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Districts nationwide seek to diversify the educator workforce, yet pathways for paraprofessionals—typically more ethnoracially and linguistically diverse than the general teacher pipeline—remain understudied. Using administrative data from New York City Public Schools (NYCPS), this study examines paraprofessionals' demographics and factors predicting their transition to teaching or exit from NYCPS. Between 2016–17 and 2023–24, the paraprofessional workforce grew substantially, and more new teachers had prior paraprofessional experience. Those advancing to teaching were more ethnoracially diverse but more likely to eventually leave teaching in NYCPS, especially when staying in the same school that they served as a professional. Findings underscore the need for targeted support to strengthen both the retention of paraprofessionals and the sustainability of their success as classroom teachers.

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Biographical Sketches

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Abstract

Districts nationwide seek to diversify the educator workforce, yet pathways for paraprofessionals—typically more ethnoracially and linguistically diverse than the general teacher pipeline—remain understudied. Using administrative data from New York City Public Schools (NYCPS), this study examines paraprofessionals' demographics and factors predicting their transition to teaching or exit from NYCPS. Between 2016–17 and 2023–24, the paraprofessional workforce grew substantially, and more new teachers had prior paraprofessional experience. Those advancing to teaching were more ethnoracially diverse but more likely to eventually leave teaching in NYCPS, especially when staying in the same school that they served as a professional. Findings underscore the need for targeted support to strengthen both the retention of paraprofessionals and the sustainability of their success as classroom teachers.

Keywords: Staff Development, Career Development, Teacher Characteristics, Retention, Race, Ethnicity, Descriptive Analysis, Regression Analysis

Transitioning Teacher Talent: An Ethnoracial Descriptive Portrait of the Paraprofessional-to-Teacher Pipeline in New York City Public Schools

Developing and sustaining a robust pipeline of high-quality teachers is a critical concern for education policymakers and practitioners, given the significant influence of teacher quality, retention, and diversity on student outcomes. Decades of research demonstrates teachers profoundly shape student learning, behavior, and long-term life trajectories (e.g., Chetty et al., 2014a, 2014b), and that a more demographically representative teaching workforce benefits both student achievement and school culture (Gershenson et al., 2021; Grissom et al., 2015; Redding, 2019). Yet, many districts—especially those serving large proportions of low-income students, students of color, and English language learners—continue to face persistent challenges in recruiting and retaining teachers (Sutcher et al., 2019). High teacher turnover and chronic shortages threaten school stability and disproportionately affect historically marginalized communities (Rodriguez & Redding, 2025; Ronfeldt et al., 2013; Sorensen & Ladd, 2020).

These challenges have placed renewed attention on the paraprofessional workforce—teaching assistants and aides who often reflect the linguistic and cultural diversity of the students they serve (Gist et al., 2022; Heller, 2021; Morrison & Lightner, 2017). Nationally, about 6% of public school teachers are Black, 9% are Hispanic, and 2% are Asian, compared with 15%, 29%, and 5% of students, respectively (National Center for Education Statistics, 2023, 2024). In contrast, paraprofessionals are considerably more racially and linguistically diverse, prompting longstanding arguments that they represent an untapped resource for diversifying the teaching workforce (Dandy, 1998; Genzuk, 1997; Villegas & Clewell, 1998).

Despite the potential of paraprofessionals transitioning into full-time teaching roles, research remains limited on the factors influencing their transition and their subsequent retention

(Camp et al., 2024; Theobald et al., 2025). Using administrative data from New York City Public Schools (NYCPS), this study examines who advances from paraprofessional to teacher roles, which characteristics predict these transitions, and how prior paraprofessional experience relates to teacher retention—including whether these patterns vary by teacher ethnoracial background and whether teachers remain in the same school in which they previously served as paraprofessionals. Investigating these forms of heterogeneity is critical, as transitioning to a teaching role within the same school may entail distinct challenges, and teachers' ethnoracial backgrounds may correspond with different forms of support or obstacles they encounter in maintaining their positions. Elucidating these dynamics is essential for informing policies and practices that promote a stable, equitable, and diverse teacher workforce.

Prior Literature on Paraprofessionals

Paraprofessionals play a crucial role in supporting instruction and serving students, particularly for those receiving special education services (Aurora & Farkas, 2023; Bisht et al., 2021; Fisher & Pleasants, 2012). Research has documented how paraprofessionals' responsibilities have expanded over time to include instructional and administrative tasks including individualized and small-group instruction, clerical work, behavior management, and family communication (Giangreco et al., 2010; Patterson, 2006). Despite their importance, the role of paraprofessionals often remains ambiguously defined, with substantial autonomy but limited guidance (Giangreco et al., 2010; Mason et al., 2021).

Prior studies have examined paraprofessional effectiveness, management, and teacher supervision of paraprofessionals, including in special education settings where a majority of paraprofessionals often work (Bisht et al., 2021; Giangreco et al., 2010; Jones & Bender, 1993; Mason et al., 2021; Theobald et al., 2025; Walker & Smith, 2015). Jones and Bender (1993)

found limited evidence that paraprofessional utilization improved student outcomes, however, they noted that prior studies relied heavily on educator perceptions rather than empirical evidence. They recommended experimental or quasi-experimental research with classroom observations to better understand the impact of paraprofessionals and the factors contributing to their efficacy. Bisht et al. (2021) highlighted disparities in professional development, evaluation, and job security for paraprofessionals as compared to teachers. Moreover, while teachers, often special educators, are expected to supervise paraprofessionals, they rarely receive formal preparation to do so, prompting calls for clearer supervisory structures and collaborative training opportunities (Giangreco et al., 2010; Mason et al., 2021; French, 2001).

Research on the Paraprofessional-to-Teacher Pipeline

The literature on paraprofessionals' transitions into teaching is limited but growing. Using nationwide data from 1999–2019, Bisht et al. (2021) documented rapid growth in the U.S. paraprofessional workforce. During these years, the paraprofessional workforce more than doubled in size and was found to be more racially diverse and older than teachers, though roughly three-quarters lacked a bachelor's degree.

State-level studies provide further insight into paraprofessionals' transitions into teaching. Camp et al. (2024) analyzed Arkansas data (2013–2014 to 2021–2022) and found that about 6% of paraprofessionals became teachers the following year, while nearly 20% left the system entirely. White paraprofessionals were twice as likely to transition as their Black or Hispanic peers, even after controlling for educational attainment. These findings suggest that the paraprofessional-to-teacher pipeline may not currently advance workforce diversity; however, the study does not address post-COVID-19 outcomes nor examine Asian paraprofessionals as a separate racial/ethnic group. Theobald et al. (2025) examined the ethnoracial background of

paraprofessionals as compared to special education teachers in Washington State and found that they were more ethnoracially diverse, though still predominantly White (80% vs. 90%), with lower salaries, less experience, and higher rates of attrition (8–11% pre-2010, peaking at 23% in 2021–22). Transitions into teaching increased modestly over time but remained below 3%, with transitions of non-White paraprofessionals into teaching roles more common in urban and suburban schools. While informative, these findings may not generalize beyond the studied contexts and do not identify predictors of role transition or turnover.

Contextual Factors Predicting Role Transition and Turnover

Qualitative research provides a nuanced understanding of factors shaping paraprofessional mobility. Focus groups with 62 multilingual paraprofessionals across multiple states revealed academic, financial, and bureaucratic barriers to becoming teachers, as well as racialized and linguistic discrimination during credentialing (Connally et al., 2017). Case studies suggest multi-level supports—flexible coursework, financial stipends, mentorship, and family accommodations—facilitate smoother transitions (Chopra et al., 2024). These studies highlight that systemic support is critical to overcoming the unique challenges faced by nontraditional teacher candidates.

Prior research underscores the valuable experience paraprofessionals gain through diverse responsibilities. Yet the paraprofessional-to-teacher pipeline remains poorly understood, with limited quantitative evidence on the factors predicting exit, transition, and retention. Existing studies largely describe workforce demographics and mobility patterns in limited contexts, but give less attention to predictors that facilitate or hinder successful role transitions and long-term stability. Understanding these dynamics is essential to strengthening both the diversity and durability of the teacher workforce.

The New York City Public Schools Context

NYCPS, the largest and one of the most racially and linguistically diverse U.S. public school districts, provides a compelling context for understanding paraprofessional career pathways. In 2023–24, it served nearly one million students across 32 community school districts (CSDs) and a citywide specialized district (CSD 75) for students with moderate to severe disabilities. The student body was 42.2% Hispanic, 19.5% Black, 18.7% Asian, and 16.2% White; 73.5% were economically disadvantaged, 21.6% had an identified disability, and 16.3% were English Language Learners (New York City Public Schools, n.d.–a). Serving more students than the public education systems of 36 states (NCES, 2022), NYCPS faces both substantial workforce needs and opportunities for innovative career pipelines.

NYCPS employs roughly 70,000 teachers and maintains a racially diverse teaching force, yet continues to experience shortages in key subjects and a persistent demographic gap between teachers and students (Rodriguez & Flack, In Press; Rodriguez et al., 2025). These shortages intensified following COVID-19, increasing reliance on substitutes and administrators to fill vacancies. In response, NYCPS prioritizes recruitment in high-need fields—including early childhood, bilingual/ESL, STEM, and special education—and invests in programs that enable paraprofessionals to earn teaching credentials and transition into full-time roles (New York City Public Schools, n.d.–b).

NYCPS offers multiple pathways for paraprofessionals to pursue teacher certification. Programs such as the Career Training Program (CTP) and Bilingual Pupil Services (BPS) provide tuition assistance, mentorship, and exam preparation through CUNY. Additional supports include the Educate to Liberate Paraprofessionals Grant at Medgar Evers College and the NYC Men Teach initiative, a collaboration between NYCPS, CUNY, and the Mayor's Office

to diversify the teaching workforce. For paraprofessionals with bachelor's degrees, alternative certification routes—such as the NYC Teaching Collaborative, NYC Teaching Fellows, and Jose P. Graduate Scholarship Program—expand access to teaching roles in critical shortage areas.

With NYCPS preparing to meet a state-mandated class-size reduction by 2028, demand for qualified educators is expected to grow. Within this evolving policy landscape, the paraprofessional-to-teacher pathway offers particular promise for addressing staffing shortages while enhancing workforce diversity and stability across New York City schools.

Data

This study draws on NYCPS administrative data, linking annual human resources, staffing, and school-level files to examine paraprofessionals' career trajectories and their transitions into and retention within teaching roles. The analytic dataset spans the 2016–17 through 2023–24 school years and includes all district-run schools, including CSD 75, which serves students with significant disabilities. Summary descriptives for paraprofessional and teacher samples are provided in Appendix Tables A.1 and A.2, including all characteristics used in analyses.

Individual-level records include demographic, educational, and employment information. Key covariates are race/ethnicity, age, gender, highest degree attained, total years of experience, and assignment to special or bilingual education roles.[1] Longitudinal employment histories identify transitions from paraprofessional to teacher roles, exits from NYCPS, and employment in CSD 75.

School-level data were merged from annual enrollment and staffing files to capture organizational and compositional features of each school-year, including grade configuration, career technical or transfer school status, total enrollment, pupil–teacher ratio, and attendance

rate. Student-level aggregates include racial/ethnic and gender composition, and proportions of students in poverty, in temporary housing, with non-English home languages, limited English proficiency, special education services, newly transferred, or retained in grade.

Staff composition and mobility measures include teacher racial/ethnic and gender composition, average years of experience, proportion holding advanced degrees, assignment to special or bilingual education roles, part-time or substitute status, prior-year departures, and current-year hires. Principal-level variables include race/ethnicity, gender, years of experience, and new assignment status.[2] Additional controls capture the number of assistant principals, guidance counselors, social workers, psychologists, and paraprofessionals. All models include year fixed effects to account for system-wide changes in staffing policies, economic conditions, and district initiatives.

Methods

The main analyses proceed in two parts. First, we examine paraprofessionals' annual employment outcomes using multinomial logistic regression to model the relative risk of transitioning into a full-time teaching position or exiting NYCPS employment altogether with respect to remaining in a paraprofessional role. Second, we estimate binary logistic regression models among teachers to assess whether those with prior paraprofessional experience were more likely to leave teaching the following year compared with teachers without such experience. All models include the individual-, school-, and leadership-level covariates described above and adjust for year fixed effects. Standard errors are clustered at the school level to account for within-school correlation over time.

To model paraprofessional career transitions, we estimate a multinomial model of following form:

$$log\left(\frac{P(Y_{ist+1}=k)}{P(Y_{ist+1}=0)}\right) = \beta_{0k} + \beta_{1k}X_{ist} + \beta_{2k}S_{st} + \gamma_{tk} + \varepsilon_{ist,k}, \quad (1)$$

for each $k \neq 0$. Here, Y_{ist+1} denotes the employment outcome for paraprofessional *i* in school *s* during the following school year *t+1*, taking on values for remaining, transitioning to a teacher role, or exiting NYCPS (with "remaining" as the reference category $k = 0$).[3] The vector X_{ist} represents paraprofessional-level characteristics such as gender, degree attainment, years of experience, and assignment to special education or bilingual education teaching roles. The term S_{st} captures school-level demographic and compositional features, and γ_{tj} denotes year fixed effects. Standard errors are clustered at the school level to account for within-school correlation in unobserved characteristics over time.

To assess heterogeneity by ethnoracial background, we conduct subgroup analyses estimating separate multinomial models for Black and Hispanic paraprofessionals. This approach allows us to examine whether the factors associated with transitioning into teaching or exiting NYCPS differ across ethnoracial groups underrepresented in the teaching profession.[4] The estimated coefficients are converted to relative risk ratios for ease of interpretation, representing the relative risk of transitioning or exiting compared with remaining in the paraprofessional role.

To assess whether prior paraprofessional experience predicts teacher retention, we estimate a logistic regression of the form:

$$log\left(\frac{P(Y_{ist+1}=1)}{1-P(Y_{ist+1}=1)}\right) = \alpha_{0j} + \alpha_1 PriorPara_i + \alpha_2 X_{ist} + \alpha_3 S_{st} + \gamma_t + \varepsilon_{ist}, \quad (2)$$

where $Y_{ist+1} = 1$ indicates that teacher *i* left their teaching position by the following school year, and $PriorPara_i$ is an indicator for whether the teacher previously served as a paraprofessional. In an additional analysis, we disaggregate prior paraprofessional experience based on whether it occurred in the same school where the teacher currently serves or in a different school. To explore heterogeneity by race/ethnicity, we interact these indicators with teacher race/ethnicity,

allowing the association between prior paraprofessional experience and attrition to vary across groups. This approach helps assess whether entering teaching through the paraprofessional pipeline—and whether that entry occurred in the same or a different school—differentially predicts career persistence across ethnoracial groups.

Covariates, fixed effects, and clustered standard errors align with those used in model (1).[5] The estimated coefficients are reported as odds ratios, and average marginal effects are used to facilitate interpretation of differences in predicted probabilities of attrition between teachers with and without paraprofessional experience.

Results

Trends in Paraprofessional Employment and Demographics

Table 1 and Appendix Figures A1–A7 summarize three areas: paraprofessionals' transitions into teaching, differences between paraprofessional and teacher workforces, and how these patterns changed over time. About 7.4% of paraprofessionals employed between 2016–17 and 2023–24 became teachers, and 57.4% of them stayed in the same school. Among those who transitioned, 64.5% moved into special education roles, even though only about 30% of the teacher workforce teaches special education (Table A.2). Across all teachers, 2.7% previously worked as paraprofessionals, rising to 3.7% in the most recent year. The share of new teachers with paraprofessional experience increased steadily—from 0.2% in 2016–17 to 14.3% in 2023–24 (Appendix Figure A.1)—and was particularly high in CSD 75 and schools with combined grade configurations (Appendix Figure A.2). Paraprofessionals who exited and later returned as teachers typically transitioned within a year and remained in teaching roles for just over two years on average.

Several differences emerge when comparing paraprofessionals and teachers. Paraprofessionals were less likely to be male (19% vs. 23%), slightly older on average (43.7 vs. 41.3 years), and had fewer years of experience (6.7 vs. 10 years). Nearly one-third worked in CSD 75, compared with under 10% of teachers, reflecting their concentration in special education. Those who later became teachers were younger (35.1 years) and had fewer years of paraprofessional experience (4.6 years). Appendix Figures A3–A7 show how these demographic and experience patterns changed over time.

Paraprofessionals were also more ethnoracially diverse and more closely aligned with NYCPS student demographics. While 53.5% of teachers were White, only 25% of paraprofessionals were; Black and Hispanic paraprofessionals made up 24.9% and 34.0% of the workforce, compared with 16.2% and 17.8% of teachers. Figure 1 plots (A) and (B) show a modest increase in the share of teachers of color (42.1% to 47.8%), while the share of paraprofessionals of color remained high and stable at 75%. Although overall diversity among paraprofessionals held steady, composition shifted slightly, with increases in Asian and other ethnoracial groups and small declines among Black and Hispanic individuals.

These patterns point to a potential pathway for diversifying the teacher workforce. Among paraprofessionals who became teachers, a majority were Black (22.5%) or Hispanic (27.8%), slightly above their representation in the overall paraprofessional workforce, while Asian paraprofessionals transitioned at lower rates (5% vs. 8%). Figure 1 plot (C) shows that the ethnoracial composition of transitioning paraprofessionals shifted over time, with rising shares identifying as Hispanic, Asian, or other ethnoracial backgrounds between 2016–17 and 2023–24.

Predictors of Paraprofessional Transition to Full-Time Teaching

To identify which individual- and school-level factors predict paraprofessionals' transitions into teaching roles or exits from NYCPS, we estimate multinomial logistic regression models (Table 2). We first focus on predictors of transitions into full-time teaching. As Appendix Figure A.8 shows, the raw percentage of paraprofessionals who became teachers rose after the pandemic: transition rates doubled overall (1.3% in 2018–19 to 2.5% in 2020–21) and roughly tripled for Black, Hispanic, and other racially minoritized paraprofessionals. However, once individual and school characteristics are accounted for, these patterns shift. Table 2 column (1a) shows that Hispanic, Asian, and paraprofessionals of other ethnoracial backgrounds have a lower relative risk of transitioning than White paraprofessionals: 18.5% lower for Hispanic ($p<0.01$), 30% lower for Asian ($p<0.01$), and 17% lower for other ethnoracial groups ($p<0.05$). Black paraprofessionals show a 7% lower relative risk, though not statistically significant.

Age and experience also predict transition. Younger paraprofessionals are more likely to become teachers: each additional year of age corresponds to a 6.5% lower relative risk of transitioning ($p<0.001$). Each additional year of paraprofessional experience is associated with a 2% higher relative risk ($p<0.05$). Among Black paraprofessionals—Table 2 column (2a)—older age similarly reduces transition likelihood (4.3% per year, $p<0.001$), while additional experience is linked to a small, statistically insignificant decrease. For Hispanic paraprofessionals—column (3a)—each year of age reduces the relative risk of transition by 6.4% ($p<0.001$), and each year of experience increases it by 2.5% ($p<0.05$).

Gender is also a significant predictor. Overall, being male is associated with a 19.8% lower relative risk of transitioning into teaching ($p<0.001$). Among Black and Hispanic paraprofessionals, this gap is larger: Black males have a 43.4% lower relative risk and Hispanic males a 22.2% lower risk compared to women in their respective groups ($p<0.001$).

Because transition opportunities are shaped by school context, we also examine school-level predictors. Among all paraprofessionals, transitions are more likely in career and technical schools and in schools with higher shares of teachers from other racial/ethnic backgrounds or with advanced degrees—likely reflecting stronger professional networks or mentoring opportunities. For Black paraprofessionals, transitions are more common in CSD 75 and in schools with higher shares of students in poverty, where demand for staff experienced with specialized supports and culturally responsive practices is high. Transitions are less likely in larger schools, in schools with higher percentages of newly transferred or retained students, and in schools with higher percentages of female teachers, possibly reflecting organizational complexity or instability that limits advancement. Among Hispanic paraprofessionals, transitions are less likely in schools with higher percentages of newly transferred or retained students but more likely in schools with only one guidance counselor, potentially indicating smaller support structures where paraprofessionals take on broader responsibilities that prepare them for teaching.

Predictors of Exit Patterns of Paraprofessionals

Similar to transitions into teaching roles, Figure A.8 summarizes exit trends between 2016–17 and 2022–23, showing a pandemic-related dip followed by a sharp spike in 2020–21. Exit rates rose from 8.3% to 13.2% for paraprofessionals overall and were slightly more pronounced for Black paraprofessionals, whose rates increased from 8.8% to 14.1% between 2018–19 and 2020–21. Although exit rates declined after 2020–21, they remained above pre-pandemic levels across all groups. Figure A.9 further shows that this pattern was not unique to paraprofessionals: teachers experienced a similar spike in exits during 2020–21 before rates fell in subsequent years.

Building on these descriptive trends, we next examined predictors of paraprofessionals' likelihood of exiting NYCPS—Table 2 columns (1b), (2b), and (3b). Relative to White paraprofessionals, Asian paraprofessionals had a 27.3% lower relative risk of exiting the district ($p<0.05$) and a 30.1% lower relative risk of transitioning into a teaching role ($p<0.001$), indicating they were the least likely to exit or transition in the subsequent year. In contrast, male paraprofessionals had an 11.88% higher relative risk of exiting ($p<0.001$), a pattern consistent among Black male paraprofessionals (11.54%, $p<0.001$) and Hispanic male paraprofessionals (11.88%, $p<0.001$), suggesting stable gender differences in exit rates across ethnoracial groups.

Age was strongly associated with the likelihood of transitioning into teaching—Table 2 column (1a)—but it significantly predicted exit risk only among Black paraprofessionals. Years of experience, however, were consistently associated with higher exit risk: each additional year corresponded to a 1.3% increase in the relative risk of exiting ($p<0.001$).

School-level factors also shaped exit risk. A higher pupil–teacher ratio was associated with a lower relative risk of exiting in the subsequent year—by 2.4% among all paraprofessionals ($p<0.01$) and by 3.7% among Black paraprofessionals ($p<0.01$). Among all paraprofessionals, exit risk was relatively higher in schools with larger shares of Hispanic students or higher percentages of Black teachers, and lower in schools with more newly transferred students, additional paraprofessional staff, or multiple social workers. These patterns suggest that staffing support and transitional student populations may buffer against exits.

For Black paraprofessionals, exit risk was higher in schools with larger shares of students with limited English proficiency, more teachers from diverse racial/ethnic backgrounds, or more teachers new to the school, and lower in schools with higher attendance rates, more bilingual education teachers, and more paraprofessional staff—patterns that point to the stabilizing role of

supportive instructional and staffing environments. Among Hispanic paraprofessionals, exit risk was higher in schools with multiple school psychologists and lower in schools with higher percentages of newly transferred or retained students. Some of these associations are counterintuitive and may reflect omitted variable bias rather than direct causal effects, indicating that other unobserved school- or contextual factors may be influencing retention.

Exit Patterns of Teachers with Previous Paraprofessional Experience

Teachers with prior paraprofessional experience generally had lower exit rates than both teachers overall and the paraprofessional workforce (Appendix Figure A.9). However, these patterns shift once individual and school characteristics are accounted for. Table 3 reports logistic regression estimates (odds ratios). Column (1) shows that Black, Hispanic, Asian, and other racially minoritized teachers have lower odds of leaving compared to White teachers. In contrast, prior paraprofessional experience is associated with 32.4% higher odds of exiting ($p<0.001$), indicating that after adjustment, teachers who entered through paraprofessional pathways are more likely to leave than their peers.

The effect of prior paraprofessional experience also varies by teachers' race/ethnicity—Table 3 column (2). This increased risk is concentrated among Hispanic teachers: the interaction term shows a 33.2% higher increase in exit odds for Hispanic teachers with prior paraprofessional experience compared to their non-Hispanic peers ($p<0.01$).

School context further shapes attrition. Column (3) shows that teachers who become teachers in the same school where they previously served as paraprofessionals have 89.56% higher odds of leaving by the next school year ($p<0.001$). When we include an indicator for prior paraprofessional experience in the same school, the main coefficient for prior experience reverses direction and becomes statistically significant because it now reflects teachers who

transitioned in a different school. After adjusting for school and individual factors, these teachers have 21.7% lower odds of exiting ($p<0.001$). Thus, paraprofessionals who transition within the same school are more likely to leave by the following year, whereas those who move to a new school are less likely to exit than teachers without prior paraprofessional experience.

Finally, we examine how prior paraprofessional experience—both within the same school and in a different school—interacts with teachers' racial/ethnic backgrounds. Results appear in Table 3 column (4) and Figure 2, which shows predicted probabilities of exit with covariates held at their means. Except for Hispanic teachers, all groups are least likely to exit when they have prior paraprofessional experience and transition to a different school, and most likely to exit when they remain in the same school. For instance, White teachers who remain in the same school exit at 2.79 times the rate of those who transfer; Black teachers, 2.18 times; and Asian teachers, 2.98 times. Hispanic teachers show a different pattern: they are more likely to exit when remaining in the same school (2.03 times higher), but their exit rates do not differ when they transfer compared to those without prior paraprofessional experience. These patterns underscore that teacher retention is jointly shaped by prior experience, school assignment, and racial/ethnic background.

Discussion

This study examines the transition of paraprofessionals into teaching roles in NYCPS, the factors predicting these transitions, and the relationship between prior paraprofessional experience and teacher retention, with a focus on heterogeneity by race/ethnicity and school assignment. Between 2016–17 and 2023–24, the share of teachers with prior paraprofessional experience increased steadily, with higher transition rates observed among Hispanic and Black paraprofessionals. While these findings differ from prior state-level studies (Camp et al., 2024;

Theobald et al., 2025), we find that the higher transition rates among Black and Hispanic paraprofessionals are largely explained by differences in individual characteristics—particularly age. Because Black and Hispanic paraprofessionals tend to be younger, and younger paraprofessionals are more likely to move into teaching roles, these groups appear more likely to transition when age is not accounted for.

While previous research noted higher rates of attrition among paraprofessionals-turned-teachers (Theobald et al., 2025), we find that retention patterns among teachers with prior paraprofessional experience reveal important nuances. Non-Hispanic teachers with prior experience who transition to a different school are comparatively least likely to exit, whereas those who remain in the same school are more likely to leave. For Hispanic teachers, prior paraprofessional experience does not confer retention benefits when they transition to a different school, and they are also more likely to exit when remaining in the same school. These findings underscore the joint importance of prior experience, school assignment, and racial/ethnic background in shaping teacher retention patterns, suggesting that internal transitions may pose unique challenges for both teachers and school administrators. Notably, the majority of paraprofessionals who transition into teaching remain in the same school, highlighting the widespread relevance of these dynamics.

School-level context also plays a critical role in both transitions and exits, a contribution to the extant literature on the paraprofessional-to-teacher pipeline. Factors such as pupil-teacher ratio, student composition, and the presence of school support staff significantly predict paraprofessional transitions and teacher attrition. Interestingly, lower pupil-teacher ratios were associated with increased exit risk, a pattern that may reflect factors that remain unobserved in our study, such as greater support in larger classrooms in the presence of multiple staff members,

or potential challenges arising from class composition. This finding has particular relevance in light of New York City's upcoming class size reduction law, emphasizing the need to consider workforce dynamics when implementing structural reforms.

The study has several limitations. We do not incorporate school climate measures or classroom-level staffing patterns—such as the presence of multiple teachers or paraprofessionals—which may influence both transitions and retention. Additionally, unobserved factors at the school or district level may contribute to selection into teaching roles and subsequent career decisions. Despite these limitations, the study provides robust evidence on how individual characteristics, school context, and racial/ethnic background shape paraprofessional-to-teacher pathways.

Policy and Practice Implications

The findings regarding the employment and transition trends of paraprofessionals in NYCPS have several important implications for education policy, practice, and research. First, while many paraprofessionals may seek pathways into teaching, it is essential to acknowledge that not all paraprofessionals aspire to become teachers, and their continued presence is critical in supporting diverse student needs. As previous research has recommended (e.g., Genzuk, 1997; Gist et al., 2022), policies should facilitate transitions into teaching roles for those interested through scholarships, structured mentorship programs, and clear career pathways. Targeted recruitment strategies could also enhance the ethnoracial diversity of the teaching workforce, particularly for underrepresented groups such as Asian paraprofessionals, who are least likely to transition into teaching positions, but also least likely to exit NYCPS. Programs such as NYC Men Teach—and its Asian American educator affinity group (AATEND), launched in 2020—offer potential frameworks for such efforts.

Second, retention strategies must address both paraprofessional and teacher workforce stability. Improving job satisfaction, career development opportunities, and workplace conditions can reduce attrition (Frantz et al., 2022; Brock & Anderson, 2020). Our findings show that the majority of teachers remain in the same school in which they were a paraprofessional; however, they exit at higher rates than those who move to a new school. This highlights the need for targeted support during role transitions, particularly when individuals are remaining in their same school, including structured onboarding, mentoring, and leadership training for school administrators (Ernst-Slavit et al., 2022; Worthen et al., 2022).

Third, structural and contextual factors, such as class size, should be considered in policy design. Our analyses indicate that lower pupil-teacher ratios are associated with higher exit risk, suggesting that class size reductions could unintentionally affect paraprofessional retention and teacher transitions if additional supports are not provided. As New York City implements its upcoming class size reduction law, policymakers should consider how such structural changes intersect with workforce transitions and retention, ensuring that paraprofessionals and teachers receive sufficient support to adapt effectively.

Future Research Directions

Future research should continue to investigate the long-term career trajectories of paraprofessionals, including those who remain in support roles. Qualitative studies could provide richer insights into the experiences and challenges associated with internal transitions, particularly for Hispanic and other racially minoritized teachers. Additionally, examining the impact of paraprofessional and teacher workforce diversity on student outcomes would help clarify the broader benefits of a diverse educational workforce (Aurora & Farkas, 2022; Gregori et al., 2022; Jones et al., 2021). Finally, rigorous evaluations of programs designed to support

paraprofessional transitions—such as mentorship initiatives, training programs, and targeted recruitment strategies—will be critical for refining policies and practices to enhance both retention and workforce diversity.

Notes

1 Information on degree attainment and on assignment to special or bilingual education roles is available for teachers but not for paraprofessionals.

2 We do not include principal degree attainment as a control variable, as all principals in the sample have credentials beyond a master's degree.

3 We exclude paraprofessionals who transitioned into non-teaching roles, as this group is small (387 individuals, or 0.24% of the analytic sample). Including them as a separate outcome caused model non-convergence. Sensitivity analyses collapsing these cases into the "exited NYCPS" category (interpreted as not remaining in the system as either a paraprofessional or teacher) yield qualitatively similar results, which are available upon request.

4 Subgroup analyses for Asian and other extremely underrepresented ethnoracial groups (i.e., non-White, non-Black, non-Hispanic) were not feasible, as small sample sizes and low transition rates for these subgroups resulted in model non-convergence.

5 Teacher retention models control for bilingual and/or special education assignment and degree attainment; comparable data were unavailable for paraprofessionals, so these factors are not included as covariates in analyses of the paraprofessional sample.

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Table 1

Descriptives of Paraprofessional Sample and Reference Teacher Samples in NYCPS

	Paraprofessionals		Teachers	
	Ever Employed 2016-17 to 2023-24	Ever Transitioned into Teaching Role	Ever Employed 2016-17 to 2023-24	Employed 2023-24
	(1)	(2)	(3)	(4)
Ethnoracial Background (%)				
White	25.0	22.5	53.5	52.2
Black	24.9	27.8	16.2	15.5
Hispanic	34.0	37.1	17.8	18.6
Asian	8.3	5.0	7.4	8.0
Other race/ethnicity	7.8	7.6	5.1	5.7
Male (%)	19.0	19.4	23.0	23.1
Age	43.7	35.1	41.3	42.9
Years of experience	6.7	4.6	10.0	12.1
Ever employed in district 75 (%)	32.8	35.0	9.3	10.0
Ever employed as teacher (%)	7.4	100.0	100.0	100.0
Ever employed as paraprofessional (%)	100.0	100.0	2.7	3.7
Ever served in para and teacher roles in same school (%)	4.4	57.4	1.5	2.0
N (unique obs.)	38,314	2,831	112,567	74,902

Notes. Paraprofessional sample includes paraprofessional staff employed between the 2016-17 and 2023-24 school years—column (1)—or those who transitioned into a teaching role at any point in that time period—column (2). Reference teacher samples include teaching staff employed between the 2016-17 and 2023-24 school years—column (3) —and teaching staff employed in the 2023-24 school year—column (4).

Table 2

Multinomial Logistic Regression Estimates Predicting Paraprofessional Transition by End of Following School Year

	All		Black		Hispanic	
	Transitioned Teacher	Left NYCPS	Transitioned Teacher	Left NYCPS	Transitioned Teacher	Left NYCPS
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
Ethnoracial Background *[BASE = White]*						
Black	0.930	0.993				
Hispanic	0.815**	0.951				
Asian	0.699**	0.727***				
Other race/ethnicity	0.828*	0.925				
Male	0.802***	1.188***	0.566***	1.154***	0.778**	1.188***
Age	0.935***	1.002	0.957***	1.005*	0.936***	1.004
Years of experience	1.020***	1.013***	0.995	0.994	1.025*	1.001
Employed in community school district 75	1.917	0.757	6.192*	0.809	1.038	0.676
Career Technical School	1.622*	1.035	1.607	0.962	1.549	1.128
Student enrollment	1.002	1.004	0.967*	1.024***	0.989	0.996
Pupil-teacher ratio	1.010	0.976**	1.041	0.963**	1.022	0.987
Pct. students Black	0.999	1.002	0.993	1.001	0.999	1.002
Pct. students Hispanic	1.001	1.003*	0.999	1.003	0.997	1.001
Pct. students Asian	0.999	1.003	0.998	1.001	0.995	0.999
Pct. students other racial/ethnic background	0.989	1.003	0.990	1.004	1.004	0.999
Pct. students in poverty	1.004	0.999	1.012*	0.999	1.003	1.000
Pct. students w/ limited English proficiency	1.005	1.002	1.002	1.008*	1.003	1.003
Pct. students newly transferred to school	0.992	0.994**	0.982*	0.995	0.996	0.991**
Average student attendance rate	0.943	0.552**	2.246	0.350***	0.774	0.761
Pct. students retained in grade level	0.995	0.997	0.988*	0.999	0.990	0.994*
Pct. teachers female	0.992	0.997	0.984*	0.999	0.998	0.998
Pct. teachers Black	1.006*	1.003**	1.005	1.006**	1.005	0.999
Pct. teachers Hispanic	1.008*	1.001	1.011	1.002	1.003	1.000
Pct. teachers Asian	1.006	1.004	1.004	1.011*	0.996	0.998

	All		Black		Hispanic	
	Transitioned Teacher	Left NYCPS	Transitioned Teacher	Left NYCPS	Transitioned Teacher	Left NYCPS
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
Pct. teachers other racial/ethnic background	1.021**	1.006	1.012	1.014*	1.021	0.999
Pct. teachers w/ master's degree	1.008	1.000	1.012	1.005	1.013	0.998
Pct. teachers w/ more advanced degree	1.012*	1.000	1.011	1.005	1.010	0.997
Pct. teachers bilingual education	0.997	0.998	0.996	0.987*	1.000	1.000
Pct. teachers newly arrived to school	1.002	1.002	1.009	1.004*	0.999	1.003
Number of paraprofessional staff	0.999	0.999**	0.999	0.998***	1.000	0.999
School has one guidance counselor	0.878	0.991	1.185	1.092	0.741**	0.983
School has more than one school psychologist	0.951	1.043	1.006	1.089	1.146	1.135*
School has more than one social worker	1.053	0.935*	1.242	0.907	0.864	0.901
Constant	0.095*	0.278**	0.086	0.290	0.121	0.272
Obs. (paraprofessional-year)	164,085		41,929		55,972	

Notes. Estimates expressed in Relative Risk Ratio (RRR) form. Standard errors clustered at school level (not shown). Estimates included in model but not shown were not statistically significant, which include school grade configuration; whether school was a transfer school; student gender composition; percent of students in temporary housing, with non-English home language, and receiving special education services; average years of experience of teaching staff; percent teaching staff assigned to special education, part-time/substitute, and left from school in prior academic year; principal gender, race/ethnicity, and years of experience; whether principal was new to school; and number of assistant principals. All models adjust for year fixed effects.

* $p<0.05$; ** $p<0.01$; *** $p<0.001$.

Table 3

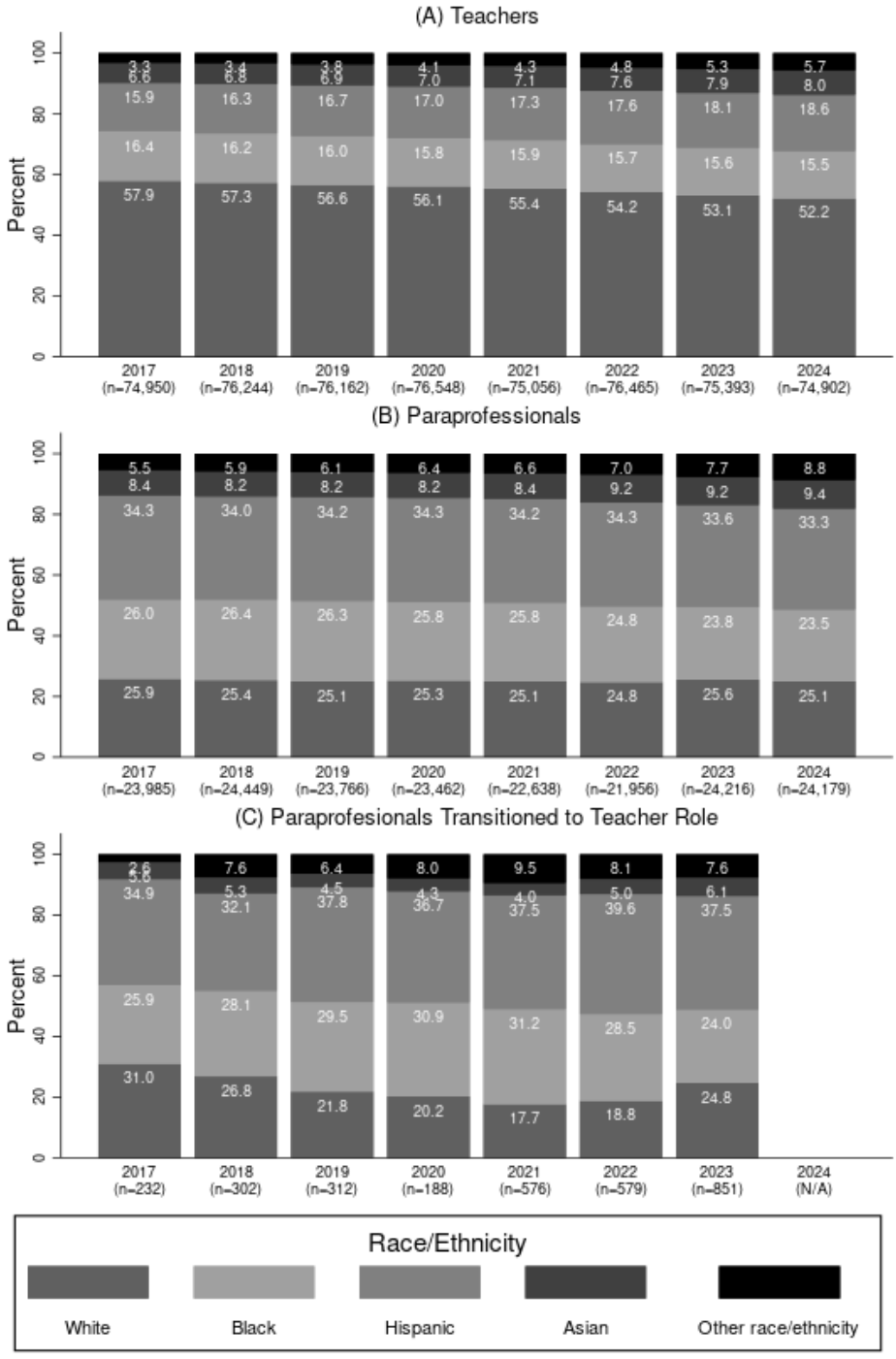
Logistic Regression Estimates Predicting Teachers Leaving Teaching Role in NYCPS by End of Following School Year

	(1)	(2)	(3)	(4)
Ethnoracial Background [BASE = White]				
Black	0.842***	0.844***	0.842***	0.843***
	(0.014)	(0.014)	(0.014)	(0.014)
Hispanic	0.823***	0.817***	0.822***	0.816***
	(0.013)	(0.013)	(0.013)	(0.013)
Asian	0.830***	0.832***	0.830***	0.832***
	(0.020)	(0.020)	(0.020)	(0.020)
Other race/ethnicity	0.925**	0.925**	0.923**	0.923**
	(0.025)	(0.025)	(0.025)	(0.025)
Prior para	1.324***	1.185	0.783***	0.560***
	(0.060)	(0.109)	(0.054)	(0.097)
Prior para in same school			1.896***	1.736***
			(0.103)	(0.206)
Prior para X Black		1.028		1.346
		(0.121)		(0.287)
Prior para X Hispanic		1.332**		1.024
		(0.146)		(0.158)
Prior para X Asian		0.825		1.762**
		(0.173)		(0.355)
Prior para X other		1.101		1.261
		(0.199)		(0.176)
Prior para in same school X Black				0.900
				(0.352)
Prior para in same school X Hispanic				0.941
				(0.238)
Prior para in same school X Asian				1.547
				(0.491)
Prior para in same school X Other				1.000
				(0.222)
Obs. (teacher-year)	530,818	530,818	530,818	530,818

Notes. Estimates expressed in Odds Ratio (OR) form. Standard errors clustered at school level shown in parentheses. Estimates included in model but not shown include teacher gender, degree attainment, years of experience, employment in community school district 75, assignment to special education and bilingual education teaching roles; school grade configuration; whether school was a career technical or transfer school; student enrollment; pupil-teacher ratio; student racial/ethnic and gender composition; percent of students in poverty, in temporary housing, with non-English home language, with limited English proficiency, receiving special education services, newly transferred to school, and retained in grade level; average student attendance rate; teacher racial/ethnic and gender composition; average years of experience of teaching staff; percent teaching staff with master's or more advanced degree, assigned to special and bilingual education roles, part-time/substitute, left from school in prior academic year, and newly arrived to school during academic year; principal race/ethnicity, gender, and years of experience; whether principal was new to school; number of assistant principals, guidance counselors, social workers, school psychologists, and paraprofessional staff in school. All models adjust for year fixed effects. “Para” = Paraprofessional.
* $p<0.05$; ** $p<0.01$; *** $p<0.001$.

Figure 1

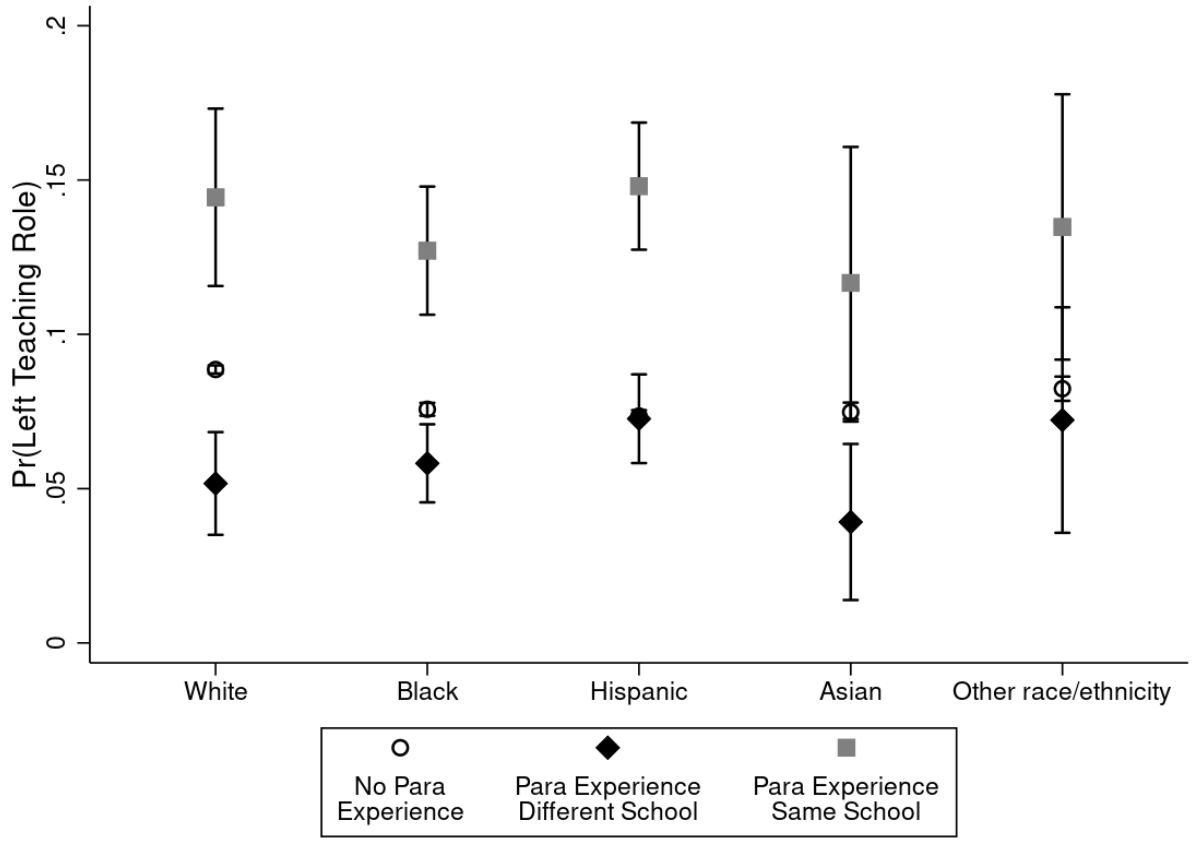
Ethnoracial Composition of Paraprofessionals (Overall and Those Who Transitioned to Teacher Roles) and All Teachers in NYCPS, By School Year (2016-17 through 2023-24)



Note. The 2024 data point is omitted for the sample of paraprofessionals who transitioned into teaching. Identifying transitions requires data from the subsequent school year (2025), which are not yet available.

Figure 2

Predicted Probability of Teacher Leaving Teaching Role in NYCPS By End of Following School Year, By Ethnoracial Background and Prior Paraprofessional Experience in Different and Same School



Note. 95% Confidence Intervals shown. Predicted probabilities generated with model estimates presented in Table 3 column 4 and covariates held at their mean value. "Para" = Paraprofessional.

APPENDIX A

Supplemental Table and Figures

Table A.1

Summary Statistics of Pooled Paraprofessional Sample

	All	White	Black	Hispanic	Asian	Other
Ethnoracial Background (%)						
White	25.3	100.0	--	--	--	--
Black	25.6	--	100.0	--	--	--
Hispanic	34.1	--	--	100.0	--	--
Asian	8.5	--	--	--	100.0	--
Other race/ethnicity	6.4	--	--	--	--	100.0
Male (%)	17.9	12.6	23.1	17.1	17.2	22.3
Age	45.8	47.9	45.1	44.2	50.6	42.9
Years of experience	7.8	7.7	7.9	7.8	8.6	6.0
Employed in community school district 75 (%)	33.1	27.1	39.6	33.8	28.4	33.6
School Grade Configuration (%)						
K-5	39.3	42.2	34.8	40.4	41.4	37.8
6-8	9.4	11.1	8.5	8.7	9.7	9.6
9-12	11.2	9.7	11.6	11.3	13.4	12.0
K-8	15.7	15.9	16.9	15.1	14.4	15.2
K-12	18.8	16.3	22.0	18.4	17.2	20.1
6-12	5.6	4.7	6.3	6.2	3.9	5.3
Career technical school (%)	1.0	0.6	1.4	0.9	1.2	1.2
Transfer school (%)	0.1	0.1	0.2	0.1	0.1	0.1
Student enrollment	7.0	8.7	5.7	6.4	8.3	6.8
Pupil-teacher ratio	10.3	11.2	9.5	10.0	11.2	10.2
Percent students female	41.0	42.5	39.4	40.9	42.2	40.7
Percent students Black	27.0	16.9	41.7	24.7	19.8	28.6
Percent students Hispanic	41.2	31.9	36.3	53.0	36.6	40.5
Percent students Asian	13.4	18.4	9.0	9.8	26.3	14.2
Percent students other race/ethnicity	2.6	2.7	2.9	2.2	2.7	2.7
Percent students in poverty	75.4	66.6	78.8	79.6	73.9	76.0
Percent students in temporary housing	9.9	5.6	11.5	12.4	8.1	10.1
Percent students non-English household	34.5	34.2	27.5	37.5	44.3	34.4
Percent students limited English proficiency	18.2	15.6	16.2	20.8	21.9	18.1
Percent student special education	47.2	42.3	52.4	48.2	41.4	47.5
Percent students newly transferred to school	11.1	9.6	12.6	11.3	10.1	11.4
Average student attendance rate	0.9	0.9	0.9	0.9	0.9	0.9
Percent students retained grade level	7.9	6.5	9.2	8.2	7.5	7.4
Percent teachers female	81.4	83.7	80.1	80.7	81.9	80.9
Percent teachers Black	16.3	7.0	27.0	15.9	12.0	17.8
Percent teachers Hispanic	15.9	10.1	14.4	21.9	13.3	15.5
Percent teachers Asian	6.1	5.1	5.8	6.1	9.4	6.5
Percent teachers other race/ethnicity	4.0	3.7	4.3	4.0	4.0	4.2
Percent teachers w/ masters degree	7.8	5.9	8.6	8.6	6.9	8.1
Percent teachers w/ more than masters	84.0	87.1	82.2	82.9	85.2	83.6
Average teacher years of experience	11.3	11.9	11.2	10.9	11.7	11.1
Percent teachers part-time/substitute	1.0	0.7	1.2	1.2	0.9	1.0
Percent teachers are special education teachers	49.5	46.3	53.6	49.9	44.8	49.3
Percent teachers are bilingual teachers	2.4	1.2	1.8	3.8	2.3	2.3
Percent teachers left school in prior year	11.0	8.9	12.1	11.9	10.1	11.2

	All	White	Black	Hispanic	Asian	Other
Percent new teachers arrived to school	12.8	11.1	13.7	13.6	11.6	13.4
Percent principals female	69.6	68.1	71.8	68.9	70.0	69.8
Percent principals Black	24.3	10.8	41.5	21.7	20.4	27.3
Percent principals Hispanic	16.4	9.7	13.2	24.3	14.0	16.5
Percent principals Asian	2.1	1.8	1.4	2.2	4.3	3.0
Percent principals other race/ethnicity	1.0	1.0	1.1	0.9	0.8	0.9
Average principal years of experience	7.7	7.8	7.6	7.6	7.9	7.6
Percent principals new to school	5.0	4.4	5.8	4.9	4.5	5.1
Number of paraprofessionals	58.6	58.7	59.7	59.3	52.7	57.7
Number of principals (%)						
None	1.6	1.8	1.2	1.7	1.6	2.0
One	96.6	96.0	97.0	96.9	96.5	96.0
More than one	1.8	2.1	1.7	1.4	2.0	2.0
Number of assistant principals (%)						
None	3.2	2.0	4.0	3.5	2.5	3.4
One	21.1	18.2	24.4	21.0	19.7	22.2
More than one	75.7	79.8	71.5	75.5	77.7	74.4
Number of guidance counselors (%)						
None	17.0	15.6	18.7	17.6	13.1	18.1
One	38.3	35.1	40.4	39.3	37.4	38.5
More than one	44.7	49.3	40.9	43.0	49.5	43.4
Number of school psychologists (%)						
None	20.9	18.4	22.2	21.2	20.9	23.8
One	49.8	53.8	46.9	48.3	53.7	49.0
More than one	29.2	27.8	30.9	30.5	25.4	27.2
Number of social workers (%)						
None	30.3	28.6	31.6	29.5	32.5	32.4
One	49.1	52.1	47.9	47.8	50.0	48.1
More than one	20.6	19.3	20.5	22.7	17.5	19.5
Observations *(para-year)*	164,472	41,636	42,049	56,138	14,052	10,597

Table A.2

Summary Statistics of Pooled Teacher Sample

	All	White	Black	Hispanic	Asian	Other
Ethnoracial Background (%)						
White	55.8	100.0	--	--	--	--
Black	15.9	--	100.0	--	--	--
Hispanic	17.0	--	--	100.0	--	--
Asian	7.1	--	--	--	100.0	--
Other race/ethnicity	4.1	--	--	--	--	100.0
Male (%)	22.6	23.6	20.7	20.6	22.8	24.6
Age	42.1	41.7	45.8	41.4	39.9	39.4
Years of experience	11.3	11.6	12.6	10.8	9.6	8.2
Employed in community school district 75 (%)	8.4	8.4	9.4	7.5	6.8	9.8
Highest Degree Attained (%)						
Bachelors	7.5	6.8	8.0	8.8	8.5	9.1
Master's degree	8.9	6.8	10.3	12.9	9.9	13.4
More than master's degree	83.6	86.5	81.7	78.3	81.6	77.5
Bilingual teacher (%)	2.6	0.4	0.3	12.0	3.6	1.7
Special education teacher (%)	32.3	31.9	36.6	31.4	24.0	38.6
Ever paraprofessional (%)	1.3	0.5	2.2	2.6	1.0	2.0
Ever paraprofessional in same school (%)	0.7	0.3	1.1	1.4	0.4	1.1
School Grade Configuration (%)						
K-5	38.7	40.4	34.3	40.6	35.1	31.1
6-8	15.0	14.7	17.8	14.3	13.0	15.4
9-12	22.9	21.5	22.9	22.0	31.8	28.8
K-8	12.4	12.8	12.0	12.5	10.0	12.1
K-12	5.2	5.6	5.0	4.4	4.5	5.5
6-12	5.8	5.0	8.0	6.1	5.7	7.1
Career technical school (%)	2.8	2.4	3.7	2.6	3.4	3.5
Transfer school (%)	1.2	1.0	1.6	1.2	1.8	1.7
Student enrollment	8.8	9.5	6.5	7.9	10.3	9.0
Pupil-teacher ratio	12.9	13.1	12.3	12.5	13.7	12.8
Percent students female	46.8	47.0	46.1	46.8	47.0	46.5
Percent students Black	23.4	18.9	42.7	20.9	19.1	25.3
Percent students Hispanic	43.1	40.4	40.0	56.9	38.8	42.6
Percent students Asian	16.2	18.9	8.1	11.0	26.3	15.8
Percent students other race/ethnicity	2.5	2.6	2.4	2.0	2.6	2.5
Percent students in poverty	73.3	69.6	80.0	79.4	72.2	74.2
Percent students in temporary housing	10.3	8.6	13.3	13.4	9.2	10.4
Percent student non-English household	40.9	41.3	31.6	45.7	48.0	41.0
Percent students limited English proficiency	16.5	15.7	13.7	20.6	18.7	16.3
Percent student special education	26.2	25.7	28.6	26.4	23.1	27.5
Percent students newly transferred to school	9.6	9.1	11.5	10.1	8.8	9.6
Average student attendance rate	0.9	0.9	0.9	0.9	0.9	0.9
Percent students retained grade level	5.7	5.2	6.9	6.0	6.0	6.3
Percent teachers female	77.3	78.4	75.4	76.9	75.1	75.1
Percent teachers Black	15.9	11.2	34.2	15.4	13.0	16.7
Percent teachers Hispanic	16.9	14.2	16.4	27.2	15.0	16.5

	All	White	Black	Hispanic	Asian	Other
Percent teachers Asian	7.1	6.8	5.8	6.3	14.6	7.5
Percent teachers other race/ethnicity	4.1	3.8	4.3	4.0	4.3	6.5
Percent teachers w/ masters degree	8.5	7.7	10.0	9.7	8.5	9.3
Percent teachers w/ more than masters	84.0	85.2	81.7	82.4	83.8	83.1
Average teacher years of experience	11.4	11.6	11.6	11.1	11.2	11.1
Percent teachers part-time/substitute	1.1	0.9	1.4	1.2	1.0	1.1
Percent teachers are special education teachers	32.1	32.1	33.6	31.9	28.4	32.6
Percent teachers are bilingual teachers	2.6	2.0	2.0	5.3	3.1	2.3
Percent teachers left school in prior year	11.8	10.9	13.7	12.7	11.6	12.2
Percent new teachers arrived to school	13.6	12.8	15.1	14.3	13.8	14.4
Percent principals female	65.4	65.2	66.8	65.9	64.3	63.2
Percent principals Black	22.0	15.5	48.3	20.3	18.0	22.9
Percent principals Hispanic	18.4	16.0	15.1	30.3	16.6	17.5
Percent principals Asian	3.4	3.1	2.2	2.9	8.5	3.8
Percent principals other race/ethnicity	1.6	1.5	1.7	1.4	1.8	1.6
Average principal years of experience	8.0	8.1	7.8	7.9	8.0	8.0
Percent principals new to school	5.4	5.0	6.5	5.4	5.6	5.5
Number of paraprofessionals	22.0	23.6	19.6	20.0	19.0	22.9
Number of principals (%)						
None	1.6	1.6	1.6	1.7	2.0	1.8
One	96.5	96.6	96.5	96.7	95.9	96.1
More than one	1.8	1.8	1.9	1.6	2.2	2.1
Number of assistant principals (%)						
None	3.5	2.9	5.0	3.8	3.7	3.8
One	24.6	22.9	32.3	24.0	23.1	23.6
More than one	71.9	74.2	62.7	72.2	73.2	72.6
Number of guidance counselors (%)						
None	11.5	12.0	11.0	10.6	11.1	10.6
One	37.7	36.8	43.9	38.1	32.3	34.9
More than one	50.8	51.3	45.1	51.2	56.6	54.6
Number of school psychologists (%)						
None	30.8	28.1	36.2	32.4	34.2	33.9
One	54.1	55.8	51.5	52.3	52.6	50.2
More than one	15.1	16.1	12.3	15.3	13.2	15.9
Number of social workers (%)						
None	30.3	29.7	33.1	29.8	30.3	29.5
One	50.1	51.0	48.9	48.4	50.1	49.4
More than one	19.6	19.3	18.0	21.8	19.6	21.1
Observations *(teacher-year)*	530,818	296,262	84,619	90,120	37,892	21,925

Figure A.1

Number of Paraprofessionals and Teachers and Percent of New Teachers with Paraprofessional Experience in NYCPS, By School Year (2016-17 through 2023-24)

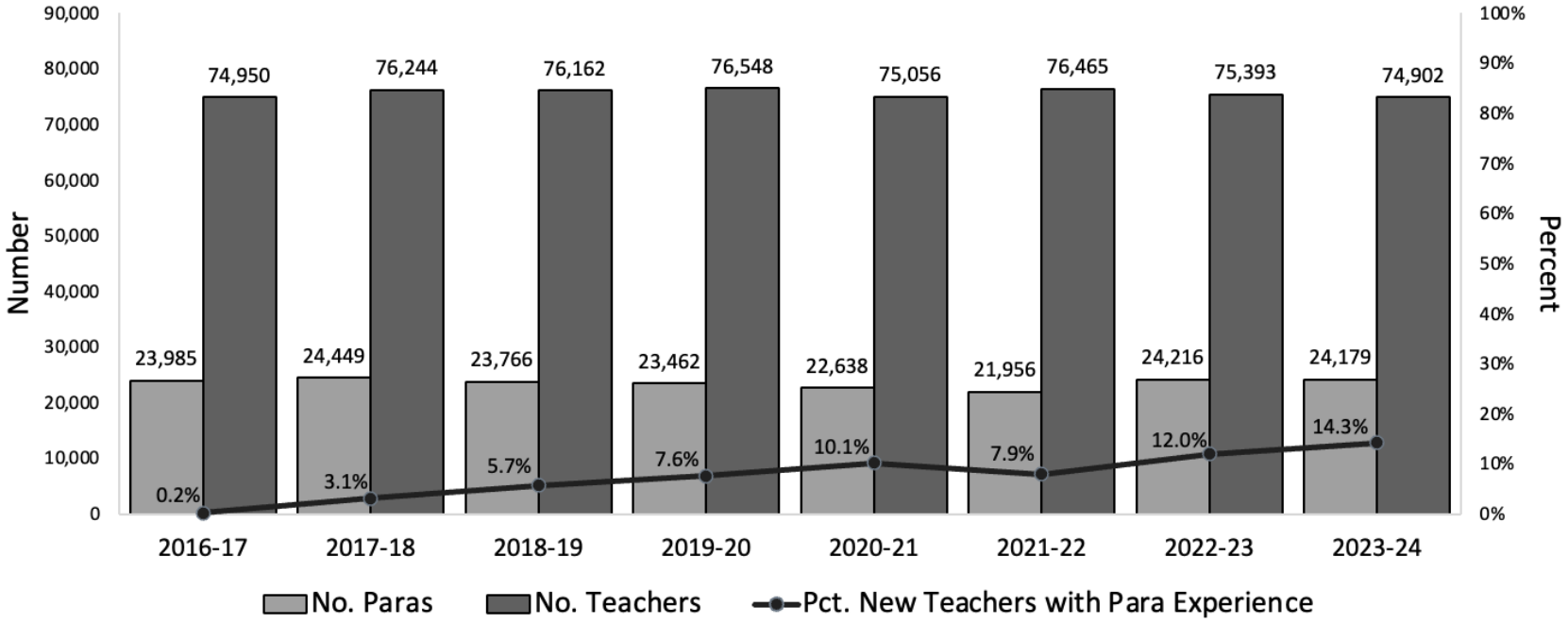
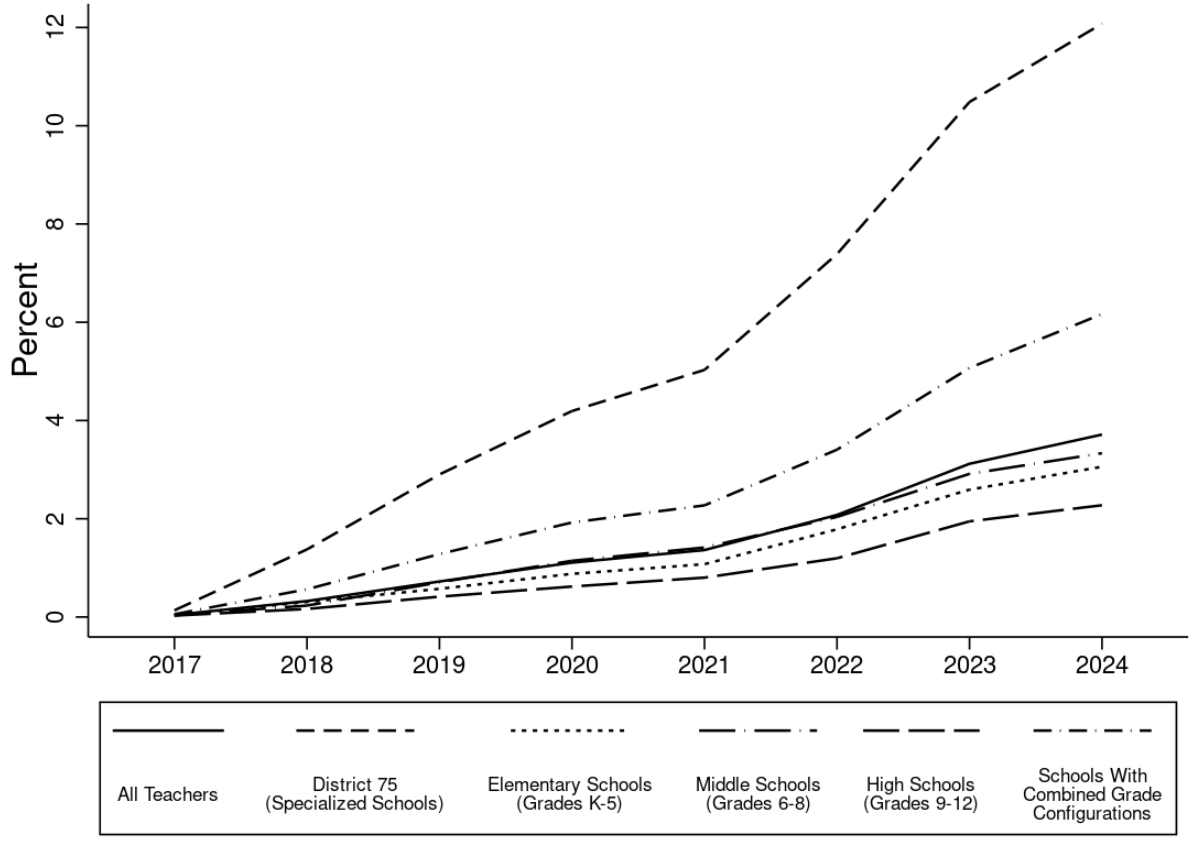


Figure A.2

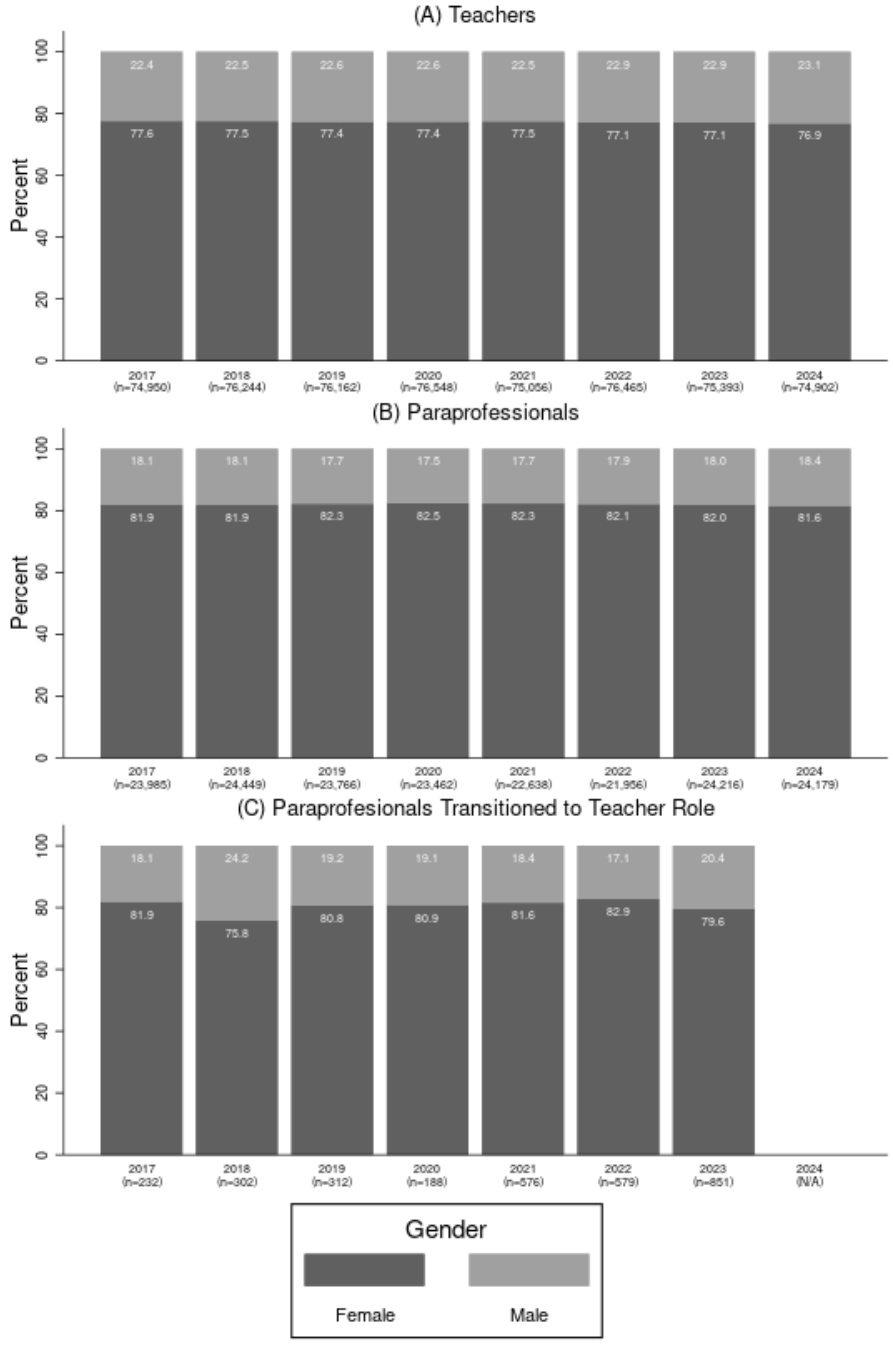
Percent of Teachers with Prior Paraprofessional Experience (All of NYCPS, District 75, and By School Level), By School Year (2016-17 through 2023-24)



Note. Schools with combined grade configurations include schools that serve grades K-8, K-12, and 6-8.

Figure A.3

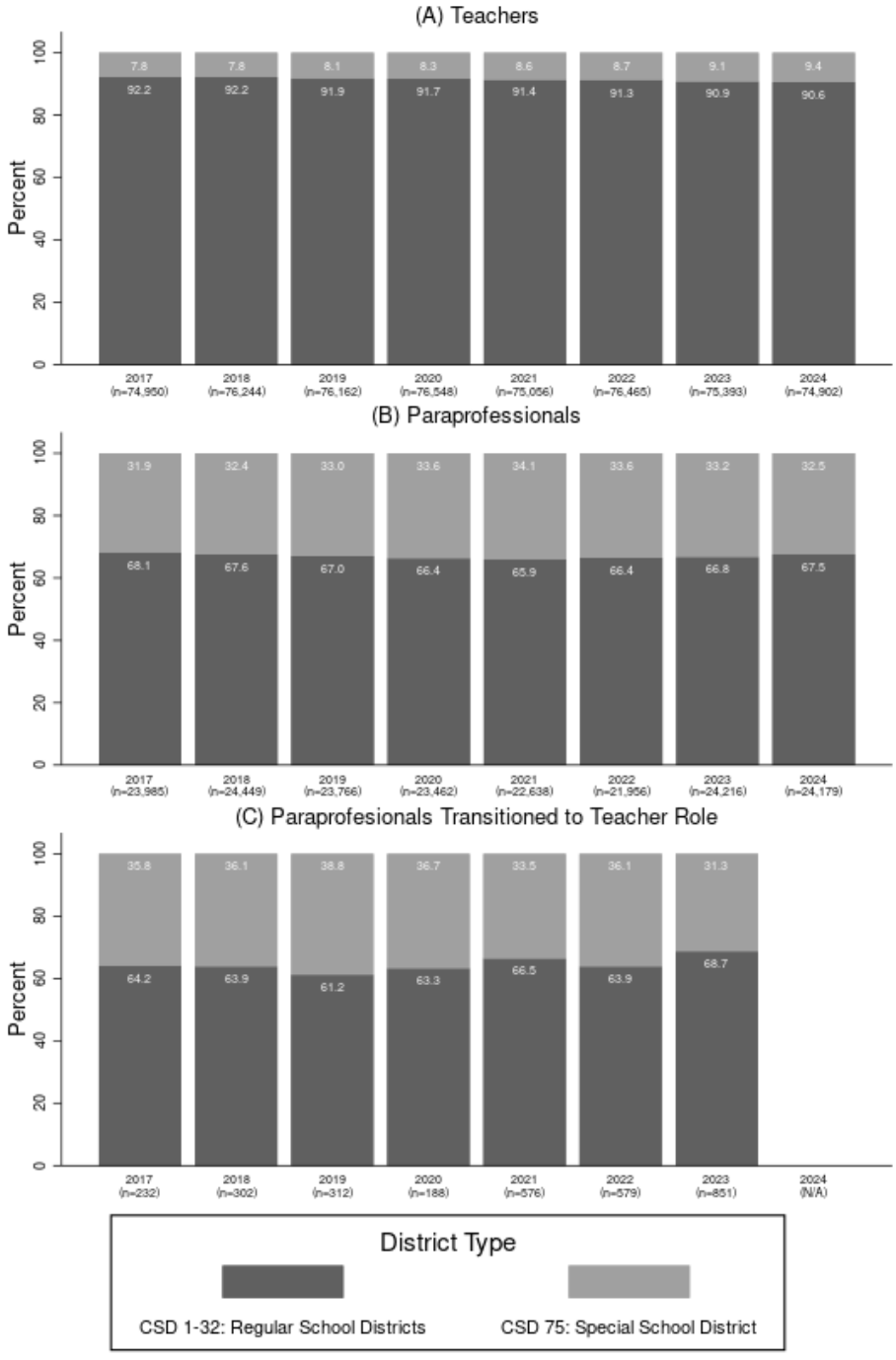
Percent of Paraprofessionals (Overall and Those Who Transitioned to Teacher Roles) and All Teachers in NYCPS, By Gender and School Year (2016-17 through 2023-24)



Note. The 2024 data point is omitted for the sample of paraprofessionals who transitioned into teaching. Identifying transitions requires data from the subsequent school year (2025), which are not yet available.

Figure A.4

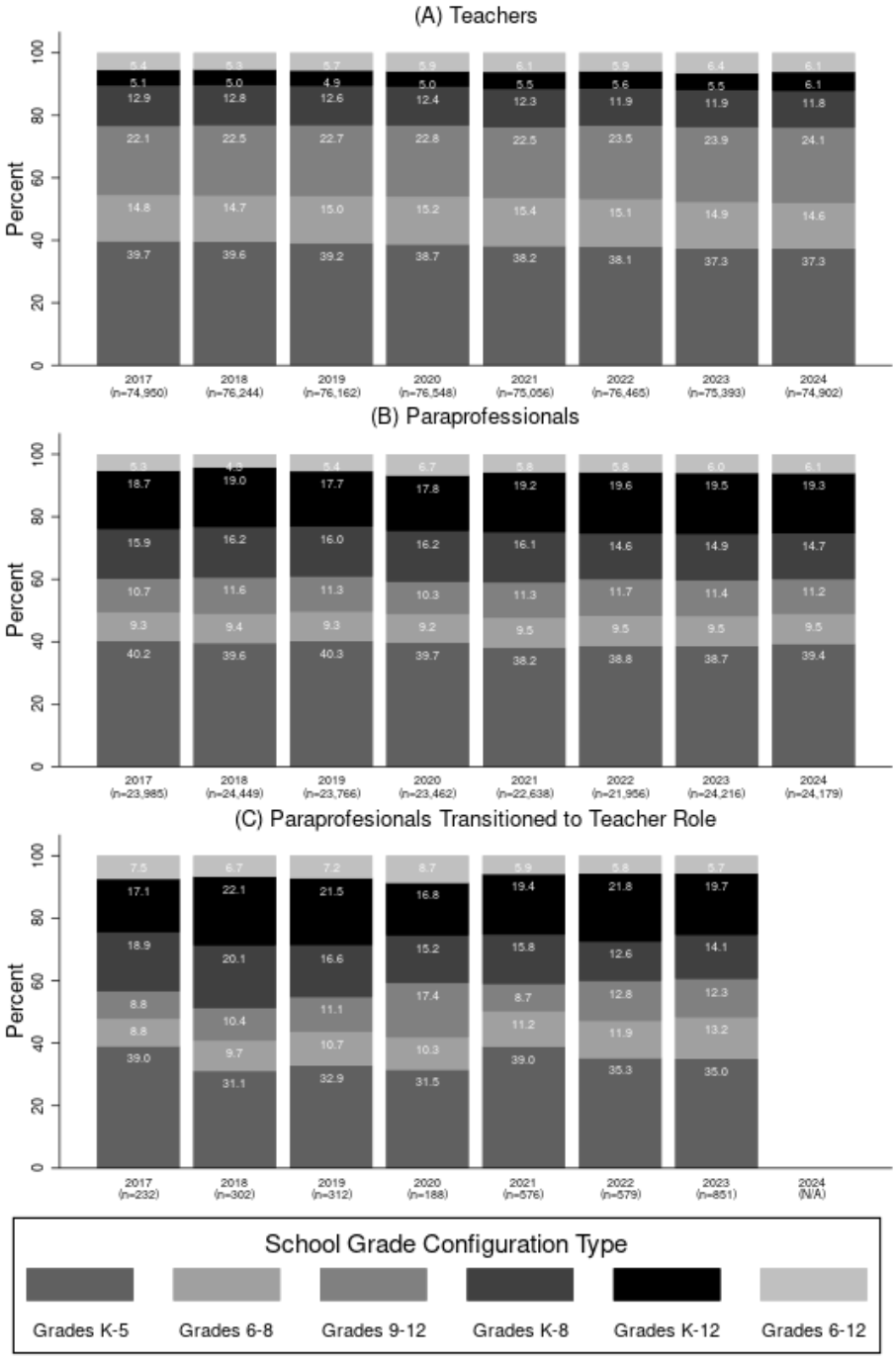
Percent of Paraprofessionals (Overall and Those Who Transitioned to Teacher Roles) and All Teachers in NYCPS, By Regular School Districts 1-32 and Specialized School District 75 and School Year (2016-17 through 2023-24)



Note. The 2024 data point is omitted for the sample of paraprofessionals who transitioned into teaching. Identifying transitions requires data from the subsequent school year (2025), which are not yet available.

Figure A.5

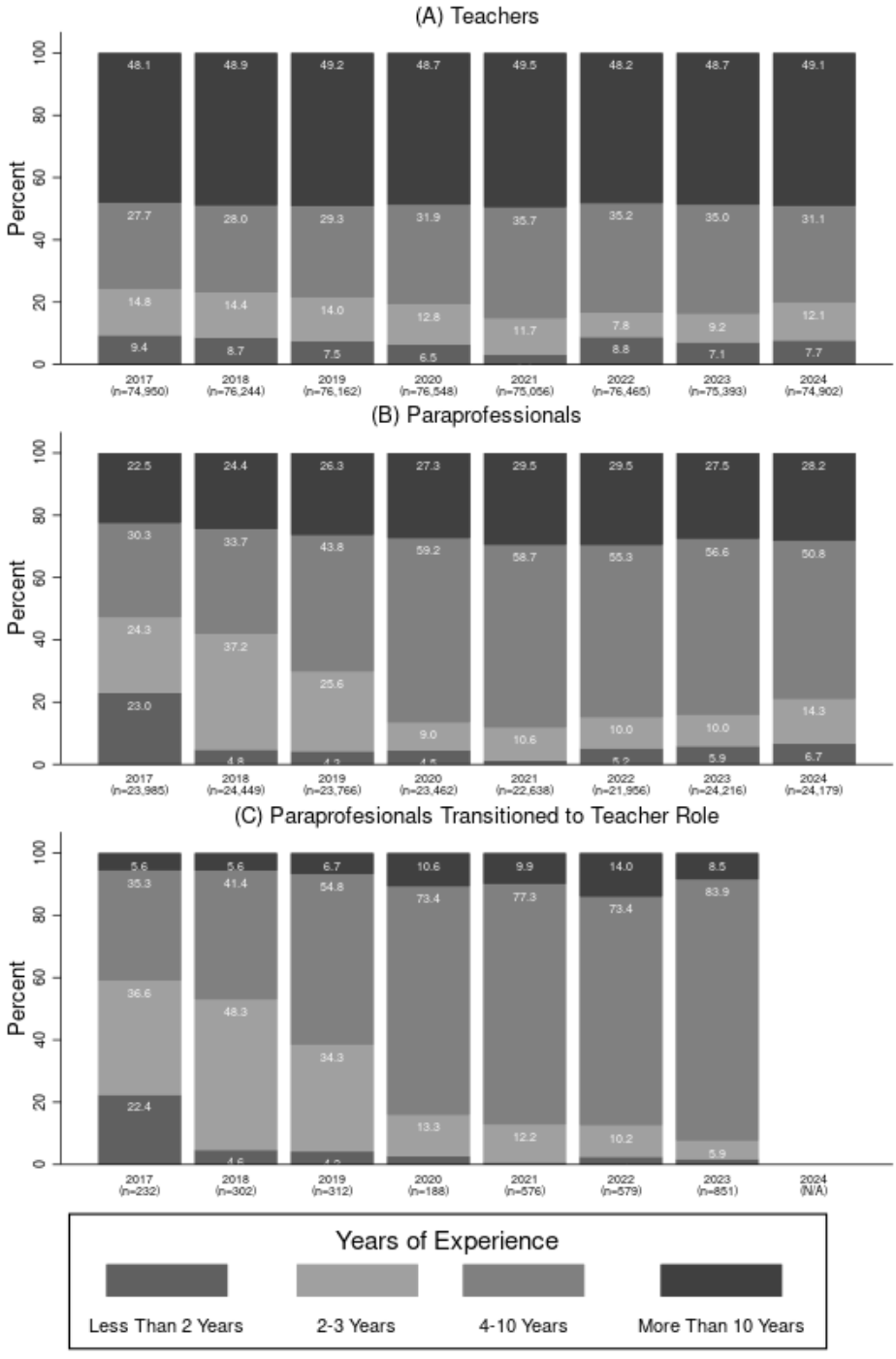
Percent of Paraprofessionals (Overall and Those Who Transitioned to Teacher Roles) and All Teachers in NYCPS, By School Grade Configuration Type and School Year (2016-17 through 2023-24)



Note. The 2024 data point is omitted for the sample of paraprofessionals who transitioned into teaching. Identifying transitions requires data from the subsequent school year (2025), which are not yet available.

Figure A.6

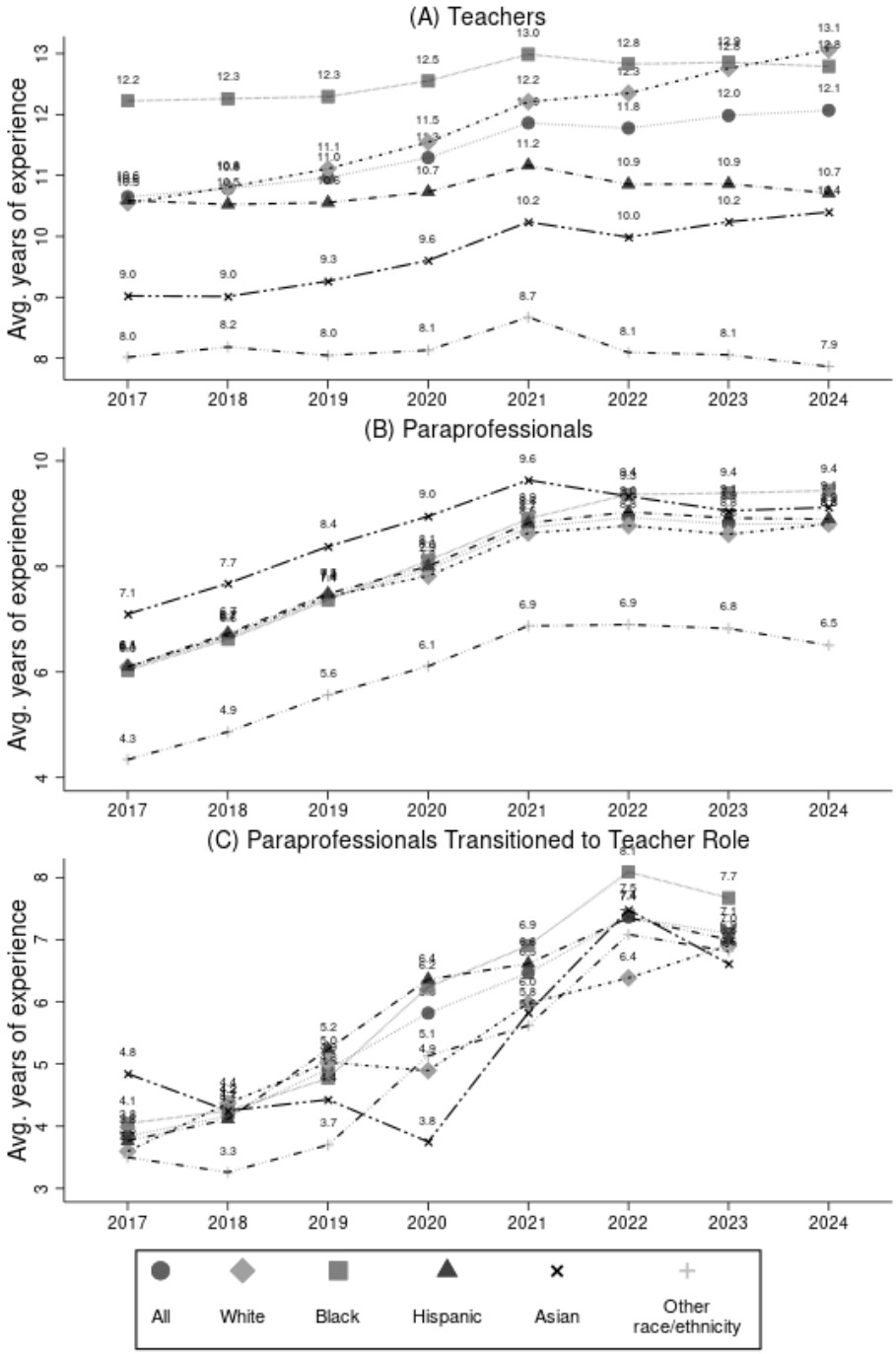
Percent of Paraprofessionals (Overall and Those Who Transitioned to Teacher Roles) and All Teachers in NYCPS, By Years of Experience and School Year (2016-17 through 2023-24)



Note. The 2024 data point is omitted for the sample of paraprofessionals who transitioned into teaching. Identifying transitions requires data from the subsequent school year (2025), which are not yet available.

Figure A.7

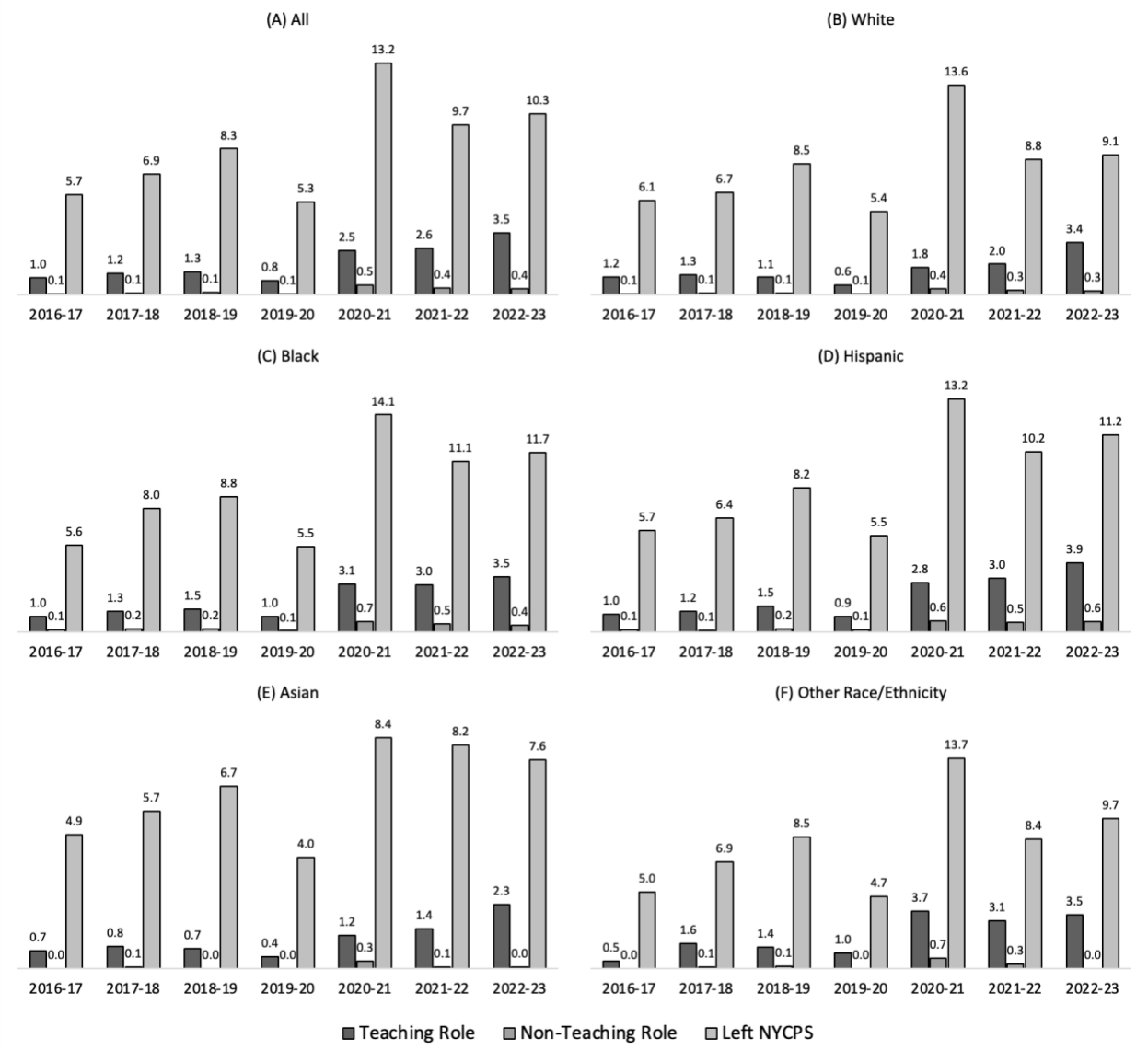
Average Years of Experience Among Paraprofessionals (Overall and Those Who Transitioned to Teacher Roles) and All Teachers in NYCPS, Overall and By Ethnoracial Background and School Year (2016-17 through 2023-24)



Note. The 2024 data point is omitted for the sample of paraprofessionals who transitioned into teaching. Identifying transitions requires data from the subsequent school year (2025), which are not yet available.

Figure A.8

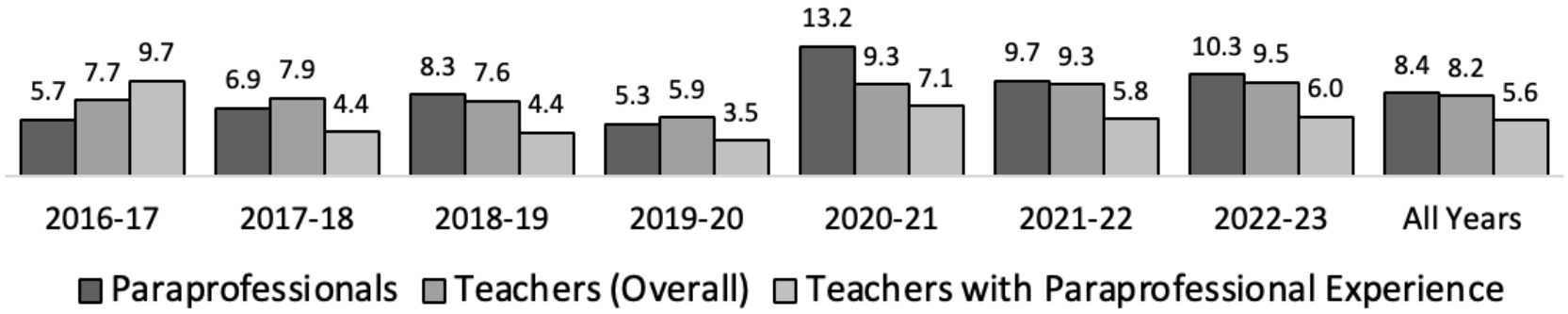
Percent of Paraprofessionals Who Transitioned to Teaching Role, Other Non-Teaching Role, and Left NYCPS by End of Following School Year (2016-17 through 2022-23)



Note. The 2024 data point is omitted. Identifying transition and turnover requires data from the subsequent school year (2025), which are not yet available.

Figure A.9

Percent of Paraprofessionals and Teachers (Overall and With Paraprofessional Experience) Who Left NYCPS by End of Following School Year, By School Year (2016-17 through 2022-23)



Note. The 2024 data point is omitted. Identifying transition and turnover requires data from the subsequent school year (2025), which are not yet available.