



New Jersey's Teacher Workforce: 2026 Legislative Report

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Executive Summary

Teachers play a vital role in both the U.S. economy and society by fostering youth development and supporting student learning throughout their K–12 education. However, the profession comes with significant challenges, beginning with the hurdles of obtaining proper certifications and securing a position. In recent years, local and national reports have also highlighted growing concerns about teacher supply and demand, particularly in specific subject areas. This report provides a high-level overview of New Jersey's teacher workforce at the state and district levels. While research in this area is progressing, questions remain about the overall supply and demand of the teaching workforce and about the factors that influence teachers' decisions to enter or remain in teaching positions. This report explores these challenges by addressing the requirements outlined in Chapter 394 of Public Law 2021 (P.L. 2021, c. 394) and providing insights into supply and demand, and the composition of the teacher workforce.

Using data from the New Jersey K–12 Statewide Longitudinal Education Data System (NJSLEDS) and the New Jersey Educator Certification System (NJEdCert) covering the period from 2013–14 to 2024–25, the key takeaways from this year's report include:

- > Overall, the number of full-time equivalent (FTE) teachers in New Jersey remained stable during this period at about 117,000 FTEs with year-over-year changes between +/- 1%. An analysis of the teacher workforce by district socioeconomic status (SES) groups highlights substantial differences in average FTE teacher counts between groups but modest changes over time for each group. For example, the lowest SES districts employ the most teachers per district compared to other district SES groups, despite a decline from 663 to 600 FTEs over the period of the analysis.
- > Some subject areas have seen more significant changes than others in the number of FTE teachers, with mathematics and science teachers decreasing by approximately 10%, and resource program teachers increasing by nearly 20%. Computer science FTE teachers decreased by 6% in this analysis.
- > The gender and racial/ethnic composition of New Jersey's teacher workforce changed little over time. During the study period, between 76% and 77% of the teacher workforce was female, and between 81% and 84% was white.
- > The number of teachers exiting their roles increased over time, particularly in the post-pandemic period. Retirements and unexplained resignations remain the most common reasons for teacher exits. Cross-district analysis shows that the lowest-SES districts experience persistently higher teacher exits, with disparities increasing after the COVID-19 pandemic.
- > Staffing increases are likely needed in multilingual learning and computer science, as student-to-teacher ratios (STRs) in these areas either increased, indicating fewer teachers per student, or remained above the average state STR of 11.5 in the 2024–25 school year.
- > The ratio of new teacher certifications – defined as unique new initial certifications – to the number of teachers permanently exiting the profession – defined as those who indicate they are leaving teaching, retiring, or have passed away – decreased over time. This trend may challenge the teacher workforce statewide and in specific localities. Across district groups, the count of teachers with new certificates relative to exits dropped substantially across all district SES groups, with differences across districts narrowing over the reporting period.

- > The highest proportion of teaching vacancies statewide was for elementary school teachers. Elementary school teacher vacancies attract the largest applicant pool, with nearly 100 applications per vacancy, while resource program and computer science positions have much lower ratios (9.9 and 9.5, respectively), indicating tighter staffing conditions in these fields. Across districts, applicant pools are largest in lowest-SES districts, particularly for elementary school positions, which averaged 59 applicants per vacancy, compared with 34 applicants per vacancy in higher-SES districts.
- > On average, vacancies remain open for two to four months, based on time-to-fill data included in the first-year reporting, with high school mathematics and science positions taking nearly three months to fill; large standard deviations in time to fill a position in these subjects (110 and 135 days, respectively) indicate substantial variation across schools and districts. Time-to-fill vacancies increase sharply as district SES decreases, with the longest hiring delays concentrated in lower-SES districts, especially for high school positions.

Introduction

Teachers play an essential role in student learning; however, many schools across the nation struggle to staff classrooms with qualified teachers and, in some cases, to fill positions at all (Nguyen et al., 2024). Unfortunately, the profession comes with significant challenges, beginning with the hurdles of obtaining proper certifications and securing a position. Local and national news reporting has indicated risks of teacher shortages, particularly in certain content areas and hard-to-staff locations. In the 2024–25 academic year, one in eight teaching positions nationwide remained unfilled or were filled by teachers not fully certified for their designated teaching assignment (Learning Policy Institute, 2025a). Special education positions have been the most difficult to staff with fully certified teachers (Institute of Education Sciences, 2024), followed by mathematics and science teachers (Learning Policy Institute, 2025b). While research in this area has advanced, questions remain about the overall supply and demand of the teaching workforce and about the factors that shape teachers' decisions to enter or remain in teaching positions.

Research on teacher preparation, recruitment, and retention over the past two decades reveals several key trends and challenges. Enrollment in teacher preparation programs has declined significantly, with the National Center on Teacher Quality noting a drop nationally from 880,000 to 591,000 enrollees between 2010 and 2021, while the proportion of students of color in teacher preparation programs has increased in 38 states (Saenz-Armstrong, 2023). Studies also found that white and female students are more likely to pursue teaching, a profile that mirrors the existing teacher workforce, raising concerns about the increasing diversity gap between teachers and their students (ACT, 2015; Putman et al., 2016; Bartanen & Kwok, 2023; Bartanen et al., 2025; Goldhaber & Mizrav, 2021). Later in the pipeline, teacher attrition is another area of concern, with new teachers and educators in high-poverty schools showing the highest turnover rates (Loeb et al., 2005). One contributing factor for teacher attrition may be teacher pay, which continues to lag that of other professions requiring similar levels of education.

This report explores these challenges by addressing the requirements outlined in Chapter 394 of Public Law 2021 (P.L. 2021, c.394). The law requires the following to be reported each year:

- > The number of teachers who left employment with the district during the prior school year;
- > The reason those teachers left employment with the district, including dismissal, non-renewal of a contract, a reduction in the labor force, employment in another school district or a nonpublic school, employment in another field, relocation to another state, or retirement;
- > The characteristics of the teachers who left the district, including age, gender, race, and tenure status;
- > The teaching positions, by certification area, in high demand in New Jersey and where existing vacancies are located;
- > The number of English as a Second Language (ESL)/bilingual teachers needed to provide adequate programming for multilingual learners, or English language learners, in line with New Jersey's constitutional requirement to deliver a "thorough and efficient education" (New Jersey Department of State, 1947);
- > The number of computer science teachers needed to provide access to computer science coursework to all students in the state;

- > The classes and programs that may be eliminated within the next three years; and
- > The areas in which teachers and school leaders should be trained/prepared so they can prepare students for the future economy.

In addition, researchers analyzed several outcomes across New Jersey school districts by grouping districts into five categories based on socioeconomic indicators: "Highest SES," "High SES," "Average SES," "Low SES," and "Lowest SES." This approach enables examination of how key patterns vary across districts with different socioeconomic profiles. In doing so, this report contributes to the ongoing debate on whether teacher shortages are primarily a national phenomenon (e.g., García & Weiss, 2020; Sutch et al., 2019) or a more localized issue (e.g., Cowan et al., 2016), by providing evidence from New Jersey that links workforce patterns to district-level socioeconomic conditions.

Analyses in these annual reports primarily comply with legal requirements, though supplemental analyses may be included each year at the request of the New Jersey Department of Education (NJDOE).

This report first presents the study's methodology, data sources, and measures. In the following section, results are presented thematically to address the state of the teacher workforce, teacher exits and projections, teacher supply and demand, and an initial review of NJDOE's new staff vacancy data collection in the fall of 2025. The report concludes with a summary of the research findings.

Methodology

Researchers from the John J. Heldrich Center for Workforce Development at Rutgers, The State University of New Jersey, conducted descriptive analyses to provide an overview of trends and projections in New Jersey's teacher workforce using data extracts for the 2013–14 to 2024–25 school years. The primary data sources used for this study are NJDOE's NJSLEDS and NJEdCert.

Throughout this study, the staff and student data used are associated with all public local education agencies in New Jersey. Additionally, the term "teachers" refers to staff who hold a State of New Jersey certification and spend at least a portion of their time assigned to an instructional job code as defined at N.J.S.A. 18:1-1. Individual staff members may hold up to six positions within a local education agency. To consistently identify teachers, researchers define them based on FTE, which reflects the share of time assigned to instructional job codes (subject-specific teaching roles). However, for the subgroup analysis by race and gender and for the analysis of teacher exits, "teachers" refers to individuals, regardless of their FTE status.

To construct a socioeconomic classification of school districts, researchers applied Principal Component Analysis to four standardized indicators for each district: local per-pupil revenue, median family income, the poverty rate, and the percentage of adults without a high school diploma. All data were obtained from the National Center for Education Statistics' (NCES) Education Demographic and Geographic Estimates (EDGE) program. The NCES EDGE data are derived from the American Community Survey (ACS) five-year estimates (2018–2022).

Readers should refer to Appendix A for additional information on the technical methodology.

Research Questions

Researchers assessed changes in the teacher workforce in New Jersey by addressing five research questions guided by the required metrics in the legislation.

1. What are the observed trends in New Jersey's teacher workforce by the number (FTEs) of teachers and by subgroup, including race, gender, age, certification and/or job code, grade level or subject area, and district SES groups?
2. What are the trends in and reasons for exiting the public school teacher workforce in New Jersey by subgroup, including race, gender, subject area, job category, and district SES groups?
3. What are the teacher workforce projections for various subject areas and grade level, and what subject areas are at higher-than-average risk of teacher turnover?
4. What are the trends in the rate of replacement in the teacher workforce in New Jersey, and how do these trends differ across district SES groups?
5. What are the teaching positions in high demand in New Jersey, and in what areas are there still existing vacancies? How are these vacancies distributed across district SES groups?

Data Analysis

Data Source: NJSLEDS

To analyze the current teacher workforce landscape, assess teacher exits by subgroup, and make projections, the Heldrich Center primarily used NJSLEDS data, housed within the New Jersey Statewide Data System (NJSDDS), covering the 2013–14 to 2024–25 school years. For each year, teachers were identified using the unique Staff Member Identification (SMID) in these data files. They were limited to those who held certified teaching positions within the local education agency for at least a portion of their time. Full-time administrators, certificated non-teaching personnel, and non-certificated staff were not included in this analysis. Teachers employed in private non-charter schools were also excluded from this analysis. In addition, teacher exits were examined by using exit dates to identify those who exited the teaching profession each school year. This analysis developed measures of the propensity of current teaching staffing levels to “adequately meet teaching needs”—STR and to be at “higher-than-average risk” of teacher turnover or program elimination. Analyzing these data enabled researchers to identify trends over time by subject and other selected characteristics, such as race and ethnicity, gender, and age group.

Staff Vacancy Data Collection

As required by Chapter 394 of Public Law 2021 (P.L. 2021, c.394), NJDOE began collecting staff vacancies for each district in the 2025–26 school year. Heldrich Center researchers worked closely with NJDOE staff on the development and validation of this data collection and received the first extract of this new data collection at the end of 2025. This data collection includes district, school, job code, a job posting identification, the number of open positions, the number of applicants, and the posting status. This data collection allows NJDOE to gather timely, accurate data on instructional staffing needs. A review and summary of the first extract are included in this report, and future reports will link vacancies to staff data.

Data Source: NJEdCert

To analyze certifications and endorsements of those meeting the requirements to become certified to teach in the state, NJDOE provided an extract of NJEdCert data. These data include digital records in NJEdCert, which employers use to verify teaching credentials and endorsements.

Certification Data

Researchers analyzed initial certification and endorsement data from 2010 to 2025. Individuals pursuing teaching certifications must fulfill requirements to secure an endorsement that identifies the type(s) of subject area(s) they can teach. Since NJDOE issues endorsements at any time, they are reported by calendar year. Because individuals may receive multiple certificates, these data were deduplicated by individual to their first initial instructional certification. This facilitates projections and comparisons with teacher exits over time and gives an idea of areas likely to be at risk.

Data Source: District SES Data

To construct a socioeconomic classification of school districts, researchers used publicly available data from NCES's EDGE program. EDGE uses data from the U.S. Census Bureau's ACS to create geographic locale classifications, school geocodes, school district boundaries, and other types of data. The NCES EDGE data are based on the ACS five-year estimates (2018 to 2022). Because EDGE does not report information for several types of districts, including county vocational districts, county special services, and educational services commissions, these districts were excluded from the classification procedure.

Analytical Limitations

Apart from the limitations already highlighted, the analysis was confined to the state level, which may overlook local- and/or school-level trends. To comply with data security and confidentiality requirements associated with NJSDS data use standards, researchers combined and/or suppressed categories with few records, constraining the depth of the analysis. These practices, while essential for data security and confidentiality requirements, limit the scope of this analysis. It is important to note that longitudinal data require consistent tracking over time. Any interruptions or inconsistencies in data collection may affect the analysis, so caution should be exercised when interpreting the results in areas where these inconsistencies may be present.

Results

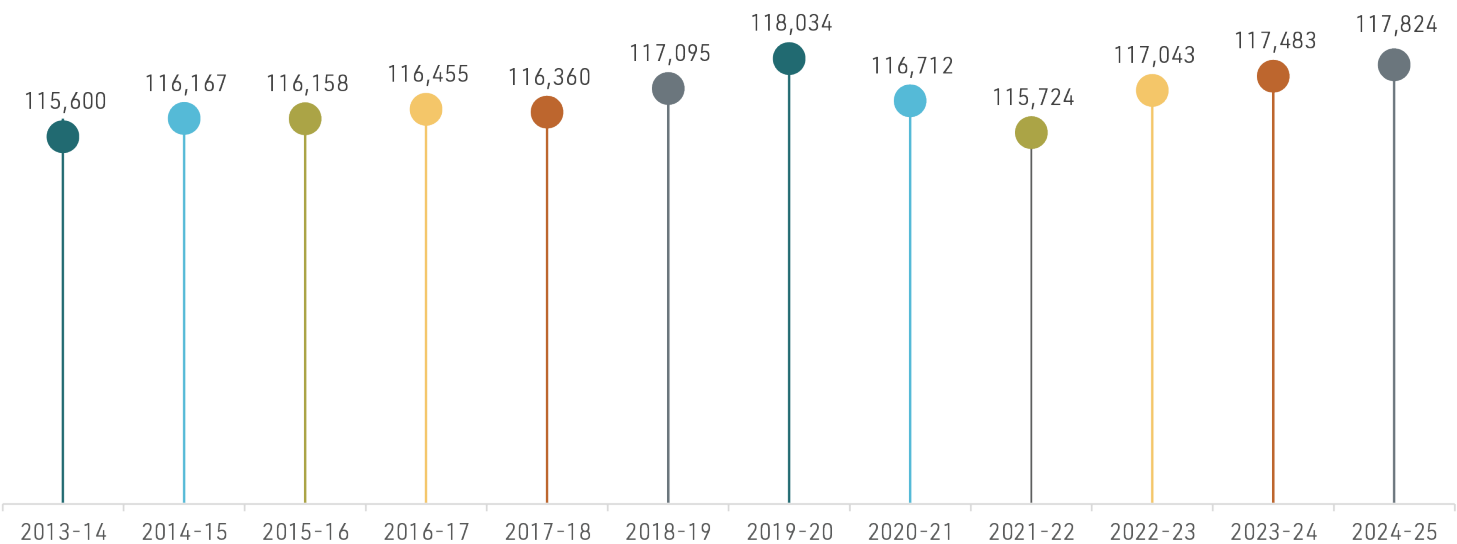
This section describes the results of these analyses, which address the five primary research questions stated earlier in this report. It first examines the state of the teacher workforce in New Jersey in terms of the total number of teachers, then separately by district SES groups, subject-area specialization, race/ethnicity, gender, and age. It then examines trends in teacher exits over time, first focusing on the demographics and subject specializations of exiting teachers and then projecting workforce needs based on STRs. Finally, the analysis concludes with an initial review of NJDOE's newly available vacancy data.

The State of the Teacher Workforce in New Jersey

The Heldrich Center conducted a descriptive review of the teacher workforce in New Jersey from the 2013–14 school year to the 2024–25 school year. The descriptive review provides an overview of the number of teachers each year, broken down by district SES groups, subject area, and individual characteristics. Individual characteristics, including race/ethnicity, gender, and age, are discussed below.

Overall, the number of FTEs in the state has remained stable during this period. Year-over-year change remained mostly around $\pm 1\%$. Figure 1 shows changes in the number of FTE teachers over time, ranging from 115,600 in 2013–14 to 117,824 in 2024–25. This represents a 1.9% increase (2,224 FTE teachers) during the period. Compared to 2023–24, there was a slight decline of around 340 FTE teachers in 2024–25. The numbers peak in 2019–20 at 118,034 FTE teachers and reach their lowest point in 2021–22 at 115,724 FTE teachers, reflecting a roughly 2% decline, likely associated with disruptions caused by the COVID-19 pandemic.

Figure 1: Number of Teachers (FTEs) in New Jersey, 2013–14 to 2024–25



Note: The figures include only FTE teachers, defined as teachers employed full time for the entire school year. This number is therefore lower than the total headcount of teachers employed.

Source: NJSLEDS SMID extract

While Figure 1 shows a trend in state-level teacher FTEs, it may mask important differences across districts with varying socioeconomic characteristics. To explore this, Heldrich Center researchers examined key district characteristics by SES groups.

The two lowest SES groups in New Jersey account for a relatively small share of districts, comprising 13% of all districts, but employ 25% of the total FTE teacher workforce and serve 26% of the total student population (see Table 1). In 2024–25, districts in the “Lowest SES” group employed an average of about 600 teachers and enrolled approximately 7,500 students, substantially exceeding the statewide averages of 173 teachers and about 2,000 students per district. In contrast, districts in the top two SES groups represent 45% of all districts but account for 42% of the teacher workforce and 40% of total student enrollment in public schools. Among those “High SES” districts, there are around 1,800 students and 160 teachers per district.

Table 1: District Characteristics by District Group (2024–25)

	Number of districts	Total enrollment	Total number of teachers	Average district enrollment	Average number of teachers	STR
	(1)	(2)	(3)	(2)/(1)	(3)/(1)	(2)/(3)
Highest SES	129	222,418	20,924	1,724	162	11
	0.19	0.16	0.18			
High SES	174	321,602	28,654	1,848	165	11
	0.26	0.24	0.24			
Average SES	132	323,743	28,230	2,453	214	11
	0.20	0.24	0.24			
Low SES	59	145,577	12,691	2,467	215	11
	0.09	0.11	0.11			
Lowest SES	28	210,091	16,789	7,503	600	13
	0.04	0.15	0.14			
Special education/ vocational	148	136,621	10,536	923	71	13
	0.22	0.10	0.09			
Total/average	670	1,360,052	117,824	1,994	173	12

Note: The number of districts reflects the count in the 2024–25 school year. The “total number of teachers” column reports the total number of FTE teachers. STR refers to the student-to-teacher ratio.

Source: NJSLEDS SMID extract

Trends in FTE teachers over time by district SES group remained relatively stable between 2012–13 and 2024–25, though notable differences across groups largely reflect differences in district sizes. Figure 2 illustrates two main patterns in the distribution of FTE teachers across district SES groups. First, total teacher counts within SES groups remained relatively stable between 2012–13 and 2024–25, with limited evidence of major shifts over time (see Figure 2a). Second, substantial differences exist in the average number of teachers employed per district across SES groups (see Figure 2b). Districts in the lowest SES group have substantially larger FTEs of teachers on average than other SES categories, reflecting the larger average size (district enrollment) of these districts. When this trend is observed over time, the average FTE of teachers per district in the “Lowest SES” group declined modestly, from 663 to 600, but the gap relative to other SES groups remained substantial throughout the period.

Figure 2: Total and Average Number of FTE Teachers by District Group, 2012–13 to 2024–25

Figure 2a: Total FTE Teachers by District Group

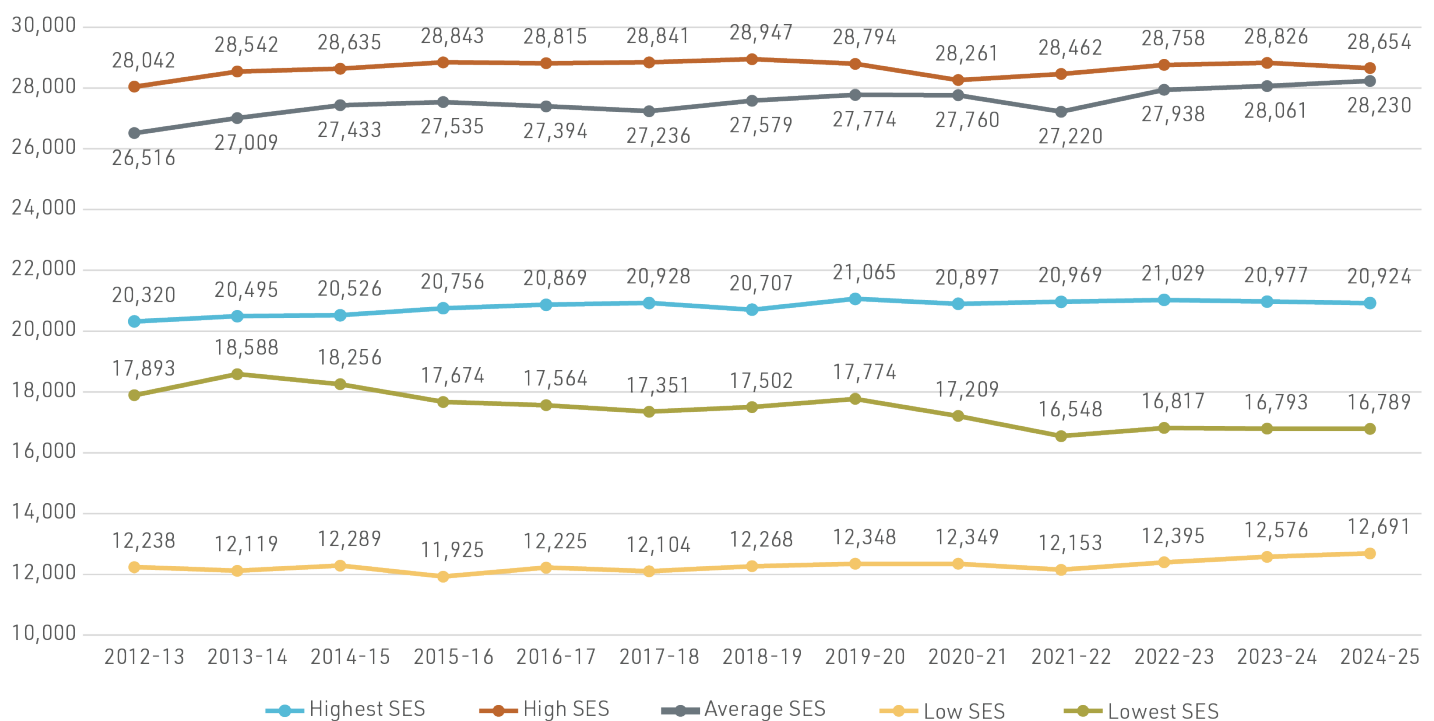
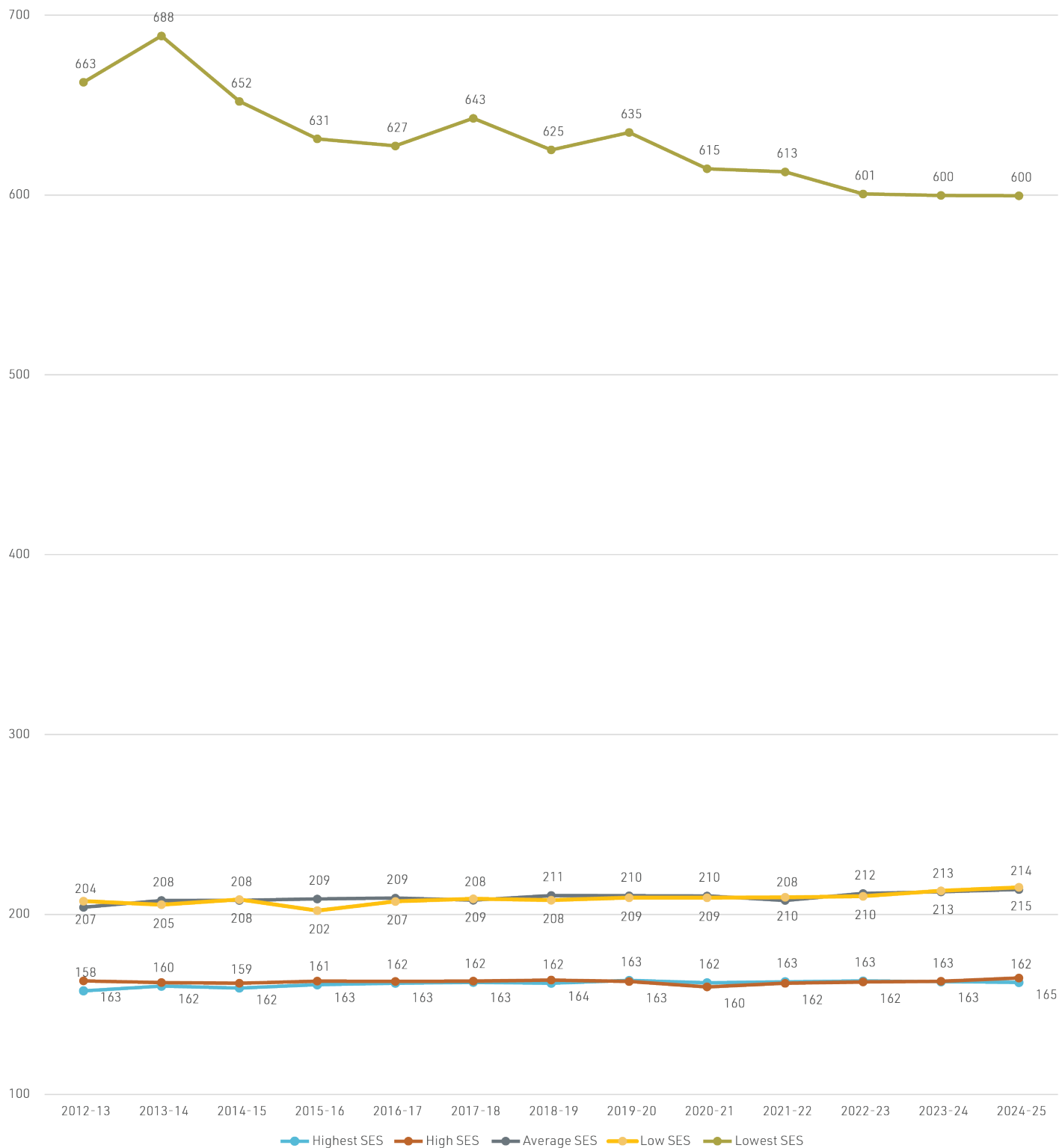


Figure 2b: Average Number of FTE Teachers by District Group



Note: Total FTE teachers refers to the total number of FTE teachers. The average number of FTE teachers is calculated by dividing the total number of FTE teachers in a district group by the number of districts in that group.

Source: NJSLEDS SMID extract

When reviewing staffing trends by job code subject area, changes were uneven across fields. Resource program staffing increased substantially, with the number of resource program FTE teachers rising by 19.6% between 2013–14 and 2024–25, an increase of approximately 2,400 FTE teachers (see Table 2). By 2024–25, resource program teachers constitute the second-largest category, accounting for about 13% of the total FTE teaching workforce, or roughly 14,800 FTE teachers. Likewise, the number of ESL/bilingual FTE teachers increased by 32.4%, or 850 FTE teachers. Despite this growth, ESL/bilingual teachers made up only 3% of the total FTE workforce. In contrast, the number of FTE teachers in world languages decreased by 12.6%, from about 4,200 to around 3,600. There has been a steady downward trend in the number of world language teachers over the entire period.

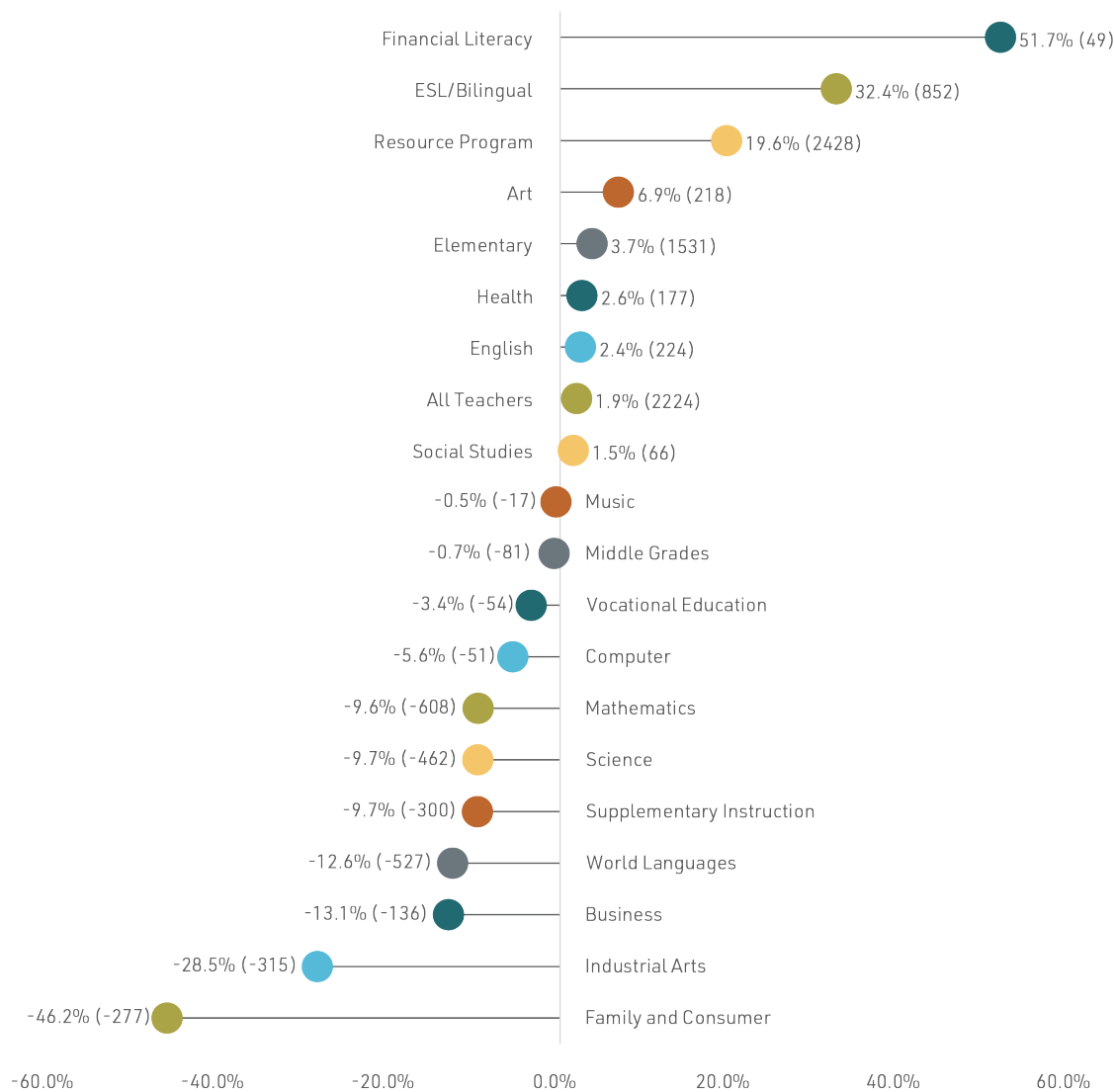
Table 2: Number (FTEs) of Teachers in New Jersey by Job Code Subject Area and Year, 2013–14 to 2024–25

	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
All teachers	115,600	116,167	116,158	116,455	116,360	117,095	118,034	116,712	115,724	117,043	117,483	117,824
Mathematics	6,313	6,270	6,232	6,266	6,170	6,183	6,129	5,973	5,890	5,834	5,753	5,705
Computer science	908	855	889	931	941	929	945	946	939	917	881	857
Science	4,773	4,767	4,750	4,710	4,675	4,639	4,659	4,549	4,453	4,411	4,317	4,312
English	9,350	9,242	8,965	9,092	9,100	9,158	9,190	9,053	9,056	9,263	9,396	9,574
Vocational education	1,578	1,259	1,223	1,251	1,260	1,298	1,336	1,347	1,369	1,387	1,446	1,525
World languages	4,166	4,087	4,098	4,075	4,022	4,020	3,976	3,860	3,809	3,788	3,747	3,640
Social studies	4,263	4,279	4,260	4,259	4,232	4,249	4,279	4,226	4,222	4,320	4,324	4,329
Health	6,887	6,934	6,899	6,932	6,919	6,984	7,044	6,973	6,910	7,046	7,093	7,063
Music	3,523	3,521	3,528	3,507	3,545	3,567	3,577	3,521	3,477	3,519	3,533	3,506
Art	3,182	3,211	3,220	3,266	3,247	3,268	3,321	3,282	3,290	3,369	3,389	3,400
ESL/bilingual	2,629	2,614	2,367	2,422	2,539	2,628	2,731	2,798	2,860	3,066	3,210	3,481
Resource program	12,413	13,044	13,579	13,978	14,157	14,218	14,561	14,446	14,554	14,602	14,851	14,841
Supplementary instruction	3,090	2,869	2,844	2,556	2,517	2,602	2,636	2,696	2,600	2,800	2,713	2,790
Business	1,039	1,043	1,015	992	985	950	945	950	919	903	897	902
Family and consumer science	600	558	525	493	463	448	446	407	380	364	344	323
Financial literacy	94	108	102	115	108	115	123	123	112	140	135	143
Industrial arts	1,106	1,110	1,056	984	938	917	871	821	795	802	800	791
Elementary grades	41,097	41,346	40,834	40,922	41,015	41,457	41,747	41,616	41,170	41,861	42,226	42,628
Middle grades	11,423	11,821	12,238	12,310	12,233	12,181	12,334	12,044	11,879	11,680	11,540	11,342

Note: The figures for each subject include only FTE teachers. The total FTE counts by subject area will not equal the sum of the subject area counts because of double counting for the following two reasons: ESL/bilingual job codes are also counted as English job codes, and three computer science job codes are also counted in either mathematics or vocational education job codes. Source: NJSLEDS SMID extract

A steady downward trend was observed in several core academic subject areas, including science, mathematics, and computer science. The number of science teachers decreased by 9.7% (see Figure 3) between 2013–14 and 2024–25, corresponding to approximately 460 fewer FTE teachers. Similarly, the number of mathematics teachers fell by 608 FTE teachers over the same period, representing a 9.6% decline overall (see Figure 3). The number of computer science teachers also declined by 5.6% over the period, a reduction of 51 FTE teachers.

Figure 3: Percent Change in Number (FTEs) of Teachers by Subject Area, 2013–14 to 2024–25



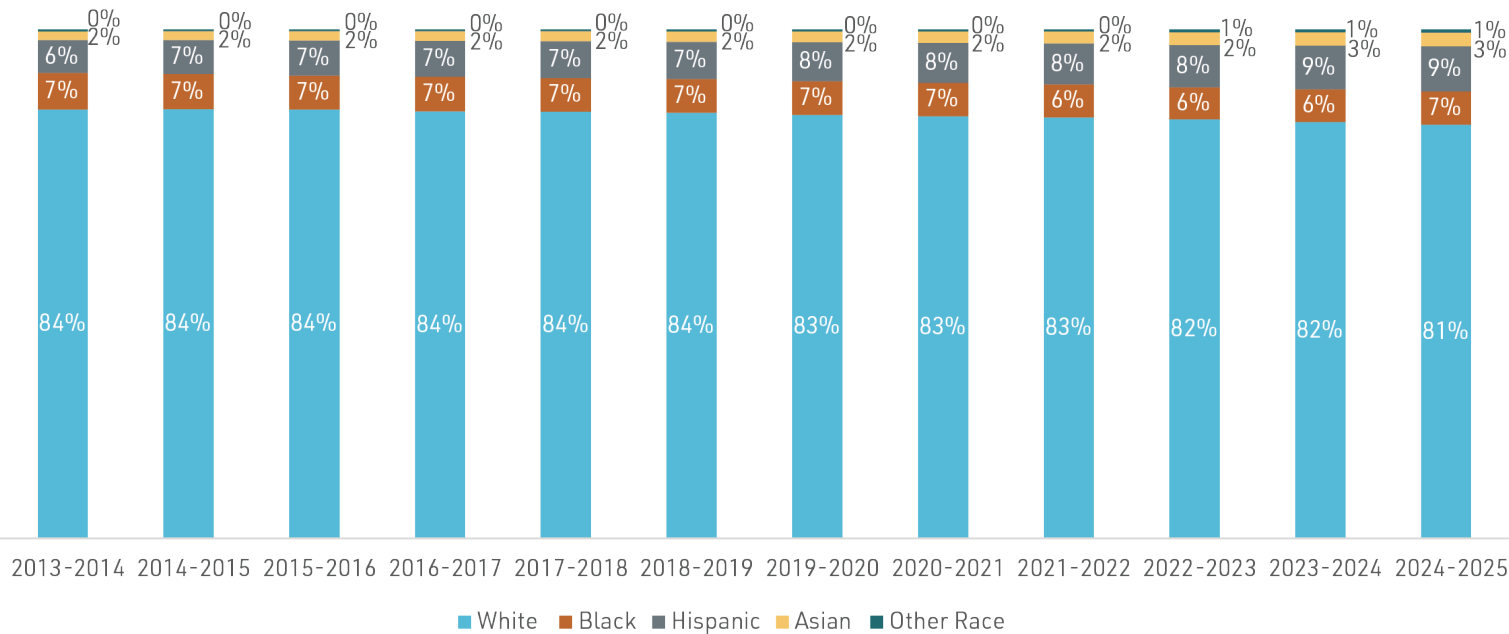
Note: The figures shown represent percentage changes in the number of FTE teachers by subject from 2013–14 to 2024–25. The change in the count of FTE teachers is shown in parentheses.

Source: NJSLEDS SMID extract

Most teachers in New Jersey are white and/or female. This composition has changed only slightly over time, with a modest trend toward a more female and more racially diverse teacher workforce. Between 2013–14 and 2024–25, the teacher workforce was 76% and 77% female, respectively. Additionally, it was 84% and 81% white, respectively, as shown in Figure 4. These numbers are based on the entire teacher workforce (including non-FTE teachers). The decline in the share of white teachers was accompanied by an increase in the number of Hispanic teachers, which rose from about 7,500 to 10,460, an increase of approximately three percentage points from 6% to 9%. The number of Asian teachers increased substantially, from about 2,000 to 3,140, although they still represent a relatively small share of the workforce, at 3% in 2024–25. In contrast, the number of Black teachers declined from 8,370 to about 7,640 over the study period, representing a 0.6 percentage-point decline (about 700 teachers).

While the numbers statewide may not have substantially changed, there may be nuances at district-level changes and by tenure of teachers.

Figure 4: Proportion of Teachers by Race/Ethnicity, 2013–14 to 2024–25



Note: The “other” category includes American Indian/Alaskan Native and Native Hawaiian/Pacific Islander teachers.

Source: NJSLEDS SMID extract

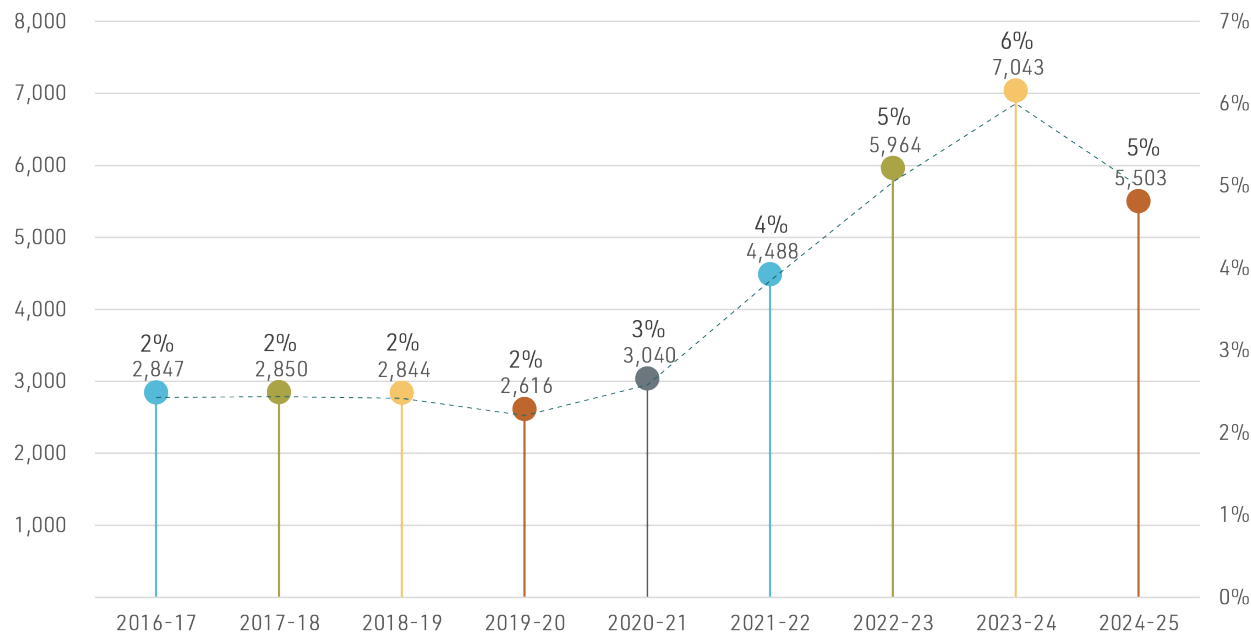
Analysis by age shows that the teacher workforce is aging, with an increasing number of teachers aged above 40, and a decreasing number of younger teachers between 2013–14 and 2024–25. The aging of the workforce is driven by an upward trend in the share of teachers aged 40 to 49, followed by a more moderate increase in the share of teachers aged 50 to 59, while the share of teachers under 40 declined steadily. In the earlier years of the analysis, about 43% of teachers were under 40 years of age; more recently, the proportion of younger teachers declined to 37%. Over the study period, the share of teachers aged 30 to 39 decreased from around 31% to approximately 26%, while the share of teachers aged 40 to 49 increased from around 24% to 32%. There was a slight decrease in the share of teachers aged 60 and older, from around 11% to 8%, likely due to higher retirement rates in recent school years.

Teacher Exits

An important component of this annual analysis is reporting the number of teachers who leave their positions each year, the reasons they leave, and trends in the characteristics of teachers who exit. This report also includes an analysis of teacher exits by district SES groups. Exits are calculated based on staff exits reported within the school year of the report.

The number of public school teacher exits observed in 2024–25 is 5,503, representing 5% of the total teacher workforce (see Figure 5). Although teacher exits declined slightly from 6% in the prior year, they remain well above the pre-COVID average of 2%.

Figure 5: Teacher Exits by School Year, Frequency and Proportion of the Workforce, 2016–17 to 2024–25

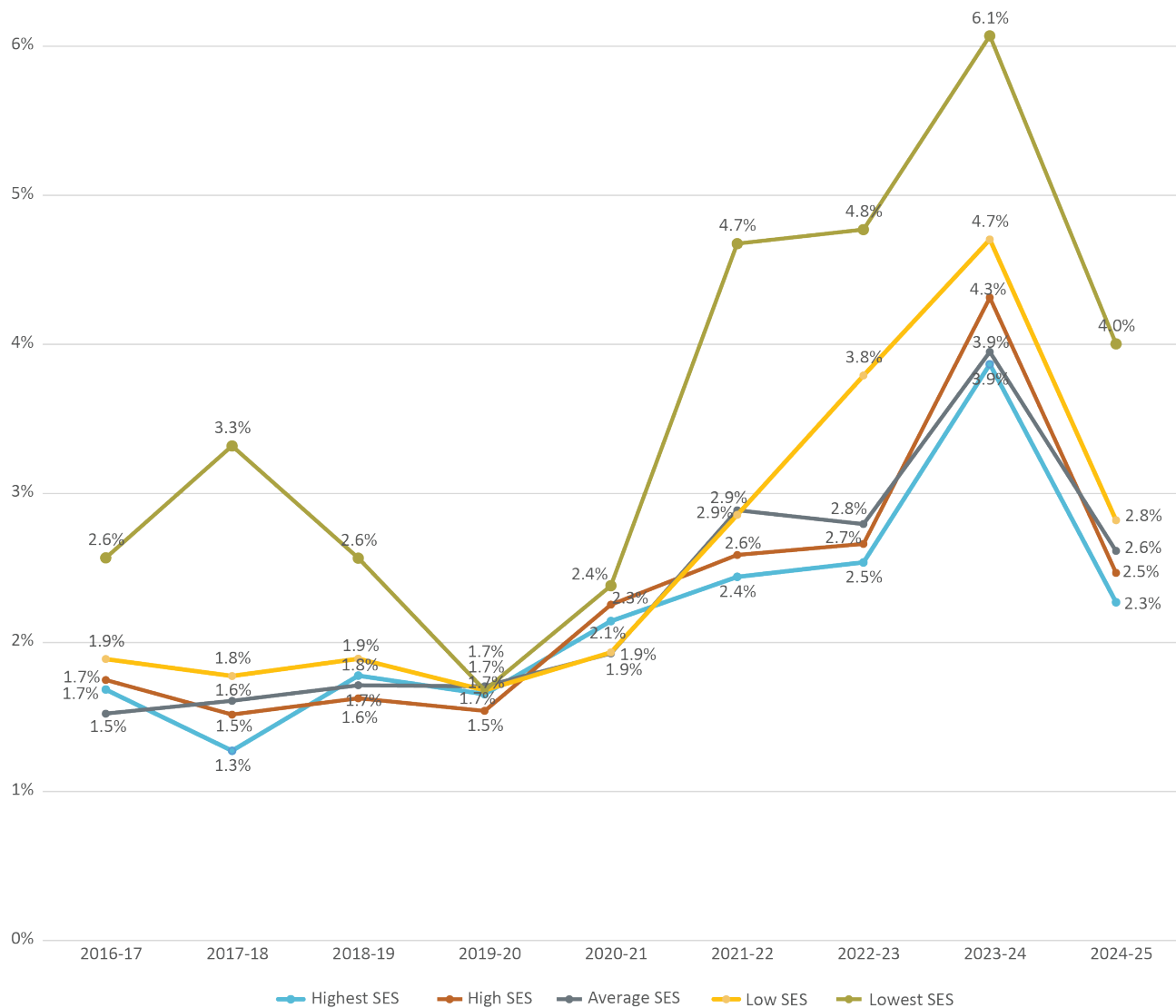


Note: Total teacher exits are calculated as the number of staff who leave a teaching position for any reason, with an effective within the school year covered by the reporting academic year. The reporting period starts with the 2016–17 school year due to data availability.

Source: NJSLEDS SMID extract

An analysis by district SES group reveals that exits as a share of the total teacher workforce have generally been higher in lower-SES districts over the study period (see Figure 6). One exception occurred during the period from 2019–20 to 2020–21, which captures COVID-19-related disruptions, during which exit shares were similar across districts. Prior to the pandemic, the share of exits in the lowest-SES districts was about one percentage point higher than in other SES groups, and this gap has since widened to roughly two percentage points. The second-lowest SES group also experienced slightly higher exit shares between 2020–21 and 2023–24, before returning to levels comparable to other districts in the most recent year.

Figure 6: Exit Shares by District Groups, 2016–17 to 2024–25



Note: Exit shares by district group are calculated as the percentage of exits in each district relative to the total teacher workforce in each district.

Source: NJSLEDS SMID extract

Over time, the reasons public school teachers gave for exiting their roles changed, with a smaller share of teachers not offered reemployment or retiring, and a greater share resigning without providing a reason. In 2024–25, retirements and resignations without a stated reason remain the most common reasons for teacher exits, at 1,087 and 1,942 exits, respectively, representing 20% and 35% of all exits, respectively (see Table 3). Exits due to transferring to another public school within New Jersey or not being offered reemployment are also widely cited reasons for exit. In 2024–25, 917 teachers transferred to another school or district in New Jersey, representing 17% of total exits. Compared to earlier years, the share of exits due to transfers to other schools or districts in New Jersey increased by about six percentage points since the 2016–17 school year. Because transfers represent one form of teacher mobility within the public school system, this pattern suggests that a growing share of teacher exits are associated with movement across schools or districts over time. In the 2024–25 school year, 821 teachers were not offered reemployment, accounting for 15% of all exits. While this remained a notable portion of total turnover, this category's share has declined by nearly five percentage points since 2016–17.

Table 3: Teacher Reported Exit Reasons, 2016–17 to 2024–25

Exit reason group	Exit reason	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Left district, still teaching	In another New Jersey public school	311	334	428	399	348	716	1,034	1,167	917
		10.9%	11.7%	15%	15.3%	11.4%	16%	17.3%	16.6%	16.7%
	In a public school district outside of New Jersey	37	50	47	45	49	90	69	88	61
		1.3%	1.8%	1.7%	1.7%	1.6%	2%	1.2%	1.2%	1.1%
	In a non-public school	23	S	24	30	S	25	33	32	24
		0.8%	S	0.8%	1.1%	S	0.6%	0.6%	0.5%	0.4%
On leave without pay	In a college/university	S	S	S	S	S	S	S	S	S
		S	S	S	S	S	S	S	S	S
	Granted leave/Sabbatical	75	94	73	48	138	71	74	102	62
		2.6%	3.3%	2.6%	1.8%	4.5%	1.6%	2%	1.4%	1.1%
	Maternity leave	317	292	251	205	242	181	219	277	163
		11.1%	10.2%	8.8%	7.8%	8%	4%	3.7%	3.9%	3.0%
Exited teaching	Retired	617	559	550	495	895	853	1,093	1,297	1,087
		21.7%	19.6%	19.3%	18.9%	29.4%	19%	18.3%	18.4%	19.8%
	Left teaching	48	45	59	78	38	85	70	80	45
		1.7%	1.6%	2.1%	3%	1.3%	1.9%	1.2%	1.1%	0.8%
Change in life circumstances	Assumed home duties	69	62	68	47	74	112	91	102	77
		2.4%	2.2%	2.4%	1.8%	2.4%	2.5%	1.5%	1.4%	1.4%
	Continuing education	S	S	S	S	S	S	S	S	S
		S	S	S	S	S	S	S	S	S
	Deceased	36	32	27	33	39	39	47	52	49
		1.3%	1.1%	0.9%	1.3%	1.3%	0.9%	0.8%	0.7%	0.9%
	Prolonged illness	24	29	14	S	S	S	S	27	29
		0.8%	1%	0.5%	S	S	S	S	0.4%	0.5%
Other exit reasons	Resigned, no reason given	718	795	718	707	780	1,697	2,350	2,616	1,942
		25.2%	27.9%	25.2%	27%	25.7%	37.8%	39.4%	37.1%	35.3%
	Not offered reemployment	561	533	565	479	402	586	677	918	821
		19.7%	18.7%	19.9%	18.3%	13.2%	13.1%	11.4%	13.0%	14.9%
	Exited or resigned for another reason	S	S	S	S	S	S	168	265	210
		S	S	S	S	S	S	2.8%	3.8%	3.8%

Note: The table reports total counts by exit reason, with the corresponding share of total exits for the year shown below each count. Cells with counts fewer than 10 are suppressed and replaced with the letter "S." The reporting period starts in the 2016–17 school year due to data availability.

Source: NJSLEDS SMID extract

An analysis by district SES group showed that retirements as a share of total teacher exits vary across groups but do not follow a clear SES gradient over time (see Figure 7a). Across most districts, retirements accounted for roughly 20% to 35% of exits, with some fluctuation over the study period. During the COVID-19 period (2020–21), the share of retirements increased across all groups, particularly in the highest and lowest SES districts. In recent years, retirement shares have remained relatively elevated in several groups, with the lowest-SES districts showing an increase in the most recent year.

Like retirements, switching to another New Jersey school district as a share of total teacher exits varies across groups and over time, without a clear SES gradient (see Figure 7b). Across most districts, district switches account for roughly 10% to 20% of exits, with some fluctuation over the study period. In recent years, the share of district switches has increased modestly across all SES groups, except for the lowest-SES districts, which consistently exhibit lower shares.

Figure 7: Retirement and District Switches as Share of Total Exits, 2016–17 to 2024–25

Figure 7a: Retirement as Share of Teacher Exits

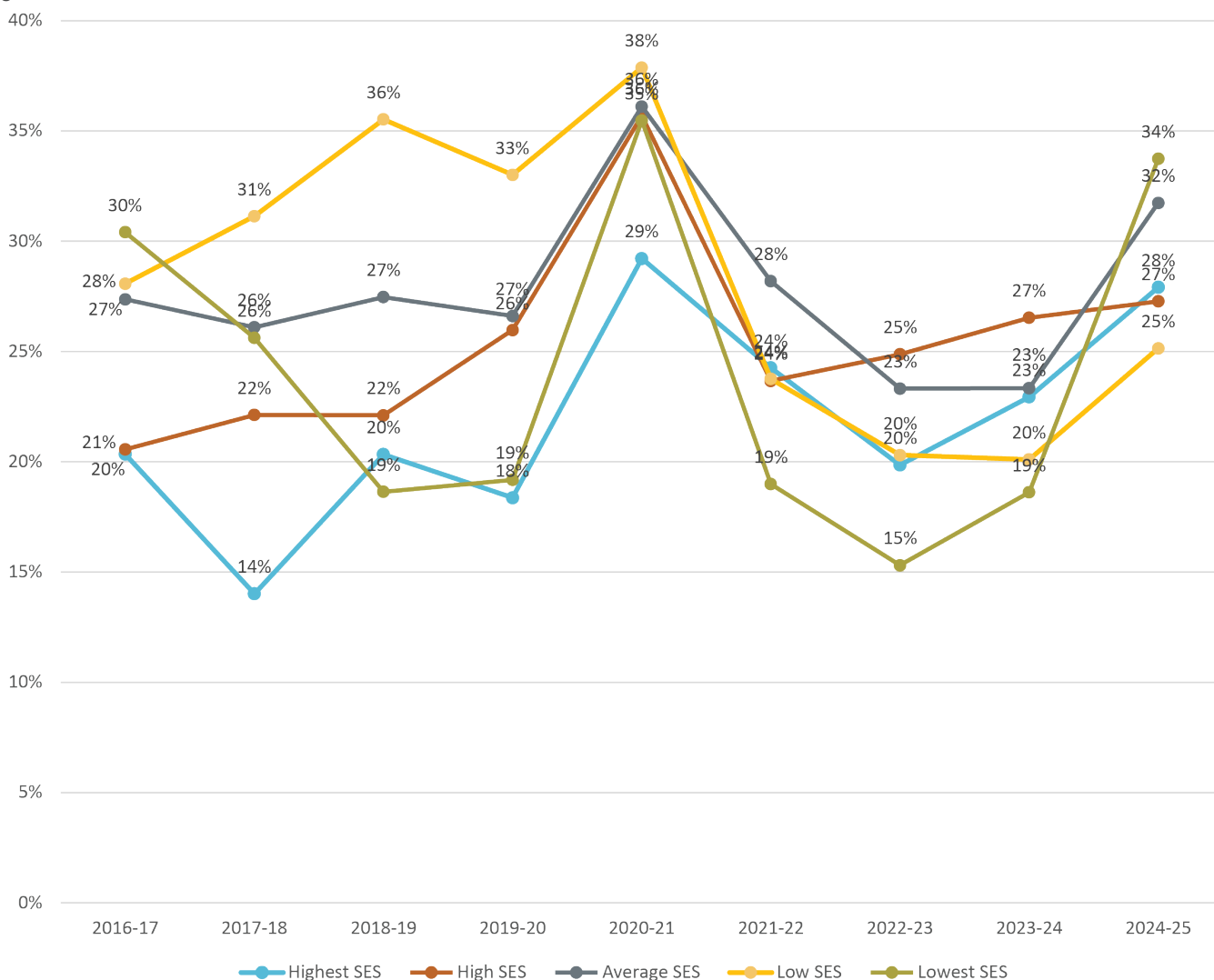
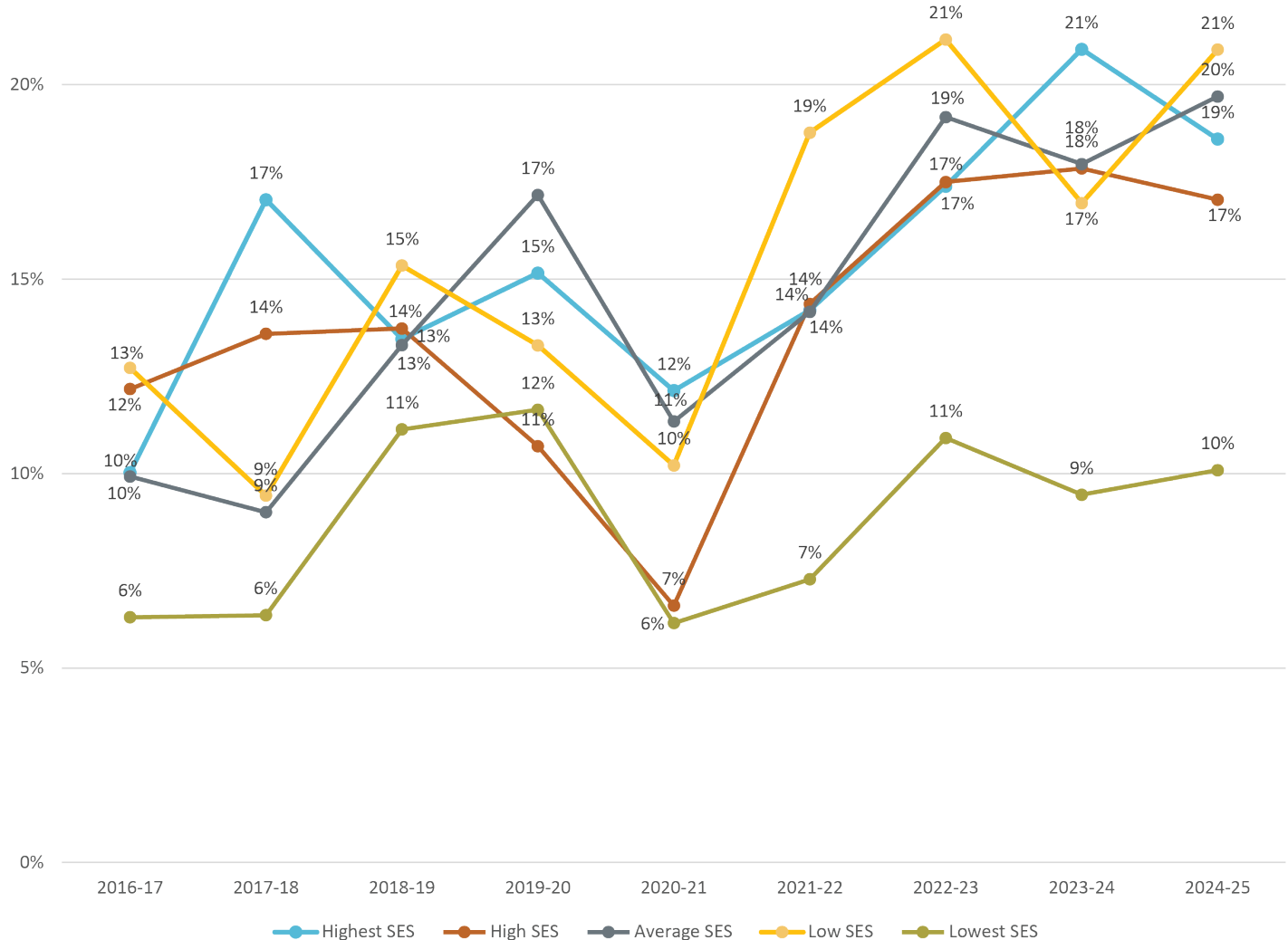


Figure 7b: Switching as Share of Teacher Exits



Note: Retirement shares by district are calculated as the percentage of retirements relative to total exits in each district. Similarly, the share of switches is calculated as the percentage of teachers who switch districts within the state relative to total exits in each district.

Source: NJSLEDS SMID extract

Teacher exits by gender and race/ethnicity remained broadly consistent with the demographic composition of the teacher workforce overall, though some variation across groups emerged over time. In particular, the share of exits among Hispanic teachers gradually increased over the study period, reflecting the growing representation of Hispanic teachers in the workforce overall, while exit shares among Asian teachers remained relatively stable.

As shown in Table 4, from 2016–17 to 2024–25, white teachers consistently accounted for the majority of exits, ranging from a low of 74% in 2022–23 to a high of 80.6% in 2020–21. After declining between 2016–17 and 2022–23, the share of exits among white teachers increased modestly in the two most recent years, reaching 74.7% in 2024–25. Exits among Hispanic teachers showed a gradual upward trend over the period. The share increased from 7.9% in 2016–17 to a peak of 11.1% in 2022–23, before decreasing to 10.7% in 2024–25. This pattern is consistent with the growing representation of Hispanic teachers in the workforce overall. Patterns by gender patterns have been relatively stable. Female teachers account for roughly three quarters of all exits across the period, ranging from 76.1% to 81.3%. The share of male teacher exits fluctuates between 18.8% and 23.9%, consistent with their representation in the workforce.

Table 4: Teacher Exits by Race/Ethnicity and Gender, 2016–17 to 2024–25

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
White	78.8%	76.2%	78.7%	78.8%	80.6%	75.8%	74%	75.9%	74.7%
Black	10.2%	10.6%	9.7%	8.4%	7.5%	10%	10.8%	9.7%	11%
Hispanic, any race	7.9%	9.9%	8.4%	8.8%	8.4%	10.3%	11.1%	10.8%	10.7%
Asian	2.2%	2.4%	2.4%	2.9%	2.8%	2.8%	3.1%	3%	2.8%
Other/missing race	0.5%	S	S	S	S	0.7%	0.5%	0.3%	0.5%
Multiple races indicated	0.4%	S	S	S	S	0.04%	0.04%	0.3%	0.3%
Female	77.9%	78.6%	78.4%	76.6%	81.3%	76.1%	78.6%	76.9%	76.3%
Male	22.1%	21.4%	21.6%	23.4%	18.8%	23.9%	21.4%	23.1%	23.7%

Note: The figures are based on the total number of exits for any reason. Cells with small numbers are suppressed and replaced with the letter "S." The reporting period starts in 2016–17 school year due to data availability.

Source: NJSLEDS SMID extract

Teacher exits by job code subject area remained relatively constant over time. In 2024–25, roughly one-third (34.8%) of exits were by elementary school teachers. This is consistent with the share of the teacher workforce held by elementary school teachers. In 2024–25, 16.6% of exits were by support/resource teachers (who serve special-needs education populations), which stayed relatively consistent over time (see Table 5), while there was a 2.5 percentage-point decrease in the share of middle school teacher exits, from 11% to 8.5% between 2016–17 and 2024–25. Science teachers also had a notable drop in their share of exits from 5% to 3.5% during this period.

Table 5: Teacher Exits by Job Code Subject Area, 2016–17 to 2024–25

	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	Total
Elementary school	33.9%	34.5%	34.3%	33.9%	34.9%	33.8%	36.2%	34.8%	34.8%	34.6%
Middle school	11%	10.3%	10.8%	10%	9.4%	9.7%	10.3%	8.6%	8.5%	9.8%
Art	3.2%	2.7%	3.5%	3.4%	3.8%	2.8%	3.1%	3.6%	2.9%	3.2%
Business	0.5%	0.8%	0.9%	1%	0.9%	0.9%	0.8%	0.9%	0.8%	0.8%
English	8.5%	8.5%	7.9%	8%	8.3%	9.4%	8.5%	8.5%	8%	8.4%
Foreign languages	3.9%	4.1%	4.6%	4.5%	3.3%	3.8%	2.9%	3.4%	2.9%	3.7%
Health/physical education	5.2%	5%	5.3%	6.4%	5.6%	5%	4.7%	5.2%	5%	5.3%
Family and consumer science	0.5%	0.4%	0.7%	0.6%	0.4%	0.3%	0.4%	0.4%	0.2%	0.4%
Industrial arts/vocational education	2.1%	2.1%	2.1%	2.3%	2.3%	2.5%	2%	2.1%	2.2%	2.2%
Mathematics	4.6%	6%	5.2%	4.2%	4.4%	4.5%	5.2%	4.9%	4.3%	4.8%
Music	3.2%	3.3%	3.7%	3.3%	3.3%	3.8%	2.9%	3.4%	3.4%	3.4%
Science	5%	4.6%	3.1%	4%	4%	4.2%	3.8%	3.9%	3.5%	4.0%
Social studies	3%	2.2%	2.3%	3.1%	2%	2.9%	3%	2.6%	2.8%	2.7%
Support/resource	15.5%	15.6%	15.5%	15.3%	17.6%	16.3%	16.3%	16%	16.6%	16.1%

Note: The figures represent shares of total exits, for any reason, by subject area. Several areas of teaching were combined for reporting purposes due to small cell counts. The reporting period begins with the 2016–17 school year due to data availability. The columns may not add to 100% due to rounding and a small number of missing values.

Source: NJSLEDS SMID extract

Workforce Projections and Higher Turnover Areas

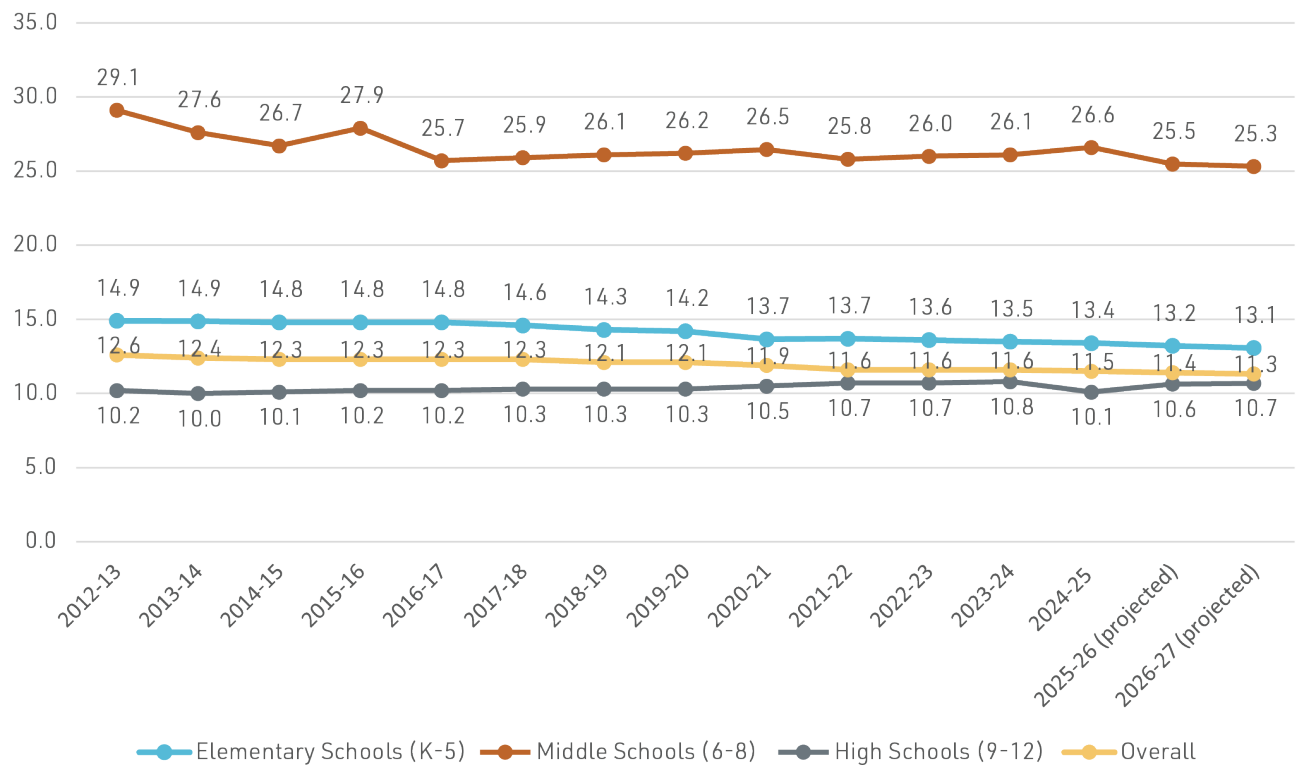
To project the future needs of New Jersey's teacher workforce, Heldrich Center researchers first calculated STRs – both overall and within grade level, demographic, and subject-area subgroups – across the 12 years included in this analysis (2013–14 to 2024–25). In these STR calculations, student headcounts are the numerator and teacher FTEs are the denominator.

For the two future school years (2025–26 and 2026–27) for which student enrollment data are not yet available, enrollment and STRs were projected by extrapolating historical trends in the observed data. Projections were generated using ordinary least squares linear regression to estimate future values based on historical trends in the series. Examining the trends in the STR allows one to see whether and in what groups additional teachers are needed. In addition, comparing these (real and projected) STRs to national and state benchmarks helps determine if staffing levels are adequate.

Overall, STRs have slightly improved, with notable variation across grades. In terms of the statewide STR, Figure 8 shows a modest 7.3% decrease in the STR in New Jersey's public school system, from 12.4 in 2013–14 to 11.5 in 2024–25. Projections in the STR indicate a slight decrease over the next two years, to approximately 11.4 in 2025–26 and 11.3 in 2026–27.¹ However, there is notable variation in projections by grade level.

When researchers examined STR trends categorized for elementary schools (K–5), middle schools (6–8), and high schools (9–12), a more nuanced picture emerged. At the elementary school level (K–5), the STR decreased from 14.9 in 2013–14 to 13.4 in 2024–25, reflecting a reduction of 1.5 students per teacher (see Figure 8). This trend is mainly driven by the increasing number of elementary school teachers. Projections suggest a continued decline to 13.2 in 2025–26 and 13.1 in 2026–27. In the middle school grades, where STRs are about double those in elementary school grades, a more modest decrease, from 27.6 in 2013–14 to a projected 25.3 in 2026–27, is observed. The STR in high school grades increased by 0.1, from 10 in 2013–14 to 10.1 in 2024–25. This trend results from a concurrent increase in the number of high school students and a decrease in the number of high school teachers. As previously noted, the data available at this time to measure STRs was limited to overall statewide comparisons, which will be updated in the future and will impact the granularity of these measures.

Figure 8: Overall STRs by Grade Level, 2012–13 to 2026–27



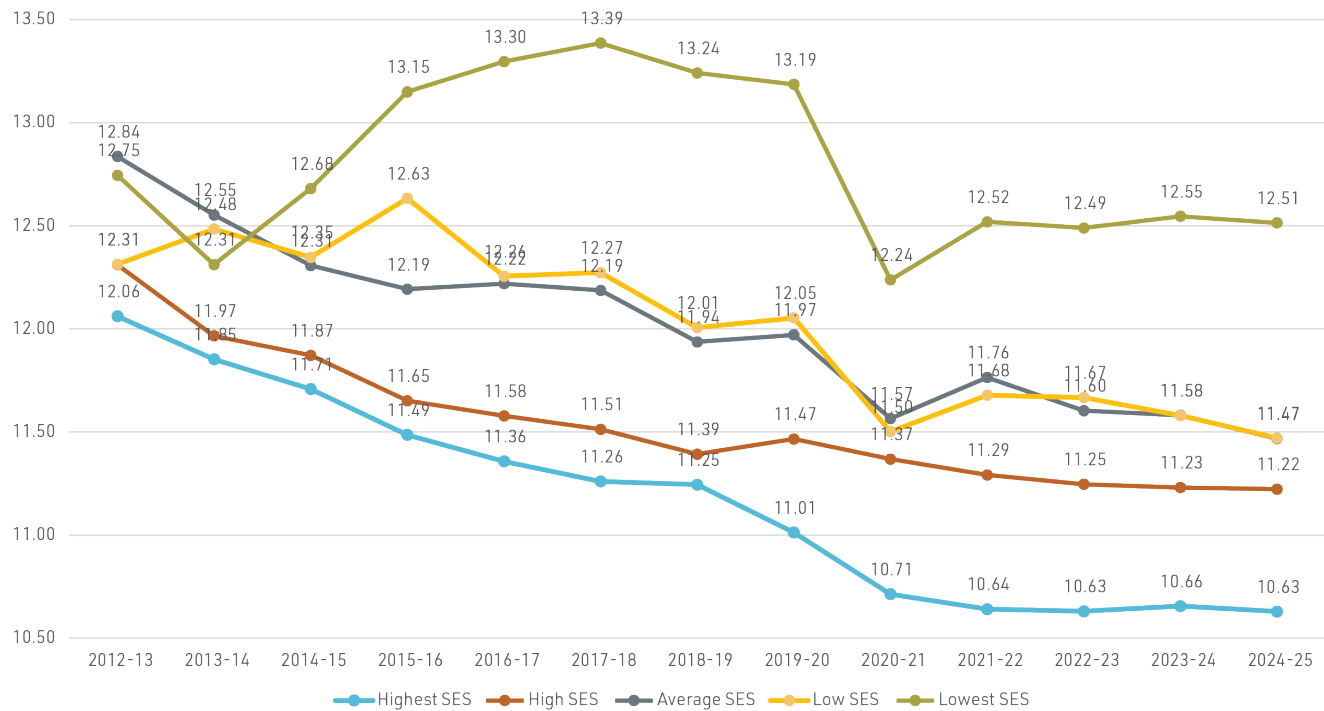
Note: The figures represent STRs, calculated by dividing the total number of students by the total number of FTE teachers in the relevant grades. Projected values are based on historical trends.

Source: NJSLEDS SMID extract

¹ Projections were generated by forecasting the numbers of students and teachers based on historical trends, after which projected STRs were calculated. All projections were produced using Microsoft Excel's FORECAST function.

An analysis across districts showed substantial differences in STRs by SES group (see Figure 9). Although STRs have declined across all groups over the study period, districts in the lowest SES group consistently maintained higher ratios. For example, STRs in the highest-SES districts decreased from 12.1 in 2012–13 to 10.6 in 2024–25, while in the lowest-SES districts, they declined only slightly, from 12.8 to 12.5. Most of the decline occurred between 2012–13 and 2020–21, after which STRs remain relatively stable.

Figure 9: Overall STRs by District Groups, 2012–13 to 2024–25



Note: The STR figures are calculated by dividing total enrollment in each district group by the total number of FTE teachers in that group.

Source: NJSLEDS SMID extract

Differences across SES groups are most pronounced at the middle school level, while the most notable increase over time at the high school level occurred in the lowest-SES districts. STR by school level shows different patterns across district SES groups (see Figures 10a, 10b, and 10c). At the elementary school level, STRs are relatively stable, generally ranging from 12 to 16 students per teacher. Higher-SES districts tend to be at the upper end, while low-SES districts are at the lower end; however, the lowest-SES districts have STRs like those in the highest-SES group, ranging around 14 to 15 in recent years. At the middle school level, STRs are substantially higher and show more variation across groups. For example, STRs in the highest-SES districts decline from 27 in 2012–13 to 22 in 2024–25, while low-SES districts remain elevated at 31 in 2024–25. At the high school level, STRs are lower overall and relatively stable for most groups, typically ranging from about 9 to 11; however, the lowest-SES districts show a noticeable increase, rising from 8 in 2013–14 to 12 by 2023–24 and remaining at that level through 2024–25. This trend reflects a notable 2.5% increase in the number of high school students (approximately 10,400 students), while the number of teachers has decreased by about 5.7% between 2013–14 and 2024–25.

Figure 10: STRs by Grade: Elementary, Middle, and High School, 2012-13 to 2024-25

Figure 10a: Elementary School Grades STRs

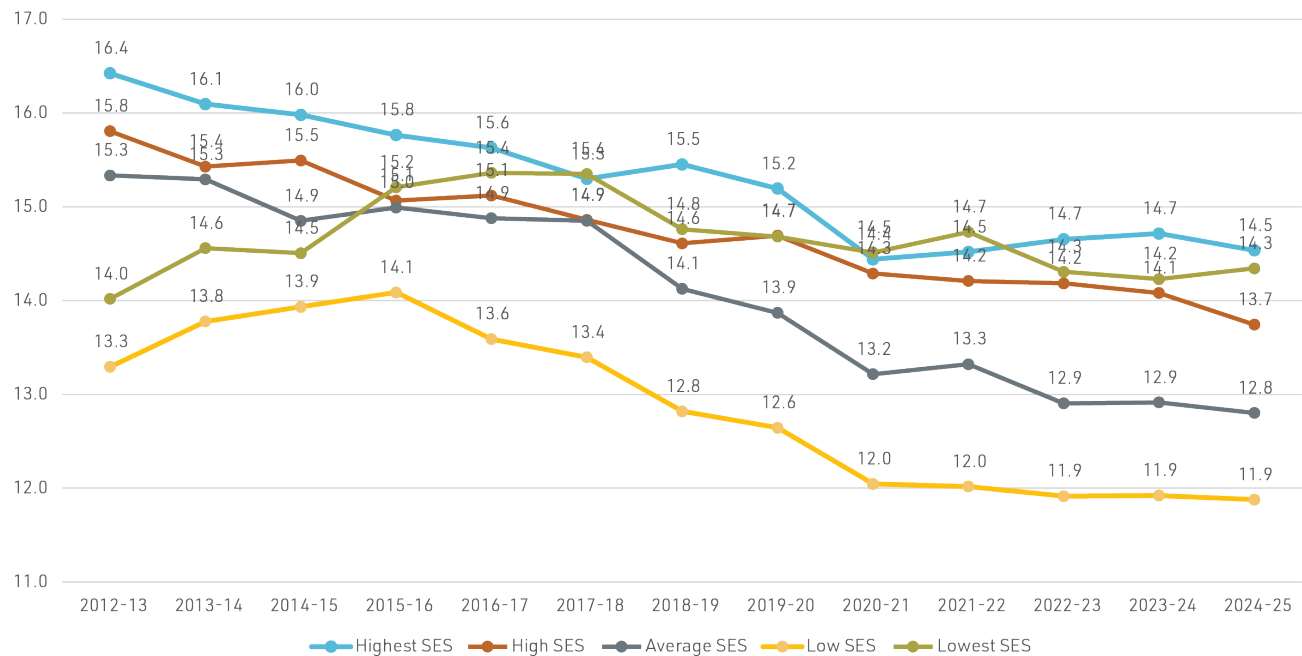


Figure 10b: Middle School Grades STRs

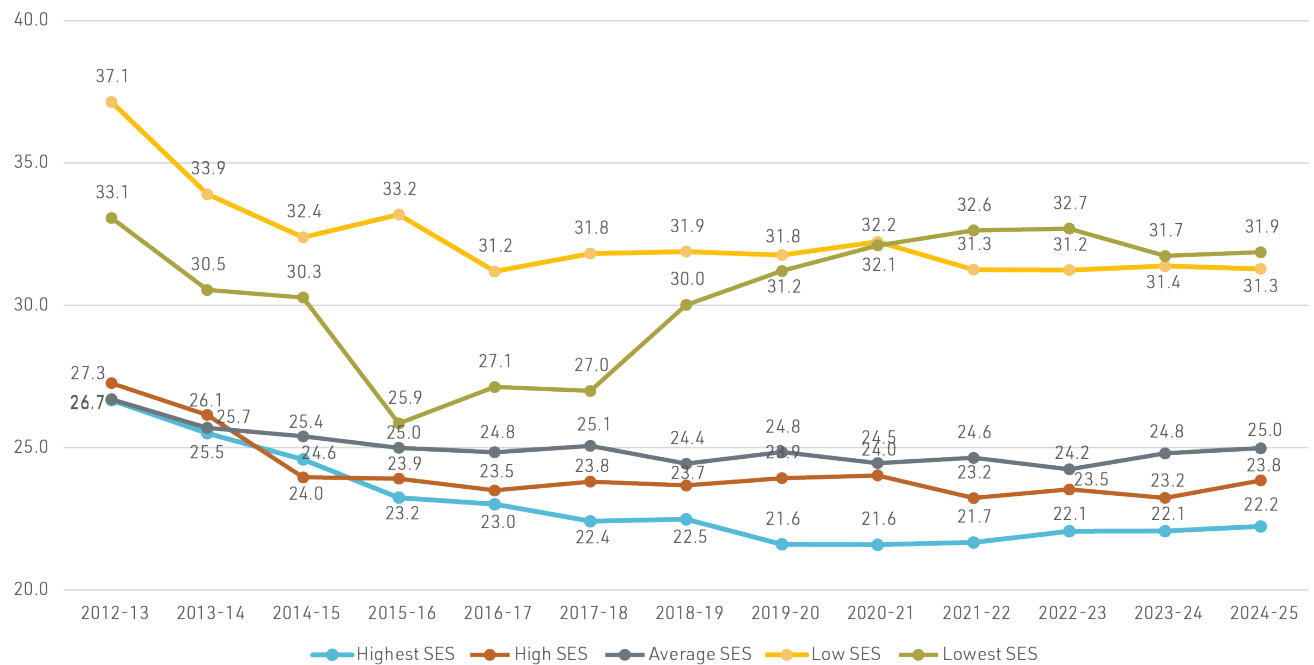
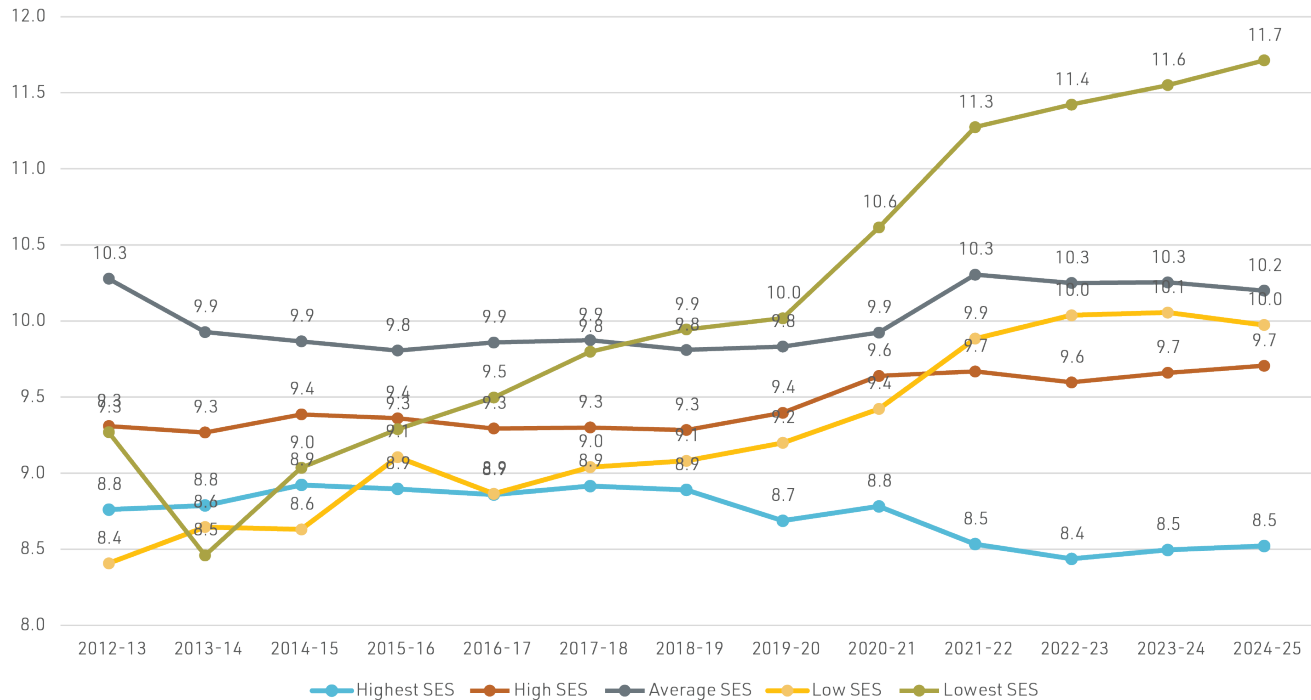


Figure 10c: High School Grades STRs



Note: STRs are calculated by dividing the total number of students in the relevant grade levels within a district group by the total number of FTE teachers at those grade levels in the same district group.

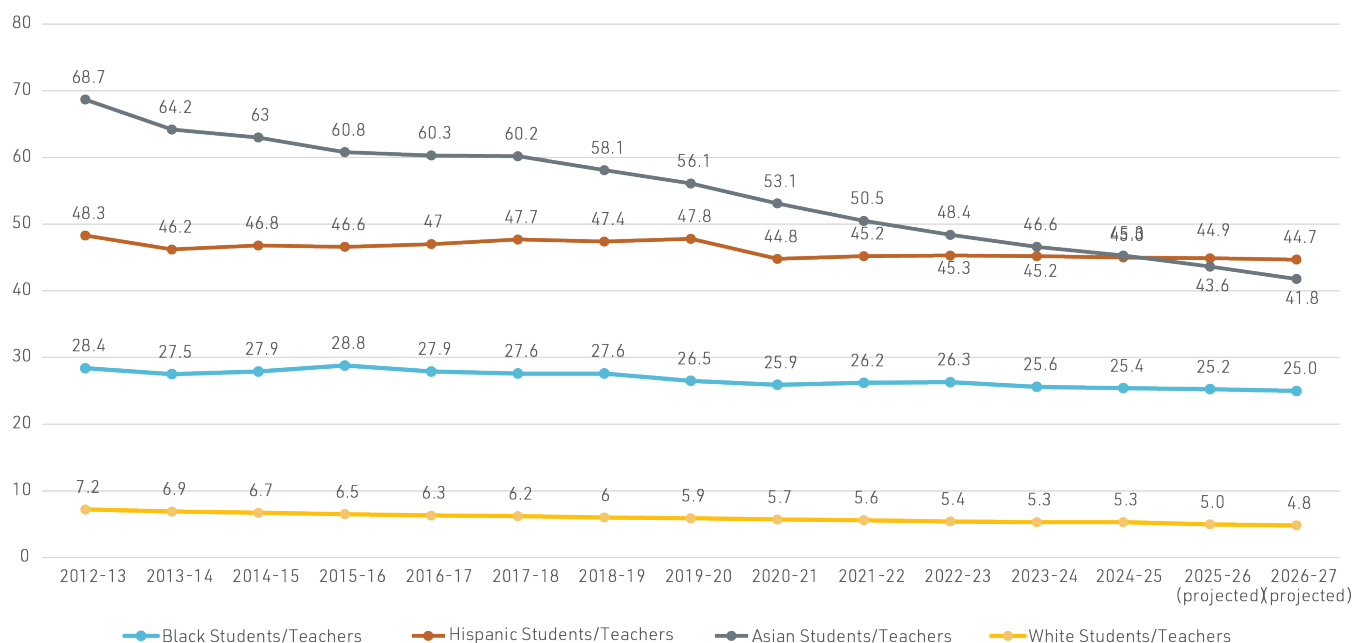
Source: NJSLEDS SMID extract

The demographic composition of the teacher workforce has become an increasingly important policy issue as New Jersey's student population has grown more racially and ethnically diverse over time. Differences between the racial and ethnic composition of students and teachers have been linked to student outcomes and are often viewed as an indicator of broader challenges in recruiting and retaining a diverse educator workforce (Egalite et al., 2015; Gershenson et al., 2022). To examine these patterns, researchers constructed STRs within racial/ethnic groups.

Across the period, the ratios vary substantially by racial/ethnic group, with the STR for Asian students and teachers showing the largest improvement. While the proportion of white teachers slightly decreased over the study period, the proportion of Hispanic and Asian teachers increased, and the proportion of Black teachers declined. Here, by focusing on the STR, researchers examined the changes in the teacher workforce as they related to demographic changes in New Jersey's student population. STRs were constructed by dividing student headcounts within each race/ethnicity category by the number of teachers of the same race/ethnicity. Lower values, therefore, indicate closer demographic alignment between students and teachers. Figure 11 shows that the STR for white students and teachers declined by 1.6 students per teacher, from 6.9 in 2013–14 to 5.3 in 2024–25. This sustained decline over the period reflects both a reduction in the number of white students and a historically higher representation of white teachers in the workforce. Projections suggest further modest declines to 5.0 and 4.8 over the next two years. By contrast, ratios for Hispanic students and teachers remain substantially higher. The ratio declined modestly from 46.2 in 2013–14 to 45 in 2024–25. Projections indicate a slight improvement in the coming years, though the ratio remains around 45, underscoring a continued underrepresentation of Hispanic teachers relative to the Hispanic student population. The STR for Black students and teachers, which similarly reflects a significant mismatch, decreased 2.1 students per teacher over the period, from 27.5

to 25.4. The most notable trend is in the STR for Asian students, which declined from 64.2 to 45.3 over the same period, a decrease of 18.9 students per teacher. This reflects strong growth in the number of Asian teachers that outpaced the more modest increase in the number of Asian students in the state.

Figure 11: STRs by Shared Student and Teacher Race/Ethnicity, 2012–13 to 2026–27



Note: The figures represent STRs, calculated by dividing the total number of students by the total number of FTE teachers in the relevant race/ethnicity across all grades. Projected values are based on historical trends. Projections for the 2025–26 and 2026–27 school years, for which data are not yet available to researchers, were generated using Microsoft Excel's FORECAST function.

Source: NJSLEDS SMID extract

Staffing increases are likely needed in bilingual/ESL and computer science. Heldrich Center researchers examined STR trends in three subject areas – computer science, multilingual learning, and special education. For computer science, they compared high school headcount enrollment to the number of teacher FTEs in computer-related job codes.² For multilingual learning, they compared the number of students classified as multilingual learners with the number of teacher FTEs in ESL and bilingual job codes, separately.³ For special education, they compared the number of students classified as special education status to the number of teacher FTEs in resource and support programs.⁴

Over the study period, the STR for computer science increased slightly from 455.1 in 2013–14 to 493.2 in 2024–25 (see Table 6); projections indicate that it will decline to 467.7 in 2026–27. The number of computer science FTEs varied over the study period from around 900 to almost 860 in the 2024–25 school year, a 5.6% decrease in computer science teachers. While there are five job codes that directly correspond with the definition of computer science, it may be that staff with other job codes are taking on this role without being documented as such, which indicates the stated shortage is the lower bound. Overall, the STRs recorded here indicate a need for increased staffing in this subject area, as noted in Appendix A, though the calculated STRs are not directly comparable to class size, since subject specialist teachers serve multiple classrooms of students each day. But in class size terms, 16 is at the upper bound of what is recommended by New Jersey state law (N.J. Admin. Code § 6A:14-1.2).

² The job codes in this field are 1962, 2525, 2593, 2712, and 2718.

³ The job codes in this field are 1485 for ESL and 1486 for bilingual teachers.

⁴ The job codes in this field are 2405 and 2406.

By contrast, the STRs for multilingual learning increased over the study period. In 2013–14, the STR for multilingual learning students to ESL teachers was 36.6; by 2024–25, it had risen to 50.3. Similarly, the STR for multilingual learning students to bilingual teachers increased from 79.4 to 329.7 over the same period. These increases were driven by rapid growth in the multilingual learning student population statewide, which outpaced the growth in FTE instructional staff. Between 2013–14 and 2024–25, the number of multilingual learning students more than doubled – from approximately 63,000 to over 150,000 – while the combined number of ESL and bilingual teachers increased by only 42%, from roughly 2,400 to 3,500 FTE teachers. These trends suggest that the hiring of ESL and bilingual instructors will likely need to continue to meet increasing demand as the state's multilingual learning population continues to grow.

In terms of special education, the observed STR declined over time – from 16.9 in 2013–14 to 15.7 in 2024–25. Projected student numbers indicate that the STR will decrease further to 14.8 in the 2026–27 school year. Adequate STRs for special education depend on the specific needs of the student population; as stated earlier, 16 is at the upper bound of what is recommended by New Jersey state law (N.J. Admin. Code § 6A:14-1.2). This suggests that staffing in recent years increased to meet that threshold.

Table 6: STRs by Select Subjects and Projections, 2013–14 to 2026–27

School year	Multilingual students to ESL teacher FTEs	Multilingual students to bilingual teacher FTEs	High school students to computer teacher FTEs	Special education students to resource program FTEs
2013–14	36.6	79.4	455.1	16.9
2014–15	41	85.9	483.9	16.3
2015–16	38.2	177.5	465.7	15.7
2016–17	38.1	179	444.2	15.4
2017–18	40.4	183.5	439.3	15.3
2018–19	40	201	445.4	15.5
2019–20	43.1	215.4	440.7	15.4
2020–21	40	199.7	441.3	15.3
2021–22	41.6	212.2	446.6	14.9
2022–23	44.7	234.9	460.1	15.1
2023–24	46.8	283.7	481.1	15.3
2024–25	50.3	329.7	493.2	15.7
2025–26 (projected)	47.8	315.9	466.4	14.9
2026–27 (projected)	48.8	333.9	467.7	14.8

Note: The figures represent STRs, calculated by dividing the total number of students by the total number of FTE teachers in the relevant subject. Projected values are based on historical trends.

Source: NJSLEDS SMID extract

Teacher Pipeline

Another way of projecting the sufficiency of the teacher workforce is by comparing the rate of entry into the profession (inflow) to the rate of exit from the profession (outflow). Notably, the 2024 New Jersey teacher workforce report (Douglas et al., 2024) showed that of the 4,521 students who enrolled in a New Jersey postsecondary education institution between 2013–14 and 2015–16 and declared education as their major, only about 23% eventually became teachers in New Jersey. Therefore, comparing the inflow to and outflow from the profession can highlight the future needs of New Jersey’s teacher workforce. Inflow is described here as the number of initial teaching certificates issued to new teachers each year; researchers define outflow as the number of teachers whose reason for exit was listed as “retirement,” “left teaching,” or “deceased.” Inflow counts of certificates were deduplicated across all years of certification data available to count only the first initial certification for each individual. Outflow could be underestimated, as some teachers who leave or retire may not report their reason for leaving. From these inflow and outflow measures, researchers derive the replacement ratio as the number of new initial teaching certifications per exiting teacher.

Table 7 presents the replacement ratio over time and reveals a declining trend between 2016–17 and 2022–23, followed by a recovery in the two most recent years. In the first four years for which exit data are available (2016–17 to 2019–20), the replacement ratio remained relatively stable, fluctuating between approximately 9-to-1 and 11-to-1. The ratio then declined during and after the COVID-19 period, falling to 5.6-to-1 in 2020–21 and reaching a low of 3.9-to-1 in 2022–23. Since then, the ratio has improved, increasing to 4.6-to-1 in 2023–24 and 5.7-to-1 in 2024–25. The increase in the most recent year was driven largely by a substantial increase in initial certificates that outpaced the increase in permanent exits, particularly in retirements.

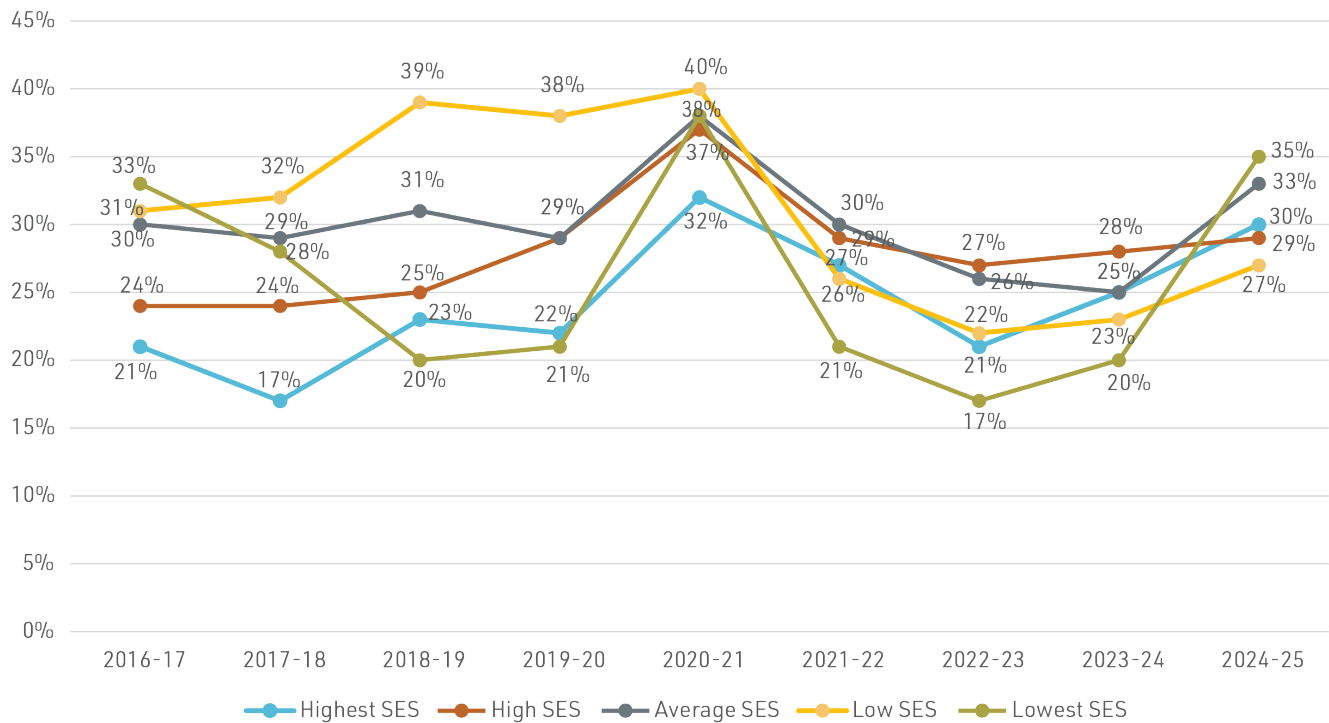
Table 7: Flows Into and Out of Teaching, 2016–17 to 2024–25

	2016– 17	2017– 18	2018– 19	2019– 20	2020– 21	2021– 22	2022– 23	2023– 24	2024– 25
Initial certificates	6,937	6,923	6,466	5,370	5,410	5,259	4,708	6,572	6,693
Permanent exits									
Retired	617	559	550	495	895	853	1,093	1,297	1,087
Left teaching	48	45	59	78	38	85	70	80	45
Deceased	36	32	27	33	39	39	47	52	49
Total permanent exits	701	636	636	606	972	977	1,210	1,429	1,181
Ratio	9.9	10.9	10.2	8.9	5.6	5.4	3.9	4.6	5.7

Note: The ratio is calculated by dividing the total number of initial certificates issued by the total number of permanent exits within the same year. The total number of permanent exits is calculated as the sum of exits due to retirement, leaving the teaching profession entirely, or death.

Source: NJSLEDS SMID extract and NJEdCert data

Because initial certifications are not linked to where teachers may ultimately work, researchers do not conduct a cross-district analysis of the ratio of certifications to permanent exits. Instead, they present a cross-district analysis of the share of permanent exits. Because permanent exits are driven largely by retirements, cross-district patterns closely track those shown in Figure 7a. As illustrated in Figure 12, permanent exits increased between the 2019–20 and 2020–21 school years, coinciding with COVID-19-related disruptions, with the largest rise observed in the lowest-SES districts. This increase is followed by a decline across all groups, after which permanent exits in the lowest-SES districts rebound to levels comparable to their 2020–21 peak.

Figure 12: Share of Permanent Exits by District Groups, 2016–17 to 2024–25

Note: Permanent exits are calculated as the sum of exits due to retirement, leaving the teaching profession, and death.

Source: NJSLEDS SMID extract

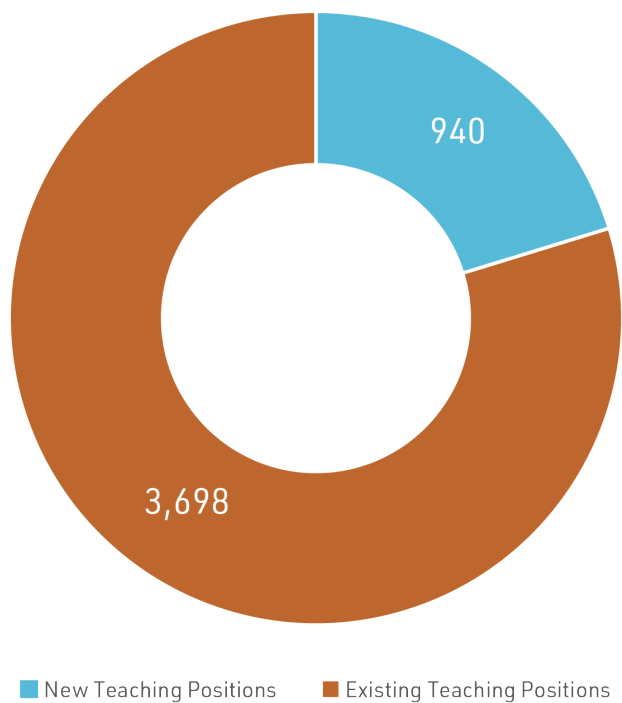
Teaching Vacancies

P.L. 2021, c.394 required this annual report with the information presented above but also required NJDOE to develop a new data collection on the number and type of vacancies within each school district. After several years of thorough planning and testing, NJDOE piloted this new data collection in early 2025, and fully launched it in fall 2025. The analysis of these data provides valuable insight into current labor market conditions in the teacher workforce, including variation in staffing demand and teacher supply.

Analysis of the fall 2025 vacancy data shows that 10,346 valid records were submitted by school districts in New Jersey's public school system. Of these 10,346 records, 74% (or 7,607) were related to teaching, while the remaining 2,739 were non-teaching positions. Of the teaching records, 39.03% (or 2,969) were eliminated positions – full-time positions that will no longer be offered in subsequent years; the remainder were vacant teaching positions. The remainder of the analysis focuses only on the 4,638 teaching vacancies.

There are two types of teaching vacancies identified in the data. New teaching positions are roles that were newly created within a district or school and did not previously exist. There is also a vacancy type for an existing teaching position that currently needs to be filled. Figure 13 shows the distribution of teaching vacancies by type. Most vacancies (3,698 or 79.7%) are for existing teaching positions, while only 940 or 20.3% of vacancies are for newly created teaching positions.

Figure 13: Teaching Vacancies by Type

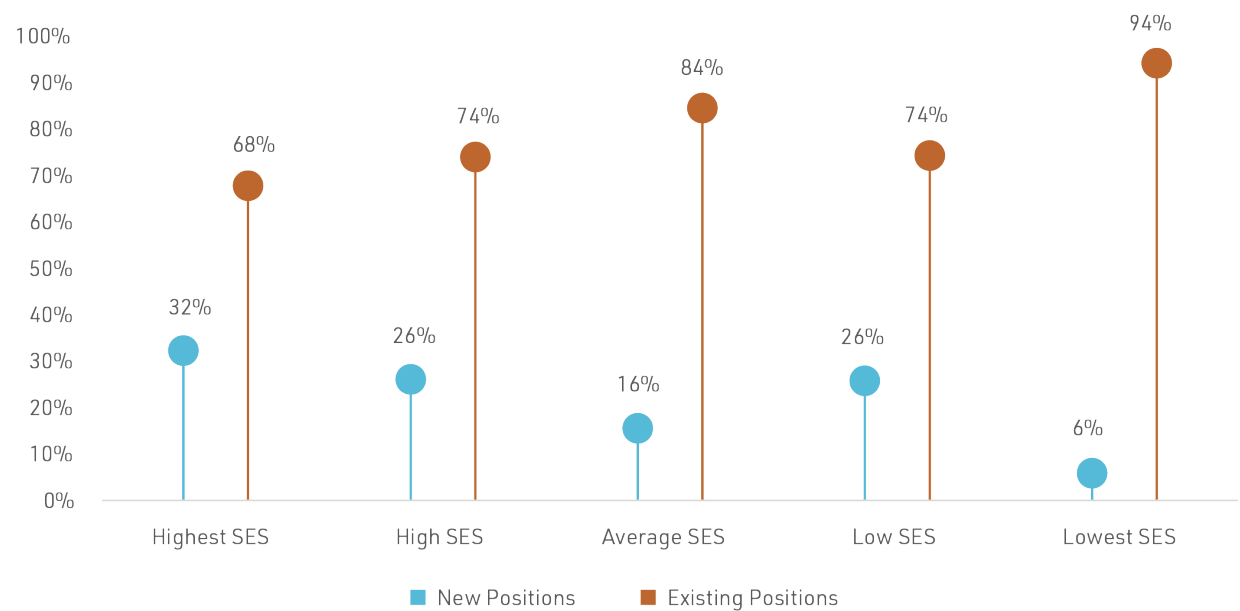


Note: The figure displays the distribution of vacancies by type for teaching positions only. Non-teaching vacancies are excluded.

Source: NJSLEDS staff vacancy extract

The distribution of teaching vacancies by type varies across district SES groups in 2024–25 (see Figure 14). In average-SES districts, 84% of vacancies are in existing positions, compared with 16% in new positions. The highest-SES districts show a somewhat larger share of vacancies in new positions, with 32% of vacancies associated with new roles, compared with 68% in existing positions. In contrast, the lowest-SES districts have the smallest share of vacancies in new positions, at just 6%, with the remaining 94% concentrated in existing positions.

Figure 14: Share of Teaching Vacancies by Type and by District Group



Note: Figures are calculated as the percentage of vacancies in new and existing teaching positions relative to total vacancies in each district group.

Source: NJSLEDS staff vacancy extract

An analysis by job title indicates that elementary school teacher vacancies constitute the largest category, with a total of 1,698 vacancies, representing 37% of all teaching vacancies. Within this job title, 25% of the vacancies are new teaching positions and the remainder are existing teaching position vacancies (see Table 8). Resource program teacher vacancies represent the second-largest category, at about 578 vacancies. There are 451 vacancies in middle school. About 10% of all vacant existing teaching positions are in high school science and mathematics, totaling 175 and 186 vacant positions, respectively.

Table 8: Teaching Vacancies Number and Proportion by Job Title

Job title	New teaching position	Existing teaching position	Total
Art teacher	14	95	109
	1.49	2.57	2.35
Business teacher	6	23	29
	0.64	0.62	0.63
Computer science teacher	3	27	30
	0.32	0.73	0.65
Elementary teacher	419	1,279	1,698
	44.57	34.59	36.61
English teacher	38	162	200
	4.04	4.38	4.31

Family and consumer science teacher	0	16	16
	0	0.43	0.34
Financial literacy teacher	2	2	4
	0.21	0.05	0.09
Health/physical education teacher	31	139	170
	3.3	3.76	3.67
Science teacher	19	175	194
	2.02	4.73	4.18
Industrial arts teacher	7	36	43
	0.74	0.97	0.93
Mathematics teacher	29	186	215
	3.09	5.03	4.64
Middle school teacher	59	392	451
	6.28	10.6	9.72
ESL/bilingual teacher	64	142	206
	6.81	3.84	4.44
Music teacher	26	85	111
	2.77	2.3	2.39
Resource program teacher	100	478	578
	10.64	12.93	12.46
Social studies teacher	18	71	89
	1.91	1.92	1.92
Supplementary instruction teacher	26	96	122
	2.77	2.6	2.63
Teacher coach coordination teacher	26	109	135
	2.77	2.95	2.91
Vocational education teacher	18	56	74
	1.91	1.51	1.60
World languages teacher	35	129	164
	3.72	3.49	3.54
Total	940	3,698	4,638

Note: The figures are based on teaching vacancies only. Each row reports the count of vacancies by job title, with the corresponding share within the vacancy category shown below the count.

Source: NJSLEDS staff vacancy extract

Further analysis of vacancy status indicates an overall fill rate of 50%. The fill rate was determined by using a vacancy close date as a proxy for the position being filled. Those vacancies not yet filled at the time of reporting (without a closing date) were considered as unfilled positions. Examining fill rates by job type reveals modest variation across positions (see Table 9). Mathematics teachers have lower-than-average fill rates with 45% of vacancies in these positions filled at the time of reporting, suggesting greater staffing challenges in this field. The fill rates for elementary and middle school teachers deviate only slightly from the overall average of 50%, indicating relatively stable staffing conditions. ESL/bilingual teacher vacancies appear more difficult to staff, with a fill rate of 44%. Similarly, vocational education and supplementary instruction teacher vacancies face greater staffing challenges, with fill rates of 38% and 34%, respectively. In contrast, business teacher vacancies exhibit a substantially higher fill rate, exceeding the average by 12 percentage points, at 62%, suggesting comparatively fewer staffing challenges.

Table 9: Vacancy Fill Rates by Job Type

Job title	Filled	Not yet filled	Total	Percent filled
Art teacher	60	49	109	55%
	2.58	2.12	2.35	
Business teacher	18	11	29	62%
	0.77	0.48	0.63	
Computer science teacher	15	15	30	50%
	0.64	0.65	0.65	
Elementary teacher	907	791	1,698	53%
	38.96	34.24	36.61	
English teacher	106	94	200	53%
	4.55	4.07	4.31	
Family and consumer science teacher	9	7	16	56%
	0.39	0.3	0.34	
Financial literacy teacher	1	3	4	25%
	0.04	0.13	0.09	
Health/physical education teacher	83	87	170	49%
	3.57	3.77	3.67	
Science teacher	94	100	194	48%
	4.04	4.33	4.18	
Industrial arts teacher	15	28	43	35%
	0.64	1.21	0.93	
Mathematics teacher	97	118	215	45%
	4.17	5.11	4.64	
Middle school teacher	220	231	451	49%
	9.45	10	9.72	

ESL/bilingual teacher	90	116	206	44%
	3.87	5.02	4.44	
Music teacher	60	51	111	54%
	2.58	2.21	2.39	
Resource program teacher	279	299	578	48%
	11.98	12.94	12.46	
Social studies teacher	50	39	89	56%
	2.15	1.69	1.92	
Supplementary instruction teacher	41	81	122	34%
	1.76	3.51	2.63	
Teacher coach coordination teacher	82	53	135	61%
	3.52	2.29	2.91	
Vocational education teacher	28	46	74	38%
	1.2	1.99	1.6	
World languages teacher	73	91	164	45%
	3.14	3.94	3.54	
Total	2,328	2,310	4,638	50%

Note: This table excludes eliminated vacancies and is based on teaching vacancies only. Each row reports the count with the corresponding share shown below the count. The fill rate is calculated by dividing the number of filled vacancies by the total number of vacancies within each job type.

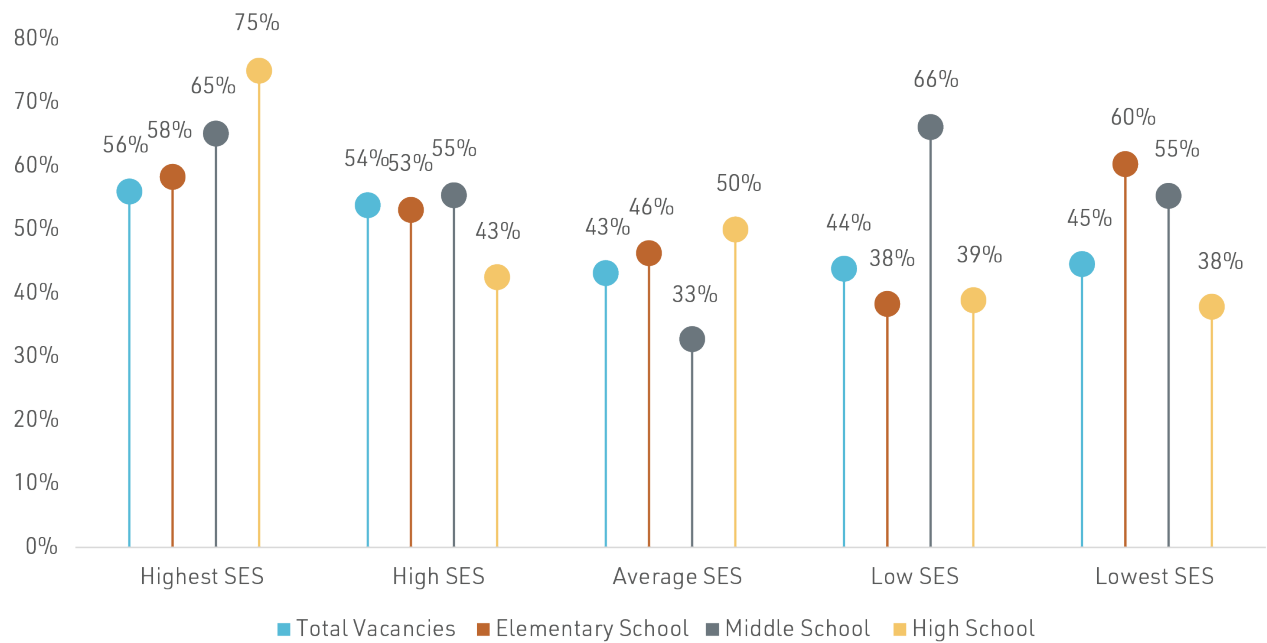
Source: NJSLEDS staff vacancy extract

Vacancy fill rates vary across district SES groups and grade levels (see Figure 15). Highest-SES districts exhibit fill rates above the state average of 50% across most categories, with total vacancy fill rates of 56% and high school vacancies filled at a rate of 75%. High-SES districts are close to the statewide average, with fill rates generally around 50% to 55% across all grade levels, except at the high school level, where the fill rate is about 7 percentage points below the state average.

In contrast, average-SES and low-SES districts show more variation and generally lower fill rates. In average-SES districts, middle school fill rates are about 20 percentage points below the state average, while reaching parity in high school; elementary school fill rates fall short by about 4 percentage points. In the low-SES and lowest-SES groups, high school fill rates are substantially lower than both the state average and the highest-SES group, at 39% and 38%, respectively.

A notable difference appears at the elementary school level, where the fill rate in the lowest-SES group is 10 percentage points above the state average, while the corresponding rate in the low-SES group is only 38%. Overall, total fill rates in these two groups are also below the state average by about 4 to 5 percentage points.

Figure 15: Vacancy Fill Rates by Grade



Note: Vacancy fill rates are calculated as the share of vacancies filled within a school year in each district group.

Source: NJSLEDS staff vacancy extract

The applicants-per-vacancy ratio reveals substantial variation in the depth of applicant pools across teaching fields, with some subjects attracting far more applicants per vacancy than others. Lower ratios suggest comparatively tighter staffing conditions, whereas higher ratios indicate deeper applicant pools and potentially greater competition for positions. As Table 10 shows, the applicant-per-vacancy ratio ranges from 4 or fewer applications per vacancy in some specialized fields (e.g., family and consumer science, financial literacy, and industrial arts) to nearly 100 applications per vacancy in elementary education. Elementary school teacher positions also attract the largest applicant pool of 169,142 applications for 1,698 vacancies. English and mathematics positions also receive relatively strong applicant flows, at 80 and 61 applications per vacancy, respectively. In contrast, the ratios for the resource program and computer science teacher vacancies are relatively low, at 9.9 and 9.5, respectively, suggesting tighter staffing conditions in these fields.

One notable outlier is the teacher coach coordinator category, which reports an exceptionally high ratio of over 390 applications per vacancy. This likely reflects broad eligibility criteria for the position and should, therefore, be compared cautiously with ratios in other teaching positions.

Table 10: Applicant Pool by Teaching Job Type

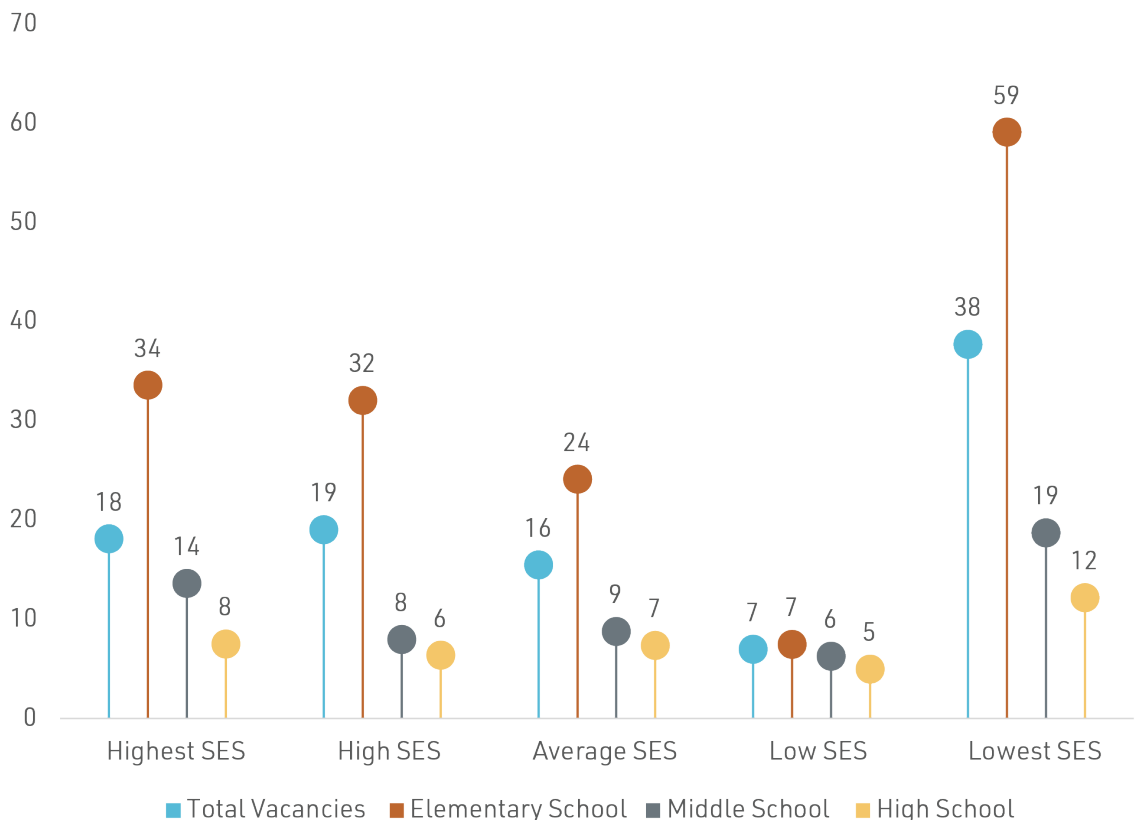
Job title	Number of applicants	Number of vacant positions (non-eliminated)	Applicants per vacancy ratio
Art teacher	3,980	109	36.5
Business teacher	354	29	12.2
Computer science teacher	284	30	9.5
Elementary teacher	169,142	1,698	99.6
English teacher	16,058	200	80.3
Family and consumer science teacher	52	16	3.3
Financial literacy teacher	16	4	4.0
Health/physical education teacher	5,642	170	33.2
Science teacher	5,386	194	27.8
Industrial arts teacher	172	43	4.0
Mathematics teacher	13,183	215	61.3
Middle school teacher	14,867	451	33.0
ESL/bilingual teacher	7,053	206	34.2
Music teacher	1,628	111	14.7
Resource program teacher	5,727	578	9.9
Social studies teacher	1,857	89	20.9
Supplementary instruction teacher	3,659	122	30.0
Teacher coach coordination teacher	53,218	135	394.2
Vocational education teacher	395	74	5.3
World languages teacher	2,455	164	15.0
Total	305,128	4,638	

Note: The number of vacant positions excludes eliminated vacancies and is based on teaching vacancies only.

Source: NJSLEDS staff vacancy extract

When analyzed across district groups, the applicant pool is largest in the lowest-SES districts, driven largely by elementary school positions, while remaining comparatively smaller and more evenly distributed across higher-SES districts (see Figure 16). The number of applicants per vacancy varies substantially across district SES groups and grade levels. Across most groups, elementary school positions attract the largest number of applicants. The lowest-SES districts attract the highest number of applicants per vacancy, particularly at the elementary school level, with nearly 59 applicants per vacancy, compared to 34 and 32 in the highest- and high-SES districts, respectively. Total applicants per vacancy in the lowest-SES group follow a similar pattern, reaching 38, compared to 18 in the highest-SES and 19 in high-SES districts and 16 in average-SES districts.

Figure 16: Applicants to Vacancy Ratio by District Groups



Note: The figures are calculated by dividing the total number of applicants by the corresponding total number of vacancies within each district group.

Source: NJSLEDS staff vacancy extract

Analysis of time-to-fill indicates that, on average, vacancies remain open for roughly two to four months, though the duration varies considerably by subject. To assess staffing difficulty, researchers analyzed the time required to fill teaching vacancies, measured as the number of days between the posting of a position and the date it was filled. The mean represents the average number of days required to fill a position within each job category; the standard deviation measures the dispersion around that average, indicating how much variability exists in time-to-fill within each job category. A larger standard deviation suggests greater heterogeneity in hiring timelines across schools and districts to hire a teacher within the same job category. Table 11 shows that ESL/bilingual and world language teaching positions take between three to four months to fill, which is the longest period across all job types. Similarly, high school science and mathematics teaching positions take close to three months to fill. High standard deviations in these subjects, at 110 and 135 days, respectively, indicate that in some schools and districts, it takes substantially longer than the average to fill a position. A natural extension of this analysis would be to examine time-to-fill by district type to determine whether certain district types face systematically longer hiring timelines.

Table 11: Time to Fill Vacancy by Job Type

Job title	Mean	Standard deviation	Frequency
Art teacher	44.2	49.8	56
Business teacher	89.1	99.1	16
Computer science teacher	72.8	45.6	13
Elementary teacher	61.9	73.3	826
English teacher	58.0	77.4	101
Family and consumer science teacher	44.0	42.6	7
Financial literacy teacher	37.0	0.0	1
Health/physical education teacher	60.2	64.2	73
Science teacher	91.4	110.3	86
Industrial arts teacher	75.2	49.1	15
Mathematics teacher	90.9	134.5	91
Middle school teacher	70.2	146.0	209
ESL/bilingual teacher	128.8	114.8	78
Music teacher	62.4	74.3	57
Resource program teacher	73.9	119.6	244
Social studies teacher	60.4	67.0	46
Supplementary instruction teacher	43.7	36.9	41
Teacher coach coordination teacher	42.9	33.9	81
Vocational education teacher	76.9	68.1	25
World languages teacher	111.3	392.8	64
Average	69.7		

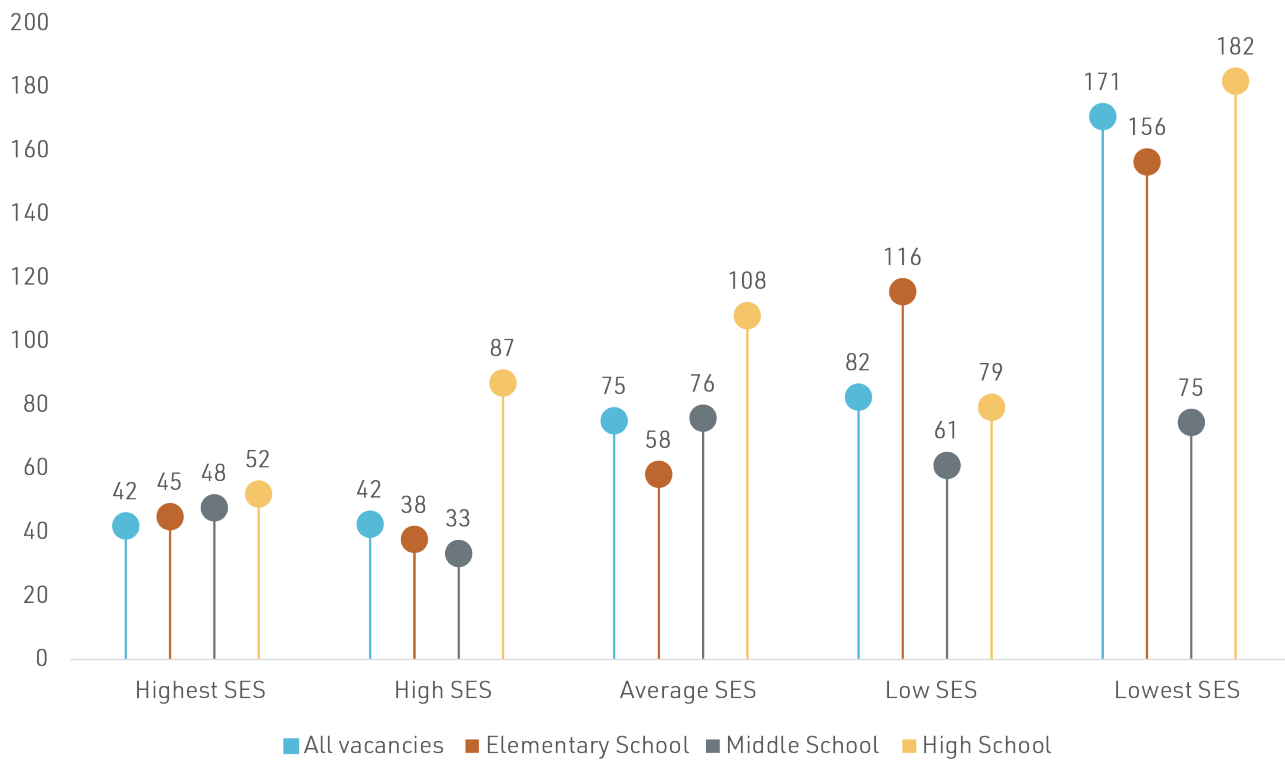
Note: The mean and standard deviation are measured in days, while frequency represents the count of vacancies.

Source: NJSLEDS staff vacancy extract

Average time to fill a vacancy increases as SES decreases, with the shortest durations observed in higher-SES districts and the longest in the lowest-SES districts (see Figure 17). Total vacancies are filled in 42 days in the highest-SES and high-SES districts, compared with roughly 80 days in low-SES districts and around 170 days in the lowest-SES districts.

Across grade levels, high school positions generally take the longest to fill, particularly in lower-SES districts. In average-SES districts, high school vacancies take 108 days to fill, compared to 76 days in middle school and 58 days in elementary school. This gap is even more pronounced in the lowest-SES districts, where high school vacancies take approximately 180 days to fill, compared with 75 days in middle school.

Figure 17: Average Time to Fill a Vacancy



Note: Figures are calculated as the average number of days required to fill a vacancy within a school year for each district group.

Source: NJSLEDS staff vacancy extract

Conclusion and Next Steps

This annual report on New Jersey's K-12 teacher workforce presents a high-level descriptive analysis based on over a decade of data for a key segment of the education labor market. Heldrich Center researchers sought to understand how the demographic traits of New Jersey's public school teachers changed over time, assess trends in teacher exits, and project teacher demand and supply into the future. Researchers analyzed data from NJSDS, primarily NJSLEDS and NJEdCert data from NJDOE, including information about teachers, teacher certifications, public school students, and staff vacancies. Analyses in these annual reports primarily follow the requirements of the law, though supplemental analyses may be included each year as NJDOE requests. These analyses yielded the following key findings:

- > Overall, the number of teachers (FTEs) in New Jersey remained stable during this period at about 117,000 FTEs with year-over-year changes between +/- 1%. An analysis across districts shows stable trends over time, with substantial differences in average FTE teacher counts between district SES groups, as lowest-SES districts employ the most teachers per district despite a decline from 663 to 600.
- > Some subject areas have seen more significant changes than others in the number of teachers, with mathematics and science teachers decreasing by approximately 10% during the study period, and resource program teachers increasing by nearly 20%. Computer science FTEs decreased by 6% in this analysis.
- > The gender and racial/ethnic composition of New Jersey's teacher workforce changed little over time. During the study period, between 76% and 77% of the teacher workforce was female, and between 81% and 84% was white.
- > The number of teachers exiting their roles increased over time, particularly in the post-pandemic period. Retirements and unexplained resignations remain the most common reasons for teacher exits. A cross-district analysis shows that the lowest-SES districts experience persistently higher teacher exits, with disparities increasing after the COVID-19 pandemic.
- > Staffing increases are likely needed in bilingual/ESL and computer science, as STRs in these areas either increased, indicating fewer teachers per student, or remained above state average of 11.5.
- > The ratio of a unique count of first-time initial certified teachers to the number of teachers permanently exiting the profession decreased over time, which may challenge the teacher workforce statewide and in specific localities. Initial certificates relative to exits have dropped substantially across all SES groups, with differences across districts narrowing over the reporting period.
- > The highest proportion of teaching vacancies was for elementary school teachers. Elementary school teacher vacancies attract the largest applicant pool, with nearly 100 applications per vacancy, while resource program and computer science positions have much lower ratios (9.9 and 9.5, respectively), indicating tighter staffing conditions in these fields. Across districts, applicant pools are largest in lowest-SES districts, particularly for elementary school positions, 59 applicants per vacancy, compared to 34 applicants per vacancy in higher-SES districts.

- > On average, vacancies remain open for two to four months, with high school mathematics and science positions taking nearly three months to fill; large standard deviations in time to fill a position in these subjects (110 and 135 days, respectively) indicate substantial variation across schools and districts. The time to fill vacancies increases sharply as SES decreases, with the longest hiring delays concentrated in lower-SES districts, especially for high school positions.

The 2027 teacher workforce report will include a more robust analysis of staff vacancies, linking the new vacancy extract to staff data. In addition, improved stakeholder engagement throughout 2026 will result in revised metrics aligned with the requirements of this annual report and additional analyses of interest using NJSDS data.

Appendix A: Technical Methodology

Heldrich Center researchers completed this analysis by using data from NJDOE's NJSLEDS. This work focused on data that came from the SMID extract, which provided detailed information on staff members in each New Jersey local education agency, certification and endorsement data that provided details on teachers' certifications, aggregate student-level data from NJSLEDS, and the new staff vacancy data collection. Researchers assessed the changes in the teacher workforce in New Jersey by addressing five research questions about the state's teacher workforce.

Research Questions

1. What are the observed trends in New Jersey's teacher workforce by the number (FTEs) of teachers and by subgroup, including race, gender, age, certification and/or job code, grade level or subject area, and district SES groups?
2. What are the trends in and reasons for exiting the public school teacher workforce in New Jersey by subgroup, including race, gender, subject area, job category, and district SES groups?
3. What are the teacher workforce projections for various subject areas and grade level, and what subject areas are at higher-than-average risk of teacher turnover?
4. What are the trends in the rate of replacement in the teacher workforce in New Jersey, and how do these trends differ across district SES groups?
5. What are the teaching positions in high demand in New Jersey, and in what areas are there still existing vacancies? How are these vacancies distributed across district SES groups?

Data Analysis

The Heldrich Center addressed these research questions through four main streams of analysis. Researchers first analyzed the current teacher workforce landscape by various characteristics over time and then assessed the trends and reasons for teacher exits by subgroup, including job categories. Researchers also reviewed K-12 student data, staff data, and certification and endorsement data to make projections about the teacher workforce needs for New Jersey in multilingual learning and computer science as well as other subject areas that are at risk of teacher shortages. Finally, researchers performed an initial review of NJDOE's new staff vacancy data collection in the fall of 2025. Provided below is more information about the data sources and how they were used in this analysis.

Data Source: NJSLEDS

To analyze the current teacher workforce landscape and pipeline, assess teacher exits by subgroup, and make projections, the Heldrich Center used NJSLEDS data, which are stored within NJSDS, between the 2013-14 and 2024-25 school years. For each year, teachers were defined using the unique SMID within these data files and were limited to those who held a certificated teaching position (job code between 1000 and 2799) within the local education agency for at least a portion of their time. Full-time administrators, certificated non-teaching positions, and non-certificated staff were not included in this analysis.

Analyzing these staff-level data enabled researchers to understand the roles individuals are serving in their district and to create trends for changes in staffing levels by subject over time. Specifically, they calculated the total FTE for teachers within the job code range of 1000 to 2999. These job codes encompass categories such as elementary, middle school (grades five to eight), art, business, computer science, English, health/physical education, family and consumer science, industrial arts, financial literacy, mathematics, ESL/bilingual teacher, music, resource program, science, social science, supplementary instruction, teacher coach coordinator, vocational education, and world languages. See Table A-1 for specific job codes assigned to each subject area.

Table A-1: Crosswalk of Subject Areas and Job Codes

Subject	Job code(s)
Mathematics	1900 to 1999
Computer science	1962, 2525, 2593, 2712, 2718
Science	2200 to 2299
English	1400 to 1499
Elementary	1000 to 1999
Middle school	1100 to 1199
Vocational education	2500 to 2999
World languages	1500 to 1599
Social science	2300 to 2399
Health/physical education	1600 to 1699
Music	2100 to 2199
Art	1200 to 1299
ESL teacher	1485
Bilingual teacher	1486
Teacher coach coordinator	2410, 2412
Resource program	2405, 2406
Supplementary instruction	2400, 2401
Business	1300 to 1399
Family and consumer science	1700 to 1799
Financial literacy	2001
Industrial arts	1800, 1899

Detailed race and ethnicity data from NJSLEDS were aggregated into broader categories to facilitate comparisons and reduce data suppression due to small sample sizes for certain groups. In doing so, five race/ethnicity identifiers were created: non-Hispanic Asian (Asian), non-Hispanic Black (Black), Hispanic (Hispanic), non-Hispanic white (white), and other. The other category includes teachers identifying as American Indian/Alaska Native and/or Native Hawaiian/Pacific Islander. Similarly, age was divided into categories (less than 30, 30 to 39 years, 40 to 49 years, 50 to 59 years, and 60 and above), and the proportion and median age within each age category was reported. Readers should note that the age variable contained implausible values likely due to random error in data input, so researchers replaced everyone with an age less than 21 years with a missing value.

Researchers analyzed teacher exits in two ways. In the first set of analyses – which includes breakdowns by race, gender, grade level, and subject area, and by reason for exit – researchers assessed all exits from district employment. District exits include permanent exits from teaching like retirement, leaving teaching, and death, as well as potentially non-permanent exits, including employment in other districts (inside or outside New Jersey, in non-public schools or colleges/universities), sabbatical, maternity leave, assuming home duties, prolonged illness, and continuing education. Teacher exits in these analyses were measured as the counts and proportion of people leaving the teaching profession in New Jersey in a school year. For the analysis of flows into and out of teaching, researchers focused on the ratio of initial teaching certifications to permanent exits – those attributed to retirement, death, and intentionally leaving teaching.

Staff Vacancy Data

As required by Chapter 394 of Public Law 2021 (P.L. 2021, c.394), NJDOE began collecting staff vacancies for each district in the 2025–26 school year. Heldrich Center researchers worked closely with NJDOE staff in the development and testing of this data collection and received the first extract of this new data collection at the end of 2025. This data collection includes district, school, job code, a position identification, the number of open positions, the number of applicants, and the posting status. This data collection allows NJDOE to gather timely, accurate data on instructional staffing needs. A review of the first extract is included in this report to summarize results, but future reports will link vacancies to staff data.

Data Source: NJEdCert

To analyze certifications and endorsements of those meeting the requirements to become a teacher in the state, NJDOE provided an extract of NJEdCert data. These data include digital records within New Jersey's online certification system used to manage the verification of teaching credentials and endorsements.

Certification Data

Researchers analyzed state teaching initial certification and endorsement data between 2010 and 2025. Individuals pursuing teaching certifications must fulfill an endorsement that identifies the type(s) of subject area(s) they can teach. Since NJDOE confers endorsements at any time, they are reported by calendar year. Because individuals may receive multiple certificates, these data were deduplicated by individual to their first initial certification. This facilitates projections and comparisons with teacher exits over time and gives an idea of areas likely to be at risk.

District SES Data

The district SES groupings are constructed based on publicly available data obtained from NCES's EDGE program. The EDGE data are based on ACS's five-year estimates (2018–2022).

Analytical Limitations

Apart from some of the limitations already highlighted, the analysis was confined to state-level estimates, which may overlook local- and/or school-level elements that uniquely affect teachers. By complying with data security and confidentiality requirements associated with NJSDS data use standards, researchers also combined and/or suppressed categories with few records, constraining the depth of the analysis. These practices, while essential for data security and confidentiality requirements, limit the scope of this analysis. Finally, it is important to note that longitudinal data require consistent tracking over time. Any interruptions or inconsistencies in data collection may affect the analysis, so caution should be exercised in interpreting the results in areas where these inconsistencies may be present.

Socioeconomic Classification of School Districts

Principal Component Analysis

1. To construct a socioeconomic classification of school districts, researchers apply Principal Component Analysis to four standardized indicators for each district: local per-pupil revenue, median family income, the poverty rate, and the percentage of adults without a high school diploma. These variables capture core dimensions of socioeconomic conditions, including financial resources, income, and educational attainment. All data are obtained from NCES's EDGE program. The EDGE data are based on ACS's five-year estimates (2018–2022).
2. Because EDGE does not report information for several types of districts, the following districts are excluded from the analysis:
 - > County vocational districts,
 - > County special services districts,
 - > Educational services commissions,
 - > Jointure commissions,
 - > State-operated districts,
 - > Non-operating sending districts,
 - > Regional high school districts not aligned with ACS boundary units, and
 - > Some consolidated or shared-service districts.

All variables are standardized prior to estimation. The first principal component (PC1) is used as a summary measure of district SES. This component explains approximately 71% of the total variance in the data, indicating a strong underlying socioeconomic gradient across districts.

The loadings of PC1 are consistent with theoretical expectations: higher levels of income and local revenue are associated with higher SES, while higher poverty rates and lower educational attainment are associated with lower SES. This coherence supports the interpretation of PC1 as a unidimensional index of socioeconomic status.

Grouping Methodology

3. Districts are grouped into five categories based on their predicted values of the first principal component: highest SES, high SES, average SES, low SES, and lowest SES. These groupings are constructed to facilitate comparisons across districts with differing socioeconomic profiles. Researchers adopt an unsupervised machine-learning clustering method, described below, to generate a data-driven, transparent and reproducible grouping.

"K-means++" Clustering

The k-means++ algorithm from ClusterR package in R (Mouselimis et al. 2025) selects k initial cluster centers, where k is the number of desired groups, five in this case. The procedure is as follows:

- > The first center is chosen uniformly at random from the set of districts.
- > Each subsequent center is selected with probability proportional to the squared distance from the district's nearest already-chosen center. This makes districts that are far from any existing center more likely to be selected.
- > After all k initial centers have been chosen, the standard k-means algorithm is applied: each district is assigned to its nearest center, the centers are recomputed as the means of their clusters, and the process iterates until convergence.
- > This initialization spreads the initial centers across the distribution of Principal Component Analysis scores, and produces more stable clusters that align with natural groupings in the data.

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