

Teacher Shortages And Supports For New Teachers

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Summary

Teacher shortages occur when the supply of available and qualified teachers cannot meet the demand for teachers with specific subject and grade level certifications or when there are fewer quality applicants than there are open positions. Under these circumstances, teaching positions may be unfilled or filled by teachers with emergency or alternative certificates, which can lead to teacher turnover. Teacher turnover is defined as the percent of teachers from the previous year that did not return to teach at the same location in the following year. This report reviews teacher certificates, teacher shortages, teacher turnover, and supports for new teachers.

This report reviews teacher certificates as direct and indirect indicators of teacher shortages, both overall and by subject and level between school years 2010 and 2019, and concluded that a relatively small percentage of teachers held emergency certificates and alternative certificates. However, reports from principals reveal that teacher shortages are occurring not only in the number of available teachers but also in the quality of teachers. These shortages may not appear in the certification data for several reasons. Principals reported addressing teacher shortages by eliminating classes, combining classes, increasing class sizes, offering online courses, renewing non-tenure, non-effective teachers, and teachers teaching during their planning period. In addition, principals reported hiring lower quality applicants rather than having unfilled positions. These strategies would not appear in the data as an indicator of shortages because they do not involve a teacher with an emergency certificate or an alternative certificate.

The number of teachers with emergency certificates was about the same in school year 2019 as in school year 2010, while teachers with alternative certificates increased by 7.9 percent. Between these years, 96.9 percent of teachers with emergency certificates held their emergency certificate for only one year. In 2019 subject areas with relatively high percentages of teachers certified through alternative routes or teachers holding emergency certificates included

- preschool,
- exceptional children,
- chemistry,
- high school general science,
- biology and life sciences, and
- physics.

Over the past 10 years, average annual teacher turnover was 17.1 percent at the school level. However, teacher turnover tends to decrease as the geographic area of reference increases because teachers may move among schools within districts, regions, or the state. Schools with lower math and reading KPREP proficiency rates tended to have higher teacher turnover, higher percentages of minority students, higher percentages of students in poverty, and higher percentages of teachers with four or fewer years of experience, suggesting that student outcomes are related to school qualities, including teacher turnover.

Analysis of 2017 TELL Survey data revealed that teachers who reported planning to continue teaching at their current school were more than twice as likely to say that their school was a good place to work and learn compared to teachers who planned to teach in a different school or

district. In addition, teachers in schools with lower turnover were more likely to rate their schools positively and less likely to report immediate plans to leave their school.

An OEA survey asked principals about their experiences with teacher shortages, teacher turnover, and supports for new teachers. Common themes emerged. Principals reported that when turnover is high, schools have difficulty carrying out organizational goals and building relationships with students, parents, and the community. Quality replacement teachers are often limited and schools must spend time and resources training new teachers. Student achievement, disciplinary issues, and school culture can be negatively affected by new and inexperienced teachers, although some principals reported that turnover was beneficial to their school and allowed for a positive culture shift.

Several subject areas have potentials for future shortages. Chemistry, high school mathematics, physics, engineering technology, and world languages were reported by more than half of school principals as having no applicants or no satisfactory applicants in the most recent school year and fewer or considerably fewer applicants compared to five years ago. More than 20 percent of current teachers in these subjects have more than 20 years of experience and will be eligible for retirement in the next few years. These were also areas where teacher preparation programs produced fewer graduates.

Principals reported different strategies in addressing teacher shortages. Some principals reported eliminating a class or classes, most commonly world languages. Some principals avoided eliminating classes by combining classes, increasing class sizes, switching to online courses, renewing non-effective, non-tenure teachers, teachers teaching during their planning period, and hiring emergency certified, out-of-field, or long-term substitute teachers.

Principals reported that insufficient salary and benefits compared to private industry was an extreme barrier to recruiting and retaining teachers. A lack of qualified candidates for a particular subject and a lack of qualified candidates in general were also barriers. Approximately half of principals reported that qualifications for some subjects present a challenge to recruiting teachers, including math, science, exceptional children, and health science, particularly the long-term care requirement.

Many principals prioritized recruiting and retaining teachers and have policies, practices, strategies, and advantages to do so, including supports for new teachers.

The report makes two recommendations:

Recommendation 2.1

In publishing critical shortage areas and regions approved by the United States Department of Education, the Kentucky Department of Education should also consider publishing the methodology and associated data used to determine critical shortage areas.

Recommendation 2.2

The Kentucky Department of Education should consider a method to differentiate between positions that are open and those that have been unfilled for a long period of time in the Kentucky Educator Placement System.

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Chapter 1

Teacher Shortages, Teacher Turnover, And Supports For New Teachers

Introduction And Overview

Teacher shortages occur when the supply of available and qualified teachers cannot meet the demand for teachers with specific subject and grade level certification or when there are fewer quality applicants than there are open positions. Under these circumstances, teaching positions are unfilled or filled by teachers that may not have adequate knowledge or experience, which can result in teacher turnover. Teacher turnover is defined as the percent of teachers from the previous year that did not return to the same location as teachers in the current year. This report offers an overview of teacher certification before exploring teacher shortages and teacher turnover by region, school demographics, and certification type. Supports for new teachers are also explored.

This report reviews teacher certificates as direct and indirect indicators of teacher shortages, both overall and by subject and level between school years 2010 and 2019, and concluded that a small percentage of teachers held emergency certificates and alternative certificates. However, reports from principals reveal that teacher shortages are occurring not only in the number of available teachers but also in the quality of teachers. The shortages may not appear in the data for several reasons. Principals reported addressing teacher shortages by eliminating classes, combining classes, increasing class sizes, offering online courses, renewing non-tenure, non-effective teachers, and teachers teaching during their planning period. These strategies would not appear in the data as an indicator of shortages because they do not involve a teacher with an emergency certificate or an alternative certificate. In addition, principals reported hiring teachers of a lower quality rather than having an unfilled position, although these teachers may have been fully certified.

Description Of This Study

In December 2018, the Education Assessment and Accountability Review Subcommittee directed the Office of Education Accountability (OEA) to conduct research on teacher shortages, teacher turnover and supports for new teachers, including career

and technical education (CTE). The study agenda directed OEA to examine

- teacher turnover rates, including CTE;
- teacher turnover rates by district, region, school demographics, and certification types;
- the number of teachers with traditional, emergency, and alternative certificates including years taught, subject areas, and levels; and
- the association between teacher turnover and student outcomes.

Data Used For This Study

Data for this study was provided by the Kentucky Department of Education (KDE), the Kentucky Center for Statistics (KYSTATS), the Council for Postsecondary Education (CPE), and an OEA survey of Kentucky principals regarding teacher shortages, teacher turnover, and supports for new teachers. Appendix A includes a copy of the survey. Data from KDE included

- teacher certification information, including type, subject, and level;
- class information by teacher, including subject and level;
- certificates issued by Education Professional Standards Board (EPSB);
- unfilled positions from the Kentucky Educator Placement Service (KEPS) and KDE;
- critical shortage areas information; and
- Teaching Empowering, Leading, and Learning (TELL) Survey responses.

Data from CPE included candidates in teacher preparation programs. OEA provided KYSTATS with teachers who left the teaching profession between school years 2009 through 2017 and KYSTATS provided workforce status and industry employment of former teachers for fiscal years 2010 to 2018. See Appendix B for data notes.

This report includes A1 schools and CTE schools. An A1 school is a stand-alone school with a principal and may establish a school-based decision making council. CTE schools are local career and technical education centers (CTCs) and area technology centers (ATCs). This report refers to A1 schools as “schools” and specifies CTE schools when applicable.

The Office of Education Accountability conducted a survey of principals at schools and career and technical schools in Kentucky. The survey included both multiple choice and open-ended response

questions. Answers to open-ended questions were coded for multiple categories when necessary. For example, a response that mentioned increased training and student achievement effects would be coded once under the category of “training needs” and once under “effects on students.”

The response rate was 64.4 percent for school principals and 39.8 percent for CTE principals. Due to an initial low response rate to the full survey, OEA abbreviated the survey to one question to increase responses. The question was: “In your experience, which best describes the supply of teacher applicants in the following program areas?” The response rate to this question from the full survey and the abbreviated survey combined was 70.3 percent for school principals and 50.2 percent for CTE principals.

This report refers to school years by the year in which the school year ends. For example, the 2018-2019 school year is called the 2019 school year.

Alternative Routes To Teacher Certification. This report refers to teachers pursuing certification through one of eight alternative routes to full professional certification as holding alternative certificates. After completing the requirements of their alternative certification program, a teacher pursuing certification through an alternative route receives a professional certificate and is subject to certificate renewal requirements the same as other teachers with a professional certificate.

Major Conclusions

Overview Of Teaching Certificates

The number of emergency certificates declined from school year 2010 to 2013, then increased through 2019 to approximately the same level as in 2010, while the number of certificates issued through alternative routes increased by 7.9 percent. Between school year 2010 and 2019, the total number of teachers with emergency certificates and teachers attaining certification through alternative routes increased by 74 teachers.

Subject areas with relatively high percentages of teachers certified through alternative routes or teachers holding emergency certificates included preschool, exceptional children, chemistry, high school general science, biology and life sciences, and physics. The highest percentage was in chemistry (9.1 percent), followed by exceptional children teachers (8.3 percent) in school year 2019.

Between school years 2010 and 2019, 96.9 percent of teachers with emergency certificates held their emergency certificates for only one year. In school year 2019, 96.8 percent of teachers with emergency certificates were issued an emergency certificate for the first time.^a

Teacher Shortages And Supply

Chemistry, high school mathematics, physics, engineering technology, and world languages were reported by more than half of school principals as having no applicants or no satisfactory applicants in the most recent school year and fewer or considerably fewer applicants compared to five years ago. More than 20 percent of current teachers in these subjects have more than 20 years of experience, indicating that one in every five teachers will be eligible for retirement in the next few years and may need to be replaced.

These were also subject areas where teacher preparation programs produced fewer graduates compared to other subjects between school years 2014 and 2018. Furthermore, comparing these areas with the number of teachers with 20 years of experience or more indicates that the supply of teachers may not be adequate to meet the current or future need for teachers.

High school and middle school social studies, elementary education, and physical education were areas typically reported by principals as having generally enough or an abundance of applicants in the most recent school year. Principals reported the number of applicants for those subjects to be about the same or greater than in the recent past.

Teacher Turnover

Approximately 7.3 percent of all teachers left the teaching profession in Kentucky between academic years 2010 and 2018, amounting to approximately 28,000 teachers. Nearly one-third were beginning teachers with four or fewer years of experience and one-fifth had 26 or more years of experience.

Teacher turnover tends to decrease as the size of the geographic area of reference increases because teachers may move among

^a For this analysis, OEA included the school years 2010 through 2019. It is possible that a teacher with an emergency certificate in school year 2019 also held one prior to school year 2010.

schools within a district, region, or the state. In the past 10 years, average annual turnover has increased within all geographic levels. In school year 2019, average turnover was:

- 9.8 percent at the state level,
- 11.1 percent at the regional level,
- 14.4 percent at the district level, and
- 17.1 percent at the school level
 - 15.0 percent at elementary schools
 - 18.2 percent at middle schools
 - 16.8 percent at high schools

Schools with lower math and reading KPREP proficiency rates tended to have higher teacher turnover, higher percentages of minority students, higher percentages of students in poverty, and higher percentages of teachers with four or fewer years of experience.

The 2017 TELL Survey provided insights into teacher preference.

- Teachers who planned to continue teaching at their current school were more than twice as likely to say that their school was a good place to work and learn compared to teachers who planned to teach in a different school or district.
- Teachers in schools with lower turnover were more likely to rate their schools positively and less likely to report immediate plans to leave the schools.

Effects Of Teacher Shortages And Turnover

Common themes emerged when principals were asked about the effects of teacher shortages and teacher turnover.

- Principals reported that when turnover is high, schools have difficulty carrying out organizational goals and building relationships with students, parents, and the community.
- Quality replacement teachers are often limited and schools must spend time and resources training new teachers.
- Student achievement, disciplinary issues, and school culture can be negatively affected by new and inexperienced teachers.
- Some principals reported that turnover was beneficial to their school and allowed for a positive culture shift.

Principals reported different strategies in addressing teacher shortages:

- Some principals reported eliminating a class or classes to address teacher shortages, most commonly world languages.
- Some principals avoided eliminating classes by
 - combining classes,
 - increasing class sizes,
 - switching to online courses,
 - renewing non-tenure, non-effective teachers,
 - teachers teaching during their planning period, and
 - hiring emergency certified, out-of-field, or long-term substitute teachers.

Recruiting Teachers, Retaining Teachers, And Supports For New Teachers

Principals reported that insufficient salary and benefits compared to private industry was an extreme barrier to recruiting and retaining teachers. A lack of qualified candidates for a particular subject and lack of qualified candidates in general were also barriers.

Approximately half of all principals reported that qualifications for some subjects present a challenge to recruiting teachers, including math, science, exceptional children, and health science, particular the long-term care requirements.

Many principals prioritized recruiting and retaining teachers and have policies, practices, strategies, and advantages to do so, including supports for new teachers.

Organization Of The Report

Chapter 1. Chapter 1 introduces the study agenda and data used for the report. This chapter summarizes major conclusions and continues by reviewing national trends in teacher shortages, placing Kentucky in context with the rest of the nation.

Chapter 2. Chapter 2 reviews the types of teaching certificates in Kentucky and discusses current teachers by certificate type, including teachers with traditional, provisional, emergency, and alternative certificates. Teachers with emergency certificates and teachers who pursued certification through one of the eight alternative routes are discussed as a percentage of all teachers by subject and level. The report also examines the number of years taught by teachers with emergency certificates and teachers who became certified through an alternative pathway.

Chapter 2 reviews direct and indirect indicators of teacher shortages and provides two calculations of teacher shortages. The quality and supply of teachers is analyzed based on survey results, teachers nearing retirement eligibility, and teacher preparation program completer. Subject areas with potential shortages are discussed. Teacher recruitment strategies and barriers to recruitment as reported by school and CTE principals are summarized.

Chapter 3. Chapter 3 provides an overview of teacher turnover in Kentucky. Turnover by geographic area, grade level, school demographic characteristics, and certificate type are analyzed. The effects of teacher turnover on student outcomes as reported by principals and turnover related to student math and reading Kentucky Performance Rating for Educational Progress (K-PREP) test scores are reviewed. This chapter concludes with school-level and state-level efforts to retain existing teachers and to support new teachers.

National Trends In Teacher Shortages

Most estimates of teacher shortages and attrition focus on the national level rather than on state-level data.¹ The U.S. Department of Education analyzed results from the 2012-2013 Teacher Follow-Up Survey and found that national teacher attrition was approximately 16 percent in the 2012 school year.² The Learning Policy Institute analyzed several data sources and found that national teacher shortages are caused by declining teacher preparation program enrollment, districts' efforts to offer classes and programs, increasing student enrollment, and teacher attrition. Furthermore, the report found that schools with higher poverty and higher minority student populations tend to have higher attrition. However, the survey data sources referenced by the Learning Policy Institute were primarily from before 2014.³

Kentucky In The National Context. The Learning Policy Institute analyzed 2012 and 2013 survey data from the National Center for Education Statistics and found that teacher turnover varies by state. Kentucky was found to be have the 15th highest turnover at approximately 15 percent.⁴ Using 2012 data from the National Center for Education Statistics, INSIDER found that Kentucky ranked 18th in the nation for teachers with fewer than three years of experience.⁵ Table 1.1 shows how Kentucky and neighboring states rank among the nation.

Table 1.1
State Rankings Of Teacher Turnover
And Teachers With Fewer Than Three Years' Experience

	Teacher Turnover, 2012 and 2013	Teachers With Fewer Than Three Years' Experience, 2012
Kentucky	15%	18%
Illinois	41	N.A.
Indiana	16	20
Missouri	22	16
Ohio	29	N.A.
Tennessee	28	13
West Virginia	45	9
Virginia	20	N.A.

Note: Only the top 20 states with teachers with fewer than three years' experience were available from the source.

Source: INSIDER and the Learning Policy Institute.

Critical Shortage Areas. States report critical shortage areas to the U.S. Department of Education every year. Most recently, Kentucky identified nine subject areas in at least one local workforce area for school year 2020 based on 2019 data. Table 1.2 shows these subject areas and the number of states, including Kentucky, reporting these areas as critical shortage areas. Nearly every state reported shortages in math teachers, exceptional children teachers, and science teachers, while more than half reported shortages in language arts teachers, world languages teachers, ESL teachers and career and technical education teachers. Less common shortage areas were social studies, health and physical education, and early childhood education.

Table 1.2
Teacher Shortage Areas Identified In Kentucky
And Other States
School Year 2020

Subject	States
Mathematics	48
Exceptional Children	47
Science	46
Language arts	38
World languages	37
English as a second language	35
Career and technical education	34
Social studies	23
Health and physical education	19
Early childhood	11

Source: Staff analysis of data from the U.S. Department of Education Teacher Shortage Area Data.

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¹ Jennifer Thomsen. “Response to Information Request: Your Question: You Asked for State-level Data Around Teacher Attrition.” *Education Commission of the States*. June 23, 2016. Web. Accessed Sept. 26, 2019.

² Rebecca Goldring, Soheyla Taie, and Minsun Riddles. *Teacher Attrition and Mobility: Results From the 2012-13 Teacher Follow-up Survey (NCES 2014-077)*. U.S. Department of Education. Washington, D.C.: National Center for Education Statistics. Sept. 2014. Web. Accessed Sept. 26, 2019.

³ Lieb Sutcher, Linda Darling-Hammond, and Desiree Carver-Thomas. *A Coming Crisis in Teaching? Teacher Supply, Demand, and Shortages in the U.S.* Palo Alto, CA: Learning Policy Institute. Sept. 2016. Web. Accessed Sept. 26, 2019.

⁴ Ibid.

⁵ Mark DeGuerin. “The 20 States With the Highest Number of Inexperienced Teachers.” *INSIDER*, Aug. 6, 2019. Web. Accessed Sept. 26, 2019.

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Chapter 2

Teaching Certificates Overview And Teacher Shortages

Introduction

This chapter describes the types of certificates available to teachers in Kentucky and shows that most teachers attain certification through traditional routes, although the number of alternative certificates and emergency certificates has increased slightly over the past ten years. This chapter shows teachers with alternative certificates and emergency certificates as a percentage of all teachers by subject and level.^a In the past ten years, teachers with alternative certificates were 1.8 percent of all teachers and teachers with emergency certificates were 0.7 percent of all teachers.

The chapter reviews measures of teacher shortages and provides two methods of calculating teacher shortages based on direct and indirect indicators. The supply of teachers from teacher preparation programs and from principals' reported experiences with applicants for teaching positions are discussed and placed in the context of current teachers with alternative certificates, teachers with emergency certificates, and teachers nearing retirement. Physics, chemistry, high school math, science, engineering technology, and world languages are areas with potential future shortages.

This chapter concludes with a review of programs in Kentucky to address teacher shortages and methods used by school principals and CTE school principals to recruit teachers.

Routes To Certification

The Education Professional Standards Board (EPSB) issues teaching certificates and is responsible for the preparation and certification of educators in Kentucky, including establishing standards and requirements for teacher preparation programs' teaching certificates. Table 2.1 shows different types of certificates available for Kentucky teachers.

^a This report refers to teachers pursuing certification through one of the eight alternative routes as holding alternative certificates while pursuing full professional certification. When these teachers attain full professional certification, they are no longer considered teachers with alternative certificates.

Table 2.1
Types Of Teaching Certificates Available In Kentucky

Certificate Type	Description
Traditional	Professional teaching certificate earned by completing a traditional certification program, usually part of a four-year bachelor's degree program.
Emergency	Allows a college graduate to fill a position for a maximum of one year with one renewal under certain circumstances. Requires a district board of education to demonstrate an inability to hire a qualified teacher to the Office of Educator Licensure and Effectiveness before the Office of Educator Licensure and Effectiveness issues an emergency certificate.
Alternative	Allows a distinguished and skilled person to pursue one of eight alternative routes to certification.
Endorsement	Additional certification for specific subjects or grades.
Provisional	Permits teaching while candidates complete requirements such as coursework, KTIP, and licensure exams.
Conditional	Issued for up to one year for a teaching candidate who has completed a teacher preparation program but failed at least one Office of Educator Licensure and Effectiveness assessment.
Limited	One-year certificate with renewal up to 3 years.
Probationary	Permits out-of-field teaching while pursuing certification in a subject area or grade.
Temporary	Issued for up to six months for out-of-state teachers who have not yet completed Kentucky teaching assessments.
Vocational	Professional certificates attained through non-traditional routes.

Source: Staff analysis of Kentucky Revised Statutes, Kentucky Administrative Regulations, and the EPSB Certificate Reference Guide.

In August 2018, the administrative functions of the Education Professional Standards Board (EPSB) were transferred to the newly created Office of Educator Licensure and Effectiveness under KDE. The reorganization was intended to improve educator preparation, certification, and discipline.¹ Table 2.2 provides an overview of statutes and regulations related to teacher certification.

Table 2.2
Statutes And Regulations Related To Teacher Certification

Statute Or Regulation	Description
KRS 156.106	Defines critical shortage areas and authorizes the Kentucky Board of Education to promulgate administrative regulations to address critical shortage areas.
KRS 161.010 through 161.123	Certification of school employees.
KRS 161.030	Authorizes the Education Professional Standards Board to certify teachers and discusses types of certification.
KRS 161.048	Establishes alternative routes to certification.
KRS 161.165	Addresses recruitment of minority teachers.
KRS 164.769	Establishes a teacher scholarship program for eligible teachers.
KAR Title 16	Regulations for the Educational Professional Standards Board, including standards for certified teachers, teaching certificates, educator preparation, assessment, teacher ranking system, and alternative routes to certification.

Source: Staff compilation of Kentucky Revised Statutes and Kentucky Administrative Regulations.

Traditional Certification. To become a teacher in Kentucky, candidates traditionally complete an approved teacher preparation program in Kentucky, usually as part of a four-year bachelor’s degree program. These programs include coursework related to the subject of certification and supervised classroom teaching experiences, after which candidates pass required certification exams for each area of certification. Previously, teaching candidates were required to complete the Kentucky Teacher Internship Program (KTIP) within their first year of teaching. House Bill 200 (2018) did not fund KTIP notwithstanding KRS 161.030, which had the effect of suspending KTIP. As a result, teachers in the process of attaining certification through the traditional and alternative routes who have met all other requirements of KRS 161.030 are now issued a five year professional certificate.²

Alternative Certification Routes. The General Assembly recognized that Kentucky students could benefit from being taught by distinguished professionals with valuable work experiences. KRS 161.048 authorizes eight alternative routes to professional teaching certification. Table 2.3 describes the eight options available to candidates pursuing alternative routes to certification. Approved candidates receive a one-year provisional certification from EPSB and must fulfill other requirements to earn a professional teaching certificate. Teachers following alternative pathways to certification also participated in KTIP before it was suspended. Appendix C details the program requirements for each option specified in KRS 161.048.

Table 2.3
Alternative Certification Route Options Available In Kentucky

Alternative Certification Option	Description
Option 1, Exceptional Work Experience	Exceptional work experience; requires a bachelor’s degree or graduate degree.
Option 2, Local District Training	Certification through a local school district training program; requires a bachelor’s degree or graduate degree.
Option 3, College Faculty	Certification of a professional from a postsecondary institution; requires a master’s degree or doctoral degree in the subject area of certification.
Option 4, Adjunct Instructor	Certification of an adjunct instructor in a specialty content area; requires a bachelor’s degree; requires a high school diploma to teach CTE.
Option 5, Veterans of the Armed Forces	Certification of a veteran of the Armed Forces; requires a bachelor’s degree or graduate degree.
Option 6, University Based	University alternative teacher preparation program for candidates already holding a bachelor’s degree or master’s degree.
Option 7, University Institute	Certification of a person in a field other than education; requires a bachelor’s degree in the subject area of certification.
Option 8, Teach for America	Certification of a Teach for America participant; requires a bachelor’s degree.

Source: Staff analysis of Kentucky Revised Statutes and Kentucky Administrative Regulations.

Table 2.4 shows the number of alternative certificates held by active teachers between school years 2010 and 2019. These years were chosen to provide information over ten years. Option 6 was the most common type of certificate, accounting for 74.6 percent of alternative certificates in school year 2019. This route allows a person with a bachelor's degree or graduate degree to teach while enrolled in a postbaccalaureate program to earn a full professional teaching certificate. KRS 161.048 requires candidates pursuing certification through Option 6 to successfully complete skills and knowledge assessments required by EPSB and detailed in 16 KAR 5:020.

Table 2.4
Teachers By Alternative Certification Route
School Years 2010 Through 2019

Route	2010	2019	2010-2019	2010	2019	2010-2019
Option 1	52	56	481	5.1%	5.1%	5.0%
Option 2	2	1	24	0.2	0.1	0.2
Option 3	63	68	1,021	6.2	6.2	10.6
Option 4	29	64	404	2.8	5.8	4.2
Option 5	38	46	334	3.7	4.2	3.5
Option 6	833	819	6,981	81.8	74.6	72.5
Option 7	1	0	8	0.1	0.0	0.1
Option 8	0	44	375	0.0	4.0	3.9
Total	1,018	1,098	9,628			

Note: This table represents certificates held by teachers. Teachers may hold more than one certificate.

Source: Staff analysis of data from the Kentucky Department of Education.

Emergency Certification. An emergency certificate may be issued when a district board of education is able to provide evidence to EPSB that a qualified candidate was not found, per KRS 161.100 and 16 KAR 2:120. An emergency certificate may be issued to a college graduate for a particular position for the duration of the school term. 16 KAR 2:120 requires districts to document that diligent efforts were made to find a qualified teacher and that applicants were not considered qualified. One-year renewals may be granted to the same person in a subsequent year if the first certificate was issued after February 15 or the emergency certificate was used to teach less than 50 percent of a teachers' class schedule. To become an emergency certified teacher, candidates must have at least a bachelor's degree but expertise in the content area of the position is not a requirement. Emergency certified teachers are often established teachers in other subjects.

Career And Technical Education Certification. Career and technical education (CTE) offers students career exploration and

preparation through both technical and academic instruction. In Kentucky, CTE is offered through comprehensive high schools, state-operated area technology centers (ATCs), and locally-operated career and technology centers (CTCs).

EPSB certifies career and technical education teachers based on occupational experience and initial certification does not require a bachelor's degree. Provisional certificates may be issued for one year to candidates holding at least an associate's degree or who are able to demonstrate appropriate occupational experience confirmed by EPSB. Teachers with provisional certificates must complete professional learning classes from the New Teacher Institute (NTI), a 24-month induction program for career and technical education teachers. Until the program was suspended, CTE teachers were required to enroll in the Kentucky Teacher Internship Program (KTIP) to continue teaching. Provisional certificates may be renewed up to five times for a total for six years to candidates that have enrolled in or completed an occupation-based degree teacher preparation program. Vocational certificates are professional certificates attained through non-traditional routes.

Endorsements. Kentucky teachers can become certified in additional subject areas after initial certification. Endorsements are held in addition to certificates and allow teachers to teach a particular subject or grade level. Teachers may be eligible for an endorsement if they already hold a teaching certificate or complete additional coursework, and successfully complete any applicable assessments.

Overview Of Teacher Certificates

To determine the subject and levels taught by teachers with each certificate type, teacher certification data from KDE were matched with categorized class data from the local educator assignment data (LEAD) report. Only instructional and career and technical education classes were included in this analysis. Teachers often hold multiple certificates and teachers held an average of 1.7 certificates in school year 2019. Table 2.5 shows the number of certificates held by active teachers between school years 2010 and 2019.

Table 2.5
Certificates Held By Active Teachers
School Years 2010 Through 2019

Certification Type	Number			Percent		
	2010	2019	2010-2019	2010	2019	2010-2019
Alternative	1,018	1,098	9,628	1.8%	1.9%	1.7%
Emergency	394	388	2,497	0.7	0.7	0.4
Provisional	18,757	14,339	172,355	33.7	24.5	29.9
Traditional	31,980	39,771	360,044	57.5	68.1	62.5
Vocational	3,320	2,659	29,888	6.0	4.6	5.2
Other	158	169	1,431	0.3	0.3	0.2
Total	56,669	59,967	588,771			

Note: "Other" includes conditional certificates, limited certificates, probationary certificates, and temporary certificates. This table represents certificates held by teachers. Teachers may hold more than one certificate. The Kentucky School for the Blind and the Kentucky School for the Deaf are excluded. Source: Staff analysis of data from the Kentucky Department of Education.

Teachers In Kentucky. Between school years 2010 and 2019, the number of teachers in Kentucky has decreased by 1,601 teachers and the number of teachers with alternative certificates and emergency certificates increased by 74. As a percentage of total teachers, the percent of teachers with alternative and emergency certificates was 3.2 percent in school year 2010 and 3.5 percent in school year 2019.^b Between these years, the number of students increased by 1,803 students, indicating that the ratio of students per teacher increased from 14.8 in school year 2010 to 15.4 percent in 2019.³

Traditional And Provisional Certificates. Traditional certificates were the most common certificate held by teachers between school years 2010 and 2019, accounting for 62.5 percent of certificates held between these years. In school year 2019, traditional certificates accounted for 68.1 percent, followed by provisional certificates (24.5 percent), vocational certificates (4.6 percent), alternative certificates (1.9 percent), and emergency certificates (0.7 percent).

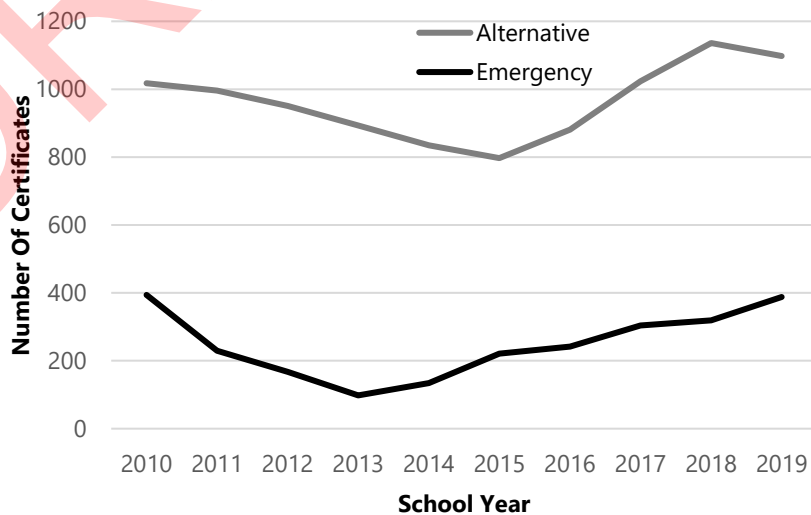
Teachers in the process of completing teacher preparation programs are issued provisional certificates and are usually beginning teachers or teachers pursuing full certification to teach additional subjects. From 2010 to 2019, 29.9 percent of all teachers were beginning teachers, although the percentage has decreased over time from 33.7 percent in 2010 to 24.5 percent in 2019.

^b The percent of total teachers with an alternative certificate was 2.6 percent in school year 2019 and the percent of total teachers with an emergency certificate was 0.9 percent in school year 2019.

Because provisional certificates also represent teachers following the traditional certification route, it can be useful to combine the number of traditional and provisional certificates. Together, traditional and provisional certificates accounted for 92.5 percent of certificates between school years 2010 and 2019, and 92.6 percent in school year 2019, indicating that the majority of teachers became teachers through the traditional certification route.

Alternative And Emergency Certificates. Figure 2.A shows the number of alternative and emergency certificates held by teachers between school years 2010 and 2019. Over time, the number of alternative certificates has increased by 7.9 percent. Emergency certificates declined from 2010 to 2013, then increased through 2019 to approximately the same number of teachers with emergency certificates as in 2010. Figure 2.A represents 95.3 percent of teachers with emergency certificates between school years 2010 and 2019. An additional 123 teachers with emergency certificates taught driver education, gifted education, media library, and prevention/alternative subjects during this time.

Figure 2.A
Alternative And Emergency Certificates
School Years 2010 To 2019



Source: Staff analysis of data from the Kentucky Department of Education.

Subject And Grade Levels Taught

It is common for teachers to hold multiple certificates and teach multiple subjects. In school year 2019, 38.2 percent of teachers with an emergency certificate also held another type of certificate. For the following analysis, teachers were counted by the subjects and levels in which they teach. For example, a teacher teaching

high school chemistry and high school art would be counted for each subject. This method best represents the loss a school would need to address should a teacher leave, especially if schools have asked teachers to cover multiple subjects.

Table 2.6 shows teachers with emergency certificates and teachers with alternative certificates as a percent of total teachers by subject and grade level. Appendix D shows this information in school year 2010.

Emergency Certificates. In school year 2019, a relatively high percentage of preschool teachers (4.9 percent) and exceptional children teachers (4.6 percent) held emergency certificates. Additional subjects with high percentages of teachers with emergency certificates were English as a second language (3.1 percent), chemistry (2.2 percent) and physics (2.0 percent).

Alternative Certificates. A higher percentage of teachers pursued certification through one of the eight alternative routes in chemistry (6.9 percent), high school general science (6.7 percent), biology and life sciences (6.2 percent), physics (5.4 percent), earth science (4.5 percent), high school English language arts (4.4 percent), high school math (4.4 percent), middle school science (4.1 percent), and world languages (4.1 percent).

Chemistry. The percent of chemistry teachers with emergency or alternative certificates decreased from 13.3 percent in 2010 to 9.1 percent in 2019, although the number decreased by only one teacher between those years.

Exceptional Children. The percent of teachers of exceptional children with alternative or emergency certificates increased from 7.7 percent in school year 2010 to 8.3 percent in school year 2019, although the number increased from 91 to 168, indicating that the need for teachers of exceptional children increased. Exceptional children teachers serve students with learning needs that require specialty training, and nearly 1 out of 10 exceptional children teachers do not necessarily have the expertise developed through traditional teacher preparation routes.

Physics. The number of physics teachers with alternative or emergency certificates increased from 19 to 30 between school years 2010 and 2019, although the percent decreased from 14.7 percent to 7.4 percent.

Elementary Education And Preschool. The number of elementary education teachers with alternative or emergency certificates nearly doubled between school year 2010 and 2019, although the increase as a percentage of total teachers was 0.2 percentage points. The number of preschool teachers with alternative or emergency certificates increased from 41 to 98 and the percentage increased from 4.3 percent to 7.7 percent.

World Languages And English As A Second Language (ESL). The count of teachers with alternative or emergency certificates in world languages and English as a second language and the number as a percent of total teachers decreased from school year 2010 to 2019. There were 98 world languages teachers and 44 ESL teachers with alternative or emergency certificates in school year 2010 compared to 65 world languages teachers and 16 ESL teachers with the alternative or emergency certificates in 2019. The percentage of world language teachers with alternative or emergency certificates decreased from 12.4 percent in school year 2010 to 5.7 percent in school year 2019 while the percentage of ESL teachers with alternative or emergency certificates decreased from 22.3 percent to 6.1 percent.

Table 2.6
Teachers With Alternative And Emergency Certificates
School Year 2010 Through 2019

Subject Area	Alternative		Emergency		All Active Teachers	
	2019	2010-2019	2019	2010-2019	2019	2010-2019
Elementary Education						
Elementary Education	1.2%	0.8%	0.1%	0.1%	17,316	142,172
Preschool	2.8	1.0	4.9	2.5	1,275	11,193
Other	0.6	0.4	0.0	0.0	1,373	9,816
Middle School						
Computer Science	3.7	2.9	0.5	0.2	217	1,799
English Language Arts	3.4	3.3	1.0	0.4	2,663	27,479
Mathematics	2.7	3.7	0.6	0.4	2,220	20,185
Sciences	4.1	4.1	1.3	0.6	1,759	15,798
Social Studies	3.8	3.1	0.4	0.3	1,587	16,026
Other	2.6	2.4	0.0	0.0	1,331	15,563
High School						
Accounting and Financial	2.8	3.8	0.0	0.0	109	1,136
Biology and Life Sciences	6.2	5.9	1.0	0.7	1,111	10,836
Chemistry	6.9	6.0	2.2	2.4	637	4,943
Computer Science	3.0	3.1	1.2	0.5	168	1,200
Earth Science	4.5	4.8	1.3	1.4	379	3,430
English Language Arts	4.4	4.1	0.5	0.3	3,056	28,742
Mathematics	4.4	4.6	1.0	0.7	2,581	24,592
Physics	5.4	5.6	2.0	1.9	405	2,514
General Science	6.7	6.9	0.5	0.2	973	10,422
Social Studies	3.5	3.3	0.2	0.2	2,060	21,238
Other	3.3	3.6	0.0	0.0	1,854	19,723
Any Grade						
English as a second language	3.1	5.0	3.1	4.2	261	2,063
Health and Physical Education	2.1	2.3	1.1	1.0	1,385	10,192
Music	1.5	1.2	0.9	0.4	924	8,868
Exceptional Children	3.7	1.7	4.6	3.6	2,028	14,796
Visual and Performing Arts	3.8	3.7	0.4	0.2	1,661	13,119
World Languages	4.1	6.3	1.6	1.8	954	8,693

Note: All active teachers represents the number of teachers per subject regardless of certificate held.

Source: Staff analysis of data from the Kentucky Department of Education.

Career And Technical Education Subjects

Table 2.7 shows the percentage of CTE teachers with alternative and emergency certificates by subject. In school year 2019, most CTE subjects with high percentages of teachers with alternative certificates or emergency certificates also had very few total teachers, meaning that even a few teachers with alternative certificates or emergency certificates were a large percentage of all

teachers by subject. The following analysis refers to subjects with more than 25 total teachers.

Emergency Certificates. In general, less than 1 percent of CTE subject teachers held emergency certificates. A relatively high percentage of family and consumer science teachers (1.1 percent) and JROTC teachers (1.3 percent) held emergency certificates in school year 2019.

Alternative Certificates. A high percentage of CTE teachers attained certification through one of the eight alternative routes in law and public services (14.0 percent) and business and marketing (5.8 percent). Other subjects with relatively high percentages of teachers with alternative certificates include family and consumer sciences (3.9 percent), engineering technology (3.4 percent), information technology (3.3 percent), and construction (3.1 percent).

Table 2.7
CTE Teachers With Alternative And Emergency Certificates
School Years 2010 Through 2019

Subject Area	Alternative		Emergency		All Teachers	
	2019	2010-2019	2019	2010-2019	2019	2010-2019
Agriculture	1.7%	1.1%	0.6%	0.5%	343	3,006
Automotive Technology	0.0	6.1	0.0	0.2	83	859
Business and Marketing	5.8	4.9	0.5	0.4	935	8,117
Construction	3.1	6.7	0.0	1.1	98	974
Engineering Technology	3.4	5.2	0.3	0.8	323	2,415
Family and Consumer Sciences	3.9	2.7	1.1	1.4	569	5,133
General CTE	1.5	5.7	0.0	0.1	201	771
Health Science	1.3	10.2	0.0	0.8	387	2,759
Industrial Maintenance	0.0	8.9	0.0	1.1	55	358
Information Technology	3.3	3.5	0.0	0.5	276	1,971
JROTC	1.9	2.7	1.3	0.8	160	1,701
Law and Public Services	14.0	15.6	0.0	0.3	57	358
Media Arts	1.3	5.5	0.0	3.2	77	218
Welding	0.0	6.1	0.0	0.5	91	935
Other	2.0	6.0	0.5	0.8	198	2,301

Note: The subjects career and technical education general and media arts did not appear in the data until school year 2016. All active teachers represents the number of teachers per subject regardless of certificate held. "Other" includes subjects with fewer than 50 total teachers.

Source: Staff analysis of data from the Kentucky Department of Education.

Average Years Taught With Alternative Certificates And Emergency Certificates. 16 KAR 2:120 prohibits emergency certificates from being issued to the same person in any subsequent year unless the certificate was issued after February 15 of the previous year or accounted for less than 50 percent of a teachers' class schedule. As written, the regulation specifies subsequent year rather than consecutive year, indicating that any individual teacher may only hold an emergency certificate once, with the potential for re-issuance.

KRS 161.028(1)(2) allows school districts to request that EPSB waive administrative regulations pertaining to K-12 education. EPSB may approve waiver requests if the school or school district can show that the alternative approach will fulfill the purpose of the administrative regulation, that the school would otherwise experience a hardship, or if there is good cause. Waivers may be requested for the administrative regulations pertaining to emergency certificates and certificates gained through the eight alternative routes.

Before issuing an emergency certificate to a candidate, EPSB verifies that the candidate has not previously held an emergency certificate. EPSB issues subsequent emergency certificates based on the issue date of the original emergency certificate. If the original certificate was issued after February 15, the subsequent emergency certificate is approved. If the original certificate was issued before February 15, EPSB refers to the percentage of class schedule to be taught with the emergency certificate as reported on the original application. If the original emergency certificate was issued for less than the person's class schedule, the subsequent emergency certificate is approved.⁴

Years Serving With Emergency Certificates. Between school years 2010 and 2019, 96.9 percent of teachers with emergency certificates held their emergency certificates for one year only. In school year 2019, 96.8 percent of teachers were issued an emergency certificate for the first time.^c This indicates that teachers with emergency certificates are in compliance with issuance and renewal restrictions in 16 KAR 2:120.

School Year 2019. In school year 2019, 406 teachers were issued emergency certificates, as shown in Table 2.8. Of these, one teacher held an emergency certificate in 2017, one teacher held an

^c For this analysis, OEA included the school years 2010 through 2019. It is possible that a teacher with an emergency certificate in school year 2019 also held one prior to school year 2010.

emergency certificate in 2016 and 2017, and 11 teachers held emergency certificates in school year 2018. Of the 11 emergency certificates issued in 2018, four were issued after February 15, 2018 and two were issued for less than 50 percent of the teachers' 2018 schedules.^d The remaining five teachers were issued a second subsequent emergency certificate when their district requested a one year waiver of 16 KAR 2:120 because they were unable to fill those positions.⁵

Table 2.8
Teachers Receiving Emergency Certificates
School Year 2019

Certificate Information	Number Of Teachers
Teachers issued emergency certificate	406 teachers
First time issuance	393 teachers (96.8 percent)
Held an emergency certificate in 2017	1 teacher
Held an emergency certificate in 2016 and 2017	1 teacher
Held an emergency certificate in 2018	11 teachers
Original issued after February 15	4 teachers
Original issued for less than 50% of schedule	2 teachers
Waiver for subsequent emergency certificate	5 teachers

Source: Staff analysis of data from the Kentucky Department of Education.

Years Serving With Alternative Certificates. KRS 161.048 specifies the number of years that certificates issued through the eight alternative routes may be issued, and specifies renewal limitations in some circumstances. In general, certificates issued through the eight alternative routes are issued for one year and regulations within KAR Chapter 16 allow for renewals. Districts may request a waiver from EPSB for administrative regulations pertaining to alternative certificates.

OEA based the number of years serving with alternative certificates on teachers whose first year of teaching was school year 2011.^e Table 2.9 compares the number of years that teachers with alternative certificates taught with an alternative certificate and the number of years taught overall between school years 2011 and 2019. Teachers whose first year teaching with a traditional certificate are included for comparison.

^d Two of these certificate appear in the data with an effective date of February 15, 2018. OEA discussed these certificates with KDE. KDE reported that these certificates were issued after February 15, 2018.

^e OEA determined that 2011 was the teachers' first year teaching by verifying that the teacher did not appear in data from previous years as a teacher. It is possible that teachers in the analysis taught in years prior to 2008.

Nearly all teachers whose first year teaching with an alternative certificate in 2011 (98.4 percent) taught for three years or less with an alternative certificate; however, 74.3 percent of teachers continued teaching for more than three years after pursuing professional certification through an alternative route. Percentages are similar for teachers who began teaching with an alternative certificate and teachers who began teaching with a provisional or traditional certificate.

Table 2.9
Number Of Years Taught By 2011 First Year Teachers
School Years 2011 To 2019

Years Teaching	Teachers Issued Alternative Certificates In 2011		Teachers Using Traditional Certification Pathways
	Teaching With An Alternative Certificate	Total Years Teaching	
1 or less	40.5%	10.9%	11.9%
2	38.2	7.5	9.8
3	19.6	7.3	7.7
4	0.5	5.9	6.4
5	0.4	7.0	7.1
6	0.0	5.0	5.2
7	0.0	8.8	6.0
8	0.0	7.5	7.9
9	0.7	40.2	37.9
Total teachers	560	560	3,413

Source: Staff analysis of data from the Kentucky Department of Education.

Measuring Teacher Shortages

The U.S. Department of Education requires states to report shortage areas for geographic regions, grade levels, or subject areas based on unfilled positions, positions filled by teachers with irregular, provisional, temporary, or emergency certificates; and out-of-field teachers in accordance with 34 CFR sec. 682.210(q). States may also propose alternative measures for approval. Teacher shortage areas are used to determine eligibility for student loan forgiveness programs.⁶

Kentucky Definition. Kentucky statutes do not specify how shortage areas should be determined. Instead, KRS 156.106 defines critical shortage areas as a “lack of certified teachers in particular subject areas, in grade levels, or in geographic locations” and gives the Commissioner of Education the authority to determine these areas based on any reliable source. KDE calculates shortage areas based on unfilled positions and positions filled with alternatively certified teachers, emergency certified teachers, and out-of-field teachers.⁷ While not required to do so, KDE does not

currently publish the methodology for determining critical shortage or the data required to determine critical shortages.

Recommendation 2.1

In publishing critical shortage areas and regions approved by the United States Department of Education, the Kentucky Department of Education should also consider publishing the methodology and associated data used to determine critical shortage areas.

Out-Of-Field Teachers. 16 KAR 2.120 defines out-of-field teachers as teaching a subject without holding certification for that subject. Out-of-field teachers increased both shortage positions calculations by more than 1 percentage point in earth science, high school general sciences, health and physical education, music, and visual and performing arts, and approximately 23 percentage points in media arts.

Unfilled Positions. Determining unfilled positions versus open positions is difficult with the information available on the Kentucky Educator Placement Services (KEPS) website. Vacant teaching positions are posted on KEPS until a district sends notification that a candidate has been hired. If a position is unfilled, it remains on KEPS. Currently there is no information provided on KEPS to explain the process of position postings or the difference between an unfilled position and an open position. This has caused public confusion regarding teacher shortages in Kentucky for the 2020 school year. In a Courier Journal article, a spokesperson for KDE said, “We are obviously reliant on the districts to update the data right now, and because of the lag time of doing background checks, we can’t have an updated number of vacancies.”⁸ KDE is in the process of creating a new platform featuring more real-time data.^f

Recommendation 2.2

The Kentucky Department of Education should consider a method to differentiate between positions that are open and those that have been unfilled for a long period of time in the Kentucky Educator Placement System.

Statewide Critical Shortage Areas. Critical shortage areas are considered to be statewide if they appear in ten local workforce

^f Between May and August 2019, there were 470 unfilled positions for the 2020 school year as of September 26, 2019.

areas (LWAs).⁹ This did not happen for the school year 2020 based on data from school year 2019, but exceptional children appeared as a shortage in eight LWAs, early childhood education appeared in six LWAs, and science appeared in five LWAs.

Shortage Indicators

Determining shortage positions depends upon the measures included in the calculation. This report will compare two calculations of teacher shortages. For each calculation, the denominator is the number of all active teachers in Kentucky regardless of certificate held. These calculations are not the calculations used by KDE in determining critical shortage areas.

Calculation 1. Calculation 1 includes teachers holding alternative certificates, emergency certificates, unfilled positions, and out-of-field teachers in the numerator.

Before an emergency certificate can be issued, KRS 161.100 requires a district board of education to satisfy the EPSB that a qualified teacher was not found and 16 KAR 2:120 requires that the superintendent and board of education document that diligent efforts were made to find a qualified teacher but were unsuccessful. Therefore, teachers with emergency certificates can be considered direct indicators of teacher shortages.

Calculation 2. To hire a teacher with an alternative certificate, schools do not have to prove that an otherwise qualified teacher was unavailable. Teachers with alternative certificates can be considered indirect indicators of teacher shortages. The numerator in Calculation 2 excludes alternative certificates and include only emergency certificates, unfilled positions, and out-of-field teachers.

Table 2.10 shows teacher shortage positions during school year 2019 as measured by Calculation 1 and Calculation 2.[§]

[§] Because the posted positions used in this analysis were acquired one year after their posting date in May through August 2018 for the 2019 school year, the districts had time to remove any postings that were filled and the unfilled positions used in this analysis should represent the true unfilled positions for school year 2019.

Table 2.10
Calculations Of Teacher Shortage Areas
School Year 2019

	Calculation 1	Calculation 2
Numerator	Alternative Certificates + Emergency Certificates + Unfilled Positions + Out-of-Field	Emergency Certificates + Unfilled Positions + Out-of-Field
Denominator	All active Kentucky teachers	All active Kentucky teachers
Shortage positions as a percent of all teachers	3.9%	1.4%

Source: Staff analysis of data from the Kentucky Department of Education.

Calculation 1 indicates that 3.9 percent of all teaching positions across Kentucky could be considered shortage positions, while Calculation 2 indicates that shortage positions amounted to 1.4 percent. Excluding teachers with alternative certificates accounts for this decrease.

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Table 2.11
Shortage Positions As A Percentage Of All Teaching Positions
School Year 2019

Subject Area	Calculation 1	Calculation 2
Elementary Education		
Elementary Education	1.9%	0.6%
Preschool	7.9	5.1
Other	0.9	0.3
Middle School		
Computer Science	4.1	0.5
English Language Arts	5.2	1.8
Mathematics	4.0	1.3
Sciences	6.3	2.2
Social Studies	4.3	0.6
Other	3.0	0.5
High School		
Accounting and Financial	2.8	0.0
Biology and Life Sciences	7.2	1.0
Chemistry	9.1	2.2
Computer Science	4.2	1.2
Earth Science	7.1	2.6
English Language Arts	5.9	1.5
Mathematics	6.2	1.8
Physics	7.9	2.5
General Science	8.7	2.1
Social Studies	4.0	0.5
Other	3.7	0.4
Any Grade		
English as a Second Language	6.9	3.8
Health and Physical Education	4.8	2.7
Music	4.3	2.8
Exceptional Children	9.3	5.6
Visual and Performing Arts	5.7	1.9
World Languages	6.5	2.4
CTE Subjects		
Agriculture	2.9	1.2
Automotive Technology	0.0	0.0
Business and Marketing	6.3	0.5
Construction	3.1	0.0
Engineering Technology	3.7	0.3
Family and Consumer Sciences	4.9	1.1
General	1.5	0.0
Health Science	1.3	0.0
Industrial Maintenance	0.0	0.0
Information Technology	3.3	0.0
JROTC	3.8	1.9
Law and Public Services	14.0	0.0
Media Arts	24.7	23.4
Welding	5.5	5.5
Other	4.0	2.0

Source: Staff analysis of data from the Kentucky Department of Education.

Comparing Calculations By Subject. Table 2.11 shows the percent of teaching positions in Kentucky that are shortage positions under Calculation 1 and 2. In general, including alternative certificates in the calculations increases the percent of shortage positions in each subject. Under Calculation 2, the percentage of shortage areas increases to more than 5 percent in 14 additional shortage areas compared to Calculation 1. Shortage positions are more than five percent in preschool, exceptional children, media arts, and welding under both calculations.

The Supply of Teachers

Candidates In Teacher Preparation Programs

Teachers pursuing certification through teacher preparation programs generally complete a four-year bachelor's degree program or an advanced degree program to further their teaching career. The Kentucky Council for Postsecondary Education (CPE) provided data from the Kentucky postsecondary data system (KPEDS) on teacher preparation completion at Kentucky institutions, including enrollment, degree attainment, sex, and race. Programs of study are general and do not necessarily correspond to teaching certificate subjects obtained by program completers. Table 2.12 shows the number of teacher preparation program completers by subject for school years 2014 through 2018.

Table 2.12
Candidates Completing Teacher Preparation Programs
School Years 2014 Through 2018

Subject	2014	2015	2016	2017	2018	2014-2018	
						Total	Percent
Academic Subjects							
English/Language Arts	337	365	330	295	317	1,644	11.8%
Mathematics	51	45	42	64	61	263	1.9
Social studies	57	55	52	53	47	264	1.9
Sciences, all	30	16	23	39	20	128	0.9
Additional Subjects							
English as a Second Language	31	24	30	15	22	122	0.9
Health and Physical Education	307	368	362	374	314	1,725	12.3
Music	102	116	95	101	115	529	3.8
Exceptional Children	452	372	368	338	368	1,898	13.6
Visual and Performing Arts	19	13	9	17	12	70	0.5
World Languages	18	15	13	18	22	86	0.6
School Level Preparation							
Elementary Education and Earlier	1,106	850	957	850	823	4,586	32.8
Intermediary Education, General	240	209	173	174	222	1,018	7.3
Secondary Education, General	141	153	132	144	167	737	5.3
Career and Technical Education Subjects							
Agriculture	17	6	9	11	13	56	0.4
Business	13	17	17	9	12	68	0.5
Family and Consumer Sciences	29	36	37	30	31	163	1.2
Health Science	1	0	2	3	2	8	0.1
Manufacturing Technology	0	2	0	0	0	2	0.0
Trade, Technology, and Industrial Education	123	110	100	130	150	613	4.4
Total	3,074	2,772	2,751	2,665	2,718	13,980	100.0

Source: Staff analysis of data from the Kentucky Council for Postsecondary Education.

Subject Areas. One third (32.8 percent) of all teacher preparation program completers between school years 2014 and 2018 completed program areas for elementary education and earlier, including pre-school. Exceptional children (13.6 percent), health and physical education (12.3 percent), and English language arts (11.8 percent) also had a relatively high portion of program completers.

A smaller percentage of teacher preparation program completers pursued areas such as mathematics (1.9 percent), any of the sciences (0.9 percent), English as a second language (0.9 percent), world languages (0.6 percent), or career and technical education subjects (6.6 percent combined).

Degrees Attained. Between school years 2014 and 2018, 64.5 percent of teacher preparation program completers received a bachelor's degree, 35.4 percent received a master's degree, and 0.1 percent received an associate's degree.

Demographics. Three-fourths (76.4 percent) of program completers were female, of which 87.9 percent were white. Few program completers were black (4.5 percent) or Hispanic (1.8 percent).^h

Principals' Experience With Teacher Preparation Program Completers. The OEA survey asked principals if they had experienced a change in the quality of beginning teachers from teacher preparation programs. Approximately half (52.7 percent) reported that the quality has been about the same. One-third (30.9 percent) reported that beginning teachers have been worse or much worse, and 16.4 percent reported that beginning teachers have been better or much better.

The Quality And Supply Of Teacher Applicants

The OEA survey asked school principals and CTE principals about the quality and supply of teacher applicants for program areas at their school. For each subject, percentages were calculated based on the total answers for that particular subject. Table 2.13 shows responses from school principals and Table 2.14 shows responses from CTE principals.

Subjects With Limited Applicants. Principals reported that high school physics, chemistry, engineering technology, transportation, manufacturing technology, high school math, and world languages were the most difficult subjects for which to find applicants. More than 50 percent of principals reported no applicants or no satisfactory applicants for these subjects.

The highest percent of principals reporting no available applicants was for physics (50.6 percent) and another 17.5 percent of principals reported that applicants were available but not satisfactory. In other words, 68.1 percent of principals were unable to find physics applicants. Only 3.6 percent of principals reported having generally enough or an abundance of satisfactory physics applicants.

Over 60 percent of principals reported no applicants or no satisfactory applicants for both chemistry and transportation, and approximately 56 percent reported being unable to find engineering and manufacturing technology applicants. Other subjects reported as having no applicants or no satisfactory

^h All data regarding program completers' race is categorized as "unknown" during the school year 2017. Race data refers to the school years 2014 through 2018, excluding school year 2017.

applicants were high school math (54.9 percent), and world languages (52.9 percent).

Between one third and one half of principals reported experiencing no applicants or no satisfactory applicants for family and consumer sciences (47.2 percent), construction technology (45.5 percent), English as a second language (42.9 percent), middle school science (40.0 percent), earth science (39.1 percent), information technology (38.8 percent), biology (36.0 percent), media arts (33.3 percent), middle school math (32.6 percent), and gifted (30.8 percent).

Principals commented that they have also experienced shortages in support roles such as guidance counselors, speech and language therapists, and school psychologists.

Subjects With Adequate Applicants. Principals reported experiencing generally enough or an abundance of satisfactory applicants in high school social studies (65.7 percent), elementary education (59.9 percent), physical education (53.8 percent), and middle school social studies (49.5 percent).

**Table 2.13
Supply And Quality Of Teacher Applicants
School Year 2019**

Subject	No available applicants	Applicants available but not satisfactory	Few satisfactory applicants	Generally enough or an abundance of satisfactory applicants	Responses
Elementary School					
Elementary education	2.2%	7.3%	30.6%	59.9%	372
Middle School					
English	9.6	12.0	38.3	40.2	209
Math	17.4	15.2	45.1	22.3	224
Science	14.9	25.1	41.4	18.6	215
Social studies	3.3	13.1	34.1	49.5	214
High School					
Agriculture	13.6	6.8	39.8	39.8	118
Biology	21.5	14.5	50.6	13.4	172
Business and marketing	12.5	15.3	49.3	22.9	144
Chemistry	42.2	20.8	34.1	2.9	173
Construction technology	28.4	17.0	42.0	12.5	88
Earth science	20.5	18.6	40.4	20.5	161
Engineering technology	39.7	16.7	40.5	3.2	126
English	6.1	11.2	36.3	46.4	179
Family and consumer sciences	31.9	15.3	36.8	16.0	144
Health sciences	15.6	12.9	39.5	32.0	147
Information technology	20.9	17.8	45.7	15.5	129
Manufacturing technology	38.6	17.0	35.2	9.1	88
Math	34.1	20.9	34.1	11.0	182
Media arts	17.5	15.9	45.2	21.4	126
Physics	50.6	17.5	28.3	3.6	166
Social studies	4.1	5.3	24.9	65.7	169
Transportation	43.1	19.4	31.9	5.6	72
Any Grade					
English as a second language	23.4	19.5	44.6	12.5	303
Exceptional children	9.6	19.4	43.1	27.9	499
World languages	31.5	21.5	36.8	10.3	340
Art	7.0	15.3	43.2	34.5	426
Music	6.6	11.5	44.7	37.2	454
Physical education	3.1	7.3	35.8	53.8	480
Gifted	13.6	17.2	44.1	25.1	390

Source: OEA survey.

Subjects With Limited Applicants, CTE Schools. Family and consumer sciences was the most difficult CTE subject to staff, with 40.0 percent of CTE principals reporting no applicants and another 12.0 percent reporting no satisfactory applicants available. Other subject areas reported as having no applicants or no satisfactory applicants were media arts (47.4 percent), engineering technology (46.9 percent), and construction technology (41.7 percent).

More than half of CTE principals reported few satisfactory manufacturing technology applicants (58.3 percent), health science applicants (54.8 percent), business and marketing applicants (52.3 percent), and information technology applicants (50.0 percent).

Subjects With Adequate Applicants, CTE Schools.

Approximately half of CTE principals reported generally enough or an abundance of satisfactory agriculture applicants (47.8 percent) and 31.8 percent reported generally enough or an abundance of satisfactory business and marketing applicants.

Table 2.14
Supply And Quality Of CTE Teacher Applicants
School Year 2019

Subject	No available applicants	Applicants available but not satisfactory	Few satisfactory applicants	Generally enough or an abundance of satisfactory applicants	Responses
Agriculture	13.0%	8.7%	30.4%	47.8%	23
Business and marketing	4.5	11.4	52.3	31.8	44
Construction technology	20.8	20.8	41.7	16.7	48
Engineering technology	18.8	28.1	40.6	12.5	32
Family and consumer sciences	40.0	12.0	28.0	20.0	25
Health sciences	11.3	19.4	54.8	14.5	62
Information technology	13.6	20.5	50.0	15.9	44
Manufacturing technology	14.6	16.7	58.3	10.4	48
Media arts	5.3	42.1	36.8	15.8	19
Transportation	6.7	17.8	62.2	13.3	45

Source: OEA survey.

Supply Of Teacher Applicants Compared To The Past

Principals were asked about the supply of teacher applicants by subject for the 2019 school year compared to the past five years by subject to understand the supply of teachers over time. Responses are summarized in Table 2.15 for school principals and Table 2.16 for CTE principals.

Supply of Applicants. Table 2.15 shows principals' responses regarding the current supply of teacher applicants compared to the past. More than 50 percent of principals reported fewer or considerably fewer applicants in 22 of 29 subjects. However, a few subjects stand out as particularly difficult to staff. Principals reported more difficulty finding teachers now compared to the past five years in chemistry (83.1 percent), high school math (82.2 percent), physics (81.1 percent), manufacturing technology (77.3

percent), engineering technology (74.1 percent), transportation (72.2 percent), and family and consumer sciences (70.8 percent).ⁱ

Table 2.15
Supply Of Teacher Applicants Compared To The Past Five Years
School Year 2019

Subject	Considerably fewer applicants	Fewer applicants	About the same or more	Responses
Elementary Education				
Elementary education	16.5%	25.8%	57.7%	279
Middle School				
English	20.7	32.4	46.9	145
Math	32.9	33.6	33.6	152
Science	34.0	35.5	30.5	141
Social studies	16.2	31.8	52.0	148
High School				
Agriculture	30.4	30.4	39.3	56
Biology	34.1	33.0	33.0	91
Business and marketing	20.3	37.7	42.0	69
Chemistry	47.0	36.1	16.9	83
Construction technology	33.3	31.0	35.7	42
Earth science	32.0	34.7	33.3	75
Engineering technology	37.0	37.0	25.9	54
English	17.7	27.1	55.2	96
Family and consumer sciences	46.2	24.6	29.2	65
Health sciences	29.8	24.6	45.6	57
Information technology	25.9	34.5	39.7	58
Manufacturing technology	36.4	40.9	22.7	44
Math	46.5	35.6	17.8	101
Media arts	29.7	25.0	45.3	64
Physics	56.8	24.3	18.9	74
Social studies	10.0	23.3	66.7	90
Transportation	38.9	33.3	27.8	36
Any Grade				
English as a second language	28.0	33.2	38.9	193
Exceptional children	22.4	33.1	44.5	326
World languages	32.2	35.1	32.7	205
Art	17.0	29.6	53.4	253
Music	15.9	27.7	56.5	271
Physical education	13.6	25.4	61.0	287
Gifted	20.6	34.1	45.3	223

Source: OEA survey.

Principals reported that there were about the same, more, or considerably more applicants in high school social studies (66.7 percent), physical education (61.0 percent), elementary education (57.7 percent), music (56.5 percent), high school English language

ⁱ This measure reflects principals who responded that there were “considerably fewer” or “fewer” applicants for a given subject compared to five years ago.

arts (55.2 percent), art (53.4 percent), and middle school social studies (52.0 percent).

CTE Schools. CTE principals reported about the same or more applicants for media arts (62.5 percent), agriculture (60.0 percent), business and marketing (53.6 percent), and transportation (50.0 percent). The remaining CTE subjects were reported as having fewer or considerably fewer applicants by 50 percent or more of responding CTE principals, and more than one-third of principals reported considerably fewer applicants in family and consumer sciences (38.9 percent) and manufacturing technology (32.3 percent).

Table 2.16
Supply Of CTE Teacher Applicants Compared To The Past Five Years
School Year 2019

Subject	Considerably fewer applicants	Fewer applicants	About the same or more applicants	Responses
Agriculture	15.0%	25.0%	60.0%	20
Business and marketing	17.9	28.6	53.6	28
Construction technology	28.6	35.7	35.7	28
Engineering technology	26.1	30.4	43.5	23
Family and consumer sciences	38.9	22.2	38.9	18
Health science	21.4	35.7	42.9	42
Information technology	29.2	25.0	45.8	24
Manufacturing technology	32.3	25.8	41.9	31
Media arts	18.8	18.8	62.5	16
Transportation	16.7	33.3	50.0	24

Source: OEA survey.

Interpretation Of Teacher Shortages

The previous section discussed findings from the OEA survey regarding the supply and quality of teachers in the most recent school year and compared to the past. This section combines direct and indirect indicators of teacher shortages with principals' experiences, the supply of teachers from teacher preparation programs, and the potential need for replacement teachers as current teachers near retirement eligibility.

Teachers with emergency certificates are direct indicators of teacher shortages, while teachers with alternative certificates are indirect indicators. Current teachers with more than 20 years of experience are nearing eligibility for retirement and represent a future need for additional teachers. Teacher preparation program completers from school year 2014 to 2018 represent the potential supply of beginning teachers.

Table 2.17 compares teachers with alternative certificates, teachers with emergency certificates, teachers with more than 20 years of experience, and principals' experiences with hiring applicants.

Table 2.18 shows teacher preparation program completers from school years 2014 to 2018 and the number of teachers in 2019 nearing retirement. Subject areas are not disaggregated by school level in the teacher preparation data but are disaggregated in the survey data.

The Potential For Future Shortages

Several subject areas have potentials for future shortages. These are areas where more than half of principals reported no applicants or no satisfactory applicants for teaching positions and fewer applicants than in the recent past. In addition, there were relatively few graduates of teacher preparation programs in these subject areas and one-fifth of current teachers may retire in the next few years.

Physics, Chemistry, And High School Math. Physics, chemistry, and high school math are subject areas where more than 5 percent of teachers hold an alternative or an emergency certificate, more than approximately 20 percent of current teachers are nearing retirement eligibility, more than 50 percent of principals report experiencing no available or no satisfactory applicants, and more than 80 percent of principals reported experiencing fewer or considerably fewer applicants than in the past.

These are also areas with few teacher preparation program completers between school years 2014 and 2018, and the number is a small fraction of the potential need represented by current teachers with more than 20 years of experience who are near retirement.

Table 2.17
Supply Of Teachers By Subject
School Year 2019

Subject	Teacher Characteristics			School Principals And CTE Principals' Reported Experience	
	Alternative	Emergency	More Than 20 Years Of Experience	No Available Or No Satisfactory Applicants	Fewer Or Considerably Fewer Applicants
Elementary School					
Elementary education and preschool	1.3%	0.4%	15.7%	9.4%	42.3%
Middle School					
English	3.4	1.0	15.5	21.5	23.1
Math	2.7	0.6	15.4	32.6	66.4
Science	4.1	1.3	13.6	40.0	69.5
Social studies	3.8	0.4	16.6	16.4	48.0
High School					
Biology	6.2	1.0	17.9	36.0	67.0
Chemistry	6.9	2.2	23.5	63.0	83.1
Earth science	4.5	1.3	21.3	39.1	66.7
English	4.4	0.5	17.2	17.3	44.8
Math	4.4	1.0	19.6	54.9	82.2
Physics	5.4	2.0	24.6	68.1	81.1
Social studies	3.5	0.2	19.2	9.5	33.3
Any Grade					
English as a second language	3.1	3.1	10.9	42.9	61.1
Exceptional children	2.1	1.1	14.2	29.1	55.5
World languages	1.5	0.9	21.3	52.9	67.3
Art	3.7	4.6	21.3	22.3	46.6
Music	3.8	0.4	20.9	18.1	43.5
Physical education	4.1	1.6	22.4	10.4	39.0
CTE Subject					
Agriculture	1.7	0.6	18.1	20.6	55.3
Business and marketing	5.8	0.5	22.4	25.0	54.6
Construction technology	3.1	0.0	21.3	44.1	64.3
Engineering technology	3.4	0.3	20.1	54.4	68.8
Family and consumer sciences	3.9	1.1	18.9	47.9	68.7
Health sciences	1.3	0.0	15.4	29.2	55.6
Information technology	3.3	0.0	20.0	37.6	58.5
Manufacturing technology	0.0	0.0	20.2	47.1	69.3
Media arts	1.3	0.0	16.4	35.2	51.3
Transportation	n/a	n/a	n/a	47.9	63.3

Source: Staff analysis of data from the Kentucky Department of Education and OEA survey.

Table 2.18
Indicators Of Potential Need For Teacher Supply
School Years 2014 To 2019

Subject (all grades)	Teacher Preparation Program Completers 2014-2018	More Than 20 Years Of Experience 2019	All Teachers including CTE, 2019
Schools			
Biology	60	189	1,054
Chemistry	16	138	587
Earth Science	3	77	369
Elementary Education and earlier	4,586	4,531	28,679
English as a Second Language	122	26	238
English/Language Arts	1,644	897	5,480
Health and Physical Education	1,725	290	1,292
Mathematics	263	787	4,598
Music	529	181	866
Physics	9	93	386
Science, General	8	439	3,128
Social Studies	221	620	3,438
Special Education	1,898	247	1,739
Visual and Performing Arts	70	327	1,537
World Languages	86	190	891
CTE			
Agriculture	56	58	321
Business	68	188	840
Family and Consumer Sciences	163	98	518
Health Science	8	42	273
Manufacturing Technology	2	19	94
Trade, Technology, and Industrial Education	613	237	1,048

Source: Staff analysis of data from the Kentucky Department of Education and OEA survey.

Engineering Technology And World Languages. More than 50 percent of principals reported experiencing no available or no satisfactory applicants and experiencing fewer or considerably fewer applicants in engineering technology and world languages. Over 20 percent of current teachers in these subjects are nearing retirement eligibility.

Future Science Teachers. Fewer than 100 candidates completed teacher preparation programs in any science area between school years 2014 and 2018. In comparison, there were approximately 940 science teachers with more than 20 years of experience in school year 2019, suggesting that the number of graduates in the past four years would be able to replace approximately 10 percent of these teachers upon retirement.

Elementary Education, Social Studies, And Health And Physical Education. Elementary education, middle and high school social studies, and health and physical education teachers were subject areas reported by more than 50 percent of principals as having generally enough or an abundance of satisfactory applicants and about the same or more as in the past five years. Additionally, a disproportionate number of teacher preparation program completers between school years 2014 and 2018 were in these subjects, although only health and physical education majors met or exceeded the potential need for replacement teachers. Teachers with more than 20 years of experience were a smaller percentage of total elementary teachers (15.7 percent), middle school social studies (16.6 percent), high school social studies (19.2 percent), and health and physical education (22.4 percent) teachers.

Recruiting Teachers

The OEA survey asked principals about policies, practices, or strategies their school or district uses to recruit teachers. Results are shown in Table 2.19. Career fairs (40.3 percent), recruiting from colleges (17.1 percent), offering competitive salary (14.8 percent), and mentorship and new teacher supports (12.0 percent) were the most common methods used by school principals, while CTE principals responded with financial assistance for continuing education (34.6 percent), social media and networking (19.2 percent), and industry partnerships (11.5 percent).

Table 2.19
Policies, Practices, Or Strategies To Recruit Teachers
As Reported By Principals, 2019

Strategy	Schools	CTE	Combined
Career fairs	40.3%	3.8%	36.4%
Recruit from colleges	17.1	7.7	16.1
Salary and competitive pay	14.8	0.0	13.2
Mentorships and new teacher supports	12.0	7.7	11.6
Advertising	9.3	3.8	8.7
Grow own or host student teachers/interns	6.5	3.8	6.2
Reduced/smaller class size	6.0	3.8	5.8
Social media or networking	3.2	19.2	5.0
School culture or practices	5.1	3.8	5.0
State financial assistance for continuing education	0.0	34.6	3.7
Continuing education support	3.7	3.8	3.7
Financial assistance or incentives	3.7	3.8	3.7
Housing and moving assistance	2.3	3.8	2.5
Alternative Certification	2.3	3.8	2.5
Industry partners	0.0	11.5	1.2
Other	10.6	11.5	10.7
Responses	216	26	

Note: Principals could respond with multiple policies, practices, or strategies and percentages do not total to 100%.

Source: OEA survey.

Other Advantages. School principals and CTE principals were asked about other advantages their school has in recruiting teachers. School qualities and the reputation of the school were considered advantages by 46.4 percent of principals. Other advantages included cost of living or an affordable area (33.6 percent), being located in a desirable community (24.6 percent), convenient location (12.8 percent), competitive salaries (9.0 percent), being close to a university (7.6 percent), and community support (4.8 percent).^j

Barriers To Recruitment. The OEA survey asked principals about barriers to recruiting teachers, as shown in Table 2.20. Salary and benefits being insufficient compared to private industry was considered an extreme barrier to teacher recruitment by 55.0 percent of CTE principals and 27.6 percent of school principals. Lack of qualified candidates for a particular subject was reported to be an extreme barrier by 36.9 percent of school principals and 33.9 percent of CTE principals, whereas lack of qualified candidates in general was considered an extreme barrier by 23.4 percent of school principals and 25.0 percent of CTE principals.

^j Principals could respond with multiple advantages and percentages do not total to 100 percent.

Community and local support was generally not considered to be a barrier by either school principals (78.6 percent) or CTE (86.4 percent) principals, and more than half of all principals considered geographic location and salary compared to other school or districts to be a minimal barrier at most.

Table 2.20
Barriers To Teacher Recruitment
As Reported By Principals, 2019

	Not a barrier	Minimal barrier	Moderate barrier	Extreme barrier	Responses
School Principal Responses					
Geographic location	29.4%	22.6%	32.9%	15.1%	456
Community and local support	47.3	31.3	17.7	3.7	457
Salary and benefits insufficient compared to private industry	19.0	22.5	30.9	27.6	457
Salary insufficient compared to other schools or districts	24.7	29.7	27.5	18.1	458
Lack of qualified candidates, in general	13.5	24.2	38.9	23.4	458
Lack of qualified candidates, in particular subjects	13.3	17.5	32.3	36.9	458
Career And Technical Education Principal Responses					
Geographic location	39.0%	27.1%	27.1%	6.8%	59
Community and local support	57.6	28.8	11.9	1.7	59
Salary and benefits insufficient compared to private industry	6.7	5.0	33.3	55.0	60
Salary insufficient compared to other schools or districts	27.1	33.9	23.7	15.3	59
Lack of qualified candidates, in general	8.3	25.0	41.7	25.0	60
Lack of qualified candidates, in particular subjects	6.8	23.7	35.6	33.9	59

Source: OEA survey.

Challenging Content Area Qualifications. Approximately half of school principals (51.0 percent) and CTE principals (53.3 percent) reported that some content areas have qualification requirements that present a challenge to recruiting teachers. Of the 225 school principals that responded with particular subject areas, 46.2 percent mentioned math, followed by science (38.2 percent), exceptional children (24.9 percent), world languages (7.6 percent), chemistry (6.2 percent), grade level requirements (5.8 percent), and English language arts (5.3 percent). Less than five percent of principals mentioned other subjects.

Thirty-three CTE principals responded that particular subjects have qualification requirements that present a challenge to recruiting teachers and 60.6 percent mentioned health science.^k All other

^k Several CTE principals mentioned the long-term care experience requirements for health sciences in particular.

CTE subjects were mentioned only once, with the exception of math (three CTE principals).

Kentucky Addressing Teacher Shortages

Go Teach KY. The Kentucky Department of Education launched Go Teach KY in August 2019, a campaign intended to “recruit and inspire the next generation of educators.”¹⁰ The Go Teach KY website offers information about becoming a teacher in Kentucky, including colleges that offer traditional teacher preparation programs, the eight alternative certification options, the licensing process, and a link to the KEPS website. The Kentucky Academy for Equity in Teaching (KAET) program, which was launched in 2019, is also featured, along with a description of the program, candidate qualification requirements, application, and participating colleges and universities.¹¹

School Level Methods To Address Shortages. The OEA survey asked principals how their schools have addressed teacher shortages. Results show that 15.3 percent of school principals and 19.7 percent of CTE principals eliminated a class or classes in response to teacher shortages. World languages was the most common subject (16 principals), followed by math (6 principals), physics (5 principals), STEM (5 principals), science (4 principals), engineering (3 principals), and family and consumer sciences (3 principals). An additional 36 other classes were eliminated by two or fewer schools.

While some principals reported eliminating classes to address shortages, other principals reported avoiding canceling classes by combining classes, increasing class sizes, switching to online courses, renewing non-effective teachers, teachers teaching during their planning period, and hiring emergency certified, out-of-field, or substitute teachers. Some principals reported being unable to add new classes and being unable to hire additional teachers.

The Association Between Teacher Shortages And Student Outcomes. Common themes emerged when principals were asked about the effects of teacher shortages. When faced with few qualified applicants, principals must often hire candidates that do not meet their expectations of quality or experience, or substitutes. As a result, student outcomes and disciplinary issues, relationships with students and parents, and the school’s organizational goals and culture can be negatively affected. In addition, lower quality teachers cause more strain on the school to support and train them.

Some turnover is intentional as schools try to replace ineffective or low quality teachers. Many principals worry about being unable to find replacements and keep teachers they would rather non-renew. Some principals reported that shortages led to restructuring scheduling or combining classes in their schools, which creates an burden on established teachers and fails to meet student needs. Career and technical education principals shared these experiences, with the additional concern of being unable to certify students for their industry career choices.

¹ Kentucky. Executive Order 2018-653. Aug 1, 2018.

² Jimmy Adams. "Board Action Concerning Certification Issuance Process." *Education Professional Standards Board*. May 17, 2018. Web. Accessed Sept. 26, 2019.

³ Staff analysis of data from the 2019 Superintendent's Annual Attendance Report (SAAR).

⁴ Crystal Hord, branch manager. Kentucky Department of Education. Email to Allison Stevens. Sept. 23, 2019.

⁵ Crystal Hord, branch manager. Kentucky Department of Education. Email to Allison Stevens. Sept. 23, 2019.

⁶ "Teacher Cancellation Low Income (TCLI)." *Federal Student Aid*. N.d. Web. Accessed Sept. 26, 2019.

⁷ Kentucky Center for Statistics. "Rationale for Methodology First Deployed for the 2017 Teacher Shortage Area Analysis." N.d. Email from Angie Tombari to Allison Stevens. April 12, 2019.

⁸ Mandy McLaren. "Kentucky Teacher Shortage: Are 'thousands' of jobs actually vacant?" *Courier Journal*. Aug. 12, 2019. Web. Accessed Sept. 26, 2019.

⁹ Ibid.

¹⁰ Staff. "KDE Announced Go Teach KY, a Campaign Aimed at Inspiring The Next Generation of Kentucky Teachers." *Kentucky Teacher*. Aug. 7, 2019. Web. Accessed Sept. 26, 2019.

¹¹ "Go Teach KY." *Kentucky Department of Education*. 2019. Web. Accessed Sept. 26, 2019.

Chapter 3

Teacher Turnover

Introduction

This chapter analyzes teacher turnover in Kentucky by geographic area, school demographics, and certificate type. On average, 16.3 percent of teachers did not return to teach in their school between school years 2010 and 2019, although they may have taught in another school the following year.

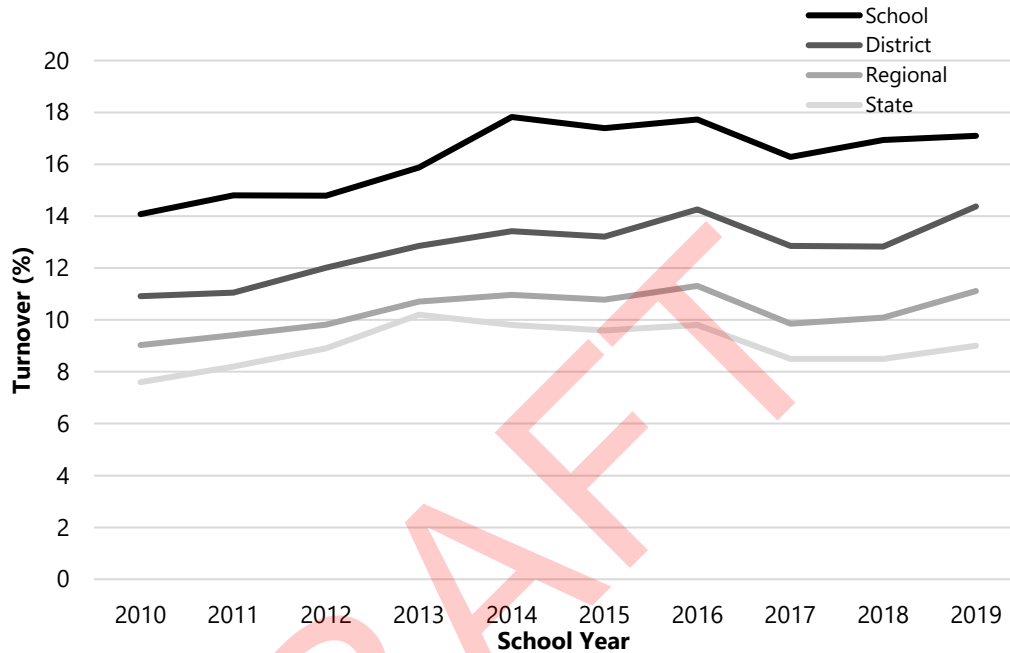
This chapter reviews barriers to retaining teachers and school-level policies, practices, or strategies to retaining teachers as reported by school principals and CTE principals. Supports for new teachers are also discussed.

Teacher Turnover In Kentucky Overview

This report uses the term teacher turnover to describe the percentage of teachers that did not return to teach at the same location in the following year. Figure 3.A shows average annual turnover by school, district, region, and state. Turnover tends to decrease as the geographic area of reference expands because teachers may move among schools within a district, region, or the state. In school year 2019, average turnover was 17.1 percent at the school level, 14.4 percent at the district level, 11.1 percent at the regional level, and 9.0 percent at the state level. All levels have seen an increase in turnover from school years 2010 to 2019.

State-Level Turnover. On average, 9.0 percent of teachers did not return to teach in Kentucky between school years 2010 and 2019, ranging from 7.6 percent to 10.2 percent. In the most recent school year, Kentucky experienced 9.0 percent turnover.

Figure 3.A
Average Annual Teacher Turnover
By Geographic Area
School Years 2010 To 2019



Source: Staff analysis of data from the Kentucky Department of Education.

Regional Turnover. Table 3.1 shows turnover by area development district. On average, 10.3 percent of teachers did not return to teaching in their region between school years 2010 and 2019. Between these years, regional turnover was fairly steady, ranging between 9.0 and 11.3 percent. Turnover tended to be higher in the state's more urban regions of KIPDA (11.1 percent) and the Bluegrass Region (11.2 percent). Appendix E shows the school districts in each area development district.

Table 3.1
Regional Average Annual Turnover
School Years 2010 To 2019

Region	Average Annual Turnover
Barren River	9.9%
Big Sandy	8.6
Bluegrass	11.2
Buffalo Trace	10.1
Cumberland Valley	8.0
FIVCO	9.7
Gateway	12.9
Green River	10.4
Kentucky River	10.5
KIPDA	11.1
Lake Cumberland	8.5
Lincoln Trail	10.1
Northern Kentucky	10.5
Pennyrile	12.9
Purchase	10.0

Source: Staff analysis of data from the Kentucky Department of Education.

District-Level Turnover. On average, 12.8 percent of teachers did not return to teach in their district between school years 2010 and 2019. During that time, turnover increased from 10.9 percent to 14.4 percent, with a slight dip in 2017 and 2018. Average turnover was higher in districts that border other states (13.8 percent) compared to interior districts (12.3 percent). See Appendix F for turnover by district.

School Level Turnover

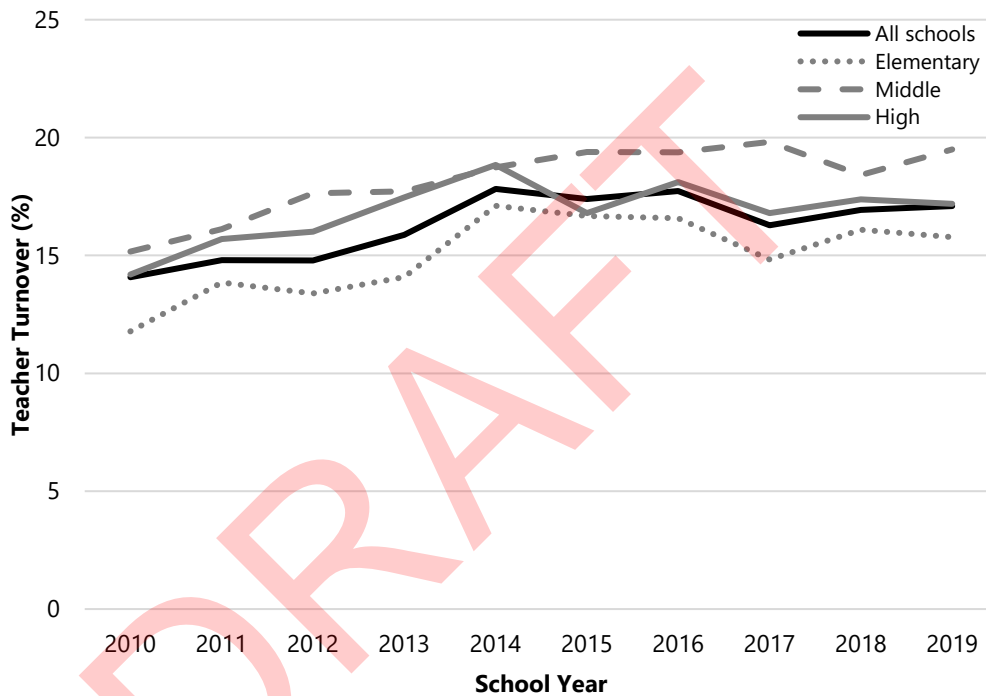
On average, 16.3 percent of teachers did not return to their school between school years 2010 and 2019. Average annual school-level turnover increased during this time from 14.1 percent in 2010 to 17.1 percent in 2019, although it was highest in 2014 at 17.8 percent. Figure 3.B shows that during this time, average turnover was highest at middle schools and lowest at elementary schools. Average annual turnover was 15.0 percent in elementary schools, 18.2 percent in middle schools, and 16.8 percent in high schools.

The number of teachers at each school affects the turnover percentage. Between school years 2015 and 2019, approximately one-fourth of schools had 24 or fewer teachers, half of schools had 32 or fewer teachers, and three-fourths of schools had 41 or fewer teachers. This means that even a small number of teachers leaving a school can have a large impact when calculating turnover.

School Years 2015 To 2019. On average, 17.4 percent of teachers did not return to their schools between school years 2015 and

2019. During this time, 61.0 percent of schools were below the mean. Turnover was 10 percent or less in 27.1 percent of schools, 20 percent or less in 71.3 percent of schools, and 30 percent or less in 91.7 percent of schools.

Figure 3.B
School-Level Teacher Turnover
School Years 2010 To 2019



Source: Staff analysis of data from the Kentucky Department of Education.

School Demographic Characteristics. Table 3.2 divides Kentucky's schools into four quartiles based on the five-year average of turnover. Quartile 1 represents the lowest average turnover and quartile 4 represents the highest average turnover.

Table 3.2
School Demographic Characteristics By School Turnover
School Years 2015 Through 2019

Turnover Quartile	Average Turnover	Average Of All Schools In Quartile		
		Receiving FRPL	Minority	Teachers With Four Or Fewer Years Of Experience
1 (lowest)	9.4%	60.6%	11.9%	17.6%
2	13.5	60.0	15.6	21.8
3	17.8	62.8	21.0	26.9
4 (highest)	32.7	69.1	29.7	33.5

Note: FRPL= Free or Reduced Price Lunch. Table represents 1,225 A1 and A2 schools for which there was complete information. Jefferson County schools are included in this analysis. When Jefferson County was excluded from this analysis, there was little change in the percentages.

Appendix B addresses the inclusion of Jefferson County schools.

Source: Staff analysis of data from the Kentucky Department of Education.

Average turnover was three times higher in quartile 4 (32.7 percent) compared to quartile 1 (9.4 percent). Schools with higher turnover tended to have higher levels of students in poverty, students who are minorities, and teachers with four or fewer years of experience. The first three quartiles had similar percentages of student in poverty (approximately 60 percent) but the percentage increased to 69.1 percent in quartile 4. The percentage of students who are minorities increased from 11.9 percent in schools with the lowest turnover compared to 29.7 percent in schools with the highest turnover. Similarly, the percentage of inexperienced teachers increased from 17.6 percent in quartile 1 to 33.5 percent in quartile 4.

Effects Of Teacher Turnover On Student Outcomes. Principals were asked about the effects of teacher turnover in the OEA survey and the results were similar to the effects of teacher shortages. Common themes emerged from principals’ responses. When turnover is high, schools have difficulty carrying out organizational goals and building relationships with students, parents, and the community. Schools may have difficulty finding quality replacements and must spend time and resources training new teachers, and student achievement, disciplinary issues, and school culture can be negatively affected by new and inexperienced teachers.

Several principals noted that turnover was beneficial to their school. One principal commented: “Last year we made some changes in our structure and vision in which some teachers left our school. However, I was able to hire new teachers that have a positive, open minded mind set. This has helped to shift the culture of our school. Now I am hoping to keep the new teachers and

continue to grow a community of colleagues that grow together in their profession.”

Math and Reading Outcomes, Middle School Demographics, And Turnover. Table 3.3 divides Kentucky’s middle schools into four quartiles based on average math and reading K-PREP proficiency rates. Quartile 1 represents the lowest average proficiency rates and quartile 4 represents the highest average proficiency rates.

Table 3.3
Middle School Demographic Characteristics
And Teacher Turnover
By K-PREP Proficiency Rates, School Year 2018

Reading Quartiles	Average Proficiency Rate In Quartile	FRPL	Minority	Turnover	Teachers with 4 or fewer years of experience
1 (lowest)	47.1%	73.6%	29.2%	21.1%	30.7%
2	57.6	66.0	13.8	16.2	26.3
3	64.3	62.8	13.0	16.4	24.3
4 (highest)	73.8	53.3	12.1	13.4	22.4

Math Quartile	Average Proficiency Rate In Quartile	FRPL	Minority	Turnover	Teachers with 4 or fewer years of experience
1 (lowest)	29.7%	72.8%	23.9%	21.0%	28.8%
2	41.9	66.9	17.2	17.7	26.1
3	51.2	62.9	13.1	14.8	25.9
4 (highest)	64.8	53.1	14.0	13.6	23.1

Source: Staff analysis of data from the Kentucky Department of Education.

Schools with lower math and reading scores tended to have higher percentages of students in poverty, higher percentages of minority students, higher percentages of teachers with four or fewer years of experience or less, and higher turnover. Table 3.3 indicates that math and reading K-PREP proficiency rates are related to school qualities, including turnover.

Turnover Of Teachers With Alternative Certificates. On average, 60.1 percent of teachers with alternative certificates did not return to their school between school years 2011 and 2019. Turnover fluctuated between 55.1 percent and 65.8 percent. As with general school turnover, turnover is affected by the relatively few number of teachers with alternative certificates employed by schools. Between school years 2011 and 2019, approximately half of schools (49.7 percent) employed only one alternatively certified teacher and 88.1 percent of schools employed 4 or fewer teachers

with alternative certificates, meaning that the departure of even a few teachers can have a large effect on turnover calculations.^a

Turnover And Teacher Preferences

The Teaching, Empowering, Leading, and Learning (TELL) Survey is an anonymous biennial survey for educators to provide input on teaching conditions in Kentucky, including teachers, principals, assistant principals, and other education professionals such as school counselors, school psychologists, or school social workers. The most recent TELL Survey available during the writing of this report was conducted in 2017.

Teachers' Immediate Plans. Data collected through Kentucky's 2017 TELL Survey show trends between teachers' immediate professional plans and their perception of working conditions at their school.^b Teachers who planned to continue teaching at their current school were more than twice as likely to say that their school was a good place to work and learn overall (89.9 percent) compared to teachers who wanted to teach at a different school or district (45.1 percent).

School Leadership. School leadership was the most important aspect affecting teachers' willingness to keep teaching at their school (30.6 percent) followed by instructional practices and support (17.8 percent), and teacher leadership (11.9 percent).

School Turnover And Working Conditions. Responses to the 2017 TELL Survey were analyzed using the turnover quartiles from the earlier analysis. Table 3.4 shows teacher responses by quartile. Quartile 1 represents the lowest turnover and quartile 4 represents the highest turnover. Teachers in schools with lower turnover were more likely to rate their school positively. On average, 54.9 percent of teachers in quartile 1 schools strongly agreed that their school was a good place to work and learn compared to 38.2 percent in quartile 4 schools. In addition, teachers in quartile 1 schools were less likely to report that their immediate plans were to leave their school (1.1 percent) compared to teachers in quartile 4 (6.1 percent).

^a Data limitations prevented an analysis of turnover of teachers holding emergency certificates.

^b Data analysis includes schools for which turnover and TELL Survey data were both available.

Table 3.4
School Turnover And Teachers' Reported Experience
School Year 2017

Quartile	School is a good place to work and learn, strongly agree	Immediate plans to teach at other school or district
1 (lowest)	54.9%	1.1%
2	52.9	1.5
3	44.3	3.0
4 (highest)	38.2	6.1

Source: Staff analysis of data from the 2017 TELL Survey.

Other Factors Influencing Teacher Turnover. Teachers may not have had the opportunity or ability to actually leave their school despite expressing a desire to do so, such as in rural areas with few immediate options for a new school or career, or teachers may not have left voluntarily, such as non-renewal. Teacher turnover is influenced by factors other than teacher preferences and current data is unable to distinguish between voluntary and involuntary turnover. On average, 7.9 percent of teachers expressed a desire to leave teaching in 2017 while 8.7 percent of teachers did not return to teaching in Kentucky in 2018.^c

Teachers Leaving The Teaching Profession

The previous section focused on teachers who did not return to the same location in a subsequent year, although they may have taught at a different location. The following discussion refers to teachers who left their classroom and did not return to teach in Kentucky during the time period of study.

Approximately 28,000 teachers left the teaching profession in Kentucky between academic years 2009 and 2017. According to staff analysis of data from the Kentucky Center for Statistics (KYSTATS), nearly one-third (28.2 percent) were beginning teachers with four years or fewer of teaching experience, while 19.2 percent had 26 or more years of teaching experience and were therefore eligible for retirement. On average, teachers earned

^c This measure includes teachers who responded that their immediate professional plans were to continue working in education but pursue an administrative position; continue working in education but pursue a non-administrative position; and leave education entirely.

between \$44,700 and \$52,900 when they left the teaching profession.^{de}

Overview. KYSTATS provided wage and industry information for 13,884 former teachers, or about half (48.1 percent) of all teachers who left the teaching profession between academic years 2011 through 2017.^f Table 3.5 shows the industries where former teachers were employed. Of all teachers who left the teaching profession in Kentucky, 35.1 percent continued working in the education industry in Kentucky, 13.0 percent were employed in other industries in Kentucky, and employment information is unknown for 51.9 percent; however, if the former teachers who were eligible for retirement (19.2 percent) did retire and did not pursue additional employment, the percentage unknown would decrease to 32.7 percent.

Table 3.5
Employment Of Former Teachers
Fiscal Years 2010 To 2018

Industry	Former Teachers Employed
Education	35.1%
Health care and social assistance	5.1
Retail	3.8
Public administration	2.9
Admin. support and waste management and remediation services	2.1
Unknown	51.9

Source: Staff analysis of data from KYSTATS.

Educational Services. The educational services industry is broad includes a variety of jobs, from principals to counselors to janitors. Although the data cannot describe the type of job held by former

^d For this analysis, “teacher” includes job class codes 2010 preschool classroom instructor; 2025 kindergarten instructor; 2030 primary classroom instructor; 2040 elementary classroom instructor; 2050 middle school classroom instructor; 2060 high school classroom instructor; 2080 local vocational school instructor; 2095 exceptional child instructor; and 2100 gifted and talented instructor.

^e There are several caveats with this analysis. First, KYSTATS was only able to provide information about former teachers who worked in Kentucky after leaving the teaching profession. This means that former teachers may be teaching or working in another state, but this would not appear in the data. Second, employment information is disaggregated by industry and industries with fewer than 10 former teachers appears as “<10” in the data to avoid identifying individuals. Therefore, it was not possible to include these industries in the analysis. Excluding these industries is unlikely to impact any conclusions because it can be assumed that fewer than 10 former teachers entering any given industry over a nine year period is unlikely to indicate a trend or common occurrence.

^f The following analysis refers to former teachers who worked full or part time after leaving the teaching profession.

teachers in the educational services industry, it is interesting to note that these former teachers are still supporting and serving schools and students in Kentucky.

Additional Industries. The second-most common industry was health care and social assistance (5.1 percent), followed by retail (3.8 percent), public administration (2.9 percent), and administrative support and waste management and remediation services (2.1 percent).

Retaining And Supporting Teachers

The OEA survey asked principals about policies, practices, and strategies at their school to retain teachers and about barriers to retaining teachers. Responses to the survey shows that many principals are making an effort to recruit teachers, support new teachers, and retain teachers they already have.

Retaining Teachers. The OEA survey asked principals about barriers to their school's ability to retain teachers. The results are summarized in Table 3.6. Salary and benefits being insufficient compared to private industry was considered a moderate or extreme barrier by 85.5 percent of CTE principals and 53.6 percent of school principals while salary insufficient compared to other schools was considered a moderate or extreme barrier by 40.7 percent of CTE principals and 44.8 percent of school principals. Geographic location was considered a moderate or extreme barrier by 38.7 percent of school principals but only 14.9 percent of CTE principals. Other factors were generally not considered to be barriers to retaining teachers.

**Table 3.6
Barriers To Retaining Teachers, 2019**

	Not a barrier	Minimal barrier	Moderate barrier	Extreme barrier	Responses
School Principal Responses					
Geographic location	31.5%	29.7%	27.0%	11.7%	444
Community and local support	47.5	32.4	17.6	2.5	442
Salary and benefits insufficient compared to private industry	22.3	24.1	30.4	23.2	444
Salary insufficient compared to other schools or districts	27.5	27.7	25.7	19.1	444
School environment, such as facilities and resources	50.0	30.2	15.8	4.1	444
School culture, such as leadership, support, and involvement	62.8	30.0	5.2	2.0	444
Student performance	51.7	33.0	12.9	2.5	443
Student conduct	53.7	28.4	13.1	4.7	443
School safety	69.2	23.4	6.1	1.4	441
Career and Technical Education Principal Responses					
Geographic location	44.4%	40.7%	9.3%	5.6%	54
Community and local support	55.6	38.9	5.6	0.0	54
Salary and benefits insufficient compared to private industry	7.3	7.3	29.1	56.4	55
Salary insufficient compared to other schools or districts	25.9	33.3	29.6	11.1	54
School environment, such as facilities and resources	40.7	37.0	18.5	3.7	54
School culture, such as leadership, support, and involvement	72.2	25.9	1.9	0.0	54
Student performance	70.4	20.4	7.4	1.9	54
Student conduct	68.5	16.7	11.1	3.7	54
School safety	77.8	16.7	5.6	0.0	54

Source: OEA survey.

Other Factors Affecting Retention. Principals were asked about any other factors affecting teacher retention. Principals answers included concerns over retirement, pensions, and benefits (five principals), life circumstances (seven principals), and non-renewal of unsatisfactory teachers (seven principals). Burnout and aspects of teaching were mentioned by 19 principals. One principal summarized the issue as “the huge amount of stress involved, the emotional impact it takes on your life.”

Policies, Practices, Or Strategies To Retain Teachers. Principals were also asked about any policies, practices, or strategies their school or district uses to retain teachers, as shown in Table 3.7. Mentoring and new teacher supports were mentioned most often by school principals (45.5 percent) and CTE principals (38.7 percent), followed by the community and culture of the school (26.1 percent of school principals and 35.5 percent of CTE principals). School principals also credited salary advantages and pay incentives (18.0 percent), and favorable class sizes (10.0 percent), while CTE principals mentioned tuition waivers and financial support for continuing education (25.8 percent), and offering professional development and learning opportunities (16.1 percent).

Table 3.7
Policies, Practices, Or Strategies Used By Schools
To Retain Teachers, 2019

Type Of Support	School	CTE
Mentoring/New teacher induction or support	45.5%	38.7%
Community/culture of school	26.1	35.5
Pay incentives	18.0	3.2
Favorable class sizes	10.0	6.5
Professional Development/Learning Opportunities	7.6	16.1
Supportive of Teachers	6.6	9.7
Tuition Waivers/Financial support for continuing education	0.9	25.8
Financial assistance	2.4	0.0
Community Support	2.4	0.0
Leadership opportunities	1.9	0.0
Administrative support	0.5	0.0

Note: Principals could select more than one support.

Source: OEA survey.

Supports For New Teachers

The OEA survey asked principals to describe any programs or practices in place to support new teachers at either the school or district level. Table 3.8 shows the multiple types of support offered by schools or districts.

Table 3.8
Supports For New Teachers Reported By Principals, 2019

Type Of Support	School	CTE
Require all beginning teachers to receive mentor support	88.2%	94.8%
Encourage beginning teachers to participate in a learning community or peer network	72.7	70.7
Provide dedicated meeting times for beginning teachers and mentors	65.2	53.5
Mentor selection process	38.0	44.8
Additional mentor stipend	35.5	32.8
Reduced teaching load for beginning teachers	5.5	17.2
Reduced teaching load for mentors	2.0	3.5
Number of Responses	440	58

Note: Principals could select more than one support and percentages do not total to 100 percent.

Source: OEA survey.

New Teacher Support. Common programs or practices for new teachers at schools were requiring all beginning teachers to receive mentor support (88.2 percent), encouraging beginning teachers to participate in a learning community or peer network (72.7 percent), and providing dedicated meeting times for beginning teachers and mentors (65.2 percent).

Less common programs and practices were additional mentor stipends (38.0 percent), a mentor selection process (35.5 percent), a reduced teaching load for beginning teachers (5.5 percent), and a reduced teaching load for mentors (2.0 percent).

Additional Strategies To Retain Teachers. Other strategies noted by school principals included professional learning communities (PLCs) or academies, meetings with district or school leadership, support from other teachers, instructional coaches, orientation, a professional growth or evaluation system, and requiring professional development. Nearly all CTE principals commented that the New Teacher Institute was an important aspect of support for new teachers.

Nearly all (94.8 percent) of CTE principals reported that mentor support was required for beginning teachers. Programs and practices for new CTE teachers were similar to those for new school teachers, with an increased percentage offering a reduced teaching load for beginning teachers (17.2 percent).

New Teacher Supports Reported In 2017 TELL Survey. The 2017 TELL Survey also addressed supports for new teachers. Of all teacher respondents, 14.5 percent answered questions about new teacher supports and 84.4 percent of these reported receiving additional supports as a new teacher. Table 3.9 shows results from the 2017 TELL Survey regarding new teacher supports.

Table 3.9
Supports Received By New Teachers
2017 School Year

Type of Support Received	Yes	Total
Regular communication with principals, other administrator, or department chair	88.0%	5,464
Access to professional learning communities where I could discuss concerns with other teacher(s)	82.2	5,445
Common planning time with other teachers	81.4	5,432
Formally assigned resource teacher/mentor	74.6	5,446
Orientation for new teachers	69.8	5,425
Participation in the KTIP program	66.1	5,436
Seminars specifically designed for new teachers	62.9	5,425
Formal time to meet with mentor during school hours	52.1	5,412
Release time to observe other teachers	51.0	5,430
Reduced workload	24.1	5,420
I received no additional support as a new teacher	15.6	4,416

Source: Staff analysis of data from the 2017 Teaching, Empowering, Leading, and Learning (TELL) Survey.

Common supports were regular communication with principal or other leadership (88.0 percent), access to professional learning communities to discuss concerns with other teachers (82.2 percent), common planning time with other teachers (81.4 percent), and a formally assigned resource teacher or mentor (74.6 percent).

Teachers generally reported that receiving additional support as a new teacher improved their instructional practice (83.2 percent), helped them impact students' learning (85.0 percent), and was important to their decision to continue teaching at their current school (82.1 percent).[§]

Support And Assistance For Teachers In Kentucky

Several programs are available to assist teachers with educational opportunities.

Kentucky Academy For Equity In Teaching (KAET). KDE prioritized the development of effective, experienced, and diverse teachers for Kentucky students and created the Kentucky Academy for Equity in Teaching (KAET) to prepare diverse educators. KAET offers financial support and training to pre-service teachers in educator preparation programs.

Educators Rising Kentucky. Formerly the Future Educators of America (FEA), Educators Rising Kentucky is a student club organization for secondary students interested in becoming

[§] This measure includes teachers who responded to each item with “agree” or “strongly agree.”

teachers. Educators Rising offers teaching experience and skill development to encourage secondary students to pursue teaching as a profession. Educators Rising Collegiate continues to support future educators.

Teacher Scholarship Program. KRS 164.769 establishes the Teacher Scholarship Program to provide financial assistance of up to \$2,500 per semester to students in teacher certification programs or to established teachers pursuing additional teaching certifications in Kentucky. Participants must teach one semester in Kentucky for each semester of scholarship awarded and participants may receive up to \$12,500 for undergraduate students and up to \$7,500 for post baccalaureate students.¹

Traineeship Program. The Kentucky Department of Education allocates federal professional development funds to the Traineeship Program to help established teachers defray the cost of tuition for certification in special education or early childhood education. The Traineeship Program is ideal for established teachers with alternative or emergency certificates and can help reduce teacher shortages in the areas of special education and early childhood education.

Teacher Education Assistance For College And Higher Education (TEACH) Grant. TEACH Grants are federal grants for undergraduate or graduate students pursuing a teaching career. TEACH Grants are awarded up to \$4,000 per year, which is converted to a loan if service requirements are not fulfilled. Recipients must teach in a high-need field in a school serving low-income families, for at least four full academic years within eight years.

Teacher Shortage Solutions In Other States

Several states have created programs to address teacher shortages. The Learning Policy institute found that 16 states funded teacher induction and mentoring programs, 40 states have teacher service scholarships and loan forgiveness, and 15 states have a teacher residency program, as of August 18, 2019.²

Texas Teacher Residency Program. Texas created the Texas Teacher Residency Program to provide an experience similar to medical residency programs.³ Beginning teacher candidates are placed in classrooms with experienced teachers to gain hands on experience while taking classes. Participants agree to teach in a shortage school for four years after completing the program. Early

success was noted as measured by students' 5th and 6th grade science scores. Texas invested approximately \$1.3 million in the program in the 2016-2017 biennial budget but it was not funded in 2018-2019.⁴

California Classified School Employee Teacher Credential Program. California created a grow-your-own teacher recruitment program aimed at developing teachers from within current classified employees and paraprofessionals already working in California schools. Up to \$4,000 per year are available to participants towards a teacher credentialing program.⁵ The state invested \$45 million in 2016 and 2017 to train 2,250 classified and paraprofessional school staff to become teachers.⁶

Arkansas Teacher Cadets Program. Arkansas' Teacher Cadet program is a grow-your-own strategy to introduce high school students to the teaching profession. The program includes a college-level curriculum and classroom internship opportunity for high school students to consider teaching as a career.⁷

¹ "Teacher Scholarship Programs." *Kentucky Higher Education Assistance Authority (KHEAA)*. 2019. Web. Accessed Sept. 26, 2019.

² Daniel Espinoza, Ryan Saunders, Tara Kini, and Linda Darling-Hammond. *Taking the Long View: State Efforts to Solve Teacher Shortages by Strengthening the Profession*. Palo Alto, CA: Learning Policy Institute. Aug. 2018. Web. Accessed Sept. 25, 2019.

³ "Texas Teacher Residency Program." *Texas Center for Educator Excellence*. 2019. Web. Accessed Sept. 26, 2019.

⁴ Daniel Espinoza, Ryan Saunders, Tara Kini, and Linda Darling-Hammond. *Taking the Long View: State Efforts to Solve Teacher Shortages by Strengthening the Profession*. Palo Alto, CA: Learning Policy Institute. Aug. 2018. Web. Accessed Sept. 25, 2019.

⁵ "California Classified School Employee Teacher Credentialing (Scholarship) Program." *Teach California*. 2019. Web. Accessed Sept. 26 2019.

⁶ Daniel Espinoza, Ryan Saunders, Tara Kini, and Linda Darling-Hammond. *Taking the Long View: State Efforts to Solve Teacher Shortages by Strengthening the Profession*. Palo Alto, CA: Learning Policy Institute. Aug. 2018. Web. Accessed Sept. 25, 2019.

⁷ Jeff Dyer. *Teacher Cadets: Arkansas Teacher Cadets Program Overview*. Arkansas Department of Education. N.d. Web. Accessed Sept. 26, 2019.

Appendix A

School Principal and CTE Principal Survey

Survey Sent To School Principals And CTE Principals

This appendix shows the survey sent to school principals and the survey sent to CTE principals. The response rate was 64.4 percent for school principals and 39.8 percent for CTE principals. Due to an initial low response rate to the full survey, OEA abbreviated both surveys to one question to increase responses. The question was: “In your experience, which best describes the supply of teacher applicants in the following areas?” The response rate to this question from the fully survey and the abbreviated survey combined was 70.3 percent for school principals and 50.2 percent for CTE principals.

Survey Sent To School Principals

Teacher Shortages And Supports For New Teachers

The Kentucky General Assembly has directed the Office of Education Accountability to study teacher shortages and supports for new teachers. This study will include teacher turnover rates, teacher shortages, teacher certification types, supports for new teachers, and the association between teacher turnover and student outcomes.

This survey should take about 30 minutes to complete.

Please complete the survey by May 28, 2019.

If you need clarification about any of the questions, please contact Allison Stevens or Bart Liguori. Call 502-564-8197 or email allison.stevens@lrc.ky.gov or bart.liguori@lrc.ky.gov.

We appreciate your time and information.

Teacher Shortages

The questions below address teacher shortages. Teacher shortages are indicated by unfilled positions and include positions filled by irregular, provisional, temporary, or emergency certificates and teachers certified in areas other than their area of expertise.

1. In your experience, which best describes the supply of teacher applicants in the following program areas at your school? For this question, “satisfactory” is defined as applicants with appropriate teaching certifications that meet your school’s expectations of quality.

	No available applicants	Applicants available but not satisfactory	Few satisfactory applicants	Generally enough satisfactory applicants	Abundance of satisfactory applicants	N/A
Agriculture, high school						
Biology, high school						
Business and marketing, high school						
Chemistry, high school						
Construction technology, high school						
Earth science, high school						
Engineering technology, high school						
English, high school						
Family and consumer sciences, high school						
Health sciences, high school						
Information technology, high school						
Manufacturing technology, high school						
Math, high school						
Media arts, high school						
Physics, high school						
Social studies, high school						
Transportation, high school						
English, middle school						
Math, middle school						
Science, middle school						
Social studies, middle school						
Elementary education						
English as a second language, all grades						
Exceptional children, all grades						
World languages, all grades						
Art, all grades						
Music, all grades						
Physical education, all grades						
Gifted, all grades						

2. Has your school experienced any teacher shortages in areas not described in the previous question?

- Yes
- No
- If you answered yes, what was the subject area(s)?

3. Please describe any effects of **teacher shortages** in your school.

4. Did your school eliminate a class or classes to address a teacher shortage?

- Yes
- No
- N/A – My school has not experienced a shortage.
- If you answered yes, please list the class or classes.

DRAFT

5. Which best describes the supply of teacher applicants for the 2018-2019 school year with the supply of teacher applicants in the past five years?

	Considerably fewer applicants	Fewer applicants	About the same	More applicants	Considerably more applicants	N/A
Agriculture, high school						
Biology, high school						
Business and marketing, high school						
Chemistry, high school						
Construction technology, high school						
Earth science, high school						
Engineering technology, high school						
English, high school						
Family and consumer sciences, high school						
Health sciences, high school						
Information technology, high school						
Manufacturing technology, high school						
Math, high school						
Media arts, high school						
Physics, high school						
Social studies, high school						
Transportation, high school						
English, middle school						
Math, middle school						
Science, middle school						
Social studies, middle school						
Elementary education						
English as a second language, all grades						
Exceptional children, all grades						
World languages, all grades						
Art, all grades						
Music, all grades						
Physical education, all grades						
Gifted, all grades						

6. To what degree is each of the following a barrier to your school's ability to **recruit teachers**?

	Not a barrier	Minimal barrier	Moderate barrier	Extreme barrier
Geographic location				
Community and local support				
Salary and benefits insufficient compared to private industry				
Salary insufficient compared to other schools or districts				
Lack of qualified candidates, in general				
Lack of qualified candidates, in particular subjects				

Please describe any other factors that affect teacher recruitment that are not listed above and estimate the degree to which each affects your school.

7. Are there particular content areas where the qualification requirements have presented a challenge to recruiting teachers?

- Yes
- No
- If yes, what are the content areas?

8. Please describe any policies, practices, or strategies your school/district uses or is considering using to **recruit teachers**. Examples of policies, practices, or strategies are financial assistance for continuing education, housing, or reduced class size.

9. Other than the policies, practices, or strategies described in the previous question, please describe any advantages your school has in **recruiting teacher**. Examples of advantages are quality of life and affordable cost of living.

10. In general, what has been the change in the quality of beginning teachers from teacher preparation programs?

- Much worse
- Worse
- About the same
- Better
- Much better
- N/A

11. Do you have any additional comments regarding **teacher shortages**?

Teacher Turnover

The following questions refer to teacher turnover. For this survey, please think of teacher turnover as the loss of teachers from your school.

12. To what degree is each of the following a barrier to your school's ability to **recruit teachers**?

	Not a barrier	Minimal barrier	Moderate barrier	Extreme barrier
Geographic location				
Community and local support				
Salary and benefits insufficient compared to private industry				
Salary insufficient compared to other schools or districts				
School environment, such as facilities and resources				
School culture, such as leadership, support, and involvement				
Student performance				
Student conduct				
School safety				

Please describe any other factors that affect teacher retention that are not listed above and estimate the degree to which each affects your school.

13. Please describe any policies, practices, or strategies your school/district uses or is considering to **retain teachers**. Examples of policies, practices, or strategies are financial assistance for continuing education, housing, reduced class size, and mentoring.

14. Other than the policies, practices, or strategies described in the previous question, please describe any advantages your school has in **retaining teachers**. Examples of advantages are quality of life and affordable cost of living.

15. Please describe any effects of **teacher turnover** in your school.

16. Do you have any additional comments regarding **teacher turnover**?

Supports For New Teachers

The following section addresses supports for new teachers.

17. Please select any of the following programs or practices your school or district has in place to support new teachers.

- Require all beginning teachers to receive mentor support
- Mentor selection process
- Provide dedicated meeting times for beginning teachers and mentors
- Reduced teaching load for beginning teachers
- Reduced teaching load for mentors
- Encourage beginning teachers to participate in a learning community or peer network
- Additional mentor stipend

Please describe any programs or practices in place that are not listed above

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Survey Sent To CTE Principals

Teacher Shortages And Supports For New Teachers, CTE

The Kentucky General Assembly has directed the Office of Education Accountability to study teacher shortages and supports for new teachers. This study will include teacher turnover rates, teacher shortages, teacher certification types, supports for new teachers, and the association between teacher turnover and student outcomes.

This survey should take about 30 minutes to complete.

Please complete the survey by May 28, 2019.

If you need clarification about any of the questions, please contact Allison Stevens or Bart Liguori. Call 502-564-8197 or email allison.stevens@lrc.ky.gov or bart.liguori@lrc.ky.gov.

We appreciate your time and information.

Contact Information

1. Districts served by your school.

Teacher Shortages

The questions below address teacher shortages. Teacher shortages are indicated by unfilled positions and include positions filled by irregular, temporary, or emergency certificates and teachers certified in areas other than their area of expertise.

2. In your experience, which best describes the supply of teacher applicants in the following program areas at your school? For this question, "satisfactory" is defined as applicants with appropriate teaching certifications that meet your school's expectations of quality

	No available applicants	Applicants available but not satisfactory	Few satisfactory applicants	Generally enough satisfactory applicants	Abundance of satisfactory applicants	N/A
Agriculture						
Business and marketing						
Construction technology						
Engineering technology						
Family and consumer sciences						
Health sciences						
Information technology						
Manufacturing technology						
Media arts						
Transportation						

3. Has your school experienced any teacher shortages in areas not described in the previous question?

- Yes
- No

If you answered yes, what was the subject area(s)?

4. Please describe any effects of **teacher shortages** in your school.

5. Did your school eliminate a class or classes to address a teacher shortage?

- Yes
- No
- N/A – My school has not experiences a shortage.
- If you answered yes, please list the class or classes.

6. Which describes the supply of teacher applicants for the 2018-2019 school year with the supply of teacher applicants in the past five years?

	Considerably fewer applicants	Fewer applicants	About the same	More applicants	Considerably more applicants	N/A
Agriculture						
Business and marketing						
Construction technology						
Engineering technology						
Family and consumer sciences						
Health sciences						
Information technology						
Manufacturing technology						
Media arts						
Transportation						

7. To what degree is each of the following a barrier to your school's ability to **recruit teachers**?

	Not a barrier	Minimal barrier	Moderate barrier	Extreme barrier
Geographic location				
Community and local support				
Salary and benefits insufficient compared to private industry				
Salary insufficient compared to other schools or districts				
Lack of qualified candidates, in general				
Lack of qualified candidates, in particular subjects				

Please describe any other factors that affect teacher recruitment that are not listed above and estimate the degree to which each affects your school.

8. Are there particular content areas where the qualification requirements have presented a challenge to recruiting teachers?

- Yes
- No
- If yes, what are the content areas?

9. Please describe any policies, practices, or strategies your school/district uses or is considering to **recruit teachers**. Examples of policies, practices, or strategies are financial assistance for continuing education, housing, or reduced class size.

10. Other than the policies, practices, or strategies described in the previous question, please describe any advantages your school has in **recruiting teachers**. Examples of advantages are quality of life and affordable cost of living.

11. Do you have any additional comments regarding **teacher shortages**?

Teacher Turnover

The following questions refer to teacher turnover. For this survey, please think of teacher turnover as the loss of teachers from your school.

12. To what degree is each of the following a barrier to your school's ability to **recruit teachers**?

	Not a barrier	Minimal barrier	Moderate barrier	Extreme barrier
Geographic location				
Community and local support				
Salary and benefits insufficient compared to private industry				
Salary insufficient compared to other schools or districts				
School environment, such as facilities and resources				
School culture, such as leadership, support, and involvement				
Student performance				
Student conduct				
School safety				

Please describe any other factors that affect teacher retention that are not listed above and estimate the degree to which each affects your school.

13. Please describe any policies, practices, or strategies your school/district uses or is considering to **retain teachers**. Examples of policies, practices, or strategies are financial assistance for continuing education, housing, reduced class size, and mentoring.

14. Other than the policies, practices, or strategies described in the previous question, please describe any advantages your school has in **retaining teachers**. Examples of advantages are quality of life and affordable cost of living.

15. Please describe any effects of **teacher turnover** in your school.

16. Do you have any additional comments regarding **teacher turnover**?

Supports For New Teachers

The following section addresses supports for new teachers.

17. Please select any of the following programs or practices your school or district has in place to support new teachers.

- Require all beginning teachers to receive mentor support
- Mentor selection process
- Provide dedicated meeting times for the beginning teacher and the mentor
- Reduced teaching load for beginning teachers
- Reduced teaching load for mentors
- Encourage beginning teachers to participate in a learning community or peer network
- Additional mentor stipend

Please describe any programs or practices in place that are not listed above.

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Appendix B

Data Notes

KYSTATS Workforce Status And Industry Employment

The Office of Education Accountability provided the Kentucky Center for Statistics (KYSTATS) a list of teachers who left the teaching profession between school years 2009 and 2017 and KYSTATS provided workforce status and industry employment information for those former teachers.

There are several caveats with this analysis. First, KYSTATS was only able to provide information about former teachers who worked in Kentucky after leaving the teaching profession. This means that former teachers may be teaching or working in another state, but this would not appear in the data. Second, employment information is disaggregated by industry and industries with fewer than 10 former teachers appears as “<10” in the data to avoid identifying individuals. Therefore, it was not possible to include these industries in the analysis. Excluding these industries is unlikely to impact any conclusions because it can be assumed that fewer than 10 former teachers entering any given industry over a nine year period is unlikely to indicate a trend or common occurrence.

Jefferson County

Chapter 3 includes an analysis of teacher turnover and school qualities. Kentucky’s schools were divided into quartiles based on turnover. The percent of students in poverty, students who are minorities, and teachers with four or fewer years of experience were examined by quartile. Table B.1 replicates the table showing the results.

Table B.1
School Demographic Characteristics By School Turnover,
Including Jefferson County
School Years 2015 To 2019

Turnover Quartile	Average Turnover	Average Of All Schools In Quartile		
		Receiving FRPL	Minority	Teachers With Four Or Fewer Years Of Experience
1 (lowest)	9.4%	60.6%	11.9%	17.6%
2	13.5	60.0	15.6	21.8
3	17.8	62.8	21.0	26.9
4 (highest)	32.7	69.1	29.7	33.5

Note: FRPL= Free or Reduced Price Lunch. Table represents 1,225 A1 and A2 schools for which there was complete information.

Source: Staff analysis of data from the Kentucky Department of Education.

The analysis in Chapter 3 included 135 schools in Jefferson County, of which 57.8 percent were in quartiles 3 and 4. Jefferson County’s staffing policy allows teachers to transfer to open positions across the district based on preference and seniority. The Office of Education

Accountability’s report “Collective Bargaining Agreements in Kentucky Districts” addressed concerns about the distribution of quality teachers in Jefferson County.

Table B.2 shows school demographic characteristics by teacher turnover when JCPS schools are excluded from the quartiles. Average turnover changed by -0.7 to 0.1 percentage points, the average percentage of students in poverty changed by -1.2 to 2.4 percentage points, the average percentage of minority students changed by 2.9 to 5.8 percentage points, and the average percent of new teachers changed by -0.2 to 1.5 percentage points.

Table B.1
School Demographic Characteristics By School Turnover,
Excluding Jefferson County
School Years 2015 To 2019

Turnover Quartile	Average Turnover	Average Of All Schools In Quartile		
		Receiving FRPL	Minority	Teachers With Four Or Fewer Years Of Experience
1 (lowest)	9.3%	61.8%	9.0%	17.9%
2	13.4	59.1	12.0	21.8
3	17.8	61.1	15.8	26.0
4 (highest)	33.4	66.7	23.9	32.1

Note: FRPL= Free or Reduced Price Lunch. Table represents 1,225 A1 and A2 schools for which there was complete information.

Source: Staff analysis of data from the Kentucky Department of Education.

Appendix C

Kentucky Statute On Alternative Routes To Certification

Introduction To The Statute

The General Assembly recognized that Kentucky students could benefit from being taught by distinguished professionals with valuable work experience. KRS 161.048 authorizes eight alternative routes to professional teaching certification.

KRS 161.048

161.048 Legislative findings -- Alternative certification program -- Purpose -- Options -- Testing and eligibility requirements -- Salary schedule.

- (1) The General Assembly hereby finds that:
 - (a)
 1. There are persons who have distinguished themselves through a variety of work and educational experiences that could enrich teaching in Kentucky schools;
 2. There are distinguished scholars who wish to become teachers in Kentucky's public schools, but who did not pursue a teacher preparation program;
 3. There are persons who should be recruited to teach in Kentucky's public schools as they have academic majors, strong verbal skills as shown by a verbal ability test, and deep knowledge of content, characteristics that empirical research identifies as important attributes of quality teachers;
 4. There are persons who need to be recruited to teach in Kentucky schools to meet the diverse cultural and educational needs of students; and
 5. There should be alternative procedures to the traditional teacher preparation programs that qualify persons as teachers;
 - (b) There are hereby established alternative certification program options as described in subsections (2) to (9) of this section;
 - (c) It is the intent of the General Assembly that the Educational Professional Standards Board inform scholars, persons with exceptional work experience, and persons with diverse backgrounds who have potential as teachers of these options and assist local boards of education in implementing these options and recruitment of individuals who can enhance the education system in Kentucky;
 - (d) The Education Professional Standards Board may reject the application of any candidate who is judged as not meeting academic requirements comparable to those for students enrolled in Kentucky teacher preparation programs; and
 - (e) The Education Professional Standards Board shall promulgate administrative regulations establishing standards and procedures for the alternative certification options described in this section.
- (2) Option 1: Certification of a person with exceptional work experience. An individual who has exceptional work experience and has been offered employment in a local school

district shall receive a one (1) year provisional certificate with approval by the Education Professional Standards Board of a joint application by the individual and the employing school district under the following conditions:

- (a) The application contains documentation of all education and work experience;
- (b) The candidate has documented exceptional work experience in the area in which certification is being sought; and
- (c) The candidate possesses:
 1. A bachelor's degree or a graduate degree;
 2. A minimum cumulative grade point average of two and seventy-five hundredths (2.75) on a four (4) point scale or a minimum grade point average of three (3.0) on a four (4) point scale on the last thirty (30) hours of credit completed, including undergraduate and graduate coursework from a nationally or regionally accredited postsecondary institution; and
 3. An academic major or a passing score on the academic content assessment in the area in which certification is being sought by the applicant as designated by the Education Professional Standards Board.

The candidate shall participate in the teacher internship program under KRS 161.030. After successful completion of the internship program, the candidate shall receive a professional certificate and shall be subject to certificate renewal requirements the same as other teachers with a professional certificate.

- (3) Option 2: Certification through a local school district training program. A local school district or group of school districts may seek approval for a training program. The state-approved local school district training program is an alternative to the college teacher preparation program as a means of acquiring teacher certification for a teacher at any grade level. The training program may be offered for all teaching certificates approved by the Education Professional Standards Board, including interdisciplinary early childhood education, except for specific certificates for teachers of exceptional children. To participate in a state-approved local school district alternative training program, the candidate shall possess:

- (a) A bachelor's degree or a graduate degree;
- (b) A minimum cumulative grade point average of two and seventy-five hundredths (2.75) on a four (4) point scale or a minimum grade point average of three (3) on a four (4) point scale on the last thirty (30) hours of credit completed, including undergraduate and graduate coursework from a nationally or regionally accredited postsecondary institution;
- (c) A passing score on the academic content assessment in the area in which certification is being sought by the applicant as designated by the Education Professional Standards Board. To be eligible to take an academic content assessment, the applicant shall have completed a thirty (30) hour major in the academic content area or five (5) years of experience in the academic content area as approved by the Education Professional Standards Board; and
- (d) An offer of employment in a school district which has a training program approved by the Education Professional Standards Board.

Upon meeting the participation requirements as established in this subsection, the candidate shall be issued a one (1) year provisional certificate by the Education Professional Standards Board. The candidate shall participate in the teacher internship

program under KRS 161.030. After successful completion of the internship program, the candidate shall receive a professional certificate and shall be subject to certificate renewal requirements the same as other teachers with a professional certificate.

- (4) Option 3: Certification of a professional from a postsecondary institution: A candidate who possesses the following qualifications may receive a one (1) year provisional certificate for teaching at any level:
- (a) A master's degree or doctoral degree in the academic content area for which certification is sought;
 - (b) A minimum of five (5) years of full-time teaching experience, or its equivalent, in the academic content area for which certification is sought in a regionally or nationally accredited institution of higher education; and
 - (c) An offer of employment in a school district which has been approved by the Education Professional Standards Board.

The candidate shall participate in the teacher internship program under KRS 161.030. After successful completion of the internship program, the candidate shall receive a professional certificate and shall be subject to certificate renewal requirements the same as other teachers with professional certificates.

- (5) Option 4: Certification of an adjunct instructor. A person who has expertise in areas such as art, music, foreign language, drama, science, computer science, and other specialty areas may be employed as an adjunct instructor in a part-time position by a local board of education under KRS 161.046.
- (6) Option 5: Certification of a veteran of the Armed Forces. The Education Professional Standards Board shall issue a statement of eligibility, valid for five (5) years, for teaching at the elementary, secondary, and secondary career technical education levels to a veteran of the Armed Forces who was honorably discharged from active duty as evidenced by Defense Department Form 214 (DD 214) or National Guard Bureau Form 22 or to a member of the Armed Services currently serving with six (6) or more years of honorable service, including Reserves, National Guard, or active duty. The candidate shall possess:
- (a) A bachelor's degree or graduate degree;
 - (b) A minimum cumulative grade point average of two and seventy-five hundredths (2.75) on a four (4) point scale or a minimum grade point average of three (3) on a four (4) point scale on the last thirty (30) hours of credit completed, including undergraduate and graduate coursework from a nationally or regionally accredited postsecondary institution; and
 - (c) An academic major or a passing score on the academic content assessment in the area in which certification is being sought by the applicant as designated by the Education Professional Standards Board.

Upon an offer of employment by a school district, the eligible veteran shall receive a one (1) year provisional certificate with approval by the Education Professional Standards Board of a joint application by the veteran and the employing school district. During this year, the veteran shall participate in the teacher internship program under KRS 161.030. After successful completion of the internship program, the veteran shall receive a professional certificate.

- (7) Option 6: University alternative program. With approval of the Education Professional Standards Board, a university may provide an alternative program that enrolls students in a postbaccalaureate teacher preparation program concurrently with employment as a teacher

in a local school district. A student in the alternative program shall be granted a one (1) year provisional certificate and shall participate in the Kentucky teacher internship program, notwithstanding provisions of KRS 161.030. A student may not participate in the internship program until the student has successfully completed the assessments required by the board. The one (1) year provisional certificate may be renewed two (2) additional years, and shall be contingent upon the candidate's continued enrollment in the preparation program and compliance with all requirements established by the board. A professional certificate shall be issued upon the teacher candidate's successful completion of the program, the internship program requirements, and all academic content assessments in the specific teaching field of the applicant as designated by the Education Professional Standards Board.

- (8) Option 7: Certification of a person in a field other than education to teach in elementary, middle, or secondary programs. This option shall not be limited to teaching in shortage areas. An individual certified under provisions of this subsection shall be issued a one (1) year provisional certificate, renewable for a maximum of two (2) additional years with approval of the Education Professional Standards Board.
- (a) The candidate shall possess:
1. A bachelor's degree with a declared academic major in the area in which certification is sought or a graduate degree in a field related to the area in which certification is sought;
 2. A minimum cumulative grade point average of two and seventy-five hundredths (2.75) on a four (4) point scale or a minimum grade point average of three (3) on a four (4) point scale on the last thirty (30) hours of credit completed, including undergraduate and graduate coursework from a nationally or regionally accredited postsecondary institution;
 3. A passing score on the GRE or equivalent as designated by the Education Professional Standards Board. A candidate who has a terminal degree shall be exempt from the requirements of this subparagraph; and
 4. A passing score on the academic content assessment in the area in which certification is being sought as designated by the Education Professional Standards Board.
- (b) Prior to receiving the one (1) year provisional certificate or during the first year of the certificate, the teacher shall complete the following:
1. For elementary teaching, the individual shall successfully complete the equivalent of a two hundred forty (240) hour institute, based on six (6) hour days for eight (8) weeks. The providers and the content of the institute shall be approved by the Education Professional Standards Board. The content shall include research-based teaching strategies in reading and math, research on child and adolescent growth, knowledge of individual differences, including teaching exceptional children, and methods of classroom management.
 2. For middle and secondary teaching, the individual shall successfully complete the equivalent of a one hundred eighty (180) hour institute, based on six (6) hour days for six (6) weeks. The providers and the content of the institute shall be approved by the Education Professional Standards Board and shall include research-based teaching strategies, research on child and adolescent growth,

- knowledge of individual differences, including teaching exceptional children, and methods of classroom management.
- (c) The candidate shall participate in the teacher internship program under KRS 161.030. After successful completion of the internship program, the candidate shall receive a professional certificate and shall be subject to certificate renewal requirements the same as other teachers with a professional certificate.
- (9) Option 8: Certification of a Teach for America participant to teach in elementary, middle, or high schools. Nothing in this subsection shall conflict with the participation criteria of the Teach for America program. An individual certified under this subsection shall be issued a one (1) year provisional certificate.
- (a) The candidate shall possess:
 - 1. An offer of employment from a local school district;
 - 2. A bachelor's degree;
 - 3. A successful completion of the summer training institute and ongoing professional development required by Teach for America, including instruction in goal-oriented, standards-based instruction, diagnosing and assessing students, lesson planning and instructional delivery, classroom management, maximizing learning for diverse students, and teaching methodologies; and
 - 4. A passing score on the academic content assessment in the area in which certification is being sought as designated by the Education Professional Standards Board.
 - (b) The provisional certificate granted under paragraph (a) of this subsection may be renewed two (2) times with a recommendation of the superintendent and approval of the Education Professional Standards Board.
 - (c) A Teach for America participant who is approved for a second renewal of his or her provisional certificate under paragraph (b) of this subsection may participate in the teacher internship program under KRS 161.030.
 - (d) A Teach for America participant shall be issued a professional certificate upon the participant's successful completion of the internship program and assessments relating to teaching of subject matter required by the Education Professional Standards Board under KRS 161.030.
 - (e) Notwithstanding any statute or administrative regulation to the contrary, a teacher certified under this subsection shall have ten (10) years from the date that the teacher successfully completed the internship program to complete a master's degree or fifth year program, or the equivalent as specified by the Education Professional Standards Board in administrative regulation.
- (10) A public school teacher certified under subsections (2) to (9) of this section shall be placed on the local district salary schedule for the rank corresponding to the degree held by the teacher.
- (11) Subsections (1) to (3) of this section notwithstanding, a candidate who possesses the following qualifications may receive certification for teaching programs for exceptional students:
- (a) An out-of-state license to teach exceptional students;
 - (b) A bachelor's or master's degree in the certification area or closely related area for which certification is sought; and
 - (c) Successful completion of the teacher internship program requirement required under

KRS 161.030.**Effective:** June 29, 2017**History:** Amended 2017 Ky. Acts ch. 14, sec. 2, effective June 29, 2017. -- Amended 2010 Ky. Acts ch. 79, sec. 1, effective July 15, 2010. -- Amended 2008 Ky. Acts ch. 177, sec. 1, effective July 15, 2008. -- Amended 2005 Ky. Acts ch. 111, sec. 2, effective June 20, 2005. -- Amended 2004 Ky. Acts ch. 117, sec. 3, effective July 13, 2004. -- Amended 2000 Ky. Acts ch. 161, sec. 1, effective July 14, 2000. -- Amended 1998 Ky. Acts ch. 514, sec. 8, effective July 15, 1998; and ch. 589, sec. 1, effective July 15, 1998. -- Amended 1996 Ky. Acts ch. 137, sec. 1, effective July 15, 1996; and ch. 343, sec. 6, effective July 15, 1996. -- Created 1990 Ky. Acts ch. 476, Pt. II, sec. 58, effective July 13, 1990.

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Appendix D

Teachers With Alternative And Emergency Certificates

Table D.1 shows teachers with alternative certificates and teachers with emergency certificates as a percent of all teachers in school year 2010 by subject and level.

Table D.1
Teachers With Alternative And Emergency Certificates
School Year 2010

Subject Area	Alternative	Emergency	All Active Teachers
Elementary Education			
Elementary Education	1.0%	0.2%	10,733
Preschool	0.1	4.2	956
Other	0.6	0.0	1,339
Middle School			
Computer Science	1.7	0.0	175
English Language Arts	4.3	0.4	2,847
Mathematics	5.0	0.9	1,450
Sciences	5.1	0.6	1,555
Social Studies	4.6	0.5	1,637
Other	2.5	0.0	1,724
High School			
Accounting and Financial	2.7	0.0	149
Biology and Life Sciences	6.4	1.3	1,008
Chemistry	7.7	5.6	444
Computer Science	5.6	0.0	107
Earth Science	7.7	3.6	336
English Language Arts	4.4	0.6	2,715
Mathematics	5.5	1.4	2,128
Physics	4.7	10.1	129
General Science	9.1	0.3	1,095
Social Studies	4.2	0.7	2,130
Other	4.2	0.0	2,142
Any Grade			
English Second Language	7.6	14.7	197
Health and Physical Education	4.1	1.8	882
Music	1.1	0.9	843
Exceptional Children	0.9	6.9	1,176
Visual and Performing Arts	4.4	0.3	1,148
World Languages	8.4	4.1	790
CTE			
Agriculture	1.1	0.4	275

Subject Area	Alternative	Emergency	All Active Teachers
Automotive Technology	0.0	1.2	86
Business and Marketing	2.7	0.2	803
Construction	8.4	0.0	95
Engineering Technology	3.4	1.7	175
Family and Consumer Sciences	4.2	1.7	521
Health Science	10.1	1.2	168
Industrial Maintenance	0.0	5.6	18
Information Technology	3.3	0.7	153
JROTC	1.3	0.6	156
Law and Public Services	0.0	0.0	6
Media Arts	0.0	100.0	1
Welding	3.2	2.1	95
Other	3.0	0.7	270

Source: Staff analysis of data from the Kentucky Department of Education.

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Appendix E

Area Development Districts

School Districts In Each Area Development District

Table E.1 shows the school districts in each area development in Kentucky. This table is a useful reference regarding turnover by region discussed in Chapter 3.

Table E.1
School Districts In Each Area Development District

Area Development District	School Districts
Barren River	Allen, Barren, Bowling Green Ind, Butler, Caverna Ind, Edmonson, Glasgow Ind, Hart, Logan, Metcalfe, Monroe, Russellville Ind, Simpson, Warren
Big Sandy	Floyd, Johnson, Martin, Magoffin, Paintsville Ind, Pike, Pikeville Ind
Bluegrass	Anderson, Berea Ind, Bourbon, Boyle, Burgin Ind, Clark, Danville Ind, Estill, Fayette, Frankfort Ind, Franklin, Garrard, Harrison, Harrodsburg Ind, Jessamine, Lincoln, Madison, Mercer, Nicholas, Paris Ind, Powell, Scott, Woodford
Buffalo Trace	Augusta Ind, Bracken, Fleming, Lewis, Mason, Robertson
Cumberland Valley	Barbourville Ind, Bell, Clay, Corbin Ind, East Bernstadt Ind, Harlan, Harlan Ind, Jackson, Knox, Laurel, Middlesboro Ind, Pineville Ind, Rockcastle, Whitley, Williamsburg Ind
FIVCO	Ashland Ind, Boyd, Carter, Elliott, Greenup, Fairview Ind, Lawrence, Raceland, Worthington Ind, Russell Ind
Gateway	Bath, Menifee, Montgomery, Morgan, Rowan
Green River	Daviess, Hancock, Henderson, McLean, Ohio, Owensboro Ind, Providence Ind, Union, Webster
KIPDA	Anchorage Ind, Bullitt, Eminence Ind, Henry, Jefferson, Oldham, Shelby, Spencer, Trimble
Kentucky River	Breathitt, Hazard Ind, Jackson Ind, Jenkins Ind, Knott, Lee, Leslie, Letcher, Owsley, Perry, Wolfe
Lake Cumberland	Adair, Campbellsville Ind, Casey, Clinton, Cumberland, Green, McCreary, Monticello Ind, Pulaski, Russell, Science Hill Ind, Taylor, Somerset Ind, Wayne
Lincoln Trail	Bardstown Ind, Breckinridge, Cloverport Ind, Elizabethtown Ind, Grayson, Hardin, LaRue, Marion, Meade, Nelson, Washington, West Point Ind
Northern Kentucky	Beechwood Ind, Bellevue Ind, Boone, Campbell, Carroll, Covington Ind, Dayton Ind, Erlanger-Elsmere Ind, Fort Thomas Ind, Gallatin, Grant, Kenton, Ludlow Ind, Newport Ind, Owen, Pendleton, Silver Grove Ind, Southgate Ind, Walton-Verona Ind, Williamstown Ind
Pennyrile	Caldwell, Christian, Crittenden, Dawson Springs Ind, Hopkins, Livingston, Lyon, Muhlenberg, Todd, Trigg
Purchase	Ballard, Calloway, Carlisle, Fulton, Fulton Ind, Graves, Hickman, Marshall, Mayfield Ind, McCracken, Murray Ind, Paducah Ind

Source: Staff analysis of data from the Kentucky Association for Economic Development.

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Appendix F

Annual Teacher Turnover By School District

Turnover By School District

Table F.1 shows turnover by district between school years 2010 and 2019.

Table F.1
Annual Teacher Turnover By School District
School Years 2010 To 2019

School District	2010-2019	2015-2019	2019
Adair County	8.1%	9.7%	9.5%
Allen County	9.0	9.4	9.0
Anchorage Independent	12.0	15.7	20.0
Anderson County	12.1	13.0	11.7
Ashland Independent	10.2	10.2	10.2
Augusta Independent	15.1	12.4	23.8
Ballard County	13.5	15.9	12.2
Barbourville Independent	12.2	10.3	4.9
Bardstown Independent	9.0	9.0	6.2
Barren County	10.1	10.0	11.8
Bath County	10.1	9.6	11.5
Beechwood Independent	12.1	12.5	15.0
Bell County	10.5	11.1	10.0
Bellevue Independent	18.5	21.1	26.1
Berea Independent	12.1	14.3	10.7
Boone County	9.6	10.6	11.2
Bourbon County	15.7	17.0	14.6
Bowling Green Independent	10.6	10.7	11.8
Boyd County	11.4	13.1	13.0
Boyle County	13.2	13.8	14.1
Bracken County	12.2	15.3	17.1
Breathitt County	11.6	12.6	14.7
Breckinridge County	11.1	9.7	13.0
Bullitt County	12.4	13.4	17.1
Burgin Independent	14.5	16.5	13.9
Butler County	9.1	9.6	10.7
Caldwell County	12.8	14.5	8.7
Calloway County	9.8	9.7	12.0
Campbell County	13.4	13.4	11.5
Campbellsville Independent	9.9	9.3	10.3
Carlisle County	16.1	17.4	11.1

School District	2010-2019	2015-2019	2019
Carroll County	17.5	20.0	20.0
Carter County	10.3	10.5	11.6
Casey County	10.5	11.7	14.1
Caverna Independent	17.5	22.9	32.7
Christian County	18.4	18.9	17.4
Clark County	20.4	21.9	16.8
Clay County	7.7	8.1	9.1
Clinton County	8.5	7.2	6.3
Cloverport Independent	19.3	23.0	20.8
Corbin Independent	8.9	9.3	7.4
Covington Independent	25.2	26.8	26.8
Crittenden County	14.0	14.4	19.8
Cumberland County	13.6	14.2	13.6
Danville Independent	20.8	24.3	64.4
Daviess County	9.5	10.4	10.6
Dawson Springs Independent	11.2	11.2	13.3
Dayton Independent	17.2	18.0	20.6
East Bernstadt Independent	8.4	8.7	16.7
Edmonson County	9.2	8.0	8.6
Elizabethtown Independent	10.8	10.4	10.6
Elliott County	8.8	9.1	11.0
Eminence Independent	19.3	24.2	34.9
Erlanger-Elsmere Independent	17.6	19.1	23.1
Estill County	10.4	11.7	14.3
Fairview Independent	16.9	21.7	24.4
Fayette County	12.8	12.8	12.5
Fleming County	12.7	15.8	11.5
Floyd County	11.1	12.0	12.5
Fort Thomas Independent	8.1	8.6	7.8
Frankfort Independent	21.3	20.3	12.5
Franklin County	15.4	16.5	17.1
Fulton County	17.7	21.0	34.3
Fulton Independent	22.1	27.6	32.3
Gallatin County	15.7	19.7	27.2
Garrard County	12.1	14.1	11.2
Glasgow Independent	10.2	10.6	10.6
Grant County	15.6	17.3	24.2
Graves County	11.4	12.4	11.3
Grayson County	8.8	9.5	14.0
Green County	9.6	11.7	14.7
Greenup County	14.4	14.5	10.7
Hancock County	10.1	10.3	14.2
Hardin County	11.9	12.0	13.5
Harlan County	9.6	10.9	11.0

School District	2010-2019	2015-2019	2019
Harlan Independent	11.9	11.8	14.9
Harrison County	9.4	9.3	11.9
Hart County	10.5	9.4	17.0
Hazard Independent	12.2	12.6	7.4
Henderson County	14.8	16.1	13.5
Henry County	15.7	16.7	16.2
Hickman County	11.4	12.9	16.7
Hopkins County	13.8	14.5	16.5
Jackson County	8.5	8.0	6.4
Jackson Independent	11.3	11.4	14.3
Jefferson County	11.1	11.1	10.4
Jenkins Independent	29.2	27.9	25.0
Jessamine County	14.5	14.5	13.0
Johnson County	8.4	7.4	8.0
Kenton County	11.7	13.1	13.8
Knott County	13.4	12.9	19.2
Knox County	11.2	11.6	12.0
LaRue County	9.2	9.5	10.9
Laurel County	8.4	9.0	9.7
Lawrence County	13.2	12.5	13.5
Lee County	9.4	7.6	12.5
Leslie County	8.6	8.6	11.3
Letcher County	11.8	12.4	13.9
Lewis County	8.8	9.3	7.3
Lincoln County	12.0	13.3	16.2
Livingston County	13.9	14.2	12.8
Logan County	12.9	13.1	13.2
Ludlow Independent	9.8	8.9	7.1
Lyon County	12.8	11.4	5.4
Madison County	9.7	10.1	14.3
Magoffin County	8.8	8.2	5.0
Marion County	10.5	10.9	12.7
Marshall County	10.3	10.1	10.7
Martin County	11.9	12.9	14.1
Mason County	9.5	10.5	9.6
Mayfield Independent	12.4	11.4	13.4
McCracken County	12.7	11.0	9.9
McCreary County	11.5	12.5	11.9
McLean County	11.5	12.7	15.6
Meade County	9.1	10.3	10.7
Menifee County	13.7	15.8	16.4
Mercer County	13.5	12.9	9.7
Metcalfe County	18.0	14.5	17.7
Middlesboro Independent	16.2	19.7	17.3

School District	2010-2019	2015-2019	2019
Monroe County	7.8	7.2	8.0
Montgomery County	18.9	21.8	30.5
Morgan County	9.1	9.3	15.3
Muhlenberg County	10.5	12.9	9.1
Murray Independent	10.6	10.1	9.6
Nelson County	17.3	20.5	24.3
Newport Independent	23.9	29.3	31.3
Nicholas County	12.5	11.9	8.7
Ohio County	10.2	11.1	9.9
Oldham County	13.8	15.1	14.3
Owen County	13.3	14.6	11.1
Owensboro Independent	9.7	9.1	8.3
Owsley County	9.0	8.7	10.6
Paducah Independent	14.1	15.0	16.8
Paintsville Independent	10.0	10.6	10.0
Paris Independent	25.3	28.4	32.7
Pendleton County	12.5	13.9	19.9
Perry County	11.9	14.2	17.3
Pike County	7.4	7.6	8.6
Pikeville Independent	8.8	8.4	13.9
Pineville Independent	12.4	15.6	10.8
Powell County	12.2	13.3	14.7
Pulaski County	8.8	8.3	8.4
Raceland-Worthington Independent	10.0	12.7	10.9
Robertson County	13.3	14.8	11.5
Rockcastle County	6.7	6.2	6.5
Rowan County	10.5	10.7	12.0
Russell County	8.1	8.9	9.5
Russell Independent	9.0	9.0	9.5
Russellville Independent	22.3	24.0	18.7
Science Hill Independent	11.0	10.4	0.0
Scott County	11.6	12.7	12.9
Shelby County	17.6	17.6	22.9
Silver Grove Independent	25.0	27.2	12.5
Simpson County	12.9	10.5	12.2
Somerset Independent	9.1	9.3	9.8
Southgate Independent	26.4	28.4	6.3
Spencer County	11.3	10.0	10.9
Taylor County	9.5	10.6	12.1
Todd County	16.4	18.8	18.0
Trigg County	11.4	10.9	7.6
Trimble County	16.8	23.0	47.8
Union County	20.2	16.0	11.2
Walton-Verona Independent	9.1	10.1	5.8

School District	2010-2019	2015-2019	2019
Warren County	12.3	13.8	14.0
Washington County	12.4	13.0	10.8
Wayne County	8.7	8.7	12.8
Webster County	14.7	17.3	15.2
West Point Independent	22.7	18.3	41.7
Whitley County	5.8	5.7	5.7
Williamsburg Independent	10.9	10.7	12.3
Williamstown Independent	15.7	16.3	16.0
Wolfe County	6.8	7.9	3.7
Woodford County	14.7	16.8	14.2

Source: Staff analysis of data from the Kentucky Department of Education.

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