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# **Independent Evaluation of California's Race to the Top–Early Learning Challenge Quality Rating and Improvement System: Supplemental Validation Study Report**

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# Independent Evaluation of California's Race to the Top–Early Learning Challenge Quality Rating and Improvement System: Supplemental Validation Study Report

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## Introduction

In January 2014, the California Department of Education contracted with American Institutes for Research (AIR) and its partners at RAND Corporation (RAND); Survey Research Management; and Allen, Shea & Associates to conduct an independent evaluation of California Race to the Top—Early Learning Challenge (RTT-ELC) grant-funded quality rating and improvement system (QRIS). The 17 Regional Leadership Consortia participating in the QRIS pilot provided data to the state on the early learning and development sites enrolled in their counties' QRIS and the ratings they had assigned to the sites based on the Hybrid Rating Matrix. At this early stage, only about 37 percent of these sites had full and complete ratings; others had incomplete or provisional ratings based on preliminary information from sites without complete observational data. The distribution of the ratings was limited; no centers received a tier rating of 1, and only 20 centers overall received a tier rating of 2.

The study team conducted observations of classrooms within a sample of the fully rated sites using the Classroom Assessment Scoring System (CLASS; Pianta, La Paro and Hamre 2008) and the Program Quality Assessment (PQA; HighScope Educational Research Foundation 2003) in the spring 2014 to examine the validity of the ratings against independent measures of quality. The results provided some evidence of validity; higher rated centers received higher scores on the Instructional Support domain of the CLASS and on the Adult-Child Interaction scale on the PQA. With no centers rated at Tier 1 and few rated at Tier 2, however, the study was able to compare only observed quality scores for centers rated at Tiers 3, 4, and 5. As a result, the findings do not apply to sites rated in the lowest tiers.

To address this limitation and to evaluate the validity of the ratings three years into the RTT-ELC pilot, AIR conducted a second phase of data collection and analysis in 2016 as a supplement to the validation analyses presented in the Cumulative Technical Report (AIR and RAND 2016). First, the study team obtained the 2015 Common Data Elements from the state and analyzed the data to evaluate the distribution of the ratings and how well the QRIS rating performs as a measurement tool. In addition, to generate additional data on Tier 2 centers,<sup>1</sup> AIR recruited 31 centers from among the 105 Tier 2 centers in four sampled Consortia to participate in the study. The study team conducted observations in each of these centers using the PreK CLASS instrument and replicated validity analyses conducted in the first phase of the study. AIR used alternative approaches to calculating ratings to identify a rating strategy that produces ratings with stronger evidence of validity.

As an extension of this study, and because additional data were not collected on family child care homes (FCCHs), AIR conducted some exploratory validity analyses using the full population of fully rated FCCHs from 2015. The study team drew on extant data for these analyses, specifically the CLASS scores collected by Consortia through the rating process and documented in the Common Data Elements submitted to the state. A detailed description of the study methodology can be found in appendix A.

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<sup>1</sup> The number of Tier 1 sites continues to be too small to include in the study. In addition, given the time and resources available, supplementing the sample with enough FCCHs to generate reliable estimates for FCCHs in addition to centers was not possible. Thus, Tier 2 centers were the focus of the supplemental data collection.

The results of each of the analyses described above are presented in this supplemental report. Thus, this report addresses some of the limitations of the first phase of the evaluation, providing additional evidence to address questions about the validity of the QRIS rating in the final year of the RTT-ELC QRIS pilot.

## Validity of the California QRIS Ratings

To further explore the validity of the QRIS in California in its final year of the pilot phase, the study team reexamined the following questions, supplementing the 2013 ratings analysis with 2015 ratings data:

1. How well does the QRIS perform as a measure of quality?
2. How well does the QRIS differentiate programs based on quality?
3. What is the validity of each element in the QRIS rating?
4. How do alternative rating methods affect the validity of ratings?

The approach to addressing each question and the relevant study findings are presented subsequently in this report.

### How Well Does the QRIS Perform as a Measure of Quality?

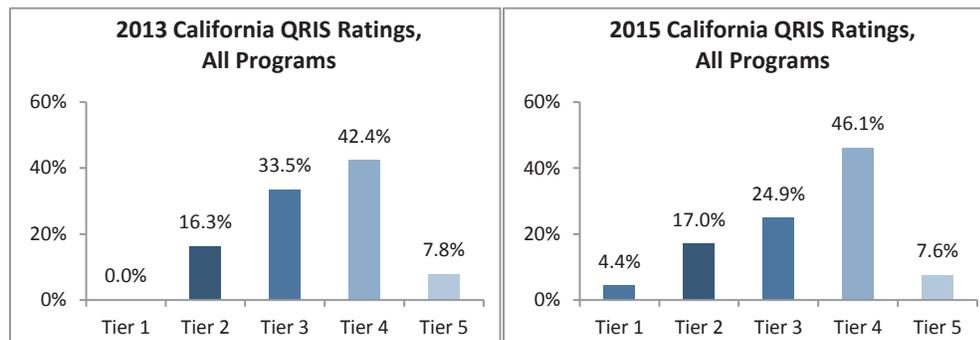
To examine how well the QRIS performs as a measure of quality, the study team conducted three sets of analyses. First, the team examined the distribution of 2015 ratings and element scores for all fully rated centers and FCCBs and compared these against the 2013 ratings. Second, the team examined program characteristics associated with 2015 ratings to determine whether higher tier ratings were more common among programs with certain characteristics such as size or funding streams. Finally, the team examined the internal consistency of the 2015 rating and the relationships between element scores; these results were compared against analyses of the 2013 ratings. The findings from each of these analyses are described next.

#### ***Distribution of Ratings and Element Scores***

***Many more sites received ratings in 2015 than in 2013; although the distribution of ratings is still limited, with few sites at the lowest and highest tiers, variation in ratings has increased somewhat.***

As expected from a developing system, there are many more fully rated sites in 2015—the third year of ratings—than in the first year in which ratings were conducted (2013). In 2015, 2,746 sites had full and complete ratings, compared with only 472 in 2013—a more than fivefold increase over the two-year period. Even with the addition of more than 2,200 sites, the number of sites rated at the lowest and highest tiers remains low (exhibit 1). Although no sites were rated at Tier 1 in 2013, 120 Tier 1 sites were added in 2015. Just under eight percent of sites were rated at Tier 5 in each year. The proportion of Tier 4 sites increased to nearly 50 percent in 2015, and the proportion of Tier 3 sites decreased over the two-year period.

**Exhibit 1. Distribution of California QRIS Ratings in 2013 and 2015, All Fully Rated Programs**



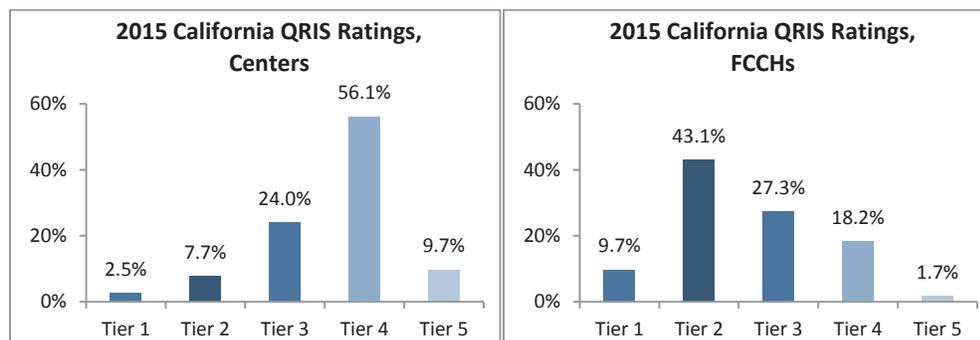
Note: 2013, N = 472 sites; 2015, N = 2,746 sites.

Although the distribution of ratings remained skewed in 2015, there is significantly more variation in scores in this final year of the pilot than in the first year (see exhibit B1 in appendix B). This is a reflection of the development of the system and the larger number of fully rated sites in 2015.

***Centers continue to receive higher tier ratings than family child care homes, on average, in 2015.***

As with the ratings in 2013, the 2015 ratings distributions continue to look different for centers and family child care homes (exhibit 2). The most common 2015 rating was Tier 4 for centers (56.1 percent) and Tier 2 for FCCHs (43.1 percent). In contrast, only 7.7 percent of centers were rated at Tier 2 and only 18.2 percent of FCCHs were rated at Tier 4, indicating a very different rating pattern for the two types of programs.

**Exhibit 2. Distribution of California QRIS Ratings for Fully Rated Centers and FCCHs**



Note: Centers, N = 2,022; FCCHs, N = 724.

***Centers receive more points than FCCHs on structural quality elements, but centers and FCCHs achieve similar scores on the elements based on direct observations of quality.***

QRIS ratings are calculated by summing points received on each of seven quality elements for centers and five of the seven quality elements for FCCHs shown in exhibit 3, and then assigning a tier rating of 1 to 5 based on the total points received. Each of the elements is scored on a scale of 1 to 5 and contributes equally to the overall score. (See appendix C for details on each point level for each element in the Hybrid Rating Matrix.)

**Exhibit 3. Quality Elements Comprising the RTT-ELC Hybrid Rating Matrix and the Number of Points Most Frequently Received by Centers and FCCHs**

	Most Common Element Score Received (Mode)	
	Centers	FCCHs
<b>CORE I: Child Development and School Readiness</b>		
Child Observation	4	1
Developmental and Health Screenings	5	1
<b>CORE II: Teachers and Teaching</b>		
Minimum Qualifications for Lead Teacher/FCCH	4	2
Effective Teacher-Child Interactions: CLASS Assessments	3	3
<b>CORE III: Program and Environment—Administration and Leadership</b>		
Ratios and Group Size	4	N/A
Program Environment Rating Scale(s)	3	3
Director Qualifications	5	N/A

Centers typically have higher scores than FCCHs on elements that measure structural quality. For example, the most common score for centers on the structural elements of the Hybrid Rating Matrix (Child Observation, Developmental and Health Screenings, Minimum Qualifications for Lead Teacher/FCCH, Ratios and Group Size, and Director Qualifications) is a 4 or a 5 (exhibit 3), whereas FCCHs are most likely to receive one or two points on the structural elements on which they are rated (Child Observation, Developmental and Health Screenings, and Minimum Qualifications for Lead Teacher/FCCH). Although this finding holds true for the Child Observation element, a substantial minority of FCCHs receive four points on this element. (See exhibits B2 and B3 in appendix B for the full distribution of element scores.) Thus, on the structural elements of the Hybrid Rating Matrix, the majority of FCCHs meet basic licensing requirements or just above, whereas centers are achieving higher standards of quality. The differences in center and FCCH scores on structural elements may also reflect that many of the centers are already held to higher program quality standards by program contracts, such as for Title 5 or Head Start.

Scores among centers and FCCHs are more similar on the elements based on direct observations of quality—the Effective Teacher-Child Interactions: CLASS Assessments element and the Program Environment Ratings Scale(s) element. The most common score for both program types was three points on these elements. To receive three points on these elements, however, sites must only complete an independent observation (CLASS or ERS), as there is no minimum assessment score required to receive three points on the element. However, scoring three points on these elements indicates that the program did not receive a high enough CLASS score to meet the requirements for four points on the element. For example, to obtain four points on the CLASS element, a program must receive at least a 5 on the CLASS Emotional Support domain and at least a 3 on the CLASS Instructional Support domain. Thus, on these two elements, the largest percentage of both centers and FCCHs score at a level that reflects a commitment to quality improvement (having agreed to the observation) but not yet achieving quality benchmarks on the Hybrid Rating Matrix.

**Characteristics of Programs by Rating Level**

*There is a clear connection between funding source and quality ratings: Sites receiving Title 5, Head Start, and CSP funding received higher ratings overall.*

The somewhat skewed distribution of the ratings for sites may be partially explained by the characteristics of the sites enrolled in the QRIS. Similar to the pool of sites in 2013, a large proportion of the fully rated sites in 2015 receive standards-based funding. Among the 2015 fully rated sites, 62 percent receive Title 5 (State Preschool, General Child Care, or Cal-SAFE) funding, Child Signature Program (CSP), or Head Start funding. These sites are held accountable for quality standards as part of their funding requirements. When the Hybrid Rating Matrix was developed, the quality standards set for Tier 3 were designed to align with program standards for Title 5 programs, Tier 4 standards were set to align with Head Start performance standards, and Tier 5 was designed to align with National Association for the Education of Young Children accreditation standards.

The majority of centers with standards-based funding meet or exceed the tier level that is most aligned with their program requirements (exhibit 4). Although 20 percent of CSP centers and 10 percent of Head Start centers are rated above Tier 4, which is the level aligned with their program requirements, 75 percent of Title 5 centers exceed the tier level aligned with their requirements (Tier 3).

**Exhibit 4. Percentage of Programs Meeting Different Quality Standards, by Funding Source**

Funding Source	Program Standards Equivalent to QRIS Tier Rating of...	Total Number of Sites	Percentage of Sites Below, Meeting, or Exceeding QRIS Tier Rating Equivalent to Their Program Standards		
			Below	Meeting	Exceeding
<b>Centers</b>					
First 5 California CSP 1 or CSP 2	4	386	24.9%	54.7%	20.5%
Federal Head Start or Early Head Start	4	482	18.7%	71.4%	10.0%
California Title 5 (State Preschool, General Child Care, or CalSAFE)	3	1203	4.2%	21.1%	74.6%
Other licensed centers (non-Head Start, non-Title 5, non-CSP)	1	191	—	4.7%	95.3%
<b>Family Child Care Homes</b>					
First 5 California CSP 1 or CSP 2	4	26	46.2%	50.0%	3.8%
Federal Head Start or Early Head Start	4	106	29.2%	43.4%	27.4%
California Title 5 (State Preschool, General Child Care, or CalSAFE)	3	56	64.3%	35.7%	0.0%
Other licensed FCCHs (non-Head Start, non-Title 5, non-CSP)	1	83	—	4.8%	95.2%

The pattern is different for FCCHs. Just over a third of FCCHs with Title 5 funding (36 percent) are rated at the tier aligned with Title 5 standards (Tier 3), and none are rated above that level. Just over half of FCCHs with CSP funding meet or exceed the tier level aligned with their

program standards (Tier 4), and 71 percent of FCCHs with Head Start funding are rated at or above this same tier level.

Of the remaining fully rated centers and FCCHs that have no additional quality requirements associated with their funding, most (95 percent) are exceeding basic California licensing requirements (Tier 1).

Given the alignment between funding requirements and tier levels, it is not surprising that in analyses modeling QRIS rating, the funding source is a clear predictor of the tier level (see exhibits B4-B7 in appendix B). That is, sites with CSP, Title 5, or Head Start funding are more likely to have higher ratings. This relationship is also found in the element scores for centers, particularly for the structural elements, such as Developmental and Health Screenings and Minimum Qualifications for Lead Teacher. Having CSP funding is predictive of higher element scores for all elements, except for Ratios and Groups Size. Use of Spanish at the program also predicts higher ratings for centers, and serving infants and toddlers is associated with lower ratings.

### ***How Element Scores Relate to Each Other and the Overall QRIS Rating***

***Although many of the elements are not well correlated with each other, the internal consistency of the ratings in 2015 has improved since 2013.***

The first round of ratings from 2013 had relatively low internal consistency. The standard used for unidimensional scales is a Cronbach's alpha of .80, which indicates high reliability; alphas between .70 and .80 represent acceptable reliability. The Cronbach's alpha in 2013 was .54. The 2015 ratings show much stronger reliability: Cronbach's alphas were within the acceptable range, at .78 for centers and .71 for FCCHs (see exhibits B8 and B9 in appendix B).

An analysis of the elements scores in the 2013 ratings data showed relatively low correlations among the elements. Element scores in the 2015 ratings data are also not highly correlated with each other, although correlations are somewhat higher than the first year of ratings (exhibit B10 in appendix B). The highest correlations among elements for centers are .45 for the two observational elements (the CLASS and ERS elements), .44 for the two elements related to child assessment and screening (Child Observation and Developmental and Health Screenings), and .41 for the two staff qualifications elements (Minimum Qualifications for Lead Teacher and Director Qualifications). Other element pairs had lower correlations. For example, Ratios and Group Size was not at all correlated with Director Qualifications (.03), Minimum Qualifications for Lead Teachers (.08), and Child Observations (.10). Ratios and Group Size also had the lowest correlation with the overall QRIS rating (.52). Because of the lack of correlation with Ratios and Group Size, the study team examined whether the QRIS would have improved internal consistency if this element were excluded from the overall rating calculation. However, removing this element from the rating did not improve the internal consistency of the overall rating (Cronbach's alpha decreases slightly from .78 to .77).

Correlations among elements are somewhat higher overall for FCCHs (exhibit B11 in appendix B). The highest correlation between the CLASS element and the ERS (.50) and Developmental and Health Screenings (.42) elements. No pairs of elements are completely

uncorrelated; the lowest correlation is between Child Observations and the CLASS element (.24).

## **How Well Does the QRIS Differentiate Programs Based on Quality?**

To understand how well the QRIS differentiates programs based on quality, the study team used analysis of variance (ANOVA) to compare CLASS scores for sites at different tier ratings, thus testing the assumption that higher rated programs will have higher observed quality. Looking first at quality in centers, the analysis draws on CLASS observation data collected for the study, adding the 31 centers observed in the summer of 2016 to the 135 centers with complete CLASS observation data from the spring 2014. For these analyses, 2016 CLASS scores are compared against 2015 QRIS ratings, and 2014 CLASS scores are compared against 2013 QRIS ratings. There are limitations to combining ratings from the two different years, given the increased participation in the QRIS and improved internal consistency observed in 2015 ratings. Sensitivity tests using an analysis of covariance (ANCOVA) to control for the year of the rating show similar, yet somewhat attenuated, results. This suggests the results can be used for program improvement; however, the magnitude of the relationships should be interpreted with caution.

No additional FCCHs were observed through the 2016 supplemental data collection effort. To supplement analyses conducted on the 2013 ratings, the study team used extant CLASS data collected by Consortia as part of the 2015 rating procedure and recorded in the Common Data Elements. The results from these analyses are not parallel with the center analyses using observation data collected by the study team, but they provide some preliminary information about how well the rating is working for FCCHs.

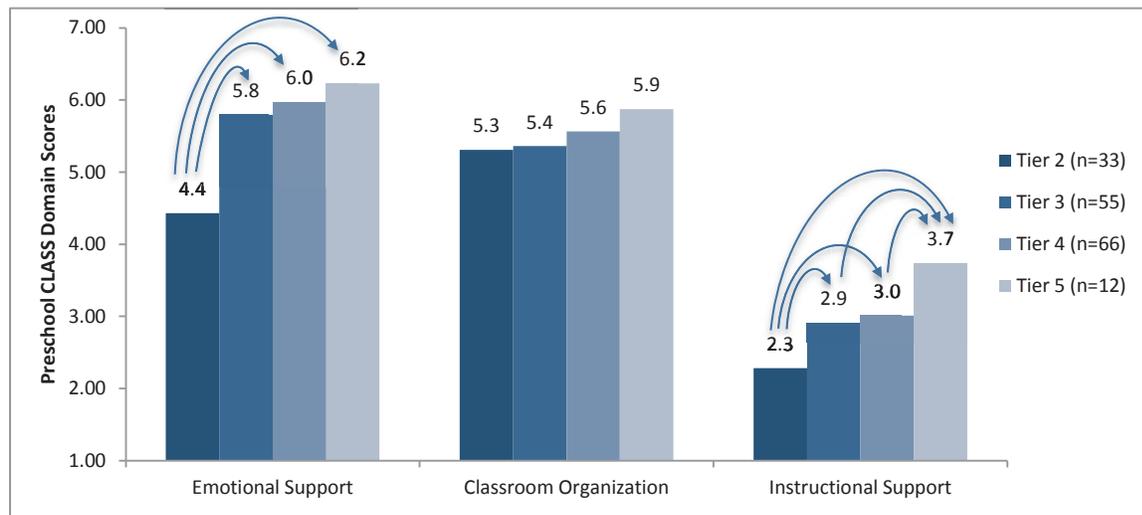
### ***Alignment Between Ratings and CLASS Scores***

***QRIS ratings appear to differentiate centers based on observed quality, especially at the high and low ends of the rating scale.***

The study results provide some evidence that the QRIS differentiates centers based on observed quality. This is especially true when considering aspects of quality related to teacher–child interactions in support of children’s cognitive development. The results reveal a clear positive relationship between tier rating and CLASS Instructional Support domain scores. Tier 5 sites have higher Instructional Support scores than sites at Tiers 3 or 4, and Tier 3 and 4 sites have higher Instructional Support scores than Tier 2 sites (exhibit 5 and exhibit B12 in appendix B). Score differences are not large, but they are statistically significant.

The study findings also show a positive relationship between tier rating and CLASS Emotional Support domain scores. Specifically, Tier 3, 4, and 5 sites have higher Emotional Support scores than Tier 2 sites. There are no statistically significant differences in Classroom Organization scores among sites at different tier ratings, and there are no differences between sites at Tier 3 and 4 on any of the measures.

**Exhibit 5. Average Preschool CLASS Domain Scores by California QRIS Rating Level, Centers**



Note: Arrows indicate where differences between bars are statistically significant ( $p < .05$ ).

Preliminary analyses of FCCH ratings using the extant CLASS scores collected by the Consortia as part of the rating process show similar results (exhibit B13 in appendix B). There is a positive relationship between tier rating and all three CLASS domains. FCCHs at higher tiers demonstrate higher scores on the CLASS. It should be noted that these analyses differ from the center analyses in that they draw on data collected by Consortia and not independent observations conducted by the study team. CLASS scores collected by the Consortia are higher, on average, than those collected by the study team, which may influence the overall results.

## What Is the Validity of Each Element in the QRIS Ratings?

Using the same data sources described previously (that is, CLASS observations collected directly by the study team for the center analysis and CLASS scores obtained by the Consortia for the FCCH analysis), the study team used ANOVA to examine the alignment between CLASS scores and scores on each of the elements that comprise the overall rating. The results of these analyses are described next.

### ***Alignment Between Element Scores and CLASS Scores***

***The ERS element and the CLASS element show the strongest evidence of validity.***

The results show variation in the degree to which element scores related to observed quality for centers (exhibit 6 and exhibits B14 through B20 in appendix B). Several elements show a consistent positive relationship with the PreK CLASS Emotional Support domain. Specifically, higher scores on the Developmental and Health Screenings and Minimum Qualifications for Lead Teacher elements are positively associated with Emotional Support scores. Centers that receive more points on these elements score significantly higher on Emotional Support than centers receiving one or two points on the elements. Centers with higher scores on the Child Observation element and the Director Qualifications element also demonstrate higher CLASS Emotional Support scores, although Tier 5 is not higher than Tier 4 on these elements.

In addition, the Child Observation, Minimum Qualifications for Lead Teacher, and Director Qualifications element show generally positive (and significant) relationships with CLASS Instructional Support scores, but the positive trend is not consistent across all point levels. The Ratios and Group Size element does not appear to be consistently related to scores on any of the CLASS domains. This may be related to the limited variability in this element.

The results show the strongest evidence of validity for the two elements that rely on classroom observations to assign points, that is, the Effective Teacher–Child Interactions: CLASS Assessments element (the CLASS element) and the Program Environment Rating Scale(s) element (the ERS element). For these elements, there is a clear positive pattern between the number of points received on the element and scores on all three domains of the CLASS. Centers with five points on the ERS element, for example, have significantly higher CLASS scores than centers with two or three points on the ERS element. Centers with five points on the CLASS element also have higher observed CLASS scores than centers with three points on this element. One would expect a positive relationship between element scores based on the CLASS and observed CLASS scores, but it should be noted that while there are minimum CLASS score requirements for the four- and five-point levels on the element, there is no minimum score for the three-point level and a CLASS observation is not even required to receive one or two points on the CLASS element. This is the case for the ERS element as well.

**Exhibit 6. Summary Table for CLASS Analysis Using Element Scores**

Independent Quality Measure	Analysis Results for Element Scores							
	QRIS Rating	CO	DHS	MQ	CLASS	RGS	ERS	DQ
<b>Preschool CLASS Scores, Centers</b>								
Emotional Support	*	*	*	*	*		*	*
Classroom Organization					*		*	
Instructional Support	*	*		*	*		*	*

*Note:* CO = Child Observation. MQ = Minimum Qualifications for Lead Teacher/FCCH. CLASS = Effective Teacher-Child Interactions: CLASS Assessments. RGS = Ratios and Group Size. ERS = Program Environment Rating Scale(s). DQ = Director Qualifications. Each row references the results of a separate ANOVA model.

An asterisk (\*) indicates a statistically significant relationship ( $p < .05$ ), and the arrows indicate the direction of the relationship between QRIS ratings and observed classroom quality scores for rating levels with more than five observations:

indicates a consistently positive relationship. indicates relationships that are not consistent in direction.

An analysis of the data for FCCHs, which rely on extant CLASS scores collected by the Consortia rather than the study team, finds that the only element consistently related to CLASS scores is the CLASS element itself (see exhibits B21–B25 in appendix B). This is not surprising, given that the element score is derived from the CLASS scores recorded in the Common Data Elements, which is the source for these analyses. Although generally positive patterns are observed for the Developmental and Health Screenings, Minimum Qualifications for FCCH, and ERS elements, the results were not consistent.

<http://www.cde.ca.gov/sp/cd/rt/aavsumclassanalyses.asp>

## How Do Alternative Rating Methods Affect the Validity of Ratings?

To examine the extent to which modifying the approach to calculating the rating alters the evidence of validity for the rating, the study team simulated ratings using the five approaches described in exhibit 7 and repeated the ANOVA analysis relating ratings to CLASS scores. Three of the five rating approaches (that is, two-level block, five-level block, and the element average approach) were used in the prior set of analyses using 2013 ratings data. The study team introduced two new alternative rating approaches that use a weighted average to give additional weight to the CLASS element, which is the element with the strongest validity evidence to date. One assigned a weight of 25 percent of the overall rating to the CLASS element, and the other assigned a weight of 40 percent of the overall rating to the CLASS element. (See exhibit A8 in appendix A for an example calculation using these rating approaches.)

### Exhibit 7. California’s QRIS Rating Approach and Alternative Rating Approaches Examined in This Study

Rating Type	Rating Definition
California QRIS	Tier 1 is blocked; Tiers 2–5 are point based for programs meeting block criteria for Tier 1. Rating is determined by total points earned across elements. This is California’s rating approach without local adaptations to the way the ratings are calculated using the element scores.
Two-level block	Tiers 1 and 2 are blocked, and Tiers 3–5 are point based for programs meeting block criteria for Tier 2. This approach is used as a local adaptation to California’s rating approach in some counties.
Five-level block	Tiers 1–5 are blocked.
Element average	Scores are determined by taking the average of all applicable rating elements (seven elements for centers, six elements for infant-only centers, five elements for FCCHs, four elements for infant-only FCCHs). Averages are rounded to whole numbers (round up for 0.5 and above, round down below 0.5).
CLASS weighted 25%	Scores are determined by taking the average of all applicable rating elements and rounding to whole numbers, after weighting the CLASS element such that it represents 25% of the overall rating, while other elements each represent 12.5% of the rating for centers and 18.75% for FCCHs.
CLASS weighted 40%	Scores are determined by taking the average of all applicable rating elements and rounding to whole numbers, after weighting the CLASS element such that it represents 40% of the overall rating, while other elements each represent 10% of the rating for centers and 15% for FCCHs.

In addition to conducting the ANOVAs with CLASS domain scores, the team used 2013 ratings data and observations conducted in 2014 using the Program Quality Assessment (PQA) to conduct another set of ANOVAs. These analyses, presented next, were conducted to determine whether these alternative rating approaches better differentiated programs based on observed quality using a measure completely external to the QRIS.<sup>2</sup> First, the study team examined the distributions of ratings under different rating protocols.

<sup>2</sup> Additional observations using the PQA were not conducted for this supplemental validation study. Thus, the validity results presented in the Cumulative Technical Report are not replicated here with new PQA data. Rather, the validity of the 2013 ratings calculated under the new rating approaches is evaluated using the PQA data collected in 2014.

## Distribution of Ratings Using Different Rating Methods

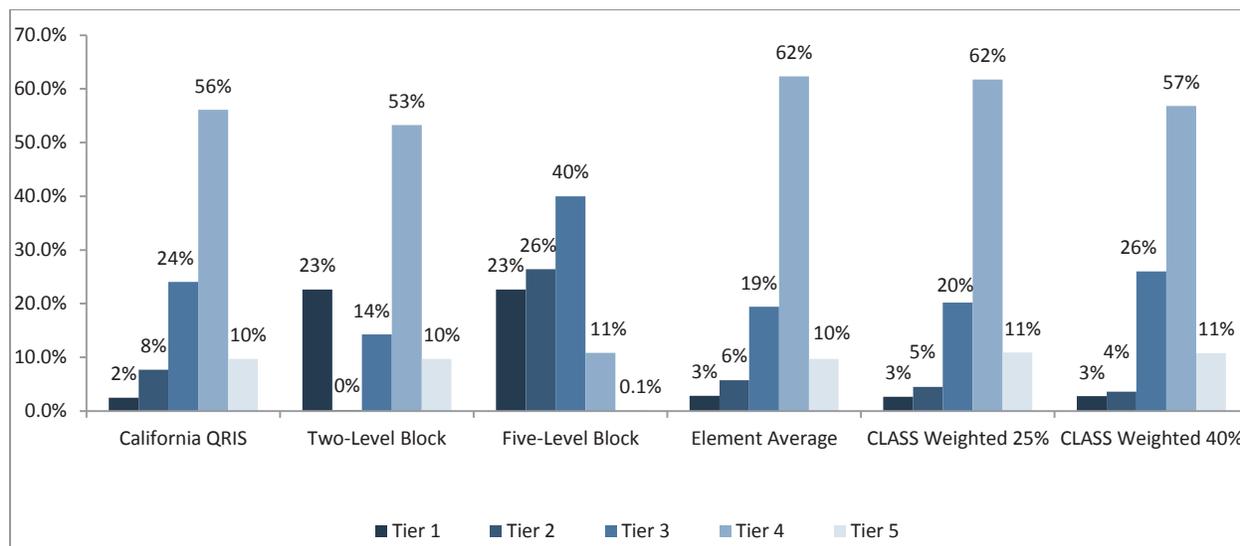
*Using a block approach results in lower ratings for some sites, whereas using an element average approach with or without assigning additional weight to the CLASS element generally results in the same or higher tier ratings.*

As with the 2013 ratings, the distribution of ratings using the 2015 ratings data varies depending on the method used for calculating the ratings (exhibits 8 and 9 and exhibits B26 and B27 in appendix B). Compared with the original approach to calculating ratings, using a block approach results in lower ratings, especially when all tiers are blocked. This is true for centers and FCCHs; blocking Tiers 1 and 2 reduces the rating for 60 percent of FCCHs but only 20 percent of centers. The majority of centers (92 percent) and FCCHs (86 percent) receive lower ratings when all five tiers are blocked.

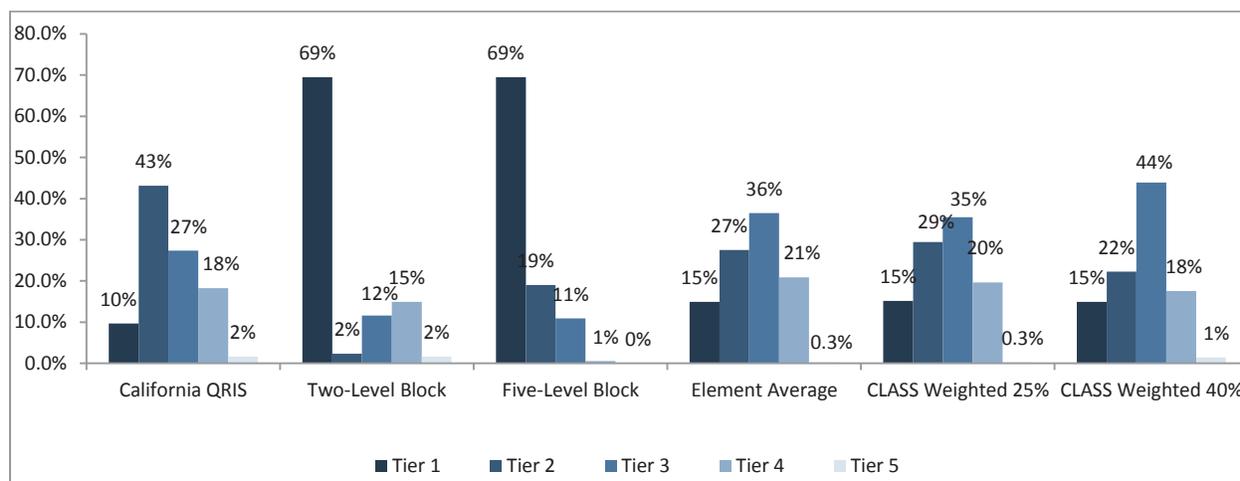
Taking the average of all element scores results in a distribution very similar to the original QRIS ratings. Only 8 percent of centers and FCCHs receive higher ratings and even fewer centers (less than 1 percent) and FCCHs (7 percent) receive lower ratings. These results are comparable with the 2013 ratings analysis.

Giving additional weight to the CLASS element does not drastically change the distribution of ratings compared to the original QRIS ratings. Increasing the weight of the CLASS element to 25 percent of the rating results in higher ratings for 12 percent of centers and FCCHs as well as lower ratings for less than 1 percent of centers and 7 percent of FCCHs. Increasing the weight to 40 percent of the rating results in lower ratings for 5 percent of centers and 11 percent of FCCHs as well as higher ratings for 11 percent of centers and 20 percent of FCCHs compared with California QRIS ratings.

**Exhibit 8. Distribution of Ratings Using Alternative Rating Approaches, Centers**



**Exhibit 9. Distribution of Ratings Using Alternative Rating Approaches, FCCHs**



### **Validity of the Alternative Rating Approaches**

*Ratings that take an average across the element scores show somewhat stronger evidence of validity for centers, especially if additional weight is assigned to the CLASS element.*

Comparisons of validity results under different rating calculation approaches reveal some differences between these approaches and the original California QRIS rating approach for centers (exhibit 10 and exhibits B28–B36 in appendix B). The two approaches involving blocks—the two-level block approach and the five-level block approach—do not differentiate centers based on CLASS scores better than the original QRIS rating approach. However, using the five-level block, rating levels differentiate centers better based on the PQA Form A total score, which is an overall score based on the PQA classroom observation protocol.

Compared with the original rating approach, the ratings calculated by taking an average of all element scores better differentiate centers based on the Learning Environment scale of the PQA. Giving the CLASS element additional weight further improves the rating’s ability to differentiate centers based on quality. The CLASS-weighted ratings are positively related to the PQA total score and the Learning Environment scales, in addition to the Adult-Child Interaction scale and the two domains on the CLASS, which are significant for the original QRIS rating. Assigning a weight of 40 percent to the CLASS element further differentiates centers based on the Classroom Organization element of the CLASS. Thus, using an element average approach and especially giving extra weight to the CLASS element further enhances the validity of the ratings for centers.

**Exhibit 10. Summary of CLASS Analysis Using Alternative Rating Approaches, Centers**

Independent Quality Measure	Analysis Results for Alternative QRIS Rating Approaches					
	California QRIS Rating	Two-Level Block	Five-Level Block	Element Average	CLASS Weighted Average (25%)	CLASS Weighted Average (40%)
<b>Preschool CLASS Scores</b>						
Emotional Support	*	*	*	*	*	*
Classroom Organization						*
Instructional Support	*	*	*	*	*	*
<b>Preschool PQA Form A—Total score</b>			*		*	*
Learning Environment			*	*	*	*
Daily Routine						
Adult-Child Interaction	*	*	*	*	*	*
Curriculum, Planning and Assessment						
<b>Preschool PQA Form B—Total score</b>						
Parent Involvement and Family Services						
Staff Qualifications and Staff Development			*			
Program Management						

*Note:* Each row references the results of a separate ANOVA model. An asterisk (\*) indicates a statistically significant relationship, and the arrows indicate the direction of the relationship between QRIS ratings and observed classroom quality scores, for rating levels with more than five observations.

indicates a consistently positive relationship. indicates relationships that are not consistent in direction.

For FCCHs where the scores were based on extant data rather than AIR’s direct observations of program quality, all alternative approaches that rely on an element average (the element average approach and both CLASS weighted averages) are equivalent in their ability to differentiate sites based on observed quality (exhibits B37–B41 in appendix B). In each case, there is not a consistent, positive relationship between tier rating and CLASS Instructional Support, whereas there is evidence of this relationship using the original QRIS rating.

## Study Limitations

Although this supplemental study was undertaken in response to the limitations of the first phase of the validation study, a few limitations in this supplemental work are important to highlight before summarizing the study findings.

<http://www.cde.ca.gov/sp/cd/rt/aavsumclassanalyses.asp>

First, although the 2015 ratings reflect the third and final year of the RTT-ELC pilot, it is still a relatively new system and participation in the QRIS is voluntary. Thus, although participation in the QRIS among early care and education sites has expanded dramatically from 472 fully rated sites in 2013 to 2,746 in 2015, participation is not universal. In addition, the majority of sites participating in the QRIS are publicly contracted programs already accustomed to meeting many of the measures in the Hybrid Rating Matrix. The proportion of sites with standards-based funding decreased from 2013 to 2015, indicating a broader spectrum of participation. However, few programs serving exclusively private fee-paying or voucher-supported families participated in 2015. The limited variation in the programs participating, as might be expected, contributed to the reduced variation in ratings across programs.

Second, given limited time and resources to conduct the supplemental data collection, the study team collected additional data on Tier 2 sites only and combined the data from the first phase of the validation study (using 2013 ratings) with the second phase (using 2015 ratings) rather than collecting data on sites representing the full range of tier ratings from 2015 data. Given changes in the distribution and performance of the ratings from 2013 to 2015, the results may be different for analyses of data from a single year.

In addition, the analyses were limited to examining the relationships between the QRIS rating and the CLASS—a measure included as one element in the rating. Given limited time for data collection, the relatively low weight given to the CLASS in the overall rating, and the fact that it is the standard for measuring quality in the field, the study team used this measure to validate the QRIS ratings. The PQA was also used in the main validation study (as reported in the Cumulative Technical Report), and the results using this tool were similar to the CLASS results. Using a measure that is part of the QRIS is also a common approach in QRIS validation studies (for example, Barnard et al. 2006, Lahti et al. 2011, Malone et al. 2011), but it should be noted that the results may differ with another quality measure against which the rating can be validated.

Despite these limitations, this supplemental validation study provides additional information to better understand the QRIS ratings and their validity and to inform further refinements to the system.

## Summary and Conclusions

### Summary

This study was intended to address some of the limitations of the first phase of the validation study, which was conducted with the first round of ratings during the RTT-ELC pilot. The small number of fully rated sites in 2013 and the limited distribution of ratings made it difficult to include sites across the full range of tier ratings. To address this limitation, the study team supplemented data collected in 2014 on the sites rated in 2013 with observation data for additional sites rated at Tier 2 in 2015 and replicated validity analyses. In addition, the study team conducted supplemental analyses of ratings data for all fully rated sites in 2015—a much larger sample than the sites rated in 2013. After further discussion with the state and with Consortia, the study team explored additional alternative rating approaches to identify strategies for improving the validity of the rating. These advancements strengthen the validation study results and suggest opportunities for potential enhancements to the QRIS.

### ***How Well Does the QRIS Perform as a Measure of Quality?***

In the third and final year of the RTT-ELC QRIS pilot, there is clear evidence that the system has further developed, expanding from 472 fully rated sites in 2013 to 2,746 sites in 2015. The distribution of ratings remains somewhat skewed with small numbers of sites rated at Tiers 1 and 2, but the variation in ratings has increased since 2013. The expanded number of sites and the increased variation may underlie the improved internal consistency of the rating observed in the analysis of the 2015 ratings. This improvement may enable the detection of more consistent relationships between tier rating and children’s outcomes than were observed in the prior phase of the validation study.

The ratings continue to look quite different for centers and FCCHs in 2015. Centers receive higher ratings on average. Scoring patterns on the individual quality elements that comprise the QRIS rating also differ for centers and FCCHs. Centers receive more points on most elements, especially those capturing structural features of the program such as Developmental and Health Screenings and Minimum Qualifications for Lead Teacher/FCCH. Elements relying on classroom observation scores look similar across the two program types.

The 2015 ratings also differed according to funding source, as was observed with the 2013 ratings. Specifically, sites receiving Title 5, Head Start, and CSP funding received higher ratings overall.

### ***How Well Does the QRIS Differentiate Programs Based on Quality?***

Analyses of supplemental data collected for the study reveal additional evidence that QRIS ratings differentiate centers based on observed quality as measured by the CLASS Instructional Support domain and the CLASS Emotional Support domain. This is especially true at the high and low ends of the rating scale; there seems to be less difference between Tiers 3 and 4 in terms of observed quality. In addition, analyses of extant data collected by the Consortia provide preliminary evidence that QRIS ratings differentiate FCCHs based on observed quality as well.

### ***What Is the Validity of Each Element in the QRIS Rating?***

Most of the elements showed some relationship with observed quality. The Developmental and Health Screenings and Minimum Qualifications for Lead Teacher elements, for example, were positively related to the Emotional Support domain of the CLASS, and the ERS element and the CLASS element itself were positively related to all three CLASS domains. Only the Ratios and Group Size element showed no significant relationship with observed quality, perhaps because of the limited score variation on this element.

### ***How Do Alternative Rating Methods Affect the Validity of Ratings?***

By testing several different rating approaches as alternatives to the California QRIS rating approach described in the Hybrid Rating Matrix, study analyses find that using a block approach results in some lowered ratings for sites, whereas using an element average approach with or without assigning additional weight to the CLASS element generally results in the same or higher tier ratings. Furthermore, ratings that take an average across the element scores show somewhat stronger evidence of validity for centers, especially if additional weight is assigned to

the CLASS element. These alternative rating approaches do not seem to improve the rating's ability to differentiate FCCHs based on observed quality. However, analyses rely solely on extant data, and the results might look different with direct observation data.

## Conclusions and Policy Options

Overall, this supplemental study of the validity of the QRIS ratings at the end of the RTT-ELC QRIS pilot phase finds some support for the validity of the ratings and offers some policy options for consideration.

First, participation in the QRIS increased dramatically from the first ratings in 2013 to the final ratings of the pilot phase in 2015. Still, not all programs participate in the QRIS, and the majority of programs that do participate have standards-based funding, which means that these programs are already held accountable for quality standards as a requirement of their funding. Without broader participation in the QRIS, the distribution of ratings continues to be limited. The limited distribution poses challenges not only for researchers but also for parents because they do not have access to ratings on the full array of options before them. Thus, finding ways to further encourage—or require—all licensed programs to participate continues to be an important policy option for consideration.

Second, there is evidence to support the validity of the rating for the purpose of differentiating programs based on observed quality. The two elements that are based on quality observations conducted in the programs—the CLASS and ERS elements—show the strongest evidence of validity based on CLASS observations, PQA observations, and children's outcomes (AIR & RAND, 2016). Thus, these elements should be retained as central to the QRIS rating.

The element of Ratios and Group Size, in contrast, is not well correlated with the overall rating and does not effectively differentiate programs based on observed quality. This may be due to the limited variation of scores on this element, and some consideration to the cut points on this element to support greater variability may be warranted. The Child Observation element also has a constrained distribution and showed limited evidence of validity, especially in the child outcomes study (AIR and RAND 2016); consideration could be given to the cut points on this element as well.

Alternative rating approaches that take an average across element scores (as opposed to summing scores on each element), and especially those that give additional weight to the CLASS element, demonstrate stronger evidence of validity. Thus, the state may wish to consider modifying the rating protocol to give additional weight to the CLASS element.

Finally, given developments in the implementation of the QRIS and the rapid expansion of fully rated sites throughout the state, further monitoring and evaluation of the validity and impact of the QRIS is needed. Variation in ratings, although limited, has increased, and internal consistency of the rating is stronger. It may be a more appropriate time to begin to examine children's outcomes as they relate to participation in programs with different tier ratings. Given how different the ratings look for FCCHs, another validation phase focused on FCCHs specifically would provide information that could be used to strengthen the QRIS for these sites.

Overall, this supplemental component to the validation study, taken together with the findings presented in the Cumulative Technical Report (AIR and RAND 2016), present a snapshot of the QRIS throughout the pilot phase and lay a foundation for ongoing reflection, analysis, and refinements to the system.

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## Appendix A. Evaluation Study Methods

This appendix describes in detail the methods—the study sample, data sources, and procedures—associated with the replication of the validation of the quality rating and improvement system (QRIS) ratings using additional data on new sites rated in 2015 and observed for this study in 2016.

### Study Samples

The analyses in this report focus on three overlapping samples of sites:

1. All sites with full 2015 QRIS ratings: the total set of sites with full and complete QRIS ratings from 2015 ( $N = 2,746$  sites)
2. A subsample of center-based sites with full QRIS ratings and classroom-level PreK Classroom Assessment Scoring System (CLASS, Pianta, La Paro and Hamre 2008) observation data collected for the study in spring 2014 or summer 2016 ( $N = 166$  centers)
3. A subsample of family child care homes (FCCHs) with full QRIS ratings and extant PreK CLASS data from 2015 ( $N = 401$  FCCHs)

More information about each of these samples follows.

#### ***Sites with 2015 Full QRIS Ratings***

Study analyses that only require existing data collected for QRIS ratings use the sample of programs with full QRIS ratings in 2015. Programs with full ratings include those programs with complete rating data on all required elements provided by the Consortia to the California Department of Education (CDE) in the Common Data Elements. Data files received from the CDE were initially reviewed for completeness and cleaned for analysis.

Nineteen Consortia collected data on their local participating programs using local procedures and database systems and following specific statewide requirements for QRIS reporting. The data submitted to the state using the QRIS reporting requirements are referred to as the Common Data Elements and include data on program type, enrollment, funding sources, languages spoken in the program, element scores, the total score (sum of the element scores), the QRIS rating, and the program average CLASS scores used to calculate the CLASS element scores.

California's QRIS permits participating Consortia to make local adaptations to the QRIS rating criteria for Tiers 2 and 5. To ensure comparability of the QRIS ratings for the study analyses further, American Institutes for Research (AIR) used the element score data for each program to simulate QRIS ratings for programs in all Consortia using the California QRIS rating criteria without local adaptations to ensure consistency across Consortia. Of the 3,117 programs participating in the QRIS, 2,746 programs (2,022 centers and 724 FCCHs) across 19 Consortia had full ratings. The remaining 371 participating programs had incomplete rating data and could not be included in the study analyses.

The sites with full 2015 ratings receive funding from a variety of sources. Approximately 62 percent of sites with full 2015 ratings receive standards-based public funding (e.g., CSP, Title 5, or Head Start). About 40 percent receive funding from parents who pay fees. Additional characteristics and a comparison of the sites with full ratings from 2015 and 2013 is included in exhibit A1.

**Exhibit A1. Characteristics of Sites with Full Ratings 2013 and 2015**

	Sites with Full 2013 Ratings		Sites with Full 2015 Ratings	
	N	Percentage	N	Percentage
<b>Program Type</b>				
Center-Based	365	77%	2,022	73.6%
FCCH	107	23%	724	26.4%
<b>Funding Sources (Programs May Have Multiple Sources)</b>				
Standards-Based Public Funding (CSP, Title 5, or Head Start)	382	85%	1,706	62.1%
First 5 California CSP 1 or CSP 2 Funding	222	49%	412	15.0%
California Title 5 (State Preschool, General Child Care, or Cal-SAFE) Funding	249	55%	1,309	47.7%
Federal Head Start or Early Head Start Funding	149	33%	538	19.6%
State-/Federally Funded Child Care Subsidy Vouchers	169	37%	624	22.7%
Private Pay	192	47%	1,104	40.2%
<b>Language Spoken with Children</b>				
Non-English Language Spoken With Children	256	58%	1,535	55.9%
Spanish Spoken With Children	249	56%	1,455	54.1%
<b>Consortia</b>				
Alameda	17	4%	94	3.4%
Contra Costa	8	2%	100	3.6%
El Dorado	0	0%	86	3.1%
Fresno	5	1%	81	3.0%
LA OCC [Los Angeles Office of Child Care]	52	11%	296	10.8%
LAUP [Los Angeles Universal Preschool]	97	21%	494	18.0%
Merced	0	0%	33	1.2%
Orange	8	2%	276	10.1%
Placer Nevada	0	0%	41	1.5%
Sacramento	27	6%	207	7.5%
San Diego	89	19%	170	6.2%
San Francisco	102	22%	167	6.1%
San Joaquin	13	3%	172	6.3%
San Mateo	0	0%	66	2.4%

	Sites with Full 2013 Ratings		Sites with Full 2015 Ratings	
	N	Percentage	N	Percentage
Santa Barbara	0	0%	136	5.0%
Santa Clara	13	3%	110	4.0%
Santa Cruz	0	0%	68	2.5%
Ventura	41	9%	103	3.8%
Yolo	0	0%	46	1.7%
	N	Mean (SD)	N	Mean (SD)
<b>Total Enrollment</b>				
Average Total Enrollment: Centers	362	52.9 (32.3)	1970	52.8 (41.8)
Average Total Enrollment: FCCHs	107	9.1 (4.1)	679	9.2 (5.6)

Note: SD = standard deviation.

### ***Centers with Full QRIS Ratings and PreK CLASS Observation Data Collected for the Study in Spring 2014 or Summer 2016***

This subsample includes 166 center-based sites with PreK CLASS observations. For 135 of these centers, data were collected in spring 2014. In addition to the direct observations conducted by the study team, five Consortia also provided some classroom-level CLASS data to supplement the sample and reduce burden on the sites. For details on the spring 2014 data collection, see appendix A of the Independent Evaluation of California’s Race to the Top-Early Learning Challenge (RTT-ELC) QRIS: Cumulative Technical Report (AIR and RAND, 2016).<sup>3</sup> During summer 2016, AIR collected data (PreK CLASS classroom observations) from an additional 31 centers.

To supplement the analyses from the Cumulative Technical Report with additional data on sites rated at Tier 2, the study team reviewed the 2015 ratings data and selected the consortia and counties with the highest numbers of Tier 2 rated sites (Los Angeles Universal Preschool [LAUP] and Sacramento). Given the limited data collection window, the team included Santa Clara and Alameda counties because of their proximity to data collection staff.

In summer 2016, AIR contacted these four consortia (LAUP, Sacramento, Santa Clara, and Alameda) and asked for contact information and assistance in reaching out to centers that had received a rating of 2 in the 2015 Consortia data. The study team asked for information on a total of 105 sites and received information back from these consortia on a total of 84 sites. Reasons for withholding site contact information varied: Sites were no longer participating in the QRIS, sites had closed, or sites declined study participation when the Consortia contacted them to introduce the study to them.

AIR contacted 75 of 84 sites by e-mail and phone, with repeated follow-up as needed to gain participation agreements from the sites. The team obtained participation agreements and then

<sup>3</sup> <http://www.cde.ca.gov/sp/cd/rt/rttelc.asp>.

scheduled and conducted observations in 31 of these sites before the end of the data collection period. To be eligible to participate in the observations during summer 2016, sites needed to be open during the summer and conducting regular programming; that is, their classroom activities and curriculum could not vary significantly from those used during the traditional school year, and they needed to have at least one classroom that served children ages 3–5. Each classroom at the observed sites received a \$50 gift card as a thank you for participating in the study. The recruitment results are provided in exhibit A2.

**Exhibit A2. Recruitment Results Based on Site Information Provided by Consortia**

Consortia	Contact Information Received	Contacted	Observed	Ineligible	Refused	Nonresponsive
LAUP	64	55	17	22	6	10
Sacramento	18	18	12	3	0	3
Santa Clara	2	2	2	0	0	0
Alameda	0	0	N/A	N/A	N/A	N/A
Total	84	75	31	25	6	13

Based on a comparison of the 2015 Tier 2 sites observed by the study team and those that were not observed on a few key variables (for example, mean enrollment, percentage serving infants and toddlers, types of funding) the observed sites only differ significantly from those that were not observed in terms of their mean enrollment. The observed sites tended to be larger than unobserved sites (exhibit A3).

**Exhibit A3. Comparison of 2015 Tier 2 Sites That Received CLASS Observations with Other Tier 2 Sites**

Program Characteristics	Not Observed (n = 105)	Observed (n = 31)
Mean enrollment	48.9	66.4*
Percentage serving infants and toddlers	54.6%	71.0%
Percentage using language other than English	32.4%	48.4%
Percentage with First 5 California CSP 1 or CSP 2 funding	2.9%	6.5%
Percentage with California Title 5 (State Preschool, General Child Care, or CalSAFE) funding	20.0%	9.7%
Percentage with Federal Head Start or Early Head Start funding	1.0%	0.0%
Percentage with State/Federally Funded Child Care Subsidy Vouchers	15.2%	9.7%

\* $p < .05$ .

**Sites with 2015 Full QRIS Ratings and Extant CLASS Data**

Approximately 78 percent (2,156 sites, 1,775 centers, and 401 FCCHs) of the sites with 2015 Full QRIS Ratings also had extant program-wide average CLASS scores as part of the Common Data Elements. The study team used these data for the FCCHs to supplement the validity analyses using the direct observation data because direct observation data were not collected for

the FCCHs in 2016. For details on the data collection for the first two samples, see appendix A of the Cumulative Technical Report (AIR and RAND 2016).

## Measures

These supplemental analyses draw on data using three measures: the California QRIS ratings, the PreK CLASS, and the Program Quality Assessment (PQA, HighScope Educational Research Foundation 2003). The QRIS ratings comprise an overall tier rating and seven element scores for centers and five element scores for FCCHs as described in the Hybrid Rating Matrix (see appendix C) and outlined in exhibit A4. Ratings data were collected by the Consortia and recorded in the Common Data Elements. The study draws on ratings data from 2013 and 2015. The Common Data elements also include program characteristics data, such as size and funding sources on each participating site.

**Exhibit A4. Quality Elements Comprising the RTT-ELC Hybrid Rating Matrix**

	Centers	FCCHs
<b>CORE I: Child Development and School Readiness</b>		
Child Observation	●	●
Developmental and Health Screenings	●	●
<b>CORE II: Teachers and Teaching</b>		
Minimum Qualifications for Lead Teacher or FCCH	●	●
Effective Teacher-Child Interactions: CLASS Assessments	●	●
<b>CORE III: Program and Environment—Administration and Leadership</b>		
Ratios and Group Size	●	
Program Environment Rating Scale(s)	●	●
Director Qualifications	●	

The PreK CLASS tool assesses three domains—Emotional Support, Classroom Organization, and Instructional Support—which are described in exhibit A5. Analyses draw on classroom-level CLASS scores collected for the study from two cohorts, one in 2014 and one in 2016. In addition, program average CLASS scores provided in the 2015 Common Data Elements were used for the analyses related ratings to observed quality for FCCHs only because they were not included in the supplemental on-site data collection.

**Exhibit A5. Description of CLASS Pre-K Domains and Dimensions**

Domain	Dimensions
<b>Emotional Support</b>	<b>Positive Climate.</b> Positive Climate reflects the emotional connection between the teacher and students as well as among students, and it measures the warmth, respect, and enjoyment communicated by verbal and nonverbal interactions.
	<b>Negative Climate.</b> Negative Climate reflects the overall level of expressed negativity in the classroom; the frequency, quality, and intensity of teacher and peer negativity are key to this scale.
	<b>Teacher Sensitivity.</b> Teacher Sensitivity encompasses the teacher’s awareness of and responsiveness to students’ academic and emotional needs; high levels of sensitivity facilitate students’ ability to actively explore and learn because the teacher consistently provides comfort, reassurance, and encouragement.
	<b>Regard for Student Perspectives.</b> Regard for Student Perspectives captures the degree to which the teacher’s interactions with students and classroom activities place an emphasis on students’ interests, motivations, and points of view, and encourage student responsibility and autonomy.
<b>Classroom Organization</b>	<b>Behavior Management.</b> Behavior Management encompasses the teacher’s ability to provide clear behavioral expectations and use effective methods to prevent and redirect misbehavior.
	<b>Productivity.</b> Productivity considers how well the teacher manages instructional time and routines and provides activities for students so that they have the opportunity to be involved in learning activities.
	<b>Instructional Learning Formats.</b> Instructional Learning Formats focus on the ways in which the teacher maximizes students’ interest, engagement, and ability to learn from lessons and activities.
<b>Instructional Support</b>	<b>Concept Development.</b> Concept Development measures the teacher’s use of instructional discussions and activities to promote students’ higher-order thinking skills and cognition, and the teacher’s focus on understanding rather than on rote instruction.
	<b>Quality of Feedback.</b> Quality of Feedback assesses the degree to which the teacher provides feedback that expands learning and understanding and encourages continued participation.
	<b>Language Modeling.</b> Language Modeling captures the quality and amount of the teacher’s use of language-stimulation and language-facilitation techniques.

Source: CLASS Manual, Pre-K (Pianta, La Paro, and Hamre 2008).

The study also draws on data collected by the study team in 2014 on a sample of sites using the PQA, which is a rating instrument designed to evaluate the quality of early childhood programs and identify staff training needs. The PQA examines multiple dimensions of program implementation, from the physical characteristics of the setting to the nature of adult–child interaction to program staffing and management. The tool includes seven areas of quality, which are described in exhibit A6.

**Exhibit A6. Preschool PQA Sections and Items**

Section	Item	
I. Learning Environment	<ul style="list-style-type: none"> <li>• Safe and healthy environment</li> <li>• Defined interest areas</li> <li>• Logically located interest areas</li> <li>• Outdoor space, equipment, materials</li> <li>• Organization and labeling of materials</li> </ul>	<ul style="list-style-type: none"> <li>• Varied and open-ended materials</li> <li>• Plentiful materials</li> <li>• Diversity-related materials</li> <li>• Displays of child-initiated work</li> </ul>
II. Daily Routine	<ul style="list-style-type: none"> <li>• Consistent daily routine</li> <li>• Parts of the day</li> <li>• Appropriate time for each part of day</li> <li>• Time for child planning</li> <li>• Time for child-initiated activities</li> <li>• Time for child recall</li> </ul>	<ul style="list-style-type: none"> <li>• Small-group time</li> <li>• Large-group time</li> <li>• Choices during transition times</li> <li>• Cleanup time with reasonable choices</li> <li>• Snack or meal time</li> <li>• Outside time</li> </ul>
III. Adult-Child Interaction	<ul style="list-style-type: none"> <li>• Meeting basic physical needs</li> <li>• Handling separation from home</li> <li>• Warm and caring atmosphere</li> <li>• Support for child communication</li> <li>• Support for non-English speakers</li> <li>• Adults as partners in play</li> <li>• Encouragement of child initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• Support for child learning at group times</li> <li>• Opportunities for child exploration</li> <li>• Acknowledgment of child efforts</li> <li>• Encouragement of peer interactions</li> <li>• Independent problem solving</li> <li>• Conflict resolution</li> </ul>
IV. Curriculum Planning and Assessment	<ul style="list-style-type: none"> <li>• Curriculum model</li> <li>• Team teaching</li> <li>• Comprehensive child records</li> </ul>	<ul style="list-style-type: none"> <li>• Anecdotal note taking by staff</li> <li>• Use of child observation measure</li> </ul>
V. Parent Involvement and Family Services	<ul style="list-style-type: none"> <li>• Opportunities for involvement</li> <li>• Parents on policy-making committees</li> <li>• Parent participation in child activities</li> <li>• Sharing of curriculum information</li> <li>• Staff-parent informal interactions</li> </ul>	<ul style="list-style-type: none"> <li>• Extending learning at home</li> <li>• Formal meetings with parents</li> <li>• Diagnostic/special education services</li> <li>• Service referrals as needed</li> <li>• Transition to kindergarten</li> </ul>
VI. Staff Qualifications and Staff Development	<ul style="list-style-type: none"> <li>• Program director background</li> <li>• Instructional staff background</li> <li>• Support staff orientation and supervision</li> <li>• Ongoing professional development</li> </ul>	<ul style="list-style-type: none"> <li>• Inservice training content and methods</li> <li>• Observation and feedback</li> <li>• Professional organization affiliation</li> </ul>
VII. Program Management	<ul style="list-style-type: none"> <li>• Program licensed</li> <li>• Continuity in instructional staff</li> <li>• Program assessment</li> <li>• Recruitment and enrollment plan</li> </ul>	<ul style="list-style-type: none"> <li>• Operating policies and procedures</li> <li>• Accessibility for those with disabilities</li> <li>• Adequacy of program funding</li> </ul>

For additional information about measures used for the study, see appendix A of the Cumulative Technical Report (AIR and RAND, 2016).<sup>4</sup>

## **Analysis Methods**

To examine the validity of the QRIS ratings, AIR employed distinct analysis methods to examine different aspects of validity, including the measurement properties of the QRIS ratings and the validity of the QRIS ratings for differentiating programs based on observed quality. The study team also examined how alternative methods of calculating QRIS ratings affect the validity of the ratings.

### ***Measurement Properties of the QRIS Ratings***

Analyzing the measurement properties of the QRIS ratings provides information about how well the QRIS defines and measures quality. For this part of the study, the study team examined the distribution of ratings and element scores, the characteristics of programs that predict QRIS ratings, the internal consistency of the QRIS ratings, and the relationship between the element scores and the overall QRIS ratings. For these analyses, the team used existing state data on programs participating in California's QRIS, including program characteristics and QRIS ratings and element scores, for 2,022 centers and 724 FCCHs with full ratings from 2015.

AIR first examined the distribution of ratings and element scores by reviewing the number and percentage of programs with full ratings that received each QRIS rating. The distributions were examined separately for centers and FCCHs.

To identify the characteristics of programs that predict QRIS ratings, the study team examined summary statistics (means or percentages) for each characteristic among programs at each rating level, and then conducted ordinal logistic regression analyses indicating which program characteristics, if any, are significantly associated with QRIS rating levels. The team conducted ordinal logistic regression analyses to examine associations between program characteristics and the individual rating elements. Again, all these analyses were conducted separately for centers and FCCHs. The specific characteristics of programs examined include the enrollment size, whether the program serves infants and toddlers, whether program staff use a language other than English in the classroom, the Consortium in which the program is located, and whether the program receives several types of funding, including Child Signature Program (CSP), State Preschool, Head Start or Early Head Start, or child care subsidies.

To examine the relationships between the element scores and the overall QRIS ratings, the study team examined the correlation between each pair of elements, and between each element and the overall QRIS rating. The team examined the internal consistency of the QRIS ratings by calculating Cronbach's alpha statistics using the element scores and by calculating the Cronbach's alpha removing each element to determine whether the internal consistency would improve without a given element score. These analyses assess the extent to which the element scores relate to each other and the overall QRIS rating as well as the extent to which QRIS rating measures a single latent construct of program quality.

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<sup>4</sup> <http://www.cde.ca.gov/sp/cd/rt/rttelc.asp>.

## ***Validity of the QRIS Ratings for Differentiating Programs Based on Observed Quality***

The second set of analyses describe how well the QRIS ratings align with performance on the CLASS, which is an objective measure of quality that has been shown to be predictive of children’s positive developmental outcomes (Howes et al. 2008; Mashburn et al. 2008). Although the CLASS is included as part of the rating protocol, the CLASS scores carry relatively little weight in the actual rating calculation. It is one of seven elements for centers (and one of five for FCCHs), and the actual score is not even captured for sites below the four-point level on the CLASS element. Thus, variation in CLASS scores has little impact on the overall rating. An external measure of quality, the PQA was used in the analyses relating ratings to observed quality in first phase of the validation study. These data were collected by the study team in 2014 for a sample of sites. An analysis of these data revealed similar results to the CLASS scores. Given the time and resource constraints for the supplemental analysis, the study was not able to include the PQA in the additional data collection in 2016.

The study team examined (1) the relationship between QRIS ratings and program average scores on each CLASS domain and (2) the relationship between each element score and program average scores on the CLASS instrument.

The team examined centers and FCCHs separately using different sources of data for each program type. For centers, QRIS ratings and element score data were drawn from administrative records and independent classroom quality observations conducted by the research team with the CLASS instrument in 2014 and 2016. For FCCHs, QRIS ratings, element scores, and CLASS domain scores were drawn from 2015 administrative records. This was done because not enough FCCHs were observed in 2014 to produce reliable estimates; additional observations of FCCHs were not conducted by the study team in 2016.

The analytic samples consisted of 166 centers and 343 FCCHs. Running models separately for centers and FCCHs, the study team used an analysis of variance (ANOVA) to determine whether preschool CLASS domain scores differ significantly for each QRIS rating level. For each model, pairwise comparisons were made for each of the tier levels and Tukey-Kramer adjustments for multiple comparisons were made. The team ran models to explore associations between CLASS domain scores and QRIS rating elements.

### ***Alternative Methods of Calculating QRIS Ratings***

AIR examined how alternative methods of calculating QRIS ratings affect the ratings programs receive as well as the validity of those ratings to inform future decisions about whether and how California might alter the QRIS rating approach. For this part of the study, the study team first used programs’ existing element scores to calculate ratings using five different calculation approaches, three of which were also used in the analyses reported in the Cumulative Technical Report (AIR and RAND, 2016). Two additional ratings approaches were used, which give additional weight to the CLASS element given the stronger validity evidence for this element (AIR and RAND, 2016). Exhibit A7 provides a definition for each rating approach included in these comparisons, and exhibit A8 provides an example calculation for the California QRIS, the element average rating, and the two CLASS-weighted ratings. The team then compared the

distribution of ratings using California QRIS ratings and each alternative rating approach. All analyses were run separately for centers and FCCHs, using the existing state data for 2,022 centers and 724 FCCHs with full ratings from 2015.

**Exhibit A7. Alternative Rating Approaches Examined in This Study**

Rating Type	Rating Definition
California QRIS	Tier 1 is blocked; Tiers 2–5 are point-based for programs meeting block criteria for Tier 1. Rating is determined by total points earned across elements. This is California’s rating approach without local adaptations to the way the ratings are calculated using the element scores.
Two-level block	Tiers 1 and 2 are blocked, and Tiers 3–5 are point based for programs meeting block criteria for Tier 2. This approach is used as a local adaptation to California’s rating approach in some counties.
Five-level block	Tiers 1–5 are blocked.
Element average	Scores are determined by taking the average of all applicable rating elements (seven elements for centers, six elements for infant-only centers, five elements for FCCHs, four elements for infant-only FCCHs). Averages are rounded to whole numbers (round up for 0.5 and above, round down below 0.5).
CLASS weighted 25%	Scores are determined by taking the average of all applicable rating elements and rounding to whole numbers, after weighting the CLASS element such that it represents 25% of the overall rating, while other elements each represent 12.5% of the rating for centers and 18.75% for FCCHs.
CLASS weighted 40%	Scores are determined by taking the average of all applicable rating elements and rounding to whole numbers, after weighting the CLASS element such that it represents 40% of the overall rating, while other elements each represent 10% of the rating for centers and 15% for FCCHs.

*Note:* Elements are the domains of quality included in California’s QRIS. All rating approaches are calculated using element scores collected by Consortia on participating programs. Scores for each element range from 1 to 5 and are determined by meeting criteria for each point level. Centers are rated on seven elements (centers serving only infants are rated on six elements), and FCCHs are rated on five of the seven elements that apply to centers (FCCHs serving only infants are rated on four elements). Some Consortia made local adaptations to element scoring rather than using the statewide criteria.<sup>5</sup> Blocking a tier means that programs meet all requirements for each element score at that tier (blocking at Tier 2 means that programs must have a score of at least 2 on all elements to be rated at 2 or higher).

<sup>5</sup> The study analyses use simulated QRIS ratings that the study team calculated from element score data collected by Consortia using the California QRIS rating guidelines without any local options to the extent possible. In most of the 11 Consortia with valid QRIS ratings, local adaptations to the criteria were applied after the element scores were calculated. However, two Consortia incorporated local adaptations into the element scores, and the study team could not recalculate the element scores without these local adaptations.

**Exhibit A8. Example Rating Calculations for the Element Average and CLASS Weighted Average Rating Approaches**

Rating Approach	Calculation Example for a Center Where: CO = 2, DHS = 2, MQ = 3, CLASS = 5, RGS = 2, ERS = 4, DQ = 3	Score	Tier Rating
California QRIS	$CO + DHS + MQ + CLASS + RGS + ERS + DQ$	21	3
	$2 + 2 + 3 + 5 + 2 + 4 + 3$		
Element average	$\frac{CO + DHS + MQ + CLASS + RGS + ERS + DQ}{7}$	3	3
	$\frac{2 + 2 + 3 + 5 + 2 + 4 + 3}{7}$		
CLASS weighted 25%	$\frac{CO*7*.125 + DHS*7*.125 + MQ*7*.125 + CLASS*7*.25 + RGS*7*.125 + ERS*7*.125 + DQ*7*.125}{7}$	3.25	3
	$\frac{1.75 + 1.75 + 2.625 + 8.75 + 1.75 + 3.5 + 2.625}{7}$		
CLASS weighted 40%	$\frac{CO*7*.1 + DHS*7*.1 + MQ*7*.1 + CLASS*7*.4 + RGS*7*.1 + ERS*7*.1 + DQ*7*.1}{7}$	3.6	4
	$\frac{1.4 + 1.4 + 2.1 + 14.0 + 1.4 + 2.8 + 2.1}{7}$		

Note: CLASS = Effective Teacher-Child Interactions: CLASS; CO = Child Observation element score; DHS = Developmental and Health Screenings; DQ = Director Qualifications; ERS = Program Environment Rating Scales; MQ = Minimum Qualifications for Lead Teacher or FCCH; RGS = Ratios and Group Sizes.

Next, the study team compared the validity of each rating approach to differentiate programs based on observed quality. This was done by using analysis of variance (ANOVA) models to determine whether average preschool CLASS scores differ significantly by rating level for each of the alternative rating approaches. These analyses drew on a combination of 2013 and 2015 ratings data and CLASS scores collected for the study in the spring of 2014 and summer of 2016. However, since PQA data were also available for a sample of sites with 2013 ratings data, the team also recalculated 2013 ratings using the new ratings approaches and compared the ratings against PQA scores. Thus, data for the analyses were drawn from the following sources:

- CLASS data for centers were drawn from independent CLASS observations conducted by the research team in 2014 and 2016 ( $n = 166$ ) and related to ratings data from 2013 and 2015, respectively;
- PQA Form A and Form B data for centers were gathered from independent observations conducted by the research team in 2014 ( $n = 134$  and  $124$ , respectively) and related to ratings from 2013; and
- CLASS data for FCCHs were drawn from the 2015 administrative data records ( $N = 343$ ) and related to ratings from 2015.

To compare the model results for each alternative rating approach and the California QRIS ratings, AIR examined the model coefficients and  $p$  values to identify which approach was most strongly associated with domain scores on each CLASS and PQA domain.

## Study Limitations

The results presented in the body of this report should be interpreted within the context of several data challenges and limitations. As previously noted in appendix A of the Cumulative Technical Report (AIR and RAND, 2016), there were four main data challenges or limitations, as follows:

1. In 2013, a little more than a third of participating programs had a full, nonprovisional rating and could therefore be included in the study analyses.
2. AIR obtained a smaller than anticipated sample for the validity analyses relating tier rating to observed quality, and there was some indication that programs participating in the classroom observations differ from programs in the QRIS that did not participate.
3. Analyses using the CLASS measure included a combination of data collected by the study team and existing data collected by independent observers for Consortia's QRIS ratings.
4. The QRIS is relatively new and was not fully implemented in 2013.

The rationale for preparing this additional report, which includes analyses of more recent (2015) QRIS rating data as well as classroom observation data on additional Tier 2 rated sites, was to address some of the limitations noted in the Cumulative Technical Report. The most notable limitations include the relatively small number of sites with full and complete ratings; the limited number of sites included in the study sample, particularly at Tier 2; and the early stage of the implementation of the QRIS. The 2015 ratings have a much higher participation rate, and fewer sites were identified as having incomplete ratings. The supplemental data collection added CLASS observation data for 31 additional sites to the analyses, improving the range of sites included.

However, although the 2015 ratings reflect the third and final year of the RTT-ELC pilot, it is a relatively new system and participation in the QRIS is voluntary. Although participation in the QRIS among early care and education sites has expanded dramatically from 472 fully rated sites in 2013 to 2,746 in 2015, participation is still not universal. In addition, the majority of sites participating in the QRIS are publicly contracted programs already accustomed to meeting many of the measures in the Hybrid Rating Matrix. The proportion of sites with standards-based funding decreased from 2013 to 2015, indicating a broader spectrum of participation. However, few programs serving exclusively private fee-paying or voucher-supported families participated in 2015. The limited variation in the programs participating, as might be expected, contributed to the reduced variation in ratings across programs.

Second, given limited time and resources to conduct the supplemental data collection, the study team collected additional data on Tier 2 sites only and combined the data from the first phase of the validation study (using 2013 ratings) with the second phase (using 2015 ratings) rather than collecting data on sites representing the full range of tier ratings from 2015 data. Given changes in the distribution and performance of the ratings from 2013 to 2015, the results may be different for analyses of data from a single year. In addition, analyses were limited to examining the relationships between the QRIS rating and the CLASS—a measure included as one element in the rating. Given the limited time for data collection and the relatively low weight given to the CLASS in the overall rating, the study team used this standard for quality in the field. Using a

measure that is part of the QRIS is a common approach in QRIS validation studies (e.g., Barnard et al. 2006, Lahti et al. 2011, Malone et al. 2011), but the results may differ with another quality measure against which the rating can be validated.

Thus, study results should be interpreted within the context of these limitations.

## Appendix B. Detailed Data Tables

### How Well Does the QRIS Perform as a Measure of Quality?

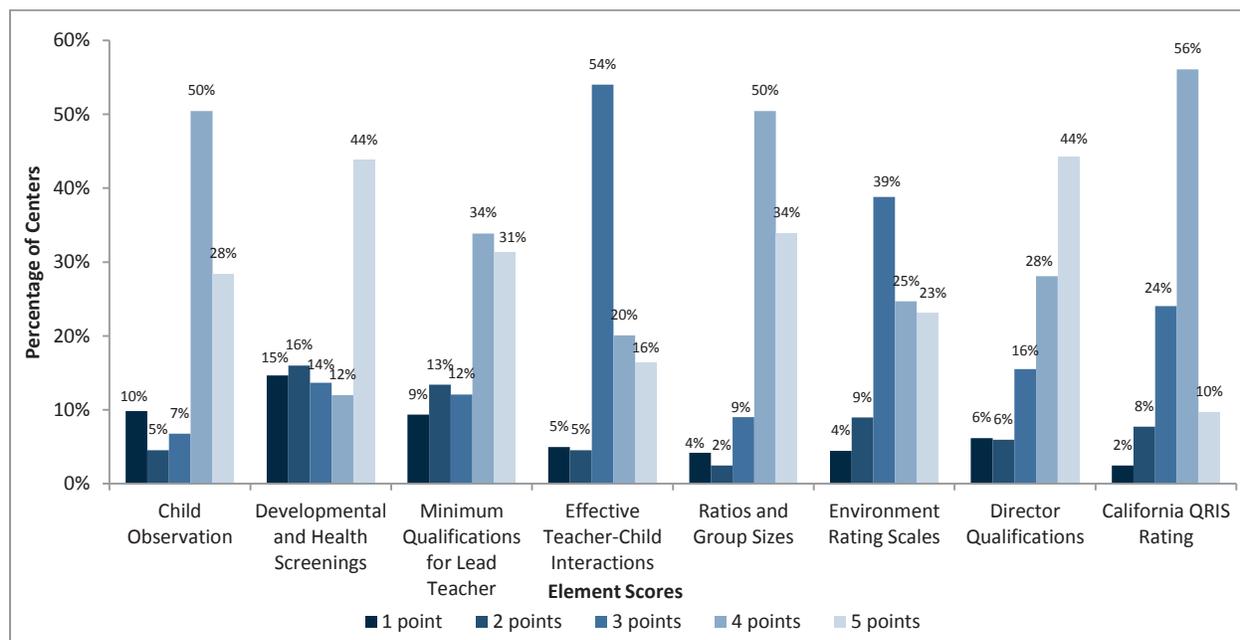
#### Distribution of Ratings and Element Scores

Exhibit B1. Variance Comparison for the 2013 and 2015 Ratings and Element Scores, Using the Robust Variance Test

Rating/Element	2013 Rating Standard Deviation (n = 472)	2015 Rating Standard Deviation (n = 2,746)	p Value From Levene's Test
QRIS rating	0.719	0.855	.013*
Child Observation	0.923	1.179	<.001***
Developmental and Health Screening	1.601	1.524	.020*
Minimum Qualification for Lead Teacher/FCCH	1.149	1.298	.001***
Effective Teacher-Child Interaction: CLASS Assessment	0.921	0.976	.543
Ratios and Group Size	0.789	0.949	.007**
Program Environment Rating Scale(s)	1.056	1.076	.380
Director Qualifications	1.072	1.180	.391

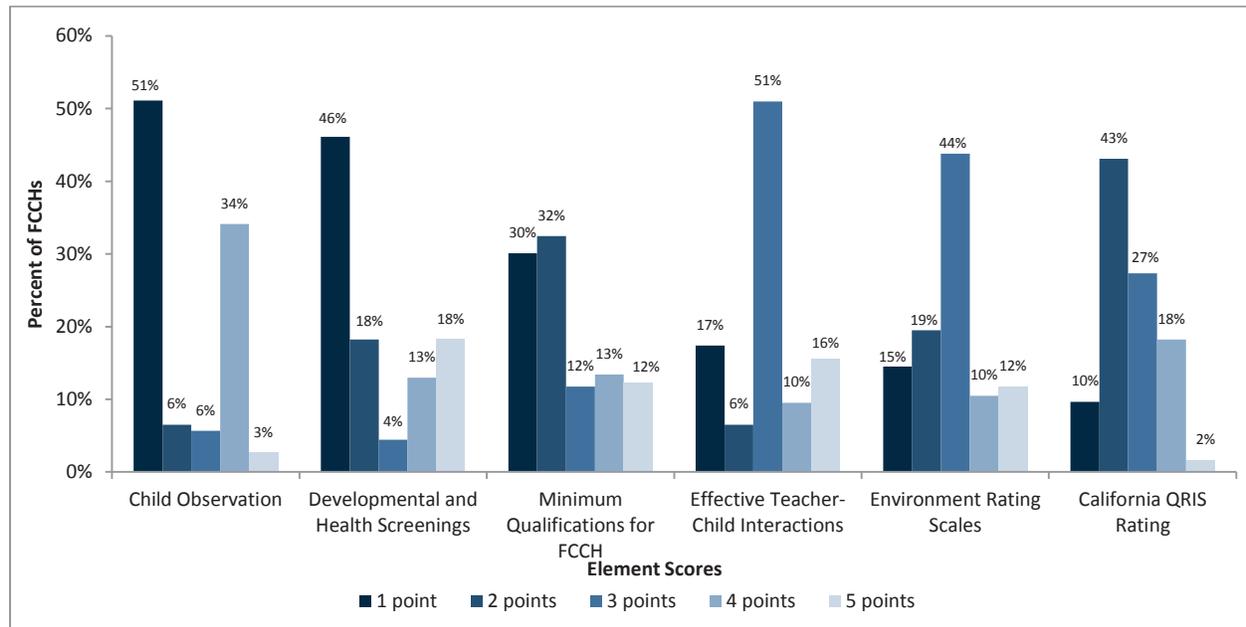
\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

Exhibit B2. Distribution of Element Scores, Centers



Note. N = 2,022 centers.

### Exhibit B3. Distribution of Element Scores by Percentage, FCCHs



Note. N = 724 FCCHs.

### Characteristics of Programs by Rating Level

#### Exhibit B4. Program Characteristics by California QRIS Rating Level, Centers

Program Characteristic	N	All Programs	California QRIS Rating Level				
			Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
<b>General Characteristics</b>							
Mean enrollment, all ages	1,970	52.8	56.9	51.7	54.7	52.1	52.2
Percentage of programs serving infants and toddlers	1,970	27.1%	42.0%	56.4%	38.1%	19.8%	16.1%
Percentage of programs using any language other than English	2,021	57.8%	12.0%	39.7%	48.4%	62.5%	80.5%
Percentage of programs using Spanish	1,995	56.4%	12.0%	33.5%	47.9%	61.0%	80.5%
<b>Funding Streams</b>							
Percentage with First 5 California CSP 1 or CSP 2 funding	2,022	19.1%	2.0%	6.4%	17.5%	18.6%	40.3%
Percentage with California Title 5 (State Preschool, General Child Care, or CalSAFE) funding	2,022	59.5%	42.0%	19.2%	52.3%	66.8%	71.9%
Percentage with Federal Head Start or Early Head Start funding	2,022	23.8%	6.0%	2.6%	17.1%	30.3%	24.5%
Percentage with children receiving State/Federally Funded Child Care Subsidy Vouchers	2,022	18.9%	14.0%	16.7%	23.5%	19.8%	6.1%
Number of centers at rating level, full sample	2,022		50	156	486	1134	196

**Exhibit B5. Ordered Logistic Regressions of QRIS Ratings and Element Scores on Program Characteristics, Centers**

Program Characteristic	Odds Ratios for Each Dependent Variable in Ordinal Logistic Regression Models							
	QRIS	CO	DHS	MQ	CLASS	RGS	ERS	DQ
<b>General Characteristics</b>								
Enrollment	1.00	1.00*	1.00*	1.00	1.00*	0.99***	1.00	1.00*
Serves infants and toddlers	0.41***	0.37***	0.61***	0.39***	0.91	0.68**	0.60***	0.47***
Uses language other than English	1.63***	1.67***	2.03***	1.44**	1.11	1.36**	1.25*	1.11
<b>Funding Streams</b>								
First 5 California CSP 1 or CSP 2 funding	3.47***	2.34***	2.87***	1.95***	2.58***	0.83	2.71***	1.43*
California Title 5 (State Preschool, General Child Care, or CalSAFE) funding	2.37***	4.06***	1.51***	1.30**	1.22	1.00	1.18	2.48***
Federal Head Start or Early Head Start funding	2.75***	1.23	6.51***	2.13***	1.09	2.56***	0.99	1.16
State/Federally Funded Child Care Subsidy Vouchers	0.88	0.91	2.10***	0.90	0.85	0.76	0.72	0.56**

*Note.*  $n = 1,969$  centers for all models. CLASS = Effective Teacher-Child Interactions: CLASS; CO = Child Observation element score; DHS = Developmental and Health Screenings; DQ = Director Qualifications; ERS = Program Environment Rating Scales; MQ = Minimum Qualifications for Lead Teacher or FCCH; QRIS = California QRIS rating; RGS = Ratios and Group Sizes. Each column represents a separate ordinal logistic regression model, which also included fixed effects for Consortia.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**Exhibit B6. Program Characteristics by California QRIS Rating Level, FCCHs**

Program Characteristic	N	All Programs	California QRIS Rating Level				
			Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
<b>General Characteristics</b>							
Mean enrollment, all ages	679	9.2	7.7	8.3	10.1	11	9.2
Percentage of programs serving infants and toddlers	679	78.4%	95.7%	83.8%	70.7%	66.7%	83.3%
Percentage of programs using any language other than English	724	50.6%	61.4%	47.4%	51.0%	53.8%	25.0%
Percentage of programs using Spanish	695	47.3%	64.6%	42.2%	48.2%	50.8%	27.3%
<b>Funding Streams</b>							
Percentage with First 5 California CSP 1 or CSP 2 funding	724	3.6%	0.0%	0.6%	5.1%	9.8%	8.3%
Percentage with California Title 5 (State Preschool, General Child Care, or CalSAFE) funding	724	14.6%	2.9%	9.3%	23.2%	20.5%	16.7%
Percentage with Federal Head Start or Early Head Start funding	724	7.7%	0.0%	6.4%	8.1%	15.2%	0.0%
Percentage with children receiving State/Federally Funded Child Care Subsidy Vouchers	724	33.3%	32.9%	31.1%	36.9%	34.1%	25.0%
Number of FCCHs at rating level, full sample	724		70	312	198	132	12

**Exhibit B7. Ordered Logistic Regressions of QRIS Ratings and Element Scores on Program Characteristics, FCCHs**

Program Characteristic	Odds Ratios for Each Dependent Variable in Ordinal Logistic Regression Models					
	QRIS Rating	CO	DHS	MQ	CLASS	ERS
<b>General Characteristics</b>						
Enrollment	1.09***	1.09***	1.02	1.07***	1.04*	1.09***
Serves infants and toddlers	.43**	.38**	.84	.48**	.78	.46**
Uses language other than English	.71	1.27	.98	.60**	.82	.89
<b>Funding Streams</b>						
First 5 California CSP 1 or CSP 2 funding	3.02*	2.16	3.75**	2.52*	1.37	.86
California Title 5 (State Preschool, General Child Care, or CalSAFE) funding	3.91***	6.28***	1.32	2.01*	.98	2.82**
Federal Head Start or Early Head Start funding	3.21**	12.22***	1.19	1.56	1.28	.96
State/Federally Funded Child Care Subsidy Vouchers	.73	.89	.91	1.00	.81	.82

Note.  $n = 679$  for all models. Each column represents a separate ordinal logistic regression model, which also included fixed effects for Consortia. CLASS = Effective Teacher-Child Interactions; CO = Child Observation element score; DHS = Developmental and Health Screenings; ERS = Program Environment Rating Scales; MQ = Minimum Qualifications; QRIS = California QRIS rating.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

**How Element Scores Relate to Each Other and the Overall QRIS Rating**

**Exhibit B8. Internal Consistency of Element Scores, Centers**

Element Score	Correlation of Element Score and Overall Scale	Correlation of Element Score and Scale with Other Six Scores	Internal Consistency Without Element
Child Observation	.757	.636	.719
Developmental and Health Screenings	.718	.530	.746
Minimum Qualifications for Lead Teacher or FCCH	.700	.542	.739
Effective Teacher-Child Interactions: CLASS	.574	.434	.760
Ratios and Group Sizes	.517	.371	.770
Program Environment Rating Scales	.611	.462	.755
Director Qualifications	.683	.536	.740
Internal Consistency of All 7 Element Scores (Cronbach's $\alpha$ )			.776

Note.  $N = 2,022$  centers.

**Exhibit B9. Internal Consistency of Element Scores, FCCHs**

Element Score	Correlation of Element Score and Overall Scale (Item-Test)	Correlation of Element Score and Scale with Other 4 Scores (Item-Rest)	
Child Observation	.684	.456	.668
Developmental and Health Screenings	.693	.437	.681
Minimum Qualifications for Lead Teacher or FCCH	.657	.433	.676
Effective Teacher-Child Interactions: CLASS	.692	.510	.648
Program Environment Rating Scales	.702	.537	.641
Internal Consistency of All Five Domain Scores (Cronbach's $\alpha$ )			.710

Note.  $N = 724$  FCCHs.

**Exhibit B10. Correlations (Spearman's rho) Among Element Scores, Centers**

	CO	DHS	MQ	CLASS	RGS	ERS	DQ
Child Observation (CO)	1.000						
Developmental and Health Screenings (DHS)	.436***	1.000					
Minimum Qualifications for Lead Teacher or FCCH (MQ)	.303***	.340***	1.000				
Effective Teacher-Child Interactions: CLASS (CLASS)	.258***	.244***	.179***	1.000			
Ratios and Group Sizes (RGS)	.098***	.184***	.076***	.119***	1.000		
Program Environment Rating Scales (ERS)	.265***	.259***	.203***	.445***	.134***	1.000	
Director Qualifications (DQ)	.324***	.251***	.411***	.127***	.025	.118***	1.000

Note.  $n = 2,022$  centers. Correlations are calculated using Spearman's  $\rho$ , a nonparametric correlation coefficient that can be interpreted in a similar way to Pearson's  $r$ . CLASS = Effective Teacher-Child Interactions: CLASS; RGS: Ratios and Group Size; CO = Child Observation element score; DHS = Developmental and Health Screenings; ERS = Program Environment Rating Scales; MQ = Minimum Qualifications; RGS = ; QRIS = California QRIS rating; for Lead Teacher/FCCHERS = Program Environment Rating Scales.

\*\*\* $p < .001$ .

**Exhibit B11. Correlations (Spearman’s rho) Among Element Scores, FCCHs**

	CO	DHS	MQ	CLASS	ERS
Child Observation (CO)	1.000				
Developmental and Health Screenings (DHS)	.365***	1.000			
Minimum Qualifications for Lead Teacher or FCCH (MQ)	.372***	.272***	1.000		
Effective Teacher-Child Interactions: CLASS (CLASS)	.237***	.423***	.299***	1.000	
Program Environment Rating Scales (ERS)	.384***	.276***	.387***	.504***	1.000

*Note.*  $n = 724$  FCCHs. Correlations are calculated using Spearman’s  $\rho$ , a nonparametric correlation coefficient that can be interpreted in a similar way to Pearson’s  $r$ . CLASS = Effective Teacher-Child Interactions: CLASS; CO = Child Observation element score; DHS = Developmental and Health Screenings; ERS = Program Environment Rating Scales; MQ = Minimum Qualifications.

\*\*\* $p < .001$ .

**How Well Do QRIS Ratings Differentiate Programs Based on Quality?**

***Alignment Between Ratings and CLASS Scores for Centers***

**Exhibit B12. CLASS Preschool Domain Scores by California QRIS Rating Level and ANOVA Results, Centers**

California QRIS Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	<i>N</i>
Tier 1	—	—	—	0
Tier 2	4.43 (0.69) <sup>c, d, e</sup>	5.31 (0.84)	2.28 (0.66) <sup>c, d, e</sup>	33
Tier 3	5.79 (0.46) <sup>b</sup>	5.36 (0.64)	2.91 (0.86) <sup>b, e</sup>	55
Tier 4	5.97 (0.69) <sup>b</sup>	5.56 (0.74)	3.01 (0.86) <sup>b, e</sup>	66
Tier 5	6.23 (0.50) <sup>b</sup>	5.88 (0.54)	3.74 (0.70) <sup>b, c, d</sup>	12
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	$F[3,162] = 54.06^{***}$	$F[3,162] = 2.65$	$F[3,162] = 10.97^{***}$	

*Note.* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\*\*\* $p < .001$ .

## Alignment Between Ratings and CLASS Scores for FCCHs

Exhibit B13. CLASS Preschool Domain Scores by California QRIS Rating Level and ANOVA Results, FCCH

California QRIS Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	5.21 (0.72) <sup>c, d, e</sup>	4.19 (1.05) <sup>c, d, e</sup>	2.23 (0.92) <sup>e</sup>	7
Tier 2	5.76 (0.72) <sup>d, e</sup>	5.11 (0.84) <sup>d, e</sup>	2.43 (0.88) <sup>d, e</sup>	121
Tier 3	5.94 (0.64) <sup>a, e</sup>	5.4 (0.91) <sup>a</sup>	2.75 (1.00) <sup>e</sup>	122
Tier 4	6.14 (0.63) <sup>a, b</sup>	5.57 (0.90) <sup>a, b</sup>	3.04 (1.04) <sup>b, e</sup>	84
Tier 5	6.61 (0.33) <sup>a, b, c</sup>	6.08 (0.39) <sup>a, b</sup>	3.99 (1.16) <sup>a, b, c, d</sup>	9
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 8.64 <sup>***</sup>	F[4,338] = 8.31 <sup>***</sup>	F[4,338] = 9.35 <sup>***</sup>	

Note: Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

<sup>\*\*\*</sup> $p < .001$ .

## What Is the Validity of Each Element in the QRIS Ratings?

### Alignment Between Element Scores and CLASS Scores for Centers

Exhibit B14. CLASS Preschool Domain Scores by Child Observation Element Scores, ANOVA Results, Centers

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	4.60 (0.69) <sup>c, d, e</sup>	5.25 (0.71)	2.33 (0.66) <sup>d</sup>	25
2 Points	4.68 (1.29) <sup>d, e</sup>	5.36 (1.08)	2.10 (0.62) <sup>d</sup>	8
3 Points	5.43 (0.74) <sup>a</sup>	5.05 (0.37)	2.61 (1.19)	9
4 Points	5.91 (0.63) <sup>a, b</sup>	5.58 (0.71)	3.09 (0.84) <sup>a, b</sup>	100
5 Points	5.91 (0.70) <sup>a, b</sup>	5.43 (0.69)	2.98 (0.88)	24
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[4,161] = 22.79 <sup>***</sup>	F[4,161] = 2.06	F[4,161] = 6.32 <sup>***</sup>	

Note: Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from one point. <sup>b</sup> This value differs from two points. <sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

<sup>\*\*\*</sup> $p < .001$ .

**Exhibit B15. CLASS Preschool Domain Scores by Developmental Health Screening Scores and ANOVA Results, Centers**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	5.23 (0.89) <sup>e</sup>	5.44 (0.73)	2.81 (0.85)	29
2 Points	5.32 (1.00) <sup>e</sup>	5.44 (0.84)	2.65 (0.79)	42
3 Points	5.48 (0.74)	5.11 (0.32)	3.01 (1.41)	5
4 Points	5.67 (0.85)	5.26 (0.93)	2.52 (0.75)	13
5 Points	5.95 (0.64) <sup>a, b</sup>	5.55 (0.63)	3.09 (0.90)	77
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[4,161] = 6.33***	F[4,161] = 0.85	F[4,161] = 2.48*	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from one point. <sup>b</sup> This value differs from two points. <sup>e</sup> This value differs from five points.

\* $p < .05$ ; \*\*\* $p < .001$ .

**Exhibit B16. CLASS Preschool Domain Scores by Minimum Quality for Lead Teachers Scores and ANOVA Results, Centers**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	4.56 (0.72) <sup>b, c, d, e</sup>	5.26 (0.87)	2.35 (0.73) <sup>d, e</sup>	23
2 Points	5.51 (0.84) <sup>a, d, e</sup>	5.40 (0.65)	2.74 (0.93)	50
3 Points	5.80 (0.56) <sup>a</sup>	5.50 (0.77)	2.73 (0.66)	19
4 Points	5.99 (0.67) <sup>a, b</sup>	5.49 (0.68)	3.13 (0.85) <sup>a</sup>	38
5 Points	6.00 (0.68) <sup>a, b</sup>	5.67 (0.74)	3.24 (0.85) <sup>a</sup>	36
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[4,161] = 18.03***	F[4,161] = 1.29	F[4,161] = 5.18***	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from one point. <sup>b</sup> This value differs from two points. <sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

\*\*\* $p < .001$ .

**Exhibit B17. CLASS Total and Preschool Domain Scores by Effective Teacher-Child Interactions Element Score and ANOVA Results, Centers**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	—	—	—	1
2 Points	—	—	—	3
3 Points	5.43 (0.82) <sup>e</sup>	5.33 (0.70) <sup>e</sup>	2.64 (0.82) <sup>d, e</sup>	110
4 Points	5.94 (0.78)	5.68 (0.59)	3.22 (0.78) <sup>c</sup>	19
5 Points	6.23 (0.52) <sup>c</sup>	5.93 (0.58) <sup>c</sup>	3.59 (0.71) <sup>c</sup>	33
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[4,161] = 11.72 <sup>***</sup>	F[4,161] = 9.38 <sup>***</sup>	F[4,161] = 11.19 <sup>***</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

<sup>\*\*\*</sup> $p < .001$ .

**Exhibit B18. CLASS Preschool Domain Scores by Ratio and Group Sizes Scores and ANOVA Results, Centers**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	—	—	—	4
2 Points	5.37 (1.10)	5.19 (0.85)	2.56 (0.69)	10
3 Points	5.39 (1.12)	5.49 (0.85)	2.93 (1.00)	22
4 Points	5.81 (0.65)	5.53 (0.63)	3.00 (0.83)	88
5 Points	5.55 (0.91)	5.43 (0.80)	2.79 (0.93)	42
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[4,161] = 4.66 <sup>**</sup>	F[4,161] = 0.76	F[4,161] = 2.54 <sup>*</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>\*</sup> $p < .05$ ; <sup>\*\*</sup> $p < .01$ .

**Exhibit B19. CLASS Total and Preschool Domain Scores by Program Environment Rating Element Score and ANOVA Results, Centers**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	—	—	—	1
2 Points	5.20 (1.13) <sup>d, e</sup>	5.22 (0.91) <sup>e</sup>	2.43 (0.73) <sup>e</sup>	23
3 Points	5.41 (0.83) <sup>e</sup>	5.38 (0.66) <sup>e</sup>	2.74 (0.91) <sup>e</sup>	76
4 Points	5.88 (0.69) <sup>b</sup>	5.49 (0.80)	2.92 (0.81)	26
5 Points	6.15 (0.46) <sup>b, c</sup>	5.77 (0.59) <sup>b, c</sup>	3.45 (0.66) <sup>b, c</sup>	40
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[4,161] = 8.80 <sup>***</sup>	F[4,161] = 2.97 <sup>*</sup>	F[4,161] = 8.07 <sup>***</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>b</sup> This value differs from two points. <sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

\* $p < .05$ ; \*\*\* $p < .001$ .

**Exhibit B20. CLASS Preschool Domain Scores by Director Qualification Scores and ANOVA Results, Centers**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	4.63 (0.63) <sup>c, d, e</sup>	5.72 (0.67)	2.47 (0.85)	7
2 Points	5.15 (0.90) <sup>c, d, e</sup>	5.29 (0.70)	2.58 (0.82) <sup>c</sup>	44
3 Points	5.91 (0.86) <sup>a, b</sup>	5.62 (0.74)	3.20 (0.71) <sup>b</sup>	34
4 Points	5.95 (0.58) <sup>a, b</sup>	5.64 (0.70)	3.08 (0.93)	46
5 Points	5.72 (0.77) <sup>a, b</sup>	5.27 (0.72)	2.80 (0.93)	35
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[4,161] = 10.32 <sup>***</sup>	F[4,161] = 2.62 <sup>*</sup>	F[4,161] = 3.58 <sup>**</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from one point. <sup>b</sup> This value differs from two points. <sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ .

## Alignment Between Element Scores and CLASS Scores for FCCHs

**Exhibit B21. CLASS Preschool Domain Scores by California Child Observation Element Score and ANOVA Results, FCCH**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	5.85 (0.77)	5.22 (0.92)	2.68 (1.09)	130
2 Points	6.01 (0.71)	5.53 (0.98)	2.79 (1.13)	32
3 Points	5.99 (0.75)	5.29 (1.05)	2.73 (1.07)	26
4 Points	5.96 (0.59)	5.38 (0.88)	2.72 (0.86)	145
5 Points	6.16 (0.74)	5.62 (0.56)	3.29 (1.6)	10
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 1.00	F[4,338] = 1.23	F[4,338] = 0.88	

Note: Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

\* $p < .05$ ; \*\* $p < .01$ .

**Exhibit B22. CLASS Preschool Domain Scores by California Developmental Health Screening Score and ANOVA Results, FCCH**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	5.88 (0.66)	5.32 (0.89)	2.62 (0.87)	130
2 Points	5.77 (0.69)	5.18 (0.84)	2.45 (0.95) <sup>e</sup>	67
3 Points	6.13 (0.68)	5.41 (1.16)	3.06 (1.33)	22
4 Points	5.96 (0.75)	5.39 (0.95)	2.88 (0.99)	61
5 Points	6.10 (0.66)	5.43 (0.91)	2.96 (1.17) <sup>b</sup>	63
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 2.55*	F[4,338] = 0.76	F[4,338] = 3.45**	

Note: Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>b</sup> This value differs from two points. <sup>e</sup> This value differs from five points.

\* $p < .05$ ; \*\* $p < .01$ .

**Exhibit B23. CLASS Preschool Domain Scores by California Minimum Qualification for Lead Teacher Score and ANOVA Results, FCCH**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	5.65 (0.74) <sup>c, e</sup>	5.02 (0.99) <sup>e</sup>	2.47 (0.94) <sup>e</sup>	64
2 Points	5.93 (0.60)	5.30 (0.82)	2.67 (0.99)	107
3 Points	6.05 (0.61) <sup>a</sup>	5.47 (0.78)	2.85 (1.03)	51
4 Points	5.90 (0.86)	5.22 (1.11) <sup>e</sup>	2.73 (1.12)	56
5 Points	6.14 (0.6) <sup>a</sup>	5.68 (0.77) <sup>a, d</sup>	2.97 (0.99) <sup>a</sup>	65
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 4.7 <sup>**</sup>	F[4,338] = 5.07 <sup>***</sup>	F[4,338] = 2.33	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from one point. <sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

<sup>\*\*</sup> $p < .01$ ; <sup>\*\*\*</sup> $p < .001$ .

**Exhibit B24. CLASS Preschool Domain Scores by California Effective Teacher-Child Interactions Element and ANOVA Results, FCCH**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	5.45 (0.71) <sup>d, e</sup>	4.53 (0.98) <sup>d, e</sup>	2.69 (1.36) <sup>d, e</sup>	11
2 Points	—	—	—	4
3 Points	5.73 (0.68) <sup>d, e</sup>	5.08 (0.88) <sup>d, e</sup>	2.24 (0.65) <sup>d, e</sup>	230
4 Points	6.35 (0.38) <sup>a, c</sup>	5.86 (0.56) <sup>a, c</sup>	3.45 (0.72) <sup>a, c, e</sup>	42
5 Points	6.52 (0.34) <sup>a, c</sup>	6.14 (0.49) <sup>a, c</sup>	4.12 (0.69) <sup>a, c, d</sup>	56
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 26 <sup>***</sup>	F[4,338] = 27.66 <sup>***</sup>	F[4,338] = 97.87 <sup>***</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from one point. <sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

<sup>\*\*\*</sup> $p < .001$ .

**Exhibit B25. CLASS Preschool Domain Scores by California Environment Rating Element Score and ANOVA Results, FCCH**

Element Score	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
1 Point	5.31 (0.66) <sup>d, e</sup>	4.42 (0.90) <sup>b, d, e</sup>	2.08 (0.75) <sup>d, e</sup>	11
2 Points	5.87 (0.70) <sup>e</sup>	5.31 (0.88) <sup>a, e</sup>	2.65 (1.03)	49
3 Points	5.81 (0.74) <sup>e</sup>	5.12 (0.91) <sup>d, e</sup>	2.55 (0.96) <sup>d, e</sup>	164
4 Points	6.08 (0.57) <sup>a</sup>	5.55 (0.9) <sup>a, c</sup>	3.13 (1.16) <sup>a, c</sup>	54
5 Points	6.26 (0.44) <sup>a, b, c</sup>	5.86 (0.61) <sup>a, b, c</sup>	3.01 (0.88) <sup>a, c</sup>	65
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 8.81 <sup>***</sup>	F[4,338] = 12.96 <sup>***</sup>	F[4,338] = 6.20 <sup>***</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from one point. <sup>b</sup> This value differs from two points. <sup>c</sup> This value differs from three points. <sup>d</sup> This value differs from four points. <sup>e</sup> This value differs from five points.

<sup>\*\*\*</sup> $p < .001$ .

## How Do Alternative Rating Methods Affect the Validity of Ratings?

### *Distribution of Ratings Using Different Rating Methods*

**Exhibit B26. Reclassification Rates for Alternative Rating Approaches, Centers**

Rating Type	Percentage Lower Than California QRIS Rating	Percentage Same as California QRIS Rating	Percentage Higher Than California QRIS Rating
Two-level block	20.1	79.9	0.0
Five-level block	91.7	8.3	0.0
Element average	0.3	91.8	7.9
CLASS weighted 25%	0.7	87.7	11.6
CLASS weighted 40%	4.7	84.2	11.1

*Note:* *N* = 2,022 centers.

**Exhibit B27. Reclassification Rates for Alternative Rating Approaches, FCCHs**

Rating Type	Percentage Lower Than California QRIS Rating	Percentage Same as California QRIS Rating	Percentage Higher Than California QRIS Rating
Two-level block	59.8	40.2	0.0
Five-level block	86.2	13.8	0.0
Element average	6.9	84.9	8.1
CLASS weighted 25%	6.6	81.8	11.6
CLASS weighted 40%	10.8	69.3	19.9

Note:  $N = 724$  FCCHs.

**Validity of the Alternative Rating Approaches—Centers**

**Exhibit B28. CLASS Preschool Domain Scores by QRIS Rating Block at Tier 2 and ANOVA Results, Centers**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	$N$
Tier 1	5.00 (0.91) <sup>c, d, e</sup>	5.31 (0.83)	2.61 (0.81) <sup>e</sup>	48
Tier 2	—	—	—	4
Tier 3	5.77 (0.48) <sup>a</sup>	5.37 (0.59)	2.86 (0.89) <sup>e</sup>	38
Tier 4	5.97 (0.70) <sup>a</sup>	5.57 (0.74)	3.00 (0.87) <sup>e</sup>	64
Tier 5	6.23 (0.50) <sup>a</sup>	5.88 (0.54)	3.74 (0.70) <sup>a, c, d</sup>	12
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	$F[4,161] = 17.66^{***}$	$F[4,161] = 2.09$	$F[4,161] = 5.74^{***}$	

Note: Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller  $N$  because some participating centers did not have any preschool classrooms. For ANOVA  $F$  test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\*\*\* $p < .001$ .

**Exhibit B29. CLASS Preschool Domain Scores by QRIS Rating Block at Tier 5 and ANOVA Results, Centers**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	5.00 (0.91) <sup>b, c, d</sup>	5.31 (0.83)	2.61 (0.81) <sup>d</sup>	48
Tier 2	5.78 (0.72) <sup>a</sup>	5.52 (0.68)	2.86 (0.88) <sup>d</sup>	67
Tier 3	5.95 (0.68) <sup>a</sup>	5.48 (0.68)	3.04 (0.85)	41
Tier 4	6.22 (0.43) <sup>a</sup>	5.88 (0.58)	3.69 (0.91) <sup>a, b</sup>	10
Tier 5	—	—	—	0
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[3,162] = 16.22 <sup>***</sup>	F[3,162] = 1.96	F[3,162] = 5.07 <sup>**</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4.

<sup>\*\*</sup> $p < .01$ ; <sup>\*\*\*</sup> $p < .001$ .

**Exhibit B30. CLASS Preschool Domain Scores by Average Element Scores Rating and ANOVA Results, Centers**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	—	—	—	0
Tier 2	4.29 (0.62) <sup>c, d, e</sup>	5.22 (0.89)	2.13 (0.61) <sup>c, d, e</sup>	21
Tier 3	5.54 (0.67) <sup>b, d, e</sup>	5.35 (0.63)	2.78 (0.82) <sup>b, e</sup>	56
Tier 4	5.96 (0.68) <sup>b, c</sup>	5.56 (0.74)	3.03 (0.86) <sup>b, e</sup>	77
Tier 5	6.23 (0.50) <sup>b, c</sup>	5.88 (0.54)	3.74 (0.70) <sup>b, c, d</sup>	12
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[3,162] = 39.38 <sup>***</sup>	F[3,162] = 3.12 <sup>*</sup>	F[3,162] = 11.62 <sup>***</sup>	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

<sup>\*</sup> $p < .05$ ; <sup>\*\*\*</sup> $p < .001$ .

**Exhibit B31. CLASS Preschool Domain Scores by Average Element Scores Rating with CLASS Weighted at 25% and ANOVA Results, Centers**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	—	—	—	0
Tier 2	4.27 (0.64) <sup>c, d, e</sup>	5.12 (0.86)	2.12 (0.65) <sup>c, d, e</sup>	18
Tier 3	5.47 (0.73) <sup>b, d, e</sup>	5.38 (0.66)	2.73 (0.82) <sup>b, e</sup>	56
Tier 4	5.98 (0.67) <sup>b, c</sup>	5.57 (0.73)	3.02 (0.83) <sup>b, e</sup>	81
Tier 5	6.06 (0.58) <sup>b, c</sup>	5.77 (0.51)	3.9 (0.68) <sup>b, c, d</sup>	11
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[3,162] = 33.27***	F[3,162] = 2.88*	F[3,162] = 12.88***	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\* $p < .05$ ; \*\*\* $p < .001$ .

**Exhibit B32. CLASS Preschool Domain Scores by Average Element Scores Rating with CLASS Weighted at 40% and ANOVA Results, Centers**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	—	—	—	0
Tier 2	4.21 (0.67) <sup>c, d, e</sup>	5.09 (0.97) <sup>e</sup>	2.06 (0.60) <sup>d, e</sup>	13
Tier 3	5.41 (0.76) <sup>b, d, e</sup>	5.34 (0.66)	2.70 (0.83) <sup>d, e</sup>	67
Tier 4	6.01 (0.67) <sup>b, c</sup>	5.59 (0.72)	3.07 (0.82) <sup>b, c</sup>	76
Tier 5	6.05 (0.56) <sup>b, c</sup>	5.88 (0.56) <sup>b</sup>	3.77 (0.90) <sup>b, c</sup>	10
All levels	5.63 (0.86)	5.47 (0.73)	2.88 (0.89)	166
ANOVA results	F[3,162] = 28.64***	F[3,162] = 3.81*	F[3,162] = 10.72***	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\* $p < .05$ ; \*\*\* $p < .001$ .

**Exhibit B33. PQA Form A Total and Preschool Domain Scores by Average Element Scores Rating with CLASS Weighted at 25% and ANOVA Results, Centers**

Rating Level	All Ages		Preschool Domain Scores				
	PQA Form A Total Score	N	Learning Environment	Daily Routine	Adult-Child Interaction	Curriculum Planning and Assessment	N
Tier 1	—	0	—	—	—	—	0
Tier 2	—	1	—	—	—	—	0
Tier 3	3.35 (0.48) <sup>e</sup>	38	3.47 (0.52) <sup>e</sup>	3.20 (0.58)	3.09 (0.59) <sup>d, e</sup>	4.09 (0.59)	38
Tier 4	3.55 (0.51)	89	3.68 (0.49)	3.30 (0.61)	3.54 (0.73) <sup>c</sup>	4.13 (0.59)	85
Tier 5	3.82 (0.56) <sup>c</sup>	11	3.97 (0.46) <sup>c</sup>	3.51 (0.58)	3.89 (0.69) <sup>c</sup>	4.07 (0.80)	11
All tiers	3.52 (0.52)	139	3.64 (0.51)	3.29 (0.60)	3.44 (0.72)	4.11 (0.60)	134
ANOVA results	F[3,135] = 2.97*		F[2,131] = 5.05**	F[2,131] = 1.13	F[2,131] = 7.97***	F[2,131] = 0.10	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\* $p < .05$ ; \*\*\* $p < .001$ .

**Exhibit B34. PQA Form A Total and Preschool Domain Scores by Average Element Scores Rating with CLASS Weighted at 40% and ANOVA Results, Centers**

Rating Level	All Ages		Preschool Domain Scores				
	PQA Form A Total Score	N	Learning Environment	Daily Routine	Adult-Child Interaction	Curriculum Planning and Assessment	N
Tier 1	—	0	—	—	—	—	0
Tier 2	—	1	—	—	—	—	0
Tier 3	3.35 (0.46) <sup>e</sup>	46	3.44 (0.48) <sup>d, e</sup>	3.20 (0.56)	3.12 (0.59) <sup>d, e</sup>	4.06 (0.64)	46
Tier 4	3.56 (0.53)	82	3.70 (0.50) <sup>c, e</sup>	3.30 (0.64)	3.55 (0.74) <sup>c</sup>	4.14 (0.57)	78
Tier 5	3.93 (0.35) <sup>c</sup>	10	4.09 (0.34) <sup>c, d</sup>	3.57 (0.42)	4.05 (0.45) <sup>c</sup>	4.16 (0.69)	10
All tiers	3.52 (0.52)	139	3.64 (0.51)	3.29 (0.60)	3.44 (0.72)	4.11 (0.60)	134
ANOVA results	F[3,135] = 4.31 <sup>**</sup>		F[2,131] = 8.80 <sup>***</sup>	F[2,131] = 1.69	F[2,131] = 10.11 <sup>***</sup>	F[2,131] = 0.31	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

<sup>\*\*</sup> $p < .01$ ; <sup>\*\*\*</sup> $p < .001$ .

**Exhibit B35. PQA Form B Total and Domain Scores by Average Element Scores Rating with CLASS Weighted at 25% and ANOVA Results, Centers**

Rating Level	All Ages				
	PQA Form B Total Score	Parent Involvement and Family Services	Staff Qualifications and Staff Development	Program Management	N
Tier 1	—	—	—	—	0
Tier 2	—	—	—	—	1
Tier 3	3.77 (0.34)	4.06 (0.47)	3.39 (0.41)	3.74 (0.44)	36
Tier 4	3.83 (0.50)	4.00 (0.62)	3.56 (0.60)	3.86 (0.55)	77
Tier 5	4.09 (0.46)	4.33 (0.58)	3.90 (0.52)	3.94 (0.49)	9
All tiers	3.84 (0.46)	4.05 (0.58)	3.54 (0.56)	3.83 (0.51)	123
ANOVA results	F[3,119] = 1.23	F[3,119] = 1.18	F[3,119] = 2.60	F[3,119] = 0.85	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

**Exhibit B36. PQA Form B Total and Domain Scores by Average Element Scores Rating with CLASS Weighted at 40% and ANOVA Results, Centers**

Rating Level	All Ages				
	PQA Form B Total Score	Parent Involvement and Family Services	Staff Qualifications and Staff Development	Program Management	N
Tier 1	—	—	—	—	0
Tier 2	—	—	—	—	1
Tier 3	3.83 (0.40)	4.09 (0.51)	3.5 (0.48)	3.78 (0.46)	42
Tier 4	3.81 (0.50)	3.99 (0.62)	3.51 (0.60)	3.85 (0.55)	71
Tier 5	4.01 (0.44)	4.20 (0.62)	3.87 (0.49)	3.90 (0.47)	9
All tiers	3.84 (0.46)	4.05 (0.58)	3.54 (0.56)	3.83 (0.51)	123
ANOVA results	F[3,119] = 0.57	F[3,119] = 0.74	F[3,119] = 1.44	F[3,119] = 0.40	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\* $p < .05$ ; \*\*\* $p < .001$ .

**Validity of the Alternative Rating Approaches—FCCHs**

**Exhibit B37. Extant CLASS Preschool Domain Scores by QRIS Rating with Block at Level 2 and ANOVA Results, FCCH**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	5.88 (0.70) <sup>e</sup>	5.32 (0.89)	2.65 (0.98) <sup>e</sup>	210
Tier 2	5.42 (0.73) <sup>d, e</sup>	4.58 (0.89) <sup>d, e</sup>	2.02 (0.79) <sup>d, e</sup>	11
Tier 3	5.91 (0.59) <sup>e</sup>	5.19 (0.90) <sup>e</sup>	2.59 (0.89) <sup>e</sup>	49
Tier 4	6.12 (0.68) <sup>b</sup>	5.49 (0.96) <sup>b</sup>	3.02 (1.06) <sup>b, e</sup>	64
Tier 5	6.61 (0.33) <sup>a, b, c</sup>	6.08 (0.39) <sup>b, c</sup>	3.99 (1.16) <sup>a, b, c, d</sup>	9
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 5.47***	F[4,338] = 4.34**	F[4,338] = 6.99***	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\* $p < .05$ ; \*\*\* $p < .001$ .

**Exhibit B38. Extant CLASS Preschool Domain Scores by QRIS Rating with Block at Level 5 and ANOVA Results, FCCH**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	5.88 (0.70)	5.32 (0.89)	2.65 (0.98)	210
Tier 2	5.95 (0.66)	5.33 (0.97)	2.78 (1.03)	75
Tier 3	6.08 (0.70)	5.36 (0.95)	2.86 (1.08)	55
Tier 4	—	—	—	3
Tier 5	—	—	—	0
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[3,339] = 1.86	F[3,339] = 0.13	F[3,339] = 3.1*	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

**Exhibit B39. Extant CLASS Preschool Domain Scores by QRIS Rating with Average Element Scores Rating and ANOVA Results, FCCH**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	5.37 (0.69) <sup>c, d</sup>	4.46 (0.90) <sup>c, d</sup>	2.36 (1.08)	12
Tier 2	5.72 (0.71) <sup>d</sup>	5.01 (0.86) <sup>c, d</sup>	2.30 (0.77) <sup>c, d</sup>	85
Tier 3	5.93 (0.66) <sup>a, d</sup>	5.40 (0.88) <sup>a, b</sup>	2.75 (1.00) <sup>b, d</sup>	153
Tier 4	6.18 (0.63) <sup>a, b, c</sup>	5.61 (0.87) <sup>a, b</sup>	3.12 (1.09) <sup>b, c</sup>	91
Tier 5	—	—	—	2
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 8.25***	F[4,338] = 9.06***	F[4,338] = 8.62***	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4.

\*\*\* $p < .001$ .

**Exhibit B40. Extant CLASS Preschool Domain Scores by QRIS Rating with Average Element Scores Rating with CLASS Weighted at 25% and ANOVA Results, FCCH**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	5.40 (0.73) <sup>d</sup>	4.43 (0.98) <sup>c, d</sup>	2.45 (1.17)	10
Tier 2	5.65 (0.69) <sup>c, d</sup>	4.93 (0.81) <sup>c, d</sup>	2.22 (0.71) <sup>c, d</sup>	82
Tier 3	5.95 (0.67) <sup>b</sup>	5.41 (0.89) <sup>a, b</sup>	2.74 (0.98) <sup>b, d</sup>	154
Tier 4	6.18 (0.62) <sup>a, b</sup>	5.63 (0.86) <sup>a, b</sup>	3.16 (1.09) <sup>b, c</sup>	95
Tier 5	—	—	—	2
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 9.6***	F[4,338] = 10.96***	F[4,338] = 11.25***	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4.

\*\*\* $p < .001$ .

**Exhibit B41. Extant CLASS Preschool Domain Scores by QRIS Rating with Average Element Scores Rating with CLASS Weighted at 40% and ANOVA Results, FCCH**

Rating Level	Preschool Domain Scores			
	Emotional Support	Classroom Organization	Instructional Support	N
Tier 1	5.40 (0.73) <sup>d, e</sup>	4.43 (0.98) <sup>c, d, e</sup>	2.45 (1.17) <sup>d, e</sup>	10
Tier 2	5.61 (0.72) <sup>d, e</sup>	4.93 (0.79) <sup>d, e</sup>	2.16 (0.74) <sup>c, d, e</sup>	57
Tier 3	5.84 (0.70) <sup>d, e</sup>	5.25 (0.92) <sup>a, d, e</sup>	2.54 (0.89) <sup>b, d, e</sup>	187
Tier 4	6.34 (0.36) <sup>a, b, c</sup>	5.83 (0.71) <sup>a, b, c</sup>	3.46 (0.92) <sup>a, b, c</sup>	82
Tier 5	6.72 (0.25) <sup>a, b, c</sup>	6.20 (0.36) <sup>a, b, c</sup>	4.21 (1.23) <sup>a, b, c</sup>	7
All levels	5.93 (0.69)	5.33 (0.91)	2.73 (1.02)	343
ANOVA results	F[4,338] = 17.71***	F[4,338] = 15.55***	F[4,338] = 26.58***	

*Note:* Cells show the mean and standard deviation for the CLASS scores at each California QRIS rating level. The preschool domain scores have a smaller *N* because some participating centers did not have any preschool classrooms. For ANOVA *F* test results (indicating significant differences across rating levels), see asterisks showing statistical significance. When ANOVA is significant, significant ( $p < .05$ ) differences between individual rating levels, after Tukey-Kramer adjustment for multiple comparisons, are indicated using superscript letters. Average CLASS score data are not presented for rating levels with fewer than five observations.

<sup>a</sup> This value differs from Tier 1. <sup>b</sup> This value differs from Tier 2. <sup>c</sup> This value differs from Tier 3. <sup>d</sup> This value differs from Tier 4. <sup>e</sup> This value differs from Tier 5.

\*\*\* $p < .001$ .

# Appendix C. RTT–ELC Quality Continuum Framework Rating Matrix

California Race to the Top–Early Learning Challenge (RTT–ELC)  
 Quality Continuum Framework—Rating Matrix  
 with Elements and Points for Consortia Common Tiers 1, 3, and 4

ELEMENT	BLOCK (Common Tier 1) Licensed In-Good Standing	2 POINTS	3 POINTS	4 POINTS	5 POINTS
<b>CORE I: CHILD DEVELOPMENT AND SCHOOL READINESS</b>					
1. Child Observation	<input type="checkbox"/> Not required	<input type="checkbox"/> Program uses evidence-based child assessment/observation tool annually that covers all five domains of development	<input type="checkbox"/> Program uses valid and reliable child assessment/observation tool aligned with <i>CA Foundations &amp; Frameworks</i> <sup>6</sup> twice a year	<input type="checkbox"/> DRDP (minimum twice a year) and results used to inform curriculum planning	<input type="checkbox"/> Program uses DRDP twice a year and uploads into DRDP Tech and results used to inform curriculum planning
2. Developmental and Health Screenings	<input type="checkbox"/> Meets Title 22 Regulations	<input type="checkbox"/> Health Screening Form (Community Care <i>Licensing form LIC 701 "Physician's Report - Child Care Centers" or equivalent</i> ) used at entry, then: <ol style="list-style-type: none"> <li>1. Annually</li> <li>OR</li> <li>2. Ensures vision and hearing screenings are conducted annually</li> </ol>	<input type="checkbox"/> Program works with families to ensure screening of all children using a <b>valid and reliable developmental screening tool</b> at entry and as indicated by results thereafter <b>AND</b> <input type="checkbox"/> Meets Criteria from point level 2	<input type="checkbox"/> Program works with families to ensure screening of all children using the <b>ASQ</b> at entry and as indicated by results thereafter <b>AND</b> <input type="checkbox"/> Meets Criteria from point level 2	<input type="checkbox"/> Program works with families to ensure screening of all children using the <b>ASQ &amp; ASQ-SE</b> , if indicated, at entry, then as indicated by results thereafter <b>AND</b> <input type="checkbox"/> Program staff uses children's screening results to make referrals and implement intervention strategies and adaptations as appropriate <b>AND</b> <input type="checkbox"/> Meets Criteria from point level 2

<sup>6</sup> Approved assessments are: Creative Curriculum GOLD, Early Learning Scale by National Institute of Early Education Research (NIEER), and Brigance Inventory of Early Development III.

ELEMENT	BLOCK (Common Tier 1) Licensed In-Good Standing	2 POINTS	3 POINTS	4 POINTS	5 POINTS
<b>CORE II: TEACHERS AND TEACHING</b>					
<b>3. Minimum Qualifications for Lead Teacher/ Family Child Care Home (FCCH)</b>	<input type="checkbox"/> Meets Title 22 Regulations [Center: 12 units of Early Childhood Education (ECE)/Child Development (CD) FCCH: 15 hours of training on preventive health practices]	<input type="checkbox"/> Center: 24 units of ECE/CD <sup>7</sup> <b>OR</b> Associate Teacher Permit <input type="checkbox"/> FCCH: 12 units of ECE/CD <b>OR</b> Associate Teacher Permit	<input type="checkbox"/> 24 units of ECE/CD + 16 units of General Education <b>OR</b> Teacher Permit <b>AND</b> <input type="checkbox"/> 21 hours professional development (PD) annually	<input type="checkbox"/> Associate's degree (AA/AS) in ECE/CD (or closely related field) <b>OR</b> AA/AS in any field plus 24 units of ECE/CD <b>OR</b> Site Supervisor Permit <b>AND</b> <input type="checkbox"/> 21 hours PD annually	<input type="checkbox"/> Bachelor's degree in ECE/CD (or closely related field) <b>OR</b> BA/BS in any field plus/with 24 units of ECE/CD (or Master's degree in ECE/CD) <b>OR</b> Program Director Permit <b>AND</b> <input type="checkbox"/> 21 hours PD annually
<b>4. Effective Teacher-Child Interactions: CLASS Assessments</b> (*Use tool for appropriate age group as available)	<input type="checkbox"/> Not Required	<input type="checkbox"/> Familiarity with CLASS for appropriate age group as available by one representative from the site	<input type="checkbox"/> Independent CLASS assessment by reliable observer to inform the program's professional development/improvement plan	<input type="checkbox"/> Independent CLASS assessment by reliable observer with minimum CLASS scores: <b>Pre-K</b> ▪ Emotional Support - 5 ▪ Instructional Support –3 ▪ Classroom Organization – 5 <b>Toddler</b> ▪ Emotional & Behavioral Support – 5 ▪ Engaged Support for Learning – 3.5  <b>Infant</b> ▪ Responsive Caregiving (RC) – 5.0	<input type="checkbox"/> Independent assessment with CLASS with minimum CLASS scores: <b>Pre-K</b> ▪ Emotional Support – 5.5 ▪ Instructional Support – 3.5 ▪ Classroom Organization – 5.5  <b>Toddler</b> ▪ Emotional & Behavioral Support – 5.5 ▪ Engaged Support for Learning – 4  <b>Infant</b> ▪ Responsive Caregiving (RC) – 5.5

<sup>7</sup> For all ECE/CD units, the core 8 are desired but not required.

**Note:** Point values are not indicative of Tiers 1-5 but reflect a range of points that can be earned toward assigning a tier rating (see Total Point Range).

ELEMENT	BLOCK (Common Tier 1) Licensed In-Good Standing	2 POINTS	3 POINTS	4 POINTS	5 POINTS
<b>CORE III: PROGRAM AND ENVIRONMENT - Administration and Leadership</b>					
<b>5. Ratios and Group Size</b> (Centers Only beyond licensing regulations)	<input type="checkbox"/> Center: Title 22 Regulations <b>Infant</b> Ratio of 1:4 <b>Toddler Option</b> Ratio of 1:6 <b>Preschool</b> Ratio of 1:12 <input type="checkbox"/> FCCH: Title 22 Regulations <i>(excluded from point values in ratio and group size)</i>	<input type="checkbox"/> Center - Ratio: Group Size <b>Infant/Toddler</b> – 4:16 <b>Toddler</b> – 3:18 <b>Preschool</b> – 3:36	<input type="checkbox"/> Center - Ratio: Group Size <b>Infant/Toddler</b> – 3:12 <b>Toddler</b> – 2:12 <b>Preschool</b> – 2:24	<input type="checkbox"/> Center - Ratio: Group Size <b>Infant/Toddler</b> – 3:12 or 2:8 <b>Toddler</b> – 2:10 <b>Preschool</b> – 3:24 or 2:20	<input type="checkbox"/> Center - Ratio: Group Size <b>Infant/Toddler</b> – 3:9 or better <b>Toddler</b> – 3:12 or better <b>Preschool</b> – 1:8 ratio and group size of no more than 20
<b>6. Program Environment Rating Scale(s)</b> (Use tool for appropriate setting: ECERS-R, ITERS-R, FCCERS-R)	<input type="checkbox"/> Not Required	<input type="checkbox"/> Familiarity with ERS and every classroom uses ERS as a part of a Quality Improvement Plan	<input type="checkbox"/> Assessment on the whole tool. Results used to inform the program's Quality Improvement Plan	<input type="checkbox"/> Independent ERS assessment. All subscales completed and averaged to meet overall score level of 5.0	<input type="checkbox"/> Independent ERS assessment. All subscales completed and averaged to meet overall score level of 5.5 OR Current National Accreditation approved by the California Department of Education
<b>7. Director Qualifications</b> (Centers Only)	<input type="checkbox"/> 12 units ECE/CD+ 3 units management/ administration	<input type="checkbox"/> 24 units ECE/CD + 16 units General Education +/with 3 units management/ administration  <b>OR</b> Master Teacher Permit	<input type="checkbox"/> Associate's degree with 24 units ECE/CD +/with 6 units management/ administration and 2 units supervision <b>OR</b> Site Supervisor Permit <b>AND</b> <input type="checkbox"/> 21 hours PD annually	<input type="checkbox"/> Bachelor's degree with 24 units ECE/CD +/with 8 units management/ administration <b>OR</b> Program Director Permit <b>AND</b> <input type="checkbox"/> 21 hours PD annually	<input type="checkbox"/> Master's degree with 30 units ECE/CD including specialized courses +/with 8 units management/ administration, <b>OR</b> Administrative Credential <b>AND</b> <input type="checkbox"/> 21 hours PD annually
<b>TOTAL POINT RANGES</b>					
<b>Program Type</b>	<b>Common-Tier 1</b>	<b>Local-Tier 2<sup>8</sup></b>	<b>Common-Tier 3</b>	<b>Common-Tier 4</b>	<b>Local-Tier 5<sup>9</sup></b>
<b>Centers</b> 7 Elements for 35 points	<b>Blocked</b> (No Point Value) – Must Meet All Elements	<b>Point Range</b> 8 to 19	<b>Point Range</b> 20 to 25	<b>Point Range</b> 26 to 31	<b>Point Range</b> 32 and above
<b>FCCHs</b> 5 Elements for 25 points	<b>Blocked</b> (No Point Value) – Must Meet All Elements	<b>Point Range</b> 6 to 13	<b>Point Range</b> 14 to 17	<b>Point Range</b> 18 to 21	<b>Point Range</b> 22 and above

<sup>8</sup>Local-Tier 2: Local decision if Blocked or Points and if there are additional elements

<sup>9</sup> Local-Tier 5: Local decision if there are additional elements included