

WHAT HAPPENED TO THE K-12 EDUCATION LABOR MARKET DURING COVID? THE ACUTE NEED FOR BETTER DATA SYSTEMS

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Abstract

The COVID-19 pandemic upended the U.S. education system in ways that dramatically affected the jobs of K-12 employees. However, there remains considerable uncertainty about the nature and degree of staffing challenges during the pandemic. We draw on data from the Bureau of Labor Statistics (BLS) and State Education Agencies (SEA) to describe patterns in K-12 education employment and to highlight the limitations of available data. Data from the BLS suggest overall employment in the K-12 labor market declined by 9 percent at the onset of the pandemic and remained well below pre-pandemic levels more than two years later. SEA data suggest that teachers did not leave the profession en masse as many predicted, with turnover decreasing in the summer of 2020 and then increasing modestly in 2021 back to pre-pandemic levels. We explore possible explanations for these patterns including weak hiring through the summer of 2020 and high attrition among K-12 instructional support and noninstructional staff. State vacancy data also suggest that schools faced substantial challenges filling open positions during the 2021-22 academic year. Our analyses illustrate the imperative to build nationally representative, detailed, and timely data systems on the K-12 education labor market to better inform policy.

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INTRODUCTION

In the spring of 2020, the COVID-19 pandemic swept across the country, shuttering schools and shifting classes online. This rapid change introduced major new operating costs for schools in the form of facilities upgrades, new supplies required for operating schools safely, and new technology for supporting remote instruction. Districts were forced to rethink staffing roles and make employment decisions with considerable uncertainty about the future outlook of education funding. Initial fears led to sobering predictions about huge budget shortfalls in state and local funding for public education, with projections of job losses that would exceed the Great Recession and linger for many years (Griffith 2020; Page 2020).

In addition to the immediate financial consequences, the pandemic also altered teachers' work dramatically, exposing them to potential health risks, increasing their workloads, and inducing considerable stress (Diliberti, Schwartz, and Grant 2021; Diliberti and Kaufman 2020; Kraft, Simon, and Lyon 2021; Zamarro et al. 2022; Steiner and Woo 2021). Policy makers, administrators, and pundits all warned of a massive exodus from the teaching profession (French 2020; Griffith 2020; Page 2020)—with teachers expressing serious concerns about the lack of child care, low pay relative to the increased job stress and health risks, and the transition to online learning (Diliberti, Schwartz, and Grant 2021; Diliberti and Schwartz 2022). By the end of the 2019–20 school year, one in three teachers reported they were likely to leave their job (EdWeek Research Center 2020). More recent surveys conducted by RAND in 2021 and the National Education Association in 2022 find that teachers continue to report high rates of burnout and intentions to leave the profession (Zamarro et al. 2021; Jotkoff 2022). Two years into the pandemic, district leaders remain concerned about a new wave of teachers exiting the profession (Diliberti and Schwartz 2022; Kaufman, Diliberti, and Hamilton 2022). Still, there remains considerable uncertainty about what happened to the education labor market during the COVID-19 pandemic.

Much of the debate about teacher turnover and shortages stems from a lack of data on the U.S. K–12 labor market that is (1) nationally representative, (2) detailed, and (3) timely. Here, we endeavor to leverage a range of available national and state datasets while simultaneously highlighting the limitations of each data source. Several datasets from the U.S. Bureau of Labor Statistics (BLS) describe national employment trends and are updated monthly. However, the data available from the BLS are limited because they do not always allow researchers to disentangle trends in higher education and private schools from those in the K–12 public education sector. Additionally, BLS data are often revised many months after the release of preliminary estimates and may not have accurately measured employment for educators during the unique transition to virtual schooling in the first months of the pandemic.

The National Center for Education Statistics' (NCES) Common Core of Data (CCD) collects nationally representative data that would be useful for examining changes in the K–12 public education labor market across specific job categories. Unfortunately, these full-time equivalent (FTE) employment data collected by NCES are released with delays that are frequently a year or more, limiting their utility to inform policy in real time. Thus, we turn to data from selected State Education Agencies (SEAs), which provide more detailed and timely employment data. The challenge here is that SEAs' disparate

and sometimes opaque approaches to reporting employment data offer an incomplete view of the national education labor market.

In this brief, we draw on the education employment data available from the BLS, NCES, and SEAs to inform our understanding of the past, present, and future of the education workforce in the wake of the COVID-19 pandemic. We document patterns over time from 2000 to 2022 while highlighting specific changes in the labor market from March 2020 to May 2022—the period from the start of the COVID-19 pandemic through the 2021–22 school year. Our exploratory analyses serve to illustrate the unprecedented changes in the K–12 education labor market during the COVID-19 pandemic. We find that the K–12 education labor market shrank rapidly by about 9 percent from March to May 2020. Employment levels two years later in March 2022 remained 4 percent below pre-pandemic levels. At the outset of the pandemic, more K–12 instructional support staff appear to have left their positions than teachers during the same period in previous years.

Data from across 16 SEAs show that teachers did not leave their jobs en masse in the summer of 2020 as many people feared. However, data on teacher departures in the summer of 2021 was limited, causing policy makers and journalists to rely on anecdotal cases on social media and incomplete data from sources such as LinkedIn (Anders 2022), leading to a narrative that the pandemic caused historically high turnover. We show across nine states that turnover (typically defined as leaving a school or district) increased modestly in the summer of 2021, returning to pre-pandemic levels. Possible explanations for the large decline in overall employment but limited changes in teacher turnover include weak hiring through the summer of 2020 and high attrition among K–12 instructional support and noninstructional staff. A range of data sources also suggest that schools faced substantial challenges filling open positions during the 2021–22 academic year. However, the lack of high-quality data makes it difficult to study the teacher labor market, and K–12 education jobs more broadly, at a time when this information is critically important for policy makers.

Our brief makes several contributions to the literature. First, we introduce readers to the full range of national data available to study K–12 employee labor markets and point out the strengths and weakness of these datasets. We then use these data to provide a comprehensive overview of employment patterns before and during the pandemic across existing datasets. We build on state- and district-specific analyses of teacher turnover (Goldhaber and Theobald 2021; Rosenberg and Anderson 2021; Bacher-Hicks, Chi, and Orellana 2022; Camp, Zamarro, and McGee 2022; Donohue et al. 2022) to provide a national picture of teacher turnover using publicly available data from SEAs. We also shine a light on the incongruous trends of declining overall employment but relatively stable teacher turnover and provide data in support of two hypotheses for reconciling these patterns. Finally, we describe how the federal government might expand the Statewide Longitudinal Data Systems Grant Program to build a detailed national picture of the K–12 employee labor market from individual-level state data systems. The ability to complement more localized analyses with a national-level dataset would allow us to track macro-level trends in our nation's K–12 education workforce both accurately and in real time.

Table 1. Datasets Capturing K–12 Education Employment Statistics

Source	Data Collection Method	K Public	G1–G12 Public	K–G12 Private	Postsecondary
CES	Businesses & organizations survey	X	X		
QCEW	Unemployment insurance records		X	X	
JOLTS	Businesses & organizations survey	X	X		X
CPS	Household survey	X	X	X	
CCD	School survey	X	X		

Notes: G = grade; CCD = Common Core of Data; CES = Current Employment Survey; QCEW = Quarterly Census of Employment and Wages; JOLTS = Job Openings and Labor Turnover Survey; CPS = Current Population Survey.

EDUCATOR LABOR MARKET DATA

To explore changes in the educator labor market during the pandemic, we first draw on four surveys from the BLS: the Current Employment Statistics (CES), the Quarterly Census of Employment and Wages (QCEW), the Job Openings and Labor Turnover Survey (JOLTS), and the Current Population Survey (CPS). Each BLS survey captures similar but not fully overlapping populations of education employees given distinct sampling targets and survey designs. Table 1 provides a quick summary of the unit and population captured by each BLS survey. The CES surveys approximately 144,000 businesses and government organizations including school districts each month. These data allow us to estimate the number of primary and secondary jobs in the U.S. K–12 public education sector. The QCEW uses unemployment records from the Quarterly Contributions Reports (QCR) that all private companies and government organization (i.e., local, state) file as a part of the federal unemployment insurance program. These data include a near census of public and private organizations to estimate employment and wages in elementary and secondary schools. Kindergarten teachers are included in the CES estimate but not the QCEW (BLS 2021a, 2021e). The JOLTS surveys roughly 16,000 organizations including public and private sector primary, secondary, and post-secondary schools on hiring, layoffs, and quits each month. These data provide insights into the circumstances under which education employees left their positions. We observe the number of hires and job separations for state and local government education employees, which includes K–12 school districts and higher education institutions, but excludes private schools.

An important limitation of the CES, QCEW, and JOLTS data is that they do not allow researchers to disaggregate estimates for specific occupations within the K–12 education sector using publicly available data (e.g., classroom teachers versus instructional support staff versus bus drivers). At the national level, we turn to the CPS data, which allow for a more detailed view into employment trends for U.S. K–12 public- and private-sector workers. CPS provides more granular occupation information to estimate separate employment trends for teachers and other instructional support and noninstructional staff. The CPS surveys a representative sample of American households on a monthly basis. However, the design of the CPS survey may have limited the reliability of data collected about the K–12 education sector during the initial transition to virtual schooling. In particular, many currently employed K–12 teachers may not have reported working full time as schools transitioned to remote instruction at the beginning of the pandemic (Gicheva 2022). Relatedly, the response rate for the CPS

survey declined sharply by 17.4 percentage points from February 2020 to March 2020 (BLS 2022). We provide a detailed discussion of the issues with using the CPS for understanding the K–12 labor market during the pandemic in appendix B, available in a separate online appendix.¹ We consider the weaknesses of the CPS to be serious enough that we only describe general patterns from our analyses.

We also use data on budgeted teaching and staff positions (i.e., FTEs) from the CCD. An advantage of the CCD staff counts is that they capture the full population of public-school employees to provide a comprehensive national view. Additionally, they include the number of specific education employees (e.g., teachers, school support staff, district administrators). However, the CCD data, which are collected in October of each school year, provide only a snap shot of current staffing levels at one time annually and are released with a considerable delay of a year or more. Another limitation is that annual reports of total FTEs do not provide sufficient information to track turnover in the K–12 public education sector given the lack of individual-level longitudinal data.

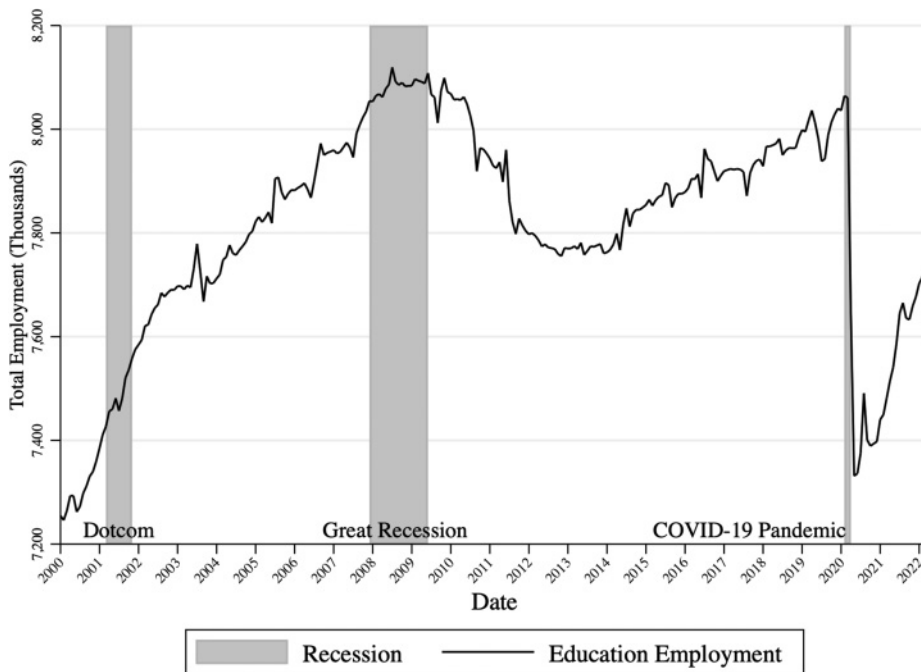
Finally, we draw on SEA data to examine teacher turnover and hiring trends using all publicly available data reported by states. We began by collecting employment data from states that publish teacher hiring data and then focused on a subset that also provide teacher turnover data (Saenz-Armstrong 2021). We identified 16 states that provide estimates of teacher turnover for pre-pandemic years and at least the first year of the pandemic, the 2019–20 school year (see online appendix table C.1 for full details). Differences in turnover definitions and data reporting approaches across states present substantial challenges and make it difficult to compare patterns across states.² We define teacher turnover as the percent of employed public teachers in the base school year that do not return (however defined) in the subsequent school year. For example, the turnover rate for 2018–19 is the percent of teachers in 2018–19 that did not return to the school (or district in some cases) they taught in during the 2019–20 school year. Despite these limitations, data from SEAs do provide important insights about how turnover has changed within individual states over time.

FINDINGS

How Many K-12 Education Jobs Were Lost During the COVID-19 Pandemic?

The CES and QCEW provides timely national data on primary and secondary education employment. Figures 1 and 2 display K–12 employment trends in the CES and QCEW, respectively. The estimates from both the CES and QCEW are quite similar despite the differences in data collection procedures and samples. The CES estimates in figure 1 show the K–12 public education labor market grew steadily over the first decade of the twenty-first century, rising from 7.2 million employees to over 8.1 million at its height in 2008. Education employment then declined steadily from 2009 to 2012 in the wake

1. The online appendix can be accessed on *Education Finance and Policy's* Web site at https://doi.org/10.1162/edfp_a_00391.
2. For example, some states count within-district moves in their measures of teacher turnover whereas other states only count moves between-districts (see online appendix table C1 for more details). States also measure turnover at different times during the school year (e.g., October 2020 to October 2021). Even the years (previous versus current) that are used to label a similar estimate of turnover are inconsistent across states. We standardize state definitions of teacher turnover to the degree that is possible.



Notes: Adapted from Gould (2020). Estimates are seasonally adjusted. Source: U.S. Bureau of Labor Statistics, Current Employment Statistics.

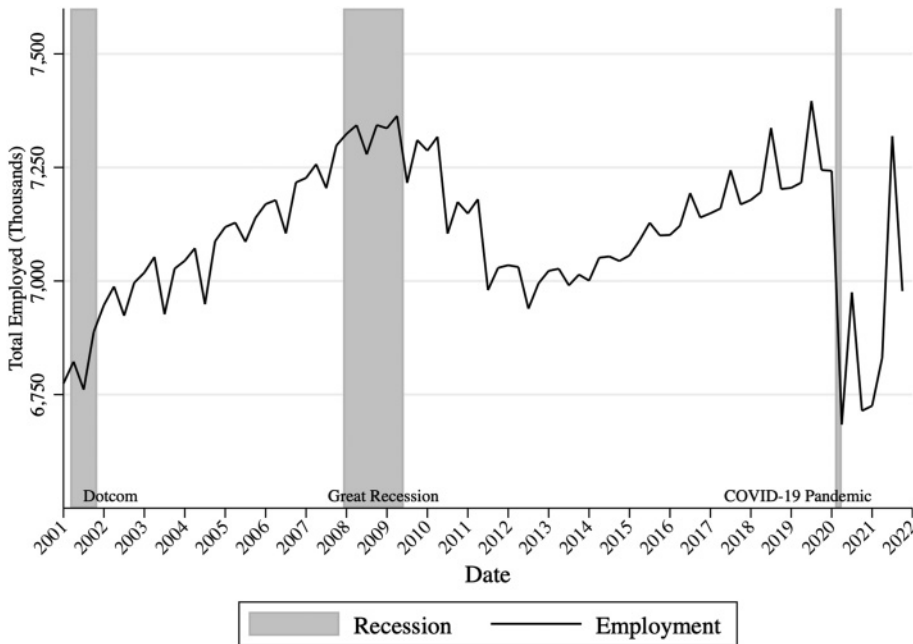
Figure 1. Total Employment in U.S. Local Government Education Industry

of the Great Recession and has never fully recovered. The total number of primary and secondary education employees began to increase slowly starting in 2014, reaching about eight million employees before the start of the pandemic. Figure 2, depicting employment trends in the elementary and secondary education sector using the QCEW, shows a very similar pattern.

Both the CES and QCEW data also illustrate the sudden and steep decline in employment in the K–12 public education sector with the onset of the COVID-19 pandemic. Data from the CES suggest that between March and May 2020, K–12 public education employment decreased by about 9.3 percent. Data from the QCEW show a similar 8.7 percent decrease in the employment of elementary and secondary education teachers from March to May 2020. The rapid decline in jobs at the beginning of the COVID-19 recession was unprecedented in its magnitude, more than twice the number of jobs during the four-year contraction following the Great Recession. This steep decline erased twenty years of labor market expansion in the span of two months. In the months since, total employment has been volatile, given high levels of uncertainty as the pandemic persists but appears to be recovering.

Which Type of K–12 Education Jobs Were Hardest Hit?

The lack of timely employment data for teachers and instructional support staff limits our capacity to understand how the COVID-19 pandemic influenced employment for specific education occupations. Cooper and Hickey (2022) use the CPS data to show the



Notes: Employment estimates are seasonally adjusted. Employment describes the average number of elementary and secondary school employees in a quarter.

Source: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages.

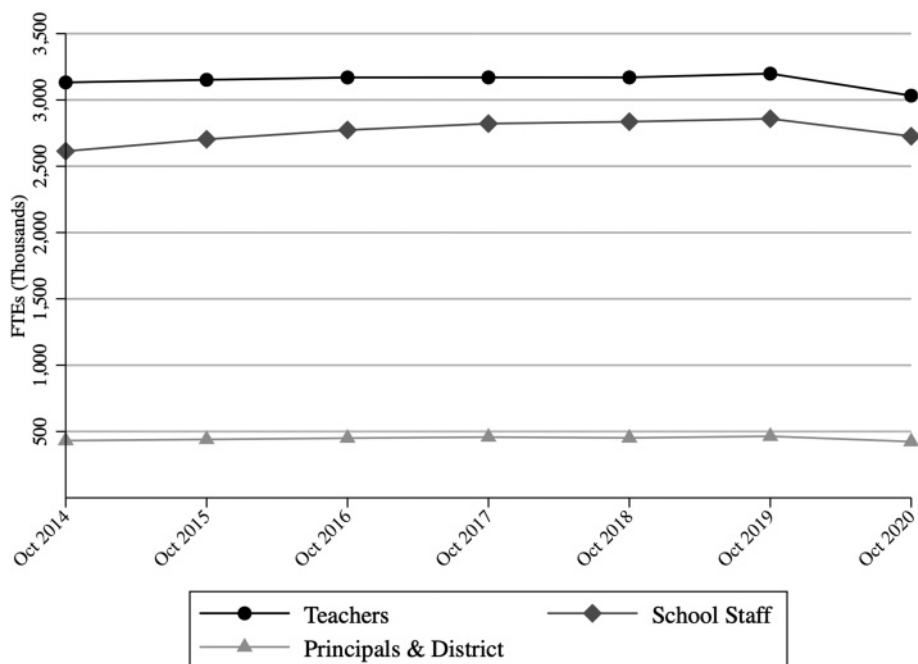
Figure 2. Elementary and Secondary School Employment

immediate job losses were relatively larger among school support staff, with meaningful declines among teachers as well.³ In auxiliary analyses, we replicate these findings using recently updated CPS data and find that job losses for instructional support and noninstructional staff were more pronounced than for teachers but recovered quickly and varied widely across specific occupations.

This general pattern of results is consistent with occupation specific data from Colorado and Illinois (Colorado Department of Education 2021; Illinois State Board of Education 2021). At the end of the 2020–21 school year, there were 3 percent fewer office and administrative support staff, 5 percent fewer people in crafts, trades, and services, and 4 percent fewer paraprofessionals compared with the 2018–19 school year. In Illinois, there were 1 percent fewer nurses and 6 percent fewer guidance counselors in the 2019–20 school year compared with the previous school year.

Data on total FTE positions for the 2020–21 academic year collected by the CCD also support the conclusion that turnover was relatively higher for nonteaching professions. Figure 3 shows the number of FTE teachers, school staff, and district administrators/principals (NCES 2022a) measured in October from 2014 to 2020. Between October 2019 and October 2020, the number of public school teachers declined by about 166,000 while the combined total number of school staff and administrators

3. We find that estimates of total employment in specific education occupations vary considerably from month to month in the CPS, limiting researchers' ability to make precise inferences about employment changes in specific occupational sectors.



Source: Common Core of Data nonfiscal file.

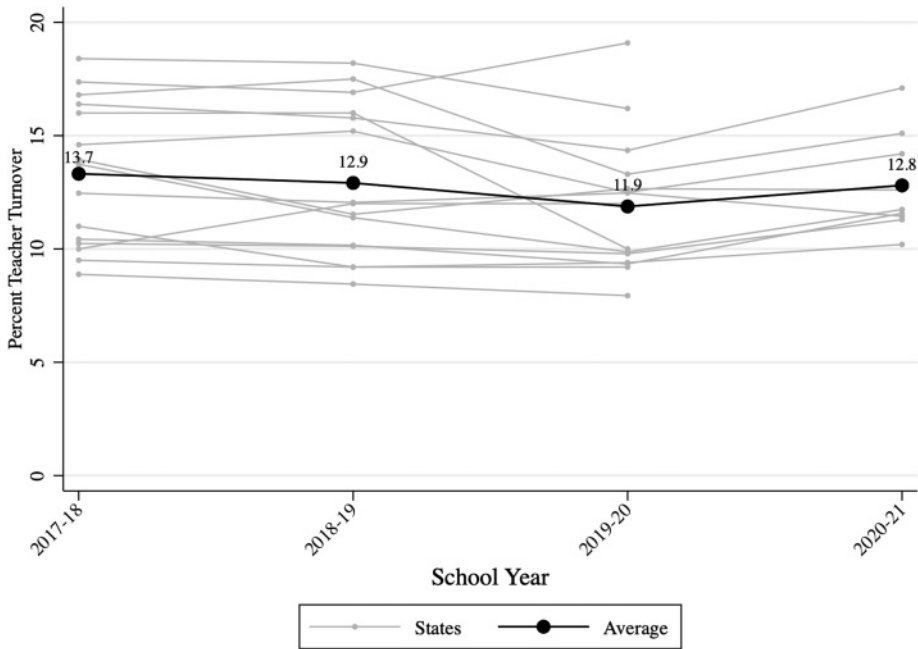
Figure 3. Budgeted Teaching and Staff Positions

declined by about 173,000. However, these annual FTE measures provide an incomplete picture of the dynamic turnover that happened during the pandemic because they do not capture any exits or job losses that occur during the school year after October if these jobs were filled by the following October. Data from the CES and QCEW both suggest that many K–12 education sector jobs were lost in March and April of 2020 but had been recovered prior to October 2020.

Were Predictions of Unprecedented Turnover True?

The BLS and NCES data do not allow us to observe K–12 teacher turnover information. Data reported by SEAs suggest that the high rates of teacher turnover that many feared have not yet materialized in practice. Figure 4 displays average teacher turnover across 16 states for the two school years prior to the pandemic and two post-pandemic school years (i.e., 2019–20, 2020–21). We encourage readers to focus on the relative changes over time shown in figure 4 rather than any state-specific differences in absolute levels given different data reporting practices used across SEAs. We find clear and consistent evidence that there was no increase in teacher turnover after the start of the pandemic. In fact, we estimate that turnover declined by 1.04 percentage points, on average, in the summer of 2020 across the 16 states that publicly report data.

The relatively stable rate of turnover after the 2019–20 school year is likely a consequence of the economic insecurity caused by the pandemic. Research shows that teachers are less likely to leave their jobs during a recession (Nagler, Piopiunik, and West 2020; Goldhaber and Theobald 2021; Eagan et al. 2022). The turnover patterns



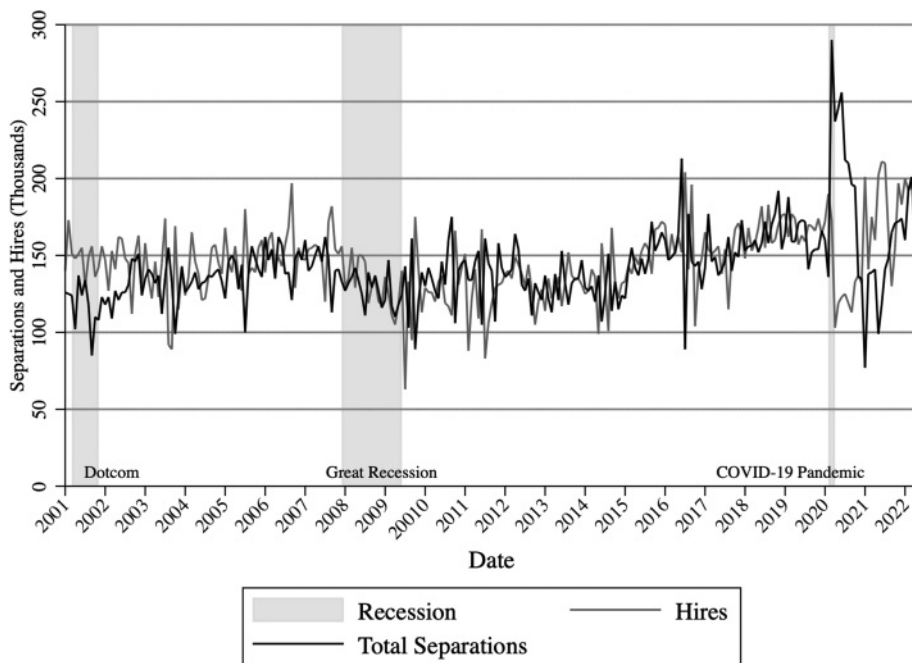
Notes: Percent teacher turnover is the percent of employed public teachers in the base school year that do not return (however defined) in the subsequent school year. Percent teacher turnover is averaged across sixteen states except in 2020-21 when it is a subsample of nine states. Gray lines represent teacher turnover for each of the sixteen states and the black line represents the sample average.

Source: See online appendix C1 for source information.

Figure 4. State Teacher Turnover across Time

shown in figure 4 are also consistent with results from a national survey of school districts (Diliberti and Schwartz 2021), an analysis of detailed individual-level data from six large schools districts (Rosenberg and Anderson 2021), and teacher turnover in Arkansas (Camp, Zamarro, and McGee 2022), Massachusetts (Bacher-Hicks, Chi, and Orellana 2022), Washington State (Goldhaber and Theobald 2021), and Providence Public Schools (Donohue et al. 2022). Additionally, recent research indicates that teacher intentions to transfer schools or leave the profession is an imperfect proxy for actual rates of teacher turnover (Nguyen et al. 2022). This finding helps to explain why survey results that forecasted an exodus from classrooms have not (yet) come to pass.

Questions still remain about whether turnover increased after the 2020-21 school year as the economy recovered and new COVID-19 variants continued to make work in schools challenging. Turnover data for the 2020-21 school year is currently available from nine states: Colorado, Delaware, Maryland, Massachusetts, North Carolina, South Carolina, South Dakota, Texas, and Washington. Teacher turnover increased in the summer of 2021 by 0.8 percentage points among this sample of nine states, returning to levels similar to those observed prior to the onset of the pandemic. However, increasing rates of teacher turnover remain a distinct possibility as the COVID-19 pandemic persists and burnout remains high, making efforts to standardize and expand data collection efforts even more pressing.



Notes: Estimates are seasonally adjusted.
 Source: U.S. Bureau of Labor Statistics, Job Openings and Labor Turnover survey.

Figure 5. State and Local Government Education Separations and Hires

Why Did Jobs Decline?

We turn to the JOLTS data to explore possible explanations for the large decline in overall K–12 education employment given that teacher turnover has been relatively stable through 2021. Data suggest this decline is explained by a range of factors including weak hiring at the start of the pandemic and an increase in total employee separations (i.e., retirements, layoffs, quits from a school district). The decline in hiring is clearly evident in figure 5, which plots the total number of separations and hires in the public education sectors (i.e., primary, secondary, postsecondary). Hiring plummeted at the start of the COVID-19 pandemic. Schools and universities hired an average of 32,000 fewer educators per month in the six months after the pandemic relative to the average over the five prior years. Federal stimulus aid supported ephemeral hiring booms in January and June 2021, but they were not large enough to offset months of anemic hiring. JOLTS data also show that total separations of employees from K–12 public schools and public colleges/universities also reached an all-time high during the COVID-19 pandemic. At their peak in March 2020, the number of total separations (294,000) was roughly double the steady rate observed across the prior two decades.

The rise in total separations in the JOLTS data raises a puzzle. How did total separations (i.e., quits, layoffs, retirements) reach historically high levels in the JOLTS if teacher turnover has remained relatively stable? One possible answer is that these separations are largely driven by job losses in the higher education sector. A major weakness of the JOLTS is that estimates aggregate K–12 and postsecondary workers together, posing a challenge because of the differences in how schools and universities responded to

the COVID-19 pandemic. Universities laid off large numbers of support staff as buildings emptied and classes shifted online (Douglas-Gabriel and Fowers 2020). University revenues are projected to decline by \$17 billion to \$30 billion over the period from 2020 to 2025 (Kelchen, Ritter, and Webber 2021). Additionally, 20 percent of universities responded to the pandemic by not renewing or terminating contracts for at least some nontenure track faculty (American Association of University Professors 2021). A second possible explanation, consistent with patterns in the CPS, is that job reductions in K-12 education were primarily driven by school and district staff rather than classroom teachers.

Continued Staffing Challenges in the Wake of COVID-19

Districts across the country are still struggling to fill open teaching, instructional support, and service positions (Heyward 2021; Goldhaber and Gratz 2021; Aldeman 2022). In September 2021, at the beginning of the 2021–22 school year, 80 percent of schools reported having at least one full or part-time teacher vacancy, and 38 percent of schools reported having more total staff vacancies than in previous years (NCES 2021). Teacher vacancies rose appreciably in the fall of 2021 in eighteen of twenty large U.S. school districts (Barnum 2021). In the fall of 2020 the majority of school leaders reported facing acute shortages of substitutes, bus drivers, special education teachers, and paraprofessionals (Schwartz and Diliberti 2022). Fifty-four percent of undergraduate-level and 42 percent of graduate-level teaching programs reported that the pandemic influenced the number of new students entering the program (King 2022). State hiring data show that the proportion of newly hired teachers declined 0.6 percentage points in 2019–20 and 1.9 percentage points in 2020–21 compared to the three school years prior to the pandemic (i.e., Colorado, South Carolina, Texas) (Colorado Department of Education 2021; Smith 2021; Center for Educator Recruitment, Retention, & Advancement 2021).

CONCLUSION

At the outset of the pandemic, school leaders were acutely concerned about a repeat of the Great Recession, when the housing market collapse led to a prolonged drop in public education funding and a substantial decline in the education sector workforce. We find that the initial shock of the COVID-19 pandemic caused an unprecedented decrease in the size of the U.S. K-12 public education labor force, but that this historic decline was not driven by increased teacher turnover. We read the state hiring/vacancy data in conjunction with the JOLTS and CCD data to support two potential explanations: a massive slowdown in hiring coupled with increased separations (e.g., quits, layoffs, retirements) concentrated among instructional support and noninstructional staff.

Our analyses suggest that the data collection infrastructure in the U.S. is largely inadequate for providing detailed, real-time information about national trends in the K-12 teacher workforce. This lack of nationally representative, detailed, and timely data substantially limits the information policy makers have when attempting to make data-informed decisions during crises such as the COVID-19 pandemic. Our lack of a national teacher labor market data system leads to conflicting and potentially erroneous conclusions about the current state of the teacher labor market.

We see a central role of the federal government in supporting states to collect and report teacher turnover statistics. The vast majority of states do not make detailed data

on teacher supply and demand available, which is likely due in part to a lack of a capacity (Saenz-Armstrong 2021). The federal government has successfully supported state efforts to build student data systems through the Statewide Longitudinal Data Systems (SLDS) Grant Program (NCES 2022b). The NCES could expand the SLDS Grant Program to support SEAs to enhance their data systems tracking K–12 education employees. These data would allow state and federal policy makers to develop more targeted solutions to staffing challenges by helping them to diagnose specific challenges and their causes. Which type of K–12 education employees are the most difficult to recruit and retain? Are staffing challenges localized or more broadly distributed? Do shortages reflect limited educator supply or excess demand due to high rates of turnover from the profession? A national picture of detailed K–12 employment data would also shine a light on districts and states that have succeeded in attracting and retaining effective educators.

The future trajectory of the K–12 teacher labor market remains an open question. Previous recessions had both immediate and delayed effects on education employment (Kraft and Bleiberg 2021). The U.S. Department of Education has advised states to spend Elementary and Secondary School Emergency Relief funds by 2024 (U.S. Department of Education 2021), creating a potentially large fiscal cliff for states and districts (National Conference of State Legislators 2021). Concerns about teacher stress and burnout remain and employee separations appear to be on the rise again. Vaccine hesitancy and new COVID-19 variants could unexpectedly cause further school closures and economic slowdowns, tipping the economy back into a recession. We expect that the COVID-19 recession and prolonged pandemic will continue to shape both prospective employees' decisions whether to pursue a career in K–12 education and current education employees' decisions whether to remain in the profession. Going forward, having nationally representative, detailed, and timely data will be essential to building and sustaining a strong educator workforce.

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