

Executive Summary

K-12 Teacher Supply, Demand, and Shortages in Pennsylvania

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Pennsylvania has long been known as an exporter of teachers and has rarely been mentioned as a state experiencing a shortage of teachers in areas other than the traditional shortage areas of mathematics, selected science courses, English Language Learner, and special education. Recent news stories and evidence, however, suggest a growing shortage across the state. This research, which was conducted in 2018-2019, used state administrative data, data collected by other entities, a focus group, and a survey of principals and superintendents to review the supply and demand of teachers to identify and understand existing and projected shortages of teachers in the Commonwealth.

Supply of Teachers

According to the research, the supply of teachers in Pennsylvania has declined dramatically from 2011-12 to 2017-18. Indeed, the number of Instructional I licenses granted by the Pennsylvania Department of Education (PDE) decreased by at least 49 percent for all subject areas. For eight of the 11 areas, the decline was at least 60 percent, and there was at least a 70 percent decline for secondary mathematics, technology-related areas, and physical/health education. Thus, across all subject areas, there

have been dramatic declines in the number of newly licensed teachers for every subject area. Pennsylvania has experienced some of the steepest declines in the number of students enrolled in teacher preparation programs (TPPs) and the number of graduates from TPPs of all states. In addition, the number of teachers entering the Commonwealth from out-of-state and the number of teachers transferring from private schools or returning to teaching after a hiatus have all declined as well.

In sum, Pennsylvania has experienced a dramatic decline in the supply of new teachers—a decline that is greater than the majority of states across the nation. This suggests potentially serious issues in the pipeline of prospective teachers in the Commonwealth.

Demand for Teachers

The number of students enrolled in early education (EE) through 12th grade in Pennsylvania public schools influences the demand for teachers. There has been—and will continue to be—a decline in the number of EE-12 students enrolled across the state. The declines will be greatest for rural districts, thus rural districts will experience a greater decrease in the demand for teachers than elsewhere in the state.



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In addition, the ratio of students to teachers slightly impacts the demand for teachers. There have been slight declines in the student-teacher ratio over the past 6 years. These declines were similar for urban and rural districts and will continue over the next decade for most districts. This will minimally increase the demand for teachers in most districts across the state.

Finally, teacher attrition in Pennsylvania is lower than in most other states and the attrition rates for Pennsylvania rural districts (6.4 percent in 2012-13 and 4.7 percent in 2016-17) have been lower than for urban districts (6.7 percent in 2012-13 and 5.5 percent in 2016-17). An increase in the percentage of those eligible to retire—especially in rural districts—will likely result in slight increases in teacher attrition in the next decade.

In sum, this study suggests the demand for teachers will increase slightly over the next decade. However, this trend will have a marginal effect on the balance between the supply and demand for teachers in Pennsylvania relative to the effects of the supply of teachers.

Estimates of Teacher Shortages

There is no commonly accepted definition of a teacher shortage. One measure is a comparison of the supply of teachers to the demand for teachers.

As further evidence, researchers often examine changes in the qualifications of teachers as evidence of the degree to which the supply of teachers is sufficient to meet the demand for teachers.

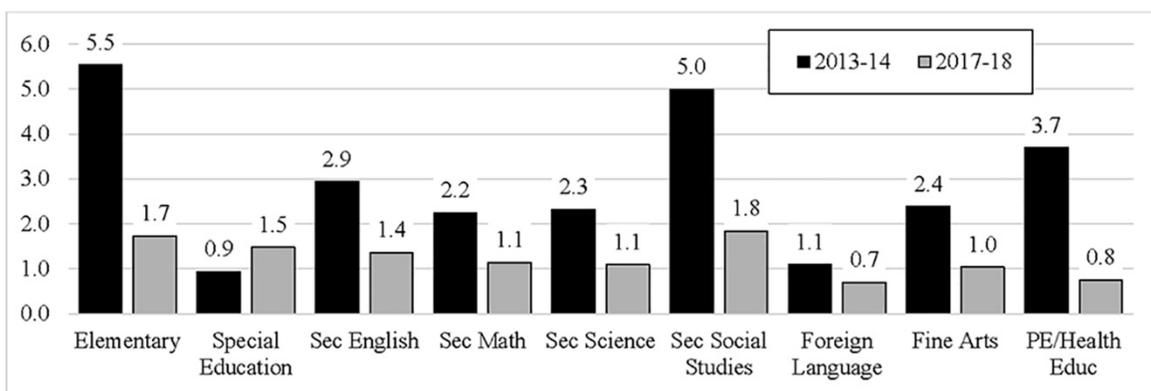
As shown in Figure 1, the ratio of new Instructional I licenses granted by PDE to the number of beginning teachers hired in the same subject area has declined substantially across all subject areas with the exception of special education.

The declines over time and very low ratios strongly suggest the pool of prospective teachers from which districts hire beginning teachers has become too small to meet the demand for beginning teachers. Evidence that this reduced supply is impacting district hiring practices is supported by the dramatic increase of more than 400 percent in the number of teachers on emergency permits from the 2011-12 to 2017-18 academic years.

Conclusions on Supply, Demand, and Shortages

At best, there will be a small increase in the supply of teachers over the next 5 to 10 years. There will likely be little change in the demand for teachers as declining student enrollments that lead to a decrease in the demand for teachers are offset by increased attrition of teachers due to retirement and declining student-teacher ratios.

Figure 1: Ratio of Number of In-State New Instructional I Certificates To the Number of Beginning Teachers Hired by Major Subject Area (2013-14 and 2017-18)



Data Source: PDE Aggregate Licensure files and Educator Employment Files; Calculations by researchers.

Currently, there is a shortage of teachers in Pennsylvania as evidenced by the ratio of newly prepared teachers to the number of beginning teachers hired, the dramatic increase in the number of teachers employed on long-term emergency permits, press reports, responses to surveys, and districts' indications of shortage areas. The shortage is much more acute in specific subject areas and for specific areas of the state. The subject areas include special education, English Language Learner in urban areas, secondary math, and secondary science (physics, chemistry, and other advanced courses). To a lesser extent, evidence also suggests there may be shortages for secondary social studies, foreign language, physical/health education, and fine arts (music and art).

With respect to location, there are shortages in some of the large city districts and in some rural districts. In particular, there is evidence of current shortages in districts in the Philadelphia Metro, North Central, and South Central regions of the state. There is also evidence that many rural districts are experiencing difficulty in finding a sufficient supply of teachers in a wide array of subject areas. These shortages are projected to, at best, persist over time.

Potential Causes and Policy Considerations

The primary cause of the shortage in Pennsylvania is the insufficient supply of individuals willing to enter the teaching profession. There are myriad underlying factors influencing this trend, but there has yet to emerge a clear research consensus about all of the factors. One factor that clearly influences the supply of teachers is compensation (Borman & Dowling, 2008). Recent research suggests Pennsylvania teacher salaries have declined relative to alternative occupations (Allegretto & Mishel, 2018; Baker, 2020). Moreover, evidence also suggests recent legislative changes to the pension system for teachers would serve to reduce rather than increase entry into the teaching profession (Keefe, 2018).

In addition, the cost of higher education in Pennsylvania is greater than in almost every other state, and the costs continue to increase (Cooper, 2017). In making decisions about career choices, indi-

viduals make an economic calculation about future salary and the increasing level of debt needed to obtain a degree coupled with pay schedules that are not competitive with other occupations may be swaying them to enter alternative occupations (Boe & Gilford, 1992). Policymakers could address this issue using multiple strategies, including reduced tuition for education majors, loan forgiveness programs that incentivize teaching for up to 5 years, and increasing teacher salaries to make loan repayment easier.

Certification rules have also been identified by superintendents and TPP personnel as problematic. Thus, policymakers should conduct a complete review of the certification process and remove unnecessary barriers that prevent entry into the teaching profession. In particular, policymakers should consider creating certification spans of Early Childhood through grade six and grade six through high school to better align with how schools are organized. Policymakers may also want to review the rules governing how TPPs operate. The goal should be to prepare effective teachers. Rather than continually adding additional rules and regulations, PDE might consider allowing more freedom and flexibility to TPPs in return for greater oversight and accountability.

Finally, policymakers should focus on additional and improved data collection regarding educator supply, demand, and shortages. Current data do not allow for the accurate identification of supply and demand nor patterns of mobility, particularly with respect to teachers from the different TPPs. In addition, PDE should annually administer a detailed survey of districts about teacher supply, demand, quality, and shortages. This would provide much more detailed and useful information for policymakers.

The final policy suggestion is for state leaders to highlight the benefits of entering the teaching profession. With encouraging words, state leaders can positively impact the number of individuals considering the education profession as a career.

Visit www.rural.palegislature.us for the full report, *K-12 Teacher Supply, Demand, and Shortages in Pennsylvania*.

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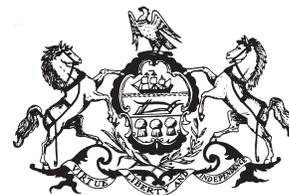
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