



## MEMORANDUM

To: Jennifer Landrum, President, Denver Preschool Program  
From: Robert Palaich, DPP Evaluation Team Leader, Augenblick, Palaich and Associates<sup>1</sup>  
Re: DPP 2008-2009 Cohort TCAP Results

### Introduction

The 2012-2013 school year is a particularly exciting year for the Denver Preschool Program (DPP) as it is the first year that a sizeable number of DPP students participated in Colorado's standardized testing system, the Transitional Colorado Assessment Program (TCAP). School year 2008-2009 was the first year of full operation of DPP, with about 4,755 children enrolled. DPP was just beginning to develop clear name recognition with parents and preschools and its efforts to improve preschool quality were just getting underway.

*This memo describes the evidence that suggests DPP children have contributed significantly to the growth in the percent of third-graders scoring "advanced" or "proficient" on the TCAP reading assessment that DPS experienced in the spring of 2013.*

### 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.*

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<sup>1</sup> The APA part of the evaluation team includes Kathryn Rooney, Nathan Roberson and Simon Workman as well as Drs. Palaich and Andrew Brodsky. The Clayton part of the evaluation team was led by Mary Maguire Klute, Ph.D., Buechner Institute for Governance, School of Public Affairs, University of Colorado, Denver and Caroline Ponce of the Clayton Early Learning Institute.

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 income, the size of the family, 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 their 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 enrolled 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 kindergarten through third-grade reading performance differences between DPP and non-DPP students who entered DPS in 2009-10. But first, a brief look at what previous analyses on the school-readiness of these children have revealed.

### **Sample of 200 from the 2008-09 DPP Cohort was ready for Kindergarten**

Each year, the DPP evaluation team selects a random sample of children who represent the population of children enrolled in 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.<sup>2</sup> 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) & Bateria 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.
- The parent and teacher surveys consisted of a measure of children's social-emotional development called the Devereaux Early Childhood Assessment (DECA: LeBuffe & Naglieri, 1999).

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<sup>2</sup> 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.

For the 2008-09 cohort of DPP children, the following steps were used to analyze their preschool progress.

- First, the 207 children selected for the evaluation study were compared with 4,675 children enrolled in DPP but not included in the sample to check the representativeness of the sample. Statistical tests for differences in child gender, ethnicity, family income, Qualistar Rating™ of the child's preschool, home language, and child's primary language were all non-significant.<sup>3</sup>
- Second, the results of all administered assessments were compared. *Results of the analysis for the sample 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 85) on assessments of their vocabulary, literacy and math skills. These standardized assessments are scaled such that 84 percent of the general population would be expected to score above the at-risk range (a score of 85 or above). Scores for literacy and math in this sample exceed that threshold. Vocabulary scores in this sample approach that threshold. When both languages of assessment were considered, more children than would be expected (i.e., more than half) met this more stringent criterion: more than half for vocabulary and nearly four-fifths for literacy and math. 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 an area of concern for fewer than 10 percent of children.

## Sample of 200 from the 2008-09 Cohort made progress in Reading

### Kindergarten Reading in Spring of 2009-10

To obtain reading assessment data from DPS, the evaluation team needed to obtain DPS identifiers from ACS, the agency that handled enrollment of families into DPP from 2007-2012. The team was able to obtain reading assessment data one year after the DPP experience for over 80 percent of the 2008-09 cohort sample.

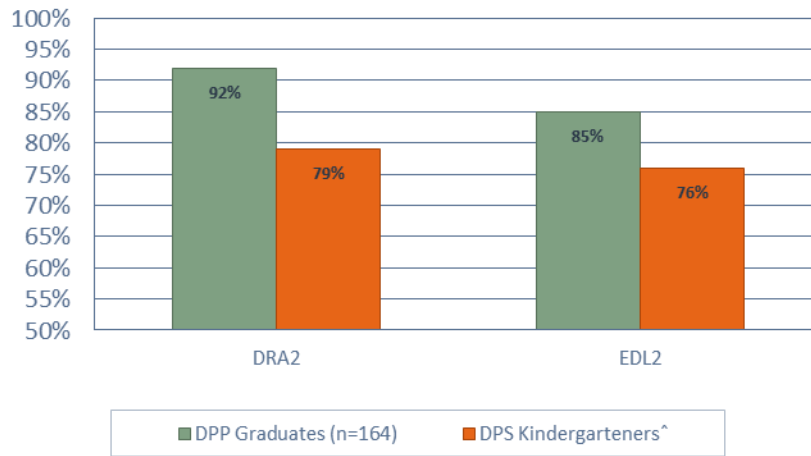
Figure 1 displays the proportion of the 2008-09 Cohort of DPP graduates whose reading level was at or above grade level as assessed by the Developmental Reading Assessment Version 2 (DRA2) and Evaluacion Del Desarrollo De La Lectura 2 (EDL2)<sup>4</sup>. This is presented alongside the reading levels for kindergarteners in the district as a whole in spring 2010. The vast majority (92 percent) of DPP graduates 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 DPP graduates assessed in Spanish using the EDL2 were 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.

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<sup>3</sup> Gender:  $\chi^2_1=.21$ , n.s.; ethnicity:  $\chi^2_7=9.51$ , n.s.; family income:  $F(1,4263)=.48$ , n.s.; Qualistar rating:  $\chi^2_4=.58$ , n.s.; home language:  $\chi^2_1=.03$ , n.s.; child primary language:  $\chi^2_1=.80$ , n.s.

<sup>4</sup> 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: Proportion of Children Reading On Grade Level in the Spring of Kindergarten Year, Cohort 1 DPP Graduates and All Kindergarteners Enrolled in DPS, Spring 2010**



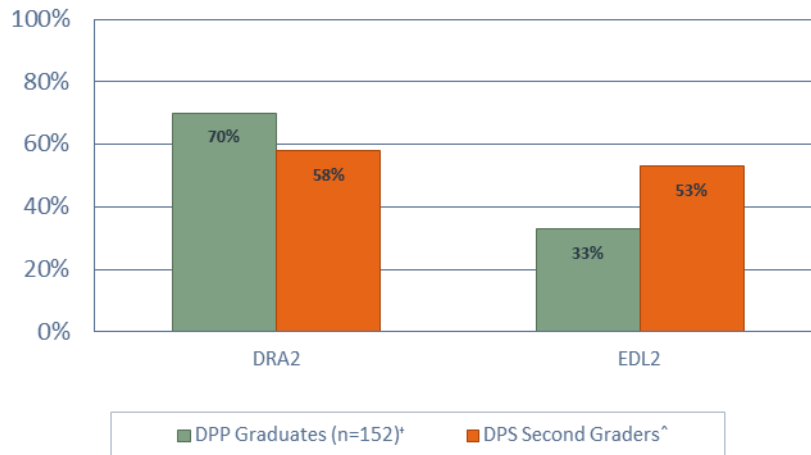
<sup>†</sup>The group of DPP Graduates includes 130 children assessed with the DRA2 and 34 assessed with the EDL2.  
<sup>^</sup>The group of DPS Kindergarteners includes the DPP graduates.

## 2nd Grade Reading Results in Spring of 2010-11

The 2008-09 Cohort sample in the spring of 2011 reading assessment data were similar to the district in terms of their ethnic and gender composition. A smaller proportion of children in this sample qualified for free or reduced-price lunch than for the district as whole, suggesting that this sample might be composed of slightly wealthier families.

Figure 2 on the following page 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. This is presented alongside the reading levels for second graders in the district as a whole in spring 2012. 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 2: Proportion of Children Reading On Grade Level in the Spring of the Second Grade Year, Cohort 1 DPP Graduates and All Second Graders Enrolled in DPS, Spring 2012\***



\*A score of 28 is considered reading "on grade level" for the end of second grade.  
 ^The 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.

### Results for all DPS Students Enrolled in 3rd Grade who took the TCAP

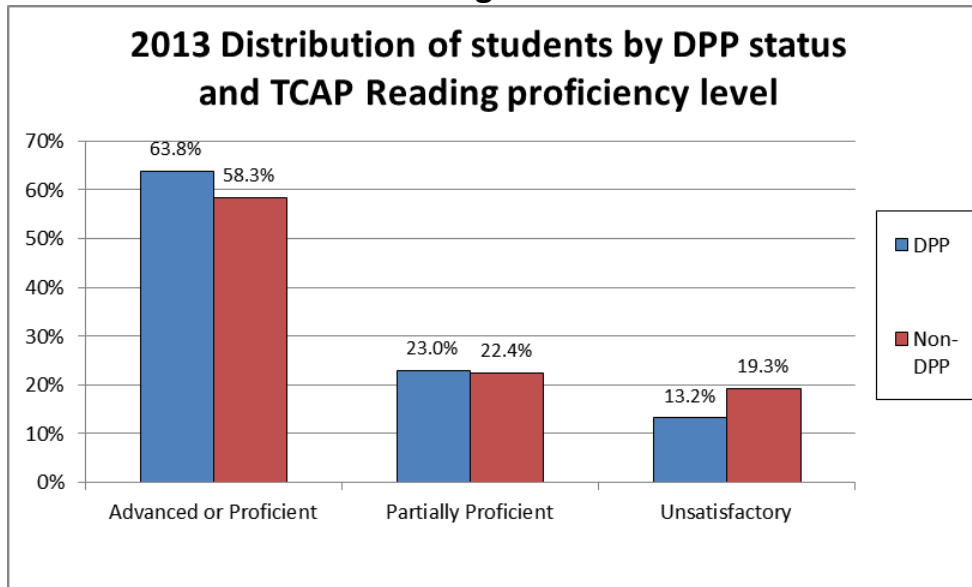
In 2012-13, Denver Public Schools (DPS) experienced success in raising the number of students scoring proficient or above on the state’s annual assessment (TCAP) in reading. DPS saw an overall 1.5 percent increase over the previous school year in the percent of students scoring proficient or above. This increase brings the percent of students scoring advanced or proficient district-wide to 61 percent. While 61 percent remains below the state average of 73 percent, the district continues to build on several years of increasing the percent of students reaching advanced or proficient on the reading portion of the assessment.

In 2012-13, 6,609 DPS students in 3<sup>rd</sup> grade took the TCAP assessment in DPS. Of those, 6,025 students took the assessment in English and 584 took the assessment in Spanish (known as “Lectura”). Among the DPS students taking the TCAP, 3,098 of these students had DPP experience while the remaining 3,511 did not participate in DPP.<sup>5</sup> Of the 4,755 children that participated in DPP in 2008-09, 3,098 took the TCAP in 3<sup>rd</sup> grade in 2012-13. For comparisons between the entire cohort that participated in DPP in 2008-09 and the DPP students who took the TCAP in 3<sup>rd</sup> Grade in 2012-13, please see Appendix A.

Figure 3 on the following page shows the proficiency distribution for the English version of 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.

<sup>5</sup> This does not mean, however, that the non-DPP students did not attend preschool; it only means that their families did not enroll in DPP. It is possible that a non-DPP student attended the same preschool as a DPP child, but did not enroll in DPP, and therefore, did not receive a DPP tuition credit.

Figure 3



### 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? In general, the cohort of DPP students who took the TCAP in 2012-13 (3,098) is not noticeably different from those who did not participate in DPP (3,511). DPP tended to serve a higher proportion of students who are typically considered to be *at-risk* of not being successful in school as is shown by the figures that follow. Figure 4 on the following page shows that DPP served a greater proportion of Hispanic students compared to non-DPP students who took the TCAP. The “other” designation includes students of Asian descent and other ethnic designations.

**Figure 4**

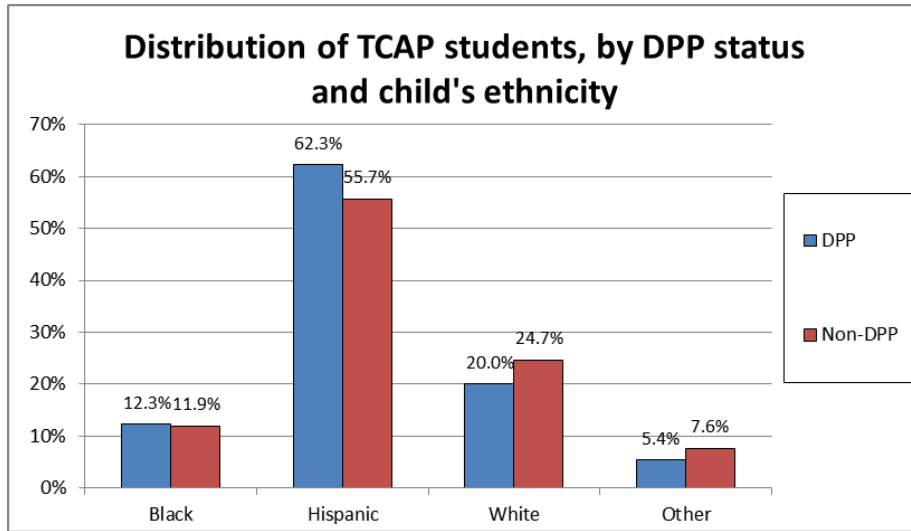


Figure 5 shows that DPP students in every race/ethnicity category outperformed their non-DPP counterparts.

**Figure 5**

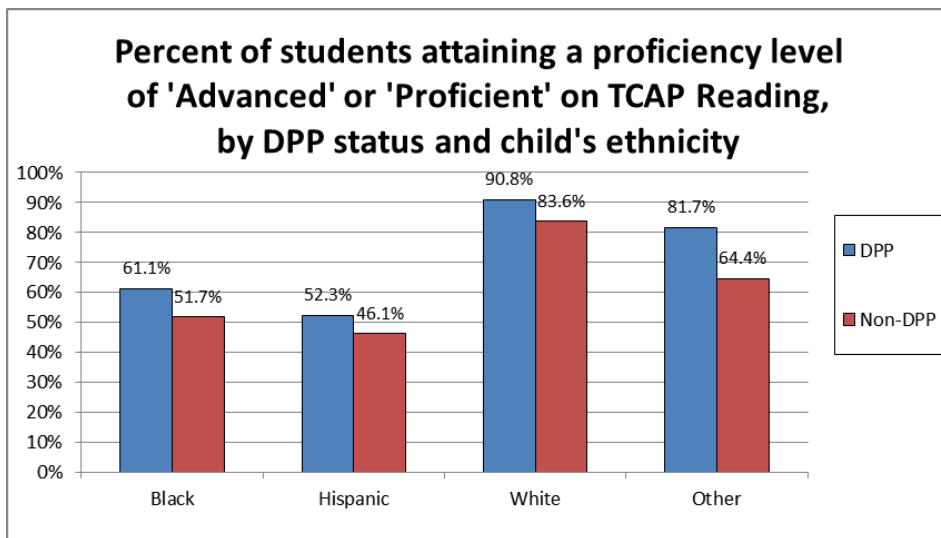


Figure 6 shows that the students who participated in DPP had a slightly higher proportion of Free and Reduced Price Lunch (FRPL) students than those students who did not participate.

**Figure 6**

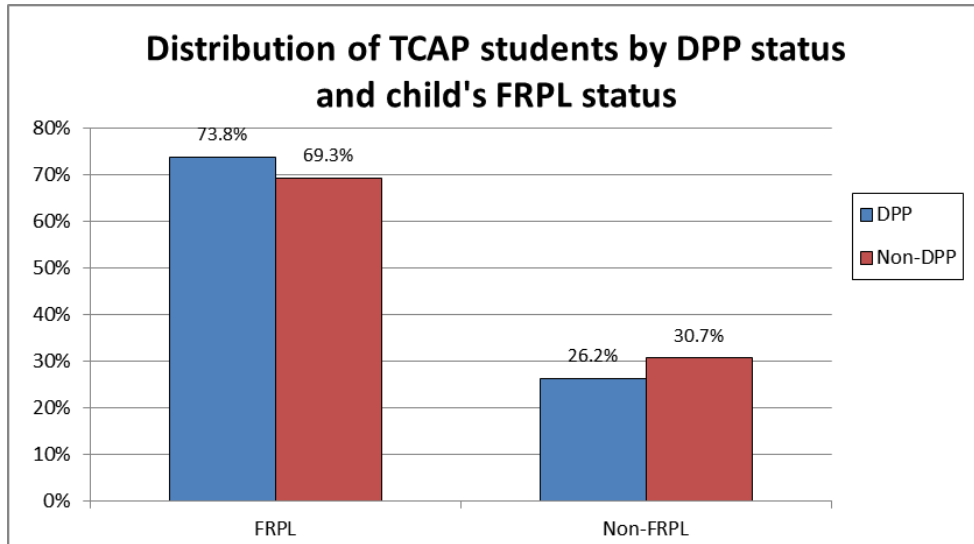


Figure 7 presents the related TCAP performance data. This result shows that DPP students who qualified for FRPL were 9.3 percent more likely to attain proficiency (or higher) than their non-DPP counterparts.

**Figure 7**

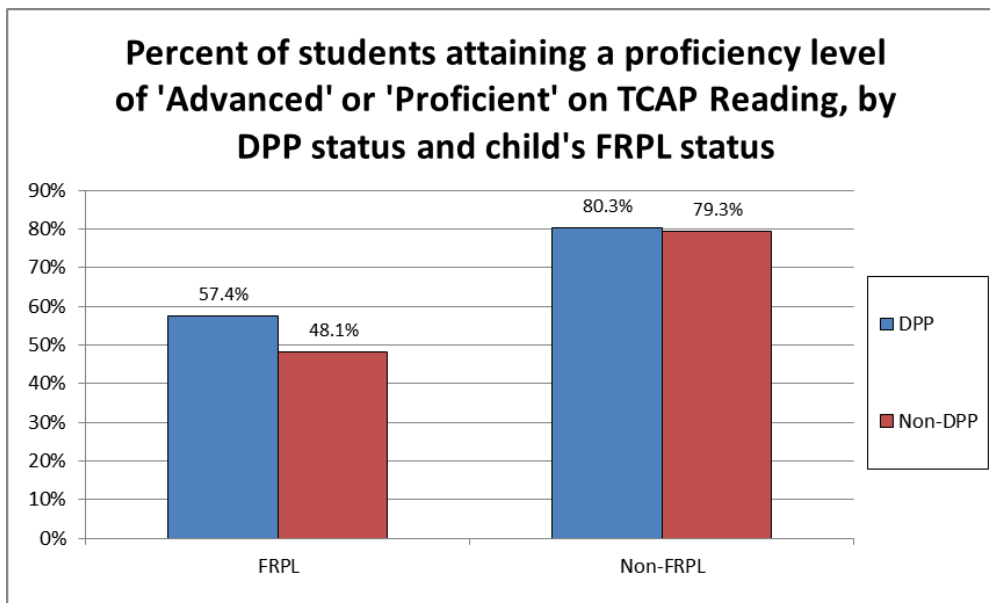
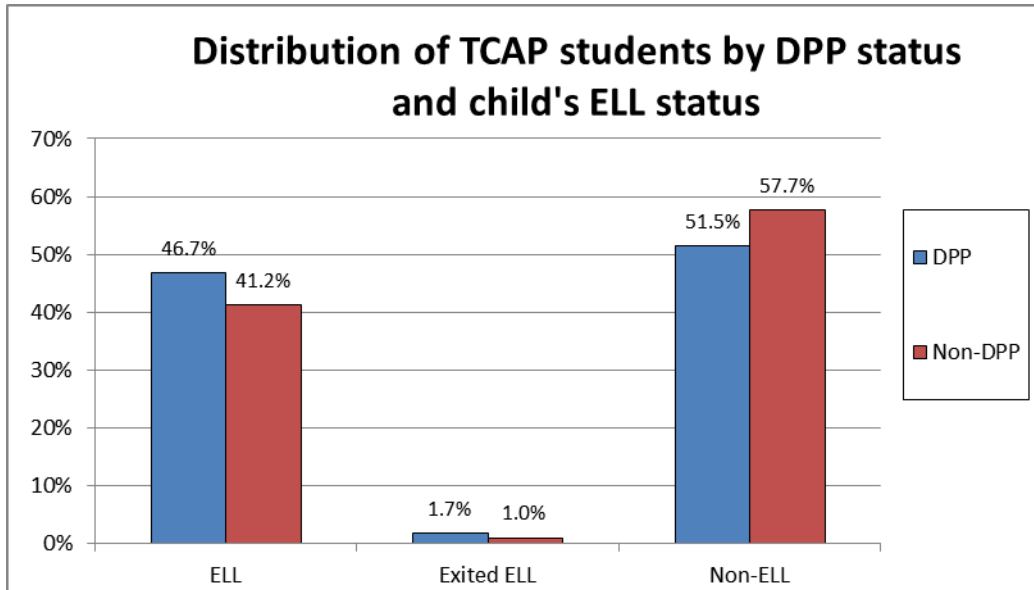




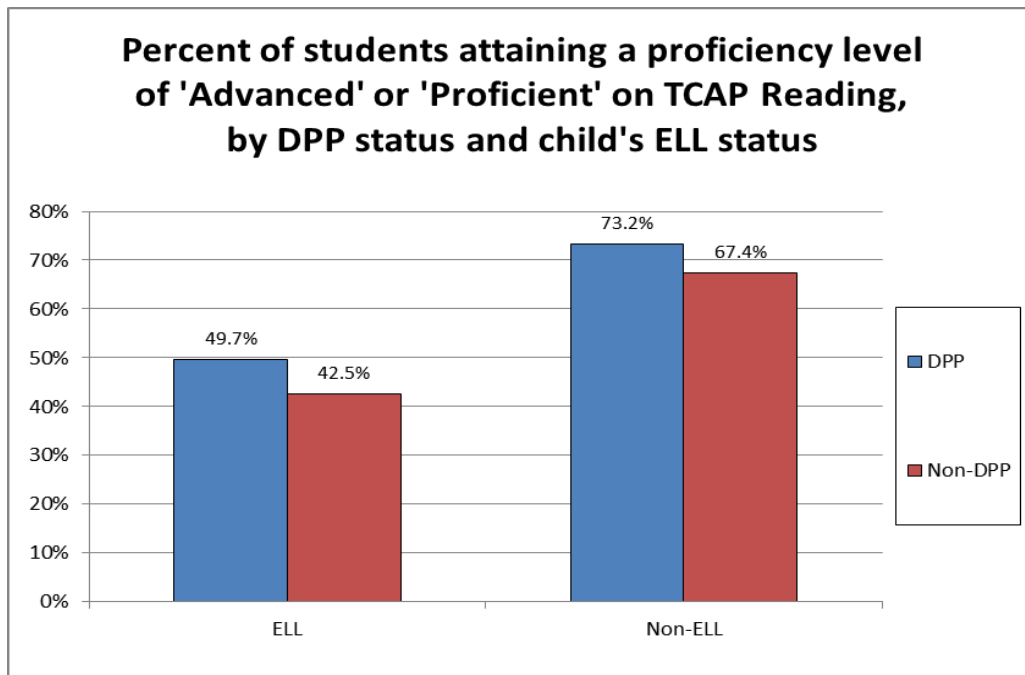
Figure 8 shows the DPP sample also had a larger proportion of students identified as English Language Learners (ELL), again indicating that the DPP sample could be considered to be a slightly more challenging group of students than the non-DPP sample.

**Figure 8**



Similar to findings reported above, Figure 9 shows that DPP students identified as ELL were 7.2 percent more likely to attain proficient or advanced levels on the TCAP.

**Figure 9**

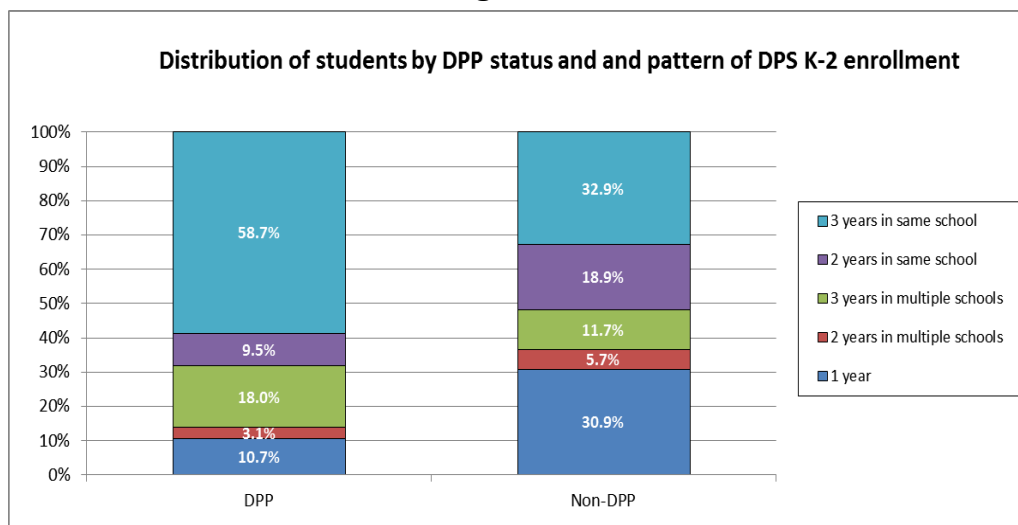


This series of charts suggest that although DPP students were a population that could face greater educational challenges than the non-DPP population among those that took the TCAP in 2012-13, they outperformed their non-DPP counterparts on the TCAP assessment. (See other important demographics of the DPP population in Appendix B)

### Advantages of DPP Students

Despite the more challenging demographic characteristics of DPP students, DPP students have the advantage of several positive enrollment patterns that could contribute to their TCAP reading proficiency. For example, DPP students are more likely to spend kindergarten, first, and second grade in DPS schools as Figure 10 shows enrollment patterns by DPP status. It indicates 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 related to student academic performance.<sup>6</sup>

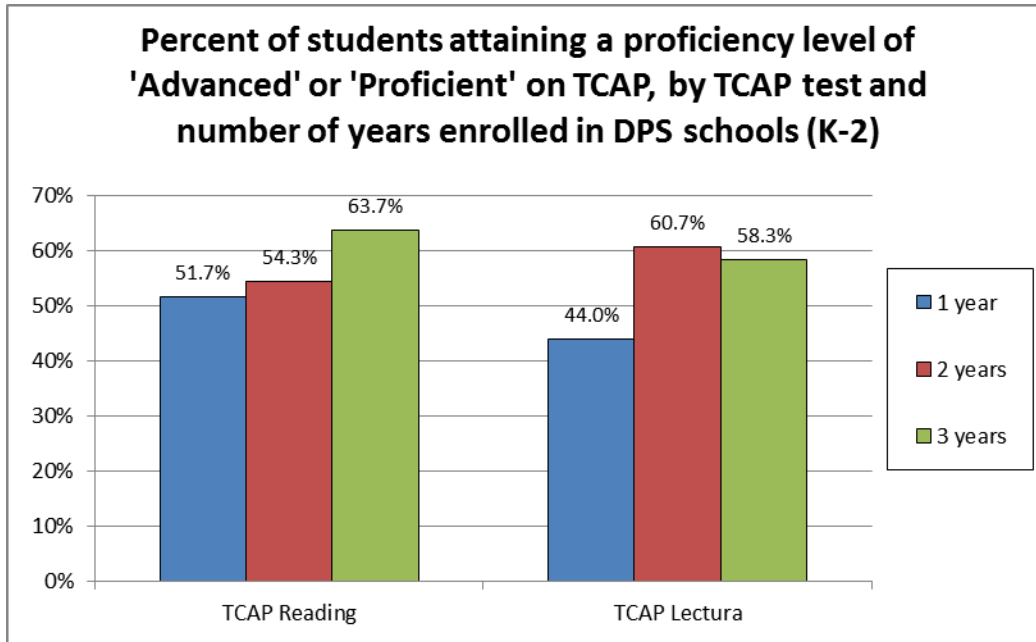
**Figure 10**



<sup>6</sup> 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.

For the entire TCAP-taking population in DPS, Figures 11 and 12 suggest that longer enrollment in DPS and / or enrollment within a single school is positively associated with proficient and advanced performance on the TCAP reading assessments. (See Appendix C for differences in scores on the DRA and EDL interim assessments between the DPP and non-DPP students.)

**Figure 11**



**Figure 12**

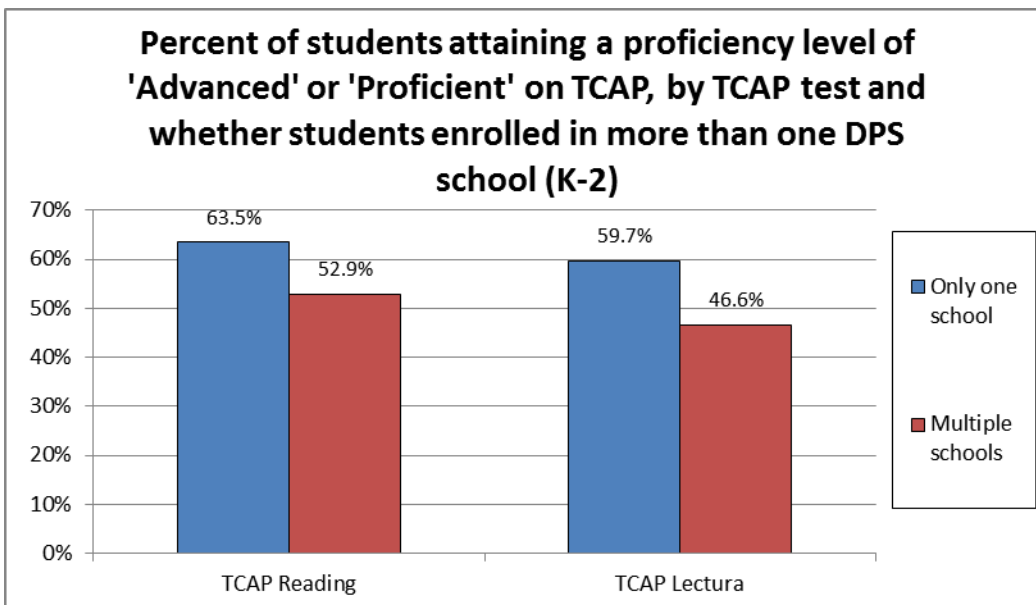
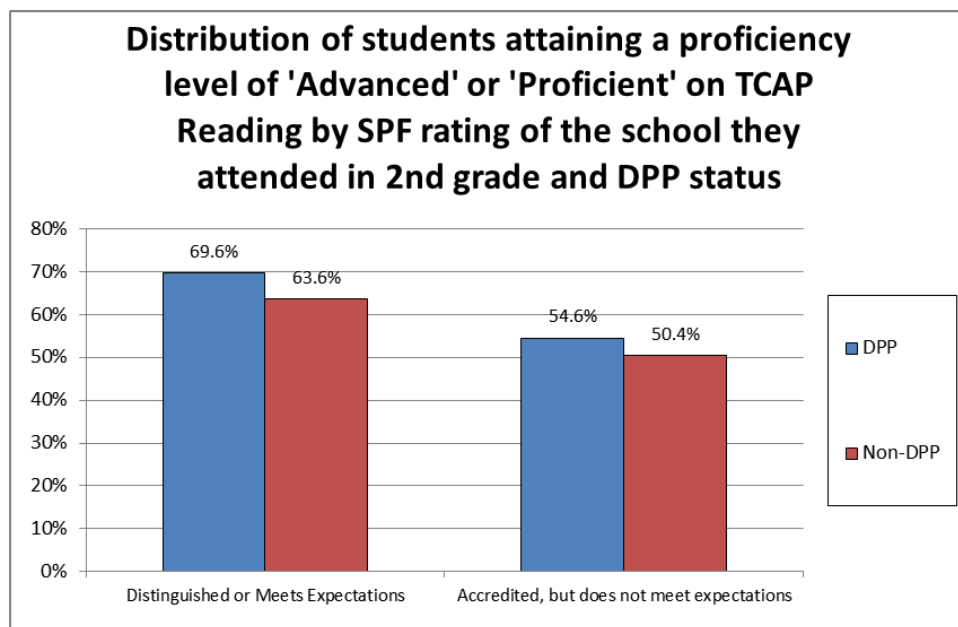


Figure 13 presents TCAP Reading performance by DPP status and DPS School Performance Framework (SPF) rating, which show a positive association between school rating and student TCAP scores. SPF rating is a measure used by DPS to indicate school quality. Figure 13 indicates that DPP students outperform their non-DPP peers regardless of the quality of the school they attended in 2nd grade.

**Figure 13**



## Conclusion

This memo describes the evidence that suggests DPP children have contributed significantly to the growth in the percent of third-graders scoring “advanced” or “proficient” on the TCAP reading assessment that DPS experienced in the spring of 2013.

A quality preschool experience, like the experience provided by DPP, coupled with the quality of the elementary school(s) students attend makes a difference. Previous 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.<sup>7</sup> By combining TCAP results, DPP status indicators and the School Performance Framework (SPF) from DPS, the following conclusions can be drawn.

<sup>7</sup> 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](http://www.rand.org/pubs/monographs/2005/RAND_MG341.pdf).

*Although the positive influence of a quality DPP supported preschool experience is consistent across the different SPF ratings, a quality DPP experience coupled with higher school SPF ratings is associated with even greater percentages of students attaining advanced or proficient scores on TCAP.*

## Appendix A

A comparison of all DPP students who participated in the program in 2008-09 with the DPP students who took the TCAP in 2012-13, by ethnicity and by Free or Reduced-Price Lunch status.

Figure A1

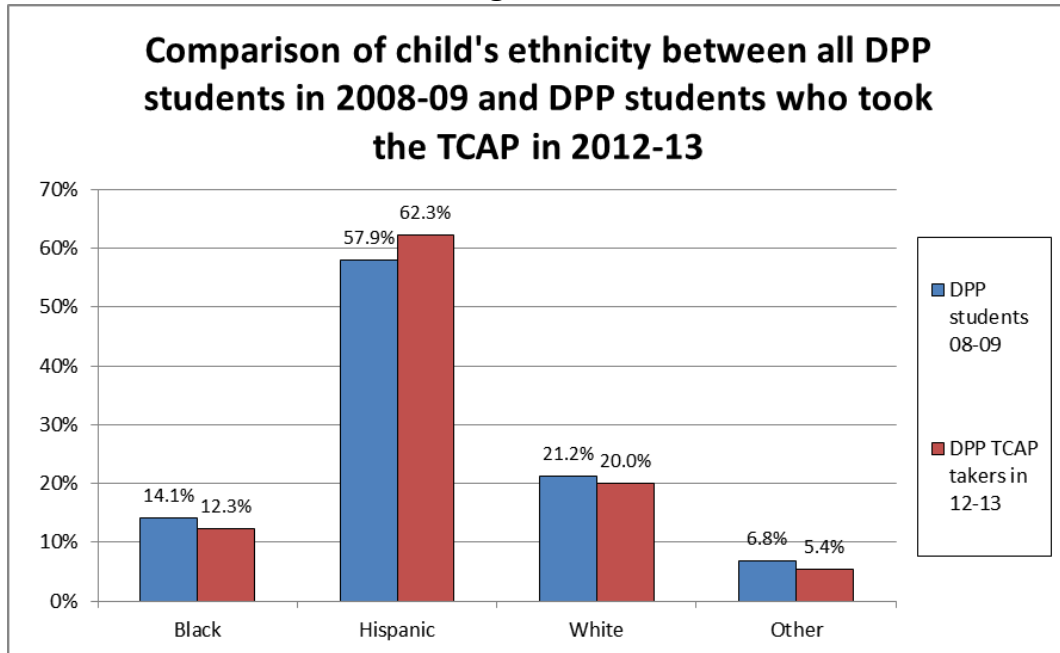
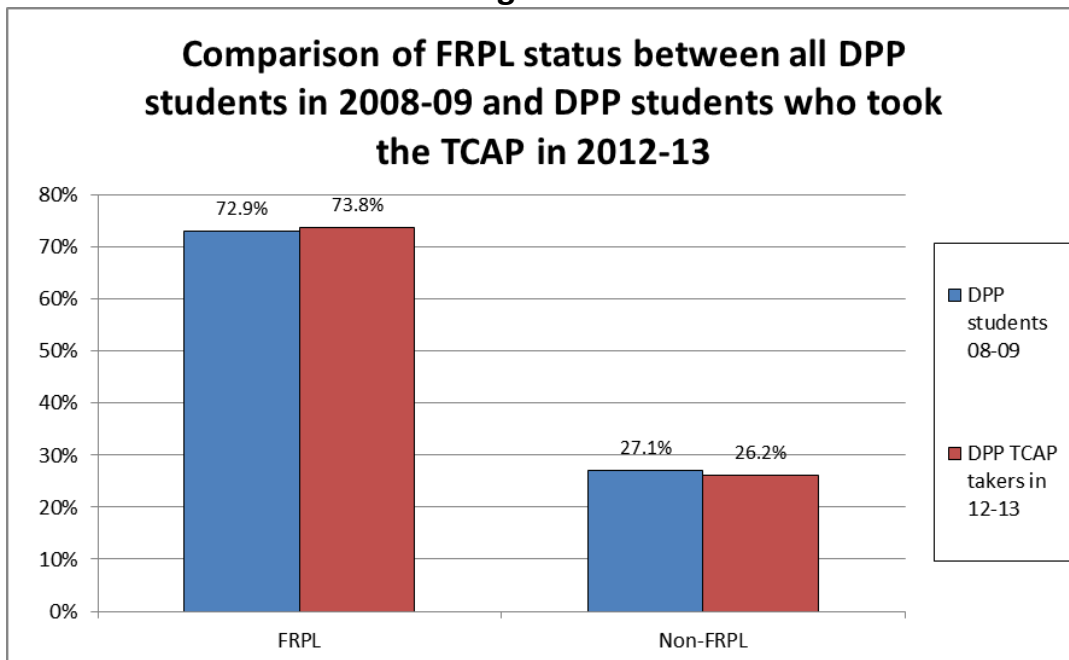


Figure A2



## Appendix B

Characteristics of DPP participants in 2008-09 who took the TCAP in 2012-13

Figure B1

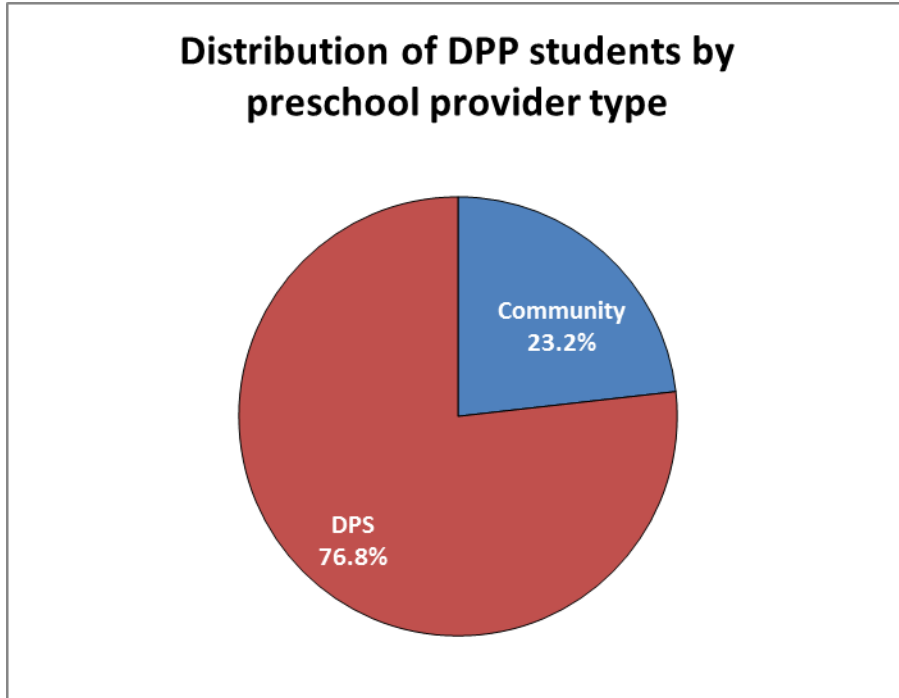
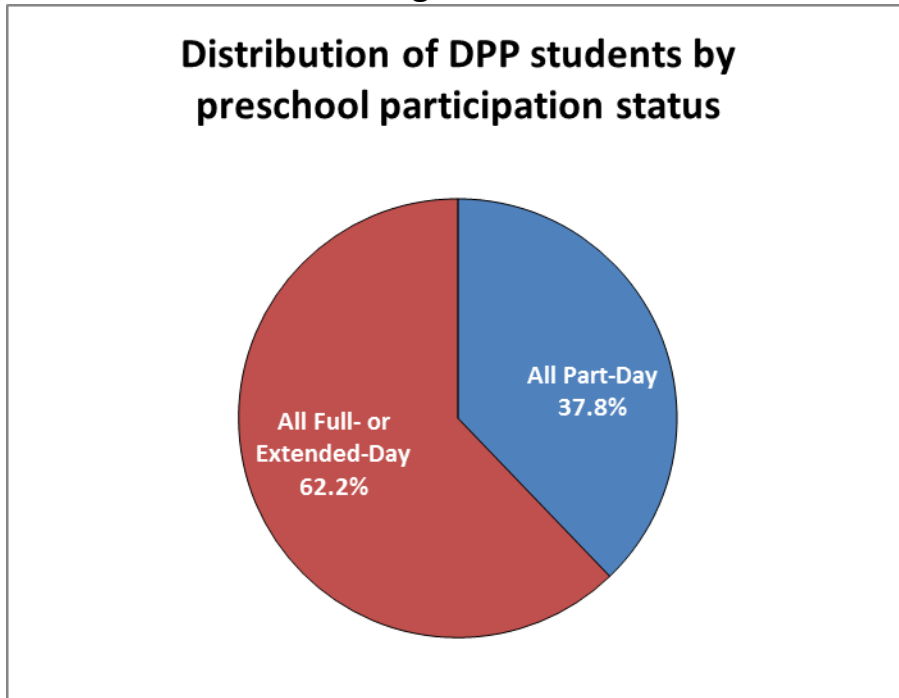


Figure B2



## Appendix C

All DPS students who took the TCAP in 2012-13 also took the Developmental Reading Assessment Version 2 (DRA2) and Evaluacion Del Desarrollo De La Lectura 2 (EDL2)<sup>8</sup> tests of reading proficiency in the years preceding Third Grade. A brief description of the Developmental Reading Continuum scores is outlined below.

### Developmental Reading Continuum

#### DRA Levels:

**Emergent Readers**      **Early Readers**      **Transitional Readers**      **Extending Readers**

←————→      ←————→      ←————→      ←————→

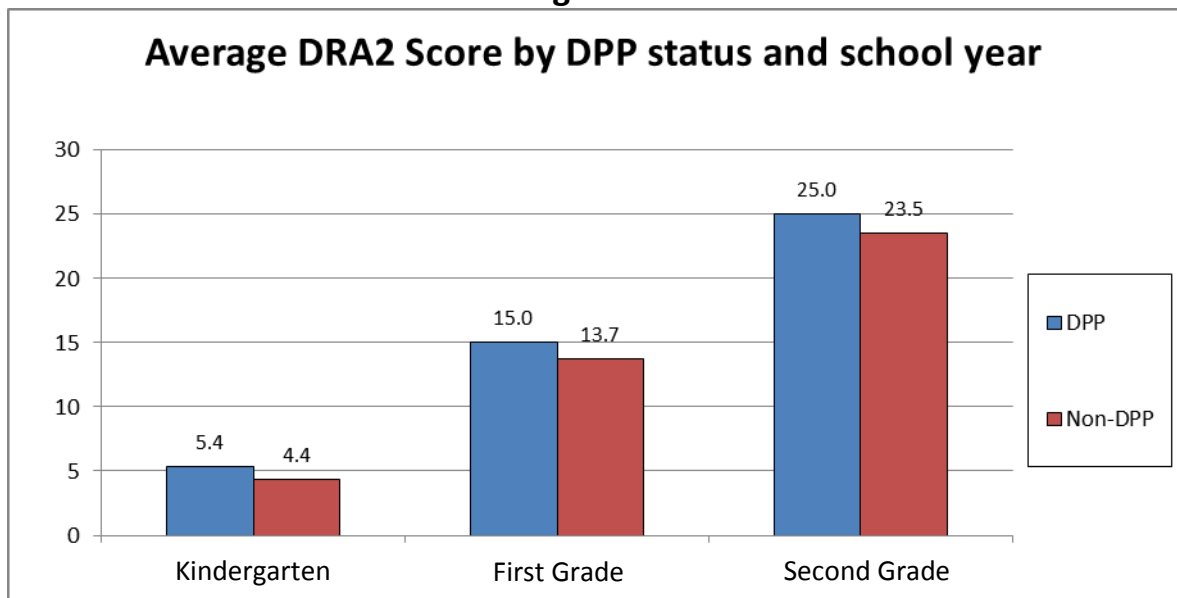
A	1	2	3	4	6	8	10	12	14	16	18	20	24	28	30	34	38	40	44
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#### Grade Level Expectations:

- 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 for each school year. 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.

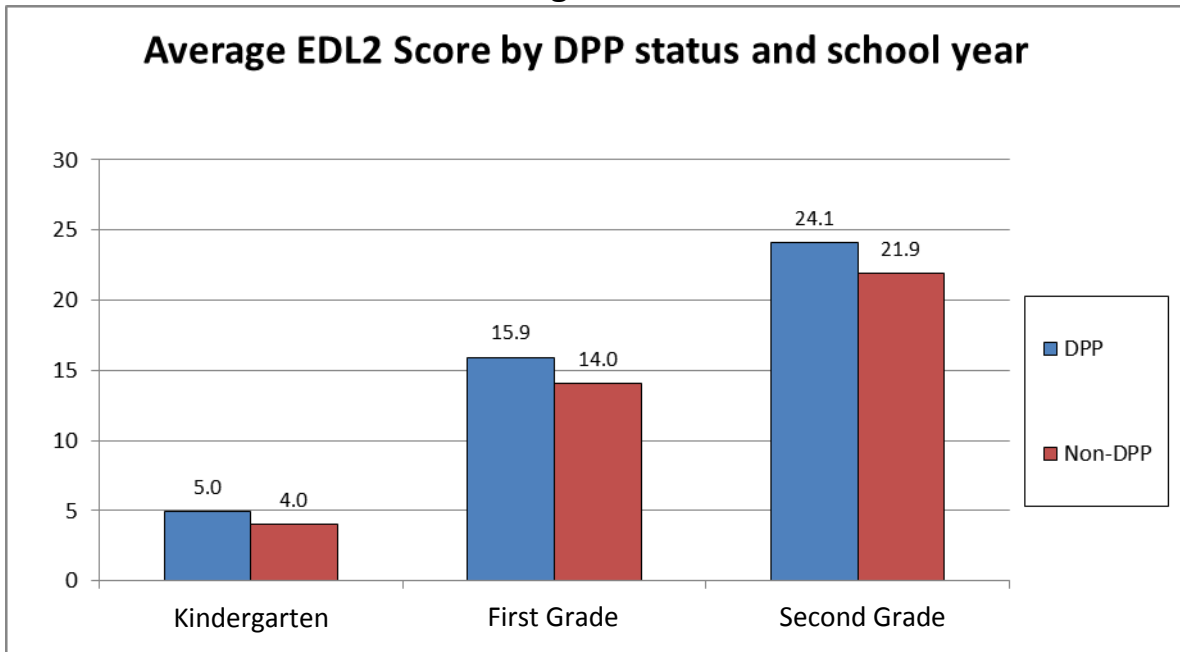
**Figure C1**



<sup>8</sup> 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 C2



The following figure shows average DRA2 scores by SPF ratings of the school attended in 1<sup>st</sup> grade. DPP students who attend schools that are distinguished or meet expectations earn higher scores on average than non-DPP students at the same schools.

Figure C3

