WASHINGTON STATE
Department of
Children, Youth, and Families

# COST OF QUALITY PHASE III

*Subsidy Research*

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www.dcyf.wa.gov

**Prepared by:**

Hayley Hohman, M.A., Subsidy Research Analyst, DCYF

Melissa Camp, Subsidy Budget and Analytics Manager, DCYF

Christopher Stanley, M.Ed., Budget Director, DCYF

Sarah Veele, Ph.D., Research and Analyst Administrator, DCYF

Nicole Rose, M.P.A., Director of Eligibility and Provider Supports, DCYF

Rachael Brown-Kendall, Quality Rating and Improvement System Administrator, DCYF

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WASHINGTON STATE
Department of
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*"Protect children and strengthen families so they flourish."*

*Department of Children, Youth, and Families*

# EXECUTIVE SUMMARY

The Department of Children, Youth, and Families (DCYF) is committed to creating an effective and continuous early learning system for children and families in Washington State. DCYF designed Phase III of the Cost of Quality research series with a mission to understand the costs of operating a licensed family child care home and the costs associated with Early Achievers. As Washington's Quality Rating and Improvement System, Early Achievers offers support to early learning professionals to continuously improve their programs. It also provides quality ratings, on a scale of 1 to 5, to communicate quality to parents.

Researchers achieved a 19.4 percent response rate on a web survey sent to a sample of approximately 2,000 licensed family child care homes. While the response rate is low, the large sample size ensured completed responses represented the population. The margin of error is ±4.75 percent at the 95 percent confidence level. Researchers report the major findings below. Statistically significant findings are in bold.

## CHARACTERISTICS

Researchers looked to see if characteristics of licensed family child care homes have a relationship with Early Achievers quality level. While these variables do not account for costs, several are indicators of quality levels. These include:

- **One can expect Early Achievers quality level to be higher in areas with a lower relative median household income.** As Early Achievers is aimed at providing high-quality care to low-income children, it makes sense that licensed family child care homes in areas with more subsidy children would participate and rate well in Early Achievers.
- **Licensed family homes that have rated in Early Achievers are more likely to have operated longer.**

## ENROLLMENT AND ACCESS

Researchers also included enrollment statistics and services in data analysis. Researchers made the following observations about variables:

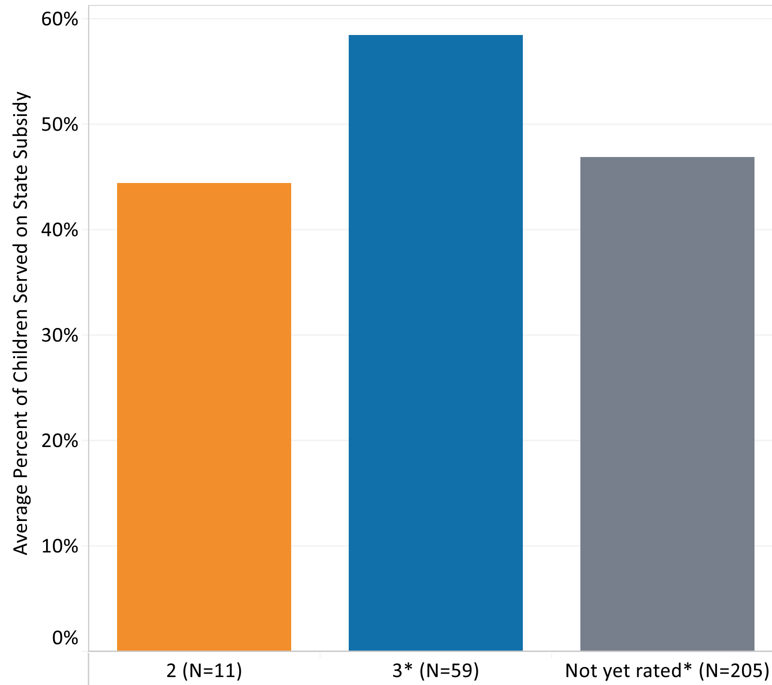
- **High-quality licensed family homes care for a higher percentage of subsidy children.** Since DCYF formed Early Achievers to support high-quality care for low-income children, this finding provides evidence that Early Achievers is succeeding.
- Care for children with special needs appears more likely to be available at high-quality licensed family child care homes when compared to all other licensed family homes.

## STAFF

Researchers found several interesting relationships between staff variables and Early Achievers quality level. These include:

- Assistant hourly wage appears to increase from Level 2 to Level 3.
- Owners of high-quality licensed family homes tend to have more education, with most having at least some college education.
- **The more days of professional development a licensed family child care home experiences, the more likely they are to have a higher quality level.**
- **High-quality licensed family child care homes have more volunteers.**
- **The more staff a licensed family home child care employs, the more likely it is to have a high-quality Early Achievers rating.**
- **High-quality licensed family child care homes are more likely to offer holidays and paid time off for staff.**

Figure 16: Percentage of Children Served on State Subsidy by Early Achievers Quality Level

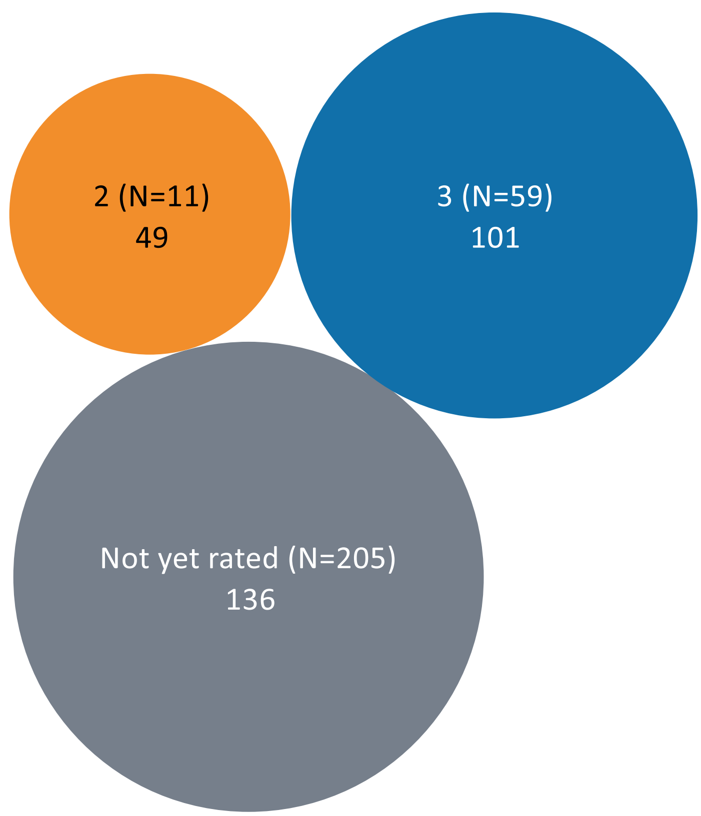



## COSTS AND REVENUE

Business models for licensed family child care homes can vary amongst quality levels. These differences include:

- High-quality licensed family homes are more likely to take more time to prepare and dedicate more time weekly to Early Achievers. Since variable expenditures for Early Achievers did not increase with quality level, researchers recommend that licensed family child care homes maintain their current monetary investment and focus on committing more time to Early Achievers.
- **Private pay tuition increases with Early Achievers quality level.** This indicates that tuition can be a signal for quality.

Figure 13: Early Achievers Weekly Time Commitment by Quality Level, in Hours



## RECOMMENDATIONS

The findings in this report suggest that expanding access and care is related to high-quality. Serving relatively more children on subsidy and offering care to children with special needs is more common with high-quality licensed family child care homes. Professional development and investing in staff also have positive impacts on quality. Researchers described positive relationships between professional development, the owner's education, and assistant wages.

On a final note, these findings also suggest that, at the current level of financial investment, differences in time investments based on Early Achievers status are noticeable. This suggests that policy should encourage licensed family child care homes to maintain monetary expenses for Early Achievers and reduce barriers to spend more time, initially and weekly, on Early Achievers. Since the number of volunteers and the total number of staff was positively correlated with quality, researchers also recommend strategies that help with hiring and paying staff.

# BACKGROUND

## CHILD CARE IN WASHINGTON STATE

Approximately 90,000 children are born in the state of Washington every year. For the first five years of life, a child's brain is developing faster than at any other age. In fact, 80-85 percent of the brain is developed in the first three years of life.[1] Every interaction is formative and may affect them for the rest of their lives. High-quality early childhood education programs are fantastic ways to utilize this development period. Studies show that these programs return an estimated $3 to $7 for every $1 invested.[2] However, in the United States, early learning is the least publically funded portion of the education pipeline.[3] This compounds socioeconomic effects on cognitive skills, socio-emotional functioning, and health that can be observed by age three.[4] Research demonstrates that quality of care is linked to positive social and emotional development in addition to more competent peer relationships.[5] An effective program can also level the playing field for low-income black and Hispanic students.[6] As economically disadvantaged and dual -language children experience the greatest improvement in early learning programs, continued support for early education is paramount.[7]

Transparency with the quality of child care is important, not just for parents, but for children as well. While early learning programs are an important part of the education pipeline, the market is hard for families to navigate. 62% of parents report difficulty finding childcare that meets their standards.[8] Further, quality is only "modestly" related to cost.[9] As a result, parents cannot rely solely on cost to determine the quality of child care, like they could expect with most other goods or services.

Almost 3,500 licensed family homes operate in Washington State. National surveys describe a population where nearly half consider this their career, and profit from their child care is a majority of their household income.[10] Family homes differ from centers in their lower capacity, and multi-age setting.

[1] "Dana L. Suskind, MD - UChicago Medicine." Accessed February 2, 2018.
[2] "Investing in Our Future: The Evidence Base on Preschool." Foundation For Child Development, October 11, 2013.
[3] News, and World. "Inequality in America Apparent by Age Three: Rich Kids Attend School. Poor Kids Stay with a Grandparent." National Post, September 27, 2017.
[4] Doyle, Orla, Colm P. Harmon, James J. Heckman, and Richard E. Tremblay. "Investing in Early Human Development: Timing and Economic Efficiency." Economics and Human Biology 7, no. 1 (March 2009): 1–6.
[5] "Infant-Toddler Child Care Fact Sheet." Zero to Three. Accessed November 28, 2017.
[6] Interlandi, Jeneen. "Why Are Our Most Important Teachers Paid the Least?" The New York Times, January 9, 2018, sec. Magazine.
[7] Weiland, Deborah A. Phillips, Mark W. Lipsey, Kenneth A. Dodge, Ron Haskins, Daphna Bassok, Margaret R. Burchinal, Greg J. Duncan, Mark Dynarski, Katherine A. Magnuson, and Christina. "Puzzling It out: The Current State of Scientific Knowledge on Pre-Kindergarten Effects." Brookings (blog), April 17, 2017.
[8] "Poll: 2 out of 3 Parents Struggle Finding Childcare That Meets Their Health, Safety Standards | Michigan Medicine." Accessed November 28, 2017.
[9] "Child Care Cost and Quality." Accessed October 7, 2017.
[10] "Characteristics of Home-Based Early Care and Education Providers: Initial Findings from the National Survey of Early Care and Education." Office of Planning, Research & Evaluation | ACF. Accessed January 23, 2018.

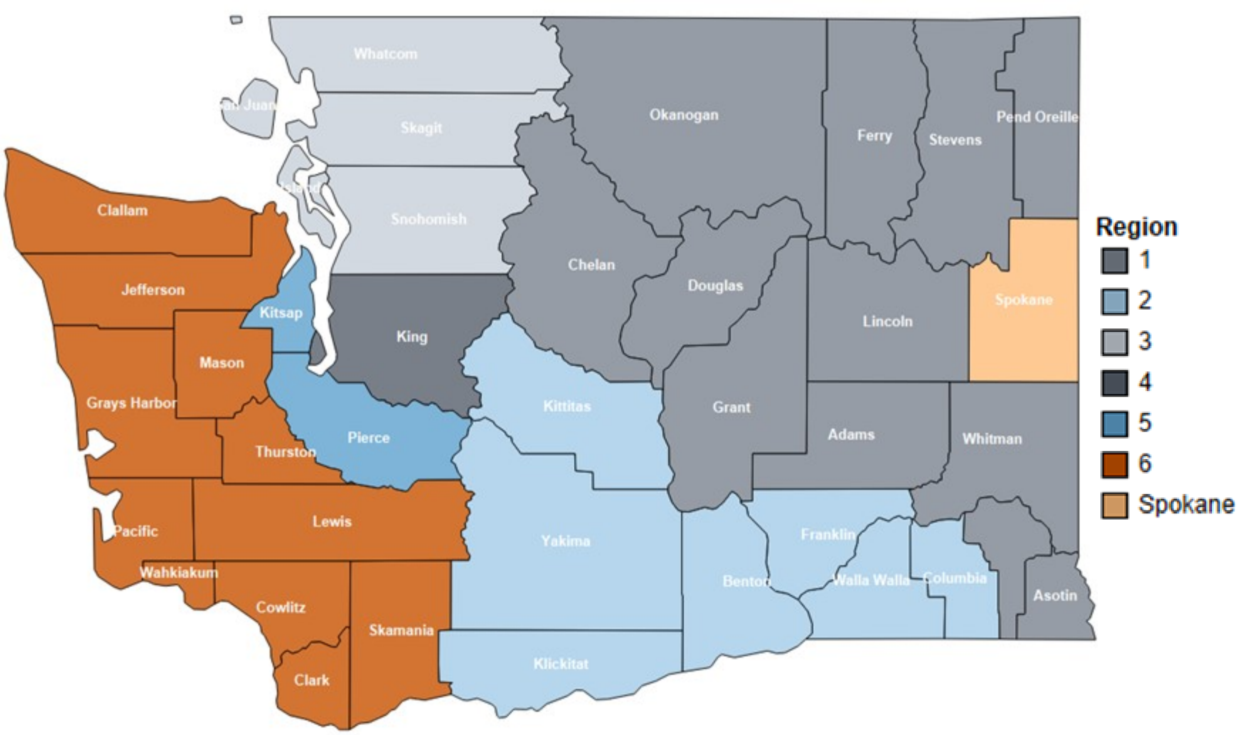
## THE DEPARTMENT OF CHILDREN, YOUTH, AND FAMILIES

Signed into law on July 6, 2017, the Washington State Legislature founded the Department of Children, Youth, and Families (DCYF) with HB 1661. Comprised of the former Department of Early Learning (DEL) and part of the Department of Social and Health Services, DCYF is restructuring how the state serves at-risk children and youth with the goal of producing better outcomes in all Washington communities. Over 3,000 employees work around the state.

DCYF believes that effective support is vital for all children to develop and transition from early childhood to the K-12 system. DCYF offers voluntary, comprehensive, and high-quality programs and support to families and early learning professionals.

## CHILD CARE SUBSIDY REGIONS

Figure 1: Washington Child Care Regions

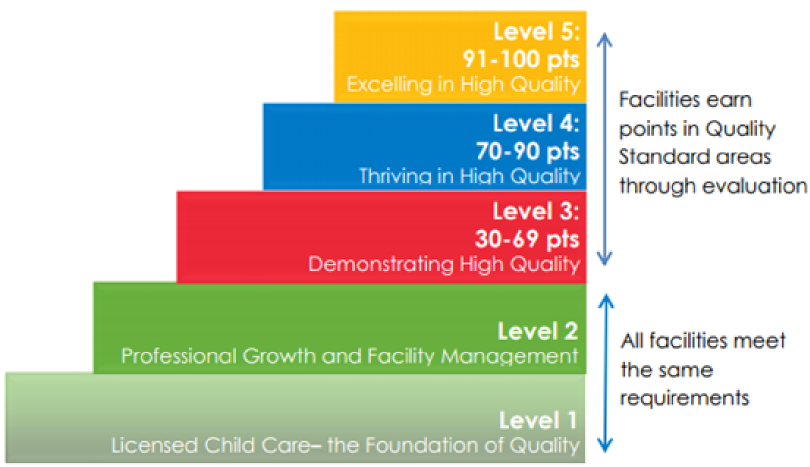


## EARLY ACHIEVERS

Washington's Quality Rating and Improvement System, Early Achievers, offers support to early learning professionals to continuously improve their programs. A federal Race to the Top Early Learning Challenge grant in 2011 helped establish DCYF's quality improvement efforts and an additional investment by the state legislature in 2015 is increasing child care quality at more licensed family home child cares than ever before.[11] Early Achievers:

- Provides resources (such as training, coaching, and incentives) to child care providers that help them offer high-quality care.
- Makes information on quality publically available to help parents and caregivers select care or programs that fit their needs.
- Ensures that children have high-quality early learning experiences that help them develop the skills they need to be successful in school and life.[12,13]

Figure 2: Early Achievers Levels




DCYF developed the Early Achievers framework in collaboration with child care providers across the state. All licensed providers who receive state subsidy payments for non-school age children must enroll in Early Achievers and achieve a Level 3 rating within a set timeframe in order to maintain subsidy eligibility. Early Achievers promotes higher levels of quality in early care and education by establishing five quality levels for provider participants[14]:

- **Level 1**--The Foundation of Quality: Level 1 denotes licensing or certification that includes all child care centers and family child care homes, military, tribal, Head Start, ECEAP, and other state funded programs. These facilities must meet health and safety standards set by licensing or other certification.

[11] "Early Achievers Standards Validation Study." Department of Early Learning. May 2016.

[12] "Early Achievers Participant Operating Guidelines." Department of Early Learning. September 2017.

[13] "Early Achievers Participant Operating Guidelines." Department of Early Learning. September 2017.

[14] "Early Achievers, Washington's Quality Rating and Improvement System Standards." Department of Early Learning. July 2017.

- **Level 2**--Professional Growth and Facility Management: Level 2 activities ensure that program leaders understand Early Achievers, program standards, child outcomes, and school readiness goals of the system and are also participating in quality improvement in partnership with coaching support and incentives. Facilities must complete all Level 2 activities to be Early Achievers participants. Facilities may also be rated Level 2, depending on points achieved in the Quality Standards. Facilities that have rated Level 2 are referenced in this report.
- **Level 3**--Demonstrating High-Quality: Level 3 is achieving high-quality in the Quality Standards and is the catalyst for Continuous Quality Improvement.
- **Level 4**--Thriving in High-Quality: Level 4 builds on Level 3 and provides expanded opportunities for family engagement and school readiness. Providers have a focus on preparing children for kindergarten, supporting overall development of individual children, and including parents in their child's learning and development plan.
- **Level 5**--Excelling in High-Quality: Level 5 builds on Level 4 through strong partnerships with families, areas of specialization, and highly qualified teachers with ECE degrees. Providers demonstrate consistent best practices associated with positive child outcomes for all and include a deep understanding of individualized instruction and support for every child and family.

By measuring quality, DCYF can improve child care standards beyond basic health and safety and focus on teacher-child interactions and fostering supportive environments. Providers meet the Early Achievers levels by completing milestones and earning points through onsite evaluations. DCYF sets the policy for Early Achievers, works with implementing partners, and uses successes and lessons learned to adapt and improve policy.

## THE COST OF QUALITY RESEARCH SERIES

The Cost of Quality series is part of DCYF's effort to review and improve child care programs. The series consists of surveys and analyses of business models of different providers. The series currently has three planned phases:

- Phase I was a proof-of-concept phase. It focused on ten contractors in the Early Childhood Education and Assistance Program (ECEAP). Researchers completed the interview process and collection of standard budget templates in 2016. The interviews were qualitative and open-ended to inform future projects.
- Phase II began in the summer of 2017. This phase focused on licensed child care centers. Researchers used a web-based survey to gather enrollment and operating cost information.
- Phase III is the subject of this report. The project began in the spring of 2018. Researchers used the same methodology as Phase II. Using lessons learned from the data analysis of Phase II, researchers created a leaner, web-based survey for Phase III. The subject of Phase III is licensed family homes.

Researchers planned the series so that experience from each phase informs future actions. As such, the researchers identify successes, challenges, and recommendations in this report. Researchers gathered input from licensed family child care homes before survey deployment. Licensed family homes and stakeholders also assisted with interpretation of the survey responses.

The intent of Phase III is to better understand the operating costs of licensed family child care homes and the costs associated with Early Achievers. By identifying these costs, DCYF can identify the investment needed for each level of Early Achievers. DCYF intends for Phase III to inform budget decisions by drawing correlations between cost drivers for licensed family homes and higher levels of quality. Focused investments to capitalize on those correlations could take the form of increased subsidy rates, higher quality improvement awards, greater tiered reimbursement awards, or targeted scholarships, among other opportunities.

To find these correlations, DCYF created a survey to ascertain the typical costs for licensed family child care homes to maintain their Early Achievers quality level in addition to total costs and revenue, continuous quality improvement using the Early Achievers framework, and indirect benefits (private tuition rate, capacity, etc.). Researchers examined differences in costs and revenue between providers at different quality levels. These findings will highlight areas that may be opportune for increased funding and work to enhance the quality of all licensed family homes in the state.

# METHODOLOGY

## SURVEY

The survey included questions about the enrollment, private pay tuition, staffing, and operational costs of each licensed family child care home. The survey was voluntary, and took about 30 minutes per provider to complete via the internet in English or Spanish. Many respondents completed the survey over the phone with the DCYF interviewers. The survey length increased if taken over the phone to approximately 40 minutes for English-speaking providers and 50 minutes for other languages.

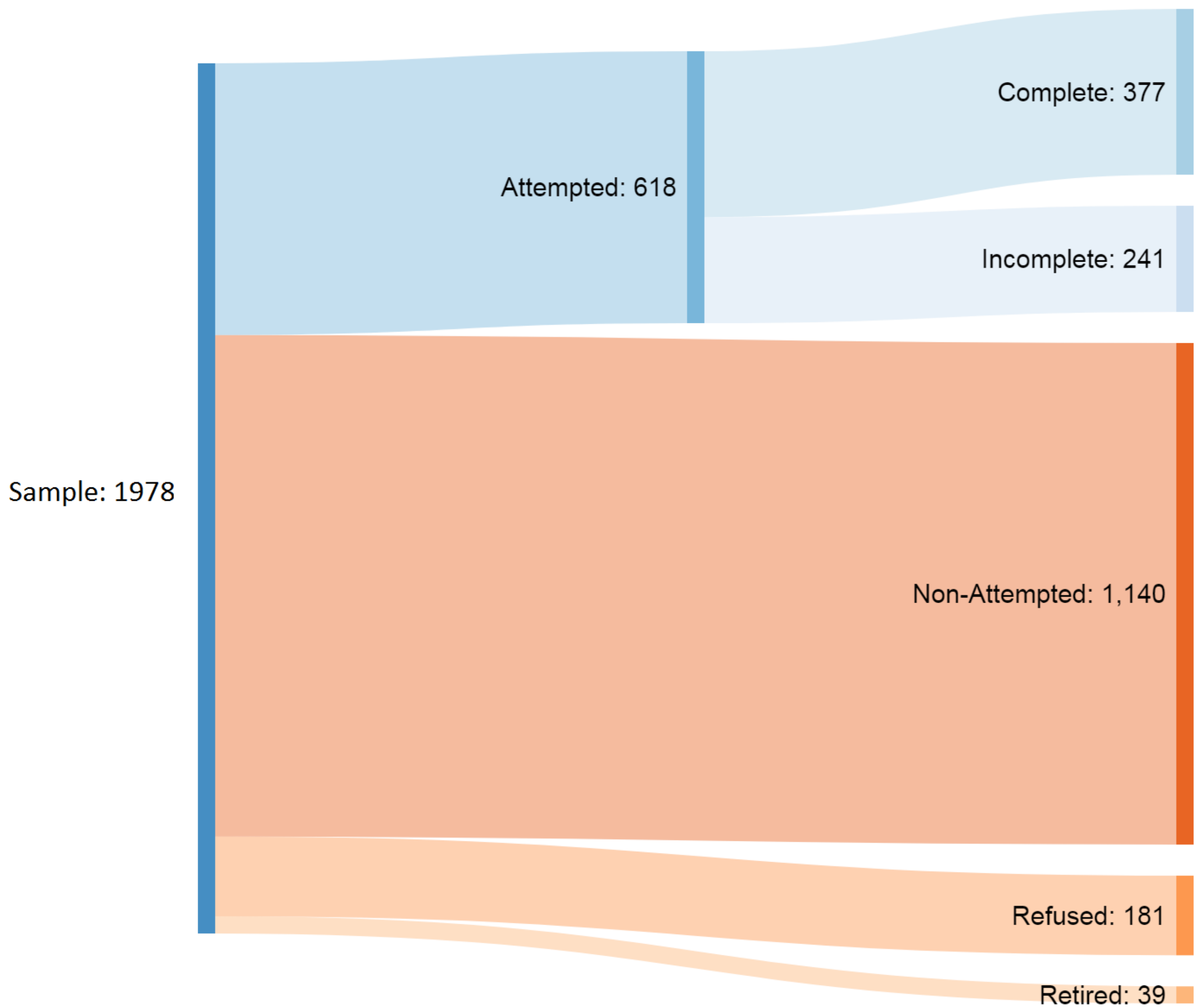
In March 2018, the Washington State Institutional Review Board granted the exempt determination request, due to the project's classification as program evaluation. Researchers linked survey responses to information from MERIT. After linking, researchers de-identified the data collected to the greatest extent possible. This was to avoid concerns around disclosure of proprietary financial information and encourage participation from licensed family child care homes. Researchers destroyed identifiable data after completion of the report.

Researchers used agency databases of 3,370 licensed family child care homes to pull a random sample of 1,978. This sample was higher than necessary for statistical validity, but was necessary to account for retired providers and ensure accurate contact information. Researchers then verified that the quality level, location, subsidy, and language distributions were representative of the state. Researchers monitored demographics of responses to ensure the data reflected the overall population.

Feedback from the Phase I interviews provided the foundation for the Phase II and III survey designs. DCYF used lessons learned from Phase II to make the Phase III survey leaner and shorter. DCYF also engaged the provider community in collecting data by asking providers to take part in the design, analysis, and outcome of the research. Stakeholders provided feedback in designing the survey language and increasing participation. These groups include SEIU 925, Child Care Aware of Washington, and the Early Learning Advisory Council.

DCYF sent the first survey invitation email March 22, 2018. This email included a message from the Director and the survey link. DCYF sent reminder emails the following week. At the end of the second week of deployment, follow-up calls began. These calls encouraged the respondents to complete the survey or schedule an interview time. Providers who took the survey over the phone benefited from assistance in better understanding questions while answering the survey. Researchers used a translation service to ensure that providers who do not speak English had an equal opportunity to participate. Beginning in April, interviewers called respondents who did not complete the survey. They worked to explain questions and recover as many answers as possible. The survey closed on May 23, 2018.

Figure 3: Cost of Quality Phase III Sample




DCYF achieved a response rate of 19.4 percent. The initial goal was a 60 percent response rate, but researchers quickly became aware of significant survey burnout and switched to a goal margin of error rather than response rate. Researchers based the final sample error on 377 licensed family homes from a population of 3,322, indicating a margin of error ±4.75 percent at the 95 percent confidence level.

## ANALYSIS

The analysis presented includes exploration of descriptive data, bivariate comparisons, logistic regression models, and cost modeling. Researchers examined the quality levels between licensed family child care homes, but data collection did not allow for analysis based on changes over time. Instead, analysis focuses on differences between licensed family child care homes of different quality levels. The researchers recommend a follow-up study to examine changes in licensed family homes over time.
Initial descriptive analysis includes averages, percentages, and number of observations for different variables. The researchers conducted bivariate comparisons to look for obvious patterns with quality levels. Researchers used one-way analysis of variance (ANOVA) to test for significant trends in continuous data, chi-squared testing for categorical data, and t-testing to examine the differences between two groups. Researchers conducted analysis using Microsoft Excel, RStudio, and Tableau. Researchers report figures in monthly amounts unless otherwise specified.

The researchers conducted a logistic regression model to determine which variables explained the variation in Early Achievers quality levels. As with the bivariate comparisons, researchers compiled variables using the cleaned survey data. A correlation matrix identified inefficiencies from the model, and researchers noted correlations of .5 or above as concerns. Researchers excluded these variables from the regression to prevent multi-collinearity. To choose between two correlated variables, researchers created simple logistic regressions of each. Researchers chose the best model fit based on comparing the Akaike information criterion (AIC) for each model. Researchers indexed correlated cost variables to preserve their effect in the model. To create an efficient regression model, the researchers removed inefficient estimators when possible or used theory to select similar variables (such as median household income instead of region). Researchers determined inefficient variables by observing a large and not significant p-value. This preserved the variables with the largest effect on quality.

Statistics that were significant at or below the .05 significance level are reported. When researchers examined business characteristics, such as costs, they excluded licensed family child care homes with a capacity of six or fewer from bivariate analysis, as they represent a different business model. However, they were included on characteristic variables when there was not an observable difference by capacity.

### What is a regression?

A regression model is a way of measuring the relationship between variables.

In this instance, researchers used a regression model to measure the relationship between Early Achievers quality level and variables from the survey. For example, a simple regression of tuition on quality level will measure how much a dollar increase in tuition will increase (or decrease) the expected quality level, holding all other variables constant.

It is important to know that regressions cannot prove what causes changes in quality— the model instead describes what is associated with quality.

# ANALYSIS AND IMPLICATIONS

Researchers report results in order of statistical validity. Some variables were significant under bivariate analysis, but were not in regression models. This is because hypothesis testing analyzes differences in the population means, and regression analysis isolates the effects of variables. Some variables do not have a significant effect when everything else is held constant, but exhibit a significant association otherwise.

**What is statistical significance?**

Statistical significance is a measure of certainty of difference. This difference can be between different groups, or the observed versus chance.

For example, a statistically significant variable in our regression means that there is evidence the variable effects provider quality – it is not just chance.

It is important to know that significance can only provide evidence that there is a difference – it cannot prove it.

Different significance levels measure the certainty of difference. A .05 significance level means the researcher is 95 percent confident that the observed difference is real. Typical significance levels are .10, .05, and .001. This report represents statistical significance at the .05 level unless otherwise specified.

## DESCRIPTIVE DATA

The descriptive data in this report comes from two sources. The first is regression results that are not statistically significant, but suggested an interesting correlation with quality. The other is clustering and averages.

While not statistically significant, regression models did return suggestive estimates for other variables. Since these are not significant, the effect is not quantified. But, researchers used these estimates as inspiration for additional analysis. Researchers report some of the positive or negative relationships with quality. Researchers intend for these to be areas of further exploration.

**Positive relationship with quality:**

- Experience – The longer a licensed family child care home has operated, the more likely it is to have a higher Early Achievers quality rating. This is discussed further in *Bivariate Comparisons*.
- Early Achievers fixed costs – Total one-time expenditures for goods or services related to Early Achievers appears to have a positive relationship with quality level. This trend is discussed further below.

To achieve an overview of variables and their relationships with Early Achievers quality level, researchers used clustering and averages. The following descriptive figures and findings describe characteristics of the business, owners, employees, and costs.

Owners of licensed family child care homes tend to be the most educated member of their business. Most owners have at least a high school education or equivalent. Most licensed family child care homes that rate well in Early Achievers have owners with at least some college experience.

Assistants appear to have less education than the owners of licensed family child care homes. The most common education level for a licensed family child care home owner was some college, the most common education level for an assistant is a high school degree or equivalent.

Figure 4: Owner Education by Early Achievers Quality Level

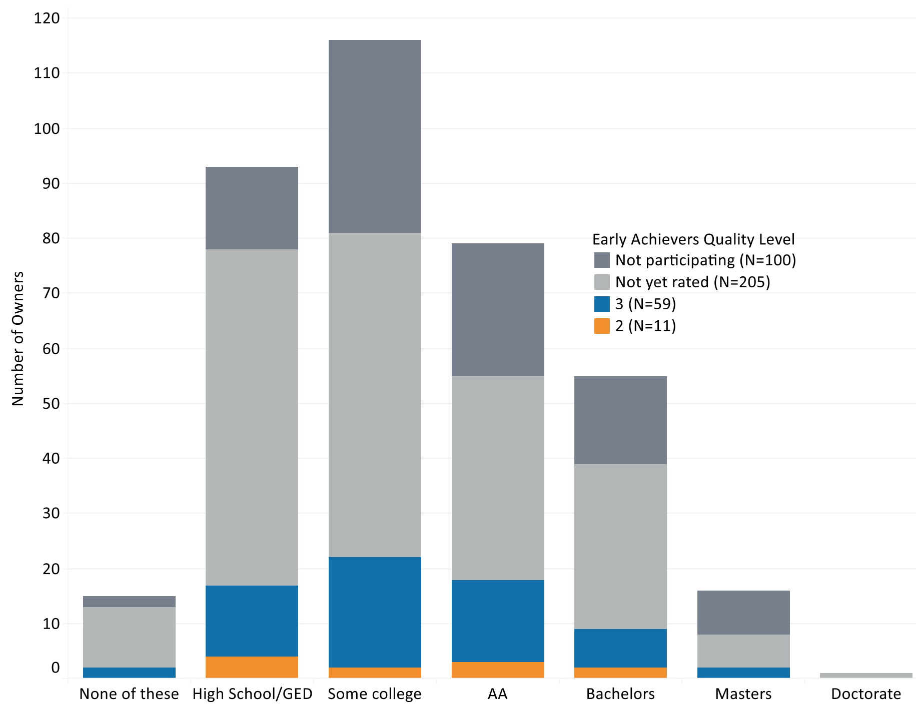
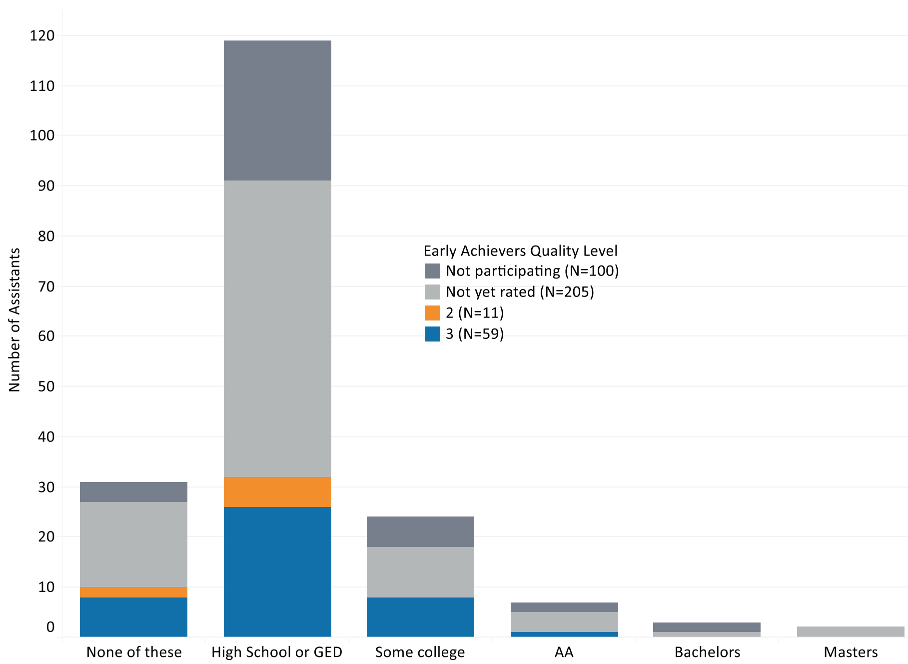



Figure 5: Assistant Education by Early Achievers Quality Level




Since not every respondent employed an assistant or reported a wage, significance testing of average assistant hourly wage did not yield results. However, Level 3 licensed family child care homes tend to compensate their assistants at higher wages than a Level 2 rated licensed family home.

Figure 6: Average Assistant Hourly Wage by Region and Early Achievers Quality Level

| Region | 2 (N=11) | 3 (N=59) | Not participating (N=100) | Not yet rated (N=205) |
|---|---|---|---|---|
| Spokane | | | $14.00 | $15.00 |
| 1 | | $15.75 | $12.00 | $15.89 |
| 2 | | $12.43 | | $11.95 |
| 3 | $13.25 | $13.75 | $13.70 | $12.43 |
| 4 | $12.25 | $13.54 | $15.71 | $13.55 |
| 5 | $11.50 | $15.67 | $13.50 | $12.67 |
| 6 | $11.50 | $15.43 | $12.25 | $12.25 |

The percentage of licensed family child care homes offering care for special needs children increases with Early Achievers quality level. This is expected, as researchers expected services for children to increase as quality level increases.

Figure 7: Special Needs Care by Early Achievers Quality Level

| Early Achievers Quality Level | Not Participating (N=66) | Not Yet Rated (N=175) | Level 2 (N=12) | Level 3 (N=75) |
|---|---|---|---|---|
| Offer Special Needs Care (%) | 20% | 26% | 25% | 32% |

### Fixed Costs Versus Variable Costs

This paper defines fixed and variable costs separately in order to capture two separate relationships.

Fixed costs are a one-time payment. They include expenses such as materials, construction, and furniture.

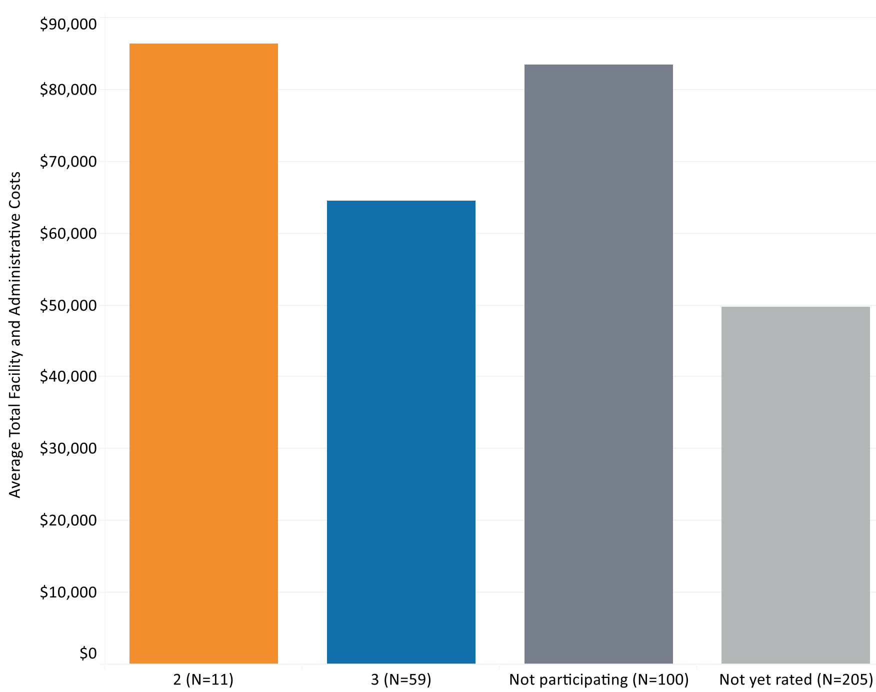
Variable costs are payments that depend on time and/or usage. This includes utilities, phone, and internet expenses.

These two separate kinds of costs capture different behaviors. A fixed cost in this report may represent preparation for rating. It is a one-time purchase of an item (like an outdoor patio) that provides benefits over time. A variable cost in this report may signify maintenance or general operations.

Managing costs and resource investment is an important part of operating a licensed family child care home. For a relatively homogenous group of businesses, there was much variability for reported expenses, both overall and within Early Achievers quality levels. This variance affected significance testing, but the overall trends shown by the data are still useful to observe.

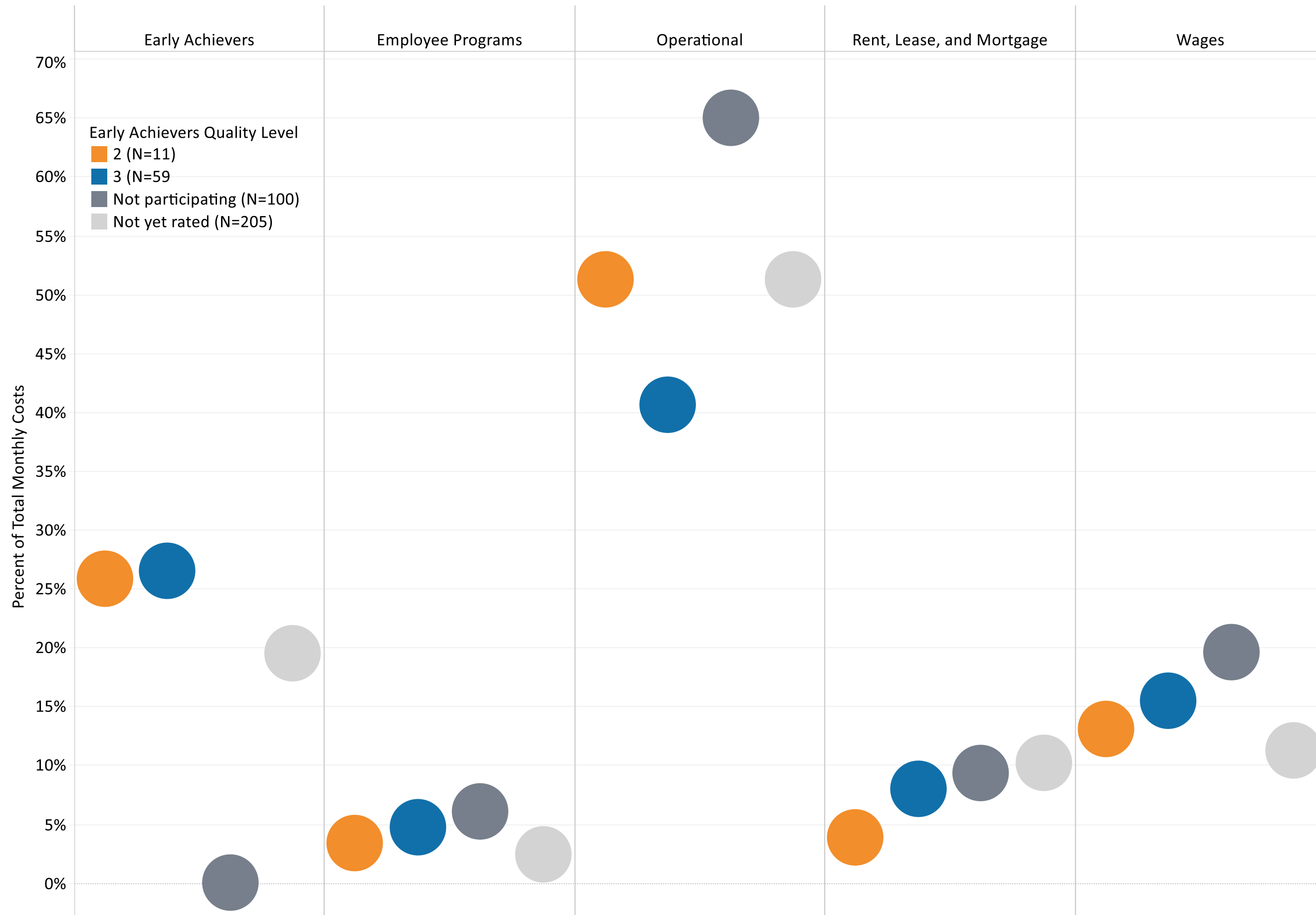
Level 2 licensed family child care homes reported the highest costs for facility and business-related expenses. In fact, these businesses reported higher average costs in every line item with a few exceptions: the employee benefit program, mortgage, taxes and licensing, and wages. Appendix 8 contains more information on costs that decrease as Early Achievers quality level increases.

Figure 8: Average Total Facility and General Business Costs by Early Achievers Quality Level



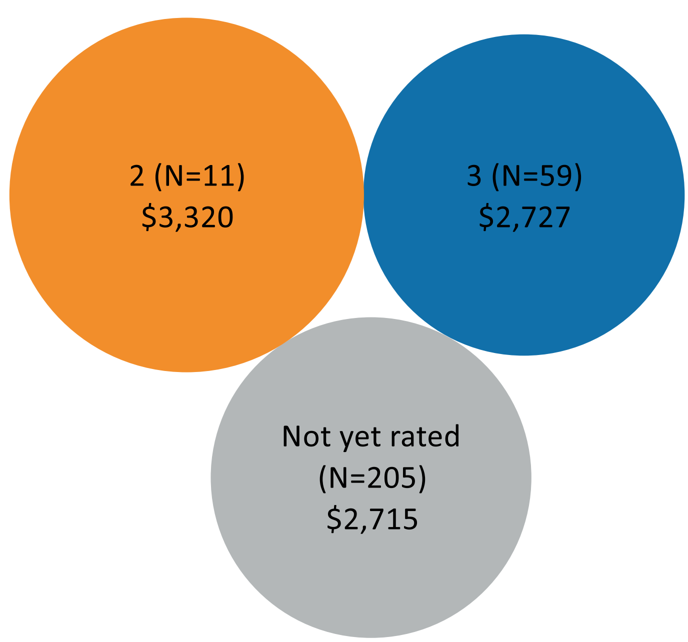

To examine this further, researchers converted each type of monthly variable costs into a percent of total monthly variable costs. Researchers found the standard monthly operating costs for licensed family child care homes can vary greatly throughout Early Achievers rating.

Figure 9: Variable Costs as a Percentage of Total Costs by Early Achievers Quality Level



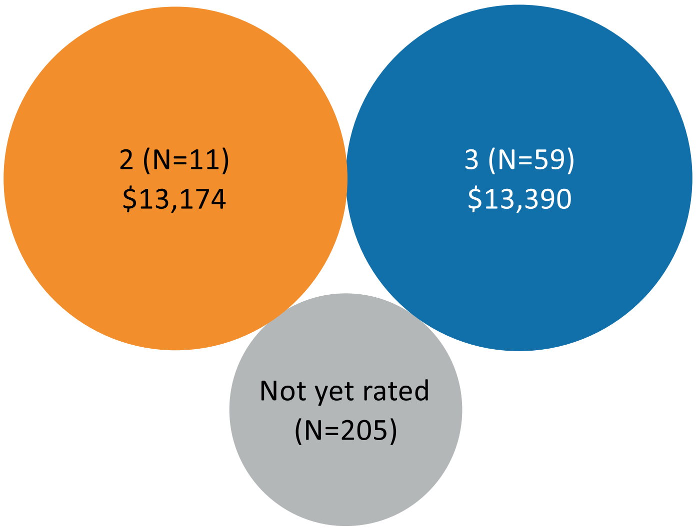

Level 3 licensed family child care homes appear to spend more of their budget in Early Achievers, Employee Programs, and Rent, Lease, and Mortgage when compared to Level 2. As shown in the illustration above, wages seem fairly consistent with Levels 2 and 3. Additionally, operational costs are the highest portion of the budget for all licensed family child care homes. Early Achievers variable costs also represent a significant portion of overall monthly expenses. The percentage of Early Achievers costs do not seem to vary greatly among those participating in Early Achievers, so researchers opted for a deeper examination of Early Achievers costs.

Figure 10: Early Achievers Monthly Variable Costs by Quality Level




In fact, when looking at the monetary amounts of Early Achievers variable costs, rather than as a percent of the total, there is not a statistically significant difference between the average expenditure for any quality level. The expenditure amounts are similar. However, fixed costs for Early Achievers exhibit some differences throughout quality level.

Figure 11: Early Achievers Annual Fixed Costs by Quality Level




Level 2 and Level 3 are similar, demonstrating that licensed family child care homes in these categories prepared for their rating. For those that have not yet rated, the fixed costs may still be in progress and the amount denoted in the figure may not be the total amount by the time of rating.

Time spent on Early Achievers exhibits a more illuminating trend. Time to prepare is the time equivalent of a fixed cost—it is a single investment of a period of time. Figure 12 shows the average time to prepare for Early Achievers by quality level.

Levels 3 and 4 and those that have not yet rated are similar in preparation time. Rated Level 2, which does not meet the state standard for quality, dedicated less time to preparing for Early Achievers. Weekly time commitment for Early Achievers demonstrates the same variability between Level 2 and the other categories. A noticeable difference here is that licensed family child care homes that have not yet rated dedicate the most time per week to Early Achievers. This most likely signifies anticipation of rating.

Figure 12: Early Achievers Time to Prepare by Quality Level, in Hours

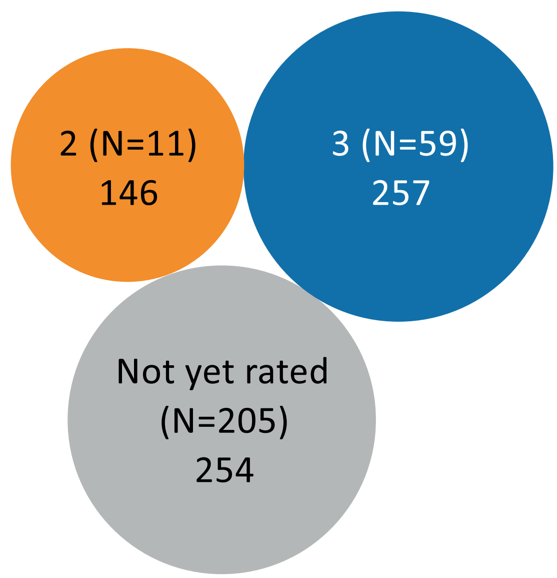
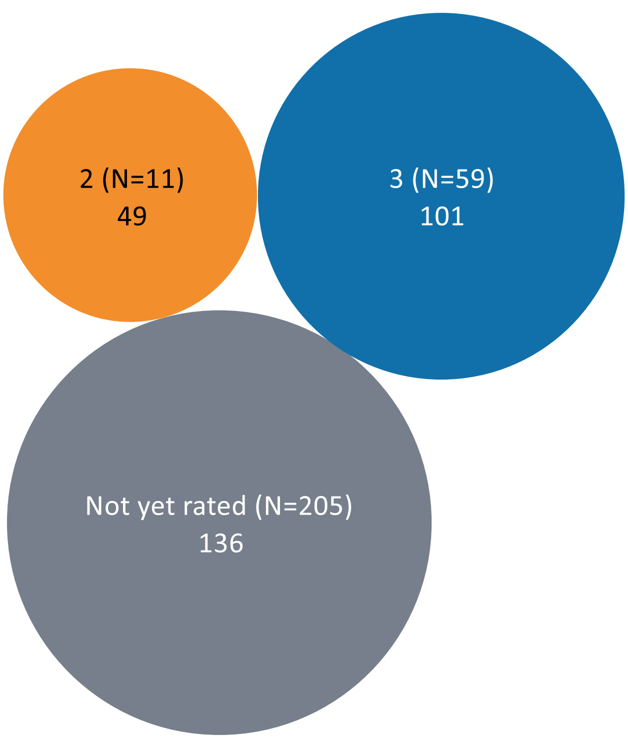


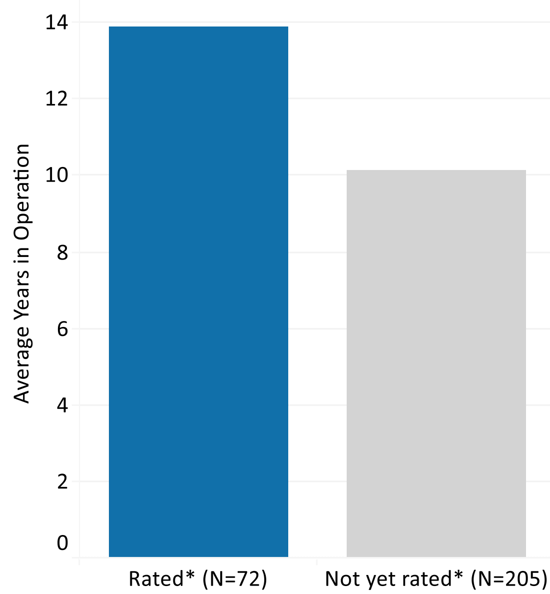

Figure 13: Early Achievers Weekly Time Commitment by Quality Level, in Hours




Researchers calculated time commitment (to prepare and weekly) by the sum of time spent on each Early Achievers subcomponent. Respondents reported this data, and the visuals suggest that time may be spent on several subcomponents at once. This means that the above visuals may double-count time spent on Early Achievers. Examined together, these time and costs visuals suggest that given the current level of monetary investment, increased time investments are what may contribute more to high-quality.

## BIVARIATE COMPARISONS

Figure 14: Years in Operation by Early Achievers Participation




Researchers conducted trend analysis between Early Achievers quality rating and characteristics of licensed family child care homes. They report findings significant at the .05 significance level (unless otherwise specified). Higher quality ratings are associated with:

- More days of professional development per year.
- Offering holidays and paid time off.
- Serving more children on state subsidy.
- Having more volunteers.

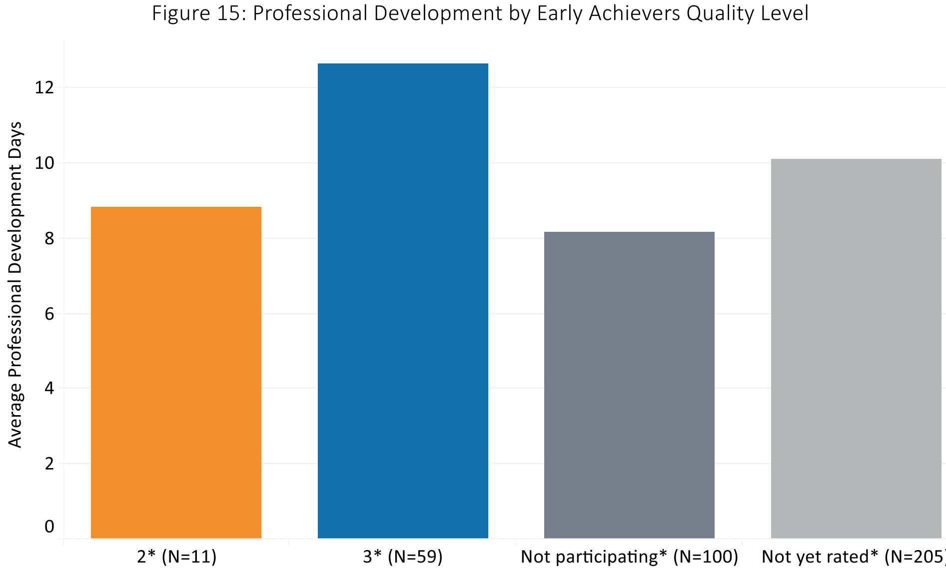
These relationships are examined in greater detail in this section.

The number of years a licensed family child care home has operated did not have a clear trend along quality level. Instead, as a whole, those that are participating in Early Achievers have more experience than those that have not. This signifies that a willingness or ability to partake in Early Achievers may increase as licensed family child care homes become more established.

Professional development exhibits a clearer, positive trend with Early Achievers quality level. Licensed family child care homes that meet or exceed the state standard of quality report more professional development. Licensed family child care homes that have not yet rated are between Levels 2 and 3 in this variable.

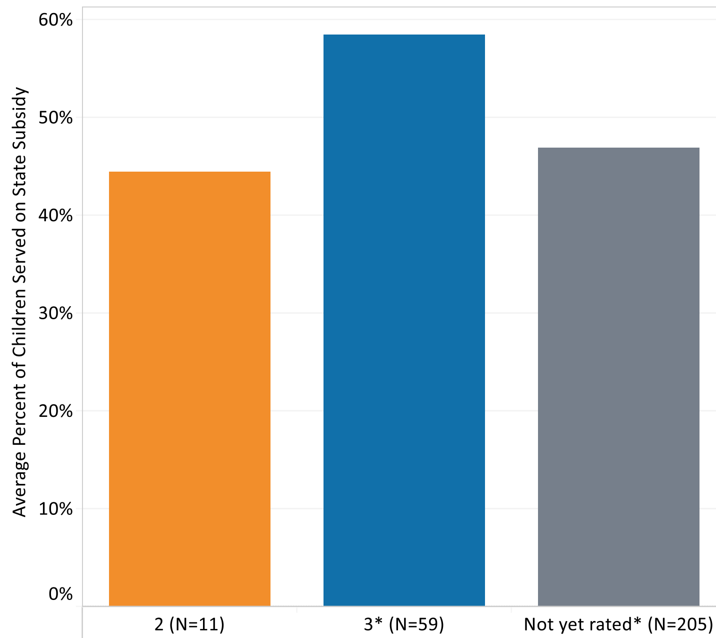
As quality level increases, licensed family child care homes are more likely to care for a larger portion of children on state subsidy. Level 3 licensed family child care homes and those that have not yet rated care for a higher percentage of children on subsidy when compared to those rated at Level 2. While increasing access may be an indicator of quality, this relationship may also be due to the requirement in RCW 43.216.085 that providers who accept state funds must participate in Early Achievers. In order to accept children on subsidy, licensed providers must rate at Level 3 by December 2019. A likely explanation for this relationship is that licensed family child care homes that have children on subsidy as a large part of their revenue are more likely to be proactive about Early Achievers, and thus rate relatively quickly. A more direct

Figure 15: Professional Development by Early Achievers Quality Level



effect should be measurable between quality level and percentage of children served by state subsidy after subsidy providers meet the first rating milestone. This relationship is also discussed further in *Regression Results*.

Figure 16: Percentage of Children Served on State Subsidy by Early Achievers Quality Level



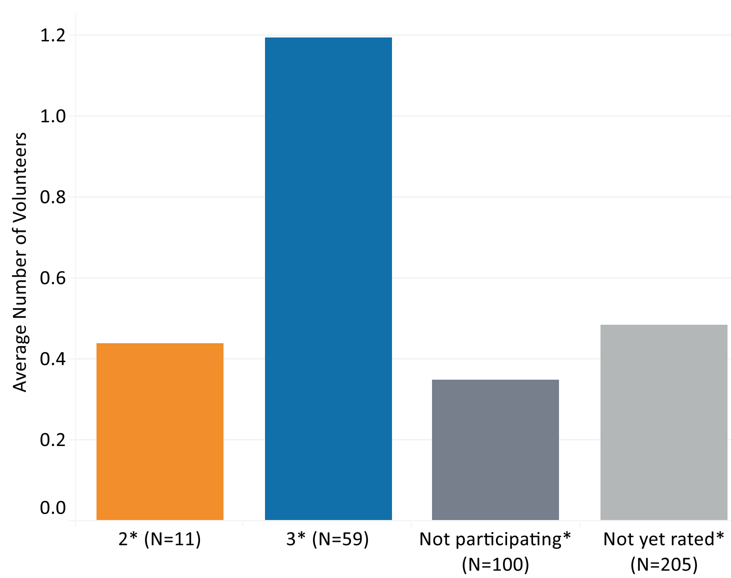

The logistic regression returned a statistically insignificant coefficient for benefits. Researchers investigated this relationship further, and discovered that the type of benefit was associated with high-quality instead of the general term. Licensed family child care homes that offer holidays or paid time off are more likely to be high-quality. These were also the most frequent type of benefit. Thus, a licensed family child care home that offers time off to staff may have a more dedicated, content, and less stressed workplace, which then contributes to high-quality.

Figure 16: Percentage of Children Served Receiving State Subsidy by Early Achievers Quality Level

| Early Achievers Quality Level | Not Yet Rated (N=119) | Level 2 (N=8) | Level 3 (N=50) | Not Participating (N=58) |
|---|---|---|---|---|
| Offer Holidays* | 15% | 25% | 32% | 26% |
| Offer Paid Time Off* | 5% | 13% | 16% | 19% |

Employing more volunteers is related to high-quality in Early Achievers. Licensed family child care homes that meet the state standard of quality (Level 3 or above) are statistically significantly more likely to have more volunteers. Researchers denoted part-time volunteers as 0.5 and 1 for full-time. This relationship may be the result of more community involvement, extra business assistance, or cost savings. To test these theories, DEL called respondents who reported having at least one part-time volunteer. Most of these volunteers were family members, such as husbands, mothers, or the children of the owner. Volunteers often help out on an as-needed basis, cleaning or looking after children. Many offered entertainment activities to children in child care, such as reading books, art and science projects, or playing with them.

Figure 18: Number of Volunteers by Early Achievers Quality Level



The relationship between staff and quality level is described more in *Regression Results*.

## REGRESSION RESULTS

Regression models describe relationships between variables and Early Achievers quality level. The dependent variable is based on the Early Achievers quality levels, with a distinction for those that rated at Level 2 and those that are at Level 2 and not yet rated. Therefore, the dependent variable captures quality level and willingness to participate in Early Achievers. Incomplete responses and creating sub-sets for analysis limited statistical power to identify significant associations. Results are at the .05 significance level unless otherwise specified. Researchers describe the statistically significant relationships below:

- Median household income – Higher income neighborhoods have lower Early Achievers quality levels. There is a negative relationship between the zip code's median household income and Early Achievers quality level. This may be due to the availability of child care substitutes and more competition in high-income areas. It may also be due to these markets having more private pay only facilities that choose not to opt into Early Achievers.
- Total staff – The more staff a licensed family child care home employs, the more likely it is to have a higher Early Achievers quality rating. This is likely due to more individualized care of children, less stress for the owner, and more assistance running the business and meeting the Early Achievers milestones. This is statistically significant at the 0.01 level.
- Private pay infant rate – There is a positive relationship between infant tuition rate and Early Achievers quality level.* This means that the price of tuition can be a signal of quality to parents and guardians. However, it is not the only indicator of quality, like one would expect with some other goods and services. This is statistically significant at the 0.01 level.
- Percent of children served on state subsidy – Licensed family child care homes that serve more children on subsidy (relative to total enrollment) are more likely to rate highly in Early Achievers.

### How is regression analysis different from bivariate comparisons?

In regression analysis, relationships between the independent and dependent variable are quantified. These estimates allow one to isolate the direct relationship between variables.

Regression models allow the researcher to keep every other variable constant—the only change is the one-unit increase in the chosen variable. Therefore, one can quantify the direct effects between dependent and independent variables.

* Tuition variables for each group could not be included in the regression due to issues with multicollinearity. Researchers selected infant tuition due to its high AIC value. For more information on this, see *Methodology*.

## REGRESSION RESULTS

### *Future Surveys*

The Cost of Quality series seeks to understand the business operations of licensed child care providers, which is no easy task (for researchers or for survey respondents). By nature of the research, the surveys were long. Many respondents said that the survey was too long, difficult, or they simply stopped at the financial section. Future surveys on business models should anticipate this difficulty. Researchers designed the online format to take less time than a phone interview, and future surveys should follow this design and try to make phone surveys more efficient. Researchers intend for the findings of Phases II and III to inform future surveys on this subject. In this way, future surveys can capture information on costs that are or appear to change over quality level, instead of all costs. This will make for a leaner survey and concise research scope.

Since Phase III overlapped with another survey, many respondents stated they thought the surveys were the same or did not wish to answer another survey. Because of this, researchers believe survey burnout influenced the low response rates of the survey. Researchers recommend a cool-off period between future surveys, as well as assembling a larger sample.

This Phase III survey was available online in English and Spanish and by phone in any language. Many respondents who spoke Spanish preferred to take the survey by phone rather than online. While translation services did offer access for respondents, they did increase the time needed for a phone survey. Researchers recommend that future projects plan for and experiment with ways to reach out to these communities to ensure an efficient and more equitable survey process.

### *Future Research*

Since licensed family child care homes have more homogenous characteristics than licensed centers, such as capacity and types of staff, researchers expected that the business models would also be similar. Instead, there was a large variability of costs with the business models of licensed family child care homes. Therefore, policies that concern the businesses of licensed family homes will have an impact that is difficult to estimate without further research. When compared to licensed centers, licensed family child care homes have different business operations and staff, capturing different economies of scale.

There was another difficulty with the analysis of this report. Early Achievers is still new and not all participants have rated yet. Our dependent variable of quality also likely captures provider willingness to participate in and initiative concerning Early Achievers. When more providers rate and advance through the quality levels, future research will be able to isolate the value of quality more directly.

### *Policy Recommendations*

These findings also suggest that expanding access and care is related to high-quality. Serving relatively more children on subsidy and offering care to children with special needs is more common with high-quality licensed family child care homes. Professional development and investing in staff also have positive impacts on quality. Researchers described positive relationships between professional development, the owner's education, and assistant wages.

On a final note, these findings also suggest that, at the current level of financial investment, differences in time investments based on Early Achievers status are noticeable. This suggests that policy should encourage licensed family child care homes to maintain monetary expenses for Early Achievers and reduce barriers to spend more time, initially and weekly, on Early Achievers. Since the number of volunteers and the total number of staff was positively correlated with quality, researchers also recommend strategies that help with hiring and paying staff.

# WORKS CITED

"Characteristics of Home-Based Early Care and Education Providers: Initial Findings from the National Survey of Early Care and Education." Office of Planning, Research & Evaluation | ACF. Accessed January 23, 2018. https://www.acf.hhs.gov/opre/resource/characteristics-home-based-early-care-education-findings-national-survey-early-care-and-education.

"Child Care Cost and Quality." Accessed October 7, 2017. https://www.princeton.edu/futureofchildren/publications/docs/06_02_03.pdf.

"Dana L. Suskind, MD - UChicago Medicine." Accessed February 2, 2018.

Doyle, Orla, Colm P. Harmon, James J. Heckman, and Richard E. Tremblay. "Investing in Early Human Development: Timing and Economic Efficiency." Economics and Human Biology 7, no. 1 (March 2009): 1–6. https://doi.org/10.1016/j.ehb.2009.01.002.

"Early Achievers Participant Operating Guidelines." Department of Early Learning. September 2017.

"Early Achievers Standards Validation Study." Department of Early Learning. May 2016.

"Early Achievers, Washington's Quality Rating and Improvement System Standards." Department of Early Learning. July 16, 2017.

"Infant-Toddler Child Care Fact Sheet." Zero To Three. Accessed November 28, 2017. https://www.zerotothree.org/resources/2012-infant-toddler-child-care-fact-sheet.

Interlandi, Jeneen. "Why Are Our Most Important Teachers Paid the Least?" The New York Times, January 9, 2018, sec. Magazine. https://www.nytimes.com/2018/01/09/magazine/why-are-our-most-important-teachers-paid-the-least.html.

"Investing in Our Future: The Evidence Base on Preschool." Foundation For Child Development, October 11, 2013. https://www.fcd-us.org/the-evidence-base-on-preschool/.

News, and World. "Inequality in America Apparent by Age Three: Rich Kids Attend School. Poor Kids Stay with a Grandparent." National Post (blog), September 27, 2017. http://nationalpost.com/news/world/inequality-in-america-apparent-by-age-three-rich-kids-attend-school-poor-kids-stay-with-a-grandparent.

"Poll: 2 out of 3 Parents Struggle Finding Childcare That Meets Their Health, Safety Standards | Michigan Medicine." Accessed November 28, 2017. http://www.uofmhealth.org/news/archive/201711/poll-2-out-3-parents-struggle-finding-childcare-meets-their.

Weiland, Deborah A. Phillips, Mark W. Lipsey, Kenneth A. Dodge, Ron Haskins, Daphna Bassok, Margaret R. Burchinal, Greg J. Duncan, Mark Dynarski, Katherine A. Magnuson, and Christina. "Puzzling It out: The Current State of Scientific Knowledge on Pre-Kindergarten Effects." Brookings (blog), April 17, 2017. https://www.brookings.edu/research/puzzling-it-out-the-current-state-of-scientific-knowledge-on-pre-kindergarten-effects/.

# APPENDICES

*Appendix A: Regression Variables*
*Appendix B: Original Correlation Matrix*
*Appendix C: Model Correlation Matrix*
*Appendix D: Regression Model*
*Appendix E: Business Characteristics*
*Appendix F: Enrollment*
*Appendix G: Costs and Revenue*
*Appendix H: Costs*

# APPENDIX A

*Regression Variables*

| Variables | | |
|---|---|---|
| Name | Description | Source |
| Qual | Early Achievers quality level | DEL records |
| Region | DEL subsidy region | DEL website |
| Rural | Binary, classified as rural by the U.S. Census | 2012-2016 American Community Survey 5-Year Estimates |
| MIncome | Median family income for the zip code | U.S. Census Bureau |
| OpYrs | Number of years in operation | Survey |
| PDDays | How many days per year are spent on professional development | Survey |
| SSubPerc | Percent of children served on state subsidy | Calculated from survey data |
| SpaceEnr | Total indoor and outdoor licensed space per enrollment | Calculated from survey data |
| InfantEnr | Total number of infants enrolled | Survey |
| PPInfRHr | Infant private pay tuition, hourly | Calculated from survey data |
| PschCare | Binary, cares for preschoolers | Survey |
| TotalStaff | The total number of staff employed | Calculated from survey data |
| Open | Staff openings in the past year | Survey |
| TotalEnroll | Total enrollment | Survey |
| Benefits | Binary, are benefits offered to employees | Survey |
| FacAdmin | Facility and administrative variable costs, monthly | Calculated from survey data |
| EAPrep | Total time to prepare for Early Achievers | Calculated from survey data |
| EAWeek | Weekly time commitment for Early Achievers | Calculated from survey data |
| EAFC | Total fixed cost for Early Achievers | Calculated from survey data |
| EAVC | Total variable cost for Early Achievers, monthly | Calculated from survey data |

# APPENDIX B

*Original Correlation Matrix*

| | TotalEnroll | Rural | MIncome | OpYrs | PDDays | SSubPer | SpaceEnr | InfantEnr | PPInfRHr | PschCare | TotalStaff | Open | Benefits | FacAdmin | EAWeek | EAFC | EAVC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TotalEnroll | 1 | | | | | | | | | | | | | | | | |
| Rural | 0.09 | 1 | | | | | | | | | | | | | | | |
| MIncome | -0.12 | -0.26 | 1 | | | | | | | | | | | | | | |
| OpYrs | 0.16 | -0.13 | 0.00 | 1 | | | | | | | | | | | | | |
| PDDays | -0.01 | 0.02 | 0.14 | 0.11 | 1 | | | | | | | | | | | | |
| SSubPer | 0.10 | -0.07 | -0.04 | -0.14 | 0.06 | 1 | | | | | | | | | | | |
| SpaceEnr | -0.33 | -0.17 | 0.09 | -0.06 | 0.08 | 0.03 | 1 | | | | | | | | | | |
| InfantEnr | 0.19 | -0.15 | -0.05 | -0.03 | 0.18 | 0.02 | -0.04 | 1 | | | | | | | | | |
| PPInfRHr | -0.25 | -0.23 | 0.39 | -0.01 | -0.09 | -0.24 | 0.05 | -0.10 | 1 | | | | | | | | |
| PschCare | 0.12 | 0.06 | -0.15 | 0.07 | 0.02 | 0.00 | -0.04 | 0.01 | -0.02 | 1 | | | | | | | |
| TotalStaff | 0.34 | 0.06 | -0.07 | -0.05 | 0.10 | 0.29 | -0.25 | 0.03 | -0.07 | 0.09 | 1 | | | | | | |
| Openings | 0.16 | -0.18 | 0.15 | 0.00 | 0.04 | 0.04 | -0.03 | 0.06 | 0.05 | 0.08 | 0.18 | 1 | | | | | |
| Benefits | 0.30 | -0.10 | -0.01 | 0.12 | -0.10 | 0.03 | -0.15 | 0.09 | 0.07 | 0.08 | 0.15 | 0.23 | 1 | | | | |
| FacAdmin | 0.42 | -0.14 | 0.00 | 0.11 | -0.09 | 0.04 | -0.18 | 0.04 | 0.08 | 0.12 | 0.34 | 0.12 | 0.29 | 1 | | | |
| EAWeek | 0.06 | -0.07 | 0.16 | -0.11 | 0.29 | -0.09 | -0.03 | 0.05 | -0.04 | 0.03 | 0.00 | 0.07 | -0.10 | -0.07 | 1 | | |
| EAFC | 0.19 | -0.01 | 0.11 | -0.13 | -0.03 | -0.09 | -0.10 | -0.05 | 0.24 | 0.06 | 0.22 | -0.01 | -0.02 | 0.34 | -0.03 | 1 | |
| EAVC | 0.22 | -0.02 | 0.00 | -0.08 | -0.08 | -0.02 | 0.01 | -0.14 | -0.15 | 0.06 | 0.19 | 0.18 | -0.01 | 0.35 | 0.06 | 0.11 | 1 |

Key
1
0
-1

# APPENDIX C

*Model Correlation Matrix*

| | MIncome | OpYrs | SSubPer | PPInfRHr | TotalStaff | Benefits | EAFC |
|---|---|---|---|---|---|---|---|
| MIncome | 1 | | | | | | |
| OpYrs | 0.00 | 1 | | | | | |
| SSubPer | -0.04 | -0.14 | 1 | | | | |
| PPInfRHr | 0.39 | -0.01 | -0.24 | 1 | | | |
| TotalStaff | -0.07 | -0.05 | 0.29 | -0.07 | 1 | | |
| Benefits | -0.01 | 0.12 | 0.03 | 0.07 | 0.15 | 1 | |
| EAFC | 0.11 | -0.13 | -0.09 | 0.24 | 0.22 | -0.02 | 1 |

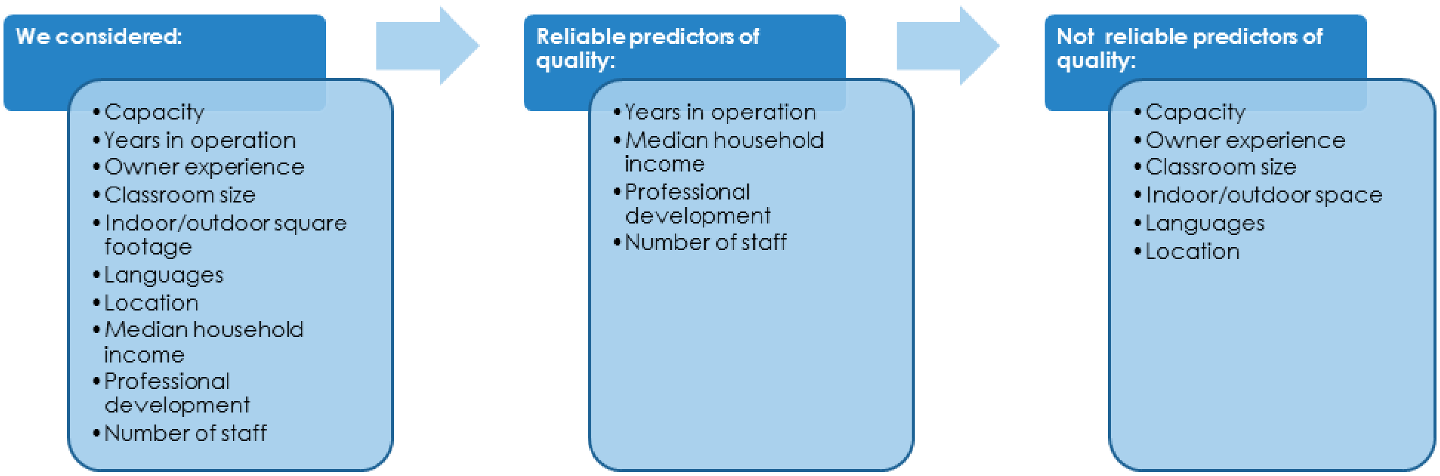
# APPENDIX D

*Regression Model*

| | (Logistic Regression) |
|---|---|
| **Intercept** | 1.166 * |
| | [0.4488] |
| **MIncome** | -0.00001111 . |
| | [0.000006567] |
| **OpYrs** | 0.01438 |
| | [0.009539] |
| **SSubPer** | 0.4361 . |
| | [0.2513] |
| **PPInfRHr** | 0.1645 * |
| | [0.07587] |
| **TotalStaff** | 0.1054 * |
| | [0.04656] |
| **Benefits** | -0.2766 |
| | [0.2373] |
| **EAFC** | 0.000007171 |
| | [0.000004946] |
| Significance codes | 0 ‘***’ \| 0.001 ‘**’ \| 0.01 ‘*’ \| 0.05 ‘.’ \| |
| **Model p-value** | 0.03901305 |
| **Null deviance (DoF)** | 76.989 (92) |
| **Residual deviance (DoF)** | 62.216 (85) |
| **AIC** | 244.54 |

# APPENDIX E

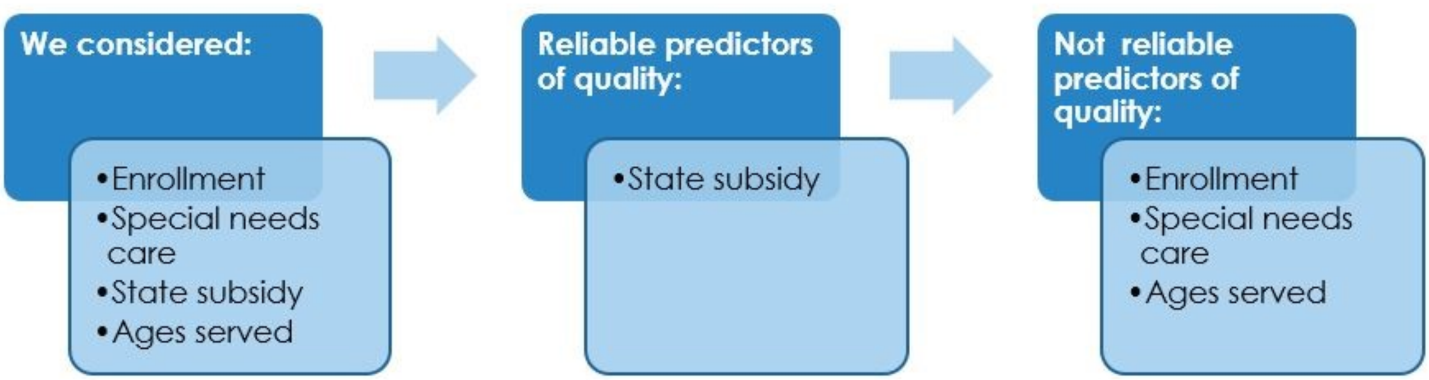
## *Business Characteristics*




**Indoor/outdoor space* is a square footage measurement from the survey and does not take in information from the CLASS or ERS.

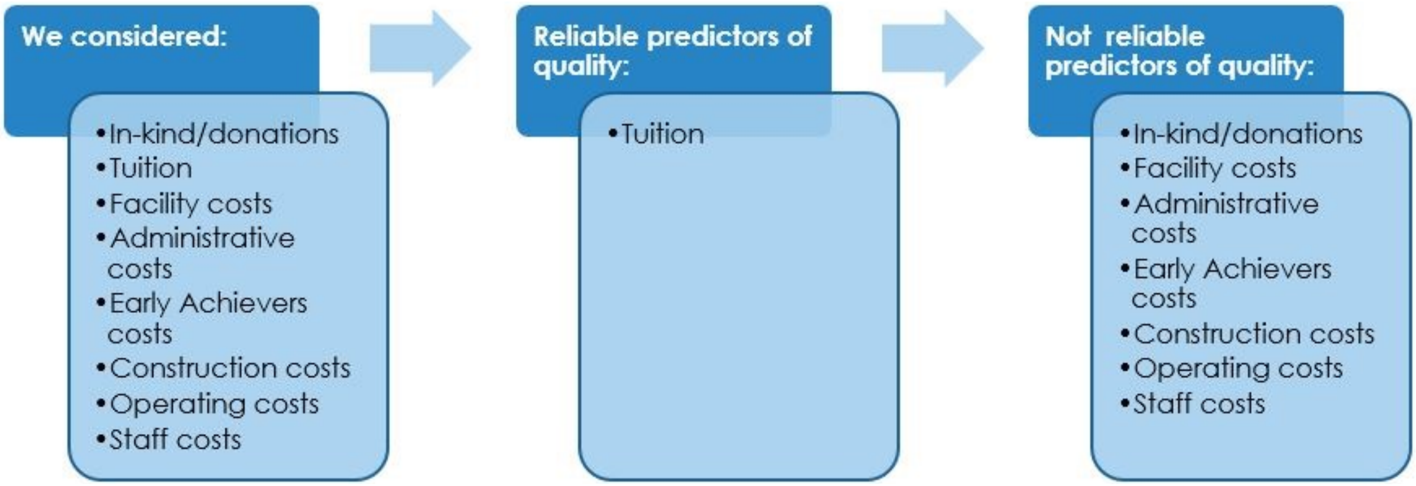
# APPENDIX F

## *Enrollment*



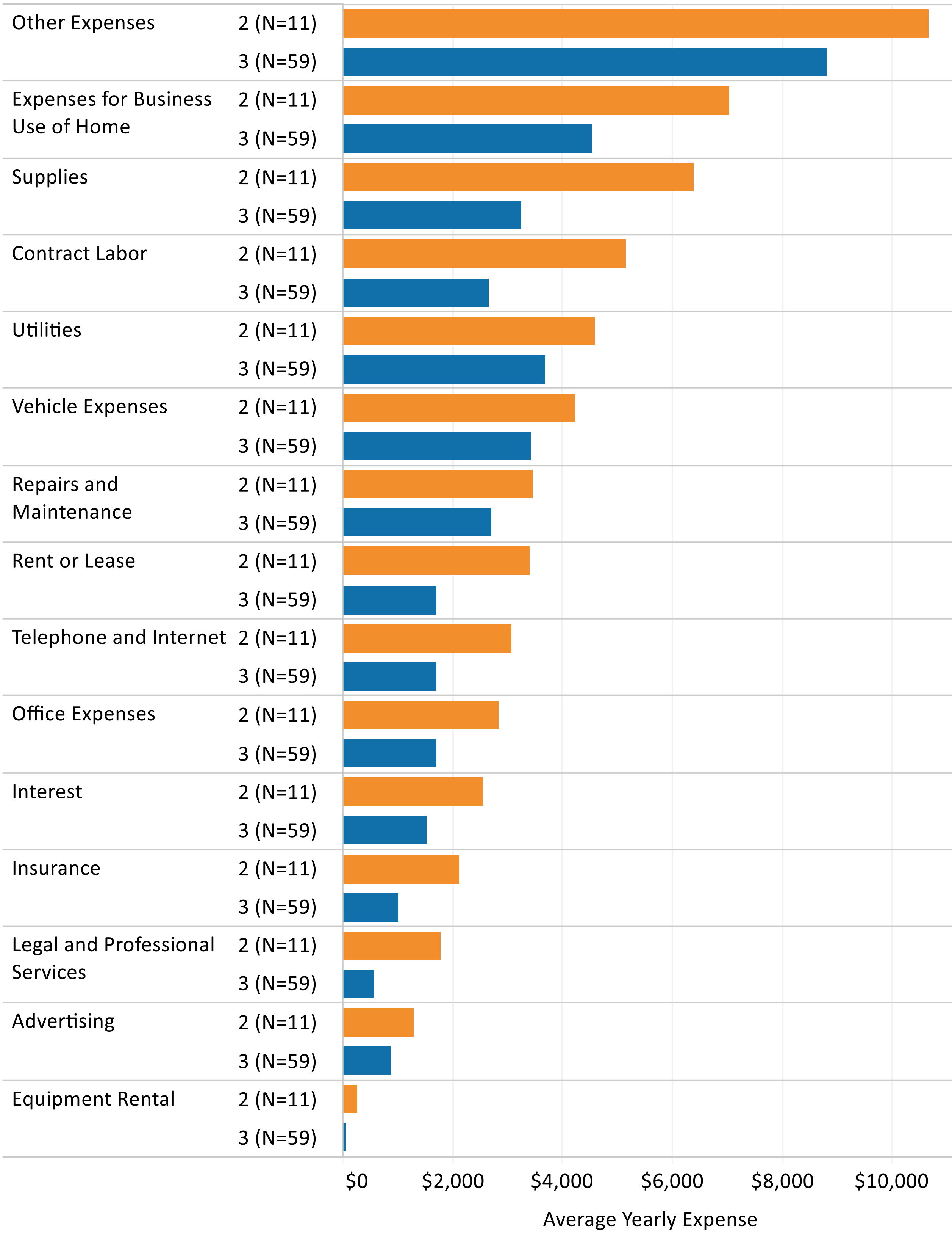
# APPENDIX G

*Costs and Revenue*



# APPENDIX H

*Costs*

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