

Additional Certification for Teachers in New York State: Teachers’ Experience and Employment Location, Certification Pathways, and Certification Areas

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Additional Certification for Teachers in New York State: Teachers' Experience and Employment Location, Certification Pathways, and Certification Areas

Camille Lemieux, Jacqueline Zweig, Karen Shakman, Rebecca Schillaci, and Laura O'Dwyer

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New York State is experiencing teacher shortages in specific subject areas. One way to address these shortages is for certified teachers to earn additional certificates qualifying them to fill positions in shortage areas. This study explored patterns in how experienced teachers (those with at least one year of teaching experience in New York State public schools) in 2015/16 earned additional certificates between October 2015 and October 2017. These patterns included which teachers earned additional certificates, their certification pathways, and their additional certification areas. The study found that about 5 percent of teachers in New York State in 2015/16 earned additional certificates during the two-year period. A larger proportion of teachers who earned additional certificates during that period were employed in New York City district schools and charter schools than in other types of districts or schools. Teachers who earned additional certificates were less experienced than those who did not earn additional certificates. More teachers earned additional certificates in shortage areas than in nonshortage areas, except for administration, a nonteaching certification area. Special education was the most common shortage certification area in which experienced teachers earned additional certificates. More than half of teachers who earned additional certificates did so through the traditional in-state pathway, while about a third did so through the individual evaluation pathway.

Why this study?

Across the country, educators and policymakers are concerned about teacher shortages, particularly in hard-to-staff subject areas and school districts (Gais, Backstrom, Malatras, & Park, 2018; U.S. Department of Education, n.d.; Viadero, 2018). New York State has faced geographically widespread and persistent teacher shortages (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) in several subject areas. Those subject areas include bilingual education, bilingual special education, career and technical education, English language arts, health education, library media specialist, literacy, mathematics, science, and special education (U.S. Department of Education, n.d.).¹

There are several ways to address these shortages, including the certification of new teachers and the additional certification of experienced teachers. To provide a picture of the populations of teachers who might fill positions in these shortage areas and suggest potential ways to resolve persistent shortages, the Regional Educational Laboratory Northeast & Islands, in collaboration with the New York State Education Department (NYSED), has prepared a report on each of these groups of teachers. The current report covers experienced teachers (those with at least one year of teaching experience in New York State public schools) who pursued

For additional information, including technical methods and supporting analyses, access the report appendixes at <https://go.usa.gov/xecdz>.

¹ The New York State shortage areas that are reported to the U.S. Department of Education for a given school year are typically based on data from two school years earlier. For example, the 2017/18 shortage areas are based on 2015/16 data. The shortage areas referenced in this study were reported as 2017/18, 2018/19, and 2019/20 shortage areas on the U.S. Department of Education website and represent shortages that occurred in the 2015/16, 2016/17, and 2017/18 school years.

additional certificates, and the companion report (Zweig, Lemieux, Schillaci, O’Dwyer, & Shakman, 2021) covers new teachers (those with less than one year of teaching experience in New York State public schools).

In New York State, certified teachers can earn additional certificates, including certificates and extensions. Additional certificates enable teachers to fill a wider range of positions, depending on school or district needs. Teachers can earn a certificate in a new area, or they can earn grade or content area extensions that build on their existing credentials in a certification area. Although having teachers earn additional certificates does not expand the supply of teachers overall, it increases the supply in particular subjects, provides schools and districts with more teachers ready to teach in areas where there are vacancies, and enhances teachers’ skills.

NYSED wants to better understand teachers who earn additional certificates, including their prior experience, their employment location, and the certification pathways through which they most frequently earn certificates (see box 1 for definitions of key terms). NYSED would also like to understand the extent to which those teachers earn certificates in shortage subject areas. NYSED can use the study findings to assess whether the pool of teachers earning additional certificates, particularly certificates related to shortage subject areas, is sufficient to address shortages and whether new strategies or incentives might be applied to promote increased numbers of qualified candidates, particularly in shortage subject areas.

This study examined which teachers pursued additional certificates, through which pathways, and in which certification areas, with a focus on whether they earned certificates related to shortage subject areas. Specifically, the study examined teachers who had at least one year of teaching experience in New York State in 2015/16 and earned at least one additional certificate between October 2015 and October 2017.

Box 1. Key terms

Additional certificate. A certificate that experienced teachers earn that authorizes them to teach in a given subject and grade level in New York State public schools. This study also counted additional certificates earned in administration, which the New York State Education Department (NYSED) considers a nonteaching certification area. For this study a certificate was considered an additional certificate if its title differed from that of the teacher’s baseline certificate. Progression from an Initial certificate to a Professional certificate within the same certificate title was therefore not counted as an additional certificate (see table A5 in appendix A).

Additional certificate holders. Experienced public school teachers in New York State in 2015/16 who earned at least one additional certificate between October 2015 and October 2017.¹

Baseline certificate. Any certificate earned by teachers prior to October 7, 2015. The earliest baseline certificate held in the sample of experienced teachers in 2015/16 was issued in February 1956.²

Certificate. A credential that authorizes an individual to teach in a given subject and grade level in New York State public schools. In this report, the term “certificate” refers to both certificates and certificate extensions (see appendix A for additional information on extensions).³

Certification areas. The 19 areas in which teachers in New York State earned certificates (see appendix A for the definition of “teacher”). The dataset contained 399 past and current certificate titles, which indicate the subject and grade level the teacher is certified to teach. The certificate titles were combined into 19 broad certification areas related to teaching and administration (a nonteaching certification area) for the analyses. For any given certification area, there were between 2 and 218 certificate titles. Each teacher can have multiple certificates in a single certification area as well as in more than one certification area. The study team counted teachers in a certification area if they had earned at least one certificate in that area. Throughout the report, the study team categorized certification areas into the following two types:

- **Shortage certification areas.** Ten certification areas that are related to reported shortage subject areas (referred to throughout the report as shortage areas) in New York State. NYSED does not report shortages related to certification areas but rather related to course assignment areas in which full-time equivalent teaching positions (FTEs) in the subject area are greater than 5 percent of total FTEs in the subject area (New York State Education Department, personal communication, December 30, 2016). Shortage FTEs are filled by teachers who did not possess state

certification for teaching assignments. This study examined certification areas related to shortage areas, and these are referred to as “shortage certification areas” throughout the report. The 10 shortage certification areas are bilingual education, bilingual special education,⁴ career and technical education, English language arts, health education, library media specialist, literacy, mathematics, science, and special education. Special education⁵ includes the following New York State certification titles: students with disabilities, students with disabilities and content area, blind and visually impaired, deaf and hard of hearing, gifted education, severe or multiple disabilities,⁶ and speech and language disabilities.

- **Nonshortage certification areas.** Eight certification areas that are related to subject areas that were not experiencing widespread and persistent shortages and the nonteaching certification area of administration. These certification areas were not related to shortage subject areas that experienced a shortage in at least two of the 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) or in all three years studied (2015/16, 2016/17, and 2017/18). The nonshortage certification areas are administration (a nonteaching certification area), arts, English to speakers of other languages, language other than English,⁷ social studies, physical education, childhood education (which spans grades 1–6), early childhood education (which spans birth–grade 2), and other teaching certification areas.⁸

Certification pathways. There are several pathways by which teachers in New York State earn certificates. Each teacher can have multiple certificates in one or more pathways. The study team included a teacher in a pathway if the teacher had earned at least one certificate in that pathway.

- **Traditional in-state pathway.** This pathway is for candidates who complete a New York State-registered teacher preparation program that includes college-supervised clinical experience(s) during which the candidate is under the direct supervision of a certified teacher who has official responsibility for the classroom. Only New York State institutions of higher education are authorized to offer registered teacher preparation programs.
- **Alternative in-state pathway.** This pathway is for candidates who are enrolled in a New York State-registered alternative teacher preparation program. While completing the program, candidates apply for and earn a Transitional B or C teaching certificate and complete a college-supervised placement as a teacher of record in a partnering school. Partnering schools agree to mentor, support, and employ the candidates throughout their program. In this study, all teachers who were enrolled in this pathway were identified as certified, as they are considered certified by New York State.
- **Out-of-state pathways.** This report groups several certification pathways under the term “out-of-state pathways.” These pathways are available for candidates who complete a teacher preparation program in another U.S. state or territory that is substantially equivalent to a New York State-registered teacher preparation program and leads to certification in the title of the New York State certificate sought in the jurisdiction in which the institution of higher education is located; have at least three years of acceptable teaching experience in public schools in another U.S. state or territory within the past seven years and hold a valid certificate in that state or territory that is equivalent to the title of the New York State certificate sought; or earn a National Board for Professional Teaching Standards Certificate in a title equivalent to the title of the New York State Initial certificate sought (New York State Education Department, n.d.b).
- **Individual evaluation pathway.** This pathway is available for candidates who do not meet the requirements for the traditional in-state, alternative in-state, and out-of-state pathways. They can apply for certification through this pathway by providing transcripts or, in the case of career and technical education certificates, evidence of prior education, credentials, and/or work experience. NYSED’s level of effort to review certificate applications in this pathway is higher than in other pathways (personal communications with New York State Education Department, September 1, 2020; see appendix A for more information).⁹
- **Certificate progression pathway.** This pathway is for teachers who hold or held a valid New York State entry-level certificate and seek to progress to an advanced-level certificate (New York State Education Department, n.d.b).

Experienced teacher. A prekindergarten–grade 12 classroom teacher, educational technology specialist, library media specialist, or literacy specialist with at least one year of experience teaching in New York State public schools.¹⁰ Administrators, pupil personnel service professionals such as school psychologists and school social workers, and supplemental school personnel such as teacher aides and teaching assistants are not included in this definition.

Need designation. A measure of a district’s ability to meet the needs of its students with local resources.¹¹ NYSED calculated this measure by dividing a district’s estimated poverty percentage by its Combined Wealth Ratio.¹² The Combined Wealth Ratio was a measure of a district’s fiscal capacity and is based equally on property wealth per pupil and income wealth per pupil compared to the statewide average. (See appendix A for details.)

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). Each district was assigned only one need designation. Teachers may teach in more than one district at the same time, each with a different need designation. Need designation data were 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.

Notes

1. This study used a snapshot of teacher data from the first Wednesday in October each year (New York State Education Department, 2019).
2. There is no mandatory retirement age in New York State.
3. There is one annotation: severe or multiple disabilities. An annotation is a type of certificate that is not freestanding and is always attached to a base certificate. The annotation alone does not authorize an individual to teach in the particular subject area but indicates expertise in the defined area. No teachers in the sample received the annotation without earning a specified special education certificate as well.
4. 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 had at least one certificate in bilingual education certification 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).
5. Special education includes certificates in multiple special education subject areas, some of which the NYSED 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.
6. Severe or multiple disabilities is an annotation.
7. NYSED recently changed “language other than English” to “world Languages other than English.” However, because this report references historical data, it retains the older terminology.
8. The study team used the same certification areas in this report and the companion report on new teachers, with the exception of the administration certification area, which is included only in this report. Very few new teachers seek an administration certificate with their first teaching certificate, whereas it is much more common among experienced teachers to earn an administration certificate as an additional certificate. NYSED considers administration a nonteaching certification area.
9. When reviewing the certificate application, NYSED staff evaluate each requirement individually, including coursework listed on transcripts. Teachers can use this pathway when they have completed acceptable coursework over time at various institutions in and out of state or when they are ineligible for other pathways (personal communications with New York State Education Department, September 1, 2020).
10. The total years of teaching variable in the Basic Education Data System Personnel Master File data determined teachers’ experience in New York State. NYSED defined the roles that are considered a teacher. A REL Northeast & Islands companion report (see Zweig et al., 2021) examines certification pathways and certification areas for new teachers in New York State.
11. New York State refers to the measure as “need/resource capacity” because it measures need relative to resources.
12. The Combined Wealth Ratio was calculated as follows: $(0.5 \times \text{the pupil wealth ratio}) + (0.5 \times \text{the alternate pupil wealth ratio})$. The Pupil Wealth Ratio equaled the actual value of property in 1995 divided by a weighted pupil count. The Alternate Pupil Wealth Ratio equaled the 1994 adjusted gross income divided by a weighted pupil count. The weighted pupil count was based on the adjusted average daily attendance of K–12 students in the district plus weightings for students with special educational needs, students with disabilities, and secondary school students; half-day kindergarten students were weighted at 0.5.

Research questions

The study team used data from NYSED to address the following questions about experienced public school teachers in New York State in 2015/16:

1. What proportion earned additional certificates between October 2015 and October 2017, and what were the characteristics of these teachers (years of experience and baseline certification areas) and the need designations of the districts in which they were employed?
2. Through which certification pathways did they earn additional certificates?
3. In which certification areas did they earn additional certificates?
 - a. By certification area, which certification pathways did they use?

Box 2 summarizes the data sources, sample, methodology, and limitations, and appendix A provides additional details.

Box 2. Data sources, sample, methodology, and limitations

Data sources. The study used data from the New York State Education Department’s (NYSED’s) TEACH system and Basic Education Data System Personnel Master File. The TEACH system is the platform through which individuals apply for certification. It maintains data on all certificate holders, including certificate titles, certificate issue dates, and certification pathways. The Basic Education Data System Personnel Master File contains annual data on teachers, such as the number of years of teaching experience in New York State, school and district assignments, region, and district need designation (see table A2 in appendix A for a list of data elements and their sources). Each teacher has a unique identification number that links them in the NYSED TEACH system and the Basic Education Data System Personnel Master File.

Sample. The sample consisted of 199,853 unique experienced teachers in New York State in 2015/16. Individuals with more than one role were considered a teacher if they had at least one teaching role. Teachers could earn multiple certificates—for example in different certification areas or grade levels (see table A3 in appendix A for the number of certificates in each certification area). The study team counted teachers one time for each certification area in which they earned at least one additional certificate. Certificates could be earned through different pathways, though a teacher could use only one pathway per certificate. Additionally, region and need designation data were missing for 2 percent of the sample. Teachers with missing region and need designation data remained in the sample, so their certification pathway and certification areas were included. For these reasons the numbers in figures and tables throughout the report do not sum to the 199,853 unique teachers in the sample, nor do the percentages sum to 100 (see the notes in figures and tables for further explanation). Because of these variations in the number of certificates earned, pathways used, and districts in which teachers in the sample were employed, each research question had a different sample size (see table A4 in appendix A for a description of each sample).

Methodology. The study team calculated the number and percentage of experienced teachers in New York State in October 2015 who earned and who did not earn at least one additional certificate between October 7, 2015, and October 4, 2017. Certificates that were expired, revoked, surrendered, or suspended were not included as additional certificates in the analyses. The study team also calculated the number and percentage of experienced teachers who earned certificates through each pathway. Each pathway was calculated as a binary variable—yes or no—for each type of pathway regardless of how many certificates a teacher earned through that pathway. Teachers could earn certificates through more than one pathway, in more than one certification area, and in more than one year.

The study team calculated the number and the percentage of experienced teachers who:

- Earned and did not earn at least one additional certificate between October 2015 and October 2017 and who were employed in districts with each need designation (research question 1).
- Earned at least one additional certificate, by certification pathway (research question 2).
- Earned at least one additional certificate, by certification area (research question 3) and by pathway (research question 3a).

The report highlights differences of more than 5 years or 5 percentage points as substantive (see appendix A).

Limitations. Although data allowed teacher placement to be examined by district, the data for this study did not include teachers’ specific course assignments. As a result, the study could not analyze the extent to which teachers taught in their certification area. Shortages might be higher than the findings suggest if many teachers with certificates in a shortage area could not easily be placed in that area. For example, a teacher might earn certificates related to two shortage areas but can teach in only one of them, or a teacher might prefer to not teach in a shortage area despite having earned a certificate related to that area. This report, therefore, documents the pool of teachers with certificates related to shortage areas—not whether they were actually assigned to courses in those areas. This study and its companion study provide New York State with a more comprehensive picture of the potential pool of candidates to address the shortages. Additional research is needed to understand the match between the number of teachers earning additional certificates in areas related to shortage areas and the number of full-time equivalents or positions available in those areas.

Another limitation of this study is that the designation of experienced teacher was based on a teacher-reported measure of years of teaching experience in New York State that could include errors.¹ The study team identified 1,470 cases in which a teacher reported zero years of experience in 2015/16, 2016/17, or 2017/18 but appeared in the dataset for a previous year, and the study team recoded the years of teaching experience variable to identify those teachers as experienced. Years of experience in 2015/16 were otherwise included in the analyses as teachers reported them in 2015/16.

This descriptive study is based on three years of data and cannot support causal inferences about the relationships among certification pathways, certification areas, and employment location.

Note

1. Teachers with less than one year of teaching experience in New York State were considered new teachers and are represented in the companion report (Zweig et al., 2021).

Findings

The findings in this section address the three research questions in order. The first four findings relate to research question 1 and describe additional certificate holders in terms of their years of experience, baseline certification areas, the additional certificates they earned, and the need designation of their district of employment (or employment in charter schools). The fifth finding addresses research question 2 on the pathways through which these teachers sought additional certificates. The final three findings relate to research question 3 and 3a and describe the certification areas in which teachers were additionally certified, with a particular focus on shortage areas, and on the certification pathways through which they earned additional certificates, by certification area.

About 5 percent of experienced teachers in New York State public schools in 2015/16 earned additional certificates between October 2015 and October 2017

In the 2015/16 school year 199,853 New York State public school teachers had at least one year of teaching experience in New York State. Of those teachers, 5 percent earned additional certificates between October 2015 and October 2017 (table 1).

Table 1. Number and percentage of experienced teachers in New York State public schools in the 2015/16 school year who earned at least one additional certificate between October 2015 and October 2017

School year	Number of experienced teachers	Number of experienced teachers who earned at least one additional certificate	Percent of experienced teachers who earned at least one additional certificate ^a
2015/16	199,853	9,865	5

Note: Experienced teachers are those with at least one year of teaching experience in New York State.
 a. The percentage of the total number of experienced teachers who earned at least one additional certificate between October 2015 and October 2017.
 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.

Additional certificate holders had fewer years of teaching experience on average than teachers who did not earn additional certificates

Additional certificate holders had taught for fewer years than teachers who did not earn additional certificates between October 2015 and October 2017. Additional certificate holders had an average of 7 years of teaching experience in New York State compared with an average of 15 years for teachers who did not earn additional certificates, a substantive difference. Additional certificate holders did not differ from teachers who did not earn additional certificates in the average number of baseline certificates they held (two certificates; see table A1 in appendix A).

Experienced teachers with baseline certificates in early childhood education earned additional certificates at higher rates than teachers with baseline certificates in other areas, including shortage areas

Whereas 5 percent of all experienced teachers earned additional certificates, 15 percent of experienced teachers with baseline certificates in early childhood education did so, a substantive difference (table 2). Experienced teachers with baseline certificates in bilingual special education (8 percent), English to speakers of other languages (8 percent), special education (7 percent), language other than English (7 percent), bilingual education (7 percent), and the other certification area category (7 percent) also earned additional certificates at higher rates than teachers with baseline certificates in other areas, though most of these differences were small (no more than 5 percentage points).

Table 2. Number and percentage of experienced teachers who earned at least one additional certificate, by baseline certificate area, 2015/16–2017/18

Baseline certification area	Number of experienced teachers in baseline certification area	Number of experienced teachers in baseline certification area who earned at least one additional certificate	Percent of experienced teachers in baseline certification area who earned at least one additional certificate ^a
Shortage certification areas^b			
Bilingual special education ^c :	1,330	105	8
Special education ^d : students with disabilities, students with disabilities with content area, blind and visually impaired, deaf and hard of hearing, gifted education, severe or multiple disabilities, ^e speech and language disabilities	58,734	4,232	7
Bilingual education	3,920	275	7
English language arts	14,960	816	5
Science: biology, chemistry, earth science, general science, physics	13,147	611	5
Mathematics	12,775	568	4
Literacy	20,621	908	4
Health education	3,951	136	3
Career and technical education	7,700	178	2
Library media specialist	2,362	33	1
Nonshortage certification areas			
Early childhood education	11,380	1,729	15
English to speakers of other languages	7,231	555	8

Baseline certification area	Number of experienced teachers in baseline certification area	Number of experienced teachers in baseline certification area who earned at least one additional certificate	Percent of experienced teachers in baseline certification area who earned at least one additional certificate ^a
Language other than English	7,534	505	7
Childhood education	89,952	4,624	5
Social studies	14,287	707	5
Administration ^f	11,051	480	4
Physical education	10,278	269	3
Arts: dance, music, theater, visual arts	9,125	214	2
Other certification areas ^g : agriculture, business and marketing, educational technology specialist, family and consumer sciences, generalist in middle education, and technology education	7,773	535	7

Note: The sample consisted of 199,853 unique experienced teachers in New York State in 2015/16, 9,865 of whom earned at least one additional certificate between October 2015 and October 2017. The sum of the values in the second column is 308,111 because some teachers earned multiple baseline certificates in multiple certification areas. The sum of the values in the third column is 17,480 because some teachers earned multiple additional certificates in multiple certification areas (8,669 earned at least one additional certificate in one certification area, 797 earned at least one additional certificate in two certification areas, 89 earned at least one additional certificate in three certification areas, and 10 earned at least one additional certificate in four certification areas), and 300 teachers earned at least one additional certificate in an area unrelated to classroom teaching or administration, such as pupil personnel services.

a. The percentage of the total number of experienced teachers in the baseline certification area who earned at least one additional certificate between October 2015 and October 2017.

b. Shortage certification areas are certification areas that are related to subject areas for which the New York State Education Department 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.

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 baseline certificate in bilingual special education if they had 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). Teachers were counted as earning an additional certificate in bilingual special education if they earned additional certificates in both bilingual education and special education (excluding gifted education), if they held a baseline certificate in bilingual education and earned an additional certificate in special education (excluding gifted education), or if they held a baseline certificate in special education (excluding gifted education) and earned an additional certificate in bilingual education.

d. 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.

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

f. Administration is a nonteaching certification area.

g. “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.

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.

The proportion of experienced teachers who earned additional certificates was higher in charter schools than in other need designations

Whereas 5 percent of all experienced teachers in the sample earned additional certificates between October 2015 and October 2017, 14 percent of teachers in charter schools did so (table 3). In districts with all other need designations, including New York City district schools and other types of high-need districts, a substantively lower proportion of teachers earned additional certificates. The proportion of additional certificate holders was consistent across New York State regions outside New York City. But 83 percent of charter schools are located in

New York City. So the combined percentages of teachers who earned additional certificates in charter schools (14 percent) and New York City district schools (8 percent) indicates that a much higher proportion of teachers in New York City than anywhere else in the state earned additional certificates.

Table 3. Number and percentage of additional certificate holders, by need designation, 2015/16–2017/18

Need designation	Number of experienced teachers	Number of additional certificate holders	Percent of additional certificate holders ^a
Charter schools	6,240	847	14
New York City district schools	60,653	4,586	8
Large city—not New York City	7,692	350	5
Other high-need urban/suburban district	14,831	587	4
Average need	60,869	1,876	3
Low need	30,996	992	3
High-need rural district	13,238	420	3

Note: The sample consisted of 199,853 unique experienced teachers in New York State in 2015/16, 9,865 of whom earned at least one additional certificate between October 2015 and October 2017. The sum of the values in the second column is 194,519 because 3,940 teachers were missing need designation data; 1,437 teachers worked in or for Boards of Cooperative Educational Services in New York State, which do not have a need designation; and 43 teachers were employed in two separate districts with different need designations (and were thus counted twice). The sum of the values in the third column is 9,658 because 167 additional certificate holders were missing need designation data, 47 additional certificate holders worked in or for Boards of Cooperative Educational Services in New York State, and 7 additional certificate holders were employed in two separate districts with different need designations (and were thus counted twice).

a. The percentage of the total number of experienced teachers working in districts with a given need designation who earned at least one additional certificate between October 2015 and October 2017.

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.

More than half of additional certificate holders earned certificates through the traditional in-state pathway, while about a third did so through the individual evaluation pathway

The study examined five different certification pathways available to experienced teachers pursuing additional certificates (see box 1). Teachers can earn multiple additional certificates, either through the same certification pathway or through different pathways. A substantively higher proportion of additional certificate holders earned certificates through the traditional in-state pathway (58 percent) than through the individual evaluation pathway (34 percent) or other pathways (table 4). Only 3 percent of teachers earned at least one additional certificate through the out-of-state pathways, and only 1 percent did so through the alternative in-state pathway. About 10 percent of additional certificate holders used the certificate progression pathway, which is available only for teachers to earn the next level certificate in the same certification area as their baseline certificate.² It is unsurprising that out-of-state pathways were rarely used given that the sample consisted entirely of teachers with at least one year of teaching experience in New York State.³ The alternative in-state pathway is seldom used by experienced teachers for additional certificates; it is most often used by individuals entering the teaching profession.

² One example of this occurring is a teacher earning a baseline certificate in literacy through the traditional in-state pathway and an additional certificate in childhood education through the certificate progression pathway.

³ Only 35 experienced teachers earned a National Board Certificate, which can be earned through an out-of-state pathway. Of those teachers, 19 earned the certificate as an additional certificate.

Table 4. Number and percentage of additional certificate holders earning certificates through each pathway, 2015/16–2017/18

Additional certification pathway	Number of additional certificate holders	Percent of additional certificate holders
Traditional in-state pathway	5,709	58
Individual evaluation pathway	3,373	34
Certificate progression pathway	1,007	10
Out-of-state pathways	289	3
Alternative in-state pathway	70	1

Note: The sample consisted of 9,865 unique experienced teachers in New York State in 2015/16 who earned at least one additional certificate between October 2015 and October 2017. The sum of the values in the second column is 10,448 because some teachers earned multiple additional certificates, each through a different pathway. The values in the third column sum to more than 100 percent because 5.6 percent of additional certificate holders earned certificates through two pathways and 0.2 percent did so through three pathways.

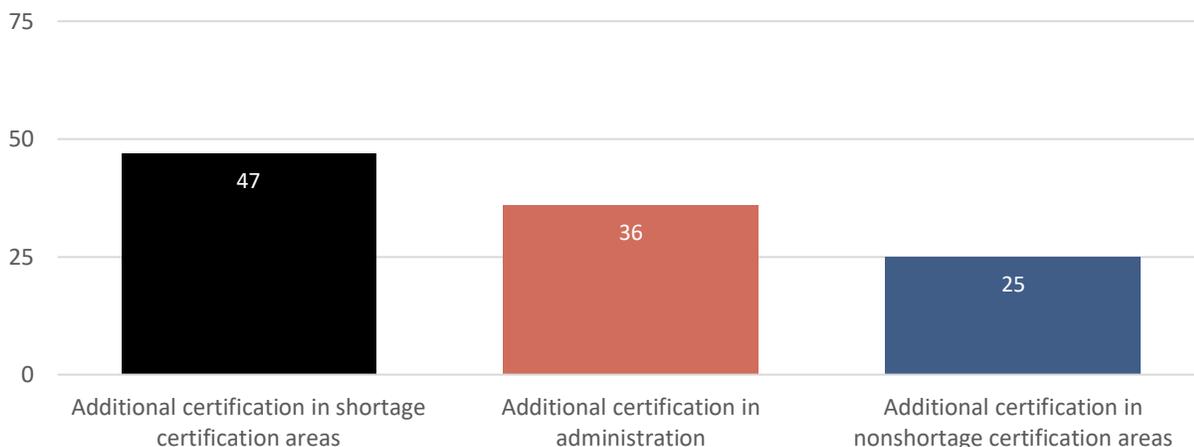
Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

More experienced teachers earned additional certificates in shortage areas than in nonshortage areas, except for administration, which is a nonteaching certification area

A higher percentage of experienced teachers earned additional certificates in shortage areas (47 percent) than in nonshortage areas (25 percent; figure 1), a substantive difference. However, the nonshortage area of administration, which is a nonteaching certification area, was the certification area with the highest percentage of teachers earning additional certificates (36 percent; see table B2 in appendix B). After administration, 27 percent of teachers earned additional certificates in special education, and 10 percent earned additional certificates in English to speakers of other languages. Some teachers with baseline certificates in shortage areas earned at least one additional certificate in that same shortage area. Specifically, teachers who held baseline certificates in the shortage areas of career and technical education (44 percent), special education (44 percent), and science (35 percent) most frequently earned additional certificates in the same certification area (see table B3).

Figure 1. A larger proportion of additional certificate holders earned certificates in shortage certification areas and in administration, a nonteaching certification area, than in nonshortage certification areas, 2015/16–2017/18

Percent of experienced teachers holding additional certificates by certification areas



Note: The sample consisted of 9,865 unique experienced teachers who earned at least one additional certificate between October 2015 and October 2017. Percentages sum to more than 100 percent because some teachers earned multiple additional certificates. The number of additional certificate holders represented in this figure is 10,740 because some teachers earned multiple certificates in more than one certification area (8,536 earned additional certificates in one certification area, 897 earned additional certificates in two certification areas, 118 earned additional certificates in three certification areas, and 14 earned additional certificates in four certification areas), and 300 teachers earned additional certificates in areas unrelated to classroom teaching or administration, such as pupil personnel services.

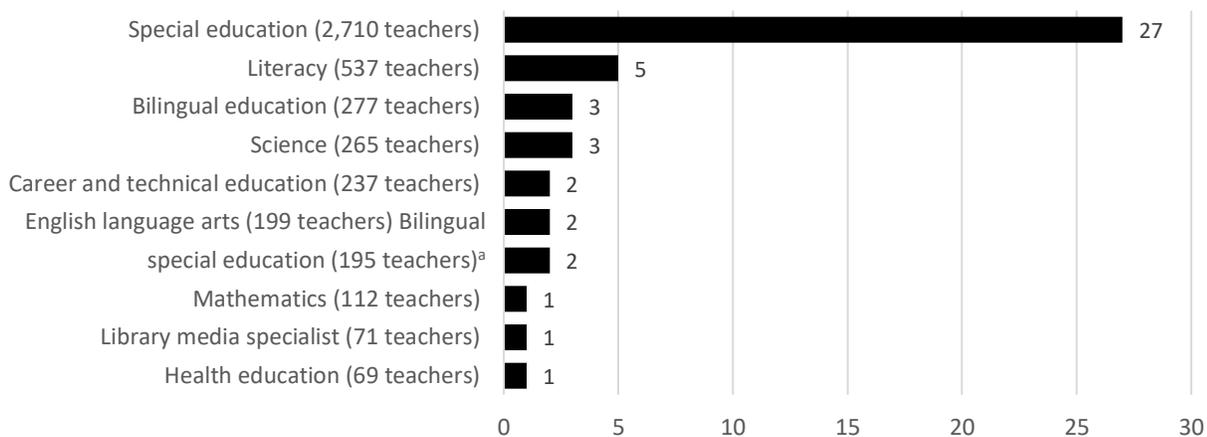
Source: Authors' analyses of 2015–18 data from the New York State Education Department's TEACH system and Basic Education Data System Personnel Master File.

Special education was the most common shortage certification area in which experienced teachers earned additional certificates

About 27 percent of additional certificate holders earned certificates in special education, a substantively higher proportion than in any other shortage certification area (fewer than 6 percent earned additional certificates in any other area; figure 2). Higher proportions of additional certificate holders in special education held baseline certificates in early childhood education (70 percent), special education (44 percent), childhood education (39 percent), literacy (37 percent), and bilingual special education (32 percent) than in other areas (see table B3 in appendix B).

Figure 2. A higher percentage of additional certificate holders earned certificates in the shortage certification area of special education than in any other shortage certification areas, 2015/16–2017/18

Percent of experienced teachers who earned additional certificates, by shortage certification area



Note: The sample consisted of 9,865 unique experienced teachers in New York State public schools in 2015/16 who earned at least one additional certificate between October 2015 and October 2017, 4,685 of whom earned at least one additional certificate in a shortage certification area.

a. Includes teachers who earned additional certificates in both the bilingual education and special education certification areas, teachers who held a baseline certificate in bilingual education and earned an additional certificate in special education (excluding gifted education), and teachers who held a baseline certificate in special education (excluding gifted education) and earned an additional certificate in bilingual education.

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 and New York State shortage data from the U.S. Department of Education (n.d.).

A majority of teachers who earned additional certificates in career and technical education used the individual evaluation pathway

A substantively higher proportion of additional certificate holders in career and technical education (73 percent) than in other shortage areas used the individual evaluation pathway (table 5). This might reflect the fact that only 3 of the approximately 97 New York State educator preparation institutions⁴ offer programs in career and technical education, whereas certification through the individual evaluation pathway for career and technical

⁴ The number of New York State institutions of higher education with teacher preparation programs between 2015/16 and 2017/18 ranged from 96 to 98; as of fall 2021, there are 91.

education certificates allows for different combinations of education background, credentials, and work experience (personal correspondence with New York State Education Department, September 1, 2020).

The proportions of additional certificate holders who used the traditional in-state pathway were higher for those who earned certificates in the shortage areas of literacy (87 percent), bilingual special education (85 percent), and bilingual education (75 percent) than for those who earned certificates in other shortage areas. More than half (57 percent) of teachers who obtained an additional certificate in the shortage area of health education used the alternative pathway, a substantively higher proportion than in any other area.

Among additional certificate holders in nonshortage areas, 61 percent of those who earned certificates in early childhood education used the individual evaluation pathway, followed by those who earned certificates in language other than English (50 percent) and arts (47 percent). Although smaller in magnitude, there were additional substantive differences in the proportions of teachers using each pathway across shortage areas and across nonshortage areas (see table 5).

Table 5. Percentage of additional certificate holders using each pathway to earn certificates, by additional certification area, 2015/16–2017/18

Additional certification area	Percentage of additional certificate holders in certification area				
	Traditional in-state pathway	Individual evaluation pathway	Alternative in-state pathway	Out-of-state pathways	Certificate progression pathway
Shortage certification areas^a					
Bilingual education	75	23	0	< 1	2
Bilingual special education	85	14	f	f	f
Career and technical education	20	73	f	f	7
English language arts	47	36	5	6	6
Health education	36	f	57	4	3
Library media specialist	66	29	f	f	f
Literacy	87	11	f	1	1
Mathematics	52	31	10	4	3
Science: biology, chemistry, earth science, general science, physics	42	41	7	3	6
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	46	33	6	2	14
Nonshortage certification areas					
Early childhood education	36	61	< 1	3	f
English to speakers of other languages	66	29	2	2	1
Language other than English	38	50	3	4	5

Additional certification area	Percentage of additional certificate holders in certification area				
	Traditional in-state pathway	Individual evaluation pathway	Alternative in-state pathway	Out-of-state pathways	Certificate progression pathway
Childhood education	69	17	2	6	7
Social studies	58	28	1	6	7
Administration ^d	93	2	f	6	f
Physical education	57	30	f	7	7
Arts: dance, music, theater, visual arts	34	47	f	6	13
Other certification areas ^e : agriculture, business and marketing, educational technology specialist, family and consumer sciences, generalist in middle education, and technology education	51	38	6	2	3

Note: The sample consisted of 9,865 unique experienced teachers in New York State in 2015/16 who earned at least one additional certificate between October 2015 and October 2017. The table includes data on 29,159 unique teacher-by-certification area-by-pathway combinations because some teachers earned multiple certificates through multiple pathways. Of teachers who earned additional certificates in shortage areas, 277 earned at least one additional certificate in bilingual education, 208 in bilingual special education, 237 in career and technical education, 199 in English language arts, 69 in health education, 71 in library media specialist, 537 in literacy, 112 in mathematics, 265 in science, and 2,710 in special education. Of teachers who earned additional certificates in nonshortage certification areas, 473 earned at least one additional certificate in early childhood education, 994 in English to speakers of other languages, 190 in language other than English, 393 in childhood education, 104 in social studies, 3,560 in administration, 47 in physical education, 119 in arts, and 118 in other teaching certification areas.

a. Shortage certification areas are certification areas that are related to subject areas for which the New York State Education Department 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. Administration is a nonteaching certification area.

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.

f. Data have been suppressed to protect privacy because of the small number or percentage of subjects in the cell.

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.

Implications

The study findings suggest three main implications for how NYSED might communicate with experienced teachers, school districts, and teacher preparation programs regarding pathways for additional certification, particularly in shortage areas. State policymakers outside New York State can also use the findings to inform their own research on shortages and certification pathways.

The New York State Education Department could explore whether additional certificate holders use their new credentials to fill shortage area vacancies

Further research is needed on the subject area assignments of additional certificate holders and whether teachers earning additional certificates is a viable approach to reducing shortages in New York State. For example, special education remains a shortage subject area in New York State in 2021/22 despite being the most common

additional certification area for experienced teachers in this study. This finding suggests that further research is needed on the subject area assignments of additional certificate holders and whether teachers earning additional certificates is a viable approach to reducing shortages. The study could not investigate experienced teachers' placement at the subject or classroom level and thus could not shed light on the extent to which additional certificate holders filled positions in the shortage areas in which they earned certificates. It is possible that experienced teachers earn certificates in shortage subject areas and fill positions in those areas but that the need for teachers with certificates in shortage areas is simply too great to be filled by additional certificate holders alone. It is also possible that additional certificate holders earned additional certificates to increase their employment potential or to gain skills to effectively teach students in their existing classrooms within their baseline certification areas but did not move into new positions in shortage areas.

Finally, because a large percentage of teachers with baseline certificates in the shortage areas of career and technical education, science, and special education go on to earn additional certificates in the same general shortage area or another shortage area (see table B3 in appendix B), there might be a need to explicitly target and incentivize teachers who are not baseline certified in shortage areas to earn additional certificates in one of the widespread and persistent shortage areas.

The New York State Education Department and school districts might want to consider incentives for teaching in shortage areas, including incentives that offer the kinds of advantages sought by experienced teachers who pursue certificates in administration

Although this research study cannot confirm whether those teachers who earn additional certificates in shortage areas go on to fill positions in these shortage areas, the persistence of the shortage areas in New York State suggests that NYSED, teacher preparation programs, and school districts might want to consider additional incentives to encourage teachers who earn additional certificates in shortage areas to go on to fill positions in those areas.

In addition, further research is needed to investigate why many additional certificate holders from across all baseline certification areas earn additional certificates in the nonteaching certification area of administration. It is possible that teachers with certificates in administration use their administrative college credits earned as a means to increase their compensation as teachers (due to compensation being based on the number of graduate hours of study). If many teachers seeking an administrative certificate do so with the objective of improving their compensation, financial incentives could help redirect teachers toward shortage certification areas instead.

The New York State Education Department and teacher preparation programs might want to emphasize to prospective teachers the benefit of becoming certified in shortage areas when they earn their first certificate

Earning an additional certificate is a time- and resource-consuming process for the teacher and, particularly in the case of the individual evaluation pathway, for the state (personal communications with NYSED, September 1, 2020).⁵ If some teachers pursue additional certificates as a matter of course, NYSED and preparation programs might want to communicate with prospective teachers about typical career trajectories for teachers in particular certification areas and encourage them to apply for related available certificates at the time of their first certification rather than seeking additional certificates only after a few years in the classroom. For example, 70 percent of additional certificate holders who held a baseline certificate in early childhood education and 39 percent of those with a baseline certificate in childhood education earned an additional certificate in special

⁵ When NYSED staff review the certificate application, each requirement, including coursework listed on transcripts, is evaluated individually (personal communications with NYSED, September 1, 2020).

education. NYSED and preparation programs might want to target prospective teachers in childhood education and early childhood education to promote earning certificates in special education at the same time.

Prospective teachers might not yet know how to maximize their employment potential when deciding which certification area(s) to pursue. Preparation programs might communicate with prospective teachers during their initial preparations to encourage them to pursue baseline certificates in shortage areas, thereby reducing the need for additional certificates later. One potentially useful strategy might be to ensure that teacher recruitment materials provide the certification titles that align with shortage areas. And given that most additional certificate holders were less experienced than teachers who did not seek additional certificates, and that they most commonly had just one year of experience in New York State, promoting multiple certificates at the time of initial preparation before teachers have settled into a particular district or position might also increase the number of those prepared to fill shortage areas.

References

- Gais, T., Backstrom, B., Malatras, J., & Park, Y. (2018). *The state of the New York teacher workforce*. Rockefeller Institute of Government. <http://rockinst.org/issue-area/state-new-york-teacher-workforce/>
- New York State Education Department. (n.d.a). *Need/resource capacity categories*. Retrieved October 14, 2020, from <http://www.p12.nysed.gov/irs/accountability/2011-12/NeedResourceCapacityIndex.pdf>
- New York State Education Department. (n.d.b). *Pathways to certification: Which pathway is right for me?* Retrieved October 14, 2020, from <http://www.highered.nysed.gov/tcert/certificate/rightpathway.html>
- New York State Education Department. (2019). *Basic Educational Data System (BEDS) administration manual educational personnel data form and electronic personnel master file (ePMF) user guide*. Retrieved October 14, 2020, from <http://www.p12.nysed.gov/irs/beds/PMF/documents/ePMFTeachingManualUserGuide201920.pdf>
- U.S. Department of Education. (n.d.). *Teacher shortage areas*. Retrieved March 13, 2020, from <https://tsa.ed.gov/#/reports>
- Viadero, D. (2018, January 23). *Teacher recruitment and retention: It's complicated*. Education Week. Retrieved October 14, 2020, from <https://www.edweek.org/ew/articles/2018/01/24/teaching-shortages-many-answers-for-a-complex.html>
- Zweig, J., Lemieux, C., Schillaci, R., O'Dwyer, L., & Shakman, K. (2021). *Teacher shortages in New York State: New teachers' certification pathways, certification areas, district of employment, and retention in the same district* (REL 2022–109). U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Northeast & Islands. <http://ies.ed.gov/ncee/edlabs>

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