

# Making a Difference in Education Reform: ProComp External Evaluation Report 2006-2010

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## Executive Summary

ProComp is an ambitious alternative teacher compensation system developed by Denver Public Schools (DPS) in cooperation with the Denver Classroom Teachers Association (DCTA). This report summarizes a summative evaluation of ProComp conducted collaboratively by The Evaluation Center and the Buechner Institute for Governance at the University of Colorado Denver and the Center for Education Data and Research at the University of Washington. This report describes the implementation of various elements of ProComp and results of the analyses of the association of ProComp with student achievement and changes in the composition of the DPS workforce. The evaluation examined ProComp from implementation beginning in January 2006 through the 2009-10 school year.

The evaluation used a mixed-methods design that incorporated data from interviews, focus groups, surveys, document reviews, and analyses of existing district data (e.g., human resources data and assessment results). The available data, and hence evaluation design, did not allow for a definitive distinction between ProComp effects and the impacts of other factors (e.g., concurrent reform efforts, economic changes, demographic shifts) on workforce recruitment and retention and student achievement. However, use of available statistical controls strengthened findings of effects associated with ProComp. The evaluation also incorporated a theory of change, which was used as a guide to examining a logical causal chain between ProComp elements and potential impacts.

## Background

DPS is an urban school district enrolling 74,000 students in 142 schools in 2008-09.<sup>1</sup> That year, it was the second largest school district in Colorado and 45<sup>th</sup> largest in the nation (Sable, Plotts, & Mitchell, 2011). Students in DPS historically have tended to score lower than students in the rest of the state on the Colorado Student Assessment Program (CSAP) tests. Achievement, however, has been on an upward trend relative to the rest of the state for the past five years (Bray & Medler, 2009; DPS Office of Accountability, Research & Evaluation, 2010).

Developing ProComp was a lengthy endeavor that included a collaborative development process by a team of DCTA and administrative representatives, a four-year Pay for Performance Pilot in 12 DPS schools, as well as both encouragement and financial support from the community and foundations for this reform effort. The current system was envisioned by 1999 and was implemented in 2006 after being approved by the DPS school board and the DCTA membership and funded by a \$25 million voter-approved tax increase. ProComp was presented to teachers as a way to increase salaries of both new and veteran teachers and to the public as a way to increase student achievement and reward good teachers.

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<sup>1</sup> The most recent data available for national comparisons on enrollment were from 2008-09.

ProComp is available to a professional workforce of about 5,000 people, the large majority of whom are teachers, but also includes other educators such as librarians, counselors, therapists, and facilitators. (This report uses *teachers* as shorthand for this extended group of educators.) All new DPS hires after January 1, 2006, were automatically placed into the ProComp program, and existing teachers had the opportunity to enroll in ProComp during numerous opt-in periods from 2005 through June of 2011. As expected, participation in ProComp has grown over the past five years, from 30% in 2005-06 to 74% of the ProComp eligible participants in 2009-10.

Data showed that financial considerations were the primary reason teachers chose to join ProComp or remain in the traditional salary system. When a teacher joins ProComp, he or she is assigned an initial salary based on the traditional salary schedule, and then he or she receives awards based on nine elements in the four component areas: Knowledge and Skills, Comprehensive Professional Evaluation, Market Incentives, and Student Growth. Each of the elements is designated either as base building or non-base building. Base building incentives are added onto the base salary each year, thus increasing the base starting salary for the next year. Non-base building incentives are essentially bonuses given on a yearly basis on top of base salary.

The incentive amounts associated with each element are displayed in the table below. The amount of each incentive ranged from a low of \$376 for meeting a Student Growth Objective (SGO) or receiving a satisfactory rating on the Comprehensive Professional Evaluation (CPE) for probationary teachers to a high of \$3,379 for earning an Advanced Degree/License. ProComp has evolved over the past five years (including the incentives associated with different components), with the most significant reforms occurring in 2008. Overall, the average number of ProComp incentives earned annually by teachers grew from 1.5 in 2005-06 to 4.3 in 2008-09, then declined slightly to 3.8 in 2009-10.

**Amount of ProComp Incentives for 2009-10**

Component	Element	2009-10 Amount
Knowledge and Skills	Professional Development Unit (PDU)	\$751**
	Advanced Degree/License	\$3,379**
	Tuition Reimbursement	\$1,000/year; \$4,000 lifetime
Comprehensive Professional Evaluation (CPE)	Probationary (once a year)	\$376*
	Non-Probationary (once every three years)	\$1,126*
Market Incentives	Hard to Serve School (HTSS)	\$2,403
	Hard to Staff Assignment (HTSA)	\$2,403
Student Growth	Student Growth Objectives (SGO)	\$376**
	Exceeds CSAP Expectations	\$2,403
	Top Performing Schools	\$2,403
	High Growth School	\$2,403

\* Base building

\*\* Base building for the first 14 years of experience

**ProComp represents a multifaceted approach to alternative teacher compensation.** ProComp includes incentives specifically targeted at both the individual teacher level and the school level. Individually based incentives include those for Advanced Degrees/Licenses, Tuition/Student Loan Reimbursement, Professional Development Units (PDUs), Comprehensive Professional Evaluation (CPE), SGOs, and Exceeds CSAP Expectations. ProComp also incorporates two bonuses that are based on school-wide accomplishments and paid to all ProComp participants in schools that achieve one or both of these distinctions: Top Performing Schools and High Growth School. The third facet of ProComp uses Market Incentive bonuses to attract and retain teachers in Hard to Staff Assignments (HTSA) and Hard to Serve Schools (HTSS). These incentives are intended to work together as a total compensation system to accomplish all of the intended results.

ProComp represents a holistic approach to alternative compensation by targeting multiple leverage points that may affect student achievement. Additionally, ProComp has continued to evolve. In 2010-11, the district implemented a new Pedagogical Content Knowledge (PCK) initiative to improve the PDU system. In 2010-11 the Leading Effective Academic Practice (LEAP) initiative was being piloted almost district wide as a potential replacement for the current CPE system.

## **Implementation and Views on ProComp**

**ProComp is the result of a productive collaboration between DPS and DCTA.** Stakeholders generally viewed ProComp as being aligned with the DPS mission and goals, the ballot initiative, and the purpose and goals established in the ProComp Agreement. The original development of ProComp was accomplished through collaboration between DPS and DCTA; however, the ideological differences between these groups strained this collaborative relationship during the negotiation of the changes to ProComp incorporated in the 2008 Agreement. These changes reduced the base-building incentives available to teachers with 14 or more years of experience and substantially increased the amount of the Market Incentives and Student Growth elements related to student achievement on the CSAP.

**Participating teachers and principals were comfortable with ProComp as a compensation system.** ProComp represents a fundamental change from the single salary schedule, which is the predominant method of determining teacher salaries in most U.S. school systems and the compensation system used exclusively in DPS prior to ProComp's implementation (Springer, 2009). Although deviating from this compensation norm, participating teachers as a group appeared to accept ProComp and also considered ProComp to be at least as fair as the traditional salary system. Teachers who voluntarily enrolled in ProComp, new hires who were automatically enrolled in ProComp, and school administrators were generally more accepting of this alternative compensation system than were those who did not choose to participate in ProComp.

**There was a general sense that ProComp could have the potential to motivate teachers to improve their instructional practice and achieve professional growth.** Teachers and principals reported they believed the incentives related to improving teacher knowledge or skills (such as PDUs and Advanced Degrees/Licenses) were more likely to impact practice and student achievement than bonuses related to student test scores (such as Exceeds CSAP Expectations and High Growth or Top Performing Schools). Importantly, the student achievement analysis indicated the opposite: PDUs and Advanced Degrees/Licenses were not correlated with higher value-added student achievement, while Exceeds CSAP Expectations was correlated.

**Many teachers and principals lacked critical information about ProComp, including an understanding of how they could earn the incentives.** Many teachers and principals participating in the evaluation reported they did not satisfactorily know and understand all ProComp incentives. Teachers considered their colleagues to be the most effective source of information about ProComp, yet school visits revealed much misinformation and numerous questions among staff. Lack of understanding of the incentives reduces the likelihood that teachers will be motivated by them.

**ProComp did not seem to impact school environments or school staff workload. Survey and interview data indicated ProComp did not have a substantial impact on the school environment or the workload of teachers and administrators.** Most principals and teachers felt ProComp had not increased competition among teachers or had a negative impact on collaboration.

**ProComp has had an important impact on the DPS system as a whole.** Operationally, ProComp necessitated significant improvements in human resources, payroll, student data systems, interdepartmental communication, and workflow. ProComp also necessitated the development of human and instructional resource capacity to support this new system. New assessments, the DPS achievement growth model, and the DPS School Performance Framework are among the products of these endeavors.

## **Professional Development Units**

As part of ProComp, DPS sought to redesign its professional development based on research-based practices. The result was the creation of the Professional Development Unit (PDU) element. This element was introduced as individual and small-group self-directed PDU studies. Over time, PDU learning experiences were expanded to include district-sponsored and school-based PDU offerings. The PDU courses taken most frequently were those sponsored by central departments and schools.

Participation in PDU learning experiences is not unique to ProComp teachers, as they are also available to Non-ProComp teachers. Nor is the PDU learning experience the only form of on-going professional development in the district; DPS and individual schools offer and, in some instances, require teachers to participate in professional development not associated with the PDU incentive.

**Teachers saw more value in PDU courses that are most closely related to their personal context.** PDU courses that have this characteristic are those where participants are connected by a similar content (e.g., art, new math curriculum), employee group membership (e.g., Teacher for America (TFA), Teacher in Residence (TIR)), or their school.

**PDU courses were generally considered motivating by teachers, though teachers and principals felt they varied considerably in both quality and rigor and receiving the bonus was not correlated with higher teacher effectiveness in terms of value-added on student assessments.**<sup>2</sup> PDU incentives were considered motivating by approximately three fourths of the ProComp teachers. **Teachers also reported changes in instructional practices as a result of PDU learning. However, the student achievement analysis found PDUs were not significant predictors of CSAP student achievement in either math or reading.**

### Advanced Degrees and Licenses

Another element in the Knowledge and Skills component is the Advanced Degrees/Licenses element. This incentive is most similar to the traditional salary schedule and provides salary increases for earning a master's or doctorate degree and/or for receiving an advanced license such as National Board for Professional Teaching Standards and School Nurse Practitioner Certification. The Tuition/Student Loan Reimbursement element reimburses teachers for expenditures for past education or professional training.

**Teachers liked receiving these incentives, but there is limited evidence that they led to changes in instructional practice or improved student CSAP achievement.** A majority of teachers and principals tended to believe these incentives provide motivation to pursue additional qualifications and expressed the belief that the additional education would help teachers improve instructional practice. However, there was limited evidence that these incentives led to improved instructional practice or improved student CSAP achievement. It may be that the small number of teachers included in the value-added analyses of these incentives and the diverse nature of advanced degree programs made it difficult to detect effects through analysis of student test achievement.

### Comprehensive Professional Evaluation

ProComp provides a base-building incentive for teachers with one to 14 years of experience who achieve a satisfactory rating on their Comprehensive Professional Evaluation (CPE). This evaluation system was adopted and used in DPS from the 2006-07 school year through the 2010-11 school year (Denver Public Schools, 2011). Teachers in their first three years of experience are formally evaluated on a yearly basis, while experienced teachers are evaluated every three years and given a satisfactory or unsatisfactory rating.

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<sup>2</sup> In this report, *teacher effectiveness* is defined in terms of value-added models. Value-added models are designed to estimate teacher contributions to student achievement on tests, specifically student learning growth as measured by CSAP scores. As such, value-added measures of teacher effectiveness will not account for teacher contributions to student outcomes that are not captured by the state assessments.

**A change that resulted from ProComp’s implementation was a new teacher evaluation system. The development of the CPE system was required by the original ProComp Agreement.** Those involved in the early thinking and development of this evaluation system viewed these changes positively.

**Principals and teachers only moderately understood the CPE element, and implementation varied in quality.** In general, the majority of teachers and principals said they understood CPEs. However, there were some misunderstandings of the CPE element, reflecting larger issues of staff communication about the specifics of ProComp.

**It is not clear if teachers were motivated by the CPE-related incentive; additionally, there is limited evidence that the CPE reward was associated with teacher effectiveness.** Comments by teachers suggested that the motivating effect of the incentive may be diminished because teachers regard the CPE incentive as small and the incentive is not available to teachers with more than 14 years of experience. The value-added analysis of CSAP achievement indicated the CPE element was marginally, yet significantly, associated with teacher effectiveness in math but showed no relationship in reading.

## Student Growth Objectives

The development of Student Growth Objectives (SGOs) by classroom teachers was a cornerstone of the initial DPS Pay for Performance Pilot. Teachers and principals collaboratively develop SGOs. All DPS teachers write two SGOs each fall and may revise them up until the Friday prior to Spring Break.

**Implementation of SGOs was impacted by a lack of support and standardization.** Teachers had numerous concerns about the way SGOs are implemented in schools. Issues centered on the inconsistencies of SGOs among teachers and schools sites and the level of expectations reflected in SGOs. The data on implementation suggested a substantial need for more support and standardization of the SGO process and criteria for rigorous SGOs. During the ProComp pilot and the initial two years of district-wide implementation, there were school support teams and school liaisons. When these were discontinued, school personnel reported they lacked much of the support and training needed to appropriately implement SGOs.

**Teachers had mixed attitudes about whether SGOs changed instructional practice.** Some teachers reported that SGOs helped them focus instruction and that data-driven conversation between teachers and administrators had increased. Other teachers reported no impact on their instruction.

**Most SGOs met expectations for rigor, but some had significant problems that could be remedied with increased standardization of the SGO process and criteria for rigorous SGOs, as well as better oversight and training.** In examining the rigor of SGOs, a majority of SGOs in the sample data set were found to meet or exceed DPS standards. However, a number of significant problems were identified. Evaluators determined some SGOs were unclear, had poorly defined learning objectives, or lacked high expectations for students yet had been approved by principals. These findings suggest a need for increased standardization of the SGO process and



the criteria for rigorous SGOs and better oversight and training for principals, since they are key actors in helping teachers define quality SGOs and are ultimately accountable for the quality of SGOs at their schools.

**Both ProComp and Non-ProComp teachers had equally rigorous SGOs, though ProComp teachers were somewhat more likely to meet their SGOs.** Results did not support the idea that providing an incentive to teachers would cause them to set higher quality expectations than the expectations set by teachers who do not receive an incentive. The rigor of SGOs for ProComp teachers was found to be functionally identical to that of their Non-ProComp peers, though somewhat more ProComp teachers achieved their SGOs.

**At the school level, meeting SGOs did not appear to be related to student growth.** As a body of evidence, results did not indicate a meaningful relationship at the school level between the level of growth in student achievement and the percentage of teachers at that school who met their SGOs.

**Higher achieving schools tended to have more rigorous SGOs and displayed some different behaviors than lower performing schools.** In comparison with lower achieving schools, higher achieving schools tended to have better quality SGOs that teachers regarded as meaningful and achievable and an SGO process that was focused, collaborative, and data based. However, these practices do not appear to be sufficiently widespread to produce differences evident at the school level.

**The student achievement analysis found that SGOs did, on average, reward effective teachers.** In math, the differential between teachers who received SGO bonuses and those who did not was about 35% of a standard deviation in terms of teacher effectiveness (the difference between a teacher at the median and a teacher at the 64<sup>th</sup> percentile). In reading, the differential was 20% of a standard deviation. This difference can be compared to a regression-adjusted estimated effect of receiving free or reduced price lunch of about 5% of a standard deviation of student achievement. In other words, the average differential in teacher effectiveness between SGO recipients and eligible non-recipients was approximately equivalent to the effect of poverty (as measured by free or reduced price lunch status) on student achievement in math and about two thirds of the effect of poverty in reading.

## Other Student Growth Incentives

ProComp includes three other Student Growth Elements, Exceeds CSAP Expectations, Top Performing Schools, and High Growth Schools that are awarded based on increased student achievement at the teacher or school level.

**The three CSAP-related ProComp incentives were the least understood.** The most problematic misunderstanding was regarding who is eligible to earn these incentives. Although only the Exceeds CSAP Expectations incentive is restricted to teachers in grades and content areas where CSAP is administered, there were teachers and administrators who wrongly believed these same restrictions apply to the Top Performing Schools and High Growth School bonuses.

**Results were mixed on the extent to which teachers find these incentives motivating.** The data clearly indicated that some teachers feel motivated by one or more of these CSAP-related incentives. However, for some teachers, achieving these distinctions seemed to have less to do with the bonus itself and more to do with the positive recognition that their students performed well. Some principals were leveraging the CSAP-related incentives to motivate teachers and help drive school improvement endeavors.

**Teachers did not strongly believe that their professional effort is directly tied to student achievement.** Teachers were somewhat more likely to believe they can impact increasing student growth than achieving high test scores, and principals were more likely than teachers to believe teacher effort has an effect on student achievement. The theory of change for ProComp argues that for an incentive to motivate change, teachers need to understand the incentive and believe they can earn it. If teachers do not feel efficacious (i.e., if they do not believe their efforts can improve student achievement and thus they cannot earn a bonus), then incentives based on student achievement (such as Top Performing Schools or High Growth School) are unlikely to be strong motivators for change in practice. The efficacy beliefs of ProComp teachers were very similar to those of Non-ProComp teachers, which suggests that participation in ProComp may not be related to participants' sense of teacher efficacy.

**The student achievement analysis found that the teacher-level incentive Exceeds CSAP Expectations is targeted appropriately and rewarded more effective teachers as measured by a value-added analysis of CSAP scores.** Specifically, the differential for the Exceeds CSAP Expectations award was about a full standard deviation in terms of teacher effectiveness in math (the difference between a teacher at the median and a teacher at the 84<sup>th</sup> percentile) and nearly 60% of a standard deviation for reading.

## Recruitment and Retention

A goal of ProComp is to improve the effectiveness of the DPS workforce by recruiting and retaining more effective teachers. Effective teachers are expected to be attracted to work in DPS through competitive salaries, participation in innovative reform, and two market incentives. The Hard to Staff Assignments (HTSA) incentive is paid to teachers who work in shortage areas, and the Hard to Serve Schools (HTSS) incentive is paid to teachers who work in schools with a high proportion of free and reduced lunch–eligible students.

**Results of the analyses of the effect of ProComp on recruitment and retention were mixed.** Over the first four years of ProComp implementation, DPS improved its ability to compete with other districts when recruiting experienced teachers. However, the evaluation design and analysis did not allow a firm conclusion that this change is due to ProComp or that the change was a result of earning either of the Market Incentives (HTSS or HTSA).

**Because of the lack of knowledge about ProComp reported by teacher trainees, a strong effect on recruitment is not expected.** In addition, surveys and interviews with newly hired teachers and teacher trainees provides mixed views on how they value ProComp incentives, which may also moderate ProComp's impact on recruitment.

**During ProComp implementation, DPS improved its ability to retain teachers.** Although this may be due to ProComp or other reforms that occurred in DPS at the same time, statistical models indicated that some degree of the improved retention was likely due to ProComp. The amount of retention that may be attributed to ProComp was between zero and four percentage points, which suggests that at most, 160 teachers per year may have remained in DPS out of a workforce of 3,700. Analysis of the relationship between receiving ProComp incentives and retention within DPS suggests that CPE and Student Growth incentives were associated with retention, while Market Incentives and Knowledge and Skills incentives were not.

## **Student Achievement**

A primary goal of the ProComp system is to increase student achievement in DPS.

**DPS has experienced significant student learning gains across grades and subjects, but it is not clear that this was the result of ProComp.** There was not a consistent pattern across grade levels and subjects in the relationship between ProComp and observed achievement gains. In some cases, the gains appeared primarily among students with ProComp teachers, while in other cases it is Non-ProComp teachers who appeared to be more effective. Though puzzling, these findings are consistent with research on other well-known interventions that include elements similar to ProComp.

Several other results that have potentially far-reaching policy implications are clearer. One finding is that “ProComp effects” were not focused solely among teachers enrolled in ProComp. This suggests that systems associated with the implementation of ProComp, such as a greater emphasis on using data and improvements in the professional evaluation system, may have influenced the professional practices of Non-ProComp teachers as well as ProComp teachers.

**Some ProComp incentives did successfully target teacher effectiveness as measured by student achievement.** There is strong evidence that earning Exceeds Expectations and SGO awards was associated with teacher effectiveness as measured through the value-added analysis of student achievement data in both CSAP math and reading. This is in contrast to the fact that teacher opinions drew into question the ability of these incentives to impact achievement. The finding that SGOs appeared to be a reasonably successful means of rewarding teachers whose students demonstrated larger than expected gains on the CSAP tests provides support for other states and localities (e.g., Race to the Top) looking to reform teacher incentives. Although the gains were smaller, CPEs were also rewarding teachers whose students showed greater than expected CSAP gains in math. There is little evidence that the PDU and Advanced Degree/License incentives were related to teacher effectiveness as measured by student achievement. These awards may be rewarding certain aspects of classroom instruction not strongly associated with students’ CSAP achievement such as content not measured in the CSAP or other valued outcomes such as social skills or civic engagement. Also the small number of teachers in the analyses of the effect of earning an advanced degree incentive may have been a factor in the results.

## Considerations

**The ability to scale up while maintaining quality and achieving balance between school level needs and standardization across a district must be considered in a large reform effort.** There are key components of ProComp that are implemented at the school level: SGOs, PDUs, and CPEs. All three were found to have variable quality across schools. However, these components were valued by teachers and administrators and, in the case of SGOs and to a lesser extent CPEs, did reward effective teachers as measured with value-added analysis. An important question to be considered in a district-wide reform effort such as ProComp is how to maintain a high quality of implementation that will support school reform broadly while still allowing enough autonomy for school principals and teachers to manage the reform in a way that meets their school's instructional improvement needs. It is critical that the district invest energy and resources to monitor and promote the quality of implementation. DPS has already taken steps to create different models for PDU learning opportunities and is piloting a new evaluation system that could replace the CPE element; making adjustments in the SGO process is prudent as well. Examples of areas in which DPS could provide additional guidance are in identifying assessments to use to evaluate student learning related to SGOs; clarifying standards for rigor, quality, and expected growth; and implementing improved quality-control processes such as annually auditing a sample of SGOs for quality and providing principals with feedback.

**There is evidence that in some DPS schools principals were effectively leveraging ProComp incentives to further school-level reform efforts.** These principals were connecting compensation with other mechanisms intended to improve instruction and student achievement, such as school improvement plans and goals, teacher collaboration on individual and team goals aligned with school goals, and professional development. In comparison with lower achieving schools, higher achieving schools tended to have higher quality SGOs that teachers regarded as meaningful and achievable and an SGO process that was focused, collaborative, and data based. It may be possible to promote improved instruction at the school level through good management and use of ProComp incentives.

**Reform efforts need to be nurtured as they evolve, but it is not always easy to maintain and sustain an effort in the midst of other reforms.** Once a reform has begun and the supporting pieces put in place, it is all too easy for a district of any size to move on to other reforms without adequately maintaining and sustaining the current effort. The fact that there was such widespread misunderstanding about ProComp is an indication that some important implementation features have either lost momentum or have been discontinued. The evidence from both teachers and principals indicated that the withdrawal of some supports available during the ProComp pilot and initial district-wide implementation has proven to be detrimental to full implementation.

Providing support at the beginning of a reform is always useful to ensure quality implementation; however, until sustainability is ensured, changes in support structures should be strategic and priorities should be determined using data. The mere fact that teacher and

principal mobility remains high will necessitate ongoing efforts to keep staff informed and the most critical supports in place long enough for them to become systemic.

**The value participants place on certain incentive elements like those found in ProComp may not be related to their actual impact on student achievement. For some elements, such as the Advanced Degree/License and PDU incentives,** a majority of teachers and principals tended to believe these incentives provided motivation to pursue additional qualifications and expressed the belief that additional education would help teachers improve instructional practice.

**However, the student achievement analysis did not find a correlation between receiving these bonuses and** teacher effectiveness as measured through the value-added analysis of student achievement data in both CSAP math and reading.

**Teachers also reported changes in instructional practices as a result of PDU learning; however, there is no evidence that these incentives have led to changes in student outcomes.** Teachers and principals also liked the PDU component of ProComp, but statistical analysis found no relationship between earning PDU credits and teacher effectiveness.

**Although there is room to improve SGO implementation, on average the incentives rewarded effective teachers. Improved implementation may improve the effectiveness of this incentive.**

The implementation of SGOs was not even: the quality, rigor, and level of expectation varied across schools and sometimes within schools. However, despite these challenges, on average, SGOs did reward teachers who were more effective. At the same time, many teachers who were less effective received SGO bonuses, and some who were effective did not receive bonuses. Improved standardization, rigor, and training on the use of SGOs could potentially improve the effectiveness of this incentive.

**Communication and understanding of compensation reform is key.** There was a considerable lack of understanding, and some active misunderstanding, about the way ProComp works and what teachers need to do to earn a particular incentive. The three CSAP-related ProComp incentives were the least understood, yet they most directly reward improvement of student achievement. The most problematic misunderstanding was confusion regarding eligibility to earn these incentives. Although only the Exceeds CSAP Expectations incentive is restricted to teachers in grades and content areas where CSAP is administered, there were teachers and administrators who wrongly believed these same restrictions apply to the Top Performing Schools and High Growth School bonuses. To the extent that teachers and principals do not understand the details of the compensation system, it is highly unlikely they will be motivated by it or that they will change their behavior to pursue these incentives.

## **Recommendations for Other Districts**

ProComp is a compensation reform that has attracted national attention. Other districts considering this type of alternative compensation system are eager to learn from the experiences of DPS, a preeminent leader in this field and one of the largest school districts in the United States. Key informants involved in the planning, design, development, and early stages of

implementation of ProComp identified several key lessons they believe DPS learned that would benefit other districts. Their top recommendations are:

- Involve teachers from the beginning and collaborate to develop the system. Take the time necessary to build the team so that everyone knows each other and knows clearly what they are working on.
- Research various compensation systems and develop a system customized for your district.
- Determine the goals for the compensation system and align the incentives with the desired goals. As you move through the process, stay focused on the goals and be very clear what behaviors need to occur in order to earn an incentive.
- Consider the entire compensation package (e.g., benefits, retirement), not just salary, and consider the effect of the compensation system on teachers at different career stages.
- Allow sufficient time to design, plan, pilot, and improve the system based on what is learned during the pilot and at various stages of implementation. Secure the financial resources required to sustain the compensation system.
- Build into the system a review and change cycle that provides for evaluation and the use of data to improve the system.

There are several additional lessons that emerged from the evaluation that can be added to the list generated by the key informants. These recommendations include:

- Engage teachers in a significant way in planning, piloting, and implementing the system to ensure their support of the change in pay systems.
- Design data systems at the district level that support the compensation system and provide clear data to the district and to individual teachers regarding incentives earned and paid. If student achievement is part of the incentive system, design systems that will accurately link teachers with the appropriate students, taking into account such things as team teaching, platooning (i.e., multiple teachers serving each student), and other instructional grouping practices.
- Focus knowledge and skill incentives on job-embedded, ongoing professional learning.
- Establish clear and visible links between the behavior that earns the incentive and the payment of the incentive.
- Provide sufficient support for initial implementation, and then continue to provide support to accommodate new informational needs and changes in personnel.
- Use multiple, ongoing forms of communication differentiated for the needs of different audiences (e.g., new teachers, experienced teachers, administrators, potential recruits).

- Provide training for principals to enable them to maximize the incentive system to increase teacher effectiveness and school improvement.
- Provide training, support, guidelines, and monitoring for teachers and principals if an incentive similar to Student Growth Objectives is included in order to ensure that standards for quality and rigor are consistently being met.

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Any and all errors are the responsibility of the authors.



## Chapter 1: Roadmap to the ProComp Summative Evaluation Report

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*Prepared by: Diane Proctor and Robert Reichardt*

There have been three major stages of educator compensation in the United States: the one-room schoolhouse/ rural “boarding around” system, the grade-based pay or tiered salary schedule, and the single salary schedule (Kershaw & McKean, 1962; Gratz, 2009). The Professional Compensation System known as ProComp and other alternative compensation schemes are potentially the beginning of a fourth era in educator compensation that aims to tie compensation closer to organizational goals of schools and districts. ProComp is an ambitious compensation system that was developed by Denver Public Schools (DPS) in cooperation with the teachers’ union, Denver Classroom Teachers Association (DCTA). Beginning with implementation in 2006, ProComp participants can receive up to ten different incentives based on skills and knowledge development, professional evaluation, market conditions, and student performance.

This report contains a summative evaluation of ProComp. The goal of this evaluation is to describe the implementation of various components of ProComp and measure the intended results of the system on the composition of the DPS workforce and student achievement. This evaluation centers on five broad evaluation questions:

1. Did ProComp meet stakeholder expectations?
2. Is ProComp associated with improvements in student achievement?
3. Is ProComp associated with improvements in the recruitment and retention of effective teachers?
4. Was ProComp effectively implemented?
5. Are there recommendations for improvement of ProComp?

This external evaluation was required as part of the original ProComp Agreement between DPS and DCTA. ProComp was funded by a mill levy election that was approved by Denver voters in November 2005 (Hundley, 2005). The ProComp Trust Board members are responsible for receiving, managing, and distributing these funds. The evaluation was funded by the ProComp Trust Fund, overseen by DPS, and conducted by a team from The Evaluation Center and Buechner Institute for Governance at the University of Colorado Denver, and the Center for Education Data and Research at the University of Washington-Bothell. This evaluation team coordinated some data collection activities with the internal DPS evaluation team from the

University of Colorado, Boulder. This evaluation was conducted between June 2008 and August 2011.

## Teacher compensation history

Beginning in the early 1800s, rural communities recognized the need to provide public education for their children. Teachers were brought in for periods of time, paid directly by the townspeople, and were “boarded around” at different townspeople’s homes (Gratz, 2009).

For many rural communities, finding qualified teachers became harder towards the end of the 1800s. The growth in manufacturing, immigration, and the shift from an agricultural to industrial society caused many people who were looking for work to move to larger cities. To counter this rapid population growth and instill civic order, school systems were developed and the teaching profession shifted into the second-phase of teacher compensation (Springer, 2009). The grade-based compensation model paid teachers according to the grade they taught and performance reviews conducted by school administrators (Podgursky & Springer, 2007). This model was in use until the 1920s when issues of favoritism and unfair evaluations led many teachers to call for change in the growing profession’s compensation system (Kershaw & McKean, 1962) .

The third-phase of teacher compensation came about as a response to the inequity of the grade-based compensation model and the civil and equal rights movement of the time. The single-salary schedule was first introduced in Denver and Des Moines, Iowa in 1921 (Springer, 2009; Gratz, 2009). This brought a feeling of professionalism and equity to the position because all teachers were now paid according to the number of years they had been in the profession and the number of college/university degrees they had completed. Women now saw pay equal to their higher education and male counterparts (Gratz, 2009).

The single-salary schedule remains the primary compensation model for educators in the United States. However, beginning in the 1980s the single-salary schedule was criticized by some for providing weak incentives for educators to act toward improving student achievement and growth and to improve teaching practices (RAND Corporation, 2011). In 1983, the National Commission on Excellence in Education released their report on public education called *A Nation at Risk*. This report re-opened the idea of merit-pay and performance-based compensation, recommending that teacher salaries be “professionally-competitive, market-sensitive, and performance-based” (National Commission on Excellence in Education, 1983).

Alternative compensation systems attempt to reward teacher performance through some form of differentiated pay, bonus, or alternative incentive (Johnson & Papay, 2009; Podgursky & Springer, 2007). There are many variations in alternative compensation system design that can be broken down into four main categories according to Johnson and Papay (2009): knowledge and skills, roles, market factors, and performance. Knowledge and skills refers to rewarding teachers for attaining and using skills valued by the school, district, state (Consortium for Policy Research in Education, 2007). Roles compensation refers to rewarding teachers for accepting special project or leadership roles within the school or an individual workgroup. Market factors include recruitment and retention incentives, pay for hard to staff positions, and positions at

hard to serve schools. These market-based systems mimic the private sector and offer higher wages and rewards to teachers willing to fill these positions that school districts typically have difficulty filling (Springer, 2009). Finally, performance compensation systems, including both merit and performance pay, focus on rewarding teachers for their effectiveness. This effectiveness can be measured through the traditional evaluation system and/or based on the academic achievement on standardized tests, some measure of student growth, or overall school performance (Johnson & Papay, 2009).

## Theory of change

A theory of change, shown in Exhibit 1, was developed by the evaluation team during the evaluation period to describe the key steps, intermediate outcomes, and long-term results ProComp is intended to achieve. This theory is organized around purpose, goals, components and elements of ProComp outlined in the 2004 Agreement and its successor documents. The theory of change incorporates expectancy theory (Gerhart, Minkof, & Olsen, 1995; Vroom, 1964) that suggests individuals are motivated to engage in certain behaviors when they believe that those behaviors contribute to an organization's goals (expectancy), when the individuals further believe the behaviors will be rewarded (instrumentality), and when the individuals value the rewards (valence).

The theory of change begins with the four goals for ProComp—Motivational, Career, Professional, and System Goals. The ProComp system has 10 elements that describe the various activities and outcomes that are incentivized by ProComp; these are organized by four components—Knowledge and Skills, Professional Evaluation, Student Growth, and Market Incentives. (The components and elements are briefly described here and in more detail in Chapter 2). The ProComp Components and Elements are most closely aligned with the Motivational and Career Goals. The System Goals are necessary to provide the infrastructure to support the ProComp system. The Professional Goal was not directly studied in the current evaluation but is included in the theory of change as it is closely related to one of the intended results. The Enabling Conditions are those assumptions that mediate or moderate the ability of ProComp to achieve its intended outcomes and results. The intended results are derived from the stated intent of ProComp to “couple teacher compensation more directly with the missions and goals of the Denver Public Schools and the Denver Classroom Teachers Association.” (DPS and DCTA, 2004)

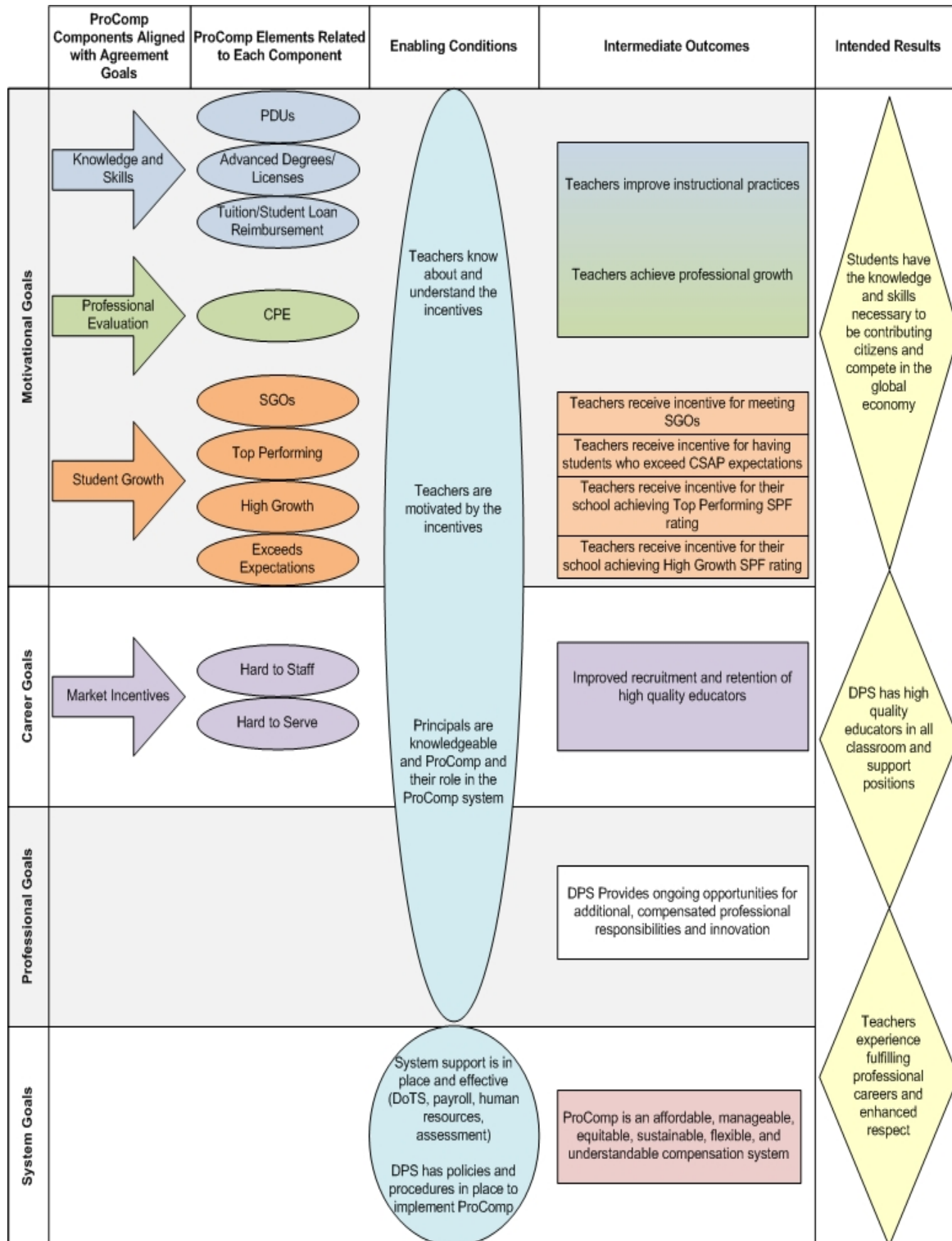
The Knowledge and Skills Component rewards educators for improving their own knowledge and skills; they are able to earn Professional Development Units (PDUs) by completing requirements for DPS approved courses, achieving Advanced Degrees and Licenses (e.g., National Board of Professional Teaching Standards), and through Tuition or Student Loan Reimbursement. The merit-based Professional Evaluation Component provides bonuses when teachers receive a satisfactory Comprehensive Professional Evaluation (CPE). The Market Elements reward teachers who work in subjects with shortages (Hard to Staff Assignments or HTSA) or high poverty schools (Hard to Staff Schools or HTSS). The performance-based Student Growth Elements reward student growth based completely or in part on the state's Colorado

Student Assessment Program (CSAP), at the school level (Top Performing and High Growth) and at the teacher level (Exceeds Expectations). The Student Growth Elements also include Student Growth Objectives (SGOs) that are goals developed by educators for a specific group of students and approved by his/her supervisor. The SGO goals use measures other than CSAP scores.

This model is based on the assumption that for the ProComp incentives to accomplish the intended outcomes, teachers need to know about, understand, and be motivated by the incentives. These Enabling Conditions are loosely based on the assumptions expectancy theory (Gerhart, Minkof, & Olsen, 1995; Vroom, 1964). There is another enabling condition related to knowledge of the system; principals need to understand ProComp and their role in the system in order to reach the intended results. The enabling conditions for the system goals are related to the infrastructure necessary to implement ProComp and moderate the ability of DPS to effectively administer the program.

The Intermediate Outcomes are primarily related to individual ProComp components and elements. These outcomes are the focus of the current evaluation. The Intended Results for ProComp are long-term outcomes for student learning, the effectiveness of the DPS educator workforce, and professional respect and career fulfillment for educators in support of the DPS mission:

*The Denver Public Schools will provide all students the knowledge and skills necessary to become contributing citizens in our diverse society and to compete in the 21<sup>st</sup> century global economy. (Denver Public Schools, 2009a)*

**Exhibit 1. ProComp Theory of Change**

## Organization of this report

Chapter 2 provides an overview of DPS and details on the history and structure of ProComp. Chapter 3 examines the extent to which ProComp has fulfilled the expectations of stakeholder groups, how teachers and principals feel about this new type of compensation system, and how the implementation of ProComp has impacted the DPS system as a whole. The remainder of the report is organized around the theory of change, in particular the ProComp elements and intended results around the composition of the DPS workforce and student achievement. Chapters 4 through 7 address the implementation of various components of ProComp and to the extent possible the outcomes related to these components. Chapter 4 addresses the Professional Development Unit (PDU) element and Chapter 5 addresses the Advanced Degree and Licensure elements of the Knowledge and Skills component of ProComp. Chapter 6 addresses the Comprehensive Professional Evaluation component. Chapter 7 describes the Student Growth Objective (SGO) element and Chapter 8 describes the other three elements of the Student Growth Component. Chapter 9 provides information on the implementation of the Market Incentives and overall recruitment and retention outcomes from ProComp. Chapter 10 provides evidence of ProComp's effect on student achievement. The final chapter provides conclusions to the report, a discussion of the findings, and recommendations.

## Overview of data sources

This section provides a brief description of the data sources used in the report. Each chapter also has information on data sources specific to that chapter. A detailed description of each source (including the sample population selection, instruments/protocols and data collection procedures, and data analyses results) are contained in Appendices B through F.

Evaluators employed a mixed-method design collecting data from the four categories of sources described below. This strategy provided multiple types of data to address the evaluation questions thoroughly and to provide a cross check on the accuracy of the findings.

### *Interviews and focus groups*

Interviews and focus groups were conducted with key informants to collect their expectations, perceptions, and opinions concerning the implementation and effectiveness of ProComp. These included:

- **DPS Administrative Staff** - Key personnel ( $n = 17$ ) from central departments involved in the implementation of ProComp were interviewed during May – October 2008. These departments included technology services, payroll, human resources, instruction, and research. These key informants were purposefully selected based on their first-hand knowledge and involvement in the development and implementation of ProComp. Interviewees were asked about their role in ProComp's development and implementation and their perceptions of ProComp's impact on the work of their department. Interviews focused on systemic challenges experienced in the

implementation and management of ProComp and ways those departments were able to adapt to meet those challenges.

- **Teachers<sup>3</sup> and Administrators** - Interviews and focus groups were conducted with teachers ( $n = 250$ ) and administrators ( $n = 36$ ) during April and May 2010. Interviewees were current staff members at 16 schools from 16 schools purposefully selected to ensure variation in the type of school (elementary, K - 8, middle, 6 – 12, and high schools), the percentage of teachers within a school participating in ProComp, the School Performance Framework (SPF) rating, and the percentage of teachers new to the school. At each school the interviewees included: 1) a random sample of 10-15% of teachers with 0 – 3 years of DPS experience, 2) a random sample of 10-15% of teachers with 4 or more years in DPS, 3) instructional leaders identified by the principal, and 4) the principal and other members of the administrative team. Both ProComp ( $n = 187$ ) and Non-ProComp ( $n = 60$ ) teachers participated in interviews, but ProComp status was not considered during the sample selection process. Both ProComp ( $n = 187$ ) and Non-ProComp ( $n = 60$ ) teachers participated in interviews, but ProComp status was not considered during the sample selection process. These interviews asked for information concerning informant's history with DPS and ProComp status and their opinions on the impact of ProComp on professional practice, student outcomes, recruitment and retention of teachers, and working conditions. Interviewees were also asked their opinion of the value of various incentives and their recommendations for improving the system.
- **Stakeholders** – Key informants ( $n = 13$ ) who were knowledgeable and involved in the development of ProComp were selected to represent various stakeholder groups. The interviewees were selected based on their first-hand knowledge and involvement in the development of ProComp and included: DPS administrators ( $n=4$ ), Denver Classroom Teachers Association (DCTA) teacher leaders ( $n=5$ ), former DPS Board members, and leadership staff from various foundations ( $n=4$ ) involved in DPS during the planning, development, and initial implementation stages of ProComp. To preserve anonymity, former Board members and representatives from foundations are referred to as “community leaders” in this report. The interviewees were asked about their role in the development and implementation of ProComp, purposes and goals of ProComp, and lessons learned. Interviews were conducted during July – October, 2010.

## Surveys

Surveys were conducted and analyzed as another source of information concerning opinions regarding ProComp:

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<sup>3</sup> Generally in this report the term “teachers” is used generically to describe ProComp eligible employees including teachers, librarians, counselors, facilitators, and Student Services Professionals (SSPs) such as nurses, psychologists, and occupational therapists. The one exception to this rule is the analysis of the State HR data that only has information on classroom teachers.



- **Teachers and administrators** - Surveys were administered to teachers and principals in the spring of the 2009-10 school year. A total of 2,985 DPS teachers (61% response rate) completed the ProComp Teacher Survey and 169 school administrators (72% response rate) completed the ProComp Principal Survey. The raw data from these surveys are included in Appendix C. The survey captured opinions on the purposes of ProComp as delineated in the 2004 ProComp Agreement and 2005 ballot initiative. The survey also was designed to capture their perceptions regarding implementation, improvement of ProComp, and the impact of both ProComp and the master salary schedule systems. Teacher and principal surveys included parallel items regarding ProComp and the traditional compensation system. The response scale for most items was a five-point Likert-type scale (1=strongly disagree and 5=strongly agree). Mean responses between 2.5 and 3.5 were interpreted as neutral. Mean responses below 2.5 were interpreted as generally disagreeing while mean responses above 3.5 were interpreted as generally agreeing. Analyses of the teacher survey data were conducted using weighted data, so that the responses of the sample would be representative of the entire population with respect to demographics and employment characteristics.
- **Teacher-Trainees** - A total of 350 individuals (20% response rate) who were near completion of educator licensing requirements at university-based teacher preparation programs in close proximity to DPS (i.e., University of Colorado Denver, University of Colorado Boulder, Metropolitan State College and University of Northern Colorado) were surveyed in December 2010. Survey items asked about future career plans, priorities in deciding where to work, and how ProComp may influence their decision to seek employment in DPS. The raw data from this survey are included in Appendix G.

### ***Analyses of existing data***

To assess the effectiveness of ProComp, existing data were analyzed to measure the impact on student achievement outcomes, teachers' professional practices as evident in their student growth objectives, and the hiring/retaining of qualified teachers:

- **Student achievement** - The student achievement analysis uses longitudinal unit record data with information on students and teachers. The student records contain results from the Colorado Student Assessment program as well as information on student race/ethnicity, free and reduced lunch status and whether they have an Individualized Education Plan (IEP). This data set only contains information for DPS teachers and students; however DPS trends were also compared with state results.
- **Student Growth Objectives (SGOs)** - A sample of SGOs developed by DPS teachers during 2009-2010 were analyzed to determine the academic rigor of the objectives using a rubric developed for this purpose. For this analysis, schools with highest and lowest achievement levels were selected by level (e.g., elementary, middle, high school); the resulting sample represented 468 growth objectives written by teachers at 41 schools. All SGOs written by school-based teachers ( $n = 9,363$ ) were also examined to



determine content, time interval, and assessment type by school levels and School Performance Framework (SPF) categories.

- **Human Resources** - Two data files were used for the descriptive analysis of DPS teachers and in the recruitment and retention section—State Human Resources (HR) File and the DPS Employee-Payment file. Each analysis file contained derived single records for employees that had demographic information (age, race, and experience), information on their job type, and where they taught. Each data set allowed for the longitudinal analysis of teachers. Both the DPS Employee-Payment file and State HR files were merged with additional information about schools where people worked. These school data were pulled from the Colorado Department of Education (CDE) files. School data included student demographics, specifically, information on enrollment, grade levels served, free and reduced lunch status, student race and ethnicity, and student performance as measured with the state derived mathematics CSAP growth data.
  - The State HR file – This data-set was created using annual HR submissions to the Colorado Department of Education. This data set described people from 2004-05 through 2009-10. This data set is limited to classroom teachers and does not have information on whether a teacher was a ProComp participant.
  - The DPS Employee-Payment file – Includes information on whether a person was a ProComp participant and what incentives a person earned. The DPS specific ProComp file was derived from DPS data systems. The final analysis file contains employee information and earned ProComp incentives and was created by merging two separate datasets (Employee and Payment files) that were derived independently. This file has information from 2005-06 through 2009-10. This data set is limited to ProComp eligible employees.

In the evaluation of SGO-related outcomes existing data from the School Performance Framework (SPF) were also used.

- **DPS School Performance Framework (SPF) Data:** The SPF rates schools on a variety of different measures including: student progress over time, student achievement, post-secondary readiness, student engagement, and parent satisfaction. The overall SPF is a weighted combination of these measures, and schools can fall into one of five categories: Distinguished, Meets Expectations, Accredited on Watch, Accredited on Priority Watch, and Accredited on Probation. The SPF incorporates student learning in two forms: growth and status. The Growth Stoplight and Status Stoplight each include four categories (Exceeds Standard, Meets Standard, Approaching Standard, and Does Not Meet Standard). The Growth Stoplight assesses change, and is based on measures including: the median CSAP growth percentiles for Reading, Writing, and Math, Adequate Yearly Progress (AYP) growth; reduction in gaps for racial-ethnic groups for CSAP Reading, Writing, Math, and Science; growth on the Colorado English Language Acquisition Assessment (CELA); and growth on the Developmental Reading Assessment

(DRA) in elementary grades. The Status Stoplight is based on students' level of achievement on these same tests, but includes scores related to percentage of students achieving proficient or advanced status on CSAP and CELA, the school making expected AYP, actual CSAP achievement gaps among racial-ethnic groups, and meeting grade level expectations for DRA (DPS, 2010). For each of these measures (Growth and Status) schools receive both a rating on the Stoplight and a measure of the percent of possible points they earned in that category.

### ***Document review***

Key documents were reviewed to provide an understanding of the purpose, guidelines, and expectations for ProComp. These documents included the 2005 ballot initiative (Hundley, 2005), ProComp Agreements (DPS and DCTA, 2004; DPS and DCTA, 2008; DPS and DCTA, 2010), DPS Board Policy (Denver Public Schools, 1997; Denver Public Schools, 2009a; Denver Public Schools, 2006a), and The Denver Plans (Denver Public Schools, 2010; Denver Public Schools, 2006b).

### **Limitations**

Caution must be observed when attempting to link causal factors to outcomes because of the presence of many contextual factors and limitations to the research design. While the evaluation goal was to examine the relationship between ProComp and teacher and student outcomes, it is difficult to rule out other factors beyond the compensation system (e.g., concurrent reform efforts, economic changes, demographic shifts). The implementation of ProComp precludes the development of comparison groups with similar groups of educators because ProComp was implemented on a voluntary basis for educators working at DPS as of January 2006 and a compulsory basis for educators hired after 2006. This means the outcomes for ProComp participants are either compared to the somewhat similar groups of DPS educators prior to ProComp implementation, DPS educators who did not participate in ProComp, or educators in other districts. None of these groups are completely similar, and this lack of completely similar control groups is the largest single limitation to this evaluation. When available, statistical controls are used to improve the comparisons and validity of the results of these comparisons. The Theory of Change is used to explain findings and support the causal links in the analysis.

A second related limitation was the availability of relevant data. Both DPS and CDE worked to provide the evaluation team with the best possible data in the form of the State HR data set, the DPS Employee-Payment file, and student achievement data. However, much of the data was created to support the administration of programs or compliance with federal expectations. The data do not have all the information in terms of variables and extended historical information that would have been optimal for this evaluation.

Additional limitations related to each data source are detailed in the appendices. Finally, while every effort was made to prevent the biases and perspectives of the evaluators to influence the

evaluation, it is possible that personal biases are present in the data collation, analysis, and presentation of results.

## Chapter 2: ProComp History and DPS Overview

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### Introduction

An increasing focus on student achievement levels, teacher quality, and teacher compensation strategies have prompted several major education reform efforts since the early 1980s. The Denver Public School's (DPS) Professional Compensation System for Teachers, known as ProComp, is one such effort. Following its district-wide implementation in 2006, ProComp received national attention and praise as one of the leading models of alternative teacher compensation reform (Gonring, P., Teske, P. and Jupp, B., 2007; Wiley, E.W., Spindler, E. R. & Subert, A. N., 2010). This section provides background on DPS and discusses how ProComp was developed, what it took to implement this reform plan in DPS, and the mechanics of the ProComp plan.

This chapter integrates information from publically available information on ProComp, evaluator interviews with key informants representing various stakeholder groups who had firsthand knowledge of the ProComp development process, and administrative data sets created for this analysis.

### Overview of Denver Public Schools

DPS is an urban school district enrolling 74,000 students in 2008-09.<sup>4</sup> That year, it was the second largest school district in Colorado and 45<sup>th</sup> largest in the nation with schools 142 schools (Sable, Plotts, & Mitchell, 2011). Enrollment was essentially flat during the development period for ProComp (1999 through 2005) and grew by 6% between 2005 and 2009 during the implementation of ProComp. A majority of the student population is minority. In 2009-10, 75% of the DPS students were non-white—the largest ethnic group was Hispanic (54%), followed by white (24%) and black (16%).<sup>5</sup> In 2009-10, 70% of the district's students were eligible for free and reduced lunch. About 30% of DPS students were classified as English Language Learners in 2009-10 (Meyer, 2010).

Student achievement results in DPS have historically been lower than for the rest of Colorado. Generally, the proportion of students who are proficient on state assessments (the Colorado Student Assessment Program or CSAP) has been 15 to 20 percentage points lower in DPS than the state average. However, student achievement has been on an upward trend relative to the rest of the state for roughly the past five years (Bray & Medler, 2009; DPS Office of Accountability, Research & Evaluation, 2010).

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<sup>4</sup> The most recent data available for national comparisons on enrollment is 2008-09.

<sup>5</sup> For more information on enrollment go to [http://www.cde.state.co.us/index\\_stats.htm](http://www.cde.state.co.us/index_stats.htm)

## **Inception and development of Denver’s Pay for Performance Plan (ProComp)**

Beginning in the 1990s, elected officials and educators in Colorado began pursuing a number of education finance and accountability reforms aimed at improving equity in student finance and student achievement levels across the state (Community Training and Assistance Center, 2004; Bray & Medler, 2009). Major education reforms during this time included an open enrollment initiative, establishment of the framework for charter school creation, a new and more equal school funding system, and development of a model system for state academic standards and student assessment testing (Colorado Student Assessment Program, CSAP). During this same period, DPS was experiencing district-wide issues regarding low student achievement levels, high ethnic and socioeconomic segregation, and a shortage of high-quality teachers (Bray & Medler, 2009). Recognizing the need to address these issues in tandem with ongoing state-wide education reform efforts, DPS officials approached the Denver Classroom Teachers Association (DCTA), a local union affiliate of the National Education Association (NEA), with a policy proposal to reform the traditional teacher compensation system (Gonring, P., Teske, P. and Jupp, B., 2007).<sup>6</sup>

In 1994, the Denver Board of Education (Board) and DCTA agreed to commission a blue ribbon committee to study merit pay and alternative teacher compensation. Despite the effort, discussions between the two parties stalled for several years. The blue ribbon committee made a recommendation to create a \$600,000 fund to reward teachers for outstanding performance, but no teachers received additional compensation as a result (Gonring, P., Teske, P. and Jupp, B., 2007).

In 1997, several articles published by the National Commission on Teaching and America’s Future (NCTAF) prompted the DCTA’s willingness to further examine teacher pay issues. Over the course of the following two years, several discussions on merit pay and knowledge and skill pay continued between DPS and DCTA. DPS Superintendent Irv Moskowitz pushed teacher compensation reform by focusing on two big outcomes. As described by a key informant, *“The first big intention was to move teacher pay so that it was based on the results of students that they served, and the second was to radically redefine the way teachers were paid in a national attention-getting way.”* By 1999, DPS officials and DCTA leadership expressed interest in

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<sup>6</sup> The traditional model of teacher compensation, known as the “single-salary” schedule, rewards teachers based on years of experience and educational attainment (Podgursky & Springer, 2007; Laine, Potemski, & Rowland, 2010). In 1921, as evidence of the district’s willingness to pursue education reform, DPS became one of the first school districts in the nation to implement the single-salary schedule (Podgursky & Springer, 2007). Since that time, the single-salary schedule has become the dominant teacher compensation model used by a majority of public schools across the country (Conley & Odden, 1995; Podgursky & Springer, 2007). Historically, teachers unions have shown strong resistance to alternative teacher compensation systems because of the ambiguous nature of defining ‘teacher performance’. Furthermore, monitoring teacher performance presents many challenges because the output data are often not readily measured in a standardized and verifiable way (Murnane & Cohen, 1986; Podgursky & Springer, 2007; Harris, 2007).

pursuing an alternative teacher compensation pilot plan that would focus on improving student achievement and professional performance (Community Training and Assistance Center, 2004; Gonring, Teske, & Jupp, 2007).

The Pay for Performance Pilot project was developed through a collaborative effort by DPS officials and DCTA leadership. A Design Team, comprised of two appointees from the District and two appointees from DCTA, set about to design the pilot plan in early 1999. A key informant reported the design team functioned like “skunkworks” – in other words, the Design Team functioned as an independent research and development group that worked outside of the normal bureaucratic constraints.

Funding for the development of the Pay for Performance Pilot was initially provided by the Denver-based Rose Community Foundation. The Rose Community Foundation also facilitated several rounds of discussion between DPS and DCTA leadership throughout the year (Gonring, P., Teske, P. and Jupp, B., 2007). During the official collective bargaining and labor negotiations of 1999, a Pay for Performance Pilot project was agreed upon by DPS officials and DCTA leadership.

The resulting Pay for Performance Pilot program began in September of 1999 with 12 elementary schools voluntarily participating in the study.<sup>7</sup> The Community Training and Assistance Center (CTAC) was selected to provide technical assistance during implementation of the pilot program and conduct an assessment of the impact of the pilot project. Despite this effort, the pilot did not progress as fast as some had expected. In 2000, the Rose Community Foundation made a second grant on the condition that the Denver Board of Education and DCTA agree to extend the Pay for Performance Pilot from two years to four years (Gonring, P., Teske, P. and Jupp, B., 2007).

The Design Team had to overcome both technical and logistical challenges to implement the pilot. They held several meetings and visited a number of school sites to determine which schools would be selected to participate (Gonring, P., Teske, P. and Jupp, B., 2007). A key focus was the development of what became known as the Student Growth Objectives (SGO) component of ProComp. In this element, teachers (or other professionals) negotiate student learning objectives with their supervisors.<sup>8</sup> Meeting these objectives is then rewarded with a bonus. Key challenges in developing SGOs included identifying “how much growth is enough” to qualify for an incentive and how to work with schools with high student mobility. CTAC provided schools with technical support in the development and assessment of SGOs during the Pilot.

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<sup>7</sup> As part of the final DPS/DCTA agreement, to participate in the pilot, a school’s faculty was required to vote 85% in favor of inclusion. This figure was later amended to 67% of the faculty to allow additional schools to join in the latter years of the pilot program (Community Training and Assistance Center, 2004)..

<sup>8</sup> SGOs are not always focused on students, since they are used by several types of support staff as well. For example, coaches who work with teachers may complete SGOs regarding goals for how teachers will progress during the year, or nurses may complete SGOs which are related to student health.

By 2002, several other foundations had also joined together in support of the Pay for Performance Pilot.<sup>9</sup> In that same year, CTAC released a midterm report on the Pay for Performance Pilot showing a link between the objective setting process and student achievement (Gonring, P., Teske, P. and Jupp, B., 2007). As CTAC reported at the conclusion of the pilot (2004, p. 135), “The Pilot has demonstrated that a focus on student achievement and a teacher’s contribution to such achievement can have a far-reaching institutional effect – *if the initiative also addresses the district factors that shape the schools.*” As a key informant reported:

*The most important learning of the pilot was that first of all, we never [before] had any conversations with staff to really talk about where our students were or where they needed to be....and it started to really shift the culture of the district. It’s also the first time that DCTA and DPS had a level playing field working on a project together, which I think was another really important factor. It gave teachers the confidence they needed in the district to work collaboratively on something.*

This effort further aligned the efforts of teachers, school administrators, and district officials on student achievement outcomes in participating schools and the district.

Encouraged by early results of the Pay for Performance Pilot, DPS and DCTA created a Joint Task Force on Teacher Compensation in 2001. The Joint Task Force included all of the current Pilot Design Team members plus additional teachers and administrators. A key informant reported that the Joint Task Force was established to recommend a new compensation system to DCTA and DPS that would build on the lessons learned in the pilot and would continue to radically reinvent teacher compensation.

### ***Development of the new professional compensation system***

By 2004, the Joint Task Force made several adjustments to the framework of the Pay for Performance Pilot plan based on the evaluation provided by CTAC. This draft plan was finalized and became the outline for the ProComp system. After several tense negotiations between DPS officials and DCTA leaders, the final plan was presented to the Denver Board of Education and approved on February 19, 2004. The stated intent of ProComp was “to couple teacher compensation more directly with the mission and goals of DPS and DCTA” and to address four broad goals:

- **Motivational:** compensation for achievement of specific goals including student achievement, performing specified additional duties, and participating in professional development

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<sup>9</sup> The Broad Foundation of Los Angeles and the Daniels Fund of Denver also made substantial financial contributions for program development. Other private donors included the Denver Foundation, the Donnell-Kay Foundation, the Jay and Rose Phillips Family Foundation, the Piton Foundation, and the Sturm Family Foundation (Gonring, Teske, & Jupp, 2007; DeGrow, 2007).

- **Career:** attract, motivate and retain high quality teachers over the course of a career
- **Professional:** enhance professional standing and dignity of teachers
- **System:** the compensation system should be affordable, manageable, equitable, sustainable, comprehensive, flexible, understandable

Additionally, ProComp was to be a collaborative endeavor between DPS and DCTA with shared responsibility for development, implementation, evaluation and renegotiation.

The plan included a safe harbor that allowed existing teachers to choose whether to remain in the traditional salary system or choose to participate in the new system (Gonring, P., Teske, P. and Jupp, B., 2007). A key informant recalled that ProComp was presented to teachers as a way to increase salaries of both new and veteran teachers, and to the public as a way to increase student achievement and reward good teachers. The campaign effort was an important joint effort of DCTA, the District and community members including both Democratic and Republican leaders. DCTA members approved the plan on March 18, 2004 by a vote of 59% in favor of the program.

After approval by DCTA and the Board, the primary funding mechanism for ProComp still needed approval from Denver voters. On November 1, 2005, Denver voters approved Referred Issue 3A that provided a \$25 million per year property tax increase exclusively to fund ProComp (that increases with inflation). The final vote was approved with 58% of the voters supporting the measure (Gonring, P., Teske, P. and Jupp, B., 2007). The language of the ballot question outlined the specific compensation elements to be included in ProComp:

- Teaching in hard to staff schools
- Teaching in hard to fill positions such as math, science and special education
- Increasing teaching knowledge and teaching skills by successfully completing ProComp approved advanced degrees, professional teaching standards licenses and additional training to improve classroom skills
- Positive evaluations of teaching performance
- Meeting or exceeding objectives for student learning
- Achieving distinguished school status

The details of the ProComp system agreed to by DPS and DCTA were described in three documents: 1) the original ProComp Agreement outlined the system that was implemented district-wide in 2004 (DPS and DCTA, 2004), 2) significant changes resulted from the 2008 negotiations and were incorporated in a revised agreement (DPS and DCTA, 2008), and 3) the contract between DPS and DCTA was renegotiated in 2010 and resulted in some adjustments that were summarized in the 2010 Memo of Understanding (DPS and DCTA, 2010)



***2006 district wide implementation***

The ProComp system officially began during the 2005-2006 contract year. All new hires to DPS after January 1, 2006 were automatically placed into the program. Key informants reported several capacity issues that had to be overcome to implement the pay system that included: developing data systems to track where teachers work and who they teach, developing new performance evaluation systems, extending performance measures to all members of DCTA (including teachers as well as student support providers such as counselors and librarians), and developing statistical measures of student growth. The development of such systems affected nearly every department in the district.

The first window of enrollment for current teachers was from November 11, 2005 to December 31, 2005. Existing teachers had the opportunity to enroll in the compensation system during any opt-in period from 2005-2011.

Proceeds from the annual mill levy were placed in a compensation trust fund governed by a board of directors (the Trust Board), which included representatives from DPS, DCTA, and the community (Denver Public Schools, 2011). The trust fund was used to compensate and reward teachers for achieving the requirements of the ProComp system and to pay for the ProComp administration of ProComp.

***Original incentive package in 2005-06***

This section describes the basic structure of the system as implemented in 2005-06. While the system was built with the understanding that it would evolve, the basic structure described here remains in place.

ProComp has four component areas: Knowledge and Skills, Comprehensive Professional Evaluation, Market Incentives, and Student Growth. Each component area featured several elements that were either designated as base building or non-base building. Base building incentives were added onto the base salary each year, thus increasing the base starting salary for the next year. Non-base building incentives were essentially bonuses given on a yearly basis on top of base salary. Non-base building incentives had to be re-earned each year. All incentives were calculated as a percentage of an index to allow for changes in cost of living and overall incentive levels.<sup>10</sup>

The Knowledge and Skills component included three elements that provide financial incentives to ProComp employees when they complete Professional Development Units (PDUs), obtain an advanced degree or license, and/or qualify for tuition reimbursement incentives. The PDU and Advanced Degrees and Licenses were both considered base building incentives, while the Tuition Reimbursement incentive was non-base building. Completing a PDU by participating in

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<sup>10</sup> The index is defined on the ProComp website as, “a dollar amount negotiated by DPS and DCTA that would be the basis for determining percentage increases in salary and bonuses in the new compensation system. Under the ProComp agreement, the index was initially established at \$33,301 for the 2005-2006 school year. The index will be subject to routine cost of living adjustments through collective bargaining.”

an approved course adjusted the base salary by 2% of the index (equating to \$666 in the 2005-2006 academic year). Teachers could complete up to two PDU courses in one academic year, but compensation was awarded for only one PDU per year, the other was banked for payment in a subsequent year. Obtaining an advanced degree or license adjusted the base salary by 9% per degree or license (equating to \$2,997 per degree or license in the 2005-2006 academic year). Teachers were eligible to claim this incentive once every three years. Tuition reimbursement incentives were payable upon receipt of evidence of payment and satisfactory completion of the coursework. This incentive was capped at \$1,000 over the employment lifetime of the teacher.

The Comprehensive Professional Evaluation (CPE) component featured potential increases to a teacher's salary based on obtaining a satisfactory evaluation from a school administrator or supervisor. The CPE incentive was considered base building and increased a teacher's base salary over their career. Teachers new to DPS were considered probationary for the first three years of service. During this time, they are eligible to receive CPE increases of 1% each year for achieving a satisfactory evaluation (equating to \$333 in the 2005-2006 academic year). Non-probationary teachers were those teachers who have been with the district for three years or longer; they were eligible to receive CPE increases of 3% every three years for achieving satisfactory evaluations (equating to \$999 in the 2005-2006 academic year).

The Market Incentives component consisted of non-base building elements for teachers who teach in Hard to Serve Schools (HTSS) or Hard to Staff Assignments (HTSA). HTSS were originally identified through a complex formula using multiple inputs, but the formula was later simplified to the proportion of students in a school who qualify for free and reduced lunch prices.<sup>11</sup> HTSA were determined using both district information on vacancies and national data on shortage areas.<sup>12</sup> Both the HTSS and HTSA market elements provided a 3% bonus to eligible teachers in the ProComp system (equating to \$999 for the 2005-2006 academic year). These incentives were designed to attract and retain teachers to schools and positions they might not have otherwise chosen or remained in.

The Student Growth component included individual incentives for teachers who achieve their Student Growth Objectives (SGO) and/or whose assigned students Exceed CSAP Expectations. Two SGOs were developed each year by teachers in collaboration with their principal or supervisor. When a teacher met both SGOs, they were paid a 1% base building increase (equating to \$333 in the 2005-2006 academic year). Alternatively, if only one SGO was met, teachers were paid a 1% non-base building incentive payment for that year. Failure to meet either SGO resulted in no incentive payment. When teachers met the district growth criteria for the 'Exceeds CSAP Expectations' element, they were paid a sustainable base building incentive of 3% (equating to \$999 in the 2005-2006 academic year). If teachers fell below district expectations for CSAP growth, they incurred a decrease in their pay.

<sup>11</sup> For more details on Hard to Serve schools see [http://denverprocomp.dpsk12.org/eligibility/hard\\_schools](http://denverprocomp.dpsk12.org/eligibility/hard_schools)

<sup>12</sup> For more details on Hard to Staff assignments see [http://denverprocomp.dpsk12.org/Hard\\_to\\_Staff](http://denverprocomp.dpsk12.org/Hard_to_Staff)

There was also a school-based incentive element of the Student Growth component awarded annually to ProComp teachers who worked in a school that achieved the Distinguished School designation. These schools were recognized for their outstanding performance during the previous academic year, and teachers at these schools received a non-base building incentive of 2% (equating to \$666 in the 2005-2006 academic year). The Student Growth elements were designed to focus teacher effectiveness on student growth outcomes in the classroom.

Unless noted as changed under the 2008 or 2010 amendments, these components remain in place as described.

### ***2008 amendments***

In 2008, DPS officials and DCTA leadership entered into negotiations to address several proposed changes to the ProComp system. At the time, both parties agreed that the current system was not having the desired effect on recruitment and retention and that too much money was being spent on administering the program (Gottlieb, 2008). DPS officials proposed several changes that would increase pay opportunities for teachers new to the profession, limit salary building opportunities for those teachers with 14 or more years of experience, and increase the amount of several of the non-base building bonus elements. DPS officials argued that taking action now would provide larger bonuses to more teachers, increase teacher retention and recruitment and that the compensation system (salary plus pension benefits) is back-ended to favor veteran teachers (Meyer, 2008).

Teachers union representatives responded to the District's proposed changes by saying that the new proposals would be unfair to veteran teachers and those teachers unable to participate and receive several of the non-base building bonus incentives each year. For example, veteran teachers were not likely to obtain any more advanced degrees or licenses, not likely to capitalize on tuition reimbursement programs, and/or be unwilling to move to Hard to Serve Schools or Hard to Staff Assignments. Union officials were not entirely opposed to changing the current system, but wanted to wait and see what the upcoming evaluation of the ProComp program revealed.

The A-Plus Denver Citizens Committee convened a hearing in June 2008 to review the state of the current ProComp system and the positions of both the district and DCTA regarding the proposed changes. The Committee concluded that the ProComp system was not in-line with the ballot initiative that Denver voters had authorized. As a result, the committee recommended several changes to the ProComp system that included:

- Diverting a larger share of the \$25 million annual compensation trust fund to non-base building incentives, rather than traditional salary building elements;
- Dedicating more money to teachers in the first 11 years of their careers; and
- Spending more money from the compensation trust fund each year to make meaningful changes to the district, sooner rather than later (A+ Denver Citizens for Denver Schools, 2008).

District officials agreed and stated that without higher pay, the district would have a hard time recruiting high-performing teachers and continue to lose teachers early in their careers (Meyer, 2008).

DPS officials and DCTA leadership eventually approved a three-year agreement. This agreement retained the basic structure of ProComp, adding one new element under student growth called High Growth Schools that would pay a non-base building incentive to all ProComp members in a school which met the criteria for student growth. Other changes were internal to the existing components and elements of ProComp, and resulted in raising DPS teachers' average annual salaries<sup>13</sup>, increasing the amount paid for non-base building incentives, and limiting the amount of base-building incentives for veteran teachers with over 14 years of service. An end result of these changes was to greatly increase the amount of money spent on incentives: in fiscal year 2008 the ProComp Trust fund incentive expenditures were just over \$6.75 million and in fiscal year 2009 the fund spent over \$23.84 on incentives (JDS Professional Group, 2009). Payment charts for the 2005-2006 and the 2008-2009 are included in Appendix A to illustrate several of the changes that resulted from the 2008 negotiations.

Specific changes to ProComp included (Denver Public Schools, 2011):

- The amount in the Hard to Serve and Hard to Staff Market Incentives increased.
- The Distinguished Schools incentive was renamed Top Performing and increased.
- A non-base building incentive for teachers in High Growth Schools identified using the Colorado Growth Model was added.<sup>14</sup>
- The Exceeds CSAP Expectations incentive was changed from a sustainable base building incentive to a non-base building incentive. The amount for this element was increased.
- Student Loans were added as a reimbursable expense to the Tuition Reimbursement incentive. The lifetime maximum for Tuition Reimbursement and Student Loan Repayment was increased to \$4,000. The maximum reimbursement in each year was set at \$1,000.
- Changes were made to payment methods for PDUs. In future years, for teachers beyond 14 years of experience the PDU element will be a bonus. This essentially limited base-building for teachers beyond 14 years of service. For those teachers with less than 14 years of service, the first PDU would be received as a base building incentive, and additional PDUs would be banked for future payments as salary building incentives.

<sup>13</sup> Salaries for new teachers would be raised roughly \$1,300, and salaries for 25 year veteran teachers would be raised by roughly \$1,000 (Rocky Mountain News, 2008).

<sup>14</sup> The Colorado Growth Model uses student level CSAP scores to calculate how much individual and groups of students progress from year to year toward achieving state academic standards. More information is available at <http://www.schoolview.org/ColoradoGrowthModel.asp>

- Beginning in the 2009-2010 academic year, CPEs for non-probationary teachers would be limited to those teachers who have a formal evaluation during service credit years 1-14, again limiting base-building incentives for teachers beyond year 14 in service.

One intent of these changes was to use taxpayer money from the mill levy fund to change and improve the ProComp system in order to help recruit and retain more high-performing teachers. As DPS Chief Operating Officer Tom Boasberg spoke of the changes, *"We're all better served if we spend today's taxpayers' money on today's teachers teaching today's students"* (Meyer, 2008).

### **2010 amendments**

In response to the economic conditions persistent throughout 2009, several changes were made to the DPS/DCTA Agreement in early 2010. These changes reflected a decrease in education funding from the State's General Fund and affected teachers on both the master salary schedule and the ProComp system. A memorandum of understanding was signed on May 20, 2010 to initiate several agreed upon changes through August 31, 2012.

These changes included freezes in Cost of Living Adjustments for both contract years, modified payment schedules for steps, lanes, or longevity payments for teachers on the master salary schedule, modified payment schedules for ProComp base building incentives (i.e., PDU, Advanced Degrees, Licenses, or Certificates, and SGOs), and other payment modifications for the 2010-11 and 2011-12 academic year (e.g., PDUs and SGOs earned during the 2010-11 school year to be paid as non-base building incentives the following year) (Denver Public Schools, 2010).

Although both parties indicated their intent to enforce the economic provisions of the Agreement through August 31, 2012, additional language was included in the memorandum of understanding to allow for reopening contract negotiations and Agreement modifications to react to changes in state funding levels.

### **Incentive amounts**

The incentive amounts are captured in Exhibit 2, which shows the amount for each incentive and whether it was base building. ProComp incentives generally range from a low \$376 for completion of an SGO or satisfactory evaluation for probationary teachers to a high of \$3,379 for an advanced degree/license.

Exhibit 2. Amount of ProComp Incentives from 2005-06 through 2009-10

	Element	2005-06 Amount	2006-07 Amount	2007-08 Amount	2008-09 Amount	2009-10 Amount
Knowledge and Skills	Professional Development Unit	\$666*	\$684*	\$711*	\$733*	\$751**
	Advanced Degree and License	\$2,997*	\$3,078*	\$3,201*	\$3,297**	\$3,379**
	Tuition Reimbursement	Actual expense up to \$1000 lifetime	Actual expense up to \$1000 lifetime	Actual expense up to \$1000 lifetime	Actual expense up to \$1000/yr, \$4000 lifetime	Actual expense up to \$1000/yr, \$4000 lifetime
Comprehensive Professional Evaluation	Probationary (once a yr)	\$333*	\$342*	\$356*	\$366*	\$375*
	Non-Probationary (once every 3 yrs)	\$999*	\$1,026*	\$1,067*	\$1,099*	\$1,126*
Market Incentives	Hard to Serve School	\$999 \$83/mo	\$1,026 \$85/mo	\$1,067 \$89/mo	\$2,345 \$195/mo	\$2,,403 \$200/mo
	Hard to Staff Assignment	\$999 (\$83.25 per mo) x (# of assignments held)	\$1,026 (\$85.50 per mo) x (# of assignments held)	\$1,067 (\$89 per mo) x (# of assignments held)	\$2,345 (\$195 per mo) x (# of assignments held)	\$2,403 (\$200 per mo) x (# of assignments held)
Student Growth	Student Growth Objectives	\$333***	\$342***	\$356***	\$366**	\$376**
	Exceeds CSAP Expectations	\$999	\$1,026	\$1,067	\$2,345	\$2,403
	Distinguished Schools	\$666	\$684	\$711	\$2,345	\$2,403
	High Growth School				\$2,345	\$2,403

\* Base-building

\*\* Base building for the first 14 years of experience

\*\*\* Base building if a teacher accomplishes 2 SGOs, not base-building if only one SGO is accomplished.

When a person joins ProComp, she or he is assigned an initial salary. If she or he was an existing member of DPS, their initial ProComp salary is based on her or his current earnings under the traditional salary schedule negotiated between DPS and DCTA. A new teacher's initial salary is based on where she or he would have started on the traditional salary schedule based on

accepted education and experience credits. In 2008-09, an inexperienced teacher whose highest education level was a bachelor's degree was paid \$36,635, and as shown in Exhibit 3; this amount increased to \$37,551 in 2010-11.

**Exhibit 3. Overview of DPS Compensation in 2010-11<sup>a</sup>**

Denver Public School Employees	
Teachers ( $n=4,555$ )	
Starting Teacher Salary (SY 2010-11)	\$37,551
Average Teacher Salary (SY 2010-11)	\$52,845
Average ProComp Bonus Amount received for a ProComp Employee in 2009-2010	\$4,715

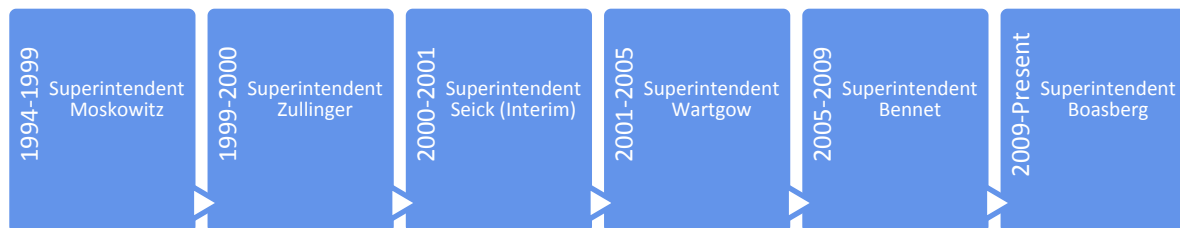
<sup>a</sup>Source: DPS web-page

The average ProComp bonus amount is the amount awarded for that year, not the sum of all base-building awards.

***Additional contextual reforms***

It is important to note that additional reform efforts in DPS were taking place concurrent with the development and implementation of ProComp. During this transformational period the district had several different superintendents, developed a comprehensive reform strategy called the Denver Plan, reformed principal compensation in a similar manner to ProComp, and the pursued a new school performance and innovation initiative that included solicitation of new charter schools, and developed a School Performance Framework (SPF) that rated all schools (Bray & Medler, 2009). The SPF is a sophisticated tool that uses longitudinal data to rate the impact that schools are having on their students.<sup>15</sup> Exhibit 4 shows the changes in DPS leadership from 1994 to 2009. During this time period, DPS had six superintendents (Denver Public Schools, 2011).

**Exhibit 4. DPS Superintendents from 1994-2009**



The Denver Plan was implemented by the DPS Board of Education in 2006 to act as the main mechanism for the district's overall reform agenda. Modeled after three effective strategies from comparable urban schools and districts, the Denver Plan focused on student achievement. The Denver Plan and the 2006 Board Policy IK, Student Academic Achievement articulated the

<sup>15</sup> For more information on the SFP go to: <http://communications.dpsk12.org/initiatives/school-performance-framework/>

Board’s vision and core beliefs and presented reform plans designed to increase student and school performance (Denver Public Schools, 1997; Denver Public Schools, 2009a; Denver Public Schools, 2006a; Denver Public Schools, 2006b). One of the elements of these improvement plans focused on teachers—“Our children will learn from highly-skilled faculty in every school that is empowered by robust professional development and timely assessment data.” Specific strategies to accomplish this were also outlined and included recruiting and retaining highly qualified educators, differentiated professional development to enhance teaching practices, and real-time assessment data.

The second generation of DPS’s strategic vision and action plan was presented in the 2010 Denver Plan (Denver Public Schools, 2010a). Again, educators were a key element—“Great People to Drive Better Outcomes for Students.” The specific goals for this element included:

1. Recruit the best teachers and principals for our schools.
2. Empower and retain effective educators.
3. Create meaningful recognition systems, advancement opportunities, and rewards for driving student achievement.
4. Recruit, retain, and reward outstanding staff to support teachers’ and principals’ work.
5. Replace low-performing employees who, despite support, fail to meet expectations.

These expectations built on those outlined in the original Denver Plan, but added new emphasis directly related to ProComp; these are outlined in bullets three and four listed above. The fifth bullet, regarding low performing employees, was a new point of emphasis.

The DPS New School Development Plan was initiated in 2007 to encourage innovation and autonomy in school management (Bray & Medler, 2009). This plan gives schools greater freedom to design curriculum, allocate resources, and manage staff. In return, schools are required to track student growth and achievement performance for accountability purposes. A number of measures and assessment tests are collected to measure school performance as part of the SPF: student progress over time, student achievement levels, post-secondary readiness, student engagement and satisfaction, school demand, and parent and community engagement (Bray & Medler, 2009).

As part of the autonomy-accountability relationship, the DPS New School Development Plan used the SPF to aid DPS leadership in managing school reorganizations, closures, replacements, and new school development with alternative schools (charter, contract, innovation, and district-managed schools). In the past, these guidelines were not clearly outlined, leading to public backlash and reduced enrollment as many students moved out of DPS to Jefferson or Douglas County school districts (Bray & Medler, 2009). The reform model uses a “portfolio of schools” to support school quality, program innovation and reform, with the ultimate goal of meeting the needs of a diverse student population (Center for Reinventing Public Education, 2011).



The SPF was also integrated into a revised principal compensation system. This system was implemented in September 2007 and is aligned with ProComp (Center for Education Compensation Reform, n.d.).

## Who is impacted by ProComp?

ProComp is a compensation program available to all of the DPS employees covered under the DCTA contract, including teachers, librarians, counselors, facilitators, and Student Services Professionals (SSPs) such as nurses, psychologists, and occupational therapists. Starting in 2005-06, the population eligible for participation in ProComp was about 4,200 people, 86% of whom were teachers. The ProComp eligible group grew to about 5,050 people in 2009-10 and remained 86% teachers. As Exhibit 5 shows, this workforce changed slightly in terms of race/ethnicity; the proportion of white, Native American and Asian professionals grew, while the proportion of Black and Hispanic professionals declined. While the proportion of minority teachers decreased, the actual number of minority teachers increased slightly during this period.

**Exhibit 5. Race/Ethnicity of the ProComp Eligible Workforce Over Time<sup>a</sup>**

	Native American	Asian	Black	Hispanic	White
2005-06	0%	1%	6%	15%	75%
2009-10	1%	2%	5%	14%	77%
<i>Change</i>	<i>0%</i>	<i>1%</i>	<i>-1%</i>	<i>-1%</i>	<i>2%</i>

<sup>a</sup> Source: DPS Employee-Payment File

The State Human Resources data allowed an examination of the race/ethnicity of teachers in DPS in comparison to other districts. Two comparison groups were created: 1) other school districts in the Denver Metro Region (defined by membership in the Denver Area Superintendent's Council), and 2) the remaining districts in Colorado (i.e. non-Denver metro area). This comparison revealed two key facts. First, DPS has a higher proportion of non-white teachers than other districts; 24% in DPS compared to 9% in other Denver districts and 10% statewide 2009-10. Secondly, while the proportion of white teachers is growing slightly in DPS's workforce, it is decreasing slightly in other districts.

Within DPS over this period, the proportion of female ProComp eligible professionals grew from 76% to 77% while the proportion of participants in ProComp who were female was 78%. In other words, women were slightly more likely than men to join ProComp.

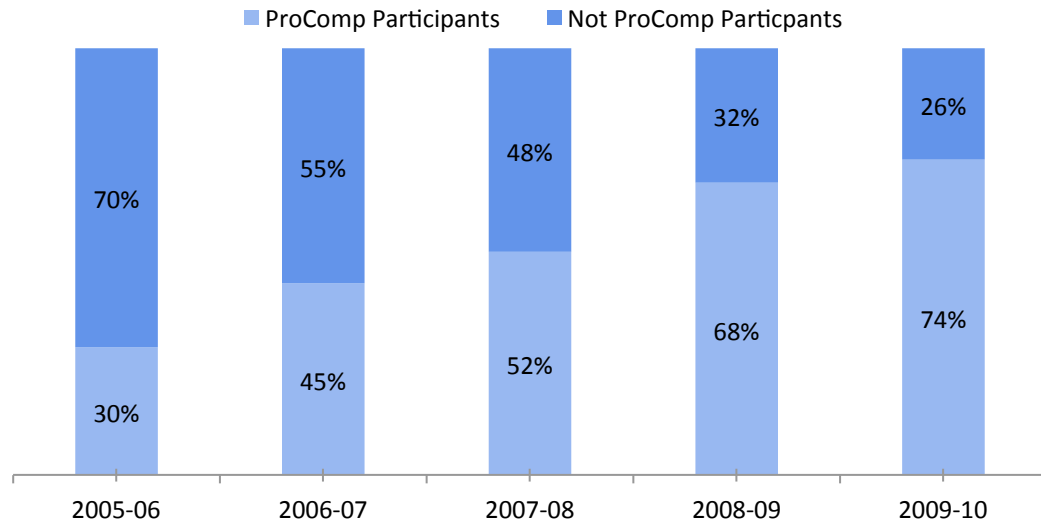
## Who has participated in ProComp across time?

As noted, DCTA eligible personnel could opt into ProComp when it began and periodically throughout the past five years, while new teachers are automatically enrolled.<sup>16</sup> In essence, ProComp was devised to grow in participation over time as all new hires after January 1, 2006

<sup>16</sup> There was also a brief opt-out window after the 2008 reform that had a very small impact on ProComp enrollment.

are automatically enrolled. As expected, participation in ProComp has grown over the past five years from 30% in 2005-06 to 74% of the ProComp eligible participants in 2009-10 (Exhibit 6).

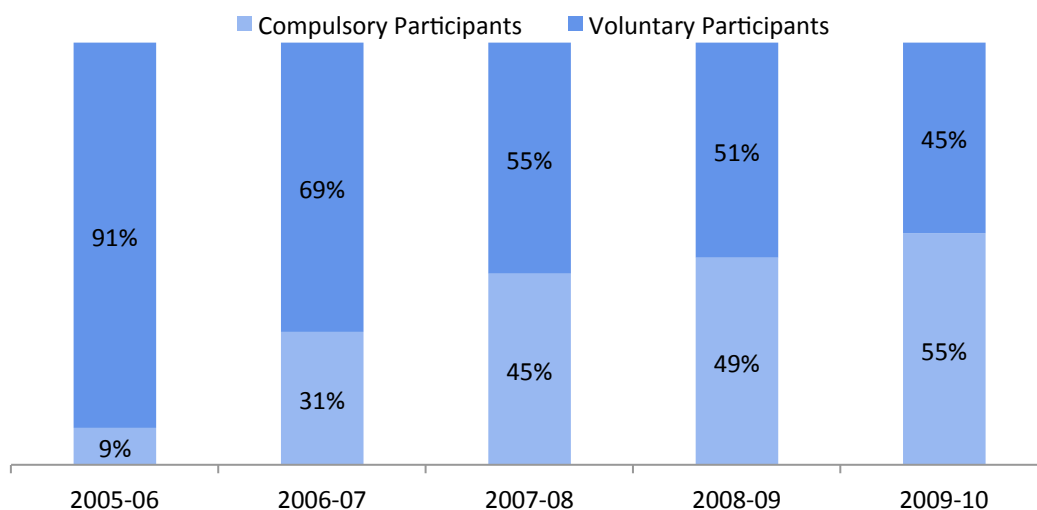
**Exhibit 6. ProComp Participation by School Year<sup>a</sup>**



<sup>a</sup> Source: DPS Employee-Payment File

In the first year of ProComp, the large majority of participants voluntarily opted to join ProComp. As to be expected, the proportion of compulsory participants in ProComp grew from 9% in 2005-06 to 55% in 2009-10 (Exhibit 7).

**Exhibit 7. ProComp Participation by School Year and Opt-In Status<sup>a</sup>**



<sup>a</sup> Source: DPS Employee-Payment File

An indicator of the increase in the proportion of compulsory participants is the average age of ProComp and Non-ProComp teachers. In 2005-06 the average age of ProComp teachers was 48.0 compared to 42.2 for Non-ProComp teachers. By 2009-10 the average age of ProComp teachers was 41.1, while the age of Non-ProComp teachers was 45.9.

Exhibit 8 shows ProComp participation rates by grade level for teachers. Grade levels were determined using job titles contained in the administrative data (grade levels are based on job titles). Participation rates increased by 40 to 48 percentage points depending on the grade level; after 2008-09, the higher grade levels while slightly lower than the elementary level, still showed a dramatic increase over the five years.

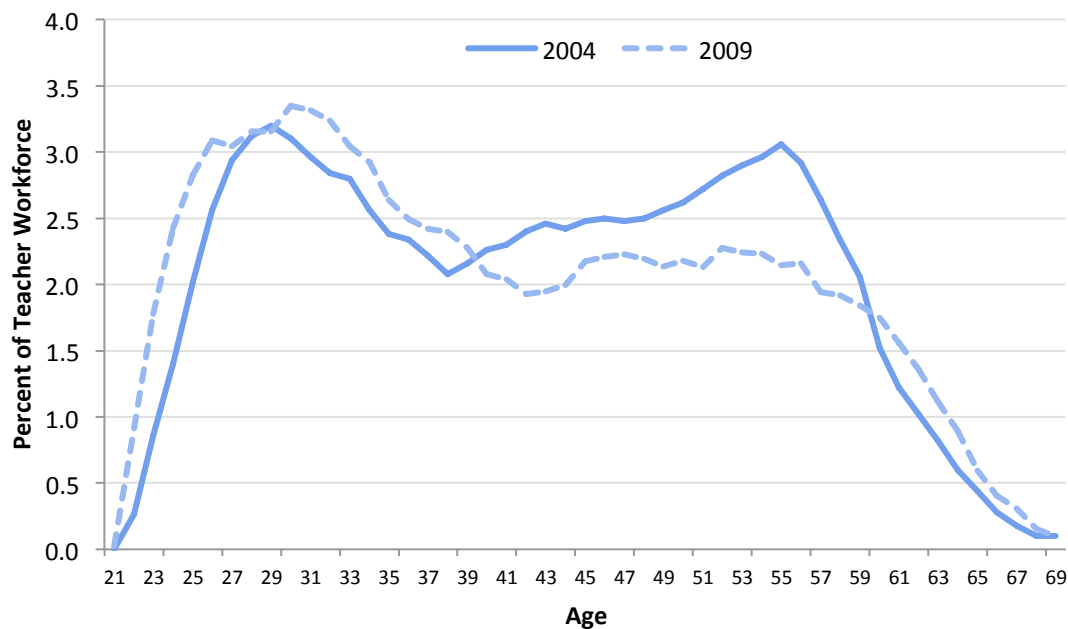
**Exhibit 8. ProComp Participation by Grade Level and School Year<sup>a</sup>**

School Year	Elementary Teachers	Middle School Teachers	High School Teachers
2005-06	24%	27%	28%
2006-07	39%	42%	43%
2007-08	48%	50%	51%
2008-09	66%	64%	65%
2009-10	72%	71%	68%

<sup>a</sup> Source: DPS Employee-Payment file, teachers only.

Note: Over 95 percent of the teachers in the dataset have an identified grade level (elementary, middle, or high school).

During the implementation of ProComp, the age distribution of the teacher workforce in both DPS and other districts in Colorado has also shifted, with large declines in the proportion of teachers who are 50 years and older. Exhibit 9 shows the age distribution of teachers in DPS in 2004 and in 2009. Solid lines show the age of teachers in 2004, and dashed lines show the age distribution in 2009. In 2004, the DPS age distribution had two peaks with high proportions of younger and senior teachers (at 29 and 54) and smaller proportions of teachers in their middle years. In 2009, the distribution has one peak of younger teachers (at 30). In DPS, the proportion of senior teachers has declined and the proportion of teachers under 35 has increased. This demographic shift will play a role in interpreting the retention data in Chapter 9.

**Exhibit 9. Age Distribution of Teachers in DPS and the Rest of Colorado**

As an indicator of this shift, the average age of teachers in DPS in 2009-10 was 41.4, which was 1.4 years younger than in 2004-05. Over this period, the average age of the teacher workforce in other districts also decreased but by a smaller amount, 0.3 years to an average of 40.9.

In summary, ProComp participation has grown over time to almost 75% of the eligible workforce in 2009-10, with relatively even growth across grade levels. During the implementation of ProComp the DPS ProComp eligible workforce changed; it had a slightly lower proportion of minorities and was younger.

### **What reasons do teachers cite for participation in ProComp?**

On the survey 36% of the Voluntary ProComp and 56% of Non-ProComp teachers reported that one of the reasons they chose their particular compensation system was based on financial reasons. In response to an open-ended survey item, teachers reported financial benefits were the main reason for their decision to join ProComp or not. Nearly 70% of teachers who were automatically enrolled in ProComp indicated they would have chosen to join, if given a choice. Further insights related to factors influencing teachers' decisions emerged during interviews. Teachers who voluntarily joined ProComp indicated it was financially more rewarding than the traditional salary schedule. Specific influences included the additional incentives offered during the initial opt-in window, reaching the top plateau on the traditional salary schedule, and the opportunities for school-wide bonuses. Some teachers reported they joined ProComp because they were philosophically in favor of pay-for-performance compensation systems. They noted this was a way to professionalize teaching and to provide opportunities for early career benefits to newer teachers. There were also teachers who reported that although they joined ProComp for the financial benefits, they were philosophically opposed.

Teachers who chose not to join ProComp also cited financial reasons for their decision. These teachers believed they would have a higher income by remaining in the traditional system. Others regarded the predictability of salaries and salary increases for additional education as financial advantages of the traditional system, noting it had fewer unknowns and was less stressful for them. Other teachers who chose to stay in the traditional system expressed philosophical opposition to linking pay to student performance and rewarding teachers for “doing their jobs.” Some had issues with the ProComp system itself, citing the subjectivity of judgments by principals, the time and effort required to obtain incentives, stress, and the changes made to the original ProComp system. A lack of trust in DPS and the concern for the ongoing funding for ProComp were also cited as reasons for not joining.

Overall, financial reasons were the primary drivers for teachers in their decision to join ProComp or remain in the traditional salary system. Philosophical reasons related to the merit of pay-for-performance systems also played a role in the decision for some teachers.

### **What is the level of participation in ProComp elements?**

When ProComp was instituted a participant could, in theory, earn nine incentives annually, and after the 2008 changes, up to 10 incentives. Exhibit 10 shows the number of incentives earned by school year for all ProComp participants (not just eligible participants). In 2005-06, the average ProComp participant earned 1.54 incentives, with a range from zero incentives up to four. Over time, ProComp participants earned more incentives, with a peak of 4.26 incentives earned in 2008-09. In 2009-10, one employee earned 10 incentives.

**Exhibit 10. Annual Number of Incentives Earned by ProComp Participants<sup>a</sup>**

School Year	Number of Incentives Earned											Mean Incentives Earned	Std. Dev.
	0	1	2	3	4	5	6	7	8	9	10		
2005-06	56	471	245	127	17	-	-	-	-	-	-	1.54	0.87
2006-07	106	222	291	409	278	109	30	2	-	-	-	2.68	1.44
2007-08	75	220	216	344	452	421	184	49	6	-	-	3.61	1.71
2008-09	61	169	199	375	609	615	401	180	53	8	-	4.26	1.77
2009-10	118	191	399	565	700	608	339	122	38	4	1	3.81	1.75

<sup>a</sup> Source: DPS Employee-Payment file.

Part of the reason relatively few incentives were earned in the first year of ProComp was that not all elements were awarded that first year. Exhibit 11 shows the proportion of all ProComp eligible participants who earned each incentive by year. ProComp incentives were only awarded for six of the ten possible categories in 2005-06. In that first year, the most common incentives awarded were for CPE. After the first year, the percentage of incentives awarded for CPE decreased.

**Exhibit 11. Percentage of ProComp Teachers Earning Incentive by School Year<sup>a</sup>**

		2005-06	2006-07	2007-08	2008-09	2009-10
Knowledge and Skills	PDU's	-	46%	61%	58%	45%
	Advanced Degree and License	8%	7%	8%	8%	7%
	Tuition and Student Loan Reimburse.	12%	5%	5%	14%	24%
Comprehensive Professional Evaluation		90%	68%	64%	69%	56%
Market Incentives	Hard to Serve School	22%	29%	29%	53%	49%
	Hard to Staff Assignment	10%	18%	31%	34%	29%

		2005-06	2006-07	2007-08	2008-09	2009-10
<b>Student Growth</b>	<b>Student Growth Objectives</b>	-	71%	76%	80%	80%
	<b>Exceeds CSAP Expectations<sup>17</sup></b>	-	5%	11%	13%	14%
	<b>Top Performing Schools</b>	13%	18%	38%	45%	34%
	<b>High Growth School</b>	-	-	39%	52%	43%

<sup>a</sup> Source: DPS Employee-Payment file.

The changes put in place with the revision of the system in 2008 are also evident. After the changes, the proportion of teachers earning reimbursements for tuition and student loans, High Growth and Hard to Serve Schools increased by 10 percentage points or more, with the largest increase for Hard to Serve schools. Other incentives showed smaller increases or decreases in the case of PDUs.

Overall, the average number of ProComp incentives earned by teachers grew from 1.54 in 2005-06 to 4.26 in 2008-09 and declined slightly in 2009-10. The CPE bonus was the most common incentive awarded in the first year of implementation: 90% of participants received the incentive as newer non-probationary teachers were awarded a “catch-up” award for a satisfactory evaluation in the first three years. SGOs were the most common incentive in later years (80% of participants received the incentive). The Advanced Degree and License is only awarded to 7% to 8% of teachers each year; however, teachers can only receive this incentive once every three years.

## Discussion

A review of the history of ProComp’s development revealed a few key points. First, it was a long effort. The current system was envisioned no later than 1999 and took until 2006 before it was implemented. Equally important, there were many key players in the implementation. The district had several different superintendents and union leaders over the development period. Community leaders from foundations, technical assistance providers, and political parties all played a role in making this reform a reality. At the same time, implementing ProComp challenged DPS to develop a new infrastructure and capacity. It helped forge new relationships among its leaders and between the union (DCTA) and administration. It also challenged the district to develop new data systems, evaluation procedures, and methods of measuring teacher effectiveness.

ProComp has continued to evolve over the past five years. The most significant reforms in 2008 increased the overall amount of money being paid out with the largest increases going to new

<sup>17</sup> This shows the proportion of all ProComp teachers who received this bonus and is not limited to those who were eligible.

teachers while limiting the growth of salaries for teachers with over 14 years of experience. The 2008 changes increased the amounts and number of people who received incentives for Student Growth (related to CSAP scores) and Market Incentives.

ProComp impacts a professional workforce of about 5,000 people. The large majority of people participating in ProComp are teachers, but it also impacts other educators such as Student Services Professionals, librarians, counselors, therapists, and facilitators. During the implementation of ProComp, the DPS teacher workforce has become younger; the average age dropped by 1.4 years. This was a result of a decline in the proportion of senior (over 50 years old) teachers and an increase in the proportion of younger (under 35 years old) teachers. While DPS has a much larger proportion of minority teachers than the rest of Colorado, during this period, the workforce became slightly less diverse; the proportion of minority teachers in DPS declined by two percentage points.

Participation in ProComp is voluntary for DCTA members who were working in DPS when it was implemented (January 1, 2006) and mandatory for those who subsequently joined the district. Because of this, the average age of ProComp participants in 2009-10 was almost five years less than those not enrolled in ProComp.

Finally, ProComp is a complex system mixing incentives that permanently raise people's salaries (i.e., base building incentives) with one-time bonus payments. The amount of each incentive varies with a range in the incentive amounts from \$376 to \$3,379 in 2009-10. Participants can earn up to ten different incentives in one year. In recent years the majority of participants earned three to four different incentives. The incentive most often earned was for SGOs, which went to almost eight out of ten participants. The incentive least often earned was for advanced degrees and licenses, which teachers can only earn every three or more years.



## Chapter 3: Stakeholder Expectations and the Implementation of ProComp

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*Prepared by: Diane Proctor*

This chapter examines the extent to which the Professional Compensation System (ProComp) has fulfilled the expectations of stakeholder groups. “Stakeholders” were considered to be Denver Public Schools (DPS) teachers, administrators, Board of Education members (hereafter referred to as the Board), staff from foundations providing funds for the development of ProComp, and the community of Denver that approved the tax referendum to fund ProComp. This chapter discusses teachers’ and principals’ knowledge and beliefs about ProComp, and how they feel about this new type of compensation system. In addition, the chapter also describes the ways in which the implementation of ProComp has impacted the DPS system at both the central office and school levels. Five methods were used to address these questions: document review, key informant interviews, teacher and principal surveys, key informant interviews, interviews with teachers and school administrators, and interviews with central office staff.

### Findings

#### ***ProComp’s development and stakeholder collaboration***

One intent of the ProComp system was that it be collaboratively developed by representatives of the school district and the teachers’ union.<sup>18</sup> For the first iteration of ProComp, this goal appeared to have been achieved; all 13 key informants acknowledged that collaboration took place between DPS and DCTA in the planning, development, and early implementation stages of ProComp. One teacher leader stated, *“ProComp is the result of collaborative work between DPS and the DCTA. It wouldn’t have happened without that. So the evidence of collaborative work is ProComp, because you’re talking about major departure from the traditional salary system.”* Administrators also commented on the positive nature of the collaboration.

However, some community and teacher leaders acknowledged that the collaborative relationship between the district and union was strained by personnel changes and ideological differences between DPS and DCTA that became polarized during the negotiation of the 2008 Agreement. Opinions shared by interviewees suggested both sides had a share of the responsibility for the diminished collaboration.

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<sup>18</sup> Throughout this report organizational labels (e.g., DPS, “the district”, and “the union”) are used as shorthand terms to describe activities actually carried out by representatives, officials, or staff in these organizations.

### ***ProComp's alignment with DPS mission and goals***

The stated intent of ProComp was to align teacher compensation with the District's mission and goals in a more explicit way. All key informants reported ProComp had indeed created a better alignment of compensation with the district mission. However, there was not a commonly held understanding among stakeholders regarding the DPS goals. DCTA teacher leaders were critical of what they regarded as the goals, describing them as not being shared goals or as being politically constructed. Community leaders pointed out that what they considered to be the district goals were often changed, making it more difficult to clearly identify district goals at any given time. Although ProComp was also intended to be aligned with the goals of DCTA, only one interviewee, a teacher leader, mentioned this. Among ProComp teachers surveyed, 58% agreed and 32% were neutral regarding ProComp being aligned with the goals of the district; among Non-ProComp teachers, 36% agreed, 34% were neutral. ProComp teachers were more likely than Non-ProComp teachers to agree with that statement ( $M = 3.53$  vs.  $M = 3.09$ , respectively). The difference between these two groups was statistically significant,  $t(4,898) = -15.14$ ,  $p = .01$ ,  $d = .49$ , a medium size difference. Principals were more positive than ProComp teachers ( $M = 3.71$ ) that ProComp was aligned with district goals.

Most key informants identified improving student achievement as a district goal and agreed that ProComp was intended to support that goal. Their opinions varied regarding the extent to which ProComp was helping the district achieve this goal. Interviewees acknowledged that achievement in DPS has improved; however, some did not think the gains were large enough to consider this goal accomplished or that there was enough evidence to attribute the gains to ProComp. Community leaders said there was limited evidence indicating that ProComp helped the district achieve its mission and goals.

Collectively, key informant interviewees confirmed that elements outlined in the ballot initiative were incorporated into ProComp. Although they were not asked directly to comment on the alignment of ProComp with the compensation system outlined in the 2005 ballot initiative, various key informants addressed the inclusion of each of these elements in the current system. Some discussed recruitment and retention of high quality educators, particularly in relation to the Hard to Serve and Hard to Staff market incentives. Some interviewees commented on the specific elements related to student achievement; elements connected with CSAP scores and Student Growth Objectives (SGOs) were the most frequently mentioned. While fewer key informants spoke about professional development and performance evaluations, those who did discuss these topics saw them as clearly tied to the purposes of ProComp. Overall, interviewees seemed to feel that ProComp fulfilled the intent of the ballot initiative.

### ***ProComp's alignment with goals in the ProComp Agreement***

#### ***Motivational goals***

Nearly all key informants thought the central purpose of ProComp was to tie teacher pay incentives to student achievement and to a teacher's demonstrated knowledge, skills, and effectiveness. They identified several specific ways ProComp was intended to "incentivize"

desired teacher behaviors. These most frequently included Student Growth Objectives (SGOs), the High Growth School and Exceeds Expectation incentives tied to Colorado Student Assessment Program (CSAP) Growth Scores, and Professional Development Units (PDUs). One administrator characterized these incentives as proxies for teacher effectiveness, but felt the “jury was still out” with regard to the impact of these incentives on student achievement.

In theory, ProComp was designed to work in part by motivating teachers to improve their instructional practice and to undertake activities that would lead to professional growth and improved student achievement. While 62% of ProComp teachers surveyed felt that ProComp could motivate participants to improve instructional practices, their opinions were mixed regarding whether the financial incentives in ProComp would lead to improved instructional practice (43% agree, 28% neutral, 29% disagree). Their opinions were also mixed with respect to whether ProComp would ultimately improve student achievement (43% agree, 34% neutral, 23% disagree). Non-ProComp teachers tended to express neutral or negative opinions on these three survey items. Principals gave primarily positive responses regarding ProComp’s ability to motivate teachers to improve instructional practices (65% agree, 19% neutral, 16% disagree) and the potential of ProComp to ultimately improve student achievement (61% agree, 25% neutral, 14% disagree); however, their opinions were mixed regarding the ProComp financial incentives leading to instructional improvement (48% agree, 31% neutral, 21% disagree). Overall, the majority of respondents were somewhat positive about the potential of ProComp to motivate teachers to improve instructional practices but were less certain that in practice ProComp would end up improving student achievement.

During the interview process, 63% of ProComp and 35% of Non-ProComp teachers commented on motivation. ProComp teachers expressed an equal number of positive and negative comments related to whether ProComp as a total system or specific elements within the system were motivating, whereas 76% of Non-ProComp teachers expressed negative comments. In talking about ProComp in relation to motivation, teachers often used the term “money” to describe the ProComp incentive. Among teachers who discussed ProComp as a wider system, 75% of ProComp teachers reported that they did not think that ProComp was motivating to them personally or to teachers in general. Among Non-ProComp teachers who discussed motivation, none indicated that ProComp was motivating. These predominately negative viewpoints tended to reflect some teacher’s beliefs that pay for performance as a system is ineffective or is in philosophical opposition to teaching as a profession. At the same time, many teachers in ProComp remarked that specific incentives were motivating to them.

Administrators at 12 out of 16 schools discussed the motivational effects of ProComp with respect to their staffs. The results were mixed. At five of these schools, administrators felt that their teachers were either motivated by ProComp in general or by particular incentives (such as the Exceeds Expectations bonus or SGO incentive). Administrators at six schools felt that their teachers were not motivated by ProComp. At one school where two administrators were interviewed separately, one felt that ProComp did serve as a motivator for staff while the other

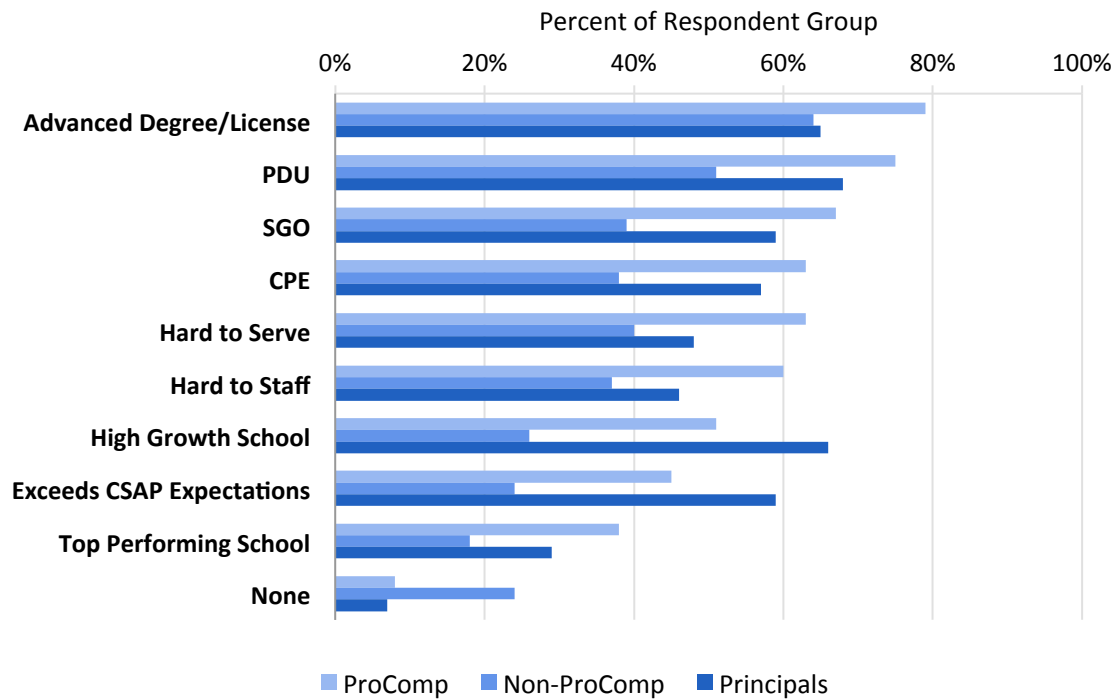
did not. Administrators expressing both viewpoints felt that it was difficult to separate the influence of ProComp from other factors present at their school and/or in the district.

Each specific ProComp element is compensated differently, but all are intended to be linked to teacher practice in some way. Survey results indicated the beliefs of teachers and principals regarding the potential of individual ProComp elements to impact instructional practice (Exhibit 12), professional growth (Exhibit 13), and student achievement (Exhibit 14) varied depending on the specific element. Overall, ProComp teachers and principals were more likely to believe that the elements would impact each of the three goals compared to Non-ProComp teachers. PDUs and Advanced Degrees/Licenses were the elements that both ProComp and Non-ProComp teachers felt were most likely to impact all three ProComp goals, while ProComp teachers also believed SGOs would have an impact on instructional practice and student achievement.

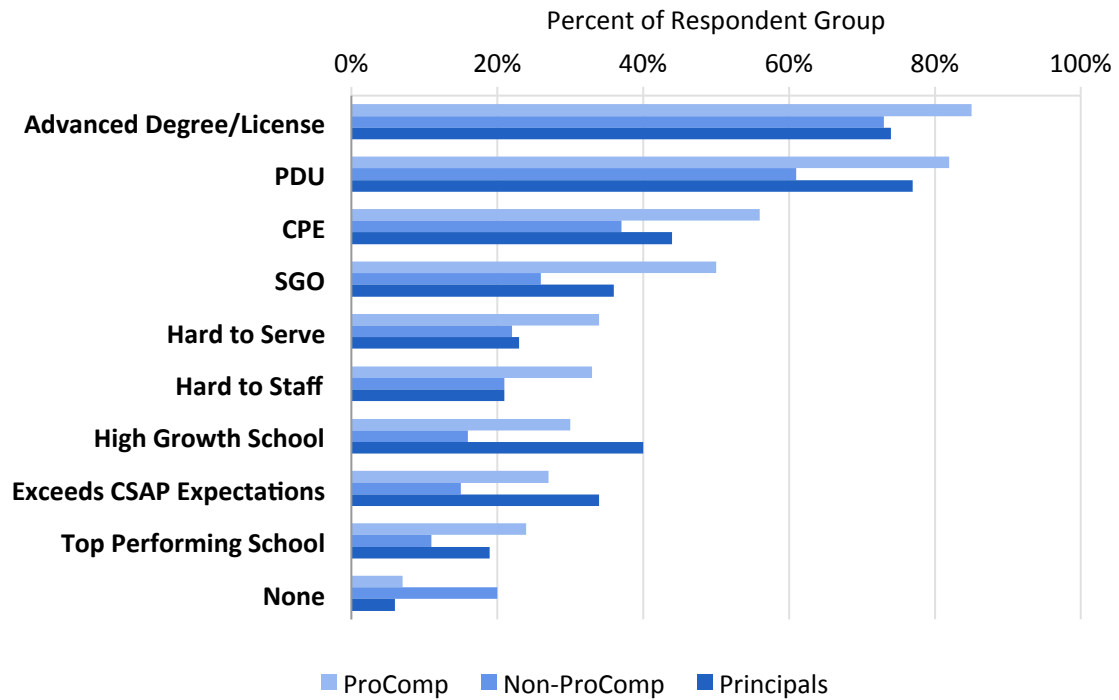
Principals' responses were similar to those of ProComp teachers with respect to the potential of ProComp to impact instructional practice and for educators to achieve professional growth. However, they rated the Exceeds CSAP Expectations and High Growth School bonuses as having the greatest potential to impact student achievement. The Top Performing School bonus was viewed by both teachers and principals as having the least likelihood of impacting any of the three ProComp goals.

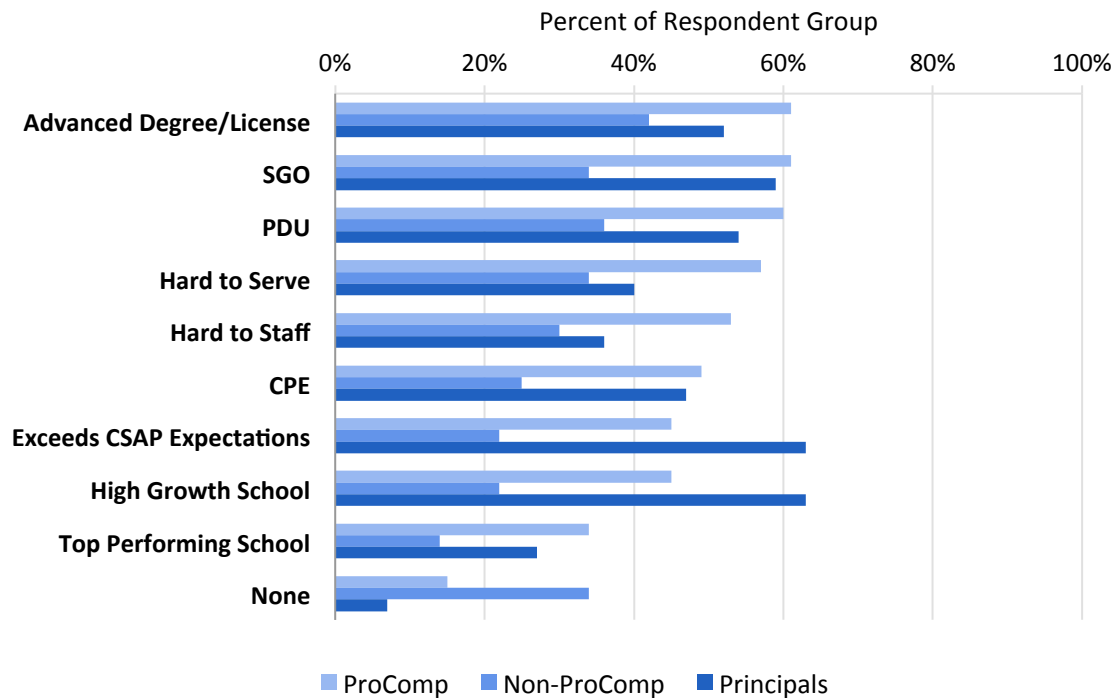
Interestingly, the beliefs of principals regarding the elements more likely to impact student achievement more closely matched the actual achievement findings than the beliefs of teachers. The achievement analyses presented in Chapter 10 indicated that the effect of earning the PDU or Advanced Degrees/Licenses incentive was not significantly related to greater than expected student growth on CSAP reading and math tests, whereas the Exceeds CSAP Expectations and SGO elements were correlated with increased teacher effectiveness as measured by value-added analysis of student achievement data.

**Exhibit 12. Likelihood of ProComp Elements to Improve Instructional Practice: Teacher and Principal Perceptions**



**Exhibit 13. Likelihood of ProComp Elements to Impact Achieving Professional Growth: Teacher and Principal Perceptions**



**Exhibit 14. Likelihood of ProComp Elements to Increase Student Achievement: Teacher and Principal Perceptions**


In interviews, 31% of ProComp teachers mentioned changes in their practice as a result of ProComp, noting that the potential for earning individual incentives and school-wide bonuses related to CSAP helped provide focus in their own teaching. For example, one teacher described how SGOs had increased his/her focus, saying,

*...I was more focused to accomplish what I had set out to do. For example, I started to review concepts more frequently with students; just checking in with them more often to make sure they were really understanding the fundamentals of the class.*

Another teacher described how his/her school used SGOs in conjunction with the School Improvement Plan (SIP). S/he explained,

*Our whole focus is to do the best for the children. That is what the SGOs are about. They help us to focus on what it is that we want to do in the coming school year. Our school wide focus is on math and writing ... The School Improvement Plan has math and writing. So the SGO ties in nicely with school wide goals.*

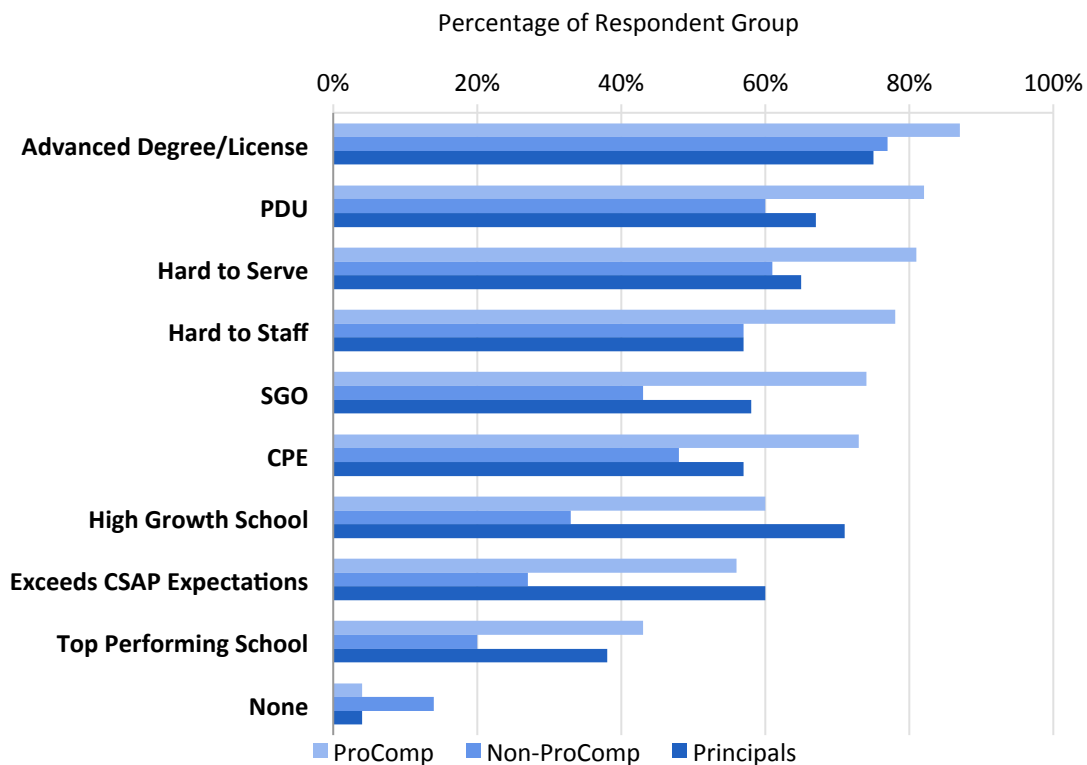
An administrator offered a similar perspective and described how his/her school tied SGOs and PDUs to the school improvement plan and commented that, “[the school works on] making

*everything purposeful, to make people move in one direction—collaboration, strength in purpose, continuity.”*

A somewhat different view regarding the concept of “focus” emerged in the survey data. ProComp teachers gave mixed responses (40% agree, 29% neutral, 30% disagree) regarding whether ProComp provided a more focused way to think about one’s work. In contrast, Non-ProComp teachers primarily expressed disagreement (51%) or were neutral (32%), and were significantly more negative about ProComp providing focus compared to ProComp teachers ( $M=2.43$  vs.  $M=3.08$  respectively,  $t(4,898) = -18.86$ ,  $p<.01$ ,  $d=.61$ , a medium size difference). Principals were somewhat more positive compared to teachers in feeling that ProComp helped focus teacher practice ( $M = 3.36$ ).

When asked about the appropriateness of receiving financial incentives for the elements included under ProComp, more ProComp participants felt it was appropriate to receive incentives for each of the elements compared to their Non-ProComp peers. All survey respondents regarded PDUs, Advanced Degrees/Licenses, and the Hard to Serve School as the elements most appropriate for financial incentives. Teachers believed the Exceeds CSAP Expectations element was less appropriate than other elements for a financial incentive, and that the Top Performing School bonus was the least appropriate element to link to financial incentives (see Exhibit 15).

**Exhibit 15. Perception of Appropriateness of Financial Incentive of ProComp Elements by Respondent Groups**





With respect to the financial incentives for specific elements, during interviews there were seven ProComp teachers who expressed their appreciation for the tuition and student loan reimbursements. Six teachers and one administrator described teachers in Hard to Serve Schools, Hard to Staff positions, or who qualified for one or more of the CSAP-related Student Growth incentives as pleased when they received those bonuses. However, there were some comments which suggested there may be a “disconnect” for teachers between fulfilling the criteria to earn the incentive and receiving that incentive. One teacher referred to the incentive bonuses as “surprises” when they appeared on his/her paycheck, and an administrator had this to say:

*Another positive was the idea that a teacher can make a bonus connected to student outcomes. But there really wasn't a direct connection for teachers – it was just by chance. “That’s nice, I got a bonus, but I am not sure what I did.” The information isn’t provided to help them make direct connections. They get an email that says they made \$5,000, but they don’t know why.*

This type of issue raises the question of the incentive’s potential to motivate teachers.. To the extent to which teachers do not perceive a direct and temporal link between positive changes they make and the incentive payment, this may decrease their motivation to sustain or engage in such behaviors.

#### *Career goals*

Attracting and retaining teachers was seen as a core purpose of ProComp by the majority of key informants. However, they had less definitive opinions on whether this goal had been accomplished; some informants felt the goal had been achieved, others viewed it as partially achieved, and some interviewees felt they had limited data regarding this goal. Teacher leaders thought there had been a positive impact on attracting teachers, but questioned the potential impact on retention beyond the first five years. An administrator suggested that teachers tend not to stay in the system very long and cited data that indicated the average career of teachers both nationally and in DPS is three to seven years. Another administrator suggested that attracting and retaining teachers is not itself a goal but contributes to the overarching goal of improving student achievement.

ProComp teachers expressed mixed opinions on the survey regarding whether ProComp will ultimately help DPS attract and retain qualified teachers (44% agree, 29% neutral, 26% disagree). Non-ProComp teachers also expressed mixed points of view but the distribution of responses was the reverse of ProComp teachers; the Non-ProComp teachers tended to feel that ProComp would not necessarily increase teacher recruitment and retention (18% agree, 33% neutral, 49% disagree). Principals tended to be more positive, with 60% indicating agreement (22% neutral, 18% disagree). However, the overall picture suggests that even ProComp teachers were not overly optimistic about ProComp’s potential to substantively impact DPS’ ability to attract and/or retain teachers.

Most key informant interviewees believed giving teachers the opportunity to earn more compensation over their careers was a goal of ProComp, though opinions were mixed regarding the extent to which this goal was being achieved. Some teacher leaders thought the original version of ProComp achieved this goal, but believed the 2008 version was slanted toward teachers in their earlier years and curtailed incentives for those with 14 or more years of experience. Community leaders and administrators generally regarded the career compensation goal as being achieved. Some administrators noted the 2008 version of ProComp pays teachers substantially more than they would have earned on a single-salary schedule at the start of their careers (a condition which applies to many DPS teachers), and that ProComp still pays more to teachers at the end of their careers.

Approximately 32% of the Voluntary ProComp teachers ( $n = 76$ ) mentioned in interviews that they were satisfied with their initial salary when switching from the master salary schedule to ProComp. While many newer teachers were simply glad to have a job, there were approximately 21% of Compulsory ProComp teachers ( $n = 90$ ) who mentioned that they liked being able to earn incentives which increased their salary. One newer teacher noted, *“The CSAP growth bonus in year one was a surprise and then I tried hard again the next year to get the CSAP bonus again. I do a PDU every year. Next, I am going for board certification. ProComp does affect my plans because I get more money.”* However, there were three new teachers hired close to the start of school who were upset that they were required to sign contracts without being told how much they would be paid.

#### *Professional goals*

There were fewer comments from key informants that addressed the ProComp goal of enhancing the professional standing and dignity of teachers. Key informants who were involved in the early development of ProComp recalled how they wanted to incorporate career ladders in ProComp to provide opportunities for advancement within the teaching profession so that going into administration was not the only opportunity for advancement. As one of the interviewees involved in this work described it, *“What we eventually settled upon ... is a compensation system that would support [career ladders] without indicating what the actual career ladder would ...look like.”* The key informants who commented on this goal considered it to be partially achieved, noting they considered the salary discrepancy between administrators and teachers at year 14 as detrimental to keeping good teachers in the classroom.

On the survey, ProComp teachers generally agreed (57%) or were neutral (26%) about the idea that ProComp was aligned with their goals as educators. In contrast, Non-ProComp teachers generally disagreed (41%) or were neutral (31%). Principal’s responses were similar to those of ProComp teachers (61% agree and 26% neutral).

#### **ProComp system goals**

Nearly half of the key informants commented on several aspects of the ProComp Agreement’s system goals that have been important in the development and refinement of ProComp.

*Creating a flexible system*

One of the goals for ProComp was for the system to have flexibility. Several community and administrative interviewees noted that flexibility was built into the ProComp system so that changes could be made as DPS learned about the effectiveness of the initiative and as District needs changed. One of the key informants involved in the early development of ProComp, noted that she or he knew early on that, *“we didn’t get it 100% right, that it was a good system, but a system that was going to have to be in constant movement.”* Other interviewees also stressed that change was expected and provisions for change were built into the system—a characteristic some considered one of ProComp’s assets. An administrator echoed this in more specific terms noting, *“...every three years [you] evaluate, ‘Is it meeting your overarching goals of driving student achievement by keeping and attracting great teachers?’”*

*Creating an understandable system*

Several key informants involved in the beginning stages of ProComp remarked that as ProComp was developed and piloted the intent was to create an understandable system. One interviewee pointed out that specific changes were made to ProComp after the Community Training and Assistance Center (CTAC) evaluation report<sup>19</sup> identified understandability as an issue. However, one key informant felt that ProComp was complex, which made it hard to understand and *“expensive to administer”*.

*Creating an affordable and sustainable system*

Affordability and sustainability of the ProComp system were addressed by many key informants. One individual noted that when ProComp was still in development s/he asked if it would be sustainable and affordable under the current funding structure;

*[I learned that]...we couldn’t afford it. Five years out under the old pay structure, it would have bankrupted the school district. So that’s why we had to go to the public for funding. And so it only is sustainable now because we have the public funding.*

Other key informants expressed similar thoughts and described how outside experts working with DPS staff developed various financial models based on different assumptions regarding the number of teachers who would earn incentives. These models were used to determine the amount of money required to create an affordable and sustainable system.

According to key administrators involved in developing the 2008 ProComp Agreement, the district engaged in an extensive financial analysis regarding the expenditure of the mill levy funds and the composition and earnings of the workforce. They determined *“that the way ProComp was structured... the incentives were so small and so diffuse that they were not particularly effective at...accomplishing the goals of ProComp.”* These analyses were the basis for the changes recommended and implemented in the 2008 Agreement. One administrator remarked that the changes made *“the incentives paid under ProComp... much more widely*

<sup>19</sup> The full report can be found here: <http://www.ctacusa.com/PDFs/Rpt-CatalystChangeFull-2004.pdf>

*distributed*” and that the increased amounts for some incentives made them “*more meaningful*”. However, some teacher leaders felt that the 2008 changes in ProComp incentives from being salary base-building to being one-time bonuses were not fair for employees beyond year 14.

#### *Creating a comprehensive and equitable system*

An administrator and a teacher leader key informant noted that one of the issues which had to be addressed early on was extending the ProComp system so that it would be comprehensive and work for all employees covered by the DCTA Agreement, including non-classroom personnel, librarians, nurses, and student services providers. The 2005 Agreement required that all positions be integrated into ProComp and created committees to involve Student Services Professionals (SSPs), counselors, student advisors, and Junior ROTC staff in this process.

### ***ProComp’s effect on the system***

#### *Operational changes*

Key informants pointed out that operational changes in Payroll, Human Resources, Department of Technology Services (DoTS), and other departments were necessitated by the implementation of ProComp. One administrator elaborated on the “*invisible, but very successful work of the operations committee....*” This committee provided oversight and was responsible for identifying and providing project management for “*the administrative structure, processes, and data systems, which were going to be required*”.

In order to understand the impact of ProComp on the operations of DPS at a system level, personnel from central offices including Payroll, Testing and Assessment, Instructional Services, and DoTS were interviewed. Interviewees reported that system-wide changes were required to provide the support and infrastructure necessary to implement the ProComp system. A major shift in the development and automation of existing systems (e.g., Lawson, Infinite Campus) became necessary in order to support the information needs of the ProComp system. It became important for separate systems to interface with one another and work together; interviewees stressed that the existing databases were key building blocks in creating a central infrastructure helpful to those operating ProComp, as well as to teachers and principals.

Interviewees in each department described how continual improvement in information sources and databases were needed in order to make them more automated and less dependent on paper processes. One key informant provided this example: “*With all of these [SGO and PDU processes] they were taking a paper and pencil process and moving them towards a web-based application.*” They also discussed the needed improvements in communication among departments to allow for timely and accurate information, not only to calculate paychecks, but to validate school and teacher classifications, as well as maintain up-to-date information on teacher movement, education, and participation in ProComp incentive activities. Interviewees from multiple departments discussed the importance of working across departments, and the need to develop an interdependent system that allowed information to flow among groups. One key informant described how the data warehouse contributed to this interdependent system:

*There wasn't the infrastructure to capture [the information about the various incentives people earned] ... so this motivated them to create a data warehouse. This information was all kept in separate systems, so the data [warehouse] ... allowed for all of the information from different systems to be [stored in] a combined area and [still produce] reports from different systems.*

Nearly all interviewees discussed the creation of the salary calculator as another pivotal development and system change effort necessitated by the implementation of ProComp. Staff in DoTS created the salary calculator to allow payroll staff to determine the amount a ProComp teacher was to be paid in a given month based on his/her position(s), school assignment(s), and meeting the requirements for particular ProComp incentives. Over time the calculator was transformed from being dependent on people entering data to becoming increasingly automated and able to retrieve the information needed to accurately calculate pay from various databases. In addition to the challenges related to developing systems to pay people efficiently and correctly, some interviewees focused on the dilemmas related to determining fair and consistent criteria and techniques for defining Hard to Staff positions, Hard to Serve schools, Distinguished/Top Performing schools, and Exceeds CSAP Expectations. A number of people in various positions described their role in identifying and developing the best practice for making these determinations. Initially, several complex strategies were developed, such as using multiple criteria to identify Hard to Serve schools. Over time, staff found that using the single indicator of Free/Reduced Lunch produced essentially the same result and, therefore, chose to shift to this simpler definition.

When these interviews were conducted in the summer and early fall of 2008, the 2008 Agreement was still being negotiated and approved. Interviewees anticipated additional changes would be needed in district infrastructure, and expected that the School Performance Framework (SPF) would provide a clearer way to determine which schools qualified for the CSAP related bonuses. The 2008 Agreement required changes in the payroll systems which included changing the dollar amount associated with various incentives, as well as revising the salary calculator to take into account the changes from salary-building to bonuses for certain elements and/or for employees at certain levels of experience. The sense was that, overall, DPS had been successful in constructing an operational infrastructure to support ProComp and would readily be able to respond to ongoing changes in ProComp.

Despite the many successful changes to the operational infrastructure, some issues remained. One of these had to do with payroll. For a compensation system to work effectively, people must be paid accurately. In interviews with teachers, communication difficulties with Payroll and Human Resources, particularly regarding paycheck issues were areas identified as being problematic by 17% of the teachers who discussed implementation issues ( $n = 108$ ). They described the paycheck stubs for both compensation systems as confusing and reported that labels for various entries were unclear. They requested a way to access clearer explanations of paycheck information, and some teachers noted that the pay information currently available on

the Lawson system<sup>20</sup> was confusing. Month-to-month variation in the paycheck amount, particularly for ProComp teachers, seemed to contribute to the confusion. Survey results, however, indicated that both ProComp and Non-ProComp teachers believed their initial salary was determined correctly ( $M = 3.45$  and  $M = 3.36$ , respectively). Likewise, both groups reported they believed their monthly salary to be accurate ( $M = 3.71$  and  $M = 3.65$ , respectively). Both ProComp and Non-ProComp respondent groups were neutral in believing their paycheck could be easily corrected if it is incorrect ( $M = 3.08$  and  $M = 2.98$ , respectively).

#### *Central office environment*

Overall, central administrators noted that the implementation of ProComp required substantial changes in the focus of their work and that their workload was increased in order to implement the changes. However, the interviewees also reported that ProComp implementation had precipitated positive changes in support services that balanced the additional work.

#### *Human and instructional resources changes*

Building the human capacity and instructional resources to support the implementation of ProComp was a challenge. One of the core ProComp elements that required support was the Student Growth Objectives (SGOs) element. As one of the administrator key informants recalled,

*We had to develop the capacity of the administrative staff to support this with the data, the capacity of the principals to evaluate this appropriately, and the capacity of the teachers to understand how to use the data and to modify it as it went along.*

This challenge was the impetus for DPS' development of assessment tools and data management systems to provide student achievement and other data for teachers in a timely manner. Interviewees from central departments concurred and described their work to facilitate the development of a more rigorous set of assessments to support the SGO process. This led to the development of the DPS benchmarks and end-of-course assessments. Not all of this work was done centrally, but responsibility for managing these assessments fell to central departments.

One of the resources available during the pilot of ProComp to support teachers and schools was a school support team made up of specially trained teachers from that school. During the phase-in of district-wide ProComp implementation, there were trained ProComp school liaisons who provided a similar function. In interviews, teachers and principals recalled the helpfulness of the school support teams and school liaisons in implementing the SGO process, answering questions about ProComp, and assisting in resolving issues. Many teachers and administrators lamented that these roles no longer exist in DPS.

Another major development discussed by central department interviewees was the creation of the DPS Growth Model used to analyze CSAP test data for the same students over successive

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<sup>20</sup> Lawson is the software DPS uses for payroll and other employee data.

school years as a measure of growth. After approval of the 2008 Agreement, these data were used to determine the High Growth School and Exceeds CSAP Expectations incentives. In creating this growth model, DPS staff worked with the Colorado Department of Education (CDE) staffs that were in the process of developing the Colorado Growth Model. Interviewees reported that the DPS Growth Model scores played a role in the development of the DPS School Performance Framework (SPF).

### *School environment*

Given the substantive changes that ProComp introduced in both teacher compensation and the work that teachers and principals do, changes in work environments would be anticipated. The impact of ProComp on the school environment was a topic during the interviews with teachers and principals. In most schools, interviewees indicated ProComp has not affected the school environment, noting they did not discuss ProComp or know who was a participant. In three schools that had received some type of school-wide bonus, ProComp teachers mentioned that receiving these bonuses had increased morale. Some ProComp (12%) and Non-ProComp (13%) teachers and administrators (18%) described divisiveness related to ProComp, though these comments were concentrated in a few schools. Survey results regarding whether ProComp helped create a positive school environment were mixed, with most responses from ProComp teachers falling into the neutral category. In contrast, Non-ProComp teachers expressed more disagreement. The difference between the ProComp and Non-ProComp teachers was significant ( $M = 2.92$  vs.  $M = 2.32$  respectively,  $t(2374.82) = -19.46$ ,  $p < .001$ ,  $d = .62$ , a medium size difference).

Mixed opinions were expressed in interviews by experienced teachers (both ProComp and Non-ProComp) regarding collaboration. Twenty-two percent of ProComp teachers and 11% of Non-ProComp teachers believed PDUs and school-wide bonuses based on CSAP led to increased collaboration within the school and departments. Twenty-three percent of ProComp and 24% of Non-ProComp teachers were unsure that the increase in collaboration was related to ProComp, or believed there had been no change in the level of collaboration. Teachers also gave mixed opinions regarding whether ProComp will improve teacher collaboration. ProComp teachers were fairly evenly split among agree (35%), neutral (35%), and disagree (30%), whereas Non-ProComp teachers responses were predominantly negative (53%) or neutral (31%). The difference between ProComp and Non-ProComp teachers was significant ( $M = 3.03$  vs.  $M = 2.40$  respectively,  $t(2364.64) = -18.75$ ,  $p < .001$ ,  $d = .6$ , a medium size difference). Principals were relatively neutral, though somewhat on the negative side, in their estimation that ProComp had changed collaboration among teachers in their schools ( $M = 2.80$ ). In terms of believing the traditional salary system would improve teacher collaboration, average survey responses for ProComp and Non-ProComp teachers were neutral tending toward disagreement ( $M = 2.71$  and  $M = 2.85$ , respectively). Principals expressed similar opinions to teachers ( $M = 2.59$ ).

With respect to workload, 27% of ProComp ( $n = 92$ ) and 25% of Non-ProComp teachers ( $n = 45$ ) who made comments regarding working conditions during interviews reported that ProComp had not substantively changed their workloads. Seventeen percent of ProComp and 25% of Non-



ProComp teachers noted they now spend more time in meetings, on paperwork, and on activities related to the ProComp elements; some teachers viewed this as a positive change, while others regarded it as “busy work”. There were some veteran teachers (13% ProComp and 11% Non-ProComp) who noted their workload has increased in recent years, but they did not attribute this change to ProComp.

Survey data indicated Non-ProComp teachers were more likely to report they experienced increased pressure and job stress as a result of ProComp ( $M = 3.32$ ) than ProComp teachers ( $M = 3.11$ ), though responses for both groups were fairly neutral. Principals, as a group, were also fairly neutral ( $M = 3.26$ ) on this topic. During interviews, there were a small number of teachers (both ProComp and Non-ProComp) who reported that ProComp increased stress. Data-driven practices, especially SGOs, were mentioned as stressors that negatively impacted working conditions; these perceptions tended to be related to teachers not being able to meet SGOs for reasons they considered to be beyond their control.

Most principals reported on the survey that ProComp had not changed the workload in their overall job as an administrator or the Comprehensive Professional Evaluation (CPE) for teachers. However, 40% of principal respondents indicated ProComp had decreased the difficulty of their role in professional development. In five schools, principals discussed in interviews how they have intentionally used school-wide PDUs and the pursuit of bonuses as a way to focus teaching efforts school-wide. Survey data indicated principals’ perceptions were mixed on the effect of ProComp on the SGO process (see Exhibit 16). The study of SGOs reported in Chapter 7 provides additional information regarding principals’ perceptions of the SGO process.

**Exhibit 16. Principal Perceptions of the Impact of ProComp on Administrative Workload**

Impact of ProComp on Workload Regarding:	Percentage of Principals ( $N = 166$ )		
	Less Difficult	No Change	More Difficult
School Professional Development	40%	52%	8%
SGO Process	34%	38%	28%
CPE For Teachers	21%	64%	16%
Overall job as administrator	17%	64%	20%

### ***General knowledge and beliefs about ProComp***

The theory of action posits that for ProComp to motivate teachers to earn the incentives they must know about the incentives and understand what they must do to earn them. Logically, for ProComp to achieve the intended results this is an essential prerequisite.



*District provided information*

One of the major resources for helping teachers understand ProComp and communicating with them about ProComp is through a dedicated website. As a whole, the information and resources accessible from the ProComp website provide access to the policies, procedures, and tools that support ProComp.<sup>21</sup> The website is organized around the four ProComp Components: Knowledge and Skills, Comprehensive Professional Evaluation, Market Incentives, and Student Growth. The links to each of the elements within the four components provide current information on the requirements and rules for earning each incentive and the necessary forms and resources related to each of the ProComp elements. There are also links to historical documents, video presentations, and the latest news regarding ProComp.

In addition to the publically accessible information, there are also links to “My DPS” for DPS teachers and administrators to access personal information and to use online registration forms, templates, and proprietary DPS resources (e.g., handbooks for principals, Professional Development Unit (PDU) instructions, samples of Student Growth Objectives (SGOs) for various content areas, and the rubric for SGOs).

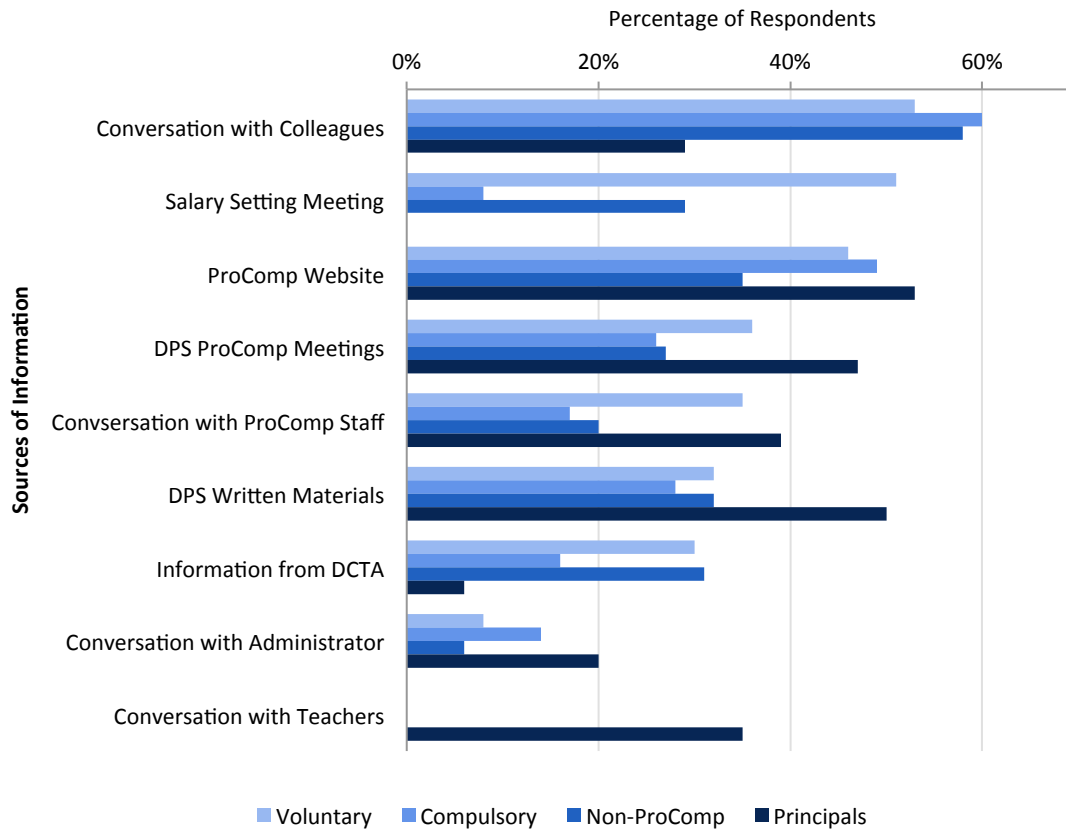
*Where do teachers and principals obtain their knowledge about ProComp?*

Teachers and principals are able to obtain their knowledge about ProComp through various means, some of which they found more effective than others. No single resource was considered effective by more than 60% of respondents, and there were considerable differences in how valuable teachers and principals found some sources (see Exhibit 17).

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<sup>21</sup> The ProComp website can be found at <http://denverprocomp.dpsk12.org/>.

**Exhibit 17. Perceptions of Effectiveness of Various Sources of Information about ProComp by Respondent Groups**



In both the survey and interviews, teachers reported that conversations with colleagues were one of the most effective sources of information about ProComp. Teachers who voluntarily joined ProComp reported on the survey that salary setting meetings provided good information on ProComp (51%).<sup>22</sup> Both experienced ProComp and Non-ProComp teachers commented during interviews that the individualized salary comparisons between traditional and ProComp systems provided in these meetings was critical information for deciding whether or not to join ProComp. In contrast, principals were most likely to report on the survey that they obtained information from the ProComp website (53%), DPS written materials (50%), and DPS ProComp meetings (47%).

Teachers had mixed opinions regarding the ProComp website. On the survey, the ProComp website was considered one of the most effective sources of information by about half of the ProComp teachers. During interviews, a more nuanced view of this finding emerged; some teachers reported that the website was too complex and difficult to navigate, while others found it to be a useful source of information.

<sup>22</sup> Salary setting meetings were only available to teachers voluntarily joining ProComp. During this meeting ProComp staff gave each teacher individualized comparative salary information regarding their potential earnings under the traditional salary schedule and ProComp.

There were a number of communication channels which were perceived to be less effective. On the survey, teachers considered conversations with administrators to be the least effective source for ProComp information (6-14%). Both teachers and principals acknowledged in interviews that principals have limited knowledge about ProComp; there were few exceptions. Conversations with ProComp staff were not considered one of the most effective sources of information about ProComp on the survey. In interviews, teachers ( $n = 32$ ) expressed mixed opinions regarding communication with central office departments. Most of their positive comments related to the ProComp Team, specifically their responsiveness by phone and email in resolving problems, answering questions, and providing information. A number of teachers (10 of 16 negative comments) complained about the Call Center. Among the issues raised were that teachers had problems accessing a staff member by phone, and that calls were often returned during times the teachers were in class. Other teachers reported difficulties in locating the correct person to answer their questions; they found communication was more successful when they knew someone in central office or were given a specific individual to contact.

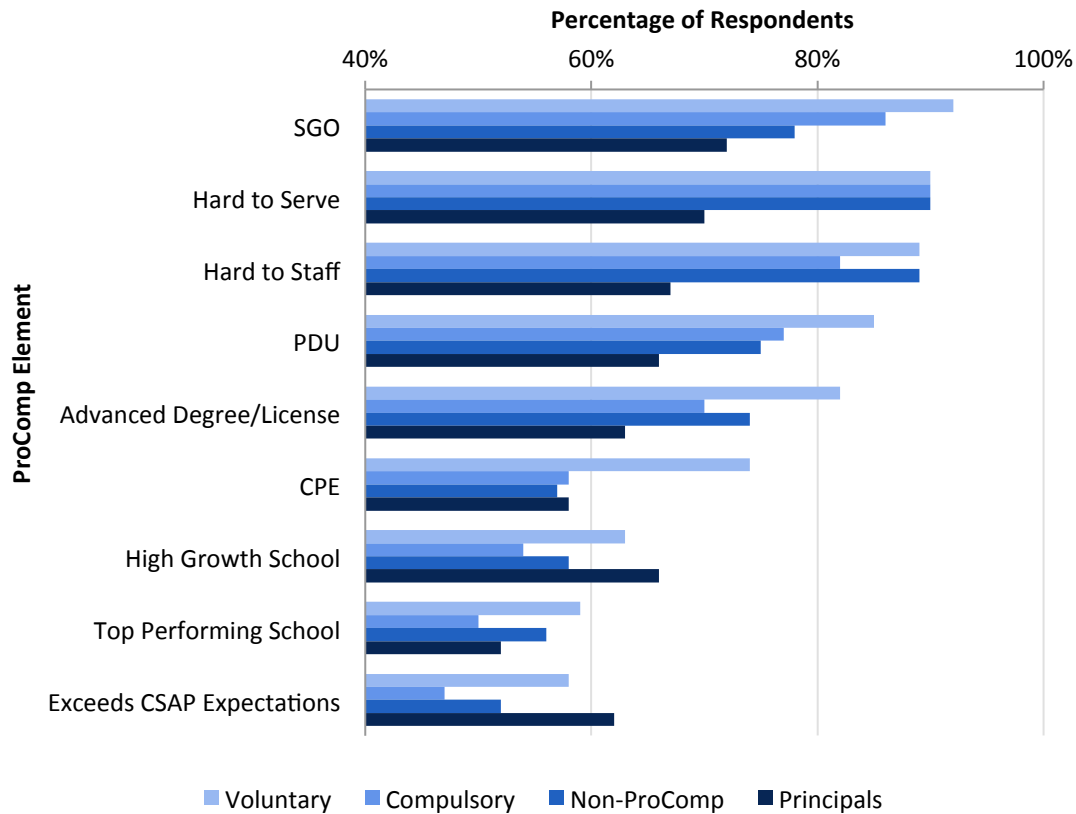
Focus group conversations with newer teachers revealed that many of these teachers felt they did not know enough about ProComp. Six teachers and administrators were particularly critical of ProComp communication provided to newly hired teachers, especially those hired near the start of school. They reported that new teachers lacked critical information regarding SGOs and the PDU enrollment/completion processes. On the survey, few compulsory ProComp teachers rated DPS ProComp meetings (26%) and DPS written materials (28%) as effective sources of information.

In general, over half (65%) of the Voluntary ProComp teachers were somewhat positive about whether they had adequate information about ProComp to make informed decisions. In contrast, only about half of the Compulsory ProComp teachers (49%) and Non-ProComp teachers (56%) reported feeling they have adequate information.

*To what extent do teachers and principals understand ProComp?*

The level of knowledge teachers reported they had about specific ProComp incentives varied considerably depending on the incentive (see Exhibit 18). In general, Voluntary ProComp teachers tended to report higher levels of understanding about incentives compared to Compulsory teachers or principals. For many of the incentives, Compulsory teachers reported lower levels of knowledge than Voluntary teachers.

Teachers tended to have the best understanding of incentives related to SGOs, Hard to Serve, and Hard to Staff. These incentive categories also had very high levels of understanding in an absolute sense, with more than 80% of teachers reporting they understood the incentive. The incentives teachers reported understanding least well were Top Performing School, High Growth School, and Exceeds CSAP Expectations. These categories of incentives were also less well understood in an absolute sense, with only between 50-63% of any given teacher group professing understanding.

**Exhibit 18. Understanding of the Requirements for each ProComp Element by Respondent Groups**

Another important condition that facilitates teacher understanding of the ProComp system is having principals who understand the system. The percentage of principals reporting on the survey that they understood the requirements for the various ProComp elements was lower than teachers for all elements except Exceeds Expectations and High Growth School, though only 12% of principals indicated they could not explain any ProComp element to teachers. It is notable that on five of the nine incentives, principal understanding was considerably lower than that reported by teachers. Principals were most likely to report they understood requirements for SGOs and Hard to Serve, with fewer reporting they understood the requirements for Top Performing School and CPEs.

Principal knowledge and understanding of ProComp was explored on several additional survey items. About half (53%) of principal survey respondents reported they knew how to answer teachers' questions about ProComp, while 24% of principals disagreed that they could do this. The majority of principals believed they could explain how schools are designated as Hard to Serve (76%), High Growth (78%), and Top Performing (71%). It is interesting that principals have a better understanding of how school designations are determined than how teachers earn the ProComp incentives associated with these school designations. Additionally, while a majority of principals rated themselves fairly positively on the various survey items related to their understanding of the system, the data suggest that many lack knowledge of ProComp's components.

During the interviews, evaluators recorded considerable contradictory and incorrect information from teachers and principals about ProComp; interviewees often asked questions and requested basic information about ProComp from the evaluators. Although both teachers and principals indicated a relatively high level of understanding of SGOs on the surveys, during interviews, SGOs were the primary area respondents identified as requiring improved understanding. The CSAP based incentives, PDU offerings and timelines, and the payment schedule for various elements were also identified as areas in which school personnel needed additional information.

Both lack of information and the spread of misinformation about ProComp are a concern, particularly when coupled with the data which indicate that teachers consider conversations with colleagues as the most effective source of information regarding ProComp. To the extent that teachers and principals have and share misinformation, this is likely to be detrimental to creating the understanding of ProComp necessary to achieve desired results.

*What are teachers and principals beliefs about the fairness of the compensation systems?*

In changing from a traditional salary schedule based on education level and experience to a system based on performance, an essential question is the perception of teachers regarding the fairness of the compensation system. In general, survey data indicated both teachers and principals tended to be relatively neutral with regards to the fairness of both types of compensation schemes. ProComp and Non-ProComp teachers tended to have somewhat more positive views regarding the fairness of their particular compensation system. ProComp teachers considered both ProComp and the master salary schedule to be similarly fair ( $M=3.12$ ). In contrast, Non-Comp teachers tended to be more positive about the master salary schedule ( $M=3.34$ ), and they were significantly more negative in their impressions of ProComp's fairness compared to ProComp teachers ( $M=2.48$  vs.  $M=3.15$  respectively,  $t(4,898) = -19.25$ ,  $p < .01$ ,  $d = .63$ , a medium size difference). Principals tended to be somewhat positive about ProComp, and had more mixed views regarding the fairness of the traditional salary system. Mean ratings for principals were less positive than for either group of teachers regarding the traditional system ( $M = 2.88$ ), and somewhat more positive than teachers regarding ProComp ( $M = 3.27$ ).

Teachers were not asked directly about the fairness of the compensation systems in interviews; however, fairness was a theme that emerged from teacher responses to various interview questions. Thirty-three percent of Non-ProComp teachers commenting on the ProComp and traditional systems ( $n=43$ ) indicated they considered the master salary schedule to be a fair system, noting that pay is predictable and credit is given for experience and education. Having a sense of control over their earnings in the traditional systems was also a major consideration in teacher's beliefs about fairness. Some Non-ProComp teachers reported they thought it was unfair that only ProComp teachers received Market and Student Growth incentives.

Approximately 40% ( $n= 54$  of 135) of ProComp teachers made comments in interviews suggesting they considered ProComp to be a fair system, noting that it was also financially advantageous for them. One experienced teacher remarked, *"I like the idea of ProComp because you can improve your work and also get additional money."* Another experienced teacher noted,

I personally like ProComp. I don't see the advantages in the old system. There was no incentive to work harder...Incentivize folks to get their butts in gear...It may not get rid of bad teachers, but it incentivizes you to be a better teacher.

About 13% of the teachers who considered the ProComp system to be fair related fairness to their perception that ProComp increased the accountability and professionalization of teaching. In the opinion of one of these teachers,

*Pay for performance is the overall wave of the future. As professionals, we demand to be treated as professionals but then we also need to have accountability, oversight, and professional development. We have to earn respect. If you want to be treated as [a] professional, then act like one.*

Two other teachers in an instructional leader focus group talked about being in favor of Pay for Performance. One of these teachers noted: *"I think your pay should be tied to performance. I am glad that DPS comes out and says, 'If you're doing well, you'll get a bonus.'"* Approximately 33% (n=18 of 54) of those who considered ProComp a fair system added the caveat that they regarded the 2008 changes in specific incentives from being salary base-building to being bonuses as unfair. As one experienced teacher explained,

*When I decided to join ProComp, I made my decision based on the ProComp calculator and am angry and upset that two years later they changed the rules. It was not a very honest way to do things. It will affect my retirement. I will probably have to work longer.*

Another experienced teacher remarked:

*When I topped out at 13 years, it made sense to me to join ProComp. They revamped it so that now there is a salary cap. They punish you for staying by freezing your salary. For new teachers, it makes sense but not for veteran teachers.*

To a much lesser extent, teachers felt the limitations on eligibility for Exceeds CSAP Expectations<sup>23</sup> and rules related to payment of incentives earned in one school year and paid the following school year for those retiring or moving to an administrative position were unfair.<sup>24</sup> There were also complaints from some teachers in schools not designated as Hard to Serve that this bonus was unfair, as there were other schools without this designation that were just as challenging. A few teachers who were currently or have been in Hard to Staff positions

<sup>23</sup> Exceeds CSAP Expectations can only be earned by teachers in 4<sup>th</sup> -10<sup>th</sup> grades teaching math and/or language arts.

<sup>24</sup> Some incentives are earned during one school year, but not paid until the next school year. Teachers who retired or moved to an administrative position were not paid for those incentives. For 2010-11, this was changed so that retirees would be paid.

were unhappy when the position's designation was changed or when they were required to teach something not designated Hard to Staff.

Approximately 70% of Non-ProComp teachers' survey comments expressed reservations about tying financial incentives solely to student achievement, while only 16% of teachers in ProComp made similar comments. Teachers who raised these concerns specifically noted that they did not feel that most ProComp elements are directly within their control, and some teachers expressed concerns that the financial incentives may foster dishonesty and competition among teachers.

## Discussion

**ProComp was the result of a productive collaboration between DPS and DCTA.** Key informant stakeholders, teachers, and administrators generally viewed ProComp as being aligned with the DPS mission and goals, the ballot initiative, and the purpose and goals established in the ProComp Agreement. There was general agreement that ProComp created better alignment between compensation in DPS and the district mission, though it was somewhat unclear as to whether there was a commonly held understanding of the DPS goals. The original development of ProComp was accomplished through collaboration between DPS and DCTA; however, the ideological differences between these groups strained this collaborative relationship during the negotiation of the changes to ProComp incorporated in the 2008 Agreement. **The current implementation of ProComp is not creating the conditions necessary for it to be fully effective.** While there are policies and procedures in place to support various ProComp components, and there is a district website with extensive information about ProComp, data suggest that many teachers and principals do not know about and understand all of the ProComp incentives particularly well. Teachers consider their colleagues to be the most effective sources of information about ProComp, yet interviews and conversation during school site visits revealed much misinformation being shared. Teachers had numerous questions regarding basic information about ProComp. If teachers do not understand how to earn the incentives, it is unlikely that they will be motivated by them or change their practice.

**Teachers and principals had mixed views on ProComp's ability to motivate change in instructional practice.** Though there was a general sense that ProComp may have potential to motivate teachers to improve their practice, stakeholders were unclear as to whether this potential had been fully realized, and whether ProComp had resulted in substantive improvements to student outcomes. Teachers and principals also believed that there are some elements of ProComp which are more likely to impact instructional practice and student achievement than others. Incentives related to improving teacher knowledge or growth (such as PDUs and Advanced Degrees/Licenses) received higher ratings on potential impact than bonuses related to student test scores (such as High Growth or Top Performing schools); though the actual achievement data reported in Chapter 10 did not support these perceptions. Interview comments suggested that the changes made to the ProComp incentive payment structure as part of the 2008 Agreement, may have diminished the motivational effects of some incentives for more veteran teachers.

**ProComp did not seem to result in a substantive impacts on school environment, or the workload of teachers and administrators.** In implementing a pay for performance system, one concern is that it will increase competition among teachers and have a negative impact on collaboration. The data did not support this as a major issue in DPS. Most principals and teachers felt that ProComp had not created substantial changes in the school environment.

**ProComp had an important impact on the DPS system as a whole.** Operationally, ProComp necessitated significant improvements in human resources, payroll, student data systems, interdepartmental communication and workflow. ProComp also necessitated the development of human and instructional resource capacity to support this new system. New assessments, the DPS achievement growth model, and the School Performance Framework were among the results of these endeavors.

The following chapters will examine the implementation and impact of the various ProComp elements in greater depth, and provide additional insights regarding how the theory of change operates in each of these areas.



## Chapter 4: Professional Development Units

*Prepared by: Diane Proctor and Amelia Challender*

Professional development is a common strategy used by school districts to keep educators abreast of new curriculum, instructional strategies, and improved educational practices. As part of ProComp, Denver Public Schools (DPS) sought to redesign their professional development based on research-based practices. The result of these endeavors was the ProComp element called the Professional Development Unit (PDU).

In the theory of change model outlined below, it is hypothesized that if teachers are offered an incentive (PDUs) to participate in quality professional growth opportunities that provide them with new skills and knowledge their instructional practice will improve. Improved instructional practice should ultimately result in increased student achievement.

Enabling Conditions	Activities	Intermediate Outcomes	Results
ProComp Agreement (Motivational Goal, Knowledge and Skills ProComp Component)	PDU learning experiences are developed	Teachers improve their instructional practice	More students benefit (increase learning) from improved instructional practices
DPS guidelines for PDUs (Handbook)	Teachers choose PDU courses and register online	Teachers achieve professional growth	DPS student achievement increases
Effective PDU learning experiences proposed, approved, and offered	Teachers participate in the study, action-research, and reflection associated with earning the PDU	Teachers increase compensation by completing approved offerings and earning the PDU incentive	<ul style="list-style-type: none"> <li>- Growth</li> <li>- Status</li> </ul>
PDU training for Instructors	Teachers complete PDU requirements and submit artifacts		
Online PDU course catalog and registration			
Culture that supports and values the PDU form of professional learning	Principals encourage and support participation in PDU learning experiences		

For the PDU element to work effectively there needs to be:

- Appropriate knowledge and understanding of the design and requirements of PDU professional development
- Motivation to fulfill the PDU professional development requirements and earn the incentive

- Rigorous and applicable PDU content on instructional improvement and student learning
- Application and implementation of new knowledge and skills acquired through PDU learning opportunities

Questions about PDUs were addressed using the teacher and principal surveys, as well as interviews with teachers and school administrators.

## Findings

### ***What does the implementation of PDU learning experiences look like?***

#### *Background and philosophy*

The DPS PDU Handbook: Earning Professional Development Units Through Ongoing, Collaborative and Job-Embedded Learning (DPS Leadership Development Department, 2008) states:

*[The DPS] plan for earning Professional Development Units (PDUs) has been carefully crafted to align with the principles for effective professional learning as defined by the National Staff Development Council (NSDC)*

#### ***Effective professional learning is ...***

- *Continuous*
- *Embedded within the school and classroom*
- *Consistent with research—based on best practice*
- *Rooted in deep self-reflection*
- *Built through communities of practice; and*
- *Standards-based, that is, based on what students need to know and be able to do and skills educators need to help students get there*

This element was introduced during the ProComp pilot as individual and small group self-directed PDU<sup>25</sup> studies. Since that time, the opportunity to earn PDUs has expanded to include district-sponsored and school-based PDU offerings. All proposed PDU courses and studies must go through an approval process and meet specific criteria prior to being offered. There is a catalog of pre-approved PDU courses; however, a new application is required each time one of these PDU courses is offered, so that it will be tailored to the new audience or context. The application form requires a plan that includes a narrative that describes each of the following components:

- Focus of the Study and Rationale
- Plan for the Study Component

<sup>25</sup> DPS uses the terms individual, personal, and self-directed PDU interchangeably. These may be individual or small group PDU studies.

- Planned Verification of the Study Component
- Plan for the Demonstration Component
  - Planned Verification of the Demonstration Component
- Plan for the Reflection Component
  - Planned Verification of the Reflection Component

There are additional requirements for any PDU courses offered for the first time. These include a course syllabus outlining course content, a class schedule, a bibliography of required reading, expectations for participants, and a plan for assessing the achievement of participants and accomplishment of course objectives. All applications are reviewed by the ProComp Team. Applications that do not meet the stated criteria may be returned for revision or may be denied (Denver Public Schools, 2009b).

While there are hundreds of different PDU learning opportunities available each year, they generally fall into one of the following types based on sponsorship:

- Personal PDU Learning Experiences. Personal or small group PDU studies created by one or more teachers; individuals or small groups participate in self-directed courses of study and investigation
- School-Based PDU Learning Experiences. School-based PDU offerings are developed by school staff or adapted from the catalog of preapproved PDU courses developed by personnel from another school or the district
- District-Sponsored PDU Learning Experiences.
  - **Content-Based PDU Courses**. Content-based PDUs courses developed by a central department (e.g., Math, Student Services, Gifted and Talented); some are related to specific curricula and may include large-scale district trainings such as Core Matters and English Language Acquisition (ELA)
  - **Employee Group PDU Learning Courses**. PDU courses or programs for specific employee groups (e.g., New Educator Induction, Teach for America (TFA), Teacher in Residence (TIR), Denver Teaching Fellows (DTF); generally district sponsored
- External PDU Learning Experiences. Preapproved PDU courses or online Professional Development offerings facilitated by an approved external instructor (e.g., Positive Behavior Support (PBS), Accelerated Reader, New Leadership Professional Development)

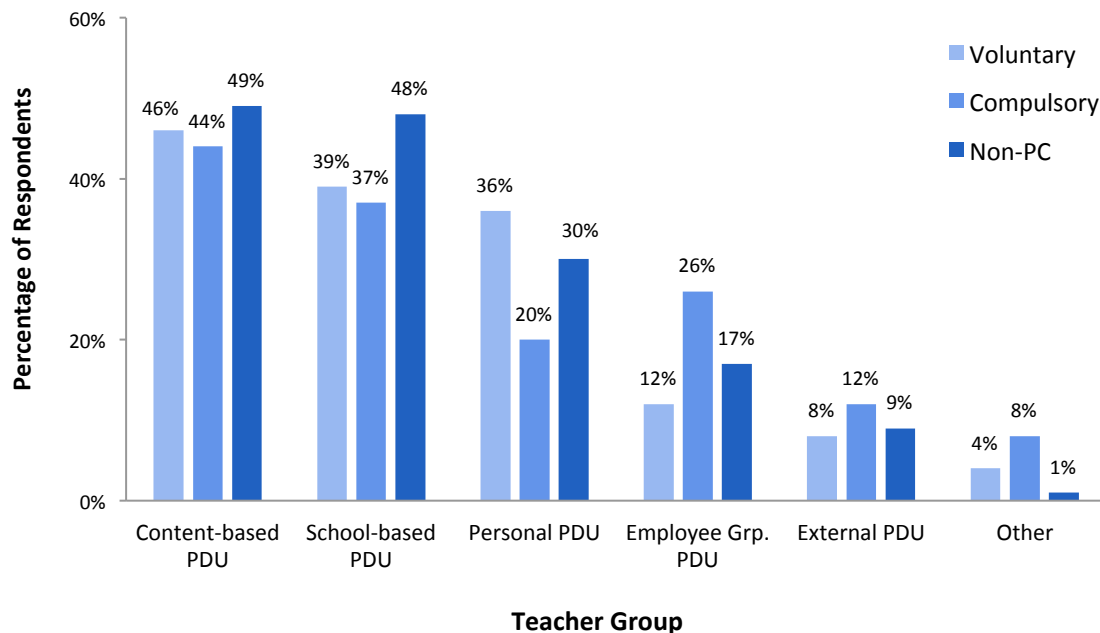
A DPS administrator who was also a member of the ProComp Team explained the history of the PDU incentive in an interview conducted during the 2008-2009 school year. According to him/her, PDU approved offerings follow a “1, 2, 3” sequence consisting of study, implementation, and reflection with a minimum time expectation of 45 clock hours. The administrator emphasized that PDU learning experiences are meant to involve action research

and true implementation. A teacher engaged in a PDU course should continuously engage in reflection, collaboration, and artifact collection, resulting in a work sample that shows *“not just what the teacher learns, but what impact it had on students.”*

It should be noted that DPS still offers and, in some instances, requires teachers to participate in professional development that is not eligible for earning a PDU incentive. Additionally, schools provide professional development apart from what they may elect to do as a school-based PDU course. Both ProComp and Non-ProComp teachers have the opportunity to participate in PDU courses. ProComp teachers may earn an incentive by completing the requirements, while Non-ProComp teachers may earn professional development credits or university credits applicable for re-licensure or, in some cases, advancement on the traditional salary schedule. In 2009-10 the amount of the PDU incentive was \$751. A teacher may only be paid for one PDU course each year. Additional PDU incentives that are earned may be banked for payment in future years. This element is base building for teachers up to year 14 and a non-base building bonus for those with more years of experience (prior to 2008-09 this incentive was base-building for all teachers).

#### *Teacher participation in different types of PDU learning experiences*

The data reported in Chapter 2 indicated that between 45% and 61% of ProComp teachers earned a PDU incentive annually from 2006-07 through 2009-10. To examine who participates in different types of PDU learning experiences, survey responses of teachers were analyzed based on groupings of who opted into ProComp (Voluntary), new teachers employed by DPS after ProComp was implemented (Compulsory), and Non-ProComp teachers. The majority of ProComp teachers (89% Voluntary and 87% Compulsory) reported they had completed or were currently completing a PDU learning experience at the time of the survey. Over half of the Non-ProComp teachers (57%) had or were completing a PDU learning experience. As shown in Exhibit 19, district-sponsored content-based PDU courses were the type most frequently taken by all groups of teachers.

**Exhibit 19. Percentage of Teachers Participating in PDU Learning Experiences by Type and ProComp Status**

Voluntary ProComp and Non-ProComp teachers (those with more years of DPS teaching experience) participated in more personal or small group PDU learning experiences; this may be because the personal and small group PDUs studies were the first type offered when ProComp was implemented. In contrast, Compulsory ProComp teachers, who by definition have fewer years of DPS experience, took more PDU courses designated for specific employee groups; this may be associated with the required Induction training and PDU courses related to alternative licensure programs (TFA, TIR, and DTF). Overall, district-sponsored and school-based PDU courses were by far the most commonly taken.

#### *Knowledge and understanding of PDUs*

Survey findings presented in Chapter 3 indicated the majority of ProComp teachers (81%) reported they understood the requirements for earning the PDU incentive. A majority of principals also considered themselves to be knowledgeable about the PDU element, with 66% indicating they were comfortable explaining the PDU element to a teacher. Additionally, most principals indicated they understand what is required for teachers to complete a PDU learning experience (70%).

A somewhat different picture emerged during interviews with teachers and principals. Among 167 interview and focus groups sources who commented on the PDU element, 16% (21 ProComp teachers, 4 Non-ProComp teachers, and 2 administrators) made comments expressing confusion or misunderstanding related to earning PDUs. They reported confusion about procedures related to PDU learning experiences and, in some cases, a lack of understanding or belief in the philosophy and vision behind this type of professional development. Some interviewees were unable to differentiate PDU courses from other types of professional

development, and other interviewees expressed interest in completing a self-directed PDU study but reported they did not understand the process. There was considerable confusion about PDU requirements and compensation. Newer teachers were more likely to report feeling overwhelmed by teaching and unable to find time to clarify their understanding of the PDU element. During site visits, evaluators were asked many questions about procedures, rules, and how to access information about PDU learning opportunities. During focus groups, as teachers discussed the PDU element, evaluators recognized some information they were sharing with each other was incorrect or incomplete.

While survey data indicated that teachers and principals reported they understand the requirements for earning a PDU, interview data suggested there was confusion and misunderstanding among at least some teachers and school administrators. The theory of change suggests that for this element to be motivating and achieve the intended results, teachers need to understand what is required to earn the incentive.

#### *Perceptions regarding the implementation of PDU learning experiences*

In order for the PDU element to achieve the desired results, activities outlined in the PDU specific theory of change need to occur. The survey included four items that related to these activities which were combined to create a PDU Experience subscale. Since both ProComp and Non-ProComp teachers can participate in PDU learning experiences, the opinions of both groups of teachers were considered. Analyses of subscale results indicated that ProComp teachers, as a group, tended to be slightly positive in their attitudes towards PDU learning experiences (see Exhibit 20). Compared with Non-ProComp teachers, ProComp teachers' responses for each of the items were more positive (though differences were small). On the overall PDU Experience subscale, differences were evident in the responses of ProComp and Non-ProComp teachers ( $t(588) = 3.60, p = .01$ , a medium-size difference,  $d = .40$ ). On average, ProComp teachers' tended to agree that their school aligned PDU courses with the School Improvement Plan (SIP), while Non-ProComp teachers were neutral. Both ProComp and Non-ProComp teachers gave positive ratings regarding PDU course instructors holding them accountable for accomplishing each part of the PDU course process, but both groups were neutral about their principal/supervisor encouraging them to use PDU courses for professional learning.

The principal survey included items comparable to the teacher survey plus three additional items focused on the principal's understanding and involvement in PDU courses. On average, principals' responses were positive, and the mean for principals on the PDU Experience subscale was comparable to ProComp teachers. Interestingly, principals tended to agree that they encouraged teachers to take PDU courses, but they were neutral regarding PDU instructors holding teachers accountable, views which were somewhat opposite to those held by teachers. Principals expressed positive views that their school tries to align their PDU courses with their SIP, but they were neutral regarding working with teachers to create school-based PDU studies.

**Exhibit 20. Comparison of Perceptions of the PDU Learning Experience by ProComp Status**

Survey Content	ProComp Teachers <sup>a</sup>		Non-ProComp Teachers <sup>a</sup>		Principals <sup>b</sup>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
The PDU process focuses me on positively improving my practice.	3.80	.87	3.48	.96	3.69	.78
At my school we try to align our PDUs with our School Improvement Plan (SIP) goals.	3.58	.98	3.23	1.08	3.57	.96
My principal/supervisor encourages me to use PDUs as professional learning opportunities.	3.46	1.00	3.19	1.05	3.89	.78
The PDU instructor(s) hold us accountable for accomplishing each part of the PDU.	3.84	.90	3.58	.93	3.48	.84
I understand what is required for my teachers to complete a PDU.	NA	NA	NA	NA	3.61	.93
I am working (or have worked) with my teachers to create school-based PDUs.	NA	NA	NA	NA	3.40	1.07
I see evidence of what teachers are learning in PDUs in their classroom practices.	NA	NA	NA	NA	3.50	.90
<b>PDU Experience Subscale.</b>	3.64	.76	3.33	.83	3.59	.69

Note: Items were measured on a 5-point scale with 1 = strongly disagree and 5 = strongly agree.

<sup>a</sup> Data are based on analyses using weighted data for individual survey items and unweighted data for the PDU Fidelity of Implementation subscale.

<sup>b</sup> Principal items were worded in terms of their teachers.

The structure for PDU learning opportunities includes components requiring reflection, documentation, and sharing. Nineteen percent (19%) of the sources (13 ProComp and 2 Non-ProComp teachers) who commented during interviews on the reflection component of PDU courses expressed mixed opinions. A few teachers spoke positively about it, noting that reflection improved their practice; other teachers equated the reflection piece with time-consuming “paperwork.” The final PDU course session is intended to be a celebration and sharing of learning among course participants, representatives from the ProComp Office, and other colleagues. Opinions about the usefulness of these sharing sessions also varied among the ten sources (8 Pro Comp teachers, 2 Non-ProComp teachers, and 1 administrator) who mentioned it; some teachers found it valuable, while others indicated it was less valuable. Teachers at two schools who participated in district PDU courses reported they shared their learning with the rest of their schools’ faculty.

On the general open-ended survey item, PDUs were one of the most commonly mentioned topics (approximately 17% of the comments). The most frequent comments about the PDU element indicated that teachers felt PDU courses required considerable additional effort for little financial reward, that PDU courses should be better differentiated based on teachers' level of experience, and should include content more directly applicable to the classroom.

While examination of the implementation of PDU courses and their effects on teaching and learning was beyond the scope of the current evaluation study, survey and interview data provided insights into the implementation of the PDU element. Overall these data suggested that opinions are mixed, which may be a reflection of differences in implementation or quality of various PDU learning experiences. This will be further explored in the next section.

#### *Quality, rigor, and difficulty of PDU learning experiences*

In general, interview data indicated teachers believed there were variations in the quality and rigor of PDU learning experiences. Among the interview and focus group sources who commented on PDU courses ( $n = 166$ ), 11% (12 ProComp teachers, 5 Non-ProComp teachers, and 1 administrator) focused on the subject of consistency. Many teachers reported that the requirements for the different types of PDU learning experiences (district, school-based, or individual/small-group) varied, as did the quality and rigor of specific PDU courses within the three types. In general, teachers indicated individual/small-group PDU studies required the greatest amount of time and effort.

In terms of district PDU courses, the difficulty, quality, and expectations reportedly varied depending on the particular course. One teacher noted that, when signing up for district PDU courses, one “*never know[s] what to expect.*” Participants in a focus group at one school suggested they would appreciate an online PDU course rating system so that they would have a better sense ahead of time of which courses were worthwhile. Twenty-one percent (21%) of interview and focus group sources (18 teachers and three administrators) who commented on the PDU element made positive statements regarding participation in district, school, or self-directed PDU learning experiences related to using data to inform instruction; although some noted that these PDU learning experiences were more difficult than others.

### ***What are teacher and principal attitudes regarding PDUs?***

#### *Motivational effects of PDUs*

For the PDU element to have the intended result of improving instructional practice, enhancing professional growth, and ultimately increasing student achievement, teachers need to be motivated to participate in PDU learning experiences. As discussed in Chapter 3, survey data indicated ProComp teachers believed the PDU incentive had the potential to motivate teachers to improve instructional practice (75%); principals held similar views. Among ProComp teachers who commented on motivation in interviews and focus groups ( $n = 135$ ), 15% believed the PDU incentive motivated them to complete PDU learning experiences. Most did not give an opinion as to whether the PDU learning experiences motivated them to improve their practice. Some said the incentive served as a secondary motivation for participating in PDU courses, along with



the desire to learn and improve practice, as evidenced in this teacher comment: *"I'm doing [PDU's] to learn, but there's the incentive that I'll get paid for my time as well."* An experienced teacher said the structure of PDU courses motivated him/her to take classes that were more likely to inform his/her instruction rather than just taking classes that sounded interesting, which was what s/he had previously done. Another teacher said the incentive made him/her more motivated to attend every class, even when s/he is *"tired and want[s] to skip out."*

Five percent (5%) of ProComp teachers commenting on motivation did *not* think the PDU incentive was motivating. Among these, five teachers reported the PDU incentive was not motivating because of the small bonus amount or the fact that the incentive was not base-building for teachers with more than 14 years of experience. One of these teachers who was not taking additional PDU courses even though previous ones had been worthwhile remarked,

The PDU process was really good, but time is more valuable than what the bonus pays. Other than not being base-building, I feel very supported. I would have done more if the base building was still there.

An experienced teacher who was not eligible to earn a base-building bonus for a PDU noted,

At this stage in my career, I will take classes to help me grow as a professional, but not for the \$800. If it was going toward my salary, it might make me think twice about doing it.

Of the remaining two teachers, one new teacher reported s/he was already required by the school and district to participate in PDU courses, making the financial incentive *"a bureaucratic technicality rather than a drive."* An experienced teacher expressed a similar viewpoint when s/he said that s/he had always participated in professional development, even before ProComp.

When discussing motivation, administrators from three schools (of 16 in the sample) mentioned PDUs. At one of these schools, both the principal and assistant principal indicated that they felt teachers were more motivated to take PDU courses because of the incentive. This principal said *"[ProComp is motivating] to a certain extent, especially PDUs. I just talked to a teacher who may take a PDU this summer that she may not have taken without the incentive."* A principal at the second school thought that earning PDUs served as "dual motivation" for teachers: to improve practice and to earn money. However, when asked about the PDU element, one principal remarked that the incentive *"...didn't affect teachers' willingness or interest in professional development."*

Eighteen Non-ProComp teachers discussed professional development. Some took university classes or participated in PDU courses without completing the required components for PDU credit. Some of these teachers were motivated to take university classes by the salary increase while others said they participated in professional development solely to learn and develop as teachers.

The survey and interview data suggested that about three-fourths of teachers thought the PDU element was motivating. Some were motivated by the financial incentive and others by the desire to learn and improve their craft. Among those who did not consider the PDU element to be motivating, teachers discussed the size of the incentive relative to the amount of work required to earn it and the fact that the incentive was not salary base-building for teachers with more than 14 years of experience. The theory of change for ProComp asserts that for the PDU to have the intended effects on instructional practice, professional growth, and student achievement, it needs to motivate teachers. If the PDU element is not motivating for a quarter of the ProComp teachers, this could lessen the potential effects of this element.

### ***What are teacher and principal attitudes about different types of PDU learning experiences?***

As previously discussed, teachers indicated there were differences among PDU courses with respect to quality, relevance to what they were teaching, differentiation to address various levels of experience, rigor, and difficulty. In this section, data relative to differences in perceptions of the three general types of PDU learning experiences (district-sponsored, personal, and school-based) are examined.

#### *District-sponsored PDU courses*

Survey results indicated more teachers had participated in district-sponsored PDU courses than other types. Some district-sponsored PDU courses are part of large-scale district endeavors to implement new curricular programs or train large groups of teachers to implement particular instructional strategies. Other district-sponsored PDU courses are geared to specific topics (such as discipline or suicide prevention), or related to training for specific employee groups such as new teachers or teachers enrolled in alternative licensure programs (e.g., TFA, TIR, DTF). Overall, 30% of interviews and focus group sources which discussed the PDU element ( $n = 166$ ) focused on district-sponsored PDU courses (37 ProComp, 9 Non-ProComp, and 3 administrators). Most comments were positive and described specific PDU courses as worthwhile, though a few teachers reported the district PDU courses were low quality and had poor instructors. Eight ProComp teachers and three Non-ProComp teachers commented that some district professional development and PDU courses were held during the school day, requiring teachers to get substitute teachers in order to attend. Several teachers were critical of this practice, since they considered it to have a negative impact on student learning.

**Large Scale District Training:** There were 31 interview and focus group sources (20 ProComp teachers, 7 Non-ProComp teachers, and 4 administrators) who mentioned “Core Matters” – a large-scale district professional development and school reform effort to increase student achievement by building a school-wide vision for literacy and a continuum of intervention strategies. Teachers varied in their opinions of whether participation in this professional development effort earned them PDU credit. The majority of teachers, particularly new teachers and those teaching at the elementary level, reported the “Core Matters” course was helpful, with some saying it was the best course in their experience. Experienced teachers commented

that the PDU courses offered at the district level (including “Core Matters”) tended to be too basic for them. They suggested having differentiated PDU courses that would allow them to advance their teaching to the next level.

Teachers reported mixed views on the quality and helpfulness of ELA PDU training. Starting with the 2010-11 school year this training was no longer offered for PDU credit, but it is still a required training for teachers in ELA classrooms.

**Content-based PDUs:** Eleven percent (11%) of the interview and focus group sources (13 ProComp teachers, 4 Non-ProComp teachers, and 1 administrator) mentioned PDU courses designed to familiarize teachers with new curricula. The majority felt these PDU courses were useful. Teachers working at a school with a specific curricular focus (e.g., International Baccalaureate) tended to find the content-related PDU courses helpful. Teachers participating in content-area PDU courses, such as those offered for Art, Physical Education, or Early Childhood Education, reported them to be beneficial. The majority of comments (15 of 19 sources) related to content-area PDU courses were positive; teachers appreciated the opportunity to network and collaborate with teachers in their discipline across the district and spoke highly of their PDU course instructors.

**PDU Courses for Specific Employee Groups:** Some of the courses related to alternative licensure programs (including TFA, TIR, and DTF) are offered for PDU credit. Although only nine teachers in the sample identified themselves as alternative-route teachers, these TFA and TIR teachers spoke favorably about the PDU courses they had participated in through their alternative licensure programs.

#### *Personal PDU studies*

Among the 20% of the interview and focus group sources (25 ProComp teachers, 2 Non-ProComp teachers, and 6 administrators) who discussed personal PDU studies, eight ProComp teachers found the time and effort worthwhile and believed that self-directed PDU learning experiences were extremely relevant, since they are specifically created to meet the teacher’s own needs. One administrator noted, “*We’ve tried to help our teachers by writing our own PDUs so that they’re more job-embedded, which makes it much better.*” Five ProComp teachers regarded personal PDU studies as challenging and requiring a significant amount of time and effort. Two teachers who completed personal PDU studies in the past decided not to participate in future ones because of the time commitment required. Five other teachers commented on the difficulty in the application process. Only two Non-ProComp teachers mentioned this type of PDU learning experience, and both expressed a lack of understanding of the process.

Some teachers and administrators regarded the written application and approval process for individual/small group PDU studies as lengthy and time consuming. Staff members at some schools shared ways they helped to ease what they regarded as “the burden” on teachers. At one school, the principal explained s/he completes the PDU form for teachers so that they could spend time on the PDU learning experience itself, rather than on fulfilling paperwork requirements. At another school, teacher-leaders wrote job-embedded PDU studies for the

newer teachers to lessen their burden. Individual/small group PDU learning experiences are one way school-based PDU courses are created. These are discussed in the following section.

#### *School-based PDU learning experiences*

At 11 of the 16 schools where interviews were conducted, teachers were currently or had previously participated in a school-based PDU courses. Some of these were small group PDU studies with a small number of participants, whereas others were school-wide PDU courses offered to the entire staff. Interview comments related specifically to the school-based PDU courses were generally positive. Teachers working with data in Professional Learning Communities (PLCs) at their schools were very positive about this process, and other teachers spoke positively about data teams and the benefit of *“getting credit for work I am already doing”*. Teachers also appreciated the convenience of not having to travel to attend a class.

Teachers reported they liked having the ability to participate in PDU courses at their schools because they felt the content was relevant. One teacher in an instructional leader focus group remarked, *“The [PDU] we’ve done here was much better because we talked about it and could go back and forth about what we learned. It makes you apply what you learned more.”* Another teacher commented on a PDU course based on a Regie Routman book on writing instruction, *“[We had] a chance to talk about kids in relation to what [we were] learning”*, saying that they valued it as a *“vertical part of planning”* and wished the *“whole school would get in on it.”* One teacher made a distinction between professional development courses and school-based PDU courses, remarking:

*I like that you can tailor them to what you need. That is more helpful than in a professional development course. [The professional development courses] tell you to differentiate for your students, but they don’t differentiate for the teachers. We have our own PDUs tailored and [they are] much more beneficial.*

Most principals who had experienced school-based PDU courses felt they had a positive potential for improving instruction. One principal noted that his/her school had seen an impact from a school-based PDU course called “Every Child a Writer” that resulted in changes in instruction and an increase in writing scores. The few principals who expressed negativity felt that school-based PDU courses created too much work for them, or that offering a variety of PDU studies did not provide sufficient common focus.

#### ***What is the relationship between PDU learning experiences and improved instructional practice?***

As discussed in Chapter 3, survey data indicated ProComp teachers believed the PDU incentive could help educators increase their professional growth (82%) and increase student achievement (60%); principals held similar opinions. The majority of ProComp teachers (76%) and principals (67%) agreed that the PDU process helped focus teachers on improving their practice in a positive way. In interviews and focus groups 19% of sources (22 ProComp teachers, 4 Non-ProComp teachers, and 6 administrators) reported they implemented what they learned

through a PDU learning experience, and described the changes they made in their instruction or classroom. As one middle school math teacher said,

One example is creating our own “Math Matters” for 6<sup>th</sup> to 8<sup>th</sup> grades, created by our own math team. We decided what would be best for us: redesigned Essential Learning Goals (ELGs), decided all the things that the kids needed to learn, designed mini-benchmarks (checkpoints), and determined how to use technology in the classroom to increase math fluency. There has been a definite impact on outcomes such as, student confidence, completed ELGs, or just watching them and how excited they are. They know how to attack the math; they are not afraid of math or angry at it. Consistency across grade levels: there is a connection between math concepts from 6th to 8th grade.

A secondary teacher described several PDU course experiences, including one on teaching literacy to Spanish speakers that s/he found particularly helpful. S/he commented,

*Each class in the PDU brought in a wealth of practical lesson plans. It was a great unit, we learned real practical stuff. This is my notebook, and I have all kinds of things that I can apply to anything I’m teaching.*

Several other teachers echoed this sentiment, noting they were now engaged in practical, implementable professional development. One teacher remarked, “... *the more relevant you make it for you, the better it is. The objective should be to implement it...*”

On the survey, 60% of principals agreed teachers put into practice what they learned in PDU courses into practice. During interviews, principal described somewhat mixed perceptions of PDU course implementation in the classroom; comments ranged from principals saying they had observed teachers implement what they were learning in PDU courses, to those who wondered if PDU learning experiences were useful and being implemented. Principals who said they were familiar with and involved in the PDU process tended to view the PDU learning experiences more positively.

## Discussion

**All teachers participate in PDU experiences, but ProComp teachers are somewhat more likely to participate.** Participation in PDU learning experiences is not unique to ProComp teachers, as they are also open to Non-ProComp teachers who may take them for in-service or college credit. Both ProComp and Non-ProComp teachers reported taking PDU courses, though the proportion is considerably higher for ProComp teachers. Across all teachers, the PDU courses which were taken most frequently were those sponsored by central departments and schools.

**There was a considerable amount of misunderstanding regarding the PDU element among teachers and principals.** The opportunity to earn PDUs is intended to motivate teachers to pursue professional learning that will result in their enhanced professional growth, improved

instructional practices, and, ultimately, increased student achievement. The interviews with principals and teachers revealed a considerable amount of misinformation or lack of information among teachers related to earning PDUs. In order for the PDU element to fulfill the original intent, teachers need a clear understanding of the process and the philosophy behind the PDU type of learning experience in contrast to other forms of professional development.

**Teachers felt that PDU courses tended to vary in both quality and rigor.** This perceived variability occurs even though there is a process in DPS for approving PDU courses based on specific criteria from the District's adaptation of the National Staff Development Council's principles for effective professional learning. In order to best help teachers achieve professional growth and improve instructional practices, courses approved for PDU credit should meet minimum standards for quality and rigor. There is already a course evaluation process in place for PDU courses, and it may be beneficial to capitalize on the information this provides in order to ensure that various course strands are being implemented in a way that meets teacher needs. Monitoring is critical to ensure that PDU courses are providing high quality and rigorous professional learning.

**Teachers see more value in PDU courses that are more closely related to their personal context.** The data suggested that teachers felt they learned more from PDU courses that were related to their personal classroom context, as they were better able to implement their learnings from these courses into their classrooms. PDU courses that had this characteristic were those where participants were connected by a similar content (e.g., art, new math curriculum), employee group membership (e.g., TFA, TIR), or school. These types of PDU courses appear to meet two of the NSCD standards adopted by DPS—learning that is job-embedded, and that which is built around a community of practice. There was some evidence that teachers may find school-based PDU courses more effective than those they take individually; this may be true regardless of whether the PDU courses were self-developed by the school or were a pre-approved course.

**There is a discrepancy between teacher and principal perceptions of the PDU element as an effective strategy, and the findings from the value-added analysis of student achievement discussed in Chapter 10.** The value-added analysis indicates that earning the PDU incentive does not have an impact on teacher effectiveness as measured by value-added analysis of student achievement data.<sup>26</sup> The diverse nature of the PDU learning content that may not be related to reading and math achievement measured by CSAP tests and the variation in quality and rigor among PDU courses may contribute to these results. Although professional development of various sorts is a common foundation of many reform efforts, it is not clear that such training has a considerable impact on student achievement.

Changes that may address some of the issues raised here and capitalize on strengths of the PDU element have already been implemented by DPS. For the 2010-2011 school year, DPS revamped the PDU element; there are now three options for earning a PDU: 1) school sponsored courses,

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<sup>26</sup> The data used in the analysis did not allow for separating the effects of the different types of PDUs.

2) personal/small group studies, and 3) a central office department PDU course. The Office of Teaching, Learning, and Leadership staff developed Pedagogical Content Knowledge (PCK) Intensives that are designed to provide 100 schools with support in sponsoring a school-wide pre-approved PDU courses. Although there is central support for PCK intensives, these are school-based PDU courses. Another change to the PDU element is minimizing the importance of district-based PDU courses except in content areas such as visual/performing arts, library science, physical education, and Student Services (DPS Teaching, Learning, and Leadership, 2010). These changes may build on the potential value many principals saw in school-based PDU courses while preserving the positive benefits that specialized content area teachers valued in centrally sponsored PDU courses. The fact that the PCK intensives and central PDU courses are pre-approved should also reduce the paper work which has been required in the past. Preserving the personal/small group PDU as an option honors those who value this type of learning opportunity.

To ensure maximum rigor and quality of PDU learning experiences, DPS should consider reviewing the approval process for PDU courses and engage in on-going data collection regarding their usefulness, rigor, and quality from the perspective of teacher participants. As part of this, it may be useful to assess sometime in the future whether the changes to the PDU element that occurred in 2010-11 have increased quality, rigor, and consistency, changed perceptions, and impacted student achievement in a positive manner.

## Chapter 5: Advanced Degrees/Licenses and Tuition/Student Loan Reimbursement

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*Prepared by: Diane Proctor*

ProComp includes two other Knowledge and Skills Elements in addition to PDUs —Advanced Degrees/Licenses and Tuition/Student Loan Reimbursement. The Advanced Degrees/Licenses incentive is the element that is most similar to the traditional salary schedule, as both compensation systems provide an incentive for master’s and doctorate degrees. The traditional salary schedule provides salary advancement for additional credit hours earned beyond the master’s degree, whereas ProComp only recognizes complete earned degrees. A teacher who voluntarily joins ProComp transfers at his/her current salary on the traditional salary schedule, so they are given credit for prior degrees and credit hours. Once in ProComp, teachers may earn a base-building salary increase of \$3,380<sup>27</sup> once every three years for a new master’s or doctoral degree. Degrees must be from an accredited college or university, and may not be degrees in theology or law. Appropriate proof of degree completion must be submitted to receive the salary increase.

In addition to providing an incentive for advanced degrees, ProComp also provides an equivalent incentive for Advanced Licenses and Certificates. DPS has a list of licenses and certificates that have been reviewed and approved based on a set of criteria related to rigor and high expectations for advanced credentialing that exceed entry level requirements of the Colorado Department of Education and DPS. These include licenses such as National Board for Professional Teaching Standards (NBPTS), Certificate of Clinical Competence for speech language pathologists and audiologists, National Certificate in School Psychology (NCSP), Licensed Clinical Social Worker (DORA), and School Nurse Practitioner Certification (SNP). Additional endorsements on a teaching license do not qualify as an advanced license. A teacher can only receive the Advanced Degree/License incentive every three years for a new degree or a professional license.

The Tuition/Student Loan Reimbursement does not operate in the same way as other incentives, where teachers are expected to accomplish something to receive the incentive. Instead, this incentive repays teachers for expenditures for past education or professional training. The Tuition/Student Loan reimbursement incentive reimburses teachers up to \$1,000 annually (with a lifetime maximum of \$4,000) for preapproved graduate level courses from an accredited college or university, continuing education courses, seminars, workshops, and conferences, National Board Certification courses and fees, and books for classes. Starting with the 2008 Agreement, outstanding loan balances for student loans are also eligible for reimbursement. The 2008 Agreement also increased the lifetime maximum for this incentive from \$1,000 to \$4,000 for either tuition or student loan reimbursement.

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<sup>27</sup> This is the 2009-10 amount.



Advanced Degrees/Licenses, like PDU learning experiences, are expected to increase student achievement through the improvement of instructional practices. For the Advanced Degrees/Licenses element to work there should be:

- Knowledge and understanding of the availability of the incentive and requirements for earning the incentive
- Motivation to pursue the degree/licensure requirements and earn the incentive
- Rigorous degree content or licensure activities leading to instructional improvement and student learning

A model of how this incentive is intended to work is depicted in the Advanced/Degrees/Licenses specific theory of action model presented below.

Enabling Conditions	Activities	Intermediate Outcomes	Results
ProComp Agreement (Motivational Goal, Knowledge and Skills ProComp Component)  DPS Requirements for Advanced Degrees/Licenses  Degree and licensure programs that lead to improved practice  Culture that supports and values increased professional learning	Teachers take courses and/or engage in activities required for advanced licenses  Teachers complete degree/ licensure	Teachers improve instructional practices  Teachers achieve professional growth  More students benefit (increase learning) from improved instructional practices  More teachers increase compensation	DPS student achievement increases <ul style="list-style-type: none"> <li>- Growth</li> <li>- Status</li> </ul>

Although the Tuition/Student Loan Reimbursement incentive is not included in this model, it is possible that this incentive may increase the motivational potential for teachers to pursue an advanced degree or license knowing that some of their costs can be reimbursed. This model provides a basic framework for examining teachers and principal's thoughts and attitudes about Advanced Degrees/Licenses and Tuition/Student Loan Reimbursement elements.

Two data sources were used for the Advance Degrees/Licenses and Tuition/Student Loan Reimbursement analyses, the teacher and principal surveys, and interviews with teachers and school administrators.

## Findings

The data reported in Chapter 2 indicated that between 7% and 8% (80 to 250 teachers per year) of ProComp teachers earned an Advanced Degree/License incentive annually between the years 2006-07 through 2009-10. During this time period, this ProComp incentive was one of the least frequently earned. A few teachers remarked in interviews that they either had waited, or were waiting, to join ProComp until they had first received the additional credit hour increases on the traditional salary schedule.

The Tuition/Student Loan reimbursement was paid to between 5% and 24% of ProComp participants annually between 2005-06 and 2009-10. There was a 10% jump in teachers earning this incentive between 2008-09 and 2009-10, which may be related to 2008 changes which increased the base amount available and extended its use to include student loan reimbursement.

For the Advanced Degrees/Licenses incentive to work in the intended manner to motivate teachers to gain new knowledge and skills to improve their instructional practices and increase their professional growth, teachers need to know about and understand how to earn this incentive. On the survey, the majority of teachers (82% Voluntary ProComp, 70% Compulsory ProComp, and 74% Non-ProComp) indicated they understood the Advanced Degrees/Licenses incentive's requirements. Sixty-three percent (63%) of the principals indicated they would be comfortable explaining this element to a teacher.

Survey data indicated that 79% of ProComp teachers, 64% of Non-ProComp teachers, and 65% of administrators thought the Advanced Degrees/Licenses incentive would motivate teachers to seek advanced degrees/licenses as a means of improving their instructional practices. Similarly, 85% of ProComp teachers, 73% of Non-ProComp teachers, and 74% of administrators believed this incentive would help teachers increase their professional growth. The Advanced Degrees/Licenses element was one of the two elements which all groups regarded as having the potential to impact instructional practices and professional growth. Fewer teachers (61% ProComp and 42% Non-ProComp) and administrators (52%) felt this incentive would result in increased student achievement.

Very few interview comments mentioned Advanced Degrees/Licenses or Tuition/Student Loan reimbursement. No administrators discussed these particular ProComp elements. Among ProComp teachers there were a total of 17 comments regarding these two elements. Four teachers remarked that they appreciated receiving the tuition/student loan reimbursement, but they did not link it to motivation. This may have been a function of the payment being related to something they had already done. In one new teacher focus group, there was considerable confusion regarding what qualified for reimbursement. Two teachers mentioned that these incentives would enable them to take advanced course work (though they were not currently doing so). Another teacher said s/he was motivated to maintain an advanced license through continuous coursework, but noted s/he would do this regardless of ProComp.

Five teachers indicated that ProComp motivated them to pursue advanced degrees. One of these teachers remarked, *“I think that a new teacher would have an incentive to go back to school.”* Another credited the availability of the Tuition/Student Loan Reimbursement and the Advanced Degree/License incentives for continuing to work in DPS. However, two experienced teachers felt that ProComp did not place much value on advanced degrees, noting there is no additional incentive for credits earned beyond a master’s degree as are possible on the traditional salary schedule.

Two Non-ProComp teachers said the traditional salary schedule’s incentive for advanced degrees motivated them to pursue advanced degrees. A third noted that teachers on the traditional schedule with more than fifteen years of experience do not have much incentive to pursue advanced course work.

Although not explicitly asked, more Non-ProComp ( $n=5$ ) than ProComp ( $n=1$ ) teachers commented on the impact of advanced degrees and licenses on their instructional or professional practices. Both a ProComp and Non-ProComp teacher commented favorably about courses related to an advanced license and National Board Certification. Two Non-ProComp teachers reported that their advanced degrees helped their instructional practice, while two indicated there was no impact, and the aspect of increased salary had been more important to them than professional learning. The results of value-added analysis discussed in Chapter 10 indicated that the effect on earning an incentive for an advanced degree was positive, but not statistically significant. This may be due in part to the small number of teachers in the achievement analysis (only 3%) who had earned the incentive in the prior year. There were too few teachers who earned an incentive for an advanced license to be able to analyze the data.

## Discussion

**Teachers like receiving these incentives, but there is limited evidence that they led to changes in instructional practice or improved student CSAP achievement.** Overall, teachers had positive attitudes towards the Advanced Degrees/Licenses and Tuition/Student Loan Reimbursement components of ProComp. Teachers tended to have a moderate knowledge regarding the requirements associated with these two ProComp elements and said that they were motivated to pursue advanced training opportunities. A majority of teachers and principals tended to believe that the incentives provided motivation to pursue these additional qualifications, and expressed the belief that these incentives would help teachers improve instructional practice. However, there was limited evidence that these incentives led to improved instructional practice or improved student CSAP achievement. One of many possible explanations is that the number of teachers included in the analyses was too small to adequately test for the effect on student achievement. Additionally, teachers are eligible for the incentive regardless of the area in which they pursue their master’s or doctorate degree (with the exception of theology and law). The result is that a teacher’s improved content or pedagogical knowledge may not be closely aligned with his/her current work assignment, and therefore would be unlikely to impact

teaching practices or student achievement. Rewarding teachers for receiving advanced degrees in subject areas in which they teach or are likely to teach (e.g., math, science, English) may be more likely to improve instructional practice.

**Compared with other incentives, fewer teachers have received the Advanced Degrees/Licenses incentive.** This may be due to a variety of factors, one of which may be that Voluntary ProComp teachers could have already earned a salary increase for an advanced degree while they were still on the traditional salary schedule. Unless these ProComp teachers wished to earn a new master's degree, doctorate, or an advanced license/certificate, then they would be unable to earn this incentive. Compulsory ProComp teachers (who are generally newer to the profession<sup>28</sup>), are in the best position to take advantage of this incentive. Other factors that may limit the use of this incentive are money, time, and the commitment required to pursue an advanced degree or license. In addition, this incentive cannot be earned until the degree or license is awarded, and it is unclear how many teachers may currently be in the process of pursuing degrees or licenses.

**The Tuition/Student Loan reimbursement element was paid to a much larger proportion of teachers in 2008-09 and 2009-10 than in prior years.** This may partly be a function of changes in this incentive that were part of the 2008 Agreement—the lifetime total amount for this incentive was increased from \$1,000 to \$4,000, and unpaid student loan balances became eligible for reimbursement. Newer teachers may be using this money to repay undergraduate student loans or tuition for courses taken in pursuit of an advanced degree/license. More experienced teachers may be using this incentive for a variety of purposes including additional course work, preapproved professional workshops and other learning opportunities, or an advanced degree/license. It is possible that this element may function to increase the motivation for teachers to pursue an advanced degree or license, since some of the costs can be reimbursed (though teachers may balance the total cost of beginning such a program with the proportion they will be reimbursed).

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<sup>28</sup> Some experienced teachers who are new to the DPS system are in the Compulsory ProComp category.

## Chapter 6: Comprehensive Professional Evaluation

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*Prepared by: Diane Proctor*

Professional evaluation is required by Colorado law and is an integral part of the educational system. ProComp includes an incentive for participating teachers who achieve a satisfactory rating on their Comprehensive Professional Evaluation (CPE). Although the requirements are the same, the payment schedule differs for teachers depending on whether they are Probationary, Non-Probationary, or Non-Probationary at an Innovation School.<sup>29</sup>

CPE incentives are intended to increase student achievement through the improvement of instructional practices and the professional growth of teachers. For the CPE component to work as intended there needs to be:

- Appropriate knowledge and understanding of the evaluation process and requirements for earning the incentive
- Motivation to fulfill the requirements for a satisfactory evaluation and earn the incentive
- Professional engagement in the evaluation process with the goal of instructional improvement and professional growth that will increase student learning.

A model of how this incentive is intended to work is depicted in the CPE specific theory of change presented below.

Inputs	Activities	Outputs	Intended Results
ProComp Agreement (Motivational Goal, CPE ProComp Component)	Teachers know about the evaluation process, requirements, and criteria for satisfactory performance	Teachers improve instructional practices	DPS student achievement increases
DPS Requirements for a satisfactory evaluation	Principals know about the evaluation process, requirements, and criteria for satisfactory performance	Teachers achieve professional growth	- Growth - Status
Culture that supports and values evaluation	Principals and teachers engage in the evaluation process	More students benefit (increase learning) from improved instructional practices	
		More teachers increase compensation	

<sup>29</sup> The CPE incentive is one of the four components of the ProComp system. The elements are slightly different for Probationary, Non-Probationary, and Innovation School teachers.

This model provides a basic framework for examining teachers and principal's opinions and attitudes about CPEs.

Three data sources were used to obtain information about CPEs: 1) teacher and principal surveys, 2) interviews with teachers and school administrators, and 3) key informant interviews.

## Findings

### ***What does CPE implementation look like?***

#### *Background of CPEs*

CPEs are required annually for teachers in their first three years (Probationary teachers) and every third year thereafter (Non-Probationary teachers). Although CPEs are done throughout a teacher's career, the incentive for CPEs is only available to teachers with 1 to 14 years of experience. Probationary teachers receive a base-building incentive payment of \$376 annually during each of their first three years, provided they receive a satisfactory evaluation. Non-probationary teachers receive a base building incentive of \$1,127 every third year when they receive a satisfactory evaluation (up through year 14). Teachers who have unsatisfactory evaluations cannot receive a CPE incentive; there may also be other consequences for an unsatisfactory evaluation which are outside the scope of ProComp. As reported in Chapter 1, the percentage of ProComp teachers who received a CPE incentive ranged from 56% to 69% annually from 2006-07 through 2009-10.

The 2004 Agreement (DPS and DCTA, 2004) charged the Teacher Evaluation Committee with the task of designing a new evaluation system that included the following specifications established by the Joint Task Force on Teacher Compensation:

- *Emphasizes inter-rater reliability*
- *Is based on a fall-to-spring evaluation cycle*
- *Uses well-developed rubrics articulating different levels of teacher performance*
- *Makes clear distinctions between professional evaluation and corrective action*
- *Incorporates formative and summative peer evaluation*
- *Incorporates peer assistance for teachers whose performance is found unsatisfactory*
- *Includes a component for a 30 to 90 day remediation plan*
- *Includes a development plan that begins concurrently with the 30 to 90 day remediation plan but runs a minimum of one year's length if the teacher is successful on the remediation plan.*

- *Allows for “special evaluation” should a teacher’s performance be identified as unsatisfactory in years out of the evaluation cycle*
- *Incorporates a self-evaluation component*

This evaluation system was adopted and used in DPS from 2006-07 through the 2010-11 school year.<sup>30</sup> Regardless of ProComp participation status, probationary teachers are formally evaluated by their school principal on a yearly basis, while non-probationary teachers are evaluated every three years.<sup>31</sup> After being observed, meeting with the principal, and presenting a body of evidence, a teacher is given a “Satisfactory” or “Unsatisfactory” evaluation by their principal/supervisor.

#### *Perceptions of the new evaluation system*

A community leader key informant indicated that one intent of ProComp was:

*...to start to develop an evaluation system that pertained more to what was going on in the classroom in teaching and learning as opposed to a teacher taking attendance every day or ... doing a certain number of after-school activities ... [or] whether they were dressed well or [other] activities that really were irrelevant to teaching and learning in the classroom.*

S/he recalled the development of the indicators for the new evaluation system as a “*thoughtful exercise*” that was “*very positive.*” S/he felt that one of ProComp’s significant contributions was the development of a more meaningful teacher evaluation system, and “*tying that meaningful evaluation to compensation*”. Another key informant involved in the development and early implementation of ProComp remarked that the old evaluation process lacked any sort of conversation, and simply included supervisors checking off a list for each teacher with regards to areas of professional growth, preparation, planning, and management. This respondent felt that an important by-product of the development of ProComp was the creation of a new evaluation system:

*[The new evaluations] were much more informative for me as the supervisor in terms of what teachers were doing. And the whole idea—and I love that idea of records of teaching—was very compelling because I think it really called on teachers to be responsible for their instruction and to really demonstrate...what [they were] doing.*

One ProComp teacher who participated in interviews had been on the committee that developed the evaluation system. S/he spoke of the improvements that had been made, saying:

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<sup>30</sup> The specific evaluation forms can be found at [http://hr.dpsk12.org/dcta\\_evaluation\\_forms](http://hr.dpsk12.org/dcta_evaluation_forms)

<sup>31</sup> In Innovation Schools the evaluation cycle may vary at the school’s discretion. The overall amount of the incentive is the same as for other teachers.

*...with the new evaluation system you are really required to have conversations about your practice with... an artifact called a record of teaching the teacher gets to choose.... It gives the teacher a chance to show that it was meaningful and... have a quality conversation with their administrator about what they do and how this effects student achievement.*

A teacher leader key informant described how the teacher evaluation system was also changed to be more specific for various positions. S/he noted that “...a specialist like nurse or social worker... will have their own independent professional evaluation system because the work they do is significantly different [from]... the regular classroom teacher.”

As a whole, these interviewees described a major shift in the evaluation system for teachers in DPS. This represented a changed in emphasis regarding the focus, the type of data considered, and the interaction between the teacher and administrator in the evaluation process.

#### *Knowledge and understanding of CPEs*

On the ProComp surveys, most teachers and administrators reported understanding the requirements for the CPE incentive (74% of Voluntary and 58% of Compulsory ProComp teachers, 74% on Non-ProComp teachers, and 58% of administrators). These represent somewhat moderate levels of understanding compared to the level of understanding of other ProComp elements by these groups of respondents.

Overall, 22% of the interview and focus group sources ( $n = 170$  sources) contained comments related to CPEs. Six of these comments expressed misunderstandings regarding the teacher evaluation system. For example, one experienced ProComp teacher did not know whether teachers got paid for a satisfactory evaluation. In the new teacher focus groups, several new teachers were not aware that evaluations affected pay. Two experienced teachers had the impression that ProComp gave principals more authority to use evaluations to reduce salaries<sup>32</sup> or dismiss teachers. While these comments were limited to a few teachers, they are indicative of some of the larger issues related to communication of accurate information about ProComp.

#### *Perceptions regarding the implementation of CPEs*

Survey data indicated that 56% of ProComp teachers agreed their most recent evaluation was conducted in a fair way compared with 41% of Non-ProComp teachers. With respect to their evaluations being based on sufficient/representative classroom observation data, 63% of ProComp teachers agreed in contrast to 46% of Non-ProComp teachers.

Responses of ProComp and Non-ProComp teachers were more similar with respect to other particular aspects of the CPE process. Sixty-six percent of ProComp teachers and 60% of Non-ProComp teachers indicated they collaborated with their principal/supervisor on the evidence to be included in their evaluation. The same level of agreement was expressed by both groups

<sup>32</sup> The 2004 Agreement did contain a provision for reducing salaries if a satisfactory evaluation was not maintained. This was changed in the 2008 Agreement to be no salary increase for an unsatisfactory evaluation.



(66% ProComp and 60% Non-ProComp) with regard to having a mid-year evaluation conference with their principal/supervisor for their most recent CPE.

Just over half (52%) of principal respondents indicated that the CPE process was manageable to complete, while about one-third (34%) disagreed. The majority of principals (64%) did not feel that ProComp changed their workload with respect to CPE's; however, 21% felt ProComp made it less difficult, and 16% felt it had made it more difficult. Most principals (74%) reported being comfortable with the demands on their knowledge and skills required by the CPE process. Nearly all principals (90%) indicated they conducted mid-year conferences with those teachers being evaluated, and collaborated with their staff on evidence to be included in the CPE, both required components of the CPE process. Interestingly, when asked if CPEs accurately reflected the job performance of their staff 62% of principals agreed, 22% disagreed, and 17% were neutral.

Approximately 27% of the interview comments focused on some aspect of CPE implementation. One teacher reported his/her evaluations were fair. Another teacher related the improvement in his/her school to the principal and assistant principal *"going into classrooms and evaluating teachers,"* (though it was not clear whether this referred to the formal evaluation observations or other classroom visits). A contrasting point of view was expressed by two other sources. An administrator complained that the evaluation was not useful, in part because teachers could only receive one of two grades—satisfactory or unsatisfactory. S/he also considered the form time-consuming, saying, *"If you did that form, it would take forever. That's a tremendous amount of work, and I don't feel that that's a valuable tool. It's just paperwork and I think it's a horrible form to use."* A newer teacher at a different school opined, *"We don't get constructive evaluations. They don't have time to give constructive evaluations and be instructional leaders."*

Five comments focused on the subjectivity of the assessment, with some expressing worries that a biased administrator could purposefully give someone a bad evaluation, which would affect their pay. One teacher remarked, *"I think the evaluation process would be difficult if there was a conflict between the principal and a teacher."* Another experienced teacher who said s/he had negative experiences with principals in the past noted, *"If I received a bad evaluation it would affect my salary with ProComp; it should be about my professional practice and not if the principal likes me or not."* Another experienced Non-ProComp teacher with bad evaluation experiences suggested that the evaluation system might be improved if there were *"more than one person coming in to evaluate you—someone from the outside."* In contrast, another teacher remarked that s/he preferred *"to get evaluated by a human rather than by my student's test scores."*

#### *What are teacher and principal attitudes regarding CPEs?*

CPEs were not regarded as highly as other ProComp elements with respect to their potential for impacting ProComp goals related to improving instructional practice and student achievement. Survey results indicated that 63% of ProComp teachers, 38% of Non-ProComp teachers, and 57% of administrators thought CPEs could motivate teachers to improve instructional practices. Only 56% of ProComp teachers, 37% of Non-ProComp teachers, and 44% of administrators felt

teachers' CPEs would help them grow professionally. The likelihood of CPEs helping ProComp achieve its goal of increased student achievement also received limited endorsement—49% of ProComp teachers, 25% of Non-ProComp teachers, and 47% of administrators agreed with this assumption. Interestingly, the value-added analysis of student achievement data discussed in Chapter 10 indicated that the CPE element is related to teacher effectiveness, but to a lesser extent than the Student Growth Objectives (SGOs) and Exceeds CSAP Expectations elements.

In interviews, five comments were focused on the financial incentive itself. One experienced teacher dismissed the evaluation bonus saying, *"It's a total of \$360 a year, and it's just a bonus [rather than base-building]."* A teacher who had not opted into ProComp made a similar remark. Another teacher complained that bonuses for satisfactory evaluations ended at Year 13, saying *"Why did they eliminate teacher evaluations at year 13? That's only half of a teacher's career...are evaluations not important?"*<sup>33</sup> Another teacher agreed with this sentiment. One newer ProComp teacher suggested it would be fairer if teachers who received excellent evaluations received larger bonuses than those with satisfactory evaluations.

### ***How might CPEs be affected by Senate Bill 191?***

Six interviewees made comments about Colorado State Senate Bill 10-191, the Ensuring Quality Instruction through Educator Effectiveness (EQuITEE) legislation passed in Spring 2010. One administrator expressed hope that the evaluation tools that come about because of this new bill will be more objective and rigorous measures of teacher effectiveness, while another wondered how the passage of the bill would affect ProComp. An experienced teacher discussing a perceived lack of rigor and authenticity in SGOs wondered how teacher effectiveness will be measured under the new legislation. A new teacher (who had earned the Exceeds Expectations incentive) did not think there was enough teacher accountability for student growth in DPS and saw the possibility that the bill could potentially affect this. One community leader key informant thought ProComp had contributed to drawing local, state, and national attention to the issue of teacher effectiveness and pointed to the passage of SB 191 as evidence of this influence. S/he remarked,

*We should congratulate ourselves for key ground-breaking with ProComp. Looking back, it needs more work to catch up with what other communities do and [to align] with SB 191 [and]... will change to the next level over the next couple of years.*

## **Discussion**

**A change that resulted from ProComp's implementation was a reconceptualization of the teacher evaluation system.** Those involved in the early thinking and development of this evaluation system viewed these changes positively.

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<sup>33</sup> These are inaccurate statements. The CPE incentive is base building and continues through year 14.

**Principals and teachers only moderately understand the CPE element, and implementation varies in quality.** In general, the majority of teachers and principals said they understood CPEs. However, there were some misunderstandings of CPEs which reflect the larger issues of communication to staff about the specifics of the ProComp elements.

**It is not clear if teachers are motivated by CPE-related incentives; however, the CPE award does identify more effective teachers as measured through the value-added analysis of student achievement.** Comments by teachers suggested that the motivating effect of the incentive may be diminished, because teachers regard the CPE incentive as small and the incentive is not available to teachers with more than 14 years of experience. In spite of these limitations, the value-added analysis of CSAP reading and math achievement indicated the CPE element was slightly more likely to reward teachers whose students evidenced greater than expected gains.

DPS has pursued the development of such an evaluation system as state and national conversations have placed increased emphasis on having evaluation systems based on better indicators of teacher effectiveness. An example of this conversation was *The Widget Effect* report from The New Teacher Project that included data from DPS (Weisberg et.al, 2009). During the spring of the 2010-2011 school year, DPS piloted a new evaluation system called “Leading Effective Academic Performance (LEAP)” in 16 schools. In the 2011-2012 school year, 96% of DPS schools (120 of 125 schools) will participate in a district-wide pilot.<sup>34</sup> In April 2010 DPS and DCTA sponsored a series of focus groups which included 225 principals, teachers, district staff and students, in order to solicit information regarding what is working in the current system and what would be necessary to build a more ideal teacher performance assessment system. Five Design Teams then applied the Core Values derived from the focus groups, along with national research, to develop the new LEAP system and the DPS Framework for Effective Teaching. Interestingly, some of the changes requested by teachers and administrators during the current evaluation of ProComp, such as having an external person conduct observations and having additional gradations on the evaluation scale, have already been built into the LEAP system.<sup>35</sup>

The DPS LEAP website features a question and answer section that includes the following information:

*Q. How is ProComp tied to all of this? Is ProComp being restructured to award effective teachers?*

*A. When DPS and DCTA created ProComp, we did not have a multi-measure teacher evaluation system, and many of the measures were put in place as proxies for teacher effectiveness. At this point in time, we are not renegotiating or restructuring ProComp. Beginning in 2011-12, we will be aligning specific components of ProComp to LEAP, including PDUs, SGOs, and the CPE. Over time,*

<sup>34</sup> These are the schools where a majority of teachers voted in favor of participating in LEAP.

<sup>35</sup> This website can be found at <http://leap.dpsk12.org/>.

*we will need to revisit ProComp, and consider how we can better restructure the performance compensation system so that it can provide significant awards to effective teachers.*

If LEAP is adopted district-wide as the evaluation system and incorporated into ProComp (as implied on the website), then it will be important for DPS to ensure that teachers and principals understand how this component works within ProComp. While the current CPE process that is reflected in this report may not have fully met expectations around effective teacher evaluation, the value-added analysis of reading and math achievement data indicated the CPE award does identify more effective teachers. Reforms such as LEAP may provide a better measure of teacher effectiveness that can be incorporated into ProComp. Additionally, if teacher effectiveness is an expectation throughout a teacher's career and if this element is to be motivating for all teachers, DPS should reconsider the termination of this incentive after year 14.

## Chapter 7: Student Growth Objectives

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*Prepared by: Diane Proctor and Kelci Price*

The development of Student Growth Objectives (SGOs) by classroom teachers was a cornerstone of the initial Denver Public Schools (DPS) Pay for Performance pilot. An evaluation of the pilot by the Community Training and Assistance Center (CTAC) found that high quality SGOs were associated with higher levels of student achievement.<sup>36</sup> When ProComp was implemented district-wide, SGOs were one of the compensation elements included in the Student Growth component.

In general, SGOs are expected to impact student achievement through a variety of interim outcomes, as shown in the model presented below. Some general concepts of how SGOs may work are suggested in the SGO specific theory of action model presented below. In general, for SGOs to impact teacher instruction and student outcomes there should be:

- Appropriate knowledge about how to create them
- An understanding of how to use SGOs to drive instructional practice
- Rigorous content in the SGOs (e.g., high expectations for students, appropriate goals and assessments)
- Motivation to meet the SGOs
- A positive change in teacher instruction based on the SGO

If teachers improve their instruction based on the SGOs, then an increase in student growth and/or achievement may be expected.

This model provides a guiding framework for the examination of attitudes about SGOs, the actual implementation of SGOs, whether SGOs are related to student achievement and to address the following evaluation questions:

- What does the implementation of SGOs look like?
- What do respondents think about the value of SGOs? What are their attitudes towards SGOs?
- What are the characteristics of SGOs? (e.g., rigor)
- What is the relationship between SGOs and student achievement?

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<sup>36</sup> This report can be found here:

<http://static.dpsk12.org/gems/newprocomp/RptCatalystChangeFull2004.pdf>

Enabling Conditions	Activities	Intermediate Outcomes	Results
ProComp Agreement DPS Guidelines Training Knowledgeable principals Student data Culture that supports high academic achievement	Principals set stage based on school goals Teachers review students' data conduct pre assessments Teachers write rigorous SGOs with high expectations that support school goals Principals advise/review/approve goals Support is provided to help teachers achieve goals	Teachers increase in expectations for students ProComp teachers increase in motivation to achieve SGOs Teachers improve instructional practice including monitoring on-going data and adjust practices to increase learning More students achieve objectives More teachers increase compensation	DPS achievement increases - Growth - Status

Four methods were used to address questions about SGOs: 1) teacher and principal surveys, 2) interviews with teachers and school administrators, 3) ratings of SGO quality, and 4) analysis of data from the School Performance Framework (SPF).

Since it was a method unique to the analysis of SGOs, how SGOs were rated for rigor will be briefly examined. Evaluators examined the SGOs written by school-based staff during the 2009-2010 school year.<sup>37</sup> There were a total of 9,263 SGOs written in this year. In order to assess the extent to which SGOS are of high quality, a stratified random sample of 468 SGOs were examined. This sample included SGOs written by 436 teachers in 41 schools, and was representative of the four areas for which SGOs are written (literacy, math, other, or focus other

<sup>37</sup> In order to link SGOs to other achievement data, only SGOs from educators whose schools are included in the School Performance Framework (SPF) were used in the data analysis, eliminating primarily SGOs from itinerant Student Services staff and staff from schools that serve highly specialized groups, such as students in a juvenile detention facility.

than content area) and of the proportion of ProComp teachers in the population.<sup>38</sup> The evaluators developed a rubric to assess rigor based on DPS guidelines and expectations for SGOs. Ratings were mainly based on the key areas of: student population targeted, expected gain, and baseline data. A full description of the rubric and coding method can be found in Appendix F; a brief description of the rubric is presented in Exhibit 21.

**Exhibit 21. Brief Description of SGO Quality Rubric**

Rubric Rating	Description
<b>Weak Rigor</b>	Teachers may include a very limited population, set growth targets which are very low or restricted, and/or focus on a very narrow learning content.
<b>Approaching Expected Rigor</b>	SGO is close to expectations. May be focused on a limited group of students, reflect narrow content goals, or have poorly defined growth targets.
<b>Meets Expected Rigor</b>	SGO meets expectations as defined by DPS. Includes at least 75% of students (limiting to students with 85% attendance is acceptable). Provides adequate information about what assessments will be used, and includes reasonable growth targets for students.
<b>Exceeds Expected Rigor</b>	SGO exceeds expectations by targeting all students for growth, targeting large amounts of growth (e.g., 1.5 years growth), providing clear differentiation of growth targets depending on where students start, or focusing on ambitious goals (e.g., all students will be proficient).

## Findings

### *What does the implementation of SGOs look like?*

#### *Overview of SGOs*

SGOs are to be job-embedded and collaboratively developed by teachers and principals. All DPS teachers are expected to write two SGOs each year that meet DPS expectations, are approved by the principal, and are submitted using an online form. SGOs may be changed up until the Friday prior to Spring Break. Only ProComp teachers are able to earn an incentive for meeting one or both SGOs. Teachers who meet both SGOs earn a base-building incentive of \$376; teachers who meet one SGO earn a non-base building bonus of \$376.

A total of 9,769 SGOs were written by all teachers in DPS in 2009-10, with the majority (9,363; 96%) written by teachers in school-based positions. Teachers specify three characteristics for each of their SGOs—content focus, time interval covered, and type of assessment used. Each of these characteristics is discussed briefly below.

<sup>38</sup> The proportion of selected SGOs from the four areas was comparable to the proportion in the population as a whole: 27% literacy, 20% math, 8% other content area, and 45% with a focus other than a content area; 74% of the sampled SGOs were written by ProComp teachers, which mirrors their representation in the teacher population.

Content focus

The four area classifications used for SGOs are: 1) literacy, 2) math, 3) other content area, and 4) a focus other than content area (such as attendance, behavior, special needs skills, etc).<sup>39</sup> Exhibit 22 shows the distribution of SGOs written by school level and area classification, based on the categorization provided by the authoring teacher. As can be seen in the table, SGOs written at higher grade levels had less of a focus on literacy and math.

**Exhibit 22. Percentage of SGOs by School Level and Area Classification**

	Literacy	Math	Other Content Area	Focus other than Content Area	Total number of SGOs
	%	%	%	%	
<b>Elementary</b>	36	29	9	26	4,282
<b>K-8</b>	31	25	8	36	1,539
<b>Middle</b>	21	15	6	58	1,081
<b>6-12</b>	15	14	9	62	493
<b>High</b>	15	10	6	69	1,968

Time interval

The majority of SGOs written covered a full school year (76%), while some were written for the semester (9%), for a quarter or less (8%), or for some other time interval (7%). As shown in Exhibit 23, there was considerable variation in the time intervals set for achieving SGOs. Most objectives written for elementary, K-8 and middle school students were for the full school year. In contrast, schools serving higher grade levels were more likely to have SGOs written that were either a semester or a quarter or less, which probably reflects the organization of classes at the secondary level.

**Exhibit 23. Percentage of SGOs by School Level and Time Interval**

	Quarter or Less	Semester	School Year	Other
	%	%	%	%
<b>Elementary</b>	4	3	90	4
<b>K-8</b>	9	5	77	9
<b>Middle</b>	14	5	70	11
<b>6-12</b>	19	22	51	9
<b>High</b>	14	23	56	7

<sup>39</sup> For the purposes of this evaluation the classification provided by the teacher was used. However, evaluators noted that in some cases SGOs would be more accurately classified in one of the other categories, particularly those which were put in the category “Focus other than content area”.



### Assessment type

In order to measure student growth, teachers need to select an assessment. Evaluators categorized the assessments used by teachers into six categories based on the general type of assessment and the extent to which the assessments were rigorously developed:

- **Nationally Standardized Tests** – These tests have gone through a rigorous development process and have technical data available regarding their reliability and validity (e.g., Developmental Reading Assessment (DRA), Dynamic Indicators of Basic Early Literacy Skills (DIBELS), Advanced Placement (AP) tests).
- **DPS Benchmark/Course Assessments** – These tests were developed by or in conjunction with DPS staff and provide measures of achievement for various content areas and grade levels, and include course assessments for some social studies, science, and world language courses. Although the psychometric characteristics of these measures have not been thoroughly researched, the assessments meet the district expectations for development and have explicit guidelines for scoring (e.g., Everyday Math, Connected Mathematics, Springboard).
- **Teacher-made Tests and Rubrics** – These assessments are created by teachers. No technical data or scoring criteria were reported for these measures.
- **Body of Evidence (BOE)**—This was a category that encompassed a variety of assessment strategies. In some instances, BOE described the use of multiple assessments to evaluate progress. In other instances it referred to collecting work across time and assessing progress with a rubric. In still other cases it was a teacher’s observation and judgment of progress.
- **Other Assessments**—This category included assessment strategies that did not fit in the previous four large groupings and included non-standardized individual measures, work samples, informal measures used by discipline, specific measures used by student services professionals (e.g., articulation measures), formal student plans such as Individual Education Plans (IEP) for all special needs students including those identified as gifted and talented, surveys, and adult-kept records of their work (e.g., health notices sent, number of classroom visits).
- **Student Records** – Although not an assessment per se, this type of documentation was used by teachers to evaluate some SGOs (e.g., behavior records for attendance, discipline, health).

Because they had gone through a rigorous development process, Nationally Standardized tests and the DPS Benchmark/Course Assessments are presumed to be relatively rigorous measures, which adequately reflect at least some elements of student learning. In contrast, measures that

were developed by individuals are less likely to have gone through a rigorous development process and scoring is likely to be much more subjective.<sup>40</sup>

When the use of assessments was analyzed across grade levels, the use of teacher-made tests and rubrics increased at the high school level, with a concurrent decrease in the use of Nationally Standardized measures and DPS Benchmark/Course Assessments (see Exhibit 24).

**Exhibit 24. Percentage of SGO Assessment Types by School Level**

	Nationally Standardized	DPS Benchmark/ Course	Teacher- made Test/Rubric	Body of Evidence	Other Assessment*	Student Records*
	%	%	%	%	%	%
<b>Elementary</b>	27	29	19	10	14	1
<b>K-8</b>	23	28	27	7	13	2
<b>Middle</b>	17	24	31	11	12	5
<b>6-12</b>	10	10	50	9	13	8
<b>High</b>	6	11	56	8	11	8

\*Note: Assessments in the 'other' category tend to be predominantly used by nurses, counselors, student services providers, Gifted and Talented teachers, facilitators, and administrative assistants. The Student Records category was primarily used by nurses and counselors.

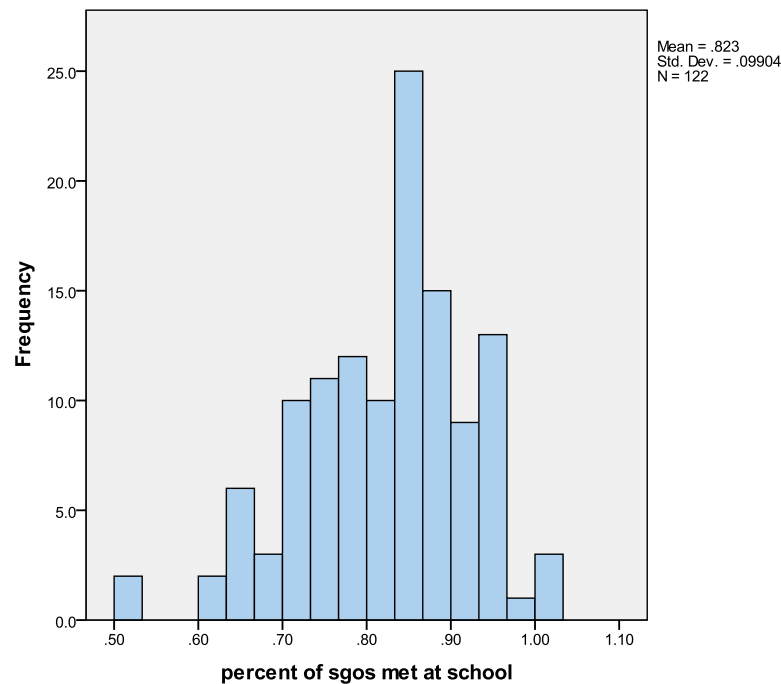
The use of assessments also differed somewhat by content area. At the elementary level, SGOs for literacy are more likely to be assessed by Nationally Standardized Tests and DPS Benchmark/Course assessments, and SGOs for math are more likely to be assessed by DPS Benchmark/Course Assessments. At the high school level, the majority of literacy and math SGOs were evaluated using Teacher-made Tests/Rubrics. For other content areas and SGOs written with a focus other than content, Teacher-made Tests/Rubrics were the predominant assessment methods. There are several considerations at the elementary level which may be driving this difference: a) the Colorado Basic Literacy Act has required standardized measures of literacy; b) there are district-wide curricula that include publisher-developed assessments; and c) there are DPS Benchmark Assessments in reading, writing and math for most elementary grade levels. By comparison, at the high school level, the course offerings are much more diverse, and there are fewer Nationally Standardized and Benchmark Assessments aligned with the course content, so teachers are more likely to develop their own assessments and rubrics to measure student progress.

<sup>40</sup> It is worth noting that for many relevant school goals there may not be a standardized or benchmark assessment available (e.g., for student health outcomes or attendance/discipline issues). In these cases self-developed metrics may indeed be very rigorous measures. The determination of rigor used here is more relevant for content-based assessments such as literacy, math, social studies, world language, etc.

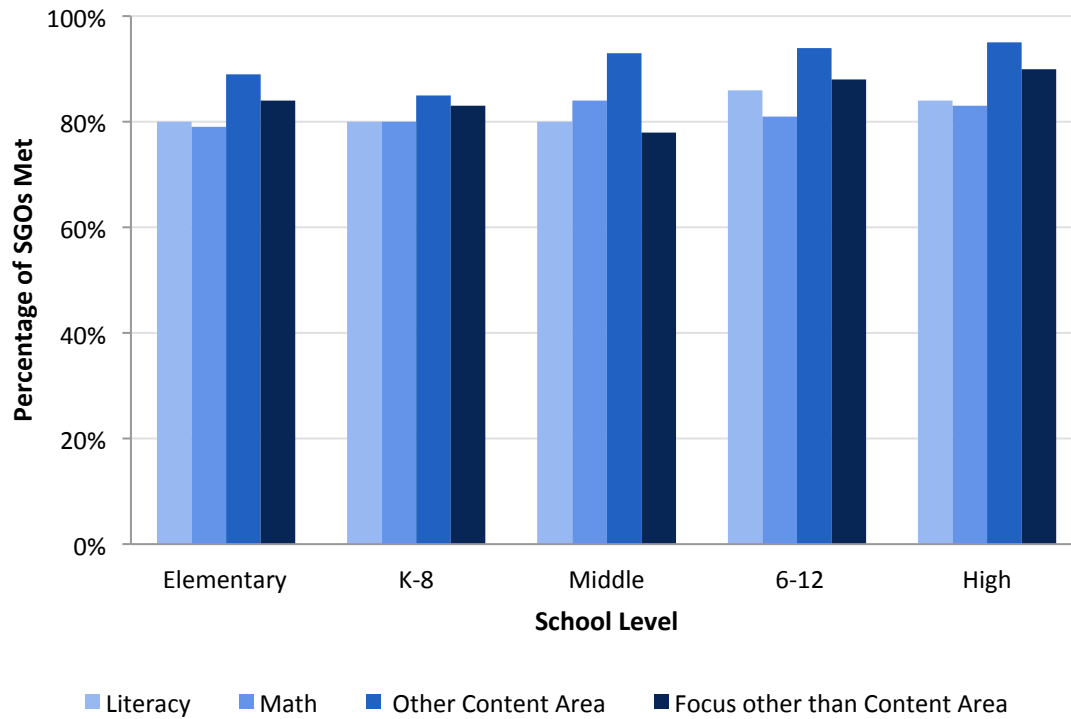
### Characteristics of SGOs Met

The vast majority of teachers met their SGOs in 2009-10. The overall percentage of SGOs met averaged 83%, though SGOs were most likely to be met at the high school (89%) and 6-12 (88%) levels, and slightly less likely to be met at Elementary (81%), K-8 (81%), and Middle School (80%) levels. At the school level, there was some variability in the percentage of staff meeting SGOs, ranging from about 50% to 100%, with a standard deviation of 9.9% (see Exhibit 25). At the majority of schools, at least 80% of staff met their SGOs.

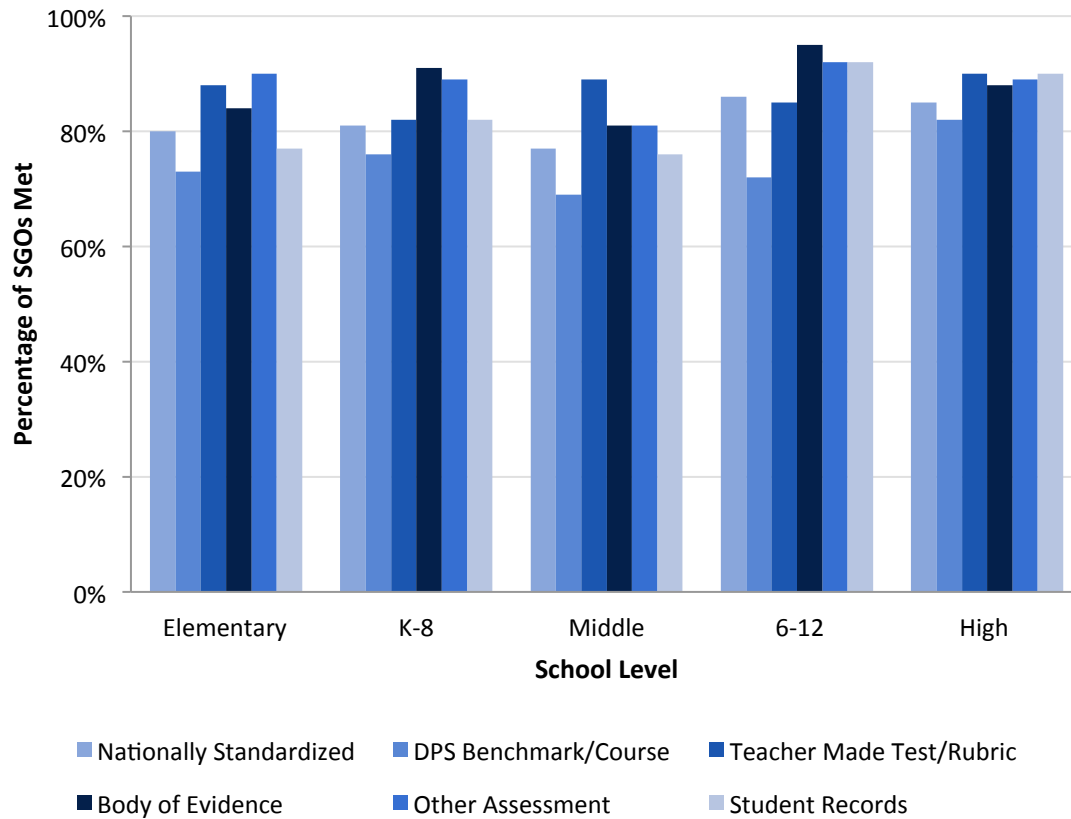
**Exhibit 25. Percentage of SGOs Met at the School Level**



To explore which SGOs staff tended to meet, SGOs were analyzed by content, time interval, and assessment type. Results indicated SGOs were slightly more likely to be met in content areas coded as “other” content area (89%) and those with a focus on something other than a content area (85%), compared to those coded as literacy (80%) or math (80%). This pattern was consistent across school levels (see Exhibit 26). SGOs were also slightly more likely to be met if they were set for a quarter or less (88%) compared to those set across a full school year (82%).

**Exhibit 26. Percentage of SGOs Met by Content Area and School Level**

The type of assessment used also made a difference in the percentage of SGOs met. Generally, when more rigorous national or DPS assessments were used, the percentage of SGOs met was lower than when SGOs were assessed using teacher made tests/rubrics, body of evidence, and other assessments (see Exhibit 27). Interestingly, SGOs were least likely to be met when DPS Benchmark/Course assessments were used.

**Exhibit 27. Percentage of SGOs Met by Assessment Type and School Level**

### *Implementation of SGOs*

Beyond analyses of the characteristics of the SGOs, teachers' perceptions concerning the implementation of SGOs were examined on the survey. On average, teachers and principals' opinions ranged from neutral to somewhat positive in their responses about SGO implementation (see Exhibit 28).

Both teachers and principals were most likely to believe that teachers are held accountable for accomplishing their SGOS and that their SGOs aligned with the school improvement plan. On average, both groups were least likely to endorse the idea that training on the SGO process had prepared them to implement the process with fidelity. There were no significant differences between ProComp and Non-ProComp teachers on the overall SGO Implementation subscale ( $M = 3.58$  vs.  $3.55$ ), suggesting that both groups of teachers view the process surrounding SGOs in a similar way.

**Exhibit 28. Perceptions about SGO Implementation**

Survey Content	ProComp Teachers <sup>a</sup>		Non-ProComp Teachers <sup>a</sup>		Principals	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Determination of SGO met/unmet done fairly	3.53	.99	3.36	1.00	3.54	.92
Align SGOs with SIP	3.85	.82	3.80	.91	3.92	.83
Held accountable for accomplishing SGO plan	3.93	.80	3.90	.82	4.01	.70
Utilize district support materials for SGOs	3.45	.99	3.34	.94	3.63	.86
Could explain steps to collaboratively set and approve SGOs	3.61	.91	3.64	.90	3.98	.65
Training on SGO process prepared for fidelity of implementation	3.17	1.08	3.02	1.03	3.34	1.01
SGO Implementation Subscale	3.58	.66	3.55	.66	3.70	.54

Note: Items were measured on a 5-point scale with 1 = strongly disagree and 5 = strongly agree.

<sup>a</sup> Data are based on analyses using weighted data for individual survey items and unweighted data for the SGO Implementation subscale.

Although survey responses suggest teachers were neutral concerning SGO implementation and fairness, issues emerged from the qualitative data analysis of the surveys responses and interviews.

Consistency. There was a perception among teachers that the SGO process and requirements were not consistent from school-to-school. Ten percent (32 of 330 total comments) of the Voluntary ProComp teacher's written survey comments were critical of perceived inconsistencies and implementation issues around SGOs. In interviews, teachers shared perceptions regarding the variability among schools in meeting SGOs. Approximately 25% of the ProComp teachers commenting on SGOs expressed concerns regarding inconsistencies in principal's requirements relative to SGO rigor, the modification process, and criteria for determining if SGO were met. Teachers tended to think of the problems with the consistency of SGO implementation as an issue of fairness. One experienced ProComp teacher provided this perception:

*Pay for performance may not be as authentically tied to your performance as I once thought. My impression talking to people is that SGOs are written differently in every school. There is no strict format to write or prove SGOs - very frustrating - saw another SGO, and it was very general and her kids met the goal and she got a raise. Every time we talk about SGOs, there is great confusion and no administrators or teachers know how to write them. If you write an easy goal and you meet it, you get paid more. Our assistant principal said students had to*

*grow by 1 ½ years as measured by DRA. Another school said that their students just have to grow by 1 year. There is no widespread understanding of what the goals look like and how to set them – have seen teachers teach their hearts out and so many other circumstances come into play – outcomes shouldn't be the only way teachers are rewarded. May get very low kids one year – I like pay for performance but not sure if I think it is fair.*

A total of 24 teachers suggested there was false reporting of data and other dishonest practices around SGOs. Non-ProComp teachers ( $n = 9$ ) suggested some ProComp teachers even manipulate data to show their goals were met. Some survey respondents expressed frustration around their perception that teachers engaged in dishonesty in order to receive the bonus.

Some ProComp teachers ( $n = 15$ ) also commented on dishonest practices around setting and meeting SGOs, though their comments were less severe than those of Non-ProComp teachers. Approximately 21% (45 of 218 total comments) of the written survey comments stressed the need for additional standardization and support in the SGO process. In interviews, both teachers and administrators who commented about SGOs advocated for supporting teachers in the SGO process by improving and standardizing the process (35% ProComp, 11% Non-ProComp, 35% administrators). In particular, respondents focused on the need to have clearer district guidelines for creating and meeting SGOs, increased support for writing effective and attainable objectives, and access to additional SGO resources (e.g., archived sets of SGOs, comparable assessments). There were three principals who reported they had requested help from the district regarding benchmarks for SGO targets and other guidelines to create greater consistency, but had not received the information they were seeking.

Level of Expectations. An issue raised by teachers was the level of student expectations reflected in SGOs. In written survey comments, 14% (20 of 139 total comments) of Non-ProComp teachers made negative remarks about SGO expectations ranging from innuendos such as, “*teachers have to be very creative in writing their goals in order to meet them*” to caustic remarks such as,

*It is a joke. It is so easy to make SGOs that students will achieve and they often have nothing to do with the exact curriculum. If it is worded in the correct way or if you teach it a certain way right before the post-test, you'll see the data you want to meet your goals.*

One Voluntary ProComp teacher described their frustration in this way,

*I work very hard at my job. It is not fair for some schools to have low expectations to meet SGOs and some schools to have high expectations to meet SGOs. There needs to be some common language around this.*

In interviews, 10% of the teachers expressed concerns regarding the level of expectation in SGOs; their comments addressed two extremes—SGOs that were worded so that they were

easy to attain and SGOs reported to be required by principals set so high that they were unattainable. Among those in the group concerned about goals easily being met, there was also a concern expressed that some teachers were changing their goals as the deadline got closer in order to craft a goal they knew they would meet in order to obtain their bonus. In the group of teachers concerned about goals being unattainable, seven comments explicitly stated that teachers should be able to “*write the goals with things that are in [their] control*” and not be required to set goals they do not believe can be achieved because “*it violates the promise of ProComp, [if]... you’re not able to meet your goal and make that extra money.*” These strong sentiments may be related to the fact that with the changes in the 2008 Agreement, SGOs are one of the only ways teachers with 14 or more years of experience can earn a base-building incentive. One experienced elementary teacher described his/her situation as follows:

*I got the low group. My high kids in my AM class go to another teacher for the PM. Her low kids come to me. That group is already three years behind, but still expected to make one year’s growth. Some are probably SPED, but not recognized yet. Because of the dynamics of the group, I won’t make my SGOs this year. I deserve \$360 and I’m not going to get it. I always made SGOs. I deserve the stipend.*

Teachers requested there be additional safeguards related to SGOs, especially related to pressures or demands placed upon them by principals. Some teachers felt there should be an appeal process outside of their own school for disputes related to how SGOs were written and evaluated.

#### *Differences in attitudes between ProComp and Non-ProComp teachers*

Overall, teachers and principals expressed relatively neutral/slightly positive opinions on average about most aspects of the SGO process. Principals tended to be somewhat more positive than teachers about the SGO process, though not substantially (see Exhibit 29). Both teachers and principals were most positive on three items: principals hold teachers accountable for accomplishing SGOs, ability to explain the steps for collaboratively setting and approving SGOs, and alignment of SGOs with the School Improvement Plan (SIP).

ProComp and Non-ProComp teachers held very similar views on SGOs for all items and for the overall SGO Experience subscale (independent samples *t* tests indicated only small or no differences between groups for individual items and the overall scale). Given that SGOs are intended to influence teacher practice within the ProComp framework, it is interesting that ProComp teachers were not more positive about the effects of SGOs on instructional practice and student outcomes. Just over half of the ProComp teachers (57%) expressed agreement that SGOs have a positive impact on student learning, and that the SGO process focused them on improving their practice.



**Exhibit 29. Comparison of ProComp and Non-ProComp Teachers' Perceptions of the SGO Experience**

Survey Content	ProComp Teachers <sup>a</sup>		Non-ProComp Teachers <sup>a</sup>		Principals	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I am confident that the measures I select appropriately represent my student's 'growth'.	3.52	1.03	3.58	.98	3.31	.95
Determination of whether SGOs have been met (or have not been met) is done fairly.	3.53	.99	3.36	1.00	3.54	.92
At my school we try to align our SGOs with our school improvement plan (SIP).	3.85	.82	3.80	.91	3.92	.83
My principal holds me accountable for accomplishing my SGO plan.	3.93	.80	3.90	.82	4.01	.70
SGOs have a positive impact on student learning.	3.43	.98	3.27	.97	3.33	.92
I utilize the support materials provided by the district in developing my SGOs.	3.45	1.00	3.34	.94	3.63	.86
The SGO process focuses me on positively improving my practice.	3.40	1.00	3.22	1.04	3.25	.96
I could explain the steps to collaboratively set and approve SGOs to others if asked.	3.61	.91	3.64	.90	3.98	.65
The training I received on the SGO process prepared me to implement it with fidelity.	3.17	1.08	3.02	1.03	3.34	1.00
When I set my SGOs this year I was confident I could meet them.	3.44	.96	3.38	1.00	3.55	.68
I needed to adjust my SGOs before Spring Break in order to be able to meet them.	2.52	1.04	2.36	1.00	2.84	.91
The measures used in evaluating SGOs can be used dishonestly to show more growth than actually measured.	3.25	1.02	3.38	1.04	2.69	.93
<b>SGO Experience Subscale.</b>	3.38	.57	3.31	.57	3.43	.47

<sup>a</sup> Data are based on analyses using weighted data for individual survey items and unweighted data for the SGO Fidelity of Implementation subscale.

### *Knowledge and understanding of SGOs*

An important requirement for writing effective SGOs is teacher and principal understanding of how to construct them, use them to drive instruction, and assess if they are appropriately met. Even though on average teachers rated their knowledge of SGOs as relatively high, survey results showed that only 68% of teachers agreed they could explain the SGO process to others, and only 44% of teachers agreed that the training prepared them to implement SGOs with fidelity. Although on surveys, principals rated their ability to explain SGOs quite high, in interviews both principals and teachers reported principals tended to have limited knowledge about ProComp and were generally not able to answer ProComp questions accurately, including questions about SGOs. Self-reports by principals coupled with comments from teachers suggested that in the 16 schools where interviews were conducted, the principals in three schools would be considered knowledgeable about ProComp (19%), while principals in five schools were viewed as not having sufficient knowledge (31%). No determination could be accurately made from the interview comments in the other eight schools.

Teachers and principals involved in the ProComp pilot and the first years of the district-wide implementation recalled the helpfulness of the trained school support teams who assisted with the SGO process and the school liaisons who were able to answer questions about ProComp and assist them in resolving issues. Although teachers and administrators noted that the training provided by the ProComp Team was helpful in writing quality SGOs and in learning to use multiple measures to evaluate progress, both teachers and principals reported that additional training was needed for principals on the SGO process. Interviews suggested that increased understanding was especially needed around: 1) how SGOs are to be written (including examples for non-classroom positions), 2) the approval and modification process, and 3) the requirements for determining if the objectives were met.

### ***What are teacher and principal attitudes towards SGOs?***

The implementation of SGOs was also examined from the perspective of teacher and principal attitudes towards SGOs and how SGOs may impact variables such as motivation, school environment, and instructional practice.

#### *Motivational effects of SGOs*

As part of the underlying theory of change for ProComp, the SGO element was partly designed to be a motivational factor for improving instruction by helping teachers set objectives, align their instruction to meet those objectives and by providing a tangible reward for achieving their stated objectives. Both teachers and administrators responded to questions about the motivational effects of SGOs in interviews.

Respondents had mixed beliefs about the effects of the SGO element on teacher motivation. Nine ProComp teachers expressed a belief that the SGO incentive was motivating. Three of these teachers noted that their SGOs helped them focus on the use of data. As one newer teacher explained, *“I’ve been monitoring their assessment more, because I do want to get both of my SGOs, so I’ve been paying more attention to kids that are lagging behind. It’s changed. I’m*

*viewing assessments a lot more.*" Three teachers at two schools said the incentive encouraged teachers to collaborate to help each other meet their SGOs. At both of these schools, teams of teachers set the same or similar SGOs and then worked together to meet their objectives. However, three of the nine teachers also emphasized that the financial incentive was not the *"only or primary motivator"* for meeting SGOs. The administrators at three schools (out of 16) felt that the SGO element was motivating, though several principals noted they were unsure if the motivation was the result of teachers' desire to meet their objectives or if it was driven by the financial incentive.

In interviews, two principals reported that the SGO element was not motivating, and eight were uncertain about the motivational effects of the SGO element. Ten teachers said they did not believe the financial incentive motivated them to achieve their SGOs. At five different schools, five teachers said the SGO element was not truly motivating because teachers were inclined to set their SGOs lower than their actual goals for students so they could meet them and earn the bonus. Some teachers reported the SGO incentive could even decrease motivation when SGOs were set low in order to be easily achieved or when teachers were required by their principals to set SGOs they considered unachievable.

Both teachers and principals commented that teachers were motivated by factors other than SGO incentives. One principal who did not think that teachers were motivated by the SGO element remarked that s/he felt the teachers were intrinsically motivated to reach the goals they had set for themselves, saying *"I've heard some teachers say if you make SGOs, it's only like 10 to 12 dollars. They want to make SGOs for themselves...not because of the money."* One teacher noted, *"Teachers have their own goals for kids apart from their SGOs; I can't remember what my SGO goals even are."* Another teacher indicated that she was intrinsically motivated rather than motivated by the SGO incentive, saying,

*The SGO as a motivator for me, I didn't need it. I know it's there, I still do what they say I have to do for the district... but tying the dollar to it doesn't change the outcome for me.*

Some Non-ProComp teachers ( $n = 4$ ) commented they were motivated to meet their SGOs, even without any financial incentive. As one of them remarked, *"We all want students to improve. We have our SMART goals, we meet, we work on what we need to do for our students and I don't think it is because some are on ProComp and some aren't."* A small number of individuals ( $n=4$ , 3 teachers, 1 administrator) commented that Non-ProComp teachers may be less motivated by the SGO element since there was no financial bonus for meeting their objectives. One teacher felt that Non-ProComp teachers were less eager to collaborate around school-based SGOs, and one principal felt that the SGO element demotivated Non-ProComp teachers.

### ***How do teachers and principals believe SGOs impact instructional practice?***

In order to influence practice, SGOs must be used by teachers to inform their instructional practice. On surveys, 55% of teachers agreed that SGOs helped to focus them on positively

improving their practice; however, 45% of teachers either felt neutral (26%) or negative (19%) about the impact of their SGOs on instruction. During interviews, 31% of the ProComp teachers and 58% of Non-ProComp teachers reported they believed that setting SGOs had an impact on their instruction, noting that SGOs helped them focus their instruction and their use of needs assessments, backwards planning, progress monitoring, and data-driven instruction. As one teacher explained,

*I was more focused to accomplish what I had set out to do. For example, I started to review concepts more frequently with the students; just checking in with them more often to make sure they were really understanding the fundamentals of the class.*

Teachers also commented on the positive effects of the increased interactions between teachers and administrators around instruction. An experienced teacher commented,

*Now I care about my SGOs. Now both sides (administration and teachers) are more involved. It is more of a conversation. There is a pre-meeting and a post-meeting. There is more planning. The idea of a pre and post-test is a constant reminder to me about what the pre-test was and the goals that I would like to see achieved. I am honed in on goals. I think, 'This is where we need to get to and this is how we are going to get there.'*

In contrast, 7% of ProComp and 20% of Non-ProComp teachers, as well as one administrator, commented during interviews that SGOs had little or no impact on instruction. An experienced ProComp teacher noted:

*No, I'd do it anyway, you just have to sit down and write it out. It doesn't change my practice or the outcome by the students. They don't even know that an SGO exists, other than it's a pre-test and we're going to see it again. So, naturally there is going to be an increase in scores because the post-tests are for a grade. It's just an extra hassle.*

Only 7 of 17 administrators who commented on the SGO element talked about the impact of SGOs on instructional practice; these administrators had mixed views. Three of seven administrators stated they believed team, department, and school-level objectives were more effective than individual SGOs. Another three focused on the implementation issues that they believe may negatively impact the effectiveness of SGOs.

#### *Contextual features and SGOs*

To examine perceptions of the SGO element, interviews were conducted with teachers and principals in schools specifically sampled to represent schools with either higher or lower percentages of ProComp teachers and schools with either higher or lower School Performance Framework (SPF) ratings. This section considers the differences that emerged in these groupings

of schools, which are relevant to an understanding of how contextual features impact implementation.

#### Higher vs. lower percentage of ProComp teachers in the school

Interviews with teachers and principals from schools with higher and lower percentages of ProComp teachers surfaced some differences in attitudes. At six of eight schools with proportionally fewer ProComp teachers, interviewees commented on different expectations for ProComp and Non-ProComp teachers with respect to setting SGOs. Some teachers ( $n=12$ ) believed that ProComp teachers were allowed to set lower SGOs so that they will be able to meet them.

#### Higher vs. lower SPF schools

Differences in perceptions of the SGO element in higher and lower SPF schools emerged in interviews with teachers and principals.

**Higher SPF schools.** In six out of eight higher SPF schools, there were four major characteristics which emerged related to the process of setting and using SGOs:

- Principals were involved and worked with teachers in the SGO process;
- SGOs were aligned with the School Improvement Plan (SIP) or other school-wide focus;
- SGOs were meaningful and achievable and provided a focus for most teachers; and
- Schools had an emphasis on using data.

Among the higher SPF schools, four of eight schools had team goals that were also identified as an important factor.

Of the eight higher SPF schools, five had large percentages of ProComp teachers. In four of these schools, the principals discussed how they used SGOs and the other student growth incentives as motivators and incorporated them into school-wide improvement efforts. Two comments were representative of the way teachers described the SGO element in their schools:

*As a faculty, we talk about goals. This year, it was higher level thinking skills across the board. We are all trying to meet same thing. This in turn has added to collaboration and discussions among faculty, doing this all year long. ProComp may play a part in that all want to get bonus – that’s part of it. But doing all the other things ties into the level of professionalism in the skill and the faculty’s goals of where they want their kids to be. Don’t want to be doing double work; ProComp goals and other school goals can all go together. (Elementary teacher)*

*It is helpful the way we have chosen [our goals]. The building has established absolute basics the kids need to know, setting learning objectives—Essential Learning Goals (ELGs). If kids get a certain percent on an ELG, then they will be proficient on CSAP. SGOs help us with that focus and increasing student objectives – we are pushing our CSAP levels. (Secondary teacher)*

Other teachers in this school also discussed the importance of ELGs on their teams and the ability to use their ELG assessments to monitor student progress. One teacher summarized saying, *“If the whole team or the whole school is on the same page as far as what is expected from the kids, then SGOs can affect student outcomes.”*

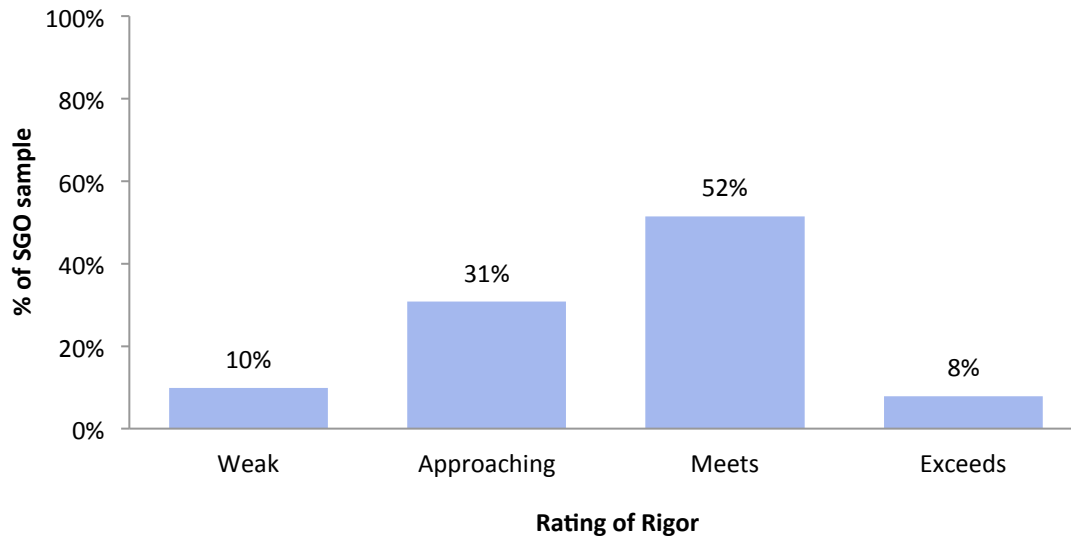
**Lower SPF schools.** In contrast to higher SPF schools, in the eight schools with lower SPF ratings, principals and teachers ( $n = 5$ ) tended to be more neutral about SGOs, noting they were not a major focus. Comments regarding setting SGOs *“at a level you know your class can meet”* tended to be more prevalent in these schools. Only two of the low SPF school principals expressed that SGOs should reflect high expectations for improved student achievement. Interestingly, these were two schools in which the teachers expressed negative views about SGOs because they felt that SGOs were dictated by the principal or district, and that they were required to set the SGOs so high that they were unattainable. These conflicting viewpoints between teachers and administrators were a source of tension in these two schools. There was only one of the eight low SPF schools in which the view of SGOs was very similar to that found in high SPF schools.

### ***How rigorous are the SGOs?***

One important requirement for effective SGOs is that they reflect rigorous objectives for student learning and methods for measuring that learning. The ProComp model compensates teachers for meeting their SGOs because it is assumed that, if teachers meet their SGOs, this will accelerate student learning and support the district’s goal of improving student achievement. Since it seems unlikely that low quality SGOs (e.g., those which set low expectations or focus on too narrow a group of students) would actually lead to wide-scale improvement in student outcomes, SGOs should meet some minimum standards of quality.

### ***How rigorous are SGOs overall?***

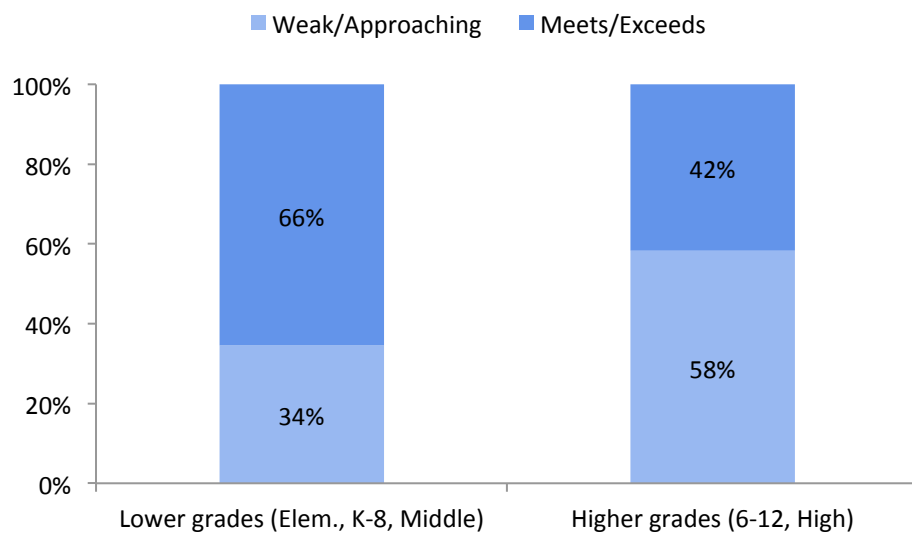
The ratings of the sample of SGOs indicated that a slight majority of SGOs (59%) fell into the Meets or Exceeds expected rigor categories, though this left 41% of the sample rated as having rigor that was Approaching or Weak (see Exhibit 30).

**Exhibit 30. Distribution of SGO Ratings on Expected Rigor**

In large part, the lower ratings were driven by growth expectations which did not meet high standards, or because they included inadequate or inappropriate baseline data.

*What is related to the rigor of SGOs?*

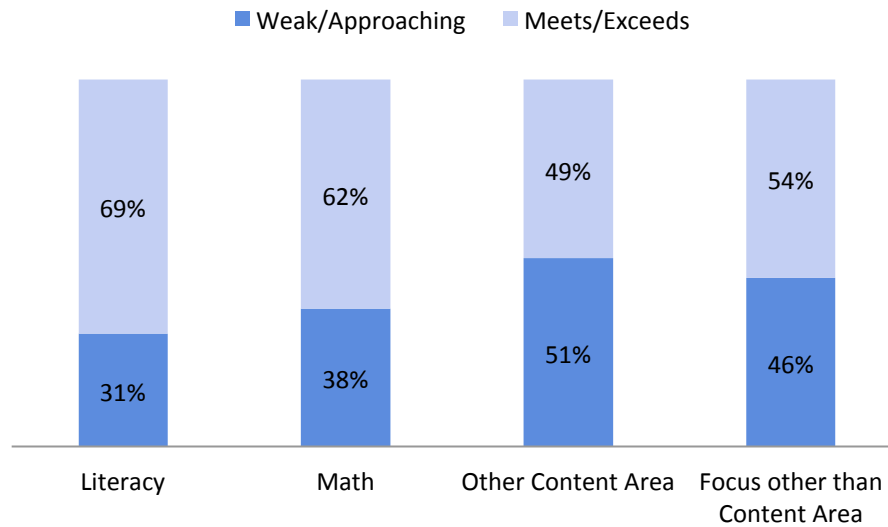
In order to examine the features of SGOs and their possible impact, rigor was compared based on several different types of characteristics. In general, SGOs at schools serving lower grade levels were rated as somewhat more rigorous compared to SGOs at schools serving higher grade levels (see Exhibit 31).<sup>41</sup>

**Exhibit 31. Distribution of SGO Ratings by School Levels**

<sup>41</sup> Regardless of which category middle schools were combined with the results were essentially the same, so middle schools were kept with the lower grade bands.

The rigor of SGOs varied somewhat by area classification. In general, SGOs in the math and literacy categories were rated as somewhat more rigorous compared to other SGO areas (see Exhibit 32).

**Exhibit 32. Comparison of SGO Rigor by Area Classification**



These two sets of findings are not necessarily surprising, because literacy and math content areas tend to have more widely available DPS benchmark assessments and standardized tests available to teachers. This is particularly evident at the elementary level where assessments often include expected standards of student growth, which meant that teachers who relied on these types of assessments tended to have SGOs that reflected educationally appropriate growth expectations for students, and which provided clear baseline data from prior assessments.

However, the differences in rigor ratings among categories were largely due to two issues that arose with SGOs written for “Other Content Area” and “Focus other than Content Area”, rather than particular strengths of the Literacy and Math SGOs (since a moderate percentage of these still received a Weak/Approaching rating). For the Other Content Area category, there tended to be slightly lower ratings of the quality of the baseline information provided on the SGO. However, differences between groups should be interpreted with caution given that the total number of SGOs in this category was only 39.

In the category Focus other than Content Area (e.g., attendance, behavior, and specific special needs skills), SGOs received somewhat lower ratings for two main reasons: the length of time that the SGO covered and the expected gain. SGOs in this category were more likely to encompass shorter intervals (usually nine weeks) that lowered their rigor rating. They were also more likely to have expected gains that were rated somewhat lower than other categories. Specific reasons for this included: a) some SGOs proposed small gains relative to the amount of time (e.g., in 1 year students could identify main idea of a passage, know the Dewey

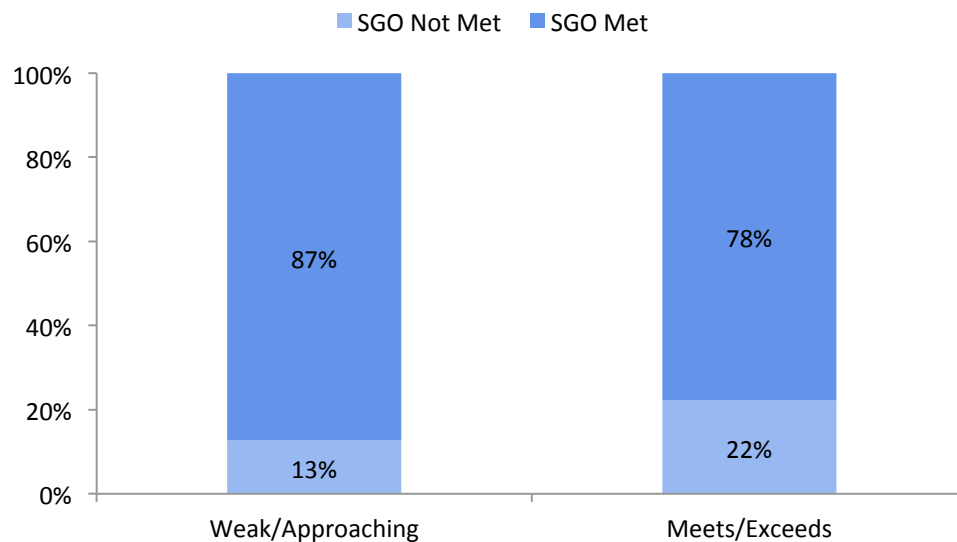


classification system); b) some SGOs focused on activities rather than outcomes (e.g., creating a bulletin board, developing screening tools and handouts); c) some SGOs were vague about the expected gain (e.g., improved attendance, 50% gain in proficiency); or d) SGOs had excessive limitations on the students targeted (e.g., 70% of students, 80% of students who attend 80% of time and complete 80% of homework). Although these issues were also present with SGOs in the other content categories, these issues were more prevalent among SGOs in this group and resulted in lower ratings.

*Does the likelihood of meeting a SGO differ with rigor?*

SGOs were somewhat more likely to be met if they were rated in the Weak/Approaching category for rigor (see Exhibit 33). Among SGOs that were rated as Weak/Approaching, 87% were met versus the 78% that were met among those rated Meets/Exceeds. The difference was small, only 9%, but worth considering since SGOs are a cornerstone of improving instructional practice under ProComp, and because interview data with teachers suggested they had concerns about the construction of SGOs that were either too easy or too difficult to meet.

**Exhibit 33. Likelihood of Meeting SGOs Based on Rating of Rigor**



There are a number of possible reasons that lower rated SGOs may be somewhat easier to meet. The goals of these SGOs may be less ambitious, thus making them simpler to achieve. These SGOs may be written more vaguely, leaving them open to interpretation in terms of whether or not they were met. On the other hand, higher rated SGOs may actually be overly ambitious. For example, these SGOs may propose growth for a very large proportion/number of students (e.g., 100%) or may set very high expectations for growth, either of which would make them more challenging to achieve.

Overall, quantitative data suggested there may be a small relationship between the rigor of an SGO and the likelihood that it will be met. Interview data suggested that some teachers felt principals pressured them to set high SGOs which then became relatively unattainable, while

other teachers felt that some teachers set SGOs too low which made them easier to meet. Either or both explanations may affect the relationship seen here. Although the precise reason for the relationship cannot be confirmed, it is worth considering how the system can be improved to ensure that SGOs are set appropriately.

It is important to note that this issue is not merely one of ensuring the equitability of the ProComp system. SGOs are potentially important because they help teachers focus their instruction, and they serve as an indicator of whether teachers are meeting their instructional goals. To the extent that teachers are basing their instructional goals on low quality SGOs, this could potentially impact the level of instruction in the classroom and, therefore, what students learn.

### ***What is the relationship between SGOs and student outcomes?***

At their core, SGOs are intended to improve student achievement by providing a structured way that teachers can look at student data, set high expectations, define instructional goals and related strategies, and differentiate instruction. If SGOs are a driver of school improvement (through whatever mechanism), we would expect to see a relationship at the school level between the percentage of teachers who meet their SGOs and the school's growth scores. To explore the relationship between SGOs and student achievement, a number of analyses were conducted at the school level to address the question: do schools that have high percentages of staff meeting their SGOs also experience improved achievement? The measures used are based on the School Performance Framework and use as a dependent variable the percentage of points schools earn on the Status and Growth indicators. The Status indicator is based on points earned on a set of measures including percent of students who are proficient or above on CSAP, AYP, achievement gaps, and grade level of above in literacy (for elementary only). The Growth indicator is based on points earned on a set of measures including AYP growth, growth percentiles for various groups of students, and literacy growth (only for elementary schools). The Status and Growth indicators are two core metrics used by DPS to assess school progress, and were therefore chosen as appropriate indicators of overall school achievement for the purposes of this analysis.<sup>42</sup>

#### ***Do schools with high growth tend to meet their SGOs?***

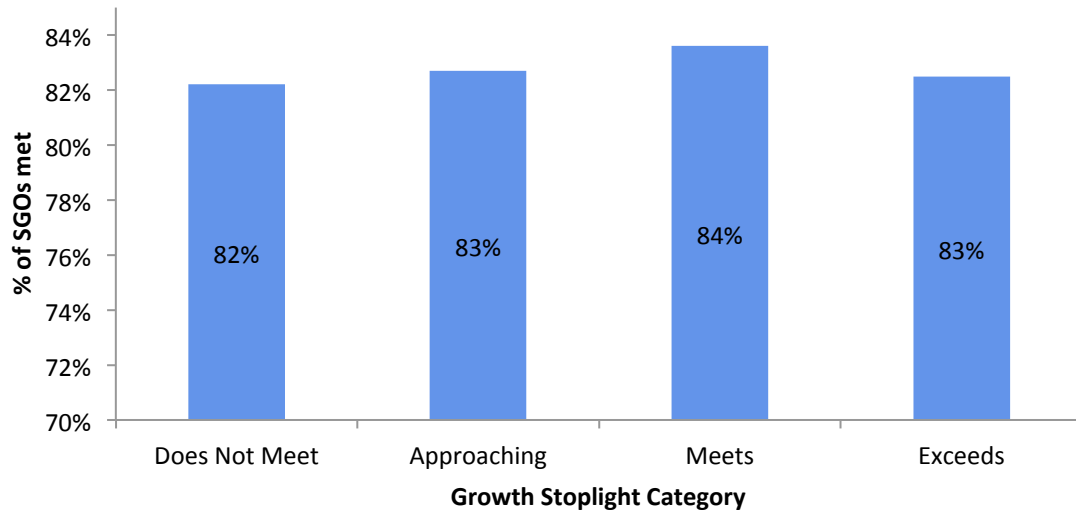
In theory, if SGOs are drivers of improved student achievement then we would expect to see that schools which have high percentages of staff meeting their SGOs should also experience greater growth. As a first step, we examined the overall percentage of SGOs that were met by teachers at schools within each Growth category; this analysis is at the level of the teacher. The percentage of teachers meeting their SGOs was very similar across all four Growth categories

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<sup>42</sup> It is possible that SGOs may be more closely related to a single or subset of these measures, such as CSAP achievement/growth. However, because these metrics are used as indicators of school performance, they serve as reasonable proxies to explore the relationship between meeting SGOs and overall school improvement.

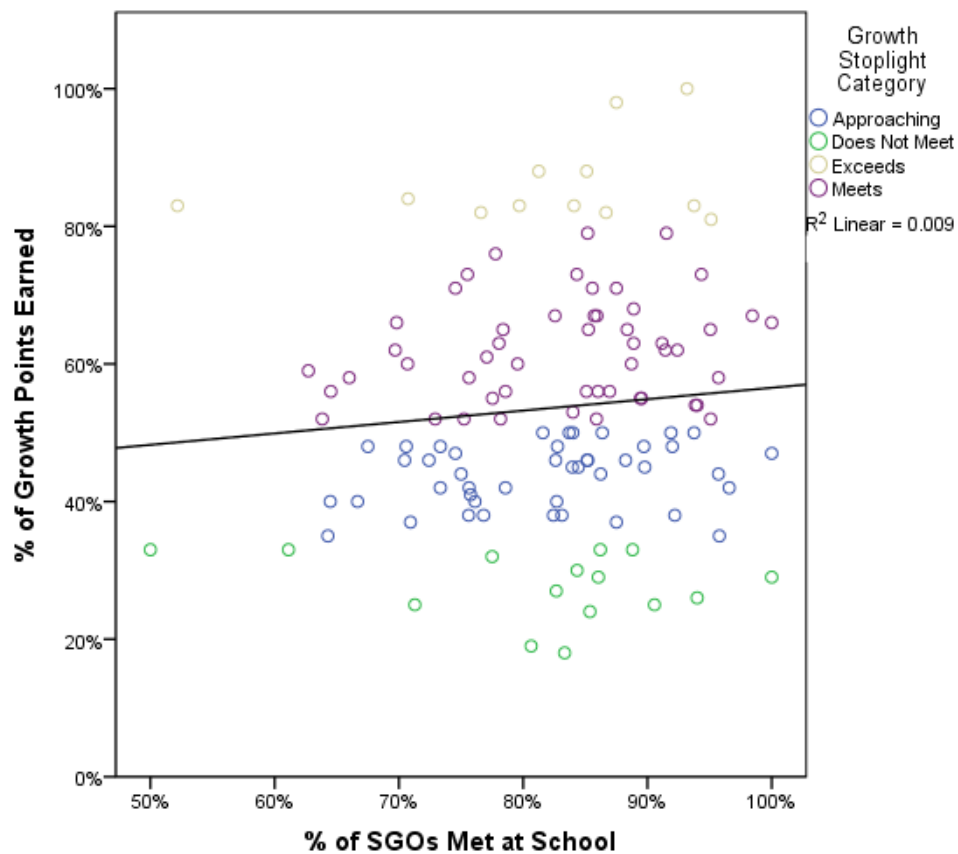
(Exhibit 34), with no definite pattern to suggest that teachers who meet their SGOs are more likely to be in higher growth schools.

**Exhibit 34. Percentage of SGOs Met within Each Growth Stoplight Category**



Note: This analysis is at the level of the individual staff member.

Evaluators next explored the question of whether schools that had higher percentages of their staff meeting SGOs also experienced higher growth. This was assessed by examining the correlation between the percentage of SGOs met and the percentage of possible Growth points the school earned (Exhibit 35). This showed that, within a given year, the extent to which a school experiences growth is unrelated to the percentage of teachers at the school who meet their SGOs ( $r(122) = .096$ ,  $p = .29$ ).

**Exhibit 35. Relationship between Growth Points and Percentage of SGOs Met**

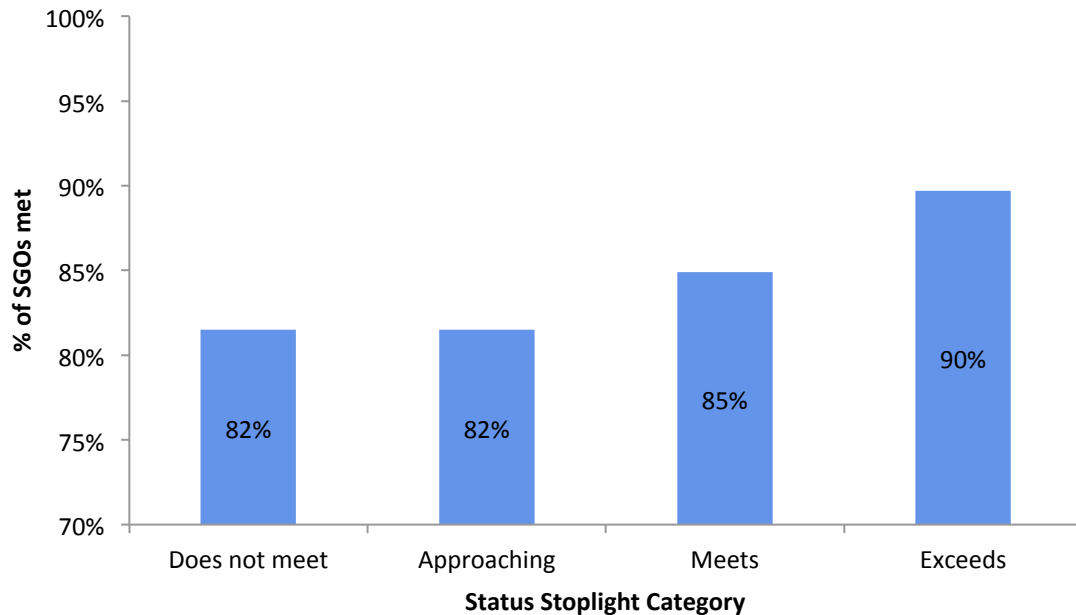
This is a key relationship, because if SGOs lead to improved student outcomes, a relationship between the percent of personnel meeting their SGOs and student growth would be expected.<sup>43</sup> It also has another important implication, which is that neither schools nor DPS administrators should assume that because a school has a high percentage of SGOs met, they are on-track to experience higher student growth.

*Do schools with high Status tend to meet their SGOs?*

The measure of Growth points earned on the SPF framework is particularly useful because it takes into account the initial level of student achievement by focusing only on growth, rather than on absolute level of attainment. However, it is also useful to consider whether there is a relationship between the percentage of points a school earns on the Status portion of the SPF and the percentage of staff meeting their SGOs; this provides a more complete picture of the relationship of SGOs with different types of attainment measures.

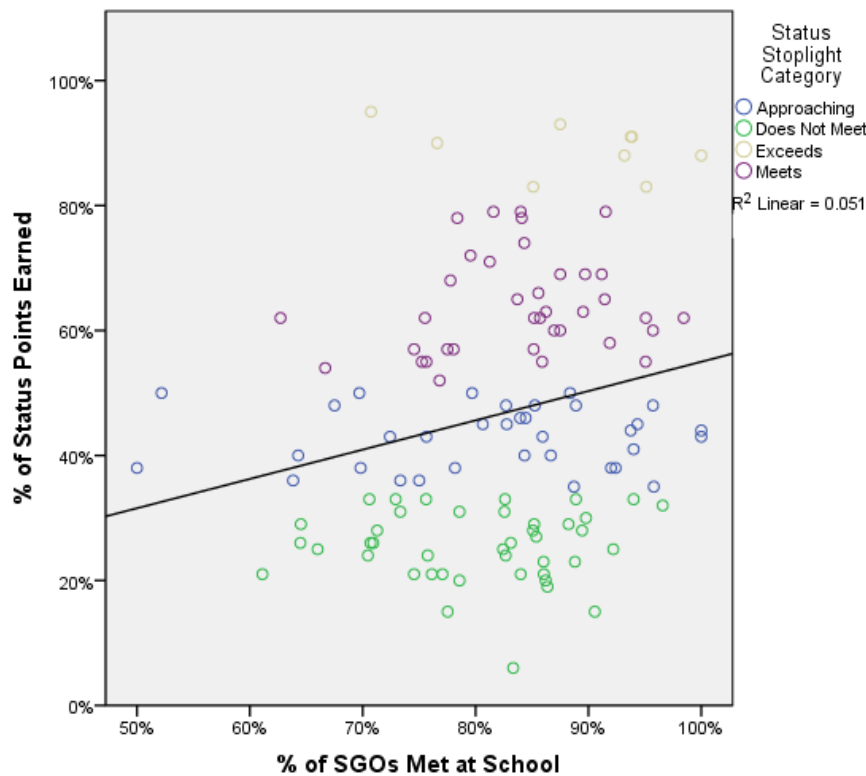
There was a slight tendency for teachers at schools with a Status Stoplight in the Meets or Exceeds category to meet their SGOs, but the overall difference in the percent of SGOs met between the highest and lowest Status categories was only about 8% (see Exhibit 36).

<sup>43</sup> This relationship was essentially the same if we assessed only SGOs written by teachers instead of including all staff ( $r(122) = .092, p = .31$ ).

**Exhibit 36. Percentage of SGOs Met within Each Status Stoplight Category**

Note: This analysis is at the level of the individual staff member.

Evaluators next explored the question of whether schools that had higher percentages of their staff meeting SGOs also earned a higher percentage of Status points on the SPF. This was assessed by examining the correlation between the percentage of status points a school earned and the percentage of SGOs met (see Exhibit 37). The correlation value was .225 ( $p=.013$ ,  $N=122$ ), which means that without controlling for any other factors about 5% of the variance in school Status points was related to the percentage of SGOs met at a school.

**Exhibit 37. Relationship between Status Points and Percentage of SGOs Met**

There are many possible explanations for the existence of this relationship. If SGOs were leading to greater student growth at a school, we would expect to see a relationship between the points a school earned on Growth and the percent of SGOs met at the school, yet this analysis finds no such relationship. This does not support an interpretation that SGOs are a cause of higher Status. However, the finding that schools that earn higher percentages of Status points also tend to have more staff who meet SGOs suggest that there might be a common factor related to both meeting SGOs and having higher Status. For example, interview data showed that higher SPF schools engage in the SGO process in a slightly different way than lower SPF schools tended to have SGOs that were aligned with school improvement goals, and to engage in a greater use of data around their SGOs. It may be that in these schools there are more robust structures and processes to support teachers around meeting their SGOs (e.g., opportunities to collaborate with other teachers to improve practice related to SGO goals, feedback from the principal related to progress towards goals, greater use of interim monitoring data related to SGO goals). These factors may make it somewhat more likely that teachers in higher Status schools will meet their SGOs.

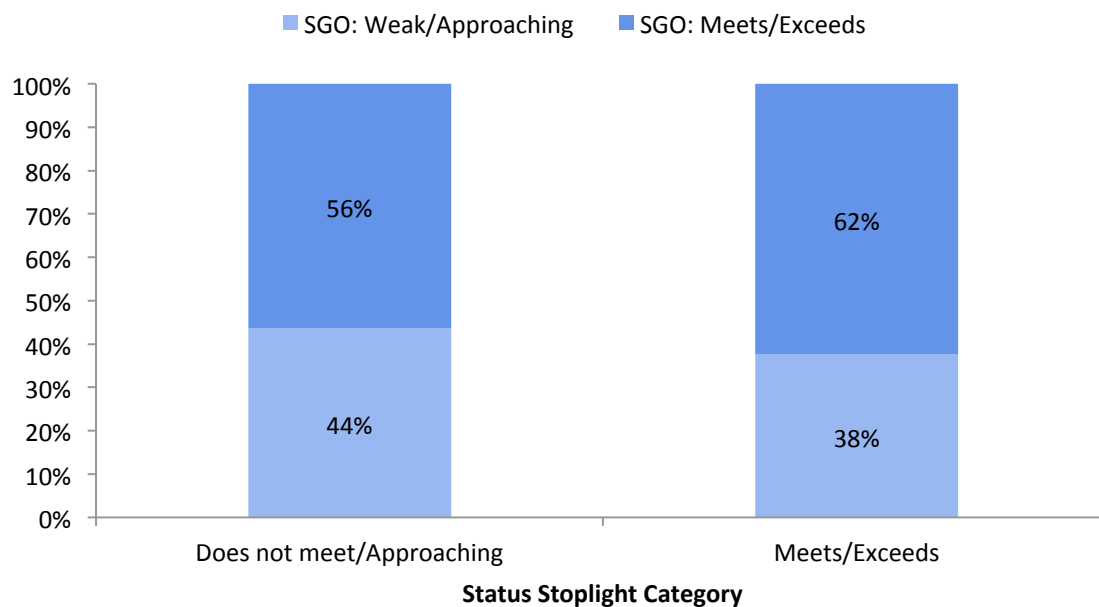
*What is the relationship between rigor and school achievement?*

One possible explanation for the lack of relationship between achievement and meeting SGOs is that at some schools the SGOs are less rigorous, making them easier to meet but also potentially resulting in lower student growth. If SGOs lack rigor, it is quite probable that there would be no relationship between SGOs met and student growth because the SGO was not informing

instruction in a meaningful way. In order to assess this possibility, the relationship of school achievement and SGO rigor was examined. Given the relatively small sample size of SGOs and the small number of schools represented, these results should be considered exploratory and interpreted with caution.

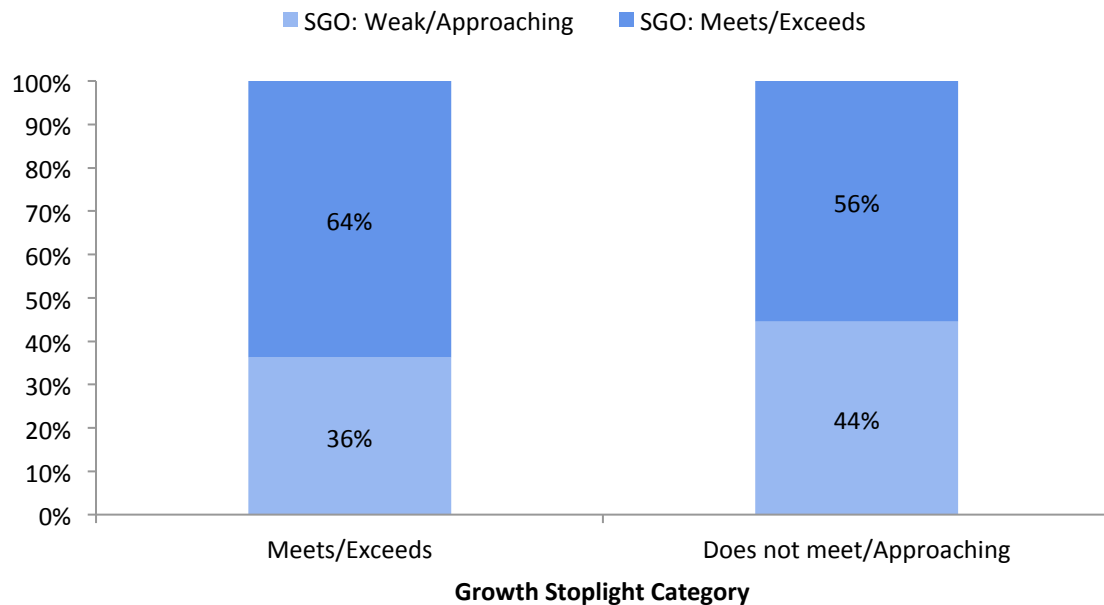
First, the ratings of SGO rigor for schools with higher Status Stoplight ratings were examined (see Exhibit 38). For the purposes of this analysis, the top two status categories (Distinguished, Meets Expectations) were combined, as were the bottom two status categories (Accredited on Probation, Accredited on Priority Watch).<sup>44</sup> The results showed that schools with lower overall achievement tended to have SGOs with somewhat lower ratings of rigor compared to schools with higher achievement, though the differences were relatively small.

**Exhibit 38. Comparison of SGO Ratings across Status Stoplight Categories**



Secondly, the relationship of SGO rigor and the school's Growth Stoplight rating was examined by combining the top two categories of growth (Exceeds, Meets), and the two bottom categories of growth (Approaching, Does Not Meet). As shown in Exhibit 39, SGOs from schools in the higher growth categories tended to have SGOs with somewhat higher rigor.

<sup>44</sup> This division excluded one category in the middle - Accredited on Watch. The conclusions remained the same if this category was included with either the top two or bottom two status categories.

**Exhibit 39. Comparison of Growth Stoplight and SGO Rating**

These analyses suggest that there may be a slight tendency for lower achieving schools to have SGOs with lower rigor. However, the variance in rigor ratings between schools which are different on either Status or Growth is small, and would be unlikely to obscure substantive relationships between the achievement measures and SGOs. It is likely that differences in rigor are only one component of a more complex story about SGOs across various types of schools. Although the data do not support the interpretation that improving SGOs would improve outcomes for these schools, it is worth considering how to improve the rigor of SGOs in order to increase consistency and quality around SGOs in these schools. These schools may benefit from additional support or resources to help make SGOs a maximally useful tool for teachers.

#### *Are ProComp teachers more likely to meet their SGOs?*

Based on the ProComp theory of action, ProComp teachers should be more motivated than Non-ProComp teachers to set meaningful SGOs and to attain them because, if they are successful, they will receive monetary compensation.<sup>45</sup> In order to assess this type of motivational effect, the relationship between ProComp status and the likelihood of meeting SGOs was examined. The percentage of SGOs met across all teachers was 83%, and ProComp teachers were somewhat more likely to meet their SGOs than Non-ProComp teachers (85% vs. 78%).

#### *How rigorous are SGOs for ProComp and Non-ProComp teachers?*

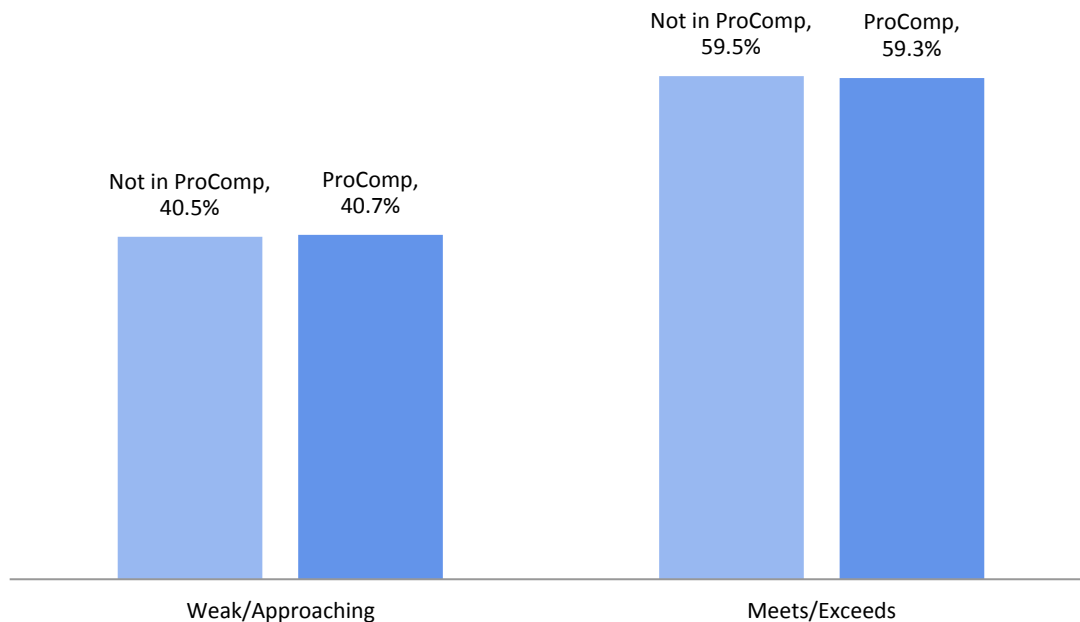
Since analyses revealed that it was somewhat easier to meet SGOs with lower rigor (see Exhibit 33 on page 105), a comparison of rigor was conducted to determine if there was a difference

<sup>45</sup> Presumably ProComp teachers would be motivated to make their SGOs rigorous and meaningful because they can also earn incentives related to high student achievement and growth.



between ProComp and Non-ProComp participants. No difference in SGO quality was found between ProComp and Non-ProComp participants; in fact, the two groups were essentially identical in the overall quality of their SGOs. This suggests that staff who are not in ProComp set equally rigorous objectives as their ProComp peers. It would appear that, at least in terms of general quality ratings, ProComp participants do not have substantively more rigorous instructional goals than Non-ProComp staff.<sup>46</sup>

**Exhibit 40. Comparison of SGO Ratings for ProComp vs. Non-ProComp Teachers**



In order to explore this further, the relationship between ProComp status, rigor rating of the SGOs, and likelihood of meeting an SGO was examined (see Exhibit 41). The likelihood of meeting an SGO was the same regardless of rigor and ProComp status for all groups except ProComp teachers who wrote lower quality SGOs. These teachers had a somewhat increased likelihood of meeting their SGOs. These results should be interpreted with caution since there was only a small percentage of teachers overall who did not meet their SGOs, and because the size of each group diminished when they were broken out in more detailed ways for this analysis (as can be seen in the *n* sizes reported in Exhibit 41).

<sup>46</sup> The quality rubric used for this study assessed SGOs at a more general level. Thus, it may be that a more detailed content analysis of SGOs would reveal subtle differences between ProComp and Non-ProComp teachers which are not evident here.

**Exhibit 41. Likelihood of Meeting the SGO Based on Rigor and ProComp Status**

	ProComp	Non-ProComp
Lower Rigor SGO	90% (n=140)	80% (n=49)
Higher Rigor SGO	78% (n=204)	78% (n=72)

In many cases, SGOs received lower ratings of rigor because they were ambiguous about goals or baseline data; higher rigor SGOs tended to include better articulated goals, which would decrease the possibility for subjective decision-making. Given that ProComp participants are more likely to meet lower rigor SGOs than their Non-ProComp peers, this may suggest that principals could give ProComp teachers the benefit of the doubt when their SGOs are vague because there is a monetary incentive tied to their accomplishment. In theory, principals have no particular reason to give Non-ProComp participants a similar benefit of the doubt because there is no positive or negative consequence for meeting the SGO. Although this explanation is speculative, some teachers did complain that they felt ProComp participants were held to different standards around SGOS. However, it is worth noting that there was no evidence of an overall bias towards ProComp participants being judged to have met their SGOs. This may highlight the need to remove subjectivity to the extent possible by ensuring that teachers set SGOs which have clearly articulated objectives and measures of performance.

## Discussion

SGOs are one of the cornerstones of the ProComp system, intended to serve as a key motivator for teachers to set and achieve high expectations for their students. The CTAC evaluation suggested that SGOs were related to improved student achievement, but the current analyses did not find evidence that SGOs were related to the percent of points a school earns on SPF Growth measures. However, this evaluation did identify a number of ways in which SGOs may be useful to teachers, as well as ways that the process could be improved. The SGO process has the potential to serve as an important organizing structure which helps teachers and schools focus and monitor their instruction. But, without addressing some important deficits in the system, there is a real risk that SGOs will become a meaningless exercise that results in no real benefit for teachers or students.

**Implementation of SGOs is impacted by a lack of support and standardization.** Teachers had numerous concerns around the way that SGOs were implemented in schools. Issues centered on consistency of SGOs between teachers and schools sites, as well as the level of expectations reflected in SGOs. The data on implementation suggest a substantial need for more support and standardization around the SGO process, a need that was voiced by both principals and teachers. After the ProComp pilot ended many key supports were discontinued, and school personnel seemed to feel that they lacked much of the support and training they needed to appropriately implement SGOs.

**Teachers have mixed attitudes about whether SGOs changed instructional practice.** Teachers and principals on average expressed fairly neutral opinions about the role of SGOs, though their comments in interviews suggested somewhat mixed opinions. Some teachers reported that SGOs had helped them focus instruction, and that data-driven conversation between teachers and administrators had increased at the school as a result of the SGO process. Other teachers reported no impact on their instruction. Similarly, findings from the survey indicated that a substantial percentage of teachers did not endorse the idea that SGOs had improved their instruction or student outcomes. School staff had mixed views of on whether SGOs had any impact on instructional practice. Given the key role of SGOs in the ProComp system, it is somewhat concerning that more teachers do not see SGOs as an important driver of improved instruction or student outcomes. It may be important for DPS to explore how the SGO process can be made more meaningful for teachers as a way of focusing and informing their instructional practice.

**Most SGOs meet expectations for rigor, but some have significant problems that could be remedied with better oversight and training.** In an examination of SGO rigor, a majority of SGOs met or exceeded standards that DPS encourages. This is critically important, since SGOs are unlikely to improve practice if they lack key elements of rigor. However, as evaluators went through the process of rating the SGOs, they identified a number of significant problems which suggested that not only are some teachers writing very poor SGOs, but that these low quality SGOs are being approved by the principal. As part of the improved standardization and quality of resources available to teachers and principals, DPS should consider addressing some of the key issues raised in Appendix F to ensure that SGOs are made maximally useful and rigorous. As one strand of standardization and quality control, principals should be held to a high standard regarding the quality of SGOs they are willing to approve. It is debatable as to whether some of the SGOs in the sample data set should ever have passed principal inspection given their lack of clarity, poorly defined learning objectives, or lack of high expectations for students. Since principals are key actors in helping teachers define quality SGOs, they must be well trained and resourced by DPS, and ultimately held accountable for the quality of SGOs at their school.

**SGOs are somewhat easier to meet when less rigorous assessments are used.** This finding raises an important issue of what kind of assessments are most appropriate or acceptable for assessing SGOs. To the extent that teachers use less rigorous assessments, meeting an SGO may provide a false sense of achievement unless these same students also improve on standardized tests at the end of the year. Debates about the appropriateness or adequacy of standardized assessments aside, these tests determine school accountability, and for that reason alone it is critical that students show appropriate achievement/growth on them. It is tempting to conclude that teachers who meet their SGOs using non-standardized assessments – particularly teacher self-developed tests or rubrics – will also have students who show adequate achievement or growth on standardized tests. But this is in no way assured, as analyses found that whether teachers met their SGOs was not a good predictor of school performance. This may be a particular issue at the high school level where the use of less rigorous assessments tended to increase sharply compared to the elementary level. As part of the continuing conversation about

ProComp, it will be important for DPS to lead the discussion on what type of assessments are appropriate measures of learning for SGOs. DPS should also ensure that teachers have easy access to high quality assessments that are aligned with state standards that could be used as part of the SGO process. The advent of Race to the Top has increased the interest in using student learning objectives as a tool in assessing teacher effectiveness. This in turn has generated professional conversation and publications focused on criteria for these objectives (Goe, 2010; Rhode Island Board of Regents, 2011) and for the assessments used to evaluate them (Goe, L. & Holdheide, L., 2011; Marion, S. & Buckley, K., 2011; Herman, J., Heritage, M. & Goldschmidt, P., 2011; Teachers of the Denver New Millennium Initiative, 2011). As DPS revisits the SGO criteria and procedures, these sources may provide useful models of rigorous criteria for evaluating SGOs and for identifying or developing rigorous measures of student learning to be used in SGOs.

**At the school-level, meeting SGOs does not appear to be related to student growth.** As a body of evidence, these analyses did not find a meaningful relationship at the school-level between the level of growth in student achievement, and the percentage of teachers at that school who met their SGOs. There was some preliminary evidence suggesting schools with lower achievement or growth may have somewhat lower quality SGOs.

**Higher achieving schools tend to have more rigorous SGOs, and also display some different behaviors than lower performing schools.** Although this evaluation study did not find a clear relationship between meeting SGOs and student achievement at the school level, it did find some differences in the SGO process between lower and higher SPF schools. In comparison with lower achieving schools, higher achieving schools tended to not only have better quality SGOs, but also had an SGO process that was focused, collaborative, data-based, and where teachers regarded SGOs as meaningful and achievable. This may provide some insight into the behaviors that higher achieving schools use, which can help DPS consider how SGOs contribute to all schools engaging in these behaviors. The existence of the SGO process itself did not appear to be a sufficient condition for schools to adopt these kinds of practices.

**Both ProComp and Non-ProComp teachers had equally rigorous SGOs, though ProComp teachers were somewhat more likely to meet their SGOs.** This analysis did not support the idea that providing an incentive to teachers would cause them to set higher quality expectations than teachers who do not receive an incentive. The rigor of SGOs for ProComp teachers was found to be functionally identical to that of their Non-ProComp peers. However, various data elements clearly highlighted the need for improving the quality control process around SGOs to ensure that they are not overly vague (leaving excessive room for interpretation as to whether or not they are achieved), as well as to ensure that they are neither set so high as to be unattainable or so low they lack rigor.

**The value-added analyses of the student achievement data reported in Chapter 10 found that SGOs are related to teacher effectiveness in reading and math.** This finding underscores the importance of improving and standardizing the SGO process as outlined above in order to

maximize the potential of this ProComp element to positively impact instruction and student achievement.

## Chapter 8: Other Student Growth Incentives—Exceeds CSAP Expectations, Top Performing School and High Growth School

*Prepared by: Diane Proctor*

In addition to Student Growth Objectives (SGOs), ProComp includes three other Student Growth Elements—Exceeds CSAP Expectations, Top Performing School, and High Growth School. Although the Top Performing School and High Growth School incentives are based on the School Performance Framework (SPF) and include other data in addition to Colorado Student Assessment Program (CSAP) scores, teachers and principals generally regard all three of these incentives as being CSAP-related.<sup>47</sup> These three incentives are expected to increase student achievement and are awarded based on the accomplishment of that outcome. For the Exceeds CSAP Expectations, Top Performing School, and High Growth School elements to work there should be:

- Knowledge and understanding of the availability of each of the incentives and requirements for earning them
- Motivation and self-efficacy to earn the incentives
- Rigorous activities focused on instructional improvement and student learning

This model provides a basic framework for examining teachers’ and principals’ thoughts and attitudes about the Exceeds CSAP Expectations, Top Performing School, and High Growth School incentives.

Two data sources were used for the analyses of the three CSAP-related incentives, the teacher and principal surveys, and interviews with teachers and school administrators.

Enabling Conditions	Activities	Intermediate Outcomes	Results
ProComp Agreement (Motivational Goal, Student Growth ProComp Component)  DPS Requirements for earning each of these incentives	Principals sets stage based on school goals  Teachers review school and student data  Teachers have or acquire DPS curriculum  Teachers have or	Teachers implement curriculum using effective instructional practices  ProComp teachers increase in motivation to increase student achievement measured by CSAP	DPS student achievement increases  - Growth  - Status

<sup>47</sup> The term CSAP-related will be used in this chapter as a shorthand way to refer collectively to the Exceeds CSAP Expectations, Top Performing School, and High Growth School elements or incentives.

Enabling Conditions	Activities	Intermediate Outcomes	Results
<p>Effective curriculum and instruction</p> <p>Culture that supports and values increased school improvement and increased student achievement</p>	<p>acquire effective instructional practices</p> <p>Teachers have high expectations for students that support school goals</p> <p>Support is provided to help teachers achieve school and individual goals for increased student achievement</p>	<p>and other SPF indicators</p> <p>More students benefit from increased learning</p> <p>More teachers increase compensation</p>	

## Findings

### *Overview of the CSAP-related incentives*

The Exceeds CSAP Expectations incentive is limited to 4<sup>th</sup> through 10<sup>th</sup> grade teachers who teach language arts and/or mathematics. The incentive is based on an assessment of the CSAP scores students earn across two successive grade levels. To qualify for this incentive a teacher must have a minimum of 10 students for whom the two scores are available and 50% of these students must attain the 55<sup>th</sup> percentile or higher for statewide student growth using the Colorado CSAP Growth Scores. If students in a particular teacher's class meet these criteria on more than one CSAP test, teachers are still awarded a single Exceeds Expectations bonus.

The Top Performing and High Growth School incentives can be earned by any ProComp teacher (not just those who teach in CSAP content areas and grades) in schools that earn one or both of these distinctions. These bonuses are determined by the school's SPF Rating, of which CSAP scores are one component. Top Performing schools are those that are in the Meets Expectations or Distinguished categories and earn the highest percentage of total points on the overall SPF Rating. High Growth Schools are those in the Meets or Exceeds categories on the Growth Stoplight component of the SPF.

All three of the CSAP-related incentives are non-base building, meaning that they are one-time bonuses as opposed to increases that are sustained in the teacher's base salary. In 2009-10, teachers who earned the Exceeds Expectations, High Growth School, or Top Performing School incentive were paid \$2,402.26 for each incentive earned.

Prior to the 2008 Agreement, Exceeds Expectations and Distinguished School were the two CSAP-related Student Growth incentives. In the 2008 Agreement, Distinguished School was replaced by Top Performing School, the basis for determining this distinction was changed to the

SPF, and the High Growth School incentive was added. The data reported in Chapter 2 indicated that the proportion of teachers earning the Exceeds CSAP Expectations incentive has increased annually from 5% in 2006-07 to 14% in 2009-10. The Distinguished School incentive was earned by a limited number of teachers in the first two years (13% and 18% respectively). Starting with the 2007-08 school year, the Top Performing incentive was earned annually by 34% to 45% of ProComp teachers and the High Growth School incentive was earned by 37% to 52% of ProComp teachers.<sup>48</sup>

### ***Do teachers know about and understand the CSAP-related incentives?***

Knowing about and understanding how to earn a particular CSAP-related incentive is necessary in order for that incentive to be motivating. Based on survey results, Exceeds Expectations, Top Performing School, and High Growth School were the least understood of the ProComp elements. Between 47% - 63% of Compulsory and Voluntary ProComp teachers reported understanding each of these incentives. Principals' levels of understanding of these incentives were similar to those of teachers.<sup>49</sup> Overall 42% of the interview and focus group sources (14 administrators, 45 ProComp teachers, and 13 Non-ProComp teachers) commented on these CSAP-related elements. Among those who commented, 31% of ProComp, 54% of Non-ProComp, and 21% of administrator interview and focus group sources expressed confusion or inaccurate information regarding these incentives. The most prevalent confusion centered on eligibility for the incentives. Both teachers and administrators wrongly thought the restrictions related to the Exceeds CSAP Expectations incentive also applied to Top Performing and High Growth.<sup>50</sup> For example, an experienced ProComp teacher expressed this misunderstanding:

*Some teachers can make more money if their CSAP scores go up, ...[but] first and second grade teachers don't get anything...even though it's the first and second grade teachers who are the building blocks.*

Non-ProComp teachers had similar misunderstandings. This teacher remarked:

*Another reason why I did not join ProComp is because ProComp does not offer bonuses for teachers who don't teach CSAP classes. We all have a hand in helping the kids meet proficiency but only CSAP teachers get the bonuses and that is unfair.*

A few administrators did not have a clear understanding of the three CSAP-related incentives. As one administrator commented:

*Exceeds Expectations. It's been nice for our teachers, [but] it's not equitable that it's only for math and English. There needs to be something that the PE*

<sup>48</sup> See Chapter 2 for additional details.

<sup>49</sup> See Chapter 3 for additional details.

<sup>50</sup> All ProComp teachers in schools designated as Top Performing and/or High Growth are paid these incentives.



teachers can be accountable on. They teach English too. It needs to be something everyone's eligible for.

There were also five comments from respondents who expressed a desire for more information regarding the data and process used for determining these incentives. Teachers in a focus group of instructional leaders emphasized this point with a rhetorical question: *"If we don't know how it works, then how do we do it?"*

### ***Are teachers motivated by CSAP-related incentives?***

Survey data indicated that less than half of the teachers believed the Exceeds CSAP Expectations and Top Performing School incentives would motivate teachers to improve instructional practices, lead to professional growth, or increase student achievement. The High Growth School incentive was regarded as having slightly more potential than the other two CSAP-related Student Growth elements; 51% of the ProComp teachers felt this incentive would improve instructional practice, 30% felt it would lead to professional growth, and 45% thought it would increase student achievement. Principals held more positive opinions than teachers and saw the greatest potential in the Exceeds CSAP Expectations and High Growth School incentives for motivating teachers to improve instructional practices and increase student achievement with 59% to 66% expressing positive opinions on these items.<sup>51</sup>

#### ***Motivational effect of Exceeds CSAP Expectations incentive***

Among the interview and focus group sources that commented on the CSAP-related incentive ( $n=72$ ), 8% remarked that the Exceeds Expectations bonus was motivating. Some teachers who had earned the bonus described how they were motivated to continue to do so, while others remarked that the bonus was just generally motivating. One teacher grouped this incentive with others, saying, *"Goal oriented [incentives] like Exceeds Expectations, CSAP Student Growth are the things that motivate me in my professional practice."* Some teachers who have earned the Exceeds Expectations bonus may be motivated by the recognition, such as one who noted, *"I am really competitive. I want to be the best and I want my kids to learn and do well... I am about the kids, not just the money."* Additionally, some teachers who taught in areas that were not eligible for the Exceeds Expectations bonus felt that they lacked an incentive or motivator. For example, one teacher explained, *"As a social studies teacher, I don't qualify for a CSAP bonus. Other than wanting to be a good teacher, there is no incentive for me to work individually harder to work for a CSAP bonus."* These teachers were either not aware of the CSAP bonuses awarded to Top Performing or High Growth schools or did not view them as individually motivating. No ProComp teachers specifically indicated that the Exceeds CSAP Expectations bonus was not motivating (other than those who, like the teacher above, commented that they were not eligible for the bonus). Non-ProComp teachers did not comment on this bonus at all.

When discussing CSAP-related incentives, principals at three schools mentioned motivation in relation to the Exceeds Expectations bonus. At one school, the principal said that when one

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<sup>51</sup> More specific data on motivational effects is discussed in Chapter 3.

teacher earned the bonus, other teachers had become motivated to do the same, saying, *“When multiple people made gains, it has created buzz and been a push.”* A principal at a second school echoed this scenario, reporting that the teachers who earned the Exceeds CSAP Expectations bonus were *“very excited”* and then told other teachers about the incentive. A principal at the third school discussed how the bonus was particularly motivating for one teacher who had earned the bonus for several years.

*Motivational effect of High Growth School and Top Performing School incentives*

Eight percent of ProComp interview and focus group sources commenting on CSAP-related incentives ( $n=72$ ) mentioned High Growth and Top Performing school-wide bonuses serving as motivators. Five remarked that the High Growth School bonus motivated them; two mentioned the Top Performing School bonus. A teacher from a school that had not received either bonus said, *“It would be nice to see all of our hard work show. It’s the label, it makes you feel better, but it’s not the money. It’s not that much.”* A teacher at a school that did receive both bonuses reported that the money did have an impact, saying, *“There’s more pressure because we get paid more for being High Growth or other designations. When you have a monetary incentive, it makes it a little more pressure.”* Another teacher at a Top Performing School agreed that both the designation and the incentive were motivating, saying, *“We are a High Performing School. We have a certain pride, but... it’s nice to be padded in the wallet.”* Teachers at two other schools who had earned bonuses in the past said that administrators had used the promise of these potential bonuses to motivate teachers. One teacher in an instructional leader focus group spoke highly of the impact that these incentives had at their school, stating:

*ProComp made a difference this year. People are seeing the impact it is making on bonuses. People see that they got recognized for doing a good job. I hadn’t seen that bureaucracy can do anything to motivate teachers and turn schools around. Teachers see the reason for the data. I have [changed my mind]. This school is living evidence.*

One Non-ProComp teacher said that she or he was motivated to work with other teachers in part for the recognition that comes with earning a High Growth or Top Performing Bonus. This teacher stated:

*You want to be in a school that is recognized for their product. I’m not on ProComp, but I’m not sitting back saying I’m not going to work hard. I work hard to get them where they need to be.*

Principals at two schools thought that High Growth or Top Performing bonuses had motivated their staff. One assistant principal said that she or he had not been aware of the High Growth bonus previously, but now they were using it as a motivator to improve student achievement. At another school, the principal discussed how staff had benefitted financially from earning both bonuses, and that the possibility of earning the bonuses in the future helped motivate staff to put in extra time and effort.

Additionally, 13% ( $n=8$ ) of those commenting on the High Growth or Top Performing bonuses mentioned they were analyzing and using data in their schools with the goal of improving achievement. Two experienced teachers noted they were not sure these conversations were a result of ProComp, but rather the overall district emphasis on achievement and AYP.

#### *CSAP-related incentives and teacher efficacy*

Teacher's sense of efficacy or belief in their ability to earn the incentive may moderate the motivational potential of the CSAP incentives. To explore teacher beliefs, the survey included a group of items designed to tap into teacher's beliefs about CSAP achievement and the Top Performing, and High Growth School designations.

Interestingly, the responses of ProComp and Non-ProComp teachers were very similar on these items (see Exhibit 42). Responses were also markedly mixed with regard to teachers' beliefs about the impact they could have on achieving the requirements to earn the bonuses. Teachers tended to be relatively split (across agree, neutral, and disagree) as to whether they believed that student CSAP scores depended of the professional effort of teachers, and whether teachers' levels of professional effort would impact a school being designated Top Performing. Teachers were slightly more positive regarding whether their professional effort would impact a High Growth designation (with about 50% agreeing and 25% disagreeing). Teachers also felt that the composition of the student population was a more influential factor in achieving the Top Performing designation compared to the High Growth designation. Principals were somewhat more likely than teachers to believe that teacher effort was related to CSAP scores and a school's High Growth designation, though overall they were relatively neutral on many items.

The similarity of responses between ProComp and Non-ProComp teachers suggest that the beliefs represented on the survey regarding CSAP achievement may be more generalized, and not specifically tied to the ProComp CSAP-related incentives. Although there were only two interview comments which directly related to efficacy, they provided some illumination of how teacher may think about these issues; both respondents expressed the belief that student test scores were not directly within their control.

**Exhibit 42. Means and Standard Deviations Comparing ProComp and Non-ProComp Teachers and Principals on Survey Items Regarding Beliefs about Student Achievement on CSAP**

Survey Item	ProComp Teachers <sup>a</sup>		Non-ProComp Teachers <sup>a</sup>		Principals	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Student CSAP scores depend on the professional effort of their teachers.	2.92	1.11	2.85	1.09	3.52	1.02
My level of professional effort will impact whether my school will be likely to be designated as "High Growth". <sup>b</sup>	3.26	1.12	3.09	1.13	3.63	.98

Survey Item	ProComp Teachers <sup>a</sup>		Non-ProComp Teachers <sup>a</sup>		Principals	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
My level of professional effort will impact whether my school will be likely to be designated as “Top Performing”. <sup>b</sup>	3.00	1.16	2.93	1.09	3.04	1.08
Our school has less of a chance of being designated “High Growth” because of our student population.	3.00	1.19	3.03	1.21	2.54	1.09
Our school has less of a chance of being designated “Top Performing” because of our student population.	3.57	1.20	3.49	1.14	3.04	1.08

<sup>a</sup> Data are based on analyses using weighted data.

<sup>b</sup> Principal items were worded in terms of the professional effort of teachers.

### ***What are teachers and administrators attitudes toward the CSAP-related incentives?***

There were a number of administrators and teachers who mentioned the CSAP-related incentives during interviews. In three schools, the administrators talked about how their schools were striving to achieve the High Growth and/or Top Achieving designations, and three teachers from these types of schools said that they had not yet earned the incentive but were striving to meet the criteria. In four schools which had previously earned the incentives, administrators spoke about their schools being appreciative of the recognition and the bonus; an additional eight teachers made similar remarks about being appreciative of the honor and bonus. Two teachers did comment that they were unhappy that the CSAP-related incentives were not base building. However, there were other teachers from schools which had not received these bonuses ( $n=3$ ) who were quite negative about these incentives and felt they were not deserved; in particular, there were three teachers who made negative comments about the Top Performing incentive. Interestingly, a teacher from a school which has earned both the Top Performing and High Growth incentives said:

*[T]he CSAP bonus is going to the wrong place; it is really important to reward high growth schools, critically important. I think it is ridiculous to give such [a] huge bonus to schools that are already high achieving.....Rewarding me for teaching at a really good school, that's foolish .....*

## **Discussion**

**The three CSAP-related ProComp incentives are the least well-understood, yet are the ones that most directly reward improvement of student achievement.** ProComp’s theory of change posits that teachers need to know about and understand how to earn an incentive in order for it to be motivating. Many teachers did not understand the CSAP-related incentives. One of the most problematic misunderstandings that surfaced was a confusion regarding who is eligible to earn which incentive. While only the Exceed CSAP Expectations incentive is restricted to

teachers in grades and content areas where CSAP is administered, there were teachers and administrators who believed these same restrictions applied to the Top Performing and High Growth bonuses as well. This is a substantial issue, since if teachers do not understand what incentives they are eligible for or what actions they need to take to obtain the incentives, then they cannot logically be motivated by these incentives.

**Results were mixed on the extent to which teachers found the incentives motivating.** The data clearly indicated that some teachers reported that they felt motivated by one or more of these CSAP-related incentives. However, for some teachers, achieving these distinctions seemed to have less to do with the bonus itself, and more to do with the positive recognition and the fact that their students performed well. Although teachers who received the bonuses tended to be appreciative, discerning the extent to which these particular bonuses were motivating is particularly challenging, since the CSAP-related bonuses are directly confounded with student achievement. There is already significant pressure for teachers to raise student achievement in this era of high-stakes accountability, and the very real possibility for negative repercussions when achievement remains low. Teachers thus already have substantial external “motivation” to raise their school’s performance regardless of whether or not they receive additional financial incentives. This makes it difficult to parse out the motivating effects of the ProComp incentives compared to general accountability pressures.

**Teachers do not have strong beliefs that their professional effort is directly tied to student achievement, and being in ProComp is not related to a higher sense of efficacy.** Teachers’ sense of efficacy is likely to impact the effects of Top Performing and High Growth Schools incentives; after all, if teachers do not believe that their effort can improve student achievement then these types of incentives are not likely to be strong motivators for change in practice. The lack of teacher efficacy beliefs among both ProComp and Non-ProComp teachers was somewhat surprising; only a minority of teachers reported that they felt their efforts could impact student achievement. Teachers were somewhat more likely to believe that they could impact student growth than the higher levels of attainment (which is required for the Top Performing bonus), and principals were more likely than teachers to believe that teacher effort has an effect on student test scores. It is also notable that the efficacy beliefs of ProComp teachers were very similar to those of Non-ProComp teachers, which suggests that ProComp may not be related to participants feeling more efficacious.

**Some principals are using the bonuses to help encourage school-wide efforts at improving instruction.** The ProComp theory of change suggests that the principal’s knowledge and understanding of the CSAP-related incentives facilitates the potential of these incentives to motivate teachers. The findings indicate that some principals are using these bonuses, particularly the school-wide bonuses, as a way to motivate their teachers. In schools which earned the Top Performing and High Growth bonuses, teachers stated that they are motivated to sustain the recognition and the incentive. Similarly, when a school has earned a bonus previously, but subsequently not earned it, teachers wanted to regain the recognition and the incentive.

**Implementing the Exceeds CSAP Expectations incentive has created systemic changes that will help DPS fulfill some of the requirements related to Colorado State Senate Bill 10-191.** The Exceeds CSAP Expectations incentive is the one most closely aligned with the requirement of Colorado State Senate Bill 10-191, Ensuring Quality Instruction through Educator Effectiveness (EQuITEE), which is to be implemented in the 2012-13 school year. One of the requirements of this legislation is that part of a teacher's evaluation be based on measures of student growth. The student growth data used to determine the Exceeds CSAP Expectations incentive would fulfill this expectation for some but not all DPS teachers. The experience of DPS in creating the growth model and the data systems to allow them to determine eligibility for this incentive has helped identify some of the challenges involved in accurately linking student achievement data to teachers.

While this chapter has focused on the qualitative data related to the three CSAP-related incentives, Chapter 10 will examine the effect of these incentives on student achievement.

## Chapter 9: Attracting and Retaining High Quality Educators

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*Prepared by: Robert Reichardt, Todd Ely and Parker Dougherty*

ProComp is intended to improve the effectiveness of the teacher and student service provider workforce in Denver Public Schools (DPS). Before examining the evidence on changes in the teacher workforce it is valuable to review the three basic mechanisms through which compensation and incentives are expected to achieve that goal:

- Motivate teachers to improve skills and practice
- Incentivize teachers to work to achieve a bonus
- Change the composition and allocation of the workforce through attracting and retaining a different workforce.

ProComp has several incentives that could serve to change the composition of the workforce. First, ProComp and its revision in 2008 were intended to make the overall salary at DPS competitive with other districts. Second, teachers might find the opportunity to participate in a new and innovative compensation system as an incentive to work in DPS. Third, ProComp includes specific market incentives intended to attract people to work in Hard to Staff Assignments (HTSA), which are shortage areas mostly around English language acquisition, special education, secondary math, and several Student Services Professional (SSP) positions; and Hard to Serve Schools (HTSS), which are currently defined by the proportion of children who are eligible for free and reduced lunch. However, it is important to note that people may also be attracted by other on-going reforms at DPS, such as the new school strategy or alternative routes for preparing new entrants into teaching.

This chapter addresses three overarching evaluation questions to examine the effect of ProComp on the composition of teachers in DPS:

- How has ProComp Affected Recruitment?
  - Has ProComp influenced the recruitment of a diverse and experienced workforce?
- How has ProComp affected the allocation of teachers between schools?
  - Has ProComp influenced the selection of people for Hard to Staff and Hard to Serve positions?
- How has ProComp affected the retention of teachers?

These questions are addressed through multiple analysis methods and data sources. The chapter begins with a review of the theory of change and its relevance to questions addressed here. Survey and interview data were used to examine the interaction of ProComp with

recruitment and retention. Regression analyses of longitudinal teacher level files were used to identify changes in recruitment and retention that may be associated with ProComp.

## Theory of Change

The theory of change describes enabling conditions necessary for ProComp to be effective, including that participants know about the incentives, believe they can receive the incentives, and find the incentives motivating. The evaluation questions related to the DPS workforce were approached from the perspective of these enabling conditions. This chapter also addresses an outcome of the theory of change—that DPS was able to recruit and retain an effective and/or diverse workforce, particularly in Hard to Staff Assignments and at Hard to Serve Schools.

## Data and Methods

The analysis begins with an examination of whether people were aware of and motivated by the ProComp incentives. Data were drawn from a survey of teacher trainees who were near completion of their licensure programs at four of the larger university-based teacher preparation programs in and near Denver in December of 2010. The survey had 329 respondents (21%). (More information on this survey is located in Appendix G.) Data were also collected from the teacher survey and interviews of existing DPS teachers and administrators conducted near the end of the spring semester in 2010. (More information on these data sources is presented in Appendices B and D.)

The next stage of the analysis examined actions taken by teachers. Data were drawn from files of DPS applicants over the past three years (2007-08, 2008-09 and 2009-10). These files included information on number of applications by position and allowed measurement of changes in the number of applicants for Hard to Serve Schools (HTSS) and Hard to Staff Assignments (HTSA). The data did not extend to periods prior to ProComp, this eliminated a pre-post design but allowed analysis of changes during ProComp implementation. (More information on the applicant dataset is located in Appendix H.)

The final outcome analysis looked at the recruitment and retention of teachers using the State Human Resources (HR) dataset and the DPS Employee Payment file. (These files are described in Appendix H.) The State HR file had longitudinal data on all regular classroom teachers in the state (not including special education or SSPs) from 2004-05 through 2009-10. It was noted that DPS had other concurrent factors that may affect attrition, particularly the development of new schools and school closures under the Portfolio reform model, as well as lay-offs or reductions in the workforce because of changes in funding.

The State HR data were used to describe the relationship between ProComp and recruitment and retention by comparing DPS with the remainder of the state. The dataset included information on where people work (district and school) and qualifications in terms of years of experience and education levels, as well as personal characteristics such as age and race/ethnicity. These data allowed a pre-post analysis of the effect of ProComp, comparing recruitment prior to ProComp implementation in January 2006 (school year 2005-06) with



recruitment in subsequent years and retention in school year 2004-05 with retention in subsequent years. It did not identify those receiving ProComp incentives. However, employees working at HTSS were identified, and one HTSA (secondary mathematics teacher) was identified. Teachers in schools that had 100% attrition or 100% new-to-school were not included in the analysis.

The Employee-Payment file was used to describe the relationship between receiving ProComp incentives and retention. This dataset contained longitudinal data on all ProComp eligible employees in DPS as well as the ProComp incentives they received. The dataset also had information on where people work and their job types. It did not have the same information on qualifications as the state HR data but did have information on educators' age. DPS also provided data on teachers who were laid-off in 2008-09 and 2009-10. These people were not included in the analysis. In addition, the analysis also did not include people from schools that have closed or have significant reductions in force (identified as schools that have over 65% attrition or new recruits based on cut points that fit with patterns seen in the data).

For both datasets, the retention outcome variable was teachers who worked in a district in a given year and did not return the next year (district leavers). The recruitment analysis of the state HR data focused on teachers who did not work in the district during the prior year (new-to-district teachers).

The State HR and DPS Employee Payment files were merged with publicly available contextual data on the schools where educators worked, in particular school enrollment, race/ethnicity of students, student growth scores on the math section of the CSAP, and the proportion of students who qualify for free and reduced lunch prices. These data provided controls for some of the contextual factors associated with recruitment and retention.

## Findings

### ***Are recruits and teachers aware of ProComp?***

An enabling condition in the theory of change is that teachers are aware of ProComp. This awareness is particularly important in recruiting outside of DPS where candidates may have little or no knowledge of ProComp. Awareness of ProComp was considered to be less of an issue for teachers already in DPS and possibly participating in the ProComp system. Three sources of data were used to address this question; the teacher trainee survey, survey of existing DPS teachers, and interviews or focus groups with teachers and administrators.

#### *Teacher trainees*

According to the teacher trainee survey, 70% of teacher trainees reported their main sources of information about where they will apply to work were the Internet and student teaching in a district. Of teachers who had most recently student taught in DPS, only 44% said they knew some or a lot about ProComp. In other words, student teaching in DPS did not assure that a trainee was aware of ProComp.

Among the all teacher trainees, 15% of respondents reported knowing some or a lot about ProComp while the vast majority of respondents (76%) said they knew very little about ProComp. These data suggested that one of the key enabling conditions for ProComp to impact recruitment was missing; many potential recruits were not aware of ProComp, including a majority of those who had recently student taught in DPS. Thus, ProComp would not be expected to have a large impact on recruitment of newly-licensed teachers.

#### *Current DPS teachers and administrators*

Likewise, based on survey responses from current DPS teachers, the majority of those hired under ProComp (64 %) said they knew little or nothing about ProComp when they were hired. Data from focus groups of new teachers showed that there were misunderstandings and a lack of knowledge regarding various aspects of ProComp, namely, what incentives were available, what could be used as base building or as bonuses, and how one was to achieve certain pay jumps. New teacher focus groups (in nine out of 16 schools, 71 teachers in total) produced conversations or individual comments related to the lack of understanding or information about ProComp.

New teachers reported receiving little information on ProComp and stated that other factors were more important in their decision to work in DPS. One new teacher working in a HTSS said, *“ProComp had no bearing on my decision to work in DPS or at the school. At the time of hire, I didn’t know anything about Pro Comp and still know little.”* Another new teacher reported, *“ProComp was just a confusing thing at the bottom of the job description.”*

A school administrator also commented on this lack of information for recruits:

*There is not a system set up to use ProComp to recruit teachers. DPS does a job posting online; we have no control over that. I very rarely discuss ProComp in the recruitment process. The potential is there but the system is not set up that way.*

Taken together, survey and interview data supported the general finding that new recruits knew little about ProComp. This lack of information will moderate ProComp’s ability to impact recruitment of teachers.

### ***Do Recruits and Teachers Value ProComp?***

#### *Teacher trainees*

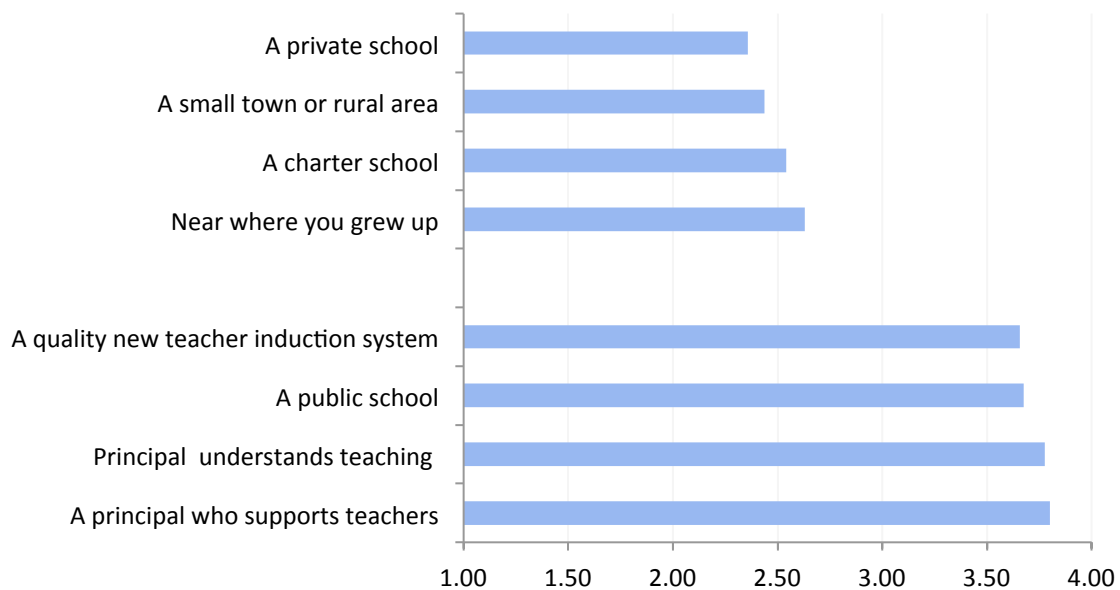
In addition to knowledge of ProComp, the theory of change hypothesizes that people value ProComp enough to either apply for a position within DPS or to remain in DPS. The evaluators examined this issue in two different ways. First, were the perspectives of the teacher trainees in four of the local university-based teacher preparation programs.

Teacher trainees who know about ProComp generally have a favorable opinion of the program. Of teacher trainees who had student taught in DPS and had some knowledge of ProComp, about half (49%) had a favorable opinion of ProComp. In the complete sample of teacher-trainees, 20% of teachers knew about ProComp; of those, about 80% had a favorable opinion of the program.

Interestingly, those whose last student teaching assignment was not in DPS had a more favorable opinion of ProComp than those who had recently student taught at DPS.

Teacher trainees were asked what characteristics impacted their choices on schools where they hoped to work. They were given 23 different characteristics of schools and districts to rate on a four-point scale; this scale was to measure the likelihood they would choose to work in a district with a given characteristic: 4 = very likely and 1 = not at all likely (see Exhibit 43). On average, their highest four priorities were generally related to support for improving practice. The lowest four priorities (on average) were related to the type or location of a school.

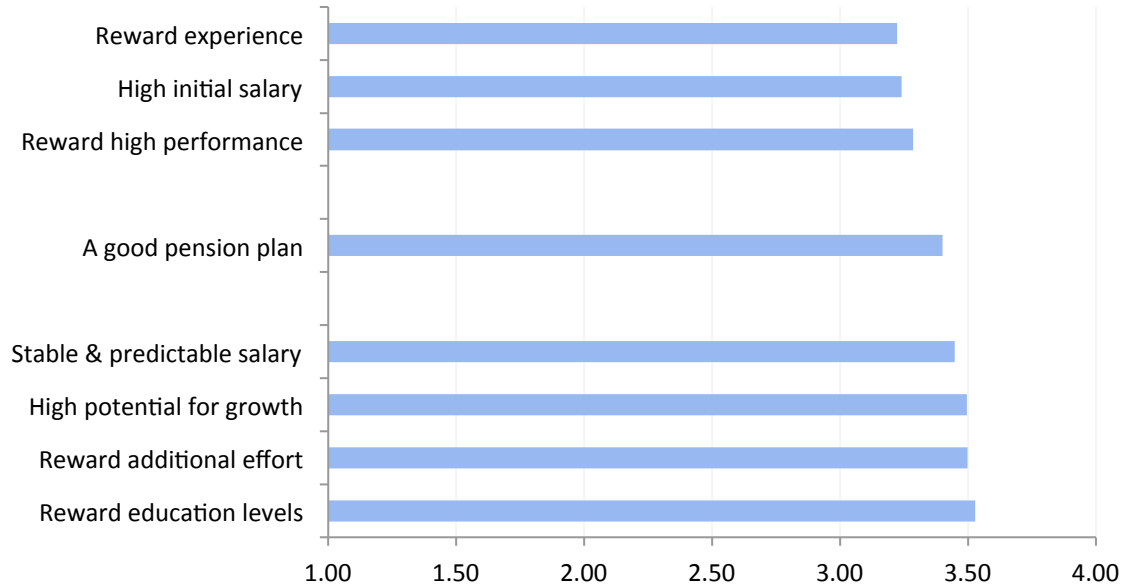
**Exhibit 43. Teacher Trainee Priorities for Selecting a Place to Work (4 is highest priority)<sup>a</sup>**



<sup>a</sup> Source: Survey of Teacher Trainees

The average ratings for the highest and lowest priority groups were statistically different (the two closest priorities were statistically different at the .05 level). Neither the highest nor the lowest priorities for the teacher trainees were related to compensation or ProComp.

There were eight characteristics related to compensation within the list of 23 rated by the teacher trainees (see Exhibit 44). Within this more limited list, teacher trainees had four clear high priorities that had ratings that were statistically different from the three low priorities. The middle priority average rating (around pension plans) was not different from either group.

**Exhibit 44. Teacher Trainee Compensation Priorities (4 is highest priority)**

<sup>a</sup> Source: Survey of Teacher Trainees

These priorities presented a mixed message in terms of ProComp’s attractiveness for recruits. The high prioritization of “salaries that reward increased education levels” and “additional effort” clearly aligned with components of ProComp. The “high potential for growth over time” may depend on the timeframe in question. In a teacher’s initial years, ProComp has more opportunities for growth than traditional compensation plans. However, after 14 years of service, there are fewer opportunities for salary growth. Finally, the high priority teacher-trainees placed on a “stable and predictable salary over time” was not well aligned with the ProComp pay system compared to traditional compensation systems.

At the same time, the low priority placed on “salaries that reward experience” was in line with ProComp’s structure. However, the low prioritization for “salaries that reward high performance” was not in line with ProComp. Equally important, while pension plans are a large component of districts’ total compensation packages, they were not a top priority for new teachers. Taken together, ProComp and the total compensation package at DPS (including retirement benefits) were somewhat aligned with the compensation characteristics that teacher trainees valued.

#### *Current DPS teachers and administrators*

Teachers already working in DPS and hired under ProComp were asked on a survey which of eight compensation elements were important in their decision to teach for DPS (see Exhibit 45). The largest group of teachers (43%) said no compensation elements were important in their decision to work at DPS. Among elements that were reported as important, starting salary was rated highest while various retirement benefits were ranked lowest.

**Exhibit 45. Compensation Elements Important to Teacher Decision to Work at DPS <sup>a</sup>**

Compensation Element	Important to decision to teach for DPS
None	43%
Starting Base Salary	28%
Hard to Serve	24%
Benefits	23%
Hard to Staff	20%
Total Salary Potential	20%
Guaranteed Pension Plan	18%
Other ProComp Incentives	10%
Other Retirement Benefits	8%

<sup>a</sup> Source: Survey of DPS Teachers limited to teachers hired after ProComp implementation, multiple responses allowed,

In a separate question, the large majority (87.3%) of teachers hired under ProComp reported that ProComp had little or no influence on their decision to join DPS. Only 6.9% of this group said ProComp influenced their decision.

The survey results were echoed in the interview data. An experienced teacher said, *“Compensation had no influence on my decision.”* S/he went on to express that DPS could not pay her enough to care more about the kids and that s/he was originally attracted to DPS because of the population and because it was the highest paying district in the metro area. Six of the 71 new teachers interviewed indicated ProComp or the teacher retirement system, known as the Public Employees Retirement Association (PERA ), was a reason for joining the district. Even fewer new teachers ( $n=2$ ) cited ProComp or PERA as a reason for continuing their careers in DPS.

During the interviews, 19 individuals (new and experienced teachers, as well as administrators) mentioned the importance of the weak labor market in improving recruitment. Administrators from 11 of 16 schools (68%) commenting on ProComp’s ability to hire and retain teachers stated that it had no effect. Administrators at five schools believed that increases in the number of applicants were due to the economy. As one administrator stated, *“What really has influenced the applicant [pool] is the job market...the economy. We used to have 1-2 applicants for a position, now we have 20-30-40 applicants. People just looking for a job.”* Some administrators, however, attributed this increase in applicants to the Internet job postings and application process, which enabled schools to attract a larger candidate pool. (The impact of the Internet-based job postings and application process is discussed further in the analysis of applicant data below.)

School leaders were more positive about the impact of ProComp on retention. One school administrator remarked:

*I think [the performance incentive aspect of ProComp] does help us keep our highly qualified teachers. We met expectations as a school, which was a great celebration that everyone got a bonus because we had everything lined up with our SPF and everything. We ask a lot of our teachers, above and beyond, so it was a nice bonus for them.*

In summary, the data from newer teachers suggested the ProComp system was not valued by new recruits or influential in their joining or remaining in DPS. However, administrators at six out of 16 schools did see ProComp as having some impact on retention.

### **Are the Market Incentives valued for recruitment or retention?**

On surveys, teachers reported some specific components of ProComp were valued more than others, such as market incentive and some of the student growth related bonuses. The market Incentives are explicitly intended to attract and retain teachers, thus expected to be valued by teachers, according to the ProComp theory of change.

When looking at ProComp elements shown in Exhibit 45, the Hard to Staff Schools (HTSS) incentive was valued more than other compensation elements with 25% of teachers hired under ProComp responding that it was important in their decision to work in DPS. However, among those who received the HTSS bonus, only 13% of teachers reported that the bonus was all or part of the reason they accepted that position. ProComp teachers who were not receiving the HTSS bonus tended to disagree when asked if the bonus was likely to motivate teachers to move to a particular school ( $M=2.39$ ,  $SD=1.15$ ). Teachers who might transfer to HTSS tended to disagree when asked if they were more likely to consider a HTSS position because of the incentive ( $M=2.35$ ,  $SD=1.4$ ). Teachers recently hired and obligated to join ProComp were more neutral towards considering these positions because of the bonus ( $M=2.72$ ,  $SD=1.069$ ). This analysis was limited to teachers who did not receive the HTSS bonus. This evidence suggests the HTSS market incentives are not highly valued by existing DPS teachers. .

Results were similar when looking at the Hard to Serve Assignment (HTSA) bonus. When asked whether they accepted an assignment because of compensation, few teachers who received HTSA bonuses (6% of compulsory and 9% of voluntary) said they took the assignment because of, or in part because of the bonus.

There was mixed evidence that ProComp Market Incentives were of value in increasing teacher retention. Those who received the HTSA bonus (both Compulsory and Voluntary ProComp participants) were neutral when asked if this bonus encouraged them to remain in the position ( $M=3.09$ ,  $SD=1.28$ ). However, in interviews, some teachers were positive about the value of the HTSS Market Incentive in supporting retention:

*It does give you an extra advantage of being here – this school is tough – I like the kids, but it does motivate me to stay here – if I was being paid the same, I would go to an easier school to teach in.*

Administrators at six out of 16 schools (38%), three of which are designated as HTSS, commented that ProComp teachers were aware of the Market Incentive and the compensation may be among their reasons for continuing in their current positions. However, only 18 out of 148 experienced and new teachers enrolled in ProComp regarded ProComp as a reason for continuing in their current position.

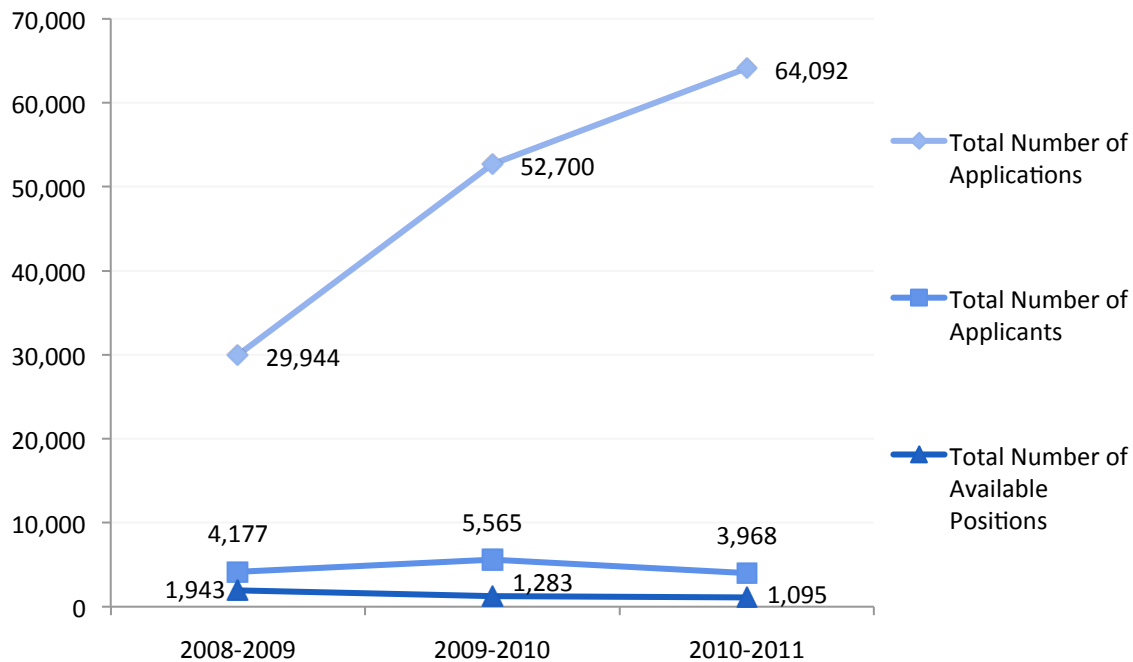
In summary, ProComp is not perceived as highly motivating in recruiting those who are looking for new positions or to retaining those already working at DPS. Survey and interview evidence supported the notion that ProComp's effect on recruitment would not be expected to be large. Within all of the different ProComp incentives, the Market Incentive elements may be slightly more important than other incentives in motivating recruitment and retention, although the data suggested that the effects of these elements would also be low.

### **Do Market Incentives increase the number of applicants?**

An intermediate intended outcome of ProComp is to increase the number of applicants to DPS, thus enhancing the choices that DPS principals and other managers have when filling a position. Based on the theory of change, more people will apply for positions in DPS if they are aware of the incentives and consider them of value. The market incentive elements, in particular, were intended to increase principal's choice of applicants for open positions.

Applicant data were used to identify the total number of applications, applicants, and positions that were eligible for ProComp in 2008-09, 2009-10, and 2010-11. Positions, applicants, and applications in HTSS were identified as well as the applicants and applications in a sub-set of HTSA (secondary mathematics and special education). It is also important to note that over this period there were large changes in all three measures (applicants, applications and positions).

Overall, the total number of applications submitted for ProComp eligible positions increased over the three-year period by 114%, from about 30,000 to over 64,000 as shown in Exhibit 46. However, this increase was due to individual applicants applying for more positions, rather than more individuals applying for positions. One possible explanation is that applicants may have been taking advantage of increases in automation to simply file more applications. There were 209 fewer individual applicants (3,968) in 2010-2011 than in 2008-09 (4,177). Over this period, the total number of available positions also decreased from 1,943 to 1,094.

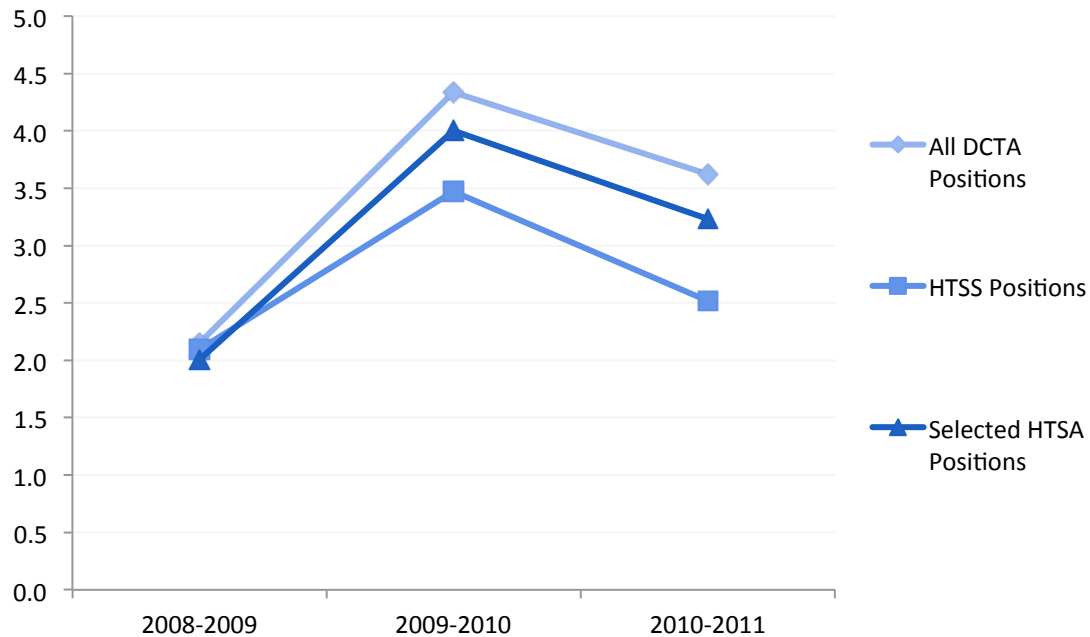
**Exhibit 46. Number of ProComp Eligible Applications, Applicants, and Available Positions for each School Year <sup>a</sup>**

<sup>a</sup> Source: DPS Applicant Files

The large increase in the number of applications creates the illusion that DPS principals and managers had many more choices when selecting people for jobs. However, the results are not the same when looking at the unduplicated number of people who want to work in DPS (applicants), given the number of open positions available.

Exhibit 47 shows the number of applicants per position for all ProComp eligible positions and for HTSS and HTSA positions. Patterns for all of these positions were similar, increasing significantly from 2008-09 to 2009-10 and then decreasing the next year. Overall, the number of applicants per position was somewhat higher in 2010-11 than in 2008-09, meaning that over this period the number of choices for DPS when hiring increased over this period, but not by the same magnitude as the number of applicants shown in Exhibit 47. The number of applicants per position increased by 20% for HTSS positions and by 68% for all DCTA positions.



**Exhibit 47. Applicants per Position by Year <sup>a</sup>**

<sup>a</sup> Source: DPS Applicant Files

However, the positions eligible for HTSS and HTSA consistently have fewer applicants per position than all other ProComp eligible positions, and this difference has increased over time. This may indicate that the ProComp incentives have not been effective in increasing choices for DPS principals and managers. However, this may also be due to other labor factors not measured here.

The results of this analysis indicate that over this three-year period of ProComp implementation, DPS managers have had more applicants to choose from when looking to fill positions although this increase cannot be directly tied to ProComp.

### How has ProComp affected recruitment?

The State HR data was used to compare DPS to other districts in the state. These data allowed comparisons of teachers in DPS prior to the implementation of ProComp (in 2004-05) with the years after implementation, with other metro districts, and the remaining districts in the state. Exhibit 48 shows how many teachers were in each population. Generally, each population increased by about 2% annually. The largest growth rate was 6% in DPS between 2007-08 and 2008-09. Over the entire period, the teacher population in DPS grew by 14%, while the population in other Denver area districts grew by 7% and by 6% in the remainder of the state. The number of teachers declined by 1% between 2008-09 and 2009-10 in the Denver Metro Districts and between 2004-05 and 2005-06 in DPS.

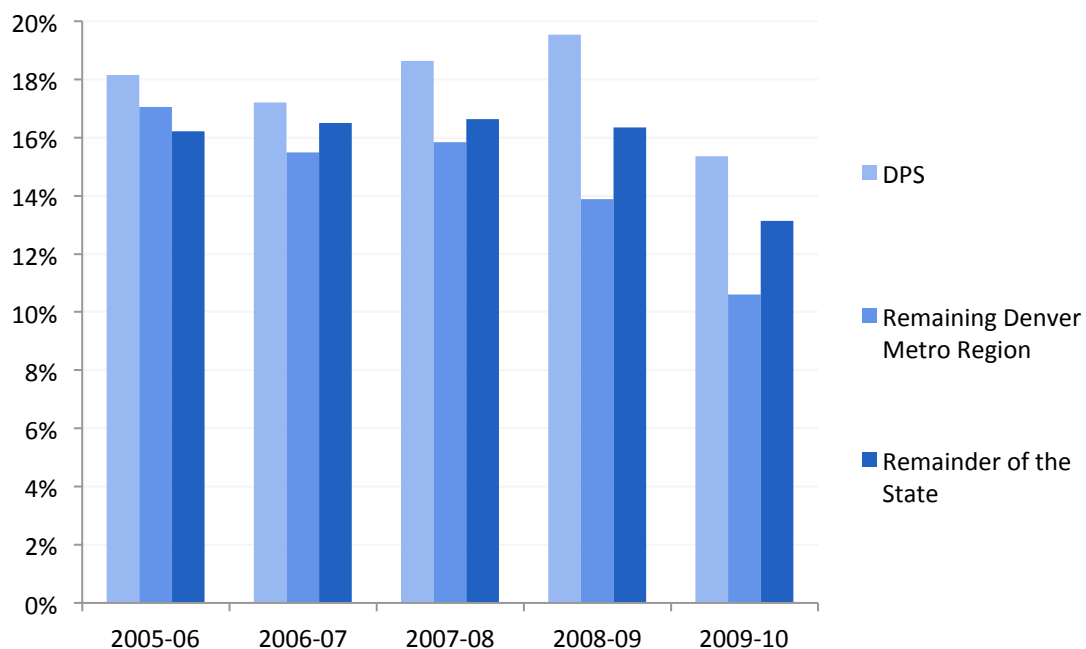
**Exhibit 48. Teacher Population in DPS, Other Denver Districts and Remaining Colorado Districts by Year**

School Year	DPS	Remaining Denver Metro Region	Remainder of the State
2004-05	3,599	17,112	21,176
2005-06	3,565	17,476	21,492
2006-07	3,661	17,884	21,946
2007-08	3,683	18,404	22,367
2008-09	3,887	18,906	22,698
2009-10	4,053	18,721	22,852

<sup>a</sup> Source data is from State HR Files

### ***Descriptive analysis of teacher recruitment***

Over this period, all districts were hiring new-to-district teachers—teachers who did not work in the district the prior year. These teachers were identified using a longitudinal dataset for 2005-06 through 2009-10. Since ProComp was not implemented until several months after the beginning of the school year, recruitment during this school year was considered as prior to implementation. Exhibit 49 shows the percentage of the teacher population new-to-district. Large year-to-year changes were evident across the analysis of the State HR data and were mirrored in DPS Employee Payment data.

**Exhibit 49. Percentage of Teachers New-To-District by School Year**

<sup>a</sup> Source data are from State HR Files

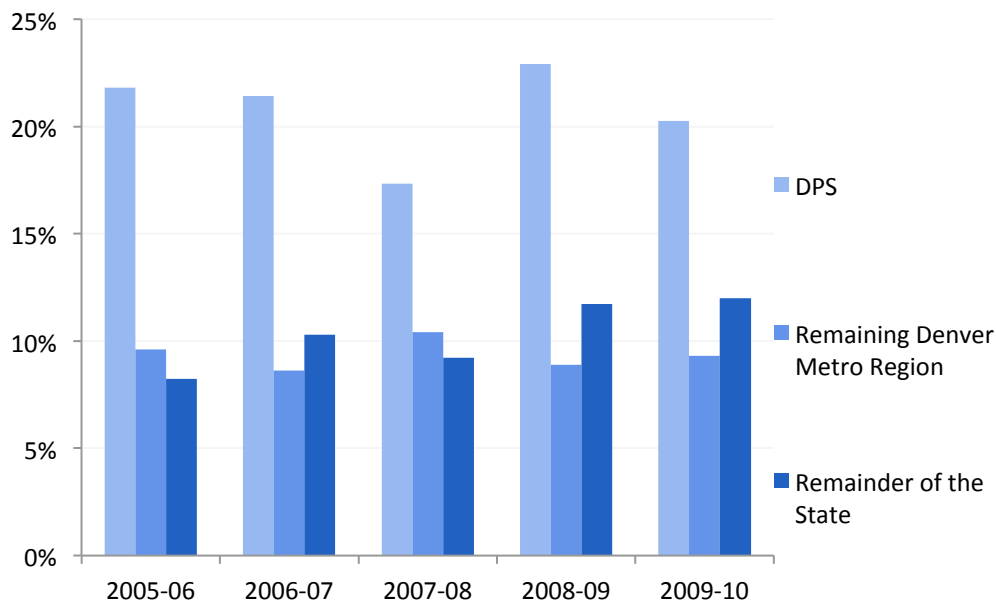
In each year, DPS had a higher proportion of teachers new-to-district than the comparison groups. In 2008-09, the year the DPS teacher workforce grew by 6%, 19.5% of DPS teachers were new-to-district. In most years, the other Denver Metro Region districts had the smallest proportion of new-to-district teachers. The lowest proportion of new-to-district teachers was 10.6% in 2009-10, when the number of teachers working in these districts declined, likely due to changes in the economy leading to reduced school funding.

### ***Has ProComp impacted the recruitment of a diverse workforce?***

#### *Changes in ethnic diversity of teachers*

One of the goals of ProComp is to improve the diversity of the DPS workforce. In Chapter 2, it was shown that the proportion of white teachers grew slightly in DPS. This section looks at the diversity of new-to-district teachers. Exhibit 50 shows the proportion of new-to-district teachers who were minority. Consistently over this period, new-to-district teachers in DPS were twice as likely as those in other districts to be minority. The largest minority group in all districts was Hispanic teachers. As shown in Chapter 2, DPS also had a sizable group of African-American teachers. Over the period, the proportion of Asian teachers also grew in all districts.

**Exhibit 50. Percentage of Minority New-to-District Teachers, by School Year <sup>a</sup>**



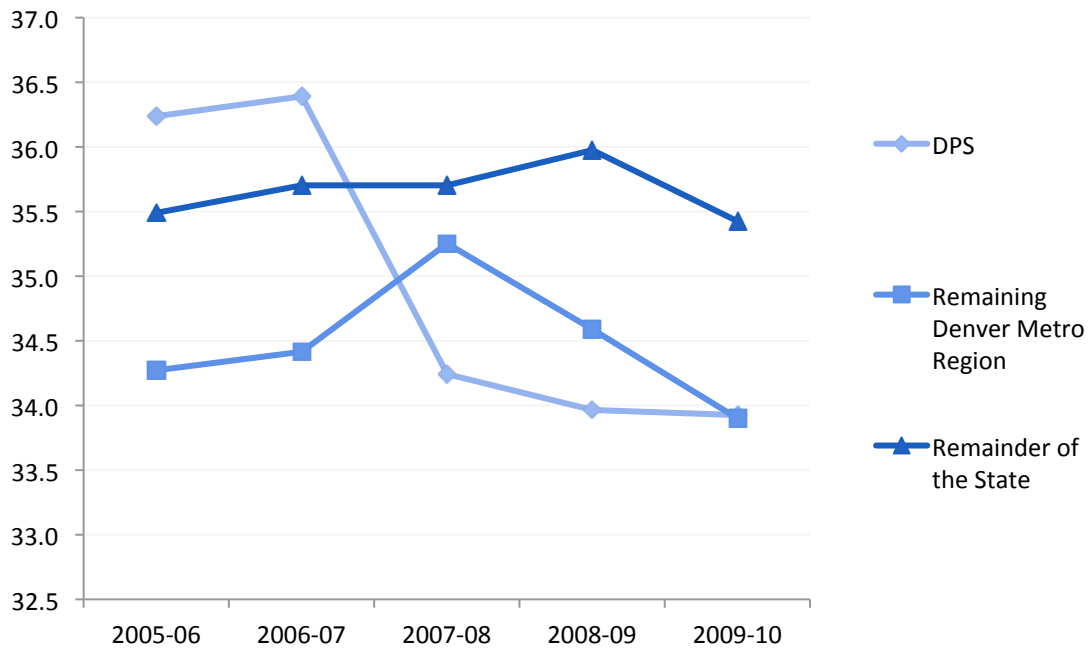
<sup>a</sup> Source: State HR Data

#### *Changes in average teacher age*

Another description of the workforce diversity is the age of its population. As shown in Chapter 2, the average age of the DPS teacher went down during ProComp implementation, at least partially due to the exiting of teachers over the age of 54. Exhibit 51 shows the average age of new-to-district teachers. In the year prior to ProComp and its first year of implementation

(2005-06 and 2006-07) new-to-DPS teachers were older than in other districts. The next year (2007-08) this average age fell by 2.1 years and remained lower than the two comparison groups for all subsequent years.

**Exhibit 51. Average Age of New-To-District Teachers<sup>a</sup>**

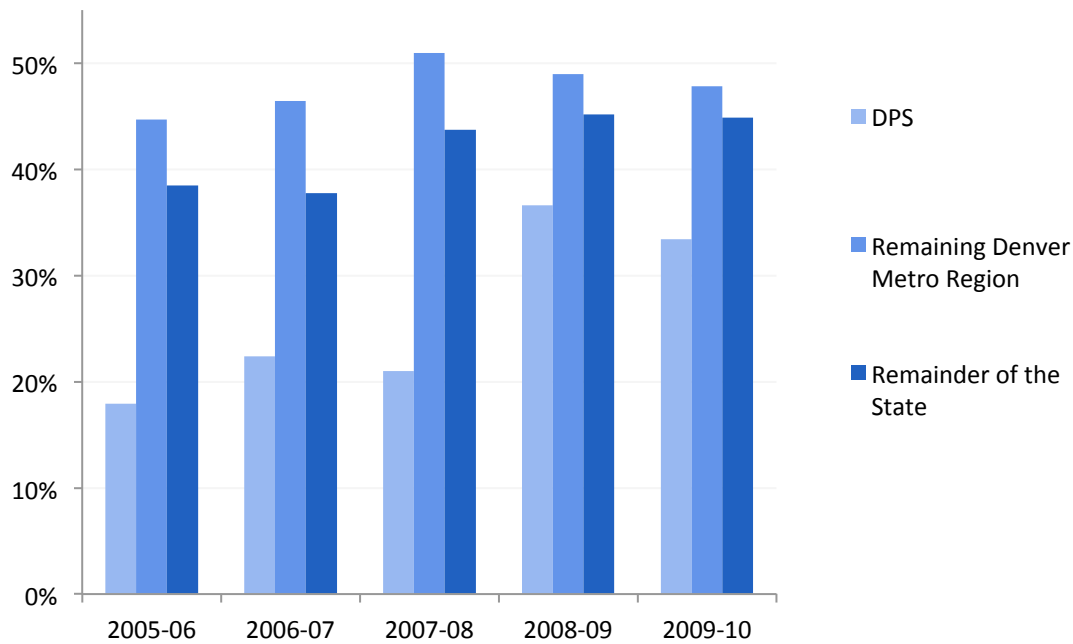


<sup>a</sup> Source: State HR Data

#### *Changes in New Teacher Experience Levels*

One intended mechanism of ProComp is that it will make DPS more competitive for talent within the teacher labor market. To examine this hypothesis, the qualifications of teachers new-to-district were examined to determine if they had improved. The strongest indicator of qualification available is teaching experience, which has some relationship with teacher effectiveness at raising student achievement based on value-added measures (King, 2003). For this analysis, teachers in their first three years of experience in any district were identified as novices; those with three or more years of experience were labeled as experienced.

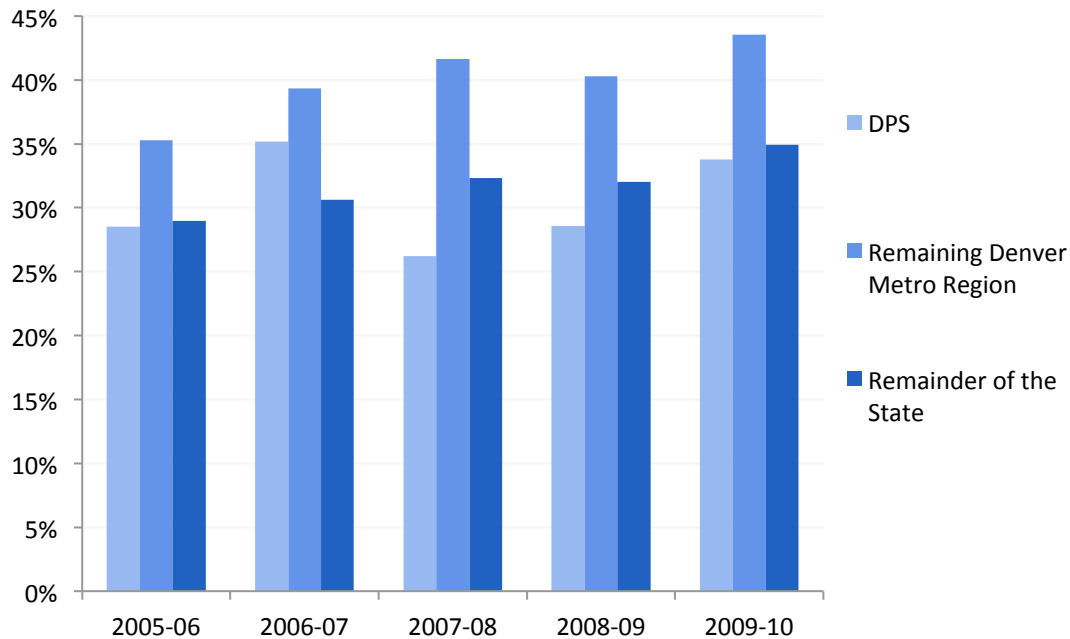
Exhibit 52 shows the proportion of new-to-district teachers who were experienced. Over this period in DPS, new-to-district teachers were generally less experienced than those in other districts, particularly the other districts in the Denver Metro area that compete with DPS for teachers. In 2005-06, the proportion of new-to-district teachers in DPS that were experienced was 27 percentage points less than other Denver area districts. This difference generally decreased during the implementation of ProComp and was at 14 percentage points in 2009-10. At the same time, the proportion of experienced new-to-DPS teachers increased by 86%. In other words, over the period of ProComp implementation, DPS greatly increased in its recruitment of experienced teachers compared to other districts in Colorado.

**Exhibit 52. Percentage of Experienced New-to-District Teachers by School Year <sup>a</sup>**

<sup>a</sup> Source: State HR Data

#### *Changes in teacher education levels*

Another measure of qualifications available for comparison in the State HR dataset is education level. For this analysis, education levels were categorized as either having a bachelor's degree or having master's degree or higher (masters, specialist, EDD or PhD). In general, education levels have not been shown to have a clear relationship with teacher effectiveness as related to student achievement, but educational degrees are valued by compensation systems including ProComp (King, 2003). Exhibit 53 shows the proportion of teachers new-to-district with a master's degree or higher. There is no clear pattern. The proportion of DPS teachers with a master's degree or higher increased in the first full year of ProComp (2006-07) then fell the next year. Over the entire period, the difference between DPS and other Denver Metro Region districts grew by three percentage points. In other words, over the period of ProComp implementation, the education levels of new-to-DPS teachers dropped relative to other districts. Appendix I. contains a linear probability model of new-to-district education levels that again shows no clear pattern in the probability a new-to-DPS teacher will have a master's degree. Given the lack of evidence of a clear relationship between ProComp and teacher education levels, experience was used as the outcome variable for the remainder of the recruitment analysis.

**Exhibit 53. Proportion of New-to-District Teachers with a Master's Degree or Higher by School Year <sup>a</sup>**

<sup>a</sup> Source: State HR Data

### ***Regression analysis of teacher recruitment***

There are multiple factors that can affect the labor market for new teachers. In order to isolate the effects of ProComp on recruitment, a series of regressions were used in the form of linear probability models. A weakness of linear probability models is they sometimes result in probabilities that are higher than 1 or less than 0—in other words, unrealistic results. A strength of these models is that their results are easy to interpret. A coefficient on a variable can be interpreted as the marginal change in the probability that the outcome being analyzed will occur. All models were repeated using a logistic regression as well, which showed similar results.

In the models shown in Exhibit 54, Exhibit 56, and Exhibit 58, a positive coefficient on a variable indicated an increase in the variable was associated with an increase in the probability that a new-to-district teacher was experienced. A negative coefficient indicated that an increase in the coefficient was associated with a decrease in the probability that a new-to-district teacher was experienced.

Three different models are presented as results. The basic equations for the model shown in Exhibit 54 are shown below, with slight differences in the models used in Exhibit 56 and Exhibit 58. The outcome variable was the experience level of recruit  $i$  in year  $j$ . This model also includes individual level factors ( $x$ ) for individual  $i$  in year  $j$  (grade level and gender). The first model is generally limited to state factors that can affect recruitment and retention as measured with year indicators ( $t$ ) in year  $j$ . Model 2 adds DPS level indicators ( $d$ ) in year  $j$  to capture the policy effects of ProComp. Model 3 contains vector school level factors ( $s$ ) in year  $j$  that have been

shown to affect recruitment and retention (Scafidi, Sjoquist, & Stinebrickner, 2007; Ladd, 2011). Appendix I contains descriptive information for the variables used in the recruitment analysis and Appendix J contains the complete results of the models.

$$\text{Model 1: } Y_j^i = f(t_j, x_j^i)$$

$$\text{Model 2: } Y_j^i = f(t_j, d_j x_j^i)$$

$$\text{Model 3: } Y_j^i = f(t_j, d_j, s_j x_j^i)$$

Exhibit 54 shows the results of the first set of linear probability models, which compared the recruitment of teachers into DPS to new teachers in other districts. The population was all teachers new to their district in a given year. The dependent variable was whether a new-to-district teacher has three or more years of experience. In each of these models, the *r*-squared showed that little of the variation in new-to-district teacher experience was accounted for in the model (less than 3%). This can be seen in similar published models (Ladd, 2011; Scafidi, Sjoquist, & Stinebrickner, 2007).

Model 1 showed new-to-district teachers in DPS were 18% less likely to be experienced, all things held equal.

Model 2 introduced the ProComp implementation using year-DPS interaction variables. The coefficient on this variable was used to identify a possible ProComp effect. In these regressions, the reference variable was the 2005-06 school year when ProComp had not been implemented in time to affect recruitment. Again, for each year, the effect of working in DPS was negative. Thus, in the years of ProComp implementation studied, new-to-DPS teachers were less likely to be experienced. This negative effect became smaller from 2006-07 to 2009-10 as shown in the descriptive analysis in Exhibit 52. In other words, over time, the negative “DPS effect” became smaller as ProComp was implemented. However, the trend was not linear; in 2007-08 the DPS effect became larger, while in 2008-09 the effect was the smallest.

Model 3 introduced school level factors that may affect the experience level of new-to-district teachers. Given that DPS schools are generally lower performing and have students with higher levels of poverty and minority status than the rest of the state, these could be factors in the lower experience levels of new-to-district hires. However, the lower experience levels may contribute to the lower performance levels. Results indicated that controlling for these factors did lessen the DPS effect. However, DPS teachers were still less likely to be experienced than the rest of the state. Again, the DPS effect decreased over time, the negative DPS effect in school year 2006-07 was larger than the negative DPS effect in 2009-10. In Model 3, the decrease of 6.5 percentage points was statistically significant at the .05 level. These results did not show an immediate impact of ProComp on the recruitment of experienced teachers, but the data suggests there has been a gradual increase in the experience levels of new-to-district teachers during ProComp implementation.

**Exhibit 54. Summary of Linear Probability Models of the Likelihood a New-to-District Teacher is Experienced<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	0.016	0.013	0.029
Works in DPS	-0.180***		
Works in DPS in SY 0607 interaction variable		-0.193***	-0.119***
Works in DPS in SY 0708 interaction variable		-0.249***	-0.182***
Works in DPS in SY 0809 interaction variable		-0.101***	-0.039
Works in DPS in SY 0910 interaction variable		-0.126***	-0.054***

<sup>a</sup> Source: State HR data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

In summary, linear probability models of the education and experience levels of new-to-district teachers confirmed much of what was seen in the descriptive analysis. There is not a clear, large overall effect of ProComp on recruitment. The experience levels of new recruits generally went up in DPS over this period while education levels did not show a clear pattern.

### **How has ProComp affected the allocation of teachers between schools?**

#### **Has ProComp influenced the selection of people for Hard to Staff**

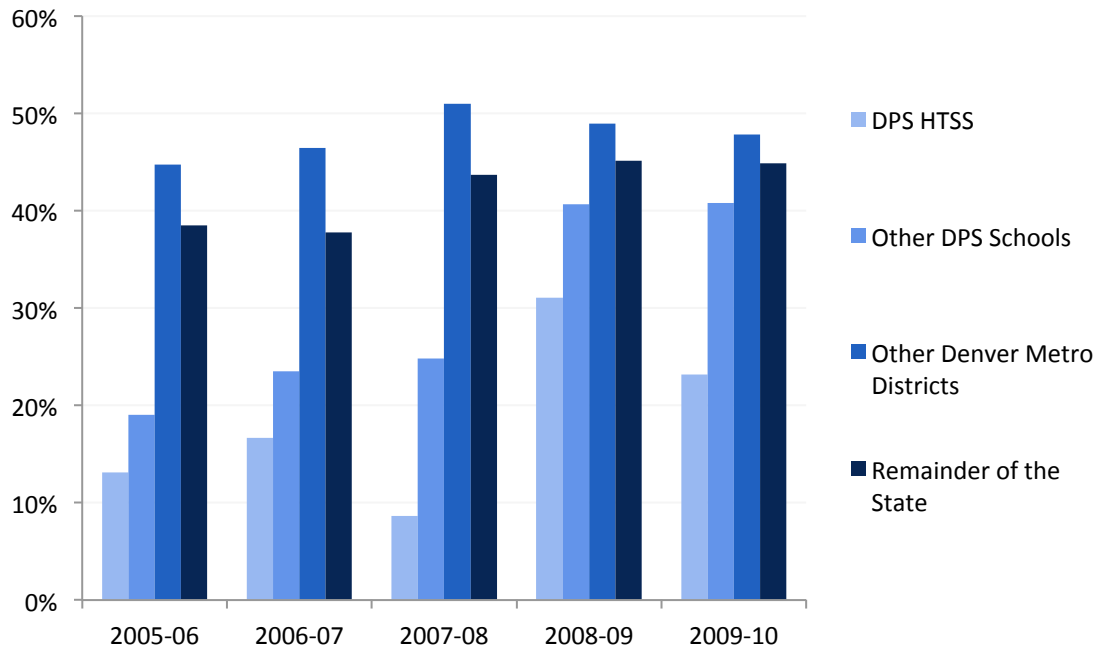
#### **Assignments and Hard to Serve Schools?**

ProComp has specific incentives intended to have an effect on the recruitment of teachers. The HTSS incentive was intended to attract more effective teachers to schools with high numbers of low-income students. The HTSA is focused on improving the recruitment of teachers into positions that generally face shortages.

#### ***Hard to Serve Schools (HTSS)***

Exhibit 55 shows the experience levels of new-to-district teachers in HTSS, other DPS schools, other Denver Metro Districts, and the remainder of the state. It shows that the experience levels of new-to-district teachers in HTSS were lower than other DPS schools, other Denver area districts, and the rest of the state. As shown previously in Exhibit 54, the difference between the experience levels of new to DPS teachers and those in other areas of the state was reduced over the period of ProComp implementation. This pattern was less clear for HTSS than for the other schools in DPS.



**Exhibit 55. Percentage of Experienced New-to-District Teachers, by School Year with HTSS<sup>a</sup>**

<sup>a</sup> Source: State HR Data

There was a large leap in the proportion of experienced teachers hired in 2008-09, the year significant changes in ProComp were enacted, including an increase in the number of HTSS. Between 2007-08 and 2008-09, the proportion of experienced new-to-district hires increased by 22 percentage points in DPS schools and by 16 percentage points in all other DPS schools. The experience levels of new recruits declined the following year (2009-10) but remained much higher than in the earlier years (2005-06 and 2006-07).

As with overall recruitment, three linear probability models were used to attempt to isolate the impact of HTSS incentives on the recruitment of experienced teachers. Model 1 incorporated an indicator of HTSS status. The coefficient on this indicator was -.086 and significant, which indicated that over this period new-to-district recruits to HTSS were 9 percentage points less likely to be experienced than other new-to-district teachers in DPS.

Models 2 and 3 added controls for school level conditions. When controlling for student characteristics (poverty, minority and growth scores), the coefficient on HTSS schools became smaller.

Model 3 used year and school level interaction variables as indicators of HTSS schools by year. This model did not show a clear ProComp effect. The effect of being in a HTSS varied by year and was only significant and negative in 2007-08. In all other years, the effect of being in a HTSS was not significant, or was positive. In 2007-08, the year the number of HTSS schools expanded and the bonuses increased, these schools out-competed other schools in DPS for experienced teachers. However, the next year these new-to-district teachers in HTSS schools did not look any different from those in other schools (after controlling for student characteristics).

**Exhibit 56. Summary of Linear Probability Model of the Likelihood that a New-to-District Teacher is Experienced Looking at HTSS<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.016	0.030	0.031
HTSS	-0.086***	-0.041*	
Hard to staff school 2006-07			-0.037
Hard to staff school 2007-08			-0.182***
Hard to staff school 2008-09			0.062*
Hard to staff school 2009-10			-0.027

<sup>a</sup> Source: State HR data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

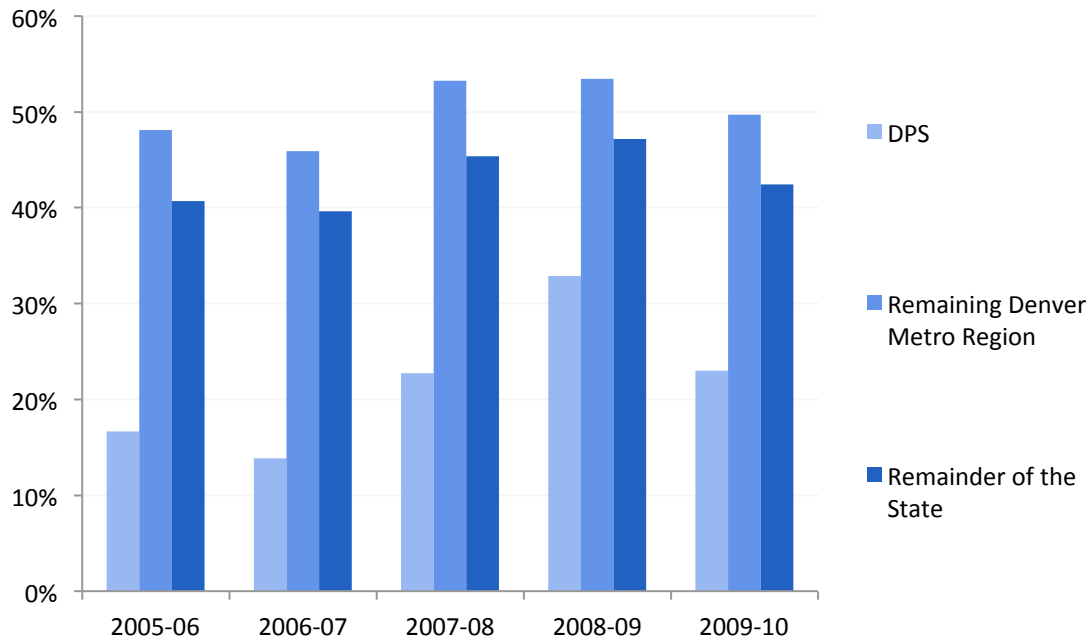
Since the HTSS was a school level incentive, the impact of the HTSS on recruitment of new-to-school teachers was also examined. New-to-school teachers are those who did not work in a particular school the prior year. They may be new-to-district teachers or transfers between schools within a district. Analysis of these changes using a linear probability model showed the same patterns seen in the analysis of new-to-district teachers in DPS and the rest of the state. Since these results were similar, they are not shown here. However, the full results of the regression are contained in Appendix J.

In summary, the information on the effect of the HTSS bonus was less conclusive than the overall ProComp data. No immediate effect of the bonus was evident with some changes over time in the experience level of new-to-district teachers in HTSS.

***Hard to Staff Assignment (HTSA)***

The other Market Incentive element in ProComp was the HTSA bonus given to teachers and other professionals who work in shortage areas. There was not a complete link between all of the assignments identified for HTSA bonuses and teacher assignments descriptions in the State HR data. However, data were available for secondary math assignments and therefore used in this analysis.

Exhibit 57 shows the experience levels of new-to-district secondary math teachers. As with previous data, the proportion of experienced new-to-district secondary math teachers in DPS increased over time. The difference between DPS and other districts has generally become smaller. In this case, the gap closed by four percentage points between 2005-06 and 2009-10.

**Exhibit 57. Percentage of Experienced New-to-District Secondary Math Teachers by School Year**

<sup>a</sup> Source: State HR Data

As with earlier investigations, several different linear probability models were conducted to study the possible effect of market incentives. As in earlier analyses, the dependent variable was new-to-district teachers who were experienced. In this model, the population was limited to secondary math teachers.

**Exhibit 58. Linear Probability Model of Likelihood that a New-to-District Teacher is Experienced Looking at Secondary Mathematics Teachers (a HTSA) <sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	0.028	.022	.039
Works in DPS	-0.246***		
Works in DPS in SY 0607 interaction variable		-0.295***	-0.175***
Works in DPS in SY 0708 interaction variable		-0.261***	-0.172*
Works in DPS in SY 0809 interaction variable		-0.168***	-0.093
Works in DPS in SY 0910 interaction variable		-0.219***	-0.119

<sup>a</sup> Source: State HR Data, New-to-district Secondary Math Teachers Only

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

The results were similar to the overall results. DPS new-to-district secondary math teachers were less likely to be experienced than teachers in other districts. As in other models, the probability appeared to decrease over time; however, the difference between the 2006-07

variable and the 2009-10 variables was not statistically significant. In other words, this model did not show a statistical increase in the qualifications of secondary mathematics teachers during the implementation of ProComp when controlling for student characteristics.

## How has ProComp affected the retention of teachers?

The teacher survey, State HR data, and DPS Employee Payment file were examined for evidence of a link between ProComp and reduced attrition (retention). The teacher survey provided descriptive information on the relative importance of ProComp as a reason why teachers say they wanted to stay or leave DPS. The longitudinal datasets (State HR and DPS Employee Payment file) were used to identify those educators who have been retained in the same district (district retention) or in the same school (school level retention) in the following year. State HR data were used to look at attrition as it allowed a comparison of DPS with the rest of the state. This dataset provided information on attrition prior to ProComp implementation (school year 2004-05) and after ProComp was implemented (school year 2005-06 through 2008-09). The DPS Employee Payment file provided data for an examination of attrition in DPS among those who received ProComp incentives; however, it did not allow a pre-post examination of attrition.

The teacher survey provided information on teacher plans for next year (see Exhibit 59). The first three rows represent choices related to staying in the district. The next five rows represent various choices for leaving the district. There were large differences in the intentions of teachers by ProComp status. Overall, about 95% of teachers in ProComp say they are planning to stay in DPS compared to 77% of those who are not in ProComp. ProComp participants were more likely to report that they planned to stay in the same school. Trends were similar to data in the longitudinal analysis of the Employee-Payment File reported later in this chapter (see Exhibit 68).

**Exhibit 59. Teacher Survey Responses on Plans for Next Year by ProComp Status <sup>a</sup>**

Plans for Next Year		Non-ProComp	Voluntary	Compulsory
Stayers	To continue teaching in this school	66%	87%	88%
	Currently applying for or have accepted another teaching position in DPS	7%	6%	4%
	Currently applying for or have accepted an administrative position in DPS	2%	1%	1%
	<b>TOTAL Stayers</b>	<b>77%</b>	<b>95%</b>	<b>94%</b>
Leavers	Currently applying for or have accepted a position in another school district	7%	1%	1%
	I plan to retire	3%	0%	0%
	I do not plan to teach next year	4%	0%	0%
	Unsure at this time	5%	2%	3%
	Other, such as move out of state, reduction in force	6%	3%	2%
	<b>TOTAL Leavers</b>	<b>23%</b>	<b>5%</b>	<b>6%</b>

<sup>a</sup> Source: Survey of DPS Teachers, not weighted

Teachers reporting plans to stay in DPS were asked for reasons that support their decision to stay in DPS, allowing for multiple responses. The top five reasons for staying were related to liking the students, colleagues, feeling effective, and enjoying working in DPS (see Exhibit 60). Compensation (including retirement) was important to fewer teachers than other possible responses. Retirement was generally the compensation component most valued by teachers. When comparing salary increases under the master salary schedule and significant incentives under ProComp as a reason to stay, ProComp incentives were twice as likely to cited as a reason to stay in DPS (22% or 24% compared to 11%).

**Exhibit 60. Reasons Teachers Give for Planning to Stay in the District Another Year by ProComp Status <sup>a</sup>**

	<b>Non-ProComp</b>	<b>Voluntary</b>	<b>Compulsory</b>
I like the student population	83%	78%	80%
I enjoy working with my colleagues	71%	72%	75%
I feel effective	62%	64%	62%
I have a good relationship with my principal/supervisor	55%	54%	62%
I enjoy working in DPS	43%	44%	50%
The DPS/PERA retirement program makes it beneficial for me to stay	22%	33%	18%
I have the potential to earn significant incentives under ProComp	4%	22%	24%
My salary will increase substantially under the master salary schedule.	11%	4%	7%
Other	7%	7%	6%

<sup>a</sup> Source: Survey of DPS Teachers, stayers only, not weighted

Teachers in all three groups had similar views on enjoying their colleagues and feeling effective. Compulsory ProComp participants reported having a good relationship with supervisors and enjoying working at DPS as reasons for staying more often than Voluntary participants (although the difference was not statistically significant at the .05 level).

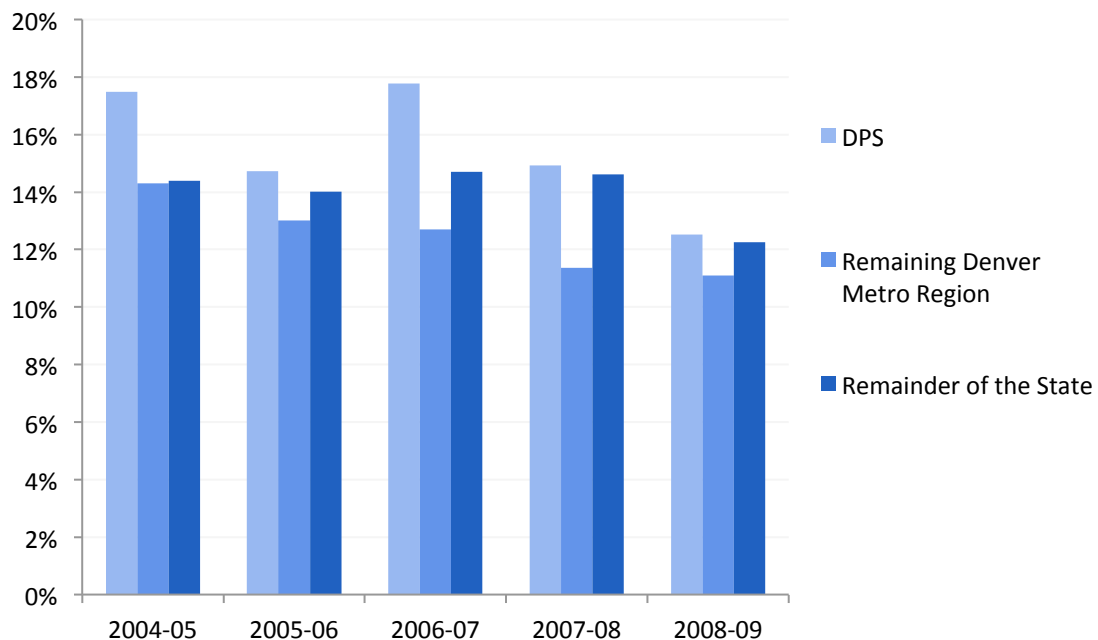
Those teachers planning to leave DPS were asked for their reasons, again allowing for multiple responses. Generally the top two reasons were dissatisfaction with DPS and supervisors (see Exhibit 61). Compensation was an important reason for leaving relative to other possible responses; it was chosen more frequently than dissatisfaction with colleagues, feeling effective, or non-renewal. The largest statistically significant difference between groups of teachers was the proportion of Non-ProComp teachers who said they were non-renewed compared to the other groups. There were few other statistically significant differences between the groups. For example, there was no statistically significant difference in the likelihood ProComp teachers citing their potential to earn incentives compared to non-ProComp teachers citing their earning potential on the master salary schedule.

**Exhibit 61. Reasons Teachers Give for Planning to Leave in the District Year by ProComp Status <sup>a</sup>**

	Non-ProComp	Voluntary	Compulsory
Dissatisfaction with working in DPS	40%	39%	39%
Dissatisfaction with my principal/supervisor	41%	20%	34%
Other; please specify:	35%	29%	34%
I'm unlikely to earn significant incentives under ProComp.	11%	27%	25%
I'm likely to receive little increase in my salary as I progress through the master salary schedule.	18%	11%	22%
I can now move my years of experience to another district because of change to PERA.	14%	30%	13%
Dissatisfaction with my colleagues	14%	4%	11%
I don't feel sufficiently effective	11%	7%	3%
My contract for next year was not renewed	13%	0%	1%
Dissatisfaction with the student population	9%	0%	7%

<sup>a</sup> Source: Survey of DPS Teachers, leavers only, not weighted

The longitudinal datasets provided actual attrition by district, defined as the percentage of teachers who leave the district from year to year. Exhibit 62 shows district level attrition by school year for DPS, other Denver Metro Districts, and the remainder of the state. As with other recruitment and retention analyses, there were significant year-to-year changes.

**Exhibit 62. District Attrition Rates by School Year <sup>a</sup>**

<sup>a</sup> Source: State HR Data

There was an almost 3 percentage point drop in attrition from the year prior to ProComp (2004-05) to the year after ProComp implementation (2005-06). However, in the following year, the attrition rate in DPS increased to above the pre-ProComp levels before going back down. Over the last two years of the analysis, the attrition rate in DPS was lower than prior to ProComp implementation. Between 2004-05 and 2008-09, DPS attrition rates went down by 4.9 percentage points, which was more than the 3.2 percentage point decrease in the attrition rate in other Denver Metro Districts and the 2.1 percentage point decrease in the remainder of the state. This suggested ProComp might have had an effect on retention. As with recruitment, the overall trend in retention rates was positive during ProComp implementation.

As with recruitment, linear probability models were used to isolate the potential effects of ProComp on retention (see Exhibit 63). The basic equations for these models are shown below. The dependent variable was whether teacher  $i$  left a district in year  $j$ , either to work in another district, to work in another field, or to not work (e.g., retire or care for a family member). Model 1 included state level year-to-year indicators ( $t$ ) in year  $j$  along with a vector of individual  $i$  characteristics of teacher ( $x$ ) including age, experience and estimated proximity to retirement eligibility. Model 2 added DPS level indicators ( $d$ ) in year  $j$  to capture the policy effects of ProComp. Model 3 contains a vector of school level factors ( $s$ ) in year  $j$  that have been shown to affect recruitment and retention – specifically, percent minority students, percent of students eligible for free and reduced lunch prices, and enrollment, as well as county level unemployment rates (Scafidi, Sjoquist, & Stinebrickner, 2007; Ladd, 2011). The population for this model was all teachers in Colorado from school year 2004-05 through 2008-09. A positive coefficient on a variable indicated that this variable was associated with an increased probability of a person leaving a district. Complete models with these variables are shown in Appendix J.

$$\text{Model 1: } Y_j^i = f(t_j, x_j^i)$$

$$\text{Model 2: } Y_j^i = f(t_j, d_j, x_j^i)$$

$$\text{Model 3: } Y_j^i = f(t_j, d_j, s_j, x_j^i)$$

**Exhibit 63. Key Variables from a Linear Probability Model of the Likelihood that a Teacher Leaves a District**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.038	.038	.041
Works in DPS	0.006***		
Works in DPS in SY 0506 interaction variable		-0.001	-0.025***
Works in DPS in SY 0607 interaction variable		0.025***	0.003
Works in DPS in SY 0708 interaction variable		-0.003	-0.026***
Works in DPS in SY 0809 interaction variable		-0.010	-0.037***

<sup>a</sup> Source: State HR data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

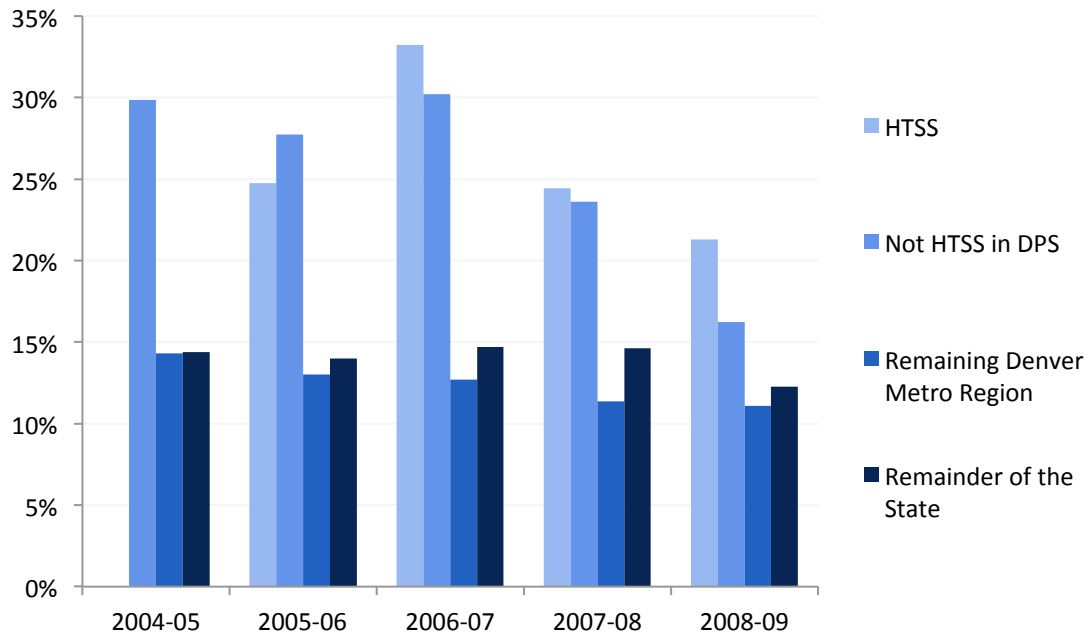
Model 2 added interaction variables between DPS and school year. The fact that the only significant and positive variable was the DPS 2006-07 interaction; variables indicated that higher attrition rate in DPS identified in Model 1 was associated with the higher attrition seen in 2006-07. In all other years, DPS retention was essentially no different from the rest of the state after controlling for age and experience levels of teachers. Model 3 added several school level variables expected to affect attrition. When controlling for these school level conditions, DPS schools again had lower attrition rates than would be expected in comparison to school year 2004-05. This suggested that retention in DPS has increased with the implementation of ProComp, when controlling for school level conditions, teacher age, and experience.

### ***District attrition and Hard to Serve Schools (HTSS)***

The HTSS bonus is intended to both increase recruitment and reduce attrition in these schools. Exhibit 64 is similar to Exhibit 62 in that it shows the district attrition rates for DPS and other district groups in Colorado. However, Exhibit 64 shows within-DPS attrition rates for the HTSS and for all other schools in DPS. No HTSS schools are shown in 2004-05 since none were designated prior to ProComp implementation. Over the period of ProComp implementation from 2005-06 through 2008-09, attrition in HTSS schools declined by 3.5 percentage points, which was more than in other Denver Metro Districts (1.9 percentage points) and in the remainder of the state (1.8 percentage points), but less than the 11.5 percentage point decline in the rest of DPS.

The attrition rate in HTSS was below the attrition rate in other DPS schools during the first year of ProComp implementation. However, after that first year, attrition in the HTSS rose above attrition rates in other DPS schools.



**Exhibit 64. District Attrition Rates with Hard to Serve Schools (HTSS) by School Year <sup>a</sup>**

<sup>a</sup> Source: State HR Data

As with the other analysis, linear probability models were used to isolate the impact of HTSS bonuses on retention as shown in Exhibit 65. As in prior models, the dependent variable was whether a teacher left the district, and the sample was the population of teachers. A positive coefficient on a variable indicated that this variable was associated with increases in the probability of a person leaving a district. A negative coefficient indicated that an increase in the coefficient was associated with a decrease in the probability that a person will leave the district. The first model used a general indicator of HTSS. The second and third models have HTSS indicators by year.

On each of the three models the coefficients on the HTSS variables were negative, suggesting the HTSS incentive was effective at lowering attrition when comparing HTSS schools to those outside of DPS. The more complete Model 3 suggested the bonus lowered attrition by between two and four percentage points in most years, but not in 2006-07.

**Exhibit 65. Key Variables in a Linear Probability of the Likelihood of Teacher Attrition with HTSS<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.038	.038	.041
Works in DPS	0.001***	0.01***	-0.012***
HTSS School	-0.017**		
HTSS 2005-06		-0.026	-0.04***
HTSS 2006-07		-0.005	-0.01
HTSS 2007-08		-0.019	-0.028*
HTSS 2008-09		-0.018*	-0.023*

<sup>a</sup> Source: State HR data

\* significant at the .05 level

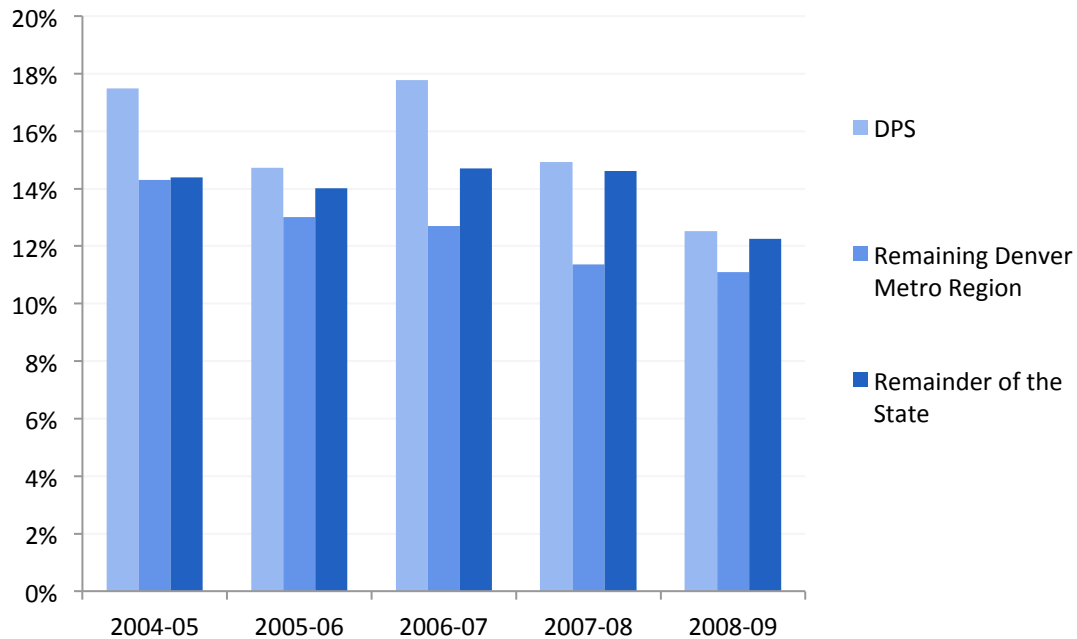
\*\* significant at the .01 level

\*\*\* significant at the .001 level

Because the HTSS bonus is a school level incentive, a similar analysis was also conducted at the school level. The results were very similar to those reported above but generally with larger coefficients, which reinforced the conclusions discussed above. (Full results are contained in Appendix J.)

### ***Attrition of secondary math teachers***

The HTSA bonus is also intended to reduce attrition. Exhibit 66 shows the attrition rates of secondary mathematics teachers by year. The patterns were similar to HTSS, with a decrease in attrition in DPS during the first year of ProComp (2005-06), an increase in school year 2006-07, and then a steady drop in attrition. Over the entire period, the attrition rate for secondary math teachers in DPS decreased by 2.8 percentage points, compared to 1.3 percentage points in other Denver Metro districts and .4 percentage points in the remainder of the state. This suggested there may have been an effect of the HTSA bonus on attrition (and retention).

**Exhibit 66. District Attrition Rates of Secondary Mathematics Teachers by Year <sup>a</sup>**

<sup>a</sup> Source: State HR Data

However, a deeper look at the predictors of retention provided limited support for the hypothesis that the HTSA bonus for secondary math teachers as effective in reducing attrition and increasing retention. This result is evident in the linear probability models shown in Exhibit 67.

**Exhibit 67. Key Variables from a Linear Probability Model of the Likelihood a Teacher will Leave a District, Secondary Math Teachers Only <sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R Squared	.052	.052	.058
Works in DPS	-0.001		
Works in DPS in SY 0506 interaction variable		0.029	0.002
Works in DPS in SY 0607 interaction variable		-0.006	-0.032
Works in DPS in SY 0708 interaction variable		-0.007	-0.033
Works in DPS in SY 0809 interaction variable		-0.028	-0.068**

<sup>a</sup> Source: State HR Data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

In the models shown in Exhibit 67, the sample was secondary math teachers in Colorado. The coefficients for DPS and the DPS by year variables were all negative, which suggested ProComp lowered attrition. However, almost all of the coefficients were not statistically significant. This

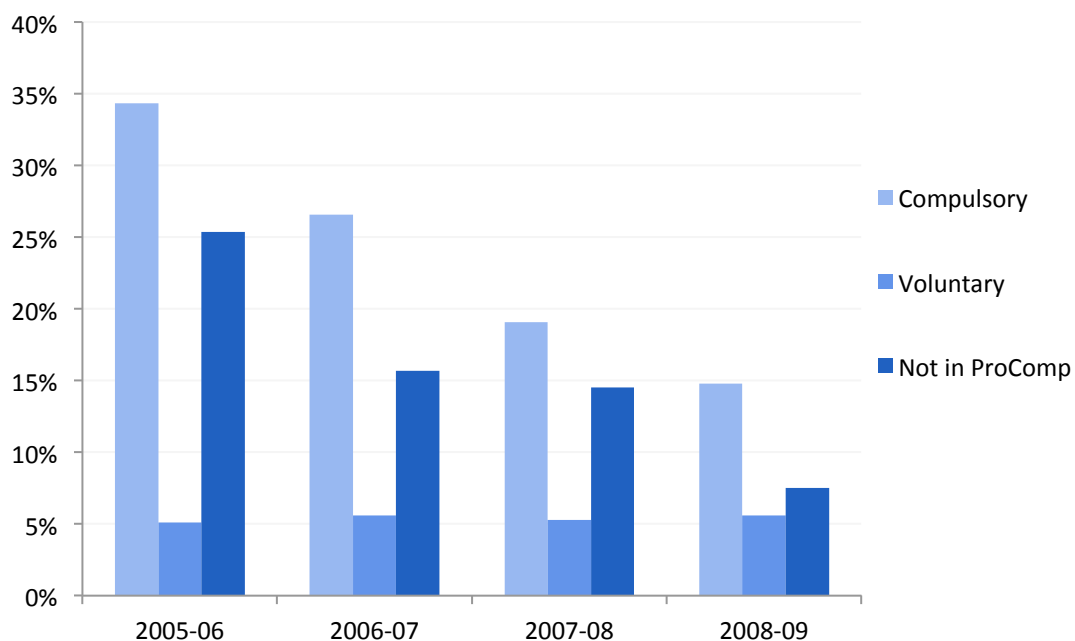
lack of significance indicates a lack of support for the hypothesis that the HTSA bonus reduced attrition. (Descriptive information on the variables used in these models can be found in Appendix I.)

### ***Attrition and ProComp incentives***

The DPS Employee Payment files provided data to link ProComp status and incentives with retention. Exhibit 68 shows attrition rates by school year and ProComp status. ProComp status indicates whether a person was in ProComp, volunteered to join ProComp, or was compelled to join as an employee hired after January 1, 2006.

The attrition rates are noticeably different by ProComp status. The higher rates for Compulsory members were expected, given the fact that many were new teachers, and attrition rates of new teachers are typically high. The attrition rate of Voluntary members decreased throughout the period examined. Voluntary members had a lower attrition rate than the other groups. Those who chose not to enter ProComp had a higher attrition rate than Voluntary members, a relatively comparable group, although these rates steadily decreased over time.

**Exhibit 68. District Attrition and ProComp Status by School Year <sup>a</sup>**



<sup>a</sup> Source: DPS Employee-Payment Files

A linear probability model was again used to isolate the effects of ProComp on retention (see Exhibit 69). The population was all ProComp eligible educators in DPS from 2005-06 through 2008-09. The dependent variable was an indicator of whether the person did not return to work in the district the next year.

These models were reduced from a full model using all indicators of ProComp incentives and other indicators describing teacher and school characteristics. To reduce the collinearity, the individual ProComp categories were collapsed into the four main ProComp components: Performance Evaluation, Knowledge and Skills, Market Indicators, and Student Growth Incentives, and the number of control variables was reduced.

All of the models incorporated ProComp status ( $p$ ) in year  $j$  with non-ProComp status as the comparison group, year indicators ( $t$ ) in year  $j$  with 2005-06 as the reference variable, and controls for individual  $i$  characteristics ( $x$ ) in year  $j$  including how near teachers are to retirement. Models 2 and 3 incorporated school level factors for school ( $s$ ) in year  $j$ . Models 3 and 4 incorporated the ProComp elements received ( $p$ ) in year  $j$ . Equations for the models are shown below.

$$\text{Model 1: } Y_j^i = f(t_j, x_j^i, p_j)$$

$$\text{Model 2: } Y_j^i = f(t_j, s_j, x_j^i)$$

$$\text{Model 3: } Y_j^i = f(t_j, s_j, x_j^i, p_j)$$

$$\text{Model 4: } Y_j^i = f(t_j, x_j^i, p_j)$$

In Models 1 and 2, voluntary participation in ProComp was related to a reduction in attrition in comparison with Non-ProComp members. Compulsory status was not associated with a change in attrition (as indicated by the lack of significance for those coefficients) which was expected to be associated with higher attrition since they are generally new teachers.

In Models 3 and 4 that contain both ProComp participation and ProComp components, the signs on ProComp participation variables are positive. This indicates that participation in ProComp was associated with higher attrition, absent of receiving any ProComp bonus. However, receiving a Performance Evaluation bonus (which was received by a majority of ProComp participants) or Student Growth incentives (the average participant received 1.13) reduced attrition rates. Interestingly, Market Incentive and Knowledge and Skills components are not statistically associated with decreases in attrition. Instead, it was the Performance Evaluation and Student Growth incentives that were associated with decreases in attrition as indicated by the negative coefficients.

**Exhibit 69. Key Variables from a Linear Probability Models of the Likelihood that a Teacher Leaves DPS with ProComp Components<sup>a</sup>**

	Model 1	Model 2	Model 3	Model 4
Adjusted R-Squared	.066	.069	.223	.220
(Constant)	0.265***	0.252***	0.281***	0.296***
Compulsory ProComp participant (compared to not in ProComp)	-0.004	0.003	0.377***	0.371***
Voluntary ProComp participant (compared to not in ProComp)	-0.086***	-0.081***	0.254***	0.246***
School year 2006-07 (compared to 2005-06)	-0.057***	-0.064***	-0.065***	-0.055***
School year 2007-08 (compared to 2005-06)	-0.069***	-0.076***	-0.055***	-0.047***
School year 2008-09 (compared to 2005-06)	-0.1***	-0.113***	-0.088***	-0.07***
Percent of students who are free and reduced lunch eligible		0	0*	
Median math growth percentile		0	0.001***	
Percent of students with an IEP		0.092	-0.01	
Performance Evaluation Indicator			-0.337***	-0.334***
Count of Knowledge and Skills incentives (range 0-3)			-0.005	-0.01
Count of Market incentives (range 0-2)			0.011	0.005
Count of Student Growth incentives (range 0-3)			-0.113***	-0.11***

<sup>a</sup> Source: DPS Employee-Payment File

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

## Discussion

Taken together the results of these analyses are mixed. Over the first four years of ProComp implementation, DPS improved in its ability to compete with other districts when recruiting experienced teachers. However, the evaluation design and analysis did not allow a firm conclusion that this change was due to ProComp or resulted from earning either of the Market Incentives (HTSS or HTSA). Lack of knowledge about ProComp reported by potential new recruits did not support the hypothesis that ProComp would have a strong effect on recruitment. At a minimum, increased communication to potential recruits about the advantages of ProComp would increase the potential for ProComp to impact recruitment. In addition, new and soon to be licensed teachers provided mixed views on how they valued ProComp incentives, which may have also moderated ProComp's impact on recruitment.

In terms of retention (as measured by reduced attrition), DPS improved in its ability to retain teachers during ProComp implementation. While this may be due to ProComp or other reforms that occurred in DPS at the same time, statistical models indicate that some degree of the improved retention was likely due to ProComp. The amount of retention that may be attributed to ProComp is between zero and four percentage points, which at most, suggests 160 teachers per year may have remained in DPS due to ProComp. Analysis of the relationship between receiving ProComp incentives and retention within DPS suggests that Performance Evaluation and Student Growth incentives are associated with retention, while Market Incentives and Knowledge and Skills incentives are not.

## Chapter 10: Student Achievement

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*Prepared by: Dan Goldhaber and Joe Walch*

A primary goal of the ProComp system is to increase student achievement in DPS. We assessed the extent to which ProComp has succeeded in increasing student achievement by exploring three primary questions:

- Is there a ProComp “system effect”? Is student achievement higher in years after the implementation of ProComp?<sup>52</sup>
- How effective are teachers who choose to opt in to ProComp, compared to teachers who choose not to opt in?
- How does the allocation of rewards in the ProComp system correspond to teacher effectiveness?<sup>53</sup>

Student achievement in DPS might be affected by ProComp through at least three distinct causal pathways (see Exhibit 70). First, we would expect teachers who are being rewarded for student achievement gains on Colorado Student Assessment Program (CSAP) tests to focus their instruction and effort around student achievement on these tests. This first pathway then is really about individual teacher productivity at any point in time. Wiley et al. (2010), who investigated the effects of ProComp, found little evidence of this type of teacher effort-related productivity effect.<sup>54</sup>

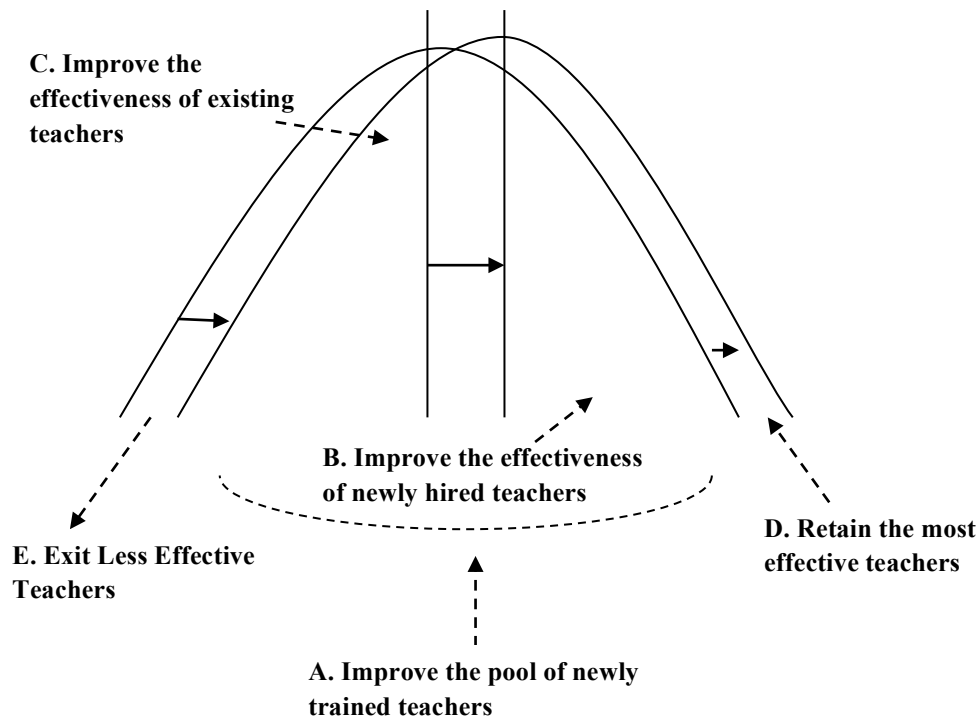
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<sup>52</sup> As we describe in more detail below, we were unable to separate the ProComp “system effects” from the effect of other factors associated with the ProComp time period.

<sup>53</sup> Teacher effectiveness was measured in value-added terms. In particular, we tried to assess the degree to which teachers who received particular rewards appeared, holding constant other observable factors, to contribute to student learning growth as measured by CSAP scores.

<sup>54</sup> This is consistent with the literature cited above (Springer et al., 2010) on pay for performance.



**Exhibit 70. Causal Pathways Through which ProComp May Affect Teacher Workforce Quality**

Beyond changes to teacher effort at a point in time, we might expect that ProComp—to the degree that it improves the feedback and professional development teachers receive—should make them more productive over time. This second pathway may result from teachers learning more (under ProComp) about areas of weakness and addressing them through professional development. But the new system may also lead teachers to learn more from each other through less formalized channels. In particular, we might expect role-modeling effects that occur precisely because ProComp identifies and rewards successful teacher excellence in a way that the old DPS compensation system did not.<sup>55</sup>

The last pathway involves compositional changes to the DPS teacher workforce—that is, the potential that ProComp influences the pipeline of teachers into and out of the district. Given that ProComp is designed to reward teacher success, we might expect the pay system to attract teachers who are likely to be successful under the ProComp system; consequently, we would

<sup>55</sup> Jackson and Bruegmann (2009) found that teachers performed better when they have more effective colleagues and that these effects are strongest for less experienced teachers. The results suggest that teachers' productivity is influenced through learning and knowledge spillovers that occur among peers.

expect ProComp to have impacts on both the number and quality of teacher applicants (see Chapter 9 for more detail). Similarly, we would expect that teachers who are successful under ProComp would be relatively likely to remain in the district and unsuccessful teachers would be relatively likely to leave. Wiley et al. (2010) found some evidence of a ProComp composition effect in that teachers hired after the implementation of ProComp were found to be more effective than those with similar years of experience hired prior to the adoption of the new pay system.

We estimated a variety of analytic models designed to assess the effect of ProComp on student achievement, with an eye toward trying to determine whether ProComp was impacting teacher effectiveness through any of the pathways described above.

## Methods

### *Is there a ProComp “system effect”?*

In order to test the presence of a system effect, we began with simple pre-post models to compare the student achievement from the time period before ProComp was implemented to student achievement during the ProComp years. We estimated the ProComp system effects with the following equation:

$$A_{ijt} = \beta \text{procompyears} + \gamma X_{it} + \delta T_{jt} + \varepsilon_{ijt} \quad (1)$$

In this model, the CSAP achievement of student  $i$ , taught by teacher  $j$ , in year  $t$ ,  $A_{ijt}$ , is regressed on the ProComp time period (with pre-ProComp as the omitted category), student background characteristics,  $X_{it}$  (prior year CSAP scores in math and reading, race/ethnicity, learning disability, free/reduced price lunch status, and grade), and teacher characteristics,  $T_{jt}$ , (degree level, experience, and experience squared). We also estimated these models separately by grade configuration.

We also investigated the effect of the significant changes made to the ProComp system in 2008 (see Chapter 2 for more detail). We designated the years after these changes were implemented as “ProComp 2.0” and compared the student achievement during the pre-ProComp (2002-03 through 2004-05), ProComp 1.0 (2005-06 through 2007-08), and ProComp 2.0 (2008-09 through 2009-10) time periods. Indicators for ProComp 1.0 and ProComp 2.0 were included in this variation of Equation (1).

The main coefficient of interest in terms of the ProComp system is  $\beta$ , as it identifies differences in student achievement associated with implementation of ProComp (we also assessed different phases of ProComp) as compared to achievement in the pre-ProComp time period. In (1) above, identification of what we called the “ProComp effect” was based solely on differences in student achievement over time. It is important to note that the ProComp system should be considered as broader than just changes to the pay structure. For instance, DPS revamped the teacher evaluation system that applies to all teachers (see Chapter 6 and 2004 ProComp Agreement (DPS and DCTA, 2004) for more detail). DPS also upgraded their information systems to allow

teachers and administrators more timely access to student and teacher data (see Chapter 3 for more detail).

Given this, ProComp system findings would not necessarily be associated solely with the new salary structures. Additionally, we cannot distinguish between effects that are based solely on the adoption of the ProComp system and other factors concurrent with the implementation of ProComp 1.0 or 2.0 (e.g., a new student health initiative). Finally Equation (1) does not necessarily distinguish whether any effect was a result of changes to workforce composition (i.e., though differential recruitment or attrition) due to the ProComp system.<sup>56</sup>

It is potentially important to distinguish between workforce composition and individual teacher productivity effects. If ProComp effects are attributable solely to workforce composition effects, it is likely that gains or losses in teacher human capital would be partially offset by gains or losses in human capital from other districts. For example, if DPS attracts highly effective teachers from other districts, then the quality of the teacher workforce for those other districts may decrease. On the other hand, if ProComp effects are due primarily to increases in individual teacher productivity there is greater potential for improvement for incumbent teachers and immediate improvement to the quality of the teacher workforce as a whole.

The evidence for changes in productivity of incumbent teachers is mixed. As discussed above, the rigorous evidence of the impact of pay-for-performance systems on the productivity of individual teachers is not terribly promising (e.g., McCaffrey et al., 2004). There is, however, some new evidence that comprehensive evaluations can impact the productivity of individual teachers. Taylor and Tyler (2011), for instance, found that students in Cincinnati Public Schools scored about 10% of a standard deviation higher in math if their teacher has participated in the district's evaluation program, and that this effect persists after the evaluation year. They did not, however, find an effect on student reading scores. As a comprehensive performance evaluation (CPE) is a central part of the ProComp system (see Chapter 6 for more detail), we might expect to find ProComp impacting the performance of individual teachers.

In order to distinguish workforce composition effects from what might be individual teacher productivity changes, we estimated a variant of (1), which includes a teacher fixed effect,  $\tau_j$ :

$$A_{ijt} = \beta \text{procompyears} + \gamma X_{it} + \tau_{jt} + \varepsilon_{ijt} \quad (2)$$

In this specification the ProComp effect was identified based on *within* teacher differences in student achievement over time so it did not reflect any influence of ProComp through changes

<sup>56</sup> Theory would predict that teachers who would financially benefit from ProComp's reward system would be likely to be sorted into the DPS workforce. And, since much of what determines teacher effectiveness is not associated with easily quantifiable variables like degree and experience levels (Goldhaber et al., 1999; Rivkin et al., 2005), this workforce sorting may not be identified with the teacher variables included in the vector T.

in workforce composition.<sup>57</sup> This specification also accounts for any time-invariant, non-random differences in the assignment of students to specific teachers.

### ***ProComp enrollment and the performance of voluntary participants***

The above explored student achievement in Denver during different ProComp periods but it did not explore whether any achievement differential appeared to be associated with those teachers actually enrolled in the ProComp system or whether there were differences between those enrolled teachers who voluntarily opted in versus those who were mandatory placements (i.e., hired into DPS after January 2006).

Whether there are productivity gains associated with different types of DPS teachers is conceptually important for at least two reasons. First, as noted above, while ProComp is explicitly designed as a pay reform, the implementation of the system entailed the development and restructuring of ancillary systems, from human resources to data systems. It is therefore conceivable that the types of information about teacher performance and performance feedback loops could provide benefits to teachers who are not actually enrolled in ProComp's alternative pay plan. On the other hand, pay reform is often quite controversial (Goldhaber, 2009), and the strife caused by pay systems that differentiate teachers could also lead to spillover effects that negatively impact those teachers not enrolled in the system. Knowing whether productivity changes associated with a comprehensive reform like ProComp are concentrated amongst teachers enrolled in the system may help policymakers decide whether to include pay reform when weighing human capital decisions.

Second, one of the goals of the ProComp system is to make the teaching profession more attractive, especially to individuals who would be, or are, effective in the classroom. Thus, it is informative to know what kinds of teachers appear to prefer the ProComp system as this will have a long-term influence on any ProComp workforce composition effects (i.e. changes in workforce quality brought about by the effectiveness of teachers who enter or leave DPS). Workforce composition effects are potentially quite important. Lazear (2000), for instance, found that much of the improvement associated with pay for performance in the private sector resulted from more productive workers sorting into a performance-based system.<sup>58</sup>

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<sup>57</sup> The coefficient for the ProComp years variable is informed solely by teachers who were in the data in ProComp years and pre-ProComp years.

<sup>58</sup> Theory would suggest more effective teachers who have much to gain from a pay for performance system to be more likely to opt in to ProComp because of the potential rewards (Gibbons, 2005). There exists relatively little empirical evidence from US schools on this potentially important labor force composition effect, but Muralidharan and Sundararamin (2011) investigated a PFP program in India and found a positive and statistically significant relationship between teachers' preferences for performance pay and the average gains of their students (the survey was administered *before* teachers knew those gains). This suggests that effective teachers know who they are and wish to be rewarded for their performance, and, further, that performance-based pay systems may yield workforce productivity benefits associated with more sorting, that is, those with teaching talent opting in to the teaching

We cannot directly observe the preferences of teachers, but we can indirectly assess the desirability of working in the ProComp system for teachers of varying effectiveness by focusing on differences between teachers who voluntarily opt in to the system and those that do not.

We explored these issues utilizing a third model specification that built off of (2) above by including variables that indicated whether a teacher is a ProComp participant and whether she or he opted in voluntarily:

$$A_{ijt} = \beta_{procomp} years + \psi_{participant} + \vartheta_{voluntary} + \gamma X_{it} + \delta T_{jt} + \varepsilon_{ijt} \quad (3)$$

We also estimated a variant of (3) that included teacher fixed effects. In the fixed effects model, the within-teacher effect of voluntarily opting into ProComp is indicated by the ProComp participant coefficient,  $\psi$ . The identification for this estimate was based on the 586 teachers (1,274 teacher-years) in the analytic sample who had observations both prior to voluntarily opting into ProComp and after they opted in.

### ***How effectively are ProComp rewards targeted?***

As discussed in Chapter 2, ProComp teachers have the opportunity to earn incentives for meeting requirements in four broad areas. In this section, we focus on the relationship between teacher effectiveness (in terms of student achievement gains) and four ProComp incentives: Exceeds Expectations (EE), Student Growth Objectives (SGO), Professional Development Units (PDU), and Comprehensive Professional Evaluation (CPE). These incentives are described in more detail in Chapter 2.

We gauged the success of ProComp's targeting for these four incentives in two steps. In step one we estimated individual teacher effectiveness, and then in step two we used this estimate in models that predict the probability of receiving a particular ProComp reward.

The estimation of teacher effectiveness is complicated by the fact that there is no universally accepted method for calculating a teacher's value-added contribution to student achievement.<sup>59</sup> The primary specification we utilized is:

$$A_{ijt} = \gamma X_{it} + \tau_{jt} + \varepsilon_{ijt} \quad (4)$$

This specification allowed for the calculation of estimated teacher-year effects,  $\tau_{jt}$ .<sup>60</sup> However, for some rewards, particularly SGOs, it was not clear whether teachers were judged relative to

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profession and the more effective teachers opting to remain in the profession. Moreover, Woessmann (2011) estimated the effects of teacher pay for performance systems using cross-national data and found a significant association between these systems and student achievement in math, science, and reading. Using cross-national data helps identify longer term, general-equilibrium effects that better incorporate both the incentive and sorting effects associated with pay for performance systems.

<sup>59</sup> Research has shown that methodology and teaching context (e.g. the sorting of students across classrooms) can influence the measure (Ballou et al., 2004; McCaffrey et al., 2004; Rothstein, 2010; Rubin et al., 2004; Tekwe et al., 2004).

other teachers in the district or other teachers in a school, so we also estimated a variant of (4) that included school fixed effects.

In order to account for measurement error in the estimation of the teacher effects, we used an empirical Bayes (EB) adjustment common in the literature (Boyd et al., 2008; McCaffrey et al., 2008). This adjustment weights the effectiveness estimates based on their reliability and shrinks unreliable estimates with large standard errors back towards the grand mean of the population.<sup>61</sup>

In step two, we used the various teacher effectiveness estimates to gauge how well the ProComp rewards are targeted towards effective teaching. This was accomplished by estimating (using a logistic regression) the probability of the receipt of a reward:<sup>62</sup>

$$reward_{jt} = \eta \bar{E}_{jt} + \zeta Year + \rho(Year * \bar{E}_{jt}) + \varepsilon_{jt} \quad (5)$$

In (5), the ProComp reward to teacher  $j$  (in year  $t$ ) is regressed against teacher effectiveness estimates,  $\bar{E}_{jt}$ , year dummies, and teacher effectiveness-year interactions.

Our coefficients of interest are  $\eta$  and  $\rho$ . The coefficient  $\eta$  indicates whether more effective teachers are more likely to receive a particular reward and  $\rho$  provides an indicator of whether the targeting of teachers for awards changes over time. One might, for instance, think that the system would become more effective over time at identifying the right (i.e., more effective) teachers to reward. However, it is also possible that teachers learn how to game the system better over time (e.g., Cullen and Reback, 2006; Figlio, 2006; Jacob, 2005) in order to receive a reward, which would lead to less effective targeting.<sup>63</sup>

#### *Analytic Sample*

We used administrative data from DPS for school years 2002-03 to 2009-10 to investigate differences in the achievement of students. In 2010, DPS included approximately 80,000 students and about 4,500 teachers.<sup>64</sup> Key to our investigation is the fact that teachers and

<sup>60</sup> Teacher effectiveness estimates were generated using the stata command *felsdvregdm* (Mihaly et. al, 2010) with the effectiveness estimates within each year and grade configuration combination summing to 0. Although teachers were only compared to teachers in the same year-grade configuration in the estimation of  $\hat{\tau}$ , we can compare each  $\hat{\tau}$  across grade levels. Thus, an elementary teacher with a  $\hat{\tau}$  of .5 is defined as being as effective as a middle school teacher with a  $\hat{\tau}$  of .5.

<sup>61</sup> The EB adjusted teacher effectiveness estimates were highly correlated with the unadjusted estimates:  $r = .96$  or higher for all models.

<sup>62</sup> Note that it is possible for a teacher who teaches both math and reading to get a reward based on high performance in one area, even if performance in the other area is low. The data does not differentiate the subject for which a teacher earns a reward.

<sup>63</sup> Murnane and Cohen (1986) noted that one of the reasons that many early pay for performance systems failed is that performance bonuses were indiscriminately awarded, leading to the financial collapse of these systems.

<sup>64</sup> Student and teacher counts were taken from the DPS website:

<http://communications.dpsk12.org/newsroom/facts-and-figures/about-denver-public-schools/>

students can be linked within each year at the middle and high-school levels, and from the 2005-06 to 2009-10 school years at the elementary level,<sup>65</sup> and teachers can be linked over time.<sup>66</sup>

DPS teacher records included variables such as years of experience, degree level, ProComp status, whether the teacher opted-in to ProComp voluntarily, and the rewards earned under ProComp. Student-level records contained information on student background, including race/ethnicity, learning disability, free/reduced price lunch status, grade, and student achievement on standardized tests.

We used student scores on the CSAP tests, which are required by Colorado law and designed to measure students' mastery of the Colorado Model Content Standards in grades 3–10, as our dependent variable in student achievement models. Because of limitations in the data and the way the CSAP is administered, we chose to focus our analysis on math and reading, even though students also take the Writing CSAP in grades 3–10 and the Science CSAP in grades 5, 8, and 10. Since our analytic strategy required a prior-year test score, the “gap years” in the science test made it impossible to attribute the learning gains in science to a particular teacher. Our dataset did not include writing scores prior to the 2005-06 school year and, in school years 2005-06 to 2008-09, only included writing scores in elementary grades. We normalized all test results within grade and subject, and across years, based on observations from all students in the unrestricted sample.<sup>67, 68</sup>

DPS, as well as the state of Colorado, uses student growth percentiles generated by the Colorado Growth Model (CGM) to measure student achievement (Report of the Technical Advisory Panel for the Longitudinal Analysis of Student Assessment, 2008), and, in some districts, teacher or school effectiveness. The value-added models we describe in this section are estimated differently from the CGM, but findings on ProComp are similar whether one uses the estimation strategies described here or employs CGM as a metric (see, for instance, Wiley et al., 2010). This is not surprising as individual teacher value-added estimates are highly correlated with the median CGM for each teacher; in our analytic sample, we found correlations between

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<sup>65</sup> Hence, we cannot compare ProComp years to pre-ProComp years for elementary students and teachers.

<sup>66</sup> Data for the pre-ProComp and ProComp years were derived from different sources, and could not be directly linked together due to the fact that different teacher masking systems were used. We obtained a cross-walk between the two systems, but a smaller percentage of teachers than might be expected (e.g. given teacher attrition) were linkable longitudinally. For instance, of the 707 teachers in the pre-ProComp analysis sample, 454 (71 percent) also show up in one or more ProComp years. We cannot determine the reason for the lower than expected linkage rate, but *t*-tests of the means of select teacher and classroom characteristics show only small (and occasionally statistically significant) differences between those teachers who we can and cannot link longitudinally. These results are available upon request.

<sup>67</sup> The CSAP tests are vertically aligned and administered year over year to students in math and reading so, in theory, normalization is not necessary for our analysis. However, the normalization facilitates interpretation as the coefficients can be interpreted as effect sizes (the percentage change in standard deviations on the CSAP test) and more easily compared to other findings in the literature.

<sup>68</sup> It is common to also normalize *within* year; however, normalizing this way would preclude the detection of growth in achievement over time.

the two of over 0.8 in math and 0.6 in reading (employing models described by equation (4) above).

For our analyses, we excluded students who did not have a prior test score and excluded teachers with fewer than 5 students in the data. After the above restrictions, our analytic sample included 73,197 unique students (163,565 student-year observations), and 2,539 unique teachers (5,820 teacher-year observations). Exhibit 71 shows selected student sample statistics for the unrestricted sample, and restricted samples by their teachers' ProComp enrollment status.

**Exhibit 71. Student Sample Statistics for Unrestricted and Restricted Samples**

	Unrestricted Sample		Restricted Sample			
	All		ProComp Teachers		Non-Procomp Teachers	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Native American	0.012	0.107	0.012	0.110	0.012	0.108
Asian	0.054	0.227	0.057	0.231	0.037	0.188
Black	0.159	0.365	0.156	0.363	0.178	0.382
Hispanic	0.559	0.496	0.558	0.497	0.580	0.494
White	0.196	0.397	0.182	0.386	0.194	0.395
Free/reduced price lunch	0.661	0.473	0.659	0.474	0.681	0.466
Learning disability	0.122	0.327	0.116	0.320	0.136	0.343
Standardized math CSAP score	0.000	1.000	0.071	0.982	-0.023	0.998
Standardized reading CSAP score	0.000	1.000	-0.021	0.979	-0.059	1.003
Observations	183,549		215,971		155,256	

Note: The unrestricted sample includes student-year observations from 2004-2010 in grades 4-10 for math and reading. The means for the restricted sample are based on student-year-subject observations. Students may be counted multiple times in the restricted sample because they can have both ProComp and non-ProComp teachers in the same year.

There were no considerable differences in the proportion of minority students or the proportion of students with a disability between the unrestricted and restricted samples, while students in the restricted sample were slightly more likely to be on free/reduced price lunch. Within the restricted sample, teachers participating in ProComp were slightly more likely to teach minority students than Non-ProComp teachers, while Non-ProComp teachers were slightly more likely to teach students with free/reduced price lunch and with learning disabilities. Students of ProComp teachers also had higher standardized CSAP Math scores.

## Findings

### *Is there a ProComp “system effect”?*

Before discussing the ProComp findings, a brief discussion of the estimated impact of teacher effectiveness on student achievement is helpful in providing context for interpreting the effects described below. Estimating individual teacher effectiveness (as in equation (4) above), we found a one standard deviation increase in teacher effectiveness (for example, moving from the median to the 84<sup>th</sup> percentile) to correspond to an increase of 9% to 18% of a standard deviation in student achievement. These effect sizes varied slightly by grade configuration, subject, and



model specification, with slightly larger effects at the elementary level.<sup>69</sup> These estimates are very much in line with published findings elsewhere in the literature on teacher effectiveness (Hanushek and Rivkin, 2010).

Estimates from the literature suggest that the differential between a novice (0 years of prior experience) and second-year teacher (1 year of prior experience) is in the neighborhood of 1% to 7% of a standard deviation of student achievement (Rockoff 2004, Rivkin et. al, 2005). We found similar returns to experience in our models, with larger effect sizes in math (2% to 5% of a standard deviation) than in reading (0% to 2%).

We can also use the standard deviation of the CSAP scores to get a reference point for effect sizes. The CSAP standard deviation in our analytic sample was about 80 points in both math and reading, across grade level configurations.<sup>70</sup> This means that an effect size of 5% of a standard deviation of student achievement translates to an increase in CSAP scores by about four points.

Exhibit 72 shows the findings for student achievement models at the elementary level. The results for control variables in the models (e.g., base year test scores, student demographics, etc.) were consistent across grade level configuration and model specifications, and consistent with the literature (e.g., Rivkin et al., 2005). For instance, minority students (African-American and Hispanic), participants in the free and reduced-price lunch program, and/or those who have learning disabilities scored lower, all else equal, than students who are white, nonparticipants in the free and reduced-price lunch program, and/or do not have learning disabilities. There was little consistency in the findings on teacher degree and experience level across grade levels; again, this is consistent with the literature.

In general, we found evidence suggesting the presence of ProComp system effects, though as mentioned earlier we cannot definitively ascribe this to the ProComp system or the alternative compensation aspects of ProComp. In particular, the estimation strategy we employed makes it impossible to separate ProComp system effects from any other unobserved factors that affect student achievement that are concurrent with ProComp implementation.

The elementary level results are reported separately from the middle and high school results because the lack of student-teacher linked data at the elementary level in pre-ProComp years means we can only compare ProComp 1.0 (school years 2005-06 to 2007-08) to ProComp 2.0 (school years 2008-09 and 2009-10). In these models, the omitted reference category is the ProComp 1.0 years; the first two columns show the results for math and the next two for reading.

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<sup>69</sup> Empirical Bayes shrunken estimates of a one standard deviation change in teacher effectiveness in math are 18% of a standard deviation in student achievement at the elementary level, 14% at the middle school level, and 9% at the high school level; the corresponding estimates in reading are 13%, 16%, and 15% of a standard deviation of student achievement. The effect sizes for the within-school teacher effectiveness estimates are slightly smaller: in math they are 15% at the elementary level, 13% at the middle school level, and 8% at the high school level; and in reading the corresponding estimates are 9%, 10%, and 9%.

<sup>70</sup> The standard deviations by grade and year in the analytic sample were very similar to those reported by CDE (CDE website: <http://elm.cde.state.co.us/cognos8bi/cgi-bin/cognos.cgi>).

**Exhibit 72. Estimated Student Achievement under ProComp: Elementary School Level**

ProComp Variables	Math		Reading	
	(1)	(2)	(3)	(4)
ProComp 2.0 (SY2007-08 to 2009-10)	0.0202*** (0.00509)	0.00434 (0.00619)	0.0304*** (0.00552)	0.00688 (0.00691)
<b>Student Variables</b>				
Prior-year math score	0.736*** (0.00386)	0.732*** (0.00379)	0.250*** (0.00429)	0.247*** (0.00436)
Prior-year reading score	0.116*** (0.00410)	0.110*** (0.00398)	0.543*** (0.00440)	0.528*** (0.00444)
Native American	-0.0899*** (0.0253)	-0.0549** (0.0242)	-0.0860*** (0.0265)	-0.0655** (0.0263)
Asian	0.0838*** (0.0150)	0.0946*** (0.0145)	-0.0425*** (0.0155)	-0.0260* (0.0156)
Black	-0.157*** (0.00979)	-0.116*** (0.0102)	-0.0858*** (0.0102)	-0.0583*** (0.0110)
Hispanic	-0.0931*** (0.00826)	-0.0422*** (0.00866)	-0.105*** (0.00862)	-0.0579*** (0.00934)
Free/reduced price lunch	-0.0498*** (0.00710)	-0.0327*** (0.00722)	-0.0731*** (0.00747)	-0.0402*** (0.00788)
Learning disability	-0.188*** (0.00812)	-0.183*** (0.00789)	-0.249*** (0.00876)	-0.262*** (0.00883)
5 <sup>th</sup> Grade	-0.0135** (0.00525)	-0.000374 (0.00937)	-0.0187*** (0.00557)	-0.00486 (0.0105)
<b>Teacher Variables</b>				
1 Year Prior Experience	0.0368*** (0.0111)	Fixed Effect	0.0205* (0.0122)	Fixed Effect
2 Years Prior Experience	0.0449*** (0.0118)		0.0360*** (0.0131)	
3 Years or More Prior Experience	0.0607*** (0.00840)		0.0406*** (0.00917)	
Masters or higher	0.000262 (0.00521)		-0.00985* (0.00564)	
Observations	36,710	36,710	33,129	33,129
R-squared	0.762	0.796	0.723	0.745

Note: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.  
All specifications include grade level and missing value dummy variables.

The results with teacher covariates suggested small increases in student achievement on CSAP tests in ProComp 2.0 relative to 1.0 years; this is on the order of magnitude of 2% to 3% of a standard deviation.

Next we turned our attention to the findings that include teacher fixed effects in the model. These models help to identify whether any ProComp effects may be due to changes in individual teacher productivity. This is an important area of investigation since the adoption of the

ProComp system entails more than just changes to teacher pay structure (see Chapter 3 for more detail). In particular, the original ProComp Agreement required a revamped performance evaluation system of all DPS teachers, not just those who are enrolled in the pay reform. And, as Taylor and Tyler (2011) found, evaluation may lead to significant improvements in teacher performance by providing them with substantive feedback on how they might improve.

In the teacher fixed effects specification of the model, the magnitudes of the ProComp 2.0 coefficients (columns 2 and 4), while still positive, were greatly reduced and no longer statistically significant. This suggests that the productivity of individual teachers at the elementary level did not increase (i.e., there is no within-teacher ProComp effect) as a consequence of the ProComp system. This is perhaps not surprising given that the comparison here is between ProComp 1.0 and 2.0, and the significant change to the evaluation system occurred upon the adoption of the ProComp system, implying that we might only expect to observe within teacher productivity effects (associated with the evaluation system) when comparing pre-ProComp teacher performance to performance under ProComp.

At the middle and high school levels, we *do* have student achievement data for pre-ProComp periods; in the models for students at the secondary level we designated the omitted reference category as the Pre-ProComp years of data (school years 2003-04 and 2004-05). We reported the results of these models in Exhibit 73. Columns 1-4 of Panel A show the estimated ProComp coefficients for math achievement at middle school level with teacher covariates (columns 1 and 3) and teacher fixed effects (columns 2 and 4), and columns 5-8 show the analogous results for reading models. Comparable results for the high school level are reported in Panel B of the table.<sup>71</sup>

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<sup>71</sup> While not reported, these models include the same set of student and teacher covariates as those in Exhibit 72 above.

**Exhibit 73. Estimated Student Achievement under ProComp: Middle and High School Level**

	<u>Math</u>				<u>Reading</u>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel A: Middle Schools</b>								
ProComp years (SY2005-06 to 2009-10)	0.0169*** (0.00561)	-0.00768 (0.00710)			0.0316*** (0.00579)	0.0242*** (0.00706)		
ProComp 1.0 (SY2005-06 and 2006-07)			-0.00760 (0.00607)	-0.0260*** (0.00742)			0.0247*** (0.00614)	0.0213*** (0.00730)
ProComp 2.0 (SY2007-08 to 2009-10)			0.0438*** (0.00616)	0.0320*** (0.00854)			0.0392*** (0.00622)	0.0309*** (0.00826)
Teacher Controls	Covariates	Fixed Effect	Covariates	Fixed Effect	Covariates	Fixed Effect	Covariates	Fixed Effect
Observations	55,626	55,626	55,626	55,626	69,543	69,543	69,543	69,543
R-squared	0.769	0.791	0.769	0.791	0.733	0.750	0.733	0.750
	<u>Math</u>				<u>Reading</u>			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>Panel B: High Schools</b>								
ProComp Years (SY2005-06 to 2009-10)	0.0726*** (0.00674)	0.0841*** (0.00802)			0.0587*** (0.00654)	0.0431*** (0.00777)		
ProComp 1.0 (SY2005-06 and 2006-07)			0.0858*** (0.00738)	0.0902*** (0.00839)			0.0304*** (0.00718)	0.0290*** (0.00806)
ProComp 2.0 (SY2007-08 to 2009-10)			0.0576*** (0.00756)	0.0690*** (0.0101)			0.0932*** (0.00748)	0.0857*** (0.0102)
Teacher Controls	Covariates	Fixed Effect	Covariates	Fixed Effect	Covariates	Fixed Effect	Covariates	Fixed Effect
Observations	32,315	32,315	32,315	32,315	37,098	37,098	37,098	37,098
R-squared	0.737	0.749	0.738	0.749	0.695	0.709	0.696	0.710
Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. All specifications also include prior-year test scores, free/reduced price lunch status, IEP status, race/ethnicity, grade level, and missing value dummy variables. There are 454 teachers who are in the analytic sample in both pre-ProComp years and ProComp years. In columns 3, 4, and 7, the difference between the ProComp 1.0 effect and the ProComp 2.0 effect is statistically significant at the .05 level; in column 8 the difference is not statistically significant.								

We began by focusing on models that include a single ProComp indicator and teacher covariates (columns 1 and 5). These specifications suggested significant and positive ProComp effects at both the middle and high school levels for both math and reading, and the effects were larger at the high school than middle school level.

As described above, there was a significant revision in the ProComp system in 2008. We investigated whether these changes to ProComp were associated with student achievement by substituting separate indicators for ProComp 1.0 and 2.0 for the single ProComp indicator. The results from this specification when we include teacher covariates (columns 3 and 7) indicated heterogeneous math effects across ProComp years. In particular, we found insignificant negative effects of ProComp 1.0 relative to pre-ProComp in math at the middle school level, but significantly positive ProComp 2.0 effects.<sup>72</sup> In reading at the middle school level, the results were consistently positive and were about the same magnitude. At the high school level, both ProComp periods were significant and positive relative to pre-ProComp years in both math and reading, but the relative effect of ProComp 2.0 was significantly larger than ProComp 1.0 in reading.

As we did at the elementary level, we also estimated teacher fixed effects specifications of our model, where the ProComp coefficients were identified based on within teacher variation in student achievement. These findings are reported in columns 2 and 4 for math and 6 and 8 for reading. While there was some evidence in math that the ProComp results from the teacher fixed effects specification differed from the specification that included teacher covariates, no clear pattern emerged for the change in findings. For instance, at the middle school level the ProComp coefficient changed from positive and significant (in column 1) to negative (in column 2), but at the high school level the magnitude of the coefficient increased somewhat when moving from the teacher covariate to fixed effects specification. In reading, a clearer pattern was apparent; the ProComp indicators remained significant and positive at both the middle and high school levels, but the magnitudes were slightly smaller.

Under the specification that included ProComp 1.0 and 2.0 indicators and teacher fixed effects, the math coefficients (in column 4) were smaller than in the covariate model (in column 3) in both ProComp periods in middle schools, but little changed at the high school level. The reading results under the teacher fixed effects specification (column 8) did not change significantly from the teacher covariate findings (column 7). The fact that some of the ProComp coefficients remained statistically significant and positive in specifications that included teacher fixed effects suggests that productivity changes in DPS are not driven solely by changes in teacher workforce composition (i.e., there is evidence of individual teacher productivity changes).

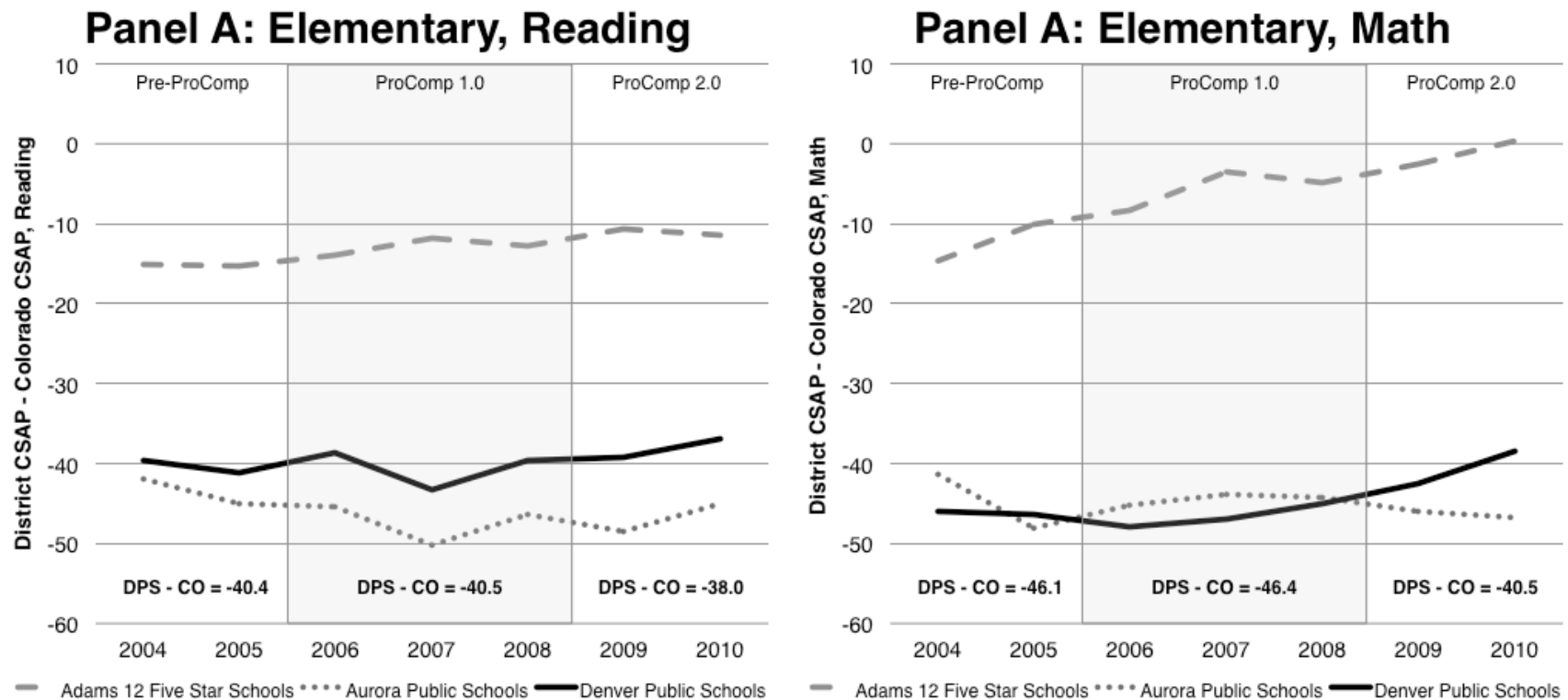
While not reported, we also estimated models that included interactions between ProComp variables and student demographics to identify whether there were differential ProComp effects for various student sub-groups. There were no consistent patterns across sub-groups and

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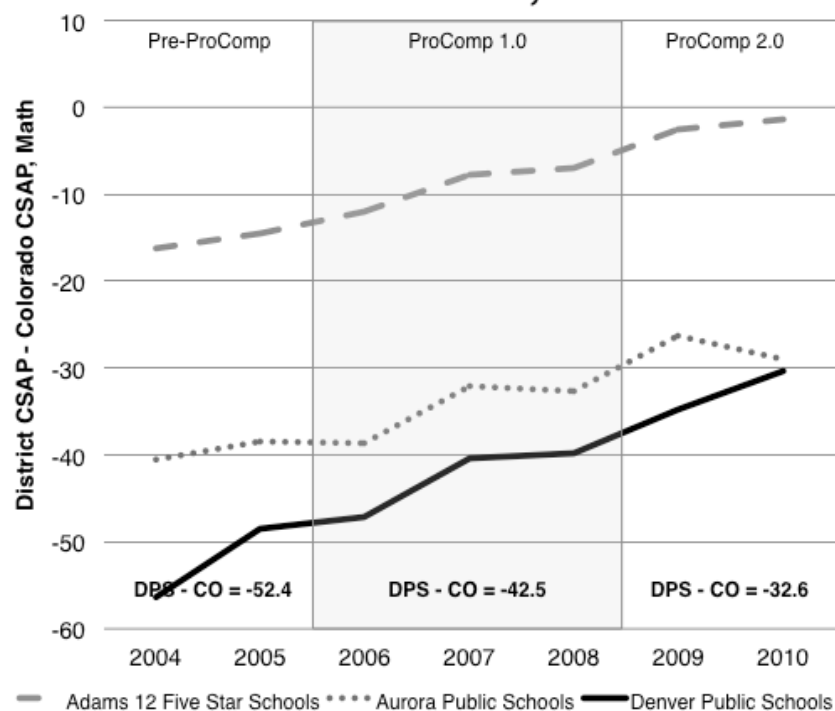
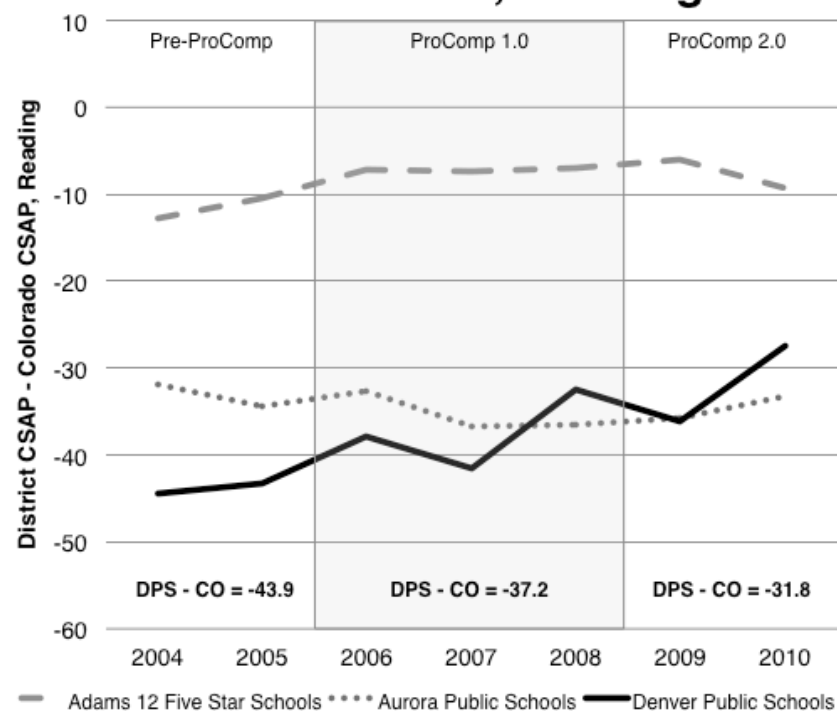
<sup>72</sup> The differential between ProComp 1.0 and 2.0 was statistically significant at the .05 level in all models except for the teacher fixed effects specification for middle school reading.

grades. In most cases, the interaction terms were not statistically significant and when they were, their magnitude and direction varied across grade level and subject area.

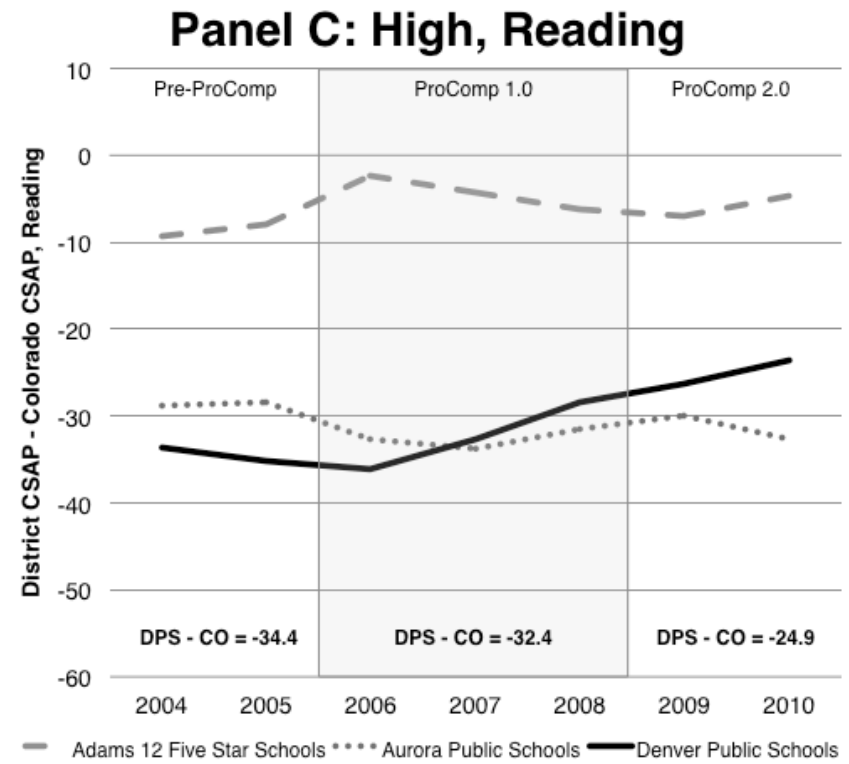
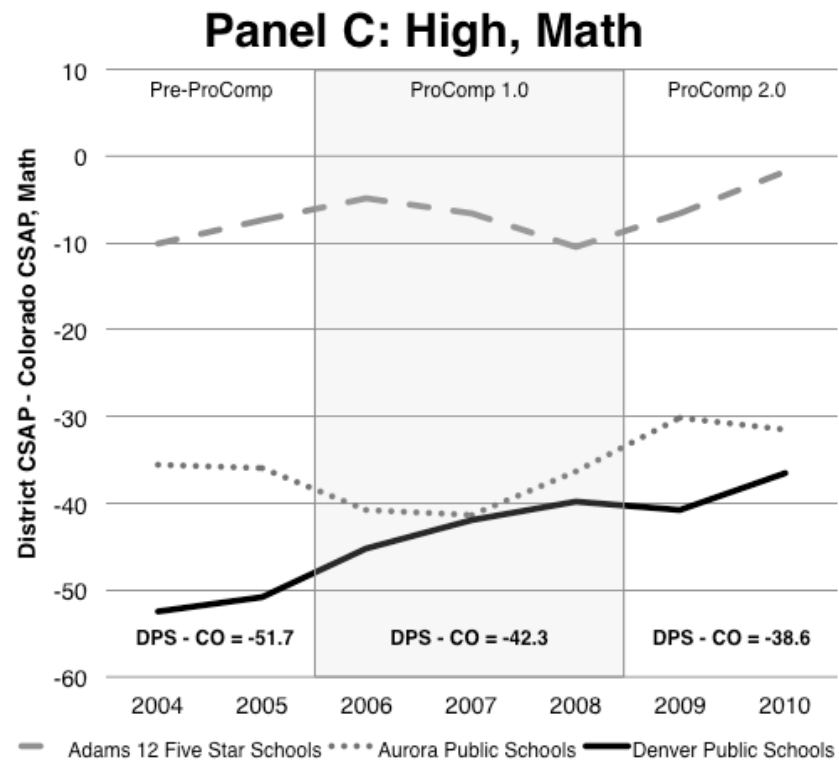
In summary, looking across Exhibit 72 and Exhibit 73, student achievement during ProComp years increased relative to the baseline pre-ProComp years (or in the case of elementary schools, in 2.0 relative to 1.0). The increase was especially large at the secondary level for reading under ProComp 2.0. We wish to be cautious about drawing any strong conclusions about the efficacy of ProComp given that our analysis was based solely on within district change. However, there is some evidence (e.g. Wiley et al., 2010) that DPS has made important progress since the implementation of ProComp. We illustrate this in Exhibit 74, which shows the differential between the average statewide performance of students on the CSAP tests and performance in several large urban districts in the Denver metro area (Adams 12 Five Star, Aurora Public Schools, and Denver Public Schools).

**Exhibit 74. Average Difference between State and Selected District CSAP Scores over Time**

Note: CSAP scores are vertically scaled. Data from Colorado Department of Education, [www.schoolview.org](http://www.schoolview.org), Data Lab data reporting system. This system includes a disclaimer, "because of the number and types of data aggregations available here, many results have not been verified."

**Panel B: Middle, Math****Panel B: Middle, Reading**





On the whole this figure reflects our above findings. Across elementary, middle, and high school levels, student performance in DPS gained relative to the rest of the state (though in each case students scored lower than the state average). Moreover, the gains were especially large at the middle and high school levels where DPS closed the gap with the state average faster during the ProComp period than did Adams 12 Five Star or Aurora Public Schools.

### ***ProComp enrollment and the performance of voluntary participants***

While the above findings suggest student gains under the ProComp system, they do not specify whether those gains were a function of teachers who are actually enrolled in the alternative pay system or were more reflective of broader changes in DPS. Research suggests that performance management systems in public schools are generally weak (DeArmond et al., 2008). While much of the focus on ProComp is related to its alternative compensation elements, it is also the case that the ancillary systems that are required for ProComp's operation are quite different from what is necessary to administer pay under the single salary schedule. And it is conceivable that these systems help to improve system operations (e.g., by providing clearer performance feedback to teachers) that increases the productivity of all teachers, not just those participating in the alternative pay system.

We explored this issue by estimating models (consistent with equation 3 above) that included indicators for whether teachers were enrolled in the alternative pay system and if so, whether this enrollment was voluntary or compulsory (see Exhibit 75).

As noted earlier, at the elementary level we do not have student achievement information for the pre-ProComp years, so the omitted reference category for teacher comparisons at the elementary level is non-participant teachers. Participant and voluntary status indicators represent comparisons amongst all teachers who were in DPS during ProComp years.<sup>73</sup> In the simplest models estimating ProComp participation (columns 1 and 2 in math and 4 and 5 in reading), the ProComp participant variables were insignificant in both subjects whether or not the model included covariates or teacher fixed effects.

It is important to note that the identification of the ProComp participant coefficient in the fixed effects specifications (columns 2 and 5) came solely from teachers who opted in. The fact that these coefficients were insignificant suggests that there is not an individual teacher productivity impact associated with ProComp participation in math or reading at the elementary level.

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<sup>73</sup> Here the variable "ProComp participant" shows the estimated student achievement for students with a teacher enrolled in ProComp relative to one who was not enrolled, and the "Voluntary participant" variable the estimated student achievement for students with a teacher voluntarily in ProComp relative to one who was compulsorily enrolled in the system. The estimated effect of having a teacher who was voluntarily enrolled in ProComp relative to one who was not enrolled is the sum of "ProComp participant" and "Voluntary participant."

**Exhibit 75. Student Achievement by ProComp Status: Elementary School Level**

	<u>Math</u>				<u>Reading</u>	
	(1)	(2)	(3)	(4)	(5)	(6)
ProComp 2.0 (SY2007-08 to 2009-10)	0.0201*** (0.00521)	0.00629 (0.00660)	0.0211*** (0.00525)	0.0295*** (0.00563)	0.00648 (0.00734)	0.0297*** (0.00568)
Procomp participant	0.000819 (0.00545)	-0.0148 (0.0175)	-0.00811 (0.00775)	0.00448 (0.00588)	0.00324 (0.0200)	0.00332 (0.00834)
Voluntary			0.0143 (0.00881)			0.00186 (0.00951)
Teacher controls	Covariates	Fixed Effect	Covariates	Covariates	Fixed Effect	Covariates
Observations	36,710	36,710	36,710	33,129	33,129	33,129
R-squared	0.762	0.796	0.762	0.723	0.745	0.723

Note: Standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1. All specifications also include prior-year test scores, free/reduced price lunch status, IEP status, race/ethnicity, grade level, and missing value dummy variables.

The omitted reference category is ProComp1.0 time period.

We expected effective teachers who might gain from a pay for performance system to be more likely to opt in to ProComp, and there was some evidence that voluntary ProComp participants differed from teachers who were hired into the ProComp system in terms of attitudes and instructional behavior (Wiley et al., 2010). Given this, it would not be surprising to find systematic differences in teacher productivity based on opt in status. The positive and nearly significant ( $p=.105$ ) coefficient on the voluntary participant indicator at the elementary level in math supports this hypothesis and suggests that teachers who voluntarily opted in were more effective than non-voluntary teachers before they opted in.<sup>74</sup> None of the participant or voluntary status results were significant in reading at the elementary level.

Exhibit 76 reports the middle (Panel A) and high school results (Panel B) for math (columns 1–3) and reading (columns 4–6). The reference category for these models is teachers in pre-ProComp years.<sup>75</sup> In contrast to the results at the elementary level, here we did see evidence of differential productivity effects of ProComp teachers (again, note here that the reference group was different than for elementary teachers), but the results are puzzling in that no consistent pattern emerged across grade level configuration and subject area.

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<sup>74</sup> We found further support for this conclusion with models not reported here that compared the effectiveness of teachers who chose to opt in with the effectiveness of teachers who had the choice to opt in and chose not to.

<sup>75</sup> Here the “ProComp years” variable indicates the estimated achievement of students with Non-ProComp teachers who were teaching in ProComp system years (relative to teachers in pre-ProComp years), and the participant and voluntary variables are still interpreted in the same way in the elementary level models described above. In these models, the net effect of having a ProComp participating teacher, relative to student achievement in pre-ProComp years, is the sum of “ProComp years” and “ProComp participant,” and the net effect of having a teacher who voluntarily participates in the system is the sum of these two coefficients plus “Voluntary participant.”

**Exhibit 76. Student Achievement by ProComp Status: Middle and High School Level**

		<u>Math</u>			<u>Reading</u>	
<b>Panel A: Middle Schools</b>	(1)	(2)	(3)	(4)	(5)	(6)
ProComp years (SY2005-06 to 2009-10)	-0.0174*** (0.00620)	-0.0361*** (0.00829)	-0.0179*** (0.00620)	0.0317*** (0.00608)	0.0353*** (0.00771)	0.0317*** (0.00608)
Procomp participant	0.0628*** (0.00486)	0.0666*** (0.0100)	0.0803*** (0.00699)	-0.000334 (0.00438)	-0.0399*** (0.0111)	-0.000598 (0.00612)
Voluntary			-0.0268*** (0.00773)			0.000451 (0.00731)
Teacher controls	Covariates	Fixed Effect	Covariates	Covariates	Fixed Effect	Covariates
Observations	55,626	55,626	55,626	69,543	69,543	69,543
R-squared	0.769	0.791	0.769	0.733	0.750	0.733
<b>Panel B: High Schools</b>	(1)	(2)	(3)	(4)	(5)	(6)
ProComp years (SY2005-06 to 2009-10)	0.0796*** (0.00751)	0.0938*** (0.00945)	0.0790*** (0.00751)	0.0504*** (0.00697)	0.0338*** (0.00829)	0.0499*** (0.00697)
Procomp participant	-0.0137** (0.00647)	-0.0243* (0.0126)	-0.0274*** (0.00865)	0.0245*** (0.00716)	0.0520*** (0.0163)	0.0391*** (0.0103)
Voluntary			0.0244** (0.0102)			-0.0247** (0.0125)
Teacher controls	Covariates	Fixed Effect	Covariates	Covariates	Fixed Effect	Covariates
Observations	32,315	32,315	32,315	37,098	37,098	37,098
R-squared	0.737	0.749	0.738	0.695	0.709	0.695
Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. All specifications also include prior-year test scores, free/reduced price lunch status, IEP status, race/ethnicity, grade level, and missing value dummy variables. The omitted reference category is the pre-ProComp time period.						

Focusing first at the middle school level in math, there was strong evidence in both teacher covariate (column 1) and fixed effects (column 2) model specifications that the overall DPS gains in student achievement reported in the prior sub-section were driven by teachers who *are* participating in the alternative pay system.<sup>76</sup> Specifically, the achievement of students assigned to Non-ProComp teachers in years in which ProComp was in effect was estimated to be slightly lower (about 2% to 4% of a standard deviation) than the achievement prior to the implementation of the ProComp system. The achievement of students assigned to a teacher participating in the ProComp system, however, was significantly higher (by 6% to 7% of a standard deviation) than that of non-participating teachers, so much so that the net effect of having a ProComp participating teacher was estimated to be positive relative to years prior to the implementation of ProComp.

The net effect on achievement levels in reading for students in ProComp years was also positive, but here the ProComp effect was driven by non-participant teachers. Note, for instance, the significant positive coefficient for “ProComp years” (in both covariate and fixed effects specifications) and negative coefficient on “ProComp participant” (in both specifications and significant in the fixed effects specification).

At the high school level, the pattern changed. The net effect of having either a ProComp participating teacher or non-participating teacher in a year in which ProComp was in effect in DPS was positive in both math and reading.<sup>77</sup> In math, the achievement of students who had ProComp participating teachers was slightly lower than the achievement of students with non-participating teachers, whereas in reading the achievement of students with ProComp participating teachers was significantly higher than the achievement of students with non-participating teachers. Again, this pattern of results held for both specifications with teacher covariates and specifications with teacher fixed effects.

Finally, we turned our attention to the specifications that include indicators for a teacher’s voluntary status in ProComp (column 3 for math and 6 for reading). These results showed no clear pattern. In middle school math, ProComp participants were more effective than non-participants, with Compulsory ProComp teachers performing slightly better than Voluntary ProComp teachers. In middle school reading, Non-ProComp teachers were more effective and there was no statistically significant difference between Voluntary and Compulsory ProComp teachers. At the high school level, Compulsory ProComp teachers were less effective in math than both Voluntary ProComp and Non-ProComp teachers. In reading, Compulsory and Voluntary ProComp teachers performed better than Non-ProComp teachers and Compulsory ProComp teachers were more effective than Voluntary ProComp teachers.<sup>78</sup>

<sup>76</sup> The effect of assignment to a Non-ProComp teacher during the period when ProComp was in effect is identified by the “ProComp years” variable and the effect of assignment to a ProComp teacher during the ProComp period is the sum of the “ProComp years” and “ProComp participant” coefficients.

<sup>77</sup> This carries forward from the results in the above sub-section, but was also seen by adding the coefficients on “ProComp years” to “ProComp participant.”

<sup>78</sup> We also estimated these same sets of models for various student sub-groups. As we described in sub-section A, there was no clear pattern of findings for these subgroups.

Wiley et al. (2010) also investigated the effectiveness of teachers voluntarily opting into ProComp and found that Voluntary ProComp teachers were more effective than both Compulsory ProComp participants and Non-ProComp teachers.<sup>79</sup> The findings that we described above were obviously less straightforward. There are at least two potential explanations for what appears to be a divergence in results. First, our analysis included the 2009-10 school year that was not part of Wiley et al.'s sample. Second, it is possible that the effects of voluntarily opting in are heterogeneous across grade levels; Wiley et al.'s analysis did not allow for differentiated effects across grade configurations while our analysis did. We checked for the source of divergence by estimating specifications that did not differentiate across grade levels and that use a sample consistent with Wiley et al.

We largely replicated Wiley et al.'s findings when we estimated models that did not allow for differentiated effects by grade level and excluded the 2009-10 school year from the analysis.<sup>80</sup> When we included all years and all grades together, we found that in math, Compulsory ProComp teachers were more effective than Non-ProComp participants, and Voluntary ProComp teachers were more effective than both Compulsory ProComp and Non-ProComp teachers. ProComp participants and Non-ProComp teachers showed no statistically significant difference in reading with this specification. These results suggest that the divergence between our findings and those of Wiley et al. are explained by the additional 2009-10 school year, which in turn implies that teachers hired in 2009-10 (who were compulsorily enrolled in ProComp) were relatively effective. When we excluded the 2009-10 school year from our analytic sample and estimated the same regressions separately by grade level configuration, we continued to find heterogeneous effects across grade levels, which draw attention to the importance of choosing a model that allows for heterogeneous ProComp effects to be estimated across grade levels.

### ***How effectively are ProComp rewards targeted?***

We began the exploration of the targeting of awards by ranking *all* teachers based on the teacher effectiveness estimates generated by Equation (4) then focusing on the set of teachers who received each of the individual teacher ProComp incentives to determine into which effectiveness quintile they fell. Exhibit 77 shows these results by incentive type and year.<sup>81</sup> To the degree that the value-added rankings correspond to the receipt of a ProComp incentive, we would expect to see far more teachers who receive incentives in the upper quintiles than lower quintiles.<sup>82</sup>

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<sup>79</sup> The outcome measure in Wiley et al.'s analysis was the median Colorado Growth Percentile score for each teacher.

<sup>80</sup> We found a similar pattern of results, although with slightly different ProComp effect sizes, which is not surprising given that Wiley et al. did not include teacher covariates in their model.

<sup>81</sup> Note that the timing of receipt of a bonus corresponds to the school year in which the bonus was earned, not the year in which it was paid out.

<sup>82</sup> We would expect recipients to be scattered evenly across quintiles if the receipt of incentives were random.

**Exhibit 77. Percent Receiving Bonus by Quintile of Effectiveness****Panel A. Exceeds Expectations**

<u>Quintiles</u>	<u>All</u>	<u>2007</u>	Math			<u>All</u>	<u>2007</u>	Reading		
			<u>2008</u>	<u>2009</u>	<u>2010</u>			<u>2008</u>	<u>2009</u>	<u>2010</u>
lowest - 1	6.8	2.0	7.9	7.9	6.1	10.5	6.7	11.1	11.2	10.1
2	12.5	8.2	15.1	14.5	10.5	16.8	11.1	12.6	21.3	15.6
3	18.5	22.5	20.6	14.9	19.9	20.0	24.4	21.5	17.1	21.2
4	24.1	16.3	21.4	25.4	25.6	23.5	20.0	20.7	22.5	26.1
highest - 5	38.1	51.0	34.9	37.3	37.9	29.3	37.8	34.1	27.9	27.0
Total teachers	680	49	126	228	277	745	45	135	258	307

**Panel B. SGOs**

<u>Quintiles</u>	<u>All</u>	<u>2007</u>	Math			<u>All</u>	<u>2007</u>	Reading		
			<u>2008</u>	<u>2009</u>	<u>2010</u>			<u>2008</u>	<u>2009</u>	<u>2010</u>
lowest - 1	17.7	19.2	20.3	16.5	17.1	18.1	14.3	20.0	19.0	17.6
2	18.9	16.4	20.8	20.8	16.9	19.3	20.1	17.6	18.3	20.8
3	19.5	20.6	15.3	19.2	21.4	20.4	25.3	22.5	15.9	21.6
4	21.0	21.2	20.3	21.2	21.0	20.3	22.1	16.3	23.0	19.4
highest - 5	23.0	22.6	23.3	22.3	23.6	21.9	18.2	23.7	23.9	20.4
Total teachers	1326	146	236	448	496	1320	154	245	422	499

**Panel C. PDUs**

<u>Quintiles</u>	<u>All</u>	<u>2007</u>	Math			<u>All</u>	<u>2007</u>	Reading		
			<u>2008</u>	<u>2009</u>	<u>2010</u>			<u>2008</u>	<u>2009</u>	<u>2010</u>
lowest - 1	18.2	22.3	19.4	18.3	15.7	18.5	14.6	17.7	20.3	18.6
2	20.1	17.0	20.8	22.2	18.0	20.8	29.1	21.1	19.3	19.3
3	19.6	17.0	19.0	18.6	22.1	20.0	22.3	23.0	15.6	21.9
4	20.8	23.4	20.4	21.6	19.4	19.8	17.5	16.8	22.7	19.7
highest - 5	21.3	20.2	20.4	19.2	24.8	20.8	16.5	21.5	22.1	20.5
Total teachers	942	94	216	338	294	902	103	209	321	269

**Panel D. CPEs**

<u>Quintiles</u>	<u>All</u>	<u>2007</u>	Math			<u>All</u>	<u>2007</u>	Reading		
			<u>2008</u>	<u>2009</u>	<u>2010</u>			<u>2008</u>	<u>2009</u>	<u>2010</u>
lowest - 1	19.2	21.1	21.8	19.6	17.1	20.4	20.0	20.5	20.7	19.6
2	19.5	16.9	20.4	20.9	17.9	20.0	21.4	20.5	18.4	22.0
3	20.6	20.4	18.0	19.1	24.2	20.4	22.1	24.9	17.6	20.9
4	19.4	21.1	18.9	19.1	18.9	19.5	18.6	14.2	21.3	19.6
highest - 5	21.3	20.4	20.9	21.4	22.1	19.7	17.9	20.0	22.1	17.8
Total teachers	1168	142	206	398	381	1145	145	205	376	382



As would be expected given the correlation between the EE incentive and value-added estimates (Panel A), teachers receiving this award were disproportionately in the upper end of the value-added distribution; for example, in math, less than 25% of teachers receiving this incentive were in the lowest two quintiles in each year and over 60% were in the top two quintiles. The distribution was less skewed for reading but was still weighted toward the top.

The pattern of results was less clear for the SGO incentives (Panel B), though in general, we observed a slightly higher proportion of teachers at the top of the distribution than the bottom. For instance, across all years in math, the total in the top two quintiles was 44% versus 37% in the bottom two quintiles (the corresponding figures for reading were 42% and 37%).

For PDUs and CPEs (Panels C and D), there did not appear to be much evidence at all that teachers receiving these incentives were more effective in either math or reading. For instance, in some years the teachers receiving these incentives tended to be at the top of the value-added distribution but, in other years, they were more likely to be at the bottom.

We investigated these findings further by estimating logistic regressions predicting the likelihood of award receipt as a function of teacher effectiveness. Exhibit 78 reports the marginal effect estimates for these models.<sup>83</sup> Columns 1 and 2 show the results for teacher effectiveness based on student achievement in math, and columns 3 and 4, for teacher effectiveness based on student achievement in reading.

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<sup>83</sup> The results in Exhibit 78 were robust to models that included teacher covariates (experience, experience-squared, and degree). When these models were run separately by grade configuration, the magnitudes and significance levels changed somewhat, but the overall patterns remained.

**Exhibit 78. Marginal Probability of Receipt of Award by Teacher Effectiveness**

	Math Marginal Effects		Reading Marginal Effects	
<b>Panel A: Exceeds Expectations</b>	(1)	(2)	(3)	(4)
Estimated $\tau$	9.121*** (1.606)		7.654*** (1.746)	
Within school est. $\tau$		6.544*** (1.441)		5.689*** (2.034)
Estimated $\tau$ *2008	-2.916 (1.884)	-0.133 (1.787)	-1.469 (2.053)	0.718 (2.488)
Estimated $\tau$ *2009	-2.07 (1.791)	-0.245 (1.661)	-3.733** (1.872)	0.428 (2.276)
Estimated $\tau$ *2010	-1.099 (1.802)	0.355 (1.662)	-2.136 (1.891)	0.452 (2.245)
Observations	1738	1727	1701	1691
Log likelihood	-972.5	-1024.6	-1047.7	-1070.6
<b>Panel B: SGO</b>				
Estimated $\tau$	3.381*** (1.02)		3.928*** (1.24)	
Within school est. $\tau$		2.725** (1.112)		2.830* (1.601)
Estimated $\tau$ *2008	-1.293 (1.338)	-0.881 (1.466)	-1.778 (1.547)	-0.187 (2.157)
Estimated $\tau$ *2009	-0.306 (1.246)	0.228 (1.379)	-1.994 (1.415)	0.307 (1.916)
Estimated $\tau$ *2010	-0.872 (1.209)	0.098 (1.338)	-3.182** (1.417)	-1.793 (1.883)
Observations	1738	1727	1701	1691
Log likelihood	-921.6	-924.9	-890.3	-887.4
<b>Panel C: PDU</b>				
Estimated $\tau$	0.956 (0.856)		1.097 (1.051)	
Within school est. $\tau$		0.801 (0.951)		1.556 (1.452)
Estimated $\tau$ *2008	0.049 (1.161)	0.329 (1.293)	0.296 (1.332)	-1.741 (1.928)
Estimated $\tau$ *2009	-0.779 (1.023)	-1.037 (1.151)	-0.556 (1.205)	-1.162 (1.705)
Estimated $\tau$ *2010	0.251 (1.009)	0.875 (1.141)	-0.586 (1.201)	-0.222 (1.677)
Observations	1738	1727	1701	1691
Log likelihood	-1162.0	-1153.6	-1141.6	-1136.3
<b>Panel D: CPE</b>				
Estimated $\tau$	1.985** (.97)		0.181 (1.133)	
Within school est. $\tau$		1.827* (1.093)		0.966 (1.565)
Estimated $\tau$ *2008	-1.592 (1.284)	-1.109 (1.451)	0.144 (1.472)	0.322 (2.116)
Estimated $\tau$ *2009	-1.48 (1.197)	-0.615 (1.371)	0.577 (1.348)	0.203 (1.908)
Estimated $\tau$ *2010	-0.805 (1.161)	0.17 (1.325)	-1.129 (1.345)	-1.844 (1.858)
Observations	1523	1512	1515	1506
Log likelihood	-863.3	-855.7	-875.9	-870.2
Note: Standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1. The omitted reference category for the interaction terms is "Estimated $\tau$ *2007." All models also include indicators for school year.				

Several findings are noteworthy. There was strong evidence that EE and SGO awards were associated with teacher effectiveness (i.e., value-added) in both math and reading. This was true whether effectiveness was based on comparisons within and across schools (columns 1 and 3) or only within schools (columns 2 and 4) as was the case when the models included school fixed effects.<sup>84</sup>

Given the high correlations between EE and value-added, it is not surprising to find the receipt of the EE award to be associated with teacher effectiveness. There is, however, little existing research on the efficacy of SGO-type award systems so the finding on SGOs has potentially important policy implications for states and localities wishing to reward teachers in grades or subjects not covered by state assessments (we discuss this further below).<sup>85</sup>

There was relatively little evidence, however, that the CPE and PDU ProComp awards were related to teacher effectiveness, though a case can be made for CPEs in math, where the coefficient on teacher effectiveness was quite small, but statistically significant.<sup>86</sup>

The above findings are illustrated in Exhibit 79, which shows kernel distributions of value-added teacher effectiveness (in math and reading) for each incentive. The dashed lines represent the distributions for those teachers who received an award and the solid line ProComp teachers who did not, with drop down lines to indicate the mean of each distribution.

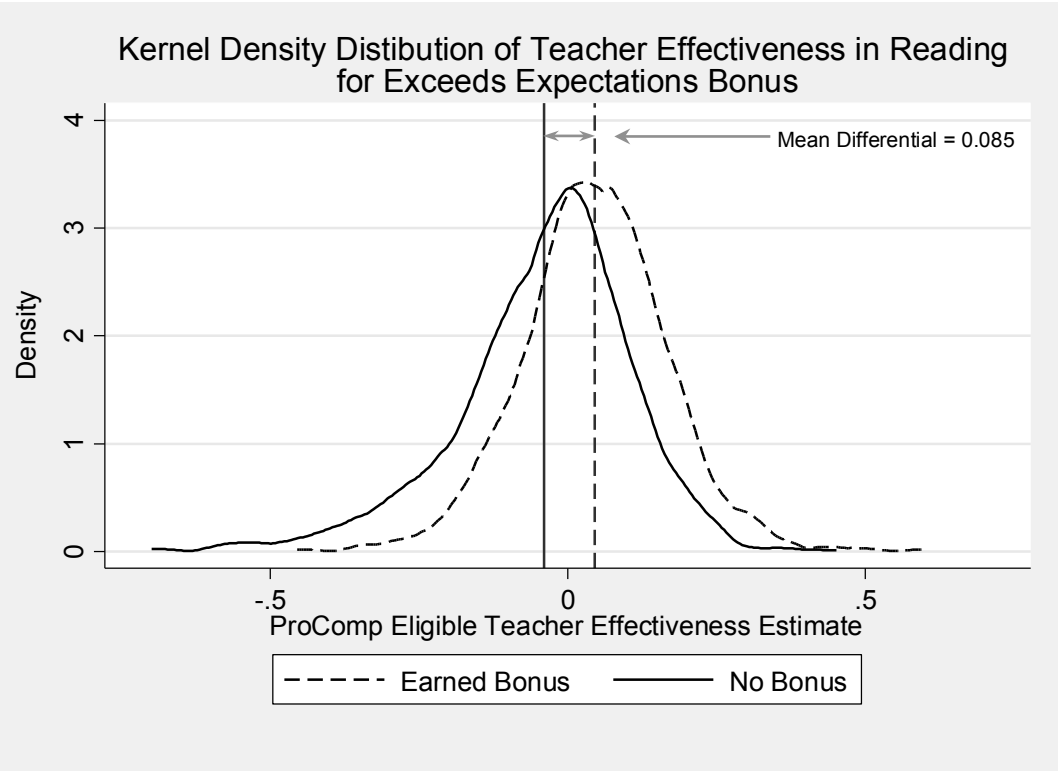
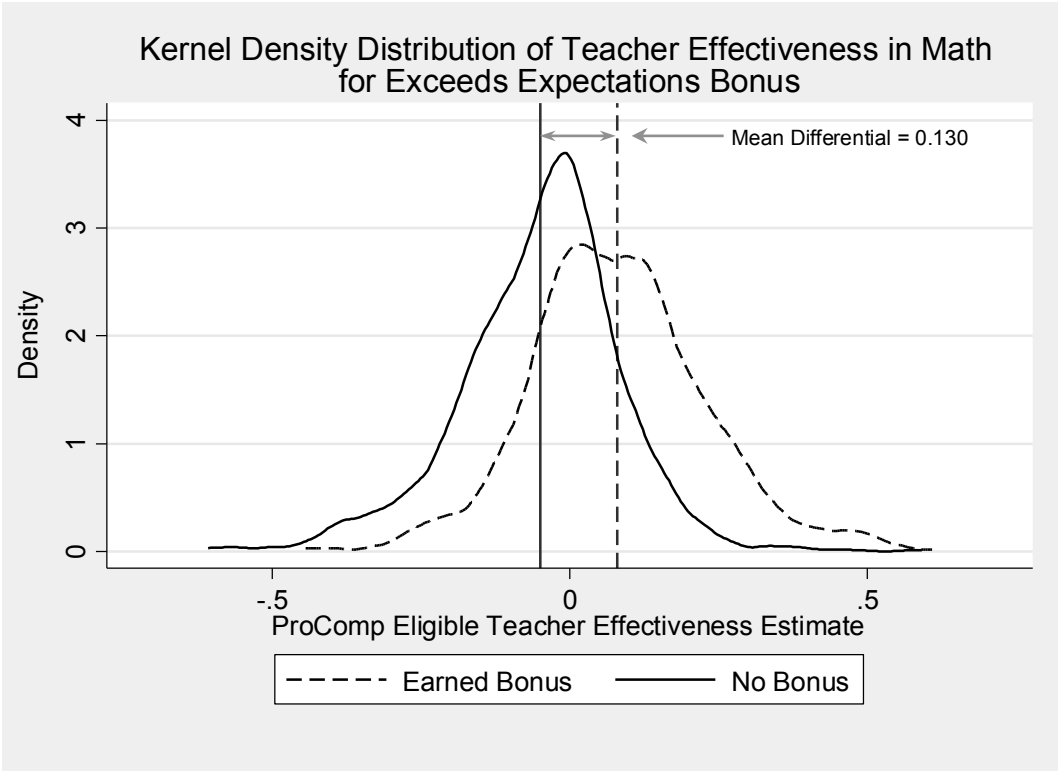
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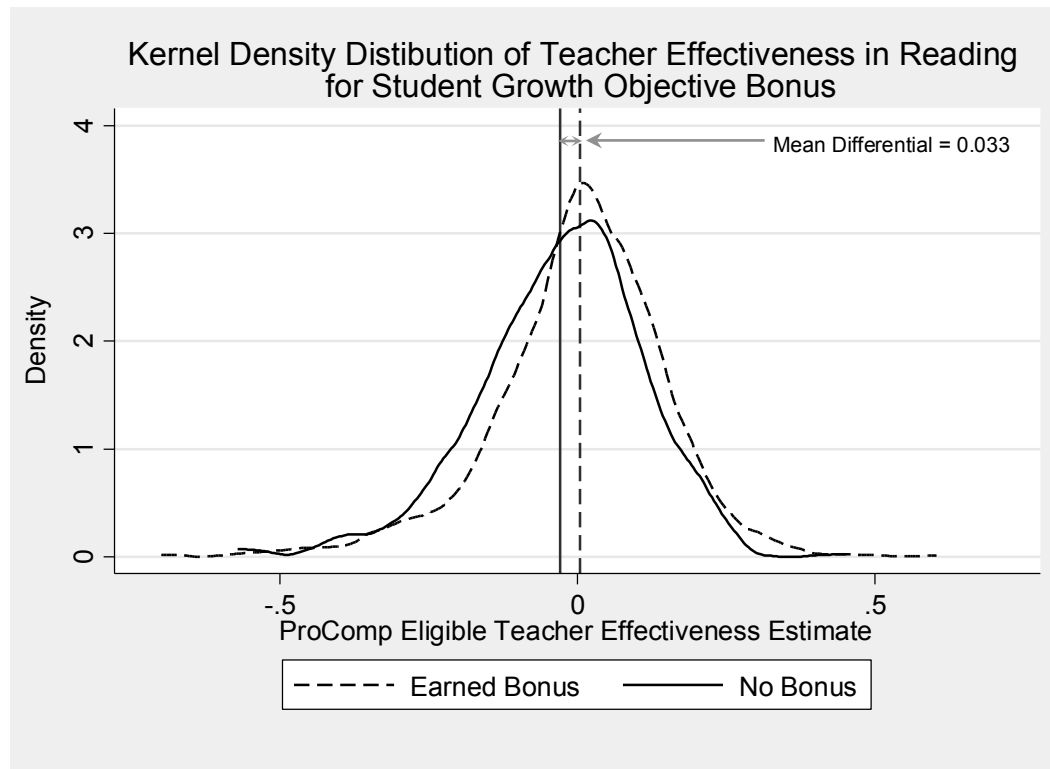
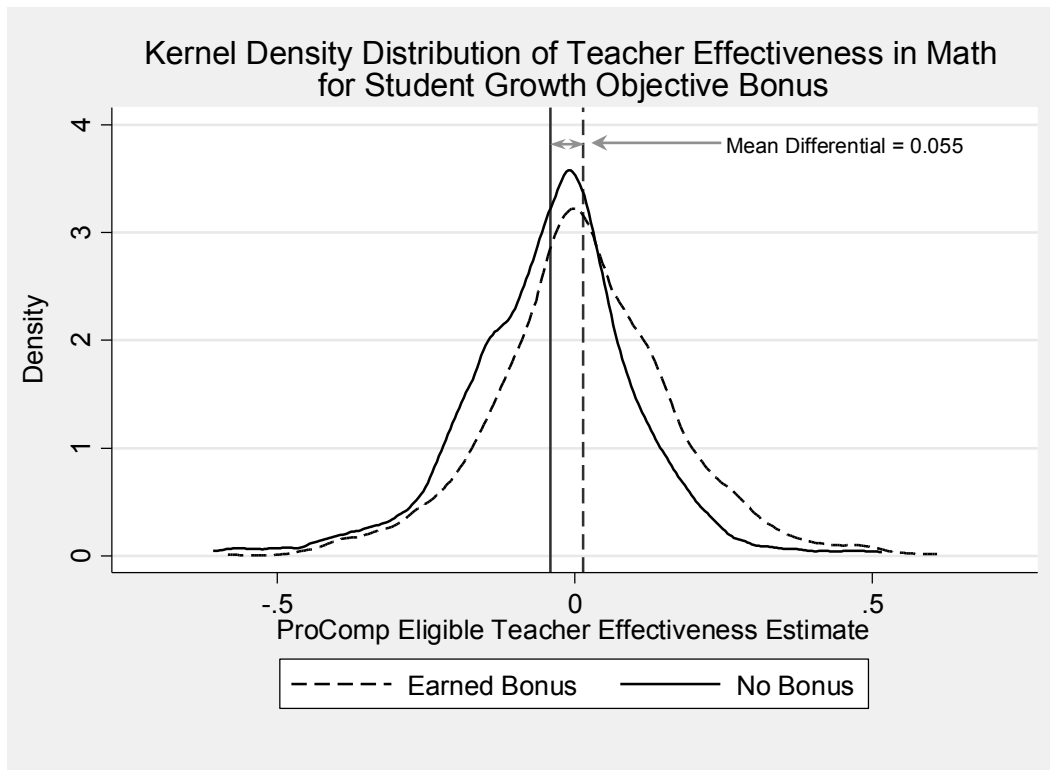
<sup>84</sup> We also estimated models that predicted the probability of receiving an SGO bonus based on effectiveness quintiles rather than the linear effectiveness estimate and found similar results.

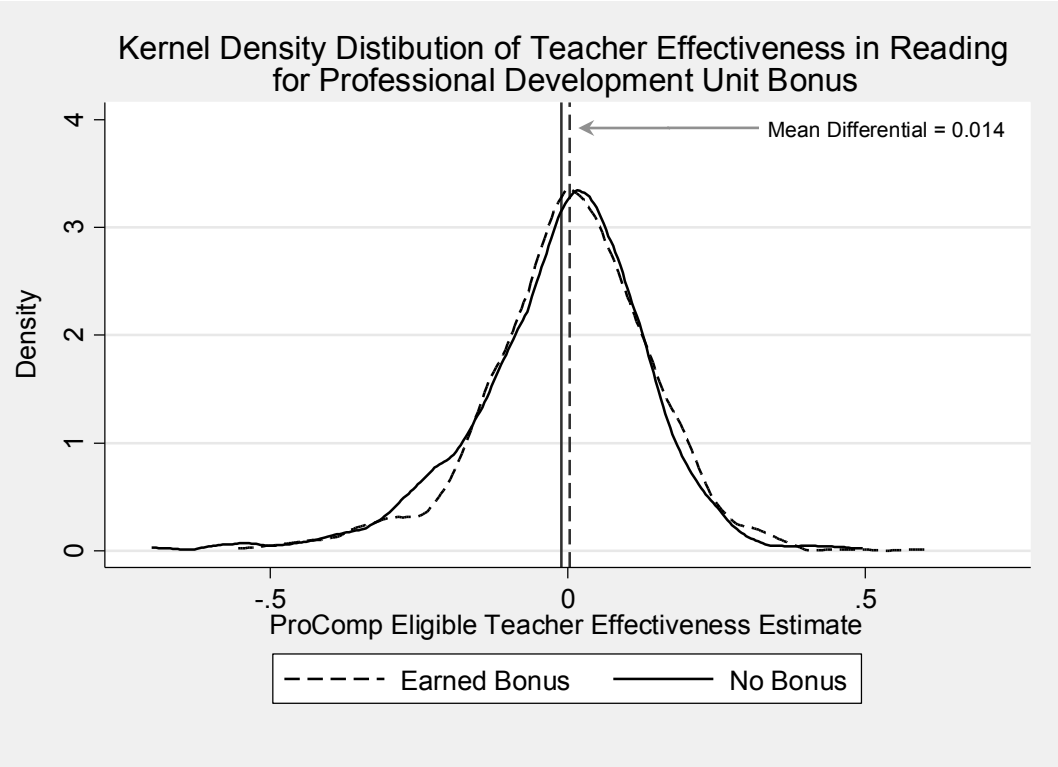
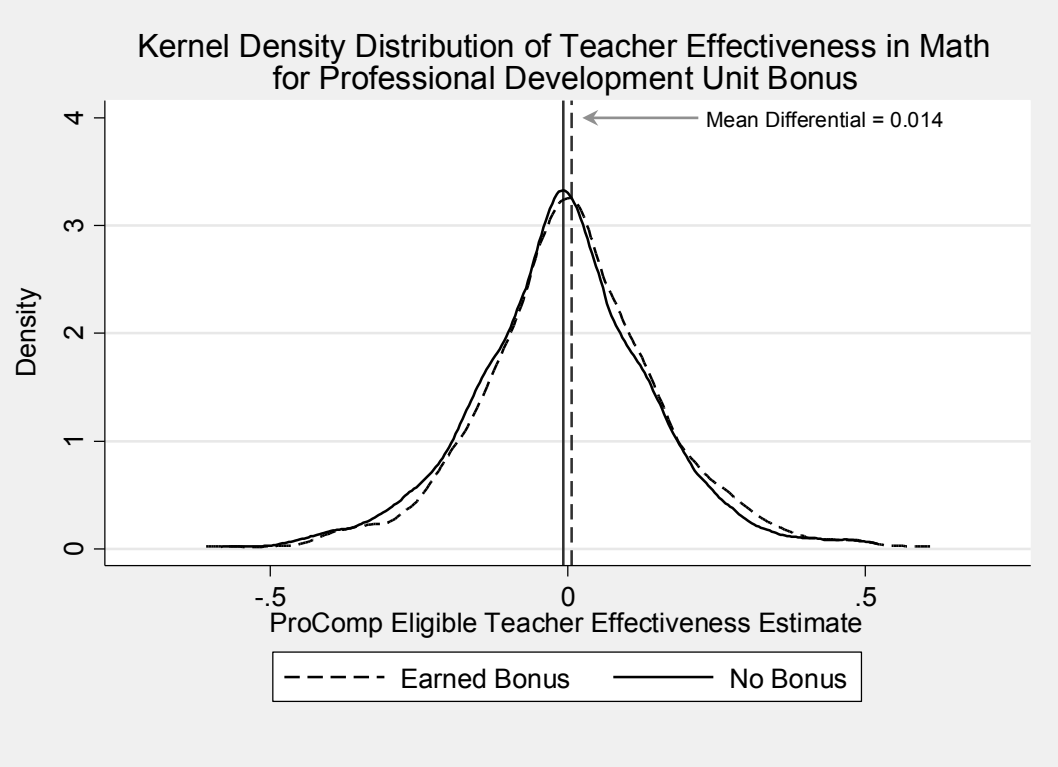
<sup>85</sup> The only other evidence on SGOs that we are aware of is from Austin, TX, which uses SGOs as part of the REACH program. Research by the Austin school district suggests that teachers whose students met learning objectives were more likely to raise student achievement on the state standardized test (Schmitt and Ibanez, 2011).

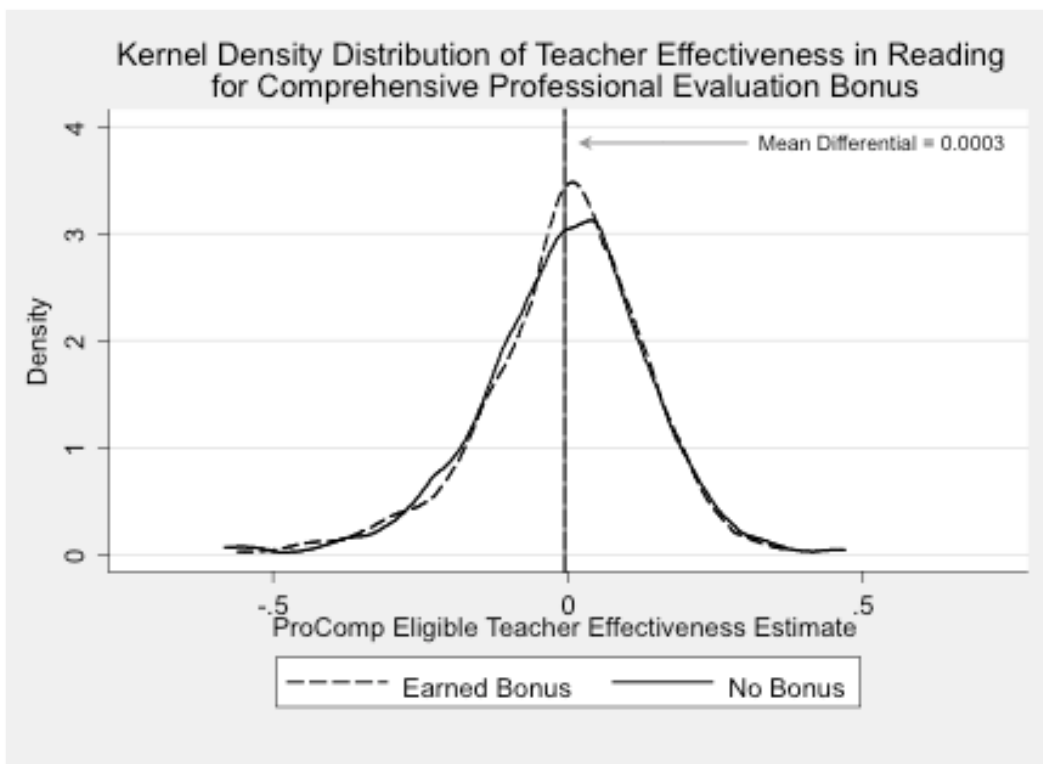
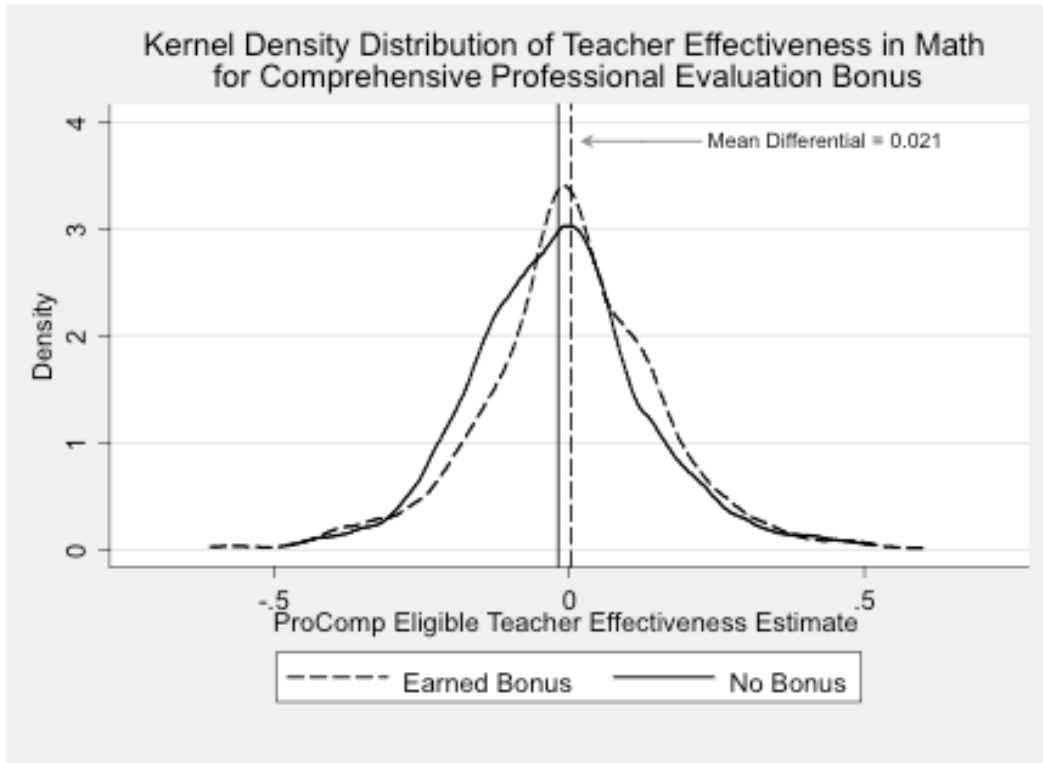
<sup>86</sup> We also ran regressions that included interactions for effectiveness and probationary status but found no evidence of an interaction effect. This suggests that the effect of teacher effectiveness on the probability of receipt of each bonus was similar for probationary and non-probationary teachers.

Exhibit 79. Kernel Density for Teacher Effectiveness by Award Status









The separation between the dotted and solid distributions for the EE and SGO awards is clear (i.e. significant weight of the dashed distribution lies to the right of the solid distribution). But, in the case of CPEs and PDUs, there was almost complete overlap of the distributions of effectiveness for those who did and did not receive these awards. We began this sub-section by noting that a one standard deviation change in *teacher effectiveness* translates into roughly 0.15 standard deviations of *student achievement*. This provides a means of gauging the average differential between award recipients and non-recipients. Specifically, the differential for the EE award was about a full standard deviation in terms of teacher effectiveness in math (for example, the difference between a teacher at the median and a teacher at the 84<sup>th</sup> percentile of the effectiveness distribution) and nearly 60% of a standard deviation for reading.

The differential between SGO recipients and eligible non-recipients was smaller, but still about 35% of a standard deviation of teacher effectiveness in math and 20% for reading. We can also compare this difference to a regression-adjusted estimated effect of receiving free/reduced price lunch of about 5% of a standard deviation of student achievement. In other words, the average differential in teacher effectiveness between SGO recipients and eligible non-recipients was approximately equivalent to the effect of poverty (as measured by free/reduced price lunch status) on student achievement in math and about two-thirds of the effect of poverty in reading.

The differentials for CPEs and PDUs were negligible and, again, only statistically significant in the case of the math CPE. Given that CPE and PDU awards were not strongly associated with teacher effectiveness, it is worth digging a bit deeper into the results. In particular, the CPE results are intriguing because there is some existing evidence in the literature that principals can distinguish teacher effectiveness (Jacob and Lefgren, 2008, Jacob, 2011), even if differences in effectiveness are rarely documented (Weisburg et al., 2009). And, In the case of PDUs, we might not expect much of a relationship to effectiveness since these awards are intended to provide teachers with a financial incentive to build their human capital through training (see Chapter 4).<sup>87</sup> Thus, if successful, teachers might be more effective after having completed PDUs.

As noted above, we did find the probability of receiving a CPE award rises marginally with teacher effectiveness in math. One possibility is that the linear specification masks stronger relationships at points along the teacher performance distribution.<sup>88</sup> We tested this by including indicators for the effectiveness quintile in which each teacher fell (with the bottom quintile being the reference group). In this specification, teachers falling into quintiles other than the bottom had a higher probability of reward receipt, with a marked increase in that probability for

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<sup>87</sup> It is of course entirely possible that any of the ProComp awards, other than EE reward aspects of teaching quality that are not strongly associated with student test achievement (so would not necessarily show up in value-added estimates).

<sup>88</sup> The Jacob and Leftgren study, for instance, suggested that principals are better able to distinguish teachers at the top and bottom of the performance distribution than the middle (Jacob and Lefgren, 2008)



teachers in the top quintile.<sup>89</sup> None of the quintiles for reading effectiveness were statistically significant.

We tested the human capital hypothesis for PDUs by regressing student achievement on the number of PDUs a teacher earned in the previous year (and whether a teacher has a master's degree). Regardless of how these models were specified (e.g., with or without school fixed effects, whether the effect of increased PDUs is assumed to be linear), PDUs were not significant predictors of student achievement in either math or reading.<sup>90</sup> Again, it may be that this award is designed to develop teachers in ways that are not easily detected through analysis of student test achievement, but it was clear from all the findings on PDUs that this was not an award that showed up as significant in predicting students' CSAP scores.

Finally, while not all awards are related to estimated effectiveness, it is conceivable that the targeting of awards improved over time as DPS developed more sophisticated means of assessing teachers. This was not borne out in the data. Specifically, as we report in the table, few of the effectiveness year interaction terms were statistically significant, and those that were significant were negative. If anything, the relationship between effectiveness and the receipt of the awards tended to be weaker in the more recent ProComp years than when the ProComp system was first implemented, which also corresponds to a period that showed a large increase in the number of ProComp awards teachers received.

## Discussion

Our findings document significant student learning gains in DPS across grades and subjects. The source of those gains, however, is not altogether clear as there was not a consistent pattern across grade level and subject: in some cases the gains appeared primarily amongst students with ProComp teachers, while in other cases non-ProComp teachers were found to be more effective. Though puzzling, these findings are not inconsistent with research on other well-known interventions that include elements similar to ProComp.

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<sup>89</sup> The marginal effect estimates for quintiles 2–5 were .16, .50, .34, and .83 for the models where teacher effectiveness was based on the model without school fixed effects, with quintiles 3, 4, and 5 being statistically significant. In the second model based on within-school teacher effectiveness the marginal effect estimates were .27, .41, .52, and .88 (quintiles 3, 4, and 5 were significant).

<sup>90</sup> We found similar results with the advanced degrees incentive. As was the case with PDUs, the effect of earning the incentive was positive but not statistically significant. This may be due in part to the small number of teachers earning the advanced degrees incentive, as only 3% of the analytic sample included teachers who had earned the incentive in the previous year. We also performed a more general test of the effect of master's degrees and found no significant relationship between master's degrees and student achievement, which is a common finding in the literature (Goldhaber and Brewer, 1997; Harris and Sass, 2011). We were unable to test the effect of the advanced license incentive because there were only 7 teachers in the analytic sample earning the incentive.

Taylor and Tyler’s (2011) investigation of the effects of evaluation reform showed large student achievement effects in math, but no effect on students’ reading performance. And, research on another well-known pay reform system – the Teacher Advancement Program (TAP) – found that the student achievement effects were heterogeneous across grade levels, with positive and significant effects associated with being a TAP school at the elementary level, and mixed and sometimes significantly negative effects at the secondary level (Springer et al., 2010).<sup>91</sup> The authors postulated that incentives at the secondary level may lead to a reduction in teamwork. It is not inconceivable that this could also be true for DPS, but the positive effects for Non-ProComp teachers in some instances imply that any negative spillovers did not severely impact their performance. This finding, along with the finding of heterogeneous effects across subjects and grade levels suggests that the effect is likely more complex. While it is simply further speculation, an additional possibility is that ProComp could be unevenly implemented across grade levels and subjects. Unfortunately, our findings on this are limited due to a lack of information on the quality of ProComp implementation across schools.<sup>92</sup> Moreover, our findings are possibly confounded by other reform efforts that tend to be targeted to particular grades and subjects.<sup>93</sup>

Two other results that have potentially far-reaching policy implications are clearer. The first is that “ProComp effects” were not always concentrated solely amongst teachers enrolled in ProComp (this is especially true at the high school level). This suggests that systems associated with ProComp implementation, e.g., data and evaluation, may have beneficial spillovers to non-ProComp teachers. The second is that some of the ProComp awards did successfully target teacher effectiveness. The finding that SGOs appeared to be a reasonably successful means of rewarding teachers whose students demonstrate larger than expected gains on the CSAP tests provides support for other states and localities (e.g., Race to the Top) looking to reform teacher incentives. However, several of the ProComp bonuses appeared unrelated to either current or future teacher value-added measurements. Whether this is good or bad is clearly a normative question as some might argue that these awards are rewarding aspects of classroom instruction not strongly associated with students’ test achievement.

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<sup>91</sup> TAP is not directly comparable to ProComp, but like ProComp it is a comprehensive reform that entails changes to teacher evaluation and advancement.

<sup>92</sup> Note that there is evidence that SGOs were implemented differently across schools, with some schools requiring more rigorous SGOs than others. See Chapter 7 for more details.

<sup>93</sup> Aside from collecting additional information on these possibilities, one avenue of potentially fruitful future research would be to assess whether the concentration of ProComp teachers in schools influences the findings as this may speak to the degree to which the incentive influences teacher teams.

## Chapter 11: Conclusions and Recommendations

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This evaluation study was designed as a formative and summative evaluation of the Denver Public Schools (DPS) Professional Compensation System, better known as ProComp. It was designed to examine the development and implementation of the program, and experiences and attitudes regarding ProComp. This evaluation also explored ProComp's impact on district goals for improving student achievement, recruitment and retention of teachers, and the school and central office components of DPS. Multiple data sources were used including: interviews, focus groups, surveys, human resources data, analyses of existing student achievement data, Student Growth Objectives (SGOs) data, and document review. This final chapter summarizes key findings, presents lessons learned, recommendations, and provides a discussion of potential implications for implementing alternative compensation programs.

### Key Findings—Outcomes

**There was general agreement among stakeholders that ProComp aligned teacher compensation with the District's mission and goals in a more explicit way.** The 2004 Agreement between DPS and the Denver Classroom Teachers Association (DCTA), as well as the mill levy that was passed by the Denver voters to fund ProComp, outlined the elements to be included in ProComp and the goals the system was intended to accomplish. The evidence indicates that ProComp, as implemented, was aligned with the framework established by the Agreement and mill levy ballot initiative.

**ProComp represents a multi-faceted approach to alternative teacher compensation.** ProComp is designed to incorporate three distinct approaches for providing teachers with incentives to engage in behaviors that will achieve intended outcomes. ProComp includes incentives specifically targeted at both the individual teacher level and the school level. Individual-based incentives include those for Advanced Degrees/Licenses, Tuition/Student Loan Reimbursement, Professional Development Units (PDUs), Comprehensive Professional Evaluation (CPE), Student Growth Objectives (SGOs), and Exceeds CSAP Expectations. ProComp also incorporates two bonuses that are based on school-wide accomplishments and paid to all ProComp participants in schools that achieve one or both of these distinctions—Top Performing School and High Growth School. The third facet of ProComp uses market incentive bonuses to attract and retain teachers in Hard to Staff Positions and Hard to Serve Schools. While the aforementioned incentives are linked to the student achievement goal, and the market incentive bonuses are linked to the recruitment and retention goal, these incentives are intended to work together as a total compensation system. ProComp represents a relatively holistic approach to alternative compensation by targeting multiple leverage points that may affect student achievement.

**ProComp has continued to evolve since it was introduced in 1999.** ProComp was implemented district-wide in 2006 after ratification of the Agreement between DCTA and the Board of Education and approval of a \$25 million tax initiative by Denver voters. The system has endured

through changes in DPS and DCTA leadership. Ongoing support has sustained the continuing evolution of ProComp through negotiations between the district and DCTA. Although the DCTA members and the district ratified the 2008 changes to ProComp, there were polarized perspectives on these changes. DPS administrators viewed the 2008 changes as supporting the goals of ProComp, while some DCTA members, most notably those with more years of experience, viewed these changes as unfair because they reduced or eliminated base-building opportunities for teachers with 14 or more years of experience.

### ***What is the impact of ProComp on student achievement growth?***

**DPS has experienced significant student learning gains across grades and subjects, but it is not clear that this is the result of ProComp. The source of the gains is not** altogether clear as there is not a consistent pattern across grade levels and subjects in the relationship between ProComp and observed achievement gains. In some cases, the gains appear primarily among students with ProComp teachers, while in other cases it is Non-ProComp teachers who appear to be more effective. Though puzzling, these findings are consistent with research on other well-known interventions that include elements similar to ProComp.

Two other results that have potentially far-reaching policy implications are clearer. The first is that “ProComp effects” are not found solely among teachers enrolled in ProComp (this was especially true at the high school level). This suggests that systems associated with the implementation of ProComp, such as a greater emphasis on using data and improvements in the professional evaluation system, may have influenced the professional practices of Non-ProComp teachers as well as ProComp teachers.

The second result is that some of the ProComp incentives did successfully target teacher effectiveness as measured by student achievement. There is strong evidence that Exceeds CSAP Expectations and SGO awards are associated with teacher effectiveness as measured through value-added analysis of student achievement in both math and reading. The finding that SGOs appear to be a reasonably successful means of rewarding teachers whose students demonstrated larger than expected gains on the CSAP tests provides support for other states and localities (e.g., Race to the Top) seeking to reform teacher incentives. While the gains are smaller, CPEs are also rewarding teachers whose students show greater than expected CSAP gains. However, several of the ProComp bonuses appear unrelated to either current or future teacher value-added measurements. There is no evidence that the ProComp PDU and the Advanced Degrees/Licenses incentives are related to teacher effectiveness as measured by value-added student achievement. These awards may be rewarding certain aspects of classroom instruction not strongly associated with students’ CSAP achievement, such as content not measured in the CSAP or other valued outcomes such as social skills or civic engagement. It is possible that the diverse nature of professional learning encompassed by these two elements may not be directly related or expected to affect the reading and math CSAP achievement.

***What is the impact of ProComp on recruitment and retention?***

**During the implementation of ProComp, DPS improved its ability to recruit and retain qualified teachers, however it is not clear if this was due to ProComp implementation.** A goal of ProComp is to improve the effectiveness of the DPS workforce by recruiting and retaining more effective teachers. The results of the analyses of the effect of ProComp on recruitment and retention are mixed. Over the first four years of ProComp implementation, DPS improved in its ability to compete with other districts when recruiting experienced teachers. However, the evaluation design and available data did not allow a firm conclusion that this change is due to ProComp or that it resulted from earning either of the Market Incentives (HTSS or HTSA). Lack of knowledge about ProComp reported in surveys of teacher trainees did not support the hypothesis that ProComp would have a strong effect on recruitment. In addition, surveys and interviews with newly hired teachers and teacher trainees provided mixed views on how they valued ProComp incentives, which may have also moderated ProComp's impact on recruitment. During the years of ProComp implementation, DPS also improved in its ability to retain teachers. While this may be due to ProComp or other reforms that occurred in DPS at the same time, statistical models indicated that some degree of the improved retention is likely due to ProComp. The amount of retention that may be attributed to ProComp is between zero and four percentage points, which, at most, suggests 160 teachers out of a workforce of 3,700 teachers may have remained in DPS due to ProComp. Analysis of the relationship between receiving ProComp incentives and retention within DPS suggested that the CPE and Student Growth incentives are associated with retention, while Market Incentives and Knowledge and Skills incentives are not.

**Key Findings—Implementation and Attitudes*****How widely is ProComp accepted?***

**ProComp represents a fundamental change in the DPS compensation system, yet participating teachers seemed to generally accept the system and reported it is at least as fair as the traditional salary system.** The findings indicate that teachers who voluntarily enrolled in the ProComp system, new hires who were automatically enrolled in ProComp, and school administrators, were generally accepting of this alternative compensation system. The teachers who seem to be opposed to ProComp were predominantly those who remained in the traditional single salary system. This is an important finding, because it suggests that compensation systems which are fundamentally different from traditional teacher compensation systems can be widely accepted by teachers and administrators, and viewed as both fair and appropriate. It is also worth considering this in the context of ProComp participation – nearly 74% of teachers were participating in ProComp by the 2009-10 school year – so acceptance of ProComp is occurring in a context of widespread adoption.

### ***Does ProComp motivate teachers?***

**There was a general sense that ProComp could have the potential to motivate teachers to improve their instructional practice and achieve professional growth.** Teachers and principals reported they believed the incentives related to improving teacher knowledge or skills (such as PDUs and Advanced Degrees/Licensees) are more likely to impact practice and student achievement than bonuses related to student test scores (such as Exceeds CSAP Expectations, and High Growth or Top Performing schools). However, the analysis of student achievement data contradicted teacher's opinions—PDUs and Advanced Degrees /Licenses showed no effects, while Exceeds Expectations, SGOs, and CPEs were related to gains in student achievement.

**Teachers did not strongly believe that their professional effort is directly tied to student achievement.** Teachers were somewhat more likely to believe they can impact increasing student growth than achieving high test scores, and principals were more likely than teachers to believe teacher effort has an effect on student achievement. Teachers' sense of efficacy is likely to impact the effects of Top Performing and High Growth Schools incentives, since if teachers do not believe their efforts can improve student achievement then these types of incentives are not likely to be strong motivators for changes in practice. The efficacy beliefs of ProComp teachers are very similar to those of Non-ProComp teachers, which suggests that participation in ProComp may not be related to participants' sense of teacher efficacy.

### ***What were the challenges to implementation?***

Of the 10 ProComp elements, seven are implemented and managed at the district level<sup>94</sup>. Three elements, Professional Development Units (PDUs), Comprehensive Professional Evaluations (CPE), and Student Growth Objectives (SGOs), are implemented by schools personnel and involve more variability and subjective decision-making. Accordingly, this evaluation is focused more on the implementation of these elements, though the data regarding CPEs are limited.

**Communication was a major barrier to implementation. Many teachers and principals expressed a lack of understanding about ProComp, including understanding the incentives that are available and how they can be earned.** Despite the existence of a ProComp website maintained by DPS, numerous data sources suggest that many teachers and principals did not know about or understand all of the ProComp incentives. Teachers considered their colleagues to be the most effective source of information about ProComp, yet the data showed that considerable misinformation was being shared, and some teachers had questions regarding basic information about ProComp. If teachers do not understand how to earn the incentives, it is unlikely that they will be motivated by them. Given that knowledge of ProComp is relatively low among participants, principals, and new teacher recruits, it may be worth exploring differentiated strategies for communicating with these groups; differentiating communication strategies is likely to ensure that all parties better understand the details of ProComp and the

<sup>94</sup> Advanced Degrees/Licenses, Tuition/Student Loan Reimbursement, Hard to Serve Schools, Hard to Staff Positions, Exceeds CSAP Expectations, High Growth School, and Top Performing School.

actions they must take to earn available incentives. Improved teacher and principal knowledge and understanding of ProComp are likely to increase the effectiveness of the system.

**Teachers saw more value in PDU courses that are more closely related to their personal context. Teachers noted that PDU courses tended to vary in both quality and rigor,** but tended to feel that they learned more from PDU courses when participants were connected by similar content (e.g., art, new math curriculum), by unique employee group membership, (e.g., Teach for America (TFA), Teacher in Residence (TIR)), or by their school. For all teachers, the PDU courses taken most frequently were those sponsored by central departments and schools.

**ProComp teachers were somewhat more likely than Non-ProComp teachers to participate in PDU courses. Teachers and administrators generally reported that teachers have incorporated PDU learning in their classroom instruction.**

**Teachers had mixed opinions about whether SGOs changed instructional practice.** Some teachers reported in interviews that SGOs helped them focus their instruction and that data-driven conversations between teachers and administrators had increased at the school, while others reported no impact on instruction. The analysis of rigor on the SGO data indicated that **both ProComp and Non-ProComp teachers had equally rigorous SGOs, though ProComp teachers are somewhat more likely to meet their SGOs.** In comparison with lower achieving schools, higher achieving schools tended to have higher quality SGOs, and a SGO process that was focused, collaborative, data-based, and where teachers regarded SGOs as meaningful and achievable.

**There was considerable room for improvement in the SGO process, with a need for standardization and quality control.** Teachers had numerous concerns about the way in which SGOs are implemented in schools. Issues center on inconsistency of the quality of SGOs among teachers and across schools sites, as well as variations in the level of expectations reflected in SGOs. The implementation data suggest a substantial need for more support, standardization of the process and criteria for rigorous SGOs, training, and quality control oversight around the SGO process. In spite of these issues, the value-added analysis of CSAP reading and math data indicate that the SGOs award is identifying effective teachers whose students demonstrate greater than expected achievement gains. If the SGO process can be made more meaningful for teachers as a way of focusing and informing their instructional practice, perhaps this incentive may have additional positive effects on student achievement.

### ***What is the impact of ProComp on the DPS system?***

**The implementation of ProComp has had a substantial impact on the DPS system as a whole.** Operationally, significant changes in human resources, payroll, student data systems, interdepartmental communication, and workflow were necessary to provide the support and infrastructure necessary to implement ProComp. Continual improvement in information sources and databases were needed in order to make them more automated and less dependent on paper processes, and to coordinate separate systems so they were able to interface with one

another and work together. While these changes necessitated additional work, they were regarded as being positive improvements. ProComp also precipitated the development of human and instructional resource capacity to support this new system. New assessments, the DPS achievement growth model, and the DPS School Performance Framework were among the positive products of these endeavors.

**ProComp was aligned with the development of other reforms in DPS.** The original ProComp Agreement required the development of a new teacher evaluation system. This new system moved DPS from a checklist (that was generally regarded as insufficiently focused on teaching and learning), to an evaluation that involved conversations between principals and teachers, consideration of artifacts that demonstrated teaching and learning, and rubrics to articulate different levels of teacher performance. While this teacher evaluation system has its shortcomings, it has played a pivotal role in paving the way for the acceptance of a newly developed evaluation system based on indicators of teacher effectiveness that is being piloted in nearly all DPS schools starting in the 2011-12 school year.

**ProComp does not appear to have had a major impact on school environments or on the workload of teachers and administrators.** In implementing a pay for performance system, one common concern is that it will increase competition among teachers and have a negative impact on collaboration. There is no evidence in the data to support this concern. Teachers and principals reported that there has been an increase in collaboration, but it is not clear whether this is related to ProComp or to other factors.

## Considerations

**The ability to scale up compensation reform, while maintaining quality and achieving balance between school level needs and standardization across a district, must be considered in a large reform endeavor.** An important question to be considered in a district-wide reform effort such as ProComp is how to maintain a high quality of implementation that supports school reform more broadly, while still allowing enough autonomy for principals and teachers to manage reforms in a way that meets the instructional improvement needs of their individual schools. One consideration is that the district invest energy and resources to monitor and promote the quality of implementation. Results of the evaluation indicate that the three ProComp elements which are implemented at the school level (SGOs, PDUs<sup>95</sup>, CPEs), all have issues related to variability in quality, rigor, and standardization. These elements are valued by teachers and administrators and, in the case of SGOs and to a lesser extent CPEs, reward effective teachers. DPS has already taken steps to improve the PDU and CPE elements; making adjustments in the SGO process is prudent as well. Examples of areas in which DPS could provide additional guidance are in identifying assessments to use to evaluate student learning related to SGOs, auditing a sample of SGOs for quality each year, and providing principals with feedback.

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<sup>95</sup> PDUs can be school-based, but this is optional and not all schools were implementing school-based PDUs when the data used in this evaluation were collected.



**Reform efforts need to be nurtured as they evolve, but it is not always easy to maintain focus and support in the midst of other reforms.** Once a reform has begun and the supporting pieces put in place, it is all too easy for a district of any size to move on to other reforms without adequately maintaining and sustaining the current effort. The fact that there is such widespread misunderstanding about ProComp is an indication that some important implementation features have either lost momentum or have been discontinued. The evidence from both teachers and principals indicates that the withdrawal of some supports available during the ProComp pilot and initial district-wide implementation has proven to be detrimental to full implementation. Providing support at the beginning of a reform is always useful to ensure quality implementation, however, until sustainability is ensured, a gradual elimination of the most important supports should be strategic and supported by data to determine priorities. The mere fact that teacher and principal mobility remains high will necessitate ongoing efforts to keep staff informed, and the most critical supports in place long enough for them to become systemic.

**The value participants place on certain incentive elements (like those found in ProComp) may not be related to their actual impact on student achievement. For some elements, such as the Advanced Degree/License and PDU incentives,** a majority of teachers and principals tended to believe these incentives provided motivation to pursue additional qualifications and expressed the belief that additional education will help teachers improve instructional practice.

**Teachers also reported changes in instructional practices as a result of PDU learning; however, these incentives were not related to changes in student outcomes.** Teachers and principals also liked the PDU component of ProComp, but statistical analysis found no relationship between earning PDU credits and teacher effectiveness.

**While there is room to improve SGO implementation, on average the incentives rewarded effective teachers. Improved implementation may improve the effectiveness of this incentive.** The implementation of SGOs was not even: the quality, rigor and level of expectation varied across schools and sometimes within schools. However, despite these challenges, on average SGOs did reward teachers who were more effective. At the same, many teachers who were less effective received SGO bonuses, and some who were effective did not receive bonuses. Improved standardization, rigor, and training on the use of SGOs could potentially improve the effectiveness of this incentive.

**Communication and understanding of compensation reform is key.** There was a considerable lack of understanding, and some active misunderstandings, about the way ProComp works and what teachers need to do to earn a particular incentive. The three CSAP-related ProComp incentives were the least understood, yet they most directly reward improvement of student achievement. The most problematic misunderstanding was confusion regarding eligibility to earn these incentives. While only the Exceeds CSAP Expectations incentive is restricted to teachers in grades and content areas where CSAP is administered, there were teachers and administrators who –wrongly believed these same restrictions apply to the Top Performing and High Growth bonuses. To the extent that teachers and principals do not understand the details

of the compensation system, it is highly unlikely they will be motivated by it, or that they will change their behavior to pursue these incentives.

**There is evidence that in some DPS schools principals are effectively leveraging ProComp incentives to further school-level reform efforts.** These principals are connecting compensation with other mechanisms intended to improve instruction and student achievement, such as school improvement plans and goals, teacher collaboration on individual and team goals aligned with school goals, and professional development. In comparison with lower achieving schools, higher achieving schools tended to have higher quality SGOs, and a SGO process that is focused, collaborative, data-based, and where teachers regard SGOs as meaningful and achievable. It may be possible to promote improved instruction at the school level through good management and use of ProComp incentives.

## Recommendations for Other Districts

ProComp is a compensation reform that has attracted national attention. As a preeminent leader in this field and one of the largest school districts in the US, other districts considering this type of alternative compensation system are eager to learn from the experiences of DPS. Key informants involved in the planning, design, development, and early stages of implementation of ProComp identified several key lessons they believed DPS learned that would benefit other districts. Their top recommendations are:

- Involve teachers from the beginning and collaborate to develop the system. Take the time necessary to build the team, so that that they know each other and know clearly what they are working on.
- Research various compensation systems and develop a system customized for your district.
- Determine the goals for the compensation system and align the incentives with the desired goals. As you move through the process, stay focused on the goals and be very clear what behaviors need to occur in order to earn an incentive.
- Consider the entire compensation package (e.g., benefits, retirement), not just salary, and consider the effect of the compensation system on teachers at different career stages.
- Allow sufficient time to design, plan, pilot, and improve the system based on what is learned during the pilot and various stages of implementation. Secure the financial resources required to sustain the compensation system.
- Build into the system a review and change cycle that provides for evaluation and the use of data to improve the system.

There are several additional lessons that emerged from the evaluation that can be added to the list generated by the key informants. These recommendations include:

- Engage teachers in a significant way in planning, piloting, and implementing the system to ensure their support of the change in pay systems.
- Design data systems at the district level that support the compensation system and provide clear data to the district and to individual teachers regarding incentives earned and paid. If student achievement is part of the incentive system, design systems that will accurately link teachers with the appropriate students, taking into account such things as team teaching, platooning (i.e. multiple teachers serving each student), and other instructional grouping practices.
- Focus knowledge and skills incentives on job-embedded, on-going professional learning.
- Establish clear and visible links between the behavior that earns the incentive and the payment of the incentive.
- Provide sufficient support for initial implementation, and then continue to provide support to accommodate new informational needs and changes in personnel.
- Use multiple, ongoing forms of communication differentiated for the needs of different audiences (e.g., new teachers, experienced teachers, administrators, potential recruits).
- Provide training for principals to enable them to maximize the incentive system to increase teacher effectiveness and school improvement.
- Provide training, support, guidelines and monitoring for teachers and principals if an incentive similar to Student Growth Objectives is included, in order to assure that standards for quality and rigor are consistently being met.

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## Appendix A. ProComp Payment Charts 2005-06 and 2008-09

Professional Compensation (ProComp) Payment Chart 2005-2006											
Component of Index \$33,301	Knowledge and Skills				Comprehensive Professional Evaluation		Market Incentives		Student Growth		
Element	Professional Development Unit	Advanced Degree and License	Tuition Reimbursement	Probationary	Non-Probationary	Hard to Serve School	Hard to Staff Assignment	Student Growth Objectives	Exceeds CSAP Expectations	Distinguished Schools	
Description of Element	Providing ongoing professional development -- tied to the needs of our students -- is a central strategy to help you expand your skills, improve student performance, and advance your career with the district	Compensation for Graduate Degree or Advanced Licenses or Certificates	Reimbursement for tuition.	Increases for new teachers based on a satisfactory evaluation.	Increases based on a satisfactory evaluation.	Designed to attract teachers to schools with a high free and reduced lunch percentage.	Designed to attract teachers to roles with high vacancy rate and high turnover	Incentive paid for meeting student growth objectives.	Teachers whose assigned student's growth in CSAP scores exceed district expectations	Incentive is paid to teachers in schools recognized for outstanding performance	
Eligibility and Payout	Base building for PDU earned. Up to two PDUs may be banked (only pay one per year)	Paid upon receipt of documentation that the license or certification is active and current	Paid upon receipt of evidence of payment for and satisfactory completion of coursework; \$1000 lifetime account	Requires Satisfactory Evaluation; if unsatisfactory, ineligible for CPE increase	Requires Satisfactory Evaluation; if unsatisfactory, ineligible for CPE increase	Teachers currently serving in schools designated "Hard-to-Serve".	Teachers currently serving in "Hard-to-Staff" positions	Base building when 2 SGOs are met, non base-building when only 1 SGO is met during prior school year	Sustainable increase paid for exceeding expectations; sustainable decrease for falling below expectations	Paid based on performance during the prior school year.	
Affect on Base Salary	Base Building	Base Building	Non-Base Building	Base Building	Base Building	Non-Base Building	Non-Base Building	Base Building/Non-Base Building	Sustainable Base Building	Non-Base Building	
Percent of Index	2%	9% per degree or license. Eligible once every 3 yrs	N/A	1% every year	3% every three years	3.0%	3.0%	1%	3.0%	2.0%	
Dollar Amount	\$666	\$2,997	Actual expense up to \$1000 lifetime	\$333	\$999	\$999 (\$83.25/mo)	\$999 (\$83.25 per mo) x (# of assignments held)	\$333	\$999	\$666	
Builds pension and highest average salary	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Payment Type and Frequency	Prorated over 12 months upon submission of proper documentation.	Prorated over 12 months upon submission of proper documentation.	Up to \$1000 upon submission of proper documents	Prorated over 12 months. If unsatisfactory delayed at least 1 yr	Prorated over 12 months. If unsatisfactory delayed at least 1 yr	Monthly installment upon completion of service each month	Monthly installment upon completion of service each month	Paid in monthly installments	Prorated over 12 months.	Paid in monthly installments	
First Paid	2006-2007	2005-2006	2005-2006	2006-2007	2006-2007	2005-2006	2005-2006	2007-2008	2007-2008	2006-2007	

Professional Compensation (ProComp) Payment System 2008-2009											
Component of Index \$36,635	Knowledge and Skills				Comprehensive Professional Evaluation		Market Incentives		Student Growth		
	Professional Development Unit	Advanced Degree and License	Tuition and Student Loan Reimbursement	Probationary	Non- Probationary	Hard to Serve School	Hard to Staff Assignment	Student Growth Objectives	Exceeds CSAP Expectations	Top Performing Schools	High Growth School
Description of Element	Providing ongoing professional development – tied to the needs of our students – is a central strategy to help you expand your skills, improve student performance, and advance your career with the district	Compensation for Graduate Degree or Advanced Licenses or Certificates	Reimbursement for tuition or for outstanding student loans.	Increases for new teachers based on a satisfactory evaluation.	Increases based on a satisfactory evaluation.	Designed to attract teachers to schools with a high free and reduced lunch percentage.	Designed to attract teachers to roles with high vacancy rate and high turnover	Incentive paid for meeting student growth objectives.	Teachers whose assigned student's growth in CSAP scores exceed district expectations	Teachers in schools designated as a "Top Performing School" based on the DPSS School Performance Framework	Teachers in schools designated as a "High Growth School" on the DPSS School Performance Framework
Eligibility and Payout	Base building for 1st PDU earned in '08-'09 and any PDUs banked prior to 9/1/08. 2nd PDU earned in '08-'09 is paid as non-base building. See footnote for rules for banked PDUs and PDUs earned starting in '09-'10 yr-1.	Paid upon receipt of documentation that the license or certification is active and current	Paid upon receipt of evidence of payment for and satisfactory completion of coursework; \$4,000 lifetime account; no more than \$4,000 per year	Requires Satisfactory Evaluation; if unsatisfactory, ineligible for CPE increase	Effective 2009-'10 school year, element payable only to teachers who have a formal evaluation during service credit years 1-14.	Teachers currently serving in schools designated "Hard-to-Serve".	Teachers currently serving in non-base-building designated during prior school year-4	Base building when 2 SGOs are met, non-base-building when only 1 SGO is met during prior school year-4	Paid based on assigned student CSAP growth percentiles. Paid based on results from prior school year.	Paid based on performance during the prior school year.	Paid based on performance during the prior school year.
Affect on Base Salary	Base Building <sup>2</sup>	Base Building	Non-Base Building	Base Building	Base Building	Non-Base Building	Non-Base Building	Base Building <sup>4</sup>	Non-Base Building	Non-Base Building	Non-Base Building
Percent of Index	2%	9% per degree or license. Eligible once every 3 yrs	N/A	1% every year	3% every three years	6.4%	6.4%	1%	6.4%	6.4%	6.4%
Dollar Amount	\$733	\$3,297	Actual expense up to \$1000/yr, \$4000 lifetime	\$366	\$1,099	\$2345 (\$195.39/mo)	\$2345 (\$195.39/mo x # of assignments held)	\$366.00	\$2,344.64	\$2,344.64	\$2,344.64
Builds pension and highest average salary	Yes	Yes	No <sup>3</sup>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Payment Type and Frequency	Monthly installments upon submission of proper documents	Monthly installments upon submission of proper documents	Up to \$1000 per year upon submission of proper documents	Prorated over 12 months. If unsatisfactory delayed at least 1 yr	Prorated over 12 months. If unsatisfactory delayed at least 1 yr	Monthly installment upon completion of service each month	Monthly installment upon completion of service each month	1 objective: Paid lump sum. 2 objectives: Paid in monthly installments	Paid lump sum in the year following assessment	Paid lump sum in the year following assessment	Paid lump sum in the year following assessment
First Paid	2006-2007	2005-2006	2005-2006; SL in 20	2006-2007	2006-2007	2005-2006	2005-2006	2007-2008	2007-2008	2006-2007	2008-2009

## Appendix B. Key Informant Interviews - Methods

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### Sample Selection

Evaluators used media coverage of ProComp and recommendations from DPS administrative staff to identify 59 individuals who were involved and knowledgeable about the development of ProComp. From this pool of potential interviewees, a purposeful sample of 13 individuals representing different stakeholder groups was selected. The interviewees were selected based on their first-hand knowledge and involvement in the development of ProComp and included: DPS administrators, Denver Classroom Teachers Association (DCTA) teacher leaders, former DPS Board members, and leadership staff from various foundations involved in DPS during the planning, development, and initial implementation stages of ProComp. Roles of the stakeholders in the interview pool and the interviewees are presented in Appendix Exhibit 1.

**Appendix Exhibit 1. Roles of Stakeholders in the Interview Pool and Purposeful Sample**

Stakeholder Role	Number in Interviewee Pool	Number in Purposeful Sample
Administrators	12	4
DCTA Teacher Leaders	11*	5*
Community Members (DPS Board members, foundation staff, and political, business and civic leaders)	21	4
Evaluators and Reporters	4	0

\* One DCTA leader became an administrator and spoke from both perspectives.

### Instruments - Interview Protocol

Individual interviews were held August-November 2010. With the permission of the interviewee, interviews were recorded and transcribed for analyses. Each person was asked to respond to the six questions shown in Appendix Exhibit 2 below.

**Appendix Exhibit 2. Key Informant Interview Protocol for Representative Stakeholders**

1. What is your relationship or history with DPS?
2. What was your role in the development or implementation of ProComp?
3. What do you think was the intent or purpose of ProComp?
4. Has it achieved that purpose, why or why not?
  - a. What are your thoughts on the changes that occurred when the contract was renegotiated in 2008 and again in 2010?
5. Here are some of the goals associated with ProComp:  
 Improve student achievement  
 Attract and retain the best educators in the profession  
 Align employee compensation with district wide goals  
 Give the vast majority of teachers an opportunity to earn more over their careers  
 Demonstrate successful collaboration between school district administrators and union negotiators representing teachers  
 Which of these do you think it has accomplished? What has not been accomplished? Why not?
6. What advice would you give to another school district that was starting to develop a compensation system similar to ProComp? What are the “lessons learned” you would want to share with them?

**Data Analysis**

Interviews were transcribed and coded for relevant content using NVivo 8 software. The initial codebook included role/relationship, role in development/implementation of ProComp, purpose/goals of ProComp, and purpose/goals accomplished. Additional codes were created during coding based on interview content. The coded data were analyzed qualitatively to identify salient themes related to the evaluation questions.

***ProComp Key Informant Stakeholder Interview Code Book*****Role/relationship with DPS**

This is usually in the first interview question. Interviewees may have or have had multiple roles. They may talk about more than one role and may refer to something as being in the past vs. something that is occurring in the present. It is o.k. to code multiple roles.

	Teacher Leader: DCTA president, union negotiator, other leadership position within the union or district.
	Administrator: Principal, superintendent, other administrative position in DPS.
	TOSA: Teacher of Special Assignment (TOSA) in the ProComp office or other central DPS department.
	Board Member: Member of DPS School Board.
	ProComp Transition Team or ProComp Trust Board Member: Someone serving in a position on one of the ProComp oversight groups.
	Foundation: Someone associated with a foundation. Most foundations provided some kind of financial or consultative support for ProComp.
	Other Stakeholder: Someone who describes a role that doesn't fit in the other categories.
	<b>Role in development/implementation of ProComp</b>

This is usually in question 2 of the interview. This is usually interwoven with stories about the history of ProComp, which they were a part of. For some individuals this will be a brief period, whereas for others there may extended involvement throughout the history of ProComp:	
	<p><b>Early Development:</b> Involved in the early thinking, planning, and beginning stages of developing the ProComp idea. May talk about merit pay, pay for performance, or other names predating ProComp as a term.</p> <p><b>Pilot:</b> Involved in the ProComp pilot. May talk about developing the pilot, collecting data from the pilot schools, or teaching in a school piloting ProComp.</p> <p><b>Mill Levy:</b> Involved in the mill levy campaign/election to provide funding for ProComp.</p> <p><b>District Wide Implementation of ProComp 1:</b> Involved when ProComp was implemented district-wide. This is often referred to as ProComp 1 or the initial version of ProComp. This is the version of ProComp established in the original Agreement between DPS and DCTA.</p> <p><b>Renegotiation of ProComp in 2008:</b> This is sometimes referred to as ProComp 2 or ProComp Lite, or may be referenced as when ProComp changed. This is when the monetary value of market incentives were increased, caps were put on some of the elements, and some elements were changed from base building to bonuses.</p> <p><b>Renegotiation of ProComp in 2010:</b> This is sometimes referenced as the recent changes. These changes involve delaying the payment of some elements based on current economics and cleanup of some problems, such as not paying retirees for bonuses earned in their final year of service.</p>
<p><b>Purpose/goals of ProComp</b> This will largely come from interviews question 4. It is focused on what interviewees perceive the purpose(s) of ProComp to be. There is often overlap with question 6.</p>	
	<p><b>Link teacher pay to outstanding performance:</b> May talk about rewarding good teachers, merit pay, increasing salary by rewarding teachers for results.</p> <p><b>Reward teachers throughout careers:</b> May talk about providing rewards, incentives, better pay for veteran teachers.</p> <p><b>Improving student achievement:</b> May talking about improving results for students, CSAP scores, SGOs, or other indicators of improved student and school performance.</p> <p><b>Attracting and retaining best educators:</b> May talk about being more competitive relative to other districts, market incentives, or increasing applicant pool.</p> <p><b>District/Union Collaboration:</b> May reference district administrators and union leaders working together.</p>
<p><b>Purpose/goals Accomplished</b> This coding is to be used in conjunction with the previous section on purpose and goals. This data will come primarily from question 6, but may also be in question 4. The purpose of this section is to reflect interviewee's assessment of the extent to which a given goal/purpose was met. Please code the "why" part of the response, not just the overall category of the response.</p>	
	Achieved
	Partially Achieved
	Not Achieved
	Not sure

	No opinion given
<b>Advice and Lessons Learned</b> This will come from interview question 7. Use this section to categorize the various recommendations provided by interviewees. Feel free to add additional nodes.	
	Involve stakeholders
	Communicate with Board
	Simplify the system
	Create rather than copy

## Limitations

These interviews were conducted with a small sample of people who were asked to recall events several years prior to the interviews. Over time, details and precise recollections of events may deteriorate. Also there may be unintentional bias in the probing related to interview questions, the transcription process, and the coding of the transcripts.

## Appendix C. Survey of Teachers and Principals – Methods

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In May 2010, online surveys regarding the teacher compensation systems in the Denver Public Schools (DPS) were conducted with DPS teachers and principals.

### Sample Selection

All ProComp eligible DPS employees, all building administrators, and principals on special assignment were invited to participate in the survey. In order to minimize the time involved for teachers to complete the survey, matrix sampling was used; that is, randomly selected teachers received different subsets of the survey, which were then combined to create an overall set of responses across all questions.

Responses were received from 2,985 teachers (61% response rate) and 169 school administrators (72% response rate). For teachers the response rates were 43% for Non-ProComp teachers, 73% for Voluntary, and 68% for Compulsory ProComp teachers.

### Instruments

The teacher and principal surveys were developed collaboratively by the evaluation teams from UC Denver and UC Boulder. They focused on ProComp and the traditional compensation systems in general and the specific elements in the ProComp system. Survey content for the teacher and principal surveys was aligned in order to make comparisons possible. The actual items and response data are presented at the end of this appendix.

### Data Analysis

Survey data were summarized and descriptive statistics calculated for each quantitative item. Where appropriate, data from the teacher survey were weighted to better reflect the demographic characteristics of the overall respondent group. Weighting categories for the survey included school type (elementary, secondary, other), masters plus (i.e. masters or higher and less than masters), years of service (4 and above, and 3 and below years of service) and minority status (non-white and white). Open-response items were coded for themes and summarized.

Evaluators created subscales using unweighted data for groups of items with a common focus in the ProComp teacher and principal surveys. The items in each of the subscales related to a key idea or element in the compensation system. Cronbach's Alpha was used to determine the internal reliability of the cluster of items. Subscales were created for clusters of items where Cronbach's Alpha was  $\geq .75$  for teachers and  $\geq .69$  for principal. The reliability indices for the teacher subscales were generally  $\geq .80$ . Descriptions of each of the subscales are presented in Appendix Exhibit 3 below.

It is also important to note that the teacher survey was built on a matrix sampling model. There were some items that were given to all survey respondents. There were also four subsets of items focusing on different elements of the ProComp system—Professional Development Units (PDUs), Student Growth Objectives (SGOs), Comprehensive Professional Evaluations (CPEs), and Market Incentives—that were



randomly assigned to respondents. Some of the subscales were based on these components of the survey and hence have a smaller number of respondents. Principals were given all survey items.

### Appendix Exhibit 3. Description of ProComp Teacher and Principal Survey Subscales

ProComp Teacher Survey Subscales				
Variable Name	Variable Label	Items included	Subscale Description	Cronbach's Alpha
PCSystem	ProComp System	Mean of gen08, gen14, gen10, gen16	These 5 items were asked about both the ProComp system and the traditional system. These items were given to all survey respondents.	.91
Tradsystem	Traditional System	Mean of comp09-13	These 5 items were asked about both the traditional system and the ProComp system. These items were given to all survey respondents.	.88
PDUexper	PDU Experience	Mean of pdu8-11	These 4 items were related to the experience respondents had in PDUs. The PDU component of the survey was randomly given to about ¼ of the respondents. Only those who had taken a PDU responded to these items.	.75
SGOexper	SGO Experience	Mean of sgo03-07, sgo13-18, sgo19r	These 12 items were related to the experience respondents had with the SGO process. The SGO component of the survey was randomly given to about ¼ of the respondents.	.83
CPEexper	CPE Experience	Mean of cpe01-07	These 7 items were related to the experience respondents had with the CPE process. The CPE component of the survey was randomly given to about ¼ of the respondents.	.93
SGOimpact	SGO Impact	Mean of sgo03, sgo05, sgo13, sgo17-18, sgo19r	These 6 items are related to the impact of SGOs on instruction and student learning. The SGO component of the survey was randomly given to about ¼ of the respondents.	.87
SGOfidelity	SGO	Mean of	These 6 items were related to	.80

ProComp Teacher Survey Subscales				
Variable Name	Variable Label	Items included	Subscale Description	Cronbach's Alpha
	Implementati on	sgo04, sgo06-07, sgo14-16	specific aspects of the SGO process that were indicative of fidelity of implementation. The SGO component of the survey was randomly given to about ¼ of the respondents.	
CPEfidelity	CPE Implementati on	Mean of cpe01,cpe04, cpe06-07	These 4 items were related to specific aspects of the CPE process that were indicative of fidelity of implementation. The CPE component of the survey was randomly given to about ¼ of the respondents.	.88
ProCompStake	ProComp Stakeholders	Mean of gen07-17	These 11 items related to ProComp aligning with the expectations of stakeholders outlined in the DPS mission, vision, and goals, the ballot initiative, and the ProComp Agreement. These items were given to all survey respondents.	.92

ProComp Principal Survey Subscales				
Variable Name	Variable Label	Items included	Subscale Description	Cronbach's Alpha
sgoexper	SGO Experience	Mean sgo01-08, sgo12-14, sgo16r	These 12 items were related to the experience administrators had with the SGO process.	.80
CPEexper	CPE Experience	Mean cpe01-06	These 6 items were related to the experience respondents had with the CPE process.	.69
PDUExper	PDU Experience	Mean pdu01-07	These 7 items were related to administrators and their teachers experience with PDUs.	.88
sgofidelity	SGO Implementati on	Mean sgo01-03, sgo07-08, sgo15	These 5 items were related to specific aspects of the SGO process that were indicative of fidelity of implementation.	.71

ProComp Teacher Survey Subscales				
Variable Name	Variable Label	Items included	Subscale Description	Cronbach's Alpha
ProCompsys	ProComp System			.91
Tradsystem	Traditional System			.88
PCstakeholders	ProComp Stakeholders	Mean of gen01-06, gen07r, gen09-11, gen21	These 11 items related to ProComp aligning with the expectations of stakeholders outlined in the DPS mission, vision, and goals, the ballot initiative, and the ProComp Agreement. These parallel the items in the teacher variable ProCompStake.	.91
Impactinstruc	Impact of ProComp on Instruction	Sum of iippdu, iipdeg, iipcpe, iiphst, iiphsr iipsgo, iipee, iiptp , iiphgs	These 9 items are related to the impact of each of the ProComp elements on instruction. They are combined in this subscale to provide an indicator for the overall impact of ProComp on instruction.	.80
Impactach	Impact of ProComp on Achievement	Sum of Isapdu, isadei, isacpe, isahst, isahsr, isasgo, isaee, isatps, isahgs	These 9 items are related to the impact of each of the ProComp elements on achievement. They are combined in this subscale to provide an indicator for the overall impact of ProComp on achievement.	.81
Impaqctprofgrowth	Impact of ProComp on Professional Growth	Sum of apgpdu, apgdeg, apgcpe, apghs, apghsr, apgsgo, apgee, apgtp, apghgs	These 9 items are related to the impact of each of the ProComp elements on helping educators achieve professional growth. They are combined in this subscale to provide an indicator for the overall impact of ProComp on helping educators to achieve professional growth.	.82
Approelements		Sum of afipdu, afideg, aficpe, afihst,	These 9 items are related to the appropriateness of offering a financial incentive for each of the ProComp elements. They are	.77

ProComp Teacher Survey Subscales				
Variable Name	Variable Label	Items included	Subscale Description	Cronbach's Alpha
		afihsr, afisgo, afiee, afitps, afihgs	combined in this subscale to provide an indicator of the overall appropriateness of the ProComp financial incentives.	
Impacthardstaff		Mean of hst01, hst02, hst03, hst04, hst05	These 5 items were related to the impact of the Hard to Staff bonus on schools recruitment and retention.	.90
Impacthardserce HSR		Mean of hsr07, hsr08, hsr09, hsr10, hsr11	These 5 items were related to the impact of the Hard to Serve bonus on recruitment and retention on schools designated as Hard to Serve.	.89
Impacthardserv eNHSR		Mean of Q163_2, Q163_3r, Q163_4r, Q163_5r, Q163_1	These 5 items were related to the impact of the Hard to Serve bonus on recruitment and retention on schools not designated as Hard to Serve.	.76

In the following sections, the complete teacher and principal surveys are presented including the summarized data for each item.

## Limitations

The response rates prior to weighting were quite different for ProComp and Non-ProComp teachers. It may be that the Non-ProComp teachers who chose to respond wished to convey their opinions to a greater extent than those who did not chose to respond.

The surveys were administered late in the school year (after the close of the school year for principals), which may have diminished the response rate.

While the matrix sampling reduced the amount of time needed for a teacher to complete the survey, the lower number of respondents for the items in the matrix samples limited some of the analyses for these particular items.

**Teacher Survey Results<sup>96</sup>**

1. Please select the option below that best applies to you:

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Teacher	2507	84.2	1897	83.2	610	87.3
SSP	156	5.2	134	5.9	22	3.1
Facilitator	78	2.6	56	2.5	22	3.1
TOSA	55	1.9	40	1.8	15	2.1
Other:	182	6.1	152	6.7	30	4.3
Total	2978	100	2279	100	699	100

2. What is your status in the ProComp compensation system?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
I have opted into ProComp.	1228	41.1	1163	51.0	63	9.0
I do not participate in ProComp but will consider opting in at some point in the future.	346	11.6	52	2.3	294	41.9
I do not participate in ProComp and do not plan to join.	251	8.4	9	.4	242	34.5
I was automatically enrolled in ProComp when I was hired.	1159	38.9	1057	46.3	102	14.6
Total	2982	100	2281	100	701	100

3. What led you to join ProComp? (Open Ended)

<sup>96</sup> These tables present the unweighted data; however, weighted data were used in the analyses unless the use of unweighted data was specifically noted. The category “ProComp” includes both Voluntary and Compulsory ProCompteachers. On most items there were no differences between these two groups, so their responses were combined. On the few items where there were important differences, these were pointed out in the text of the report. Throughout the report the term teacher has been used generically to encompass classroom teachers as well as employees in these other roles, such a counselors, student services providers, and facilitators.

4. Please provide any comments regarding (1) why you have yet to join ProComp and/or (2) why you plan to join ProComp. (Open Ended)

5. What is your main reason for choosing not to join or stay in ProComp? (Open Ended)

6. What influence did ProComp have on your decision to join DPS?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
No influence.	729	63.0	661	62.6	68	66.7
Little influence; I made my decision for other reasons.	252	21.8	232	22.0	20	19.6
Negative influence, but I decided to join DPS anyway.	53	4.6	50	4.7	3	2.9
Positive influence. ProComp is one of the reasons I decided to join DPS.	106	9.2	97	9.2	9	8.8
Other, please specify	18	1.6	16	1.5	2	2.0
Total	1158	100	1056	100	102	100

7. Which of the following statements best describes your understanding of ProComp when you were hired?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
I knew nothing about ProComp.	422	36.5	385	36.6	37	36.3
I knew DPS had a pay for performance system (ProComp), but I had little understanding of how it could impact my salary.	363	31.4	334	31.7	29	28.4
I knew about ProComp and had some idea of how it could impact my salary.	300	26.0	273	25.9	27	26.5
I knew quite a bit about ProComp and understood how it could impact my salary.	64	5.5	56	5.3	8	7.8
Other, please specify	6	0.5	5	.5	1	1.0
Total	1155	100	1053	100	102	100

8. Which of the following elements related to compensation were important in your decision to teach for DPS?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Starting base salary	360	31.1	327	31.0	33	32.4
Benefits	300	26.0	274	26.0	26	25.5
Incentives for Hard to Serve Schools	324	28.0	295	28.0	29	28.4
Incentives for Hard to Staff Assignments	264	22.8	242	23.0	22	21.6
Other ProComp incentives	146	12.6	136	12.9	10	9.8
Total salary potential with incentives	246	21.3	227	21.5	19	18.6
Other retirement benefits (401K, TSA)	93	8.0	84	8.0	9	8.8
Guaranteed Retirement Pension Plan (DPS Retirement or PERA)	189	16.3	174	16.5	15	14.7
None of the above	456	39.4	412	39.1	44	43.1

9. Had you been given a choice, would you have been likely to opt into ProComp upon joining DPS?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Yes	796	69.5	725	69.5	71	69.6
No	350	30.5	318	30.5	31	30.4
Total	1146	100	1043	100	102	100

10. Please indicate your agreement with the following statement:

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The possibility of receiving a bonus would make me work even harder to achieve our school's achievement goals.	215 9.1%	315 13.3%	554 23.4%	919 38.8%	370 15.6%	2373	3.39
ProComp	200 9.1	290 13.0	504 22.8	865 39.2	349 15.8	2208	3.40

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Non ProComp	15 9.1	25 15.2	50 30.3	54 32.7	21 12.7	165	3.25

11. Whether or not you participate in ProComp, you have probably formed some general impressions of the program. Please indicate your agreement with the following statements.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
ProComp can motivate participants to improve instructional practices.	206 6.9	472 15.9	692 23.3	1369 46.1	230 7.7	2969	3.32
ProComp	97 4.3	299 13.2	466 20.5	1193 52.6	215 9.5	2270	3.50
Non ProComp	109 15.6	173 24.7	226 32.3	176 25.2	15 2.1	699	2.74
ProComp can ultimately improve student achievement.	295 9.9	583 19.6	985 33.2	913 30.8	193 6.5	2969	3.04
ProComp	154 6.8	374 16.5	762 33.6	797 35.1	183 8.1	2270	3.21
Non ProComp	141 20.2	209 29.9	223 31.9	116 16.6	10 1.4	699	2.49
ProComp will ultimately help DPS attract and retain qualified teachers.	352 11.9	586 19.8	883 29.8	885 29.9	257 8.7	2963	3.04
ProComp	201 8.9	382 16.9	658 29.0	779 34.4	246 10.9	2266	3.21
Non ProComp	151 21.7	204 29.3	225 32.3	106 15.2	11 1.6	697	2.46
ProComp will improve teacher collaboration in DPS.	355 12.0	700 23.6	1016 34.3	735 24.8	159 5.3	2964	2.88
ProComp	189 8.3	491 21.7	797 35.2	637 28.1	153 6.7	2267	3.03
Non ProComp	166 23.8	209 30.0	219 31.4	98 14.1	5 .7	697	2.38



Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
ProComp is aligned with the goals of our school district.	144 4.9	235 7.9	1016 34.3	1353 45.7	213 7.2	2961	3.42
ProComp	78 3.4	145 6.4	722 31.9	1122 49.6	195 8.6	2262	3.54
Non ProComp	66 9.4	90 12.9	294 42.1	231 33.0	18 2.6	699	3.06
ProComp is aligned with my goals as an educator.	304 10.3	363 12.3	817 27.6	1197 40.4	280 9.5	2961	3.27
ProComp	146 6.5	226 10.0	589 26.0	1043 46.1	259 11.4	2263	3.46
Non ProComp	158 22.6	137 19.6	2258 32.7	154 22.1	21 3.0	698	2.63
I feel more pressure and job stress as a result of ProComp.	219 7.4	645 21.8	931 31.5	790 26.7	373 12.6	2958	3.15
ProComp	172 7.6	554 24.5	647 28.6	638 28.2	250 11.1	2261	3.11
Non ProComp	47 6.7	91 13.1	284 40.7	152 21.8	123 17.6	697	3.31

12. Again, regardless of whether you participate in ProComp, please indicate your agreement with the following statements.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
ProComp is a fair program.	353 11.9	647 21.8	814 27.5	1006 34.0	142 4.8	2962	2.98
ProComp	205 9.0	420 18.5	607 26.8	895 39.5	139 6.1	2266	3.15
Non ProComp	148 21.3	227 32.6	207 29.7	111 15.9	3 .4	696	2.42
ProComp helps to create a positive work environment.	346 11.8	744 25.3	1176 39.9	580 19.7	98 3.3	2944	2.78

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
ProComp	184 8.2	504 22.4	954 42.4	513 22.8	97 4.3	2252	2.93
Non ProComp	162 23.4	240 34.7	222 32.1	67 9.7	1 .1	692	2.28
The financial incentives in ProComp will lead to improved instructional practice.	390 13.2	667 22.6	824 27.9	899 30.4	177 6.0	2957	2.93
ProComp	211 9.3	438 19.4	649 28.7	791 35.0	173 7.6	2262	3.12
Non ProComp	179 25.8	229 32.9	175 25.2	108 15.5	4 .6	695	2.32
ProComp provides a more focused way to think about my work.	367 12.4	679 23.0	881 29.9	868 29.4	156 5.3	2951	2.92
ProComp	200 8.9	480 21.3	663 29.4	760 33.7	154 6.8	2257	3.08
Non ProComp	167 24.1	199 28.7	218 31.4	108 15.6	2 .3	694	2.39

13. You have probably formed some general impressions about the traditional (master) salary schedule as well. Please indicate your agreement with the following statements.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The traditional salary schedule can motivate participants to improve instructional practices.	165 5.6	823 27.7	1281 43.2	628 21.2	70 2.4	2967	2.87
ProComp	125 5.5	656 28.9	982 43.3	465 20.5	40 1.8	2268	2.84
Non ProComp	40 5.7	167 23.9	299 42.8	163 23.3	30 4.3	699	2.97
The traditional salary schedule can ultimately improve student achievement.	171 5.8	817 27.5	1477 49.8	442 14.9	59 2.0	2966	2.80
ProComp	129 5.7	627 27.6	1150 50.7	326 14.4	36 1.6	2268	2.79
Non ProComp	42 6.0	190 27.2	327 46.8	116 16.6	23 3.3	698	2.84
The traditional salary schedule will improve teacher collaboration in DPS.	158 5.3	819 27.7	1509 51.0	405 13.7	68 2.3	2959	2.80
ProComp	13 5.4	646 28.6	1163 51.4	291 12.9	38 1.7	2261	2.77
Non ProComp	35 5.0	173 24.8	346 49.6	114 16.3	30 4.3	698	2.90
The traditional salary schedule is fair.	165 5.6	525 17.8	1049 35.5	1048 35.5	168 5.7	2955	3.18
ProComp	132 5.8	421 18.6	851 37.7	756 33.5	100 4.4	2260	3.12
Non ProComp	33 4.7	104 15.0	198 28.5	292 42.0	68 9.8	695	3.37
The financial incentives in the traditional salary schedule will lead to improved instructional practice.	205 6.9	782 26.4	1441 48.7	458 15.5	75 2.5	2961	2.80
ProComp	156 6.9	627 27.7	1109 49.0	330 14.6	43 1.9	2265	2.77

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Non ProComp	49 7.0	155 22.3	332 47.7	128 18.4	32 4.69	696	2.91

14. Improving Instructional Practice: Which of ProComp's elements do you believe will ultimately help ProComp achieve its goal of improving instructional practice? Please select all that apply.

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
Salary increases for completion of Professional Development Units (PDU's)	2010	68.2	1677	74.1	333	48.8
Salary increases for earning an Advanced Degree/License	2222	75.4	1790	79.1	432	63.3
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	1664	56.5	1415	62.5	249	36.5
Bonuses for employment in a Hard to Staff Assignment	1600	54.3	1362	60.2	238	34.8
Bonuses for employment in a Hard to Serve School	1678	57.0	1419	62.7	259	37.9
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	1774	60.2	1515	66.9	259	37.9
Bonuses for having students who Exceed CSAP Expectations	1165	39.5	1016	44.9	149	21.8
Bonuses for employment at a Top Performing School	986	33.5	868	38.4	118	17.3
Bonuses for employment at a High Growth School	1318	44.7	1153	51.0	165	24.2
None of the above	334	11.3	173	7.6	162	23.7

15. Increasing Student Achievement: Which of ProComp's elements do you believe will ultimately help ProComp achieve its goal of increasing student achievement? Please select all that apply.

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
Salary increases for completion of Professional Development Units (PDU's)	1582	54.2	1338	59.7	244	36.0
Salary increases for earning an Advanced Degree/License	1644	56.3	1360	60.7	284	41.9

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	1274	43.7	1102	49.2	172	25.4
Bonuses for employment in a Hard to Staff Assignment	1392	47.7	1189	53.1	203	29.9
Bonuses for employment in a Hard to Serve School	1495	51.2	1266	56.5	229	33.8
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	1603	54.9	1375	61.4	228	33.6
Bonuses for having students who Exceed CSAP Expectations	1164	39.9	1015	45.3	149	22.0
Bonuses for employment at a Top Performing School	864	29.6	768	34.3	96	14.2
Bonuses for employment at a High Growth School	1158	39.7	1010	45.1	148	21.8
None of the above	560	19.2	328	14.6	232	34.2

16. Achieving Professional Growth: Which of ProComp's incentives do you believe will help educators achieve professional growth? Please select all that apply.

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
Salary increases for completion of Professional Development Units (PDUs)	2241	76.7	1840	82.0	401	59.1
Salary increases for earning an Advanced Degree/License	2390	81.8	1903	84.8	487	71.8
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	1490	51.0	1253	55.9	237	35.0
Bonuses for employment in a Hard to Staff Assignment	861	29.5	730	32.5	131	19.3
Bonuses for employment in a Hard to Serve School	896	30.7	758	33.8	138	20.4
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	1282	43.9	1114	49.7	168	24.8
Bonuses for having students who Exceed CSAP Expectations	700	24.0	606	27.0	94	13.9
Bonuses for employment at a Top Performing School	593	20.3	525	23.4	68	10.0
Bonuses for employment at a High Growth School	765	26.2	661	29.5	104	15.3
None of the above	287	9.8	148	6.6	139	20.5

17. Appropriateness of Financial Incentives: For which of ProComp's elements do you believe educators should receive financial incentives? For example, do you believe it is appropriate that educators receive a bonus for working in a Top-Performing school? Please select all that apply.

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
Salary increases for completion of Professional Development Units (PDUs)	2237	76.4	1841	82.0	396	58.0
Salary increases for earning an Advanced Degree/License	2489	85.0	1968	87.6	521	76.3
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	1965	67.1	1648	73.4	317	46.4
Bonuses for employment in a Hard to Staff Assignment	2120	72.4	1745	77.7	375	54.9
Bonuses for employment in a Hard to Serve School	2228	76.1	1828	81.4	400	58.6
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	1935	66.1	1652	73.6	283	41.4
Bonuses for having students who Exceed CSAP Expectations	1322	45.1	1150	51.2	172	25.2
Bonuses for employment at a Top Performing School	1088	37.1	954	42.5	134	19.6
Bonuses for employment at a High Growth School	1565	53.4	1346	59.9	219	32.1
None of the above	196	6.7	93	4.1	103	15.1

18. For which of ProComp's elements do you understand the requirements for teachers to earn salary increases or bonuses? Please select all that apply.

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
Completion of Professional Development Units (PDUs)	2335	79.6	1825	81.0	510	74.9
Earning an Advanced Degree/License	2219	75.7	1714	76.1	505	74.2
Satisfactory Comprehensive Professional Evaluation (CPE)	1859	63.4	1468	65.2	391	57.4
Achieving Student Growth Objectives (SGOs)	2531	86.3	2000	88.8	531	78.0
Having students who Exceed CSAP Expectations	1516	51.7	1163	51.6	353	51.8
None of the above	194	6.6	102	4.5	92	13.5

19. Appropriateness of Financial Incentives: For which of ProComp's elements do you understand the criteria used to designate schools/positions? (For example, do you understand how DPS designates a school as Hard to Serve?) Please select all that apply.

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Employment in a Hard to Staff Assignment	2126	86.2	1651	85.7	475	88.3
Employment in a Hard to Serve School	2213	89.7	1729	89.7	484	90.0
Employment in a Top Performing School	1337	54.2	1032	53.6	305	56.7
Employment in a High Growth School	1426	57.8	1109	57.6	317	58.9

20. Please select the sentence below that best describes your progress toward completing a Professional Development Unit (PDU).

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
I have completed a PDU at DPS (regardless of school year).	582	78.8	489	84.6	93	57.8
I have never completed a PDU but am currently in the process of doing so.	20	2.7	18	3.1	2	1.2
I have never completed a PDU.	137	18.5	71	12.3	66	41.0
Total	739	100	578	100	161	100

21. Please select the phrase(s) below that describes the type(s) of your most recent PDU(s).

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
A personal or small group PDU I/we created	160	26.7	133	26.3	27	28.7
A preapproved school-wide PDU	229	38.2	185	36.6	44	46.8
A preapproved content-based PDU developed by a central department (e.g., Math, Student Services, GT)	281	46.9	234	46.3	47	50.0
A preapproved PDU for specific employee groups (e.g., New Educator Induction, TFA, TIR, DTF)	119	19.9	103	20.4	16	17.0
A preapproved PDU or online PD facilitated by an approved external instructor (e.g., PBS, Accelerated Reader, New Leadership PD)	58	9.7	51	10.1	7	7.4
Other, please specify	31	5.2	30	5.9	1	1.1

22. Based on your most recent experience with the PDU process, please indicate your agreement with each of the following statements

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
The PDU process focuses me on positively improving my practice.	19 3.2	41 6.8	96 16.0	351 58.6	92 15.4	599	3.76
ProComp	12 2.4	33 6.5	74 14.7	301 59.6	85 16.8	505	3.82
Non ProComp	7 7.4	8 8.5	22 23.4	50 53.2	7 7.4	94	3.45
At my school we try to align our PDUs with our School Improvement Plan (SIP) goals.	28 4.7	54 9.1	170 28.7	262 44.2	79 13.3	593	3.52
ProComp	18 3.6	44 8.8	142 28.5	222 44.6	72 14.5	498	3.57
Non ProComp	10 10.5	10 10.5	28 29.5	10 42.1	7 7.4	95	3.25
My principal/supervisor encourages me to use PDUs as professional learning opportunities.	28 4.7	73 12.3	177 29.8	244 41.1	72 12.1	594	3.44
ProComp	20 4.0	61 12.2	146 29.2	208 41.6	65 13.0	500	3.47
Non ProComp	8 8.5	12 12.8	31 33.0	36 38.3	7 7.4	94	3.23
The PDU instructor(s) hold us accountable for accomplishing each part of the PDU.	17 2.9	38 6.4	105 17.7	325 54.7	109 18.4	594	3.79
ProComp	12 2.4	30 6.0	79 15.8	280 56.0	99 19.8	500	3.85
Non ProComp	5 5.3	8 8.5	26 27.7	45 47.9	10 10.6	94	3.50



23. Professional Development Units (continued) Please select the answer below that best reflects why you have not completed a PDU.

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
I have not yet had time to complete a PDU, but I am planning on completing one in the future.	45	33.6	41	58.6	4	6.3
I have not yet had time to complete a PDU, and I am not planning on completing one in the future because of the time commitment.	15	11.2	12	17.1	3	4.7
I am not a part of ProComp and have no financial incentive to complete a PDU.	48	35.8	2	2.9	46	71.9
I don't plan to complete a PDU for another reason:	26	19.4	15	21.4	11	17.2
Total	134	100	70	100	64	100

24. CSAP Expectations: Even if you do not teach in a subject/grade in which CSAP assessments are administered, please answer the following question about the "Exceeds CSAP Expectations" component of ProComp.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
Student CSAP scores depend on the professional effort of their teachers.	97 13.3	168 23.0	215 29.5	215 29.5	34 4.7	729	2.89
ProComp	73 12.7	136 23.7	164 28.6	171 29.8	29 5.1	573	2.91
Non ProComp	24 15.5	32 20.6	50 32.3	44 28.4	5 3.2	155	2.83

25. Student Growth Objectives (SGOs): All DPS teachers and SSPs are expected to set two student growth objectives (SGOs) each year. Please answer the following questions about SGOs.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
I am confident that the measures I select appropriately represent my students' "growth".	29 4.0	100 13.6	123 16.8	394 53.7	87 11.9	733	3.56

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
ProComp	21 3.6	79 13.6	93 16.0	319 55.0	68 11.7	580	3.58
Non ProComp	8 5.2	21 13.7	30 19.6	75 49.0	19 12.4	153	3.50
Determination of whether SGOs have been met (or have not been met) is done fairly.	40 5.4	83 11.3	155 21.1	385 52.5	70 9.5	733	3.49
ProComp	31 5.3	63 10.9	114 19.7	316 54.5	56 9.7	580	3.52
Non ProComp	9 5.9	20 13.1	41 26.8	69 45.1	14 9.2	153	3.39
At my school we try to align our SGOs with our school improvement plan (SIP).	14 1.9	41 5.6	114 15.7	432 59.4	126 17.3	727	3.85
ProComp	10 1.7	34 5.9	92 16.0	343 59.7	96 16.7	575	3.84
Non ProComp	4 2.6	7 4.6	22 14.5	89 58.6	30 19.7	152	3.88
My principal holds me accountable for accomplishing my SGO plan.	13 1.8	27 3.7	104 14.3	441 60.5	144 19.8	729	3.93
ProComp	9 1.3	23 4.0	83 14.4	349 60.6	112 19.4	576	3.92
Non ProComp	4 2.6	4 2.6	21 13.7	92 13.7	32 20.9	153	3.94
SGOs have a positive impact on student learning.	39 5.3	90 12.3	208 28.4	336 45.8	60 8.2	733	3.39
ProComp	31 5.3	64 11.0	157 27.1	280 48.3	48 8.3	580	3.43
Non ProComp	8 5.2	26 17.0	51 33.3	56 36.6	12 7.8	153	3.25

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
I utilize the support materials provided by the district in developing my SGOs.	38 5.2	104 14.2	165 22.6	364 49.8	60 8.2	731	3.42
ProComp	30 5.2	79 13.6	127 21.9	293 50.6	50 8.6	579	3.44
Non ProComp	8 5.3	25 16.4	38 25.0	71 46.7	10 6.6	152	3.33
The SGO process focuses me on positively improving my practice.	47 6.4	100 13.7	180 24.7	350 48.0	52 7.1	729	3.36
ProComp	32 5.5	77 13.3	139 24.1	288 49.9	41 7.1	577	3.40
Non ProComp	15 9.9	23 15.1	41 27.0	62 40.8	11 7.2	152	3.20
I could explain the steps to collaboratively set and approve SGOs to others if asked.	17 2.3	85 11.6	135 18.5	419 57.4	74 10.1	730	3.61
ProComp	13 2.2	71 12.3	105 18.2	333 57.6	56 9.7	578	3.60
Non ProComp	4 2.6	14 9.2	30 19.7	86 56.6	18 11.8	152	3.66
The training I received on the SGO process prepared me to implement it with fidelity.	63 8.7	136 18.7	203 27.9	282 38.7	44 6.0	728	3.15
ProComp	52 9.0	103 17.9	150 26.0	240 41.7	31 5.4	576	3.16
Non ProComp	11 7.2	33 21.7	53 34.9	42 27.6	13 8.6	152	3.09
When I set my SGOs this year, I was confident I could meet them.	28 3.9	103 14.3	188 26.0	341 47.2	62 8.6	722	3.42
ProComp	21 3.7	80 14.0	148 26.0	275 48.2	46 8.1	570	3.43

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	N	Mean
Non ProComp	7 4.6	23 15.1	40 26.3	66 43.4	16 10.5	152	3.40
I needed to adjust my SGOs before Spring Break in order to be able to meet them.	112 15.5	308 42.7	147 20.4	138 19.1	16 2.2	721	2.50
ProComp	81 14.2	252 44.2	109 19.1	114 20.0	14 2.5	570	2.52
Non ProComp	31 20.5	56 37.1	38 25.2	24 15.9	2 1.3	151	2.40
The measures used in evaluating SGOs can be used dishonestly to show more growth than actually occurred.	35 4.8	130 17.9	237 32.6	245 33.7	79 10.9	726	3.28
ProComp	27 4.7	108 18.8	185 32.2	196 34.1	58 10.1	574	3.26
Non ProComp	8 5.3	22 14.5	52 34.2	49 32.2	21 13.8	152	3.35

26. How many times per year do you meet with your administrator regarding your SGOs?

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
0	32	4.4	26	4.6	6	3.9
1	92	12.8	73	12.9	19	12.4
2	241	33.4	199	35.1	42	27.5
3	243	33.7	179	31.6	64	41.8
4	77	10.7	64	11.3	13	8.5
5	20	2.9	15	2.6	5	3.3
6	6	0.8	4	.7	2	1.3
7	2	0.3	2	.4	0	0
8	2	0.3	2	.4	0	0
9	0	0	0	0	0	0

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
10	3	0.4	1	.2	2	1.3
11+	2	0.3	2	.4	0	0
Total	720	100	567	100	153	100

27. Top-Performing Schools even if you do not work in a school identified as “Top Performing” under ProComp, please answer the following questions about the “Top Performing Schools” component of ProComp.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Our school has less of a chance of being designated “Top Performing” because of our student population.	36 5.0	122 17.0	153 21.3	217 30.3	189 26.4	717	3.56
ProComp	29 5.1	98 17.3	116 20.5	173 30.5	151 26.6	567	3.56
Non ProComp	7 4.7	24 16.0	37 24.7	44 29.3	38 25.3	150	
My level of professional effort will impact whether my school will be likely to be designated as “Top Performing”.	91 12.7	151 21.0	193 26.9	232 32.3	51 7.1	718	3.00
ProComp	70 12.3	122 21.5	150 26.4	181 31.9	45 7.9	568	3.02
Non ProComp	21 14.0	29 19.3	43 28.7	51 34.0	6 4.0	150	

28. High Growth Schools even if you do not work in a school identified as “High Growth” under ProComp, please answer the following questions about the “High Growth Schools” component of ProComp.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Our school has less of a chance of being designated “High Growth” because of our student population.	65 9.0	220 30.6	184 25.6	155 21.6	95 13.2	719	2.99
ProComp	51 9.0	177 31.1	142 25.0	124 21.8	75 13.2	569	2.99
Non ProComp	14 9.3	43 28.7	42 28.0	31 20.7	20 13.3	150	3.55
My level of professional effort will impact whether my school will be likely to be designated as “High Growth”.	72 10.0	100 13.9	200 27.7	277 38.3	73 10.1	722	3.25
ProComp	53 9.3	81 14.2	160 28.0	214 37.4	64 11.2	572	3.27
Non ProComp	19 12.7	19 12.7	40 26.7	63 42.0	9 6.0	150	3.55

29. Do you currently serve in a “Hard to Staff” Assignment?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Yes	340	46.4	259	48.7	81	40.5
No	392	53.6	273	51.3	119	59.5
Total	732	100	532	100	200	100

30. Did you decide to work in this assignment as a result of the financial compensation from ProComp?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Yes – ProComp was the main reason I decided to accept this assignment.	7	2.1	7	2.7	0	0
Yes – ProComp is part of the reason I decided to accept this assignment.	27	8.0	26	10.1	1	1.3
No – ProComp was not a reason I decided to accept this assignment.	167	49.6	132	51.4	35	43.8
No – I was working in this assignment before ProComp.	136	40.4	92	35.8	44	55.0
Total	337	11.3	257	100	80	100

31. Hard to Staff Positions (continued): I am more likely to consider moving to a position designated as "Hard to Staff" because of the ProComp "Hard to Staff Assignment" bonus.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
All	116 29.6	106 27.0	96 24.5	65 16.6	9 2.3	392	2.35
ProComp	66 24.2	82 30.0	70 25.6	49 17.9	6 2.2	273	2.44
Non ProComp	50 42.0	24 20.2	26 21.8	16 13.4	3 2.5	119	2.14

32. The bonus offered by ProComp for my assignment encourages me to remain in this position.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
All	77 22.8	47 13.9	91 26.9	87 25.7	36 10.7	338	2.88
ProComp	44 17.1	34 13.2	69 26.7	77 29.8	34 13.2	258	3.09
Non ProComp	33 41.3	13 16.3	22 27.5	10 12.5	2 2.5	80	2.19

33. Do you currently serve in a school designated as “Hard to Serve”?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Yes	414	56.9	309	58.5	105	52.8
No	313	43.1	219	41.5	94	47.2
Total	727	100	528	100	199	100

34. Hard to Serve Schools (continued): Did you decide to work in this school as a result of the financial compensation from ProComp?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Yes – ProComp was the main reason I decided to work in this school.	11	2.3	10	2.8	1	.8
Yes – ProComp is part of the reason I decided to work in this school.	31	6.4	28	7.7	3	2.5
No – ProComp was not a reason I decided to work in this school.	290	59.9	228	63.0	62	50.8
No – I was working in this school before ProComp.	152	31.4	96	26.5	56	45.9
Total	484	100	362	100	122	100

35. The ProComp bonus for working in my school encourages me to remain in this school.

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Strongly Disagree	102	21.1	57	15.8	45	36.3
Disagree	83	17.1	61	16.9	22	17.7
Neither Agree Nor Disagree	141	29.1	105	29.2	36	29.0
Agree	107	22.1	93	25.8	14	11.3
Strongly Agree	51	10.5	44	12.2	7	5.6
Total	484	100	360	100	124	100



36. Hard to Serve Schools (continued): I am more likely to consider moving to a school designated as “Hard to Serve” because of the ProComp “Hard to Serve Schools” bonus.

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Strongly Disagree	80	34.2	44	27.3	36	49.3
Disagree	70	29.9	48	29.8	22	30.1
Neither Agree Nor Disagree	43	18.4	35	21.7	8	11.0
Agree	35	15.0	31	19.3	4	5.5
Strongly Agree	6	2.6	3	1.9	3	4.1
Total	234	100	161	100	73	100

37. The Hard to Serve School bonus is large enough to make these positions attractive to me.

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Strongly Disagree	73	31.3	40	52.0	33	45.2
Disagree	72	30.9	53	33.1	19	26.0
Neither Agree Nor Disagree	64	27.5	48	30.0	16	21.9
Agree	19	8.2	15	9.4	4	5.5
Strongly Agree	5	2.1	4	2.5	1	1.4
Total	233	100	160	100	73	100

38. What size of annual bonus would be sufficient to attract you to a position in a Hard to Serve School?

(Open Ended)

39. In answering the following questions, please reflect on your most recent professional evaluation.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
My evaluation was conducted in a fair way.	38 5.1	55 7.4	95 12.8	388 52.2	167 22.5	743	3.79
ProComp	20 3.5	41 7.2	67 11.8	298 52.3	144 25.3	570	3.89

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Non ProComp	18 10.4	14 8.1	28 16.2	90 52.0	23 13.3	173	3.50
My most recent evaluation accurately reflected my job performance.	37 5.0	84 11.3	96 13.0	369 49.8	155 20.9	741	3.70
ProComp	18 3.2	64 11.2	67 11.8	290 50.9	131 23.0	570	3.79
Non ProComp	19 11.1	20 11.7	29 17.0	79 46.2	24 14.0	171	3.40
My administrator has the knowledge necessary to evaluate my professional practice.	53 7.2	106 14.4	99 13.4	326 44.2	154 20.9	738	3.57
ProComp	35 6.2	78 13.8	74 13.1	249 44.0	130 23.0	566	3.64
Non ProComp	18 10.5	28 16.3	25 14.5	77 44.8	24 14.0	172	3.35
My evaluation was based on sufficient/representative classroom observation data.	65 8.8	115 15.6	118 16.0	308 41.7	133 18.0	739	3.45
ProComp	41 7.2	83 14.6	85 15.0	242 42.7	116 20.5	567	3.54
Non ProComp	24 14.0	32 18.6	33 19.2	66 38.4	17 9.9	172	3.12
My most recent evaluation has helped me to improve my professional practice.	70 9.5	120 16.2	166 22.5	281 38.0	102 13.8	739	3.30
ProComp	45 7.9	92 16.2	114 20.1	222 39.2	94 16.6	567	3.40
Non ProComp	25 14.5	28 16.3	52 30.2	59 34.3	8 4.7	172	2.98
I collaborate with my principal/supervisor on evidence to be included in the CPE.	42 5.7	87 11.8	134 18.2	346 46.9	129 17.5	738	3.59
ProComp	30 5.3	68 12.0	96 16.9	260 45.9	113 19.9	567	3.63

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Non ProComp	12 7.0	19 11.1	38 22.2	86 50.3	16 9.4	171	3.44
I had a mid-year evaluation conference with my principal/supervisor for my most recent CPE.	55 7.4	110 14.9	97 13.1	344 46.5	133 18.0	739	3.53
ProComp	37 6.5	83 14.6	70 12.3	265 46.7	112 19.8	567	3.59
Non ProComp	18 10.5	27 15.7	27 15.7	79 45.9	21 12.2	172	3.34

40. Generally speaking, to what extent do you agree with each of the following statements regarding your current feelings about working in DPS?

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The district provides high quality and useful professional development activities related to assessment and data-driven instruction.	321 10.9	617 21.0	701 23.8	1155 39.3	148 5.0	2942	3.07
ProComp	212 9.4	450 20.0	540 24.0	917 40.7	133 5.9	2252	3.14
Non ProComp	109 15.8	167 24.2	161 23.3	238 34.5	15 2.2	690	2.83
The professional development I receive improves my ability to increase student achievement.	257 8.7	547 18.6	649 22.1	1286 43.7	203 6.9	2942	3.21
ProComp	161 7.1	398 17.7	500 22.2	1012 44.9	181 8.0	2252	3.29
Non ProComp	96 13.9	149 21.6	149 21.6	274 39.7	22 32	690	2.97
CSAP data are presented in a timely manner and in a format that is useful in informing instruction.	646 22.0	754 25.7	865 29.5	601 20.5	70 2.4	2936	2.56
ProComp	456 20.3	578 25.7	682 30.4	469 20.9	62 2.8	2247	2.60
Non ProComp	190 27.6	176 25.5	183 26.6	132 19.2	8 1.2	689	2.41
Benchmark data are presented in a timely manner and in a format that is useful in informing instruction.	199 6.8	330 11.2	897 30.6	1316 44.9	191 6.5	2933	3.33
ProComp	137 6.1	238 10.6	703 31.3	1010 45.0	157 7.0	2245	3.38

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Non ProComp	62 9.0	92 13.4	194 28.2	306 44.5	34 4.9	688	3.23
Other district assessment data (e.g. DRA2, end-of-course assessments, etc.) are presented in a timely manner and in a format that is useful in informing instruction.	163 5.6	303 10.3	1005 34.3	1288 44.0	169 5.8	2928	3.34
ProComp	108 4.8	222 9.9	769 34.3	998 44.5	144 6.4	2241	3.28
Non ProComp	55 8.0	81 11.8	236 34.4	290 42.2	25 3.6	687	3.22
My principal has the right amount of time devoted to instructional activities such as student growth, professional development and supervision of teachers.	263 9.0	493 16.8	790 27.0	1390 38.9	243 8.3	2928	3.21
ProComp	163 7.3	360 16.1	608 27.2	899 27.2	209 9.3	2239	
Non ProComp	100 14.5	133 19.3	182 26.4	240 34.8	34 4.9	689	2.96

41. Generally speaking, to what extent do you agree with each of the following statements regarding your current feelings about your compensation in DPS?

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
My initial salary was set correctly.	184 6.3	383 13.1	516 17.6	1702 58.2	143 4.9	2932	3.42
ProComp	131 5.8	294 13.1	377 16.8	1319 58.7	125 5.6	2246	3.45
Non ProComp	53 7.7	89 13.0	139 20.3	387 56.4	18 2.6	686	3.33

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
My monthly salary is determined correctly.	58 2.0	148 5.1	599 20.5	1961 67.1	157 5.4	2923	3.69
ProComp	37 1.7	118 5.3	450 20.1	1496 66.8	137 6.1	2238	3.71
Non ProComp	21 3.1	30 4.4	149 21.8	465 67.9	20 2.9	685	3.63
If my paycheck is not correct, it can easily be corrected.	196 6.7	473 16.2	1313 45.0	843 28.9	92 3.2	2917	3.06
ProComp	142 6.4	357 16.0	992 44.4	665 29.8	79 3.5	2235	3.08
Non ProComp	54 7.9	116 17.0	321 47.1	178 26.1	13 1.9	682	2.97
I feel I have enough information about ProComp to make informed decisions.	157 5.4	488 16.7	626 21.4	1474 50.4	180 6.1	2925	3.35
ProComp	121 5.4	367 16.4	480 21.4	1150 51.3	123 5.5	2241	3.35
Non ProComp	36 5.3	121 17.7	146 21.3	324 47.4	57 8.3	684	3.36

42. Please provide any comments regarding salary or paycheck issues.

(Open Ended)

43. Which of the following resources have been the most effective source(s) of information about ProComp?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
Written materials provided by DPS	832	30.1	644	30.1	188	29.9
ProComp website	1254	44.5	1038	47.7	216	33.7
DPS group meetings/presentations about ProComp	837	29.7	664	30.5	173	27.0
Salary setting (opt-in) meetings	797	28.3	611	28.1	186	29.0
Conversations or phone calls with ProComp staff	690	24.5	562	25.8	128	20.0
Information from DCTA	680	24.1	487	22.4	193	30.1
Conversations or meetings with my principal/supervisor	274	9.7	244	11.2	30	4.7
Conversations with colleagues	1586	56.3	1221	56.1	365	56.9
Other, please specify	126	4.5	94	4.3	32	5.0

44. What are your current plans for the next school year?

	All		ProComp		Non ProComp	
Answer	N	%	N	%	N	%
To continue teaching in this school	2432	83.2	1969	88.1	463	67.3
Currently applying for or have accepted another teaching position in DPS	169	5.8	119	5.3	50	7.3
Currently applying for or have accepted an administrative position in DPS	31	1.1	16	.7	15	2.2
Currently applying for or have accepted a position in another school district	58	2.0	16	.7	43	6.3
I plan to retire	23	0.8	2	.1	21	3.1
I do not plan to teach next year	30	1.0	5	.2	25	3.6
Unsure at this time	98	3.4	58	2.6	40	5.8
Other, please specify	83	2.8	52	2.3	31	4.5
Total	2924	100	2236	100	688	100

45. Which of the following reasons make it more likely for you to stay in DPS next year?

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
I like the student population.	2059	79.8	1638	79.0	421	83.2
I enjoy working with my colleagues.	1909	72.7	1543	73.2	366	70.7
The DPS/PERA retirement program makes it beneficial for me to stay.	632	24.1	520	24.7	112	21.6
My salary will increase substantially under the master salary schedule.	177	6.7	121	5.7	56	10.8
I have the potential to earn significant incentives under ProComp	512	19.5	490	23.2	22	4.2
I feel effective.	1648	62.7	1325	62.8	323	62.4
I have a good relationship with my principal/supervisor.	1516	57.7	1231	58.4	285	55.0
I enjoy working in DPS.	1224	46.6	999	47.4	225	43.4
Other, please specify:	182	6.9	146	6.9	36	6.9

46. Which of the following factors make you more likely to leave your teaching position in DPS next year?

Answer	All		ProComp		Non ProComp	
	N	%	N	%	N	%
Dissatisfaction with the student population	18	6.4	5	3.9	13	8.6
Dissatisfaction with my colleagues	32	11.3	10	7.6	22	14.6
I'm unlikely to earn significant incentives under ProComp.	51	18.0	34	25.8	17	11.3
I'm likely to receive little increase in my salary as I progress through the master salary schedule.	50	17.7	23	17.4	27	17.9
I don't feel sufficiently effective	23	8.1	6	4.5	17	11.3
Dissatisfaction with my principal/supervisor	100	35.3	37	28.0	63	41.7
Dissatisfaction with working in DPS	113	39.9	52	39.4	61	40.4
My contract for next year was not renewed	19	6.7	1	.8	18	11.9
I can now move my years of experience to another district because of change to PERA.	48	17.0	27	20.5	21	13.9
Other; please specify:	95	33.6	42	31.8	53	35.1

47. Please provide any final comments regarding the ProComp program or any aspect of it.(Open Ended)



**ProComp Principal Survey<sup>97</sup>**

1. Based on your general impressions of the Teacher ProComp program, please indicate your agreement with the following statements.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
ProComp can motivate participants to improve instructional practices.	4 2.4	22 13.3	31 18.7	101 60.8	8 4.8	166	3.52
ProComp can ultimately improve student achievement.	5 3.0	19 11.5	41 24.8	90 54.5	10 6.1	165	3.49
ProComp will ultimately help DPS attract and retain qualified teachers.	8 4.8	22 13.3	36 21.7	88 53.0	12 7.2	166	3.45
ProComp is aligned with the goals of our school district.	3 1.8	9 5.4	32 19.3	111 66.9	11 6.6	166	3.71
ProComp is aligned with the professional goals of my teachers.	5 3.0	18 10.9	43 26.1	90 54.5	9 5.5	165	3.48
ProComp will improve teacher collaboration in DPS.	7 4.2	34 20.5	63 38.0	53 31.9	9 5.4	166	3.14
My teachers feel more pressure and job stress as a result of ProComp.	3 1.8	38 23.2	51 31.1	57 34.8	15 9.1	164	3.26
The financial incentives in ProComp will lead to improved instructional practice.	9 5.4	26 15.7	51 30.7	74 44.6	6 3.6	166	3.25
I know how to answer my teachers' questions about ProComp.	4 2.4	36 21.8	38 23.0	79 47.9	8 4.8	165	3.31

<sup>97</sup> No weighting was applied to the principal data. The term principal is used generically to include principals, assistant principals, and principals on special assignment.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
ProComp is a fair program.	7 4.3	22 13.4	58 35.4	73 44.5	4 2.4	164	3.27
ProComp helps to create a positive work environment.	7 4.2	42 25.5	74 44.8	41 24.8	1 0.6	165	2.92
ProComp provides a more focused way for teachers to think about their work.	5 3.0	27 16.3	51 30.7	77 46.4	6 3.6	166	3.31

2. Based on your general impressions of the traditional or master salary schedule, please indicate your agreement with the following statements.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The traditional salary schedule can motivate participants to improve instructional practices.	17 10.2	68 41.0	46 27.7	33 19.9	2 1.2	166	2.61
The traditional salary schedule can ultimately improve student achievement.	21 12.7	58 34.9	61 36.7	25 15.1	1 0.6	166	2.56
The traditional salary schedule will improve teacher collaboration in DPS.	19 11.5	55 33.3	67 40.6	23 13.9	1 0.6	165	2.59
The traditional salary schedule is aligned with the goals of our school district.	17 10.3	57 34.5	65 39.4	25 15.2	1 0.6	165	2.61
The traditional salary schedule is fair.	17 10.3	36 21.8	64 38.8	46 27.9	2 1.2	165	2.88

3. Based on your experience as an administrator, to what degree has ProComp changed each of the following aspects of your professional role (and that of your teachers)?

Question	ProComp has made it much less difficult	ProComp has made it somewhat less difficult	Has not changed	ProComp has made it somewhat more difficult	ProComp has made it much more difficult	Responses	Mean
Recruitment of high-quality candidates for open teaching positions at my school	8 4.8	26 15.6	118 70.7	14 8.4	1 0.6	167	2.84
Retention of high-quality teachers at my school	9 5.4	26 15.6	119 71.3	10 6.0	3 1.8	167	2.83
Collaboration between teachers in my school	10 6.0	33 19.8	107 64.1	14 8.4	3 1.8	167	2.80
Professional development in my school	11 6.6	55 32.9	87 52.1	12 7.2	2 1.2	167	2.63
The SGO process	12 7.2	45 27.1	63 38.0	38 22.9	8 4.8	166	2.91
Professional evaluation of teachers	6 3.6	29 17.4	106 63.5	23 13.8	3 1.8	167	2.93
Overall, my job as a school administrator	5 3.0	23 13.8	106 63.5	29 17.4	4 2.4	167	3.02

4. Increasing Instructional Practices: Which of Teacher ProComp's incentives do you believe will help improve instructional practices? Please select all that apply.

Answer	N	%
Salary increases for completion of Professional Development Units (PDUs)	112	68.3
Salary increases for earning an Advanced Degree/License	106	64.6
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	94	57.3
Bonuses for employment in a Hard to Staff Assignment	76	46.3
Bonuses for employment in a Hard to Serve School	79	48.2
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	97	59.1
Bonuses for having students who Exceed CSAP Expectations	97	59.1
Bonuses for employment at a Top Performing School	47	28.7

Answer	N	%
Bonuses for employment at a High Growth School	108	65.9
None of the above	12	7.3

5. Increasing Student Achievement: Which of Teacher ProComp's incentives do you believe will help educators will help educators increase student achievement? Please select all that apply.

Answer	N	%
Salary increases for completion of Professional Development Units (PDUs)	88	53.7
Salary increases for earning an Advanced Degree/License	86	52.4
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	77	47.0
Bonuses for employment in a Hard to Staff Assignment	59	36.0
Bonuses for employment in a Hard to Serve School	66	40.2
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	96	58.5
Bonuses for having students who Exceed CSAP Expectations	103	62.8
Bonuses for employment at a Top Performing School	44	26.8
Bonuses for employment at a High Growth School	104	63.4
None of the above	12	7.3

6. Achieving Professional Growth. Which of Teacher ProComp's incentives do you believe will help educators will help achieve professional growth? Please select all that apply.

Answer	N	%
Salary increases for completion of Professional Development Units (PDUs)	128	77.1
Salary increases for earning an Advanced Degree/License	122	73.5
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	73	44.0
Bonuses for employment in a Hard to Staff Assignment	34	20.5
Bonuses for employment in a Hard to Serve School	38	22.9
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	60	36.1
Bonuses for having students who Exceed CSAP Expectations	56	33.7
Bonuses for employment at a Top Performing School	32	19.3
Bonuses for employment at a High Growth School	66	39.8
None of the above	10	6.0

7. Appropriateness of Financial Incentives For which of Teacher ProComp's elements do you believe educators should receive financial incentives (i.e., salary increase or bonus)? (For example, do you believe it is appropriate that educators receive a bonus for working in a Top Performing School?) Please select all that apply.

Answer	N	%
Salary increases for completion of Professional Development Units (PDUs)	110	67.1
Salary increases for earning an Advanced Degree/License	123	75.0
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	94	57.3
Bonuses for employment in a Hard to Staff Assignment	94	57.3
Bonuses for employment in a Hard to Serve School	106	64.6
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	95	57.9
Bonuses for having students who Exceed CSAP Expectations	99	60.4
Bonuses for employment at a Top Performing School	63	38.4
Bonuses for employment at a High Growth School	117	71.3
None of the above	6	3.7

8. For which of the following Teacher ProComp elements would you feel comfortable explaining to teachers the requirements for earning financial incentives? Please select all that apply.

Answer	N	%
Salary increases for completion of Professional Development Units (PDUs)	108	65.9
Salary increases for earning an Advanced Degree/License	103	62.8
Salary increases for satisfactory Comprehensive Professional Evaluation (CPE)	95	57.9
Bonuses for employment in a Hard to Staff Assignment	110	67.1
Bonuses for employment in a Hard to Serve School	115	70.1
Bonuses and salary increases for achieving Student Growth Objectives (SGOs)	118	72.0
Bonuses for having students who Exceed CSAP Expectations	101	61.6
Bonuses for employment at a Top Performing School	85	51.8
Bonuses for employment at a High Growth School	108	65.9
None of the above	20	12.2

9. Which of the following resources have been the most effective source(s) of information about Teacher ProComp? Please select all that apply.

Answer	N	%
Written materials provided by DPS	85	53.5
ProComp website	84	52.8
DPS group meetings/presentations about ProComp	74	46.5
DCTA website	10	6.3
Conversations or phone calls with ProComp staff	62	39.0
Conversations or meetings with my supervisor	32	20.1
Conversations with administrative colleagues	46	28.9
Conversations with teachers	55	34.6
Other, please specify	2	1.3

10. Please answer the following questions about SGOs.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The training I received on the SGO process prepared me to implement it with fidelity.	7 4.2	32 19.2	37 22.2	79 47.3	12 7.2	167	3.34
I utilize the handbook and tools provided by the district in implementing the SGO process.	5 3.0	16 9.6	26 15.6	109 65.3	11 6.3	167	3.63
I could explain the steps to collaboratively set and approve SGOs to others if asked.	2 1.2	5 3.0	10 6.0	127 76.0	23 13.8	167	3.98
I am confident that the measures my staff members select for SGOs appropriately represent their students' "growth".	3 1.8	40 24.1	34 20.5	81 48.8	8 4.8	166	3.31
It is easy to fairly determine whether SGOs have been met (or have not been met).	2 1.2	28 16.9	29 17.5	92 55.4	15 9.0	166	3.54

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The SGO process focuses teachers on positively improving their practice.	6 3.6	37 22.3	38 22.9	79 47.6	6 3.6	166	3.25
SGOs have a positive impact on student learning.	5 3.0	30 18.1	43 25.9	81 48.8	7 4.2	166	3.33
When my teachers set their SGOs this year, I was confident they could meet them.	2 1.2	9 5.4	54 32.5	98 59.0	3 1.8	166	3.55
Most SGOs need to be adjusted before Spring Break in order for teachers to be able to meet them.	5 3.4	66 40.5	43 26.4	48 29.4	1 0.6	163	2.84
In general, the SGOs set by members of my staff are rigorous.	7 4.2	31 18.7	38 22.9	85 51.2	5 3.0	166	3.30
The measures used in evaluating SGOs can be used dishonestly to show more growth than actually occurred.	4 2.4	31 18.7	51 30.7	69 41.6	11 6.6	166	3.31
At my school, we try to align our SGOs with our school improvement plan (SIP).	2 1.2	13 7.9	13 7.9	106 64.2	31 18.8	165	3.92
I hold teachers accountable for accomplishing their SGO plans.	2 1.2	4 2.4	15 9.1	112 68.3	31 18.9	164	4.01

11. On average, how many times per year do you meet with each teacher regarding his/her SGOs?

Answer	N	%
0	2	1.2
1	0	0
2	30	18.0
3	91	54.5
4	27	16.2
5	12	7.2
6	2	1.2
7	1	0.6
8	0	0
9	1	0.6
10	0	0
10+	1	0.6
Total	169	100

12. How rigorous are the Student Growth Objectives set by ProComp teachers relative to the SGOs of non-ProComp teachers?

Answer	N	%
ProComp teachers tend to set more rigorous SGOs than their non-ProComp counterparts.	22	13.6
ProComp teachers tend to set less rigorous SGOs than their non-ProComp counterparts.	21	13.0
There are no differences in the rigor of SGOs set by ProComp and non-ProComp teachers.	119	73.5
Total	162	100



13. Please answer the following questions about the Exceeds CSAP Expectations component of ProComp.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
Students' CSAP scores depend on the professional effort of their teachers.	9 5.4	18 10.8	36 21.7	83 50.0	20 12.0	166	3.52
The Exceeds CSAP Expectations element rewards my best teachers.	12 7.3	39 23.6	38 23.0	62 37.6	14 8.5	165	3.16

14. Based on your experience with the PDU process, please indicate your agreement with each of the following statements.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
I understand what is required for my teachers to complete a PDU.	4 2.4	23 13.8	24 14.4	99 59.3	17 10.2	167	3.61
The PDU process focuses teachers on positively improving their practice.	2 1.2	10 6.0	42 25.1	97 58.1	16 9.6	167	3.69
I am working (or have worked) with my teachers to create school-based PDUs.	3 1.8	45 27.1	21 12.7	77 46.4	20 12.0	166	3.40
I see evidence of what teachers are learning in PDUs in their classroom practices.	4 2.4	22 13.2	40 24.0	89 53.3	12 7.2	167	3.50
At my school, we try to align our PDUs with our School Improvement Plan (SIP) goals.	4 2.4	20 12.0	43 25.9	75 45.2	24 14.5	166	3.57
I encourage my teachers to use PDUs as professional learning opportunities.	3 1.8	6 3.6	24 14.4	107 64.1	27 16.2	167	3.89

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The PDU instructors hold teachers accountable for accomplishing each part of the PDU.	5 3.0	12 7.2	59 35.3	80 47.9	11 6.6	167	3.48

15. Principals and APs participate in staff recruitment and retention. Please answer the following questions about Hard to Staff assignments.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The number of applicants interviewing for assignments designated as "Hard to Staff" is increasing.	4 2.4	13 7.9	99 60.4	42 25.6	6 3.7	164	3.20
The quality of applicants interviewing for assignments designated as "Hard to Staff" is improving.	5 3.0	19 11.6	91 55.5	42 25.6	7 4.3	164	3.16
The availability of an incentive for working in an assignment designated as "Hard to Staff" makes it easier to recruit highly qualified applicants.	4 2.5	23 14.1	86 52.8	43 26.4	7 4.3	163	3.16
ProComp's incentive for working in assignments designated "Hard to Staff" makes it easier to retain highly qualified professionals.	5 3.0	23 14.0	83 50.6	46 28.0	7 4.3	164	3.16
Overall, ProComp's incentives for "Hard to Staff" assignments have helped hire the best-qualified people for those assignments.	6 3.7	28 17.1	90 54.9	34 20.7	6 3.7	164	3.04

16. Is your school currently identified as "Hard to Serve" (under ProComp)?

Answer	N	%
Yes	88	54.0
No	75	46.0
Total	163	100

17. Please answer the following questions about ProComp's Hard to Serve Schools incentive and teacher recruitment and retention.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
The number of applicants interviewing for positions in my school is increasing.	1 1.1	6 6.8	22 25.0	47 53.4	12 13.6	88	3.72
The overall quality of applicants interviewed for positions in my school is improving.	1 1.2	4 4.7	31 36.0	44 51.2	6 7.0	86	3.58
ProComp's incentive for working in schools designated as "Hard to Serve" makes it more difficult for my school to recruit highly qualified applicants.	1 1.1	13 14.8	42 47.7	24 27.3	8 9.1	88	3.28
ProComp's incentive for working in schools designated as "Hard to Serve" makes it more difficult for my school to retain highly qualified professionals.	1 1.1	13 14.8	37 42.0	30 34.1	7 8.0	88	3.33
Overall, ProComp's "Hard to Serve" incentive has resulted in a decline in qualified teachers and SSPs in my school.	3 3.4	9 10.2	41 46.6	31 35.2	4 4.5	88	3.27

18. Based on your experience with the CPE process, please indicate your agreement with each of the following statements.

Question	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree	Responses	Mean
CPEs accurately reflect the job performance of my staff.	5 3.0	29 17.6	28 17.0	97 58.8	6 3.6	165	3.42
The CPE process is manageable to complete.	10 6.1	46 28.0	22 13.4	82 50.0	4 2.4	164	3.15
I conducted mid-year evaluation conferences with the majority of my staff scheduled for evaluations this school year.	1 0.6	8 4.8	7 4.2	107 64.8	42 25.5	165	4.10
I collaborate with staff on evidence to be included in the CPE.	1 0.6	5 3.0	12 7.3	119 72.1	28 17.0	165	4.02
Sufficient data are available on which I can base my evaluations.	1 0.6	12 7.3	14 8.5	116 70.3	22 13.3	165	3.88
I am comfortable with the demands on my knowledge and skills required by the CPE process.	3 1.9	6 3.7	16 9.9	107 66.0	30 18.5	162	3.96

19. Please provide any additional comments you may have regarding the Teacher ProComp program.

(Open Ended)

20. Please provide any final comments you may have. (Open Ended)

## **Appendix D. School Interviews and Focus Groups – Methods**

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### **Sample Population**

Evaluators conducted interviews with 250 teachers (ProComp and Non-ProComp) and 36 school-based administrators from 16 schools purposefully selected to ensure variation in the type of school (elementary, K - 8, middle, 6 – 12, and high schools), the percentage of teachers within a school participating in ProComp, the School Performance Framework (SPF) rating, and the percentage of teachers new to the school.

The sample selection follows this process:

1. Listed all DPS Schools by level
2. Combined K-8 schools with elementary
3. Combined 6-12 schools with high schools
4. Eliminated charter schools and alternative schools serving a highly specialized populations
5. Ranked schools by %ProComp , secondly by SPF rating, and thirdly by % new teachers
6. Created a matrix for elementary and K-8, middle, and 6-12 and high schools based on the 3 sorting variables
7. Selected 16 schools (10 elementary, 1 K-8, 2 middle, and 4 high schools)

At each school the interviewees included: 1) a random sample of 10-15% of teachers with 0 – 3 years of DPS experience, 2) a random sample of 10-15% of teachers with 4 or more years in DPS, 3) instructional leaders identified by the principal, and 4) the principal and other members of the administrative team. Both ProComp ( $n = 187$ ) and Non-ProComp ( $n = 60$ ) teachers participated in interviews, but ProComp status was not considered during the sample selection process.

### **Instruments**

Data were collected by teams of evaluators who conducted site visits to each school in the sample during May 2010. Generally, instructional leaders, newer teachers, and administrative teams participated in focus groups. However, individual interviews were conducted when staff were not able to participate in their scheduled focus group. Individual interviews were conducted with experienced teachers who were not included in a focus group.

There were separate protocols tailored to each group. The topics covered by the various protocols included:

- History with DPS and plans for next school year
- ProComp status (teachers only)
- Professional practice and growth (motivation, PDUs)
- Student outcomes and achievement growth (SGOs)
- Recruitment and retention

- Market incentives and incentives related to CSAP
- Working conditions and work load
- Recommendations for improvement

### Focus Group Protocol #1: New Teachers (1 -3 years in DPS)

School: \_\_\_\_\_ Number of Participants: \_\_\_\_\_

Interviewer: \_\_\_\_\_ Note Taker: \_\_\_\_\_

Date/Time of Interview: \_\_\_\_\_

#### Suggested Group Norms

All comments are confidential - nothing said here should leave the room  
 Everyone's opinions are important – we want to hear from all of you  
 Please allow others to express their opinion – when your point has been made allow others to speak  
 However, if your opinion/thoughts have already been expressed by others, do not feel obligated to speak. In the interest of time we will move on to another question.

#### Introduction

Welcome. Thanks for taking the time to join in our discussion of ProComp. I'm \_\_\_\_\_ and this is \_\_\_\_\_ from the University of Colorado Denver. The University of Colorado Denver has been hired by DPS to provide an independent evaluation of ProComp to understand how it's working and how it may be improved. Talking with teachers and principals is just one part of the evaluation process. You were invited since you are in your first three years of experience and have an important perspective to share about ProComp. We have 10 questions for you today, so we'll spend 5-8 minutes on each one. We will be sure we take no more than an hour. There are no right or wrong answers and we expect that you will have differing points of view and hope you will share them. To help us stay within our time frame, we ask that you avoid repeating what others have already said.

Your responses to the questions are confidential and your participation is voluntary—you do not have to answer any of the questions. What you say will be combined with responses from educators at 15 schools; your names will not appear in any report or be seen by any DPS employees/administrators. To respect the confidentiality of everyone, we ask that you not discuss the comments made by others with those outside this group.

We would like to take notes and, with your permission, digitally record this discussion to supplement our notes. If anyone prefers we not record this discussion, we can just take notes. May we record the discussion? Do you have any questions before we begin?

Let's begin with quick introductions. Please tell us:

**What would you like me to call you? How long have you been a teacher in DPS? At this school? Teaching In subject area/grade level?**

**What influenced your decision to teach in DPS? At this school?**

**Probes, as needed:**

- Were there specific factors that influenced you?
- What about ProComp, the benefits package, or the retirement program?

**What are your current plans for continuing your career as an educator? Do you plan to continue in DPS? At this school? Teaching in your current subject area?**

**Follow-up:**

<b>No change:</b>	<b>Change:</b>
What influenced your decision to continue in your current role/school/subject area?	What influenced your decision to change districts/schools/subject areas?

**Probes, as needed:**

- How does compensation package affect your decision to stay in DPS?
- What about ProComp?
- What about the retirement package?

**How has ProComp affected your motivation as a teacher?**

- Specifically, has ProComp affected your motivation to work harder, to seek additional professional development or other ways to improve your professional practice? Or to change schools/subject areas?

**How has being in ProComp affected your professional practice? How has that affected the achievement growth of your students?**

**Probe, as needed:**

- Please give an example, if applicable.

**Specifically, how has the SGO process affected your professional practice? How has that affected the achievement growth of your students?**

**Probe, as needed:**

- Please give an example of a SGO that was effective/ ineffective.
- What guides how you set SGOs? What is the SGO process like in your school?
- How does the SGO process influence your professional practice?

**What has been your experience with PDUs? Specifically, have PDU's made a difference in your professional practices?**

**Probes, as needed:**

- Please give an example of a PDU that helped/did not help improve your professional practice, if applicable.

- How did these changes in your instructional practices impact student outcomes?
- Have you been involved in any school-based PDUs?

**How has ProComp affected your school's working conditions?**

- Has it affected teacher workload?
- Teacher collaboration? Other elements of your school's culture?

**Probes, as needed for what has been affected and how:**

- Example?

**What's been your experience with ProComp as a compensation system?**

**Probes, as needed:**

- Do you think your salary has been determined correctly and fairly?
- Have you had any problems getting information, getting your questions answered, or getting payments?

**How could you be better supported in the ProComp system?**

**Probes, as needed:**

- Support In your growth as a teacher
- Support that would make it more likely you will continue in DPS
- Support that would lead to improvement in student outcomes

**Any additional comments related to ProComp? Any advice you would like to give for improving ProComp?**

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For recording purposes only - please note other observations or contextual features:



## Interview Protocol #2: Teachers with 5+ Years Experience in DPS

Interviewee: \_\_\_\_\_ School: \_\_\_\_\_

Interviewer: \_\_\_\_\_ Note Taker: \_\_\_\_\_

Date/Time of Interview: \_\_\_\_\_

Thank you for participating in this interview. I'm \_\_\_\_\_ and this is \_\_\_\_\_ from the University of Colorado Denver. The University of Colorado Denver has been hired by DPS to provide an independent evaluation of ProComp to understand how it's working and how it may be improved. Talking with teachers and principals is just one part of the evaluation process. We have 6 questions for you today, so we'll spend about 4 to 5 minutes on each question. We will be sure we take no more than 30 minutes.

Your responses to the questions are confidential and your participation is voluntary—you do not have to answer any of the questions. What you say will be combined with responses from educators at 15 schools; your name will not appear in any report or be seen by any DPS employees/administrators. We would like to both take notes and, with your permission, to digitally record this interview to supplement our notes. If you prefer the interview not be recorded, we can just take notes. May we record the interview? Do you have any questions before we begin?

**How long have you been a teacher or SSP in DPS? At this school? Teaching In subject area/grade level?**

**What are your plans for next year? Do you plan to continue in DPS? At this school? Teaching in your current subject area?**

Follow-up:

No change:	Change:
<b>What influenced your decision to continue in your current role/school/subject area?</b>	<b>What influenced your decision to change schools/subject areas/districts?</b>

Probes, as needed:

**How does the overall DPS compensation package affect your decision to stay in DPS?**

What about ProComp?

What about the retirement package?

**Are you currently participating in ProComp?**

Yes:

**What's been your experience with ProComp as a compensation system?**

Probes, as needed:

Do you think your salary has been determined correctly and fairly?

Have you had any problems getting information, getting your questions answered, or getting payments?

No:

**What's been your experience with the traditional salary plan as a compensation system?**

Probe, as needed:

Please give an example

**How has being in ProComp affected your professional practice and growth?**

Probes, as needed:

What parts of ProComp are beneficial? What parts are more of a hindrance?

Has ProComp affected your motivation?

Specifically, has ProComp affected your motivation to work harder, to seek additional professional development or

**How has the traditional salary plan affected your professional practice and growth?**

Probes, as needed:

What parts of the traditional salary plan are beneficial? What parts are more of a hindrance?

Has the traditional salary plan affected your motivation? Examples?

other ways to improve your professional practice? Or to change schools/subject areas? Examples?

**How has being in ProComp affected your SGOs?**

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**How has Pro Comp affected the way your school approaches' improving student outcomes?**

Probe, as needed:

Has it affected school-wide goals and priorities

Has it caused your school to become more focused in its approach?

Has it caused your school to make changes in instructional practices or curriculum?

Has it caused your school to become more data driven?

Can you give us examples?

**Have SGO's made a difference in your professional practices? In the achievement growth of your students?**

Probe, as needed:

Please give an example of a SGO that was effective in improving student outcomes, if applicable.

**What has been your experience with PDUs? Specifically, have PDU's made a difference in your professional practices?**

Probe, as needed:

Please give an example of a PDU that you helped you/hindered your practice, if applicable.

How did these changes in your instructional practices impact student outcomes, if applicable?

Have you been involved in any school-based PDUs?

**How has ProComp affected your school's working conditions? Has it affected teacher workload? Teacher collaboration? Other elements of your school's culture?**

Probes, as needed for what has been affected and how:

Example?

**[PROCOMP TEACHERS ONLY] How could you be better supported in the ProComp system?**

Probes, as needed:

Support In your growth as a teacher

Support that would make it more likely you will continue in DPS

Support that would lead to improvement in student outcomes

**Any additional comments related to ProComp? Any advice you would like to give for improving ProComp?**

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For recording purposes only - please note other observations or contextual features:

## Focus Group Protocol #3: Instructional Leaders

School: \_\_\_\_\_ Number of Participants: \_\_\_\_\_

Interviewer: \_\_\_\_\_ Note Taker: \_\_\_\_\_

Date/Time of Interview: \_\_\_\_\_

### Suggested Group Norms

All comments are confidential - nothing said here should leave the room  
 Everyone's opinions are important – we want to hear from all of you  
 Please allow others to express their opinion – when your point has been made allow others to speak  
 However, if your opinion/thoughts have already been expressed by others, do not feel obligated to speak. In the interest of time we will move on to another question.

Welcome. Thanks for taking the time to join in our discussion of ProComp. I'm \_\_\_\_\_ and this is \_\_\_\_\_ from the University of Colorado Denver. The University of Colorado Denver has been hired by DPS to provide an independent evaluation of ProComp to understand how it's working and how it may be improved. Talking with teachers and principals is just one part of the evaluation process. You were invited since you are one of the instructional leaders at \_\_\_\_\_. We have 10 questions for you today, so we'll spend 5-8 minutes on each one. We will be sure we take no more than an hour. There are no right or wrong answers and we expect that you will have differing points of view and hope you will share them. To help us stay within our time frame, we ask that you avoid repeating what others have already said.

Your responses to the questions are confidential and your participation is voluntary—you do not have to answer any of the questions. What you say will be combined with responses from educators at 15 schools; your names will not appear in any report or be seen by any DPS employees/administrators. To respect the confidentiality of everyone, we ask that you not discuss the comments made by others with those outside this group.

We would like to take notes and, with your permission, digitally record this discussion to supplement our notes. If anyone prefers we not record this discussion, we can just take notes. May we record the discussion? Do you have any questions before we begin?

### Let's begin with quick introductions. Please tell us:

*(Note for each participant)* What would you like us to call you? What you teach or your role? How long have you been with DPS? At this school?

Name:

Grade/Subject Area:

DPS years:

Years at school:

### Has the ProComp system contributed to improving professional practices at your school?

Probe, as needed:

What parts of ProComp have been helpful to improving professional practices? Not helpful?

Does the traditional salary schedule have an effect on professional practice?

### Specifically, have PDU's made a difference in professional practices?

Probes, as needed:

Please give examples of ways in which PDU's have helped/hindered the improvement of professional practice at your school, if applicable.

If changes occurred, how did these changes in professional practices impact student outcomes?  
To what extent is professional development aligned with school goals?  
Have you been involved in any school-based PDUs?

**How has ProComp affected teachers' motivation?**

Probe, as needed:

Specifically, has ProComp affected teachers' motivation to work harder, to teach particular subjects, to seek coaching or additional professional development? Examples?

Has it affected the way teachers write SGOs or work to achieve those goals?

**Has the ProComp system contributed to improving student outcomes at your school?**

Probes, as needed:

For example, has it led to your school to:

Change school-wide goals and priorities

Become more focused in its approach?

Change instructional practices or curriculum?

Become more data driven?

**Please give examples of ways in which ProComp has affected student outcomes, if applicable.**

**Specifically, have SGO's made a difference in student outcomes?**

Probe, as needed:

Please give examples of how SGOS were effective in improving the achievement of your students at your school, if applicable

**Specifically, have the incentives for Top Performing, High Growth, and Exceeding CSAP Expectations made a difference?**

Probe, as needed:

Please give examples of how these have been effective.

**How has ProComp affected the working conditions of your school? Has it affected teacher workload? Teacher collaboration? Other elements of your school's culture?**

Probes, as needed for what has been affected and how:

Example?

**How could the ProComp system be improved to better support instructional improvement and student achievement?**

**Any additional comments related to ProComp? Any advice you would like to give for improving ProComp?**

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For recording purposes only - please note other observations or contextual features:

## Interview Protocol #4: Principals and Assistant Principals

Principal: \_\_\_\_\_

Assistant Principal(s): \_\_\_\_\_

School: \_\_\_\_\_

Interviewer: \_\_\_\_\_ Note Taker: \_\_\_\_\_

Date/Time of Interview: \_\_\_\_\_

Thank you for participating in this interview. I'm \_\_\_\_\_ and this is \_\_\_\_\_ from the University of Colorado Denver. The University of Colorado Denver has been hired by DPS to provide an independent evaluation of ProComp to understand how it's working and how it may be improved. Talking with teachers and principals is just one part of the evaluation process. We have 12 questions for you today, so we'll spend about 1 to 3 minutes on each question. We will be sure we take no more than 30 minutes.

Your responses to the questions are confidential and your participation is voluntary—you do not have to answer any of the questions. What you say will be combined with responses from educators at 15 schools; your name will not appear in any report or be seen by any DPS employees/administrators. We would like to both take notes and, with your permission, to digitally record this interview to supplement our notes. If you prefer the interview not be recorded, we can just take notes. May we record the interview? Do you have any questions before we begin?

### To what extent has ProComp influenced the recruitment process at your school?

Probes, as needed:

Has it affected the quality and/or quantity of applicants?

Has it affected your ability to hire?

What elements of ProComp have had the greatest impact on recruiting teachers to your school, if applicable?

### To what extent has ProComp affected the retention of qualified teachers at your school?

Probe, as needed:

What elements of ProComp have had the greatest impact on retaining teachers at your school, if applicable?

### How has ProComp affected professional practice at your school?

Probe, as needed:

How have you used ProComp as a tool for improving professional practice? Examples?

### Specifically, have PDU's made a difference in professional practices?

Probes, as needed:

Please give examples of ways in which PDU's have helped to improve instruction at your school, if applicable.

How did these changes in instructional practices impact student outcomes?

To what extent is professional development aligned with school goals? Is it more aligned under ProComp than in the past?

Have you been involved in any school-based PDUs?

### How has ProComp affected teachers' motivation?

Probe, as needed:

Specifically, has ProComp affected teachers' motivation to professional development? To change schools/subject areas? Examples?

### Has the ProComp system contributed to improving student outcomes at your school?

Probes, as needed:

For example, has it led to your school to:

Change school-wide goals and priorities

Become more focused in its approach?  
Change instructional practices or curriculum?  
Become more data driven?

**Please give examples of ways in which ProComp has affected student outcomes, if applicable.**

**Specifically, have SGO's made a difference in student outcomes?**

Probes, as needed:

Please give examples of how SGOS were effective in improving the achievement of your students, if applicable.

**Specifically, have the incentives for Top Performing, High Growth, and Exceeding CSAP Expectations made a difference?**

Probe, as needed:

Please give examples of how these have been effective.

**How has ProComp affected the working conditions of your school?**

Probes, as needed for what has been affected and how:

Has it affected your workload (as an administrator)?

Has it affected teacher workload?

Teacher collaboration?

Other elements of your school's culture?

Examples?

**How could the ProComp system be improved to better support instructional improvement and student achievement?**

**Any additional comments related to ProComp? Any advice you would like to give for improving ProComp?**

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For recording purposes only - please note other observations or contextual features:

## Data Analysis

Interviews and focus group field notes were transcribed and coded for relevant content using NVivo 8 software. There was considerable overlap in the content applicable to the various interview questions. Content was assigned to the question where that information seemed most applicable. The initial codebook included role/relationship, role in development/implementation of ProComp, purpose/goals of ProComp, and purpose/goals accomplished. Additional codes were created during coding based on interview content. The coded data were analyzed qualitatively to identify salient themes related to evaluation questions. The initial code book is presented below.

### ProComp Interview and Focus Group Data Code Book

<b>Content: Educator Recruitment &amp; Retention</b> Content focuses on recruiting, hiring, and retaining high quality educators. Comments may talk about applicant quality, applicant quantity, interviewing, and retaining quality staff. There may also be references to the retirement programs. Principals and new teachers are the main sources for these data. Code to the 2 nodes below rather than to this node.	
	<b>Recruitment:</b> Content deals specifically with recruiting and hiring applicants. References may be to new teachers, experienced DPS teachers, second career teachers, quantity/quality of applicant pool. Retirement comments related to recruitment go here. Comments may also indicate no impact.
	<b>Retention:</b> Content deals with staying at school and/or staying in DPS. References may be to new teachers or experienced teachers. May be mention of RIB (Reduction in Building), change in DPS direct placement practices, and other factors not actually related to ProComp. Retirement comments related to retention go here. Comments may also indicate no impact.
<b>Content: Outcomes</b> Content focuses on professional and student outcomes related to ProComp or the traditional salary system. Comments may talk about impact or lack of impact on teaching and learning. Personal philosophies regarding motivation, professional practice, or student outcomes may occur. Code to the 3 nodes below rather than to this node.	
	<b>Motivation:</b> Content deals with teacher/educator motivation. May be motivation to work harder, earning advanced degrees, licenses, or certificates, focus on earning bonuses or salary increases by meeting the criteria for various ProComp incentives or changing schools or jobs. Comments may also indicate motivation from sources other than compensation system and may express personal philosophies regarding motivation.
	<b>Professional Practice:</b> Content deals with educator focus, implementation of particular instructional practices or knowledge learned in a PDU or other class. Some comments may express personal philosophies regarding professional practice. Comments may also indicate no impact.
	<b>Student Outcomes:</b> Content related to student outcomes/growth on SGOs, CSAP, benchmark assessments, DRA, or other district or teacher-made assessments. May make reference to school being Top Performing or High Growth. There may also be philosophical statements regarding student outcomes. Comments may also indicate no impact.
<b>Content: Implementation &amp; Improvement of the System</b> Content focuses on the various ProComp incentives, reasons or philosophical stances regarding joining or not joining ProComp, knowledge of ProComp, communication, experiences with the compensation system, topics related to implementation, and suggestions for improvements. This category will have both positive comments	

and complaints. Code to the 10 nodes below rather than to this node.	
	<p><b>SGOs:</b> Content deals with Student Growth Objectives (SGOs). Comments may talk about focus of instruction, assessments used, principal's role in setting SGOs, impact on student learning, issues related to SGOs, accountability, and cheating. Comments may also indicate SGOs are not meaningful.</p>
	<p><b>PDUs:</b> Content deals with Professional Development Units (PDUs). Both ProComp and non ProComp teachers can take PDUs. Comments may reference individual PDUs developed by a teacher or small group of teachers, school-based PDUs (may be whole school or groups within school), and district sponsored/required PDUs. You may see comments specifically about ELA and Core Matters courses. There is sometimes confusion between regular District professional development (PD) and PDUs. For the first round, all of this can go here.</p>
	<p><b>CSAP Score Incentives:</b> Content deals with bonuses based on CSAP Scores. Top Performing and High Growth bonuses are based on school scores and go to all ProComp educators in that school. Exceeds Expectations is an individual bonus for teachers whose students achieve greater than expected CSAP growth. The only teachers who can get this are those who teach in a CSAP content area (Reading, Writing, Math) where there are Colorado Growth Scores (Grades 4-10). There is sometimes confusion about these incentives.</p>
	<p><b>Other Incentives:</b> Content deals with the other incentives. These include Hard to Serve Schools, Hard to Staff Positions, Advanced Degrees and Licenses, Tuition/Loan Reimbursement, and CPEs (Comprehensive Professional Evaluations). Some comments in this category may talk about incentives in the traditional salary system (steps and lanes). You may see opinions regarding eligibility for some incentives.</p>
	<p><b>Reasons for joining/not joining:</b> Comments will refer to why someone chose or did not choose to join ProComp. Sometimes the comments will be specific to the individual; sometimes they will reference colleagues/school philosophies.</p>
	<p><b>Understanding of ProComp:</b> Content will be about what people know or do not know about ProComp, communication regarding ProComp (ProComp website, new teacher orientation), resources in ProComp office or Human Resources for answering questions and resolving problems, and resources (or lack of) resources within school for ProComp information. Comments may reflect misunderstandings and/or misinformation.</p>
	<p><b>Fairness of ProComp:</b> Comments will refer to ProComp system or aspects of the system being fair or unfair. This is one place where personal stories are likely to come up. Some of these will focus on ProComp rules and regulations related to changing positions, retiring, or filing paperwork or web forms by deadlines. May refer to changes in ProComp as it has been modified over time.</p>
	<p><b>Working Conditions:</b> This covers such things as workload, teacher collaboration, and school culture. There may be references to awareness/lack of awareness of who is/isn't in ProComp. Comments may also reflect no impact.</p>
	<p><b>Implementation:</b> This is a fairly broad category that will include people's experience with the compensation system, paycheck issues, getting problems resolved, loopholes in the system, fidelity of implementation, and time and effort required related to the various ProComp incentives.</p>
	<p><b>Improvements Recommended:</b> This is a broad category that encompasses the various suggestions offered for improving or</p>



	changing the ProComp system. Comments will range from advice regarding specific incentives to advice regarding the system as a whole. Some comments deal with process, while others focus on specific programmatic elements.
<b>Content School Factors:</b> Content focuses on school specific factors that may be related to ProComp or may go beyond ProComp. Comments may mention the School Improvement Plan (SIP), data teams, school initiatives or school leadership. Code to the 3 nodes below rather than to this node.	
	<b>Focus:</b> Content will mention some kind of school wide focus, or goals and priorities. The SIP may be mentioned. Some schools will also have a specific initiative, such as IB (International Baccalaureate). There may also be references to the work of data teams or the influence of the School Performance Framework (SPF) and being categorized as red, yellow, or green.
	<b>Leadership/Leveraging the System:</b> Content will make specific mention of the school leader(s) and their influence on the school's direction, reform plan, or school culture. There may be conversation around how the leader leverages the ProComp System to further his/her vision or plan.
	<b>School Circumstances:</b> Content will include factual statements about the school, student population, faculty, principal, or neighborhood. There may be references to such things as student mobility, ELL population increases, principal turnover, etc.
<b>Other Influences:</b> Content focuses on factors beyond the school and ProComp that respondents identify as having an impact. These may include district, state, and national influences.	
	<b>District:</b> Content may include references to district policies, curriculum, or district leadership. These are district influences other than ProComp. The Gates grant and other district initiatives or grants may be mentioned.
	<b>State:</b> Content may include comments regarding state policies and laws. Senate Bill 191 (S.B. 191), teacher tenure act, teacher effectiveness act, and state budget cuts are among the references mentioned. The CO application for Race to the Top (R2T2) may be mentioned.
	<b>Federal:</b> Content may include comments regarding federal laws and policies. No Child Left Behind (NCLB) or reforms advocated by USOE or President Obama may be mentioned. The R2T2 funding may be mentioned as a reform program.
<b>Valence:</b> This is a general categorical node rather than a node you will actually code to. This is intended to capture the direction of the comment. This does not need to be coded for every comment, just for those where the direction of the comment is an important aspect of the comment. This will often be in relation to opinions, philosophies, or experiences/stories. Code to the 3 nodes below when relevant.	
	<b>Positive:</b> General nature of the comment/opinion is positive.
	<b>Negative:</b> General nature of the comment/opinion is negative.
	<b>Neutral:</b> Comment is neutral in tone. It may be a factual statement that is not embellished with an opinion.
<b>Time:</b> This is a general categorical node rather than a node you will actually code to. This is intended to capture the time dimension of the comment. This does not need to be coded for every comment, just for those where the direction of the comment is important to the meaning. Code to the 3 nodes below when relevant.	
	<b>Past:</b> Comment/opinion references the past state of the individual or the content being discussed.

	Present: Comment/opinion references the current state of the individual or the content being discussed.
	Future: Comment /opinion references the future state of the individual or the content being discussed. This may be something that is certain or something that is conjecture.

## Limitations

Although sampling was used to create a representative sample of respondent groups, their viewpoints may not represent the full range of opinions of all members of these groups. Data presented are perceptions and opinions of the individuals interviewed. In seven schools, where there were not enough teachers from the identified sample, the school principal or office staff recruited volunteers to fill the open interview slots. Precise records of these substitutions were not available for each school; however, there were at least 14 volunteers included in the interview sample. It is not clear whether these volunteers were simply willing to talk with evaluators about ProComp or if they had specific points of view they wanted to present.

## Appendix E. Workflow Interviews – Methods

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**Sample Population:** Evaluators purposefully selected 16 key informants based on their first-hand knowledge and involvement in the development and implementation of ProComp. Interviews were conducted with representatives from payroll, student services, data processing, instructional services, assessment, planning, and human resource departments.

**Instruments - Interview Protocol:** Individual interviews were held during the summer and early fall of 2008. A semi-structured interview format was used. Interviewees were asked about their role in ProComp's development and implementation and their perceptions of ProComp's impact on the work of their department. With the permission of the interviewee, interviews were recorded to supplement notes were taken during the interviews.

**Data Analysis:** Interviews were transcribed in order to capture detailed descriptions provided by these interviewees. Interview field notes and transcripts were analyzed qualitatively to identify salient themes related to the four questions in the interview analysis protocol.

### Instruments – Interview Analysis Protocol

Interviewee(s) and Role(s):

Date interview conducted:

Topic/Focus of Interview:

What were the main implementation challenges that were identified in this interview?

How were the challenges or problems solved?

What evidence was there of system learning and capacity building in overcoming these challenges?

What else is important to capture about this interview?

Name(s) of persons completing form:

### Limitations

These interviews were originally done for the purpose of understanding what was involved in the workflow of each department related to the implementation and ongoing support of ProComp. This set of interviews was discontinued due to changes within the ProComp Office in the Human Resources Department. The new groups of stakeholders felt this information was not needed for the evaluation. Evaluators had planned to conduct additional interviews as well as follow-up interviews after the 2008 Agreement was approved and implemented.

## Appendix F. Student Growth Objectives – Methods

### Sample Population

Evaluators examined the SGOs written by school-based staff during the 2009-2010 school year.<sup>98</sup> There were a total of 9,263 SGOs written in this year. In order to assess the extent to which SGOS are of high quality, a stratified random sample of 5% of the SGOs from each school level was selected from the top and bottom 1/6 of the schools at each school level.<sup>99</sup> This sample included 468 SGOs written by 436 teachers in 41 schools, and was representative of the four areas for which SGOs are written (literacy, math, other, or focus other than content area) and of the proportion of ProComp teachers in the population.<sup>100</sup>

### Instruments – Rubric

The evaluators developed a rubric to assess rigor based on DPS guidelines and expectations for SGOs. Ratings were mainly based on the key areas of: student population targeted, expected gain, and baseline data. The complete rubric is presented below.

	Weak (1)	Approaching (2)	Meets Expectations (3)	Exceeds (4)
Rationale: Identifies basis for goal (Basically a given in data set. Not a key factor in determining rating.)	Does not identify rationale	Identification is not specific	Identifies rationale related to school improvement plan, district or department goals, or identified team goals.	
Population: Identifies the specific student group that is the focus of the goal	Student group is poorly or not identified or limitations on group inclusion are too limiting (e.g., high rate of work	Goal is for <75% of defined student group.	Goal is for 75% or more of the defined student group or an agreed upon exception based on the population.  Limiting group based	

<sup>98</sup> In order to link SGOs to other achievement data, only SGOs from educators whose schools are included in the School Performance Framework (SPF) were used in the data analysis, eliminating primarily SGOs from itinerant Student Services staff and staff from schools that serve highly specialized groups, such as students in a juvenile detention facility.

<sup>99</sup> The samples were pulled by using “select cases” process from SPSS. Schools were first selected by level. Within each level the number of schools representing 1/3 of the schools at that level was identified and rounded to achieve the top and bottom 1/6 of the total schools at that level. The percent of SPF points earned was the variable used to separate these schools into their own data sets. The number of SGOs sampled was determined by calculating 5% of the SGOs from that level. Half of these cases were selected from the top SPF and half from the bottom SPF schools from this level.

<sup>100</sup> The proportion of selected SGOs from the four areas was comparable to the proportion in the population as a whole: 27% literacy, 20% math, 8% other content area, and 45% with a focus other than a content area; 74% of the sampled SGOs were written by ProComp teachers, which mirrors their representation in the teacher population.

	Weak (1)	Approaching (2)	Meets Expectations (3)	Exceeds (4)
	completion).		on 85% attendance is acceptable.  Limiting group based on ELL or special education status is acceptable.	
Interval of Time: Specifies the length of time the objective covers	Time interval not specified or is less than 9 weeks.	Goal is for 9 weeks (1 quarter)	Goal is for more than 9 weeks (semester, trimester, or school year) or is appropriate for the amount of time at the school site	
Assessment: Assessments to be used to determine if goal is achieved	Assessment not specified, is vaguely described, or does not measure the goal.	Assessment lacks objectivity or determination that goal is achieved is not based on pre/post data.	Assessments are objective (standardized, reliable, valid) pre/post measures of the academic skills, behaviors, or attitudes that are the focus of the goal.  Teacher-developed rubrics are acceptable (even without specification of what they include).	
Expected Gain/Growth Population: Specifies the number of proportion of students expected to demonstrate growth	Number or proportion of students expected to meet target not specified.	Goal addresses growth for <75% of the defined student group.	Goal addresses growth of at least 75-85% of the defined student group or an agreed upon exception based on the population.	Goal addresses growth for >=85% of the defined student group.
Expected Gain/Growth Baseline: specifies starting point for assessing growth	No baseline data or baseline data are not specific enough to determine starting point.	Some description of baseline or some data, but not sufficient to meet expectations.  Teacher suggests what assessment will be used, but does not provide adequate data to determine starting point for most students.	Baseline data are provided that specify the starting point for assessing growth or there is a specific description of how baseline will be determined.  Teacher provides specific information about the starting point of students.  Acceptable if data is not available yet.	

	Weak (1)	Approaching (2)	Meets Expectations (3)	Exceeds (4)
		Teacher provides different methods of assessing whether their goal is met (e.g., standardized test or teacher rubric).		
Expected Gain/Growth Target: Specifies the amount of gain or growth expected	No target specified or is vague.	Specified target is lower than standards of practice.	Specified a growth or performance target that meets standards of practice or past performance of students.	Specified a growth or performance target that exceeds standards of practice or past performance of students.  Goal may differentiate growth depending on whether students started.  Goal may be very ambitious in nature (e.g., all students will reach proficiency, students will gain 1.5 years of growth over the year, students will grow in multiple areas)
Learning Content: academic skills, behaviors or attitudes addressed by the goal	Goal addresses very narrow or trivial content.	Learning content targets do not seem to be connected with DPS/department initiatives or national standards or are vague.  Specified learning content is very narrow, or addresses only one standard out of many.	Learning content targets specific academic skills, behaviors, or attitudes that are aligned with DPS/department initiatives or national standards of practice.	

	Weak (1)	Approaching (2)	Meets Expectations (3)	Exceeds (4)
		Specified target represents small gain relative to baseline, even if the overall target is high (e.g., proficiency).		

## Data Analysis

Each SGO in the sample was evaluated using the rubric for quality and rigor. Although all pieces of the SGO were considered, ratings were based mainly on the three key indicators of: population, expected gain, and baseline. Ratings could be downgraded based on learning content, assessment, and interval of time; otherwise these components were not included in ratings since the majority met expectations and the evaluators wanted to limit the weight that these components had on the overall rating because they were not considered central to the assessment of SGO quality. “Rationale” was also not included in final ratings, because all SGOs specified some sort of rationale and evaluators did not have a solid basis for determining its quality.

Ratings were holistic in that each element was considered separately, but the overall rating was based on how the pieces fit together as a whole. Each SGO was read in its entirety and given an overall rating. Evaluators then rated each category within the SGO based on the rubric (e.g., population, expected gain, baseline, learning content, assessment, time interval) and created an unweighted average representing the rating based on the components separately. The holistic and mean ratings were then compared to ensure they were closely aligned with each other. For cases where the ratings using the two methods were substantively different, the SGO was examined to determine the nature of the discrepancy and a final rating was determined. The majority of outliers were the result of the fact that unweighted averages did not always reflect the increased weight that evaluators gave to various components depending on the teachers’ stated goals, or that the average masked a significant problem in one area of the rubric. Teachers were given the higher rating if the parts of the SGO which scored lower were also considered less important to the overall goal the teacher was trying to achieve, and received lower rating if there were very substantive problems with parts of an SGO. Considerations around expected gains and the targeted population received higher consideration in the decision about a final rating.

Raters had to make certain assumptions based on what teachers wrote, since many SGOs had pieces that were somewhat vague or unclear. These assumptions included:

- Phrases like “my students” were interpreted to mean 100% of students.
- Teacher suggestions for assessments were generally taken to be adequate unless they were clearly lacking in objectivity, such as using grades as a measure of students improvement (because the teacher is wholly responsible for these), or using only self-report surveys to measure whether coaching was effective.

- When teachers indicated they were using a rubric, raters had to assume the content of the rubric was appropriate.
- When teachers indicated they were using a rubric and suggested that students would move from one level to another, raters assumed this was an appropriate amount of growth.
- Gains that were phrased as ‘reaching proficiency’ or ‘gaining a level of proficiency’ or ‘gaining a year’s growth’ were generally accepted as reasonable growth targets.
- Gains that suggested very small amounts of growth and were not related to an actual proficiency target (e.g., 10% growth) were generally given a lower rating.

If a SGO required a lot of assumptions by the evaluator about what the teacher meant, it was given a lower score (e.g., meets instead of exceeds). In cases where a teacher put information into the wrong column, raters attempted to give teachers credit for this under the appropriate category.

## Specific Implementation issues around SGOs

Evaluators noted a number of issues with SGOs that merit consideration as possible areas of improvement:

- **Limiting populations** – In many SGOs, teachers limited their populations to students who had 85% or more attendance, which is considered appropriate in the examples provided by DPS. However, some teachers limited their focus population in other ways.
  - **Extreme limiting** – A number of teachers chose to limit their population based on one or more of the following characteristics: English-speaking students, continuously enrolled, non-IEP. A few teachers also chose to limit based on the whether students had turned in a certain percentage of class work/assignments. To the extent that teachers include numerous limitations on the students who are the focus of their growth objectives, there is the risk they will leave out large portions of their students.
  - **Unclear populations** – Some teachers framed their population as a percentage of students who had fallen into a certain group (e.g., not proficient, scored a 3 on the rubric), but did not provide any information about how many students this actually was. This made it difficult for evaluators to judge the total number/percentage of students being targeted out of the potential population, which could obscure an overly narrow focus on a small group of students. It may be useful for teachers to make explicit what percentage of their total class or student population they are targeting.
  - **Focus on underperformance** – There were few, if any, of the sampled SGOs which reflected a distinct focus on higher performing students, while many SGOs focused on lower performing students. Exceptions included SGOs that proposed moving all student achievement up in some way (though many of these SGOS also included maintenance of proficiency status rather than growth for all students). Although there is a clear need to improve the skills of struggling students, it is also important that classroom teachers explicitly address the needs of higher-performing students.



- **SGOs as compliance, rather than reflection** – Although SGOs represent an opportunity for teachers to reflect on the data for their students and set related goals, for many SGOs it was not clear that teachers had engaged in such a process. Below are several issues that were noted in SGOs which suggested that some teachers were not engaging in a thoughtful process around the data.
  - **Lack of clear information** – Many SGOs lacked clear information or had misinformation in one or more of the categories on the SGO online data form, which made them difficult to interpret. This lack of clarity is problematic because it requires considerable guesswork for a reader to interpret what the goals were and determine whether or not they were met. Clarity and accuracy in SGOs should be a key concern since they are linked to compensation.
  - **Arbitrary use of percentages** – There were a number of examples among the SGOs sampled which suggested that some teachers set goals in a rather arbitrary way. For example, a teacher whose SGO included 4 students suggested that 85% would become proficient (which would be 3.4 students). It was clear that in some cases teachers had simply picked a percentage, rather than thoughtfully considering what this would mean in terms of the number of students.
  - **Wrong information, wrong category** – In some SGOs the information for a given section of the online data form was reflected under the wrong heading (e.g., baseline data were under growth targets and vice versa). These issues suggest the need for increased care and accuracy on the part of teachers completing the SGO online template, as well as on the part of the principal reviewers.
- **Measuring success** – Many teachers opted to use self-made assessments or rubrics to measure success. Although it can be important for students to be able to demonstrate learning in different ways, it is interesting to note that SGOs were more likely to be met when they utilized measures other than standardized or benchmark tests. The SGOs often failed to specify what the rubric or assessment would measure, where it came from, or what the scale was. Although it may be that the principal reviewed the tools the teacher proposed, it was difficult to evaluate the rigor of the proposed assessment based on the limited information provided.
  - **Percentages of percentages** – In a number of SGOs, teachers proposed they would focus on a certain percentage of their population, of whom a certain percentage would experience a certain percentage of growth/proficiency. This made it confusing as to how many students were actually intended to experience growth or reach proficiency, because through each successive step the number of students became reduced. It may be preferable to state the number of students as a percentage of the target population.
  - **Narrow content or growth targets** – In a number of cases, content of the SGOs (e.g., “learn the parts of a sewing machine”, “identify three types of texture”) or the growth targets (e.g., “be able to do three more push-ups”, “know who Andy Warhol is”) were overly narrow. This was particularly the case for non-core subjects, but certainly not confined only to these areas. Interestingly, the standards teachers listed were broad and amenable to a more holistic body of evidence than that proposed. Although there are few standardized or

benchmark tests readily available in non-core areas, measures and goals should be reflective of well-rounded student learning implied by the standards, rather than focused on narrow content or growth simply because it is easy to quantify. This also applies to the core content areas, where teachers sometimes set goals around students improving in only one small sub-area or on one scale of an assessment.

- **Determining appropriate growth** – It was difficult to determine the quality of SGOs in relation to the growth proposed by teachers for several reasons.
  - **Baseline data** – Many SGOs lacked baseline data. This often made it difficult to determine the appropriateness of growth goals. In some cases where baseline data were included, goals appeared challenging at first read (e.g., 80% of class will be proficient), but upon further inspection the goal actually demonstrated little difference from baseline (e.g., 75% were already proficient on pretest).
  - **Mixing metrics** – When baseline data related to the students' proficiency levels were included, anticipated growth was often stated in terms of a percentage increase in scores. Given the variety of different assessments, this may or may not be appropriate depending on how many points students would need to gain in order to increase their proficiency in line with expected growth. Where standards are available, teachers should reference these instead of percentages (e.g., gain 1 years' growth vs. grow scores by 10%).
  - **Measureable growth** – Some teachers framed their goal as having students demonstrate "measureable growth". This vague goal does not take into account the process of maturation whereby students will naturally demonstrate some degree of growth over the course of a year. The SGO should instead reflect the teacher's goals as a function of what is expected or appropriate growth, particularly as it is important to have a benchmark that can be used to determine if s/he met the goal.
  - **Lack of differentiation** – Many teachers did not suggest any kind of differentiated growth expectations for students. Depending on the strategies a teacher was proposing to use with his/her students, or where a student started on the pretest, it is quite likely that some students may experience more growth than others.

## Appendix G. Teacher Trainee Survey

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In an effort to evaluate the effectiveness of ProComp as a teacher recruitment and retention tool, a survey was developed through a joint arrangement of the University of Colorado Denver ProComp Evaluation Team and various teacher preparation institutions within Colorado.

Lists of students who will complete licensure this year were provided by the University of Colorado Boulder (CUB), Metropolitan State College of Denver (Metro), University of Colorado Denver (UCD), and the University of Northern Colorado (UNC). Students were identified by their scheduled completion of licensure requirements in either fall 2010 or spring 2011 semesters.

The survey was distributed via email on December 8th, 2010 to students scheduled to complete their licensure programs at their teacher preparation institution in either the fall 2010 or spring 2011 semesters. Potential respondents were asked to participate in the survey prior to December 23rd, 2010. Of the 1,604 emails sent to potential respondents, 423 respondents started the survey and 329 respondents completed the survey. The response rate for the raw data set was 21%.

After the data compilation, cleaning, and coding process, a total of 388 respondents were selected for evaluation (327 who had completed the survey and 61 who had not completed the survey but had answered some of the questions). The final dataset showed 84% of respondents with completed surveys and 16% of respondents with incomplete surveys. The response rate for this group was 20% (a 1% difference from the response rate calculated from the raw dataset). The frequency breakdown for the aggregated dataset and number of respondents based on survey source are represented in the exhibits below.

### Appendix Exhibit 4. Response Rate

	Emails Sent	Completed Surveys	Partial Surveys	Surveys for Analysis	Response Rate
Totals	1,604	327	61	388	20%

### Appendix Exhibit 5. Response Rates by Participating Teacher Preparation Institution

	Frequency	Percent
CUB	56	14%
Metro	133	34%
UCD	78	20%
UNC	121	31%
Total	388	100%

## Limitations

The response rate was rather low across the sample. This is in part due to the administration of the survey near the end of the semester. The data was not weighted to account for non-response bias.

**ProComp New Recruit Survey Instrument:**

Please take a few minutes to complete a voluntary and confidential questionnaire regarding how teachers decide where to work.

This survey is the product of a joint arrangement of the University of Colorado Denver (UCD) ProComp evaluation team and your teacher preparation institution. ProComp is the compensation system in Denver Public Schools. Your feedback will help guide improvement to ProComp and provide feedback to your teacher preparation program.

All responses will be strictly confidential. No information that could identify individuals will be shared by the evaluation team. Your participation is voluntary.

The survey is being collected by researchers at UCD; if you have any questions or comments about the survey, please feel free to email either Robert Reichardt ([Robert.Reichardt@ucdenver.edu](mailto:Robert.Reichardt@ucdenver.edu)) or Diane Proctor ([Diane.Proctor@ucdenver.edu](mailto:Diane.Proctor@ucdenver.edu)). Thank you for your participation.

**1. Prior to June 2010, what was your employment experience? (Please check all that apply to you)**

Answer	N	%
Classroom Teacher and/or Instructional Leader	24	4.5%
Teacher Assistant or Substitute Teacher	83	15.4%
Outside of Education	187	34.8%
Full Time Student	238	44.2%
No Employment Experience	6	1.1%
Total	538	100%

**2. When did you (or do you expect) to complete the requirements to receive your initial Colorado License?**

*[Drop Down Menu with Month & Year Options]*

**3. What is the name of the district where you most recently student taught or worked as a teacher candidate intern?**

*[Open Ended Text Response]*

**4. What age groups do you expect to be certified to teach:**

Answer	N	%
Early Education (ages birth-9)	16	4.0%
Elementary Education (grades K-6)	215	54.3%
Secondary Education (grades 6-12)	165	41.7%
Total	396	100%

**5. How long do you plan to work/teach in schools?**

Answer	N	%
1-2 Years	3	0.9%
3-5 Years	2	0.6%
5-10 Years	8	2.3%
10 Years or More	64	18.3%
For the Rest of My Working Life	223	63.9%
Don't Know	49	14.0%

Answer	N	%
Total	349	100%

**6. Do you have any specific school or districts in mind in which you might want to work?**

Answer	N	%
Yes	240	69.0%
No	108	31.0%
Total	348	100%

**7. How much do you think you know about the pay, benefits and working conditions of the districts you may be considering?**

Answer	N	%
Quite a Lot	50	14.6%
Some	149	43.4%
A Little	85	24.8%
Very Little	59	17.2%
Total	343	100%

**8. How much do you know about the ProComp pay system in Denver Public Schools?**

Answer	N	%
Quite a Lot	8	2.5%
Some	41	12.9%
A Little	26	8.2%
Very Little	242	76.3%
Total	317	100%

**9. Based on what you know about ProComp, what is your opinion of this pay system?**

Answer	N	%
Very Unfavorable	0	0.0%
Unfavorable	18	5.2%

Answer	N	%
Favorable	58	16.7%
Very Favorable	4	1.1%
No Knowledge	268	77.0%
Total	348	100%

**10. What is your main source of information about districts where you have or will apply to work:**

Answer	N	%
Internet	114	32.9%
Friends and Family	33	9.5%
Your Experience Working in or Attending Schools in the District	134	38.7%
District Employees (e.g. Teachers or Administrators)	55	15.9%
Other	10	2.9%
Total	346	100%

**11. After completing your licensure, how many districts will you (or did you) apply for employment?**

Answer	N	%
1	35	10.1%
2-4	171	49.3%
5-7	98	28.2%
8-10	24	6.9%
11 or More	19	5.5%
Total	347	100%

**12. How likely are you to choose to work in a school with the following characteristics?**

	Very		Somewhat		A Little		Not at All		Totals	
Answer	N	%	N	%	N	%	N	%	N	%
a. In an urban area	122	38.2%	121	37.9%	59	18.5%	17	5.3%	319	100%
b. In a small town or rural area	53	16.8%	98	31.0%	99	31.3%	66	20.9%	316	100%



Answer	Very		Somewhat		A Little		Not at All		Totals	
	N	%	N	%	N	%	N	%	N	%
c. In a suburban area	154	48.0%	109	34.0%	48	15.0%	10	3.1%	321	100%
d. Near where you grew up	87	30.1%	85	29.4%	40	13.8%	77	26.6%	289	100%
e. In a school in which you have previously taught	127	44.4%	102	35.7%	34	11.9%	23	8.0%	286	100%
f. In a school located in a high-poverty community	84	26.0%	119	36.8%	94	29.1%	26	8.0%	323	100%
g. In a school with racially/ethnically/culturally diverse student population	155	48.0%	130	40.2%	31	9.6%	7	2.2%	323	100%
h. In a school with racially/ethnically/culturally diverse faculty	141	43.8%	139	43.2%	36	11.2%	6	1.9%	322	100%
i. In a charter school	51	15.9%	120	37.5%	100	31.3%	49	15.3%	320	100%

**13. How likely are you to choose to work in a district or school with the following characteristics?**

Answer	Very		Somewhat		A Little		Not at All		Totals	
	N	%	N	%	N	%	N	%	N	%
a. In a low performing school	78	24.1%	161	49.8%	74	22.9%	10	3.1%	323	100%
b. In a high performing school	95	29.5%	181	56.2%	41	12.7%	5	1.6%	322	100%
c. In a public school	225	69.9%	89	27.6%	8	2.5%	0	0.0%	322	100%
d. In a private school	42	13.1%	96	29.9%	118	36.8%	65	20.2%	321	100%

**14. How likely are you to choose to work in a school with the following characteristics?**

Answer	Very		Somewhat		A Little		Not at All		Totals	
	N	%	N	%	N	%	N	%	N	%
a. In a district that offers high initial salary	122	38.0%	156	48.6%	41	12.8%	2	0.6%	321	100%
b. In a district with high potential for salary growth over time	175	54.5%	131	40.8%	14	4.4%	1	0.3%	321	100%
c. In a district with a good pension plan	157	49.1%	135	42.2%	27	8.4%	1	0.3%	320	100%
d. In a district with stable and predictable salary over time	159	49.7%	145	45.3%	16	5.0%	0	0.0%	320	100%

	Very		Somewhat		A Little		Not at All		Totals	
Answer	N	%	N	%	N	%	N	%	N	%
e. In a district with salaries that reward experience	128	39.8%	143	44.4%	46	14.3%	5	1.6%	322	100%
f. In a district with salaries that reward increased education levels	194	60.2%	105	32.6%	22	6.8%	1	0.3%	322	100%
g. In a district with salaries that reward additional effort	176	54.5%	133	41.2%	13	4.0%	1	0.3%	323	100%
h. In a district with salaries that reward high performance	142	44.4%	133	41.6%	39	12.2%	6	1.9%	320	100%

**15. How likely are you to choose to work in a district or school with the following characteristics?**

	Very		Somewhat		A Little		Not at All		Totals	
Answer	N	%	N	%	N	%	N	%	N	%
a. In a school known for a quality new teacher induction system (for example senior teacher mentors)	225	69.9%	84	26.1%	13	4.0%	0	0.0%	322	100%
b. In a school with a principal known for understanding teaching and learning	257	79.3%	61	18.8%	6	1.9%	0	0.0%	324	100%
c. In a school with a principal known for establishing supportive relations with teachers	263	81.2%	57	17.6%	4	1.2%	0	0.0%	324	100%

**16. What is your race/ethnicity? (Optional: Please select no more than two)**

Answer	N	%
American Indian or Alaska Native	8	2.3%
Asian	10	2.9%
Black or African American	4	1.2%
Hispanic	19	5.6%
Native Hawaiian or other Pacific Islander	0	0.0%

Answer	N	%
White	296	86.5%
Other	5	1.5%
Total	342	100%

**17. What is your gender? (Optional)**

Answer	N	%
Male	56	17.2%
Female	270	82.8%
Total	326	100%

**18. What is your age group? (Optional)**

Answer	N	%
21-25	166	51.1%
26-30	66	20.3%
31-35	40	12.3%
36-40	17	5.2%
41-50	28	8.6%
Over 50	8	2.5%
Total	325	100%

**19. What is your highest level of education/degree? (Select one)**

Answer	N	%
Bachelor's	287	88.3%
Master's	29	8.9%
Education Specialist (at least 1 year beyond a Master's)	6	1.8%
Doctorate	3	0.9%
Total	325	100%

**20. Are there other factors important to where you would like to work as an educator that we should know about?**

*[Open Ended Text Response]*

## Appendix H. Recruitment and Retention File Description

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### Data Sources

Two data files were used for the descriptive analysis of DPS teachers and in the recruitment and retention section: a) the State Human Resources (HR) File, and b) the DPS Employee-Payment file. Each analysis file contained derived single records for employees that had demographic information (age, race, and experience), information on job type, and where they taught. Each data set allowed for longitudinal analysis of teachers.

The State HR file was created using annual HR submissions to the Colorado Department of Education. This data set described people from 2004-05 through 2009-010. This data set is limited to classroom teachers and does not have information on whether a teacher was a ProComp participant. This data set is well described and has been used for several different analyses of Colorado's teacher workforce and an examination of Douglas County's alternative compensation system (Reichardt & Van Buhler, 2002; Reichardt & Akiba, 2003).

The State HR data are collected each December. Individual records for all teachers in the state are derived based on the subject they spend most of their time teaching. The descriptive information on the teachers used in this analysis included experience, work assignment, education level, and where they received their highest degree. Teacher records are linked through unique identifiers allowing one to identify attrition and to track teachers as they move between schools, assignments and districts.<sup>101</sup>

The DPS Employee-Payment file does include information on whether a person was a ProComp participant and what incentives a person earned. This DPS specific ProComp file was derived from DPS data systems. The final analysis file containing employee information and earned ProComp incentives was created by merging two separate datasets (Employee and Payment files) that were derived independently. This file has information from 2005-06 through 2009-10.

### Merging with External Data

Both the DPS Employee-Payment file and State HR files were merged with additional information about schools where people worked. These school data were pulled from the Colorado Department of Education (CDE). School data included student demographics, information on enrollment, grade levels served, free and reduced lunch status, student race and ethnicity, and student performance as measured with the state derived mathematics CSAP growth data. Mathematics data were used because the larger teacher effect is usually measured on math achievement in value added studies when compared to reading. The State HR data were also merged with county unemployment data. Each of these merges led to slight decreases in the number of observations because not every case had data in both files.

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<sup>101</sup> For more information on the Colorado Human Resources data system go to:  
[https://cdeapps.cde.state.co.us/doc\\_toc.htm#human](https://cdeapps.cde.state.co.us/doc_toc.htm#human).

In the DPS Employee-Payment files the school data link was made using a location code which evaluators had to match with CDE assigned school numbers for the merge. This location code did not account for buildings with multiple schools. State data used in the merge categorized schools by grade levels served (elementary, middle and high). In the case of multiple schools, evaluators choose to keep the higher graded school (e.g. middle over elementary). Five new schools were also lost because it was not possible to crosswalk the DPS location code with a CDE school number. These created only minor changes in the overall sample.

Several efforts were made to exclude involuntary attrition as part of the retention analysis using the DPS Employee-Payment file. First, the ProComp Evaluation Team at the University of Colorado Boulder created a file of DCTA members who were involuntarily separated through reductions in force. These teachers were dropped from the analysis. Second, through a review of historical records, schools that closed during this period were identified and teachers from these schools were dropped from the analysis. Third, schools with over 65% attrition were assumed to have closed or restructured and teachers from those schools were also dropped from the analysis.

## DPS Employee-Payment File Organization

The Employee-File data set provided demographic information, education, ProComp participation, and experience information that was linked to information on where people worked and what they did.

Each record in this file, referred to as the Employee file, and represents a DPS teacher or employee in a given school year. A key challenge in developing this file was working with multiple contracts per person per year with incomplete information about some of the contracts. To reduce the complexity of these multiple contracts, the final file was limited to full-time employees.

The Employee-Payment File provides the teacher's primary location (based on the courses taught by the educator and location codes), primary function (from job codes), demographic information (from Employee file), ProComp participation (from Participant file), education, licensing information, and compensation. Identifying whether employees voluntarily opted into ProComp is complicated by a number of factors. First, if an employee has left the district the opt-in-type field is overwritten when they exit ProComp. For those employees, an opt-in-type is assigned based on the employee hire date and whether the participation was compulsory at that time. A relatively small number of employees (just over 100) had a hire date before ProComp participation was compulsory, had a reported break-in-service with the district, and were rehired after the January 1, 2006 cutoff for compulsory ProComp participation. These employees were considered voluntary participants for all school years before the reported rehire date and compulsory for those after.

The second file, referred to as the Payment file, describes the ProComp payments earned by an employee in a given school year. This file was developed because there was not an existing file that linked individuals with all of the ProComp payments they earned or received during a school year. The records are uniquely identified. Again, the coding reflects the school year in which the payment is earned rather than received. The file consists largely of dichotomous variables (1, 0) indicating whether an incentive was earned during the current school year. Although employees may be eligible for

different percentages of some of the ProComp payments, evaluators have kept the file simple by using only dichotomous measures of “earned” payments (i.e. > 0 eligibility). These eligibility rates primarily apply to school based, and Hard-to-Staff Assignment, bonuses where a teacher may work at multiple schools with different eligibility for incentives. In general, the majority of earned incentives are for employees with high rates of eligibility.

The merge between the payment and employee file created 557 records that do not have employee data, but did receive ProComp related payments. These are believed to be people who were not full-time, and thus not captured in the employee file. They are relatively evenly distributed across the five years, with the lowest number (97) in 2007-08 and the highest number (147) in 2008-09.

## Data Validation Efforts, Employee File

Data validation efforts revealed strengths and weaknesses of this file. In general, challenges with the Employee file centered on the fact that the file is limited to only full time employees and incomplete and confusing information on contract periods. As part of validation, the Employee file data was compared with information from the DPS ProComp Office and with the state HR data (see Appendix Exhibit 6). Generally, differences were less than 7% and averaged 3% to 4%. The exception is with the year of ProComp eligibility in school year 2005-06, where our estimate of ProComp participants is 65% larger than what was provided by the DPS ProComp Office. We believe this difference is due to different dates used to calculate contract years.

**Appendix Exhibit 6. Employee Data Compared With Data From The DPS ProComp Office**

School Year	ProComp Evaluation Team Employee Payment file		DPS ProComp Office Data		Percent Different Eligible	Percent Different Participant
	Eligible	Participants	Eligible	Participants		
2005-06	4,244	1,188	4,307	411	-1%	65%
2006-07	4,240	1,806	4,439	1,755	-5%	3%
2007-08	4,697	2,367	4,521	2,330	4%	2%
2008-09	4,794	3,150	4,634	3,062	3%	3%
2009-10	5,045	3,634	4,781	3,424	5%	6%

Challenges with the Payment portion of the file revolved around incomplete or inconsistent information on school years in the payment file (see

Appendix Exhibit 7). Comparison with a DPS developed payment file for school year 2008-09 showed almost 97% or higher agreement on the number of payments earned. The only exception is with PDUs and this was driven by differences in how the district and the evaluators assigned the year the incentive was earned.



**Appendix Exhibit 7. The Employee Data Compared to the State HR Data**

School Year	DPS Analysis File	State HR data	Percentage difference
2004-05		3,599	
2005-06	3,558	3,565	0%
2006-07	3,503	3,661	5%
2007-08	3,954	3,683	-7%
2008-09	3,989	3,887	-3%
2009-10	4,226	4,053	-4%

**Data Validation Efforts, Payment File**

DPS assembled a spreadsheet of earned ProComp incentives for the 2008-09 school year. This spreadsheet was used to validate this ProComp Payment file. While this does not guarantee accuracy in other years, the procedure to compile the data from the respective ODS files was the same across school years. Generally, the payment file was accurate with regards to earned incentives in the 2008 school year. Appendix Exhibit 8 presents a measure of accuracy for each main ProComp incentive. The “Accuracy %” is the number of teachers correctly coded as having earned an incentive based on the DPS data divided by the total number of teachers in the dataset. As can be seen, eight of the eleven were accurate more than 99% of the time. The remaining three incentives were less accurate based on the DPS data, especially the Professional Development Units (PDUs). After looking at the original ODS data files, the discrepancies do not appear to be a problem with this dataset. Each is discussed in greater detail, below.

**Appendix Exhibit 8. Accuracy of Earned Incentive Coding (based on DPS 2008 Earned Incentive file)**

Element	Accuracy Percent
PDU	88%
Knowledge and Skills: Advanced Degree/ License	97%
Knowledge and Skills Tuition and Loan Reimbursement	96%
Hard-to-Staff School	99%
Hard-to-Serve Assignment	99%
Complete 2 SGOs	99%
Complete 1 SGO	99%
Top Performing School	99%
High Growth School	99%
Satisfactory Evaluation	99%
CSAP Exceeds Expectations	99%

**Knowledge and skills Advanced Degree/ License:** accuracy was affected by the fact that the DPS file used for validation only included KSRP ADP (advanced degree) and not licensing or certificates (KSRP LIC & KSRP SL).

**Knowledge and Skills Tuition & Loan Reimbursement:** Reimbursement accuracy was affected by 126 records that are recorded as having earned a reimbursement by DPS on the 2008 validation spreadsheet, which did not have reimbursement records in the Payment file for the 2008 school year based on the date awarded field.

**PDU:** PDU accuracy relative to 2008 DPS validation file was quite poor. The discrepancies appear to result from inconsistencies in school year coding in the original payment file (e.g. listed school years that do not match with dates of PDU completion or approval).

## Appendix I. Recruitment and Retention Model Descriptives

This appendix contains descriptive information on the variables used in the linear probability models in Chapter 9 on recruitment and retention. It also includes a complete model of changes in the recruitment of teachers with master's degrees.

Appendix Exhibit 9 contains descriptive information on measures for the new-to-district models. The teacher level data is from the State HR files. Information on schools and the students who attend schools (e.g. race/ethnicity and growth scores) are from public files available on the Colorado Department of Education web page. The universe is all teachers who are new to districts between 2006-07 and 2009-10.

### Appendix Exhibit 9. Descriptive Statistics for Measures used in the New to District Regressions

	N	Minimum	Maximum	Mean	Std. Dev.
Three or more years of experience-inverse of novice	33355	.00	1.00	.4194	.49346
Masters Degree or Higher	33331	.00	1.00	.3469	.47600
School Year 2006-07 indicator	33355	.00	1.00	.2039	.40292
School Year 2007-08 indicator	33355	.00	1.00	.2079	.40584
School Year 2008-09 indicator	33355	.00	1.00	.2127	.40919
School Year 2009-10 indicator	33355	.00	1.00	.1682	.37407
Works in DPS	33355	.00	1.00	.0982	.29761
Works in DPS in SY 0607 interaction variable	33355	.00	1.00	.0181	.13345
Works in DPS in SY 0708 interaction variable	33355	.00	1.00	.0200	.13999
Works in DPS in SY 0809 interaction variable	33355	.00	1.00	.0228	.14912
Works in DPS in SY 0910 interaction variable	33355	.00	1.00	.0186	.13528
Teaches MS, K-8 or High School	33340	.00	1.00	.5560	.49687
Male indicator	33355	.00	1.00	.2517	.43399
Unemployment Rate Percent	32728	2.1	14.1	5.118	1.4818
Math Median Growth Percentile	31514	5	95	50.22	11.617
Total Enroll	33090	5	5006	693.66	558.484
Percent Free and Reduced Lunch	33090	.00	1.00	.3760	.27500
Percent non-white	33090	.00	1.00	.4122	.27501
Valid N (listwise)	30951				

Appendix Exhibit 10 contains information used in the HTSS new-to-school analysis. The results of this analysis were very similar to the new-to-district models for HTSS schools.

**Appendix Exhibit 10. Descriptive Statistics for Measures used in the HTSS New-to-School Models<sup>a</sup>**

	N	Min.	Max.	Mean	Std. Dev.
Three or more years of experience-inverse of novice	46015	.00	1.00	.5245	.49941
School Year 2006-07 indicator	46015	.00	1.00	.2021	.40156
School Year 2007-08 indicator	46015	.00	1.00	.2111	.40808
School Year 2008-09 indicator	46015	.00	1.00	.2121	.40879
School Year 2009-10 indicator	46015	.00	1.00	.1756	.38052
Works in DPS	46015	.00	1.00	.1077	.30995
HTSS in year of the ob	46015	.00	1.00	.0309	.17317
Hard to staff school 2006-07	46015	.00	1.00	.0033	.05775
Hard to staff school 2007-08	46015	.00	1.00	.0053	.07233
Hard to staff school 2008-09	46015	.00	1.00	.0110	.10449
Hard to staff school 2009-10	46015	.00	1.00	.0082	.09014
Unemployment Rate	45362	2.1	14.1	5.136	1.4902
Math Median Growth Percentile	43507	5	95	50.18	11.595
Enrollment	45469	5.00	5006.00	682.8541	536.13666
Percent free and reduced lunch	45469	.00	1.00	.3792	.27472
Percent minority	45469	.00	1.00	.4100	.27480
Teaches Secondary	46000	.00	1.00	.5442	.49805
Male indicator	46015	.00	1.00	.2489	.43235
Valid N (listwise)	42935				

Appendix Exhibit 11 contains information used in the HTSA (Secondary Math) new-to-district models.

**Appendix Exhibit 11. Descriptive Statistics for Measures Used in the HTSA (Secondary Math) New-to-District Models**

	N	Min.	Max.	Mean	Std. Dev.
Three or more years of experience-inverse of novice	3310	.00	1.00	.4323	.49547
Masters Degree or Higher	3306	.00	1.00	.3645	.48136
School Year 2006-07 indicator	3310	.00	1.00	.2000	.40006
School Year 2007-08 indicator	3310	.00	1.00	.2057	.40430
School Year 2008-09 indicator	3310	.00	1.00	.2048	.40364
School Year 2009-10 indicator	3310	.00	1.00	.1834	.38704
Works in DPS	3310	.00	1.00	.1121	.31552
Works in DPS in SY 0607 interaction variable	3310	.00	1.00	.0281	.16527
Works in DPS in SY 0708 interaction variable	3310	.00	1.00	.0199	.13981
Works in DPS in SY 0809 interaction variable	3310	.00	1.00	.0221	.14688
Works in DPS in SY 0910 interaction variable	3310	.00	1.00	.0221	.14688
Teaches MS, K-8 or High School	3310	1.00	1.00	1.0000	.00000
Male indicator	3310	.00	1.00	.4054	.49105
Unemployment Rate Percent	3262	2.1	14.1	5.209	1.5300
Math Median Growth Percentile	3154	9	95	49.56	10.731
Total Enroll	3296	12.00	5006.00	886.2621	664.04459
Percent Free and Reduced Lunch	3296	.00	.99	.3675	.26271
Percent Minority (non-white)	3296	.00	1.00	.4150	.27458
Valid N (listwise)	3109				

## Retention Data

Appendix Exhibit 12 contains descriptive information on the variables used in the he district retention models. This data is from the state HR files merged with descriptive data from the Colorado Department of Education. The universe is all teachers working in Colorado between 2005-06 and 2008-09.

### Appendix Exhibit 12. Descriptive Data for District Retention Probability Models

	N	Minimum	Maximum	Mean	Std. Dev.
Left district	217856	.00	1.00	.1347	.34146
First yr of teaching--0 total experience	217856	.00	1.00	.0863	.28078
Second yr of teaching-1 yr total experience	217856	.00	1.00	.0613	.23993
Third yr of teaching--2 yrs of total experience	217856	.00	1.00	.0544	.22679
Fourth to fifth year of experience	217856	.00	1.00	.1129	.31644
Age squared	217791	441.00	6084.00	1824.6699	929.95943
Can retire in five years or less	217597	.00	1.00	.1656	.37171
Years to retire	217597	.00	30.00	15.6131	8.81720
Can retire right now	217597	.00	1.00	.0556	.22915
Non-white teacher indicator	217856	.00	1.00	.1029	.30385
Male indicator	217856	.00	1.00	.2624	.43992
Age the year school year began	217791	21	78	41.29	10.958
Teaches MS, K-8 or High School	217827	.00	1.00	.5389	.49848
School Year 2005-06 indicator	217856	.00	1.00	.1952	.39638
School Year 2006-07 indicator	217856	.00	1.00	.1996	.39972
School Year 2007-08 indicator	217856	.00	1.00	.2041	.40301
School Year 2008-09 indicator	217856	.00	1.00	.2088	.40646
Works in DPS	217856	.00	1.00	.0844	.27804
Works in DPS in SY 0506 interaction variable	217856	.00	1.00	.0164	.12687
Works in DPS in SY 0607 interaction variable	217856	.00	1.00	.0168	.12854
Works in DPS in SY 0708 interaction variable	217856	.00	1.00	.0169	.12892
Works in DPS in SY 0809 interaction variable	217856	.00	1.00	.0178	.13238
Unemployment Rate Pct	216830	2.1	10.9	4.777	.9327
Math Median Growth Percentile	194943	5	95	50.99	11.075
Total Enrollment	216567	2.00	4501.00	736.1559	578.10304

	N	Minimum	Maximum	Mean	Std. Dev.
Percent Free and Reduced Lunch	216567	.00	1.00	.3500	.26456
Percent non-white SY	216596	.00	1.00	.3782	.26340
Hard To Staff School	217856	.00	1.00	.0179	.13259
Hard To Staff School 2005-06	217856	.00	1.00	.0028	.05271
Hard To Staff School 2006-07	217856	.00	1.00	.0035	.05900
Hard To Staff School 2007-08	217856	.00	1.00	.0039	.06209
Hard To Staff School 2008-09	217856	.00	1.00	.0078	.08771
Secondary Math Teacher in DPS SY 2005-06 through 2008-09	217856	.00	1.00	.0055	.07367
Valid N (listwise)	193915				

Appendix Exhibit 13 contains descriptive statistics for the secondary mathematics retention models. The universe is all secondary mathematics teachers in the state between 2005-06 and 2008-09.

**Appendix Exhibit 13. Descriptive Statistics for Variables used in Secondary Mathematics Retention Models**

	N	Minimum	Maximum	Mean	Std. Dev.
Left district	17454	.00	1.00	.1623	.36870
First yr of teaching--0 total experience	17454	.00	1.00	.0959	.29448
Second yr of teaching-1 yr total experience	17454	.00	1.00	.0675	.25098
Third yr of teaching--2 yrs of total experience	17454	.00	1.00	.0590	.23565
Fourth to fifth year of experience	17454	.00	1.00	.1142	.31805
Age squared	17451	441.00	5776.00	1789.2783	927.15498
Can retire in five years or less	17433	.00	1.00	.1446	.35172
Can retire right now	17433	.00	1.00	.0495	.21692
Non-white teacher indicator	17454	.00	1.00	.0949	.29313
Male indicator	17454	.00	1.00	.4155	.49283
Age the year school year began	17451	21	76	40.86	10.956
School Year 2005-06 indicator	17454	.00	1.00	.1950	.39623
School Year 2006-07 indicator	17454	.00	1.00	.2022	.40169
School Year 2007-08 indicator	17454	.00	1.00	.2048	.40354
School Year 2008-09 indicator	17454	.00	1.00	.2070	.40517
DPS during ProComp, for retention analysis	17454	.00	1.00	.0681	.25196
Works in DPS in SY 0506 interaction	17454	.00	1.00	.0159	.12498
Works in DPS in SY 0607 interaction	17454	.00	1.00	.0177	.13188
Works in DPS in SY 0708 interaction	17454	.00	1.00	.0168	.12848
Works in DPS in SY 0809 interaction	17454	.00	1.00	.0178	.13209
Unemployment Rate 2009 Pct	17389	2.1	10.9	4.788	.9345
Math Median Growth Percentile	16783	12	95	50.58	9.923
Enrollment	17386	9.00	4501.00	1000.3603	685.77137
Percent FRL	17386	.00	1.00	.3148	.24435
Percent minority	17386	.00	1.00	.3614	.25307
Valid N (listwise)	16720				



Appendix Exhibit 14 provides descriptive information used in the school level retention analysis of HTSS. The universe is all teachers working in Colorado schools between 2005-06 and 2008-09.

**Appendix Exhibit 14. Descriptive Statistics for School Level Attrition Analysis, with Hard to Staff School information**

	N	Min.	Max.	Mean	Std. Dev.
Left district	212528	.00	1.00	.1977	.39825
First yr of teaching--0 total experience	212528	.00	1.00	.0854	.27947
Second yr of teaching-1 yr total experience	212528	.00	1.00	.0609	.23908
Third yr of teaching--2 yrs of total experience	212528	.00	1.00	.0541	.22628
Fourth to fifth year of experience	212528	.00	1.00	.1123	.31578
Age squared	212465	441.00	6084.00	1824.3715	928.92069
Can retire in five years or less	212271	.00	1.00	.1659	.37195
Years to retire	212271	.00	30.00	15.6027	8.81573
Can retire right now	212271	.00	1.00	.0557	.22938
Non-white teacher indicator	212528	.00	1.00	.1010	.30136
Male indicator	212528	.00	1.00	.2629	.44024
Age the year school year began	212465	21	78	41.29	10.947
Teaches MS, K-8 or High School	212499	.00	1.00	.5419	.49824
School Year 2005-06 indicator	212528	.00	1.00	.1935	.39507
School Year 2006-07 indicator	212528	.00	1.00	.1994	.39958
School Year 2007-08 indicator	212528	.00	1.00	.2057	.40418
School Year 2008-09 indicator	212528	.00	1.00	.2121	.40882
Secondary Math	212528	.00	1.00	.0803	.27173
Unemployment Rate	211557	2.1	10.9	4.765	.9293
Math Median Growth Percentile	191075	5	95	51.09	10.986
Total Enrollment	171244	5	4501	744.02	577.897
Percent Free and Reduced Lunch	171244	.00	1.00	.3479	.26172
Percent non-white (minority)	171244	.00	1.00	.3766	.26098
Hard to Staff School 2005-06	212528	.00	1.00	.0023	.04757
Hard to Staff School 2006-07	212528	.00	1.00	.0031	.05564
Hard to Staff School 2007-08	212528	.00	1.00	.0035	.05910
Hard to Staff School 2008-09	212528	.00	1.00	.0079	.08835
HTSS in year of the ob	212528	.00	1.00	.0167	.12832
Secondary Math Teacher in DPS SY 2005-06 through 2008-09	212528	.00	1.00	.0063	.07910
Valid N (listwise)	164613				

Appendix Exhibit 15 provides descriptive information for DPS specific analysis of the relationship of the ProComp incentives and retention. This data is from the DPS Employee-Payment file and the universe is all ProComp eligible employees from 2006-07 through 2009-10.

**Appendix Exhibit 15. Descriptive Statistics for Variables used in Attrition and ProComp Incentives and Retention Models**

	N	Min.	Max.	Mean	Std. Dev.
Middle-school level dummy variable based on job description	17053	0	1	.14	.349
High-school level dummy variable based on job description	17053	0	1	.18	.386
Age adjusted for each panel school year	16496	20.66	79.24	43.7569	11.78743
DPS Years of Service Adjusted for Panel School Year	16496	0	41	8.47	7.810
can retire in five years or less	16496	.00	1.00	.1965	.39734
Can retire right now	16496	.00	1.00	.0495	.21685
Compulsory ProComp Participant	17053	.00	1.00	.1834	.38698
Voluntary ProComp participant	17053	.00	1.00	.2894	.45349
School year 2006-07	17053	.00	1.00	.2376	.42560
School year 2007-08	17053	.00	1.00	.2514	.43383
School year 2008-09	17053	.00	1.00	.2650	.44134
Percent Free and Reduced - Fall Count	14318	.0	1.0	.660	.2388
Math Median Growth Percentile	13781	14	91	51.26	11.954
Percent of students with IEP	14045	.00	.45	.1213	.04105
Dummy variable = 1 if PE rating is 'Satisfactory'	17053	0	1	.36	.480
Sum of PDU, advanced license & tuition reimbursement indicators	17053	.00	3.00	.3391	.58369
Sum of HTSA and HTSS indicators	17053	.00	2.00	.3453	.61574
Sum of exceeds expectations, SGO and either distinguished or growth school	17053	.00	3.00	.5572	.83866
Valid N (listwise)	13507				

## **Appendix J. Full Linear Probability Models for Retention Analysis**

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This appendix contains complete linear probability models from the attrition/retention section of Chapter 9.

There are multiple factors that can affect the labor market for new teachers. In order to isolate the effects of ProComp on recruitment, a series of regressions were used in the form of linear probability models. In the models shown, a positive coefficient on a variable means an increase in the variable is associated with an increase in the probability that a new to district teacher is experienced. A negative coefficient indicates that an increase in the coefficient is associated with a decrease in the probability that a new-to-district teacher is experienced.

The models have many indicator or dummy variables. Some of these indicator variables describe a complete set of conditions, such as male and female, or works in DPS and does not work in DPS. These variables have two possible values: 0 or 1. In this case only one of the variables is included in the model and the other condition is present if the included variable does not take on a value of 1. This variable that is not included is called the reference or comparison variable.

A concern with all of these models is collinearity, when explanatory variables are correlated with each other. An outcome of this is that coefficients on correlated variables are not reliable and often vary significantly between models. One reason for showing multiple models is to provide evidence to evaluate the collinearity in a model. If coefficients on explanatory variables that could be correlated remain with the same direction, order of magnitude and significance across models, this suggests collinearity is not a serious problem in interpreting the model's results.

Model 1, in Appendix Exhibit 16, shows the year-to-year changes in the statewide labor market (school year 2005-06 is the reference year) and the effect of working in DPS. These are controlled for by using fixed effects or dummy variables. These fixed year fixed effects are generally significant and stable across all of the models. The universe for this model is all teachers who are new to their districts.

**Appendix Exhibit 16. Linear Probability Model of a New Teacher being Experienced<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	0.016	0.013	0.029
(Constant)	0.407***	0.391***	0.506***
School Year 2006-07 indicator	0.004	0.021	0.012
School Year 2007-08 indicator	0.042***	0.064***	0.057***
School Year 2008-09 indicator	0.075***	0.083***	0.080***
School Year 2009-10 indicator	0.065***	0.076***	0.101***
Works in DPS	-0.180***		
Works in DPS in SY 0607 interaction variable		-0.193***	-0.119***
Works in DPS in SY 0708 interaction variable		-0.249***	-0.182***
Works in DPS in SY 0809 interaction variable		-0.101***	-0.039
Works in DPS in SY 0910 interaction variable		-0.126***	-0.054***
Median Growth Percentile Math			-0.001*
Total Enrollment			8.45x10(-06)
Percent Free and Reduced Lunch			-0.264***
Percent Minority			0.045*
Unemployment rate			-.005
Secondary Teacher	-0.0006	-0.0006	0.0046
Male	-0.023***	-0.023***	-0.032

<sup>a</sup> Source: State HR data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

Appendix Exhibit 17 shows the model of the probability of new-to-district teachers have a master's degree or higher. This is the only model of new-to-district education level as an outcome variable.

**Appendix Exhibit 17. Linear Probability Model of the Education levels (Master's Degree or Higher) of New-to-district Recruits<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	0.002	0.003	0.013
(Constant)	0.319***	0.315***	0.296**
School Year 2006-07 indicator	0.029***	0.028***	0.027***
School Year 2007-08 indicator	0.038***	0.047***	0.044***
School Year 2008-09 indicator	0.032***	0.038***	0.040***
School Year 2009-10 indicator	0.064***	0.06***	0.084***
Works in DPS	-0.05***		
Works in DPS in SY 0607 interaction variable		0.008***	0.025
Works in DPS in SY 0708 interaction variable		-0.100***	-0.076***
Works in DPS in SY 0809 interaction variable		-0.068***	-0.063***
Works in DPS in SY 0910 interaction variable		-0.046***	-0.020
Median Growth Percentile Math			0.001***
Total Enrollment			3.45x10(-5)***
Percent Free and Reduced Lunch			-0.196***
Percent Minority			0.113***
Secondary Teacher	0.002	0.002	0.013***
Male	0.002	0.002	-0.008

<sup>a</sup> Source: State HR data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

Appendix Exhibit 18 shows the full linear probability model of the experience levels of new-to-district teachers in Hard to Staff Schools (HTSS)

**Appendix Exhibit 18. Linear Probability Model of Likelihood that a New-to-District Teacher is Experienced Looking at HTSS<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.016	0.030	0.031
(Constant)	0.404***	0.511***	0.493***
School Year 2006-07 indicator	0.005	0.003***	0.003
School Year 2007-08 indicator	0.054***	0.050***	0.047***
School Year 2008-09 indicator	0.069***	0.071***	0.075***
School Year 2009-10 indicator	0.060***	0.088***	0.092***
Works in DPS	-0.155***	-0.108***	-0.116***
HTSS	-0.086***	-0.041*	
Hard to staff school 2006-07			-0.037
Hard to staff school 2007-08			-0.182***
Hard to staff school 2008-09			0.062*
Hard to staff school 2009-10			-0.027
Math Median Growth Percentile		-0.000	-0.000
Unemployment rate		-.004	-.002
Enrollment		8.55x 10(-06)	8.5 x10(-6)
Percent Free and Reduced Lunch		-0.254***	-0.267***
Percent Minority		0.053*	0.068***
Secondary Teacher	0.023***	0.003	0.003
Male	-0.034***	-0.034***	-0.030***

<sup>a</sup> Source: State HR data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

Appendix Exhibit 19 shows the complete linear probability model for new-to-school teachers being experienced. The sample for this analysis is all new-to-school teachers. Results were not presented in the full report because they are so similar to the new-to-district analysis with HTSS schools.

**Appendix Exhibit 19. Linear Probability Model that New-to-School Teachers are Experienced with HTSS<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.006	.012	.013
(Constant)	0.593***	0.593***	0.595***
School Year 2006-07 indicator	0.008	0.008	0.007
School Year 2007-08 indicator	0.047***	0.047***	0.049***
School Year 2008-09 indicator	0.05***	0.05***	0.048***
School Year 2009-10 indicator	0.057***	0.057***	0.059***
Works in DPS	-0.037***	-0.037***	-0.038***
HTSS	-0.015**	-0.015	
Hard to staff school 2006-07			0.067
Hard to staff school 2007-08			-0.106**
Hard to staff school 2008-09			0.04
Hard to staff school 2009-10			-0.051
Math Median Growth Percentile		-0.001***	-0.001***
Unemployment rate		0.006	0.006
Enrollment		0	0
Percent Free and Reduced Lunch		-0.158***	-0.159***
Percent Minority		-0.012	-0.013
Secondary Teacher	0.008	-0.003	-0.002
Male	-0.013*	-0.015*	-0.015*

<sup>a</sup> Source: State HR data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

Appendix Exhibit 20 shows a liner probability model of the likelihood that a new-to-district teacher is experienced. This model is focused on secondary mathematics, which was a Hard to Staff Assignment (HTSA). As in earlier analysis the dependent variable is new-to-district teachers who are experienced. In this model, the population is limited to secondary math teachers only.

**Appendix Exhibit 20. Linear Probability Model of Likelihood that a New-to-District Teacher is Experienced Looking at Secondary Mathematics (a HTSA) <sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	0.028	.022	.039
(Constant)	0.430***	0.407***	0.474***
School Year 2006-07 indicator	-0.022	0.009	0.005
School Year 2007-08 indicator	0.044	0.070**	0.072**
School Year 2008-09 indicator	0.067	0.083***	0.077***
School Year 2009-10 indicator	0.015	0.035	0.0120
Works in DPS	-0.246***		
Works in DPS in SY 0607 interaction variable		-0.295***	-0.175***
Works in DPS in SY 0708 interaction variable		-0.261***	-0.172*
Works in DPS in SY 0809 interaction variable		-0.168***	-0.093
Works in DPS in SY 0910 interaction variable		-0.219***	-0.119
Math Median Growth Percentile			-0.000
Enrollment			7.17x10(-06)
Percent Free and Reduced Lunch			-0.340***
Percent Minority			0.056

<sup>a</sup> Source: State HR Data, New-to-district Secondary Math Teachers Only

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level



**Retention Analysis**

This section provides results from the retention analysis. In these analyses, the population is all teachers in schools that do not close. Closure was defined as having attrition of 65% or higher. As was noted in Chapter 1, DPS has had relatively high levels of retirement due to a high number of senior teachers, and DPS has a relatively high proportion of new teachers. Each of these groups has high levels of attrition. These linear probability models attempt to control for that low retention with a series of variables isolating teachers in their first five years of experience and a set of variables isolating teachers who are near retirement. Eligibility for retirement was estimated using the 2008-09 retirement rules for the statewide retirement system (Public Employees Retirement Association or PERA). All of these variables are significant in the expected directions. DPS indicator in Model 1 is positive as would be expected with the higher attrition rates seen in DPS.

**Appendix Exhibit 21. Complete Linear Probability Model of the Likelihood that a Teacher Leaves a District<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.038	.038	.041
(Constant)	-0.251***	-0.250***	-0.235***
First yr of teaching--0 total experience	0.056***	0.056***	0.054***
Second yr of teaching-1 yr total experience	0.039***	0.039***	0.036***
Third yr of teaching--2 yrs of total experience	0.044***	0.044***	0.041***
Fourth to fifth year of experience	0.020***	0.020***	0.017***
Age squared	1.02x10(-4)***	1.03x10(-4)***	1.06x10(-4)***
Can retire in five years or less	0.097***	0.097***	0.093***
Years to retire	0.013***	0.013***	0.013***
Can retire right now	0.138***	0.138***	0.136***
Non-white teacher indicator	0.000***	0.001	-0.006*
Male indicator	-0.009***	-0.009***	-0.009***
Age the year school year began	-0.001***	-0.001	-0.001
Teaches MS, K-8 or High School	0.025***	0.025***	0.037***
School Year 2005-06 indicator	-0.011***	-0.011***	-0.01***
School Year 2006-07 indicator	-0.006***	-0.009***	-0.007*
School Year 2007-08 indicator	-0.015***	-0.015***	-0.015***
School Year 2008-09 indicator	-0.032***	-0.031***	-0.032***
Works in DPS	0.006***		
Works in DPS in SY 0506 interaction variable		-0.001	-0.025***
Works in DPS in SY 0607 interaction variable		0.025***	0.003
Works in DPS in SY 0708 interaction variable		-0.003	-0.026***
Works in DPS in SY 0809 interaction variable		-0.010	-0.037***
Unemployment Rate			0.001
Math Median Growth Percentile			3.43x10(-4)***
Total Enrollment			2.31x10(-5)***
Percent Free and Reduced Lunch Eligible			-0.03***
Percent Minority			0.072***

<sup>a</sup> Source: State HR Data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

Appendix Exhibit 22 estimates the effect of Hard to Staff School bonuses on district attrition.

**Appendix Exhibit 22. Linear Probability of the Likelihood a Teacher Leaves the District with Hard to Staff Schools<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.038	.038	.041
(Constant)	-0.251***	-0.251***	-0.234***
First yr of teaching--0 total experience	0.056***	0.056***	0.053***
Second yr of teaching-1 yr total experience	0.039***	0.039***	0.036***
Third yr of teaching--2 yrs of total experience	0.044***	0.044***	0.041***
Fourth to fifth year of experience	0.020***	0.02***	0.017***
Age squared	0.0001***	1.02x10(-4)***	1.05x10(-4)***
Can retire in five years or less	0.097***	0.097***	0.093***
Years to retire	0.013***	0.013***	0.013***
Can retire right now	0.138***	0.138***	0.136***
Non-white teacher indicator	0.0007	0.001	-0.006*
Male indicator	-0.009***	-0.009***	-0.009***
Age the year school year began	-0.001	-0.001	-0.001
Teaches MS, K-8 or High School	0.025***	0.025***	0.037***
School Year 2005-06 indicator	-0.010***	-0.01***	-0.011***
School Year 2006-07 indicator	-0.006**	-0.006***	-0.006*
School Year 2007-08 indicator	-0.015***	-0.015***	-0.016***
School Year 2008-09 indicator	-0.032***	-0.032***	-0.034***
Works in DPS	0.001***	0.01***	-0.012***
Hard to Staff School	-0.017**		
Hard to staff school 2005-06		-0.026	-0.04***
Hard to staff school 2006-07		-0.005	-0.01
Hard to staff school 2007-08		-0.019	-0.028*
Hard to staff school 2008-09		-0.018*	-0.023*
Unemployment Rate Pct			0.001
Math Median Growth Percentile			3.61x10(-4)***
Total Enrollment			-2.32*10(-4)***
Percent Free and Reduced Lunch Eligible			-0.029***
Percent non-white			0.072***

<sup>a</sup> Source: State HR Data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

Appendix Exhibit 23 shows linear probability models of whether a person leaves their school with HTSS variables. This is the only school level model shown in the analysis and was done because the HTSS bonus is a school level incentive. The results are not presented in the text of the report because they are very similar to the district level model. The dependent variable for these models is whether a person leaves their school. The universe is similar.

**Appendix Exhibit 23. Linear Probability of the Likelihood a Teacher Leaves their School with Hard to Staff Schools<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.027	.027	.032
(Constant)	.000	-0.336***	-0.334***
First yr of teaching--0 total experience	-0.337***	0.059***	0.053***
Second yr of teaching-1 yr total experience	0.059***	0.031***	0.025***
Third yr of teaching--2 yrs of total experience	0.03***	0.033***	0.03***
Fourth to fifth year of experience	0.033***	0.014***	0.011***
Age squared	0.014***	0***	0***
Can retire in five years or less	0***	0.091***	0.088***
Years to retire	0.091***	0.015***	0.016***
Can retire right now	0.015***	0.129***	0.126***
Non-white teacher indicator	0.129***	0.014***	0.006***
Male indicator	0.014***	-0.01***	-0.01***
Age the year school year began	-0.01***	0.004***	0.004***
Teaches MS, K-8 or High School	0.004***	0.021***	0.045***
School Year 2005-06 indicator	0.021***	-0.011***	-0.011**
School Year 2006-07 indicator	-0.011***	-0.01***	-0.009**
School Year 2007-08 indicator	-0.008**	-0.014***	-0.014***
School Year 2008-09 indicator	-0.014***	-0.041***	-0.043***
Works in DPS	-0.041***	0.044***	0.013**
Hard to Staff School	0.044***		
Hard to staff school 2005-06	-0.009	-0.023	-0.038*
Hard to staff school 2006-07		0.065***	0.056**
Hard to staff school 2007-08		-0.025	-0.042**
Hard to staff school 2008-09		-0.028**	-0.036**
Unemployment Rate Pct			-0.001***
Math Median Growth Percentile			0***
Total Enrollment			0.006
Percent Free and Reduced Lunch Eligible			0.068***
Percent non-white	.027	.027	.032

<sup>a</sup> Source: State HR Data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

**Appendix Exhibit 24. Full Linear Probability Model of the Likelihood a Teacher will Leave a District, Secondary Math Teachers Only<sup>a</sup>**

	Model 1	Model 2	Model 3
Adjusted R-Squared	.052	.052	.058
(Constant)	-0.555***	-0.554***	-0.432***
first yr of teaching--0 total experience	0.138***	0.138***	0.132***
second yr of teaching-1 yr total experience	0.095***	0.095***	0.084***
third yr of teaching--2 yrs of total experience	0.118***	0.117***	0.108***
Third to fifth year of experience	0.059***	0.059***	0.055***
Age squared	0	0	0
can retire in five years or less	0.123***	0.123***	0.124***
Years to retire, negative set to zero	0.017***	0.017***	0.015***
Can retire right now	0.104***	0.104***	0.11***
Non-white teacher indicator	0.018	0.018	0.002
Male indicator	-0.002	-0.002	-0.002
Age the year school year began	0.009**	0.008**	0.008**
School Year 2005-06 indicator	-0.016	-0.018*	-0.012
School Year 2006-07 indicator	0.001	0.001	0.013
School Year 2007-08 indicator	-0.005	-0.005	0.01
School Year 2008-09 indicator	-0.025*	-0.023***	-0.018
Works in DPS	-0.001		
Works in DPS in SY 0506 interaction variable		0.029	0.002
Works in DPS in SY 0607 interaction variable		-0.006	-0.032
Works in DPS in SY 0708 interaction variable		-0.007	-0.033
Works in DPS in SY 0809 interaction variable		-0.028	-0.068**
Unemployment Rate			0.007
Math Median Growth Percentile			-0.002***
Total Enrollment			-2.91x10(-5)***
Percent Free and Reduced Lunch Eligible			-0.057*
Percent Minority			0.108*

<sup>a</sup> Source: State HR Data

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

A linear probability model is again used to isolate the effects of ProComp on retention (see Appendix Exhibit 25). The population is all ProComp eligible educators in DPS from 2005-06 through 2008-09. The dependent variable is an indicator of whether the person did not return to work in the district the next year.

These models are reduced from a full model using all indicators of ProComp incentives and other indicators describing teacher and school characteristics. The reduced model was used because of significant issues with collinearity. This occurs when explanatory variables are correlated with each other. For example, all of the indicators of teachers in their first few years of working at DPS are collinear with compulsory ProComp status, so these indicators of teachers in their early years of experience are not included in the model. The impact of collinearity is that the coefficients on the variables are not reliable. To reduce the collinearity, we collapsed the individual ProComp categories into the four main ProComp elements: Performance Evaluation, Knowledge and Skills, Market Indicators and Student Growth Incentives and reduced the number of control variables.

On all the models, the coefficients on ProComp Status and ProComp incentives are negative, suggesting ProComp contributes to reduced attrition. Model 1 is a simple model that incorporates people's ProComp status as shown in 3 along with controls for how close people are to retirement. Models 2 and 3 incorporate school level factors. Models 3 and 4 incorporate different ProComp elements. Interestingly, Market Elements are not the incentives most associated with decreases in attrition. Instead, it is the performance appraisal and student growth incentives that are associated with decreases in attrition as indicated by the negative coefficients.

**Appendix Exhibit 25. Full Linear Probability Models of the Likelihood that a Teacher Leaves DPS with ProComp Elements<sup>a</sup>**

	Model 1	Model 2	Model 3	Model 4
Adjusted R-Squared	.066	.069	.223	.220
(Constant)	0.265***	0.252***	0.281***	0.296***
Middle School (compared to elementary)	0.03***	0.022*	0.018*	0.017*
High School (compared to elementary)	0.017*	0.015*	0.004	0.01
Age	0	0.001	0	0
Years working in DPS	-0.01***	-0.01***	-0.01***	-0.01***
Can retire in five years or less	0.088***	0.088***	0.082***	0.077***
Can retire right now	0.112***	0.116***	0.1***	0.1***
Compulsory ProComp participant (compared to not in ProComp)	-0.004	0.003	0.377***	0.371***
Voluntary ProComp participant (compared to not in ProComp)	-0.086***	-0.081***	0.254***	0.246***
School year 2006-07 (compared to 2005-06)	-0.057***	-0.064***	-0.065***	-0.055***
School year 2007-08 (compared to 2005-06)	-0.069***	-0.076***	-0.055***	-0.047***
School year 2008-09 (compared to 2005-06)	-0.1***	-0.113***	-0.088***	-0.07***
Percent of students who are free and reduced lunch eligible		0	0*	
Median math growth percentile		0	0.001***	
Percent of students with an IEP		0.092	-0.01	
Performance Evaluation Indicator			-0.337***	-0.334***
Count of Knowledge and Skills incentives (range 0-3)			-0.005	-0.01
Count of Market incentives (range 0-2)			0.011	0.005
Count of Student Growth incentives (range 0-3)			-0.113***	-0.11***

<sup>a</sup> Source: DPS Employee-Payment File

\* significant at the .05 level

\*\* significant at the .01 level

\*\*\* significant at the .001 level

## **Appendix K. Final DPS ProComp Evaluation Questions**

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### *1. Stakeholder Expectations*

- 1.1 How has ProComp helped DPS achieve its mission and goals?
- 1.2 To what extent has ProComp fulfilled the intent of the initial ballot initiative?
- 1.3 To what extent is the ProComp system aligned with the intent, terms and conditions of the ProComp agreement?

### *2. Increasing Student Achievement*

- 2.1 How are the various elements of ProComp and the master salary schedule (including years of service, advanced degrees and graduate credit, successful evaluation, achievement of student growth objectives, completion of professional development units, market incentives, and student growth incentives) associated with subsequent student growth?
- 2.2 Is there a difference in the academic growth for students of ProComp teachers as compared to students of non-ProComp teachers? Are ProComp teachers more likely than non-ProComp teachers to achieve or exceed expected outcomes as predicted by factors that impact student achievement (e.g., rates of free/reduced lunch, prior levels of achievement)?
- 2.3 What is the association between student achievement outcomes/growth and the percentage of teachers participating in ProComp at a school site?
  - 2.3.1 How does the level of teacher participation in ProComp at one school relate to student achievement?
  - 2.3.2 What school factors contribute to teachers' success in setting high standards and achieving success with students?
- 2.4 What is the association of student achievement outcomes/growth and the quality and rigor of teacher-set annual student growth objectives?
- 2.5 To what extent are there differences in the quality and rigor among different types of PDUs (individual or small group, pre-approved school-wide, content area, or position specific) and the demographic characteristics of teachers taking these courses?

### *3. Attracting and Retaining High Quality Educators*

- 3.1 What role does compensation play in a teacher's decision of whether to teach/whether to stay at DPS? How do the various elements of the compensation structure (e.g., base salary, market incentives, student growth incentives, health benefits, retirement benefits, total compensation) impact the decision of whether to teach/stay at DPS?
- 3.2 How has the implementation of ProComp affected DPS's overall ability to hire and retain qualified teachers? How does the rate new hires being retained in DPS compare to the rates of other Denver Metro districts, Colorado, and other comparable urban districts? [As data allow]



3.3 Have there been any changes in the number, demographic characteristics and qualifications and student growth for teachers who apply to/ are hired and retained in DPS since the start of ProComp as compared to historical data? What are the characteristics of those who have left the district or retired?

3.4 Has the use of market incentives improved the qualifications and student growth of teachers hired for hard to serve schools or hard to staff assignments?

3.4.1 How does the availability of ProComp influence the rate of application of teachers to work in hard-to-serve schools and hard-to-staff positions as compared to historical data? [As data allow.]

3.4.2 What are the demographic characteristics and qualifications of educators who are seeking and selected for the hard-to-serve schools and hard-to-staff assignments? [As data allow.]

3.4.3 What are the characteristics of those who have left the district or retired?

3.5 How has the Pro-Comp system influenced teacher quality as assessed by the recruitment, hiring, and retention of diverse, highly qualified and experienced teachers? [As data allow]

3.6 Do prospective teachers understand how ProComp works as compared to pay systems of other metro districts? Are communication/marketing materials effective? What do prospective teachers like/dislike about ProComp?

#### *4. Improvement of the System*

4.1 What is the level of participation in each of the ProComp elements? What is the rate of success in meeting various requirements for salary advancement?

4.2 What are the demographics (e.g., years of experience, highly-qualified status, national board certification, level/discipline, age group) and differences in the student growth demonstrated by teachers who have elected to participate in ProComp compared to those who have not? How has this changed over the first four years of implementation?<sup>4</sup>

4.3 What reasons do teachers cite for participation in ProComp? What reasons are cited for not participating?

4.3.1 What factors contribute to success in meeting requirements in each of the ProComp elements? How could teachers be better supported in meeting requirements?

4.4 *Overall Impact*-- What are the perceptions and understandings of stakeholders (e.g., teachers, principals, central administrators, Board) regarding how successful the master salary schedule and ProComp are in improving instructional practice and driving student outcomes?

4.5 *Impact on Instructional Practice*—What are the perceptions and understandings of stakeholders (e.g., teachers, principals, central administrators, Board) regarding:

4.5.1 The impact on of ProComp and the master salary schedule on instructional practice?

4.5.2 The value and importance of each element of the compensation structure for improving instructional practice?

4.5.3 The appropriateness of the amount of the financial incentive for each compensation element with respect to the likelihood it will improve instructional practice?

4.5.4 The extent to which elements of the compensation structure are viewed as an “entitlement” v. a stimulus for teacher learning?

4.6 *Reasonableness and fairness* – What are the perceptions and understandings of stakeholders (e.g., teachers, principals, central administrators, Board) as to whether the elements that teachers are compensated for under the master schedule and ProComp are fair and reasonable?

4.7 *Impact on workload* – What are the perceptions and understandings of stakeholders (e.g., teachers, principals, central administrators, Board) regarding the impact of ProComp on workload and work focus?

4.8 *Impact on school environment* – What are the perceptions and understandings of stakeholders (e.g., teachers, principals, central administrators, Board) regarding to what extent the master schedule and ProComp encourage collaboration and create a positive work environment?

4.9 *Implementation*—From the perspective of key stakeholders, how effectively has the ProComp system been implemented?

4.9.1 How satisfied are ProComp participants with the initial salary settings and subsequent salary increases?

4.9.2 How much time and effort are required on the part of teachers, principals, human resources, payroll, and other departments with respect to each ProComp element?

4.9.3 What is the quality and content of training provided to teachers and principals concerning the implementation of ProComp components?

4.9.4 What safeguards are in place to assure teacher and principal accountability? What is the perceived effectiveness of the safeguards?

4.9.5 What are perceptions of key stakeholders concerning the Professional Review Panel and Grievance process? What changes, if any, would improve the effectiveness and equity of the dispute process?

4.10 *Communication*—From the perspective of key stakeholders, how effective and efficient is the communication regarding the ProComp system? What is the level of understanding of the system across the district?

4.11 Has ProComp been implemented with fidelity across schools, levels, and school years? What factors (e.g., principal qualifications, years of experience, school factors) impact fidelity?

## 5. Overall Recommendations

5.1 What is the evidence that higher compensation for teachers results in greater gains in student achievement? How long does it take to see benefits of the Pro-Comp system (for school buildings, teachers, for students)? What is it about this kind of intervention that works, for whom, in what circumstances, in what respects, and why?

5.2 What are the salient findings from this evaluation study that support one or more elements of the ProComp system? What findings indicate that changes should be considered? What recommendations have emerged?

5.3 What can we learn from ProComp that informs our understanding of strategies that result in systemic change, school reform, and effective policy decisions? What are the key “lessons learned” that might inform the development of similar pay-for-performance systems in other urban school districts?



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