Scope, Structure, and Data Collection Methods

Research Brief #2

### Allison Comport, Predoctoral Researcher

Overview

This Research Brief is the second in a four-part series on child care cost modeling. Cost modeling refers to an approach to estimating the typical cost of providing early childhood services at the program and/or system level. As attention increases to the role and value of cost models for policymakers, there is an opportunity to define the essential components for analysis, or variables within models. This Research Brief will define the essential phases of conducting a cost model and outline the decisions cost modelers must make regarding scope, structure, and methods.

Phases of Cost Modeling

There are four distinct phases to building a cost model, outlined in Figure 1. This Research Brief will focus on the first two phases of this sequence, Phase 1: Scope and Structure, and Phase 2: Data Collection and Analysis. Research Brief 3 will explore Phase 3: Final Decisions on Parameters, and Phase 4: Reporting.

Figure 1: Cost Modeling Phases

The four phases to developing and producing a cost model.
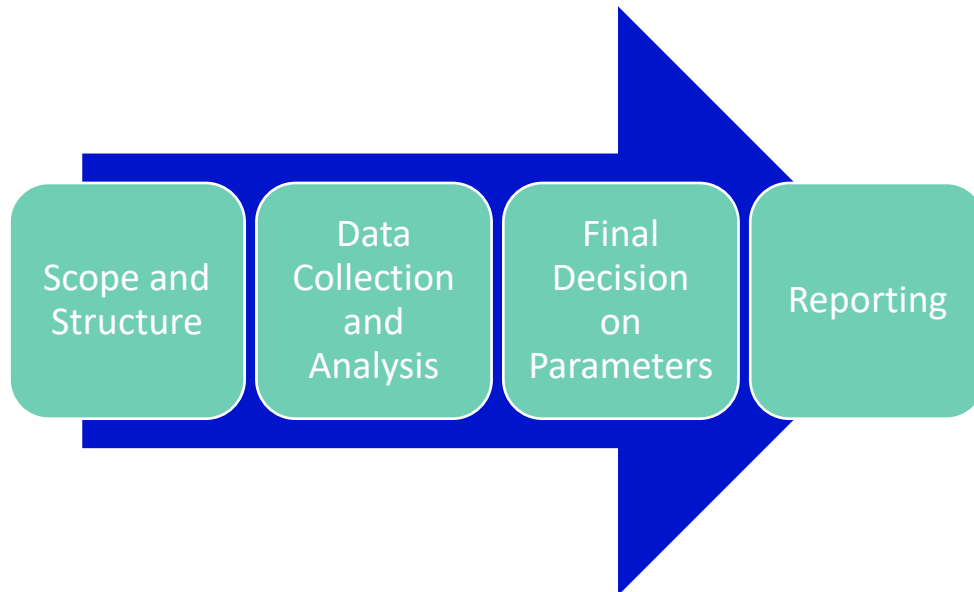
Phase 1: Initial Decisions about Scope and Structure

The first phase of developing a cost model focuses on determining the overarching goals for commissioning the model and the corresponding scope and structure of the project. Of the models reviewed, seven had goals to further understand the true cost of care, nine had goals related to the cost of quality, three costed the full system of care including the current and aspirational costs, nine had the true cost of quality Pre-K, and two calculated the cost to appropriately compensate the workforce.

Next, there are decisions regarding: 1) the geographic approach and how many geographic areas will be included in the analysis, 2) the ages of the children that will be included and how they will be grouped, 3) the types of care that will be modeled, and 4) the levels of quality that will be included in the cost model. These decision points are aligned with the recent Administration for Children and Families *Guidance on Cost-Based Alternative Methodologies and Evaluation Criteria for Establishing Subsidy Payment Rates*.

Geographic Approach: A modeler must make methodological decisions on the geographic approach of the model, including how costs will be determined based on geographic locations. Some models are statewide, establishing a single rate region, whereas others break down rate regions at the city, region, county levels, or other geographies. Of the models analyzed, accounting for cost variances in urban, rural, and suburban areas was the most commonly used regionalization approach (8 models). The second most common approach was using a single statewide model (8 models), followed by using already established subsidy reimbursement rate regions (6 models), and lastly, a county-level approach to determining costs (4 models).

Revenue: Decisions must be made about what types of revenue to consider within the model. From our review of models, calculations included revenue from private pay, subsidy payments, parent co-pays, Child and Adult Care Food Program (CACFP), Head Start, and State Pre-K contracts. Some models deducted non-payments for assumptions related to tuition or copayment delinquency. Several of the models reviewed included no information related to revenue assumptions.

Rate Regions: Rate regions have significant implications for the calculation of revenue and costs. Across models, there were between 1 and 24 rate regions, with a median of 3 regions. When details were provided regarding the rationale for the number of rate regions, it was most often aligned with existing licensing, subsidy, and/or governance regions. Of all the models analyzed, there was only one explicit example of a model specifically suggesting revisions to the number of rate regions within a state in instances where costs were equivalent, and simplification could be made.

Children's Ages: The goals of the cost model drive decisions regarding the ages of the children for which costs will be estimated. The models studied address costs for children birth through five, birth through 13, or a focused group of children such as those in Pre-K. Not surprisingly, given that child care subsidy programs are the predominant motivating factor in commissioning models, most have been conducted to include children from birth through school age as Table 1 displays below.

Table 1: The Age of Children Encompassed by Models

The costs for children across the age span in the 25 models reviewed.

Children's Ages	Number of Models
Infants and Toddlers Only	0
Preschoolers/Pre-K Only	4
Birth to Five	4
Birth through School Age	17

Types of Care Being Modeled:

Modelers must choose whether they will include cost estimates for the full array of providers within the mixed delivery system. For example, will center-based, school-age, public school, and Head Start providers be included in cost estimates and differentiated scenarios? Models analyzed included the following provider categories within their analysis:

Table 2: Settings Included in Model Analysis

25 models reviewed, included these providers as part of their assumptions and modeled scenarios.

Provider Type	# of Models
Centers	21
Family Child Care	19
Head Start	8
Public Schools	6
Family Friend and Neighbor Care	1

Levels of Quality: Modelers make decisions regarding costing the current baseline levels of quality designated by child care licensing, called "cost of care," in addition to aspirational levels of quality, or "cost of quality." If the cost of quality is calculated, modelers must decide the levels to include for analysis. For example, some models chose to model levels 1, 3, and 5 on a 5-star system. Others chose to cost all levels of quality. To model these costs, estimates are developed for what it would take to meet these requirements across a wide array of variables, including ratios, curriculum, facilities, schedules, and more. In our review of models, 21 models used both licensing and QRIS levels in cost scenarios, two models stated using only licensing data, and the remaining two models used licensing and state Pre-K quality requirements.

Phase 2: Data Collection and Analysis

Another core decision point for beginning any cost model concerns the methodological approach for data collection and analysis. The approach is informed by the goals of the cost model, associated research questions, scope of analysis, and any community or state requirements.

Cost modelers can decide whether to use a publicly available cost model template, develop their own, or take a hybrid approach. Of the reports analyzed, the most commonly used published tool was the Provider Cost of Quality Calculator (PCQC), used in 12 models, with another six using a fully customized approach.

Table 3: Public Tools Utilized

Table 3 represents the approach taken to developing the models (n=25).

Approaches	# of Models Utilizing This Approach
Provider Cost of Quality Calculator (PCQC)	14
Fully customized Excel-based approach	6
National Academy of Sciences, Engineering and Medicine (NASEM) "Transforming the Financing" report methodology	2
Center on Enhancing Early Learning Outcomes (CEELO) Cost of Preschool Quality	2
Organization for Economic Co-Operation and Development (OECD) Methodology	1

Data Collection

Once the goals, scope, and format have been established, the methods for data collection need to be determined. In three instances, state administrative data from a workforce registry or statewide integrated data system was also used. Almost all models incorporated analysis of nationally available data sources, such as the Bureau of Labor Statistics (6), U.S. Census Bureau (2), MIT Living Wage Data (6), and others.

Table 4: Data Collection Methodology

Research methods utilized in reviewed cost models.

Research Method	# of Cities/States Using This Method
Survey	16
Focus Group	9
Key Informant Interviews	9
Publicly Available Data Sets	5
State Administrative Data	5

Modelers shared that they use qualitative data from interviews and focus groups to inform, substantiate, and provide additional context to the quantitative findings they gather from administrative data sets, surveys, and publicly available data sets.

According to our survey of cost modelers, state administrative data systems were the preferred source of information to inform models because they reduce the burden of data collection on already fatigued providers and typically include data

from nearly the full universe of providers. When administrative data were not available or were not reliable, however, other sources of state data were used.

Table 5: Administrative Data Sources

Cited sources of publicly available or administrative data

Data Source	Number of Models Using This Source
Administrative Data	12
Bureau of Labor Statistics	12
MIT Cost of Living Calculator	10
Other sources, not identified	5
American Community Survey Data (ACS)	2
Department of Housing and Urban Development (HUD)	1
Zillow	1
Self-Sufficiency Standard Data	1
Pulse DataAI	1
Occupational Safety and Health Administration (OSHA)	1
LoopNet	1
KidsCount	1
Early Childhood Learning and Knowledge Center (ECKLC)	1

Lessons and Recommendations

Findings from this analysis demonstrated that most cost modeling methodologies most often utilized a mixed-methods approach to data collection, for example, using surveys, focus groups, informant interviews, administrative data, and archival data such as U.S. Census data and Zillow housing facts. Most modelers are also utilizing the Provider Cost of Quality (PCQC) as a tool to support cost estimation. Informed by these findings, I recommend:

1. There are opportunities for modelers to engage in discussions with researchers around the use of publicly available tools available for modeling. Many publicly available tools were not used by any of the modelers participating in this research. For example, these include: the Human Services Policy Center Cost Estimation Tool, the Center for Benefit-Cost Studies in Education (CBCSE) Cost Tool Kit, The Standardized Early Childhood Development Costing Tool (SECT), and the Center on Enhancing Early Learning Outcomes (CEE-LO), Cost of Preschool Quality Tool, to name a few. Reasons for not using these tools centered on the complexity of the models and their lack of user-friendliness. I suggest exploring this as a topic at the quarterly Cost Modeling Technical Network meetings. The rationale for these decisions can inform ongoing improvements to publicly available tools.
2. This analysis brought to light that there are several sources of publicly available data which are not commonly used across cost modelers. For example, Head Start data, Pulse DataAI, and Self Sufficiency data. Understanding the varied tools used in modeling can provide an opportunity for cost modelers to discuss further how these are supportive in their work and inform the development of assumptions for the basis of modeling.
3. States and communities should continue to build their capacity to collect and analyze reliable administrative data. The use of administrative data can reduce data collection fatigue from participants and allow community members to focus on informing research designs, providing feedback on the draft model to test assumptions, and informing

potential future Strategic Public Finance[1] efforts. Enhanced administrative data will continue to enhance the process of data collection and analysis, and ease updates made to the model in future years. An example of this effort can be seen with the Chicago Early Childhood Integrated Data System (CECIDS).

This is the second of four Research Briefs that summarize a review of 25 states' cost modeling approaches.

Overview Brief – An Analysis of Cost Models

Research Brief #1 – How Greater Transparency Can Further Support Equity

Research Brief #2 – Scope, Structure, and Data Collection Methods

Research Brief #3 – Parameters and Details Provided Within Reports

Research Brief #4 – The Impact of Cost Models

This research was conducted by Allison Comport while serving as a visiting Predoctoral Fellow with CELFE in 2024. To learn more about this Research Brief series and to view the other briefs in this series, please visit celfe.org.

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[1] Children's Funding Project (n.d.) Strategic Public Financing. Strategic Public Financing - Children's Funding Project