MEMORANDUM

To: Jennifer Landrum, President, Denver Preschool Program

From: Dr. Robert Palaich, Augenblick, Palaich and Associates[1]

Re: DPP 2008-09 and 2009-10 Cohort third Grade TCAP Results

Introduction

The Denver Preschool Program School (DPP) began operations in 2007. Since then, over $55 million in tuition support has helped over 31,000 Denver four-year-olds attend a quality-rated preschool.

The 2008-09 school year was the first year of full operation of DPP. Students who participated in DPP in 2008-09 entered third grade in the Denver Public Schools (DPS) in the 2012-13 school year and participated along with other Colorado third graders in Colorado's standardized testing system, the Transitional Colorado Assessment Program (TCAP). Students who participated in DPP in the 2009-10 school year, entered the third grade in DPS in the 2013-14 school year and participated along with other third grade students from across the state in the TCAP.

There are now two years of third grade TCAP data on students who applied and were approved to participate in DPP four years earlier. This memo describes the evidence about whether students who participate in DPP in the year before kindergarten are more likely to reach proficient or advanced levels on third grade TCAP assessments, than students who did not participate in DPP.

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 0.12 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, approximately 70 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.

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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.

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.

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 size and income of the family, the quality rating of the preschool the child attends, and the child's participation types (part-, full-, or extended-day). In addition, DPP provides funding for preschools serving children who live in Denver to obtain a state-approved 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 program quality.

The child outcomes portion of the DPP evaluation has focused on the following three questions over the life of the program:

- Do children make progress in their development while in DPP early learning environments?
- To what extent are children who participate in DPP ready for kindergarten?
- Do children from different income levels and with different primary languages make similar progress in their development while in DPP early learning environments?

In the balance of this memo, we will focus on documenting the third grade TCAP performance differences between DPP and non-DPP students who took a third grade TCAP test in 2012-13 or 2013-14. But first, we present a brief look at what previous analyses have revealed about the school-readiness of these children.

Samples of 200 from the 2008-09 and 2009-10 DPP Cohorts were ready for Kindergarten

Each year, the DPP evaluation team selects a random sample of children who represent the population of children approved by DPP at that time. The academic and social-emotional progress of these children is tracked during their preschool year, with each child being assessed in the fall and spring.[2] The following standardized assessments are used:

- Peabody Picture Vocabulary Test-4 (PPVT: Dunn & Dunn, 2007) and Test de Vocabulario en Imagenes Peabody (TVIP: Dunn, Lugo, Padilla & Dunn, 1986). We used the PPVT and TVIP, which are widely used measures of receptive vocabulary in English and Spanish, respectively.
- Woodcock-Johnson III Achievement Battery (WJ; Woodcock, McGrew, & Mather, 2001) & Batería III Woodcock-Muñoz (WM; Muñoz-Sandoval, Woodcock, McGrew & Mather, 2005). We used two subtests of the WJ: Letter-Word Identification (LWI; an assessment of pre-literacy and literacy skills) and Applied Problems (a math assessment). The WJ has a parallel Spanish version, WM, and these two subtests have strong reliability for preschool-aged children.

[2] For more information about this sample and results from the preschool year, readers are referred to the Annual Evaluation Report. Klute, M. M. (2009). *Denver Preschool Program: Report on Child Outcomes—2008-09 School Year.* Unpublished Report. Denver: Clayton Early Learning Institute, and Klute, M. M. (2010). *Denver Preschool Program: Report on Child Outcomes—2009-10 School Year.* Unpublished Report. Denver: Clayton Early Learning Institute

- Parent and teacher surveys that use the Devereaux Early Childhood Assessment (DECA: LeBuffe & Naglieri, 1999) to measure of children's social-emotional development.

For the 2008-09 and 2009-10 cohorts of DPP children, the following steps were used to analyze their preschool progress:

- First, the children selected for the evaluation study were compared with children approved by DPP but not included in the sample to check the representativeness of the sample. In the 2008-09 cohort, statistical tests for differences in child gender, race/ethnicity, family income, Qualistar Rating™ of the child's preschool, home language, and child's primary language were all non-significant. In the 2009-10 cohort, the community sample overrepresented females, but was otherwise representative of the population of enrolled children at the end of the 2009-10 school year.
- Second, the results of all administered assessments were compared. *Results of the analysis for the sample for both cohorts suggest that the vast majority of children were ready for school, both academically and social-emotionally.* When considering both languages of assessment, the evaluation team concluded that few children had scores in the risk range (below 85th percentile) on assessments of their vocabulary, literacy, and math skills. These nationally standardized assessments are scaled such that students who score above the 84th percentile would be expected to be ready for kindergarten. Scores for literacy and math in these samples exceed that threshold. Vocabulary scores approach that threshold. In addition, when teachers rated children's behaviors, their ratings of protective factors were high for most children. Protective factors, i.e., initiative, self-control and attachment, were rated as areas of concern for fewer than 10 percent of children.

Sample of 200 from the 2008-09 and 2009-10 Cohorts made progress in Reading during Kindergarten and this progress persisted through 2nd grade

Spring Kindergarten Reading Results

The evaluation team was able to obtain reading assessment data one year after the DPP experience for over 80 percent of the 200 in the original 2008-09 cohort sample and for approximately 70 percent of the 200 in the original 2009-10 cohort sample. This data included results from the kindergarten DRA Developmental Reading Assessment Version 2 (DRA2) and Evaluacion Del Desarrollo De La Lectura 2 (EDL2).[3]

[3] Tasks measured by the DRA test are divided into several skill sets. Rhyming, alliteration, segmentation, and phonemic awareness are tested in the phonemic awareness section. Letter naming, word-list reading, spelling, decoding, analogies, structural analysis, and syllabication are tested in the alphabetic principle/phonics portions. Oral reading fluency or words per minute for contextual reading are tested under fluency. Vocabulary, comprehension, and reading engagement skills are also measured in the test.

Figure 1 displays the proportion of the 2008-09 sample of DPP graduates whose reading level was at or above grade level as assessed by the DRA2and EDL2. This is presented alongside the reading levels for kindergarteners in the district as a whole in spring 2010, which includes the DPP sample as well as non-DPP participants who also attended preschool during the year before kindergarten. The vast majority (92 percent) of the DPP cohort sample assessed in English with the DRA2 were reading at or above grade level at the end of kindergarten. In contrast, in the district as a whole, just fewer than 80 percent of children were reading at or above grade level. Eighty-five percent of the DPP cohort sample assessed in Spanish using the EDL2 was reading at or above grade level at the end of kindergarten. In contrast, about three-quarters of children in the district as a whole were reading at or above grade level as assessed by the EDL2.

Figure 1

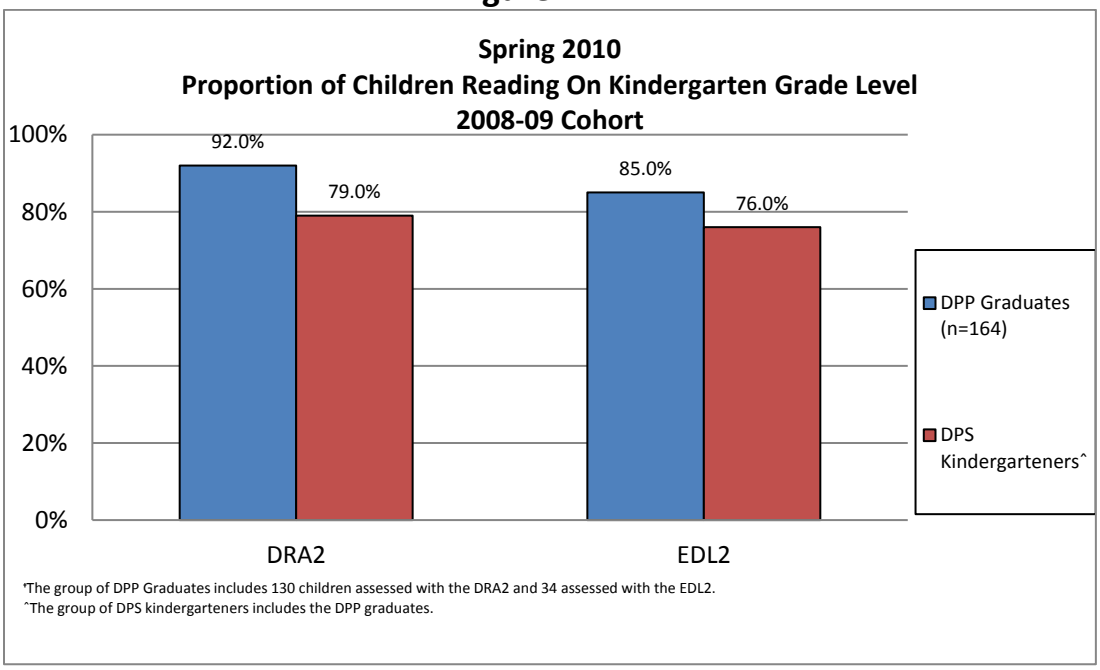
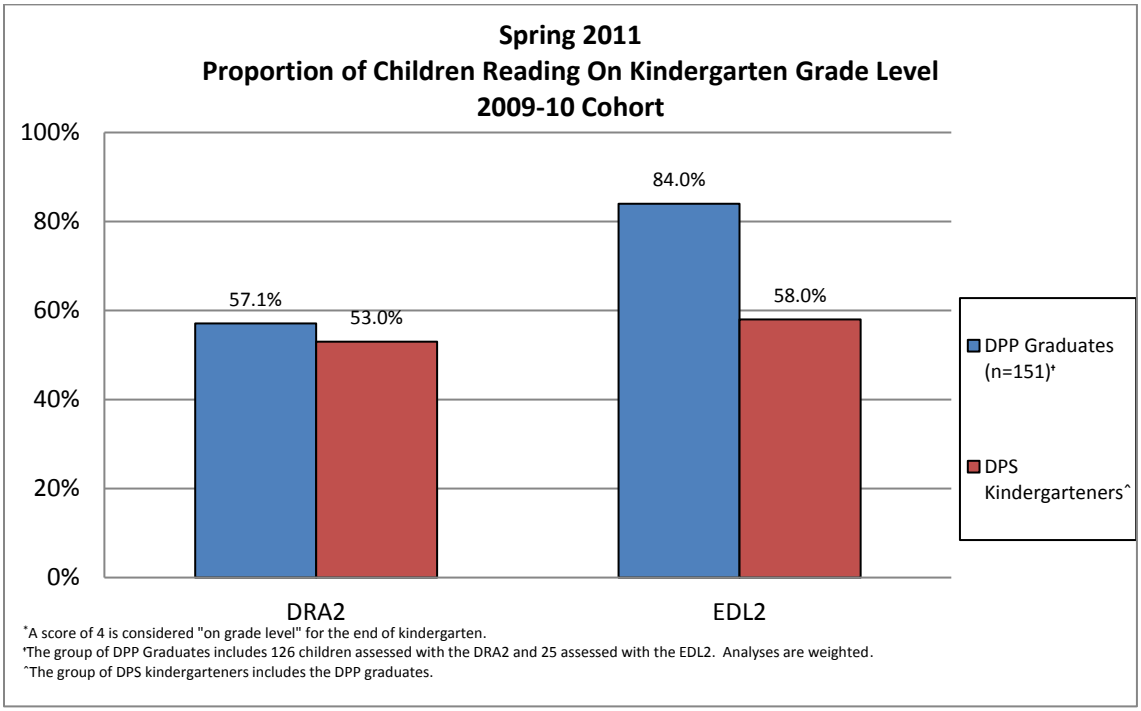


Figure 2 displays the proportion of the 2009-10 cohort of DPP graduates whose reading level was at or above grade level as assessed by the DRA2 and EDL2. This is presented alongside the reading levels for kindergarteners in the district as a whole in spring 2011, which includes the DPP sample. Fifty-seven percent of DPP graduates assessed in English with the DRA2 were reading at or above grade level at the end of kindergarten. This is slightly higher than the proportion reading at or above grade level in the district as a whole (53 percent). Eighty-four percent of the DPP cohort sample assessed in Spanish using the EDL2 was reading at or above grade level at the end of kindergarten. In contrast, 58 percent of children in the district as a whole were reading at or above grade level as assessed by the EDL2.

Figure 2



Though there appears to be a dramatic difference between results for the 2008-09 cohort and the 2009-10 cohort, a large part of the difference between the two cohorts is due to an increase in expectations for reading that started with the 2010-11 school year. Because of the increase in the proportion of children enrolled in full-day kindergarten, DPS raised its expectations for reading on grade level at the end of kindergarten from a score of 3 on the DRA to a score of 4 on the DRA. For the purposes of comparison across cohorts, the evaluation team also computed the percent of the 2009-10 cohort of DPP graduates reading on grade level using the old cutoff of 3. Under this analysis, 81 percent of the 2009-10 DPP cohort sample assessed with the DRA2 and 98 percent of assessed with the EDL2 children met the benchmark. These figures are more consistent with what was observed for the 2008-09 cohort.

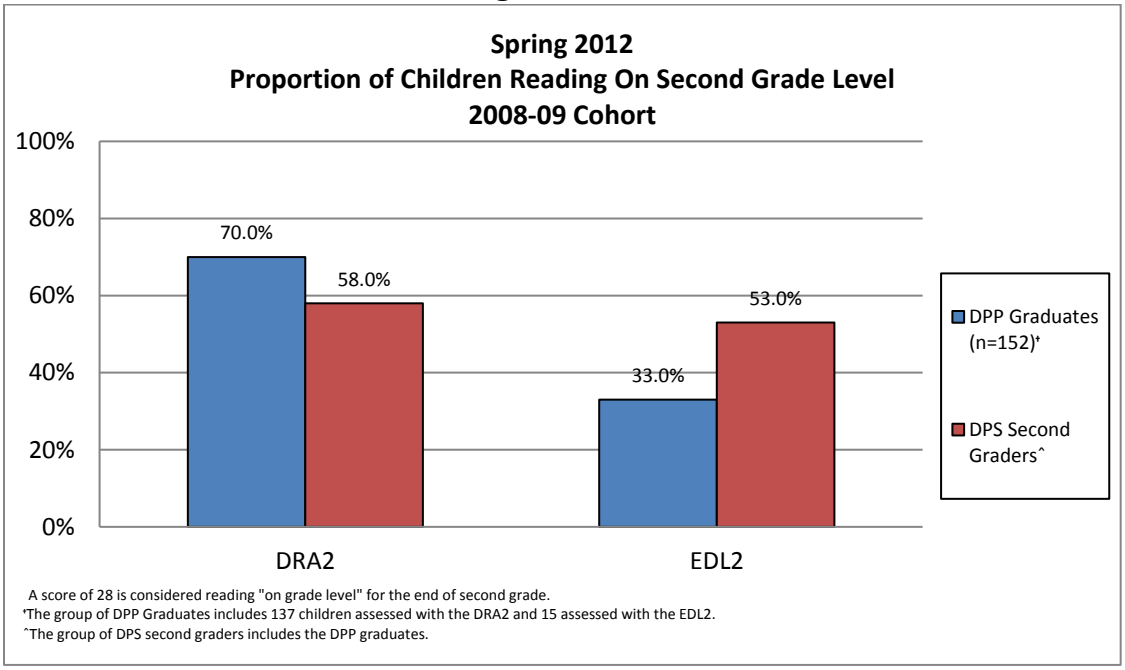
Spring 2nd Grade Reading Results

The fall 2011 reading assessment data for the 2008-09 cohort sample were similar to the district in terms of their ethnic and gender composition. The fall 2012 reading assessment data for the 2009-10 cohort sample includes more Black children and fewer Hispanic children than the district as a whole. For both cohorts, a smaller

proportion of children in the samples qualified for free or reduced-price lunch than for the district as whole, suggesting that the samples might be composed of slightly wealthier families than the district as a whole.

Figure 3 displays the proportion of 2008-09 DPP cohort sample graduates whose reading level was at or above grade level as assessed by the DRA2 and EDL2 in the spring of second grade. This is presented alongside the reading levels for second graders in the district as a whole in Spring 2012, which includes the DPP sample. Over two-thirds of DPP graduates assessed in English with the DRA2 were reading at or above grade level at the end of second grade, compared with just 58 percent of second graders in the district as a whole. Only 15 DPP graduates were assessed using the EDL2. Of these 15, only a third were reading on grade level compared to slightly over half of the second graders assessed with EDL2 in the district as a whole.

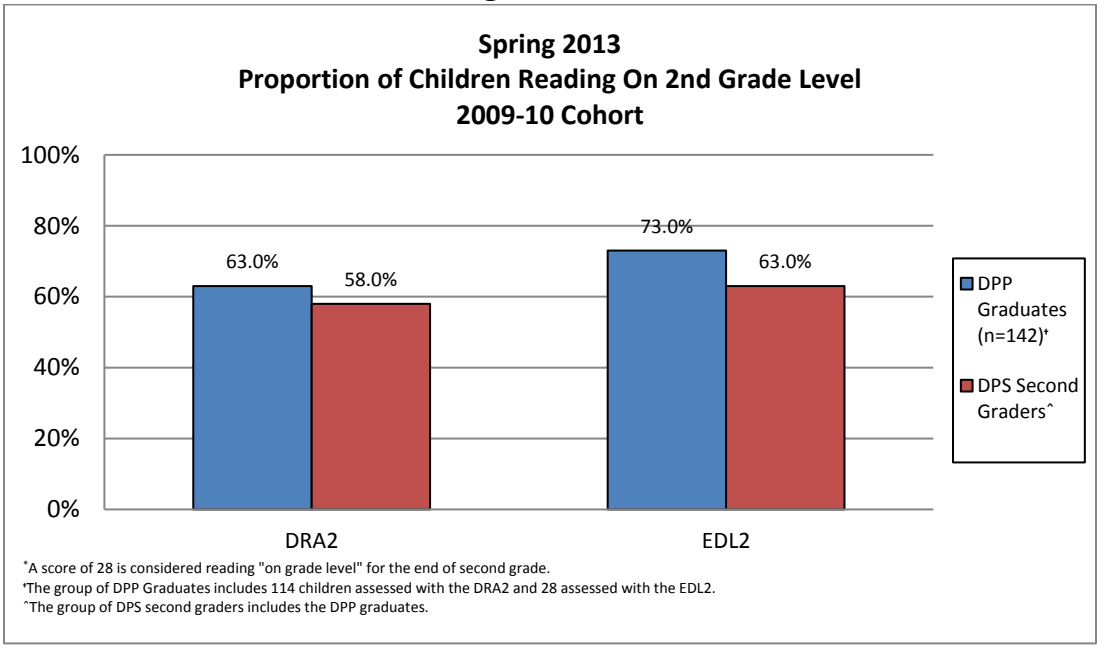
Figure 3



A score of 28 is considered reading "on grade level" for the end of second grade.
ᵗThe group of DPP Graduates includes 137 children assessed with the DRA2 and 15 assessed with the EDL2.
^The group of DPS second graders includes the DPP graduates.

Figure 4 displays the proportion of the 2009-10 Cohort DPP graduates whose reading level was at or above grade level as assessed by the DRA2 and EDL2 in the spring of second grade. This is presented alongside the reading levels for second graders in the district as a whole in spring 2013, which includes the DPP sample. Nearly two-thirds of DPP graduates assessed in English with the DRA2 were reading at or above grade level at the end of second grade, compared with just 58 percent of second graders in the district as a whole. Only 28 DPP graduates were assessed using the EDL2. Of these, nearly three-quarters were reading on grade level compared to nearly two-thirds of the second graders assessed with EDL2 in the district as a whole.

Figure 4



These results demonstrate that the representative sample of DPP graduates in the first two full cohorts of the program were more likely to be reading on grade level at the end of their kindergarten year, and at the end of second grade, than their peers who did not enroll in DPP. For the 2008-09 cohort, the gap between DPP graduates and non-DPP graduates on the DRA2 was 13 percentage points at kindergarten and 12 percent at the end of second grade. While the DRA2 gap for the 2009-10 cohort was smaller, at four percent in kindergarten and five percent at second grade, both sets of results indicate that DPP graduates outperformed their peers upon entering school, and continued to do so two years later.

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

In 2012-13, Denver Public Schools (DPS) experienced success in raising the percent of third grade students scoring proficient or above on the state's annual assessment (TCAP) in Reading, Lectura (the Spanish version of the Reading test), and Math. Specifically, DPS saw increases in the percent of students scoring proficient on the following TCAP tests:

- TCAP Reading: 1.5 percent
- TCAP Lectura (Spanish version of Reading test): 9.8 percent
- TCAP Math: 5.2 percent

These increases brought the percent of students scoring proficient or above to the following levels for each test:

- TCAP Reading: 60.5 percent
- TCAP Lectura (Spanish version of Reading test): 56.6 percent
- TCAP Math: 59.3 percent

While these rates remain below the state average, they represented important increases.

The DPS 2013-14 TCAP results showed increases on the percent scoring proficient or higher on four out of the five TCAP tests (every test except Reading, which experienced a 0.8 percent decline). The list below presents each TCAP test and the corresponding increase in the percent of students scoring at proficient or higher levels:

- TCAP Lectura (Spanish version of Reading test): 5.0 percent
- TCAP Math: 0.6 percent
- TCAP Writing: 2.7 percent
- TCAP Escritura (Spanish version of Writing test): 12.5 percent

In 2012-13, 6,630 students took at least one of the third grade TCAP assessments, while 7,027 students took at least one in 2013-14. More than 6,000 took each of the individual tests in English in both school years. Fewer than 800 students took either one of the Spanish version assessments in either 2012-13 or 2013-14. Among the students who took at least one TCAP assessment in third grade, 3,101 students or 46.8 percent of 6,630 participated in DPP in 2008-09 and 3,575 students or 50.9 percent of 7,027 participated in DPP in 2009-10. Thus, both the number and percentage of third grade TCAP takers who participated in DPP increased from 2012-13 to 2013-14.

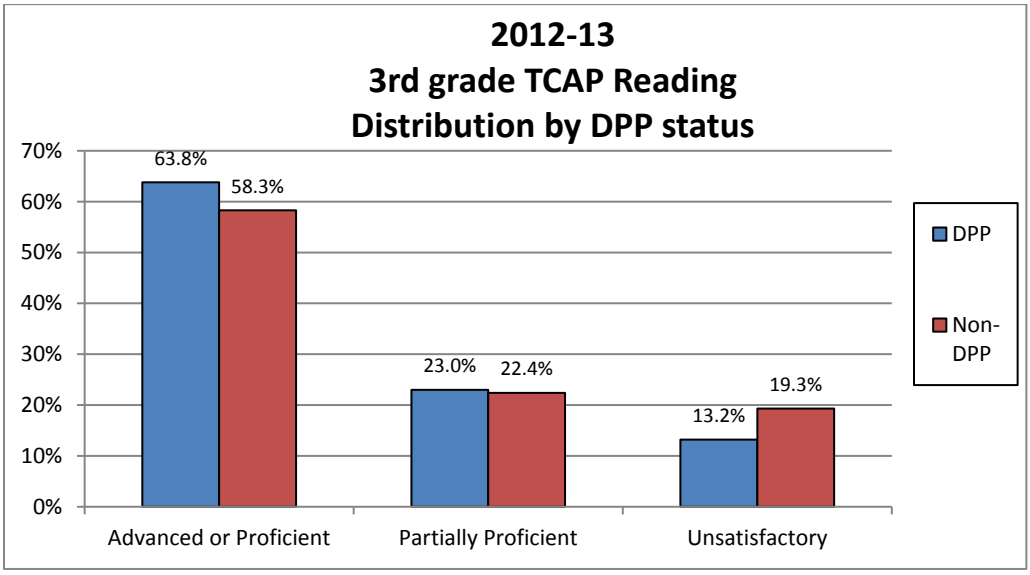
Of the children that participated in DPP in 2008-09, 3,101 (65.2 percent) took the TCAP (at least one of the tests) in third grade in 2012-13. In the 2009-10 cohort, 62.4 percent or 3,575 took the third grade TCAP in 2013-14. For a deeper comparison of the cohorts that participated in DPP in 2008-09 and 2009-10, and the DPP students who took the TCAP 4 years later, please see Appendix A.

The following sections compare TCAP results for students who participated in DPP and those who did not. This analysis includes two years of third grade results (2012-13 and 2013-14) and every TCAP subject test (Reading, Lectura: Spanish version of the Reading test, Writing, Escritura: Spanish version of the Writing test, and Math).

Reading

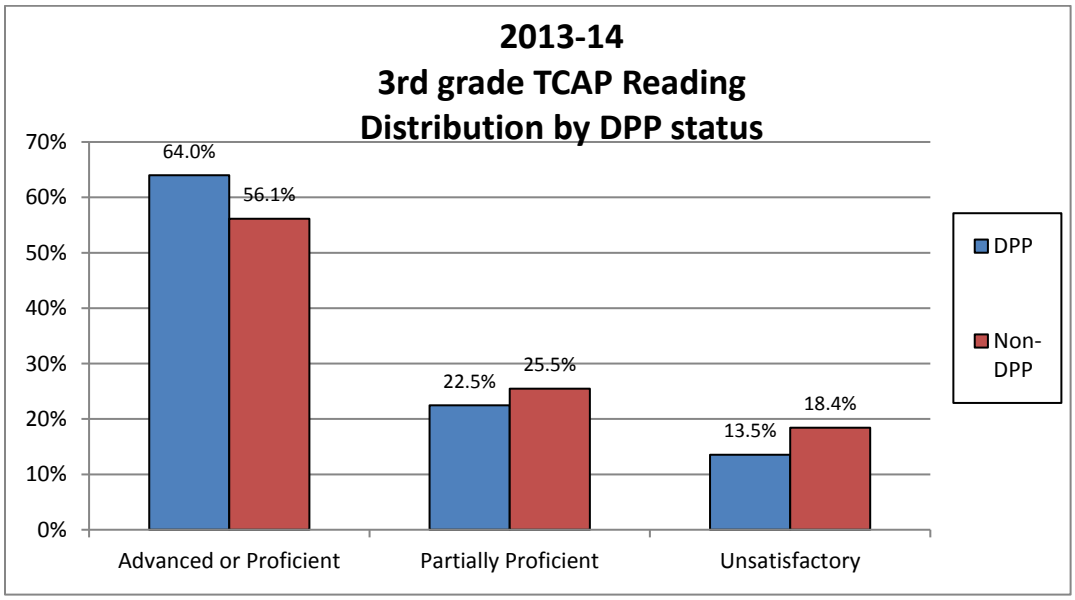
Figure 5 displays the proficiency distribution for the TCAP Reading assessment. Compared to non-DPP students, DPP students were more likely (by 5.5 percent) to reach advanced or proficient levels and less likely (by 6.1 percent) to score at unsatisfactory levels.

Figure 5



In 2013-14, DPP students were even more likely than non-DPP students to score at advanced or proficient levels (7.9 percent) and 4.9 percent less likely to score at unsatisfactory levels in Reading.

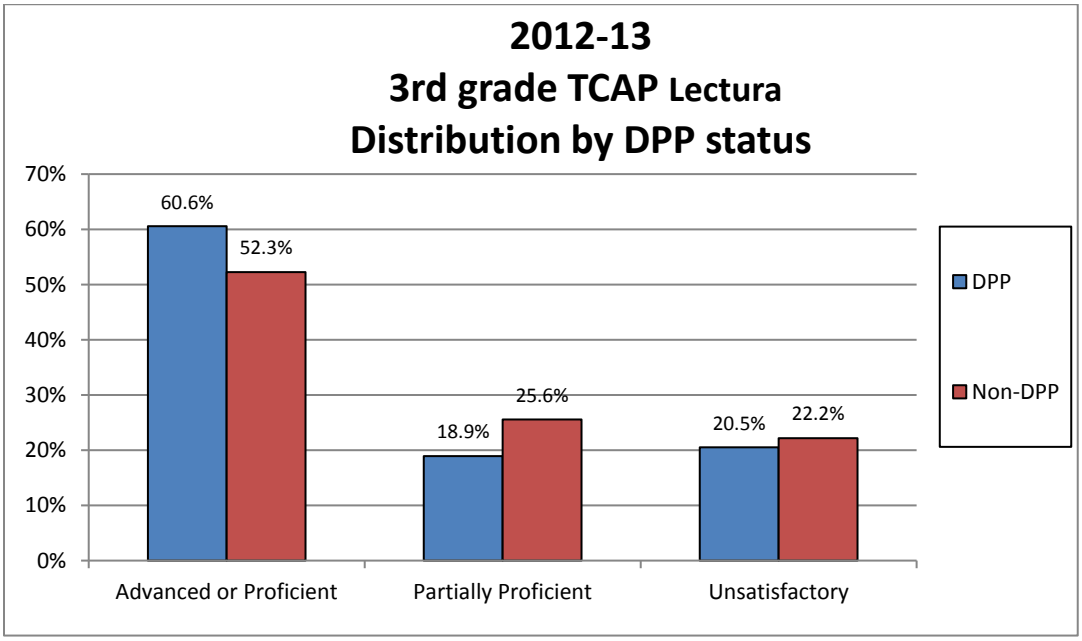
Figure 6



Notably, the percent of DPP students reaching advanced or proficient levels on TCAP reading in third grade increased slightly (0.2 percent) from 2012-13 to 2013-14, while this percent decreased 2.2 percent for non-DPP students.

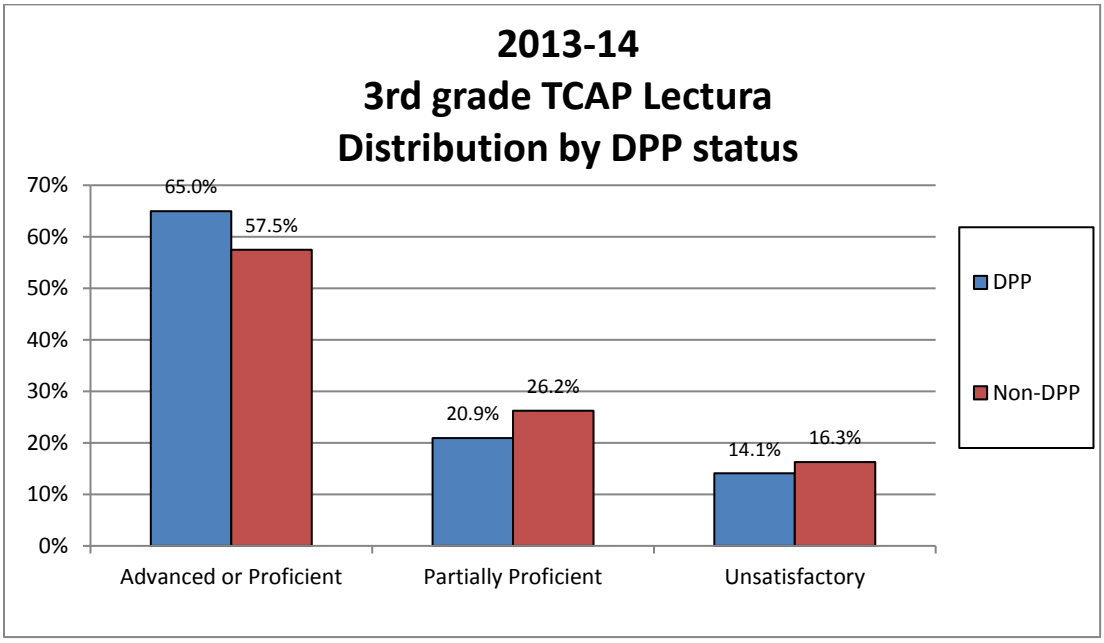
The numbers of students taking the Spanish version of the TCAP reading assessment (Lectura) are considerably smaller than the numbers taking the English version (585 students in 2013 and 755 in 2014). As a result of these smaller numbers, the differences between DPP and non-DPP students are not statistically significant. Nonetheless, the patterns suggest that DPP students are performing at relatively high levels. Figures 7 and 8 present these results for 2012-13 and 2013-14 respectively.

Figure 7



Differences are not statistically significant

Figure 8

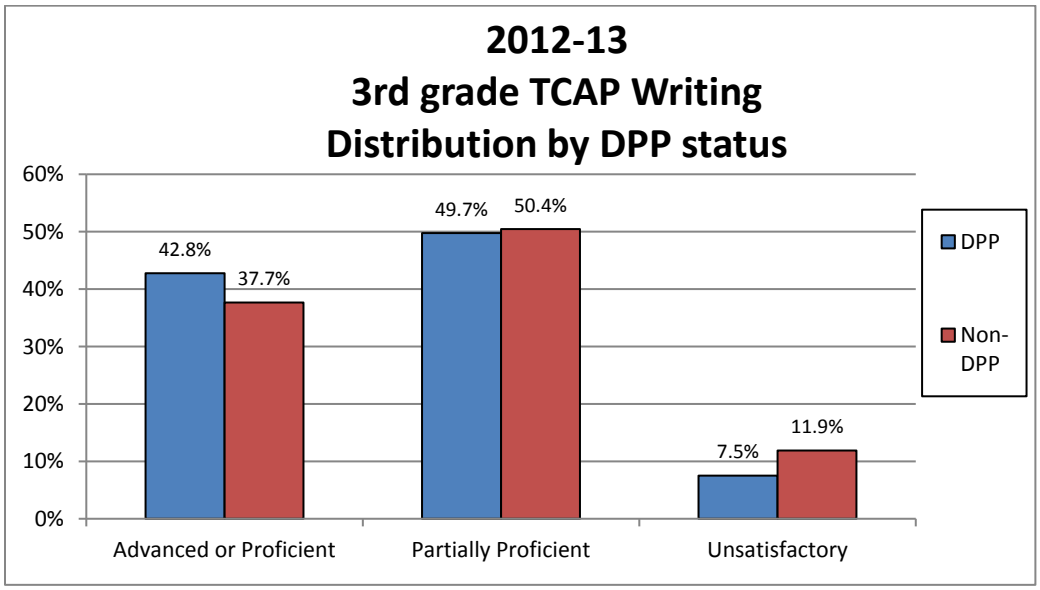


Differences are not statistically significant

Writing

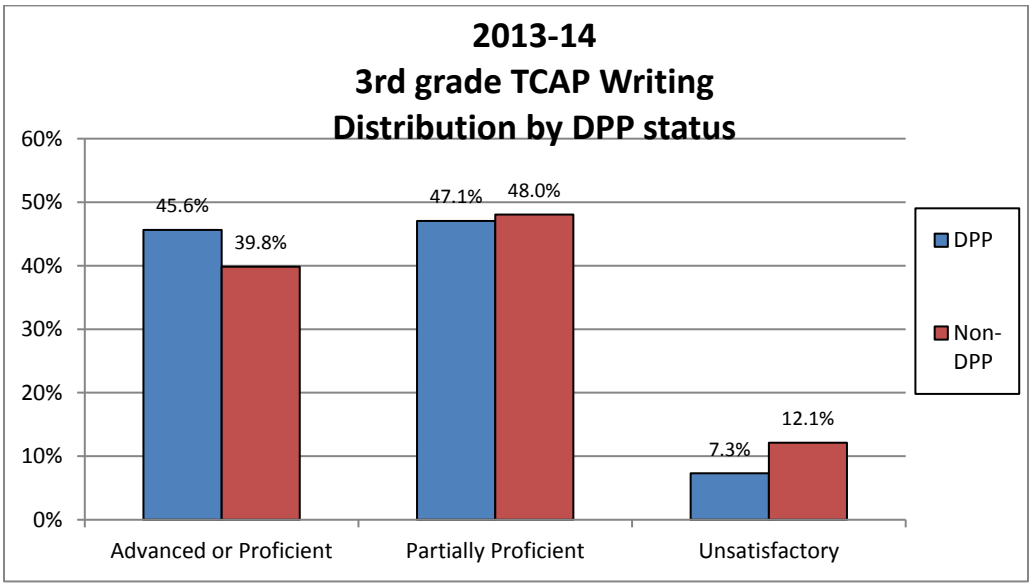
Third grade students who had participated in DPP were more likely than non-DPP students to score at advanced or proficient levels on TCAP Writing in both 2012-13 and 2013-14. Additionally, DPP students were less likely than non-DPP students to score at unsatisfactory levels. In 2012-13, there was a 5.1 percent gap between DPP and non-DPP students in the percent of students scoring at advanced or proficient levels. Figures 9 and 10 display these results.

Figure 9



In 2013-14, DPP students were 5.8 percent more likely than non-DPP students to score at advanced or proficient levels on TCAP Writing.

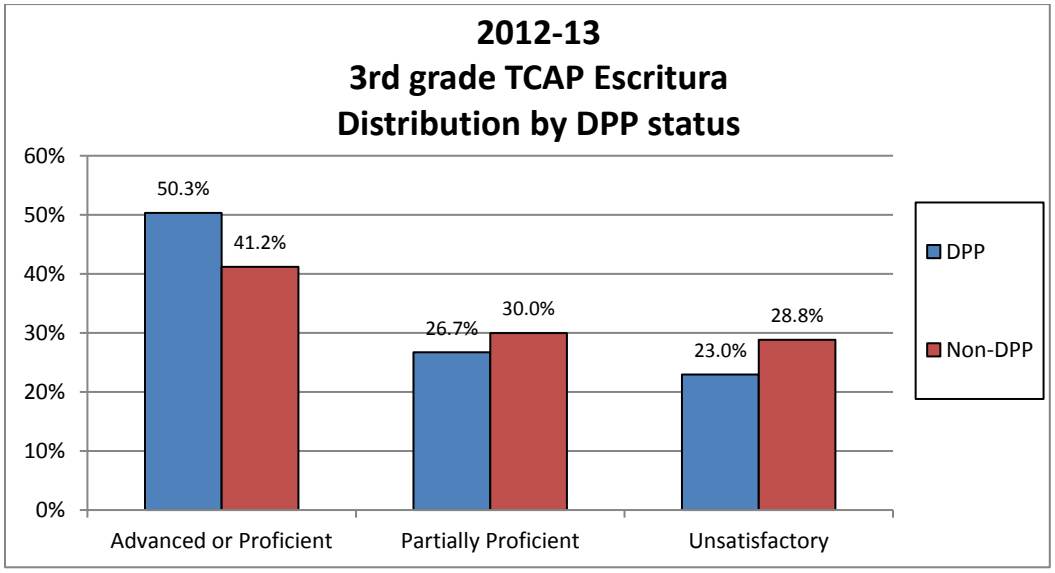
Figure 10



Both DPP and non-DPP third grade students in 2013-14 slightly outperformed their 2012-13 peers on the third grade TCAP Writing.

In 2012-13, the differences between DPP and non-DPP students on the Spanish version of the Writing test (Escritura) appear to show DPP students scoring at high levels compared to their peers. However, the sample size (585 students) was not large enough to reach statistical significance.

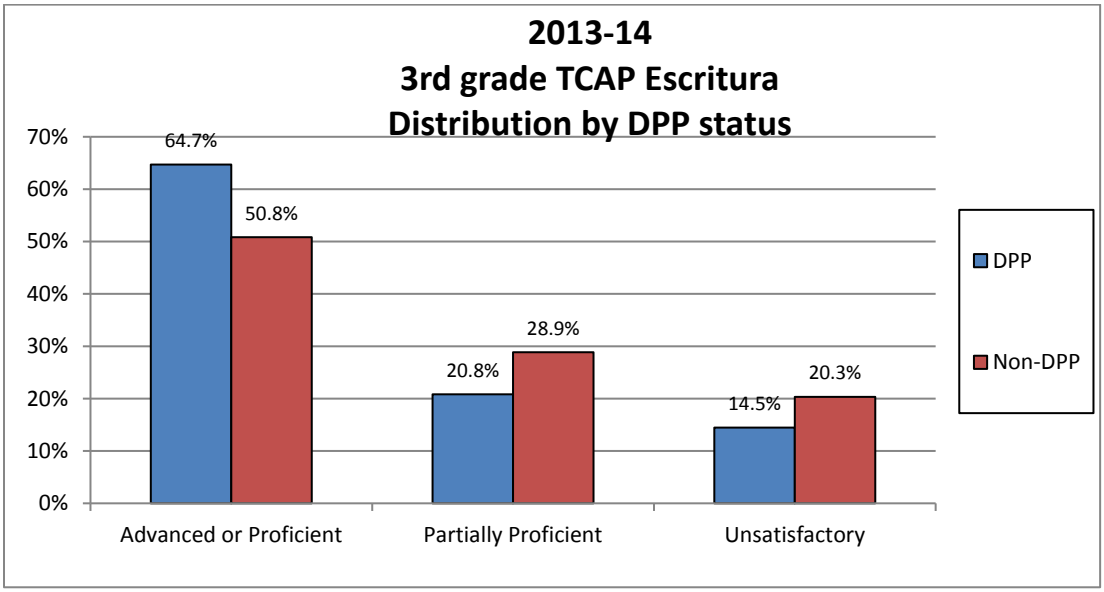
Figure 11



Differences are not statistically significant

The results in 2013-14 indicate that students who attended DPP in 2009-10 were more likely by a margin of 13.9 percent than non-DPP students to score at proficient or higher levels. These results are statistically significant even though the number of students in the sample was low, 761 students.

Figure 12

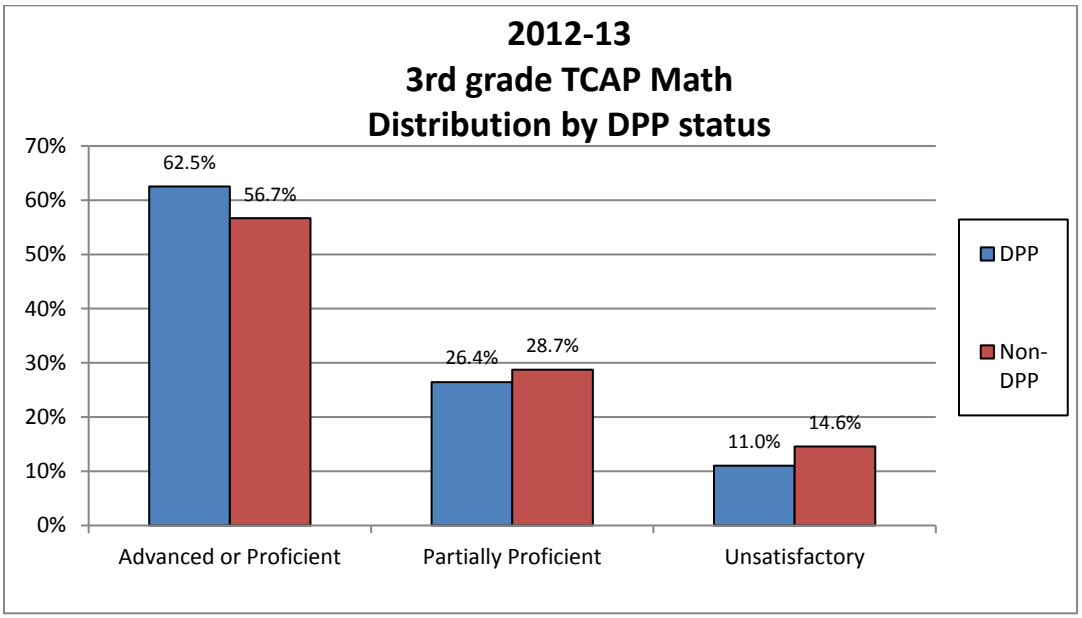


The 2013-14 third grade students were much more likely than 2012-13 third grade students to score at advanced or proficient levels on the TCAP Escritura. In fact, the percent of students scoring at these higher levels increased 9.6 percent for non-DPP students and an even greater 14.4 percent for DPP students.

Math

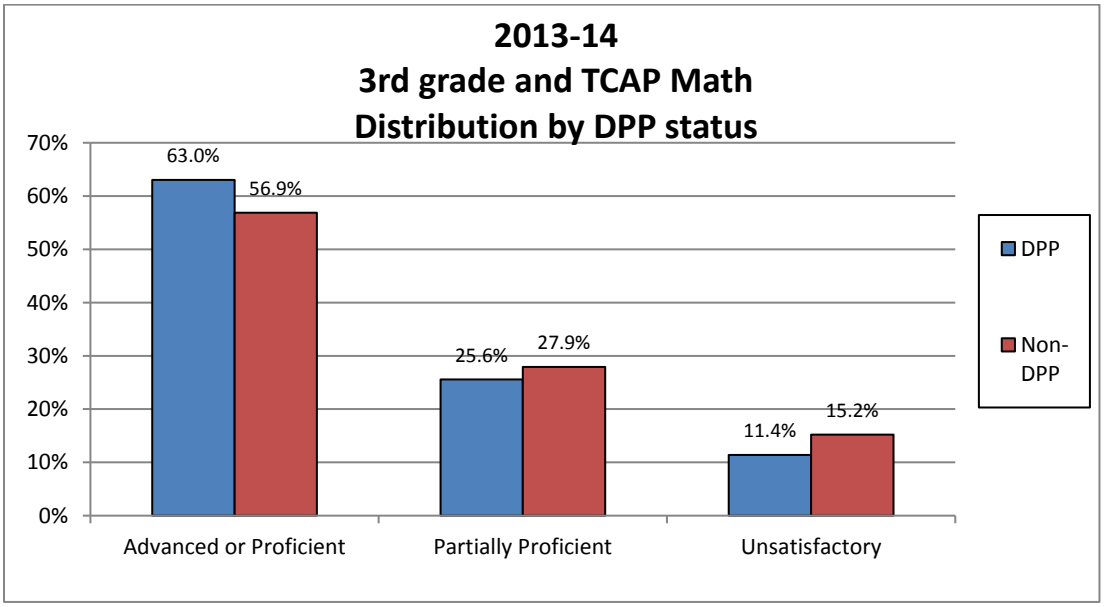
DPP participants were more likely than their non-DPP peers to score at advanced or proficient levels and less likely to score at unsatisfactory levels on the third grade TCAP Math assessments in both 2012-13 and 2013-14. In 2012-13, DPP students were 5.8 percent more likely to score at advanced or proficient levels and 3.6 percent less likely to score at unsatisfactory levels. Figures 13 and 14 present the data for each school year.

Figure 13



Among those who took the third grade TCAP Math assessment in 2013-14, DPP students were 6.1 percent more likely than students who did not attend DPP to score at advanced or proficient levels and 3.8 percent less likely to score at unsatisfactory levels.

Figure 14



Both DPP and non-DPP students experienced small increases in the percent of third grade students scoring at proficient levels on TCAP Math between 2012-13 and 2013-14.

The third grade proficiency results are very positive for students who attended the Denver Preschool Program four years earlier. DPP students were more likely to score at advanced or proficient levels than third grade students who did not enroll in DPP. This was true across subjects assessed and for the third grade cohorts taking TCAP in either 2012-13 or 2013-14.

DPP and Race/Ethnicity

Figure 15 shows that DPP served a greater proportion of Hispanic students, compared to non-DPP students taking the TCAP in 2012-13. The distribution of students taking the TCAP was slightly different in 2013-14, as shown in Figure 16. In 2013-14, the percent of the DPP cohort comprised of Black or Hispanic students is nearly identical to the percent for non-DPP students for each of these races and ethnicities. The DPP sample in the latter year has a slightly higher percent of White students, and slightly lower percent of 'Other' students.

Figure 15

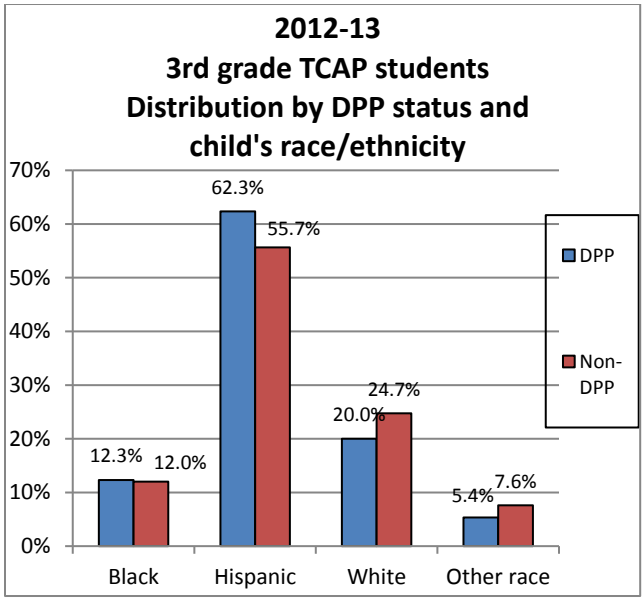
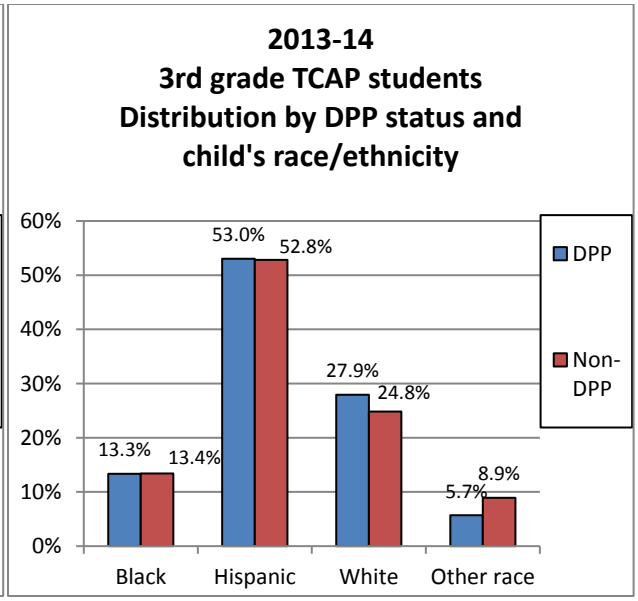


Figure 16



Figures 17 and 18 show that DPP students in every race/ethnicity category outperformed their non-DPP counterparts on TCAP Reading in both 2012-13 and 2013-14. Results presented in the following figures are statistically significant unless noted otherwise.

Figure 17

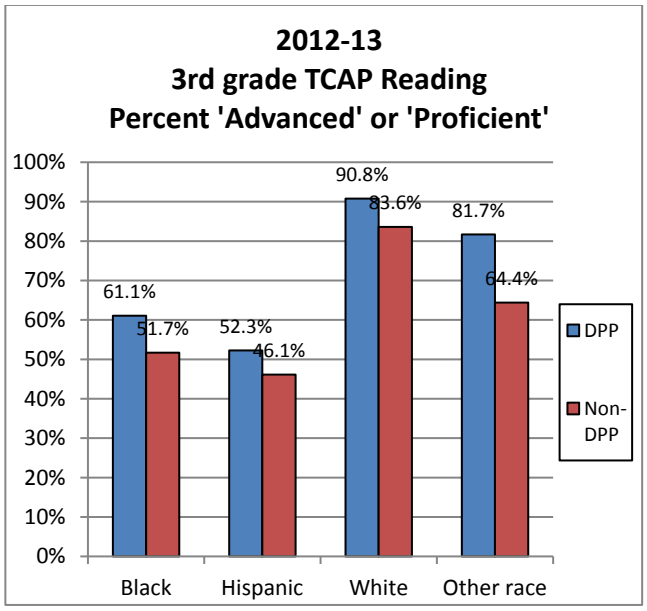
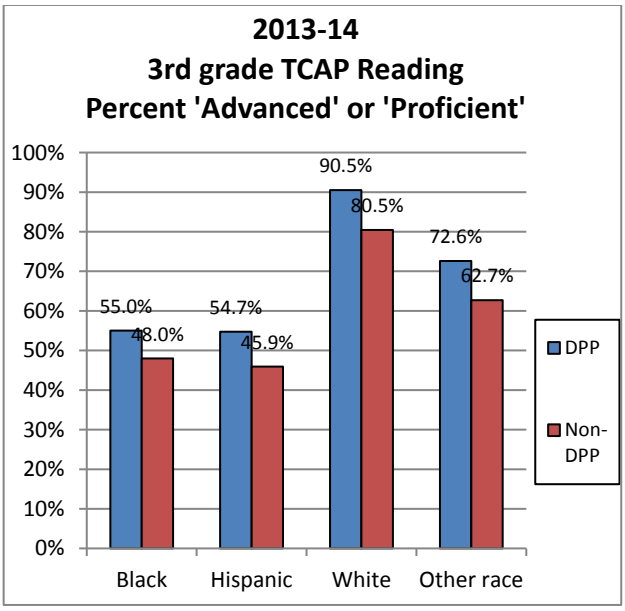
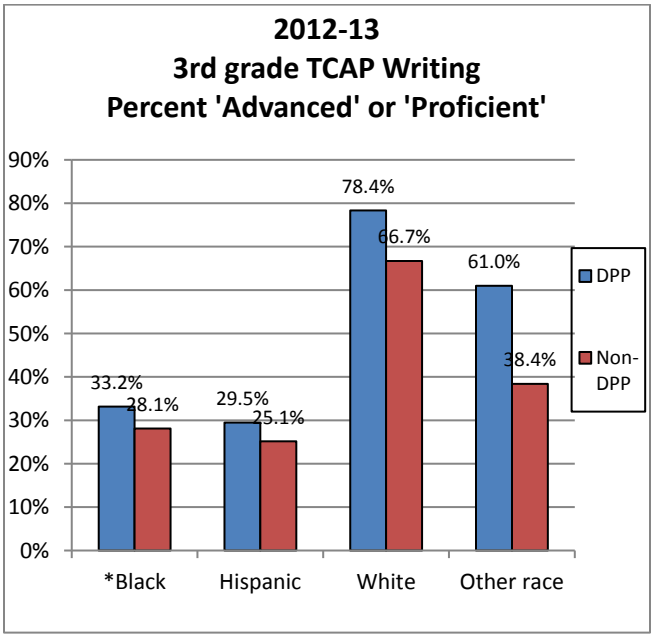


Figure 18



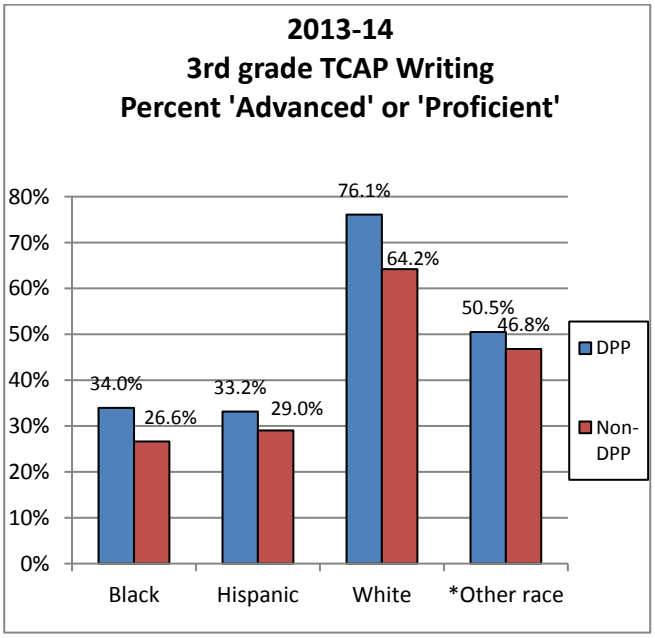
In 2012-13, DPP students in every race/ethnic group were more likely to score at advanced or proficient levels than non-DPP students on TCAP Writing. The same was true in 2013-14, although there was no statistical difference between DPP and non-DPP students of 'Other' race. Figures 19 and 20 display these results.

Figure 19



*Differences for Black students are not statistically significant.

Figure 20



*Differences for Other students are not statistically significant.

DPP students taking the TCAP Math in 2012-13 were more likely across every race/ethnic group, to score at advanced or proficient levels than non-DPP students. In 2013-14, Hispanic and White DPP students outperformed their non-DPP counterparts, but there was no statistical difference between DPP and non-DPP students for Black students or those identifying as 'Other' in the percent scoring at advanced levels. These results are displayed in Figures 21 and 22.

Figure 21

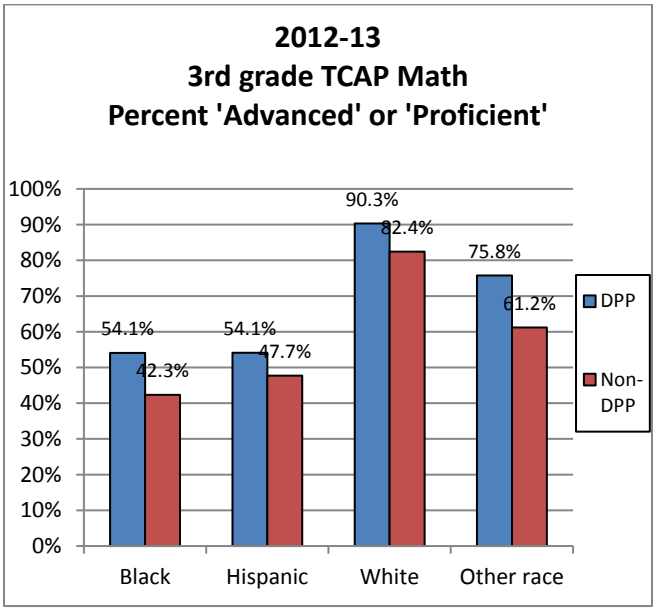
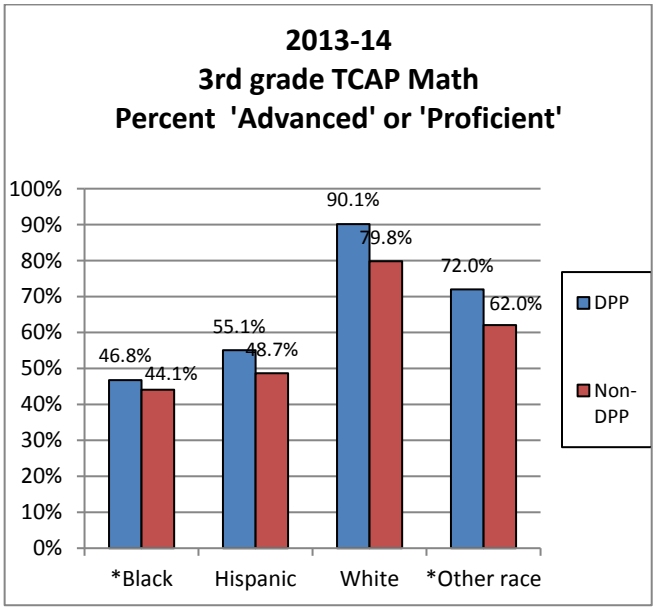


Figure 22



*Differences are not statistically significant for Black or 'other race' students.

Differences in TCAP Results for the Lectura and Escritura assessments, by DPP status and the child's race/ethnicity rarely display statistical significance and are not presented in this analysis.

DPP and FRPL Status

Figure 23 shows that in 2012-13 the DPP sample had a slightly higher proportion of Free and Reduced Price Lunch (FRPL) students than the non-DPP sample. In 2013-14, the proportion of FRPL students was slightly higher among the non-DPP sample than in the DPP sample, as shown in Figure 24.

Figure 23

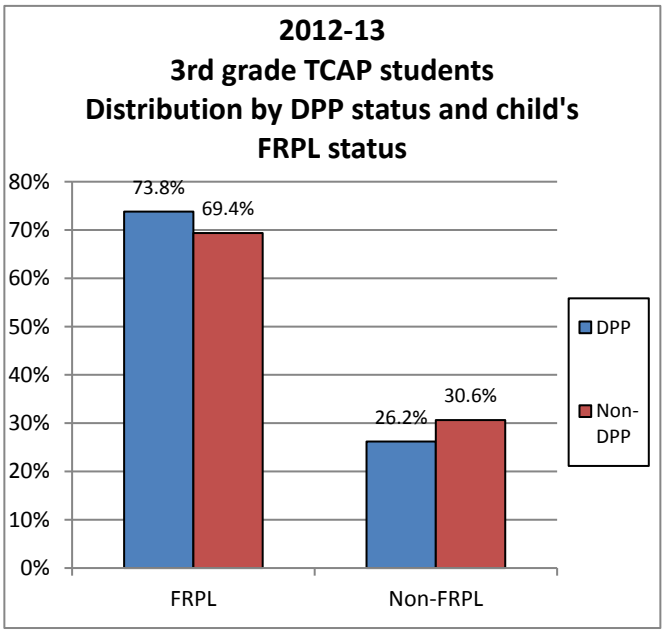
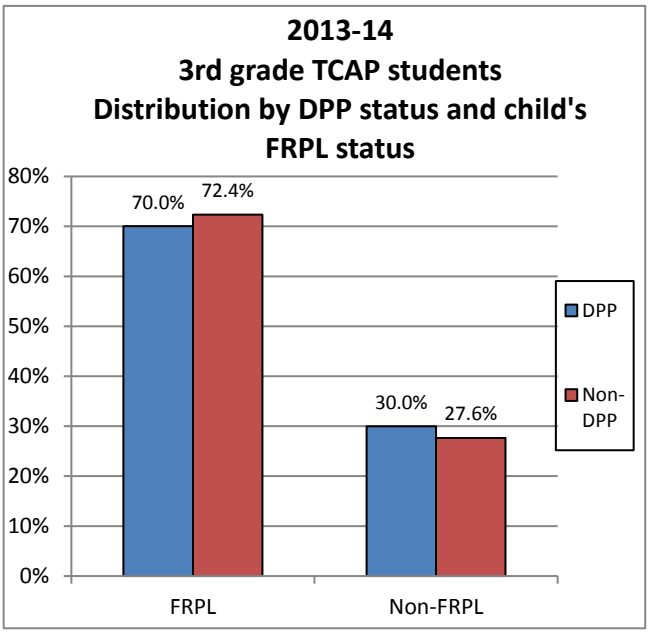


Figure 24



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 both years. This percentage gap between the DPP and non-DPP FRPL students was identical (9.3 percent) in both years. In 2013-14, DPP students who were not eligible for free and reduced price lunch also were more likely to score at proficient or advanced levels than non-DPP students. Results presented in Figures 25 and 26 are statistically significant unless noted otherwise.

Figure 25

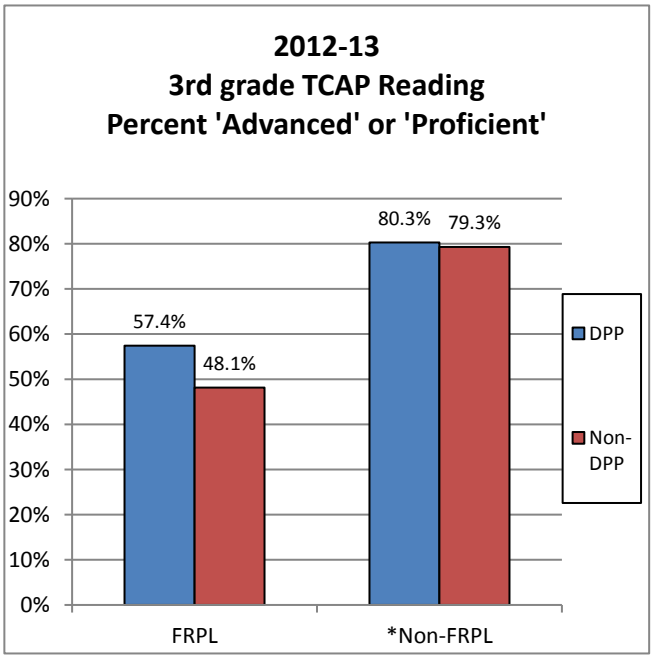
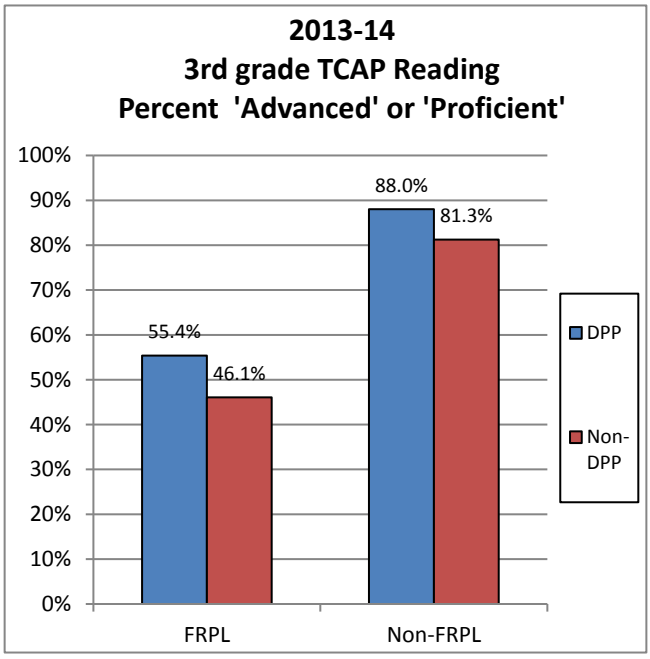


Figure 26



*Differences are not statistically significant for Non-FRPL students

As shown in Figures 27 and 28, the patterns of results for TCAP Writing are similar to those for TCAP Reading. Students who were eligible for free and reduced price lunch in either school year were more likely to earn proficient or advanced scores on the writing assessment if they applied and were approved to participate in DPP four years earlier (9.5 percent more likely in 2012-13 and 5.5 percent more likely in 2013-14). DPP students who were not eligible for free and reduced price lunch in 2013-14 were more likely (by 7.4 percent) to earn these high scores on the TCAP Writing if they had been approved by DPP.

Figure 27

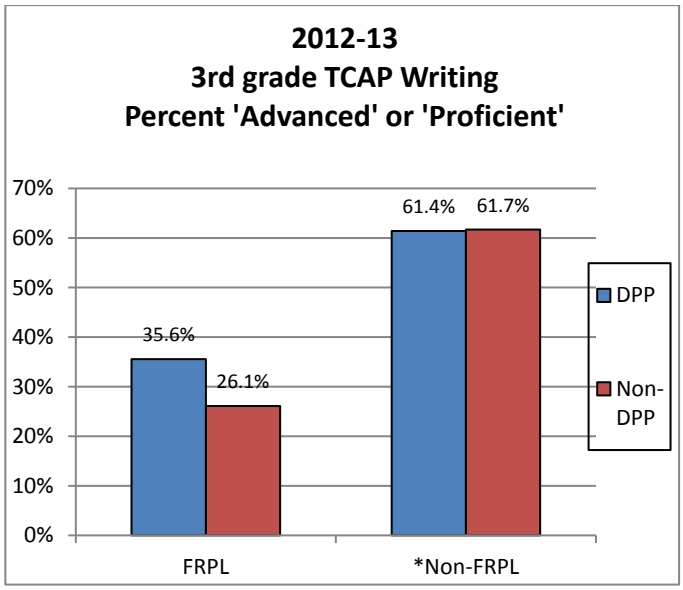
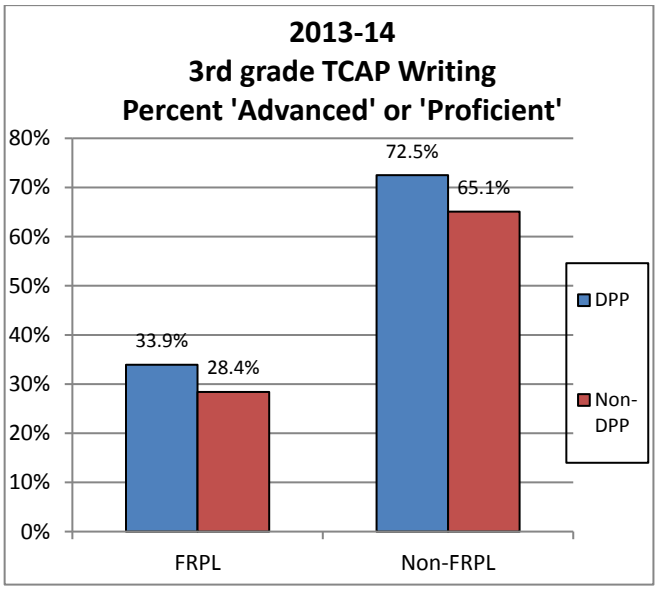


Figure 28



*Differences are not statistically significant for Non-FRPL students

Students who took the third grade TCAP Math assessment in either year and who were eligible for free and reduced price lunch were more likely to attain proficient or advanced scores on this assessment if they were previously approved to participate in DPP. In 2012-13, the proficiency gap between FRPL students who were DPP and those who were not was 9.8 percent and in 2013-14 the gap was 6.9 percent. DPP students who were not eligible for free and reduced price lunch were more likely, by 8.8 percent than their non-DPP peers to attain proficient or advanced scores on TCAP Math in 2013-14. Figures 29 and 30 below display this data.

Figure 29

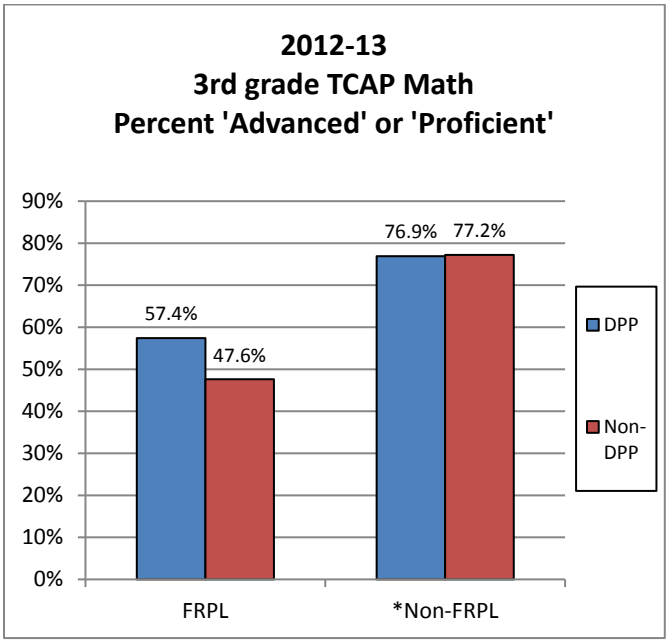
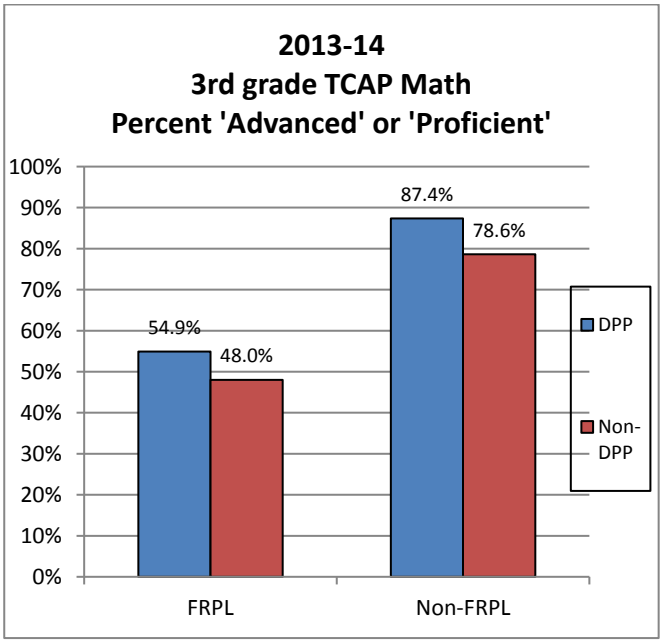


Figure 30



*Differences are not statistically significant for Non-FRPL students

Results for the TCAP Lectura and Escritura by FRPL Status were rarely statistically significant and are not presented in this analysis.

DPP and ELL Status

The DPP TCAP test takers had a larger proportion of students identified as English Language Learners (ELL) than the non-DPP samples in both 2012-13 and 2013-14. These proportions are presented in Figures 31 and 32.

Figure 31

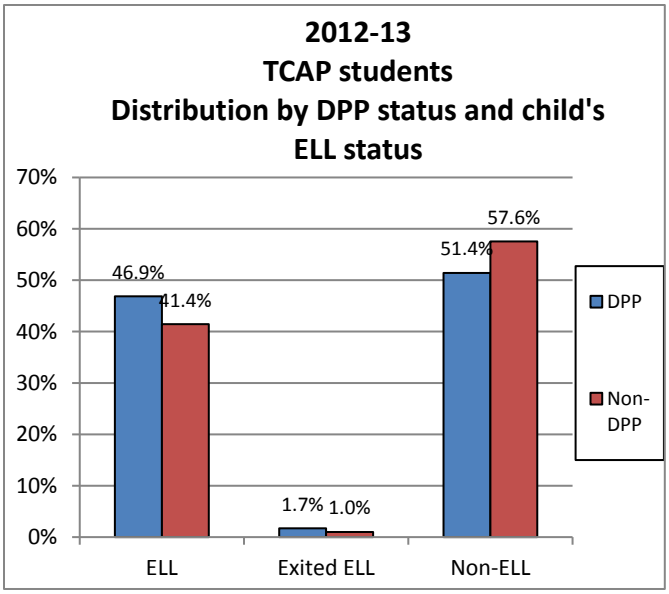
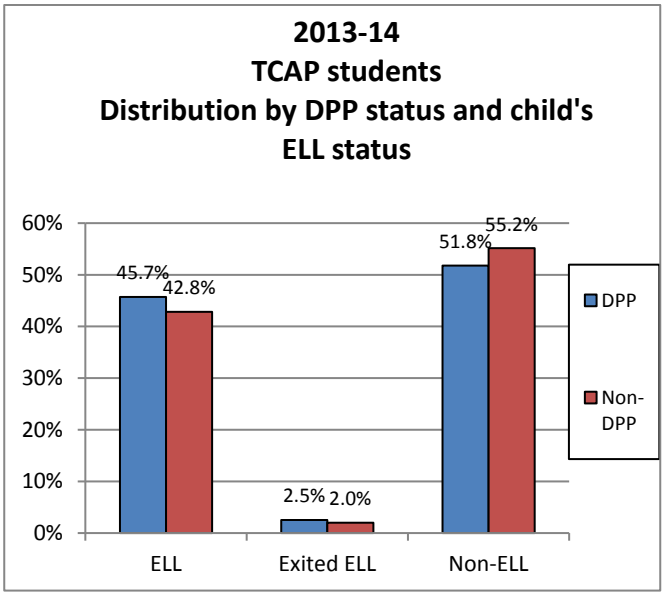


Figure 32



Among students who took the third grade TCAP Reading in either school year, DPP students were more likely to score at proficient or higher levels across the primary two ELL categories. That is, ELL students were more likely to attain these higher proficiency levels if they participated in DPP four years earlier (7.2 percent more likely in 2012-13 and 11.3 percent more likely in 2013-14, as shown in Figures 33 and 34 respectively). Similarly, non-ELL students were more likely to score proficient or advanced on TCAP Reading if they were previously approved to participate in DPP (5.8 percent in 2012-13 and 6.2 percent in 2013-14).

Figure 33

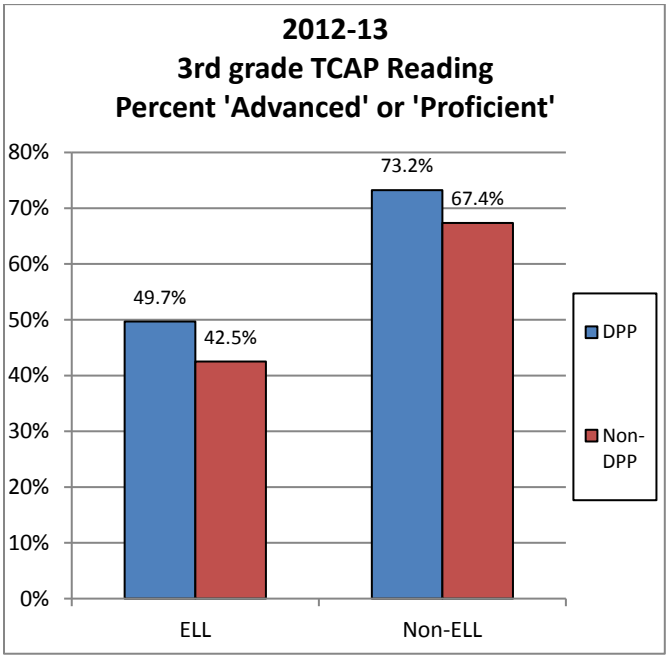


Figure 34

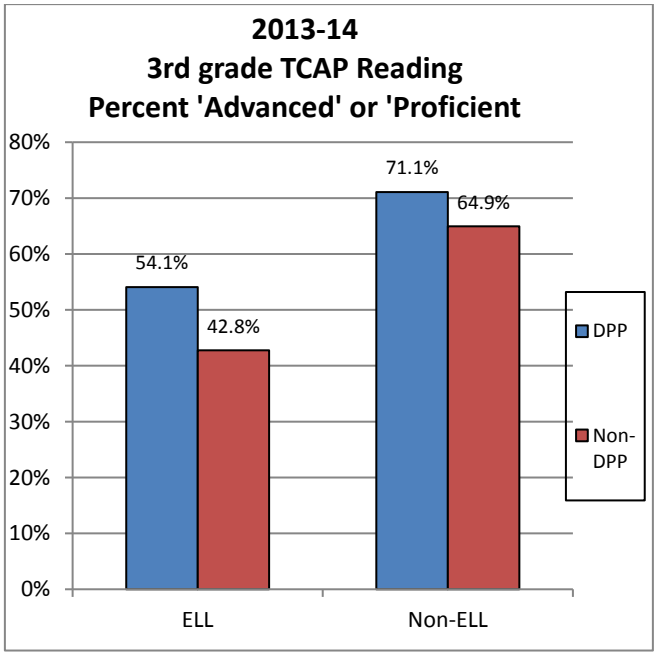


Figure 35 and 36 indicate that DPP students in each of the two primary ELL categories outperformed their non-DPP counterparts on TCAP Writing in both 2012-13 and 2013-14.

Figure 35

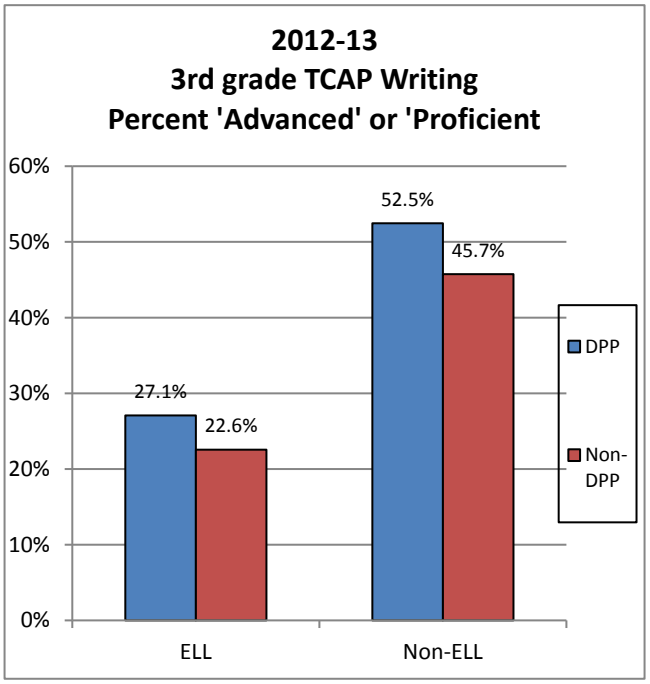
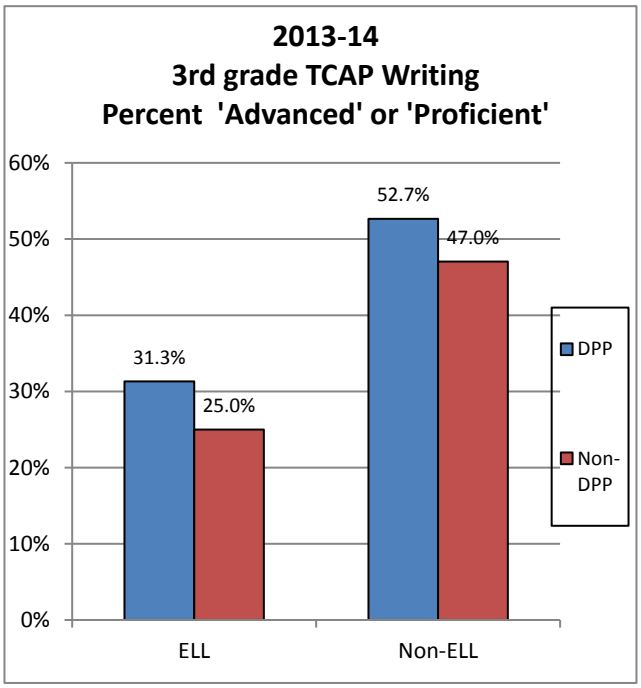


Figure 36



Similar to findings reported above, DPP students identified as ELL were 6.4 percent more likely to attain proficient or advanced levels on the third grade TCAP Math in 2012-13 and 8.1 percent more likely in 2013-14. Among non-ELL students, those who had been approved to participate in DPP four years earlier also outperformed non-DPP students. These results are presented in Figures 37 and 38.

Figure 37

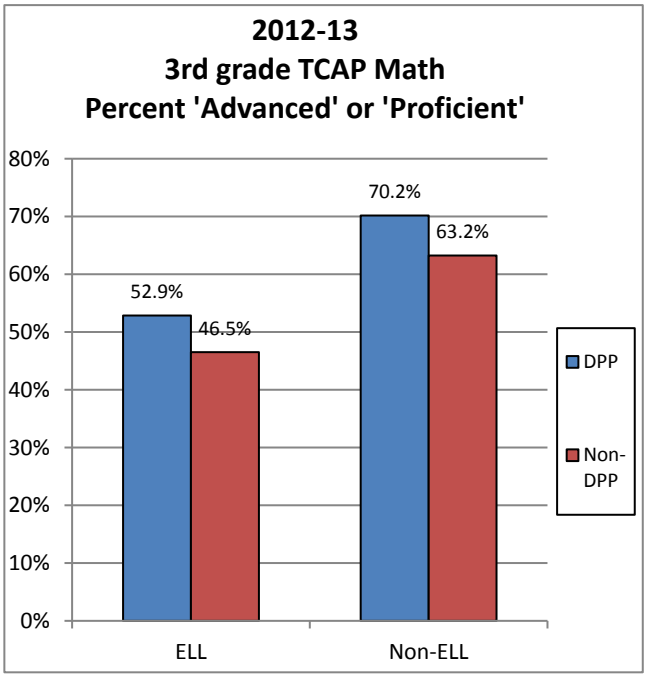
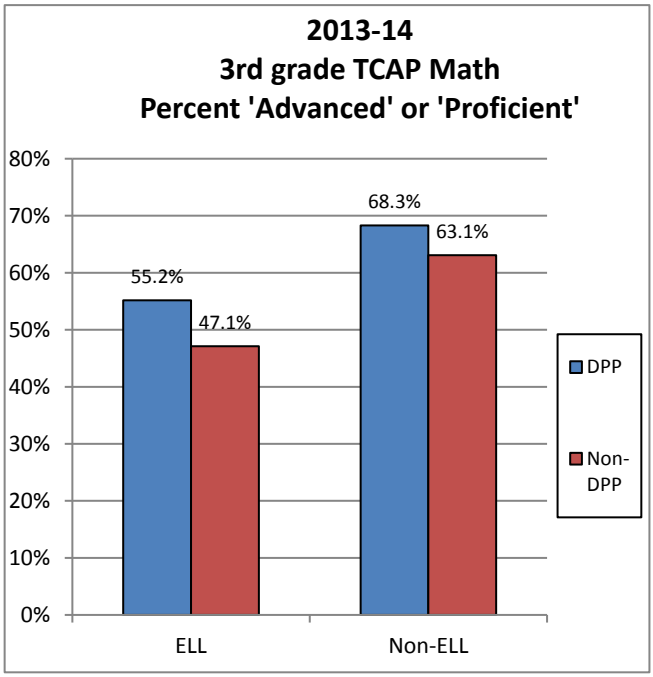


Figure 38



The results on TCAP Lectura and Escritura have smaller sample sizes. Very few of the comparisons were statistically significant and are not presented in this analysis.

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 participated in 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 both 2012-13 and 2013-14. (See other demographics of the DPP population in Appendix B).

In both school years, every statistically significant comparison of subgroups showed that students who participated in DPP four years earlier were more likely to score at proficient or higher levels on TCAP Reading, Writing, and Math assessments. While the Lectura and Escritura data often lacked the sample size to show statistical significance, many of those results also displayed patterns that look favorable for DPP participation.

Advantages of DPP Students

Despite the challenging demographic characteristics of DPP students, DPP students have the advantages of several positive enrollment patterns that could contribute to their TCAP proficiency. For example, DPP students are more likely to spend kindergarten, first, and second grade in DPS elementary schools. Figures 39 and 40 present enrollment patterns by DPP status. They indicate that DPP students are much more likely to have enrolled for three years in the same DPS School (kindergarten, first, and second grade) than non-DPP students and much less likely to have enrolled for only one year in the district. Such stability is often related to student academic performance.[4]

Figure 39

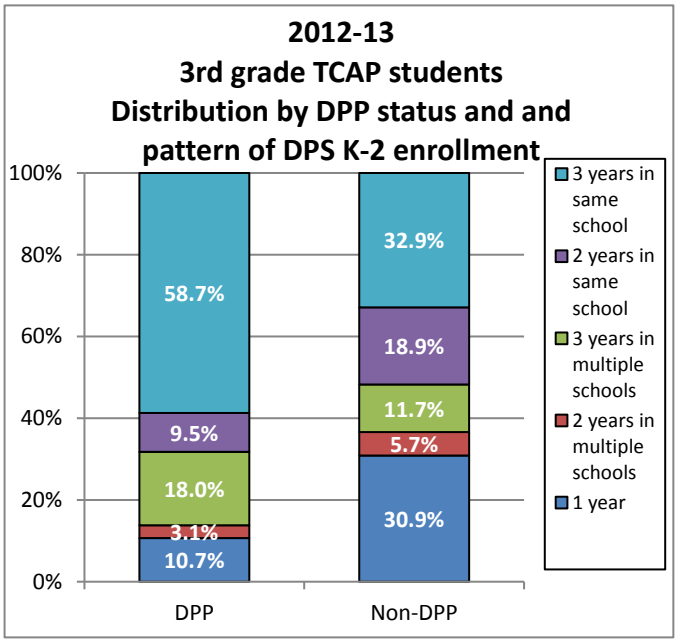
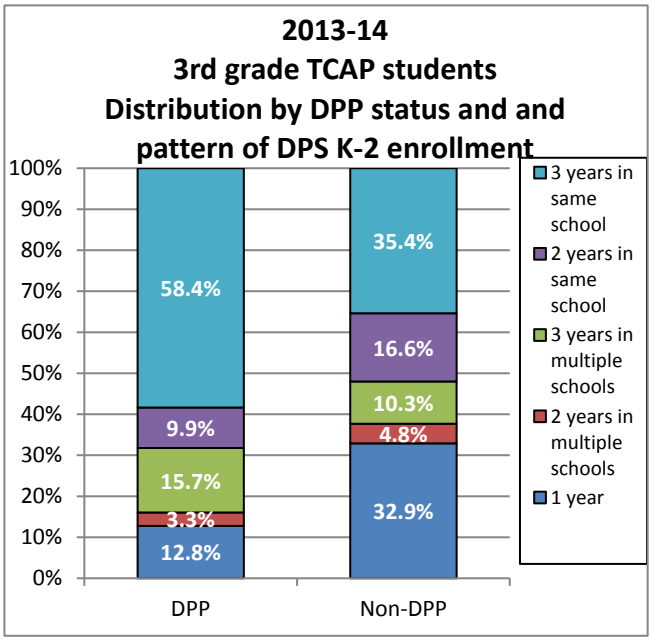


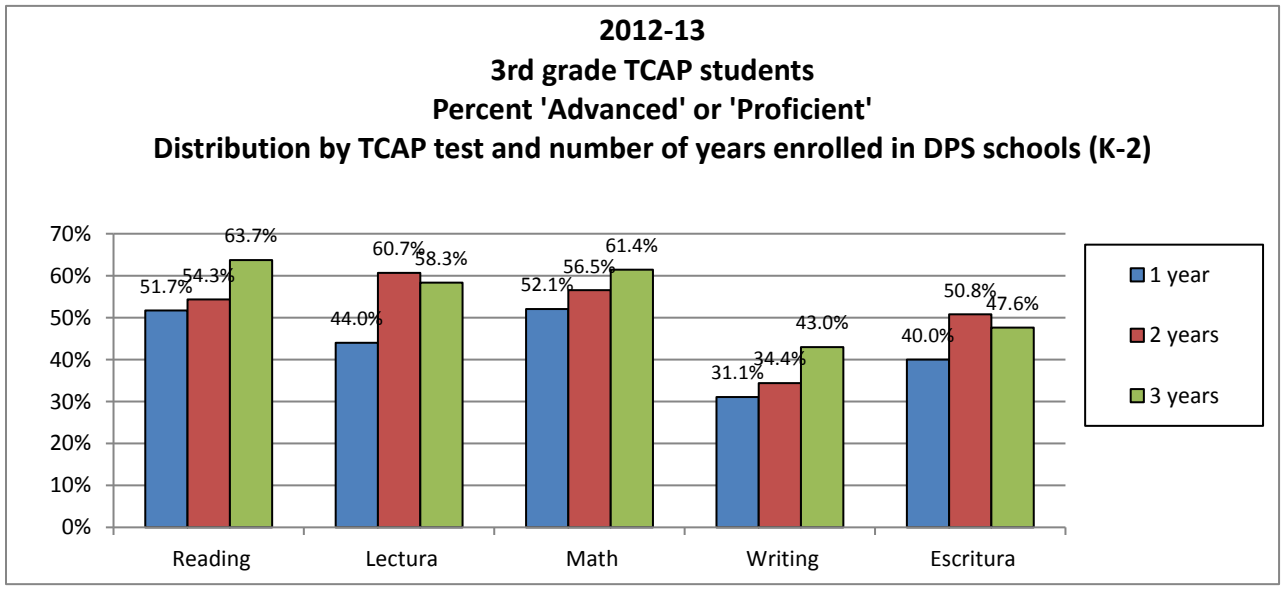
Figure 40



[4] 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.

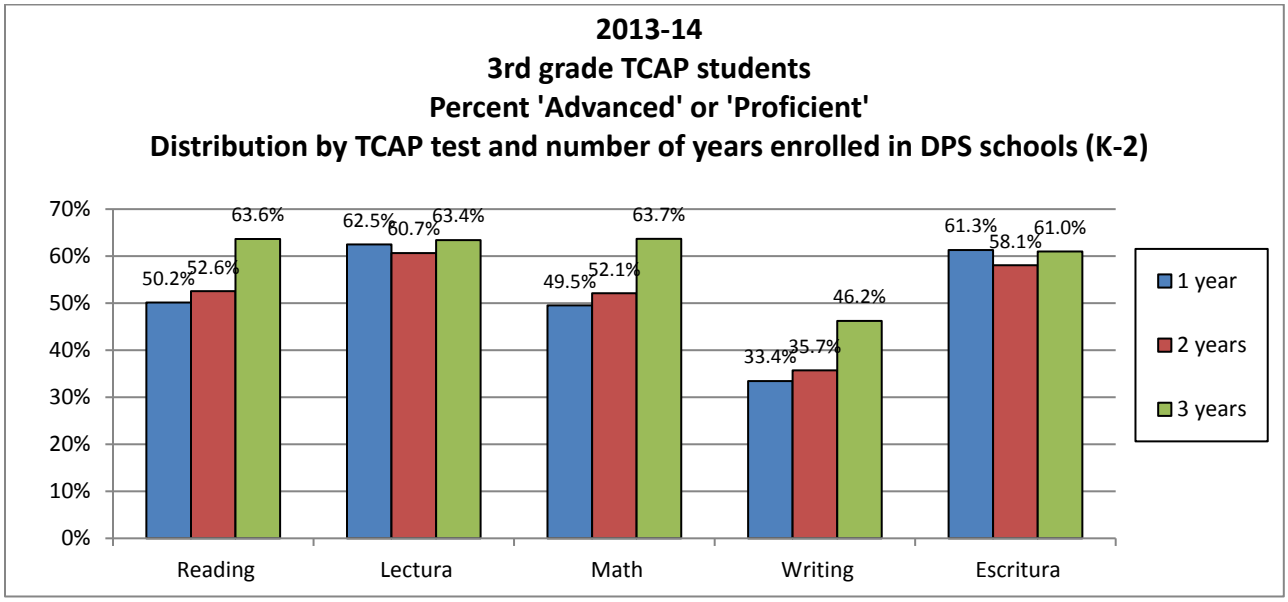
Figures 41-43 suggest that longer enrollment in DPS and/or enrollment within a single school is generally positively associated with proficient and advanced performance on the TCAP reading assessments. (See Appendix C for differences in scores on the DRA2 and EDL2 interim assessments between the DPP and non-DPP students.) The following two figures present the percentages of 2012-13 and 2013-14 students attaining proficiency or higher by TCAP assessment and years enrolled in DPS schools. For each English version of the TCAP tests, students who were enrolled longer were more likely to earn advanced or proficient scores.

Figure 41



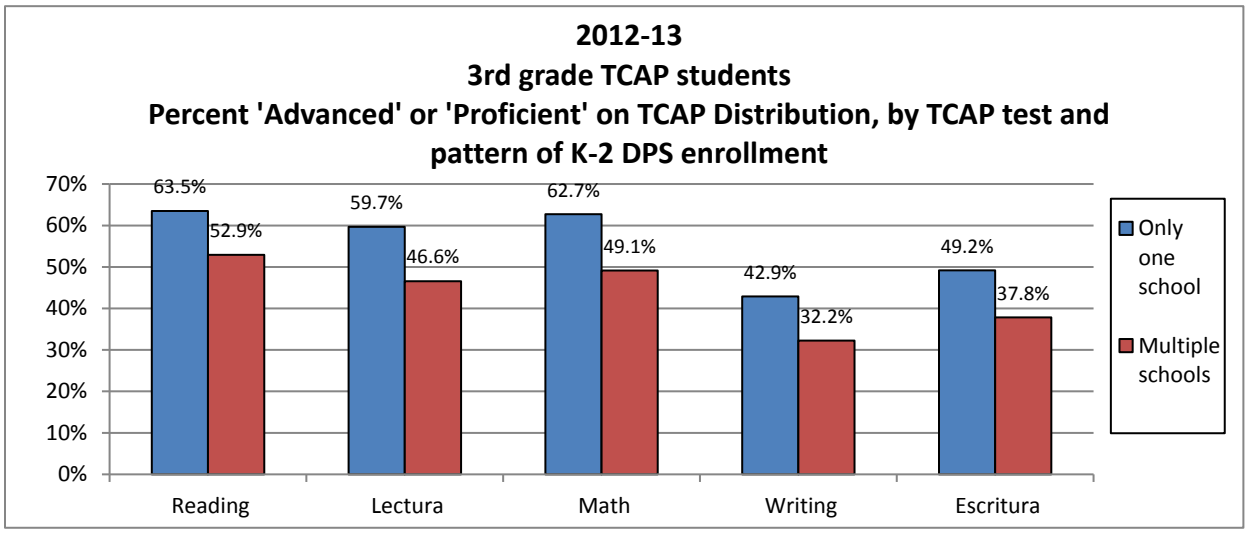
Differences for TCAP Lectura and Escritura are not statistically significant.

Figure 42



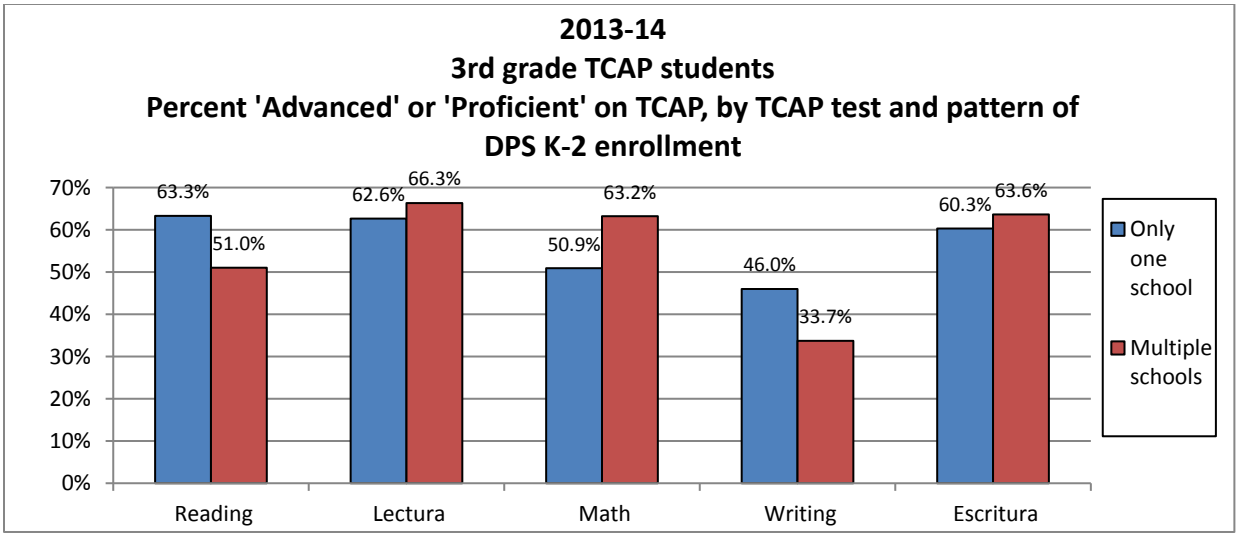
In 2012-13, students enrolled in only one school were more likely than students enrolled in multiple schools to reach proficiency or higher on every TCAP assessment, Figure 43.

Figure 43



The pattern in 2013-14 shown in Figure 44 is quite a bit different. Students enrolled in only one school were more likely to score proficient or higher in Reading and Writing, but less likely to score proficient or higher in Lectura, Math, or Escritura than students who enrolled in more than one DPS school during kindergarten through second grade.

Figure 44



Another key area of interest in this study was the interaction between DPP status (whether or not a child had approved by DPP) 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 in the vast majority of cases that DPP students were more likely than non-DPP students to earn advanced or proficient scores on the third grade TCAP, across subjects. The following figures from 2012-13 and 2013-14 respectively illustrate how students who were enrolled in higher quality elementary schools in 1st grade were more likely to succeed on TCAP Math if they had previously participated in DPP. Both DPP and non-DPP students were more likely to earn proficient or advanced scores on the TCAP Math if they attended higher quality elementary schools in 1st grade.

Figure 45

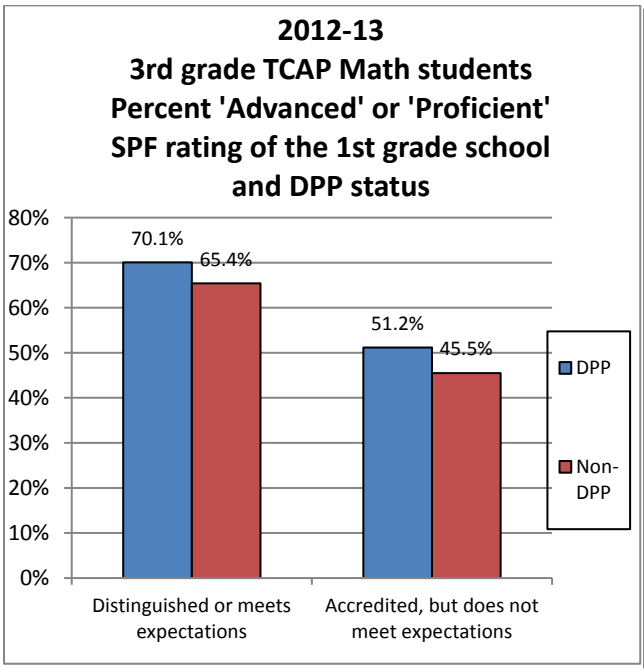
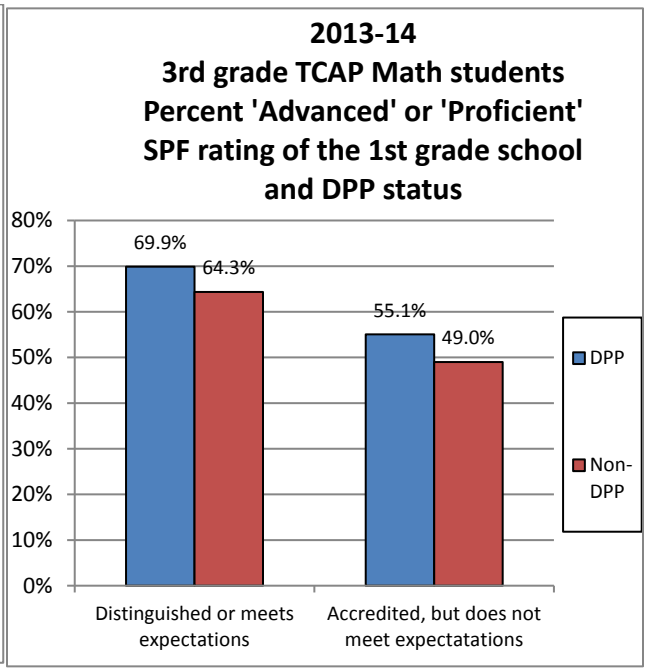


Figure 46



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.[5] By combining TCAP results, DPP status indicators and the School Performance Framework (SPF) from DPS, this data indicates 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.

Conclusion

This memo shows that students who participate in DPP in the year before kindergarten from two different but early cohorts are more likely to reach proficient or advanced levels on third grade TCAP assessments. There is now multiple years of evidence that DPP students outperform students who did not participate in DPP across subgroups of student race/ethnicity, free and reduced price lunch status, ELL status, and school quality.

[5] 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.

Appendix A

The following figures provide a comparison of all DPP students who participated in DPP in 2008-09 with the DPP students who took the TCAP in 2012-13, by race/ethnicity and by Free or Reduced-Price Lunch (FRPL) status.

Figure A1

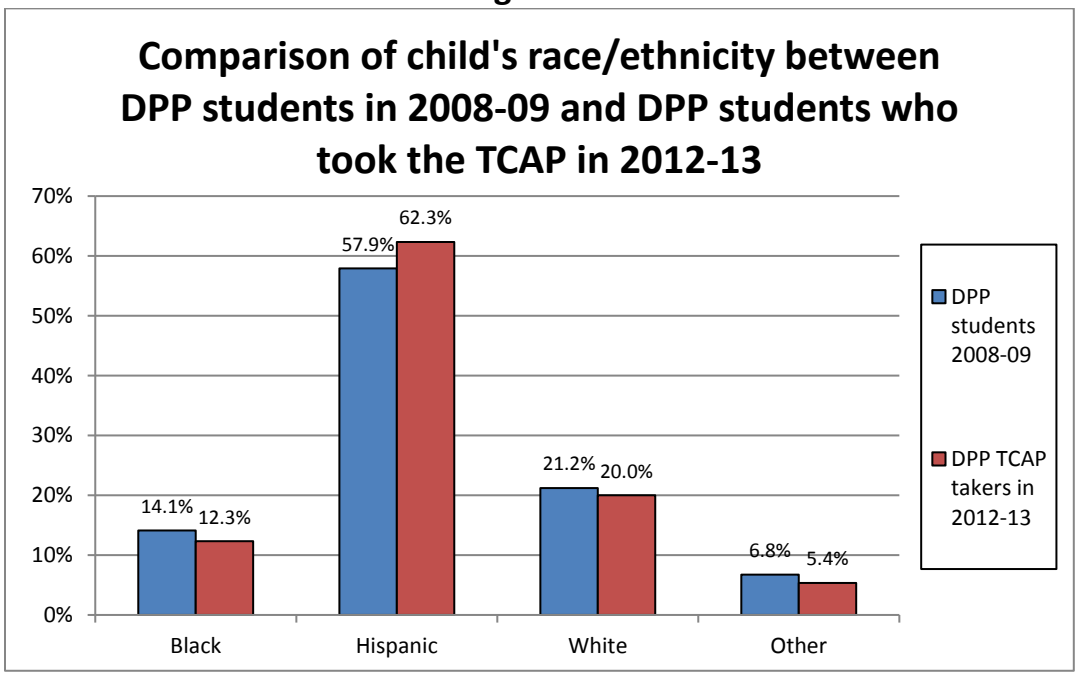
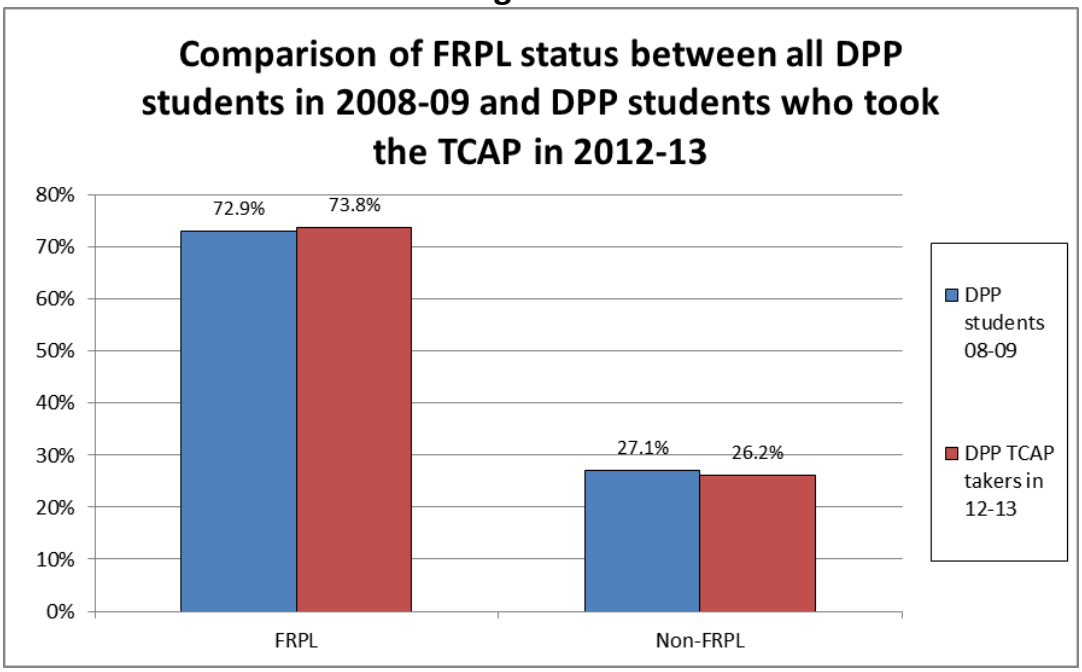


Figure A2



The next figures provide a comparison of all DPP students who participated in DPP in 2009-10 with the DPP students who took the TCAP in 2013-14, by race/ethnicity and by Free or Reduced-Price Lunch (FRPL) status.

Figure A3

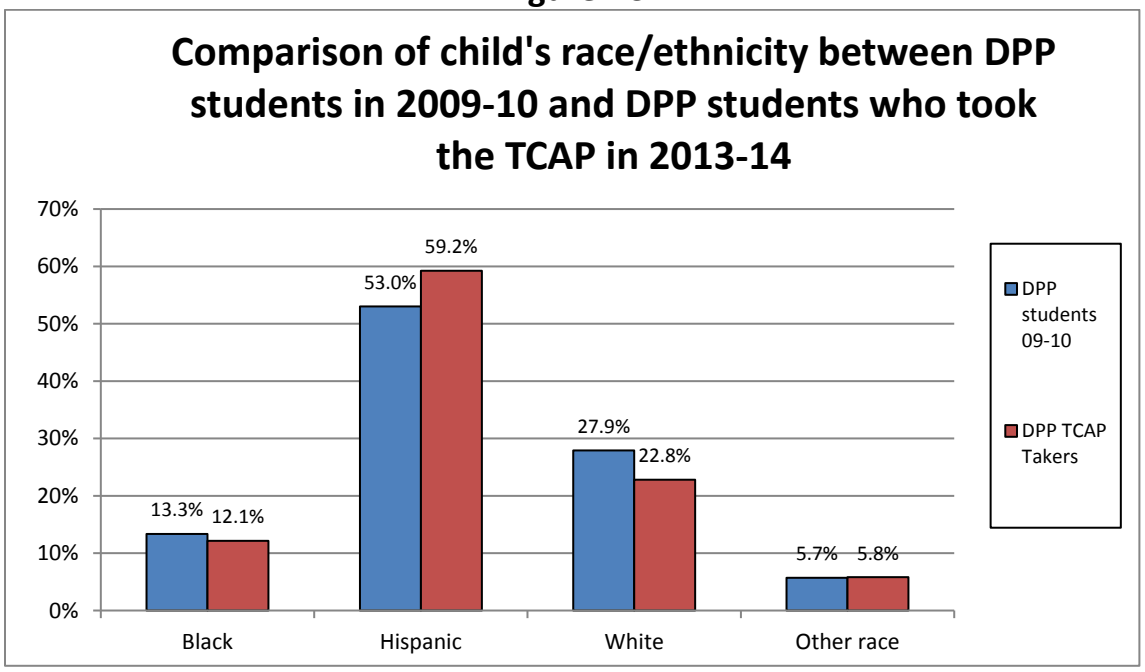
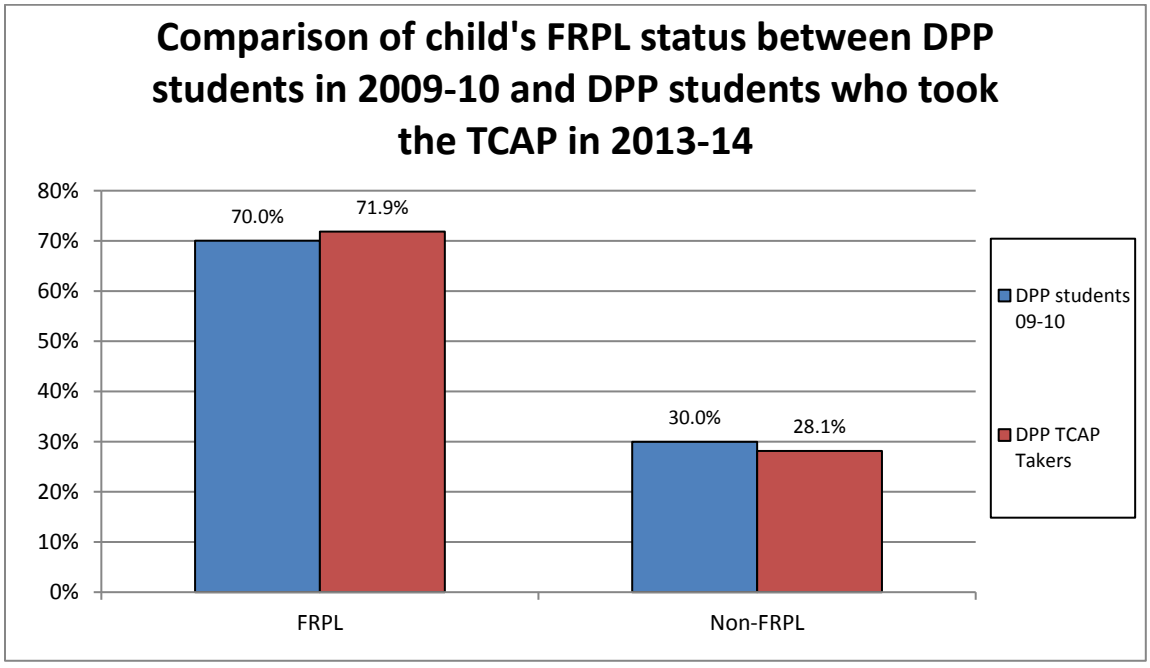


Figure A4



Appendix B

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

Figure B1

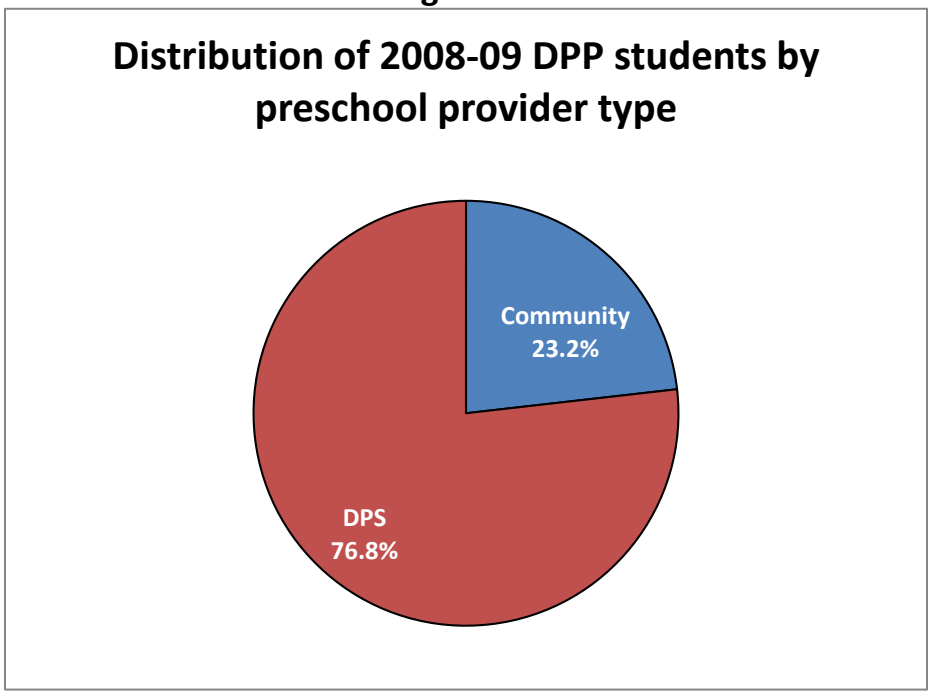
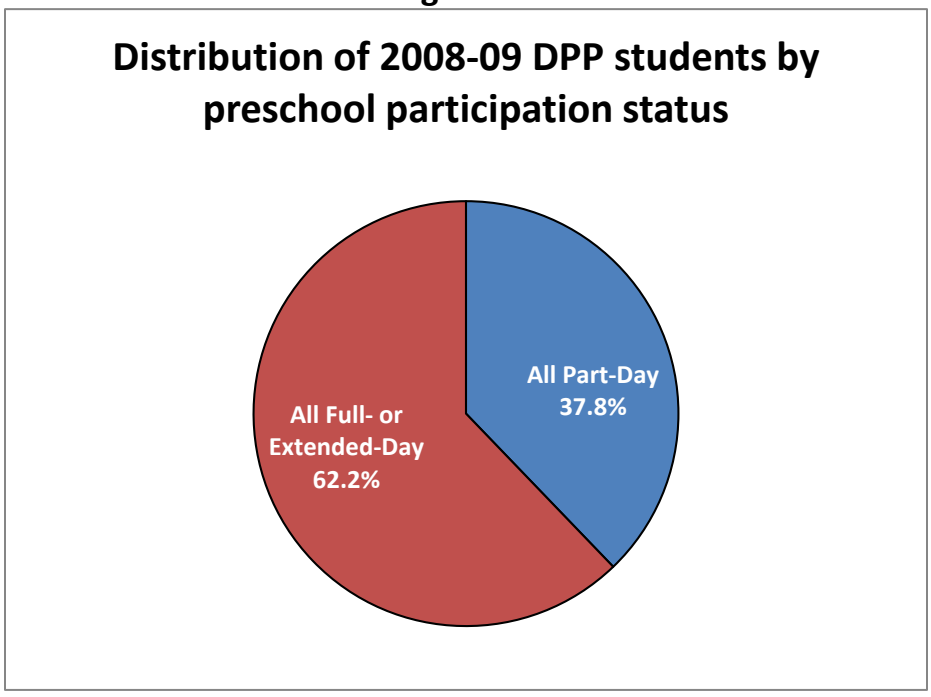


Figure B2



The next two figures provide information on the DPP students who applied and were approved by DPP in 2009-10.

Figure B3

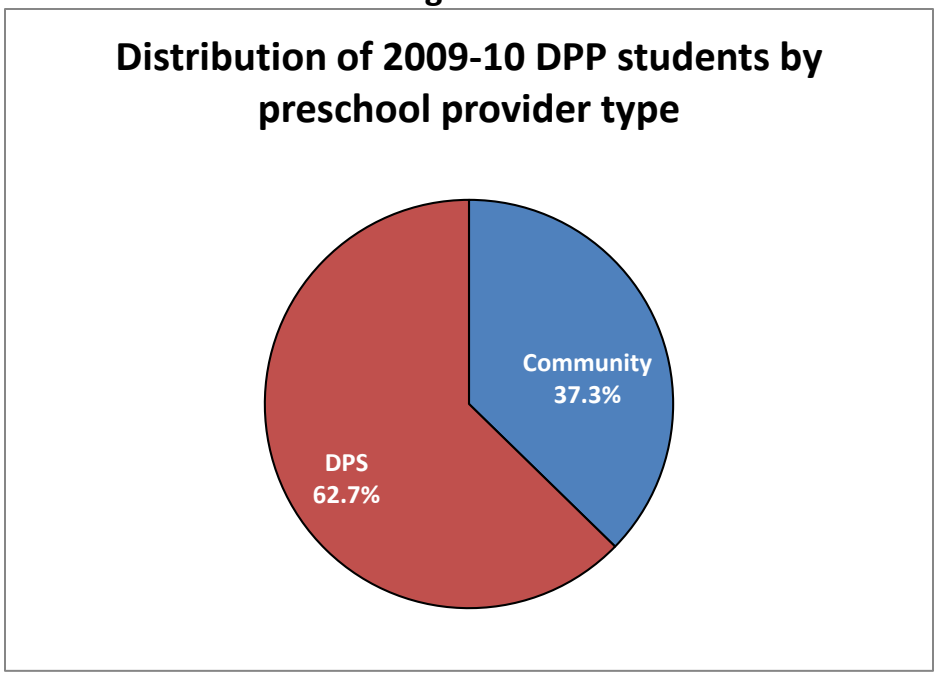
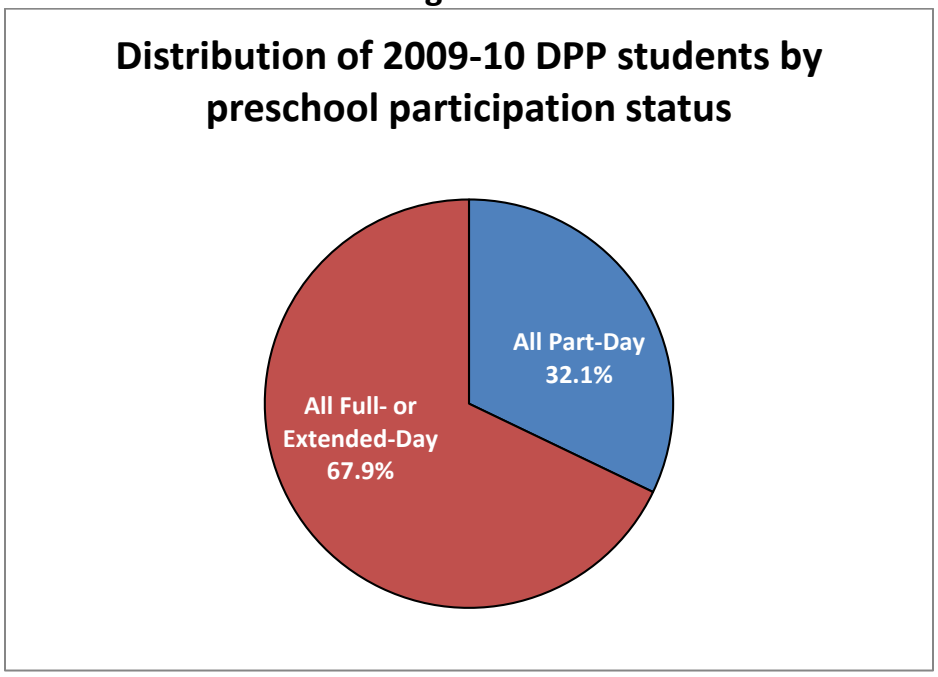


Figure B4

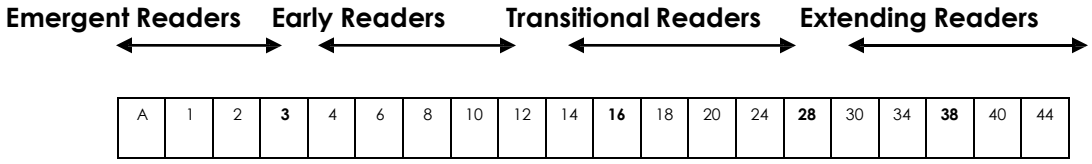


Appendix C

All DPS students who took the TCAP in 2012-13 or 2013-14 also took the Developmental Reading Assessment Version 2 (DRA2) and Evaluacion Del Desarrollo De La Lectura 2 (EDL2)[6] tests of reading proficiency in the years preceding third grade if they were enrolled in DPS. A brief description of the Developmental Reading Continuum scores is outlined below.

Developmental Reading Continuum

DRA Levels:



Grade Level Expectations:
Level 3 – Beginning of Gr. 1
Level 16 – End of Gr. 1 – Beginning of Gr. 2
Level 28 – End of Gr. 2 – Beginning of Gr. 3
Level 38 – End of Gr. 3

The following figures show average scores on the DRA2 and EDL2 by grade level. Average scores increase for all students with each subsequent year and DPP students on average earn higher scores than non-DPP students in every year. Figure C1 and C2 represent the scores for the cohort of 2008-09 4-year olds, while Figures C3 and C4 represent the scores for the cohort of 2009-10 4-year olds.

6 Tasks measured by the DRA test are divided into several skill sets. Rhyming, alliteration, segmentation, and phonemic awareness are tested in the phonemic awareness section. Letter naming, word-list reading, spelling, decoding, analogies, structural analysis, and syllabication are tested in the alphabetic principle/phonics portions. Oral reading fluency or words per minute for contextual reading are tested under fluency. Vocabulary, comprehension, and reading engagement skills are also measured in the test.

Figure C1

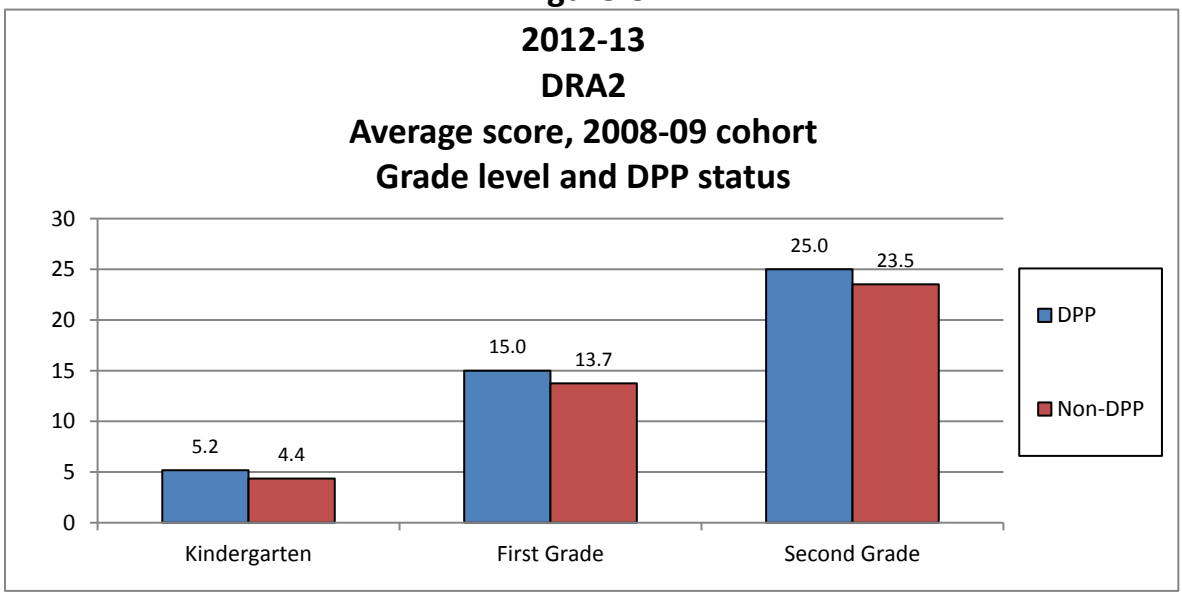


Figure C2

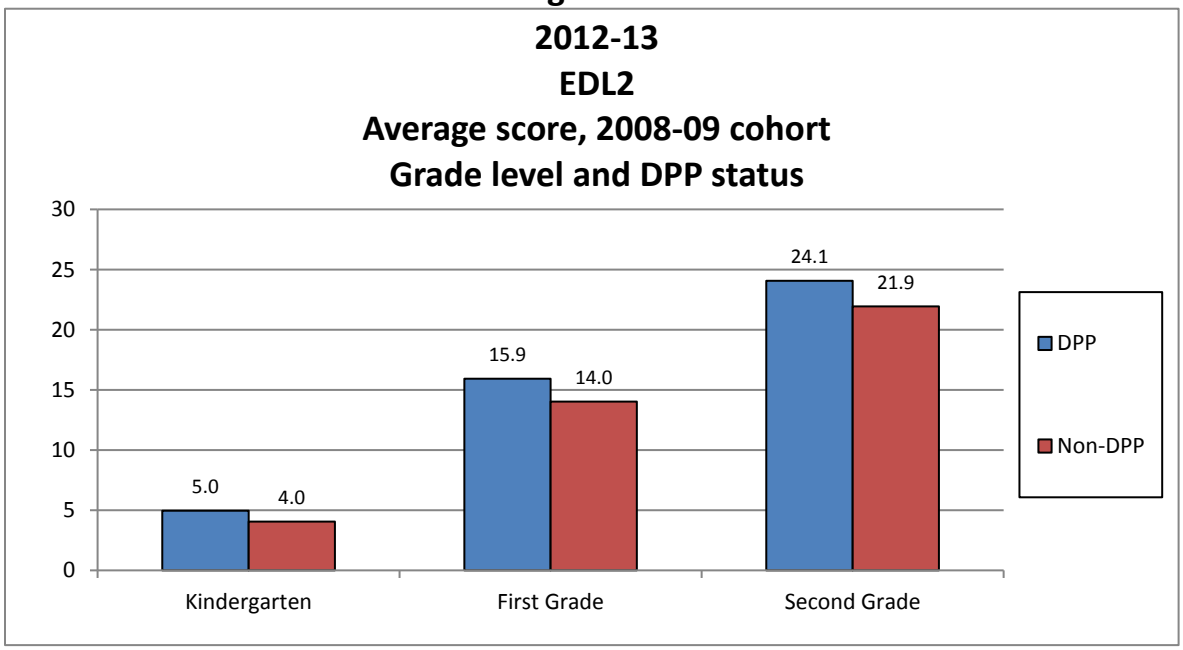


Figure C3

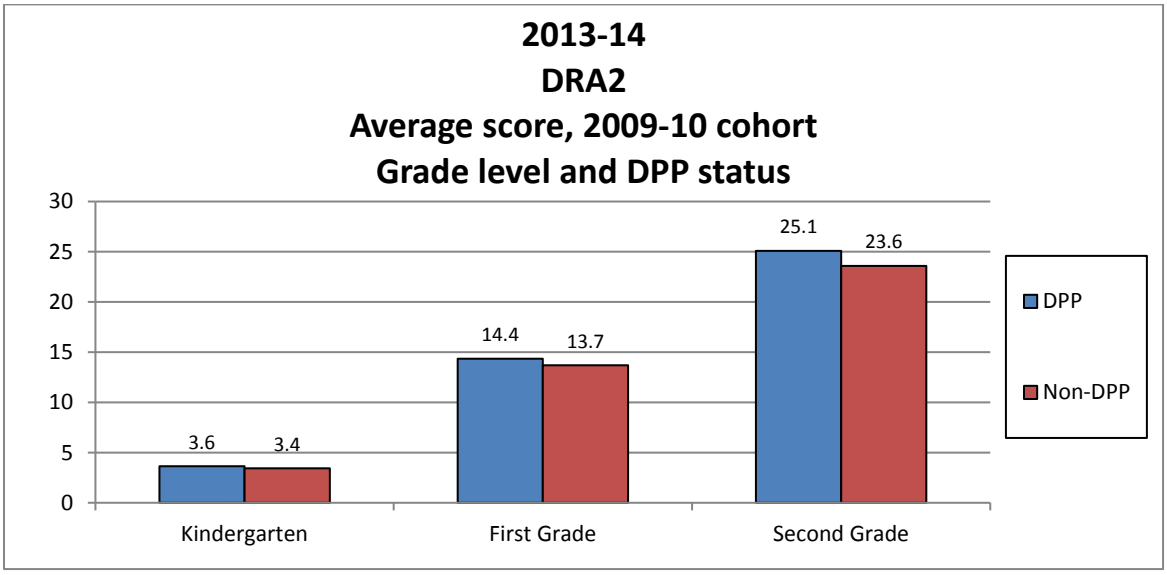
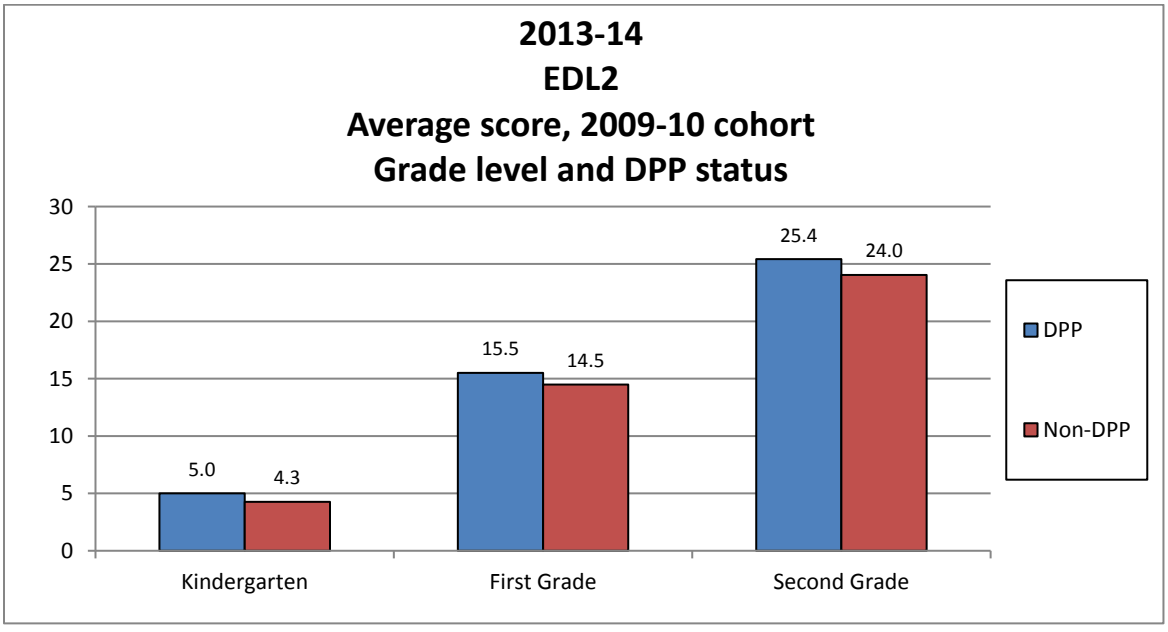


Figure C4



The following figures show average DRA2 scores by the School Performance Framework (SPF) ratings of the school attended in 1st grade for both the 2008-09 and 2009-10 cohorts. For both cohorts, DPP students who attended schools that were distinguished or met expectations earned higher scores on average than non-DPP students at these high performing schools.

Figure C5

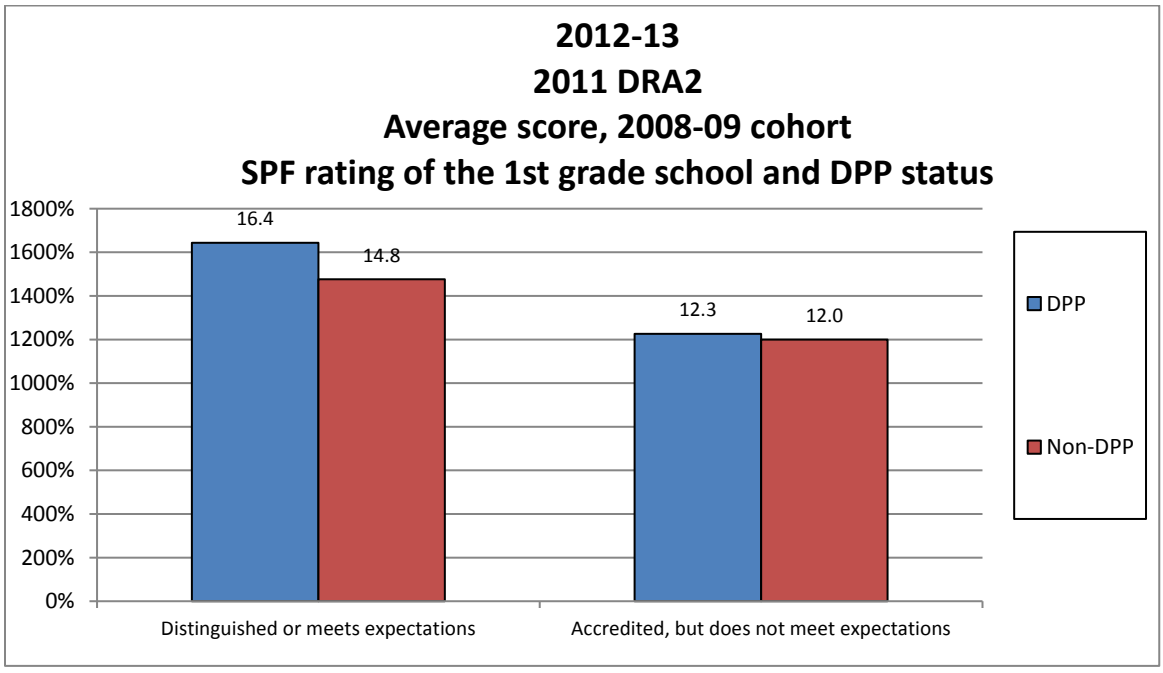


Figure C6