



Teacher Shortages in New York State: New Teachers’ Certification Pathways, Shortage Areas, District of Employment, and Retention in the Same District

Appendix A. Methods

Appendix B. Supporting analyses

Appendix C. Other analyses

See <https://go.usa.gov/xecdM> for the full report.

Appendix A. Methods

This appendix provides additional information about the study sample, data, and methods, as well as how the study team determined substantive differences.

Sample

The study sample consisted of 22,424 unique new teachers in New York State in the 2015/16, 2016/17, and 2017/18 school years. New teachers in these three years accounted for about 3.5 percent of all teachers in the state (table A1).

Table A1. Total number of teachers in New York State public schools, number of new teachers in New York State public schools, and new teachers as a percentage of all teachers, 2015/16–2017/18

School year	Total number of teachers	New teachers	
		Number	Percent of total number of teachers
2015/16	210,240	7,260	3.5
2016/17	212,496	7,392	3.5
2017/18	214,009	7,772	3.6

Note: New teachers are teachers who were new to teaching in New York State.

Source: Authors’ analyses of 2015–17 data from the New York State Education Department’s Basic Education Data System Personnel Master File.

The teacher role as defined by the New York State Education Department included prekindergarten–grade 12 classroom teachers, educational technology specialists, library media specialists, and literacy specialists and excluded administrators, pupil personnel service professionals such as school psychologists and school social workers, and supplemental school personnel such as teacher aides and teaching assistants. Staff with more than one role were considered a teacher if they had at least one teaching role. Across the sample 1,173 teachers were uncertified—that is, they taught in a New York State public school but did not hold a valid certificate documented in New York State Education Department’s TEACH system (the platform through which individuals apply for certification and that maintains data on all certificate holders). There were 197 uncertified new teachers in 2015/16, 383 uncertified new teachers in 2016/17, and 593 uncertified new teachers in 2017/18.

Teachers were classified as new teachers in New York State if they had zero years of teaching experience in the state based on the variable for total years of teaching experience in New York State in the New York State Education Department’s Basic Education Data System. This variable was teacher-reported and asked about teaching experience in New York State specifically. Therefore, both teachers new to the teaching profession and experienced teachers new to teaching in the state might have been included in the sample. The steps taken to remove errors included recoding cases where teachers reported zero years of experience but appeared in the dataset in a previous year.

Data

The study used certification data from the New York State Education Department’s TEACH system and teacher and district data from its Basic Education Data System Personnel Master File for 2015/16–2017/18 (see table A2 for the data elements used in the analyses). The study team engaged in ongoing and extensive communication with the New York State Education Department to ensure that information about all variables was complete and accurate.

Table A2. Data elements used in the study

Data element	Description	Source
Unique ID	Identification number for each teacher	TEACH system, Basic Education Data System
Total years of teaching experience in New York State	Continuous variable that was recoded to dichotomous: 0 years of experience = new teacher; 1 or more years of experience = not a new teacher	Basic Education Data System
District of employment	Identification number for each district	Basic Education Data System
Region	Categorical variable representing the regions in the state (see appendix B for a list of regions)	Basic Education Data System
Need designation	Categorical variable representing six need designations and charter schools (see appendix B for a list of categories)	Basic Education Data System
Certificate issue date	Date certificate was issued	TEACH system
Certificate title code	Categorical variable as listed in the TEACH system	TEACH system
Certificate type code	Categorical variable indicating type of certificate (for example, Initial or Professional)	TEACH system
Certificate pathway code	Categorical variable indicating which of the following pathways a teacher used to earn a certificate: traditional in-state pathway, alternative in-state pathway, individual evaluation pathway, out-of-state program pathway, and/or certificate progression pathway	TEACH system

Source: Authors’ compilation.

The dataset contained 597 past and current certificate titles and extensions. Examples of certificate titles include Music, Biology Grades 5–9, and Students with Disabilities Grades 1–6. A certificate extension is added to a certificate and authorizes the holder to teach an additional student population, grade, or subject not authorized by the baseline certificate. The individual must hold the appropriate baseline certificate. For example, the baseline certificate for the General Science extension is in biology, chemistry, earth science, or physics. The study team, in consultation with the New York State Education Department, collapsed all the certificate titles and extensions into 18 broad certification areas related to teaching (table A3). Multiple certificate or extension titles were collapsed

into one certification area when there were similar certificate and extension titles in the past and present, when there were similar certificate and extension titles at different grade-level bands for a particular certification area category, and when there were similar certificate and extension titles in the same certification area. In addition, the numerous career and technical education certificate titles in various occupations were collapsed into one certification area.

Table A3. Certification areas and number of certificate titles in each certification area

Certification area	Number of certificate titles in certification area
Arts: dance, music, theater, visual arts	7
Bilingual education	8
Bilingual special education ^a : bilingual education and at least one of the special education certificates except for gifted education	118
Career and technical education	218
Childhood education	33
Early childhood education	36
English language arts	13
English to speakers of other languages	3
Health education	2
Language other than English	90
Literacy	3
Library media specialist	5
Mathematics	9
Physical education	3
Science: biology, chemistry, earth science, general science, physics	72
Social studies	9
Special education ^b : students with disabilities, students with disabilities and content area, blind and visually impaired, deaf and hard of hearing, gifted education, severe or multiple disabilities, ^c speech and language disabilities	111
Other certification areas ^d : agriculture, business and marketing, educational technology specialist, family and consumer sciences, generalist in middle education, and technology education	17

Note: Of the 770 certificate titles related to classroom teaching in the New York State Education Department’s TEACH system, only 597 past and current certificate titles and extensions were earned by teachers in this study’s sample.

a. There is not a bilingual special education certificate, but bilingual special education is a shortage area. In this study teachers were counted as having earned a certificate in bilingual special education if they earned at least one certificate in bilingual education and at least one certificate in special education (excluding gifted education because the shortage area of bilingual special education does not pertain to those with teaching assignments related to gifted education).

b. Special education includes certificates in multiple special education subject areas, some of which the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. The special education shortage area is based on courses taught by teachers who hold Special Education or Students with Disabilities certificate titles, rather than specialized certificates in the area of special education, such as Blind and Visually Impaired and Deaf and Hard of Hearing.

c. Severe or multiple disabilities is an annotation on a certificate, not a certificate in and of itself.

d. “Other certification areas” include certificates related to subject areas that the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. However, teachers could be certified in those areas and fill subject area shortages by teaching in those areas. For example, a Technology Education certificate holder can teach certain career and technical education courses that cross multiple subject areas. Fewer than 2 percent of teachers earned certificates in each certification area within the other certification areas category.

Source: Authors’ compilation in consultation with New York State Education Department staff.

The analysis included all regions in New York State: Capital District, Central, Finger Lakes, Hudson Valley, Long Island, Mohawk Valley, New York City, North Country, Southern Tier, and Western. There are six need

designations. The high-need designations are New York City district schools, large city—not New York City, urban/suburban, and rural. The two other designations are average need and low need (New York State Education Department, n.d.a). Some teachers in New York State work in or for the Boards of Cooperative Educational Services (BOCES), which provide education programs and services to New York State districts. An additional need designation was created to distinguish teachers who work in or for BOCES from teachers with missing need designation data. Need designation data are reported at the district level, with the exception of teachers employed in charter schools. Charter schools are not included in the need designations in New York State, but for completeness they are included as a separate category. Region data were missing for 529 teachers (2 percent), and need designation data were missing for 511 teachers (2 percent).

The number of teachers included in the analyses for figures and tables in the study varies because teachers could earn multiple certificates in multiple certification areas through multiple pathways and because of missing data (table A4).

Table A4. Sample of new teachers across the study

Sample	Number of unique teachers	Sample size in figures and tables after teachers who earned multiple certificates in multiple certification areas through multiple pathways were accounted for
Overall	na	22,424 new teachers
Research question 1	22,424	27,913 because some new teachers earned certificates through multiple pathways and some teachers were uncertified (table 1)
Research question 2	22,424	35,565 (36,738 including the 1,173 uncertified teachers) because some new teachers earned certificates in multiple certification areas (table 2)
Research question 2a	22,424	35,565 because some new teachers earned certificates in multiple certification areas (figure 1)
Research question 3 sample	22,424	21,840 because some new teachers were employed in districts with two different needs designations and some teachers were missing data (figures 2 and 3)
Research question 4: retention by certification area	12,414 (new teachers in 2015/16 and 2016/17 not employed in charter schools)	21,311 because some new teachers earned certificates in multiple certification areas (figure 4)
Research question 4: retention by need designation	12,414 (new teachers in 2015/16 and 2016/17 not employed in charter schools)	11,939 because some new teachers were employed in districts with two different need designations, some had missing data, and teachers who worked in or for Boards of Cooperative Educational Services were excluded (figure 5)
Research question 4: retention by certification pathway	12,414 (new teachers in 2015/16 and 2016/17 not employed in charter schools)	15,964 because some teachers earned certificates through multiple pathways and some teachers were uncertified (figure 6)

na is not applicable.

Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Methods

The study team calculated the number and percentage of new teachers who held valid certification during the 2015/16, 2016/17, and 2017/18 school years. Teachers could earn multiple certificates corresponding to the same certificate title as they progressed from an Initial certificate to a Professional certificate. For example, candidates could receive a Conditional Initial certificate valid for one year until they passed the New York State teacher performance assessment (edTPA). Once they passed the assessment, they would be issued an Initial certificate valid for five years. They could then choose to take the steps to earn a Professional certificate for that same certificate title. Excluding Internship certificates, there were 10 certificate types that teachers could earn at the time of data analysis (table A5). Data from teachers who earned multiple types of the same certificate title were collapsed to indicate that the teacher had earned certificates in a particular certification area. The issue date of the first certificate issued and the expiration date of the final certificate issued were kept to determine whether the certificate was valid.

Table A5. Certificate types

Certificate type	Description	Duration of certificate validity	Leads to
Initial certificate	Issued as an entry-level certificate for classroom teachers in specific subject or grade titles.	Five years	Professional certificate
Initial reissuance—classroom teacher	A reissuance of an Initial certificate that has expired.	Five years	Professional certificate
Conditional Initial certificate—classroom teacher	Issued to an individual holding a valid teaching certificate in the same or equivalent title from another U.S. state or territory. To earn a Conditional Initial certificate, applicants must meet all requirements for the Initial certificate through the “Completion of a Comparable Educator Program in Another U.S. State” pathway except for the edTPA. ^a	One year, during which the individual would complete and pass the edTPA assessment	Initial certificate
Professional certificate	Issued as the advanced-level certificate for classroom teachers in specific subject or grade titles as well as educational leaders.	Continuously valid. Certificate holders must register with NYSED and complete continuing teacher and leader education (CTLE).	na
Supplementary certificate	Issued to New York State-certified classroom teachers to enable them to teach in a different subject area where a shortage exists. The district/employer must submit a recommendation in the TEACH system.	Five years, while the individual completes the requirements for the Initial or Professional certificate in the new subject area. Supplementary certificates issued prior to May 2017 were valid for three years.	Initial or Professional certificate
Transitional A certificate	Issued to permit employment in a specific career and technical education title in a New York State school district or Board of Cooperative Educational Services ^b for an individual who does not meet the requirements for an Initial certificate but possesses the requisite education, credentials, and/or work experience.	Up to three years, while the individual is employed in a New York State school district or Board of Cooperative Educational Services	Initial or Professional certificate

Transitional B certificate	Issued to permit employment as a classroom teacher in a New York State public school for an individual who is enrolled in a New York State-registered Transitional B program (a program for candidates holding an undergraduate degree in the subject area of the certificate sought). The Transitional B certificate is tied to the school district placement.	Up to three years, while the individual is matriculated in the Transitional B program. When a candidate completes or leaves the program, the certificate is no longer valid.	Initial certificate (Transitional B)
Transitional C certificate	Issued to permit employment as a classroom teacher in a New York State public school for an individual who is enrolled in a New York State-registered Transitional C program (a program for candidates holding a graduate degree in the subject area of the certificate sought). The Transitional C certificate is tied to the school district placement.	Up to three years, while the individual is matriculated in the Transitional C program. When a candidate completes or leaves the program, the certificate is no longer valid.	Professional certificate (Transitional C)
Transitional G certificate	Issued to permit employment as a classroom teacher in a New York State public school or Board of Cooperative Educational Services for a college professor who holds a graduate degree in any area for which there is a certificate title and has successfully taught the subject of the desired certificate area at the college level for at least 2 of the 10 years immediately preceding the application. The district or employer must submit a recommendation in the TEACH system.	Two years	Initial certificate
Residency certificate	Issued to permit the employment of an individual who is enrolled in the New York State Classroom Academy Residency pilot program.	Up to three years, while the individual is matriculated in the program. When a candidate completes or leaves the program, the certificate is no longer valid.	Initial certificate
Internship certificate	Issued to permit the employment of an individual who is enrolled in a New York State-registered graduate teacher, school leader, or school counselor program that includes an internship and has completed at least half of the semester hour requirements in the program.	Up to two years, while the individual is matriculated in the program.	Initial certificate

na is not applicable because a Professional certificate does not lead to another type of certificate for the same certificate title in which the Professional certificate is issued.

a. The edTPA is the New York State performance assessment and satisfies the New York State teacher performance assessment requirement for certification.

b. The Boards of Cooperative Educational Services of New York State provide education programs and services to New York State districts.

Source: New York State Education Department, n.d.b.

Analysis of retention in the same district included only new teachers in 2015/16 and 2016/17 because at the time of the study no data were available to calculate third-year retention for new teachers in 2017/18. Teachers employed in charter schools were also excluded from the retention analysis. Retention was measured as retention within the same district and not at the level of the teachers' position or school. As a result, charter school teachers' retention rates could not be reasonably compared to those of other teachers in the sample because charter school teachers' retention could be measured only at the school level.

Determining substantive differences

To determine whether differences were substantive for each research question, the study team used a threshold of 5 percentage points. This is the same threshold used in recent studies by the Regional Education Laboratory Midwest and the Regional Education Laboratory Southwest (Burkhauser, Mellor, Garland, & Osmond, 2011; Feygin et al., 2019).

References

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Appendix B. Supporting analyses

Descriptive information on all variables within each category of interest is provided in tables B1–B10.

Table B1. Number and percentage of new teachers, by number of certificates as of the first Wednesday in October in their first year of teaching, 2015/16–2017/18

Number of certificates	Number of new teachers	Percent of total
0	1,173	5
1	9,953	44
2	6,040	27
3	2,636	12
4	1,519	7
5	692	3
6	264	1
7	98	0.4
8	30	0.1
9	13	0.1
10+	6	<.1

Note: The sample consisted of 22,424 unique new teachers in New York State. The percentages do not sum to 100 because of rounding.

Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Table B2. Number and percentage of new teachers with certificates and extensions, by certification area, 2015/16–2017/18

Certification area	Certification area related to shortage subject area ^a	Number of new teachers	Percent of total
Special education ^b : students with disabilities, students with disabilities and content area, blind and visually impaired, deaf and hard of hearing, gifted education, severe or multiple disabilities, ^c speech and language disabilities	✓	9,036	40
Childhood education		8,535	38
Early childhood education		3,823	17
English language arts	✓	1,699	8
Math	✓	1,564	7
English to speakers of other languages		1,495	7
Social studies		1,495	7
Literacy	✓	1,480	7
Science: biology, chemistry, earth science, general science, physics	✓	1,358	6
Arts: dance, music, theater, visual arts		1,352	6
Physical education		841	4
Bilingual education	✓	619	3
Language other than English		543	2
Health education	✓	353	2
Career and technical education	✓	312	1
Bilingual special education ^d : bilingual education and at least one of the special education certificates except for gifted education	✓	303	1
Library media specialist	✓	131	1
Other certification areas ^e : agriculture, business and marketing, educational technology specialist, family and consumer sciences, generalist in middle education, and technology education		626	3
Uncertified		1,173	5

Note: The sample consisted of 22,424 unique new teachers in New York State in 2015/16–2017/18. The sum of the values in the third column, including uncertified teachers, is 36,738 and the sum of the values in the fourth column exceed 100 because some teachers earned multiple certificates in multiple certification areas (11,270 earned certificates in one area, 6,300 earned certificates in two areas, 2,737 earned certificates in three areas, 685 earned certificates in four areas, 119 earned certificates in five certification areas, 21 earned certificates in six certification areas, 1 earned certificates in seven certification areas, and 2 earned certificates in eight certification areas); 1,173 teachers were uncertified; 45 teachers had certificates that were denied, disapproved, expired, pending information, revoked, surrendered, suspended, or withdrawn during the school year in which the teacher began teaching in New York State; and 71 teachers earned certificates in a certification area that was not related to classroom teaching (such as administration).

a. Shortage certification areas are certification areas that are related to subject areas for which the New York State Education Department (NYSED) reported shortages in at least two of the state's three broad geographic reporting locales—New York City Public Schools, the Big Four (Buffalo Public Schools, Rochester City School District, Syracuse City School District, and Yonkers Public Schools), and the rest of the state—in 2015/16, 2016/17, and 2017/18.

b. Special education includes certificates in multiple special education subject areas, some of which the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. The special education shortage area is based on courses taught by teachers who hold Special Education or Students with Disabilities certificate titles, rather than specialized certificates in the area of special education, such as Blind and Visually Impaired and Deaf and Hard of Hearing.

c. Severe or multiple disabilities is an annotation on a certificate, not a certificate in and of itself.

d. There is not a bilingual special education certificate, but bilingual special education is a shortage area. In this study teachers were counted as having earned a certificate in bilingual special education if they earned at least one certificate in bilingual education and at least one certificate in special education (excluding gifted education because the shortage area of bilingual special education does not pertain to those with teaching assignments related to gifted education).

d. "Other certification areas" includes certificates related to subject areas that the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. However, teachers could be certified in those areas and fill subject area shortages by teaching in those areas. For example, a Technology Education certificate holder can teach certain career and technical education courses that cross multiple subject areas. Fewer than 2 percent of teachers had earned certificates in each certification area within the other certification areas category. Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Table B3. Percentage of teachers who earned certificates in each certification area, by certification pathway, 2015/16–2017/18

Certification area	Number of new teachers	Percent of total				
		Traditional in-state pathway	Individual evaluation pathway	Alternative in-state pathway	Out-of-state program pathway	Certificate progression pathway
Special education ^a : students with disabilities, students with disabilities and content area, blind and visually impaired, deaf and hard of hearing, gifted education, severe or multiple disabilities, ^b speech and language disabilities	9,036	86	22	16	3	5
Childhood education	8,535	87	6	5	7	< 1
Early childhood education	3,823	57	40	< 1	3	< 1
English language arts	1,699	84	11	15	7	< 1
Mathematics	1,564	87	12	16	6	< 1
English to speakers of other languages	1,495	84	14	19	2	0
Social studies	1,495	88	7	4	7	0
Literacy	1,480	96	5	0	1	0
Science: biology, chemistry, earth science, general science, physics	1,358	89	19	31	3	< 1
Arts: dance, music, theater, visual arts	1,352	84	6	3	10	< 1
Physical education	841	86	5	< 1	8	1
Bilingual education	619	92	8	0	0	< 1
Language other than English	543	79	26	3	6	< 1
Health education	353	49	43	0	7	1
Career and technical education	312	8	92	0	< 1	< 1
Bilingual special education ^c : bilingual education and at least one of the special education certificates except for gifted education	303	82	4	0	0	< 1
Library media specialist	131	74	14	0	11	2
Other certification areas ^d : agriculture, business and marketing, educational technology specialist, family and consumer sciences, generalist in middle education, and technology education	626	60	21	27	3	< 1

Note: The sample consisted of 22,424 unique new teachers in New York State in 2015/16–2017/18 who held 42,168 valid certifications in their first year of teaching. The sum of the values in the second column exceeds 22,424 and the sum of the percentages in the third through seventh columns exceeds 100 because some teachers earned multiple certificates in multiple certification areas through multiple pathways. In the special education certification area 2,574 teachers earned certificates through two pathways, and 214 teachers earned certificates through three pathways. In the childhood education certification area 463 teachers earned certificates through two pathways. In the early childhood education certification area 17 teachers earned certificates through two pathways. In the English language arts certification area 311 teachers earned certificates through two pathways. In the mathematics certification area 341 teachers earned certificates through two pathways. In the science certification area 621 teachers earned certificates through two pathways, and 5 teachers earned certificates through three pathways. In the English to speakers of other languages certification area 281 teachers earned certificates through two pathways. In the social studies certification area 100 teachers earned certificates through two pathways. In the arts certification area 42 teachers earned certificates through two pathways. In the literacy teaching certification area 32 teachers earned certificates through two pathways. In the physical education certification area 1 teacher earned certificates through two pathways. In the career and technical education certification area 4 teachers earned certificates through two pathways. In the other teaching certification titles area 168 teachers earned certificates through two pathways. In all other certification areas teachers earned certificates through one pathway.

- a. Special education includes certificates in multiple special education subject areas, some of which the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. The special education shortage area is based on courses taught by teachers who hold Special Education or Students with Disabilities certificate titles, rather than specialized certificates in the area of special education, such as Blind and Visually Impaired and Deaf and Hard of Hearing.
- b. Severe or multiple disabilities is an annotation on a certificate, not a certificate in and of itself.
- c. There is not a bilingual special education certificate, but bilingual special education is a shortage area. In this study teachers were counted as having earned a certificate in bilingual special education if they earned at least one certificate in bilingual education and at least one certificate in special education (excluding gifted education because the shortage area of bilingual special education does not pertain to those with teaching assignments related to gifted education).
- d. “Other certification areas” includes certificates related to subject areas that the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. However, teachers could be certified in those areas and fill subject area shortages by teaching in those areas. For example, a Technology Education certificate holder can teach certain career and technical education courses that cross multiple subject areas. Fewer than 2 percent of teachers had earned certificates in each certification area within the other certification areas category. Source: Authors’ analyses of 2015–18 data from the New York State Education Department’s TEACH system and Basic Education Data System Personnel Master File.

Table B4. Number and percentage of new teachers employed in each need designation in New York State (2015/16–2017/18) and each need designation’s share of statewide student enrollment (2017/18)

Need designation	New teachers, 2015/16–2017/18		2017/18 student enrollment
	Number	Percent of total ^a	Percent of total ^b
High need: New York City district schools	11,305	50	36
Charter schools	3,612	16	5
Average need	3,077	14	28
High need: rural	1,173	5	6
High need: other urban/suburban	1,081	5	8
Low need	1,021	5	14
High need: large city—not New York City	571	3	4

Note: The sample consisted of 22,424 unique new teachers in New York State in 2015/16–2017/18. The values in the second column sum to 21,840 because 511 teachers were missing need designation data; 142 teachers worked in or for in Boards of Cooperative Educational Services, which do not have a need designation; and 69 teachers were employed in two separate districts with different need designations (and were thus counted twice).

a. Percentages do not sum to 100 because of teachers with missing need designation data.

b. Percentages do not sum to 100 because of rounding.

Source: Authors’ analyses of 2015–18 data on new teachers from the New York State Education Department’s Basic Education Data System Personnel Master File and 2017/18 data on student enrollment from New York State Education Department (2017).

Table B5. Percentage of new teachers in New York State employed in each need designation, by certification pathway, 2015/16–2017/18

Need designation	Number of new teachers	Percent of new teachers					
		Traditional in-state pathway	Individual evaluation pathway	Alternative in-state pathway	Out-of-state program pathway	Certificate progression pathway	Uncertified
High need: New York City district schools	11,305	69	18	24	7	2	2
Charter schools	3,612	52	11	15	6	0	25
Average need	3,077	90	34	0	7	4	0
High need: rural	1,173	89	31	0	9	2	1
Low need	1,081	88	37	0	9	4	0
High need: other urban/suburban	1,021	90	31	1	6	3	1
High need: large city—not New York City	571	86	31	4	4	2	3

Note: The sample consisted of 22,424 unique new teachers in New York State in 2015/16–2017/18. The values in the second column sum to 21,840 because 511 teachers were missing need designation data; 142 teachers worked in or for Boards of Cooperative Educational Services, which do not have a need designation; and 69 teachers were employed in two separate districts with different need designations (and were thus counted twice). The sum of the percentages in the third through eighth columns exceeds 100 because some teachers earned multiple certificates through multiple pathways.

Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Table B6. Percentage of new teachers employed in each region of New York State, by certification pathway, 2015/16–2017/18

Region	Number of new teachers	Percent of new teachers					
		Traditional in-state pathway	Individual evaluation pathway	Alternative in-state pathway	Out-of-state program pathway	Certificate progression pathway	Uncertified
New York City	14,302	65	16	23	7	2	7
Long Island	1,450	91	40	0	6	6	1
Hudson Valley	1,208	87	32	0	9	2	0
Finger Lakes	1,144	88	27	0	5	4	5
Western	840	86	38	5	6	4	2
Central	744	88	33	0	4	4	3
Capital District	711	87	32	1	7	2	2
Southern Tier	673	86	27	0	10	1	1
Mohawk Valley	435	90	26	0	6	1	2
North Country	423	91	34	0	6	2	1

Note: The sample consisted of 22,424 unique new teachers in New York State in 2015/16–2017/18. The values in the second column sum to 21,930 because 529 teachers were missing region data, 31 teachers were employed in two regions (and were thus counted twice), and 2 teachers were employed in three regions (and were thus counted three times). The sum of the percentages in the third through eighth columns exceeds 100 because some teachers earned multiple certificates through multiple pathways.

Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Table B7. Number and percentage of new teachers in 2015/16 and 2016/17 who were retained in the same district for a second year and third year, by pathway

Certification pathway	First year teaching in district	Second year teaching in same district		Third year teaching in same district	
	Number of new teachers	Number of new teachers	Percent of first-year teachers	Number of new teachers	Percent of first-year teachers
Traditional in-state pathway	9,699	7,423	77	6,262	65
Individual evaluation pathway	3,199	2,296	72	1,932	60
Alternative in-state pathway	1,761	1,443	82	1,067	61
Out-of-state program pathway	799	610	76	518	65
Certificate progression pathway	373	278	75	237	64
Uncertified	133	46	35	25	19

Note: The sample consisted of 12,414 unique new teachers in New York State in 2015/16 and 2016/17. Teachers could earn multiple certificates through multiple pathways. New teachers in 2017/18 were excluded because at the time of the study no data were available to calculate their third-year retention rates. New teachers employed in charter schools were excluded because the retention analysis focused on retention at the district level rather than at the school level. Rate of retention in the same district refers to teachers who were retained in the same district with a teaching assignment for a second year and a third year. The numerator for each year is the number of teachers who were retained in the same district with a teacher role. The denominator is the number of teachers from the previous year.

Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Table B8. Number and percentage of new teachers in 2015/16 and 2016/17 who were retained in the same district for a second year and third year, by certification area

Certification area	First year teaching in district	Second year teaching in same district		Third year teaching in same district	
	Number of new teachers	Number of new teachers	Percent of first-year teachers	Number of new teachers	Percent of first-year teachers
Special education ^a : students with disabilities, students with disabilities and content area, blind and visually impaired, deaf and hard of hearing, gifted education, severe or multiple disabilities, ^b speech and language disabilities	5,479	4,194	77	3,458	63
Childhood education	4,746	3,779	80	3,250	68
Early childhood education	2,382	1,874	79	1,623	68
English language arts	985	732	74	620	63
Literacy	950	734	77	650	68
Mathematics	940	679	72	569	61
English to speakers of other languages	914	706	77	584	64
Social studies	875	659	75	553	63
Science: biology, chemistry, earth science, general science, physics	844	657	78	518	61
Arts: dance, music, theater, visual arts	826	620	75	495	60
Physical education	512	380	74	311	61
Bilingual education	428	351	82	286	67
Language other than English	336	220	65	184	55
Health education	232	153	66	123	53
Bilingual special education ^c : bilingual education and at least one of the special education certificates except for gifted education	214	170	79	135	63
Career and technical education	207	77	37	64	31
Library media specialist	85	64	75	49	58
Other certification areas ^d : agriculture, business and marketing, educational technology specialist, family and consumer sciences, generalist in middle education, and technology education	356	266	75	210	59

Note: The sample consisted of 12,414 new teachers in New York State in 2015/16 and 2016/17. The values in the second column sum to 21,311 because teachers could earn multiple certificates in multiple certification areas and 133 teachers were uncertified. In addition, 35 teachers had certificates that were denied, disapproved, expired, pending information, revoked, surrendered, suspended, or withdrawn, or were not related to classroom teaching. New teachers in 2017/18 were excluded because at the time of the study no data were available to calculate their third-year retention rates. New teachers employed in charter schools were excluded because the retention analysis focused on retention at the district level rather than at the school level. Rate of retention in the same district refers to teachers who were retained in the same district with a teaching assignment for a second year and a third year. The numerator for each year is the number of teachers who were retained in the same district with a teacher role. The denominator is the number of teachers from the previous year.

a. Special education includes certificates in multiple special education subject areas, some of which the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. The special education shortage area is based on courses taught by teachers who hold Special Education or Students with Disabilities certificate titles, rather than specialized certificates in the area of special education, such as Blind and Visually Impaired and Deaf and Hard of Hearing.

b. Severe or multiple disabilities is an annotation on a certificate, not a certificate in and of itself.

d. There is not a bilingual special education certificate, but bilingual special education is a shortage area. In this study teachers were counted as having earned a certificate in bilingual special education if they earned at least one certificate in bilingual education and at least one certificate in special education (excluding gifted education because the shortage area of bilingual special education does not pertain to those with teaching assignments related to gifted education).

e. "Other certification areas" includes certificates related to subject areas that the New York State Education Department does not report to the U.S. Department of Education in this specificity when computing data on shortages. However, teachers could be certified in those areas and fill subject area shortages by teaching in those areas. For example, a Technology Education certificate holder can teach certain career and technical education courses that cross multiple subject areas. Fewer than 2 percent of teachers had earned certificates in each certification area within the other certification areas category. Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Table B9. Number and percentage of new teachers in 2015/16 and 2016/17 were retained in the same district for a second year and third year, by need designation

Need designation	First year teaching in district	Second year teaching in same district		Third year teaching in same district	
	Number of new teachers	Number of new teachers	Percent of first-year teachers	Number of new teachers	Percent of first-year teachers
High need: New York City district schools	7,554	6,115	81	5,003	66
Average need	2,012	1,456	72	1,245	62
High need: rural	758	611	81	527	70
Low need	676	444	66	383	57
High need: other urban/suburban	614	471	77	399	65
High-need: large city—not New York City	325	247	76	203	62

Note: The sample consisted of 12,414 unique new teachers in New York State in 2015/16 and 2016/17. The values in the second column sum to 11,939 because 315 teachers were missing need designation data; 87 teachers worked in or for Boards of Cooperative Educational Services (BOCES), which do not have a need designation; 77 teachers did not have one of the specified need designations; and 4 teachers were employed in two separate districts with different need designations (and were thus counted twice). New teachers in 2017/18 were excluded because at the time of the study no data were available to calculate their third-year retention rates. New teachers employed in charter schools were excluded because the retention analysis focused on retention at the district level rather than at the school level. Rate of retention in the same district refers to teachers who were retained in the same district with a teaching assignment for a second year and a third year. The numerator for each year is the number of teachers who were retained in the same district with a teacher role. The denominator is the number of teachers from the previous year.

Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Table B10. Number and percentage of new teachers in 2015/16 and 2016/17 who were retained teaching in the same district for a second year and third year, by region

Region	First year teaching in district	Second year teaching in same district		Third year teaching in same district	
	Number of new teachers	Number of new teachers	Percent of first-year teachers	Number of new teachers	Percent of first-year teachers
New York City	7,636	6,150	81	5,010	66
Long Island	909	602	66	519	57
Hudson Valley	729	534	73	462	63
Finger Lakes	583	439	75	366	63
Western	432	311	72	256	59
Central	467	347	74	295	63
Capital District	389	284	73	245	63
Southern Tier	417	331	79	289	69
North Country	275	215	78	187	68
Mohawk Valley	257	198	77	158	61

Note: The sample consisted of 12,414 new teachers in New York State in 2015/16 and 2016/17. The values in the second column sum to 12,094 because 333 teachers were missing region data and 13 teachers were employed in more than one region and thus were counted twice. New teachers in 2017/18 were excluded because at the time of the study no data were available to calculate their third-year retention rates. New teachers employed in charter schools were excluded because the retention analysis focused on retention at the district level rather than at the school level. Rate of retention in the same district refers to teachers who were retained in the same district with a teaching assignment for a second year and a third year. The numerator for each year is the number of teachers who were retained in the same district with a teacher role. The denominator is the number of teachers from the previous year.

Source: Authors' analyses based on the New York State Education Department Basic Education Data System Personnel Master File data (2015–2018).

Reference

New York State Education Department. (2017). Enrollment database. Retrieved October 14, 2020, from <https://data.nysed.gov/downloads.php>.

Appendix C. Other analyses

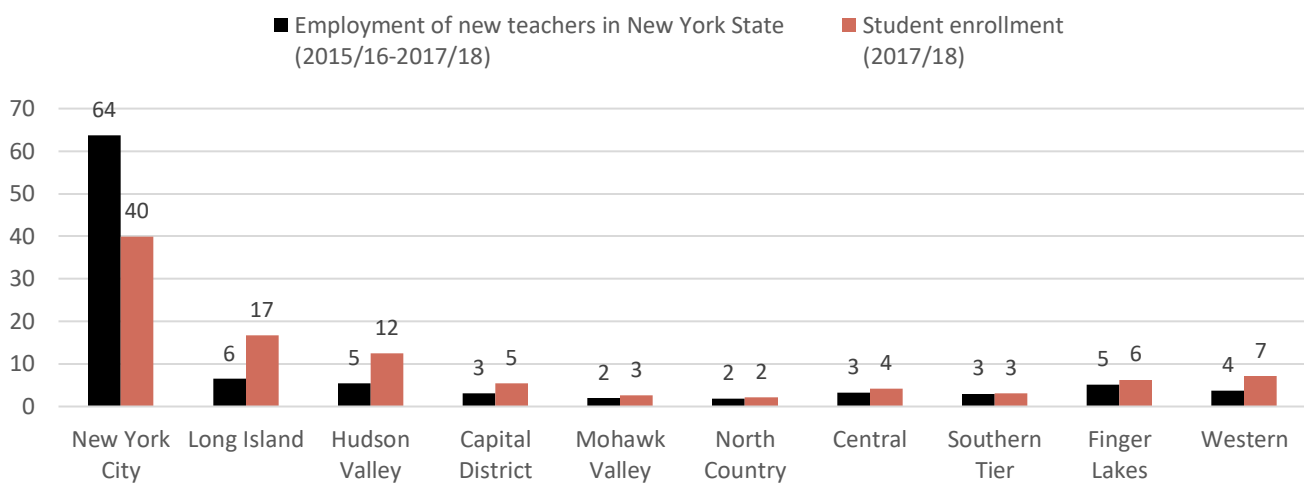
Analyses and findings based on region of employment are provided below.

New teachers were overrepresented in the New York City region relative to the region's percentage of statewide student enrollment (40 percent)

The New York City region accounted for 64 percent of new teachers but only 40 percent of statewide student enrollment. In contrast, new teachers were underrepresented in Long Island, which accounted for 6 percent of new teachers but 17 percent of statewide student enrollment. In all other regions of the state, the share of new teachers was commensurate with the share of student enrollment (figure C1 and table C1).

Figure C1. New teachers were overrepresented in New York City relative to statewide student enrollment, 2015/16–2017/18

Percent of new teachers and percent of student enrollment



Note: The sample consisted of 22,424 new teachers in New York State in 2015/16–2017/18. 529 teachers were missing region data, 31 teachers were employed in two regions, and 2 teachers were employed in three regions. The New York City region includes both district schools and charter schools.

Source: Authors' analyses of 2015–18 data on new teachers from the New York State Education Department's Basic Education Data System Personnel Master File and 2017/18 data on student enrollment from New York State Education Department (2017).

Table C1. Number and percentage of new teachers employed in each region of New York State (2015/16–2017/18) and each region’s share of statewide student enrollment (2017/18)

Region	New teachers, 2015/16–2017/18		2017/18 student enrollment
	Number	Percent of total	Percent of total
New York City	14,302	64	40
Long Island	1,450	6	17
Hudson Valley	1,208	5	12
Finger Lakes	1,144	5	6
Western	840	4	7
Central	744	3	4
Capital District	711	3	5
Southern Tier	673	3	3
Mohawk Valley	435	2	3
North Country	423	2	2

Note: The sample consisted of 22,424 new teachers in New York State in 2015/16–2017/18. The values in the second column sum to 21,930 because 529 teachers were missing region data, 31 teachers were employed in two regions (and were thus counted twice), and 2 teachers were employed in three regions (and were thus counted three times).

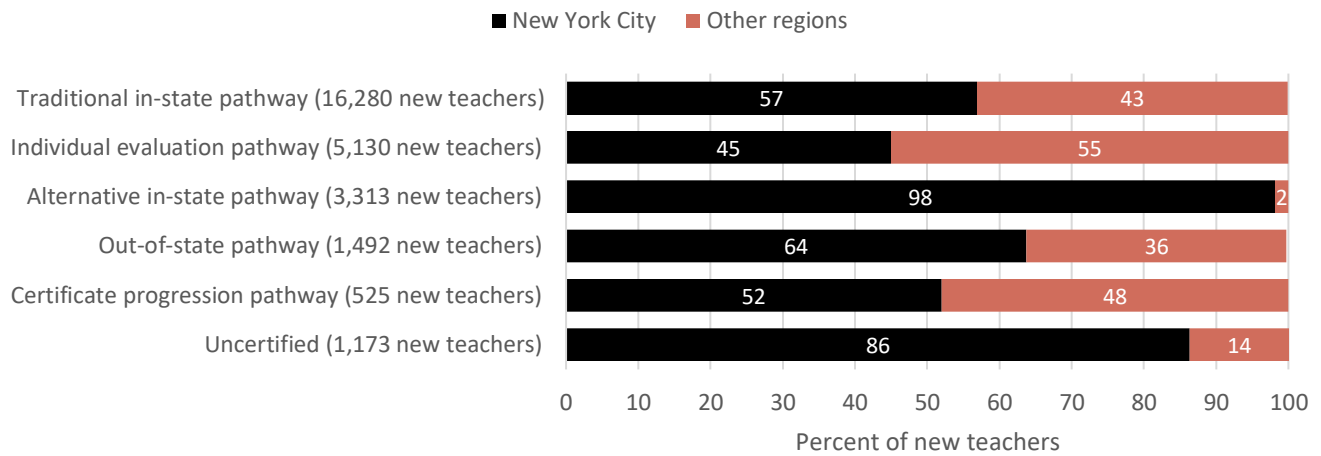
Source: Authors’ analyses of 2015–18 data on new teachers from the New York State Education Department’s Basic Education Data System Personnel Master File and 2017/18 data on student enrollment from the New York State Education Department (2017b).

The proportion of new teachers who were employed in New York City was higher among those who earned certificates through the alternative in-state pathway than among those who earned certificates through other pathways

Nearly all new teachers who earned certificates through the alternative in-state pathway (98 percent) were employed in New York City, while new teachers who earned certificates through other certification pathways were employed in New York City and in other regions in New York State. About 72 percent of teachers who earned certificates through the alternative teacher preparation programs (Transitional B and Transitional C) in New York State did so through programs located in New York City. Finally, 86 percent of uncertified teachers in New York State were employed in New York City (figure C2).

Figure C2. Nearly all uncertified new teachers and teachers who earned certificates through the alternative in-state pathway were employed in the New York City region, 2015/16–2017/18

Percent of new teachers in each certification pathway category



Note: The sample consisted of 22,424 unique new teachers in New York State in 2015/16–2017/18. The numbers of new teachers in the category labels on the vertical axis sum to 27,913 because some teachers earned multiple certificates through multiple pathways (16,070 earned certificates through one pathway, 4,752 earned certificates through two pathways, 378 earned certificates through three pathways, and 8 earned certificates through four pathways). In addition, the figure excludes 43 teachers who earned certificates in nonteaching areas but had teaching assignments between 2015/16 and 2017/18. Source: Authors' analyses of 2015–18 data on new teachers from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Reference

New York State Education Department. (2017). Enrollment database. Retrieved March 13, 2020, from <https://data.nysed.gov/downloads.php>