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Estimating the Costs of Implementing Workforce Development Strategies in Child Care and Early Education: A Methodological Guide

Building and Sustaining the Child Care and Early Education Workforce

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This brief highlights design considerations for cost studies of child care and early education (CCEE) workforce development strategies. Cost studies can offer valuable information to CCEE practitioners, decision-makers, and researchers to help them understand how resources have been allocated in existing strategies. Cost studies can also be helpful in deciding if it is economically feasible to implement a strategy and to determine the resources that may be necessary to replicate or scale successful strategies. The Building and Sustaining the Child Care and Early Education Workforce (BASE) environmental scan and literature review revealed a dearth of information on the costs of implementing CCEE workforce development strategies, particularly studies that systematically compare the costs of different strategies.[1] (See Box 1 for more information on the BASE project.) Information on costs is often highly valued by CCEE administrators as they seek to make impactful workforce decisions, making this critical gap an important area for further inquiry.

The **Building and Sustaining the Child Care and Early Education Workforce (BASE)** project aims to increase knowledge and understanding in child care and early education (CCEE) by documenting factors that drive workforce turnover and by building evidence on current initiatives to recruit, advance, and retain a stable and qualified CCEE workforce.

[1] Bernardi, Hsueh, Roach, and Rau (2023); Maier and Roach (2023).

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Box 1. The Building and Sustaining the Child Care and Early Education Workforce Project

High-quality, stable child care and early education (CCEE) can have lasting, positive impacts on children.* However, there are ongoing challenges in recruiting, supporting, and retaining a qualified and stable CCEE workforce that provides high-quality care.†

While several states and localities are taking steps to build and stabilize their CCEE workforce, important questions remain about how to best strengthen the workforce to meet the needs of children and families. Additionally, there is limited evidence about the effectiveness of these strategies, their implementation, or their cost.

The *Building and Sustaining the Child Care and Early Education Workforce* (BASE) project aims to increase knowledge and understanding about CCEE by documenting factors that drive turnover in the field and by building evidence on current initiatives to recruit, advance, and retain a stable and qualified CCEE workforce. As part of the BASE project, the study team completed a literature review and an environmental scan designed to identify and document existing knowledge about the CCEE workforce and strategies to strengthen it. The team also conduct-ed a scan of existing data that could be used to study workforce dynamics and conducted analyses using several of these data sources to illustrate how they can be used to address gaps in knowledge.

NOTES: *Burchinal, Magnuson, Powell, and Soliday Hong (2015).
†Markowitz, Bassok, and Hamre (2018); Shonkoff and Bales (2011).

The information presented in this brief pertains specifically to inventorying the resources needed to implement a workforce development strategy and in turn assess the costs and potential savings associated with that strategy. The proposed design considerations could be relevant to a stand-alone cost study or a cost study completed alongside an impact study, an implementation study, or both. The methodological basis for this work is the ingredients method, designed by Henry Levin, that specifically estimates costs in education settings. Alternatives to the ingredients method exist, although many are similar in aim and technique. The ingredients method is presented here because of its relatively widespread adoption in education settings, making the resulting estimates more comparable between studies, and its approachability and grounding in nuances specific to the field of education. The ingredients method uses a mixed-methods data collection approach to identify the quantity and quality of the resources that contribute to a program, strategy, or intervention and uses that information to estimate the costs of the program or intervention as implemented.[2]

This brief is intended to help users determine if a cost study may be appropriate to address their questions and identify potential considerations. Specific study designs should be tailored to the particular strategy and context and be developed in coordination with a cost researcher. Incorrectly estimated costs, whether they be over- or underestimated, can have unintended consequences for the individual CCEE settings that attempt to use the estimates and more broadly for the field's reception and interpretation of the workforce strategy.

[2] Levin et al. (2017).

Cost estimates can be helpful in documenting the resources that go into a strategy, replicating effective strategies, and gauging the feasibility of implementing the strategy with limited resources. Cost estimates can then be combined with estimates of the intervention's effectiveness in cost-benefit or cost-effectiveness analyses, as is described in Box 2.

Box 2. Key Cost Study Terminology

Cost analysis is a foundational element that is necessary to conduct further economic evalua-tions, such as benefit-cost and cost-effectiveness analyses. While these two common economic evaluations are beyond the scope of this guidance, understanding their potential is important to contextualize the utility of a cost analysis. Below the three key terms are defined:

A **cost analysis** is an estimation of the costs of implementing to implement a strategy. The resources that contribute to the strategy are inventoried and described, and their economic value is estimated to ultimately estimate the cost of the strategy. A cost analysis is an essential element of cost-effectiveness analyses and benefit-cost analyses. A cost analysis can be conducted as a stand-alone analysis or alongside an implementation study or an impact study. Throughout this brief, this type of analysis is also called a cost study.

A **cost-effectiveness analysis** (CEA) is an estimation of the relationship between the costs of the intervention and the observed outcomes. This estimation is presented as a ratio of the costs divided by a quantitative and rigorously estimated strategy outcome. Cost-effectiveness ratios are relevant in comparing the relative efficiency of two or more strategies with similar goals. It requires both a cost analysis and an impact analysis.

For example:

Components	Strategy A	Strategy B
Strategy cost	$1,000 per participant	$5,000 per participant
Observed impact	0.1 standard deviation increase in teacher effectiveness	0.2 standard deviation increase in teacher effectiveness
CEA ratio	$1,000/0.1	$5,000/0.2
Simplified CEA ratio to common terms	$1,000 per 0.1 standard deviation increase	$2,500 per 0.1 standard deviation increase

One can conclude that Strategy A is more efficient at improving teacher effectiveness, when all else is equal. If an education agency were trying to reach as many teachers as possible given a limited set of funds, then Strategy A would be the better option.

A **benefit-cost analysis** is an estimation of the economic value of the observed effects, com-pared with the estimated costs. The goal is that the value of the effects exceeds the costs. Multiple outcomes can be considered in a cost-benefit analysis and it can accommodate the comparison of programs with different goals. This type of analysis is often presented in terms of dollars spent. It requires both a cost analysis and an impact analysis. For example:

(continued)

Box 2 (continued)

Components	Strategy A	Strategy B
Strategy cost	$1,000 per participant	$5,000 per participant
Observed impact	0.1 standard deviation increase in teacher effectiveness an average reduction in teacher turnover of 0.5 instances per year	0.2 standard deviation increase in teacher effectiveness 0.5 standard deviation increase in teacher job satisfaction an average reduction in teacher turnover of 0.75 instances per year
Value of outcomes	$2,000	$12,000
Benefit-cost ratio	$2,000 in strategy effects/$1,000 in strategy costs	$12,000 in strategy effects/$5,000 in strategy costs
Simplified benefit-cost ratio	$2 for every $1 spent	$2.40 for every $1 spent

One can conclude that the benefits of BOTH Strategy A and B exceed their costs, although Strategy B appears to produce more value for each dollar spent.

Examples of Research Questions

Below are some examples of research questions for a cost study of a workforce development strategy to recruit, support, and retain qualified CCEE educators at state, local, and setting levels across the United States.

- What does the given workforce development strategy cost? What portion of the costs are carried by different parties, such as individual CCEE settings, funders, governance agencies, and CCEE employees? How are these costs distributed across resource categories including personnel time, training, facilities, materials, and technology?
- How do the costs associated with the workforce development strategy compare with the potential savings that the strategy offers?
- Do cost comparisons differ depending upon the setting in which the workforce strategy is implemented, such as in Head Start programs, state pre-K programs, center-based care, or home-based care?

These questions can serve as stand-alone research questions or can be combined with impact or implementation study research questions.

Implementing the Cost Study

The main steps required for a cost study of a CCEE workforce strategy are outlined below, followed by detailed descriptions of each step:

1. **Understand and document the workforce strategy's design and goals** to lay the foundation for a well-informed and well-designed cost study that is aligned with the strategy as implemented.
2. **Draft an ingredients list** that documents the resources used to deliver the workforce strategy or that may be impacted by the workforce strategy.
3. **Design data collection activities** to collect data on the ingredients list drafted in step 2.
4. **Set a sampling strategy and select a sample** that is representative of various study conditions and facility characteristics.
5. **Collect data** on the quantities, qualities, and details of the resources that go into the strategy. Collect data on the status quo programming without the workforce development strategy ("services as usual") using information from either randomization to different experimental conditions (treatment or control) or information from before and after the implementation of the strategy.
6. **Analyze costs.** Match the data collected in step 5 with standardized prices and estimate costs for services as usual and for the workforce strategy. Contrast services as usual and strategy costs to estimate the cost of the workforce strategy.
7. **Conduct sensitivity testing** where relevant.
8. **Leverage cost estimates for other applications.** Begin the procedures for a cost-effectiveness analysis, comparing the costs of the strategy relative to its effects on key outcomes, or a cost-benefit analysis, comparing the costs of the strategy with its potential benefits.

Step 1: Understand and document the workforce strategy's design and goals

Before conducting a cost study, it is first important to have a thorough understanding of the workforce strategy's goals and design. To achieve this, it may be helpful to develop a comprehensive explanation of how and why a desired change is expected and map the strategy's components formally. A "theory of change" or a document that outlines what the strategy will do and how it is hypothesized to change outcomes can be helpful at this stage, if one exists. It may also be helpful to interview someone with clear knowledge of the workforce strategy's design, such as a staff member from an implementing agency, to help facilitate the cost study team's understanding of the strategy.

Step 2: Draft an ingredients list

Using the strategy's goals, design, and theory of change, consider developing a list of the "ingredients" or important resources that are necessary for the strategy. Additionally, any areas where it is hypothesized that the strategy may generate savings should also be included in the ingredients list. For example, if it is theorized that a change in staff compensation may lead to reduced hiring and recruitment costs, the time and resources that it takes to hire a staff member may be included in the ingredients list. It may be helpful

to group the ingredients into categories. Typical categories include personnel, training, materials and equipment, facilities, and technology, although other categories may be relevant.

At this stage, the ingredients list may be broad and imprecise. Notes should be taken to document relevant cost details from the strategy's goals and design. Any questions that arise at this stage should be documented so that they can be addressed during the data collection stage.

Some sample questions appear below. Throughout the brief, a hypothetical credentialing program will be used as an example of a strategy. In this hypothetical program, a community college network provides a program for current assistant teachers to complete their associate's degree and earn lead teacher certification. The state offers tuition coverage while the centers provide mentorship and time to complete coursework and attend workshops. Notes and questions could include the following items. (For an example of a full ingredients list, and associated questions, see Appendix A.)

- **Descriptions of the resources, including questions on what is too ambiguous to cost:** Example: What is "mentorship time"? What does it displace? Who is responsible for it? How long and how often are mentorship meetings?
    - **Quantities:** For example, how often do mentors and mentees meet? For how long do they meet?
    - **Qualities:** For example, what books and materials does the program require? Are they virtual or in print? Are they rented or purchased?
- **What is potentially offset by the resource use?** For example, do participating assistant teachers miss teaching time and need a substitute? Do their courses and workshops replace previous professional development sessions or are they in addition to previous professional development sessions?
- **Who typically conducts the work?** For example, does the center director have a role in the program? What are the qualifications of the community college coaches who observe teachers and instruct workshops?
- **Is the resource shared?** For example, does the community college staff member observe only one participant's student teaching per trip or can they combine trips to centers?
- **Is the resource useful for more than one year?** For example, will participants be able to use their textbooks in future years, perhaps as reference books in their classrooms? Is the laptop useful beyond a single year?

Data Comprehensiveness

One inevitable question in a cost analysis is how much data to collect, as there is a fine line between too much and not enough information, and there is often a concern that data collection activities may miss some important costs. It is not feasible to plan to collect data on every single resource that goes into implementing a strategy (a "soup to nuts" approach). At the same time, important costs can be missed if researchers take a limited approach to cost data collection.

The comprehensiveness of the cost analysis may vary depending on:

- the strategy's design and theory of change
- the time and budget resources available to the research team
- the level of effort requested of participants
- the timeline of the research study
- the information that is most needed by decision-makers

Researchers should focus on the resources used in the strategy that are likely to differ from services as usual. This approach requires a clear understanding of the strategy design. Of note, personnel costs are frequently a main cost driver in education settings, so special attention should be given to these costs.

> **For example,** it would be important to capture information on how long the community college coach typically spends with each participant, but less important to understand what supplies are used in the classroom during the observation. Capturing data on classroom supplies may not be warranted because supplies are not expected to change in the theory of change, nor would one expect supply use to be meaningfully impacted by the credentialling program.

Focusing on targeted activities makes data collection less burdensome for researchers to conduct and for respondents to complete. By developing a thorough and efficient data collection plan that is tailored to the goals and scope of the study, respondent time can be responsibly managed and reduced to as minimal a burden as possible.[3] However, a strategy that is more complex or more likely to impact services as usual will necessitate more data collection activities.

> **For example,** a cost study of the community college program, complete with coaching and intensive workshops, will logically necessitate more cost data collection than a test of a small hiring bonus.

Step 3: Design data collection activities

Data collection efforts should be planned using the ingredients list developed in step 2. Much of the data needed to conduct a cost study of a typical CCEE workforce strategy can be collected using a cost survey supplemented with cost interviews and time-use data. Other potential data sources could include administrative data, document analyses, and interviews. Some potential workforce strategies may warrant additional cost data collection, such as setting observations or substantial survey efforts. A list of potential sources of cost data are described briefly below and at length in Appendix B. A single study need not leverage each of these data sources; rather, research teams can select from these options to develop a data collection plan that is feasible, rigorous, and tailored to the specific workforce strategy being studied. When possible, collecting data on a resource from two or more independent sources can be helpful in triangulating information and can improve rigor. When designing data collection efforts, it is best to consult experts for methodological guidance on the specific data collection type. For example, best practices for survey design should be leveraged for survey development.

[3] For example, see Building and Sustaining the Child Care and Early Education Workforce (BASE) Study [OMB Information Collection Request 0970-0615] at https://omb.report/omb/0970-0615 in which the project amended the cost data collection to reduce staff burden and collect only key pieces of information.

Examples of types of data collection

Pilot data collection activities, including a small number of interviews, surveys, observations, and document analyses, can be conducted early in the study to help plan for future full-scale data collection activities.

Cost surveys can offer an efficient means of gathering much of the cost data and can be fielded to more respondents than other more intensive methods of data collection. Cost questions should focus on the resources used to implement the program and can be informed by the questions the research team documented in step 2.

Cost interviews with key personnel can be helpful in identifying which resources are used and clarifying their qualitative details, especially where resource use is complicated. Such interviews may also be helpful in gathering information on costs undertaken by parties beyond the main subjects of the study.

> **For example,** interviews with the community college faculty members in charge of the program could help fill in gaps that teachers and center staff members are not aware of.

Time-use surveys can be used to collect detailed records of how subjects spend their time related to the program. They can be embedded in a larger survey or they can be a stand-alone effort.

Administrative records and document analyses, including budgets, purchase orders, time sheets, or participation records, can provide efficient ways to get a sense of the resources that go into a workforce strategy. Care should be exercised when reviewing budgets and similar documents since they typically represent an allocation plan, rather than what was actually spent.

Observations allow the researcher to see the setting in action and recognize important ingredients quickly. Observations can occur in person or virtually.

Price data are discussed in more detail in the analysis section, although it is important to mention that when considering cost data collection activities, ballpark estimates are sufficient in nearly all cases. Recall that a cost study's purpose is to inventory and value the resources that are involved in an intervention, not to conduct forensic accounting at a specific site. By releasing the need to collect detailed data on every expenditure, participant burden can be substantially reduced.

> **For example,** it is more important to know that the community college hired a part-time faculty member for half of the time of a full-time position to conduct coaching sessions, than it is to know what that specific person's wage was to the penny. Instead, a wage that reflects a national or state average for a similar role with similar qualifications and duties is preferable.

Step 4: Set a sampling strategy and select a sample

Compare with "services as usual." A cost study typically aims to estimate costs above and beyond services as usual.[4] To accomplish this, cost data should be collected from both the treatment condition, or the new strategy being tested, and the control condition, or services as usual.

[4] Levin et al. (2017).

When data are not available to estimate the costs of services as usual, assumptions about what resources are used, absent the strategy of interest, can be made using precedents and methodological guidance.[5]

> **For example,** the research team learns that the community college credentialling program exceeds all state requirements for assistant teacher continuing education. If data are not available on the status quo continuing education offered by the centers, the team could assume that before the credentialing program, those teachers would have met the minimum state requirement for continuing education hours.

Select the sample. It is important to collect data from a large enough sample of individuals and sites to adequately represent the population of interest, including a sufficient proportion of treatment and control sites. For example, it is important to select sites for the cost study that will allow for the exploration of costs across salient characteristics.

Some characteristics to consider when designing a cost sampling strategy are:

- type of care (such as center-based, home-based, Head Start, and public pre-K, among others)
- program size
- location (for example, center, school, home, or church)
- funding sources (federal, state, or private pay)
- rurality
- ages served
- additional characteristics relevant to specific strategies or contexts

There may simply be fundamental differences in costs depending on the type of site that is reporting them, such as those with federal funding compared with those without such funding.

Consider respondent capacity. The ability of CCEE settings to easily locate and share the information needed for a cost study will vary. Some will have clear records and a dedicated administrator who can facilitate the gathering of cost data, while others may be unable or hesitant to share clear and complete cost data. Researchers should be aware that the ability to share cost information may vary by setting characteristics.

> **For example,** if participating assistant teachers come to the community college credentialling program from large corporate center chains and small home-based child care facilities, the capacity of facilities to share data will likely differ. Larger centers may have different data available (perhaps their records are easy to share but they have less inherent knowledge about specific teachers' time use) than home-based programs (more first-hand knowledge of teachers' time use, but more "back of the envelope" records).

To help provide a consistent baseline for data quality and thoroughness, cost data collection efforts should be designed to ask for cost information in a way that is likely to be easily accessible for the majority of sites in the sample. In this example, it may not be helpful to collect accounting records as the level of

[5] Levin et al. (2017); Shand and Bowden (2022); Cost Analysis Standards Project (2021).

thoroughness and format will vary too much. Instead, surveys and interviews may provide more useful information.

Set respondents up for success. Ample time and advance notice should be provided to respondents about the kind of cost information that will be requested so that they can be prepared to provide it. Site-specific accounting records are not necessary for an externally generalizable cost study given that standardized market prices are preferable for generalizability and replication.[6] Further, it may not be helpful to collect accounting records as the level of thoroughness and format will vary too much. Instead, surveys and interviews may provide more useful information.

Collecting information about the resources used, rather than the prices paid or money spent, may be less burdensome for sites.

Step 5: Collect data

Collaborate with other study arms. If an implementation study is being conducted simultaneously, the cost study team and the implementation study team can collaborate to select a shared sample of sites and to design a coordinated data collection effort.

Implementation and cost data collection efforts often overlap, and thus can be designed in tandem to reduce respondent burden and increase the efficiency of study resources.

A representative from the cost team can even be involved in site visits, if scheduled, either as an attendee or in training the site visitors on how they can support the cost study. Many cost activities can be completed at a site visit, including fielding surveys, sharing documents, and conducting interviews. The benefits of this approach are twofold: (1) researchers can be on site to answer any questions respondents may have and help encourage completion and (2) researchers can get a "feel" for the site and the way resources are being used firsthand.

Who? Cost data collection activities on resource use should ideally be routed to those staff members who are aware of the resources that go into the intervention at the CCEE setting.

When? Ideally, cost data on a strategy would be collected before and during strategy implementation (rather than retrospectively).

Before: Collecting data before implementation allows researchers to measure the contrast between resource use before and after the implementation of the strategy.

During: There are several benefits to concurrent data collection, including that the strategy is fresh in respondents' minds and records tend to be readily available. Additionally, some types of data collection activities, such as time-use surveys, site visits, or observations, are impossible or improbable after a strategy has ended.

After: When conducting data collection activities retrospectively, it can be difficult to adapt or change plans in response to new information or to answer unanticipated questions, such as when investigating a resource category that was not well-documented in the original understanding of the strategy. However, this is often the only option and it is feasible, if not ideal.

[6] Levin et al. (2017).

Fielding full data collection activities multiple times may place too heavy a burden on participants. To address this, researchers can consider two strategies:

1. Researchers can conduct **brief, baseline** data collection activities before a strategy is implemented so as not to impose the burden of a full data collection effort on participants.
2. Alternatively, participants can be asked to **reflect** on the resources that they used before the strategy simultaneously with the resources used during the strategy to more easily estimate contrast in a single survey or interview.

Contrast

It is important to establish costs when compared with services as usual. Assessing services as usual will depend on the study design:

With a counterfactual condition: In a **randomized controlled trial** or in **quasi-experimental designs** with a known counterfactual condition the cost sample should include both treatment and counterfactual sites, if possible, so that contrast in resource use is empirically documented. In a **multi-arm trial**, the cost sample should be drawn from each treatment arm.

Without a counterfactual condition: In a **descriptive study** or **quasi-experimental design** where there is no control condition, the costs of services as usual can be estimated from available site data or using grounded assumptions, or both.

Pre-post cost data comparisons: Cost analysts can collect data from sites implementing the strategy on the resources they used *before* the new strategy, either by asking before implementation and during or after implementation, or by asking sites to reflect on resource use before the strategy. *As with any pre-post comparison, it is important to note that any differences may be due to nonintervention causes*. These differences can be reduced somewhat by:

- adjusting prices to a constant dollar (to avoid issues stemming from inflation)
- collecting data at the same time of year, if possible

Although two waves of data collection activities would be preferable, it is possible to gauge pre-implementation resource use by asking respondents to reflect on resource use before the intervention.

Assumptions: When data are not available to estimate the cost of services as usual without the strategy, assumptions about what resources are used absent the strategy of interest can be made using norms in the field, precedents from studies of similar strategies, and methodological guidance.[7]

For example, in the assistant teacher credentialling program, the following assumptions could be helpful to fill any gaps in data.

- Without the credentialling program coursework, participants would have received the state-mandated number of continuing education credits required for assistant teachers.
- Any resources spent on books or materials needed for the coursework are above and beyond books and materials that would be obtained in the counterfactual condition.

[7] Levin et al. (2017); Shand and Bowden (2022); Cost Analysis Standards Project (2021).

Step 6: Analyze costs

In the analysis phase, the data collected in step 5 should be in a format that includes each ingredient, a description, and the quantity used. At this stage, the researchers should carefully compare the resources used for services as usual with the resources used when implementing the workforce strategy as discussed above, and the final cost estimate should only include the costs above and beyond services as usual. The analysis phase of a cost study can be complex and requires specialized training; when conducting a cost analysis, it is important to seek the advice of a trained cost researcher, if possible.

Standardized Prices

When considering a strategy for pricing resources, keep the following points in mind:

- Prices paid by specific locales, such as individual child care centers, are often not the right choice for documenting what an additional center would pay for a similar resource elsewhere.
- By standardizing prices, cost estimates are more generalizable to different settings.
- Generalizable prices are easy to find for many resources and tools and techniques exist for valuing more obscure resources when necessary.

Price generalizability. The data collection activities may have included the price paid for an ingredient and, while it is useful to note that price, the cost analysis team should also plan to record ***standardized prices***. Prices paid by sites reflect site-level nuance and may not lead to generalizable cost findings.

> **For example,** a CCEE center may report that it needed a substitute teacher to cover for an assistant teacher who was attending the credentialling program workshop. However, the CCEE center did not pay for these services because the center director's sister filled in for free. It would not be prudent to record that this resource has no cost as that would not be accurate for another site that was seeking to replicate the strategy.

> ***Standardized prices*** *represent the average market price paid for similar resources. For example, instead of recording teachers' actual wages, the national (or state) average wage for teachers can be used. This allows for readers to adjust the cost study up or down based on their knowledge of their own context.*

Additionally, site expenditures reflect place-specific prices, which can cause difficulty if the goal is to estimate costs that are generalizable outside of that specific place. Prices can be standardized at the state or national level, depending on the audience. For example, a cost study conducted for a national audience would use nationally generalizable prices, while a cost study conducted as part of a contract with a state agency may use prices that are specific for that state.

> **For example,** the assistant teacher credentialling program occurs in an expensive metropolitan area with a very high cost of living. There, teachers are paid 1.5 times the national average and prices for transportation, facilities, and materials are high. If the goal is to generalize what the program costs so that programs in a different part of the country can understand the general burden, then the local prices would inadvertently overestimate the cost of the program. Instead, nationally standardized prices should be used.

Using standardized prices. Standardized prices address the issues of nuanced and place-based expenditure data from sites, thus facilitating a more accurate and generalizable cost estimate. To use standardized prices, one simply decouples the pricing data from all other data and instead uses a price from a national- or state-level source. These prices are available from a wide variety of sources including the Bureau of Labor Statistics, national retailers, and trade organizations.[8]

> **For example,** to access a standardized price for a site administrator, the cost team may use the state average wage for a CCEE administrator, available from the Bureau of Labor Statistics. To access a standardized price for a computer, the team may search three national retailers and use the average price.

Wage-specific interventions. A critical caveat to workforce development strategy cost studies is that in a wage-related workforce strategy, the actual wage may be critical to the intervention. In these cases it may be important to use actual wage data in addition to standardized wages to reflect the wage increase accurately.

To bridge the importance of the wage increase in absolute terms and the problems with site-based expenditures, data collected on the wages that personnel receive could be analyzed to understand the relative value of the increase, which could then be applied to a standardized wage. See Table 1 for an example.

Table 1. Example of Adjusting Standardized Wages to Reflect the Magnitude of the Observed Wage Increase

Category	Numeric Value
Average site-specific wage before the intervention	$15.50 per hour
Average site-specific wage after the intervention	$18.50 per hour
Magnitude of wage increase observed at the study location	19.35%
Average national median hourly wage for a preschool teacher	$17.85 per hour
Average national wage + a proportional wage increase	($17.85 x 1.1935) = $21.30 per hour

SOURCES: Average national wage collected from the Bureau of Labor Statistics. Average site-specific wage before and after the intervention is hypothetically collected from 12 programs in a single metropolitan area. The data included in this table are used for illustrative purposes.

In this table, a (hypothetical) set of study sites were queried as to the typical wages they offered to lead teachers before and after a wage intervention. From this, an average pretreated wage of $15.50 an hour was identified. This wage may be relevant to programs in the same metropolitan area where the study took place, but they are not necessarily generalizable to a national audience (in this case, they are lower than the national average wage by $2.35 an hour). To provide generalizable cost estimates, it is preferable to use the wages from a national market and to adjust the wage by the same magnitude of the wage change

[8] For more information on standardized price sources, see Levin et al. (2017).

in the study, in this hypothetical case a wage increase of about 20 percent. In this case, the magnitude of the change is more likely to be helpful to program replication, both in terms of geographical variation (both high-cost and low-cost areas can apply a 20 percent increase to similar effect while a $3 increase may mean more in the low-cost area than it does in a high-cost area given cost-of-living differences) and in terms of variation across time (the research will still be relevant in future years, even after inflation would have likely rendered an absolute dollar value irrelevant to present times). A sensitivity analysis can be used to assess how sensitive the cost estimate is to the use of site-level wages by comparing the absolute increase with the relative increase to standardized wages.

Adjusting costs over multiple years: Any ingredient that has a usable period that exceeds the analytical time frame needs its value spread over its useful life so that it is not overvalued in the initial year. Typically, an interest rate is used to reflect the concept that money spent today for resources that will be useful in the future cannot be spent on something else today, thus having a cost. This process is known as amortization and ensures that expenditures for durable resources are accounted for in proportion to their long-term value.

> **For example,** participants in the assistant teacher credentialling program need a laptop for their coursework. It would overestimate the cost of the program to apply the full value of the laptop only to the first year. Instead, the team should plan to proportionately prorate the value of the laptop and software over their typical usable lifespan of three years.[9]

Estimating totals. Once the appropriate prices have been applied and adjusted as relevant, the prices can then be multiplied by the quantities used and summed to estimate the cost. These costs can be applied to the appropriate denominator, such as per classroom or per teacher, over the relevant timeframe, such as per year.

Step 7: Conduct sensitivity testing

When there is uncertainty in an element of the cost analysis, sensitivity testing can be used to build confidence in the analytical choices by varying the decisions made and checking to see how those choices impact the final estimates. These findings can be shared in final reports or briefs showing the potential range in estimates, in a manner that is similar to how robustness testing is used in impact evaluations.

> **For example,** if teachers' computers are used in a credentialling program and also for other purposes within the facility and in the teachers' personal lives, the research team may choose not to include the cost of these computers in the estimate yet feel uncertain around this decision. To test the sensitivity of the estimate to this decision, research team members could reassess costs with the inclusion of the computers and compare the cost estimates with and without computers included to see how sensitive the final cost is to this analytical decision.

Step 8: Leverage cost estimates for other applications

If consistent with the study goals, researchers may choose to conduct advanced economic evaluations using their cost estimates, including cost-effectiveness or cost-benefit analyses as defined at the start of

[9] Levin et al. (2017); Shand and Bowden (2022).

this brief. Both of these analyses are beyond the scope of this publication; however, more information can be found in existing methodological guidance.[10]

Additional Considerations for Conducting Cost Studies

Strategy Design

It is difficult to conduct a cost analysis for a strategy that is not well-defined. For example, the estimation of costs will be imprecise if the resources used to implement the strategy are difficult to clearly identify. A poorly defined strategy could seem more or less expensive than it actually is. For instance, a wage increase strategy that is designed with unclear requirements, insufficient training, and changing standards may result in increased personnel costs due simply to poor initial design. The same strategy may have lower costs if it were more clearly established. The cost of a workforce strategy as designed will nearly always differ from the cost of the strategy as implemented. However, it is important to capture the costs of the strategy as implemented because there are key lessons to be learned from how a strategy has been previously implemented in the field.

Study Timing

The cost study should be designed around a relevant and feasible time frame, such as a record of costs incurred over the course of a particular year. While a year is relevant for costs such as annual salaries or the purchase of a curricular subscription, more work may be needed to break down the larger time frame into shorter time frames for data collection.

> **For example,** it may be relevant to collect personnel time use over a typical week and during an activity of interest, such as when teachers are engaged in coursework for a credentialing program. The time frames used in the study depend in part on the strategy being implemented, as well as what is feasible for the researchers to field and for the participants to complete.

Additionally, it is possible that some of the potential savings associated with changes in workforce development may take longer than a single year to manifest. Workforce turnover, for example, may be reduced in a two-year period following the start of the strategy. When possible, follow-up data collection should be planned, although this may not be feasible. Therefore, the cost analysis may only provide a snapshot of cost differences associated with a given workforce development strategy. These snapshots can still provide important short-term considerations for those looking to implement similar approaches.

Site Engagement

A well-designed cost study should be minimally burdensome to participating sites. However, it is prudent to make the sites aware of the activities involved with participation. Participants' buy-in can be supported by providing clear outlines of what is involved and what sorts of information will be gathered, reminding

[10] Levin et al. (2017); Boardman, Greenberg, Vining, and Weimer (2018).

participants that their responses will be confidential, sharing how the research may benefit the field, and offering appropriate incentives. See Box 3 for more tips on encouraging participation.

Box 3. Mitigating Concerns About Sharing Cost Data

Respondents may reasonably be concerned about sharing financial and cost data. The following tips can help respondents feel comfortable and help the study gather important data.

- Develop clear privacy protocols and share both formal and plain language versions with respondents.
- Share the ways in which an organization or individual will be identified in the research if relevant. If not relevant, share that the individual or the organization will not be identified.
- Do not ask for sensitive information unless absolutely necessary, for example, individual salaries are not usually needed.
- Use multiple choice or a range of response options to reduce the specificity for sensitive responses.
- Allow respondents to preview questions ahead of time.
- Preserve respondents' right to skip questions.

Conclusion

A cost study can provide critical information to practitioners and decision-makers on the feasibility and resource intensity of a given intervention. While some research teams may perceive them as daunting and time-intensive, cost studies need not be overly burdensome for respondents or researchers. As one example, the Colorado Child Care Assistance Program Teacher Salary Increase Pilot evaluation under the BASE project included a cost study.[11] The original cost workbook for center directors was expected to take five hours to complete. Given low director participation, the protocol was revised, giving directors the option of working with a team member for 30 minutes to complete key portions of the workbook.

By strategically collecting data on the resources used, often in conjunction with other data collection efforts, a cost study can be added without substantially increasing a study's data collection budget. Researchers should keep a focus on the key resources that facilitate a strategy's implementation and should use standardized prices when possible to reduce the burden on respondents while supporting the study's external generalizability. Additional resources on costs and on CCEE workforce development programs are listed in the bibliography, in addition to the references cited in this publication, that can offer additional reading on specific contexts or that delve into cost research and CCEE in greater depth.

[11] For more information about the Colorado Child Care Assistance Program Teacher Salary Increase Pilot evaluation and cost study, see Maier et al. (Forthcoming).

References

Bernardi, Alexandra, JoAnn Hsueh, Sydney Roach, and Lisa Rau. 2023. *Child Care and Early Education Workforce Recruitment and Retention: Insights from a Current Landscape of Strategies*. OPRE Report 2023-178. Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Website: https://www.acf.hhs.gov/opre/report/building-and-sustaining-child-care-and-early-education-workforce-knowledge-review.

Boardman, Anthony E., David H. Greenberg, Adrian R. Vining, and David L. Weimer. 2018. *Cost Benefit Analysis: Concepts and Practice*. Cambridge University Press.

Burchinal, Margaret, Katherine Magnuson, Douglas Powell, and Sandra Soliday Hong. 2015. "Early Childcare and Education." In Marc H. Bornstein, Tama Leventhal, and Richard M. Lerner (eds.), *Handbook of Child Psychology and Developmental Science: Ecological Settings and Processes*. John Wiley & Sons, Inc.

Cost Analysis Standards Project. 2021. *Standards for the Economic Evaluation of Educational and Social Programs.* American Institutes for Research.

Levin, Henry M., Patrick J. McEwan, Clive R. Belfield, A. Brooks Bowden, and Robert D. Shand. 2017. *Economic Evaluation in Education: Cost-Effectiveness and Benefit-Cost Analysis*. SAGE.

Maier, Michelle F., Alexandra Bernardi, Michele Abbott, Rebecca Davis, and Cynthia Miller. Forthcoming. *Evaluation of the Colorado Child Care Assistance Program Teacher Salary Increase Pilot*. Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Website: https://www.acf.hhs.gov/opre/project/building-and-sustaining-early-care-and-education-workforce-base.

Maier, Michelle F., and Sydney Roach. 2023. *What Do We Know About Building and Sustaining the Child Care and Early Education Workforce? Cross-Cutting Themes from a Literature Review, Environmental Scan, and Data Scan*. OPRE Report 2023-242. Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services. Website: https://www.acf.hhs.gov/opre/report/building-and-sustaining-child-care-and-early-education-workforce-knowledge-review.

Markowitz, Anna J., Daphna Bassok, and Bridget Hamre. 2018. "Leveraging Developmental Insights to Improve Early Childhood Education." *Child Development Perspectives* 12, 2: 87–92.

Shand, Robert, and A. Brooks Bowden. 2022. "Empirical Support for Establishing Common Assumptions in Cost Research in Education." *Journal of Research on Educational Effectiveness* 15, 1: 103–129.

Shonkoff, Jack P., and Susan Nall Bales. 2011. "Science Does Not Speak for Itself: Translating Child Development Research for the Public and Its Policymakers." *Child Development* 82, 1: 17–32.

Bibliography

Additional cost references and resources pertaining to child care and early education workforce development strategies include:

Adams, Gina, Danielle Ewen, and Grace Luetmer. 2021. *Supporting the Child Care and Early Education Workforce: A Menu of Policy Options for the COVID-19 Pandemic and Recovery*. Urban Institute.

Bassok, Daphna, Maria Fitzpatrick, Susanna Loeb, and Agustina S. Paglayan. 2013. "The Early Childhood Care and Education Workforce from 1990 through 2010: Changing Dynamics and Persistent Concerns." *Education Finance and Policy* 8, 4: 581–601.

McLean, Caitlin, Lea J. E. Austin, Marcy Whitebook, and Krista L. Olson. 2021. *Early Childhood Workforce Index 2020*. Center for the Study of Child Care Employment, University of California, Berkeley.

National Research Council. 2015. *Transforming the Workforce for Children Birth Through Age 8: A Unifying Foundation*. The National Academies Press.

Phillips, Deborah A., Sara Anderson, A. Rupa Datta, and Ellen Kisker. 2019. "The Changing Portrait of Center-Based Preschool Teachers: 1990 and 2012." *Children and Youth Services Review* 107.

Porter, Noriko. 2012. *High Turnover Among Early Childhood Educators in the United States*. Washington State University.

Schaack, Diana D., and Vi Nhuan Le. 2017. "The Colorado Early Childhood Workforce Survey 2017: Findings from Northeast Colorado." University of Colorado, Denver.

Totenhagen, Casey J., Stacy Ann Hawkins, Deborah M. Casper, Leslie A. Bosch, Kyle R. Hawkey, and Lynne M. Borden. 2016. "Retaining Early Childhood Education Workers: A Review of the Empirical Literature." *Journal of Research in Childhood Education* 30, 4: 585–599.

Whitebook, Marcy, Deborah Phillips, and Carollee Howes. 2014. *Worthy Work, Still Unlivable Wages: The Early Childhood Workforce 25 Years After the National Child Care Staffing Study*. Center for the Study of Child Care Employment, Institute for Research on Labor and Employment, University of California, Berkeley.

Whitebook, Marcy, and Laura Sakai. 2003. "Turnover Begets Turnover: An Examination of Job and Occupational Instability Among Child Care Center Staff." *Early Childhood Research Quarterly* 18, 3: 273–293.

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