



AUGENBLICK,
PALAICH AND
ASSOCIATES

MEMORANDUM

To: Jennifer Landrum, President, Denver Preschool Program
From: Dr. Robert Palaich, Augenblick, Palaich and Associates¹
Re: Fourth grade TCAP results for DPP's 2008-09 Cohort

Introduction

The 2008-09 school year was the first year of full operation of the Denver Preschool Program (DPP) and about 4,755 4-year old children participated in the program. Students who were approved by DPP² in 2008-09 entered fourth grade in the Denver Public Schools (DPS) in the 2013-14 school year and participated along with other Colorado fourth graders in Colorado's standardized testing system, the Transitional Colorado Assessment Program (TCAP). This memo describes the evidence that students who were approved by DPP were more likely to reach proficient or advanced levels on fourth grade TCAP assessments than students who did not participate.

The Denver Preschool Program

The Denver Preschool Program (DPP) is a taxpayer-funded initiative aimed at increasing access to high-quality preschool for all Denver 4-year-olds. DPP was created to encourage the families of children to voluntarily participate in quality preschool programs and thus increase the likelihood that children will be successful in kindergarten and beyond. Denver voters approved the Preschool Matters initiative in November 2006. Under this ballot initiative, the city collects a .12 cent sales tax which is earmarked for DPP. Beginning in January 2007, Denver expected to collect between \$10 and \$11 million annually. The vast majority of this revenue, 80 percent, is used to provide tuition credits to the parents of children in the child's last year of preschool and to provide grants to preschools to improve the quality of the programs they offer.

DPP operates on the premise that preschool plays an important role in the academic and social-emotional development of children and that participating in a high-quality preschool experience, even for only one year, can have a positive impact on a child.

¹ The DPP evaluation team is led by Augenblick, Palaich and Associates in partnership with the Institute at Clayton Early Learning. The APA part of the evaluation team includes Kathryn Rooney, Nathan Roberson and Simon Workman as well as Dr. Palaich. The Clayton part of the evaluation team is led by Sheridan Green, Ph.D. and Caroline Ponce of the Institute at Clayton Early Learning. During the first four years of the evaluation, Mary Maguire Klute, Ph.D., now with Marzano Research Laboratory, led the Clayton effort.

² Families in the year before kindergarten apply to DPP for their child to attend preschool at a DPP approved site; DPP must then approve the child's participation in the program at an approved DPP preschool site. Children who are approved by DPP then can participate in the program and the site is authorized to receive payment from DPP once the child starts attending. DPP approval is necessary before the child is counted as participating. These distinctions are critical in the child's year before kindergarten, however, for the purposes of this analysis we are only looking at children who have been approved and have participated in an approved preschool program for long enough for the preschool to have received a payment from DPP.

The program encourages families to enroll their children in high-quality preschool by providing tuition credits to parents to offset the cost of preschool. The size of the tuition credit each family receives is determined by the family’s size and income and the quality rating of the preschool the child attends. In addition, DPP provides funding for preschools serving children who live in Denver to obtain a DPP quality rating. Participating programs also receive access to professional development opportunities (e.g., training and coaching) and quality improvement grants to assist them in their efforts to improve quality.

In the balance of this memo, we will focus on documenting the fourth grade TCAP performance differences between DPP and non-DPP students in 2013-14.

Results for all DPS Students Enrolled in Fourth Grade who took the TCAP

DPS 2013-14 fourth grade students outperformed DPS 2012-13 fourth grade students in Lectura, Escritura and Math. On TCAP Reading and Writing, the 2013-14 fourth grade sample had slightly lower proportions of students earning proficient or advanced scores (0.8 percent and 0.4 percent lower respectively) than the 2012-13 sample. Table 1 compares DPS fourth grade students in 2012-13 to DPS fourth grade students in 2013-14.

Table 1

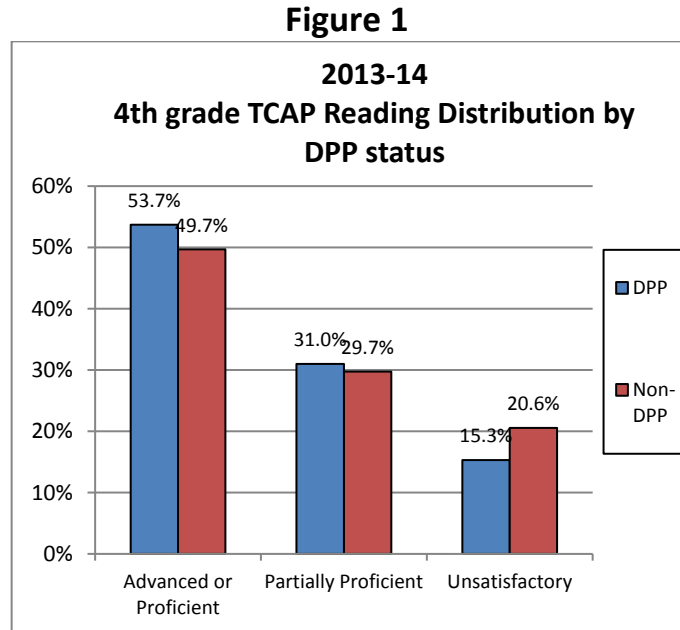
	2012-13 4th grade TCAP Percent ‘Proficient’ or ‘Advanced’ DPS	2013-14 4th grade TCAP Percent ‘Proficient’ or ‘Advanced’ DPS
Reading	52.1%	51.3%
Lectura (Spanish version of Reading)	30.3%	36.2%
Writing	41.6%	41.3%
Escritura (Spanish version of Writing)	15.2%	31.9%
Math	58.3%	60.2%

Of the 4,755 children who were approved by DPP in 2008-09, 2,968 (62.4 percent) took the TCAP in fourth grade in 2013-14. Among the 6,606 students who took a TCAP assessment in fourth grade, 2,968 or 44.9 percent were approved by DPP in 2008-09.

The following sections compare TCAP results for students who were approved by DPP and those who were not. This analysis includes fourth grade results from 2013-14 on the English versions of each TCAP subject test (Reading, Writing, and Math). The results from the Spanish versions of Reading and Writing (Lectura and Escritura respectively) are largely excluded from the analysis due to the extremely low numbers of test takers. The results of such an analysis would be unrepresentative and misleading. All reported results are statistically significant unless noted otherwise.

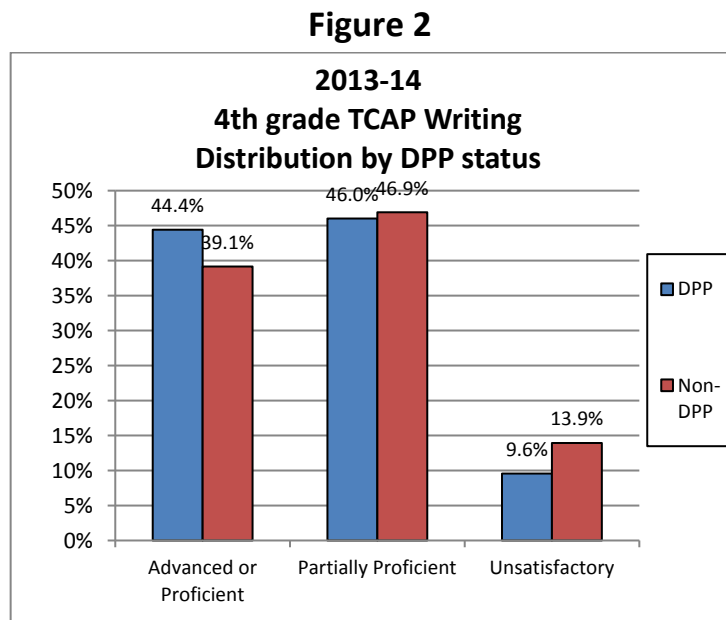
Reading

Figure 1 displays proficiency distributions for the TCAP Reading assessment for fourth grade in 2013-14. In fourth grade, compared to non-DPP students, DPP students were more likely (by 4.0 percent) to reach advanced or proficient levels and less likely (by 5.3 percent) to score at unsatisfactory levels.



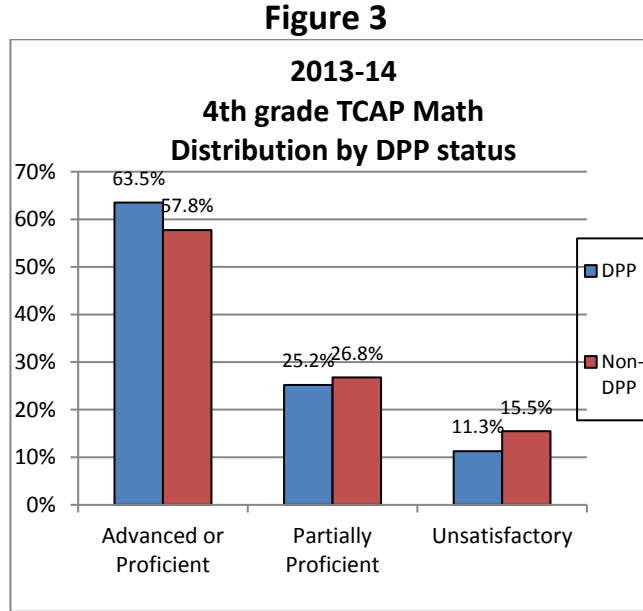
Writing

In fourth grade, there was a 5.3 percent gap between DPP and non-DPP students in the percent of students scoring at advanced or proficient levels in writing. Figure 2 displays these results.



Math

Results from fourth grade indicate that DPP students were 5.7 percent more likely than non-DPP students to score at advanced or proficient levels and 4.2 percent less likely to score at unsatisfactory levels. Figure 3 presents this data.



DPP and Race/Ethnicity

Figure 4 shows that the DPP student cohort had a greater proportion of Hispanic students and a lower proportion of White students than the non-DPP cohort taking the TCAP in fourth grade.

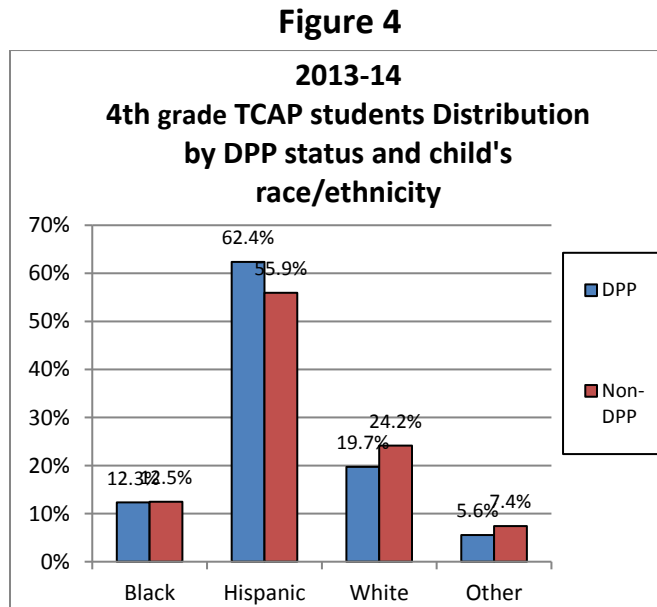
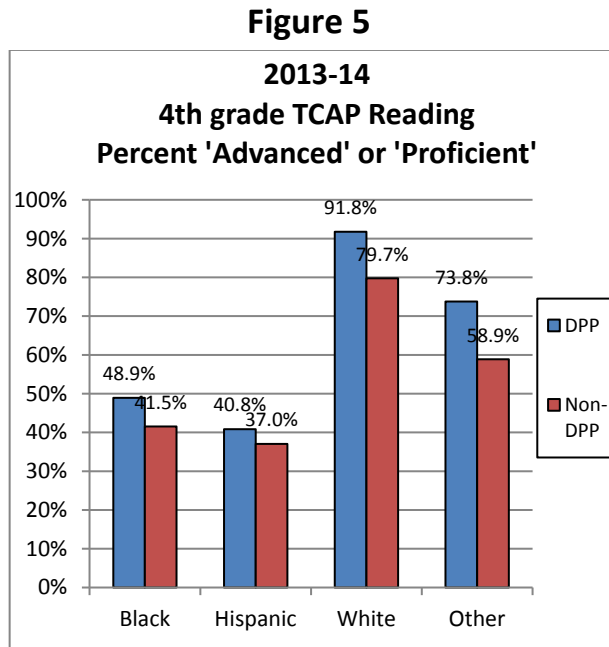
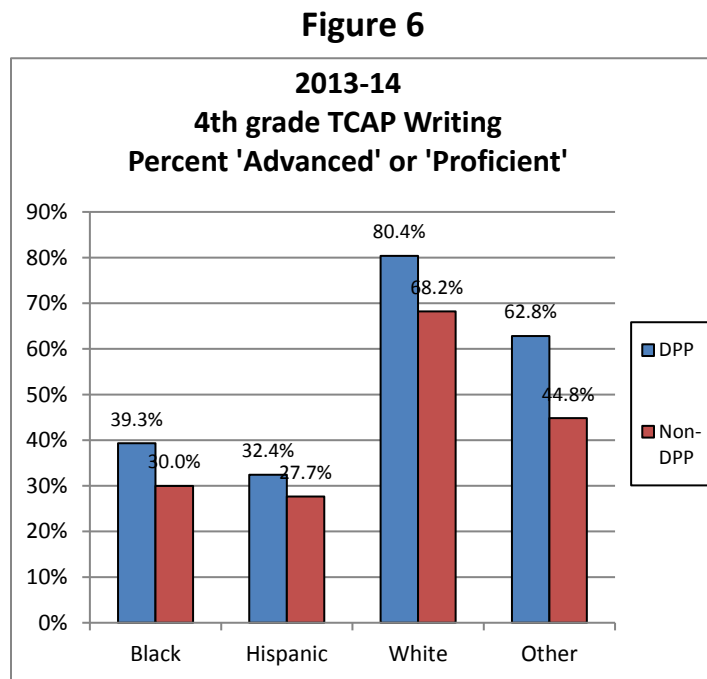


Figure 5 shows that DPP students in every race/ethnic category outperformed their non-DPP counterparts on TCAP Reading in fourth grade.

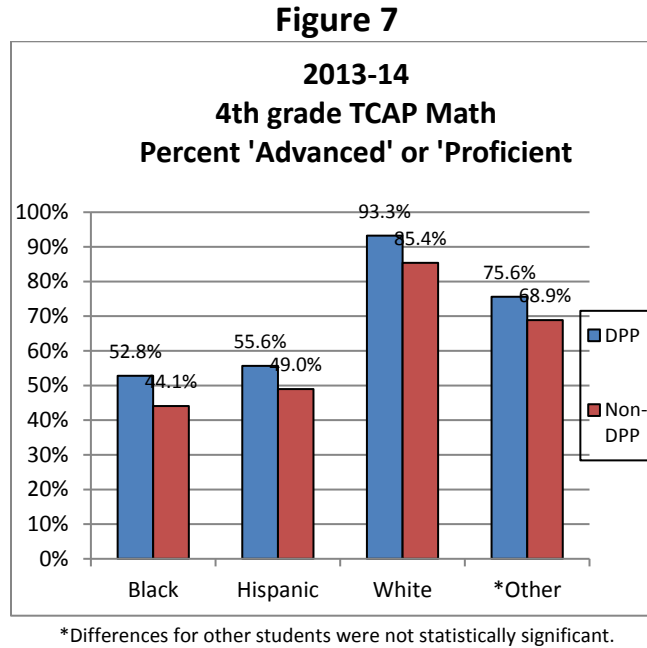


DPP students were more likely to score advanced or proficient than non-DPP students on the fourth grade TCAP Writing. This was true across all race/ethnicities. Figure 6 displays these results.



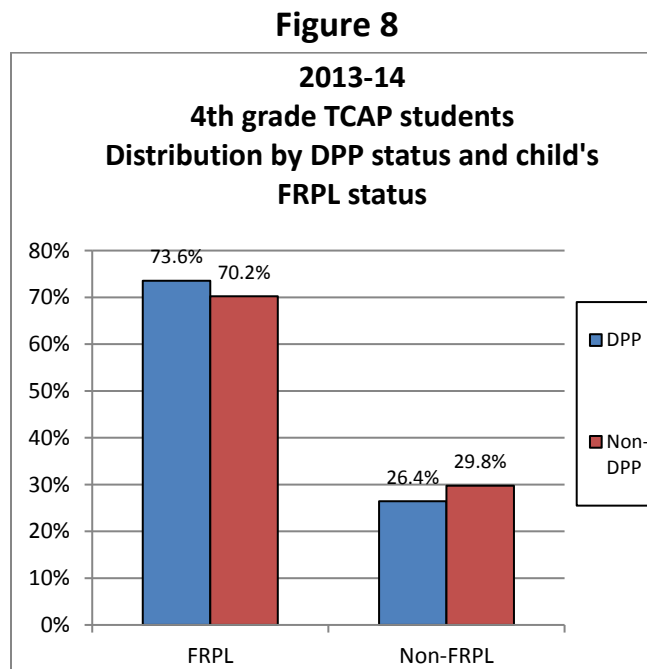
*Differences for Black students were not statistically significant.

Among fourth grade TCAP takers, Black, Hispanic, and White DPP students outperformed non-DPP counterparts in math, but there was no statistical difference between DPP and non-DPP students identifying as 'other race' in the percent scoring proficient or advanced. Figure 7 shows these results.



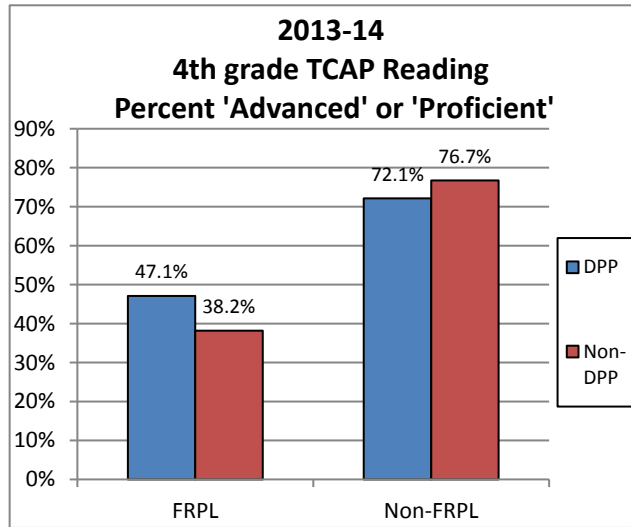
DPP and FRPL Status

Figure 8 indicates that in fourth grade, the DPP sample had a slightly higher proportion of Free and Reduced Price Lunch (FRPL) students than the non-DPP sample.



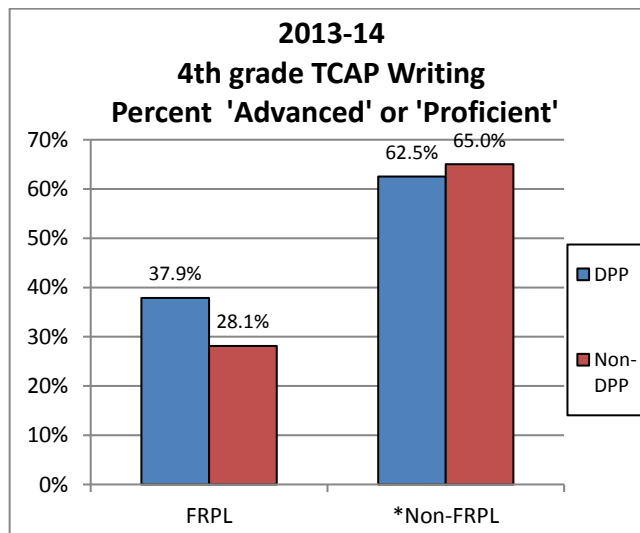
Among students who took the TCAP Reading and were eligible for free and reduced price lunch, DPP students were more likely than non-DPP students to score at proficient or advanced levels on the assessment in fourth grade. However, among those not eligible for free and reduced price lunch, non-DPP fourth graders were more likely than DPP fourth graders to score at proficient or advanced levels on TCAP Reading.

Figure 9



Students eligible for free and reduced price lunch in fourth grade were 9.8 percent more likely to earn proficient or advanced scores on the writing assessment if they were approved by DPP in 2008-09. There was no statistical difference between DPP and non-DPP students who were non-FRPL.

Figure 10

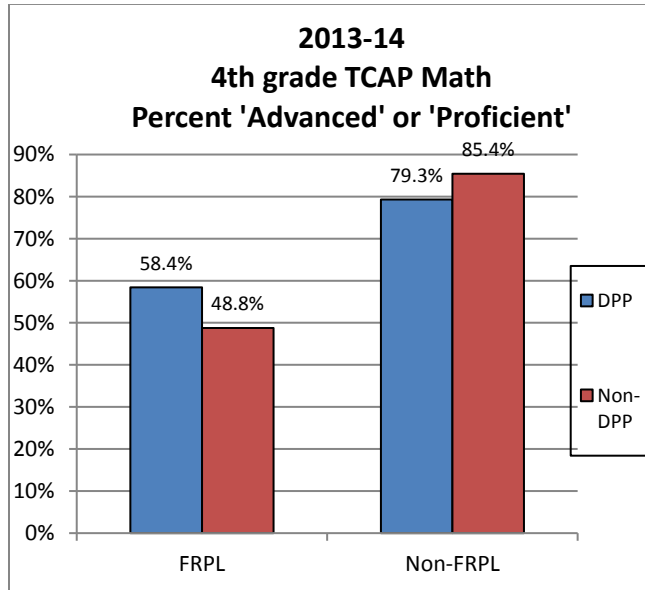


*Differences for Non-FRPL students were not statistically significant.

Students who took the TCAP Math assessment in fourth grade and who were eligible for free and reduced price lunch were more likely to attain proficient or advanced scores on the assessment if they were approved by DPP.

In fourth grade, the gap was 9.6 percent. The results are somewhat different for non-FRPL students. Among non-FRPL students, non-DPP students were more likely to be advanced or proficient than DPP students. Figure 11 displays this data.

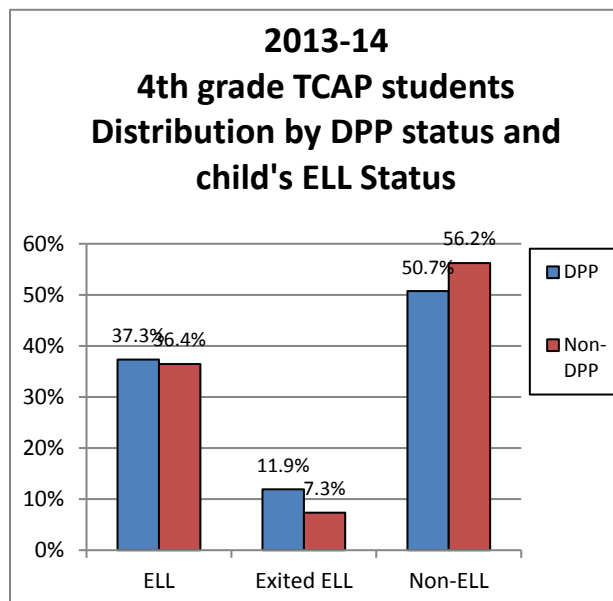
Figure 11



DPP and ELL Status

In fourth grade, proportions of DPP and non-DPP students in ELL programs were similar. A higher percent of DPP fourth graders than non-DPP fourth graders exited ELL programs. Figure 12 displays this information.

Figure 12



Among students taking TCAP Reading, DPP students were more likely to score proficient or advanced across two major ELL categories. That is, ELL students were more likely to attain higher proficiency levels if they were approved to participate in DPP in 2008-09. The difference between DPP and non-DPP ELL was only 0.8 percent. The gap between DPP and non-DPP students was larger among non-ELLs at 6.7 percent.

Figure 13

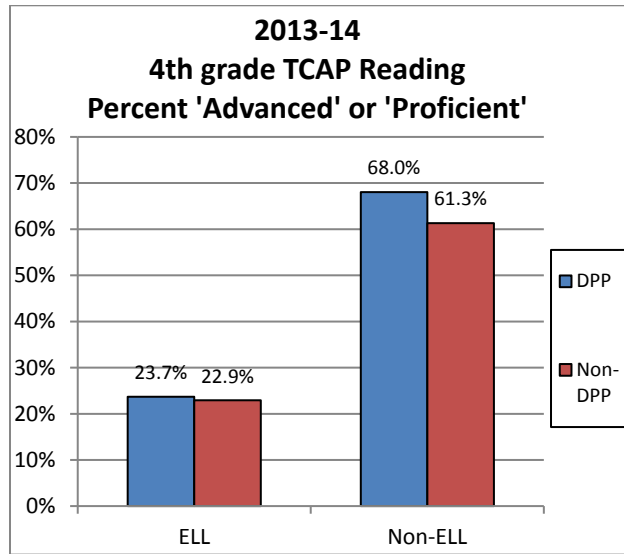
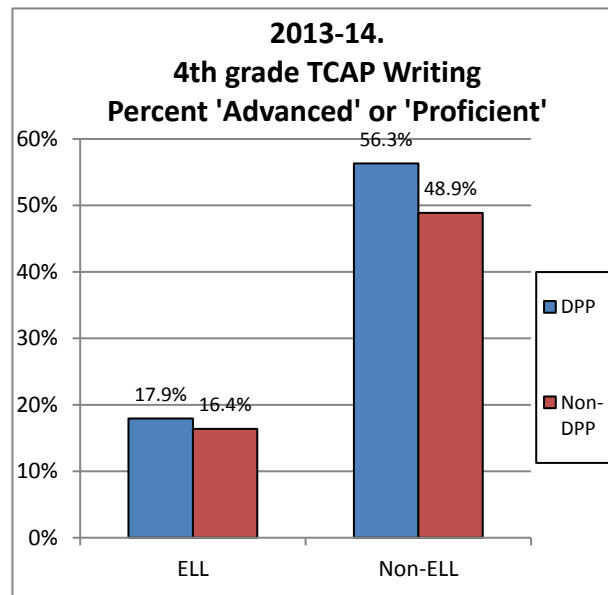


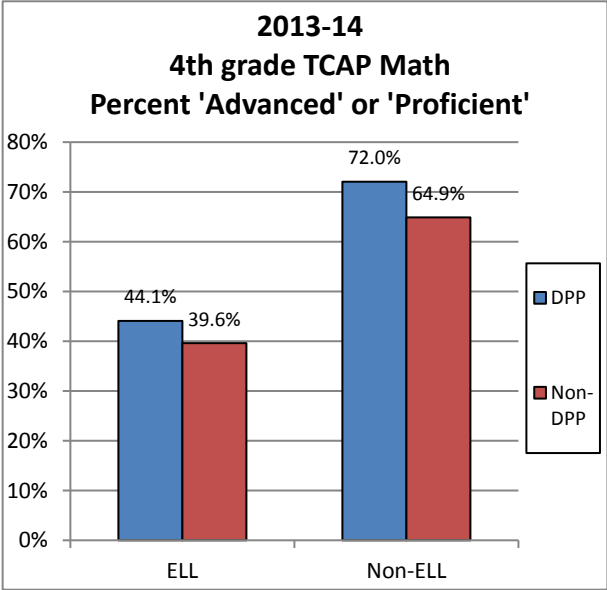
Figure 14 indicates that DPP students in each of the two primary ELL categories outperformed their non-DPP counterparts on fourth grade TCAP Writing. The gap between DPP and non-DPP students was 1.5 percent for ELL students and 7.4 percent among non-ELL students.

Figure 14



DPP students who were identified as ELL were 4.5 percent more likely to attain proficient or advanced levels on the fourth grade TCAP Math. Among non-ELL students, those who were approved by DPP in 2008-09 outperformed non-DPP students by 7.1 percent on the fourth grade TCAP Math. These results are presented in Figure 15.

Figure 15



Comparing the Demographics of DPP and Non-DPP Students

To place the TCAP results for DPP students in context, the evaluation team examined the question, “Are the demographics of the students who were approved by DPP different than those who did not participate?” The series of charts presented above suggests that the samples of DPP and non-DPP students were very similar in terms of the distribution of child’s race/ethnicity, FRPL status, and ELL status in 2013-14. (See other demographics of the DPP population in Appendix B).

Advantages of DPP Students

Despite the challenging demographic characteristics of DPP students, DPP students do have the advantage of several positive enrollment patterns that may contribute to their performance. For example, DPP students are more likely to enroll in a single DPS school for longer periods of time. Figure 16 presents enrollment patterns by DPP status. The results indicate that DPP students are much more likely (by 20.9 percent) to enroll for four to five years in the same DPS school than non-DPP students and much less likely to enroll for only one year in the district (by 17.3 percent). Such stability can be related to student academic performance.³

³ Russell W. Rumberger and Katherine A. Larson, “Student Mobility and the Increased Risk of High School Dropout,” *American Journal of Education* (1998): 1–35. Tucker, C. J., Marx, J., & Long, L. (1998). "Moving on": Residential mobility and children's school lives. *Sociology of Education*, 71(2), 111-129. EJ 568 057. Rumberger, R. W., Larson, K. A., Ream, R. K., & Palardy, G. J. (1999). *The educational consequences of mobility for California students and schools*. Berkeley, CA: Policy Analysis for California Education. ED 441 040. Skandera, H. & Sousa, R., *Mobility and the Achievement Gap*, Hoover Digest, 2002, No.3.

Figure 16

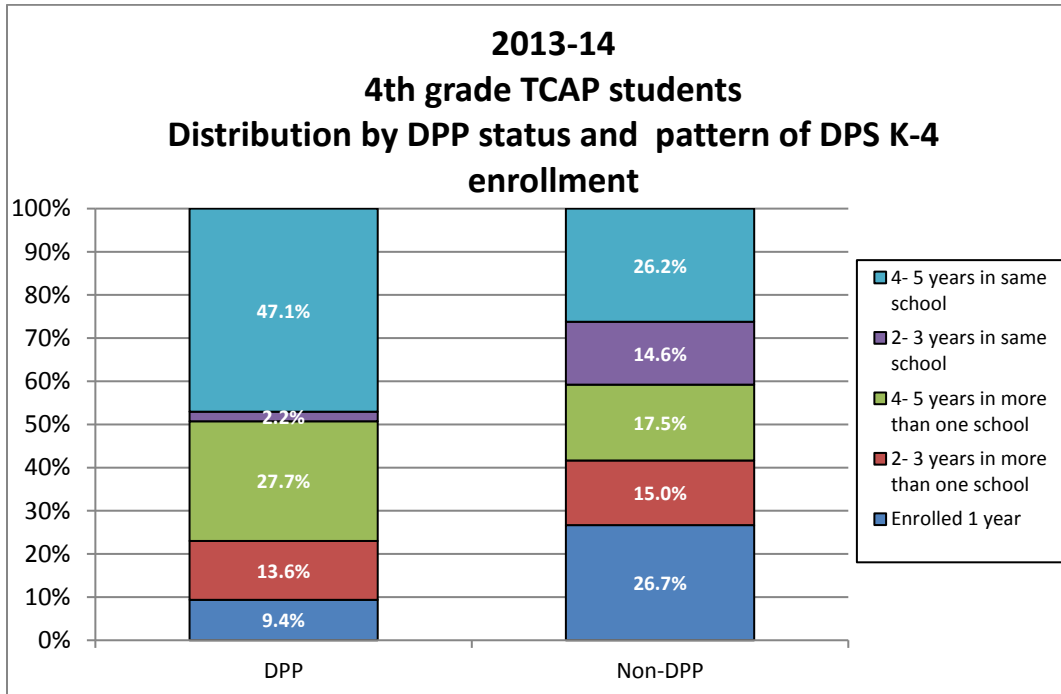
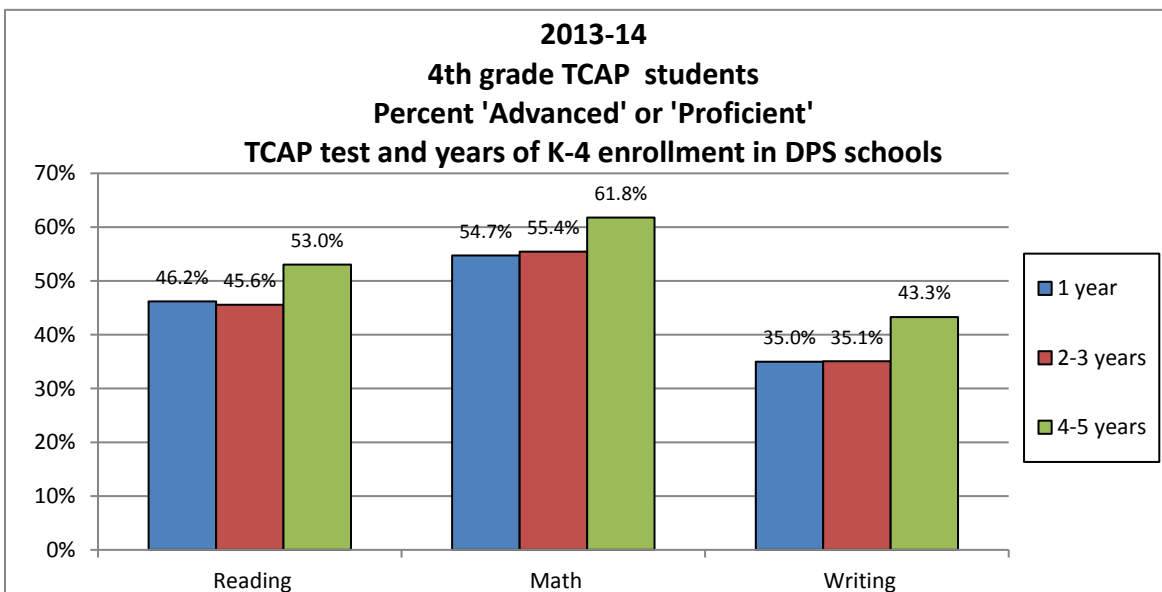


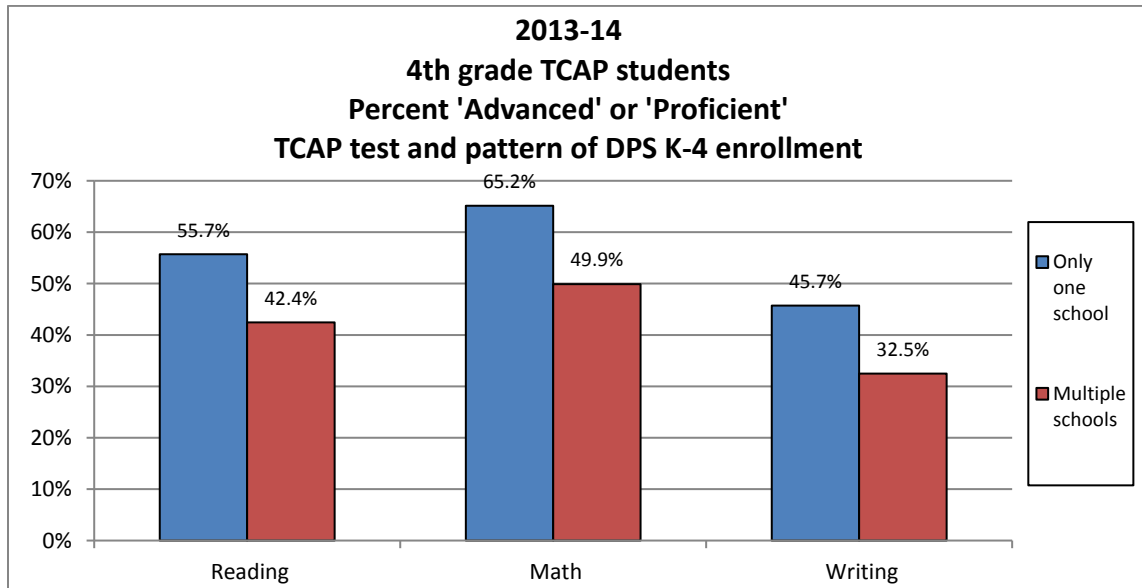
Figure 17 and Figure 18 suggest that longer enrollment in DPS and/or enrollment within a single school is also positively associated with proficient and advanced performance on the TCAP reading assessments. The following two figures present the percentages of fourth grade students attaining proficiency or higher by TCAP assessment and years enrolled in DPS schools. Students who were enrolled 4-5 years in DPS schools were more likely to earn advanced or proficient scores on TCAP Reading, Math, and Writing assessments.

Figure 17



Students enrolled in only one DPS school were more likely than students enrolled in multiple schools to reach proficiency or higher on fourth grade TCAP Reading, Math, and Writing assessments.

Figure 18



Another key area of interest in this study was the interaction between DPP status and the quality of the elementary schools where students enroll. To quantify elementary school quality, this study used the Denver School Performance Framework (SPF) ratings to assess whether elementary schools where students enrolled met Performance Framework expectations or did not meet expectations.

Analysis of TCAP performance, DPP status, and SPF ratings indicated that in all but one case, DPP students were more likely than non-DPP students to earn proficient or advanced scores on the fourth grade TCAP across subjects and school quality ratings. The exception was the TCAP Reading assessment for students attending schools that did not meet expectations.

Early childhood education research indicates that a quality preschool experience coupled with an effective elementary school can make a large positive difference in the academic performance of a child.⁴ By combining TCAP results, DPP status indicators and the School Performance Framework (SPF) indicators from DPS, these data indicate that a quality DPP experience coupled with higher school quality is associated with even greater percentages of students attaining advanced or proficient scores on TCAP.

⁴ Schweinhart, L.J., Montie, J., Xiang, Z., Barnett, W.S., Belfield, C.R., Nores, M. (2004). Lifetime Effects: The High/Scope Perry Preschool Study Through Age 40. Ypsilanti High/Scope Foundation. Rolnick, A. and R. Grunewald (2003). Early childhood development: Economic development with a high public return. Technical report, Federal Reserve Bank of Minneapolis, Minneapolis, MN. Karoly, L. Kilburn, M. & Cannon, J. (2005). Early childhood interventions: Proven results, future promise. Santa Monica, CA: RAND Corporation. Available online at http://www.rand.org/pubs/monographs/2005/RAND_MG341.pdf.

Conclusion

This memo shows that students who were approved by DPP in 2008-09 were more likely to reach proficient or advanced levels on fourth grade TCAP assessments. Evidence indicates that DPP students outperformed students who did not enroll in DPP across many subgroups of student race/ethnicity, free and reduced price lunch status, ELL status, and school quality.

Appendix A

The following figures provide comparisons of all DPP students who were approved by DPP in 2008-09 with the DPP students who took the fourth grade TCAP in 2013-14, by race/ethnicity and by Free or Reduced-Price Lunch (FRPL) status. The figures show both how the fourth grade samples differ from the preschool year. Overall, the demographics are very similar between the DPP students in their 2008-09 preschool year and the DPP students who took the fourth grade TCAP.

Figure A1

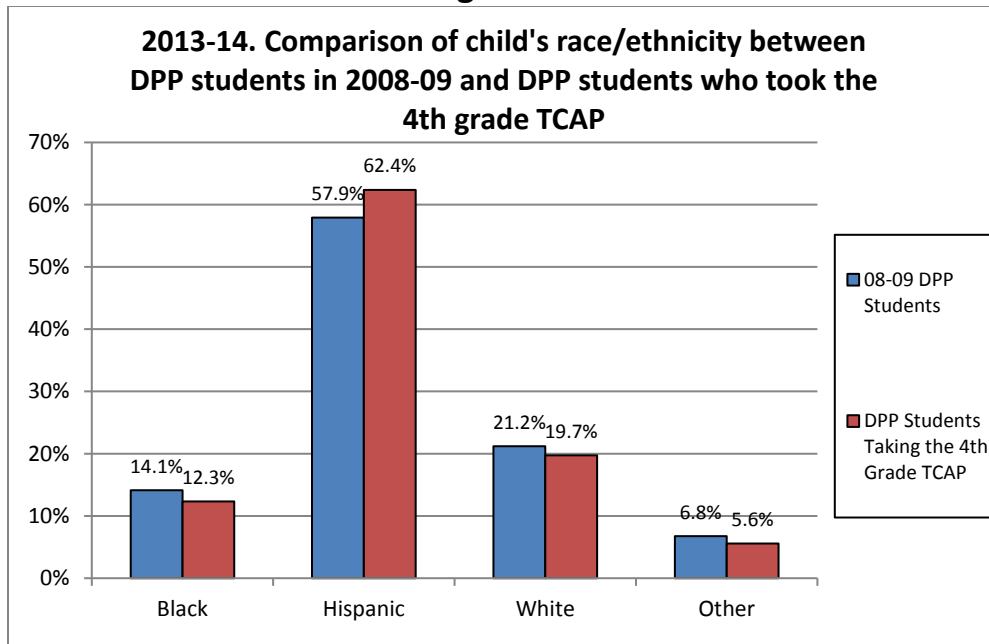
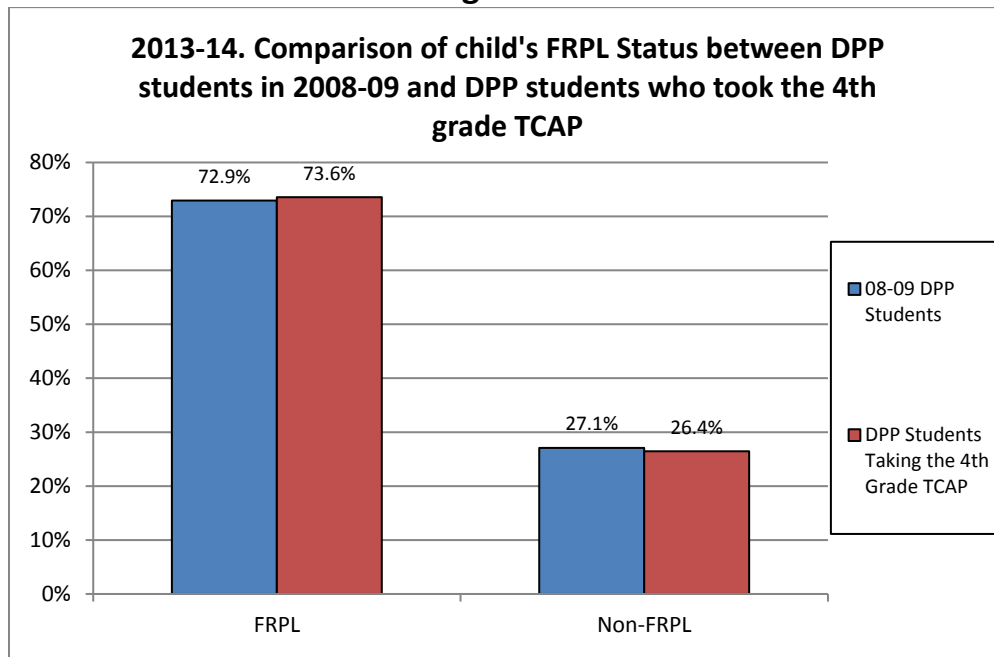


Figure A2



Appendix B

The following two figures provide additional information on approved DPP participants in 2008-09.

Figure B1

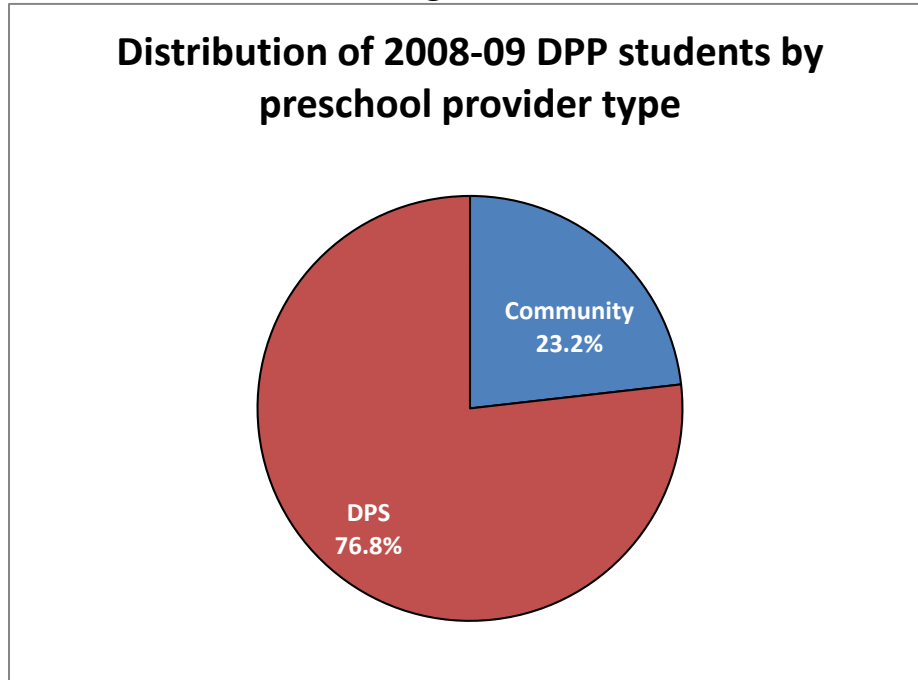


Figure B2

