Using Unemployment Insurance Wage Data to Better Understand the Experiences of the Child Care and Early Education Workforce Over Time:
Methods Brief

Building and Sustaining the Child Care and Early Education Workforce

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The workforce challenges facing the child care and early education (CCEE) sector are well known. CCEE educators typically have low levels of compensation; limited opportunities for education, training, and professional development; inconsistent working conditions; and high levels of stress and burnout.[1] There are also high rates of job turnover, which can strain remaining educators and decrease the quality of care they offer.[2]

Policymakers at the federal and state levels are taking steps to build and stabilize the CCEE workforce, but effectively addressing these challenges requires a better understanding of the issues.[3] The Building and Sustaining the Child Care and Early Education Workforce (BASE) project aims to increase knowledge and understanding about the CCEE workforce by documenting factors that drive turnover and by building evidence on current initiatives

> 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]Whitebook, Phillips, and Howes (2014); McLean, Austin, Whitebook, and Olson (2021).
[2]Whitebook, Phillips, and Howes (2014); Bassok, Fitzpatrick, Loeb, and Paglayan (2013); Phillips, Anderson, Datta, and Kisker (2019); Schaack and Le (2017); Totenhagen et al. (2016); Whitebook and Sakai (2003).
[3]See Whitebook, Phillips, and Howes (2014).

to recruit, advance, and retain a stable and qualified CCEE workforce.[4] Despite new research documenting the significant and positive effects of workforce initiatives and investments, there is still limited evidence on which strategies increase retention and recruitment and which strategies work best for different types of teachers and in different settings.[5] There are also important gaps in knowledge about how teachers enter, stay in, and exit the field, owing to a lack of data that track individuals over time.[6]

Wage data from state Unemployment Insurance (UI) systems can be used to address some of the most pressing policy and research questions about the CCEE workforce because they track individual-level employment and quarterly earnings over time and across employers. This brief describes how these data can support longitudinal analyses that address the following questions:

- How do educators enter and exit the CCEE workforce over time?

- Which other industries do educators work in before and after child care employment?

- When and how often do educators change CCEE employers or leave the industry?

- How do wages change over time for CCEE work?

- How do CCEE wages compare with wages in other industries?

A better understanding of how CCEE workers move through the labor market can inform the development of targeted recruitment and retention strategies, as well as evaluations of these strategies. For example, understanding the other industries that CCEE workers are likely to come from or exit to can suggest ways in which CCEE jobs are and are not competitive with the wages, job stability, schedule, and type of work available elsewhere in local job markets.

This brief is a technical primer for researchers or agencies interested in using UI wage data to better understand the labor market experiences and, especially, the job trajectories of CCEE workers. (See Box 1 for the definitions of key terms.) Informed by a series of analyses of Illinois UI wage data, this brief describes how child care workers can be identified and characterized in these data, and suggests methods to measure important aspects of their employment, such as job duration, wages, and retention.[7] The proposed methods are particularly suited to describing the CCEE workforce in community-based settings, including not only teachers and administrators but also coaches, cooks, bus drivers, and other support staff members. Most characteristics of UI wage data are consistent across states, so these methods have wide applicability.[8]

UI wage data do not include all of the employee, employer, and job characteristics necessary to answer some questions about CCEE workforce dynamics. This brief also includes a short discussion of possibilities for linking UI wage data to other data sources to address these limitations.

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[4]For more information, see: https://www.acf.hhs.gov/opre/project/building-and-sustaining-early-care-and-education-workforce-base.
[5]For an example of recent research documenting the positive effects of workforce investments, see Bassock, Doromal, Michie, and Wong (2021).
[6]These knowledge gaps, and others identified through a comprehensive literature review and scan of existing strategies are summarized in Maier and Roach (2023).
[7]For prior analyses of Illinois wage data that informed this brief, see Goerge, Wiegand, and McQuown (2022).
[8]Abowd et al. (2009).

Box 1. Definition of Terms

This box summarizes how two key terms are defined for this brief, highlighting where those definitions may differ from other project materials in the Building and Sustaining the Child Care and Early Education Workforce (BASE) project.

CHILD CARE AND EARLY EDUCATION (CCEE) WORKFORCE: This brief discusses the CCEE workforce as it may be identified in the Unemployment Insurance (UI) wage data: individuals whose employers have the industry code for "Child Day Care Services." This industry will not include individuals who work in CCEE in elementary school settings, or owners of family child care homes. Because the wage data do not indicate role or position, all workers in the industry, even those who do not directly care for children, are included in the workforce.

In contrast, the workforce as defined for the BASE project includes current and prospective educators who are paid to care for children from birth to 13 years of age in center- and home-based settings. This definition includes educators in different positions and roles. For example, center administrators, directors, lead and assistant teachers, and home-based educators are included in this definition. This definition also includes licensed and license-exempt home-based settings. While the CCEE workforce also includes support staff members in centers, such as coaches, education coordinators, and behavioral specialists, these individuals are not the primary focus of the project.

WORKFORCE DYNAMICS: The phrase "workforce dynamics" encompasses entry into and exit out of the CCEE field as an employed individual. For those in the field, it includes tenure and advancement, as well as entry into and exit from different roles, settings, and types of care. Workforce dynamics include multiple phases of employment: entry, retention, turnover, and advancement.

Obtaining access to UI wage data for analyses can be challenging and complex. Yang and colleagues offer a comprehensive discussion of these issues in their primer for Temporary Assistance for Needy Families (TANF) professionals about the use of UI wage data.[9] That discussion will be similarly applicable to researchers, analysts, and administrators in CCEE.

About Unemployment Insurance Wage Data

UI wage records identify quarterly wages paid by employers that are required to report to the state UI system and include over 90 percent of all U.S. jobs.[10] CCEE workers can be identified in these data through the broad CCEE industry code (624410, "Child Day Care Services").[11]

UI wage data are provided at the job level, with each record linking an employee and an employer in a given quarter. They also show the total wages paid by that employer to that employee in that quarter.

[9]Yang et al. (2022).
[10]Abowd et al. (2009).
[11]This industry code comes from the North American Industry Classification System (NAICS), which is a standard business classification system used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. Although some NAICS classifications have changed over time, the "Child Day Care Services" code has been consistent since 2002 and may be used for longitudinal analysis.

Because these records include quarterly earnings at the individual level and include identifiers for both the individual and the employer, the data may be used to track individuals, employers, and the relationships between them longitudinally. The data contain employer names and identification numbers, allowing researchers to look at individuals' transitions between employers within the CCEE sector.

In addition to the ability to track wages and work statuses longitudinally for each employer/employee combination, the strengths of UI data to inform CCEE workforce analyses include broad coverage of the CCEE workforce and some data on employer characteristics.

In most states, UI data are collected quarterly. Because businesses cannot begin to report the data until after the quarter ends, data may be considered "final" and research-ready about six to nine months after the end of the quarter.[12]

Employee-Level Measures of Workforce Dynamics

UI wage data may be used to understand employment trajectories, such as employee tenure, career paths, and wage progression using worker-level analyses. This section suggests approaches for measuring these important concepts, as well as providing best practices in selecting cohorts and using quarterly wage information to infer employment trajectories.

Identifying Cohorts

There are two main options for cohorts to characterize employment experiences at the worker level: an entry cohort or a point-in-time cohort.

To understand tenure and advancement within a job, information about an entry cohort (comprised of individuals who begin jobs in the industry during a given period) compares new hires with each other over time and across job and employer characteristics. Information about this kind of cohort can answer questions such as, "How long do new recruits remain in CCEE?" and "What are average starting wages in CCEE?" How a new entrant is defined is a critical question for any analysis in this area, and that definition may vary depending on the analysis. A new hire is someone starting a new job (that is, receiving wages from a new employer) in the industry, but are individuals who were previously employed by other employers in the industry excluded? What if they were employed in CCEE but have been out of the industry for many years? The answers to these questions will depend on the goals of the analysis and how the results will be interpreted. An analysis that seeks to understand the wages and experiences of CCEE workers who are new to the industry is different from one that simply wants to characterize how long any new employee at a center is likely to stay with that employer. The available historical data may also determine how far back a new entry can be defined. For the tenure analysis in the BASE project, a new hire was defined as someone who started a new job with a CCEE employer in a given year and who had not received wages from a CCEE employer in the two years prior to starting that job.

A point-in-time cohort (comprising all individuals who are working in the industry at a given point in time) may be more appropriate if the goal of the analysis is to characterize the experience or wages of the CCEE workforce at a certain time. Information about this kind of cohort can answer questions such as, "How long

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[12]This statistic draws from the direct experience of the research team in particular states and is supported by timelines for the availability of data via the Longitudinal Employer-Household Dynamics (LEHD) datasets. See, for example, slide 16 of Sienkiewicz, Graham, and Dowell (2015).

have educators been working for their current employers?" or "What are the median wages of the current CCEE workforce?" By definition, a point-in-time cohort is going to include a greater share of workers with longer tenures than an entry cohort, since workers who leave quickly are less likely to be sampled at any given point in time.

Understanding Full-Quarter Employment and Wages

Because it is not possible to benchmark hours worked or identify the date when a worker started or stopped working for an employer, any attempts to describe quarterly wages should be limited to what is known as "full-quarter employment" or "stable employment."

An individual has a stable job in a quarter if the individual has the job in that quarter as well as in the previous and following quarters. This logic matches the full-quarter employment definition from the Census Bureau Longitudinal Employer-Household Dynamics (LEHD) Quarterly Workforce Indicators, as displayed in Table 1.

Table 1. Longitudinal Employment and Household Dynamics Measures of Employment

Employment measure	Quarters included in this measure (relative to time t)								
	-4	-3	-2	-1	t	+1	+2	+3	+4
Reference quarter					▓				
Beginning-of-quarter employment				▓	▓				
End-of-quarter employment					▓	▓			
Full-quarter employment				▓	▓	▓			
Full-quarter employment in the previous quarter			▓	▓	▓				

SOURCE: Derived from page 16 of the U.S. Census Bureau's Quarterly Workforce Indicators (https://lehd.ces.census.gov/doc/QWI_101.pdf).

NOTE: t indicates the focal quarter for which the defined measure (beginning-of-quarter employment, end-of-quarter employment, full-quarter employment, etc.) is true.

Individuals who do not meet the stable employment threshold were employed at some point in the quarter but were not employed at both the beginning and the end of the quarter. As a result, their wages for that quarter represent only a partial quarter's wages and cannot be compared with full-quarter wages for other individuals.

The UI wage data analyses in the BASE project used entry cohorts limited to individuals who reached stable employment, defined as workers who had wages in at least three consecutive quarters. (Depending on when a worker begins or ends a job, wages in three consecutive quarters could indicate employment as short as three to four months or as long as nine months.) These workers met the full-quarter employment threshold in their second quarter of employment, allowing for analyses that compared starting wages (using wages from this first full quarter of employment) across individuals. An entry cohort limited only to individuals who reach the stable employment threshold is one where seasonal, temporary, or other impermanent employment situations are removed from the analysis.

The BASE analyses in Illinois found that limiting entry cohorts to those who reached the stable employment threshold significantly reduced the number of individuals in the entry cohorts. The dark green line in Figure 1 shows total new entrants (no employment in child care in the prior two years) by year, and the light green

line shows the corresponding number of new entrants reaching the stable employment threshold. Overall, between 55 percent and 61 percent of new hires in any given year reach the stable employment threshold.

FIGURE 1. Total New Child Care Industry Entrants in Illinois and New Entrants Meeting Stable Employment Threshold, by Year
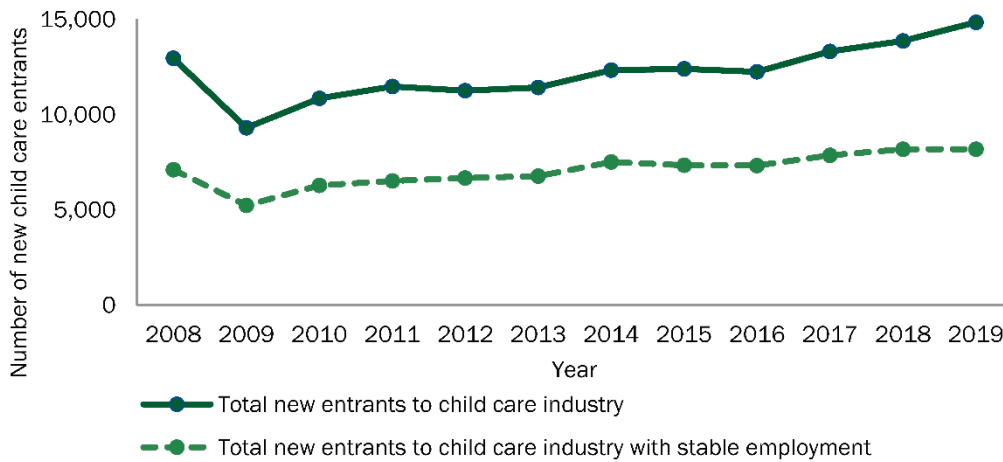
SOURCE: Authors' calculations from Unemployment Insurance quarterly wage records provided by the Illinois Department of Employment Security.

These rates of stable employment are generally similar to those found for other industries in Illinois and for the day care services industry in other states. Using LEHD public use data from the U.S. Census Bureau, the research team looked at equivalent rates for various industries in Illinois in the four-year period from 2016 until 2019. Across all industries, the rate of new jobs meeting the stable employment threshold each year ranged from 45 percent to 46 percent over the period. In employers using the North American Industry Classification System (NAICS) code indicating "Educational Services," it ranged from 49 percent to 52 percent. For the NAICS code for "Health Care and Social Assistance," it ranged from 58 percent to 62 percent. Finally, for the NAICS code for "Accommodations and Food Services," it ranged from 42 percent to 45 percent. Similarly, rates for the day care services industry across several states ranged from 45 percent to 65 percent over this period.[13]

Measuring Tenure

There are several ways to operationalize the measurement of tenure (employment duration) in quarterly wage data. (See Box 2 for possible outcomes measured using UI data.) Because all duration measures are derived from quarterly data, durations are initially calculated in numbers of quarters. Multiplying values by three in order to present duration in months helps to make the results more interpretable, although it is important to note that this adjustment likely overstates durations slightly since first and last quarters of employment will not always be three entire months.

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[13]Researchers may benchmark against employment dynamics in LEHD for their own and other states using the U.S. Census Bureau's LEHD QWI Explorer. See https://qwiexplorer.ces.census.gov/#x=0&g=0

Box 2. Possible Outcome Measures for the CCEE Workforce in Longitudinal Unemployment Insurance Quarterly Wage Data, as Piloted in BASE Project Analyses

1. **EMPLOYEE JOB TENURE:** Length of time an individual receives wages from a single employer (measured in quarters but multiplied by three to report in months for clarity).

    • Continuous months with the employer

    • Total months with the employer in a 10-year follow-up period

2. **EMPLOYEE TENURE IN THE INDUSTRY:** Length of time an individual receives wages from any employer in the child care industry (measured in quarters but multiplied by three to report in months for clarity).

    • Continuous months in the industry

    • Total months in the industry in a 10-year follow-up period

3. **EMPLOYEE ADVANCEMENT:** Wage growth demonstrated by an individual working at the same employer over an extended period.

    • For continuously employed individuals, full-quarter wage growth over time, relative to the starting wage for the same individuals

4. **EMPLOYER TURNOVER RATE:** Annual measure of the level of change in employees at a single employer.

    • Number of workers exiting from an employer (receiving wages in one quarter and not in the next) in a given year divided by the mean quarterly employment for the employer in that year

5. **EMPLOYER RETENTION RATE:** Annual measure of employees leaving a single employer.

    • Percentage of first-quarter employees earning wages from the same employer in the fourth quarter of a given year

Measures of duration tested in the BASE project analyses of Illinois UI wage data include:

1. Number of **continuous** months after entry that the worker spends **with the same employer** (sometimes described as time in a person's first "job," although that definition does not allow for the fact that a person's role or responsibilities may change during the person's time with the same employer)

2. Number of **continuous** months after entry that the worker spends working **in the child care industry** (for example, accounting for a job change with less than a full quarter's unemployment between jobs)

3. Number of **total** months within a 10-year period that the worker spends **with the employer they had at entry** (for example, for individuals who leave their first employer for at least a quarter but later return, this measure will be larger than item 1)

4. Number of **total** months within a 10-year period that the worker spends with **any employer in the child care industry**

Ultimately, the BASE project analyses concentrated on measures of continuous employment (items 1 and 2 above) because there was little difference between these continuous durations and total employment duration in a 10-year follow-up period, suggesting that for the cohorts used in those analyses relatively few workers returned to their employer or the child care industry after employment gaps.

In addition to these overall measures of tenure, it may make sense for certain analyses to look at specific employment patterns, such as breaks in employment at the time of COVID-19 closures.[14]

Measuring Advancement

While job tenure may be operationalized in UI wage data in a variety of ways, wage data alone are only able to capture professional advancement by looking at individual wage growth over time. To ensure accurate comparisons, only full-quarter wages should be compared.

It is possible to look at wage growth both at the same employer and across employment changes. In the BASE UI wage data analyses, the research team found that tenure in a first child care job was very similar to tenure in the child care industry, so the project focused on wage growth while working at the same employer.

In the BASE analysis, individuals who persisted in CCEE had higher starting wages than those who did not persist. Because of this selective attrition, it is necessary to calculate wage growth over time relative to the starting wage distribution of *those who are still employed*, rather than relative to the starting wage distribution of the entire cohort. Depending on the length of the analysis and the economic climate of the years included, it might also be necessary to adjust wages for inflation across years.

Multiple Jobs

Because the UI wage data include one record for every employer/employee combination in a given quarter, individuals who have multiple jobs (receive wages from multiple employers) are captured in the data.

In the BASE UI wage data analyses, only a very small percentage of the CCEE populations included in the analyses held multiple jobs, either in the CCEE industry or across industries. As a result, those analyses did not include any concentrated assessments of multiple jobs.

Employer-Level Measures of Workforce Dynamics

Employer-level measures of workforce dynamics include concepts such as an employer's retention rate and an employer's turnover rate. These rates may be calculated annually for individual employers using UI wage data and then aggregated over time, across the CCEE industry, and across employers who share common characteristics. Because these measures compare employment across quarters, they work best when limited to employers who had at least one employee in each quarter of a given year.

Calculating Employer Retention and Turnover Rates

At the employer level, turnover is defined as the number of workers exiting from an employer in a year (the number of quarters where an individual earned wages and then did not earn wages the next quarter)

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[14]Goerge, Wiegand, and McQuown (2022).

divided by the average number of workers at the employer in the same year (the average point-in-time employment across all four quarters). Calculating turnover annually evens out seasonal employment patterns.

Retention is defined as the percentage of first-quarter employees earning wages in the fourth quarter of a given year. The example below illustrates how both rates are calculated, using a hypothetical employer with the following employment pattern:

- The employer has five employees at the beginning of the first quarter, one of whom leaves in February (first quarter total employment is five).

- In the second quarter, the employer hires two new employees, one of whom leaves quickly (second quarter total employment is six).

- In the third quarter, there is no change (third quarter total employment is five).

- In the fourth quarter, the employer hires one additional employee (fourth quarter total employment is six).

Turnover for this employer is the number of exits divided by the average quarterly employment. There were two employees who left, one in each of the first two quarters. The average quarterly employment was 5.5 ((5+6+5+6)/4). The turnover rate is approximately 36 percent (2/5.5).

Retention is the number of employees who were present in the first quarter who are still present in the fourth quarter. Only one of the employees who was employed in the first quarter left during the year (the other exit was a new hire). That means four out of five employees were retained from the first quarter to the fourth quarter, for a retention rate of 80 percent.

Retention and turnover rates may exhibit substantial variation and be hard to interpret, particularly for small employers. For example, any single employee who leaves a very small employer can have a large impact on that employer's turnover rate.

Employer Characteristics

The UI wage data include information about employers that may be used to characterize or create subset analyses of workforce dynamics.

Employer size in a given year can be derived in two ways with UI wage data: using average quarterly employment or using average quarterly total wages paid. Either measure may approximate the size of the child care center and the number of children served.

Number of employees is not a perfect proxy for children served, especially since the mix of full-time and part-time staff members might vary across employers, but it can roughly distinguish centers by size. Employers in the "Child Day Care Services" industry who average four or fewer employees per quarter are very likely family child care home providers. Likewise, those who average five or more employees per quarter are more likely centers.

In defining employer size categories based on the number of employees, it is important to remember that the median employer size is much smaller in an employer-level analysis than in an employee-level analysis. In other words, while there are more small employers, more people are employed by larger employers. For

the BASE project analyses of Illinois UI wage data, the research team categorized employer size differently depending on the level of analysis. For employee-level analyses, the employer size groupings were 12 or fewer employees, 13 to 25 employees, 26 to 50 employees, and 51 or more employees. For employer-level analyses, the larger groups were the same, but the smallest employers were split into two categories: 4 or fewer employees and 5 to 12 employees.[15] These cut-off points were determined based on the distribution of employer size in the analytic datasets.

Average total quarterly wages paid is another potential proxy for employer size. One advantage of using total wages paid to approximate size is that this measure can be standardized across full-time and part-time employment; if one provider has two full-time teachers and another has four part-time teachers, the number of employees would look different but the wages paid would align. However, this comparison only holds if hourly wages are consistent across different employers, and relating total wages paid to provider type or potential capacity (such as number of children served) is less intuitive than with the number of employees.

Median employer wages are another way to characterize employers. In the BASE project employer-level analyses of Illinois UI wage data, employers are classified according to their median full-quarter wages, grouped by quartile. (Note that for this and other analyses reporting median quarterly wages, it is usually more interpretable to annualize quarterly wage values, multiplying them by four, with clear documentation of this transformation.) This approach allows for analyses that roughly distinguish higher-paying employers from lower-paying employers. Unfortunately, however, employers who have more part-time employees are conflated with employers who pay lower hourly rates using this approach.

Industry and **geography** are important employer characteristics that are collected by the Bureau of Labor Statistics' Quarterly Census of Employment and Wages (QCEW) program to complement UI wage records. The QCEW program combines administrative data from state UI systems with surveys that verify employers' industries and locations.[16]

A single employer can be classified as part of multiple industries and may have multiple locations according to QCEW data, and it is not possible to link quarterly UI wage records to specific sites or industries, only to the employer overall. BASE project analyses classified employers according to the industry where their total quarterly wages paid are highest and treated all employees working for that employer as working in that industry. Industry is classified in QCEW data using a version of the NAICS code assigned by state workforce agencies based on a description collected from the employer.[17]

For geographic analyses, how a location is assigned to a given job may depend on the population under analysis. In the child care industry, most providers are single-site, and even most multi-site providers usually have only a few sites in a relatively small geographic area, so if the analysis is conducted at a relatively large geographic level (such as a metro area), all of a provider's sites may fall into the same geographic area. A handful of large child care companies operate many sites in each state, and it is best practice to segment out these large multi-site providers into their own geographic group. In most cases,

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[15]Wiegand, Goerge, Kang, and McQuown (2024).
[16]U.S. Bureau of Labor Statistics (2023a).
[17]U.S. Bureau of Labor Statistics (2023b).

these companies will be headquartered out of state, so these records will naturally cluster geographically into an "out of state" or "other" category.[18]

Limitations and Potential for Linkage to Other Data Sources

When used in isolation, UI wage data do have some significant limitations in addressing key CCEE workforce questions.

Crucially, the data do not include any characteristics on individual educators, including demographic information, titles, or qualifications. The only individual characteristics that can be derived from wage data are those related to employment history. A "job" as represented in UI wage data does not reflect when someone is promoted or changes roles at an employer; job changes are only visible when the person changes employers.

Analyses that use UI wage data to define the CCEE workforce assume that all individuals employed by employers in the "Child Day Care Services" NAICS code are CCEE workers. Table 2 summarizes the populations that are included or excluded from the workforce defined by industry code. Two particularly significant limitations are:

- Because the data do not distinguish roles within the CCEE sector, researchers cannot distinguish teachers by level or identify administrators or support staff members. The 2012 National Survey of Early Care and Education estimated that 86 percent of all center-based staff members were teachers or caregivers; the remaining employees "might be specialists, administrators, managers, receptionists, cooks, drivers, or custodial staff."[19]

- The data do not capture the earnings of individuals who are self-employed or who operate businesses that do not have any employees. This group includes most owners of family child care homes.

For each individual, the data include total earnings by quarter but no information about weeks worked within the quarter or hours worked per week. While wage data can describe a worker's overall income, it is impossible to distinguish part-time workers or determine an employee's hourly wage. Finally, while some employer information is available in the data, this information does not include CCEE-specific characteristics such as provider type, program model, ages served, or funding source.

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[18]In addition to in-state employers headquartered outside of the state, employers with out-of-state locations will be listed in a state's UI wage data if the employer has employees who live in the state. In other words, an employer may be fully located outside of the state as long as in-state workers either commute across state lines or work remotely for an out-of-state employer. See detail on "Location of Employment" in U.S. Department of Labor Employment and Training Administration (2022).

[19]See the note on page 5 and Appendix Table 6 of National Survey of Early Care and Education Project Team (2013).

TABLE 2. Populations Included in and Excluded from the "Child Care Workforce" as Defined by NAICS Code 624410

Subpopulation	Included	Excluded
Overall	Individuals working for day care centers, preschools, and family child care homes[a]	Individuals working outside the state providing the Unemployment Insurance wage data
By provider type	Public and privately funded child care centers, including centers funded through school districts	Employers classified as elementary or secondary schools Family child care homes operating as sole proprietors with no employees
By employment status	Part-time and full-time workers[b]	Individuals who are paid informally
By role	All employees, including teachers, administrators, and support staff members (such as kitchen staff members, bus drivers, and janitors); classroom staff members cannot be distinguished from support staff members	Nannies, babysitters, or other household employees

SOURCE: Authors' summarization.
NOTES: NAICS stands for the North American Industry Classification System.
[a]Employer type cannot be distinguished in more detail, although employer size can be used to roughly distinguish larger centers from smaller establishments and family child care homes.
[b]Employment status cannot be distinguished using quarterly wage data. Only the total wages earned in a quarter are available for each worker.

Linked data combining UI wage records with CCEE-specific data sources, such as workforce registries or Quality Rating Improvement Systems (QRIS), are one solution to the limitations of UI wage data. Workforce registries in particular contain many of the individual demographics, role characteristics, and provider details missing in wage data. Linking wage data with registry data at the level of the individual worker is challenging because UI data usually contain very limited individual identifiers and rely on Social Security Numbers (SSNs) for linkage. Because registries do not typically collect SSNs, linkages between registry and wage data require the use of an intermediate dataset, such as background check data or state drivers' licenses. This limitation adds to the data access barriers in the creation of linked data and may impact the population covered by the linked data.[20] However, some states have been able to create these linked datasets. For example, one BASE project analysis used Colorado linked data that combined wages and registry information using a background check dataset.[21]

Conclusions and Implications

UI wage data are directly relevant to addressing CCEE workforce knowledge gaps in measuring workforce entry/exit, job duration, retention, and advancement.

The available details about employment and wages in these data ultimately highlight the complexities in how measures like tenure and retention are defined. Capturing the full story of the CCEE workforce requires approaching these questions from multiple angles. For example, suppose that an analysis finds the durations of workers' first jobs in CCEE are generally quite short. The analysis could find that workers are also earning wages in CCEE for a majority of quarters over a 10-year period after beginning their first job—suggesting that workers stayed with the industry but were frequently in and out of particular jobs. Alternately, if workers' first jobs in CCEE are short, but their overall employment in the industry over a 10-year period is similarly short, most new hires are leaving the industry after a short period and not coming

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[20]Wiegand, McQuown, and Goerge (2024).
[21]Wiegand, Guiltinan, Tran, and Goerge (2024).

back. A single measure of tenure that is focused only on the initial duration of continuous employment would not be able to distinguish between these two patterns.

A particular strength of UI wage data is the ability to contextualize labor market patterns in CCEE against patterns in other industries, with consistently defined measures. These cross-industry comparisons, for example, can affirm that it is common for large proportions of new workers to leave their jobs before reaching the stable employment threshold; this is not a CCEE-specific story. Because there are few published numbers about child care workforce dynamics, the ability to investigate these comparative populations is particularly valuable.

However, significant gaps in wage data, especially the lack of individual characteristics, extremely limited setting information, and the absence of data about roles and hours worked, limit the value of these findings. The CCEE industry and its workforce are both varied, and without being able to look at specific subpopulations, conclusions are necessarily limited. Furthermore, the lack of detail about roles and workers can obscure the very specific ways in which jobs and employment are defined in the wage data: The data can only approximately distinguish seasonal workers, employees who do not work directly with children (such as janitorial staff members), and part-time workers, for example, and all of these populations are subsumed into the population-level metrics of tenure, advancement, retention, and turnover. Linked data sources that include UI wage data as well as other sources can help address these challenges.

In addition to extending these measures with information from other data sources, the measures of workforce dynamics captured in UI wage data would benefit from co-interpretation with center directors or Human Resources directors (where they exist). These individuals are more used to thinking about point-in-time cohorts (such as the staff members employed by their center at any single point in time) than cohorts of new entrants, but they could still provide important context around their centers' experiences with very short-term employment (less than one quarter) as well as realistic retention periods for new employees. How do job tenures vary in important ways that might not be captured in these data—for example, is turnover more concentrated in teachers or in support staff members who do not interact with children? Do full quarter wages captured in UI wage data seem accurate, and to what extent do they reflect fewer hours at higher rates or more hours at lower rates?

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