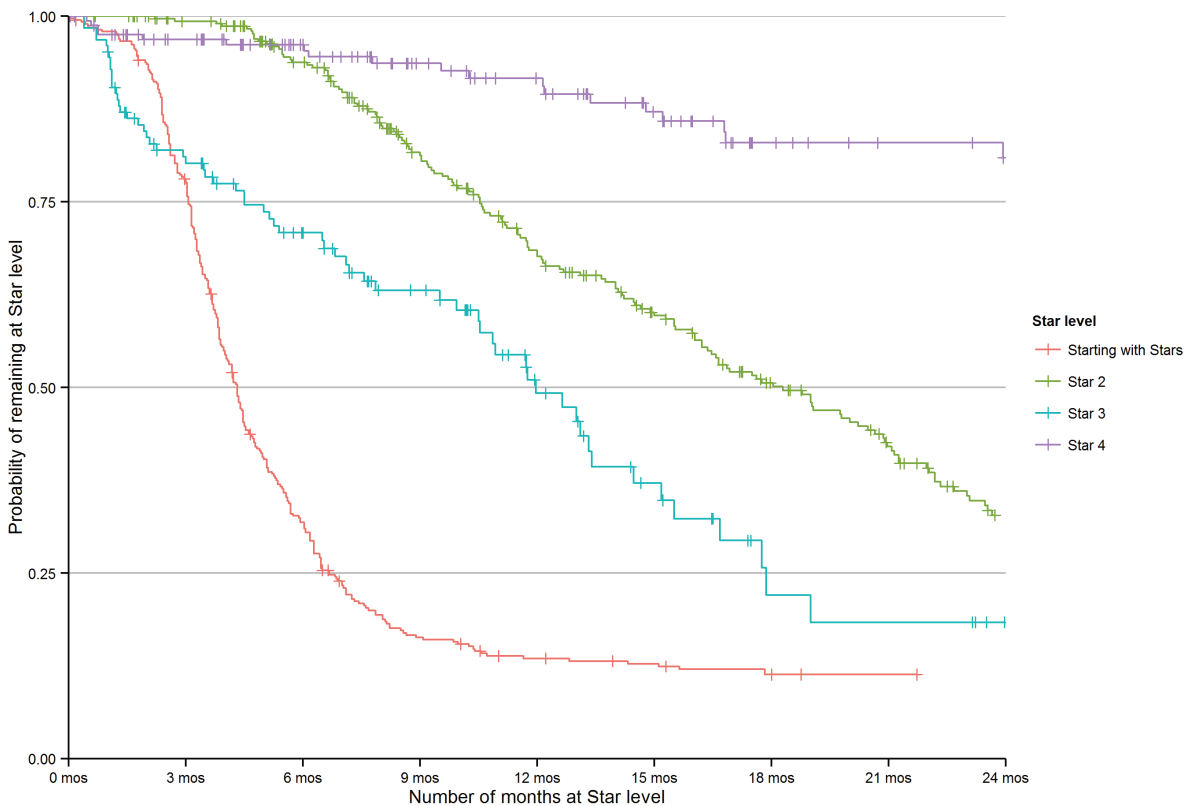
NOTES: School-age-only providers have been excluded. Percentage distributions might not add to 100 because of rounding. A total of 451 of 455 stars providers are included in this table, since four programs were missing enrollment data.

Table 2.3 also reports the distribution of children in Delaware Stars programs by the program's Stars Plus status. Although Table 2.2 indicated that close to one-third of Delaware Stars providers participate in Stars Plus, because participation is dominated by FCCs, these programs served just about 22 percent of children in Delaware Stars programs.

Movement Across Rating Tiers

We also updated our analyses of programs’ movements across the star levels, with results reported in Figure 2.1. As with the Year 1 report, we conducted an analysis to examine the time it takes to move from one rating level to the next, accounting for the right censoring of the data (i.e., that we do not observe the time to the next transition for those programs below Star 5 as of October 14, 2014). Each curve in Figure 2.1 estimates the probability that a program, upon reaching a given star level in Delaware Stars, will “survive”—or still be at that level— t months after it first achieved that level, where t ranges in the plot from one month to 24 months. As with the Year 1 report, we include programs that are rated through an alternative pathway only from the star level where they entered (i.e., Star 3 or Star 4; those moving directly to Star 5 are not included in the analysis).

Figure 2.1. Estimated Probability of Remaining at a Given Rating Level by Month



SOURCE: Authors’ analysis of Delaware Stars administrative data, as of October 14, 2014.

NOTES: School-age-only providers have been excluded. The figure includes programs certified through alternative pathways at the Star 3 or Star 4 level. It includes all Delaware Stars ratings for which an initial award was obtained on or after January 1, 2012: 395 Starting with Stars awards, 318 Star 2 awards, 129 Star 3 awards, and 165 Star 4 awards. A total of 35 programs were removed from the analysis because their movements to various star levels were not technically possible, indicating administrative data errors.

Given the increased number of programs moving up in the rating scale throughout 2014 (especially to Star 4 or Star 5), the survival curves plotted in Figure 2.1 are based on more transitions than the equivalent curves estimated in the Year 1 report, which used data through January 2014. This means that the updated data are a better reflection of the experience of a typical program moving through the Delaware Stars ratings.

As with the Year 1 report, the patterns indicate that programs moved most rapidly from Starting with Stars to Star 2 and from Star 3 to Star 4. The red line in Figure 2.1 depicts the Starting with Stars provider movement. For example, after approximately three months, the probability of remaining at Starting with Stars was about 75 percent, but that probability drops to 25 percent by six months. In contrast, the movement out of Star 2 (the green line) was more gradual: The probability of remaining at that level did not drop below 50 percent until about 18 months. For those programs that reach Star 3 (the blue line), the transition to the next level was more rapid than at Star 2 but not as rapid as Starting with Stars. Finally, the transition from Star 4 to Star 5 (the purple line) was the most gradual: Even at 18 months, the probability of remaining at Star 4 exceeded 75 percent.

Chapter 3. Financial Incentives in Delaware Stars

Most, if not all, state QRISs provide programs with some type of financial incentives for participating and advancing in the rating system (BUILD Initiative, n.d.). The most common types of financial incentives available in QRISs are QI Grants, achievement awards, staff professional development grants, education or retention bonuses and awards, and tiered child care subsidy reimbursements (Mitchell, 2012; Mitchell, Kerr, and Armenta, 2008). Delaware is no exception; each of these types of financial incentives is or was available to providers participating in Delaware's QRIS.

In this chapter we describe the types of financial incentives included in Delaware Stars as of July 2014. (We do not discuss other forms of nonfinancial support, such as free training or materials on how to use the Ages and Stages developmental screening tool and Teaching Strategies Gold.) For those financial incentive programs where we have data, we also present results regarding incentive use and dollar value by provider characteristics.

Structure of Delaware Stars Financial Incentives

Table 3.1 provides an overview of the five financial incentives available in Delaware Stars as of July 2014. As shown in the table, three types of financial incentives are available at the provider level, compared with two at the staff or teacher level.

- *QI Grants* are available on an annual basis to providers at Star 2, Star 3, and Star 4 and are one-time awards at each rating level. Although they are one-time awards, they can be spread over time and do not need to be expended all at once. The grants are tied to a provider's QIP and can be used for several purposes, including purchasing new materials, preparing for ERS assessments, and professional development activities. The amount of the award is tied to provider type and enrollment, with small FCCs being eligible for the smallest amount (\$750) and the largest centers (of 201 or more children) eligible to receive the largest amount (up to \$5,000).
- The *Infrastructure Fund* provides two types of grants to providers at Star 2 and higher: capital improvement awards and technology funds. Capital funds may be used to enhance the physical features of provider sites, such as purchasing playground equipment or installing sinks or adding or moving walls to create better spaces for children. Technology funds may be used to assist providers with using technology to complete child assessments, create lesson plans, or communicate with parents. Infrastructure Fund grants must be used to support providers moving to the next star level and can be awarded more than one time. In the 2013–2014 program year covered by our data, capital

Table 3.1. Financial Incentives Available to Delaware Stars Providers or Staff as of July 1, 2014

Financial Incentive	Description	Features
Provider-Based Incentives		
QI Grants	Provides grants to programs at Star 2, Star 3, or Star 4 that are tied to the provider's QIP; funds can be used for professional development, materials, or other projects; programs can receive this grant once per star level	Small FCC.....up to \$750 Large FCCup to \$1,000 Small center (13–60).....up to \$2,500 Medium center (61–120).....up to \$3,000 Large center (121–200)up to \$4,000 Extra large center (201–300)up to \$5,000
Infrastructure Fund	Provides grants to programs at Star 2 or higher for capital or technology improvements that will support moving to the next star level; programs may apply for either or both awards and may receive more than one award over time	<u>Requirements:</u> Improvements must be related to a program's QIP; programs must participate in POC and serve high-need children
Tiered POC reimbursements	Provides an escalating reimbursement rate for POC subsidies for providers at Star 3 or higher, with the following tiered structure for children up to age five: <u>Star 3:</u> 80 percent of market rate <u>Star 4:</u> 93 percent of market rate <u>Star 5:</u> 102 percent of market rate	<u>Requirements:</u> Valid contract with Division of Social Services for POC
Staff-Based Incentives		
CORE awards	Provides grants to early childhood educators employed in Star 3, Star 4, or Star 5 programs for making gains on the Delaware Early Childhood Career Lattice (awards from \$500 to \$6,000), for being recruited to the field (\$1,000), and for remaining in the field (\$2,000 to \$3,100)	<u>Eligibility for degree/credential awards:</u> Administrators, teachers, assistant teachers, curriculum coordinators, and family child care providers who have reached Step 4 or higher on the Career Lattice and are employed for at least 30 hours per week in Star 3 to Star 5 programs and meet a specified wage threshold <u>Eligibility for recruitment awards:</u> Newly recruited teachers who have reached Step 7 or higher on the Career Lattice and are employed for at least six months in a Star 3 to Star 5 large FCC or center and meet a specified wage threshold <u>Eligibility for retention awards:</u> Administrators, teachers, assistant teachers, curriculum coordinators, and family child care providers who have reached Step 8 (administrators) or Step 7 (all others) or higher on the Career Lattice and who are employed for at least 12 months at the same Star 3 to Star 5 program and meet a specified wage threshold
T.E.A.C.H. Early Childhood ® ^a	Provides scholarships and support to ECE professionals pursuing a degree or credential related to early childhood education at a participating Delaware higher education institution	<u>Eligibility:</u> Individuals enrolled in programs that grant degrees in early childhood or child development

SOURCE: Delaware Institute for Excellence in Early Childhood (n.d.); and OEL (2014).

NOTE: Merit awards are excluded because they are no longer available as of July 1, 2014.

^a Data on T.E.A.C.H. Awards were not available.

awards ranged from about \$1,300 to almost \$30,000, while technology awards spanned a range of about \$50 to almost \$8,000.

- *Tiered POC reimbursement* for programs serving children with POC subsidies is available to providers at Star 3 to Star 5. The base reimbursement is set at 65 percent plus \$0.50 of the 75th percentile of the 2011 market rate. Star 3, Star 4, and Star 5 providers serving children with POC subsidies from birth to age 5 receive 80 percent, 93 percent, and 102 percent of the market rate, respectively.

Two other financial incentives, administered by the Delaware Association for the Education of Young Children (DAEYC), are available to early childhood educators and other ECE program staff in Delaware (see Table 3.1).

- **Compensation, Retention, and Education (CORE) awards** are structured to provide early childhood professionals in Star 3, Star 4, or Star 5 programs with incentives to make gains on the Delaware Early Childhood Career Lattice. The awards for education or credential attainment ranged from \$500 to \$6,000 in the 2013–2014 program year depending on the Career Lattice step level and other factors. CORE awards are also available to help recruit and retain qualified professionals to the early childhood field, with recruitment awards of \$1,000 and retention awards ranging from \$2,000 to \$3,100 during the 2013–2014 program year. Awards can be repeated over time.
- **T.E.A.C.H. Early Childhood® (Teacher Education and Compensation Helps)** is a national program that provides scholarships to early childhood professionals who are pursuing an associate’s or bachelor’s degree related to early childhood education or child development. Eligibility also extends to those pursuing an ECE administrator’s credential and the Child Development Associate (CDA) Credential. In Delaware, this program is not limited to individuals working in Delaware Stars programs, and awards can be made over multiple years. The scholarships cover a portion of the cost of tuition and books in degree programs, as well as paid release time for those working at least 30 hours per week and an annual completion bonus. Recipients must remain at their sponsoring centers (or in the field for FCC providers) for one year for each year of scholarship receipt.

Data on Financial Incentives

To better understand participation in the financial incentive programs, we analyzed three separate data files provided by OEL and created by the contractors who administer the financial incentives. As summarized in Table 3.2, these files covered four of the five incentive programs listed in Table 3.1: (1) QI Grants, (2) Infrastructure Fund, (3) tiered POC reimbursements, and (4) CORE awards. Data covering T.E.A.C.H. scholarships were not available. The available files covered incentives provided over varying time periods, ranging from January 2012 to September

Table 3.2. Summary of Data on Financial Incentives for 2013–2014

Financial Incentive	Dates Covered	Total Value (\$)	Incentives Not Matched to Delaware Stars Providers		
			Percentage of Total Awards	Total Value (\$)	Percentage of Total Value
QI Grants	10/2013–9/2014	491,020	0.0	0	0.0
Infrastructure Fund—capital	11/2013–9/2014	560,875	12.1	45,558	8.1
Infrastructure Fund—technology	11/2013–9/2014	190,344	8.6	10,816	5.7
Tiered POC reimbursements	10/2013–9/2014	9,411,683	3.2	90,550	1.0
CORE awards	10/2013– 9/2014	4,634,600	7.4	439,000	9.5
Total	—	15,288,522	4.2	585,924	3.8

SOURCE: Authors' analysis of Delaware Stars administrative data.

NOTES: Merit awards are excluded because they are no longer available to programs (as of July 1, 2014). Data are not available for T.E.A.C.H. Scholarships.

2014. However, we limited our analysis to the most recent 12-month period in each data file, although the Infrastructure Fund award files covered 11 months of awards (see Table 3.2). According to these records, in 2013–2014, the POC reimbursements constituted, by far, the largest dollar outlay for financial incentives, about \$9.4 million. The next largest outlay was approximately half of POC expenditures: \$4.6 million in CORE awards. The Infrastructure Fund had grant outlays of about \$750,000, with most of those funds applied to capital grants. Finally, QI Grants amounted to just under \$500,000 in awards. Together, these four incentive programs distributed about \$15.3 million in 2013–2014.

For administrative reasons, all of the current financial incentives, except for the QI Grants, are tracked in stand-alone files by the implementing organizations. With the exception of the POC tiered reimbursement payments, the financial incentives awarded are recorded by program name or administrator name, rather than by a unique identifier, such as the program OCCL license number that matches the Delaware Stars database. When the OCCL license number was not available, we matched the financial incentive information to the 455 providers in Delaware Stars as of October 14, 2014, based on the provider name, which was not always entered in the databases as an official name that could be matched to the program name in the OCCL licensing database.

Because of the need to match across some data files without a unique provider identifier, we could have expected to find that it is not possible to generate an exact match between the records in the external files with financial incentives and those maintained by Delaware Stars. Indeed, this was the pattern we found. As Table 3.2 indicates, we were able to match all of the QI Grants records between October 2013 and September 2014 to a provider in the Delaware Stars database, as these grants are tracked within the Delaware Stars database. However, for the other three incentive programs, 3 to 17 percent of the financial incentive records could not be matched to

one of the 455 Delaware Stars providers, even after manual inspection. Depending on the financial award program, the nonmatched records constitute a little less than 1 percent and up to 10 percent of the value of each type of financial incentives for the period examined, or an average of 4 percent of the pool of resources in these four incentive vehicles.

The nonmatches might arise because some programs that received an award during the period were no longer in Delaware Stars as of October 14, 2014 (not very likely in the 12-month period we examine). A more likely explanation is that provider names are not accurately entered into the financial incentives spreadsheets provided to OEL, and there is no provider ID to rely on for matching. Regardless of the explanation, it is important to keep in mind that the analysis that follows is based on incomplete data regarding all but the QI Grants.

It is also important to note that, in the analyses that follow, we examine receipt of financial incentive during the 12-month period, from October 2013 to September 2014, based on a program's star rating as of October 2014. Thus, the incentive might have been received at a time in the prior year when the program was at a lower tier in the rating system. Thus, for example, some portion of Star 5 programs as of October 2014 might be recorded as receiving a QI Grant in the prior year, which must have occurred when they were still rated as a Star 4 program.

Participation in Financial Incentives

Table 3.3 displays summary indicators of the receipt of financial incentive on the part of Delaware Stars programs. Results are shown for QI Grants, for Infrastructure Fund capital and technology awards (separately), for tiered POC reimbursements (i.e., reimbursements exceeding the regular POC reimbursement), and for CORE awards. For each incentive type, Table 3.3 reports the rate of receipt of the incentive at the provider level, where the denominator includes all participating Delaware Stars programs, including programs that might not be eligible to receive a given award type based on their star ratings. We include all providers because the goal of the analysis is to understand how incentives are reaching participating Delaware Star providers. It is important to note that Table 3.3 reports participation rates in each incentive program, but because we do not know whether all programs would have met all the eligibility criteria (see Table 3.1), these rates do not constitute take-up rates among those eligible.

For those providers receiving a given financial incentive, the average value of the incentive is also recorded. Because CORE awards are provided to specific staff, we also report the average number of staff per provider receiving the award and the average amount awarded per staff recipient. The final column shows the average total incentive amount programs received, including those with zero amounts.

Table 3.3. Financial Incentives Provided to Delaware Stars Programs for 2013–2014

	QI Grants		Infrastructure Fund—Capital		Infrastructure Fund—Technology		Tiered POC Reimbursements		CORE Awards			Total	
	Program Rate of Receipt (%)	Program Average Amount, If > 0 (\$)	Program Rate of Receipt (%)	Program Average Amount, If > 0 (\$)	Program Rate of Receipt (%)	Program Average Amount, If > 0 (\$)	Program Rate of Receipt (%)	Program Average Amount, If > 0 (\$)	Program Rate of Receipt (%)	Program Average Amount, If > 0 (\$)	Average Staff Receiving Award (N)	Average Amount per Staff Recipient (\$)	Program Average Amount (\$)
Total	55.2	1,852	9.2	11,253	26.8	1,186	44.6	36,205	27.9	31,809	11.0	2,660	27,410
By program type													
Small FCCs	70.7	860	7.9	7,021	12.8	713	34.8	4,122	6.7	3,400	1.3	2,450	2,917
Large FCCs	57.1	984	14.3	6,220	32.1	841	42.9	11,890	28.6	4,713	1.9	2,423	8,163
Centers	45.2	2,937	9.5	14,259	35.0	1,328	51.0	52,029	41.1	36,709	13.2	2,684	44,733
By Delaware Stars status													
Stars ^a	49.0	1,931	8.6	13,566	24.5	1,601	38.9	43,149	29.2	31,369	11.5	2,560	28,444
Starting with Stars	—	—	—	—	—	—	—	—	—	—	—	—	—
Star 2	54.4	1,209	0.0	0	1.3	836	—	—	—	—	—	—	669
Star 3	72.2	2,062	13.9	12,514	30.6	1,330	80.6	26,716	47.2	23,727	8.7	2,609	36,359
Star 4	61.8	2,498	19.1	14,671	50.0	1,442	75.0	42,392	60.3	32,534	11.9	2,502	56,479
Star 5	46.9	2,183	12.5	11,288	53.1	2,140	62.5	68,904	53.1	36,203	13.3	2,647	65,869
Stars Plus	84.8	1,754	12.4	7,513	32.4	734	55.2	21,279	10.3	6,520	2.5	2,456	15,073
Alternative pathway	3.8	3,000	3.8	19,481	22.6	781	43.4	57,930	69.8	42,951	15.0	2,902	56,150
By county													
Kent	57.6	1,964	14.1	11,158	28.2	1,252	41.2	23,431	23.5	34,990	12.7	2,619	20,942
New Castle	52.7	1,839	6.0	10,932	25.2	1,158	45.3	44,572	29.2	30,583	11.1	2,638	31,041
Sussex	62.5	1,778	16.7	11,830	31.9	1,210	45.8	15,522	27.8	33,960	11.7	2,713	20,017

SOURCE: Authors' analysis of Delaware Stars administrative data, as of October 14, 2014.

^a Defined as Delaware Stars programs that are not in Stars Plus and that do not qualify through an alternative pathway.

NOTES: School-age-only providers have been excluded. There are 455 Delaware Stars providers as of October 14, 2014. See Table 3.2 for the period covered by the data for each type of financial incentive. — = not eligible.

Participation for All Delaware Star Programs

Focusing on the first row in Table 3.3, we see that programs were most likely to receive QI Grants (55 percent) and least likely to receive Infrastructure Fund capital grants (9 percent). A little less than half of Delaware Stars programs received tiered payments through the POC program. Close to 30 percent of programs received an Infrastructure Fund technology grant, and a similar rate received one or more CORE awards. Among providers participating in each incentive, POC tiered payments provided the largest incentive on average (about \$36,000), followed by the CORE awards (about \$31,800). In the case of the CORE awards, an average of 11 staff per provider received that benefit, for an average of about \$2,700 per staff recipient. The average Infrastructure Fund capital award was approximately \$11,000, while the average QI Grant was just below \$1,900, and the Infrastructure Fund technology awards averaged about \$1,200. Across all award types, providers in Delaware Stars received an average of about \$27,410.

Participation by Provider Type

Table 3.3 also shows differences in the financial incentives received based on program type. QI Grants were mostly likely to be received by FCCs (71 percent and 57 percent for small and large FCCs, respectively), compared with centers (45 percent). However, among those receiving awards, centers received more on average than FCCs (almost \$3,000 versus about \$1,000), because grants are tied to program size.⁷ For the other financial incentives, participation rates, with only a few exceptions, tended to be highest for centers and lowest for FCCs, and the size of the awards among recipients followed the same pattern. Small FCCs had particularly low rates of receipt of Infrastructure Fund technology awards and CORE awards. The low rate of CORE awards might be due to lower levels of staff education and credentials. Although Infrastructure Fund grants are not explicitly tied to program size, it is to be expected that capital or technology needs would be higher for larger programs. Likewise, because tiered POC reimbursements and CORE awards are conferred for children and staff, respectively, the total amount of the awards would be expected to be larger for centers where enrollments and the number of staff are higher compared with FCCs. Interestingly, the average CORE award per staff recipient was about the same across the three provider types, ranging from about \$2,400 for FCCs to \$2,700 for centers.

Summing up the four types of financial incentives shown in Table 3.3, centers received about \$45,000 on average, compared with \$3,000 for small FCCs and \$8,000 for large FCCs. One way to view these differences in average incentives receipt is to calculate the funds per child enrolled. Based on the average number of children served by each of these provider types, we calculate

⁷ Small FCCs have an average QI Grant amount (\$860) that is slightly above the award ceiling (\$750). This occurs because 17 small FCCs increased their star rating and were therefore eligible to receive multiple QI Grants in the 12-month period.

that the financial incentives awarded to small FCCs in 2013–2014 equated to about \$486 per enrolled child. The financial incentives per enrolled child equaled \$816 for large FCCs and \$648 for centers.⁸ POC tiered reimbursements largely account for the differential in the per-child incentive amount across the three program types. Removing POC reimbursements yielded an average incentive per enrolled child of \$232, \$298, and \$265 in small FCCs, large FCCs, and centers, respectively. Keeping in mind that our analysis does not include T.E.A.C.H. scholarships and that about 3 percent of the incentives provided by the four incentive programs are not included in the figures in Table 3.3, these calculations suggest that—excluding tiered POC reimbursements—the structure and implementation of the financial incentives associated with QI Grants, the Infrastructure Fund, and CORE awards resulted in a fairly even distribution of the incentive funds per enrolled child across the three provider types. Taking into account the tiered POC payments, large FCCs had the greatest per-child incentive amount, which reflects the fact that 68 percent of children enrolled in large FCCs within Delaware Stars qualify for POC, compared with 52 percent in small FCCs and 35 percent in centers. Since these data are based on average enrollment, which is not uniformly defined or counted across programs, these figures are approximate.

Participation by Delaware Stars Status

There is also variation in financial incentive outcomes based on Delaware Stars status. Table 3.3 differentiates between three mutually exclusive groups: (1) those not in Stars Plus or not rated through an alternative pathway; (2) those in a Stars Plus cohort; and (3) those rated through an alternative pathway. For the first group, results are disaggregated by star level. As indicated earlier, it is important to keep in mind that programs are classified based on their Delaware Stars rating and Stars Plus status as of October 14, 2014—i.e., at the end of the interval covered by the incentive data. Thus, programs that moved up during the 2013–2014 year will have spent part of the interval at a lower rating, and awards would have been made based on the Delaware Stars rating at the time of the award.

Consider first the set of providers not in Stars Plus or rated through an alternative pathway. For that group, Table 3.3 presents results for all such providers, disaggregated by their star levels (although none of the Table 3.3 incentives apply to Starting with Stars). For this set of providers in the standard part of the rating system and without the added Stars Plus supports, participation rates and award amounts tended to rise with the rating level, although Star 4 was often close to or higher than Star 5. About one-half of Star 2 programs received QI Grants, but almost none

⁸ From Table 2.2 we obtain the number of Delaware Stars programs by provider type, while Table 2.3 reports the total number of enrolled children in Delaware Stars programs by provider type. From these figures, we calculate that small FCCs serve an average of six children (164 providers with 1,049 children enrolled), large FCCs serve ten children on average (28 providers serving 288 children), and centers serve an average of 69 children (263 centers serving 18,070 children). We then divide the average financial incentives received by provider type (final column of Table 3.3) by the average number of children served for each provider type to arrive at the incentive funds per enrolled child.

received Infrastructure Fund awards (0 to 1 percent). Across all incentives, Star 4 programs received average benefits close to \$56,000. That reached about \$36,000 for Star 3 programs and \$66,000, on average, for Star 5 programs. Star 2 programs, which do not have access to tiered POC reimbursements or to CORE awards, received an average that fell below \$1,000.

Considering the other Delaware Stars groups, programs in a Stars Plus cohort stand out for having the highest rate of participation in QI Grants (85 percent) and above-average participation rates in the two Infrastructure Funds awards and tiered POC reimbursements. However, among Stars Plus programs with awards or payments, the average amounts for QI Grants, Infrastructure Fund awards, and tiered POC reimbursements fall below the average for all programs. This results, in part, because small FCCs are overrepresented among Stars Plus programs (see Table 2.2), and such FCCs receive lower financial incentives on average. In the case of CORE awards, the rate of receipt and the average dollar amount among receiving programs were below the average. As a result, Stars Plus programs received an average of about \$15,000 in financial incentives, or about half the overall average.

Alternative pathway programs, in contrast, were far less likely to receive QI Grants or Infrastructure Fund grants, and slightly less likely to receive tiered POC reimbursements, but they had the highest rate of participation in CORE awards (70 percent), the highest average number of staff receiving awards (15), and the highest average amount per staff recipient (about \$2,900). Keeping in mind that these were all center programs rated at higher tiers, this pattern likely reflects the higher qualifications of the staff in those programs. Compared with the other Delaware Stars programs and Stars Plus programs, those rated through an alternative pathway received a higher amount of financial incentives on average, about \$56,000 per program.

Other Results

Table 3.3 shows that the reciprocity rate and amount of financial incentives were similar across the three counties, with any differences potentially explained by variation across the counties in the mix of provider types.

To more thoroughly examine the importance of program characteristics—program type, Delaware Stars status, and county—on the total award funding, we conducted a regression analysis. In this analysis, we included controls for the characteristics listed in Table 3.3, which allows us to measure the independent contribution of each characteristic while holding the other characteristics constant. The analysis excluded Starting with Stars programs because they are not eligible for any of the financial incentives analyzed.

The estimates, reported in Appendix C (see Table C.1), show the following:

- Provider type was a significant predictor of the total amount of the incentives. Notably, large centers (more than 60 children enrolled) were predicted to have significantly higher dollars received, compared with FCCs of any size or small centers.

- For programs not in Stars Plus, the Delaware Stars level was a significant predictor of the amount of financial incentives, primarily because Star 2 programs had lower participation rates and lower incentive amounts, a pattern we would expect given that these programs are not eligible for CORE awards. There was no significant difference across Star 3, Star 4, and Star 5 programs in the amount of financial incentives.
- Being a Stars Plus program was also a significant predictor of the incentives amount, again with a significantly lower amount for Stars Plus programs at Star 2.
- There was not a significant effect on the amount of financial incentives received from being an alternative pathway program, nor from being in one county or another.

Chapter 4. Technical Assistance in Delaware Stars

All programs that participate in Delaware Stars receive TA visits from trained TA providers. This practice is common to most QRISs, as most systems provide participating programs with assistance navigating the QRIS, meeting quality goals, and coaching on techniques to implement instructional practices (Smith et al., 2012; BUILD Initiative, undated). However, the role that TA plays in QRISs is largely unstudied. In this chapter, we use Delaware Stars administrative data on TA to examine the patterns of TA receipt overall and by provider characteristics.

With the exception of tiered POC subsidies, TA is the largest single investment that Delaware makes in its QRIS. Once programs join Delaware Stars, they are assigned a TA provider that conducts an onboarding visit and assists providers with creating a QIP. After programs move up to Star 2, TA providers are expected to conduct visits approximately twice a month for those programs actively working to move up a star level and work with the provider to schedule its ERS assessment, which is a required component of reaching Stars 3–5. Twice-per-month visits continue until the program moves to Star 5. At that level, according to the Delaware Institute for Excellence in Early Childhood, visits are expected to taper off (e.g., one visit per quarter) and only occur in preparation for recertification. For Stars Plus programs, weekly TA is provided. Delaware Stars TA providers have on average a caseload of 35 programs (ten to 14 programs if they serve Stars Plus programs).

We begin in the next section by briefly describing the TA data we examined and then turn to our descriptive findings regarding the delivery of TA to Delaware Stars programs.

Data on Technical Assistance

The Delaware Stars database includes detailed TA records, for both generalist and specialist TA, from January 2012 onward, including the date of each TA contact or visit, the types of support provided at each session, the duration of each session, the delivery mode, and detailed session notes. Given changes to the Delaware Stars program over time and to provide a snapshot of TA delivery during a 12-month period, we retained the TA records—for the period from October 1, 2013, to September 30, 2014—attributable to the 455 Delaware Stars programs enrolled as of October 14, 2014 (see Table 2.1). We omitted all instances where TA providers recorded a session as being delivered over the phone or by email, focusing exclusively in this chapter on TA provided onsite. For 28 of the 455 Delaware Stars program, there was no TA record in the Delaware Stars database.¹

¹ This could indicate that TA was not conducted at the site, or that TA visit data are missing. Fifteen of the 28 programs are at the Starting with Stars level.

The TA data files contain 11 possible codes for the type of TA provided (e.g., *CN* for *consultation*, *CO* for *coach*, *DI* for *direct instruction*, and *TA* for *technical assistance*). However, a single TA visit is often recorded with multiple codes, consistent with the multipurpose nature of the TA service. Because the generic *TA* code was used for a majority of the visits, we are not able to analyze the stated purpose of onsite TA visits. Instead, we focus on the number of visits, the average visit duration, and total annual hours of TA provided.

Delivery of Technical Assistance

Table 4.1 presents the results of our analysis of the number, duration, and dosage of TA visits for the 12-month period from October 2013 through September 2014. For the number of visits, the average visit length, and the annual TA hours, the table reports results by provider type and then further disaggregated by Delaware Stars status and county. Note that, as with the analysis in Chapter Three, we distinguish three types of providers based on their Delaware Stars status as of October 14, 2014: providers that are not in Stars Plus and not rated through an alternative pathway, providers in Stars Plus, and providers rated through an alternative pathway. For the first group, we examine TA outcomes in total and by star level. In viewing these results by rating tier and Stars Plus status, it is important to keep in mind that programs are classified according to their Delaware Stars rating and Stars Plus status as of October 14, 2014, the end of the time period covered by the TA data. Thus, programs that moved up during the 12 months covered by the data would have been receiving TA supports at a lower star level during some part of the year.

TA Receipt by Provider Type

As seen in the first row of Table 4.1, across all Delaware Stars providers, programs received an average of 27 onsite TA visits during the 12-month period analyzed, ranging from 30 to 31 annual visits for FCCs and about 25 annual onsite visits for centers. On average, TA onsite sessions with FCCs lasted for about 1.5 hours (88 minutes), while onsite center visits averaged nearly two hours (114 minutes). Viewed in terms of annual hours, FCCs received an average of about 38 to 39 hours per year, compared with 43 hours for centers. Although FCCs received a higher number of annual onsite visits, centers received more annual hours of TA.

TA Receipt by Delaware Stars Status

This overall pattern masks some important differences by Delaware Stars status. As should be the case, for those programs not in Stars Plus, the variation in TA onsite delivery by rating level was largely consistent with the expected TA supports for each star level. On average, TA supports were least intensive at Starting with Stars (an average of four visits during the year), but some providers at this level will have entered Delaware Stars during the 12-month period

covered by the TA data and not have yet experienced a full year in the QRIS. By contrast, TA supports are most intensive at Star 3 (an average of 24 visits, or about two visits per month).

Average annual visits were somewhat lower at Star 4 (21 visits) and Star 5 (21 visits), and lower still at Star 2 (14 visits). (Again, keep in mind that some providers at each star level were at a lower rating in the prior 12-month period covered by the TA visits.) The average visit duration ranged from 94 minutes at Star 2 to 114 minutes at Star 5. Viewed in terms of annual TA hours, the TA supports were most intensive at the Star 3 to Star 5 levels, ranging from 35 to 38 annual hours.

At any given star level, Table 4.1 also shows some variation in the average number of onsite visits and the average visit duration by provider type and within star level by provider type, but the pattern is not always consistent. Because of the inconsistencies, we are hesitant to draw strong conclusions regarding TA provided at the various star levels for the three provider types. The average number of visits at the Star 2 and Star 5 levels was highest for large FCCs, while centers had the highest average at Starting with Stars, Star 3, and Star 4. At the same time, centers had longer visit durations, on average, at every rating level—as much as 20 to 50 minutes longer than the FCCs. The combined effect in terms of annual hours was that centers received the most TA, on average, compared with FCCs, with the exception of the Star 5 level, where large FCCs had the highest annual hours. Again, it is likely the high number of TA visits for Star 5 programs was a result of the movement of programs from a lower tier of the rating system to the top tier.

As expected, the intensity of onsite TA supports during the 12-month period covered by the data was even greater for the Stars Plus cohort programs, but that was achieved by a greater frequency of visits rather than longer visit length. On average, Stars Plus providers received nearly 50 visits during the year (i.e., about four visits per month) and an average visit length of just over 100 minutes. The average number of visits was similar regardless of provider type, but visits to Stars Plus centers were longer on average, a pattern noted above. Again, when annual hours are tallied, Stars Plus centers had close to 20 more hours, on average, than FCCs, but Stars Plus programs had an average annual total TA support (about 73 hours) that was nearly double the support for Star 3 programs not in Stars Plus.

The final type of provider in Delaware Stars is the group rated through an alternative pathway, all of which are centers. Table 4.1 shows that the TA supports for this group were somewhat higher than what Starting with Stars programs received but not as high as the TA delivered to Star 2 programs. The comparison to the lower tiers of the rating system shows how few TA visits were received by the alternative pathway programs. This likely reflects that fact that about half of the alternative pathway providers are automatically rated at Star 5 and therefore have lower TA needs than programs at lower rating tiers.

Table 4.1. Number, Duration, and Annual Dosage of TA Onsite Visits for 2013–2014, by Provider Type

	Number of Onsite Visits				Average Visit Duration (in minutes)				Average Annual Hours			
	Small FCCs	Large FCCs	Centers	Total	Small FCCs	Large FCCs	Centers	Total	Small FCCs	Large FCCs	Centers	Total
Total	30.9	30.2	24.6	27.2	88.3	88.7	113.7	103.2	38.7	37.8	43.1	41.1
By Delaware Stars status as of October 14, 2014												
Stars ^a	13.3	12.2	20.0	17.3	86.2	80.9	116.8	104.4	16.2	11.2	34.7	27.1
Starting with Stars	3.4	1.5	4.6	3.8	80.1	97.5	111.9	100.3	3.5	1.5	7.1	5.2
Star 2	13.9	15.6	13.4	13.8	85.1	70.7	115.1	94.4	16.6	13.2	22.5	18.4
Star 3	17.4	23.5	26.9	24.1	88.4	70.3	121.5	109.4	20.2	21.5	47.1	38.2
Star 4	12.6	13.5	23.8	21.0	86.8	83.6	117.8	110.0	15.5	15.5	42.0	35.4
Star 5	21.7	38.0	21.4	21.4	108.3	100.8	115.0	114.4	33.7	53.0	36.6	36.3
Stars Plus	50.6	49.8	46.5	48.8	90.7	97.2	123.2	104.9	63.9	66.5	83.7	72.6
Alternative pathway	—	—	9.3	9.3	—	—	90.6	90.6	—	—	14.7	14.7
By county												
Kent	31.4	36.7	26.0	28.2	75.9	76.2	107.5	96.3	38.8	45.3	42.2	41.2
New Castle	27.6	28.0	24.0	25.6	89.1	90.1	120.1	106.2	32.3	32.5	45.8	39.8
Sussex	46.2	33.8	25.0	31.9	100.8	91.2	99.9	99.6	70.4	51.2	35.6	47.0

SOURCE: Authors' analysis of Delaware Stars administrative data, as of October 14, 2014.

NOTES: School-age-only providers have been excluded. TA visit records cover one calendar year, from October 1, 2013, to September 30, 2014. Analysis is based on 427 out of 455 Delaware Stars programs as of October 14, 2014. — = not applicable.

^a Defined as Delaware Stars programs that are not in Stars Plus and that do not qualify through an alternative pathway.

Other Results

We also examined the pattern of TA visits and duration by county. Across all providers, the average number of visits in each county, as well as the average visit duration, was fairly similar. Annual hours range from an average of 40 in New Castle County to 47 in Sussex County. There are more-pronounced differences when comparing across counties for a given provider type. However, such variation might reflect differences in the composition of each provider type within each county.

To address this issue, we estimated a linear regression model (ordinary least squares, or OLS) to examine the contribution of provider type, Delaware Stars status, and county, holding all else equal. Models were estimated for annual TA visits, average visit duration, and total annual hours. (Results are presented in Table C.2 in Appendix C.) Focusing on annual hours of TA (which is the product of the number of visits and average TA visit duration), the regression estimates showed no independent effect of the county of location when holding the provider type and Delaware Stars status constant (i.e., pathway, Stars Plus status, and rating level). As expected, for programs not in Stars Plus, TA annual hours were significantly higher for Star 2, Star 3, Star 4, and Star 5 providers by 15 to 29 annual hours, compared with their Starting with Stars counterparts. As with the descriptive data in Table 4.1, annual hours peaked at the Star 3 level. Likewise, Stars Plus providers had a significantly higher number of annual hours than Starting with Stars programs not in Stars Plus, with a peak for Stars Plus providers at the Star 4 level. In pairwise comparisons, there were no significant differences between Star 3, Star 4, or Star 5 programs in total annual hours for either the Stars Plus providers and those not in Stars Plus. Annual hours were not significantly different for alternative pathway programs compared with Starting with Stars programs on the regular pathway. There was also no difference in annual hours between small and large FCCs, but center-based programs had higher annual hours, by 13 to 23 hours, compared with the FCCs. Separate results for the number of TA visits and average TA visit duration are found in Appendix C.

Chapter 5. Conclusions and Recommendations

One aim of this report was to determine whether Delaware Stars providers are advancing in the rating system and whether additional providers serving infants, toddlers, and preschool-age children are joining the QRIS. We therefore updated the analyses of Delaware Stars participation based on administrative data as of October 2014, which is nine months after the prior snapshot of ECE providers' participation in Delaware Stars presented in the Year 1 report. A second goal of this report was to examine the administrative data on financial incentives and TA. Thus, we also included new analyses of Delaware Stars programs' use of financial incentives and the amount of in-person TA delivered to participating providers. In this concluding chapter, we summarize the findings from these analyses. We also point to the need for, and potential gain from, improving the Delaware Stars administrative data system.

Delaware Stars Participation

Our analyses indicate that, on net, 23 providers joined Delaware Stars over the course of the first nine months of 2014, with additions among both FCCs and centers. This resulted in a slight gain in the overall provider participation rate (from 36 to 39 percent), but no change in the share of children in Delaware Stars programs, which remained steady at 66 percent. The center participation rate continued to be well above that for small and large FCCs (73 percent versus 23 percent and 38 percent, respectively).

The addition of the 23 providers in Delaware Stars surpassed Delaware's RTT-ELC goal of 442 total providers participating in the rating system by 2015. As of October 2014, the state had also already met its 2015 target of 40 Star 5 providers and 184 Star 4 or Star 5 providers (OEL, 2013). With 273 providers at Star 3 and above, the state had almost attained the goal of 289 providers in the top three tiers by 2015.

The administrative data further demonstrate that Delaware Stars programs were advancing through the rating system as intended. As of October 14, 2014, about six in ten programs were at Star 3 to Star 5. Nearly half of all programs (45 percent) were at the Star 4 or Star 5 level. Because centers were more prevalent at the higher tiers, 62 percent of children in Delaware Stars programs were in a Star 4 or Star 5 program as of October 2014. Notably, as more programs reached the higher rating tiers through the standard process, the share of Star 4 and Star 5 programs rated through an alternative pathway fell to 20 percent and 39 percent, respectively. Thus, a larger proportion of the most highly rated programs achieved that status by demonstrating that they met the quality level specified for the ERS and obtained the required number of points-based standards.

Almost one-third of providers in Delaware Stars are in a Stars Plus cohort and are therefore receiving more-intensive TA services. Because FCCs were more likely to be in Stars Plus compared with centers, Stars Plus programs reached a smaller share of children in Delaware Stars programs (22 percent).

Our analysis of transitions from one rating level to the next continues to show that programs transitioned most rapidly out of Starting with Stars to Star 2 and from Star 3 to Star 4. Some providers at Star 2 moved quickly to Star 3, but a substantial share of programs remained at that level for 18 months or more. Likewise, the transition from Star 4 to Star 5 was a more gradual process. As the additional enhancements to the Delaware Stars rating system become effective in 2015 and beyond, particularly for programs at Star 4 and 5, the rate of upward movement might slow if it is more challenging for programs to meet the required standards, such as having a written curriculum and employing child assessments. On the other hand, the availability of specialized TA to support programs in meeting these standards might mean that the pace of upward movement remains the same or even improves.

Financial Incentives

Delaware Stars administrative data available for our analysis cover four of the five types of financial incentives offered to participating programs and staff at the Star 2 (or sometimes Star 3) level and above. In the 12-month period from October 2013 to September 2014, these four types of incentives—QI Grants, Infrastructure Fund, tiered POC reimbursements, and CORE awards—constituted an investment of \$15.3 million in funds to Delaware Stars providers or ECE professionals, with the aim of raising quality through improved facilities, classroom resources, programming, and staff quality and stability. In analyzing the pattern of receipt of these incentive funds and the average amounts, our analysis excluded about 4 percent of the value of the funds awarded because records on incentive awards could not be matched to Delaware Stars providers as of October 14, 2014.

With this limitation in mind, our analysis of the share of programs participating in each incentive program showed the highest participation rate in QI Grants, followed by tiered POC reimbursements, CORE awards, Infrastructure Fund technology awards, and Infrastructure Fund capital awards. On average, during 2013–2014, Delaware Stars programs received \$27,000 in combined incentives.

The patterns of receipt and amount of receipt across all programs show no difference in allocation by county when we account for program type and Delaware Stars status (regular versus alternative pathway and Stars Plus status). We do find that centers received on average about \$45,000 in awards, compared with approximately \$3,000 for small FCCs and \$8,000 for large FCCs, a pattern that remains after holding Delaware Stars status and county constant. When taking enrollment into account, however, large FCCs obtained the greatest average funding per enrolled child: \$816 per enrolled child at large FCCs versus \$652 for centers and

\$486 for small FCCs. Tiered reimbursements drive this difference, however, and once tiered POC reimbursements are excluded, the incentives received per child were fairly equal, ranging from \$232 per enrolled child in small FCCs to \$298 per enrolled child in large FCCs, with centers in between, at \$265 per enrolled child. Given several data limitations, these numbers should be viewed as approximate figures.

We also found variation in financial incentive receipt and amounts by Delaware Stars status, but some of this resulted from the structure of the incentive programs. For example, among programs not in Stars Plus, award amounts were higher for Star 3, Star 4, and Star 5 programs than Star 2 programs. However, Star 2 programs were not eligible for tiered POC reimbursements or CORE awards, which accounted for the majority of incentive funds. There was no significant difference for Stars Plus programs in the amount of awards received, which was to be expected given that Stars Plus status does not confer any special eligibility. Programs rated through an alternative pathway had especially high rates of participation in CORE awards, which was consistent with their Star 4 and Star 5 ratings.

One future direction for understanding financial incentive utilization is to determine how providers are informed about the available incentives and possibly to further promote their availability through the TA process. In addition, if some current limitations of the administrative data systems could be overcome, it would be possible to replicate this analysis for the full set of financial incentives listed in Table 3.1. It would also be beneficial to examine the relationship between the receipt and amount of financial awards and program movement up the star ratings, as well as retention in Delaware Stars. Because our financial incentive data spanned one year and movements within the star rating system typically take longer than a year, we lack the necessary information to examine the role of financial incentives in the timing of movements across the rating tiers. Such analyses would provide insights into ways to possibly improve the targeting and effectiveness of Delaware's significant investment in financial incentives.

Technical Assistance

Delaware Stars administrative data permit a basic analysis of the pattern of TA receipt among Delaware Stars programs. In general, our analysis of combined generalist and specialist in-person TA delivery over a 12-month period shows that Delaware Stars providers received the expected amount of TA noted in the *Delaware Stars for Early Success Program Guide* (OEL, 2014). On average, providers above the Starting with Stars level that were not in a Stars Plus cohort or rated through an alternative pathway received about 14 to 24 onsite visits annually, depending on their rating levels. Combined, these visits amounted to 18 to 39 hours of TA supports in a year. Visits and annual hours were lower for Starting with Stars programs, as expected for that entry level. The number of visits and annual hours peaked at the Star 3 level and then tapered off at the Star 5 level. We also found that TA supports measured in annual hours were somewhat higher for centers, on average, than FCCs. Visits and annual hours were

also considerably higher for Stars Plus programs, consistent with the objective for that more intensive set of supports. When viewed in a multivariate framework, our analysis showed no significant differences in annual TA hours by county, but the pattern of differential supports by star level, program type, and Stars Plus status remained.

Data limitations precluded our ability to examine the relationship between the sequence of TA supports and their cumulative impact over time on movements to higher rating tiers. In addition, because the coding of the types of TA delivered at each visit were not sufficiently detailed (e.g., the use of a generic *TA* code within the Delaware Stars database as opposed to more-precise codes for type of TA provided), we were not able to examine how the content of TA supports might vary by provider characteristics or which type of TA supports might be more strongly linked to movements to higher rating tiers. Fewer codes, the elimination of the generic *TA* code, and greater standardization of at least a portion of notes in the note-taking field would provide better information about TA and aid future analyses.

Administrative Data Challenges

A number of issues with the Delaware Stars administrative data were highlighted in the Year 1 report. Our efforts to incorporate data on the receipt of financial awards and TA supports point to additional limitations of the existing data systems. Ideally, the QRIS administrative data would first contain OCCL data for all licensed programs in the state in a manner that standardizes and refreshes enrollment counts and age ranges served. On top of the OCCL data, the QRIS administrative data set should also support the creation of a history for each program in Delaware Stars, starting with entry into the QRIS, that would indicate when a program enters (or leaves) Delaware Stars; when each transition in the rating tier occurs; the date of each verification or reverification and the associated ERS score (including subscale scores) and points-based standards met for those at Star 3 or above; the timing and amounts of financial incentives received of each type; and the timing, amount, and nature of TA supports received. The timing of entry and exit in Stars Plus or other quality improvement supports would also be tracked. Such a history would allow analysts to examine the status of all licensed programs at a point in time (e.g., Delaware Stars participation, Delaware Stars ratings, participation in Stars Plus), and more important, to examine dynamic aspects of Delaware Stars participation, such as movements through the rating tiers and the relationship between the receipt of financial incentives or TA and changes in program ratings.

Such analyses are not readily possible with the existing Delaware Stars data for several reasons. First, numerous data tracking systems sit outside the Delaware Stars database, and they are not all connected by a common ID, such as a program license number. For example, financial award and POC data are stored in separate files and in multiple cases lack a provider ID. ERS item-level scores are stored outside the Delaware Stars database. Another issue is that several key aspects of programs, such as enrollment, age ranges, ECAP status, and Head Start status, are

not frequently refreshed in the OCCL and, by extension, Delaware Stars database. The various databases do not record event dates in a consistent way. Other anomalies in the data are associated with the dates of changes in star levels. Further, no one agency maintains all portions of the Delaware Stars database. The Delaware Department of Education created and revised the database; the Delaware Institute for Excellence in Early Childhood enters and reviews data for Delaware Stars programs; and OCCL data are automatically linked to the Department of Education–housed database.

Delaware has been investing in improvements in the Delaware Stars administrative data systems, and such improvements should be continued. To advance the Delaware Stars administrative data systems, we recommend that Delaware

- integrate all information recorded and maintained by all applicable agencies (including contractors) in the Delaware Stars database, where possible
- if separate data systems are maintained by different agencies or contractors, always use the OCCL license number to identify providers and facilitate matching across databases
- record the date of all actions in a consistent way, such as changes in Delaware Stars ratings, the payment of financial incentives, and delivery of TA supports
- clearly define the type of TA support provided (e.g., coaching, professional development, consultation)
- define enrollment and capacity and refresh enrollment figures for all licensed programs on a periodic basis
- identify key status variables (e.g., Head Start and ECAP status, NAEYC accreditation, school-age-only providers), and ensure that those indicators are routinely updated in the central Delaware Stars database and are as accurate as possible
- establish clearer lines of authority for refreshing and reviewing data in the Delaware Stars database.

Appendix A. Additional Documentation for Delaware Stars

This appendix provides additional information about the structure of the Delaware Stars QRIS. Table A.1 summarizes the major features of Delaware Stars that vary by provider type according to the program features as of July 2014.

Table A.1. Features of Delaware Stars That Vary by Provider Type

	Small FCCs	Large FCCs	Centers
Eligibility	Licensed providers in good standing	Licensed providers in good standing	Licensed centers in good standing; license-exempt centers in public schools
ERS	FCCERS–R	FCCERS–R	ITERS–R and/or ECERS–R for one-third of randomly selected classrooms
Total points-based standards	30	46	46
Points-based standards, by domain:			
Family and community partnerships	12 standards (25 points)	13 standards (25 points)	12 standards (20 points)
Qualifications and professional development	5 standards (25 points)	14 standards (25 points)	11 standards (30 points)
Management and administration	4 standards (15 points)	10 standards (20 points)	10 standards (20 points)
Learning environment and curriculum	9 standards (35 points)	9 standards (30 points)	13 standards (30 points)
Financial incentives:			
QI Grants	up to \$750	up to \$1,000	By enrollment: 13–60: up to \$2,500 61–120: up to \$3,000 121–200: up to \$4,000 201–300: up to \$5,000

SOURCE: Delaware Institute for Excellence in Early Childhood (n.d.).

NOTES: Features in effect as of July 2014, including the removal of Personal Care Routines from the ERS. FCCERS–R = Family Child Care Environment Rating Scale–Revised. ITERS–R = Infant/Toddler Environment Rating Scale–Revised. ECERS–R = Early Childhood Environment Rating Scale–Revised. Only financial incentives that vary by provider type are listed. Small centers are those with up to 60 children. Large centers are those with 61 or more children.

Appendix B. Tables from the Year 1 Report

This appendix provides the tables included in the Year 1 report (Schwartz et al., 2014) that equate to Tables 2.1 to 2.3 in Chapter Two. This allows for a comparison of the number of programs by program type in Delaware Stars as of January 27, 2014, and October 2014 and their distribution by county (Table B.1), as well as by star level and alternative pathway status (Table B.2). The distribution of enrolled children in Delaware Stars programs by program type, county, and rating level is also included (Table B.3).

Table B.1. Participation of Providers in Delaware Stars and Ratings as of January 2014, by Provider Type

Indicator	Small FCCs	Large FCCs	Centers	Total
Licensed Delaware providers (N)				
Total	771	73	357	1,201
Not in Delaware Stars	614	54	101	769
In Delaware Stars	157	19	256	432
In Delaware Stars, by county				
Kent	25	1	51	77
New Castle	108	14	158	280
Sussex	24	4	47	75
Distribution of providers in Delaware Stars (%)				
Total	36.3	4.4	59.3	100.0
By county				
Kent	5.8	0.2	11.8	17.8
New Castle	25.0	3.2	36.6	64.8
Sussex	5.6	0.9	10.9	17.4
Participation rate of providers in Delaware Stars (%)				
Total	20.4	26.0	71.7	36.0
By county				
Kent	17.9	16.7	72.9	35.6
New Castle	24.0	30.4	70.5	38.9
Sussex	13.3	19.0	74.6	28.3

SOURCE: Schwartz et al. (2014), Table 2.1.

NOTES: School-age-only providers have been excluded. Percentage distributions might not add to 100 because of rounding.

Table B.2. Distribution of Delaware Stars Providers According to Rating Level or Alternative Pathway as of January 2014, by Provider Type

Indicator	Small FCCs	Large FCCs	Centers	Total
Delaware Stars providers (N)				
Total	157	19	256	432
By rating level				
Starting with Stars	50	5	14	69
Star 2	69	5	92	166
Star 3	20	3	38	61
Star 4	18	5	79	102
Star 5	0	1	33	34
Rated via alternative pathway ^a				
Star 3 providers	0	0	2	2
Star 4 providers	0	0	33	33
Star 5 providers	—	0	23	23
Distribution of Delaware Stars providers (%)				
Total	100.0	100.0	100.0	100.0
Starting with Stars	31.8	26.3	5.5	16.0
Star 2	43.9	26.3	35.9	38.4
Star 3	12.7	15.8	14.8	14.1
Star 4	11.5	26.3	30.9	23.6
Star 5	0.0	5.3	12.9	7.9
Delaware Stars providers rated via alternative pathway (%)^a				
Star 3 providers	0.0	0.0	5.3	3.3
Star 4 providers	0.0	0.0	41.8	32.4
Star 5 providers	—	0.0	69.7	67.6

SOURCE: Schwartz et al. (2014), Table 2.2.

NOTES: Results are based on Delaware Stars administrative data as of January 27, 2014. School-age-only providers have been excluded. Percentage distributions might not add to 100 because of rounding. — = not applicable.

^a Applies to public school 619 programs, stand-alone Head Start programs and ECAP, and NAEYC-accredited providers.

Table B.3. Participation of Children in Delaware Stars Programs as of January 2014, by Provider Type

Indicator	Small FCCs	Large FCCs	Centers	Total
Children enrolled in licensed programs (N)				
Total	4,522	877	24,335	29,734
Not in Delaware Stars programs	3,582	652	5,642	9,876
In Delaware Stars programs	940	225	18,693	19,858
In Delaware Stars programs, by county				
Kent	159	13	3,654	3,826
New Castle	601	162	12,836	13,599
Sussex	180	50	2,203	2,433
In Delaware Stars programs, by rating level				
Starting with Stars	255	66	650	971
Star 2	453	54	6,009	6,516
Star 3	118	29	3,245	3,392
Star 4	114	60	5,430	5,604
Star 5	0	16	3,359	3,375
Distribution of children enrolled in Delaware Stars programs (%)				
Total	4.7	1.1	94.1	100.0
By county				
Kent	0.8	0.1	18.4	19.3
New Castle	3.0	0.8	64.6	68.5
Sussex	0.9	0.3	11.1	12.3
By rating level				
Starting with Stars	1.3	0.3	3.3	4.9
Star 2	2.3	0.3	30.3	32.8
Star 3	0.6	0.1	16.3	17.1
Star 4	0.6	0.3	27.3	28.2
Star 5	0.0	0.1	16.9	17.0
Participation rate of children in Delaware Stars programs (%)				
Total	20.8	25.7	76.8	66.8
By county				
Kent	18.7	17.1	83.9	72.4
New Castle	24.7	29.8	76.6	68.9
Sussex	14.5	19.4	68.5	51.6

SOURCE: Schwartz et al. (2014), Table 2.3.

NOTES: Results are based on Delaware Stars administrative data as of January 27, 2014. School-age-only providers have been excluded. Percentage distributions might not add to 100 because of rounding.

Appendix C. Additional Documentation for Chapter Three and Chapter Four Analyses

This appendix provides the model estimates that support the findings presented in Chapters Three and Four. Table C.1 shows the results of estimating a Tobit model on the total value of the financial incentives, discussed in Chapter Three. Tobit models were estimated to account for programs that did not receive any financial incentives during the 12 months covered by the data (a total of 62 programs, or 15.1 percent of the cases). The Tobit estimation method accounts for the truncation of the dependent variable (total amount of financial incentives) at zero, whereas the standard linear model (OLS) does not.

Table C.2 shows the OLS regression results for the number of TA visits, average TA visit duration, and TA annual hours, as reported in Chapter Four.

In all models, the covariates include

- indicators for program type, with centers divided into a small and a large group, based on enrollment below 60 children or 60 children and above
- a series of mutually exclusive and exhaustive indicators for Delaware Stars status, with dummy variables for all possible star levels for programs not in Stars Plus or not rated via an alternative pathway (i.e., Starting with Stars and Star 2 to Star 5), for all possible star levels for Star Plus providers (i.e., Star 2 to Star 4), and for all possible star levels for alternative pathway programs (i.e., Star 4 and Star 5)
- indicators for the county in which the provider is located.

Note that in the Tobit model for the value of financial incentives, reported in Table C.1, programs at Starting with Stars are omitted from the cases, as they are not eligible for any of the financial incentives. In that model, Star 3 providers that are not Stars Plus and not rated via an alternative pathway serve as the omitted (or reference) group.

In the OLS models for TA outcomes reported in Table C.2, the Starting with Stars programs were included in the estimation, and that group of programs (not in Stars Plus or rated via an alternative pathway) serves as the omitted group.

Both tables report the result of F-tests for the joint significance of relevant groups of categorical variables—i.e., for the joint significance of program type; for the joint significance of star level separately for programs not in Stars Plus or rated via an alternative pathway, for programs in Stars Plus, and for programs rated via an alternative pathway; and of county of location.

Table C.1. Regression Model Estimates for Amount of Financial Incentive Awards

Covariate	Coefficient (standard error) [Tobit]
Provider type [small FCC]	[***]
Large FCC	5611.42 (11697.62)
Small center (enrollment < 60)	6258.98 (6993.84)
Large center (enrollment ≥ 60)	54941.69*** (6843.71)
Not in Stars Plus programs [Star 3]	[***]
Star 2	-41643.19*** (10552.82)
Star 4	14328.35 (10126.10)
Star 5	19161.99 (12026.66)
Stars Plus programs	[**]
Star 2	-29545.47** (10701.16)
Star 3	-8924.57 (11938.75)
Star 4	6127.41 (11158.93)
Star 5	21201.13 (21285.05)
Alternative pathway programs	[n.s.]
Star 4	-11266.70 (12912.27)
Star 5	18343.09 (13042.37)
County [New Castle]	[n.s.]
Kent	-6789.29 (6693.09)
Sussex	-5442.55 (7233.84)
Intercept	14413.61 (9210.39)
<i>N</i>	410

SOURCE: Authors' analysis of Delaware Stars administrative data, as of October 14, 2014.

NOTES: See Table 3.2 for the date ranges covered by the data. School-age-only providers have been excluded. The 45 Starting with Stars programs are not eligible for any of the financial incentives analyzed, so they are excluded from the regression. The omitted group for categorical variables is shown in brackets in the row labels. Significance for an F-test of the joint significance of each cluster of categorical variables is shown in brackets in the column of regression coefficients. Statistical significance indicated as: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$. n.s. = not statistically significant at a p -value of 0.05 or better.

Table C.2. Regression Model Estimates for TA Visits, Average TA Visit Duration, and Annual TA Hours

Covariate	Coefficient (standard error)		
	Number of TA Visits [OLS]	Average TA Visit Duration (in minutes) [OLS]	Annual TA Hours [OLS]
Provider type [small FCC]	[**]	[***]	[***]
Large FCC	0.90 (2.77)	-2.00 (6.29)	-0.16 (5.69)
Small center (enrollment < 60)	-1.55 (1.64)	32.25*** (3.73)	12.96*** (3.38)
Large center (enrollment ≥ 60)	3.81* (1.68)	32.52*** (3.83)	22.65*** (3.46)
Not in Stars Plus programs [Starting with Stars]	[***]	[n.s.]	[***]
Star 2	8.99** (2.89)	3.09 (6.58)	15.13* (5.95)
Star 3	19.17*** (3.25)	4.93 (7.39)	28.58*** (6.68)
Star 4	15.87*** (2.95)	2.52 (6.70)	23.99*** (6.06)
Star 5	15.76*** (3.40)	3.57 (7.73)	22.23** (6.99)
Stars Plus programs	[***]	[n.s.]	[***]
Starting with Stars	1.95 (7.65)	14.50 (17.40)	1.01 (15.73)
Star 2	37.47*** (2.99)	9.21 (6.81)	59.88*** (6.16)
Star 3	51.12*** (3.33)	6.51 (7.56)	73.30*** (6.84)
Star 4	51.47*** (3.12)	11.08 (7.10)	78.86*** (6.42)
Star 5	36.27*** (5.53)	32.32* (12.57)	69.72*** (11.37)
Alternative pathway programs	[n.s.]	[***]	[n.s.]
Star 4	5.41 (3.66)	-11.71 (8.31)	4.63 (7.52)
Star 5	0.45 (3.82)	-34.20*** (8.68)	-8.34 (7.85)
County [New Castle]	[*]	[***]	[n.s.]
Kent	3.94* (1.62)	-12.64*** (3.68)	2.27 (3.33)
Sussex	3.17 (1.77)	-10.88** (4.03)	0.66 (3.65)
Intercept	2.96 (2.66)	85.77*** (6.06)	-3.21 (5.48)
<i>N</i>	426	426	426

SOURCE: Authors' analysis of Delaware Stars administrative data, as of October 14, 2014.

NOTES: TA visits are measured for one calendar year, from October 1, 2013, to October 14, 2014. School-age-only providers have been excluded. Information on TA visits is missing for 28 programs, so they are omitted from these analyses. One additional program is missing enrollment information, so the case is also excluded. The omitted group for categorical variables is shown in brackets in the row labels. Significance for an F-test of the joint significance of each cluster of categorical variables is shown in brackets in each column of regression coefficients. Statistical significance indicated as: * = $p < 0.05$, ** = $p < 0.01$, *** = $p < 0.001$. n.s. = not statistically significant at a p -value of 0.05 or better.

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