

Teacher Mobility in the School District of Philadelphia, 2009–10 through 2015–16

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How this report was produced

This report is the result of a collaboration between the Philadelphia Education Research Consortium (PERC); Dr. Matthew Steinberg, an assistant professor at the University of Pennsylvania Graduate School of Education; and students enrolled in Dr. Steinberg's Spring 2018 *Education Policy Research Practicum* class. This course pairs groups of students with community clients who have practical, pressing questions that require data analysis to answer. With Dr. Steinberg's guidance, students plan and conduct the analysis and prepare a report for the client (in this case, PERC). This published report, co-authored by the students, is based on their end-of-class report.

About PERC

The mission of the Philadelphia Education Research Consortium is to provide timely, actionable, rigorous, and non-partisan research on the most pressing issues facing Philadelphia public education. To do this, PERC seeks to engage the region's colleges and universities, nonprofits, and the Philadelphia public education sector in respectful, mutually beneficial research-practice partnerships. By providing Philadelphia's leaders and citizenry with high-quality information about progress, challenges, and effective strategies in education, PERC aims to increase education opportunities and achievement for all Philadelphia students.

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Matthew P. Steinberg, Ruth Curran Neild, W. Kyle Canulette, Sharin Park, Emily Schulman, and Melissa Wright • September 2018

Summary

Teachers are the most important influence in schools on student achievement, which makes attracting and retaining excellent teachers a high priority for all school districts. But public schools in large cities like Philadelphia are especially challenged to provide every student with a highly-effective teacher. Teacher mobility—that is, transferring from one school to another or leaving the profession entirely—is disproportionately concentrated in urban school districts and has negative consequences for student performance. For these reasons, it is critical for policymakers and school leaders in Philadelphia to have a clear picture of the extent and nature of teacher mobility.

This report provides evidence on teacher mobility in the School District of Philadelphia (SDP) during the 2009-10 through 2015-16 school years. Using publicly available data from the Pennsylvania Department of Education, we examine the extent of teacher mobility as well as the characteristics of mobile teachers and the schools that they exit and enter.

For this report, teacher mobility is defined as occurring when an SDP teacher does not return to the same school in the following year. Therefore, a mobile teacher is one who moved to another SDP school, moved to a Philadelphia charter school or a Pennsylvania public school outside of Philadelphia, or left public education in Pennsylvania.

Key Findings

- **On average, 27 percent of teachers exited their schools in a given school year, either to transfer to another SDP school or to leave the district.** Teacher mobility rates spiked at the end of 2010-11 and 2012-13, likely due to SDP's Renaissance School Initiative, under which district schools were converted to charters, and staff layoffs following the district's major round of school closings at the end of the 2012-13 school year.
- **Over half of all mobile teachers exited SDP, resulting in an average annual district departure rate of 14.6 percent.** Of those who left SDP, about 10 percent taught in any Pennsylvania public school during the following school year.
- **Across all study years, 2.9 percent of teachers exited SDP for a charter school in Philadelphia.** Olney Charter High School and Mastery Charter School Gratz Campus—both part of the Renaissance School Initiative—received the largest share of mobile SDP teachers who remained in Philadelphia.
- **Across all study years, 2.4 percent of teachers who exited SDP taught in a Pennsylvania public school outside of Philadelphia.** Upper Darby and North Penn school districts received the largest share of mobile SDP teachers who exited Philadelphia.

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- **Mobility was highest among teachers with the fewest years of experience in education and among those with the most experience.** First-year teacher mobility was above 50 percent. Mobility fell sharply across the first decade of teaching, hovered around 20 percent for those with 11-28 years in education, and increased rapidly for those with 30 years or more of experience.
 - **Teacher mobility affected all subjects and grade levels but teachers of mathematics, science, and English were more mobile than others.** Annually, 32.6 percent of mathematics teachers exited their schools, and more than half of these teachers left SDP entirely. Science and English teachers were close behind in terms of overall mobility and district departure. Approximately 23 percent of general education teachers—those teaching a range of subjects, usually in the elementary grades—were mobile.
 - **The typical mobile SDP teacher enters a school in the next year that has fewer minority students, fewer low-income students, and higher math and ELA achievement.**

Implications for policy and practice

- **Relatively few teachers left SDP for charter schools or other public school districts in Pennsylvania—a fact that can inform the district’s policy choices related to teacher recruitment and retention.** For any school district, formulating a strategy to recruit and retain teachers requires a clear understanding of the problem and a set of targeted responses. This report shows that teacher departure to Philadelphia charter schools or other Pennsylvania public schools was *not* a major part of SDP’s teacher recruitment and retention challenge.
- **The high percentage of departing SDP teachers who did not continue to teach in Pennsylvania public schools raises many questions about whether they planned for a short or long career in education when they began to teach in SDP.** Without more information about what SDP teachers do after they leave the district or their intended length of commitment, it is difficult to formulate policy responses designed to retain them. But learning more about the individual and school factors associated with longer SDP retention—particularly for teachers with 1-3 years of experience—could inform teacher candidate selection and help refine the induction programs intended to help them succeed.
- **The high turnover among early career teachers, though not unique to Philadelphia, is an area for ongoing attention.** In particular, teachers with 1-3 years of experience are over-represented among teachers who exited SDP or transferred to another SDP school. Some of this mobility may be normal and beneficial, as teachers seek school assignments that best match their skills, but some of this mobility may be the result of difficult teaching assignments or a lack of support for new teachers.

Table of Contents

Summary	2
Key Findings	2
Implications for policy and practice	3
Why this study	1
What the study examined	2
What the study found	5
On average, about one-quarter of SDP teachers exited their schools annually from 2009-10 through 2015-16. These teachers either transferred to another SDP school or left SDP.....	6
On average, 48 percent of SDP teachers who exited their schools transferred to another school in SDP, while 47 percent left public school teaching in Pennsylvania. .	7
On average, about 15 percent of teachers left SDP each year from 2009-10 through 2015-16.	9
Almost half of SDP teacher departure to charter schools occurred during the 2010-11 school year—the first year of SDP's Renaissance School Initiative.....	10
An average of 57 teachers per year left SDP to teach in a Pennsylvania public school outside of Philadelphia.	12
Mobility was highest among SDP teachers with the fewest years of experience in education <i>and</i> among those with the most experience.	14
Teachers with fewer than 10 years in education were more likely than other teachers to transfer to another school in SDP or to leave SDP for another Pennsylvania public school.	14
Teachers of mathematics, science, and English were more mobile than special education teachers or general education teachers.....	16
Compared to teachers of other subjects, a larger percentage of mathematics and English teachers left SDP for Philadelphia charter schools. In an average year, less than 1 percent of teachers of any subject left SDP for another Pennsylvania public school.	17
The typical mobile teacher in SDP enters a school in the next year that has fewer minority students, fewer low-income students, and higher math and English language arts achievement—although the differences were modest.....	18
Implications for policy and practice	19
Limitations	19
Appendix A: Additional tables.....	20

Why this study

Teachers are the most important influence in schools on student achievement,¹ which makes attracting and retaining excellent teachers a high priority for all school districts. But public schools in large cities like Philadelphia are especially challenged to provide every student with a highly-effective teacher.² For schools serving more disadvantaged students, teacher transfers to more advantaged schools within the same district add to this challenge.

Teachers who transfer to another school, either within their current district or elsewhere, or who leave the profession are called *mobile teachers* (see definitions box on this page). The most recent national data show that 18 percent of teachers in urban districts were mobile in 2011-12 and 2012-13. In schools where more than 75 percent of students were low-income, the teacher mobility rate was 22 percent, compared to 14 percent among all other schools.³

Why teacher mobility matters. Some teacher mobility is normal—for example, when teachers retire. And some mobility is beneficial to schools and students. For example, some teachers move schools to fill grade or subject positions that better fit their expertise. Other teachers discover after they enter the classroom that teaching is not the career they want—or one in which they can succeed. This kind of mobility can result in better matches between teacher interests and expertise and student needs.

However, there are a number of reasons to be concerned about the extent of teacher mobility. First, recent research has shown that, on average, teacher mobility negatively affects student achievement.⁴ These negative effects occur, in part, because there is a learning curve for new teachers. For example, novice teachers—those typically in their first through third years in the profession—perform significantly worse in math instruction than their more experienced peers.⁵

Definitions

Mobile teachers. In this report, a *mobile teacher* is one who does not return to the same school in the following year.

Teacher mobility. In this report, the term *teacher mobility* refers to teacher exit from their schools to any destination, including another school in SDP, a Philadelphia charter school, another Pennsylvania public school, or exit from the public education workforce in Pennsylvania. Other research has used the term *teacher turnover* to describe this phenomenon.

¹ Bert P.M. Creemers & Gerry J. Reezigt, "School Level Conditions Affecting the Effectiveness of Instruction," *School Effectiveness and School Improvement*, 7 no. 3 (1996): 197-228; Kenneth Leithwood, Karen Seashore Louis, Stephen Anderson and Kyla Wahlstrom, *How Leadership Influences Student Learning* (Minneapolis University of Minnesota Center for Applied Research and Educational Improvement, 2004).

² Hamilton Lankford, Susanna Loeb, and James Wyckoff, "Teacher Sorting and the Plight of Urban Schools: A Descriptive Analysis," *Educational Evaluation and Policy Analysis*, 24 no.1 (2002): 37-62; Elaine Allensworth, Stephen Ponisciak, Christopher Mazzeo, *The Schools Teachers Leave: Teacher Mobility in Chicago Public Schools* (Chicago: Consortium on Chicago School Research, 2009); William H. Marinell and Vanessa M. Coca, *Who Stays and Who Leaves? Findings from a Three-Part Study of Teacher Turnover in NYC Middle Schools* (New York: The Research Alliance for New York City Schools, 2013); Ana M. Elfers, Margaret L. Plecki, Anna Van Windekens, *Understanding Teacher Retention and Mobility in Washington State: Final Report* (Seattle: University of Washington College of Education Center for the Study of Teaching and Policy, 2017).

³ Rebecca Goldring, Soheyla Taie, and Minsun Riddles, *Teacher Attrition and Mobility: Results From the 2012–13 Teacher Follow-up Survey*. (Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2014).

⁴ Allison Atteberry, Susanna Loeb, and James Wyckoff, "Teacher Churning: Reassignment Rates and Implications for Student Achievement," *Educational Evaluation and Policy Analysis*, 39 no. 1 (2017): 3-30.

⁵ Steven G. Rivkin, Eric A. Hanushek, and John F. Kain, "Teachers, Schools, and Academic Achievement," *Econometrica* 73 no. 2 (2005): 417-458.

Second, teacher mobility results in substantial economic costs. Districts must spend money to recruit, screen, and interview applicants, process paperwork, and orient new teachers. In all, the district cost of replacing an individual teacher ranges from \$4,366 to \$17,872.⁶

Finally, teacher mobility has the potential to concentrate the most effective and experienced teachers in schools that serve more advantaged students, leaving hard-to-staff schools struggling to fill critical vacancies.⁷ In fact, national data show that mobile teachers are more likely to exit schools serving large percentages of low-income and minority students.⁸ Mobile teachers are also more likely to be teachers of math, science or special education.⁹

Previous evidence on mobility in Philadelphia. From 2001 through 2007, four reports published by the Philadelphia Education Fund (2001) and Research for Action (2003, 2005, and 2007) examined teacher recruitment, retention, and mobility in the School District of Philadelphia (SDP).¹⁰ The reports found that SDP schools serving more disadvantaged students had fewer qualified, experienced teachers, and that teachers who transferred within SDP tended to move from schools serving more disadvantaged students to those serving less disadvantaged students. Middle schools found it particularly challenging to recruit and retain qualified, experienced teachers.

The reports shared a concern that SDP teachers could be leaving for surrounding public school districts offering higher salaries, better facilities, and more classroom resources. Since then, there is even more reason to be concerned about a “teacher drain” to other local districts: from 2013-2017, SDP teachers worked for four years without a teaching contract and cost-of-living increases, which could have accelerated teacher exit from SDP to other Pennsylvania school districts, including the city’s charter schools. But until now, we have not had the data to examine how many SDP teachers leave for other public school districts in the state. This report fills this gap by using a publicly available data set to examine multiple types of mobility among teachers who ever taught in SDP during 2009-10 through 2015-16.

What the study examined

This study examines the number and percentage of SDP teachers who were mobile—that is, who did not return in the following year to the school where they had been teaching—from the 2009-10 through 2015-16 school years. The study also examines the percentage of these mobile teachers who, in the following school year, were working in another school in SDP, were employed by a Philadelphia charter school or in another Pennsylvania public school, or exited Pennsylvania’s

⁶ Data come from school districts in Chicago, Illinois; Milwaukee, Wisconsin; Granville, North Carolina; Jemez Valley, New Mexico; and Santa Rosa, New Mexico. In Chicago Public Schools, for example, the annual cost of teacher mobility is estimated at over \$86 million. (Gary Barnes, Edward Crowe, and Benjamin Schaefer, *The Cost of Teacher Turnover in Five School Districts: A Pilot Study*. (Washington, DC: National Commission on Teaching and America’s Future, 2007.)

⁷ Li Feng and Tim Sass, “Teacher Quality and Teacher Mobility,” *Education Finance and Policy*, 12 vol. 3 (2017): 396-418.

⁸ Richard Ingersoll, “Teacher Turnover and Teacher Shortages: An Organizational Analysis,” *American Educational Research Journal* 38 no. 3 (2001): 499-534; John F. Kain, Steven G. Rivkin, and Eric A. Hanushek, “The Revolving Door: A Path Breaking Study of Teachers in Texas Reveals that Working Conditions Matter More than Salary,” *Education Next* 4 vol. 1 (2004): 77-82.

⁹ Ana M. Elfers, Margaret L. Plecki, Anna Van Windekens, *Understanding Teacher Retention and Mobility in Washington State: Final Report* (Seattle: University of Washington College of Education Center for the Study of Teaching and Policy, 2017).

¹⁰ Elizabeth Useem and Ruth Curran Neild, *Teacher Staffing in the School District of Philadelphia: A Report to the Community* (Philadelphia: Philadelphia Education Fund, 2001); Ruth Curran Neild, Elizabeth Useem, Joy Lesnick, and Eva Travers, *Once and For All: Placing a Highly Qualified Teacher In Every Philadelphia Classroom* (Philadelphia: Research for Action, 2003); Ruth Curran Neild, Elizabeth Useem, and Elizabeth Farley, *Quest for Quality: Recruiting and Retaining Teachers in Philadelphia* (Philadelphia: Research for Action, 2005); Elizabeth Useem, Robert Offenber, and Elizabeth Farley, *Closing the Teacher Quality Gap in Philadelphia: New Hope and Old Hurdles* (Philadelphia: Research for Action, 2007).

public education sector entirely. Finally, we examine key characteristics of mobile teachers and the schools they exited and entered.

The research questions are:

- What percentage of SDP teachers exited their schools?
- Among teachers who exited their schools, what percentage:
 - Moved to another SDP school?
 - Moved to a charter school in Philadelphia?
 - Moved to a Pennsylvania public school outside of Philadelphia?
 - Exited public education in the state of Pennsylvania?
- What were the characteristics of mobile SDP teachers?
- What were the characteristics of the schools that mobile SDP teachers exited and entered?

To answer these questions, the study team used publicly available personnel records from the Pennsylvania Department of Education (PDE) and school-level information retrieved from the National Center for Education Statistics.¹¹ The data included teacher- and school-level data, including teachers' school assignments for the 2009-10 through 2016-17 academic years (see Box 1 for a description of the data and teacher- and school-level variables). In all, the study included 20,056 unique teachers who ever taught in SDP schools during the study period.

Until now, we have not had the data to understand the extent to which SDP teachers leave for other public school districts in the state. This report fills this gap by using publicly available data to examine multiple types of mobility among teachers who ever taught in SDP during 2009-10 through 2015-16.

¹¹ PDE personnel data can be downloaded from: <http://www.education.pa.gov/Data-and-Statistics/Pages/Professional-and-Support-Personnel.aspx>.

Box 1

Data and Variables

The study uses teacher- and school-level data for teachers who ever taught in the School District of Philadelphia (SDP) during 2009-10 through 2015-16. The data span the time period 2009-10 through 2016-17. The study includes 20,056 teachers (86,633 teacher*year observations). Teacher data were compiled from data available on the Pennsylvania Department of Education (PDE) website. School data were compiled from PDE and the National Center for Education Statistics Common Core of Data.

Teacher-level data include:

School and district: A teacher's school code and district code, reported by PDE.

Gender: A teacher's gender, reported by PDE.

Years in education: A teacher's total number of years in education, reported by PDE.

Salary: A teacher's annual salary, as reported by PDE. Nominal dollars were adjusted to January 2017 dollars using the Bureau for Labor Statistics Consumer Price Index.

Teaching assignment: The assignment description, reported by PDE, identifies the teacher's classes in a given school year. We categorized each assignment description into four core middle and high school subjects: ELA, Math, Science, and Social Studies. A fifth category included all other subjects (at the middle and high school level), including electives, CTE, and foreign languages. All other teachers were designated as General Education, representing elementary school teachers who were not exclusively teaching one of the core subjects. Special Education teachers were considered separately, allowing teachers to be categorized as both a subject teacher and a special education teacher.

School-level data include:

Enrollment: Total school enrollment in a given year, as reported by NCES.

PSSA: The percentage of a school's tested students who were academically proficient (or advanced) in math or English Language Arts (ELA) on the Pennsylvania System of School Assessment (PSSA). PSSA data for students in grades 3-8, and reported by PDE.

Keystone Exams: The Keystone Exams are end-of-course assessments designed to assess proficiency in specific subject areas. The Keystone Exams were first given to high school students beginning in the 2012-13 school year. We report the percentage of a school's tested students who were academically proficient (or advanced) in math or English Language Arts (ELA) on the Keystone Exams. Keystone Exam data reported by PDE.

Low-Income Percentage: The percentage of students receiving free/reduced-price lunch. Data reported by PDE.

Racial Composition: The percentage of students identified as either white or non-white. Data reported by NCES.

Box 2

Methods

The study team downloaded publicly available personnel records from the Pennsylvania Department of Education (PDE) to construct a teacher-level analytic file that included all teachers ever in SDP during 2009-10 through 2016-17. The original data set included 90,847 teacher*year observations.

The publicly available data does not include a unique, time-invariant teacher ID. We used the *matchit* command in Stata to match teachers across years based on name and gender. This procedure allowed us to create a unique teacher ID variable that does not vary across school years. Across the study period, we successfully matched 91-94 percent of all teacher*year observations.

We included in the analysis only teachers for whom a unique teacher ID could be created from this matching procedure. Further, in any given school year, teachers could be listed as having up to four teaching assignments, since teachers could have multiple teaching responsibilities in one school or could be assigned to multiple schools in a given school year. We considered a teacher's first reported assignment for each teacher*year observation as their primary school assignment, and this is the school assignment considered in the analysis. Based on these sample criteria, a total of 86,633 teacher*year observations comprised the analytic sample. We limit our analysis to teachers and omit any personnel categorized as administrators, support staff, or coordinate services.

For the analytic sample, we categorized SDP teachers into one of five discrete pathways at the end of each of the 2009-10 through 2015-16 school years, based on whether and where they were teaching in the following school year. These pathways include:

1. **Non-mobile teacher:** These teachers returned to the same school in the following school year.
2. **Transferred to another SDP school:** These teachers remained in SDP but were employed by a different school in the following year.
3. **Taught in a Philadelphia charter school:** These teachers remained in public education in Philadelphia but were employed by a charter school in the following year.
4. **Taught in a Pennsylvania public school outside Philadelphia:** These teachers remained in Pennsylvania public education but were employed by a school district located outside the city of Philadelphia in the following year.
5. **Left public education in Pennsylvania:** These teachers were not found in the dataset the following year, indicating that they exited the Pennsylvania public education system.

For teachers who left SDP to teach in another district or who left public school teaching in Pennsylvania, we do not examine whether they returned to the system two or more years after their exit.

What the study found

On average, about one-quarter of SDP teachers exited their schools annually from 2009-10 through 2015-16. These teachers either transferred to another SDP school or left SDP.

Across the 2009-10 through 2015-16 school years, the average teacher mobility rate was 27 percent. However, annual rates ranged from a low of 23 percent for 2011-12 and 2014-15 to highs of 34 percent for 2010-11 and 36 percent for 2012-13 (Figure 1). The teacher mobility spike in 2010-11 was likely due to SDP's Renaissance School Initiative, under which some schools were converted to charter schools.¹² The 2012-13 spike was likely the result of staff layoffs and reshuffling due to a budget shortfall and school closings.¹³

When we exclude these two anomalous years, about 24 percent of teachers did not return to their schools the following year, on average. These mobile teachers include those who transferred to other SDP schools and those who left SDP entirely.

Figure 1. Percentage of SDP teachers who were mobile, by year

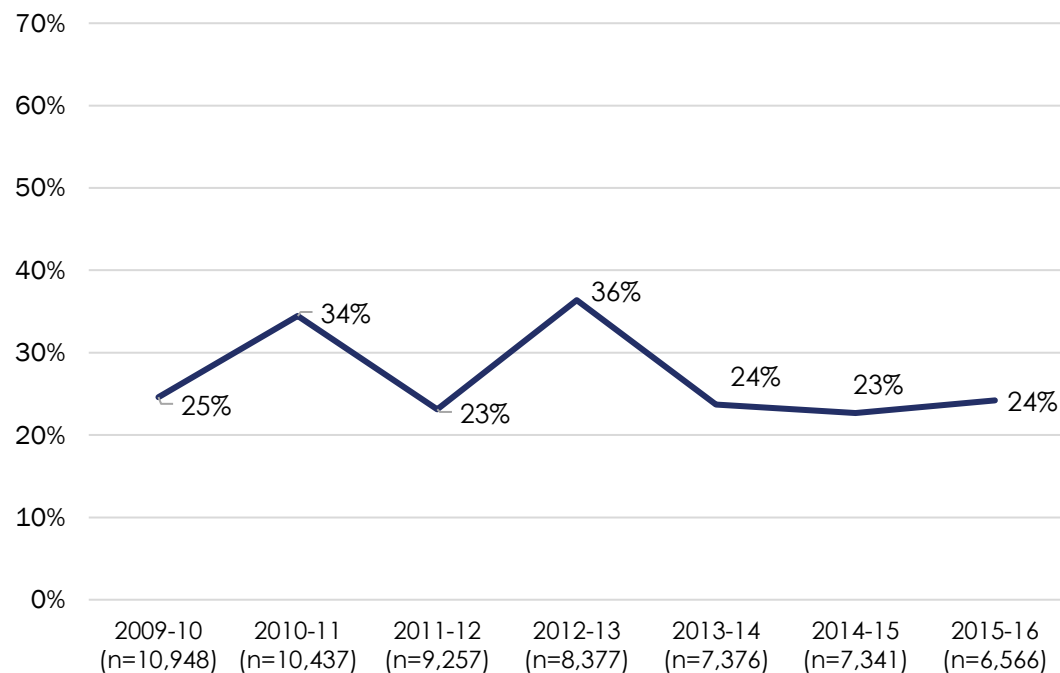


Table reads: Of those who taught in SDP during 2009-10, 25 percent did not return to the same school to teach during the next school year. Of those who taught in SDP during 2010-11, 34 percent did not return to the same school to teach during the following school year, and so on.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

¹² Renaissance Charter Schools were formerly operated by SDP but were converted to charter schools. The schools remained in the same building and served students in the same catchment as when the school was operated by SDP. However, charter schools are counted as separate education agencies from their authorizing districts. Therefore, even though a teacher who remained at one of the Renaissance schools would work in the same building, the employing education agency would have changed.

¹³ Valerie Strauss, "Philadelphia School District Laying off 3,783 Employees," *Washington Post* (June 8, 2013). Retrieved from https://www.washingtonpost.com/news/answer-sheet/wp/2013/06/08/philadelphia-school-district-laying-off-3783-employees/?utm_term=.652a15471b63.

On average, 48 percent of SDP teachers who exited their schools left public school teaching in Pennsylvania, while 47 percent transferred to another SDP school.

In a typical year, almost all of the mobile SDP teachers either left public school teaching in Pennsylvania (47.8 percent) or transferred to another SDP school (46.9 percent). The remaining mobile SDP teachers moved to a Pennsylvania school located outside of Philadelphia (2.4 percent) or to a Philadelphia charter school (2.9 percent). The destinations for teachers who left their SDP schools were quite consistent from year to year (Figure 2).¹⁴

Figure 2. Destinations of SDP teachers who exited their schools, 2009-10 through 2015-16

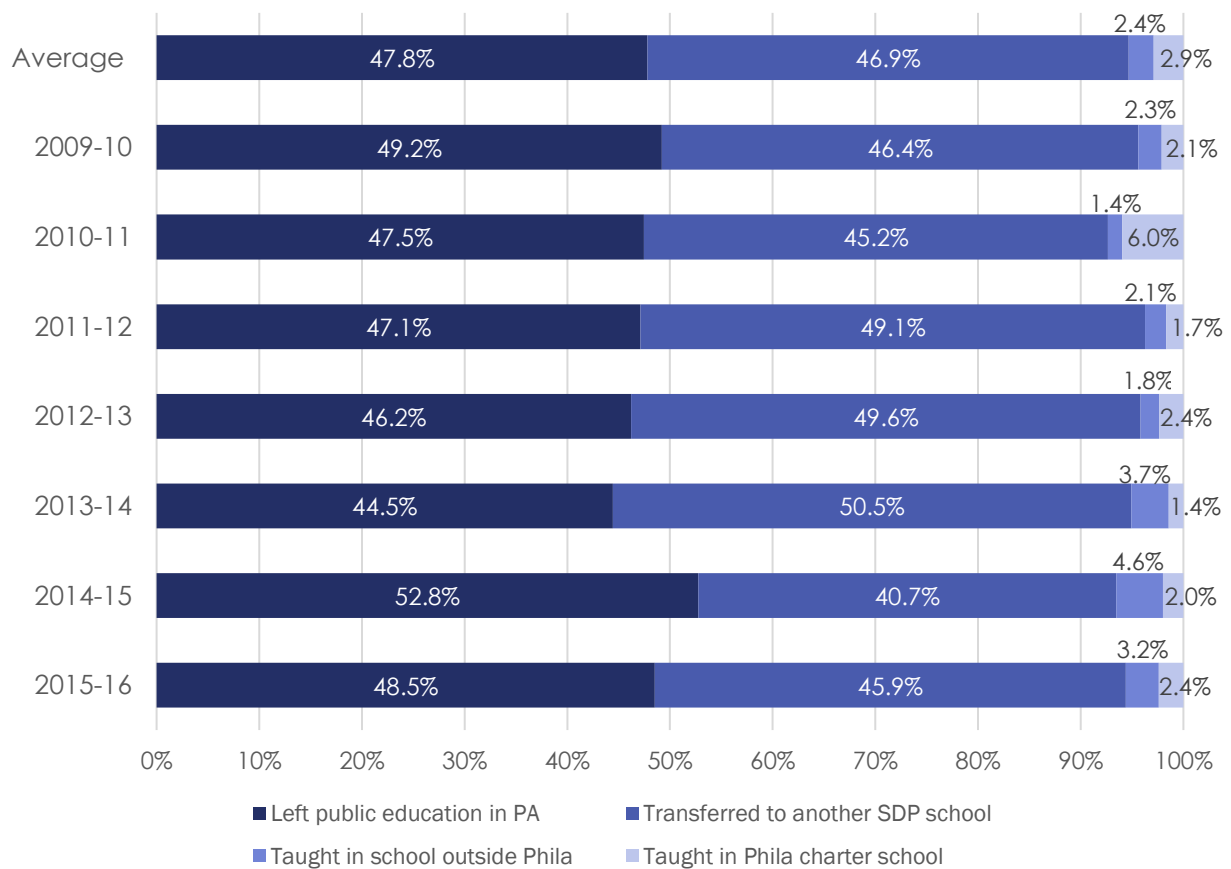


Table reads: Across all study years, 47.8% of mobile SDP teachers left public education in Pennsylvania; 46.9% transferred to another SDP school; 2.4% went to a Pennsylvania public school outside Philadelphia; 2.9% taught in a Philadelphia charter school; and so on.

Note: n=16,478 mobile SDP teachers.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

It is important to note that teacher mobility out of SDP was largely not the result of teachers leaving for teaching positions in charter schools or other Pennsylvania school districts. Of all teachers who left SDP from 2009-10 through 2015-16, 90 percent did not teach in another Pennsylvania school district during the following year, 4.6 percent taught in a district outside of Philadelphia, and 5.4

¹⁴ See Tables A-1 and A-2 in Appendix A for tables of numbers and percentages of departing teachers and their destinations.

percent taught in a Philadelphia charter school (Figure 3). However, there was an uptick beginning in 2013-14 in the percentage of SDP teachers who departed for public schools outside of Philadelphia, perhaps as a result of the lack of a teaching contract.¹⁵ The share of departing SDP teachers who obtained employment in Pennsylvania school districts outside of Philadelphia doubled between 2012-13 and 2013-14 (from 1.6 percent to 3.7 percent) and remained higher than in any of the years prior to 2013-14.

Figure 3. Destinations of teachers who left SDP, 2009-10 through 2015-16

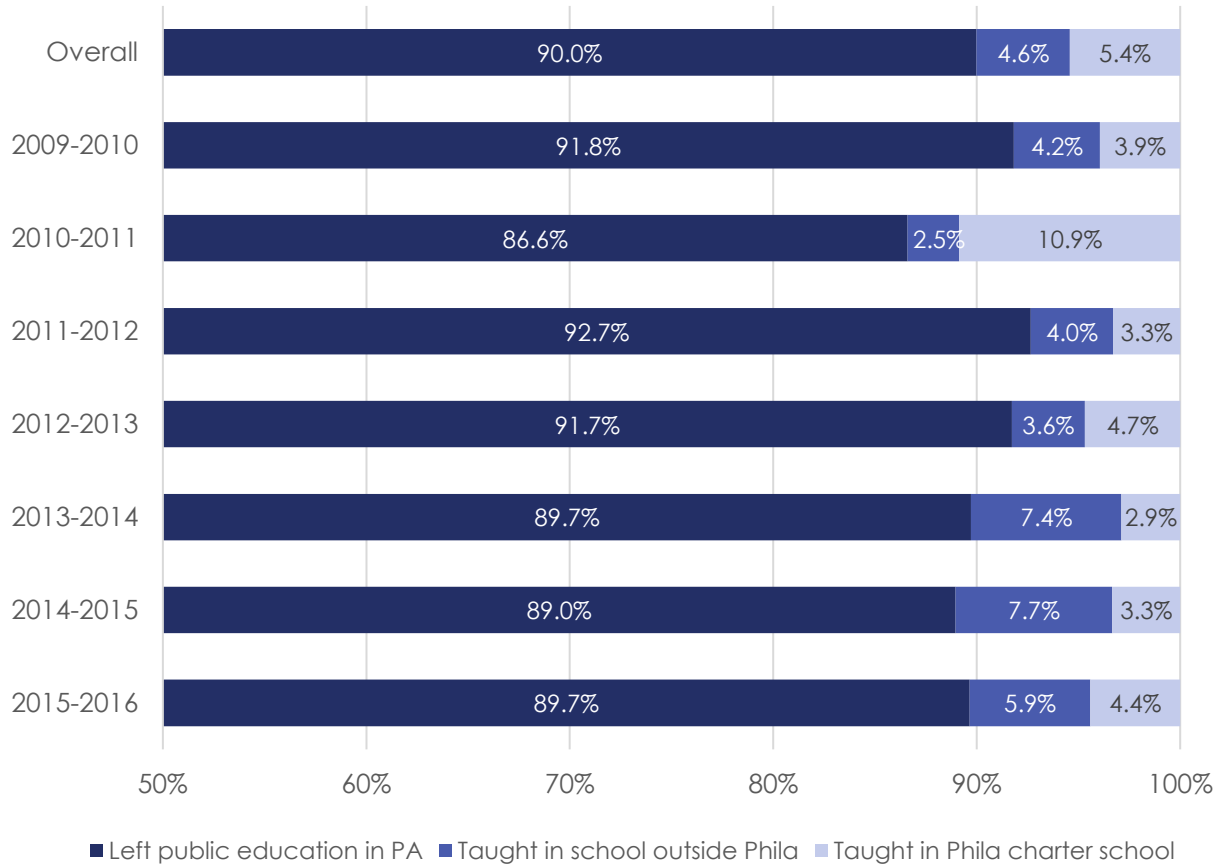


Table reads: Across all study years, 90.0% of teachers who left SDP also left public education in Pennsylvania during the next year; 4.6% taught in a Pennsylvania public school outside Philadelphia; and 5.4% taught in a Philadelphia charter school.

Note: n=8,751 teachers who left SDP

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

¹⁵ After four years without a contract, a new agreement was ratified by membership of the Philadelphia Federation of Teachers in June 2017. See Kristin Graham, "Raises for Philly Teachers in Deal worth \$395M," *Philadelphia Inquirer* (July 17, 2017). Retrieved from <http://www.philly.com/philly/education/raises-for-philly-teachers-in-deal-worth-395m-20170617.html?arc404=true>.

On average, about 15 percent of teachers left SDP each year from 2009-10 through 2015-16.

During the study period, the percentage of teachers who left SDP for any destination ranged from 10.7 percent in 2013-14 to 18.9 percent in 2010-11 (Table 1), with an average of 14.6 percent. Table 1 highlights how years with greatest intra-district transfer (2010-11 and 2012-13) also were the years with the largest number of SDP exits.

These data also reinforce the general consistency across years in the destinations of teachers who left SDP. In a typical year, less than 1 percent of SDP teachers left for a charter school, and less than 1 percent left for a public school outside of Philadelphia. Excluding the two years with spikes caused by charter conversions and staff layoffs (2010-11 and 2012-13), roughly 10 to 12 percent of SDP teachers left public education in Pennsylvania annually.¹⁶

Table 1. Percentages of non-mobile and mobile SDP teachers, including destinations for mobile teachers, 2009-10 through 2015-16

School Year	Remained in SDP		Left SDP		
	Non-mobile	Transferred within SDP	To Phila charter school	To public school outside Phila	Left public education in PA
2009-10	75.4%	11.4%	0.5%	0.6%	12.1%
2010-11	65.6	15.6	2.1	0.5	16.3
2011-12	76.9	11.4	0.4	0.5	10.9
2012-13	63.6	18.0	0.9	0.7	16.8
2013-14	76.3	12.0	0.3	0.9	10.5
2014-15	77.3	9.2	0.4	1.0	12.0
2015-16	75.8	11.1	0.6	0.8	11.7
7-YEAR AVG.	72.7	12.8	0.8	0.7	13.1

Table reads: Between the 2009-10 and 2010-11 school years, 75.4% of SDP teachers remained in the same schools; 11.4% transferred to another school in SDP; 0.5% left SDP for a charter school; 0.6% left SDP for a public school outside of Philadelphia; and 12.1% left public education in Pennsylvania, and so on.

Note: n=60,302 SDP teacher-years (teachers*years employed in SDP from 2009-10 through 2015-16)

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

¹⁶ This is similar to the approximate 10 percent departure rate from SDP for the 1999-00 school year. See: Ruth Curran Neild, Elizabeth Useem, Joy Lesnick, and Eva Travers, *Once and For All: Placing a Highly Qualified Teacher In Every Philadelphia Classroom* (Philadelphia: Research for Action, 2003).

Almost half of SDP teacher departure to charter schools occurred during the 2010-11 school year—the first year of SDP’s Renaissance School Initiative.

From 2009-10 through 2015-16, 475 teachers exited SDP to teach in a Philadelphia charter school (Table 2). Of these teachers, 45 percent made the transition at the end of the 2010-11 school year—meaning that they taught in SDP in 2010-11 but taught in a charter school the next year. The 2010-11 school year was the first year of SDP’s Renaissance School Initiative. In fact, five of the six charter schools employing the largest numbers of former SDP teachers were Renaissance charter schools (Table 3). Excluding the anomalous 2010-11 school year, an average of 44 teachers left SDP each year for the city’s charter schools.

Table 2. Number of teachers exiting SDP to Philadelphia charter schools, by school year

School Year	Number of teachers	Percentage of all teachers who left SDP for charter schools
2009-2010	57	12.0%
2010-2011	214	45.1
2011-2012	36	7.6
2012-2013	72	15.2
2013-2014	25	5.3
2014-2015	33	6.9
2015-2016	38	8.0
TOTAL	475	100.0

Table reads: Of teachers who taught in SDP in 2009-10, 57 were employed by a Philadelphia charter school in the following year. Those 57 teachers represent 12.0% of all teachers who left SDP for charter schools during the study period, and so on.

Source: Authors’ calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Table 3. Most common charter school destinations for former SDP teachers, 2009-10 through 2015-16

Charter School	Number of teachers who left SDP for this school	Percentage of all teachers who left SDP for charter schools
Olney Charter High School *	60	12.6%
Mastery Charter School-Gratz Campus*	34	7.2
John B. Stetson Charter School*	19	4.0
KIPP Philadelphia Charter School	19	4.0
Universal Audenried Charter School*	15	3.2
Mastery Charter School - Clymer Elementary*	14	3.0
Tacony Academy Charter School	11	2.3
Mastery Charter School -Shoemaker Campus	10	2.1
Mastery Charter School -Pickett Campus	10	2.1
Imhotep Institute Charter High School	8	1.7
Sankofa Freedom Academy Charter School	8	1.7
Universal Alcorn Charter School*	8	1.7
KIPP West Philadelphia Preparatory Charter School	7	1.5
Memphis Street Academy Charter School @ JP Jones*	7	1.5
People for People Charter School	7	1.5
The Philadelphia Charter School for Arts and Sciences*	7	1.5
Universal Creighton Charter School*	7	1.5
Universal Daroff Charter School*	7	1.5
Eugenio Maria De Hostos Charter School	6	1.3
Franklin Towne Charter Elementary School	6	1.3
Independence Charter School	6	1.3
Khepera Charter School	6	1.3
Mariana Bracetti Academy Charter School	6	1.3
Pan American Academy Charter School	6	1.3
Philadelphia Performing Arts Charter School	6	1.3
Russell Byers Charter School	6	1.3
Universal Vare Charter School*	6	1.3
Young Scholars Frederick Douglass Charter School	6	1.3
Belmont Charter School	5	1.1
Delaware Valley Charter High School	5	1.1
Esperanza Academy Charter School	5	1.1
Freire Charter High School	5	1.1
Mastery Charter School - Hardy Williams	5	1.1
Mastery Charter School - Thomas Campus	5	1.1
Wakisha Charter School	5	1.1
Young Scholars Charter School	5	1.1

*Became a charter school under SDP's Renaissance School Initiative.

Table reads: Between 2009-10 and 2015-16, 60 teachers left SDP, taught at Olney Charter High School, and were employed the charter operator of that school. These 60 teachers represent 12.6% of all teachers who left SDP to teach at a charter school during the study period, and so on.

Notes: Table includes all charter schools to which five or more SDP teachers exited during 2009-10 – 2015-16.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

An average of 57 teachers per year left SDP to teach in a Pennsylvania public school outside of Philadelphia.

From 2009-10 through 2015-16, 401 teachers exited an SDP school for a school district or charter school located outside of Philadelphia. In a typical year, approximately 57 teachers exited SDP for a school district outside of the city (Table 4). This number stayed approximately consistent from year to year, even though the number of SDP teachers fell by about 40 percent during this same time period.

Upper Darby, North Penn, Bensalem, Norristown, and Pennsbury school districts employed the largest share of teachers who exited SDP for a school district or charter school outside of Philadelphia (Table 5).

Table 4. Number of teachers exiting SDP to Pennsylvania public schools outside of Philadelphia, by school year

School Year	Number of teachers	Percentage of all teachers who left SDP for a Pennsylvania public school outside of Philadelphia
2009-2010	61	15.2%
2010-2011	50	12.5
2011-2012	44	11.0
2012-2013	55	13.7
2013-2014	64	16.0
2014-2015	76	19.0
2015-2016	51	12.7
TOTAL	401	100.0

Table reads: Of teachers who taught in SDP in 2009-10, 61 were employed by a Pennsylvania public school outside of Philadelphia in the following year. Those 61 teachers represent 15.2% of all teachers who left SDP for public schools outside of Philadelphia during the study period, and so on.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Table 4. Most common district or charter destinations outside of Philadelphia for former SDP teachers, 2009-10 through 2015-16

School District or Charter School	Number of teachers who left SDP for this district/school	Percentage of all teachers who left SDP for a public school outside of Philadelphia
Upper Darby School District	25	6.2%
North Penn School District	15	3.7
Bensalem Township School District	13	3.2
Norristown Area School District	13	3.2
Pennsbury School District	13	3.2
Abington School District	11	2.7
Cheltenham Township School District	11	2.7
Lower Merion School District	10	2.5
William Penn School District	10	2.5
Downingtown Area School District	9	2.2
West Chester Area School District	9	2.2
Chester-Upland School District	8	2.0
Council Rock School District	8	2.0
Agora Cyber Charter School	7	1.8
Central Bucks School District	7	1.8
Chester Community Charter School	7	1.8
Commonwealth Connections Academy Charter School	7	1.8
Centennial School District	5	1.3
Collegium Charter School	5	1.3
Haverford Township School District	5	1.3
Radnor Township School District	5	1.3
Springfield Township School District	5	1.3

Table reads: Between 2009-10 and 2015-16, 25 teachers left SDP to teach in the Upper Darby School District. These 25 teachers represent 6.2% of all teachers who left SDP to teach in a district or charter school outside of Philadelphia during the study period, and so on.

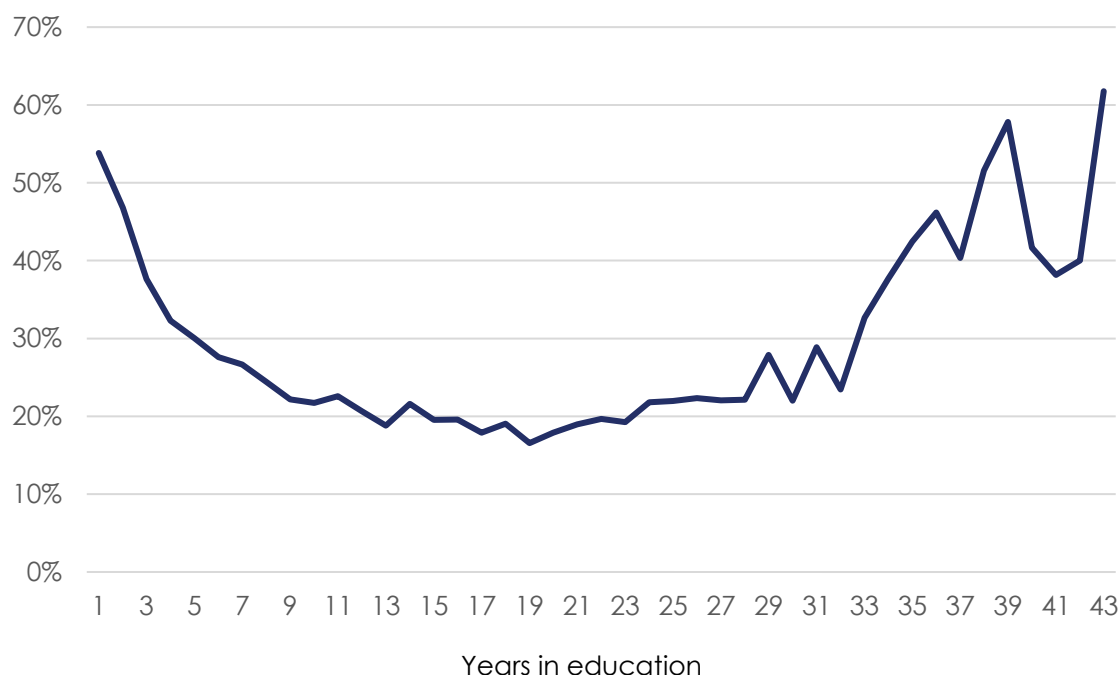
Notes: Table includes all districts/schools to which five or more SDP teachers exited during 2009-10 – 2015-16.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Mobility was highest among SDP teachers with the fewest years of experience in education *and* among those with the most experience.

Nationally, mobility in the teaching profession—like that of many professions—follows a U-shaped curve: mobility is highest among both the newest and most senior members of the profession.¹⁷ The same pattern can be seen in SDP during 2009-10 through 2015-16 (Figure 4). Among first-year teachers, more than 50 percent did not return to their school the next year. Mobility fell sharply across the first decade of teaching and hovered around 20 percent for those with between 11 and 28 years in education. Mobility increased rapidly for those with 30 years or more of experience.

Figure 4. Mobility rates for SDP teachers, by years of experience in education (2009-10 through 2015-16)



Notes: n=60,243 teacher-years (teachers*years employed in SDP) from 2009-10 – 2015-16. Teachers with more than 43 years in education, as reported by PDE, were not included in this figure.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Teachers with fewer than 10 years in education were more likely than other teachers to transfer to another school in SDP or to leave SDP for another Pennsylvania public school.

Teachers in their first decade in education were more likely than other teachers to transfer from one school to another within SDP. Although these early career teachers comprised about 47 percent of all SDP teachers during 2009-10 through 2015-16, they made up 61 percent of the within-district movers (Figure 5). Further, exiting from SDP to teach in another Pennsylvania public school was an action taken almost exclusively by teachers in the early stages of their careers, comprising about 90 percent of those who left SDP for Philadelphia charter schools and about 87 percent of those who

¹⁷ Chad Aldeman, "Are Teacher Turnover Rates Rising? Maybe Not," *Education Next* (November 8, 2016). Retrieved from <https://www.educationnext.org/are-teacher-turnover-rates-rising-maybe-not/#>.

left for Pennsylvania public schools outside of Philadelphia. It is important to remember, when looking at these data, that relatively few teachers per year left SDP for Philadelphia charter schools (about 44 teachers) or for other Pennsylvania school (about 57 teachers).

Teachers with 21 or more years in education were disproportionately likely to leave public education in the state—most likely because of retirement.¹⁸

Figure 5. Years of experience in education, for all SDP teachers and mobile teachers, by type of mobility

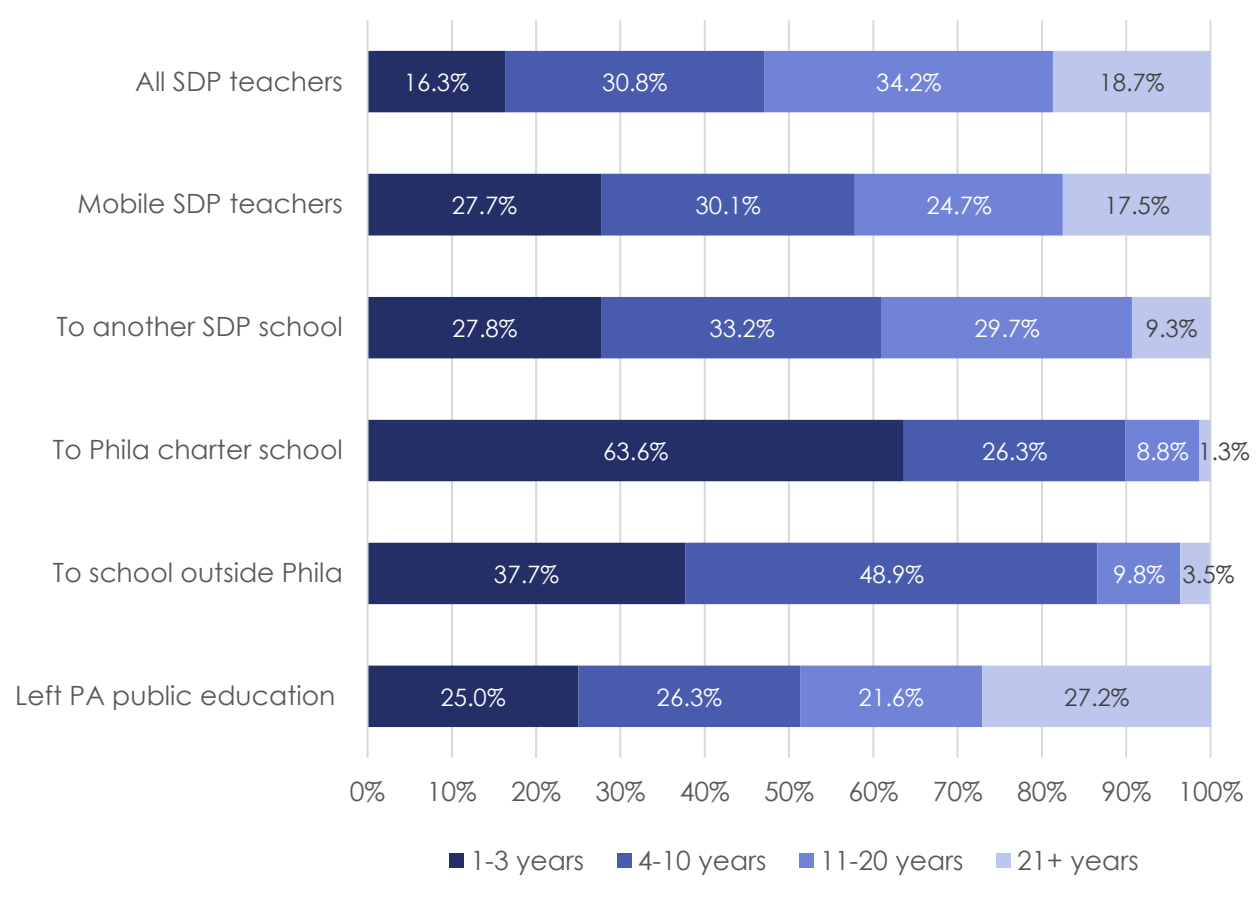


Table reads: Among all SDP teachers from 2009-10 through 2015-16, 16.3% had 1-3 years of experience in education; 30.8% had 4-10 years in education; 34.2% had 11-20 years in education; 18.7% had 21 or more years in education; and so on.

Notes: n=68,034 teacher-years (teachers*years employed in SDP) from 2009-10 – 2015-16.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

¹⁸ Table A-3 in Appendix A provides the number of teachers in each age/destination category for Figure 5.

Teachers of mathematics, science, and English were more mobile than special education teachers or general education teachers.

On average, after each school year between 2009-10 and 2015-16, 32.6 percent of teachers of mathematics in SDP did not return to their school the following year, and more than half of these teachers left SDP entirely (Figure 6). Close behind in both overall mobility and departure from SDP were science teachers and English teachers. General education teachers—those teaching a range of subjects, usually in the elementary grades—were less mobile, although each year, on average, 23.4 percent of general education teachers did not return to their school.¹⁹

Figure 6. Average annual percentage of teachers who were mobile and percentage who left SDP, by subject taught, 2009-10 through 2015-16

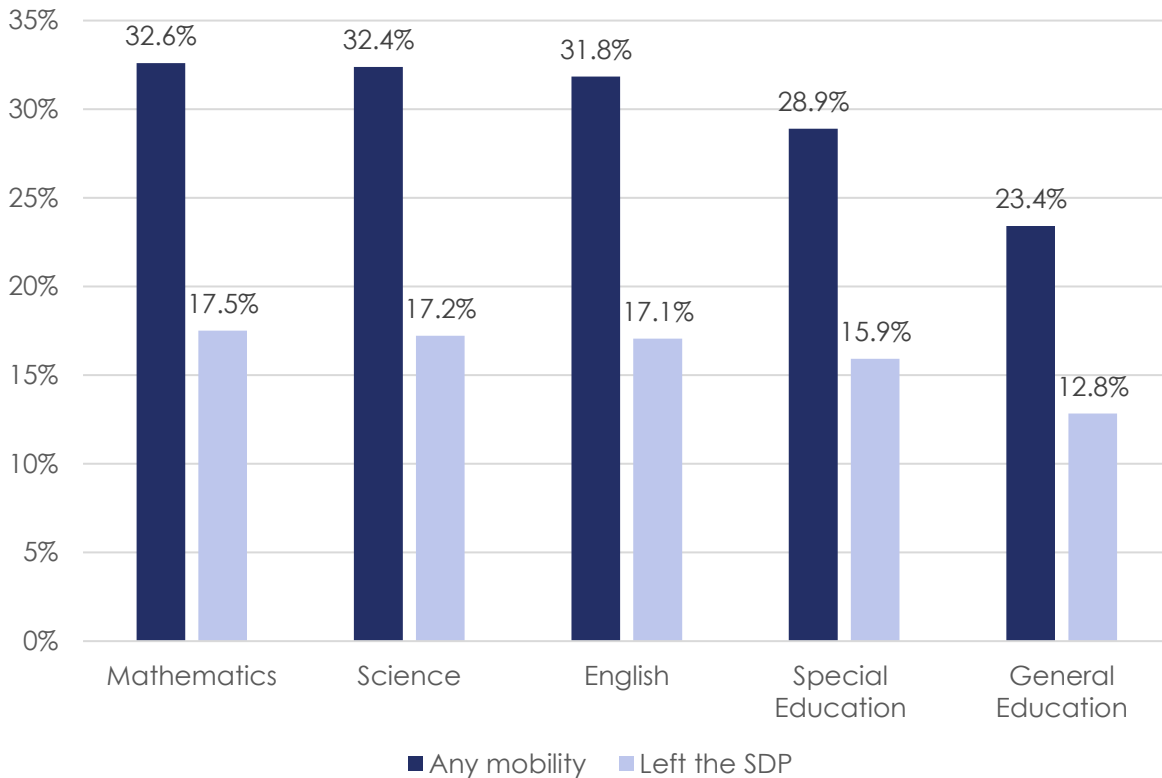


Table reads: On average, across the study period, 32.6% of SDP teachers of mathematics did not return to their school the following year. On average, 17.5% of the mathematics teachers left SDP each year, and so on.

Notes: n=47,280 teacher-years (teachers*years employed in SDP) from 2009-10 – 2015-16.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

¹⁹ Additional tables with data for each year are presented in Tables A-4 and A-5 in Appendix A.

Compared to teachers of other subjects, a larger percentage of mathematics and English teachers left SDP for Philadelphia charter schools. In an average year, less than 1 percent of teachers of any subject left SDP for another Pennsylvania public school.

Earlier in this report, we showed that in any given year, less than 1 percent of teachers who left SDP taught in a Philadelphia charter school the following year. Likewise, less than 1 percent taught in another Pennsylvania public school (Table 1). However, across 2009-10 through 2015-16, a higher percentage of mathematics and English teachers left for charter schools, compared to teachers of other subjects; this appears to be the result of SDP schools being converted to charters under the Renaissance School Initiative (Figure 7).

A higher percentage of mathematics and science teachers left SDP for other Pennsylvania districts outside of Philadelphia, compared to teachers of English, special education, and general education classes. Nevertheless, the departure rate to other Pennsylvania districts for teachers of any of these subjects was not higher than 1 percent annually, on average.

Figure 7. Average annual percentage of teachers who left SDP for a Philadelphia charter school and for another Pennsylvania public school, by subject taught, 2009-10 through 2015-16

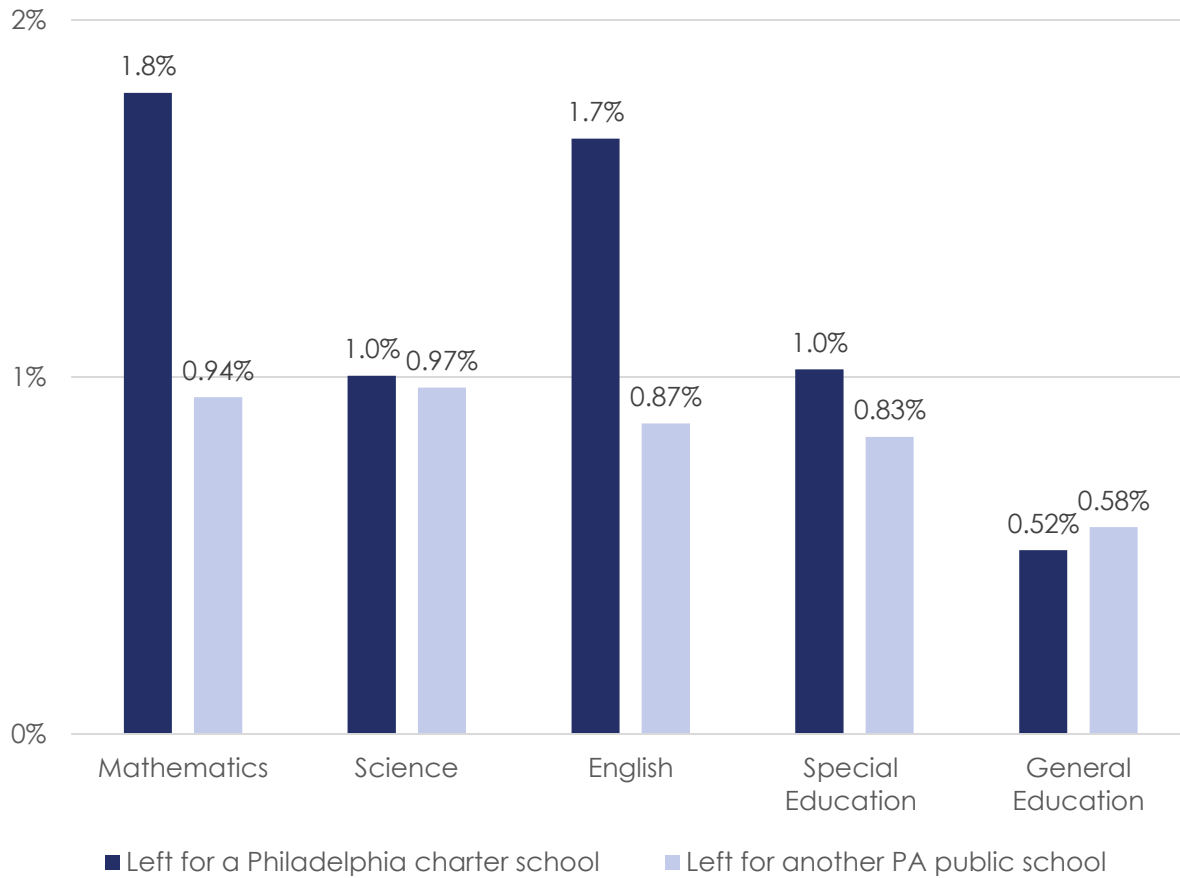


Table reads: On average, across the study period, 1.8% of SDP teachers of mathematics taught in a Philadelphia charter school the following year, 0.94% taught in a Pennsylvania public school outside of Philadelphia, and so on.

Notes: n=47,280 teacher-years (teachers*years employed in SDP) from 2009-10 – 2015-16

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

The typical mobile SDP teacher enters a school in the next year that has fewer minority students, fewer low-income students, and higher math and English language arts achievement.

Consistent with national patterns, mobile SDP teachers who remained in public education in Pennsylvania—either at another school in SDP, a charter school in Philadelphia, or another public school in the state—went to schools with fewer Black or Hispanic/Latinx students, fewer low-income students, and higher academic achievement, on average (Table 5). Although the percentage of students who were proficient or above on state assessments was higher, on average, in the schools that SDP teachers entered, the percent proficient was below 50 percent for all four state standardized test types.

These data show that in Philadelphia, as in other cities, teacher mobility has the potential to concentrate more experienced teachers in schools with higher-achieving students and fewer low-income and minority students. Over time, without sustained attention to incentives to keep effective teachers in the most disadvantaged schools, this mobility can result in the most disadvantaged schools having consistently high staff turnover and a large number of novice teachers each year.

Table 5. School characteristics, by schools exited and entered by mobile SDP teachers, 2009-10 through 2015-16

School Characteristic	Mobile SDP Teachers		
	SDP Average	Schools Exited	Schools Entered
Percentage Black or Hispanic/Latinx students	85.8%	88.8%	85.4%
Percentage low-income students	82.8	87.4	83.0
Percentage proficient, PSSA Mathematics	40.1	37.2	43.6
Percentage proficient, PSSA English language arts	40.6	37.5	43.0
Percentage proficient, Keystone mathematics	27.0	22.9	30.1
Percentage proficient, Keystone English language arts	36.7	33.6	40.7

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17, and the Common Core of Data.

Implications for policy and practice

1. **Relatively few teachers left SDP for charter schools or other local public school districts in Pennsylvania—a fact that can inform the district’s policy choices related to teacher recruitment and retention.** For any school district, formulating a strategy to recruit and retain teachers requires a clear understanding of the problem to be solved and a set of targeted responses to that problem. The findings in this report show that teacher departure to other Pennsylvania schools was *not* a major part of SDP’s teacher recruitment and retention challenge.

In some ways, this fact—that relatively few SDP teachers leave for other Pennsylvania public schools—makes the teacher staffing challenge more complicated. If large numbers of SDP teachers were departing for other districts with higher pay or less challenging working conditions, that exodus would provide a clear focus for a human capital campaign to increase the appeal of SDP schools relative to those in other districts. Instead, the findings show that, by and large, when teachers left SDP, they also left public education in the state.

2. **The high percentage of departing SDP teachers who did not reappear in public education in Pennsylvania raises many questions about whether they planned for a short or long career in education when they began to teach in SDP.** Without more information about what SDP teachers do after they leave the district or their intended length of commitment to education, it is difficult to know what the policy responses should be to retain more of these teachers. But learning more about the individual and school factors associated with longer retention in SDP—particularly for teachers with 1-3 years of experience—could inform selection of teacher candidates and the types of induction programs that could provide early career teachers with the tools and support to succeed.
3. **The high turnover among early career teachers, though not unique to Philadelphia, is an area for ongoing attention.** In particular, teachers with 1-3 years of experience are over-represented among teachers who left SDP and who transferred to another school within SDP. Some of this mobility may be normal and beneficial as teachers seek school assignments that best match their skills. But some of this mobility may be the result of receiving difficult teaching assignments without enough support.

Limitations

This study is not able to examine the reasons why teachers left the SDP, which would require additional survey or qualitative data. Further, the study cannot determine whether the teachers who left the SDP, or who moved to another school within SDP, were more effective at increasing student achievement. For this reason, we cannot assess the extent to which teacher mobility was beneficial to students and schools. Such an analysis would require information about the achievement of students instructed by each teacher, which was not provided in the publicly available dataset used for this report.

Appendix A: Additional tables

Table A-1. Number of mobile SDP teachers, by destination and school year

School Year	Transferred within SDP	To Phila charter school	To public school outside Phila	Left public education in PA	Total mobile teachers	Total SDP teachers
2009-10	1,250	57	61	1,326	2,694	10,948
2010-11	1,625	214	50	1,706	3,595	10,437
2011-12	1,051	36	44	1,009	2,140	9,257
2012-13	1,512	72	55	1,408	3,047	8,377
2013-14	873	25	64	777	1,739	7,376
2014-15	677	33	76	878	1,664	7,341
2015-16	729	38	51	771	1,589	6,566
7-YEAR TOTAL	7,727	475	401	7,875	16,478	60,302

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Table A-2. Percentage of mobile SDP teachers to each destination, by school year and overall

School Year	Transferred within SDP	To Phila charter school	To public school outside Phila	Left public education in PA	Total mobile teachers
2009-10	46.4%	2.1%	2.3%	49.2%	100.0%
2010-11	45.2	6.0	1.4	47.5	100.0
2011-12	49.1	1.7	2.1	47.1	100.0
2012-13	49.6	2.4	1.8	46.2	100.0
2013-14	50.5	1.4	3.7	44.5	100.0
2014-15	40.7	2.0	4.6	52.8	100.0
2015-16	45.9	2.4	3.2	48.5	100.0
7-YEAR AVG.	46.9	2.9	2.4	47.8	100.0

Note: n=16,478 mobile teachers

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Table A-3. Number of mobile teachers, by destination and years of experience in education

Destination	1-3 years	4-10 years	11-20 years	21+ years	Total teachers
To another SDP school	2,146	2,567	2,294	720	7,727
To a Phila charter school	302	125	42	6	475
To school outside Phila	151	196	40	14	401
Left PA public education	1,967	2,069	1,698	2,141	7,875
All mobile teachers	4,566	4,957	4,074	2,881	16,478
All SDP teachers	11,095	20,529	23,728	12,682	68,034

Note: n=68,034 teacher-years (teachers*years employed in SDP) from 2009-10 – 2015-16.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Table A-4. Number of mobile SDP teachers, by subject taught and school year

School Year	Mathematics	Science	English	Special Education	General Education
2009-10					
Mobile teachers	271	178	265	349	1165
All teachers	928	636	1,064	1,455	5,087
2010-11					
Mobile teachers	345	233	439	460	1197
All teachers	803	562	1,059	1,230	4,280
2011-12					
Mobile teachers	165	130	239	215	912
All teachers	597	439	857	945	4,626
2012-13					
Mobile teachers	261	176	324	340	1115
All teachers	600	391	767	909	3,677
2013-14					
Mobile teachers	125	100	160	218	683
All teachers	459	332	642	818	3,318
2014-15					
Mobile teachers	139	78	184	161	725
All teachers	547	335	633	645	3,515
2015-16					
Mobile teachers	146	73	146	97	747
All teachers	520	294	496	364	3,450
7-YEAR TOTAL					
Mobile teachers	1,452	968	1,757	1,840	6,544
All teachers	4,454	2,989	5,518	6,366	27,953

Note: n= 47,280 teacher-years (teachers*years employed in SDP) from 2009-10 – 2015-16.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.

Table A-5. Percentage of mobile SDP teachers, by subject taught and school year

School Year	Mathematics	Science	English	Special Education	General Education
2009-10	29.2%	28.0%	24.9%	24.0%	22.9%
2010-11	43.0	41.5	41.5	37.4	28.0
2011-12	27.6	29.6	27.9	22.8	19.7
2012-13	43.5	45.0	42.2	37.4	30.3
2013-14	27.2	30.1	24.9	26.7	20.6
2014-15	25.4	23.3	29.1	25.0	20.6
2015-16	28.1	24.8	29.4	26.6	21.7
7-YEAR TOTAL	32.6	32.4	31.8	28.9	23.4

Note: n= 47,280 teacher-years (teachers*years employed in SDP) from 2009-10 – 2015-16.

Source: Authors' calculations from publicly available personnel data from the Pennsylvania Department of Education, 2009-10 – 2016-17.