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Paraeducators: Growth, Diversity and a Dearth of Professional Supports

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Paraeducators perform multiple roles in U.S. classrooms, including among others preparing classroom activities, working with students individually and in small groups, supporting individualized programming for students with disabilities, managing classroom behavior, and engaging with parents and communities. Yet, little research provides insights into this key group of educators. This study combines an analysis of national administrative data to describe the paraeducator labor market with a systematic review of collective bargaining agreements and other job-defining documents in ten case-study districts. We find a large and expanding labor market of paraeducators, far more diverse along ethnic and racial lines than certified teachers but with far lower wages, fewer performance incentives, less professional development, and fewer opportunities for advancement within the profession.

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Abstract

Paraeducators perform multiple roles in U.S. classrooms, including among others preparing classroom activities, working with students individually and in small groups, supporting individualized programming for students with disabilities, managing classroom behavior, and engaging with parents and communities. Yet, little research provides insights into this key group of educators. This study combines an analysis of national administrative data to describe the paraeducator labor market with a systematic review of collective bargaining agreements and other job-defining documents in ten case-study districts. We find a large and expanding labor market of paraeducators, far more diverse along ethnic and racial lines than certified teachers but with far lower wages, fewer performance incentives, less professional development, and fewer opportunities for advancement within the profession.

Keywords: Paraeducators, Teachers, Human resources management, Mixed-methods research, Collective bargaining contracts

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The rapid increase in non-teacher instructional staff is changing the composition of the educator workforce in public elementary and secondary schools. While between 1990 and 2018 the number of teachers in the U.S. modestly increased from 2.4 million to 3.2 million (a 7.8% increase), the number of paraeducators— also referred to as teaching assistants, instructional aides, or paraprofessionals — increased from 395,960 to 825,630 (a 108.5% increase) during the same period. The growth of paraeducators led teachers in fall of 2018 to make up less than half of the administrative and instructional staff[1] in schools (48.3% in 2018, NCES, 2020). Yet, despite that paraeducators are a large and growing share of educators, little research has provided evidence of the characteristics or dynamics of their workforce.[2]

Paraeducators perform a variety of roles in classrooms, including among others preparing classroom activities, working on instruction with individuals and small groups, supporting individualized programming for students, performing clerical tasks, managing classroom behavior, helping to evaluate student work, and conducting parent involvement activities (Hemelt et al., 2021; Lewis, 2005). Having paraeducators in these roles may allow more time for teachers to focus on teaching and provide opportunities for differentiating instruction. Paraeducators often serve students with learning differences, multi-language learners, and those receiving additional academic support.

Policymakers and district leaders have also recognized paraeducator positions as potential steps in the pipeline for recruiting racially, ethnically, and linguistically diverse teachers as paraeducators are more diverse than the current teaching workforce and often come from the communities in which they work (Haselkorn & Fideler, 1996; Pickett, 1996). These attributes, in addition to their already acquired experiences of instructional practice, student support, and family engagement, make paraeducators strong teacher candidates (Villegas & Clewell, 1998). A

number of school districts have developed "grow your own" or "career pipeline" programs in collaboration with teacher preparation programs offered by local colleges, universities, or other types of non-profit organizations to target the recruitment of paraeducators into teacher preparation programs and support them during their first years of in-service teaching (Kaufman et al., 2020; Villegas & Clewell, 1998).

A relatively small body of research evaluates the effectiveness of paraeducators in improving student learning. Early research found small and inconsistent effects of teaching assistants on student achievement (Davidson et al., 1994; Kruger, 1999; Gerber et al., 2001); however, more recent research in the U.S., Denmark, U.K., and Wales shows more positive effects (Alborz et al., 2009; Anderson et al., 2018; Hemelt et al., 2021). For example, leveraging the significant reduction in state-funded staffing levels for teaching assistants in North Carolina, Hemelt, Ladd, and Clifton (2021) provide compelling evidence that paraeducators have positive effects on student achievement in both math and reading, with the clearest and most widespread effects on reading. The study found that paraeducators were more beneficial for students of color and in high-poverty schools than for White students and students in more affluent schools. Similarly, Bingham et al. (2010)'s randomized controlled trial of 63 kindergarten-aged children who had been ranked in the lowest 20th percentile on basic literacy skills revealed that children who received engaging and explicit supplemental instructions from a paraeducator performed significantly better on rhyming, spelling, and blending tasks than children who received one-on-one instruction through a tutoring program (Bingham et al., 2010).

The evidence about paraeducators' impact on student academic achievement piques a growing interest for researchers and policymakers to better understand this group of educators. Yet, we have limited evidence on paraeducators, including on their distribution across states and

districts or the contexts in which they work. We particularly lack information about how districts manage, motivate, and develop their paraeducator workforce, including to what extent they use strategies of compensation and benefits, evaluation, and professional development and mentoring. This evidence could support a more in-depth discussion of how to best use the substantial investment in paraeducators to effectively support student learning. To address these gaps in our knowledge, we ask the following specific questions in this paper.

1. What are the recent trends of paraeducator workforce development from the 1990s to 2019, particularly in comparison to trends in the teacher workforce?
2. What contextual factors (e.g., school district demographics and performance) explain the variation in paraeducator workforce development across school districts?
3. How do district policies develop, motivate, and manage paraeducators in comparison to teachers?

To answer these questions, we use an explanatory sequential mixed-methods approach. We first apply descriptive analysis to multiple federal databases to examine the growth of the paraeducator workforce from 1993 to 2019, comparing it to the trends for the teacher workforce. We find great variation across states in paraeducator workforce growth and in the number of paraeducators per 1,000 students. We also find that the paraeducator workforce is more racially diverse than teachers and that their compensation varies greatly. To address research question 2, we then use multivariate regression models to examine factors that predict the number of paraeducators per student across districts nationwide and the growth of paraeducator over time. We find that districts that hired more paraeducators or grew their paraeducator workforce more rapidly were more likely to serve higher proportions of students from high poverty backgrounds,

students receiving special education services or multi-language learner services, and schools with higher expenditures per pupil.

For research question 3, we code in detail and then analyze collective bargaining agreements and employment handbooks from the largest school districts in the ten most populated states in the U.S. This analysis provides the first evidence of districts' talent management strategies for paraeducators. We find wide variation in paraeducator policies across districts and states, with unionization playing a significant role in defining the structure and content of district-level personnel policies. We also compare these strategies with those for teachers in the same district. We find that paraeducators receive fewer mentoring and leadership opportunities compared to teachers, and that their contracts provide fewer evaluation criteria and less support for an unsatisfactory evaluation.

In what follows, we first review relevant literature on the paraeducator workforce including the policy context shaping the expansion of that workforce, and then provide a human resources framework to guide our exploration of the third research question including the qualitative coding. We then describe the ways in which our quantitative and qualitative data and analytics are integrated to inform our research questions. We lastly summarize the key findings and discuss their policy implications.

Literature Review and Conceptual Framing

This section starts with the review of the historical policies and legislations that shape the development of the paraeducator workforce. These policies contextualize our inquiries of Research Questions 1 and 2. We then adapt the ability, motivation and opportunity (AMO) framework from the human resources management literature to guide our conceptualization of

district strategies that develop, motivate, and manage paraeducator and teacher workforces, to guide our inquiry of Research Question 3 (Appelbaum et al., 2000; Boxall, 2003).

Policies that Shape the Recent Trends of Paraeducator Workforce Development

Paraeducators gained popularity as policymakers looked for alternative ways to address teacher shortages and provide educational services to students. In 1953, Bay City, Michigan designed and organized the first large-scale use of teacher aides with a grant from the Ford Foundation (Lewis, 2005; Gartner & Riessman, 1974; Gerber et al., 2001). A series of national events in the 1960s and 1970s then further influenced the development of the paraeducator profession. The Nelson-Scheuer Amendment to the Economic Opportunity Act of 1964 designated $40 million for the 1966-67 school year to provide people living in economically disadvantaged communities with little or no formal education with training in teaching and learning to support them becoming paraeducators (Kaplan, 1977). Then, Title I of the Elementary and Secondary Education Act (ESEA) of 1965 designated $75 million for teacher aides in schools in low-income areas. The Bilingual Education Act of 1968 and other reauthorizations in the 1970s provided competitive grants that school districts and other educational institutions could apply for to strengthen the services they provided to multilingual students (Stewner-Manzanares, 1988).

The targeting of funding to schools in high-poverty geographies and those serving low-income and multi-language learners also contributed to developing a workforce that was relatively diverse by race and ethnicity. Many paraeducators were local to the communities in which they worked and served as a key link to families and communities (Chopra et. al., 2004; Lewis, 2004). Moreover, schools commonly hired women of color as paraeducators as a way to bridge communication and language gaps between home and schools, as well as to make

children feel more comfortable in racially desegregated school settings and for students whose primary home language was not English (Hayes, 1965; Shank & McElroy, 1970).

With the growth of the workforce, policymakers and school leaders began to require special training for paraeducators, enhancing both their skills and responsibilities. In the 1970s, multiple legislative actions mandated training and career development for paraeducators. The passage of the Education for All Handicapped Children Act of 1975 required schools to provide a free and appropriate education for all children and youth with disabilities, and all staff who work with these children, including paraeducators, were required to have appropriate training. The Individuals with Disabilities Education Act (IDEA) reauthorization in 1997 further required states to ensure that paraeducators possess the appropriate education and ongoing professional development needed for providing special education and related services to children with disabilities. Higher education organizations and other agencies made concerted efforts to establish standards for career development for paraeducators. Paraeducators evolved to a workforce responsible for a variety of crucial supports for student learning and for other direct and indirect services to students and their parents, as well as for connections between schools and their communities, tutors (Lewis, 2005). In many instances, paraeducators became the primary instructors of students with special education needs.

The reauthorization of ESEA in 2002 as the well-known No Child Left Behind Act (NCLB) continued to influence and professionalize the paraeducator workforce. All paraeducators working in programs supported by Title I funds were required to complete two years of study at an institution of higher education, to obtain an associate's (or higher) degree, or to pass a rigorous standard of quality and demonstrate, through a formal State or local academic assessment, knowledge and ability to assist in instruction. Although the reauthorization of ESEA

in 2015, the Every Student Succeeds Act (ESSA), removed the term "highly qualified" for paraeducators, just as it did for teachers, ESSA directs states to develop minimum standards for employment. As a result, states began to pass legislation to set new paraeducator standards (WA OSPI, 2017).

With required education, experience working with students, and a diversity and community connection greater than the teacher workforce, paraeducators have been recognized as "untapped resources" for recruiting racially, ethnically, and linguistically diverse teachers, as highlighted by a survey conducted by the National Education Association in 1997 (Pickett, 1996). Given the evidence that students achieve better learning outcomes when they are taught by teachers that reflect their own racial and ethnic backgrounds (Dee, 2005; Egalite et al., 2015; Gershenson et al., 2018) combined with the far greater share of White teachers than White students in US schools, many school and district leaders aim to increase the proportion of Black and Lantinx teachers in their classrooms. Black and Latinx paraeducators if supported to become teachers could help to meet these goals. As a result, in the late 1990s, a number of districts created "career ladder" programs that provided paraeducators with opportunities to earn bachelor's degrees and teacher certification. Studies of these programs concluded that financial and academic support systems were vital if paraeducators were to complete such training programs (Haselkorn & Fideler, 1996; Villegas & Clewell, 1998). Similar types of programs for paraeducators that aim to increase teacher diversity, as well as to address persistent teacher shortage challenges in hard-to-staff subjects and schools, have recently gained popularity. Districts have developed alternative, faster-tracked teacher preparation programs that are locally based, often in partnership with external organizations or institutions of higher education (Darling-Hammond, 2016; Kaufman et al., 2020).

In summary, paraeducators gained popularity due, at least in part, to teacher shortages, particularly in schools that served students living in poverty, students receiving special education services or English language learner services, and students with low academic achievement. Its development was likely spurred on by Federal policies aimed at addressing the needs of these students, potentially resulting in greater representation of paraeducators in their schools. Currently, paraeducators are not only a common workforce in schools but, because of their more diverse backgrounds and connections to the local community, paraeducators are being tapped to increase teacher workforce diversity through either "career ladder" programs or alternative teacher preparation pathways.

District Human Resources Strategies for Paraeducator Development

District human resources (HR) strategies broadly aim to recruit, hire and retain effective educators, leaders and support staff. They also aim to develop and support employees and to enhance employees' commitment to their own responsibilities and to district goals. Districts' HR strategies for paraeducators, and the research assessing these strategies, are nascent (Lewis, 2015). However, the literature on the teacher workforce can inform the development of the analytic framework for understanding the current state of the paraeducator workforce.

The AMO framework helps to conceptualize district strategies that are united together to motivate, develop, and manage their workforce and can be a tool for assessing districts' approaches to their paraeducator workforce (Jiang et al., 2012; Myung, Martinez, & Nordstrum, 2013; Runhaar, 2016; Wurtzel & Curtis, 2008). The AMO framework, as shown in Figure 1, posits that HR strategies should comprise (A) ability-enhancing policies aimed at increasing the knowledge, skills, and abilities of employees, (M) motivation-enhancing policies targeted at improving employees' motivation and effort, and (O) opportunity-enhancing policies aimed at

helping employees effectively fulfil their responsibilities and jobs and incorporate their voices in decision making (Jiang et al., 2012). In essence, AMO theory argues that organizational interests are best served by an HR management system that attends to employees' interests to develop their knowledge and skill, and their efforts and commitment to the organization (Boselie et al., 2005).

[Insert Figure 1 Here]

We apply this AMO framework to assess HR strategies for both teachers and paraeducators, drawing on the framework to analyze district collective bargaining agreements and employee handbooks.

(A) Ability Strategies

The (A) Ability HR strategies aim to develop educators' knowledge, skills, and abilities to perform their job and may include the selection and recruitment of best eligible candidates into the service, induction and mentoring for new hires and continuous professional development throughout an educator's career. Selection, induction, mentoring/coaching, and professional development have all demonstrated effects on educator performance.

Research on the selection of teachers demonstrates that typically measured teacher applicants' characteristics, such as education level, certification, and years of experience, predict, teacher performance on the job as measures by observational ratings or through student test score gains, although their predictive power is not strong (Boyd et al., 2009; Goldhaber et al., 2000; Ladd & Sorensen, 2017; Papay & Kraft, 2015). More in-depth measures of teachers, however, do provide better information about their likely effectiveness. For example, Jacob and his colleagues using data from Washington DC, found that academic background (undergraduate GPA) and screening measures (written assessments, interviews, lessons) strongly predict teacher job

performance, though districts and schools do not select teachers effectively based on these characteristics (Jacob et al., 2018). We know of no study that has similarly assessed the selection of paraeducators.

Studies of induction programs for beginning teachers also find mixed effects for both educators and their students (Campbell & Malkus, 2011; Glazerman et al., 2010; Ingersoll & Strong, 2011). Among studies that identify positive effects of induction programs, mentoring and coaching, where beginning teachers are paired with a more experienced teacher whose role is to provide collegial support, constructive feedback, and career guidance to the new colleague, is one of the most cited features (Wang, 2001; Kaufman et al., 2002; Johnson & Birkeland, 2003; Stanulis & Floden, 2009; Borman & Dowling, 2008; Guarino, Santibanez, & Daley, 2006; Hobson, Ashby, Malderez, & Tomlinson, 2008; Ronfeldt & McQueen, 2017). Kraft, Blazar, & Hogan (2018) conducted a meta-analysis of 44 causal research design studies and found significant positive pooled effect sizes of coaching on instructional practice and student achievement.[3]

Many school districts also use on-going professional development (PD) to continuously support teachers. A recent meta-analysis of STEM programs finds that professional development is more effective when it builds teachers' knowledge of the curriculum materials they will use, of how to present content for learners, and of how students learn that content (Hill, Lynch, Gonzalez, & Pollard, 2020). Other empirical research studies identify several features of PD that are more likely to yield positive effects (Desimone, 2009; Gates & Gates, 2014; Jacob & McGovern, 2015; Yoon, Duncan, Lee, et al., 2007). These PD features include on-going and sustained learning, focusing on subject content knowledge, opportunities for active and job embedded learning, and integration into teacher' professional networks and communities

(Authors, 2013).

Within the limited literature addressing how paraeducators develop ability, skills, and knowledge, studies reveal that paraeducators have, on average, not received effective or sufficient PD (Douglas, Uitto, et al., 2019; Walker & smith, 2015; Hall et al., 2010; Frantz, Douglas, Meadan, 2020). Moreover, the research shows wide variation across states and districts in the quality of provided professional development opportunities for paraeducators (Schmidt & Greenough, 2002). The partnership between teachers and paraeducators is critical for providing high-quality educational experiences for students (Goddard et al., 2007). A common district strategy uses "cooperating teachers" to provide mentoring and coaching for paraeducators. The collaboration between these mentor teachers and paraeducators can provide paraeducators with opportunities to learn and practice new skills, such as lesson planning, individualized education plan (IEP) development, assessment, and communication with parents. Teachers can also serve as role models for paraeducators to encourage them to become teachers (Ashbaker & Morgan, 2006; 2010; Chopra, Sandoval-Lucero, & French, 2011; Pickett, 2008; French & Pickett, 1997). However, research indicates that cooperating teachers do not typically receive adequate training for their roles in supporting and coaching paraeducators (Lewis, 2015; Biggs et al., 2016; Douglas et al., 2016; Morgan, 1997; Wallace, et al., 2001).

(M) Motivation Strategies

Within the AMO framework, (M) Motivation comprises HR strategies that are implemented to influence employee motivation and effort. These strategies can include performance management policies, salary and benefits, monetary incentives, recognition, tenure, and layoff or dismissal policies. These management policies provide both pecuniary (salary and

benefits) and non-pecuniary (recognition and tenure) incentives, as well as use either positive (e.g., merit pay, tenure) or negative (e.g., layoffs or dismissal) motivation strategies.

The research on these types of strategies for paraeducators is sparse but, again, studies of the teacher workforce provide potentially useful insights. For teachers, performance management systems that have positive effects often include the features of rigorous evaluation instruments and processes that provide useful feedback for teachers to use in their daily instructional improvement, as well as integration with high-leverage incentives that include either monetary reward or job security threats. This type of evaluation system, such as in Connecticut and Washington D.C., produced positive effects on retaining high-quality teachers and improving teacher performance as measured by student test scores and observational ratings (Dee & Wyckoff, 2015; Taylor & Tyler, 2012).

Pecuniary awards can provide incentives for employees to increase their effort in ways that are conducive to organizational performance (Akerlof & Yellen, 1986; Hendricks, 2014). For example, one study shows that highly able teachers are less likely to search or accept an outside offer if their salaries are high enough in their current school district (Hendricks, 2014). Districts also can provide a variety of limited-time monetary incentives— such as signing bonuses, certification stipends, tuition reimbursement, loan forgiveness, tax credits, and housing subsidies — to motivate their employees to put more effort into their work, or to recruit and retain educators particularly in hard-to-staff subjects or schools (Springer et al., 2016). Studies have found positive effects of such programs on teachers' career choices (Dee & Wyckoff, 2015; Springer et al., 2016; Clotfelter et al.; 2008; Glaberman et al., 2013; Steele, Murnane, and Willett, 2009). Research on retirement benefits further demonstrates the potential power of

pecuniary incentives, strongly affecting the retirement decisions of many teachers (Costrell, Podgursky, 2010; McGee & Winters, 2019).

A variety of other policies and practices can affect motivation including among others, tenure, dismissals, and reduction of workforce policies. Tenure policies prevent teacher dismissal for political purposes or due to capricious decisions by administrators or politicians. Although tenure policies do not require schools to retain ineffective teachers, the cost of due process for removing teachers with tenure are so burdensome that they rarely are pursued (Authors, 2015). These types of policies could be motivating to teachers if they protect them from capricious decisions and increase their commitment to the organization or they can be demotivating if they reduce the incentive to perform because of the difficulty in dismissal. Over the past decade, many states and districts have increased dismissal using multiple measures of teacher performance (including value added and rigorous observations) as criteria for dismissal (Winters & Cowen, 2013). As an example, a policy in Chicago that gave administrators full freedom to dismiss provisional teachers (those with less than 5 years of experience) reduced teacher absences by 10% and the incidence of frequent absences by 25% (Jacob, 2011). On the other hand, researchers have cautioned the risks of performance-based dismissal strategy in the possible mismeasurement of employee effectiveness associated with value-added measures (Authors, 2011).

Paraeducators also participate in performance management systems that include both pecuniary and non-pecuniary factors affecting motivation. Interviews with 21 paraeducators, participants cited difficulties with low pay as one key reason for paraeducators leaving the profession (Tillery et al., 2003). However, we have very little data on paraeducator salaries nor causally-strong evidence of salaries or other pecuniary incentives on paraeducator career

decisions. Similarly, as teachers, non-pecuniary job features can also affect paraeducators' motivation, although again, the data here is sparse. Surveys and interviews with paraeducators highlight a feeling of lack of voice in school decision making that can reduce their motivation as well as a lack of professional development opportunities (e.g., Fisher & Pleasants, 2012; Riggs & Mueller, 2001). The Council for Exceptional Children (CEC) has established that the supervision of paraeducators is an important role of the special education teachers (2009). Federal laws require that paraeducators work under the direction and supervision of a certified professional (IDEA, NCLB, ESSA). However, teachers and school administrators often lack training and competence in evaluating paraeducators' performance which may affect paraeducators' motivation and resulting job performance (Lewis, 2005).

(O) Opportunity Strategies

Opportunity-oriented strategies provide educators with access to school organizational decision-making and career advancement so as to attract, develop, and retain talents in the profession (Booker & Glazerman, 2009; Ebmeler & Hart, 1992). Opportunity strategies come in three forms. First, for more experienced teachers, teacher mentor/coaching/professional development programs draw on the expertise of master teachers to support the development and growth of early career teachers. Second, teacher career ladder programs recognize the increasing degree of teachers' instructional expertise and offer teachers opportunities to earn extra pay for extra duties (Booker & Glazerman, 2009). Third, shared governance capitalizes on teacher expertise and increases their influence on decision making about instructional, classroom, teacher workforce development, and school organizational issues. District policies often utilize some combination of these three forms, for example, not only having master teachers to mentor new teachers, but also placing them in a career ladder system to compensate for their mentoring

roles, or involving them in school or district decision-making via formations like building leadership teams. These programs (a) provide master teachers with opportunities to observe and interact with other teachers to continue growing their own instructional and leadership expertise (Porter, 1986; Smylie, 1994), (b) develop teachers' ownership and commitment to the organizational goals (Barth, 2001; York-Barr & Duke, 2004); and (c) support schools to make more effective organizational decisions and increase the likelihood of successful reform implementations (Authors, 2013).

To build paraeducators' opportunities, one popular strategy is for districts to establish career pathways for paraeducators to become certificated teachers. This approach serves to improve the job performance of paraeducators by providing a career ladder. These programs may target paraeducators who are already working in community schools to continue their education towards teaching certification or high school students who are interested in obtaining an associate degree to work as paraeducators. They often offer academic, social, and financial support, including payment for certification exams, tuition assistance, scholarships, living stipends, childcare, transportation supports, release time from school, or counseling and mentorship (Becket, 1998; Lau et al., 2007). Career pathways for paraeducators can simultaneously enhance districts' teacher workforce. Paraeducators often diversify the teacher workforce and can be more likely to stay in the classroom than other teachers entering through alternative pathways (e.g., emergency certification and Peace Corps members) (Clewell & Villegas, 2001). Elementary school teachers who began as paraeducators have also been found to be more effective at improving their students' achievement in reading and math and more likely to remain as classroom teachers than other new teachers (Fortner et al., 2015). However, costs associated with tuition, transportation, and childcare can present high barriers to enrollment in

teacher education, particularly when enrollment requires that paraeducators must resign their paraeducator positions (McLeskey, Tyler, & Flippin, 2004; White, 2004). Very little research provides evidence on district policies that provide career advancement opportunities within the paraeducator profession.

Relationships among These Strategies

These district HR strategies interact with one another, ultimately affecting school performance and student learning outcomes. The HR management literature suggests two main types of relationships among these policies and practices. One type describes that within a district's HR system, the three domains of abilities, motivation and opportunities have synergistic effects on employees' performance (Jiang et al., 2012; Kepes et al., 2008). When the domains are used together, they work interdependently such that the effectiveness of one HR strategy depends on other strategies being in place. For example, teacher evaluation programs (motivation) would have a more positive effect on teacher performance and retention if there are professional development and coaching systems for teachers (ability) in place (Boxall & Purcell, 2000; Boxall, Ang, & Bartram, 2011; Dee & Wyckoff, 2015). The other type is an *additive* relationship in that HR practices have independent and non-overlapping effects on employee outcomes (Delery, 1998; Jiang et al., 2012). In this case, two practices might generate greater effects on an outcome than either one used alone. However, the effects of using two practices together are not more than the sum of the effects of the individual practices and the deficiency of one policy will not necessarily deracinate the effect of another policy (MacDuffie, 1995). In other words, the effect of each practice is sufficient in isolation and is not dependent on other practices (Becker & Huselid, 1998; Batt, 2002; Guthrie, 2001; Liao et al., 2009; Takeuchi et al., 2009; Youndt et al., 1996). For instance, schools can improve employee's skills and knowledge

through one-on-one mentoring and coaching, particularly for early career teachers to acquire knowledge and skills, or schools can offer group-based PD programs. These two strategies may both add value to educator's performance growth and improve student academic performance, while the absence of one-on-one mentoring and coaching would not erase the impact of group-based PD (Delery, 1998). Regardless of being either synergistic or additive, all three HR policy domains contribute to an HR system collectively; thus, a fruitful examination of district HR systems needs to consider the key aspects of HR policies altogether, which is what we plan to pursue in our qualitative coding of districts' key employee handbooks and contracts.

In summary, the research literature on the teacher workforce provides a framework for considering HR practices and empirical research assessing the effectiveness of specific approaches, primarily for improving the workforce of teachers within schools through approaches that affect ability, motivation and opportunity. The same AMO framework can be useful for considering paraeducators as these positions are also affected by ability policies such as educational requirements and professional development, motivational policies such as salaries and voice in decision making, and opportunity policies such as pathways to teaching. However, the review also makes clear the dearth of information on the work-context of paraeducators. While a number of studies have examined in detail the work of a small number of paraeducators, little research has described the workforce and the structures affecting that workforce at scale.

Methods

This study uses an explanatory sequential mixed methods design (Creswell & Clark, 2017). We first analyze nationwide data on paraeducator workforce trends and examine district contextual factors that explain the variation of these trends and patterns. To further understand

district policies that shape paraeducator workforce development, we use qualitative data from an informative sample of school districts to elaborate key differences between paraeducator and teacher workforce policies, and the variations in paraeducator policies across districts and states.

Data and Sample

Secondary Nationwide Data

Fiscal and non-fiscal surveys from the U.S. Department of Education's Common Core of Data (CCD) from 1999 to 2019 provide annual census data for public schools and districts. They include data on employment in five broad job categories: teachers, instructional aides, school and district administrative staff, school and district support staff, and other employees which include librarians, guidance counselors, and instructional coordinators. They also include data on student enrollment, program participation, and per pupil expenditure. We match these data to the average academic test score data for each district drawn from the Stanford Education Data Archive (SEDA) which is available from 2009 through 2019. SEDA includes measures of academic achievement, school and neighborhood racial and socioeconomic composition, and other features of the schooling systems (Reardon et al., 2021).

We also use annual wage and salary information from the U.S. Bureau of Labor Statistics' Occupational Employment and Wage Statistics, which includes wage estimates for teachers and paraeducators (or teaching assistants, as used in the original data) working in elementary and secondary schools across the U.S. We match this data to the National Teacher and Principals Survey (NTPS) and the American Community Survey 1-year public-use microdata samples from IPUMS to compare demographic characteristics between teachers and paraeducators.

For our primary analyses, we begin with district level data from 2009 to 2019 and create a balanced panel that includes a sample of districts that appear in both CCD and SEDA each year. This procedure generates 63,100 district-by-year observations. For the robustness analysis of the relationships between several key school district factors and paraeducator workforce development, we use CCD alone, which includes a longer panel data from 1999 to 2019.

Primary Data from 10 School Districts

To further understand the policies and practices that define the structures and rules for paraeducators' jobs in schools, we collect data on the collective bargaining agreements (CBAs) and official employee handbooks for the largest districts in the 10 most populated states in the U.S. We choose this sample of districts in order to identify policies and practices and variations in those policies and practices that influence a large student population. The resulting 10 school districts are Los Angeles Unified School District (CA), Houston Independent School District (TX), Miami-Dade County Public Schools (FL), New York City Public Schools (NY), School District of Philadelphia (PA), Chicago Public Schools (IL), Columbus City Schools (OH), Gwinnett County Public Schools (GA), Wake County Public School System (NC), and Detroit Public Schools Community District (MI).

Table 1 compares the characteristics of these 10 case-study districts to those of the national samples. The sampled case study districts had lower average numbers of per-pupil staff in 2017-18 than the SEDA sample. They also served far higher percentages of students of color and students receiving English Language Learner services (hereafter, also referred as multi-language learners, MLL), as well as had lower average student achievement and higher per-pupil expenditures. They serve a similar proportion of students with disabilities (SWD).

[Insert Table 1 Here]

Districts in our sample employ multiple types of paraeducators. The most common titles include those of "aides" (e.g., instructional aide, teacher aide, classroom aide), "paras" (e.g., paraprofessional, paraeducator, instructional paraprofessional), and "assistants" (e.g., educational assistant, teaching assistant, bilingual professional assistant). The duties and responsibilities of paraeducators are often dependent on the specific role of that paraeducator position in that district. Common paraeducator responsibilities in the case study districts include one-on-one non-academic support, clerical/administrative support, classroom management, student supervision within and outside of classrooms, and instructional support such as selecting, planning and organizing lessons.

We analyze paraeducator and teacher CBAs and official employee handbooks from the 2019-20 school year, which are most often published on the district or union website. Since three of the states in our sample prohibit unionized collective bargaining for state employees (NC, GA, and TX), we identify other foundational employment documents that include similar information, such as a policy manual in Houston and Wake County and personnel handbook in Gwinnett County. We also include data from documents directly referenced in these core files, such as health care plans and evaluation handbooks. In six of the ten districts, employment provisions for paraeducators and teachers are contained in the same document, while in four districts (New York City, Los Angeles, Columbus, and Detroit) collective bargaining agreements are negotiated separately for these two groups.

Data Analytics

Our data analytics starts with descriptions of the national trends of paraeducator workforce development from 1960s to 2019, as well as variations across states. To better situate paraeducator workforce growth within contexts, we compare the trends and patterns of

paraeducator workforce development with those of regular teachers and other school staff. We then use multivariate regression analyses to predict the variation in level and change in the number of paraeducators per 1,000 students across a range of district characteristics, including student demographic characteristics, district poverty, proportions of students participated in Multi-language Learners (MLL) and special education programs, achievement level, enrollment size, and per pupil expenditure.

To develop a deeper understanding of policy factors that enable or restrict paraeducators' workforce development, we conduct document analyses in the 10 case-study districts. Drawing on analytic frameworks used in studies of collective bargaining agreements (CBAs) for classroom teachers (Strunk & Reardon, 2010; Strunk, 2011; Strunk et al., 2018), we develop a codebook appropriate for both paraeducator and teacher employment documents. Three individual coders read through the teacher and paraeducator materials in a unionized and non-unionized district, and then suggested adaptations to the original teacher codebook, including revisions of wording (to accommodate both role types) and new provisions novel to the paraeducator role. These adaptations and other iterative changes were routinely shared back with the larger research team to discuss these coding decisions and the utility of the codebook. After confirming the initial codebook draft, two individual coders then coded four other districts each, with a third peer-coder cross-coding 15 percent of their provisions in each district as a check for inter-rater reliability. Discrepancies between peer-coders and questions from individual coders were each addressed as a group before moving on in the coding process. This process resulted in inter-rater reliabilities (IRRs) of 88% for one coder and 93% for the second coder. These IRR rates and our regular collaborative codebook development conversations give confidence in the alignment across coders and in applying consistent coding schema across districts.

In keeping with our conceptual framework, our document analysis highlights 32 provisions pertaining to district human resources development strategies for paraeducators some of which align with those of classroom teachers and some of which contrast. We group the provisions under six dimensions of educator employment structures and then group those six dimensions under the ability, motivation, and opportunity framework. The six dimensions include (a) professional growth under the framework element of ability, (b) evaluation, (c) economic incentives, health care, and retirement, and (d) job security under the framework element of motivation, and (e) promotion and leadership opportunities and (f) transfers and vacancies under the framework element of opportunity. We conduct our document analyses at the provision, dimension, and framework element level in order to surface patterns of variation and commonality in the data at both granular and aggregate levels.

Findings

Trends of Paraeducator Workforce Development and Variations across States

As shown in Figure 2, paraeducators are the fastest growing segment of the U.S. educator workforce, increasing from about 401,680 in 1993 to 813,500 in 2019. We observe a fast growth from 1993 to 2003, then a decade of stagnation until 2014, and then another sharp increase from 2015 through 2019. Even during the last economic recession and early recovery from 2008 to 2015, the number of paraeducators did not meaningfully decrease, despite the lesser job security of paraeducators compared to certificated teachers. This lack of reduction in force may result from the federal stimulus funds infused to Title I schools and federal legislative protections of services provided to students receiving special education or English language learner services, students with low academic achievement, or economically disadvantaged students. Starting in

approximately 2015 aligned with the reauthorization of ESEA, employment of paraeducators and other non-teacher non-paraeducator staff picks up pace. In contrast with paraeducator workforce growth, teachers in public elementary and secondary schools had slower and more consistent growth from 1993 to 2016. Growth in other staff has outpaced teachers since 2017.

[Insert Figure 2 Here]

Paraeducator workforce growth has varied across states. As shown in Figure 3, from 1998-99 to 2018-19, some states— including New York (NY), New Jersey (NJ), Delaware (DE), Washington D.C. (D.C.), South Carolina (SC), Ohio (OH), Illinois (IL), Arkansas (AR), and Montana (MT) — had unusually fast growth from 35%-100%. In contrast, states such as Kentucky (KY), Nevada (NV), and Virginia (VA) had low and even negative growth rates during this period of time. Largely, states that had a higher growth rate for paraeducators also had a higher growth rate for teachers.

[Insert Figure 3 Here]

States also vary in the number of paraeducators they employ per pupil. As shown in Figure 4, in 2017-18, states in the Northeast (e.g., Maine, New Hampshire, Connecticut) and upper Mid-West/Mountain regions (e.g., North Dakota, Wyoming) had larger numbers of paraeducators per 1,000 students than those on the west coast (e.g., Washington, California, Nevada, or Utah) or in the southeast (e.g., Florida, Georgia, and North Carolina).

[Insert Figure 4 Here]

The paraeducator workforce differs from the teacher workforce not only in its growth rate but also in the characteristics of its workers. Table 2 shows that the paraeducator workforce as of 2017-18 was far more diverse than the teacher workforce. The higher percentage of Black and Hispanic educators in the overall paraeducator workforce is consistent with prior studies (e.g.,

Pickett, 1996). The average age for paraeducators was older than for teachers, though paraeducators had higher proportions of educators who were less than 30 years old. While teaching is a majority female profession (77%), paraeducators are even more female (87%). They are also far less likely to hold a bachelor's degree or a master's degree. Approximately three quarters of paraeducators do not hold a bachelor's degree, compared with less than 3% of teachers. The distribution of paraeducators across locales was consistent with the distribution of teachers, about 41% in suburban, and 29% in city, 13% in town, and 17% in rural settings.

[Insert Table 2 Here]

Using snapshot data from the U.S. Bureau of Labor Statistics in 2019, on average, paraeducators ("teaching assistants" in the data source) earned under one half of the annual average wage earned by elementary and middle school teachers. Their annual wage ranged from about $19,600 for the 10th percentile to $44,300 for the 90 percentile (2.26 times); in contrast, the annual wage for elementary and middle school teachers for the 90th percentile is 2.48 times as that for the 10th percentile, and 2.45 higher for secondary school teachers.

[Insert Table 3 Here]

District Variation in Paraeducator Workforce Growth

Informed by prior literature on paraeducator workforce growth (please see the literature review section), we examine several district factors that may predict variation in paraeducator workforce magnitude and growth, including student demographic characteristics, poverty, academic achievement (grades 3-8), enrollment, and per-pupil expenditure.

As shown in Table 4, in 2017-18, districts that hired more paraeducators per 1,000 students served a higher proportion of students with disabilities. This characteristic is the strongest predictor of paraeducators per pupil. In addition, districts serving more students

experiencing poverty and those with higher expenditure levels also employed more paraeducators per pupil. District characteristics such as the proportions of students with disabilities and those experiencing poverty are also strong predictors of the number of teachers per pupil.

Table 5 presents similar results using longitudinal data and with models that include district fixed effects. These models allow us to examine how district factors correspond to paraeducator workforce growth. We notice the same factors, such as the proportion of students with disabilities, multilingual learners (or English language learners), and per-pupil education expenditure. These patterns reflect the influence of federal legislation and school funding on paraeducator workforce growth, as stated in the background section that IDEA requires several special educational services provided by paraeducators. Paraeducators with diverse backgrounds are often hired to support MLL students. Moreover, districts with higher spending per pupil are able to hire more paraeducators and teachers, possibly driven by the goal of reducing class size. The factors are associated with teachers and paraeducators in overall consistent ways. The results of using a large sample of CCD yield similar results (see Appendix Table A1).

[Insert Table 4 Here]

[Insert Table 5 Here]

Human Resources Management Policies: Comparing Teachers and Paraeducators

District HR policies define the structures, rules, and support for educators that enable or constrain educator workforce growth. In alignment with the AMO framework, we examine six dimensions of paraeducator management policies found in the employment documents and compare them to those for classroom teachers.

First, Table 6 shares the minimum and maximum of annual paraeducator and teacher salaries from the ten case study districts, as well as the average of these ten minimums and maximums. The average of the paraeducator minimum salary in these 10 districts is reflective of the 10th percentile of the national average for teaching assistants, and the average maximum paraeducator salary in case study districts is similar to the 75th percentile of the national average. For teachers, case-study district minimum and maximum salary averages are reflective of the 25th and 90th percentiles at the national level for K-12 teachers, respectively.

[Insert Table 6 here]

Next, we use the employment documents to capture dimensions of the AMO framework reflected in district HR policies. Table 7 provides descriptive statistics comparing provisions for paraeducators to teachers across the six dimensions: professional growth, evaluation, economic incentives, job security, promotion and leadership opportunities, and transfers and vacancies. For each provision, coders selected a 1 (present) or 0 (not present) and the proportion in the table represents the share of the total provisions in the dimension that were coded as 1. Our measures do not comprehensively capture every aspect of policies or regulations in these employment documents, let alone capture every aspect of district HR strategies for either paraeducators or teachers. Rather, our measures are aligned with the key dimensions of the AMO frameworks that improve educators' professional knowledge and skills, promote educators' motivation and commitment to the job, and offer opportunities for career advancements and leadership in the organizations. To our knowledge, our work is the first comparative exploration of employment conditions between paraeducators and teachers. As follows, we describe the findings for each of the six dimensions aligning with the AMO framework.

[Insert Table 7 here]

(A) Ability

Selection and credentials. While three of the 10 case-study districts specify education credentials for paraeducators (ranging from requiring a high school diploma, to a high school diploma plus a certain number of college credits, to an associate's degree), further inquiry into the state-level certification process via publicly available information reveal that all 10 states require paraeducators to have at minimum a high school diploma or equivalent (e.g., GED). ESEA updates require aspiring paraeducators with no more than a high school degree to pass a role-specific assessment exam (e.g., ParaPro) for employment eligibility. Only New York State has a role-specific certification exam as part of their paraeducator accreditation process. Pennsylvania provides a voluntary credentialing program for special education paraeducators. Districts have more similarities in their credentialing requirements for classroom teachers than for paraeducators. All 10 case study districts require aspiring teachers to have attained at least a bachelor's degree, certification via an approved teacher preparation program, and passing of a state licensing or content exams for accreditation.

Professional growth. The provisions include several dimensions of professional growth such as mentoring programs, PD, and leave for further professional education. Only one of the sample districts mentions a formal mentoring program for paraeducators. Columbus is set to establish this program during the contract window. In contrast, 80% of districts mention mentorship for teachers. While nearly all the case study districts provide PD for both paraeducators and teachers, such support is mandatory for paraeducators in only half of the districts compared to nearly all but one of the districts for teachers. Employment provisions for educator sabbatical and study leave are also provided in some of the case-study districts, with teachers being offered these opportunities in slightly more districts (80%) compared to

paraeducators (60%). Taken together, the comparison between paraeducators and teachers within the domain of developing their abilities to perform their job indicates a level of formal investment in teacher professional growth through mentorship programs and mandatory PD that is not reflected for paraeducators in the case study districts.

(M) Motivation

Evaluation. Within the employment dimension of evaluation, district documents show much less detailed schema for paraeducators than for teachers. For example, fewer case study districts specify the criteria for evaluation or define final evaluation ratings for paraeducators compared to teachers. In provisions concerning observations, only one district specified the number of formal observations for paraeducators (Chicago) and none distinguished between formal and informal observations. In contrast, more than half of the districts do both for teachers. Moreover, more teacher provisions identify the consequences for negative evaluations, than do paraeducator provisions, which is likely due to the higher level of detail in teacher evaluation documentation and also the at-will status of paraeducators in three of the case-study districts. The specific consequences faced for receiving unsatisfactory evaluations, however, are more punitive for paraeducators (e.g., probation or dismissal) than for teachers (e.g., remediation plan or coaching).

Economic incentives, health care, and retirement. Within the dimension of economic incentives, the main areas of difference between paraeducators and teachers are in role-specific monetary bonuses. Case study districts offer paraeducators stipends or bonuses for professional growth at a lower frequency (30%) compared to teachers (80%). For the districts that specify educator bonuses and compensations, the range of bonuses for paraeducators ($150-$800) is far lower than that of teachers, even as a percent of salary ($7,500-$20,000). Districts are also less

likely to offer paraeducators bonuses for filling a hard-to-staff position (Columbus City Schools for special education) compared to teachers (50% of districts, for areas of need such as special education and bilingual education). While districts offer both paraeducators (70%) and teachers (60%) tuition subsidies for continuing education, paraeducators are more likely to be offered units/coursework towards becoming a teacher—leaving the paraeducators' profession. In contrast, teachers are more likely to be offered incentives towards further certification within the profession (e.g., National Board, bilingual). For health care coverage, paraeducators and teachers are offered the same healthcare program in all case study districts. Differences in health care coverage are then only differentiated based on full-time equivalency differences; an average of 21.85 hours/week is needed for coverage. Since most paraeducators work part-time while most classroom teachers work full-time (Ashbaker & Morgan, 2001), paraeducators are likely to have less healthcare coverage than teachers. Lastly, we find little systematic difference between paraeducators and teachers in retirement plan provisions, other than the consideration that cumulative FTE plays a role in retirement payouts.

Job security (tenure, layoffs, reassignment, and grievances). Provisions related to job security show some similarity between paraeducators and teachers, except for procedures for tenure and the non-contract status of paraeducators in states that did not allow for public employee unionization. No district offers paraeducators a procedure for tenure, while 90% of districts offer it for teachers. Of the four districts that specify probationary period lengths for both groups of educators, probationary periods for paraeducators are on average one third of the length of those for teachers. In terms of layoffs, paraeducators and teachers share a similar frequency of provisions including layoff factor criteria, with seniority as a primary factor for layoff decisions, and factors for reemployment offer ordering. In the three right-to-work states

(Georgia, North Carolina, and Texas) paraeducators have lower job security than certificated teachers by measure of being a non-contract employee. We find no provision-based systematic differences between paraeducators and teachers in grievance processes, although slightly more districts specify a district's right to discipline a teacher (90%) than a paraeducator (70%). Most of the case study districts include provisions concerning involuntary transfer after the beginning of the school year for paraeducators and teachers, without noticeable differences in the types of causes that allow for the involuntary transfer of an educator (e.g., the needs of the district, reduction in force).

(O). Opportunity

Promotion and leadership opportunities. In the framework realm of opportunity, we note differences between paraeducators and teachers in the promotion and leadership provisions. Paraeducators are more represented than teachers when it came to the support for promoting out of their role, in that more than half of districts (60%) offer promotional supports for paraeducators to become certificated teachers; in contrast, fewer districts (20%) offer supports for teachers to become administrators. We find little evidence of leadership opportunities for paraeducators, where only one district mentions leadership roles or programs for paraeducators (10%), while all districts did the same for teachers (100%).

Transfers and vacancies. The district documents show less difference between teachers and paraeducators in their opportunity provisions concerning rights to voluntary transfer roles or buildings during a school year. Slightly fewer districts (50%) mentioned such transfers for paraeducators, compared to teachers (80%). Districts that do mention these transfers specified criteria for transfer priority at a similar rate, with the primary criterion for both groups of staff being seniority.

Paraeducator Human Resources Management Policies: Variation across Districts

While the district documents demonstrate clear differences between teachers and paraeducators across the AMO dimensions, they also vary in their treatment of paraeducators across districts. Table 8 summarizes this variation at the dimensional level for each case study district and the subsequent analysis provides insight into common provisions provided for paraeducators, as well as outliers in approach.

[Insert Table 8 here]

For the dimension of *professional growth*, most districts include some reference to professional growth for paraeducators, with the Los Angeles Unified as the one outlier with no mention of paraeducator professional development (PD). Districts vary in whether districts make PD mandatory or provide support for pursuing teacher certification. Philadelphia, New York City, Gwinnett County, and Columbus met these three provisions—including providing PD, making PD mandatory, and providing support for promotion—while Columbus was the only district to meet all four provisions, also including mentoring for paraeducators.

For the *evaluation* dimension, there was less variation in paraeducator provisions across the case study districts because half of the districts (New York City, Miami, Philadelphia, Columbus, and Detroit) met zero of the five provisional criteria, meaning they provided no evidence of an evaluation rubric, observation details, or outcomes for an unsatisfactory evaluation. Gwinnett County, Chicago, and Los Angeles were the only districts who specified skills or final rating categories for paraeducator evaluations, and no district other than Chicago met more than three of the five evaluation provisions in our codebook.

For the dimension of *economic incentives*, *health care*, and *retirement*, there was more commonality across how districts approached health care and retirement, and more differences in

how they approached specific economic incentives for paraeducators. While most districts provided a similar level of detail concerning health care and retirement plans for paraeducators, only Columbus provided a bonus for certain special education paraeducators as a "hard-to-staff" position. The seven districts who provided some version of tuition subsidies and reimbursements for paraeducator professional growth most commonly provided them for some version of units, coursework, or accreditation towards becoming a classroom teacher. The districts who provided these subsidies and reimbursements did not discriminate which kind of paraeducator they were directed for.

For the dimension of *job security*, while districts varied in which of the 12 provisions they provided, they were relatively aligned in how many were provided overall, with each district addressing between 6 and 9 of the 12 provisions. If one counted the job security provision of non-contract employee as a negatively-weighted provision, then the three non-unionized districts of Houston, Gwinnett County, and Wake County would have each provided the lowest number of job security provisions to its paraeducators, a finding that aligns with previous research on the roles of unions in protecting employment. As for the nine districts that allowed for involuntary transfer after the beginning of the school year (Chicago being the outlier for teachers as well), three districts identified specific causes for involuntary transfer, with Philadelphia the only one of those three identifying reasons other than the needs of the district (specifically due to the position being discontinued or a program reduction).

For the dimension of *promotion and leadership*, just over half of the districts offered non-financial support for promotion to becoming a certificated teacher, while New York City was the only district to indicate a formal leadership position (called the Lead Educational Associate) for paraeducators. For the dimension of transfers and vacancies, it was most common for districts to

mention one of the two provisions for paraeducators (concerning priority criteria for voluntary transfers and transfer availability), while only Los Angeles and Columbus mentioned them both. Houston and Gwinnett County (two non-unionized states) did not mention either provision in their foundational employment documents.

Cross-district variation across certain dimensions for paraeducators may be in part explained by differences in state-level collective bargaining conditions. We noted this by comparing trends from the seven case study districts that allowed for state employee organizing to the three non-unionized districts in our sample (Houston, Gwinnett County, and Wake County). Specifically, the non-unionized districts provided paraeducators fewer provisions concerning the employment dimensions of promotion and leadership, transfers and vacancies, and job security. The difference was most pronounced for the two dimensions of promotion and leadership and transfers and vacancies, where the three non-unionized districts provided an average of 17% of provisions within those dimensions, while the seven unionized districts provided an average of 43% and 64% of the provisions, respectively. Within the job security dimension, differences were identifiable at the provisional level in how certain provisions were provided in at least four of the seven unionized districts but zero to one of the non-unionized districts, such as a probationary period for paraeducators, voluntary transfer after the start of the year, and layoff order details. Finding that paraeducators are relatively less supported in non-unionized districts compared to unionized districts further highlights the need to develop support for an important educator group that already has fewer supports and protections compared to teachers within the case study districts.

Discussion

Paraeducators have been the fastest growing educator workforce in K-12 schools from 1990s to 2019. With approximately 813,500 paraeducators in 2019, the paraeducator workforce represents a substantial investment in public education. Paraeducators perform a variety of important roles and responsibilities in schools that have direct and indirect effects on student learning outcomes (e.g., Anderson et al., 2018; Bingham et al., 2010; Hemelt et al., 2021). Unfortunately, we have had very little systemic knowledge of the paraeducator workforce. This study is the first of its kind to describe the workforce and contracts that create the policy context in which these educators work. We combine multiple nationwide databases to uncover trends and variation in the magnitude, characteristics and wages of paraeducators and, using a case study of 10 large districts across the country, we provide some of the first empirical evidence on district HR policies that develop, motivate, and provide opportunities for paraeducators.

Historically, the paraeducator position developed in response to teacher shortage in difficult-to-staff schools and subject areas, such as for teachers serving students with disabilities. In keeping with this developmental pathway, we find that paraeducator workforce growth is associated with increasing public investment in supporting students receiving special education and multi-language learner services, students with low academic achievement, and economically disadvantaged students. Besides the student demographics, districts that had higher expenditures per pupil also had a higher number of paraeducators per 1,000 students.

Initial policy and legislative efforts to develop the paraeducator workforce emphasized hiring educators of color from local school communities to support better connections with students and parents. This focus is evident in the characteristics of today's paraeducators. They are more diverse than certificated teachers, with a substantially higher percentage of Black and

Hispanic educators, in particular. Paraeducators are now a resource for building "career ladder" or "grow your own" teacher preparation pathways for recruiting racially, ethnically, and linguistically diverse teachers.

CBAs and employee handbooks for both teachers and paraeducators from 10 large case study districts provide the first comparative exploration of employment conditions between paraeducators and teachers. We compare provisions related to ability, motivation and opportunity, in keeping with the AMO framework. Within these areas we identify six dimensions of professional growth; evaluation; economic incentives, health care, and retirement; job security; promotion and leadership opportunities; and transfers and vacancies. Our document analysis uncovers patterns of similarity between paraeducators and teachers concerning employment dimensions of retirement and health care, grievances, layoffs and reductions in force, and transfers and vacancies.

We find the most difference between the two education workforces on professional growth, evaluation, and economic incentives and compensation. Paraeducators receive less professional development, particularly less mentoring. Only one of 10 districts (Columbus) mentions a formal mentoring program for paraeducators and that one is in development. In contrast, eight out of 10 districts mention mentorship for teachers in these formal employee documents. While both teachers and paraeducators are provided opportunities for professional development, fewer districts made mandatory PD for paraeducators and fewer districts provide sabbatical and study leave for paraeducators. In terms of evaluation, paraeducator contracts provide less evaluation criteria and formal observations and fewer support for an unsatisfactory rating than they do for teachers. Paraeducators are more likely to receive more punitive actions (e.g., probation or dismissal) than teachers (e.g., remediation plan or coaching). Lastly,

paraeducators are provided fewer overall and less substantial economic incentives than are teachers, including fewer bonuses for professional growth and hard-to-staff positions, and fewer tuition subsidies for continuing education. Taken together, the comparison between paraeducators and teachers indicates that districts have a much higher level of formal investment in teachers than they do in paraeducators.

Paraeducator HR policies also vary across districts. Our analysis identifies several districts with innovative practices. Columbus is developing a formal mentoring program for paraeducators and providing a bonus for certain special-education paraeducators in this "hard-to-staff" position. New York City provides formal leadership positions for paraeducators (called the Lead Educational Associate). These innovative practices may serve as examples for districts to learn from one another.

Paraeducators are a large and growing workforce that provides key services for schools and, importantly, diversifies the demographics of educators in schools—providing adults with knowledge of local communities and shared experiences with students. Yet, these educators receive substantially lower wages, and their contracts provide fewer protections as well as fewer supports for advancement, particularly within the paraprofessional role. The most common type of promotional provisions aims to move paraeducators into the teaching profession. More than half of our case study districts offered promotional supports for paraeducators to become certificated teachers, even more than offered teachers supports to become school leaders. While this movement can be beneficial for many paraeducators, it requires a substantial investment of time and effort by the paraeducator. Many paraeducators, particularly older paraeducators, are not interested in this trajectory. Similarly, paraeducators have low levels of evaluation and observation support, despite the findings from research on teachers that rigorous observation and

evaluation can support professional growth. Overall, paraeducators receive few other promotional or learning opportunities even though they perform necessary and complex jobs in schools that positively contribute to student learning, especially for students most likely to benefit from additional supports (e.g., Hemelt, Ladd, & Clifton, 2021).

Our study also identifies several areas for future studies. For example, although we conceptualize possible synergistic or additive relationships among district HR strategies, we lack data to empirically associate district HR practices with paraeducator workforce development and student learning outcomes. One can imagine that the findings from this type of analyses could well inform districts' investment in a coherent and efficient set of practices to develop paraeducators to better student learning. Moreover, our study only includes 10 districts with large enrollment. Future studies can use a different sampling strategy to also include districts with smaller enrollment, because smaller districts may adopt different HR strategies bounded by their contexts and resources; thus, paraeducators may have different working conditions and experiences in other settings.

In sum, despite these limitations, this study makes a significant contribution to the literature by providing the first evidence on districts' paraeducator workforce development strategies and comparing them with those for teachers in the same districts. The findings highlight several policy strategies that can develop stronger professionalism in the paraeducator profession. Paraeducators, along with teachers and school administrators, should be a perpetual topic in educational policy research and move towards the center of public discourse in making policy decisions.

Endnotes

1. The administrative and instructional staff includes principals and assistant principals, teachers, instructional aides, guidance counselors, and librarians. https://nces.ed.gov/programs/digest/d20/tables/dt20_213.10.asp?current=yes
2. We use "paraeducators" as our preferred term to refer to this group of educators.
3. Research-based elements of effective feedback include using data and evidence from rigorous assessment in feedback conversations; offering specific, descriptive feedback; giving feedback frequently and continuously over time; contextualizing feedback in the teacher's classroom instruction and school setting; establishing and maintaining trust and respect between the feedback provider and recipient; engaging the recipient's performance goals in feedback conversation; and consistent feedback across multiple feedback providers, such as principal, peer teachers, and coaches (Brinko, 1993; Hannan et al., 2015; Hattie & Timperly, 2007; Park, Takahashi, & While, 2014; Rivera-McCutchen & Scharff Panero, 2014; Tuma, Hamilton, & Tsai, 2018).

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Tables and Figures

Table 1. District summary statistics: 2017-18 school year

	SEDA Sample	Case-Study Sample
Staff Characteristics		
Teachers per 1000 students	74.23	56.97
Non-teachers per 1000 students	73.48	56.54
Paraeducators per 1000 students	18.65	12.57
Administrative staff per 1000 students	7.27	4.71
Support staff per 1000 students	17.73	14.38
Other staff per 1000 students	31.59	26.46
Student characteristics		
District proportion Asian	1%	35%
District proportion Black	1%	7%
District proportion Hispanic /Latinx	13%	39%
District proportion White	69%	16%
District proportion SWD	15%	15%
District proportion MLL	5%	16%
District characteristics		
Spending per pupil ($1000s)	13.91	15.45
Grades 3-8 achievement	-0.03	-0.08
Observations	6,371	10

Note. Each cell contains variable mean. District demographic and staffing characteristics data are from the fiscal and non-fiscal annual district surveys from the U.S. Department of Education's Common Core of Data. District achievement data are gathered from the Stanford Education Data Archive (SEDA), averaged across Grades 3 through 8 in Math and ELA. SWD=Students with disabilities; MLL=Multilingual-language learners who are also referred as English Language Learners in the data files and in prior research. Support staff includes school district support staff, school and library support staff, student support staff, and other support services staff. Other staff includes school and district administrators, librarians, and guidance counselors. We use the term of paraeducators instead of instructional aides—the staffing classification terminology used in the Common Core of Data.

Table 2. National Annual Wage Estimates for Education Occupations (in $1000s)

	Mean	10th Percentile	25th Percentile	Median	75th Percentile	90th Percentile
Preschool and kindergarten teachers	42.6	22.9	28	36.8	52.9	70.7
Elementary and middle school teachers	65.3	40.3	48.5	60.9	78.7	100
Secondary school teachers	67.2	41.5	50.5	62.8	81.1	101.8
Special education teachers	65.9	40.8	49.2	61.5	79.4	100.6
Paraeducators (teaching assistants)	30.6	19.6	23.8	28.9	36.1	44.3

Note. National estimates for this table were derived from the Occupational Employment and Wage Statistics (OEWS) 2020 Survey available from the U.S. Bureau of Labor Statistics. These estimates are calculated with data collected from employers in all industry sectors in metropolitan and non-metropolitan areas in every state and the District of Columbia.

Table 3. National Comparison between Paraeducator and Teacher Characteristics

	Teachers[1]	Paraeducators[2]
Race/ethnicity		
Hispanic	9.3%	19.1%
White, non-Hispanic	79.3%	60.9%
Black, non-Hispanic	6.7%	12.8%
Asian, non-Hispanic	2.1%	3.8%
Other races, non-Hispanic	2.5%	3.3%
Age distribution		
Average age	42.4%	43.7%
Median age	41.4%	44.0%
Less than 30 years old	15%	22.8%
30-49 years old	55.7%	38.5%
50-54 years old	11.6%	10.8%
Over 55 years old	17.6%	27.9%
Gender		
Male	23.5%	13.2%
Female	76.5%	86.8%
Highest degree earned		
Less than a bachelor's degree	2.7%	73.7%
Bachelor's degree	39.3%	21.2%
Masters or higher	58%	5.1%
Urbanicity (% of own specific workforce)		
City	30.0%	29.5%
Suburban	42.1%	40.8%
Town	11.1%	12.7%
Rural	16.8%	17.0%

Notes. [1]Teachers include educators at both traditional public schools and charter schools. Teacher data is from the 2017-18 National Teacher and Principal Survey (NTPS) report. [2]Paraeducators include individuals in the "Teaching Assistant" occupation in the "Elementary and Secondary schools" industry according to the census classification. Paraeducator data is from the ACS 1-Year household microdata downloaded from IPUMS. Both, teachers and paraeducators, include full-time and part-time staff.

Table 4. District Factors Predict Paraeducator and Teacher Workforce Size in 2017-18

	Paraeducators per 1000 students				Teachers per 1000 students			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% SWD	0.675**	0.454**	0.451**	0.396**	0.701**	0.250**	0.490**	0.360**
	(0.033)	(0.032)	(0.037)	(0.036)	(0.045)	(0.038)	(0.047)	(0.039)
% ELL	-0.058**	-0.059**	0.021	0.014	-0.336**	-0.319**	0.098**	0.092**
	(0.017)	(0.016)	(0.016)	(0.016)	(0.031)	(0.027)	(0.022)	(0.018)
% Black	-0.012+	0.004	-0.033**	-0.020*	-0.011	0.059**	-0.078**	-0.024**
	(0.007)	(0.008)	(0.007)	(0.008)	(0.010)	(0.010)	(0.009)	(0.008)
% Hispanic/Latinx	0.047**	0.037**	-0.030**	-0.010	0.048**	0.042**	-0.118**	-0.051**
	(0.008)	(0.007)	(0.008)	(0.008)	(0.014)	(0.012)	(0.011)	(0.009)
% Poverty	0.008	0.035*	0.135**	0.079**	0.145**	0.171**	0.238**	0.055**
	(0.016)	(0.016)	(0.015)	(0.016)	(0.025)	(0.023)	(0.020)	(0.016)
Student achievement	2.599**	1.738**	0.571	0.419	5.519**	4.416**	0.988+	0.999*
	(0.470)	(0.455)	(0.443)	(0.432)	(0.730)	(0.600)	(0.568)	(0.434)
Log Enroll		-1.679**		-1.260**		-4.813**		-4.204**
		(0.097)		(0.098)		(0.149)		(0.105)
Log Spending per pupil		8.706**		5.913**		18.040**		15.298**
		(0.476)		(0.536)		(0.591)		(0.736)
State FE	No	No	Yes	Yes	No	No	Yes	Yes
Observations	8,135	8,135	8,135	8,135	8,135	8,135	8,135	8,135
Adjusted R-squared	0.075	0.178	0.375	0.410	0.089	0.371	0.586	0.733

Notes. All columns include state fixed effects. All coefficients for district proportion of student characteristics are scaled by 100 to estimate the effect of one percentage point change. Student achievement includes average district achievement across Grades 3-8 in Math and ELA from the Stanford Education Data Archive (SEDA). District percent Poverty is derived from the district level estimate of poverty for school aged children produced under the Census Bureau's Small Area Income and Poverty Estimates (SAIPE) program.
SWD= Students with disabilities; MLL= Multi-language Learners who are also referred as English Language Learners in the data files or in prior research
Standard errors in parentheses + p<0.10, * p<0.05, ** p<0.01

Table 5. District Factors Predict Paraeducators and Teachers From 2008-09 to 2017-18

	Paraeducators per 1000 students				Teachers per 1000 students			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% SWD	0.372**	0.322**	0.284**	0.267**	0.049**	-0.164**	0.414**	0.251**
	(0.011)	(0.011)	(0.015)	(0.015)	(0.016)	(0.014)	(0.016)	(0.016)
% ELL	-0.018*	0.053**	0.073**	0.066**	-0.299**	-0.046**	0.101**	0.078**
	(0.009)	(0.008)	(0.015)	(0.015)	(0.013)	(0.010)	(0.017)	(0.016)
% Black	-0.002	0.030**	0.056**	0.047**	-0.079**	0.028**	0.027	0.024
	(0.003)	(0.003)	(0.018)	(0.018)	(0.004)	(0.004)	(0.020)	(0.018)
% Hispanic/Latinx	0.062**	0.056**	-0.084**	-0.076**	0.114**	0.084**	-0.124**	-0.020
	(0.003)	(0.003)	(0.014)	(0.014)	(0.005)	(0.004)	(0.016)	(0.015)
% Poverty	0.066**	0.056**	-0.016*	-0.013+	0.192**	0.168**	-0.018*	-0.026**
	(0.006)	(0.006)	(0.007)	(0.007)	(0.009)	(0.007)	(0.008)	(0.008)
Student achievement	1.828**	2.806**	0.543**	0.468*	-0.762**	2.331**	3.050**	3.147**
	(0.181)	(0.184)	(0.205)	(0.204)	(0.295)	(0.248)	(0.227)	(0.215)
Log Enroll		-1.461**		-0.036		-5.158**		-19.629**
		(0.035)		(0.343)		(0.049)		(0.361)
Log Spending per pupil		3.797**		2.760**		15.694**		6.318**
		(0.158)		(0.156)		(0.233)		(0.165)
District FE	No	No	Yes	Yes	No	No	Yes	Yes
Observations	49,899	49,899	49,899	49,899	49,899	49,899	49,899	49,899
Adjusted R2	0.040	0.092	0.720	0.722	0.049	0.364	0.851	0.866

Notes. All columns include year fixed effects. All coefficients for district proportion of student characteristics are scaled by 100 to estimate the effect of one percentage point change. Student achievement includes average district achievement across Grades 3-8 in Math and ELA from the Stanford Education Data Archive (SEDA). District percent Poverty is derived from the district level estimate of poverty for school aged children produced under the Census Bureau's Small Area Income and Poverty Estimates (SAIPE) program.
SWD= Students with disabilities; MLL= Multi-language Learners who are also referred as English Language Learners in the data files or in prior research
Standard errors in parentheses + p<0.10, * p<0.05, ** p<0.01

Table 6. Case Study District Paraeducator and Teacher Salary Comparisons

District	Paraeducators		Teachers	
	Min	Max	Min	Max
Chicago	$37,065	$55,824	$54,547	$111,490
Miami	$21,429	$55,522	$47,500	$85,432
Philadelphia	$15,010	$46,585	$46,267	$88,449
New York	$26,446	$42,070	$56,711	$119,472
Columbus	$21,686	$36,158	$42,981	$101,496
Gwinnett County	$13,043	$33,588	$46,646	$99,500
Wake County	$19,019	$27,112	$41,275	$78,774
Los Angeles	$22,915	$24,061	$53,435	$119,751
Houston	$20,160	$23,659	$54,369	$96,371
Detroit	$10,927	$16,006	$38,500	$74,000
[Min/Max mean]	$20,770	$36,059	$48,223	$97,474

Notes. Data are drawn from publicly available 2019-20 paraeducator and teacher salary schedules

Table 7. Case Study District Paraeducator and Teacher Employment Dimension Comparisons

	Paraeducators	Teachers
Dimension A. (Ability) Professional Growth		
Mentions mentoring	0.1	0.8
Provides professional development	0.9	1
Mandatory professional development	0.5	0.9
Option of sabbatical or study leave	0.6	0.8
Dimension B (Motivation): Evaluation		
Specified categories/skills for evaluation	0.2	0.8
Defined final evaluation rating categories	0.2	0.7
Specified amount of formal observations	0.1	0.6
Distinction between in/formal observations	0	0.7
Consequences for receiving an unsatisfactory evaluation	0.3	0.9
Dimension C. (Motivation): Economic incentives, health care, and retirement		
Bonus for "hard to staff" roles	0.1	0.5
Subsidies/reimbursement for education tuition	0.7	0.6
Stipends/bonuses for professional growth	0.3	0.8
Minimum weekly hours for full health benefits (mean)	21.9	21.9
Specified retirement plan details	0.8	0.8
Specified amount of years benefits last	0.8	0.9
Specified amount paid towards retirement plans	0.7	0.9
Dimension D (Motivation): Job security (tenure, layoffs, reassignment, and grievances)		
Procedure for tenure	0	0.9
Probationary period	0.7	0.9
Specified factors that determine layoff order	0.8	0.9
Specified procedures for layoff notifications	0.8	0.6
Specified factors for reemployment offer order	0.6	0.5
Non-contract employee	0.3	0
Availability of grievance procedure for educators	1	1
Specified non-grievable matters	0.6	0.6
Specified grievable matters	0.7	0.7

Addresses district's right to discipline educators	0.7	0.9
Involuntary transfer after beginning of SY	0.9	0.9
Specified causes for involuntary transfer	0.6	0.6
Dimension E (Opportunity): Promotion and leadership opportunities		
Provides supports for promotions (teacher, principal)	0.6	0.2
Provides leadership opportunities/roles	0.1	1
Dimension F (Opportunity): Transfers and vacancies		
Mentioned member priority for transfers	0.5	0.8
Voluntary transfer after beginning of SY	0.5	0.7

Note. Values represent proportion of employment document provisions coded as 1, or present, out of the ten case study districts

Table 8. Case Study District Paraeducator Dimension Variation

Dimension [*# of provisions*]	New York City	Houston	Gwinnett County	Chicago	Los Angeles	Miami	Wake County	Philadelphia	Columbus	Detroit
Professional growth [*4*]	0.75	0.5	0.75	0.25	0.25	0.25	0.25	0.75	1	0.5
Evaluation [*5*]	0	0.2	0.2	0.6	0.4	0	0.2	0	0	0
Economic incentives [*6*]	0.5	0.5	0.33	0.5	0.33	0.83	0.67	0.83	0.83	0.33
Job security [*12*]	0.58	0.5	0.58	0.58	0.75	0.75	0.58	0.67	0.67	0.75
Promotion and leadership [*2*]	1	0	0	0.5	0.5	0.5	0.5	0	0.5	0
Transfers and vacancies [*2*]	0.5	0	0	0.5	1	0.5	0.5	0.5	1	0.5

Figure 1. AMO Framework for Paraeducator and Teacher Workforce Development

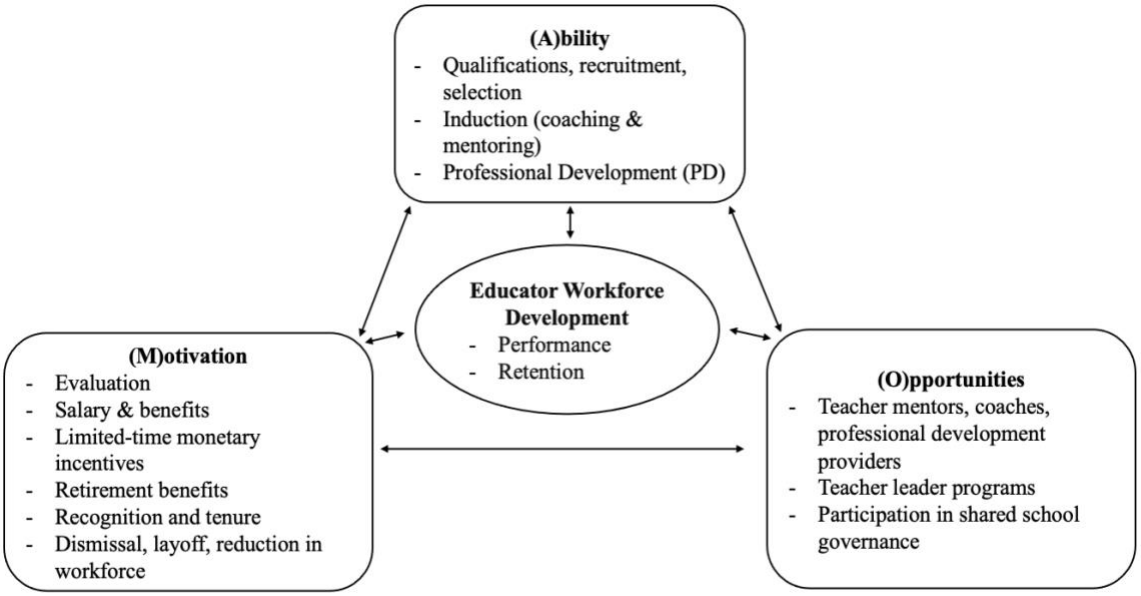
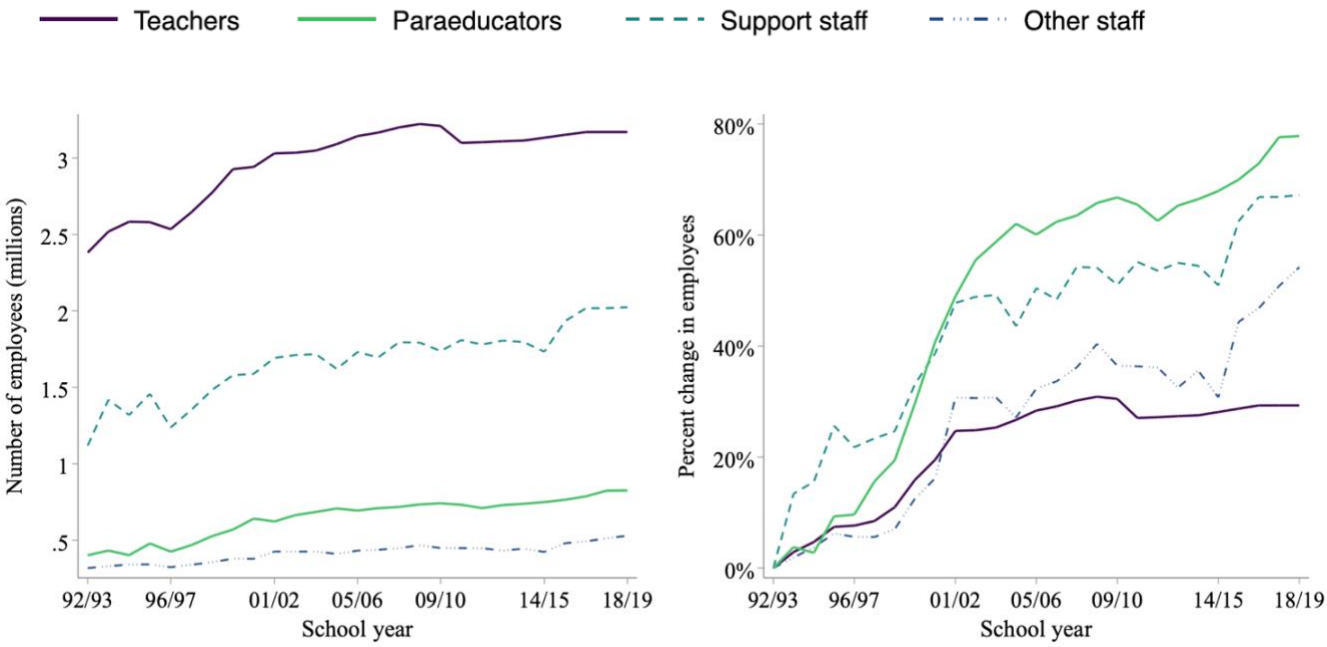


Figure 2. Trends in Paraeducator and Teacher Workforce



Notes. These graphs plot staffing changes from 1992-93 to 2018-19 school years. Support staff includes school district support staff, school and library support staff, student support staff, and other support services staff. Other staff includes school and district administrators, librarians, and guidance counselors. We use the term of paraeducators instead of "instructional aides", the staffing classification terminology used in the Common Core of Data.

Figure 3. Percent Change in Paraeducators from 1998-99 to 2017-18

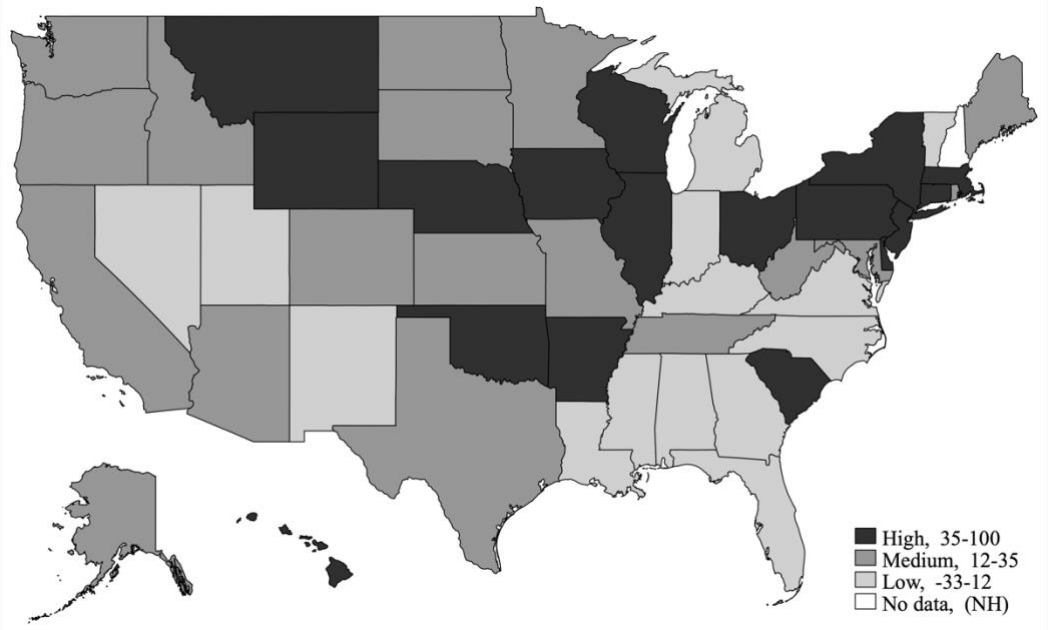
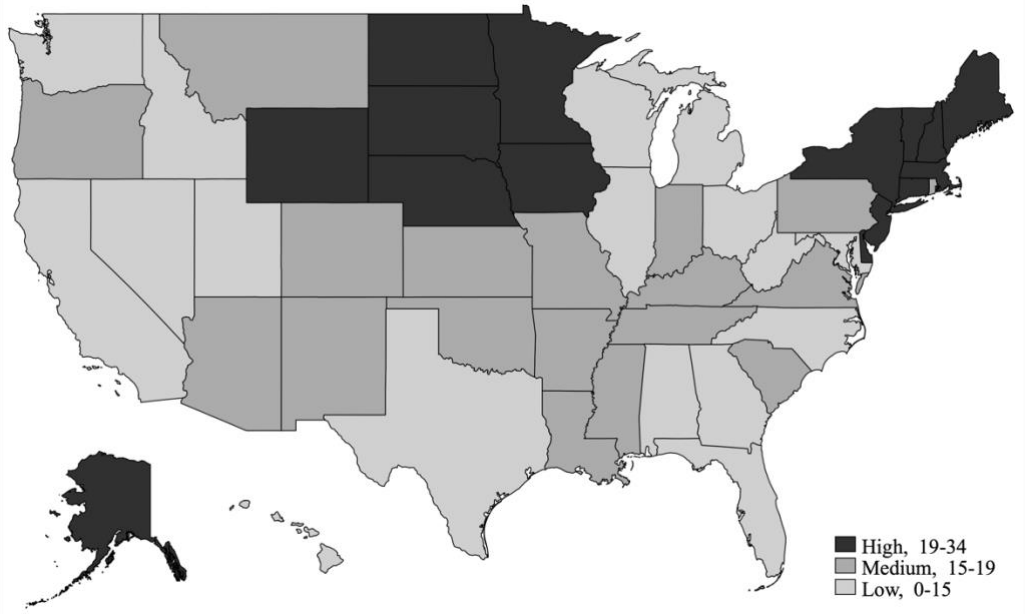


Figure 4. Number of Paraeducators per 1,000 Students in 2017-18



Notes. Staffing data in figures 3 and 4 are gathered from non-fiscal annual district surveys from the Department of Education's Common Core of Data. We use the term of paraeducators instead of "instructional aides", the staffing classification terminology used in the Common Core of Data.

Appendix

Table A1. Distribution of Paraeducators and Teachers across school districts (1999-00 - 2017-18)

	Paraeducators per 1000 students				Teachers per 1000 students			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
% SWD	0.421**	0.259**	0.212**	0.138**	0.702**	0.298**	0.382**	0.186**
	(0.017)	(0.016)	(0.007)	(0.007)	(0.020)	(0.016)	(0.008)	(0.008)
% ELL	0.019**	0.041**	0.054**	0.037**	-0.268**	-0.209**	0.095**	0.056**
	(0.007)	(0.006)	(0.006)	(0.006)	(0.010)	(0.007)	(0.007)	(0.006)
% Black	-0.057**	0.024**	0.062**	0.106**	-0.151**	0.065**	0.027*	0.159**
	(0.002)	(0.002)	(0.012)	(0.012)	(0.003)	(0.003)	(0.014)	(0.012)
% Hispanic/Latinx	-0.018**	0.003	-0.033**	-0.007	-0.055**	0.003	-0.118**	-0.039**
	(0.003)	(0.003)	(0.007)	(0.007)	(0.005)	(0.003)	(0.008)	(0.007)
% Poverty	0.121**	0.080**	-0.041**	-0.052**	0.297**	0.176**	-0.023**	-0.065**
	(0.005)	(0.005)	(0.006)	(0.006)	(0.008)	(0.007)	(0.007)	(0.007)
Log Enroll		-2.505**		-6.873**		-6.624**		-21.658**
		(0.044)		(0.172)		(0.047)		(0.179)
Log Spending per pupil		9.875**		5.412**		24.442**		10.781**
		(0.165)		(0.142)		(0.207)		(0.149)
District FE	No	No	Yes	Yes	No	No	Yes	Yes
Observations	157,518	157,518	157,518	157,518	157,518	157,518	157,518	157,518
Adjusted R2	0.034	0.168	0.625	0.636	0.077	0.450	0.799	0.833

Notes. All columns include year fixed effects. District percent Poverty is derived from the school-district level estimate of poverty for school aged children produced under the Census Bureau's Small Area Income and Poverty Estimates (SAIPE) program.
Standard errors in parentheses + p<0.10 * p<0.05 ** p<0.01

Figure A1. Percent Change in Teachers from 1998-99 to 2017-18

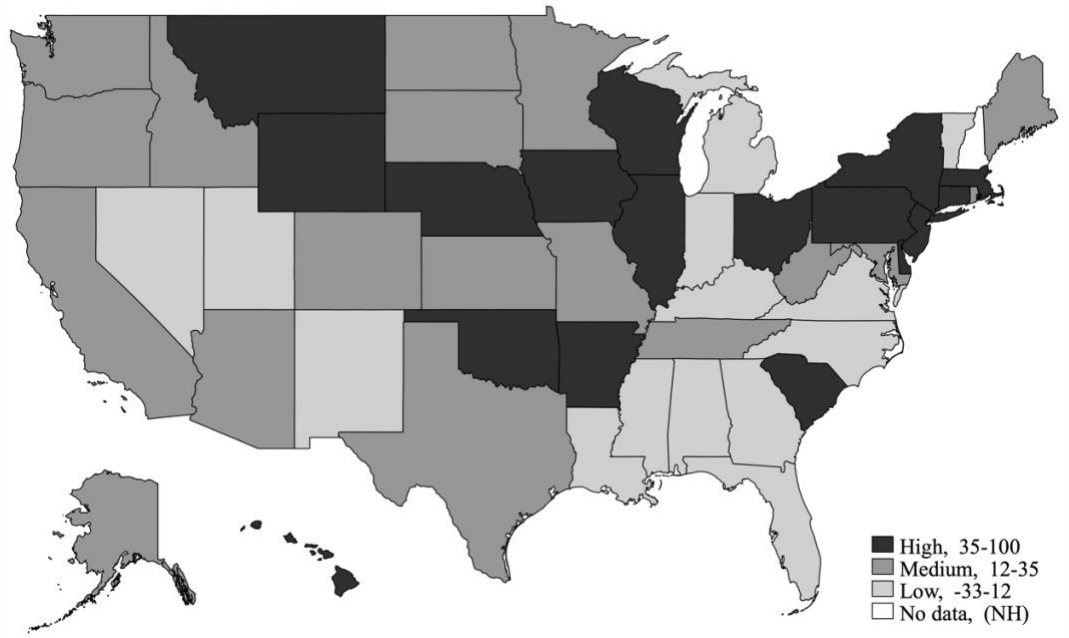
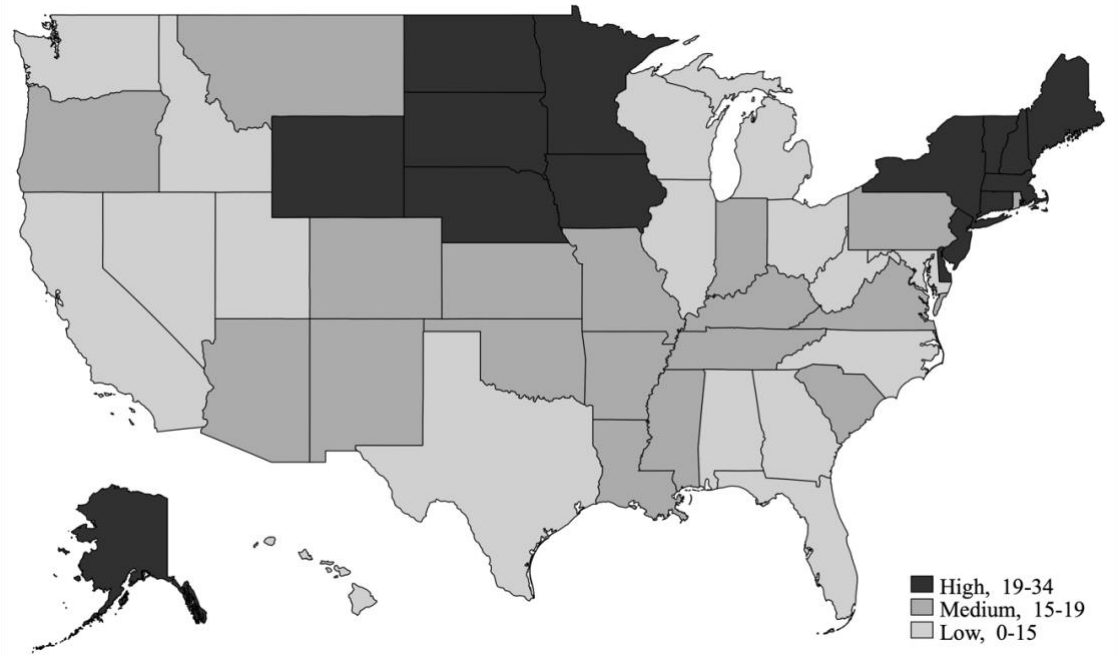


Figure A2. Number of Teachers per 1,000 Students in 2017-18



Notes. Staffing data in figures A1 and A2 are gathered from non-fiscal annual district surveys from the U.S. Department of Education's Common Core of Data.