Cost Estimation Study Final Report

PREPARED FOR THE MASSACHUSETTS DEPARTMENT OF EARLY EDUCATION AND CARE

SEPTEMBER 2023

Center for Early Learning Funding Equity
NORTHERN ILLINOIS UNIVERSITY

Center for Early Learning Funding Equity

Center for Early Learning Funding Equity (CELFE) builds capacity for assessing adequacy and equity in early learning funding systems through research and transformative partnerships. We create innovative approaches and funding mechanisms that support the diverse needs of children and families. We bring decades of experience in developing and implementing early learning systems at the state and local levels and are driven by our deep belief in the power of early experiences to shape the trajectory of children's lives.

To learn more about CELFE, please visit celfe.org

Report Authors

Theresa Hawley, Ph.D., Executive Director, CELFE
Maya Portillo, Policy Associate, CELFE
Sessy Nyman, Deputy Director, CELFE

Acknowledgments

The research presented in this report was conducted in partnership and with the expertise and guidance from the Massachusetts Department of Early Education and Care (EEC). A special thank you to those at EEC who made this work possible: Commissioner Amy Kershaw, Amy Checkoway, Jocelyn Bowne, Adrienne Murphy, Michelle Saulnier, Jose Mendez, Eugenia Soiles, and the rest of the EEC team.

EXECUTIVE SUMMARY

CONTENTS

Executive Summary 4

Center-Based Model 6

Family Child Care Cost Model Structure 7

Summary of Cost Estimation Results 8

Center-Based Cost Estimates 8

Family Child Care Cost Estimates 11

Recommendations and Next Steps 13

EXECUTIVE SUMMARY

The Massachusetts Department of Early Education and Care (EEC) is committed to expanding access to affordable, high quality early education and care for children and their families throughout the Commonwealth. The Department made nation-leading investments to sustain child care providers through the recent Covid-19 pandemic, and continues to explore effective approaches to supporting child care providers' ability to attract and retain a qualified workforce and provide high quality services that meet children's and families' needs. Understanding the cost of early education and care services—and the key cost drivers for providers—is an essential first step in developing an effective financing strategy for Massachusetts' child care system.

EEC engaged an external consulting and research firm, Center for Early Learning Funding Equity (CELFE)[1], to 1) study and develop a model to understand the cost of providing child care in the Commonwealth, and 2) use this research to provide recommendations on the child care financial assistance (often referred to as child care subsidy) rate structure and other strategies for improving the child care funding system to address challenges such as improving child care affordability, raising compensation for the child care workforce, and ensuring access to high quality child care across the Commonwealth. Massachusetts joins a small but growing number of states that are completing in-depth studies of the cost of child care to inform their child care funding policy.

A "Cost Model" refers to a comprehensive modeling tool to estimate the cost of providing child care.

A "cost estimation study" refers to an analysis completed with a cost model tool using a set of parameters decided upon after rigorous data analysis and stakeholder feedback.

To estimate the cost of providing child care services, CELFE created cost models to study the cost of care and investigate to what extent there are revenue-expense gaps for typical providers under current market conditions. CELFE created separate cost estimation studies for two primary provider types in Massachusetts—Center-Based and Family Child Care (FCC)—to capture the unique cost drivers for these different business models.

1 Center for Early Learning Funding Equity. "Home | Center for Early Learning Funding Equity." Accessed July 5, 2023. https://celfe.org/.

A cost model is a tool for states and system administrators to use to inform their overall financing strategy, including:

Understanding child care financial assistance reimbursement rates

Identifying and Quantifying specific 'cost-drivers' in a child care program and,

Understanding the difference between the typical costs providers incur and the prices they charge *(prices are studied separately in a Market Rate Survey)*

A cost model is not a reflection of any individual child care program's costs nor is it meant to be used by providers as a reflection on their day-to-day costs in administering their programs. Instead, the cost model aggregates data from a wide range of child care programs, and—after refinement following stakeholder input and feedback—provides a systems-wide view of the cost of providing care given current conditions. The model further allows exploration of the likely cost of quality improvements, improved compensation, comprehensive services, and other improvements to the child care system that states are interested in exploring. The models serve as an important tool for EEC to develop an average per-child cost of care using extensive data, research, and provider feedback.

To validate assumptions made in both cost estimation studies, CELFE conducted multiple listening sessions with different types of early childhood education and care (ECEC) providers and stakeholders from throughout the Commonwealth to inform decisions on cost model inputs. CELFE also consulted with select EEC licensing and program support staff to advise on licensing requirements and additional cost assumptions. CELFE and the EEC team reached consensus on all inputs to the cost estimation study.

Finally, CELFE made recommendations on next steps for research on the cost of child care in the Commonwealth and suggested implications EEC might consider as they use the results of this current research to inform the future development of their funding system for early childhood education and care. CELFE has provided EEC with focused training and documented use cases so that EEC can use the cost models effectively in the future as conditions change and updates are needed.

CENTER-BASED MODEL

The Center-Based cost model is structured as a set of "profit and loss statements" that generate estimates of the cost of providing child care services in a Center-Based setting at the program, classroom, and per-child levels. The categories of assumptions built into the model include staffing patterns (e.g., number of FTEs per classroom), personnel costs (e.g., salaries, health insurance, retirement, etc.), and non-personnel costs (e.g., food, occupancy costs, educational supplies, insurance/liability, etc.). The model breaks out cost by age group and provides estimates for each geographic region for three different operating scenarios:

1

Model 1: Licensed Care (Current Salaries)

Used compensation data from Commonwealth Cares for Children (C3) applications to inform salary inputs

Used C3 data and input from EEC licensing staff to inform staffing patterns

2

Model 2: Licensed Care + Increased Compensation

Used CELFE-constructed target salaries identified as "desired" salary inputs

Used the licensed staffing pattern (same as above operating scenario)

3

Model 3: Licensed Care + Increased Compensation + Increased Staffing

Used CELFE-constructed target salaries as "desired" salary inputs

Used a more intensive staffing pattern informed by provider feedback to reflect staffing needed to provide higher quality care

In light of the challenge of low early care and education workforce compensation (and resulting staffing shortages)in Massachusetts and nationally, EEC was interested in understanding what the cost of care would be if salaries and benefits were high enough to reliably attract and retain an adequate workforce. CELFE developed a set of "desired" salary inputs for each geographic region that were anchored by estimates of a "living wage" (for entry-level assistants) and parity with public school teachers (for BA-level teachers) to illustrate the resources that would be needed to raise compensation across the field. While the desired salaries are not intended to be directly included in policy at this time, they help inform the "north-star" vision for the early childhood workforce while also recognizing the current compensation (and related recruitment and retention) challenges that the early childhood field faces.

FAMILY CHILD CARE COST MODEL STRUCTURE

The Family Child Care cost model is structured as a series of aggregate "profit and loss statements" for three FCC home configurations to account for the common staffing and enrollment patterns with which FCC homes typically operate. The categories of assumptions built into the model include staffing patterns, personnel costs, and non-personnel costs. For FCC providers, the cost estimate is based on a target "salary" (or small business profit) for the FCC Educator/Owner that is equal to the current median salary of a center director. The available data on market prices, enrollment patterns, and FCC operational costs suggest that most FCC Educator/Owners currently earn significantly less than this, but EEC was interested in understanding the cost of an adequate level of compensation rather than current conditions.

Similar to the Center-Based model, the FCC model generates an estimate of the cost of providing child care services in a family child care home by region and by age of child. Unlike the Center-Based model, where costs can be attributed to age-specific classrooms, the FCC model allocates costs evenly across all children enrolled. The model then provides cost estimates for each region for three different FCC provider staffing/enrollment patterns. The staffing/enrollment patterns are as follows:

Pattern 1: FCC Educator Only

Capacity of 6 that assumes 6 children under age six

Pattern 2: FCC Educator Only

Capacity of 8 that assumes 6 children under age six plus 2 School-Age children

Pattern 3: FCC Educator with Full-Time Assistant

Capacity of 10 that assumes 8 children under age six plus 2 School-Age children

The model creates a weighted average of the costs produced for the above staffing/enrollment patterns to generate an overall estimate of the cost of care for family child care programs in each region. CELFE developed the weights for the average cost across the FCC models by analyzing data from the C3 grant applications on staffing patterns and licensed capacity of FCC providers, which showed that approximately 30% of providers match Pattern 1, 40% match Pattern 2, and 30% match Pattern 3.

For more detailed information on the model assumptions and process to vet the models with providers and other key stakeholders, please see the full report.

Summary of Cost Estimation Results

CENTER-BASED COST ESTIMATES

For Center-Based child care, the full cost study produced a daily cost per child for each age group, subsidy region[2], and model scenario type. See the corresponding graphs and highlights below:

- Infant and Toddler daily costs per child are substantially higher than Preschool and School-Age daily costs across all regions and all model scenario types. This is largely due to the fact that serving Infants and Toddlers in centers requires higher staffing levels than serving older children.
- The cost of providing School-Age care Before & After School was only about 15% lower than the cost of providing Full-Day care for these children. This is because providers report very similar staffing levels for their before and after care and full-day care programs.
- The Metro Boston regions, across all model scenario types and age groups, have the highest daily per child costs in comparison to other regions. These higher costs align with the higher cost of living in each of these regions.
- The cost to operate a program varied across regions but not as widely as current reimbursement rates: For centers, compared to the lowest-cost region (Western), the highest-cost region (Metro Boston) was approximately 18% more expensive for children under age 5 and 12% more expensive for School-Age care. In contrast, the current reimbursement rates for Metro Boston are up to 52% higher than the rates for the Western region.
- The higher salaries in Model 2 resulted in 15% to 30% higher cost per child across the various age groups and regions compared to Model 1.
- Model 3 resulted in 54% to 66% higher costs across the regions for Infants, Toddlers, and Preschoolers, and 93% to 125% higher costs for School-Age children (Note: the increased staffing scenario included smaller group sizes for School-Age programs than the other scenarios, but for other ages group sizes were the same across models).
- In most cases, the cost per child per day was higher than the current EEC child care financial assistance reimbursement rate.[3] Preschool reimbursement rates, however, are higher than the estimated costs in Model 1 in the Central and metropolitan Boston regions. (Note: In the private-pay child care market, it is typical for providers to charge less than the cost of care for Infants and Toddlers and more than the cost of care for Preschool and School-Age children, as few parents would otherwise be able to afford the cost of Infant/Toddler care. Nationally, child care reimbursement rates have historically followed this same pattern). For all ages and regions, the cost of care in Model 2 was substantially higher than the current reimbursement rates.

2 The 'Metro' region includes towns/cities surrounding the City of Boston and the 'Metro Boston' region includes the City of Boston and a small number of adjacent communities.

3 EEC provides child care financial assistance to eligible families. EEC reimburses child care providers for providing this care using a per-child, per-day rate. Reimbursement rates are based on multiple factors including the program type, the child's age, the location of care, and the type of care. For more information on EEC rates, please see: https://www.mass.gov/service-details/daily-reimbursement-rate-for-early-education-and-care-programs

1

Model 1: Licensed Care (Current Salaries)

2

Model 2: Licensed Care + Increased Compensation

3

Model 3: Licensed Care + Increased Compensation + Increased Staffing

Figure 1: Current Per Child Daily Center-Based **Infant** Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region

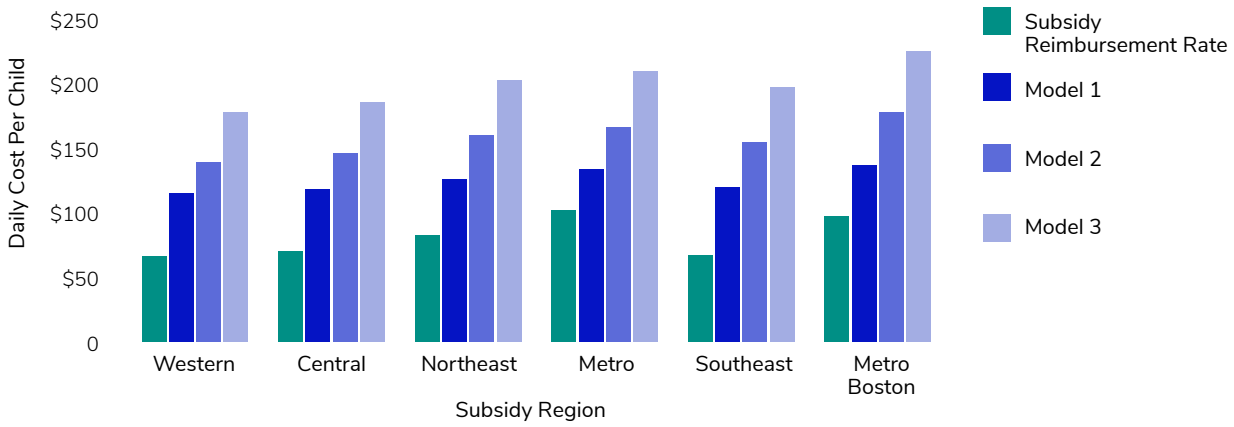


Figure 2: Current Per Child Daily Center-Based **Toddler** Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region

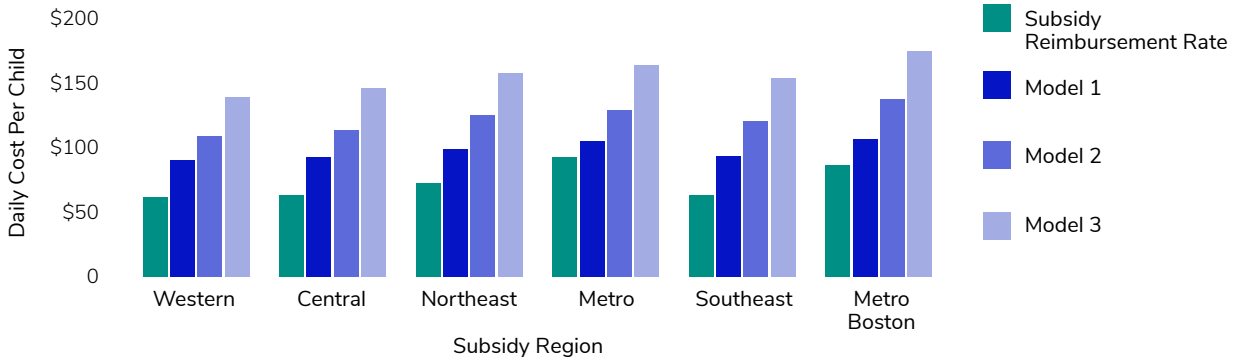


Figure 3: Current Per Child Daily Center-Based **Preschool** Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region

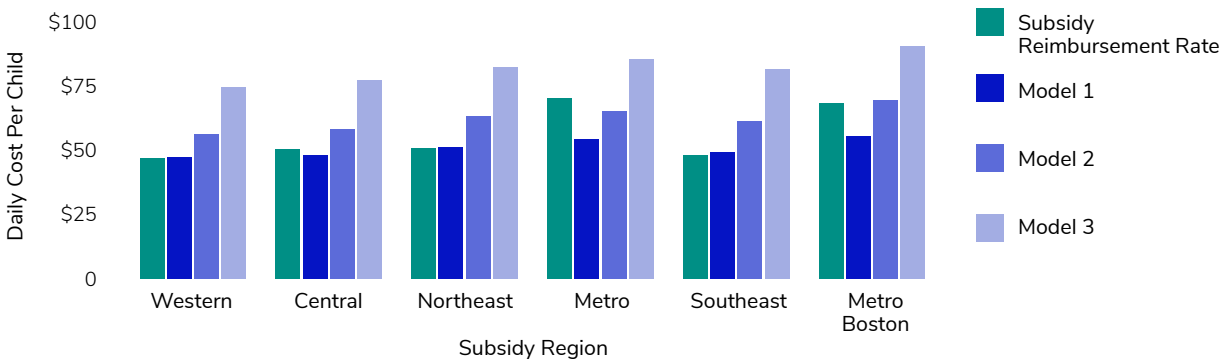


Figure 4: Current Per Child Daily Center-Based **School-Age (Before and After School)** Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region

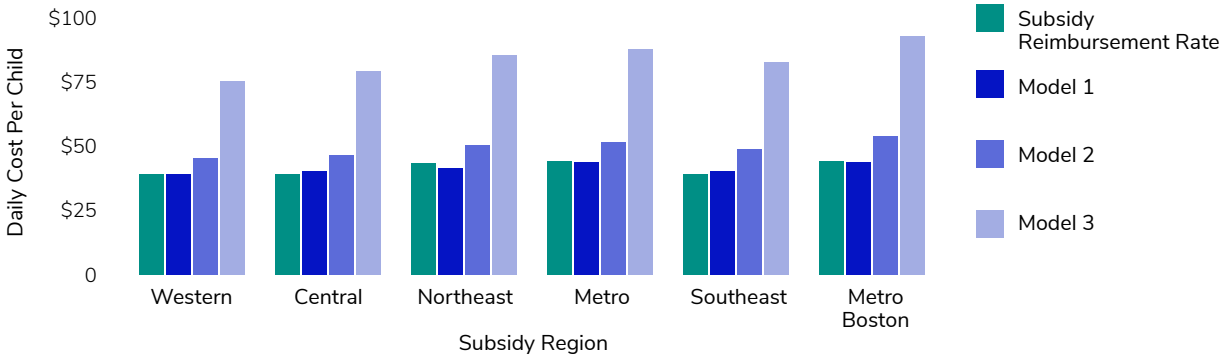
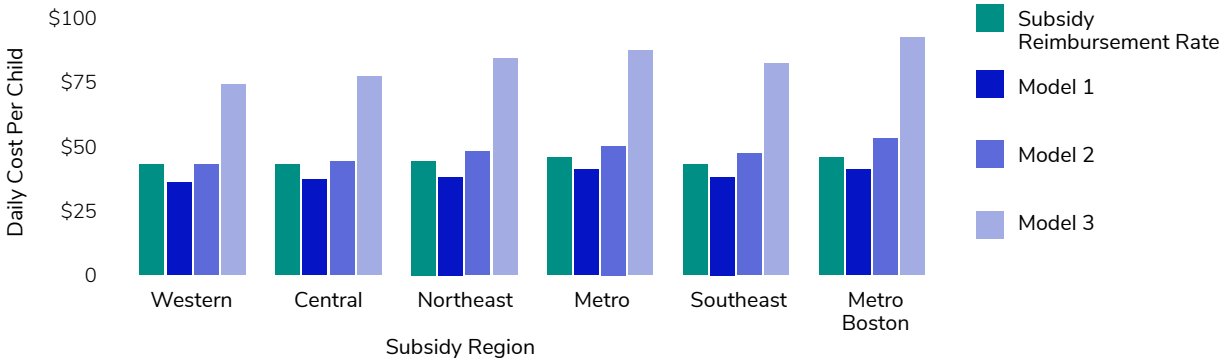


Figure 5: Current Per Child Daily Center-Based **School-Age (Full-Day)** Subsidy Reimbursement Rates Compared to Cost Model Estimates by Subsidy Region



FAMILY CHILD CARE COST ESTIMATES

For Family Child Care, the cost study produced a daily cost per child for each age group and subsidy region using a weighted average across the three staffing/enrollment patterns that were studied. Unlike in the Center-Based cost study, only one set of compensation assumptions was used, reflecting the target compensation for Family Child Care providers that was developed as described on page 7. Key highlights from the cost estimation results include:

- Across all age groups, the daily cost per child is highest in the metropolitan Boston Regions. These higher costs align with the higher cost of living in this part of the Commonwealth.
- The difference in costs between the highest- and lowest-cost regions for all ages was approximately 24%. In contrast, compared to the rates for the Western region, the current reimbursement rate for the Metro region is 71% higher for children under age two and 20% higher for children over age two.
- The FCC Cost Model allocated costs evenly across all children enrolled in a home, and therefore produced identical cost estimates for children under age two and ages two to five. In the private pay marketplace, however, it is common for providers to charge more to serve Infants and Toddlers than for older children, and EEC (like most states) has historically set reimbursement higher rates for children under age two to encourage providers to serve these youngest children. Overall, in most regions the subsidy reimbursement rates are lower than the estimated cost of providing services.

Figure 6: Current Daily Per Child **Ages 0-2** Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region

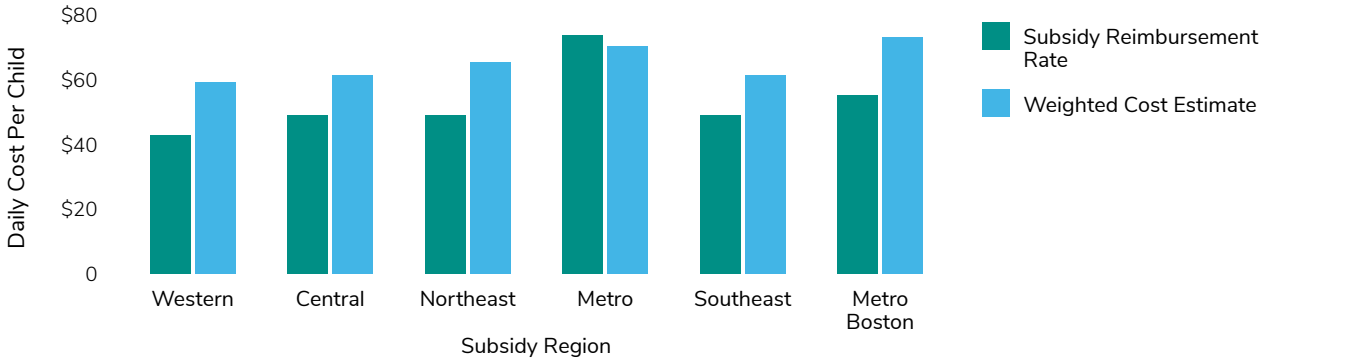


Figure 7: Current Daily Per Child **Ages 2-5** Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region

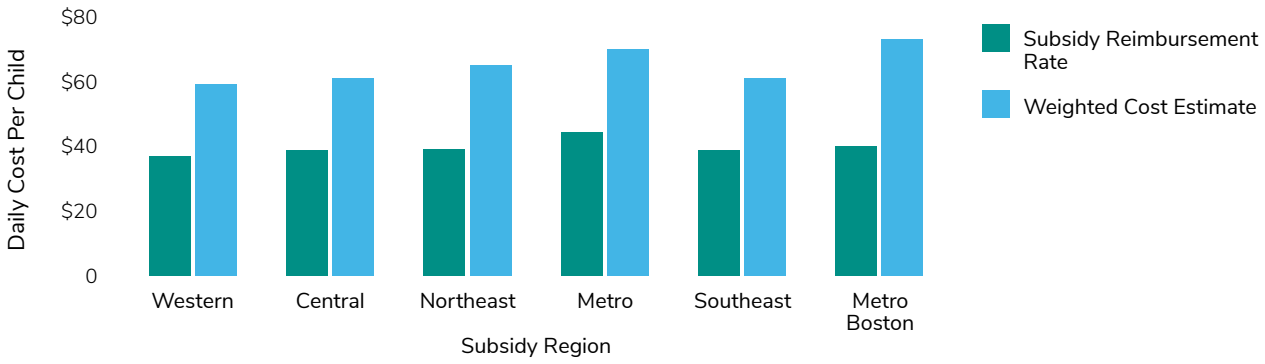


Figure 8: Current Daily Per Child **School-Age (Before and After)** Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region

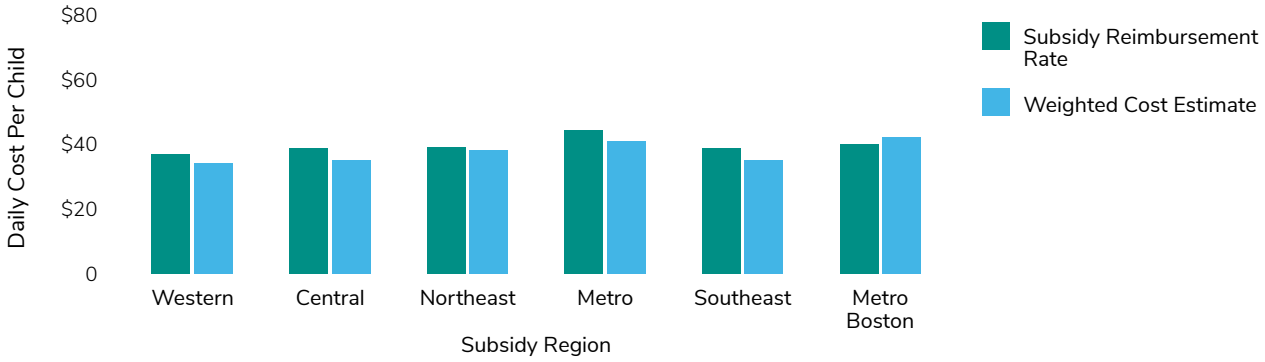
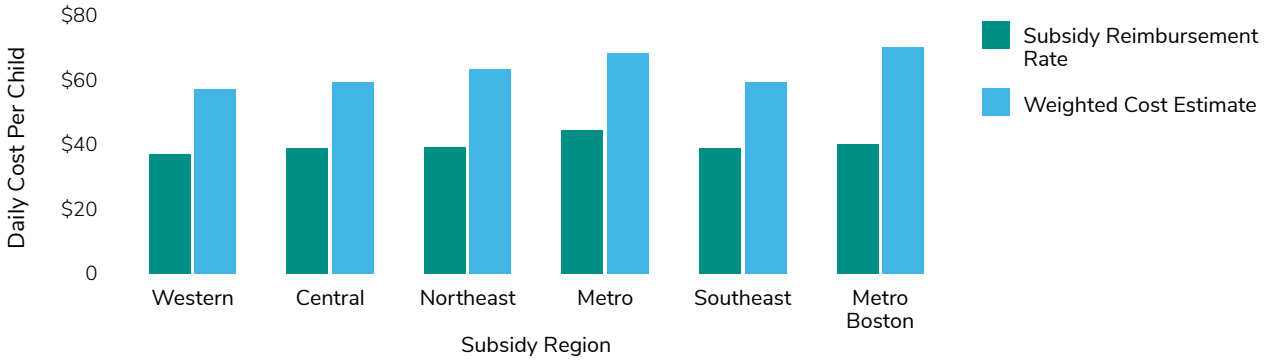


Figure 9: Current Daily Per Child **School-Age (Full Day)** Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region



Recommendations and Next Steps

This cost estimation study represents the best available estimate of the current cost of providing child care in Massachusetts. The study findings point to several opportunities for EEC to continue to strengthen the funding system for early education and care across the Commonwealth. CELFE recommends that the Department consider the following steps:

- **Simplify the Subsidy Rate Structure to Better Align with Economic Indicators:**
  Currently, Massachusetts has six subsidy regions with a 38% difference between the lowest and highest rate paid to providers across the regions. In contrast, the highest and lowest cost areas differed in cost by only approximately 20% in this study, and many regions had similar costs. Based on this finding, EEC could consider simplifying the reimbursement rate structure by reducing the number of rates.

- **Set Reimbursement Rates Across Ages in a Consistent Way Across Regions:**
  The cost estimation study showed that the relative cost difference for serving Infants and Toddlers as compared to serving Preschool - and School-Aged children is the same across all regions. The Department may want to move towards a more consistent approach to setting rates across age groups across regions as it continues to update its rate structure.

- **Use Cost Information to Inform Rates:**
  The results of the cost estimation study should be considered alongside information about prices in the private-pay child care market as the Department develops its rate structure.

- **Support Strong Business Practices Among Child Care Providers:**
  Building budgets, understanding the tax implications of a small business, and building overall administrative efficiencies are all areas that help providers thrive while reducing their overall cost and maximizing their revenue as they operate their child care business.

- **Help Providers Maintain Enrollment:**
  The cost models quantify the significant economic impact that under-enrollment can play in a program's overall financial viability. As EEC considers state strategies to support the provider workforce, supporting providers to maintain full enrollment can be an important strategy for improving provider's financial viability.

- **Consider Child Care Subsidies as Just One Part of an Overall Early Childhood Funding Strategy:**
  Child Care financial assistance can play a critical role in providing low-income families access to care but is not the only strategy for ensuring an adequate supply of quality child care across the Commonwealth. Innovative financing strategies like grants that support operational costs separate from voucher-based subsidy payments can address the gap between the prices the market will bear (to avoid out-pricing private pay families) and the actual cost of operating a high-quality child care program.

The current cost estimation study reflects conditions as of Spring 2023. The cost estimates can be kept current by updating the assumptions for staff salaries and non-personnel costs, and CELFE recommends conducting such an update annually, or as new cost data becomes available. In addition, if changes are made to the subsidy rate regions or key child care regulations, a revised cost estimations study should be completed to align with these new policies. Finally, EEC could consider developing a more robust model of child care provider revenues to better understand the resources that providers do and could access to meet the cost of providing care.

The cost estimates developed through this participatory process represent the collective wisdom of hundreds of child care providers and other early education professionals about the resources needed to effectively meet the needs of children and families across the Commonwealth. The customized cost model tools developed for this project will enable EEC to analyze the impact of various potential changes that may impact the cost of care, such as an increase in the state minimum wage, changes in regulatory requirements and/or initiatives aimed at helping providers maintain higher enrollment or recruit and retain educators. EEC can also use the cost models to inform the design of additional investments to support a stable early education and care sector, such as the C3 grants. The Department can use the findings from this study, together with the recent Market Rate Survey findings[4] that documented the current prices charged for child care throughout the Commonwealth, as it continues to develop its transformative financing strategy to support access to high quality early education and care throughout Massachusetts.

4 The Administration for Children and Families (ACF) guidance requires states to use the Market Rate Survey (MRS to estimate the percentage of the overall child care market that their subsidy reimbursement rates will allow participating families to access. Please see Footnote #5 for more detail on the Massachusetts Department of Early Education and Care. "Massachusetts 2022 Market Rate Survey and Narrow Cost Analysis Final Report" September 2022. https://www.mass.gov/doc/massachusetts-2022-market-rate-survey-and-narrow-cost-analysis-final-report/download

TABLE OF CONTENTS

Introduction **19**

Overview of Cost Research **20**

Methodology and Data Sources **21**

Stakeholder Engagement **23**

Cost Estimation Study Results **25**

Center-Based Cost Estimates 25

Family Child Care Estimates 29

Staffing and Enrollment Patterns Studied for Family Child Care 29

Sensitivity Analyses **32**

Center-Based Scenarios 32

Family Child Care Scenarios 33

Recommendations **35**

Simplify the Subsidy Rate Structure to Better Align with Economic Indicators 35

Set Rates Across Ages in a Consistent Way Across Regions 35

Use Cost Information to Inform Rates 35

Support Strong Business Practices Among Child Care Providers 36

Help Providers Maintain Enrollment 36

Consider Child Care Subsidies as Just One Part of an Overall Early Childhood Funding Strategy 36

Next Steps + Additional Research **37**

Revise the Cost Estimation Study to Match Any Changes to Subsidy Regions 37

Conduct Research on Additional Potential Cost Drivers 37

Conduct a Study of Child Care Program Revenues 37

APPENDIXES

Appendix A. Center Based Cost Estimation Results—Total Classroom Costs 39

Appendix B. Family Child Care Cost Estimation Results—Total Costs Per Home 40

Appendix C. Assumptions for Center-Based Care Cost Estimation Model 41

Model Structure 41

Classrooms 41

Staffing Structure 42

Licensed Capacity 43

Enrollment Efficiency 43

Days of Care 44

Expenses 44

Benefits/Payroll Taxes 44

Occupancy Costs 46

Reserves 46

Appendix D. Assumptions for Family Child Care Cost Estimation Model 47

Model Structure 47

Enrollment Capacity/Staffing Pattern 47

Enrollment Efficiency 47

Days of Care 48

Expenses 48

Benefits/Payroll Taxes 48

Non-Personnel 49

Occupancy Costs for Family Child Care 50

Appendix E. Current Salaries—Center-Based Care 51

Appendix F. Target Salaries—Family Child Care 53

Appendix G. Target Salaries and Compensation for Cost Modeling—Center-Based Care 54

Methodology 54

Appendix H. C3 Data Used in Cost Research 59

FIGURES

Figure 1: Current Per Child Daily Center-Based Infant Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region 9
Figure 2: Current Per Child Daily Center-Based Toddler Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region 9
Figure 3: Current Per Child Daily Center-Based Preschool Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region 10
Figure 4: Current Per Child Daily Center-Based School-Age (Before and After School) Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region 10
Figure 5: Current Per Child Daily Center-Based School-Age (Full-Day) Subsidy Reimbursement Rates Compared to Cost Model Estimates by Subsidy Region 10
Figure 6: Current Daily Per Child Ages 0-2 Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region..... 11
Figure 7: Current Daily Per Child Ages 2-5 Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region..... 12
Figure 8: Current Daily Per Child School-Age (Before and After) Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region..... 12
Figure 9: Current Daily Per Child School-Age (Full Day) Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region 12
Figure 10: Current Per Child Daily Center-Based Infant Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region 28
Figure 11: Current Per Child Daily Center-Based Toddler Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region 28
Figure 12: Current Per Child Daily Center-Based Preschool Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region 28
Figure 13: Current Daily Per Child Ages 0-2 Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region..... 31
Figure 14: Current Daily Per Child Over Age 2 Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region..... 31

TABLES

Table 1: Center-Based Listening Session Feedback 23
Table 2: Family Child Care Listening Session Feedback 24
Table 3: Center-Based Model 1 - Licensed Care (Current Salaries)
Daily Cost Per Child by Age Group and Subsidy Region 27
Table 4: Center-Based Model 2 - Licensed Care + Increased Compensation
Daily Cost Per Child by Age Group and Subsidy Region 27
Table 5: Center-Based Model 3 - Licensed Care + Increased Compensation
+ Increased Staffing Daily Cost Per Child by Age Group and Subsidy Region 27
Table 6: Family Child Care Weighted Average Across all 3 Scenario Types 30
Table 7: Center-Based Results for Model 1 - Licensed Care (Current Salaries)
– Annual Total Expenses – Per Classroom Licensed 39
Table 8: Center-Based Results for Model 2 - Licensed Care + Increased Compensation
– Annual Total Expenses – Per Classroom (Including Reserves) 39
Table 9: Center-Based Results for Model 3 - Licensed Care + Increased Compensation
+ Increased Staffing – Annual Total Expenses – Per Classroom (Including Reserves) 39
Table 10: FCC Results for the Weighted Average Across all 3 Patterns – Per Home 40
Table 11: FCC Results for Pattern 1: FCC Educator Only (Capacity of 6) – Per Home 40
Table 12: FCC Results for Pattern 2: FCC Educator Only (Capacity of 8) – Per Home 40
Table 13: FCC Results for Pattern 3: FCC Educator with Full-Time
Assistant (Capacity of 10) – Per Home 40
Table 15: Center-Based Classroom Assumptions 41
Table 16: Center-Based Staffing Structure Assumptions 42
Table 17: Center-Based Staffing Assumptions 42
Table 18: Center-Based Licensed Per-Classroom Capacity Assumptions 43
Table 19: Center-Based Days of Care Assumptions 44
Table 20: Center-Based Benefits/Payroll Assumption 44
Table 21: Center-Based Non-Personnel Assumptions 45
Table 22: Center-Based Regionalization Factor 46
Table 23: FCC Enrollment and Capacity/Staffing Pattern Assumptions 47
Table 24: FCC Days of Care Assumptions 48
Table 25: Family Child Care Benefits/Payroll Assumptions 48
Table 26: FCC Non-Personnel Assumptions 49
Table 27: Family Child Care Occupancy Costs Assumptions 50
Table 28: Center-Based Current Salaries Assumptions 51
Table 29: Family Child Care Target Salaries Assumptions 53
Table 30: BLS Proxy Positions 56
Table 31: Center-Based Target Starting Salaries Assumptions 57
Table 32: Application Data Relevant Variables 59

INTRODUCTION

The Massachusetts Department of Early Education and Care (EEC) is committed to expanding access to affordable, high quality early education and care for children and their families throughout the Commonwealth. The Department made nation-leading investments to sustain child care providers through the recent Covid-19 pandemic, and continues to explore effective approaches to supporting child care providers' ability to attract and retain a qualified workforce and provide high quality services that meet children's and families' needs. Understanding the cost of early education and care services—and the key cost drivers for providers—is an essential first step in developing an effective financing strategy for Massachusetts' child care system.

EEC engaged an external consulting and research firm, Center for Early Learning Funding Equity (CELFE)[5], to 1) study and develop a model to understand the cost of providing child care in the Commonwealth, and 2) use this research to provide recommendations on the child care financial assistance (often referred to as child care subsidy) rate structure and other strategies for improving the child care funding system to address challenges such as improving child care affordability, raising compensation for the child care workforce, and ensuring access to high quality child care across the Commonwealth. Massachusetts joins a small but growing number of states that are completing in-depth studies of the cost of child care to inform their child care funding policy.

The work was organized into two phases. Phase I of the work, which took place during the Summer and Fall of 2022, consisted of completing a Market Rate Survey[6] using EEC's administrative datasets to document the current prices charged for child care throughout the Commonwealth, in accordance with federal requirements for the Child Care Development Block Grant (CCDBG). At that time, CELFE also completed a preliminary cost analysis which focused on updating an earlier analysis conducted by a different vendor in 2020. This report provides the findings from Phase II, which involved further and deeper analysis as part of a comprehensive cost study in late 2022 and the first quarter of 2023.

A "Cost Model" refers to a comprehensive modeling tool to estimate the cost of providing child care.

A "cost estimation study" refers to an analysis completed with a cost model tool with a set of parameters decided upon after data analysis and stakeholder feedback.

For this report, the Department of Early Education and Care will be referred to as "the Department" or "EEC" and the Center for Early Learning Funding Equity will be referred to as "CELFE."

5 Center for Early Learning Funding Equity. "Home | Center for Early Learning Funding Equity." Accessed July 5, 2023. https://celfe.org/.

6 The Child Care Development Block Grant (CCDBG) Act of 2014 authorizes the Child Care and Development Fund (CCDF) program, which lays out how federal funds are to be used when providing financial assistance to low-income families to access child care. States and territories are required to describe how they will use CCDF resources to support child care policies through a three-year state plan to the Administration for Children and Families (ACF). A valid and reliable Child Care Market Rate Survey (MRS) or approved Alternative Methodology is required to be submitted as part of this state plan. ACF guidance requires states to use the MRS to estimate the percentage of the overall child care market that their subsidy reimbursement rates will allow participating families to access. The federal government does not require states to set reimbursement rates at the 75th percentile but considers this an important benchmark for determining how well subsidy reimbursement rates are affording participating families adequate access to and choice within the child care market.

OVERVIEW OF COST RESEARCH

CELFE analyzed EEC data and other state and federal publicly available datasets to develop a more comprehensive estimate of the cost of providing child care in the Commonwealth, and to identify potential challenges in current child care provider business models, including the potential impact of fluctuations in revenue due to enrollment, business inefficiencies that might be addressed by future supports from EEC, and potential structural gaps in funding.[7] Datasets included, 1) data from the Fall 2022 Market Rate Survey,[8] 2) previous cost estimation work, 3) data gathered from Commonwealth Cares for Children (C3) grant applications and surveys, 4) U.S. Department of Housing and Urban Development (HUD) Fair Market Rent data, and 5) the Provider Cost of Quality Calculator (PCQC).

To estimate the cost of providing child care services, CELFE created cost models to study the cost of care and investigate whether there are any revenue-expense gaps for typical providers under current market conditions. CELFE created Cost Estimation Studies for two primary provider types in Massachusetts – Center-Based and Family Child Care (FCC) – to capture the unique cost drivers for these different business models.

The core structure of the cost model is a budget constructed to represent a typical provider's costs and revenues. The model is built to allow the user to change the assumed values for all key variables—e.g., the number of staff per classroom, the salary of staff, benefit rates, and the cost paid for non-personnel expenses such as food, supplies, and professional services—to see the impact of these changed assumptions on the resulting overall cost of child care services. The Center-Based model allocates each expense across specific age groups to produce a cost per classroom and per child for Infants, Toddlers, Preschoolers and School-Age children. The Family Child Care model is built to allow for allocating expenses differentially across age groups (e.g., allocating expenses more to children under two), but in the current study costs are allocated evenly across all children enrolled in a given home.

To validate assumptions made in this cost estimation study, CELFE conducted multiple listening sessions with different types of providers and experts in early childhood education and care (ECEC) across the Commonwealth to inform decisions on cost model inputs. CELFE also relied on EEC licensing and other program support staff to advise on licensing requirements and additional cost assumptions. The CELFE and EEC teams reached consensus on the inputs to the cost estimation study.

7 "How to Initiate a Cost Model in Your State or Community." Community Change and Children's Funding Project, November 2022. https://communitychange.org/wp-content/uploads/2022/11/Part-1-How-to-Initiate-a-Cost-Model-in-Your-State-or-Community-2.pdf.

8 Massachusetts Department of Early Education and Care. "Massachusetts 2022 Market Rate Survey and Narrow Cost Analysis Final Report" September 2022. https://www.mass.gov/doc/massachusetts-2022-market-rate-survey-and-narrow-cost-analysis-final-report/download

What is new in this analysis?

The current analysis builds on a preliminary cost analysis completed in 2020. After presenting the Phase I cost research findings in September 2022 to the EEC board, CELFE received the following feedback to continue to refine the scope of work for Phase II including and not limited to the following:

Deeper Dive on Occupancy Costs

- In Phase I's narrow cost analysis, CELFE noted that the estimates for occupancy costs did not seem to be adequately accounting for regional differences in this cost across the Commonwealth.
- In Phase II, CELFE used a new and refined quantitative methodology to estimate occupancy costs and conducted extensive stakeholder engagement to validate and update our analysis.

Deeper Dive on Compensation

- CELFE used data from the C3 grants to better estimate current educator salaries for each region, thus providing the model a base to assess increased compensation levels.
- As the Department is exploring how to address opportunities to improve educator compensation, CELFE provided robust analysis to create 6 different target compensation levels to be used in cost modeling, differentiated by subsidy region and by staff position.
- These target compensation levels are intended to serve as a starting point for a Massachusetts conversation to develop a "north star" for early childhood education and care educator compensation that honors ECE professionals' experience, credentials, years of experience, and their integral part of the ECEC ecosystem.

METHODOLOGY AND DATA SOURCES

This comprehensive research includes 1) a cost estimation study with updated assumptions developed through stakeholder engagement and updated data analysis, and 2) a set of robust cost models (comprehensive modeling tools to estimate the cost of providing child care) that EEC can use in the future to conduct a range of analyses related to child care financing.

CELFE began this research by reviewing Massachusetts licensing regulations to identify the staffing ratio and maximum group size requirements for specific age ranges for centers, and the allowable staffing and enrollment patterns for family child care homes. Next, CELFE identified all relevant cost factors to include in the cost model through a review of the previous Massachusetts cost model, other states' models, and the federally-sponsored Provider Cost of Quality Calculator tool. The cost models were built as Excel workbooks that allow for all cost driver assumptions to be changed to allow maximum flexibility in analyzing the impact of each cost driver on the overall cost of child care.

The cost models include assumptions about classroom structure, enrollment, personnel, and non-personnel costs. Personnel costs include assumed number of staff and benefits, and non-personnel costs including but not limited to food, office supplies, occupancy expenses, staff training, etc. CELFE developed each assumption in the cost estimation study using the best available data and reviewed assumptions with stakeholders and EEC staff to ensure that the cost study provides an accurate estimate of current typical program costs.

CELFE used the following datasets to estimate assumptions:

- **Commonwealth Cares for Children (C3) / Child Care Stabilization Grants.**[9] As a response to the COVID-19 pandemic, EEC made available Child Care Stabilization Grants—known in Massachusetts as Commonwealth Cares for Children, or C3, grants—to eligible EEC-licensed child care providers to support their operational and workforce costs on a monthly basis. Through monthly applications for this new grant and regular surveys, EEC has collected extensive provider-level data on staffing patterns, enrollment, and staff salaries. This dataset (C3 application data collected in September 2022) served as the foundation for the staffing structure and current salary inputs for the cost estimation study. For a complete variable list, see Appendix H.
- **U.S. Department of Housing and Urban Development (HUD) Fair Market Rent.**[10] HUD publishes the cost to rent a "moderately priced dwelling unit in the local housing market," or "Fair Market Rent," which equals approximately the 40th percentile of rent prices in the area. CELFE used data from HUD's most recent FY23 dataset. This dataset was the foundation for the FCC cost estimation study rent assumption for Family Child Care homes, which was set at Fair Market Rent for a 3-bedroom home plus 10% (to reflect the assumption that homes appropriate for use as a Family Child Care home would likely be somewhat more expensive than a typical home).
- **Provider Cost of Quality Calculator (PCQC).**[11] The PCQC is a tool created by the Child Care Technical Assistance Network sponsored by the federal Office of Child Care within the U.S. Department of Health and Human Services, and it provides national estimates for child care operating costs. CELFE relied on PCQC default data values when local/state data was not available.

The assumptions developed through the data analysis were validated through listening sessions with providers and other stakeholders (see Stakeholder Engagement section). All assumptions used in the final cost estimation study are detailed in Appendices C – Assumptions for Center-Based Care Cost Model Structure, D – Assumptions for FCC Cost Estimation Model Structure, E – Current Salaries – Center-Based Care, F – Target Salaries – Family Child Care, and G – Target Salaries and Compensation for Cost Modeling - Center-Based Care.

As the final step in conducting the cost estimation study, CELFE conducted sensitivity analyses to better understand the impact of changes in various assumptions in the models on the cost of care. These analyses are described in the Sensitivity Analysis section beginning on page 32.

9 Commonwealth of Massachusetts. "Child Care Stabilization Grants (C3)," July 3, 2023. Accessed July 5, 2023. https://www.mass.gov/info-details/c3-grants.

10 U.S. Department of Housing and Urban Development. "Fair Market Rents." Accessed July 5, 2023. https://www.hud.gov/program_offices/public_indian_housing/programs/hcv/landlord/fmr.

11 Child Care Technical Assistance Network. "Provider Cost of Quality Calculator." Accessed July 5, 2023. https://childcareta.acf.hhs.gov/pcqc.

STAKEHOLDER ENGAGEMENT

To supplement the quantitative data described above, CELFE met with Center- and Home-Based providers across Massachusetts to better understand the available data, test assumptions, and learn more about on-the-ground costs. Feedback from the early childhood field was critical in developing the model and providing important context for the quantitative data.

CELFE, in conjunction with EEC, hosted listening sessions in January and February 2023 to learn more about the context around staffing patterns, program operating costs, and salaries for program staff directly from child care providers. In total, CELFE held nine listening sessions with over 161 total participants. Each session had a particular focus - Center-Based (including out-of-school time programs) or Family Child Care - so CELFE could dive deep into staffing patterns and other cost elements based on type of care. EEC recruited providers from across the Commonwealth. Sessions were held in English and Spanish.

CELFE synthesized the listening session feedback. Table 1 and 2 summarize key themes, examples of provider quotes, and changes to the cost models that CELFE in conjunction with EEC made as a result of the listening sessions.

An additional finding from the stakeholder engagement process was that many child care business owners—especially family child care providers—have not yet implemented formal accounting systems that allow them to track their expenses and understand in detail the cost drivers that impact their net revenue. For this reason, CELFE primarily relied on the data sources above to inform the cost model, rather than doing a new survey to gather data from providers on their costs.

Table 1: Center-Based Listening Session Feedback

Theme	Quote(s)	Changes to the Cost Model
The pandemic experience led some programs to increase their staffing levels	"We have seen so much improvement at a 2:15 ratio that we don't have an intention to go back to 2:20 unless financially we have no other option."	CELFE set the "Increased Staffing" scenario in cost model to include higher-qualified staff and more staff per classroom for every age group.
Floater staff are very hard to recruit	"Floaters/subs are hard to find and when we do hire them, we often end up hiring them as full-time teachers because the field is really thin right now with staffing."	CELFE set the Lead Floater Teacher/ Sub and Assistant Floater Teacher/ Sub pay to match full-time teacher and assistant teacher pay. Matching floater/substitute pay to full time incentives recruitment and retention.
Programs reported a need for additional teaching/program staff + administrative staff to provide additional supports and services for children	"Other teaching/program staff doesn't capture needed consultant roles/specialized staff (instructional and/or behavioral)." "We have a high-needs population that need the additional support of instructional and behavioral support more than ever right now."	CELFE set an "Additional Professional Staff" to the "Increased Staffing" scenario.

Table 2: Family Child Care Listening Session Feedback

Theme	Quote(s)	Changes to the Cost Model
Food costs have increased significantly due to inflation	"We are facing serious challenges with inflation where we are feeling it in our rent, food costs, and materials costs."	Given high inflation, CELFE completed a new study of food costs based on USDA food program guidelines and current prices in MA.
Variations in enrollment have significant impact on annual revenue	"I can't under-enroll. I wouldn't be able to pay my full-time assistant. I couldn't afford not to be full. I value her and she deserves to be paid." "Not maintaining full enrollment would be a huge luxury."	The cost model accounts for the different staffing patterns providers have and includes an estimated enrollment of 85%.
Providers often don't budget for a salary – because they can't afford to	"For 33 years, I have been running a FCC and have never been able to make a paycheck." "After working over 16 years, I have never been able to reach the salary I want to."	CELFE created cost estimates based on salary targets rather than reported salary by FCC providers.
Shared services is a benefit to support providers' enhanced business practices as they are spread thin with so many responsibilities	"We do it all. As an FCC, we wear all the hats. We are the business owners, we are the nurse, we are the teacher, we are the mom (not just to my 3 kids) but the 6 kids that come in here every day, we are the therapist for the parents, we are the therapist for the kids. We advocate for these kids." "Shared services has been a great option for folks in Metro Boston area."	CELFE made recommendations to EEC on supporting FCC providers with shared services supports in a separate memo, not included in this report.

Center-Based Cost Estimates

Using the assumptions detailed in the appendices, CELFE generated cost estimates for Center-Based child care at the center, classroom, per-child/per-year and per-child/per day levels. These estimates were created for three scenarios as described in the box "Operating Scenarios." The tables below provide the estimated daily costs per child by age group and subsidy region as estimated in each Center-Based operating scenario tested - *Model 1*—Table 3, *Model 2—Table 4*, and *Model 3—Table 5*. Figures 10 (Infants), 11 (Toddlers), & 12 (Preschoolers) shows for each region the 75th percentile from the Market Rate Survey (i.e., the price that equals or exceeds the price charged by 75% of centers), the current EEC reimbursement rate, and the daily cost per child for each of the operating scenarios tested.

CELFE compared the cost estimates across regions, age groups and operating scenarios, as well as comparing the cost estimates to the current EEC Daily Reimbursement Rates for child care financial assistance. Notable findings included:

- Infant and Toddler daily costs per child are substantially higher than Preschool and School-Age daily costs across all regions and all model scenario types. Compared to the cost of serving Preschoolers, the cost of serving Infants is approximately 148% more in all regions, and the cost of serving Toddlers is 93% more. This is largely due to the fact that serving Infants and Toddlers in centers requires higher staffing levels than serving older children.
- The cost of providing School-Age care Before & After School was only about 15% lower than the cost of providing full day care for these children. This is because providers report very similar staffing levels for their before and after care and full-day care programs.
- The two Metro Boston regions, across all model scenario types and age groups, have the highest daily per child costs in comparison to other regions. These higher costs align with the higher cost of living in each of these regions.
- The cost to operate a program varied across regions but not as widely as current reimbursement rates: For centers, compared to the lowest-cost region (Western), the highest-cost region (Metro Boston) was approximately 18% more expensive for children under age 5 and 12% more expensive for School-Age care. In contrast, the current reimbursement rates for Metro Boston are up to 52% than the rates for the Western region.
- Some regions had very similar costs: The Western, Central and Southeast regions had very similar costs, and the two Boston-area regions (Metro and Metro Boston) had very similar costs.
- The higher salaries in Model 2 resulted in 15% to 30% higher costs per child across the various age groups and regions compared to Model 1.

- In most cases, the cost per child per day was higher than the current EEC child care subsidy reimbursement rate.[12] Preschool reimbursement rates, however, are higher than the estimated costs in Model 1 in the Central and Metropolitan Boston regions. (Note: In the child care market nationally, it is typical for providers to charge less than the cost of care for Infants and Toddlers and more than the cost of care for Preschool and School-Age children). For all ages and regions, the cost of care in Model 2 was substantially higher than the current reimbursement rates.
- Model 3 resulted in 54% to 66% higher costs across the regions for Infants, Toddlers, and Preschoolers, and 93% to 125% higher costs for School-Age children compared to Model 1 (Note: the increased staffing scenario included smaller group sizes for School-Age programs than the other scenarios but for other ages group sizes were the same across scenarios).

Operating Scenarios

The Center-Based cost model results are broken out by three distinct operating scenarios:

1

Model 1: Licensed Care (Current Salaries)

Used compensation data from Commonwealth Cares for Children (C3) applications to inform salary inputs

Used C3 data and input from EEC licensing staff to inform staffing patterns

2

Model 2: Licensed Care + Increased Compensation

Used target salaries identified as part of this research as "desired" salary inputs

Used the licensed staffing pattern (same as above operating scenario)

3

Model 3: Licensed Care + Increased Compensation + Increased Staffing

Used CELFE-constructed target salaries as "desired" salary inputs

Used a more intensive staffing pattern informed by provider feedback to reflect staffing needed to provide higher quality care

This scenario uses a more comprehensive staffing pattern that goes beyond EEC's base licensing requirements. This staffing pattern was informed by advisory group members and providers in listening sessions and reflects what was considered "best practice for high quality." This allows analysis of the impact that increasing staffing would have on the overall costs for providers.

12 EEC provides child care financial assistance to eligible families. EEC reimburses child care providers for providing this care using a per-child, per-day rate. Reimbursement rates are based on multiple factors including the program type, the child's age, the location of care, and the type of care. For more information on EEC's subsidy rates, please see: https://www.mass.gov/service-details/daily-reimbursement-rate-for-early-education-and-care-programs

Table 3: Center-Based Model 1 - Licensed Care (Current Salaries) Daily Cost Per Child by Age Group and Subsidy Region

1

Model 1: Licensed Care (Current Salaries) *Daily Cost Per Child*

Age Group	Western	Central	Northeast	Metro	Southeast	Metro Boston
Infant	$115.15	$118.20	$126.01	$134.45	$119.98	$136.56
Toddler	$89.54	$91.85	$ 97.74	$104.16	$93.19	$105.80
Preschool	$46.83	$47.94	$50.71	$53.80	$48.57	$54.71
School-Age (Before & After)	$31.07	$32.00	$32.85	$35.04	$32.18	$34.80
School-Age (Full-Day)	$36.23	$37.50	$38.26	$41.36	$37.54	$40.72

Table 4: Center-Based Model 2 - Licensed Care + Increased Compensation Daily Cost Per Child by Age Group and Subsidy Region

2

Model 2: Licensed Care + Increased Compensation *Daily Cost Per Child*

Age Group	Western	Central	Northeast	Metro	Southeast	Metro Boston
Infant	$139.02	$145.87	$160.49	$165.94	$155.21	$177.68
Toddler	$107.81	$113.02	$123.90	$128.11	$120.05	$137.08
Preschool	$55.71	$58.18	$62.59	$64.75	$61.27	$69.09
School-Age (Before & After)	$35.81	$37.14	$39.86	$40.98	$38.91	$43.19
School-Age (Full-Day)	$42.74	$44.48	$48.44	$49.84	$46.94	$52.74

Table 5: Center-Based Model 3 - Licensed Care + Increased Compensation + Increased Staffing Daily Cost Per Child by Age Group and Subsidy Region

3

Model 3: Licensed Care + Increased Compensation + Increased Staffing *Daily Cost Per Child*

Age Group	Western	Central	Northeast	Metro	Southeast	Metro Boston
Infant	$177.52	$186.42	$202.56	$210.28	$197.14	$224.53
Toddler	$138.42	$145.31	$157.27	$163.18	$153.33	$174.12
Preschool	$73.69	$77.24	$81.99	$84.94	$80.66	$90.41
School-Age (Before & After)	$60.11	$62.88	$68.23	$69.79	$65.88	$73.59
School-Age (Full-Day)	$73.99	$77.46	$84.36	$86.51	$81.50	$91.67

Figure 10: Current Per Child Daily Center-Based **Infant** Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region

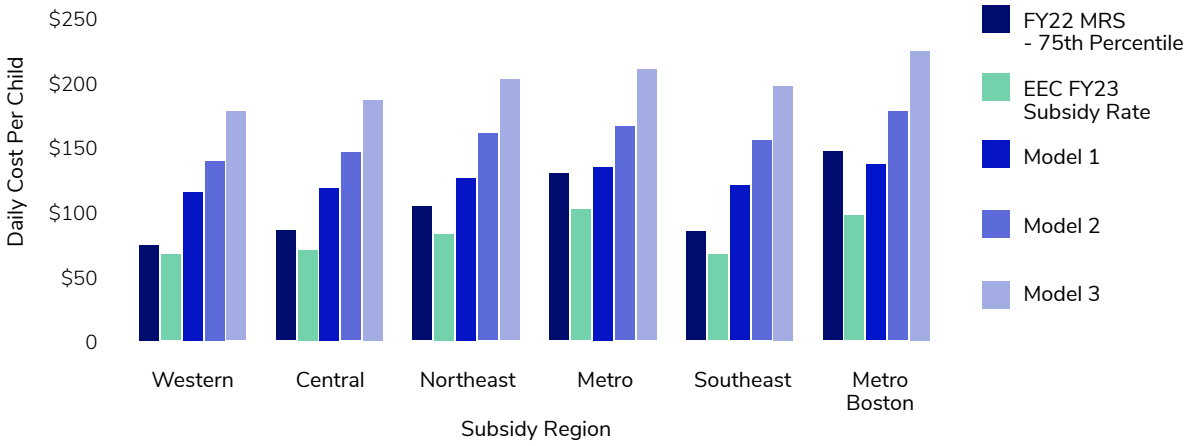


Figure 11: Current Per Child Daily Center-Based **Toddler** Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region

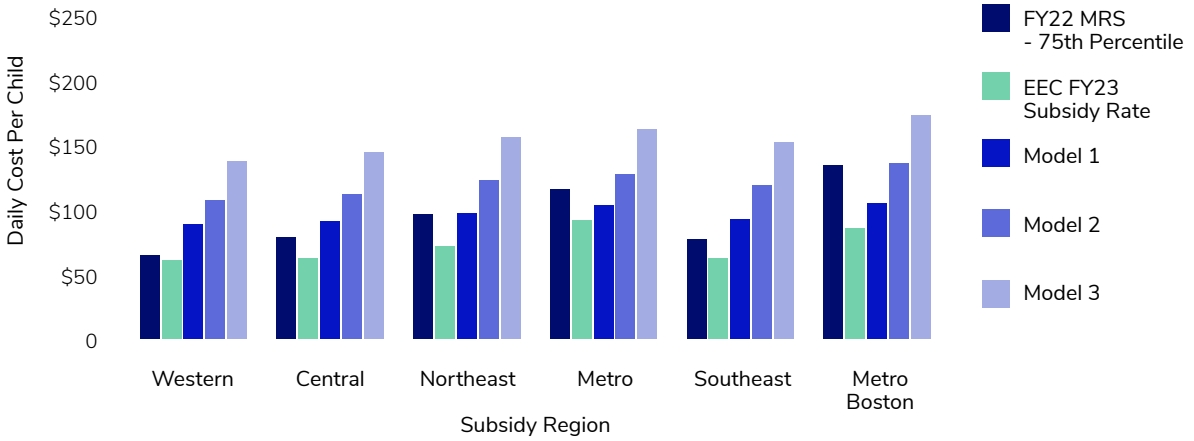
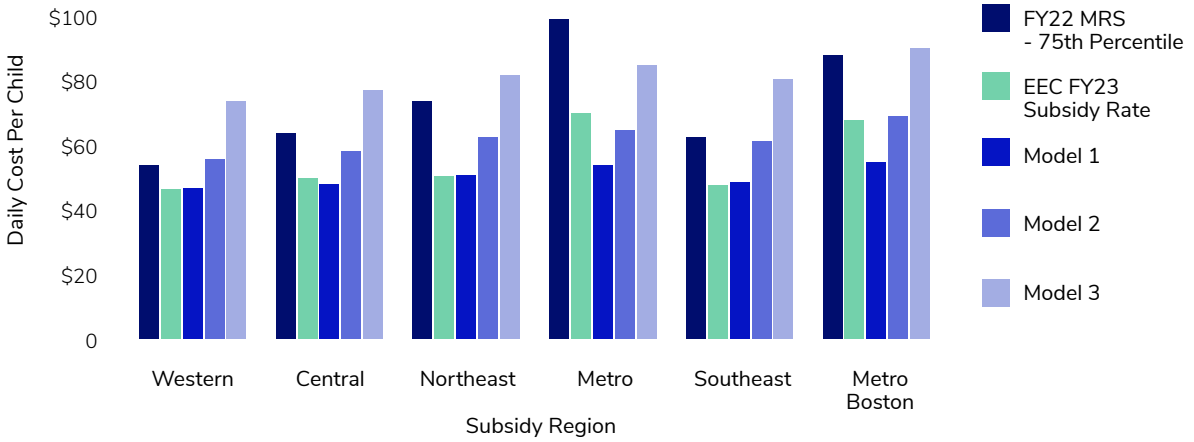


Figure 12: Current Per Child Daily Center-Based **Preschool** Subsidy Reimbursement Rates Compared to Cost Model Estimates By Subsidy Region



Family Child Care Estimates

Using the assumptions for personnel and non-personnel costs detailed in the appendices, CELFE generated cost estimates for Family Child Care at the program and per-child/per-year and per-child/per day levels for each of three common staffing/enrollment patterns (see "Staffing and Enrollment Patterns Studies for Family Child Care" box). The full cost study produced a daily cost per child for each age group and subsidy region using a weighted average across the three staffing/enrollment patterns. CELFE developed the weights for the average cost across the FCC models by analyzing data from the C3 grant applications on staffing patterns and licensed capacity of FCC providers, which showed that approximately 30% of providers match pattern 1, 40% match pattern 2, and 30% match pattern 3.

Unlike the Center-Based model, where costs could be attributed to age-specific classrooms, the FCC model allocates costs evenly across all children enrolled. This is because there was no clear rationale for attributing costs for staff time or occupancy costs—the primary cost drivers for FCC care—differentially across age groups. As a result of this approach, the cost model produces the same cost estimate for children under age two and ages two to five. An important caveat to this approach is that if a provider were to serve only children under age two, they would be able to serve fewer children overall (as providers can only serve three children under age two without an assistant and six with an assistant). In this case, the cost per child served would be significantly higher than this analysis currently shows (see Sensitivity Analysis section on page 32).

STAFFING AND ENROLLMENT PATTERNS STUDIED FOR FAMILY CHILD CARE

Pattern 1: FCC Educator Only

Capacity of 6 that assumes 6 children under age six

Pattern 2: FCC Educator Only

Capacity of 8 that assumes 6 children under age six plus 2 School-Age children

Pattern 3: FCC Educator with Full-Time Assistant

Capacity of 10 that assumes 8 children under age six plus 2 School-Age children

Table 6 shows the cost estimates for Family Child Care for each region and age group. Figures 13 and 14 shows for each region the 75th percentile from the Market Rate Survey (i.e., the price that equals or exceeds the price charged by 75% of homes), the current EEC reimbursement rate, and the daily cost per child from the cost model (a weighted average across the three scenarios studies) for children under age two and ages two to five. No graph is shown for School-Age care for homes because the Market Rate Study gathered prices in a way that is not comparable to the current cost model. Also, current EEC reimbursement rates for homes do not distinguish between children ages two to five and School-Age children.

Key findings for Family Child Care costs include:

- Across all age groups, the daily cost per child is highest in the metropolitan Boston Regions. These higher costs align with the higher cost of living in this part of the Commonwealth.
- The difference in costs between the highest- and lowest-cost regions for all ages was approximately 24%. In contrast, compared to the rates for the Western region, the current reimbursement rate for the Metro region is 71% higher for children under age two and 20% higher for children over age two.
- Some regions had very similar costs: The Western, Central and Southeast regions had very similar costs, and the two Boston-area regions (Metro and Metro Boston) had very similar costs.
- The cost per child varied considerably across scenarios, with the Pattern 1 (no School-Age children) and Pattern 3 (full-time assistant) resulting in costs-per-child that are approximately 20% higher than the cost of care in Pattern 2 (no assistant, with School-Age children).
- The cost for serving children under age two and ages 2-5 is the same in this cost study because of the way that costs were allocated across age groups. However, it should be noted that costs would be significantly higher per child if a home only served Infants and Toddlers, as per-home costs would remain nearly the same but would be divided across fewer children because licensing regulations limit the number of young children served (see Sensitivity Analysis section on page 32).
- The daily cost per child was higher than the current EEC reimbursement rate for child care financial assistance in all regions and age groups compared, except the Metro region under age two rate is slightly higher than the modeled cost. As noted above, reimbursement rates and costs for School-Age children are not directly comparable due to the way costs are modeled in this study.

Table 6: Family Child Care Weighted Average Across all 3 Scenario Types

	Age Group	Western	Central	Northeast	Metro	Southeast	Metro Boston
Weighted Average[13] Across all 3 Scenario Types *Daily Cost Per Child*	Under 2	$58.82	$60.78	$65.00	$70.30	$61.02	$72.81
	Age 2-5	$58.82	$60.78	$65.00	$70.30	$61.02	$72.81
	School-Age (Before & After)	$34.10	$35.17	$37.51	$40.59	$35.30	$41.83
	School-Age (Full Day)	$56.84	$58.62	$62.51	$67.65	$58.84	$69.72

13 The Family Child Care cost model is structured as a series of aggregate "profit and loss statements" for three FCC home configurations to account for the common staffing and enrollment patterns with which FCC homes operate. The categories of assumptions built into the model include staffing patterns, personnel costs, and non-personnel costs.

Figure 13: Current Daily Per Child **Ages 0-2** Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region

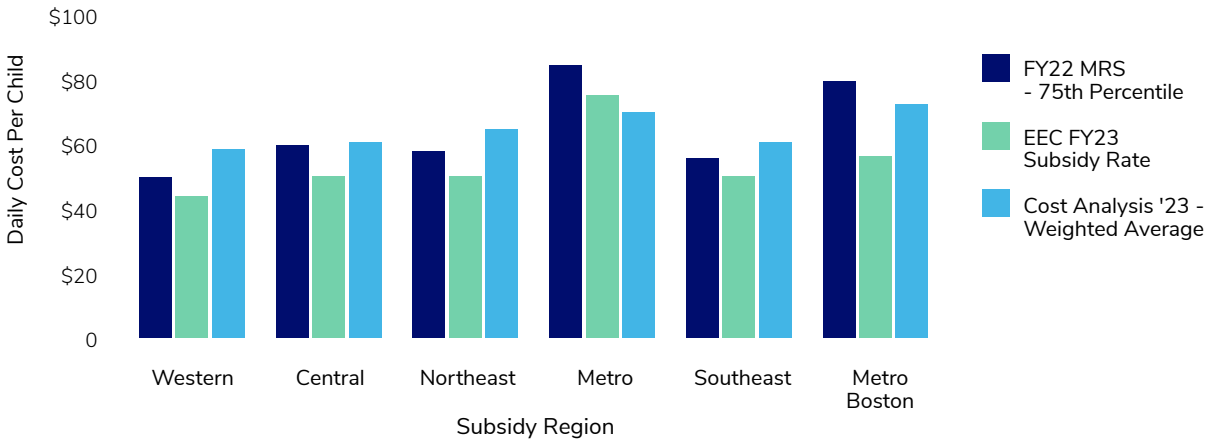
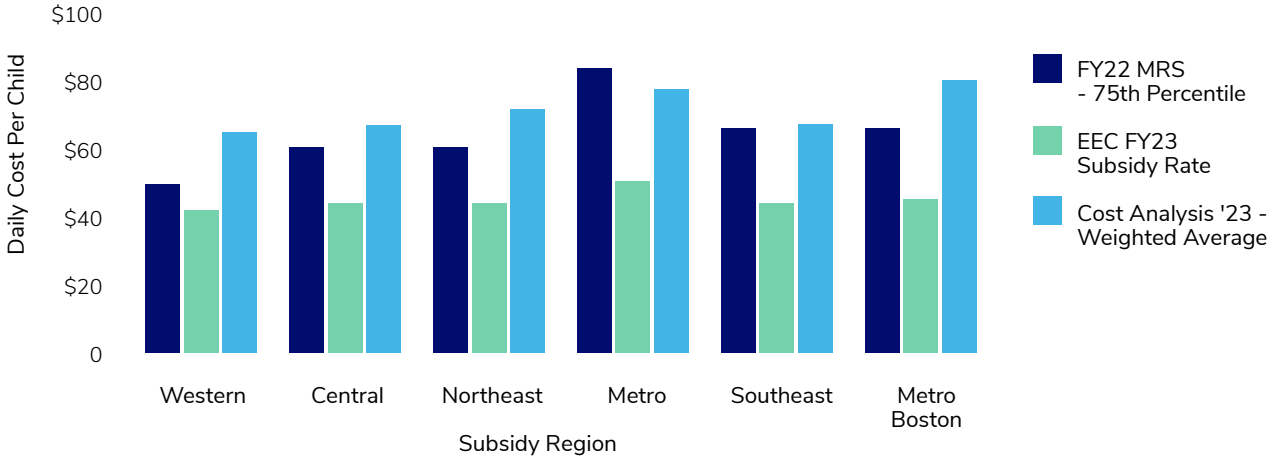


Figure 14: Current Daily Per Child **Over Age 2** Family Child Care Subsidy Reimbursement Rate Compared to Cost Model Estimate by Subsidy Region



SENSITIVITY ANALYSES

CELFE conducted a series of sensitivity analyses to understand the impact of increasing or decreasing values for key parameters in the models. Based on questions received from providers in listening sessions, CELFE selected particular variables to stress-test. Below are the results of each analysis.

Center-Based Scenarios

- **Center Size.** To test how sensitive per-child cost is to program size, CELFE ran a scenario with a center-size that doubles each classroom type, with everything else held constant. Doubling the size of the center across each scenario type results in a change of -1% to 4% costs per child per day across all regions and all models for birth to five age groups. This small percentage range indicates that the model is relatively insensitive to changes in center size for children birth to five. For School-Age children, costs fluctuate slightly more across all models, producing cost estimates that differ by between -1% to 8% percent. This implies that School-Age outputs are more sensitive to changes in center size given the changes in staffing structure when enrollment increases.

- **Age Group – Only Preschool.** To examine different types of centers that may serve only one age group, CELFE modeled for a center that only serves Preschool children with five Preschool classrooms, everything else held constant. This resulted in cost estimates that differed from the original model by between -3% and 1%. This small range indicates that the model is insensitive to changes in classroom type and can support rich analysis regarding different classroom types.

- **Age Group – Only Infant/Toddler.** To examine different types of centers that may serve only one type of age group, CELFE modeled for a center that only serves Infants and Toddlers with five Infant classrooms and five Toddler classrooms, everything else held constant. This resulted in cost estimates that differed from the original model by between 1%-3%. This small range indicates that the model is insensitive to changes in classroom type and can support analysis of different classroom types.

- **Food Costs.** Given the feedback received from providers about the rising costs of food due to inflation, CELFE completed an analysis that inflated the food input by 50%, with everything else held constant. This resulted in daily costs per child across all regions and model operating scenarios that were higher by approximately 2%-9%. This shows the model is moderately sensitivity to higher food prices; therefore, CELFE recommends that EEC update food costs in the model annually to keep up with rising costs of inflation.

- **Rent Costs.** Given the feedback received from providers about the variation in rent/lease costs across the Commonwealth, CELFE completed an analysis that inflated the rent/lease costs by 50%, holding everything else held constant. This resulted in daily costs per child that were higher by approximately 5%-7% across all regions. Similar to food costs, CELFE recommends that EEC update the rent/lease cost assumptions annually to keep the model consistent with current market conditions.

- **Enrollment Efficiency – Under-Enrollment.** The cost model is designed to produce a per-child cost estimate tied to an assumed level of enrollment for programs. If there is a higher "% full enrollment," that means there will be more children in each classroom or home to divide program costs across, and thus a lower per-child cost. Very few costs in a typical center budget vary with enrollment—most costs are attached to the operation of a classroom and remain the same even if the classroom is under-enrolled. For this scenario, CELFE modeled the enrollment efficiency changing to 75% to estimate a center that is under-enrolling. In the model, the current enrollment efficiency is set to 85% across each age group.[14] Changing the enrollment efficiency from 85% to 75% has a significant impact on daily cost per child for Toddler, Preschool, and School-Age (full-day) groups with an estimated percentage increase of 10%–13% across all model operating scenarios. This result was expected given the importance of enrollment to a center's operational efficiency and confirms the validity of the model.

- **Enrollment Efficiency – Higher-Enrollment.** For this scenario, CELFE modeled the enrollment efficiency to a level of 95% to estimate a center that is enrolling at a higher rate than the initial assumption. In the model, the current enrollment efficiency is set to 85% across each age group. Changing the enrollment efficiency from 85% to 95% had a significant impact on daily cost per child across all age groups with an estimated percentage decrease of 8%–13% across all model scenario types. Similarly, to the test of under-enrollment, this result was expected and confirms the validity of the model.

Family Child Care Scenarios

- **Age Group - Only Infant Toddler Care.** As noted above, the cost model distributes costs evenly across all children enrolled. However, Family Child Care is often a preferred option especially for families with Infants and Toddlers, so it is important to understand how costs might change if a home serves only Infants and Toddlers. The cost of care for a child under two in a family child care home that only serves Infants and Toddlers is approximately twice the per-child cost in homes that serve the full range of ages considered in the cost model. This shows that costs in Family Child Care, in contrast to the Center-Based model, is highly sensitive to the age range of children served.

- **Food Costs.** Given the feedback received from providers about the rising costs of food due to inflation, CELFE completed an analysis that inflated the food input by 50%, with else held constant. This resulted in daily costs per child across all regions and model operating scenarios that were higher by approximately 5%–7%. This shows the model is moderately sensitivity to higher food prices; therefore, CELFE recommends that EEC update food costs in the model annually to keep up with rising costs of inflation.

- **Rent Costs.** Given the feedback received from providers about the variation in rent/lease costs across the Commonwealth, CELFE completed an analysis that inflated the rent/lease costs by 50%, holding everything else held constant. This resulted in daily costs per child that were higher by approximately 3%–6% across all regions. Similar to food costs, CELFE recommends that EEC update the rent/lease cost assumptions annually to keep the model consistent with current market conditions.

14 Enrollment efficiency of 85% is a commonly held assumption and standard used by many cost researchers and used as a standard figure in the Provider Cost of Quality Calculator.

- **Enrollment Efficiency – Under-Enrollment.** The cost model is designed to produce a per-child cost estimate tied to an assumed level of enrollment for programs. If there is a higher "% full enrollment," that means there will be more children in each home to divide program costs across, and thus a lower per-child cost. Few costs in a typical Family Child Care budget vary with enrollment—most costs are attached to the operation of a home and remain the same even if the home is under-enrolled. Enrollment efficiency in the model dictates the assumed enrollment and percentage differences are important to stress-test. For this scenario, CELFE modeled the enrollment efficiency changing to 75% to estimate a center that is under-enrolling. In the model, the current enrollment efficiency is set to 85% across each age group. Changing the enrollment efficiency from 85% to 75% has a significant impact on daily cost per child for Toddler, Preschool, and School-Age (full-day) groups with an estimated percentage increase of 12% across all model operating scenarios. This sensitivity to enrollment efficiency was expected given the importance of full enrollment in a home's operational efficiency and confirms the validity of the model.
- **Enrollment Efficiency – Higher-Enrollment.** For this scenario, CELFE modeled the enrollment efficiency at 95% to estimate a home that is enrolling at a higher rate than the initial assumption. Changing the enrollment efficiency from 85% to 95% had a significant impact on daily cost per child across all age groups with an estimated percentage decrease of 9% across all model scenario types. As with the test of under-enrollment, this result was expected and confirms the validity of the model.

RECOMMENDATIONS

The full cost estimation study provides the Department with important information about the cost of providing child care services in various regions of the Commonwealth. The cost estimates produced by the study can be used with other sources of information, such as the Market Rate Survey, to design and inform modifications to specific funding streams and/or the overall financing system for child care in Massachusetts. Based on information gathered through this study, CELFE presents the following recommendations for consideration:

SIMPLIFY THE SUBSIDY RATE STRUCTURE TO BETTER ALIGN WITH ECONOMIC INDICATORS

Currently, Massachusetts has six subsidy regions with a wide range of reimbursement rates paid for child care financial assistance across those regions. Specifically, there was a 38% difference between the lowest and highest rate paid to providers across the regions. In contrast, the highest and lowest costs areas differed in cost by only approximately 20% in this study. Furthermore, some regions were especially close in cost: The Western, Central and Southeast regions had very similar costs, as did the two Boston-area regions (Metro and Metro Boston).[15]

While economic diversity exists and should inform the child care reimbursement rate, the cost estimate data does not support having six rate regions. This finding provides EEC the opportunity to simplify the reimbursement rate structure by reducing the number of rates.

SET RATES ACROSS AGES IN A CONSISTENT WAY ACROSS REGIONS

The cost estimation study showed that the relative cost difference for serving Infants and Toddlers as compared to serving Preschool - and School-Aged children is the same across all regions. This cost difference is due primarily to the higher staffing levels needed to care for very young children. Currently, the reimbursement rates across regions show considerable variation in the relationship of rates for younger children compared to older children; for example, in the Northeast region the rate for Infants is 63% higher than the rate for Preschoolers, whereas in the Central region, the rate for Infants is only 40% higher. The Department may want to move towards a more consistent approach to setting rates across age groups across regions as it continues to update its rate structure.

USE COST INFORMATION TO INFORM RATES

The results of the cost estimation study are just one part of the information that the Department can consider as it sets rates. It should be noted that, even in a well-functioning market, the relationship between prices and costs is not the same across all age groups. Because care for Infants and Toddlers is markedly more expensive than care for Preschool - and School-Aged children—up to 2.5 times more expensive, due to the higher staffing levels needed to care for very young children—providers typically "over-charge" for serving Preschoolers so that they can offset some of the cost of serving Infants and Toddlers to "smooth" the cost of care for parents across the birth to five age span. This market reality makes it challenging to develop reimbursement rate policy in a system where child care subsidies are intended as a replacement for parent-paid tuition. Simply setting reimbursement rates to the cost estimate developed through this cost estimation study could have the unintended consequence of driving up the cost of care for Infants and Toddlers well

15 The 'Metro' region includes towns/cities surrounding the City of Boston and the 'Metro Boston' region includes the City of Boston and a small number of adjacent communities.

beyond the level that most parents could afford.

The relationship between cost and price is especially complex for Family Child Care. In the cost estimation study for Family Child Care, costs were allocated evenly across all children enrolled in a program, resulting in the same cost estimates for Infants, Toddlers and Two-year-olds. In the marketplace, however, it is very common to charge families a higher price for caring for younger children than older children. And because licensing regulations do not allow a provider to care for more than three children under age two at one time (or six if there is a full-time assistant), it would make sense for the Department to set payment rates higher for serving Infants and Toddlers. This is especially true if universal publicly-funded Preschool for three and four year olds is available in the community, thereby reducing the market for family child care services for Preschool-Age children.

SUPPORT STRONG BUSINESS PRACTICES AMONG CHILD CARE PROVIDERS

Stakeholder comments in focus groups suggested that child care programs may need additional supports to effectively manage the *business side* of child care such as the EEC-supported business training currently available for FCC providers via Neighborhood Villages. Many providers struggled to articulate their approach to budgeting and their specific costs for providing care. Building budgets, understanding the tax implications of a small business, and building overall administrative efficiencies are all areas that help providers thrive while reducing their overall cost and maximizing their revenue as they operate their child care business.

HELP PROVIDERS MAINTAIN ENROLLMENT

The cost models quantify the significant economic impact that under-enrollment can play in a program's overall financial viability. As EEC considers state strategies to support the provider workforce, supporting providers to maintain full enrollment can be an important strategy for improving provider's financial viability. EEC should continue to focus on infrastructure supports and investments to connect families in need of care with providers who have current openings. This strategy could help address the enrollment needs of programs while simultaneously addressing the waiting list for care that exists currently.

CONSIDER CHILD CARE SUBSIDIES AS JUST ONE PART OF AN OVERALL EARLY CHILDHOOD FUNDING STRATEGY

Children need stable, high-quality early education and care to thrive, and providers need stable sources of revenue to operate the programs families rely on.[16] Child care subsidies are structured as a 'per-child' funding approach which alone is not likely to provide the financial stability that programs need to invest in adequate salaries and quality program features. Child Care financial assistance can play a critical role in providing low-income families access to care but is not the only strategy for ensuring an adequate supply of quality child care across the Commonwealth.

Innovative financing strategies like grants that support operational costs separate from voucher-based subsidy payments can address the gap between the prices the market will bear (to avoid out-pricing private pay families) and the actual cost of operating a high-quality child care program. EEC now has cost estimation models to help better understand how different revenue sources can work together to meet the true cost of quality early education and care services.

16 National Academies of Sciences, Engineering, and Medicine. (2018). Transforming the Financing of Early Care and Education. Washington, DC: The National Academies Press. Doi: https://doi.org/10.17226/24984.

NEXT STEPS + ADDITIONAL RESEARCH

CELFE has created for EEC a robust set of tools for understanding the cost of providing child care in the Commonwealth. The current cost estimation study reflects conditions as of late 2022 and early 2023. The cost estimates can be kept current by updating the assumptions for staff salaries and non-personnel costs, and CELFE recommends conducting such an update annually, or as new cost data becomes available.

As the Department considers revisions to its child care financial assistance reimbursement rate structure and other changes to the funding system for early childhood services—including the potential continuation of C3 grants and expansion of publicly-funded Preschool—CELFE advises additional research on costs and program revenues, including:

REVISE THE COST ESTIMATION STUDY TO MATCH ANY CHANGES TO SUBSIDY REGIONS

The current cost estimation study developed cost estimates for each of the six current subsidy regions. The inputs to the model for the study were based on analyses completed on data specific to each geography, including analyses of current salaries paid, target salaries, and estimated occupancy costs. If the Department were to revise the regional structure for subsidies, it would be important to revise the study with new inputs tied to the new geographies. The cost model "engine" will also need to be updated to reflect these changes.

CONDUCT RESEARCH ON ADDITIONAL POTENTIAL COST DRIVERS

The current cost estimation study did not include some costs that are important to understanding the full cost of providing equitable access to high quality early childhood education and care to children across the Commonwealth. For example, transportation costs—which can vary substantially depending on geographic region, program size and program schedule—were not included in the cost estimation, but they can be a sizable portion of a program budget, especially for Before and After-School care. Costs associated with meeting the specific needs of English Language Learners and children with special needs were also not modeled but are important to consider when developing a finance strategy for an equitable system.

CONDUCT A STUDY OF CHILD CARE PROGRAM REVENUES

The current cost model engine includes a rudimentary estimate of the revenue that programs are receiving which enables EEC to start to look at funding gaps. However, little research has been conducted to understand actual program revenues and the range of funding levels experienced by programs across the Commonwealth. It would be very helpful for the Department to better understand typical revenue patterns so that it can better design funding supports for programs. Topics for this research could include:

1. **Patterns of Subsidy vs. Private Pay Enrollment.** The Department could benefit from an analysis of how the concentration of subsidized children in programs varies across regions and provider types, and how this relates to the rates providers charge tuition-paying families. For example, do providers serving a high percentage of subsidized children tend to charge rates that are closer to the 25th, 50th, or 75th percentile? Do providers with higher tuition prices tend to enroll fewer subsidized children?

2 **Patterns of USDA Child and Adult Care Food Program (CACFP) Participation.** CACFP is a significant revenue resource for child care programs, especially those serving low-income families. However, in the listening sessions, CELFE heard that there is a range of participation in the program, and some providers reported that they did not always receive reimbursement for all children enrolled or for all days served due to the complexity of the CACFP regulations. It would be helpful to better understand this important revenue source and to identify ways to maximize receipt of this federal funding by Massachusetts providers.

3 **Prevalence and Funding Levels of Other Public Funding.** Many child care providers "blend and braid" funding from multiple public funding streams to provide comprehensive, high-quality early childhood education and care. It would be helpful to understand the prevalence of the use of funding streams such as Early Head Start, Head Start, local and state public Preschool funds, and other sources, and how they are combined with child care subsidy funds to support high quality programs.

4 **Other Factors Impacting Revenue.** The current cost model engine assumes some under-enrollment and a small amount of uncollected revenue but does not account for other factors that might impact revenues, such as programs providing their own financial scholarships or discounts to students, tuition waivers for the children of staff, temporary program closures, or other situations.

APPENDIX A.

CENTER BASED COST ESTIMATION RESULTS— TOTAL CLASSROOM COSTS

Appendix A includes a summary of the Center-Based annual total expenses per classroom by age group and subsidy region as estimated in model—Model 1, 2, and 3.

Table 7: Center-Based Results for Model 1 - Licensed Care (Current Salaries) – Annual Total Expenses – Per Classroom Licensed

	Age Group	Western	Central	Northeast	Metro	Southeast	Metro Boston
Model 1: Licensed Care (Current Salaries) *Annual Total Expenses – Per Classroom*	Infant	$180,318	$185,101	$197,331	$210,544	$187,891	$213,853
	Toddler	$186,968	$191,786	$204,081	$217,493	$194,574	$220,920
	Preschool	$207,782	$212,703	$224,996	$238,716	$215,485	$242,741
	School-Age (Before & After)	$128,637	$132,489	$136,000	$145,074	$133,213	$144,088
	School-Age (Full-Day)	$67,497	$69,862	$71,278	$77,048	$69,939	$75,862

Table 8: Center-Based Results for Model 2 - Licensed Care + Increased Compensation- Annual Total Expenses – Per Classroom (Including Reserves)

	Age Group	Western	Central	Northeast	Metro	Southeast	Metro Boston
Model 2: Licensed Care + Increased Compensation *Annual Total Expenses – Per Classroom*	Infant	$217,709	$228,434	$251,321	$259,864	$243,065	$278,254
	Toddler	$225,102	$235,985	$258,714	$267,502	$250,667	$286,224
	Preschool	$247,194	$258,165	$277,702	$287,282	$271,842	$306,567
	School-Age (Before & After)	$148,264	$153,769	$165,022	$169,669	$161,087	$178,799
	School-Age (Full-Day)	$79,621	$82,872	$90,244	$92,850	$87,451	$98,255

Table 9: Center-Based Results for Model 3 - Licensed Care + Increased Compensation + Increased Staffing – Annual Total Expenses – Per Classroom (Including Reserves)

	Age Group	Western	Central	Northeast	Metro	Southeast	Metro Boston
Model 3: Licensed Care + Increased Compensation + Increased Staffing *Annual Total Expenses – Per Classroom*	Infant	$277,991	$291,935	$317,202	$329,304	$308,727	$351,615
	Toddler	$289,021	$303,413	$328,388	$340,729	$320,146	$363,571
	Preschool	$326,964	$342,719	$363,789	$376,879	$357,891	$401,131
	School-Age (Before & After)	$194,763	$203,720	$221,077	$226,106	$213,459	$238,426
	School-Age (Full-Day)	$107,884	$112,935	$122,997	$126,138	$118,832	$133,655

APPENDIX B.

FAMILY CHILD CARE COST ESTIMATION RESULTS—TOTAL COSTS PER HOME

Appendix B includes a summary of the Family Child Care annual total expenses per home (including the FCC Educator/Owner's target salary or profit) by subsidy region. The weighted average across all patterns is presented first, followed by the estimates for each pattern tested—Pattern 1, 2, & 3.

Table 10: FCC Results for the Weighted Average Across all 3 Patterns – Per Home

Weighted Average Across all 3 Patterns *Per Home*	Western	Central	Northeast	Metro	Southeast	Metro Boston
	$99,399	$102,627	$109,605	$118,600	$103,019	$122,552

Table 11: FCC Results for Pattern 1: FCC Educator Only (Capacity of 6) – Per Home

Pattern 1: FCC Educator Only (Capacity of 6) *Cost Per Home*	Western	Central	Northeast	Metro	Southeast	Metro Boston
	$84,464	$87,625	$94,230	$101,802	$88,017	$106,518

Table 12: FCC Results for Pattern 2: FCC Educator Only (Capacity of 8) – Per Home

Pattern 2: FCC Educator Only (Capacity of 8) *Cost Per Home*	Western	Central	Northeast	Metro	Southeast	Metro Boston
	$86,927	$90,088	$96,692	$104,265	$90,480	$108,981

Table 13: FCC Results for Pattern 3: FCC Educator with Full-Time Assistant (Capacity of 10) – Per Home

Pattern 3: FCC Educator with Full-Time Assistant (Capacity of 10) *Cost Per Home*	Western	Central	Northeast	Metro	Southeast	Metro Boston
	$130,962	$134,347	$142,198	$154,512	$134,739	$156,680

APPENDIX C.

ASSUMPTIONS FOR CENTER-BASED CARE COST ESTIMATION MODEL

Appendix C includes detailed assumptions made in the Center-Based cost estimation model, which estimates costs for a full-day (10 hours), year-round center (261 days) across age group, operating scenario, and subsidy region.

Model Structure

The below section provides a breakdown of the Center-Based cost model's structure and details the rationale and data source for each assumption included in the cost estimation study.

CLASSROOMS

The C3 data showed a wide range of center sizes and ages served. CELFE selected the classroom grouping below to represent a "typical" center.

- The median number of classrooms reported by providers was between 4 and 5
- The median child is served in a center with 7 or more classrooms (because more children overall are served in larger centers)
- 80% of Center-Based providers serve Preschoolers, but only 50% serve Infants and/or Toddlers and 33% serve School-Age

CELFE selected the classroom grouping below to represent a "typical" center. CELFE conducted sensitivity analyses (see page 32 in report) and showed that estimated costs would not vary widely across centers with different total number of classrooms. See Table 15.

Table 15: Center-Based Classroom Assumptions

Age Group	Number of Rooms
Infant	1
Toddler	1
Preschool	2
School-Age (Before & After—School Year)	1
School-Age (Full-Day—Summer)	1
Total**	5

**Note:* The same number of classrooms was modeled for all operating scenarios.

***Note:* School-Age (Before & After) is weighted by number of school year days of care and School-Age (Full-Day) is weighted by number of summer-only days of care. Together, the total of School-Age classroom is 1 classroom.

STAFFING STRUCTURE

The cost estimation study produced estimates using two sets of staffing structure assumptions. The study includes a "typical" staffing structure that aligns with licensing and regulatory standards (and with the staffing pattern reflected in data collected from C3 applications about the number of staff programs employ)[17] while the "increased" staffing structure reflects best practices as detailed by listening session members and EEC staff. In some cases, the "increased" staffing structure includes staffing patterns with higher credentials than is required by licensing, and the model accounts for the need to pay higher salaries for staff with these higher credentials. See tables 16 and 17.

Table 16: Center-Based Staffing Structure Assumptions

Typical Staffing	Increased Staffing
Based on licensing regulations and data from C3 applications	Based on best practices as articulated in listening sessions

Table 17: Center-Based Staffing Assumptions

Category	Center-Based Assumed FTE	Typical Staffing	Increased Staffing	Unit
Site Leadership	Experienced Director/ Educational Leader	0.00	1.00	Per Center
	Program Director/Administrator	1.00	0.00	Per Center
	Additional Professional Staff (out of classroom)	0.00	2.00	Per Center (if enrollment >100)
	Site Coordinator	1.00	1.00	Per Center IF no B-5 classrooms
Classroom Staff: Infant & Toddler	Expert Teacher/Teacher Mentor	0.00	1.00	Per Classroom
	Lead Teacher	1.00	0.00	Per Classroom
	Teacher	1.00	1.00	Per Classroom
	Teacher Assistant	0.75	1.25	Per Classroom
Classroom Staff: Preschool	Expert Teacher/Teacher Mentor	0.00	1.00	Per Classroom
	Lead Teacher	1.00	0.00	Per Classroom
	Teacher	1.00	1.00	Per Classroom
	Teacher Assistant	0.50	1.00	Per Classroom
Classroom Staff: School-Age (Before & After School)	Group Leader	1.00	1.00	Per Classroom
	Assistant Group Leader	0.60	1.50	Per Classroom
Classroom Staff: School-Age (Full Day)	Group Leader	1.50	2.00	Per Classroom
	Assistant Group Leader	1.00	1.50	Per Classroom

17 To understand the distribution of staff across program size, CELFE analyzed the "Number of FTE" distributed across the "Number of Classrooms" reported by providers in the September C3 data.

Category	Center-Based Assumed FTE	Typical Staffing	Increased Staffing	Unit
Support Staff	Lead Floater Teacher/Sub	0.00	0.00	Per Classroom
	Assistant Floater Teacher/Sub	0.00	0.00	Per Classroom
Family Engagement	Family Engagement Specialist	0.00	1.00	Per Center
Center Support Staff	Food Aide	1.00	1.00	Per Center (if Enrollment>100)
	Administrative Assistant	1.00	1.00	Per Center (if Enrollment>100)
	Maintenance Workers	0.00	0.20	Per Classroom

Note: The per-unit column helps the cost model user understand how CELFE calculated the FTE. For example, if the per-unit value for a given FTE indicated "Per Classroom" the calculation in the model is FTE* Number of Classrooms (for the associated age group). The per-unit value that is contingent on an enrollment minimum uses an IF formula in the cost model.

LICENSED CAPACITY

Table 18 reflects maximum group sizes per Massachusetts' licensing regulations.

Table 18: Center-Based Licensed Per-Classroom Capacity Assumptions

Age Group	All models
Infant	7
Toddler	9
Preschool	20
School-Age (Before & After)	26
School-Age (Full-Day)	26

ENROLLMENT EFFICIENCY

Child care programs do not typically operate at 100% full enrollment, therefore, the model includes a factor to reflect this reality. Table 19 outlines the percentage of licensed capacity assumed for each age group in the cost estimation study. The PCQC default value for enrollment is 85%.[18] As detailed in a national report, achieving 100 percent enrollment efficiency can be unattainable even for a provider with high demand supported by extensive waiting lists; such a provider might achieve 95 percent enrollment efficiency. The industry standard is to keep enrollment at or above 85 percent of the desired capacity.[19]

In the current cost study, enrollment efficiency was set at 85% for all age groups and models.

18 Child Care Technical Assistance Network. "Provider Cost of Quality Calculator." Accessed July 5, 2023. https://childcareta.acf.hhs.gov/pcqc.

19 "Early Care and Education Program Characteristics: Effects on Expenses and Revenues." National Center on Early Childhood Quality Assurance, November 2014. https://childcareta.acf.hhs.gov/sites/default/files/new-occ/resource/files/pcqc_ece_characteristics_final.pdf.

DAYS OF CARE

Table 19 outlines the number of days used in the model in which CELFE divides the number of days by annual costs to result in daily cost estimates in the cost estimation study. This corresponds with the days per year that EEC typically pays for subsidized care for a child enrolled full-time in a 5-day per week program.

Table 19: Center-Based Days of Care Assumptions

Category	All Operating Scenarios
Full Year- Number of Days Care is Provided Annually	261
Summer Only - Number of Days Care is Provided Annually	81
School Year - Number of Days Care is Provided Annually	180

Expenses

BENEFITS/PAYROLL TAXES

Table 20 shows the benefit costs and payroll tax assumptions used in the cost estimation model.

Table 20: Center-Based Benefits/Payroll Assumption

Category	Typical Staffing	Increased Staffing	Unit	Source
FICA (Social Security & Medicare)	7.65%	7.65%	Per Salary Amt Annually	Federal requirement
Health Insurance	$4,450	$5,450	Per FTE Annually	See below[1]
Worker's Compensation	0.64%	0.64%	Per Salary Amt	Per MACI class code 8868[2]
Retirement	0%	5%	Per Salary Amt	Set slightly higher than national average of employer contribution[3]
State Unemployment Tax	$217.50	$217.50	Per FTE Annually	1.45% for first $15,000 wages
Federal Unemployment Tax	$420.00	$420.00	Per FTE Annually	6% of first $7,000 wages

[1] The cost of health insurance is estimated based on data from the Center for Health Information and Analysis 2021 Massachusetts Employer Survey.[20] Estimates are derived from average employer-paid premium per covered employee for small firms ($10,207) multiplied by average eligibility rate (68%) and take-up rate (64%) for small firms—result: $4,442; rounded to $4,450. An additional $1,000 per employee was added to the increased staffing to account for enhanced benefits such as dental, vision, or other flexible benefits.

[2] Cost of Workers' Compensation is from The Workers' Compensation and Inspection Bureau of Massachusetts based on classification as code 8868 (Day Nurseries) effective 7/1/2022.[21]

[3] The national average is 4.4% for employer contribution.[22]

20 Massachusetts Employer Survey. (n.d.). Retrieved July 13, 2023, from https://www.chiamass.gov/massachusetts-employer-survey/

21 WCRIBMA MACI Search. (n.d.). Retrieved July 13, 2023, from https://www.wcribma.org/mass/ToolsAndServices/MACI/Results.aspx?class=8868

22 How America Saves. (n.d.). Retrieved July 13, 2023, from https://institutional.vanguard.com/how-america-saves/overview.html

Table 21: Center-Based Non-Personnel Assumptions

Category	Typical Staffing	Increased Staffing	Unit	Source
Food (include food and kitchen supplies)	$1,500	$1,700	Per child annually	PCQC adjusted[1]
Office supplies & equipment	$111	$111	Per child annually	PCQC
Education supplies & equipment	$341	$415	Per child annually	PCQC[2]
Child Assessment + Screening	$0	$37	Per child annually	PCQC
Advertising	$22	$31	Per child annually	PCQC
Rent/Lease	$16.60	$16.60	Per sq ft annually	See "Occupancy Costs"
Utilities (gas, electric)	$3.70	$3.70	Per sq ft annually	PCQC
Maintenance/ Repair/Cleaning	$4.10	$4.10	Per sq ft annually	PCQC
Fees/Permits/Licenses/ Accreditation/Taxes	$626	$1,251	Per center annually	PCQC[3]
Background Checks	$35	$35	Per Staff * 30%	PCQC
Staff training & education	$250	$550	Per staff annually	2020 cost model
Consultation— mental health, nutrition, health, etc.	$500	$500	Per Classroom annually	2020 cost model
IT support	$0	$1,000	Per Classroom annually	2020 cost model
Legal/Audit/Accounting/ Other Prof support	$9,000	$10,000	Per center annually	2020 cost model[4]
Insurance/Liability	$282	$282	Per child annually	PCQC[5]
Telephone & Internet	$5,000	$5,000	Per center annually	PCQC
Payroll Service	$225	$225	Per staff annually	CELFE estimate[6]
Software	$45	$45	Per child annually	CELFE estimate[7]

[1] This value CELFE derived from the PCQC value of $1,444 adjusted upward based on listening session feedback. CELFE included an additional $200 per child for higher staffing model.

[2] This value CELFE derived from the PCQC values for Classroom Supplies, Education Supplies, Medical Supplies and Curriculum, additional funds assumed for program with more intensive staffing.

[3] This value CELFE derived from the PCQC estimate for Licensing Fees and Permits and Professional Memberships; Accreditation Fees added for intensive staffing model.

[4] This value CELFE derived from the PCQC value for Legal/Accounting/Professional Services at $4,533 per Center. CELFE used the higher number generated through listening session input for the 2020 model as it likely better reflects costs in Massachusetts.

[5] CELFE calculated this per-child combination of building insurance and liability insurance from PCQC estimates.

[6] This expense is not included in the PCQC but is noted in the "Stakeholder Engagement" section of the report. CELFE calculated an estimate by reviewing several payroll services' pricing advertised online.

[7] This expense is not included in the PCQC but is noted in the "Stakeholder Engagement" section of the report. CELFE calculated an estimate by reviewing several child care management program services' pricing advertised online

OCCUPANCY COSTS

The C3 application data and listening sessions included a very wide range of costs for rent/mortgage for child care centers and the data were difficult to interpret. Therefore, CELFE used a national figure to estimate occupancy costs and applied a regionalization factor to account for the variation in costs across the Commonwealth. The regionalization factor was based on the MIT living wage indicator, with each region calculated as a percentage of the Western region amount. Table 22 shows the resulting regionalization factor that CELFE applied to the rent/mortgage factor. CELFE then calculated the total rent/mortgage as $16.60 (from PCQC) multiplied by regionalization factor multiplied by 1,280 sq ft multiplied by number of classrooms. The 1,280 sq ft per classroom estimate is from the PCQC and reflects the gross square footage of a facility, including hallways, offices, etc.

Table 22: Center-Based Regionalization Factor

Western	Central	Northeast	Metro	Southeast	Metro Boston
100%	107%	131%	134%	119%	141%

RESERVES

The model includes reserves of 5% of the total of personnel and non-personnel costs. Reserves are a key component of a viable business model—a program should not be designed to have zero net cash flow as it needs to be able to meet unexpected expenses, recoup capital costs, and weather unexpected revenue shortfalls. CELFE included a 5% reserve in cost models for other states.[23, 24]

23 Capito, Jeanna, Jessica Rodriguez-Duggan, and Simon Workman. 2021. Understanding the cost of quality child care in New Mexico: A cost estimation model to inform subsidy rate setting. Prenatal to Five Fiscal Strategies.

24 Capito, Jeanna, Katie Fallin Kenyon, and Simon Workman.2022. Understanding the true cost of child care in California: Building a cost model to inform policy change. Prenatal to Five Fiscal Strategies.

ASSUMPTIONS FOR FAMILY CHILD CARE COST ESTIMATION MODEL

Appendix D provides a detailed list of assumptions made in the Family Child Care cost estimation study, which assumed a full workday (10 hours), year-round program (261 days).

Model Structure

The below section provides a breakdown of the Family Child Care cost model's structure and details the rationale and data source for each assumption used in the cost estimation study.

ENROLLMENT CAPACITY/STAFFING PATTERN

To determine cost per child for Family Child Care, it is important to account for the variety of different types of FCC homes that exist and the licensing regulations that determine the number of children of different ages that can be served in each home.

For the cost estimation study, CELFE used estimates for the three most common enrollment capacity/staffing patterns and calculated a weighted average across these patterns based on C3 data that showed the relative prevalence of each enrollment capacity/staffing pattern. See Table 23.

Table 23: FCC Enrollment and Capacity/Staffing Pattern Assumptions

Scenario	Staffing Pattern	Enrollment Capacity Pattern	Weighting
1	Licensee/FCC Educator Plus .10 FTE Substitute	6 children ages 0-5	30%
2	Licensee/FCC Educator Plus .10 FTE Substitute	6 children ages 0-5 PLUS 2 School-Age children	40%
3	Licensee/FCC Educator Plus 1.0 FTE Assistant .20 FTE Substitute	8 children ages 0-5 PLUS 2 School-Age children	30%

ENROLLMENT EFFICIENCY

The cost model includes a factor to reflect the fact that Family Child Care programs typically are not operating at 100% full enrollment. The table below outlines the percentage of licensed capacity assumed for each age group in the cost estimation study. As further described in the Center-Based cost model, the PCQC default value for enrollment is 85%.[25] The current cost study used an enrollment efficiency of 85% for all age groups and staffing/enrollment scenarios.

25 Child Care Technical Assistance Network. "Provider Cost of Quality Calculator." Accessed July 5, 2023. https://childcareta.acf.hhs.gov/pcqc.

DAYS OF CARE

Table 24 outlines the number of days annual costs are divided by producing daily cost estimates in the cost estimation study. It corresponds with the days per year that EEC typically pays for subsidized care for a child enrolled full-time in a 5-day per week program.

Table 24: FCC Days of Care Assumptions

Category	Days
Full Year- Number of Days Care is Provided Annually	261
Summer Only - Number of Days Care is Provided Annually	81
School Year - Number of Days Care is Provided Annually	180

Expenses

BENEFITS/PAYROLL TAXES

Table 25 shows the model's benefits and payroll tax assumptions. CELFE made assumptions based off PCQC recommendations and/or in conjunction with EEC staff and feedback from listening sessions with providers.

Table 25: Family Child Care Benefits/Payroll Assumptions

Category	Typical Staffing	Unit	Source
FICA (Social Security & Medicare)	7.65%	Per Salary Amt	Federal requirement
Health Insurance	$1,064.00	Per FTE Annually	See below[1]
Worker's Compensation	0.64%	Per Salary Amt	Per MACI class code 8868[2]
Retirement	0%	Per Salary Amt	Not included
State Unemployment Tax	$215.50	Per FTE Annually	1.45% for first $15,000 wages
Federal Unemployment Tax	$420.00	Per FTE Annually	6% of first $7,000 wages

[1] Using the Health insurance premium cost on the Health Connector exchange, after subsidy, CELFE calculated this input using the Health Connector Get an Estimate Tool. The parameters of a family with an annual income of $40,000 with 1 adult and 1 child to be insured (Boston monthly premium=$84.39, Worcester monthly premium=$93, average=$88.10/mo*12=$1,064/year). The FCC provider would pay this amount directly, and the model assumes the provider would reimburse any full-time assistants for this same cost of coverage.

[2] Cost of Workers' Compensation is from The Workers' Compensation and Inspection Bureau of Massachusetts based on classification as code 8868 (Day Nurseries) effective 7/1/2022.[26]

26 WCRIBMA MACI Search. (n.d.). Retrieved July 13, 2023, from https://www.wcribma.org/mass/ToolsAndServices/MACI/Results.aspx?class=8868

NON-PERSONNEL

Table 26 outlines the model's non-personnel assumptions. CELFE made assumptions based on PCQC recommendations and/or in conjunction with EEC staff and feedback from listening sessions with providers.

Table 26: FCC Non-Personnel Assumptions

Category	Typical Staffing	Unit	Source
Food (include food and kitchen supplies)	$2,000	Per child annually	Calculated[1]
Legal/Audit/Accounting support	$700.20	Per site annually	2020 Listening sessions[2]
Equipment/Maintenance/Repair	$661.00	Per site annually	PCQC[3]
Supplies & Equipment	$1,070.00	Per site annually	PCQC[4]
Insurance/Liability	$700.00	Per site annually	PCQC
Staff training & education	$466.80	Per site annually	2020 Listening sessions[2]
Rent/Lease/Mortgage (including homeowners' insurance)	$29,323.92 and up	Per site annually	See below—varies by geography
Utilities (gas, electric) & cleaning	$5,981.00	Per site annually	See "Occupancy Costs for FCC"
Consultation services (e.g., mental health, health, educational support)	$500.00	Per site annually	Listening sessions input
Transportation for field trips	$306.00	Per site annually	PCQC
Miscellaneous (including cell phone)	$3,006.00	Per site annually	2020 Listening sessions[2]

[1] CELFE developed a weekly food list, to include daily breakfast, lunch, and two snacks, based on a sample USDA CACFP menu and calculated the cost of the food as listed using a national, low-budget retailer[27] for pick-up in the Boston Metro area in March 2023, then multiplied by 52 weeks in a year and rounded to $2,000 per child.

[2] CELFE gathered inputs from the 2020 listening sessions and then CELFE inflated those inputs by the CPI increase 2020-2023 (16.7% total).

[3] Includes the PCQC estimate for equipment depreciation and repairs.

[4] Includes PCQC estimates for Office supplies, Supplies, Assessment and Screening.

27 Walmart. "Walmart." Accessed July 5, 2023. https://walmart.com/.

OCCUPANCY COSTS FOR FAMILY CHILD CARE

CELFE reviewed the data on reported occupancy costs that were included in applications for the C3 grants but found that the data were highly variable and difficult to interpret. PCQC estimates were not used because Massachusetts (especially the Boston Metro area) has housing costs that are much higher than the national average. Thus, CELFE developed a novel approach to account for occupancy costs for Family Child Care homes. CELFE used the town-level Fair Market Rent (FMR) for a 3-bedroom apartment as reported by the federal Department of Housing and Urban Development (HUD)[28] to create a weighted average FMR for each of the six subsidy regions. The FMR was adjusted upward by 10% in recognition that apartments that can be used for child care may be harder to find and may have higher rent than the general market.

See Table 27 for the monthly rent amounts used in the model.

Table 27: Family Child Care Occupancy Costs Assumptions

Region	Monthly Rent in Model
1	$1,698
2	$2,165
3	$3,190
4	$3,336
5	$2,276
6	$3,528

CELFE estimated utility costs as $423 per month ($5,076 per year, much higher than the PCQC estimate of $2,200) based on a 2022 Massachusetts average reported on Rentcafe.com, plus PCQC-derived estimates of costs for repairs and cleaning ($294 and $611 per year respectively).

CELFE multiplied both the Rent/Mortgage factor and the Utilities cost factor in the model by a Time/Space Usage factor of 35%, corresponding to the way the Internal Revenue Service accounts for the business cost for use of the home. The factor of 35% reflects an assumption that 98% of the home is used for 60 hours per week (of the 168 possible hours of the week). According to Family Child Care budgeting expert Tom Copeland, 35% is a fairly typical Time/Space Usage reported by Family Child Care providers.[29]

28 HUD User. "Fair Market Rents (40th Percentile Rents)." Accessed July 5, 2023. https://www.huduser.gov/portal/datasets/fmr.html.

29 Copeland, T. (2023, February 15). How to calculate your time-space percentage before the year is over. Taking Care of Business. https://www.tomcopelandblog.com/blog/how-to-calculate-your-time-space-percentage-before-the-year-is-over

APPENDIX E.

CURRENT SALARIES—CENTER-BASED CARE

Appendix E includes a table of estimated current salaries according to data analysis CELFE conducted with September C3 data that was the basis for Model 1 in the Center-Based model. To date, the C3 database is the richest dataset that EEC has to examine salaries which in turn provided a rich opportunity for CELFE to use in the Center-Based model. CELFE did have to make certain data assumptions to extrapolate a more expansive current salary landscape. The "Notes" section of Table 28 shows the analysis CELFE performed to estimate each wage if that data point was not available.

Table 28 includes a complete list of current salaries and each associated calculation that was used as an input for the salaries in the Model 1 cost estimate.

Table 28: Center-Based Current Salaries Assumptions

Position	Western		Central		Northeast		Metro		Southeast		Metro Boston		Notes
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Data used from C3 application to estimate this wage
Category: Site Leadership													
Experienced Director/ Educational Leader	$25.50	$53,030	$27.00	$56,160	$29.78	$61,942	$33.00	$68,640	$28.00	$58,240	$35.00	$72,800	*Median of Center Director Highest Wage*
Program Director/ Administrator	$23.50	$48,880	$24.03	$49,972	$25.00	$52,000	$28.00	$58,240	$24.00	$49,920	$29.76	$61,901	*Median of Center Director Lowest Wage*
Additional Professional Staff (out of classroom)	$22.95	$47,727	$24.30	$50,544	$26.80	$55,748	$29.70	$61,776	$25.20	$52,416	$31.50	$65,520	*Set at 10% lower than Experienced Program Director*
Category: Classroom Staff (Infant, Toddler, Preschool)													
Expert Teacher/ Teacher Mentor	$22.00	$45,760	$23.00	$47,840	$25.00	$52,000	$28.00	$58,240	$23.49	$48,859	$28.84	$59,987	*75th percentile of Teacher Highest Wage*
Lead Teacher	$19.00	$39,520	$20.00	$41,600	$21.70	$45,136	$25.00	$52,000	$20.30	$42,224	$24.76	$51,501	*Median of Teacher Highest Wage*
Teacher	$16.00	$33,280	$16.25	$33,800	$17.00	$35,360	$18.00	$37,440	$16.00	$33,280	$18.92	$39,354	*Median of Teacher Lowest Wage*
Teacher Assistant	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	*Average between Median Highest and Lowest Wage for Assistant Teacher*

Position	Western		Central		Northeast		Metro		Southeast		Metro Boston		Notes
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Data used from C3 application to estimate this wage
Category: Classroom Staff: School-Age (Before and After & Full-Day)													
Site Coordinator	$19.00	$39,520	$21.00	$43,680	$20.05	$41,704	$24.13	$50,190	$19.00	$39,520	$22.75	$47,320	*Average of Median Highest and Lowest Wage for Site Coordinator*
Group Leader	$16.00	$33,280	$16.93	$35,214	$16.50	$34,320	$19.75	$41,080	$16.25	$33,800	$18.36	$38,189	*Average of Median Highest and Lowest Wage for Group Leader*
Assistant Group Leader	$15.00	$31,200	$16.00	$33,280	$16.00	$33,280	$17.75	$36,920	$16.00	$33,280	$17.00	$35,360	*Median of Group Leader Lowest Wage*
Category: Support Staff													
Lead Floater Teacher/Sub	$19.00	$39,520	$20.00	$41,600	$21.70	$45,136	$25.00	$52,000	$20.30	$42,224	$24.76	$51,501	*Same wage as Lead Teacher*
Assistant Floater Teacher/Sub	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	*Same wage as Teacher Assistant*
Category: Family Engagement													
Family Engagement Coordinator	$15.54	$32,315	$18.79	$39,074	$18.08	$37,616	$17.12	$35,603	$17.48	$36,367	$17.48	$36,361	*Based on BLS wages for "Child, Family, and School Social Worker" Entry Annual Wage*
Category: Center Support Staff													
Food Aide*	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	*Based on BLS wages for "Food Preparation Workers" Entry Annual Wage*
Administrative Assistant	$17.41	$36,220	$17.67	$36,754	$18.08	$37,606	$19.38	$40,310	$17.52	$36,431	$20.26	$42,132	*Based on BLS wages for "Secretaries and Administrative Assistants, Except Legal, Medical, and Executive" Entry Annual Wage*
Maintenance Worker*	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	*Based on BLS wages for "Building and Grounds Cleaning and Maintenance Occupations" Entry Annual Wage*

Italics = data analysis assumptions; Annual salaries are calculated off a presumed 2,080 hours.

*Adjusted to reflect increased MA minimum wage

APPENDIX F.

TARGET SALARIES—FAMILY CHILD CARE

Appendix F details CELFE's process to assess Family Child Care Target Salary inputs. The Family Child Care cost model requires establishing a target compensation for the Licensee/Family Child Care Educator, as well as a salary level for the assistants/substitutes. While C3 provided a rich dataset for Center-Based providers, compensation (or sole-proprietor profit) data for Family Child Care providers was not available. EEC was interested in modeling costs that included compensation for FCC Educators that was comparable to that of those working in centers. After gathering feedback through in Family Child Care listening sessions, and in collaboration with EEC staff, CELFE set the salary assumptions to match those of the Center-Based current salaries as detailed in Table 29 below.

Table 29: Family Child Care Target Salaries Assumptions

Position	Western		Central		Northeast		Metro		Southeast		Metro Boston		Notes
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Set to Match Center-Based
Licensee/ FCC Educator	N/A	$48,880	N/A	$49,972	N/A	$52,000	N/A	$58,240	N/A	$49,920	N/A	$61,901	Program Director/ Administrator
Assistant	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	Teacher Assistant
Substitute	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	Assistant Floater Teacher/Sub

Annual salaries are calculated as a presumed 2,080 hours.

APPENDIX G.

TARGET SALARIES AND COMPENSATION FOR COST MODELING—CENTER-BASED CARE

Appendix G details CELFE's process to create target salaries for an input to the Center-Based Model. In addition to updated cost assumptions, EEC also needed to understand the cost implications of increased compensation levels that are likely needed to stabilize and expand child care services in the Commonwealth. In order to estimate these costs, CELFE created a set of "target" salary assumptions to include in the model to support retention and recruitment. CELFE worked closely with EEC and external stakeholders to include target salaries that 1) honored a mixed-delivery system, 2) drew distinct geographic boundaries that aligned with the existing subsidy system, 3) aimed to reach parity with K-12 teachers in each respective geographic boundary, 4) created livable wage floors, and 5) addressed years of service. In working through each of these core tenants of the target salaries, CELFE conducted extensive data analysis to triangulate figures to benchmark the target salaries and conducted stakeholder engagement to validate the assumptions with a diverse set of providers to incorporate provider feedback and honor providers' lived experience.

Methodology

CELFE used the following datasets to better approximate assumptions made for target salaries:

Step 1. Identify Base Salaries Using the MIT Living Wage Calculator.[30] CELFE used county-level data from the MIT Living Wage Calculator as the anchor for the entry-level of the target salaries (using 1 adult, 0 children as the defined family structure). These figures are updated annually; therefore, CELFE recommends that the target salaries be updated annually.

- Note on the Unit of Geography: The smallest unit of geography that the dataset offers is at the county level. While CELFE understands that there are economic differences even within counties or reimbursement rate regions, CELFE and EEC agreed that the MIT Living Wage data was the best tool to use to understand living wage benchmarks for the purpose of this research.
- Note on Family Structure: There are not readily available data to understand the family composition on average for the ECE workforce. Therefore the family structure included as a standard baseline as an input to the model is based on discussion with EEC. CELFE has made similar decision points on family structure when conducting cost estimation work in other states. In other states, cost modelers have made the same assumption on family structure when using the same economic measurement tool.[31]

30 Glasmeier, Amy K. Living Wage Calculator. 2023. Massachusetts Institute of Technology. https://livingwage.mit.edu

31 Capito, Jenna, Katie Fallin Kenyon, and Simon Workman, "Understanding the True Cost of Child Care in California: Building a cost model to inform policy change," Prenatal to Five Fiscal Strategies, 2022.

Step 2. Identify Parity Salaries for Teachers Using K-12 District Contracts. CELFE conducted an analysis to find a weighted average (based on district enrollment) for a K-12 teacher (BA+0). This methodology is consistent with other state and national policy and advocacy benchmarks and is consistent with the highest quality tier that the national cost calculator – the PCQC - recommends.[32]

CELFE contracted with Afton Partners[33] to conduct an initial data collection on current K-12 teacher salaries in late 2022. Afton pulled data from publicly available information such as district-level teacher union contracts for a sample of school districts in each of the six subsidy regions. CELFE then updated this data collection in April 2023 using the most up-to-date data (SY22-23 salary schedules when available; otherwise, most recent year available). CELFE calculated a weighted average of the starting salary for a bachelor's degree-level teacher with zero years of experience, using SY22-23 district enrollment[34] as the weighting factor.

- Given that the ECE workforce typically works on a 12-month schedule versus the typical K-12, 10-month schedule, the weighted average was multiplied by 120% to reflect the additional months of work in a full-year child care program.
- For district enrollment, CELFE used the Massachusetts Department of Elementary and Secondary Education Profile database.[35]

Step 3. Create Steps Between the Two Benchmarks – Living Wage and K-12 Salaries. The benchmarks created a floor (Living Wage) and a top (K-12 parity) for the salary scales used in the cost estimation study. CELFE then created intermediate steps in the salary scales for each of the positions that needed to be included. See below for an example:

- In the Western region, the anchored living wage is $19.00/hour, and the average K-12 teacher salary for a teacher with a bachelor's degree and zero years of experience is $28.75/hour resulting in a $9.75 difference. Given there are 4 levels of classroom staff position/qualifications included in the model, CELFE divided $9.75 by 3 to understand the necessary step between - resulting in a $3.25 pay differential between steps.

Between benchmarks: 28.75 - 19 = 9.75

Pay differential: 9.75 / 3 = 3.25

- CELFE used the same pay differential across each step in the position/qualification "ladder."

32 Workman, Simon, and Jeanna Capito. "Using the Provider Cost of Quality Calculator to Estimate the Cost of Quality." National Center on Early Childhood Quality Assurance, December 2022.

33 Afton Partners. "Afton Partners." Accessed July 5, 2023. https://aftonpartners.com/.

34 Massachusetts Department of Elementary and Secondary Education. "School and District Profiles Search." Accessed July 5, 2023. https://profiles.doe.mass.edu/search/search.aspx?leftNavId=11238#C.

35 Massachusetts Department of Elementary and Secondary Education. "School and District Profiles Search." Accessed July 5, 2023. https://profiles.doe.mass.edu/search/search.aspx?leftNavId=11238#C.

Step 4. Use Proxy Salaries for the Additional Positions Using the Massachusetts Department of Economic Research.[36] For "Family Engagement" and "Center Support Staff" CELFE used the average of entry annual salaries for related positions found in the larger Massachusetts labor market using the Bureau of Labor Statistics' (BLS) Occupational Employment and Wages dataset from December 2022. CELFE selected these proxy positions based on similar educational requirements and job titles and descriptions.

- *Note:* The smallest unit of geographic analysis for the aforementioned dataset was the "Workforce Development Area" so the geographic categorizations used are not completely analogous to the subsidy regions. CELFE translated the units of geography as best as possible.

See Table 30.

Table 30: BLS Proxy Positions

Proxy Position in BLS Data	Associated Position for Target Salaries	Justification
Building and Grounds Cleaning and Maintenance Occupations SOC Code: 37-0000	Maintenance Worker	The "Building and Grounds Cleaning and Maintenance Occupations" lists "Elementary and Secondary Schools" as the third highest level of employment for this occupation type. A school-based setting is a close analogous to working in/for a child care center therefore proving as a just and rationale proxy.[1]
Food Preparation Workers SOC Code: 35-2021	Food Aide	The "Food Preparation Workers" category lists the typical work environment to be a "school." This work environment is analogous to working in a child care center therefore providing as a just and rationale proxy.[2]
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive SOC Code: 43-6014	Administrative Assistant	The "Secretaries and Administrative Assistants, Except Legal, Medical, and Executive" lists "Elementary and Secondary Schools" as the first highest level of employment for this occupation type. A school-based setting is a close analogous to working in/for a child care center therefore proving as a just and rationale proxy.[3]
Child, Family, and School Social Workers SOC Code: 21-1021	Family Engagement Specialist	The most typical educational requirement for a "Child, Family, and School Social Workers" for nonclinical positions is a bachelor's degree. While a bachelor's degree may not be a requirement for most family engagement specialists working in Center-Based child care facilities, the job duties are similar to that of a family engagement specialist and therefore is a just rationale for serving as a proxy position.[4]

[1] U.S. Bureau of Labor Statistics Occupational Employment and Wages, May 2022. "Building and Grounds Cleaning and Maintenance Occupations." Accessed July 5, 2023. https://www.bls.gov/oes/current/oes370000.htm.

[2] U.S. Bureau of Labor Statistics Occupational Employment and Wages, May 2022. "Food Preparation Workers." Accessed July 5, 2023. https://www.bls.gov/oes/current/oes352021.htm.

[3] U.S. Bureau of Labor Statistics Occupational Employment and Wages, May 2022. "Secretaries and Administrative Assistants, Except Legal, Medical, and Executive." Accessed July 5, 2023. https://www.bls.gov/oes/current/oes436014.htm

[4] U.S. Bureau of Labor Statistics Occupational Employment and Wages, May 2022. "Social Workers." Accessed July 5, 2023. https://www.bls.gov/ooh/community-and-social-service/social-workers.htm#tab-1

36 Massachusetts Department of Economic Research. "Occupational Employment and Wages All Industry Data." Accessed July 5, 2023. https://www.mass.gov/orgs/labor-market-information.

Table 31 details the target salaries by position, title, and subsidy region that CELFE in conjunction with EEC developed for this research following the processes described above. As described above, CELFE used various external datasets to triangulate the appropriate data point for some benchmarks. Additionally, CELFE vetted the proposed target salaries as part of the stakeholder engagement process as described in the main section of the report.

These target salaries are intended as the *minimum* salaries for each position; however, the cost model requires use of an *average* salary for each position. Therefore, the target salaries were increased by 5% (based on an assumption that staff with greater years of experience may earn as much as 10% or more higher than the minimum target) and these minimum-plus-5% numbers were used in the calculations for Models 2 and 3.

Table 31: Center-Based Target Starting Salaries Assumptions
(Note: Cost model uses these starting salary levels plus 5% to account for staff members' range of experience)

Position	Western		Central		Northeast		Metro		Southeast		Metro Boston		Notes
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	
Category: Site Leadership													
Experienced Director/ Educational Leader*	$36.00	$74,880	$38.50	$80,080	$35.00	$72,800	$38.00	$79,040	$39.00	$81,120	$44.50	$92,560	
Program Director/ Administrator	$33.00	$68,640	$35.25	$73,320	$33.00	$68,640	$36.50	$75,920	$36.00	$74,880	$41.25	$85,800	
Site Coordinator*	$30.00	$62,400	$32.00	$66,560	$31.00	$64,480	$34.00	$70,720	$33.00	$68,640	$38.00	$79,040	
Category: Classroom Staff													
Expert Teacher/ Teacher Mentor*	$27.00	$56,160	$28.75	$59,800	$29.00	$60,320	$31.50	$65,520	$30.00	$62,400	$34.75	$72,280	Anchored to K-12 Teacher Salary (BA + 0) / (12-month schedule)
Lead Teacher*	$24.00	$49,920	$25.50	$53,040	$27.00	$56,160	$28.50	$59,280	$27.00	$56,160	$31.50	$65,520	
Teacher / Group Leader*	$21.00	$43,680	$22.25	$46,280	$25.00	$52,000	$26.00	$54,080	$24.00	$49,920	$28.25	$58,760	
Teacher Assistant / Assistant Group Leader*	$18.00	$37,440	$19.00	$39,520	$23.00	$47,840	$23.50	$48,880	$21.00	$43,680	$25.00	$52,000	Anchored to MIT Living Wage

Position	Western		Central		Northeast		Metro		Southeast		Metro Boston		Notes
	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	Hourly	Annual	
Category: Support Staff													
Lead Floater Teacher/Sub*	$24.00	$49,920	$25.50	$53,040	$27.00	$56,160	$28.50	$59,280	$27.00	$56,160	$31.50	$65,520	(1 adult, 0 children)
Assistant Floater Teacher/Sub*	$18.00	$37,440	$19.00	$39,520	$23.00	$47,840	$23.50	$48,880	$21.00	$43,680	$25.00	$52,000	Tied to Lead Teacher Wage
Category: Family Engagement													
Family Engagement Coordinator**	$15.54	$32,315	$18.79	$39,074	$18.08	$37,616	$17.12	$35,603	$17.48	$36,367	$17.48	$36,361	Tied to Teacher Assistant Wage
Category: Center Support Staff													
Food Aide**	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	Based on proxy position - Child, Family, and School Social Workers
Administrative Assistant**	$17.41	$36,220	$17.67	$36,754	$18.08	$37,606	$19.38	$40,310	$17.52	$36,431	$20.26	$42,132	Based on proxy position - Food Preparation Workers
Maintenance Workers**	$15.41	$32,053	$15.50	$32,240	$16.00	$33,280	$17.00	$35,360	$15.50	$32,240	$16.88	$35,110	Based on proxy position - Secretaries and Administrative Assistants, Except Legal, Medical, and Executive

*= Figure derived from C3 September 2022 Data; **= Figure derived from proxy wage(s) for similar positions based on data derived from MA Department of Economic Research

Annual salaries are calculated as a presumed 2,080 hours.

APPENDIX H.

C3 DATA USED IN COST RESEARCH

Appendix H details the variables used as the basis to the cost study analysis. EEC sent CELFE the following data file "2022-10-19+C3+Application+Data."

Table 32: Application Data Relevant Variables

Relevant Variables- Application Data	
Licensed Capacity	Other Benefits Offered
Staffing Level Adjustment	Do you provide additional stipend?
Number of FTE	Stipend Details
Number of Assistant Hours	Total Amount of Stipends
Percent Children Receiving Subsidies	Number of Staff getting stipend
CEO Compensation	Lowest Bonus Paid
Enrollment: Younger than 1	Highest Bonus Paid
Enrollment: Between 1 and 2	Categories Supported Using Funds
Enrollment: Between 2 and 3	Assistant Teacher Lowest Wage
Enrollment: Between 3 and 4	Assistant Teacher Highest Wage
Enrollment: Between 4 and 5	Lead Teacher Lowest Wage
Enrollment: Between 5 and 6	Lead Teacher Highest Wage
Enrollment: Between 6 and 10	Center Director Lowest Wage
Ages Served: Older than 10	Center Director Highest Wage
Total Children Enrollment	Assistant Leader Lowest Wage
Number of Infant Classrooms	Assistant Leader Highest Wage
Number of Toddler Classrooms	Group Leader Lowest Wage
Number of Preschool Classrooms	Group Leader Highest Wage
Number of School Age Classrooms	Site Coordinator Lowest Wage
Total Number of Classrooms	Site Coordinator Highest Wage
Number of Assistant Teachers	Program Admin Lowest Wage
Number of Lead Teachers	Program Admin Highest Wage
Number of Center Directors	Assistants working (y/n)
Number of Assistant Leaders	Number of Hours Assistant Works
Number of Group Leaders	Assistant Lowest Hourly Wage
Number of Site Coordinators	Assistant Highest Hourly Wage
Number of Program Admin	Other Staff working w/ children
Benefits Offered	

PREPARED FOR THE MASSACHUSETTS DEPARTMENT OF EARLY EDUCATION AND CARE

celfe.org