

Office of the Superintendent of Schools
MONTGOMERY COUNTY PUBLIC SCHOOLS
Rockville, Maryland

October 1, 2002

MEMORANDUM

To: Members of the Board of Education

From: Jerry D. Weast, Superintendent of Schools

Subject: Improvements in Student Reading in Kindergarten and First Grade

Significantly more students—especially those who are most heavily affected by poverty and English language development—are acquiring foundational reading skills in kindergarten and text reading skills in Grade 1 as a result of teachers and principals using a more rigorous curriculum, enhanced program implementation, and ongoing professional development. The gains in foundational reading skills in kindergarten, which are being achieved to various degrees among all racial and ethnic groups, are being sustained in Grade 1 as more students keep pace in achieving higher-level skills in reading text

These are the major findings of two ongoing studies that are part of an effort to chronicle the academic development of nearly 16,000 students who were part of the first group of children to benefit from the kindergarten reforms implemented two years ago (2000-2001) and the second group of students who completed kindergarten last year (2001-2002), including those who were enrolled in full-day kindergarten. The first group of children are now in second grade this year, and their experience last year as first graders provides emerging trend data that underscore the potential for long-term advancements in student academic performance, especially in the schools most heavily affected by poverty.

The growing impact of poverty is an important factor in the development and implementation of the kindergarten reforms and the expansion of full-day kindergarten. The attendance areas of the 56 schools that now have full-day kindergarten also have 81 percent of all elementary school participation in the federal meals program systemwide and 71 percent of the county's English language learners. The heaviest concentrations of the poor among all racial and ethnic groups also are located in these schools.

There is much more to be done. One immediate step is the implementation this fall of a phonics supplement in kindergarten through Grade 2 in the 18 federally funded Title I schools for students who need extra foundational skill development, especially those learning English as a second language. Other efforts will concentrate on improvements in oral language instruction for English language learners and increased focus on underperforming students, including those in special education. In the meantime, there is much that already has been accomplished. The

hard work by teachers, instructional assistants, reading teachers, principals, and early childhood program staff is clearly showing significant dividends in the pursuit of higher, more rigorous standards for what students are expected to know and be able to do in reading by the end of kindergarten and first grade in the Montgomery County Public Schools.

In fact, the findings from an initial, landmark kindergarten study released a year ago were confirmed by a second evaluation review that focused on previous Head Start students and made like-group comparisons with other schools for the first time. The review compared the performance of Head Start students in the original 17 full-day kindergarten schools in the 2000-2001 school year with the performance that year of other Head Start students from two groups of schools with half-day kindergarten. The findings show that the Head Start students in the full-day program significantly outperformed their peers in the other two school groups. For example, 50 percent of Hispanic students in Head Start in the original group achieved the benchmark in all four foundational reading skills, compared to just 32 percent in the first group of schools and 10 percent in the second group. Similar gains also were noted for all racial and ethnic groups. The second review findings are important because the lower-performing schools in the comparison are those that received the second and third phase of the full-day kindergarten expansion, underscoring the necessity of continuing to expand the program into schools with high levels of poverty and underachievement.

Overall, the two studies looked at three major areas: the second-year implementation of the kindergarten initiative, the effects of the enhanced full-day kindergarten program in targeted schools, and the sustained reading benefit in Grade 1.

The studies produced seven key findings:

- The acquisition of foundational reading skills improved in the second year of the kindergarten initiative, with better-prepared teachers producing better-prepared kindergarten students. The gain was significant for all groups of students. For example, 62 percent of African American students in the second year achieved the foundational reading skill benchmark, compared to 49 percent in the first year.
- The gain in acquiring the highest reading level in kindergarten (text reading) was significant. The percentage of students systemwide at or above the foundational skill level (i.e., reading text) improved from just 11 percent in the fall to 61 percent in the spring. All racial and ethnic groups made such gains, with African American and Hispanic students gaining the most during the year and helping to narrow the gap with Asian American and white students.
- The benefit of attaining foundational reading skills in kindergarten was sustained and enhanced in Grade 1, with 84 percent of the first-year kindergarten students achieving “early fluency” or “fluency” in reading skills by the end of Grade 1 and 60 percent of the

students attaining the more rigorous Grade 1 requirement of the text reading benchmark that includes a measure for reading comprehension.

- The sustained benefit of the first full-day kindergarten program helped African American and Hispanic students attain the text reading benchmark in Grade 1 at or above the average for all African American and Hispanic students in Grade 1 systemwide. For example, 51 percent of African American students from the first full-day kindergarten class achieved the Grade 1 benchmark, compared to 49 percent of all African American students in first grade systemwide. Similarly, 48 percent of students participating in the Free and Reduced-price Meals System (FARMS) from the first full-day kindergarten attained the Grade 1 benchmark, compared to 45 percent of FARMS students' systemwide in Grade 1.
- Overall, the attainment of the text reading benchmark in Grade 1 was lower for the first full-day kindergarten students, as a group, compared to all first grade students because of the significant impact of oral language deficiencies among students in the English for Speakers of Other Languages (ESOL) program and their heavier concentration in the first full-day kindergarten class.
- The oral language deficiencies among ESOL students were most evident in the second year of the full-day kindergarten implementation, when the assessment was expanded to include oral language skill levels as part of the foundational reading measurement.
- The second year of full-day kindergarten confirmed the earlier finding that the greatest rate of improvement during the year for students in FARMS and ESOL occurred in full-day kindergarten, compared to the half-day program, underscoring the value of the extended learning opportunities for students impacted by poverty and/or learning English.

The foundational reading skills are those that prepare students for text reading, and they include letter identification, print concepts, hearing and recording sounds, and word recognition. The text reading skills include oral reading and fluency, as well as comprehension, in a manner that also can be described as "reading proficiency." The process of determining these skill levels involves individual assessments for each student by the teacher. This past year, the assessments in kindergarten were broadened to include determination of skills in phonemic awareness and oral language, as part of the continued strengthening of the kindergarten curriculum.

Montgomery County's kindergarten initiative is a multiyear plan that contains two distinct parts. First, both the kindergarten curriculum and the teacher-training program were substantially strengthened beginning in the spring of 2000. Second, a phased-in expansion of full-day kindergarten was initiated, featuring a substantially reduced class size with a student to teacher ratio of 15:1. This initiative began with 17 schools in the 2000-2001 school year, expanded to 34 schools last year, and now involves 56 schools with the highest level of poverty. These same 56 schools also have class size ratios of 17:1 in Grades 1 and 2.

In its third year of implementation, the full-day kindergarten program includes extended time for balanced literacy instruction, within a nurturing environment appropriate for the age group. The instructional program includes reading, mathematics, social studies, art, music, and physical education. Kindergarten teachers and elementary school principals are part of an ongoing training program that reinforces the focus on accelerated reading and mathematics instruction. (An ongoing study of student acquisition of mathematics skills in kindergarten is under way.) The strengthened kindergarten curriculum features a written framework and schedule that allocates specific blocks of time for sustained high-quality teaching. The kindergarten initiative, in fact, provided the model for the ongoing improvements now under way to improve the curriculum for all grade levels and the professional development program for all teachers and principals.

The emerging results are impressive. The long-term advantage of this kind of achievement is important in reaching the school system's goal of reading proficiency by third grade and opening the door to success in all other subject areas, particularly in writing and mathematics. For example, the new opportunities for accelerated mathematics instruction in elementary school are highly dependent on students reaching the reading proficiency levels that will give them the chance to comprehend more advanced classroom instruction, books, and other materials. Such reading proficiency will prepare them for even more success as they advance toward high school in our county.

I will continue to keep you informed.

JDW:kmy

Attachments

Copy to:

Executive Staff

Principals



**Evaluation of the Montgomery County
Public Schools Assessment Program:
Kindergarten and Grade 1
Reading Report**

Office of Shared Accountability

September 2002

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EVALUATION OF THE MONTGOMERY COUNTY PUBLIC SCHOOLS
ASSESSMENT PROGRAM: KINDERGARTEN AND
GRADE 1 READING REPORT

Evaluators: Jennifer Nielsen, Elizabeth Cooper-Martin, John Larson, Jocie Cogen,
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EXECUTIVE SUMMARY

During the 2000-01 school year, Montgomery County Public Schools (MCPS) launched its Kindergarten Initiative. This initiative served as a multifaceted strategy that expanded full-day kindergarten and reduced class size programs in kindergarten classrooms across the county, revised the existing kindergarten curriculum, provided ongoing professional development through the summer and the school year, and increased communication between parents of kindergarten students and schools in an attempt to help students acquire reading skills. The design of the Kindergarten Initiative included an evaluative component that is guided by the MCPS Assessment Program. This program uses system-wide implementation of a local, research-based assessment program in reading, to direct future changes in the curriculum and professional development.

The following report details four major findings: the continued progress of the acquisition of reading skills of both year 1 and year 2 Kindergarten Initiative students, the full-day kindergarten benefit, the progress of year 1 Kindergarten Initiative students into Grade 1, and evidence of an experience effect, better implementation in year 2 of the program.

MCPS students continue to make progress in the acquisition of reading skills in year 2 of the Kindergarten Initiative. By the end of the year, 69 percent of Kindergarten Initiative students were achieving benchmark performance levels in four Foundational Skill Areas¹. In year 1 of the Initiative, 58 percent of students met this same benchmark, demonstrating a nine percentage point increase in the number of students who achieved benchmark performance levels in the foundational skill areas between year 1 and year 2. High-risk students, who received Free and Reduced-price Meals (FARMS) only made the greatest gains, with much work still needing to be done for those students receiving English as a Second Language (ESOL) and FARMS and only ESOL services.

The Kindergarten Initiative has produced a full-day kindergarten benefit in both year 1 and 2 of the program. The full-day kindergarten benefit appears for both Head Start and non-Head Start students, with all racial/ethnic groups benefiting similarly from the full-day kindergarten benefit. Partial evidence that the full-day kindergarten benefit is greater for students most in need, as defined by risk group (ESOL/FARMS) is found in non-Head students only.

¹ In year one of the Kindergarten Initiative, students were assessed on four Foundational Skill Areas. In year two, students were assessed on six Foundational Skill Areas. For comparative purposes, only the four Foundational Skill Areas common to both years one and two of the Initiative are discussed in this report.

At the end of Grade 1, 84 percent of students were reading at the early fluent or fluent level and met the Grade 1 reading proficiency benchmark. Again, while the majority of students across all risk levels were reading at the early fluent or fluent level, only 51 percent of children in the ESOL and FARMS risk group were able to read text at these levels. In tracking year one's kindergarteners into Grade 1, we found that success in Grade 1 is clearly related to reading achievement in kindergarten. Seventy-six percent of students who achieved benchmark performance levels on all four foundational skill areas in kindergarten were able to meet the reading proficiency benchmark in Grade 1.

Evidence of an experience effect has been found that shows that progress made in the year 2 of the Initiative was even greater than the progress made in year 1. Year 2 Kindergarten Initiative teachers have the advantage of having more time to acquaint themselves to the curriculum and the accompanying assessments, and experiencing an additional year of professional development. As a result we can hope to see even greater program successes in year 3 of this program.

Kindergarten Initiative students in both cohorts 1 and 2 have made progress while attending kindergarten in Montgomery County Public Schools. Preliminary evidence of sustained effects can be seen in Grade 1 progress. The children in cohorts 1 and 2 must continue to be followed through subsequent years in the MCPS so that program effectiveness can be examined and student successes can be shared with other counties across the country.

INTRODUCTION

Children who are impoverished, cultural minorities, and learning English as a second language are at a greater risk of academic failure than those students who do not have these risk factors (Gordon & Yowell, 1994; Natriello, McDill, & Pallas, 1990; Smith & O'Day, 1991). These children tend to have significantly weaker literacy skills upon entering kindergarten than students who do not have these risk factors (J.D. Weast, personal communication, March 7, 2001). Bridges-Cline documented the prevalence of this achievement gap in kindergarten classrooms across Montgomery County during the 2000-01 school year (2001, March).

The Montgomery County Public Schools (MCPS) has pledged to narrow this gap in student achievement by providing effective instructional programs delivered by highly trained and dedicated staff within a supportive learning community, both inside and around our schools (MCPS, 1999). The introduction of Public Law 107-110, the No Child Left Behind Act of 2001, which demands that every student, regardless of race, ethnicity, or poverty level, meet academic standards in reading, math, and science intensified our countywide mission to narrow this gap in achievement and ensure success for all MCPS students.

The Montgomery County Kindergarten Initiative

In spring 2000, MCPS curricula were examined in an attempt to find a solution for narrowing the gap. What we found was that the kindergarten curriculum lacked the comprehensiveness needed to accelerate the performance of all students in literacy and mathematics. It appeared that the weekly time allocations for reading and mathematics in

kindergarten programs across the county were insufficient in delivering a consistent rigorous curriculum to our students. At that time, it was also very difficult for schools to communicate with parents regarding their children's performance and grade-level expectations.

In response to these identified concerns, during the 2000-01 school year, MCPS launched its Kindergarten Initiative. This initiative served as a multifaceted strategy that revised the existing kindergarten reading and mathematics curricula, introduced a consistent assessment program, expanded full-day and reduced-class size programs in kindergarten classrooms across the county, provided ongoing professional development through the summer and the school year, and increased communication between parents of kindergarten students and schools.

The redesigned kindergarten curriculum, based on a review of the literature, included more time for balanced literacy instruction and emphasized sustained high-quality teaching during the language arts time block. The revised curriculum equipped each kindergarten classroom in the county with consistent core materials and assessments that would be administered during the fall and spring. These assessments would make it possible for teachers to monitor student progress closely and to direct their instructional efforts effectively toward the students with the greatest needs and weakest skill areas. A new reporting tool was developed and implemented to facilitate effective communication regarding these assessments between schools and parents. In addition, comprehensive staff development was developed so that all kindergarten teachers would receive training to ensure that the revised curriculum, and the accompanying assessments, would be delivered consistently to our students county-wide. This training involved more than 400

teachers and provided up to 100 hours of staff development per teacher, with a major portion of this training devoted to procedures for administering and scoring the assessments.

During year one of the Kindergarten Initiative, full-day kindergarten programs were offered in 17 elementary schools in Montgomery County, while the remaining elementary schools offered half-day kindergarten programs. In the full-day kindergarten classrooms, the student-teacher ratio was 15:1. In the half-day kindergarten classrooms, the average student-teacher ratios were 22:1 (White, 2002). The 17 elementary schools that offered full-day kindergarten programs during year one of the Kindergarten Initiative were those schools with the highest concentration of students who were academically disadvantaged and economically deprived. Currently, 56 MCPS elementary schools offer full-day kindergarten programs, the initial 17 schools from year one, an additional 17 schools that offered full-day kindergarten during year two of the Initiative, and an additional 22 schools that are offering full-day kindergarten for the first time this school year (year three). Again, these schools were selected to offer full-day kindergarten programs because they had the highest concentration of students who were academically disadvantaged and economically deprived (the original 17 schools from year one), the second highest concentration of students who were academically disadvantaged and economically deprived (the next 17 added in year two) and the third highest concentration of students who were academically disadvantaged and economically deprived (the 22 schools added this school year, year three of the Kindergarten Initiative).

MCPS Assessment Program

Kindergarten Assessments: A primary goal of the kindergarten reading curriculum is to support students' acquisition of the beginning, foundational reading skills that will ensure rapid transition into successful text reading as students progress into Grade 1. These foundational skills are letter knowledge, print concepts, oral language, phonemic awareness, phonics, and word knowledge. Letter knowledge, the ability to identify alphabet letters, is assessed based on students' ability to name upper and lowercase letters with the Letter Identification Assessment Tool. Print concepts, the ability to demonstrate book handling skills and print awareness concepts, is assessed based on students' understanding of how printed language works in books (e.g., directional movement, one to one matching, book conventions such as the front and back of the book, etc.) with the Concepts About Print Assessment Tool. Oral language, the ability to speak clearly and use a wide variety of words to convey ideas effectively, is assessed based on students' control of oral language and grammatical structures, with the Record of Oral Language Assessment Tool. Phonemic awareness, the ability to hear the distinct sounds in spoken words, is assessed based on students' ability to separately articulate and manipulate the sounds of a spoken word (e.g., beginning sounds, rhyming, etc.) with the Phonemic Awareness Assessment Tool. Phonics, the ability to use knowledge of letter/sound relationships to decode and write words, is assessed based on students' ability to associate and write letters for sounds heard in words in a dictated sentence with the Hearing and Recording Sounds Assessment Tool. Finally, word knowledge, the ability to identify high frequency words in print and decode unknown words, is assessed based on students' ability to read basic sight words by the Word Recognition Assessment Tool.

For the purposes of evaluating kindergarten students' progress toward successful reading, score ranges of "substantial proficiency" were empirically established and defined as benchmarks (Bridges-Cline, 2001, August). A summary of these foundational skills, their assessment scale range, and their accompanying benchmark performance levels is displayed in Table 1.

Table 1.
Foundational Skills Area Assessments Scale Ranges and Benchmark Performance Levels

	Assessment Scale Range		Benchmark Performance Levels	
	Year One 2000-01	Year Two 2001-02	Year One 2000-01	Year Two 2001-02
Earliest Reading Skill Areas				
Letter Identification	0 - 54	0 - 54	45 +	45 +
Concepts About Print	0 - 16	0 - 16	13 +	13 +
Oral Language Skill Areas				
Record of Oral Language*	--	0 - 21	--	13 +
Phonemic Awareness*	--	0 - 24	--	14 +
More Advanced Reading Skill Areas				
Hearing and Recording Sounds	0 - 14	0 - 15	8 +	9 +
Word Recognition	0 - 22	0 - 25	8 +	11 +

* These skill area assessments were added in 2001-02 and were not administered in 2000-01.

The second step in the developmental continuum is early text reading. Oral reading/fluency, the ability to read text aloud fluently and accurately, is assessed through student's oral reading accuracy and fluency by the Running Record Assessment Tool. The Running Record Assessment Tool is administered individually to each student in the class. The teacher first selects a book from one of the various levels of difficulty and then asks the student to read it aloud. Errors in word recognition are recorded as the student reads. If at least 90 percent of the words in the text are read correctly, the reading stage that corresponds with that particular text is recorded. Each of the textbooks correspond to one of four reading stages: Fluent, Early Fluent, Upper Emergent, or Early

Emergent. A detailed description of these reading levels can be found in Appendix 1. If word recognition accuracy were less than 90 percent, the teacher would select a lower level text and repeated the process until the 90 percent criterion was met.

In kindergarten, there are five books listed on the Running Record that are part of the kindergarten curriculum. These books levels one through five, one being the easiest, five being the most difficult, provide text reading experiences for kindergarten students. The running record allows teachers to monitor the progress of students as they approach Grade 1 reading readiness. Some students may move beyond the kindergarten texts, book level 5, and begin reading grade one texts. Based on findings presented by the Office of Shared Accountability (OSA) (Bridges-Cline, 2001, August) and a review of research based early childhood literacy programs, the Division of Early Childhood Programs and Services (DECPS) established the benchmark for kindergarten text reading proficiency as students reading the level 3 book with an accuracy rate of 90 percent or above.

Grade One Assessments: Foundational reading skill assessments were used in Grade 1 to check on the skills that a student needs in order to become a strong, fluent reader and to provide guidance for instruction. For some of the tests, a Grade 1 (G1) version was developed and used, in addition to the kindergarten (K) version. For the assessment in spring 2002, teachers were instructed to give the following foundational tests to students at or below the Early Emergent stage: Record of Oral Language (G1), Concepts about Print (G1), Letter Identification (G1), Hearing & Recording Sounds (K), and Phonemic Awareness (K). For students at the Upper Emergent stage, teachers were instructed to

give the following foundational tests: Record of Oral Language (G1), Hearing & Recording Sounds (G1), Phonemic Awareness (G1), and Word Recognition (G1).

The text reading level was determined by the running record assessment for Grade 1. In giving this assessment individually to each student in the class, the teacher first selected a book at 1 of 14 levels of difficulty and then asked the student to read it aloud. Errors in word recognition were recorded as the student read. If at least 90 percent of the words were read correctly, the student's text level was one of four reading stages associated with that text: Fluent, Early Fluent, Upper Emergent, or Early Emergent (see Appendix 1). By convention in reporting these data, only the stage is reported, not the level of the book within a stage. If word recognition accuracy was less than 90 percent, the teacher selected a lower level text and repeated the procedure until the 90 percent criterion was met (White, 2002).

In the MCPS Assessment Program, reading comprehension is assessed by means of both oral and written responses elicited from the student. In 2001-02, oral comprehension scores were obtained for students who read a text at the Early Emergent, Upper Emergent and Early Fluent stages; the teacher asked the student three to six questions (depending on the book) immediately after the student read the text. Oral scores were optional for students at the Fluent stage and were collected after completion of the written comprehension task, if the teacher felt the written score was weak. The written score was determined as follows. Following oral reading of a text, the teacher provided the student with a response booklet containing two to five questions or prompts to draw and write about the story or informational text read. The student was allowed sufficient time to complete the task. At the spring 2002 assessment, the written

comprehension score was obtained only for students who read a text at the Early Fluent or Fluent level. The Grade 1 proficiency benchmark for 2001-02 was reading *Wibble-Wobble*, or a higher text level with an accuracy rate of 90 percent or higher, along with a score of 2 or 3 (i.e., with partial or essential comprehension) on the written response. The target text has a Reading Recovery level of 14 and at the Early Fluent level.

In early June 2002, the Office of Curriculum and Instructional Programs (OCIP) held a series of scoring sessions of the written responses for all Grade 1 teachers at a central location. In each scoring session, groups of teachers were assigned to a specific title, and each group received scoring training that was specific to that book. The OCIP trainers first reviewed the content of the book and the comprehension questions and prompts. Then they reviewed and discussed model papers illustrating each of the score points. There were four score points, as follows: 3, representing “essential” understanding; 2, representing “partial” understanding; 1, representing “minimal” understanding; and 0, representing “no” understanding or no response. Scoring was holistic, meaning that the student’s responses to all of the questions and prompts were taken into account. Finally, each student’s paper was scored by at least two teachers. Generally the first scorer was a teacher from the school that the student attended. If the first two teachers disagreed on a paper, a third teacher scored it. Each score was recorded on a data reporting form. All scores for each paper that received three scores were entered into a database accessible by staff in the Office of Shared Accountability.

Reliability of the written comprehension scores was analyzed and found to be more than adequate for analysis at a system-wide level. Across the eight book titles at the Early Fluent or Fluent level (i.e., the only titles for which written comprehension

scores were available in spring 2002), there was from 69 to 78 percent exact agreement on the first two scores. More than 99 percent of the first two scores were within one score point of each other.

THE ACQUISITION OF READING SKILLS FOR MCPS
KINDERGARTEN INITIATIVE STUDENTS

MCPS Kindergarten Initiative Students and their Acquisition of Reading Skills

A longitudinal study was conceptualized during the development of the Kindergarten Initiative to monitor the trends in academic progress of three successive cohorts of kindergarten students as they advance through the primary grades. The Kindergarten Initiative was launched during the 2000-01 school year. The students who were in kindergarten during year one of this initiative, the 2000-01 school year, are referred to as cohort 1. In year two of the initiative, the 2001-02 school year, the members of cohort 1 entered into Grade 1. The incoming kindergarten students for the 2001-02 school year are referred to as cohort 2. In year three of three of the initiative, the 2002-03 school year, the members of cohort 1 entered into Grade 2. The members of cohort 2 entered into Grade 1. The incoming kindergarten students for the 2002-03 school year are referred to as cohort 3. A summary of the members of each cohort, their grade level, and their corresponding school year is in presented in Table 2.

Table 2.
Cohort Members Grade Levels and School Years

	2000 - 2001	2001 - 2002	2002 - 2003	2003 - 2004	2004 - 2005
Cohort 1	K	1	2		
Cohort 2		K	1	2	
Cohort 3			K	1	2

Cohort Demographics

Cohort 1 Kindergarteners: Cohort 1 kindergarteners were enrolled in kindergarten during the 2000-01 school year. In kindergarten, students in cohort 1 (n=8748) were predominantly five year olds. Slightly more than a quarter of the students in cohort 1

were four year olds. Almost half of the students in cohort 1 were White (48%), with the remaining half consisting of African American (20%), Hispanic (19%), Asian American (13%), and American Indian (<1%) students.

As presented in Table 3, almost one quarter of the students in cohort 1 received Free and Reduced-price Meals (FARMS). Fifteen percent of the students in cohort 1 received English as a Second Language (ESOL) services. Thirty percent of the students in cohort 1 are considered to be high risk students, those students receiving ESOL services, FARMS, or both ESOL and FARMS. Fifteen percent of those students received only FARMS, 7 percent of those students received only ESOL services, and 8 percent of those students received both ESOL and FARMS services. The 8 percent of cohort 1 students in this risk group are considered to be the highest risk group.

Cohort 2 Kindergarteners: Cohort 2 kindergarteners were enrolled in kindergarten during the 2001-02 school year. In kindergarten, students in cohort 2 (n=8827) were also predominantly five year olds. Again, slightly more than a quarter of the students in cohort 2 were four year olds. Almost half of the students in cohort 2 were White (45%), and the remainder were African American (20%), Hispanic (21%), Asian American (14%), and American Indian (<1%) students.

Twenty-five percent of the students in cohort 2 received Free and Reduced-price Meals (FARMS). Twelve percent of the students in cohort 2 received English as a Second Language (ESOL) services. Again, thirty percent of students in cohort 2 were considered to be high risk students. Eighteen percent of those students received only

FARMS, 5 percent of those students received only ESOL services, and 7 percent of those students received both ESOL and FARMS services.

Table 3.
A Comparison of the Demographic Characteristics of Cohort 1 and 2 Students in Kindergarten

	Cohort 1 K in 2000-01 (N=8748)	Cohort 2 K in 2001-02 (N=8827)
Gender		
Male	51%	52%
Female	49%	48%
Age at Entry to Kindergarten		
4 years	27%	27%
5 years	72%	71%
6+ years	1%	2%
Race/Ethnicity		
American Indian	<1%	<1%
African American	20%	20%
Asian American	13%	14%
Hispanic	19%	21%
White	48%	45%
ESOL and FARMS Services in Kindergarten		
FARMS	23%	25%
ESOL	15%	12%
Not ESOL or FARMS	70%	70%
FARMS Only	15%	18%
ESOL Only	7%	5%
ESOL and FARMS	8%	7%
Special Education Services (with IEP)	7%	6%

The longitudinal study that was conceptualized during the development of the Kindergarten Initiative set out to monitor the trends in academic progress of three successive cohorts of kindergarten students as they advanced through the primary grades using the MCPS Assessment Program. These assessments, developed locally based on the literature, were designed with this sole purpose in mind. However the longitudinal study/program evaluation will use this assessment information in two ways. Primarily,

the assessments will provide the data needed to monitor the trends in academic progress of the Kindergarten Initiative. Secondly, the assessment information provides an opportunity for program designers to use evaluation findings to fine-tune the Kindergarten Initiative so that it can be more effective in helping MCPS kindergartners' learn reading and math skills.

This initiative is a multifaceted, multi-year effort to continuously expand and strengthen the early learning opportunities and instructional environments offered to our youngest students to ensure that they acquire strong academic foundations upon which to build as they move through the primary grades. The accompanying program evaluation is also multifaceted, incorporating formative and summative findings, and capable of providing recommendations that will inform stakeholders how to better develop, implement, and expand the Kindergarten Initiative.

MAJOR EVALUATION QUESTIONS AND FINDINGS

1. Are MCPS kindergarten students making progress in their acquisition of reading skills?

A Recap of Year 1 Kindergarten Initiative Findings: Foundational Skill Areas

Fall-to-spring gains for the first cohort of MCPS Kindergarten Initiative students were analyzed in August 2001, (Bridges-Cline, 2001, August). This cohort consisted of all students who had both fall and spring letter identification and concepts about print foundational skill area assessment scores, and students who missed less than one month of school. These gains were examined by risk group, kindergarten program, and participation in Head Start. Those students considered to be at lowest risk were members of the cohort who did not receive FARMS or ESOL services. Those students considered to be at high risk were members of the cohort who received FARMS or ESOL services, or both ESOL and FARMS services.

Kindergarten Initiative students could be in one of two kindergarten programs: half-day or full-day kindergarten. In year one of this program there were 17 elementary schools offering the full-day program. In year two, the 2001-02 school year, the number of schools offering full-day kindergarten grew to 34. In year three, the 2002-03 school year, the number of schools offering full-day kindergarten will grow to 56. During this school year cohort 3 students will be entering kindergarten.

MCPS offers a Head Start program for income-eligible three- and four-year olds. This year, more than 1,600 children are enrolled in the program. The Head Start program provides education; parent involvement; and health, disabilities, nutrition, and social services. The Head Start Web site lists a variety of educational opportunities that program participants will experience including, talking, listening and conversing with

others; listening and dramatizing stories; recognizing names, colors, shapes, numbers, and letters; solving problems; painting, drawing, and creating; and measuring, counting, and classifying. These activities are designed to nurture the participating children’s social, emotional, intellectual, linguistic, and physical development.

At the beginning of the 2000-01 school year, the percentage of students achieving benchmark performance levels in all four of the foundational skill areas ranged from 12 to 41percent. By spring, the percentage of students achieving benchmark performance in these skill areas ranged from 82 to 90 percent. Increases in the percentage of students achieving these foundational skills were observed in all four areas, with the greatest increase (73%) observed in the percentage of students acquiring word recognition skills.

A summary of these fall-to-spring gains can be found below in Table 4.

Table 4.
 Percentage of MCPS Kindergarten Initiative Students in Cohort 1 Achieving Benchmark Performance Levels in the Four Foundational Skill Areas

N = 7849	Fall 2000	Spring 2001
Letter ID	41%	90%
Print Concepts	20%	82%
Hearing & Recording Sounds	26%	82%
Word Recognition	12%	85%

Presentation of Year 2 Kindergarten Initiative Findings: Foundational Skill Areas and Text Reading

Fall-to-spring gains for the second cohort of MCPS Kindergarten Initiative students were analyzed in August 2002, (Bridges-Cline, 2002). This cohort consisted of all students who had fall and spring letter identification, concepts about print, and record of oral language foundational skill area assessment scores, and students who missed less than one month of school. These gains also were examined by risk group, kindergarten program, and participation in Head Start.

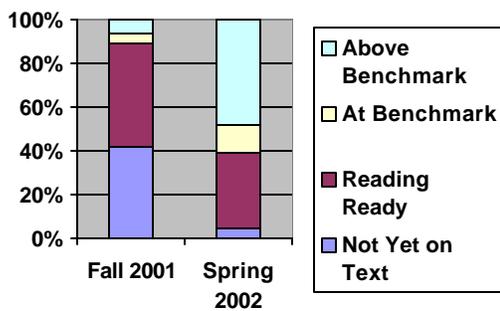
At the beginning of the year, the percentage of students achieving benchmark performance levels in all six of the foundational skill areas ranged from 16 to 68 percent. By spring, the percentage of students achieving benchmark performance in these skill areas ranged from 77 to 93 percent. Increases in the percentage of students achieving these foundational skills were observed in all six areas, with the greatest increases (54%) observed in the percentage of students acquiring print concept and hearing and recording sound skills. A summary of these fall-to-spring gains can be found in Table 5.

Table 5.
Percentage of MCPS Kindergarten Initiative Students in Cohort 2 Achieving Benchmark Performance Levels in the Six Foundational Skill Areas

N = 8005	Fall 2001	Spring 2002
Letter ID	51%	93%
Print Concepts	28%	86%
Oral Language	68%	87%
Phonemic Awareness	45%	88%
Hearing & Recording Sounds	23%	77%
Word Recognition	16%	82%

During the second year of professional development associated with the Kindergarten Initiative, teachers were informed of the importance of assessing their students' text reading skills in addition to their foundational reading skills. In year one of the Kindergarten Initiative, text reading skills were not consistently assessed for all students in Cohort 1, and therefore are not presented in this report. Cohort 2 kindergarten students made excellent progress during year two of the Kindergarten Initiative with regard to text reading. Upon entry into kindergarten, an astounding 11 percent of cohort 2 students were already reading above the kindergarten text reading benchmark (Figure 1). By the end of the year, 61 percent of cohort 2 students were reading above the kindergarten text reading benchmark.

Figure 1.
Kindergarten Text Reading Levels of Cohort 2 Students



Those students who are classified as reading ready were reading a level one or two text (Appendix 1), those students who were reading at benchmark were reading a level three text with an accuracy rate of 90 percent or above. Students reading a level four text or above were classified as above benchmark

2. Are high risk kindergarten students making progress in their acquisition of reading skills?

A Recap of Year 1 Kindergarten Initiative Findings: Foundational Skill Areas by Risk

Group

At the beginning of the 2000-01 school year, very few high risk students were achieving benchmark performance levels on the four foundational skill areas. One percent of FARMS only students, 1 percent of ESOL only students, and less than one percent of ESOL and FARMS students were successful in achieving benchmark performance levels on the four foundational skill areas. By spring, 47 percent of the FARMS only students were able to achieve benchmark performance in four of the four foundational skill areas, an increase of 46 percentage points. This increase also was observed in ESOL only students, a 38 percent increase, and in ESOL and FARMS students, a 32 percent increase. For the low risk group, those students receiving neither FARMS nor ESOL services, a 61 percent increase was observed. These fall-to-spring gains are presented below in Table 6.

Table 6.
Percentage of MCPS Kindergarten Initiative Students in Cohort 1 Achieving Benchmark Performance Levels in the Four Foundational Skill Areas By Risk Group

	Fall 2000	Spring 2001
Non- ESOL / Non-FARMS (n = 5534)	4%	65%
FARMS Only (n = 1219)	1%	47%
ESOL Only (n = 468)	1%	39%
ESOL & FARMS (n = 628)	<1%	32%
Total (n = 7849)	2%	58%

Presentation of Year 2 Kindergarten Initiative Findings: Foundational Skill Areas by

Risk Group

At the beginning of the 2001-02 school year, again, very few high risk students were achieving benchmark performance levels on the four foundational skill areas. Four percent of FARMS only students, 4 percent of ESOL only students, and less than 1 percent of ESOL and FARMS students were successful in achieving benchmark performance levels on five or six of the foundational skill areas. By spring, 60 percent of the FARMS only students were able to achieve benchmark performance on the four foundational skill areas, an increase of 56 percentage points. This increase was also observed in ESOL only students, a 33 percent increase, and in ESOL and FARMS students, a 36 percent increase. For the low risk group, those students receiving neither FARMS nor ESOL services, a 65 percent increase was observed. These fall-to-spring gains are presented in Table 7.

Table 7.
Percentage of MCPS Kindergarten Initiative Students in Cohort 2 Achieving Benchmark Performance Levels in Four Foundational Skill Areas By Risk Group

	Fall 2001	Spring 2002
Non- ESOL / Non-FARMS (n = 5594)	12%	77%
FARMS Only (n = 1532)	4%	60%
ESOL Only (n = 369)	4%	37%
ESOL & FARMS (n = 510)	<1%	36%
Total (n = 8005)	10%	70%

ESOL only students, along with ESOL & FARMS students, are consistently performing at substantially lower levels than their English speaking peers in each foundational skill area that pertains to oral language. This finding, consistent to both Cohort 1 and 2 ESOL students suggests that the services that ESOL only students are

receiving are not adequately preparing our second language learning students for attaining benchmark performance levels. To illustrate this, a comparison of the percentage of students from Cohort 2 who met benchmark performance levels on the six foundational skill areas assessed in 2001-02 is presented in Table 8, by ESOL service status.

Table 8.
 Percentage of Cohort 2 Students Attaining Benchmark Performance Levels on the Six Foundational Skill Area Assessments by ESOL Service Status

	Cohort 2 (n = 8005)	
	Non ESOL (n = 7126)	ESOL (n = 879)
Letter ID	95%	81%
Print Concepts	90%	57%
Oral Language	92%	46%
Phonemic Awareness	91%	57%
Hearing & Recording Sounds	81%	49%
Word Recognition	85%	60%

3. *Is there a full day K benefit? / Are students enrolled in different kindergarten programs making different progress in the acquisition of reading skills?*

The Kindergarten Initiative involved a variety of improvements, and so it is appropriate to evaluate its impact on academic performance. As described earlier, this Initiative included a revised curriculum, new assessments, and professional development. All kindergarten children in 2000-01 and in 2001-02 received these three components of the Initiative, as shown in Table 9. Because these changes were implemented in all schools, it is not possible to evaluate the Kindergarten Initiative by comparing schools with these changes to schools without these changes. Furthermore, because new assessments were a part of the Initiative, there is not the same assessment data for the kindergarten group that preceded cohort 1 and so it is not possible to use an earlier group of kindergarten students for comparison.

Table 9.
Roll Out Plan of Full-day Kindergarten Programs for Three Groups of MCPS
Kindergarten Initiative Elementary Schools

Year of Kindergarten Initiative	One (2000-01)			Two (2001-02)			Three (2002-03)		
Cohort 1	K			1			2		
Cohort 2				K			1		
Cohort 3							K		
School Group	17	+17	+22	17	+17	+22	17	+17	+22
Revised Curriculum	♦	♦	♦	♦	♦	♦	♦	♦	♦
New Assessments	♦	♦	♦	♦	♦	♦	♦	♦	♦
Professional Development	♦	♦	♦	♦	♦	♦	♦	♦	♦
Full Day K	♦			♦	♦		♦	♦	♦

However, as illustrated in Table 9, the one component of the Kindergarten Initiative that differed across schools was the roll out of a full-day kindergarten program coupled with reduced class sizes. Specifically, the full-day component was rolled out first to the most academically impoverished schools in our county. Previous research findings, which suggested that providing the most intensive services to the students with the most intensive needs helps increase academic performance, supported this roll out plan. In year one of the Kindergarten Initiative, 17 schools offered a full-day kindergarten program, with an additional 17 schools offering a full-day program in year two (2001-02), giving MCPS a total of 34 schools with full-day kindergarten programs and 85 schools with half-day programs. In year three of the Initiative, 2002-03, 22 more schools began offering a full-day kindergarten program bringing the total number of schools with a full-day kindergarten program to 56. These differences in kindergarten program create the opportunity to evaluate the effectiveness of the Kindergarten Initiative by comparing reading performance for students in schools with full-day kindergarten programs to students in schools with half-day kindergarten programs to see if there is a full-day kindergarten benefit.

In general, when making comparisons between schools that received a new program (full-day kindergarten) and schools without the new program (half-day kindergarten), it is most appropriate to compare the most similar schools. Using the most appropriate comparison groups helps us to be sure that we compare schools with comparable demographics, students, and circumstance. Given that the first schools to receive the full-day kindergarten program faced incredible challenges (serving high percentages of second language learners, students affected by poverty, and mobility), it

was not appropriate to compare them to every school within the system receiving a half-day kindergarten program. The groups of schools that will provide the most appropriate comparisons are those groups of schools slated to roll out the full-day kindergarten program within the first three years of the Initiative.

Additionally, in order to separate the impact of full-day kindergarten from other factors that have been shown to affect reading, the analyses take into account three factors: Head Start participation, racial/ethnic groups, and risk groups as defined by ESOL/FARMS status. The first factor, participation in the Head Start program has been shown to affect kindergarten reading performance (Bridges-Cline, 2001, August). To take these findings into account, it was important to examine student achievement with regard to their participation in the Head Start program. The second and third factors, differences between racial/ethnic groups, and differences between risk groups (ESOL/FARMS groups) need to be considered because of the historical differences in performance between these groups both in Montgomery County and across the nation.

By including these three factors in the analyses we can test if the full-day kindergarten program is beneficial for all groups of students, or if there are specific groups of students who benefit more from the program. To incorporate the factors of racial/ethnic groups and risk groups into the analyses, the statistical approach of multiple analysis of variance was used. Specific contrasts were formulated that allowed us to examine each of these two factors independently and collectively. We conducted separate analyses for each Head Start group, which prevents us from making statements about all students, regardless of participation in Head Start. Additionally, the Head Start and non-Head Start groups were never directly compared in any of the analyses.

The results from our analysis are presented below in two ways. First, a discussion of differences between groups of students will be presented. This discussion reflects the statistically significant results found in the analyses, presented in a manner that is clear and concise. Second, a more statistically oriented approach will be presented using the tables that will be contained in the appendix of this report. The statistical results of the multiple analysis of variance (MANOVA) procedures, along with syntax and commentary, will be presented in Appendix 2.

Results for Kindergarten Reading Performance, Cohort 1, Kindergarten Initiative Year 1

The first set of results that will be presented are based on kindergarten assessments from cohort 1. Specifically, the analysis examined the percentage of students who met benchmark on four out of four foundational reading skills (i.e., Letter Identification, Concepts about Print, Word Recognition, Hearing and Recording Sounds) by the end of Kindergarten. In year one, 17 schools had full-day kindergarten; the results from this group (FDK 17 – School Group 17 in Table 9) were compared to two groups of schools with half-day kindergarten in 2000-01: HDK +17, the 17 schools with full-day kindergarten in 2001-02 (School Group +17 in Table 9), and HDK +22, the 22 schools with full-day kindergarten in 2002-03 (School Group +22 in Table 9). For all subsequent analyses, these school groups (17, +17, and +22) will be referred to as either FDK (if the schools had full-day programs in the indicated year), or HDK (if the schools had half-day kindergarten in the indicated year) and the number 17, +17, or +22, that indicates the school group being compared.

Performance benchmarks broken down by racial/ethnic groups and risk groups (ESOL/FARMS groups) are presented in Figures 2 and 3. (There are too few ESOL only children in the full-day kindergarten group and too few American Indian students overall to give reliable results.)

FIGURE 2.
Average Full-day Kindergarten Benefit for Cohort 1 Students by Racial/Ethnic Groups
and Participation in Head Start

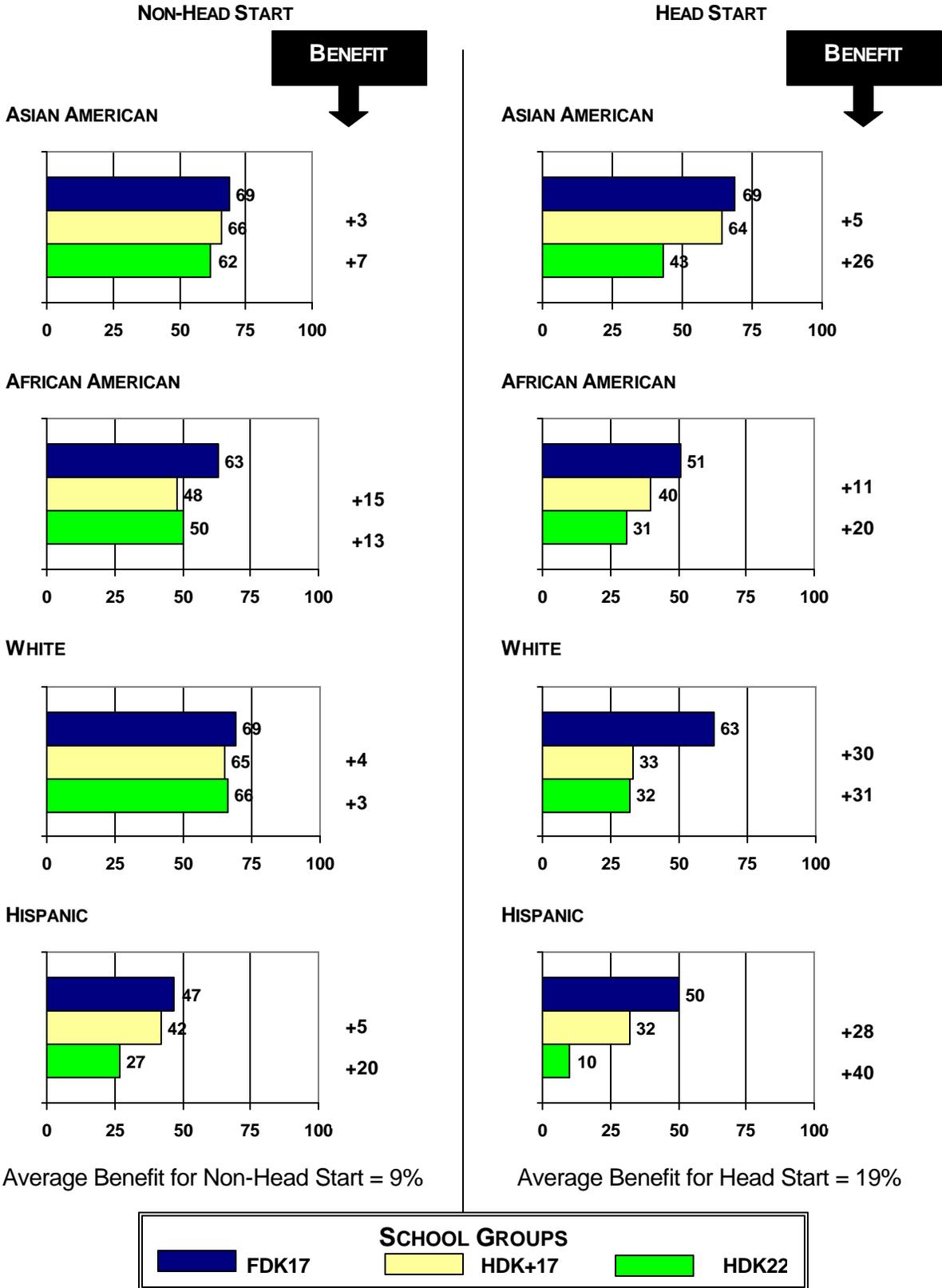
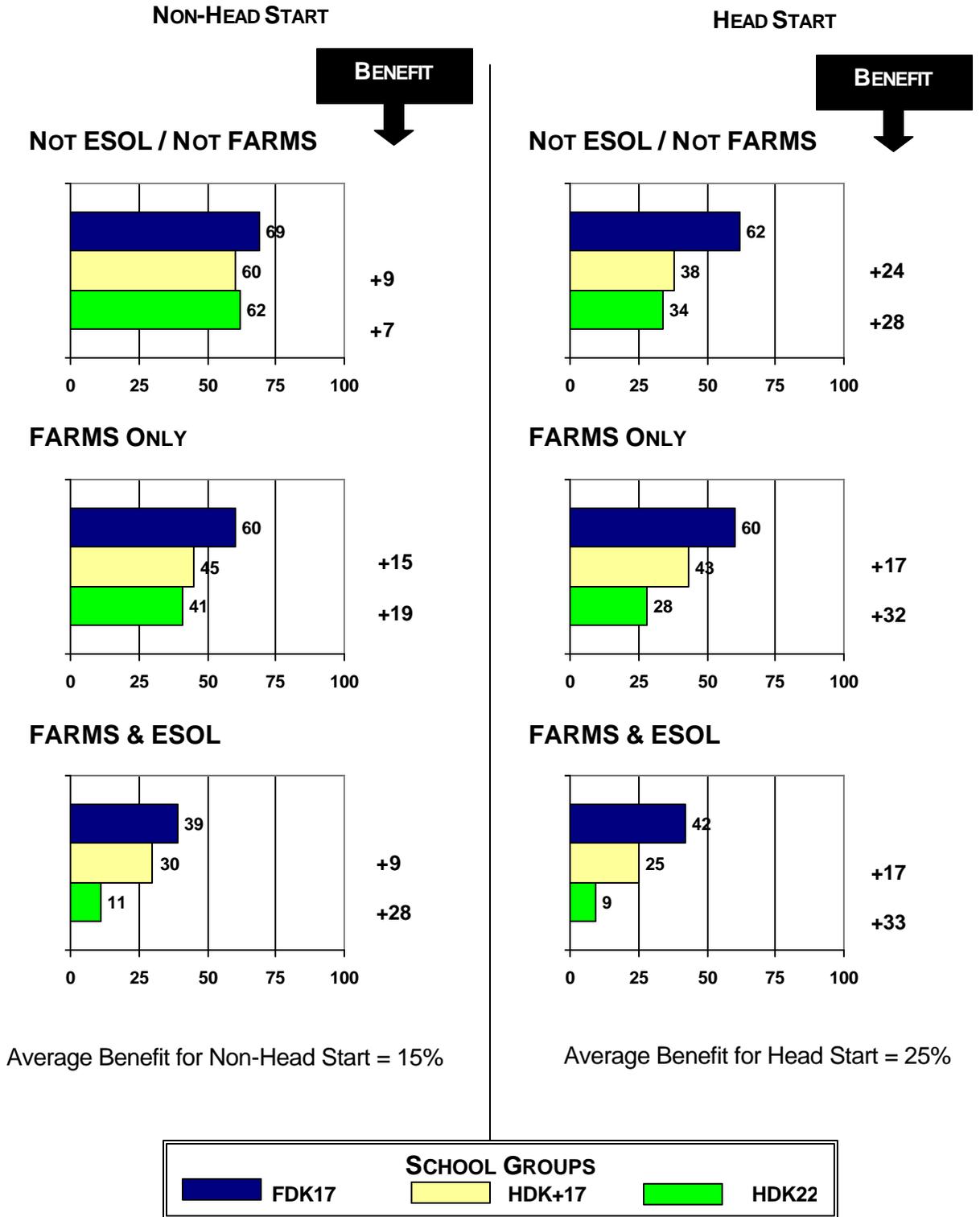


Figure 3.
Average Full-day Kindergarten Benefit for Cohort 1 Students by Risk Groups and Participation in Head Start



In Figures 2 and 3, the horizontal axis for each small bar chart represents the percentage of children who met benchmark on four of four foundational skills. For example, for the group of Head Start students who are Asian American, 69 percent of this group in FDK 17 schools met four of four benchmarks; 64 percent of this group of students in HDK +17 schools met all four benchmarks, and 43 percent of this group of students in HDK +22 schools met all four benchmarks.

In Figures 2 and 3, there are numbers with a plus sign to the right of the three bars in each small bar chart. Each of these numbers represents the difference in percentage of students at benchmark between the group of schools with full-day kindergarten (FDK 17) and a group of schools with half-day kindergarten. The top number equals the difference in percentage of students at benchmark between FDK 17 and HDK +17. In Figure 2, for Head Start students who are Asian American, this difference is +5. It means that, among Asian American students who attended Head Start, 5 percent more in FDK 17 schools, than in HDK +17 schools, met the benchmark. This positive difference indicates a full-day kindergarten benefit. The bottom number in the benefit column equals the difference in percentage of students at benchmark between FDK 17 schools and HDK +22 schools. For Head Start students who are Asian American, this difference is +26, indicating that 26 percent more of these students in FDK 17 schools, than in HDK +17 schools, met the four benchmarks. Again, this positive number represents a full-day kindergarten benefit.

A review of Figure 2 shows a positive full-day kindergarten benefit for each racial group among non-Head Start and among Head Start children, and for comparisons between the full-day kindergarten group, FDK 17, and each set of schools with half-day kindergarten. Although the size of the full-day kindergarten benefit varies across racial

groups, these differences are not statistically significant. In other words, for both Head Start and non-Head Start children, a full day-K benefit exists for every racial/ethnic group, and there is no statistical evidence that this benefit helps any one racial/ethnic group more than another. For non-Head Start students, the average benefit across the four racial/ethnic groups and all comparisons of full-day versus half-day is 9 percent and for Head Start students the average benefit is 24 percent. In other words, for all racial/ethnic groups, more students in full-day kindergarten met the benchmark than their peers in half-day kindergarten.

As seen in Figure 3, there is a full-day kindergarten benefit for each of the three ESOL/FARMS risk groups. Although the magnitude of the full-day kindergarten benefit does vary across risk groups, this variation is not statistically significant. In other words, for both Head Start and non-Head Start children, a full day-K benefit exists for every ESOL/FARMS risk group, and there is no statistical evidence that this benefit helps any one risk group more than another. Across the three ESOL/FARMS groups, for Non-Head Start students, the average benefit is 15 percent and for Head Start students is 25 percent. In other words, for each ESOL/FARMS risk group, more students in full-day kindergarten met the benchmark than their peers in half-day kindergarten.

More detail on the percentages of students who met benchmark on four of four foundational skills by various demographic groups is in appendix Table A-1 for children with Head Start and in appendix Table A-2 for children who did not attend Head Start. These overall percentages are *not* weighted. The percentages of children who met benchmark on four of four in Figures 2 and 3 are taken from Tables A-1 and A-2 in Appendix 3.

There are several ways to examine the full-day kindergarten benefit. Figures 2 and 3 are particularly helpful in illuminating the benefit to non-Head Start students, because of the heterogeneous nature of this group; to truly see the full-day kindergarten effect, it is necessary to examine the benefit broken down by racial/ethnic and risk groups. Table A-2 in Appendix 3 presents another way to examine the full-day kindergarten benefit. This table contains unweighted percentages of kindergarteners that met the benchmark on four of four foundational skills. From this table, the benefit of full-day kindergarten for all students when compared to HDK +17 appears to be 2 percent (obtained by subtracting 56% from 58%) and 3 percent (58%-55%) when compared to HDK +22. However, referring back to Figures 2 and 3, every full-day kindergarten benefit is at least 3 percent and the average full-day kindergarten benefit across groups ranges from 9 percent to 19 percent. When differences in the mix of racial/ethnic groups and in ESOL/FARMS groups across schools are accounted for in the multiple analysis of variance, the true statistical full-day kindergarten benefit for Head Start students is obtained. The full-day kindergarten benefit is 19 percent when compared to HDK +17 schools and 32 percent when compared to HDK +22. For non-Head Start students, the statistical full-day kindergarten benefit is 13 percent when compared to HDK +17 and 13 percent when compared to HDK +22 (see Table A1 in Appendix 3). In short, in year one of the kindergarten initiative, more students in full-day kindergarten met the benchmark than their peers in half-day kindergarten.

Results for Kindergarten Reading Performance, Cohort 2, Kindergarten Initiative Year 2

The findings presented in the previous section of this report found a full-day kindergarten benefit, for a variety of students, in year one of the Kindergarten initiative. This section will examine whether there was a full day kindergarten benefit for the students in kindergarten in year two of the initiative. This analysis again examined the percentage of kindergarten students who met benchmark on four out of four foundational reading skills. In year two, there are two comparisons that examine the full-day kindergarten benefit: 1) schools with full-day kindergarten in 2000-01 and again in 2001-02 (FDK 17) *versus* the 22 schools with half-day kindergarten in 2001-02 (HDK +22) and 2) schools with full-day kindergarten for the first time in 2001-02 (FDK +17) *versus* the 22 schools with half-day kindergarten in 2001-02 (HDK +22).

Performance benchmarks broken down by racial/ethnic groups and ESOL/FARMS risk groups are presented in Figures 4 and 5. As in Figures 2 and 3, the horizontal axis for each small bar chart in Figures 4 and 5 represents the percentage of children who met benchmark on four of four foundational skills. For example, in Figure 4, for the group of non-Head Start students who are Asian American, 68 percent of this group in FDK 17 schools met four of four benchmarks, 87 percent of this group of students in FDK +17 schools met all four benchmarks, and 71 percent of this group of students in HDK +22 schools met all four benchmarks.

In Figures 4 and 5, there are numbers with a plus sign to the right of the three bars in each small bar chart. Each of these numbers represents the difference in percentage of students at benchmark between a group of schools with *full-day kindergarten* and the group of schools with *half-day kindergarten*.

FIGURE 4.
Average Full-day Kindergarten Benefit for Cohort 2 Students by Racial/Ethnic Groups
and Participation in Head Start

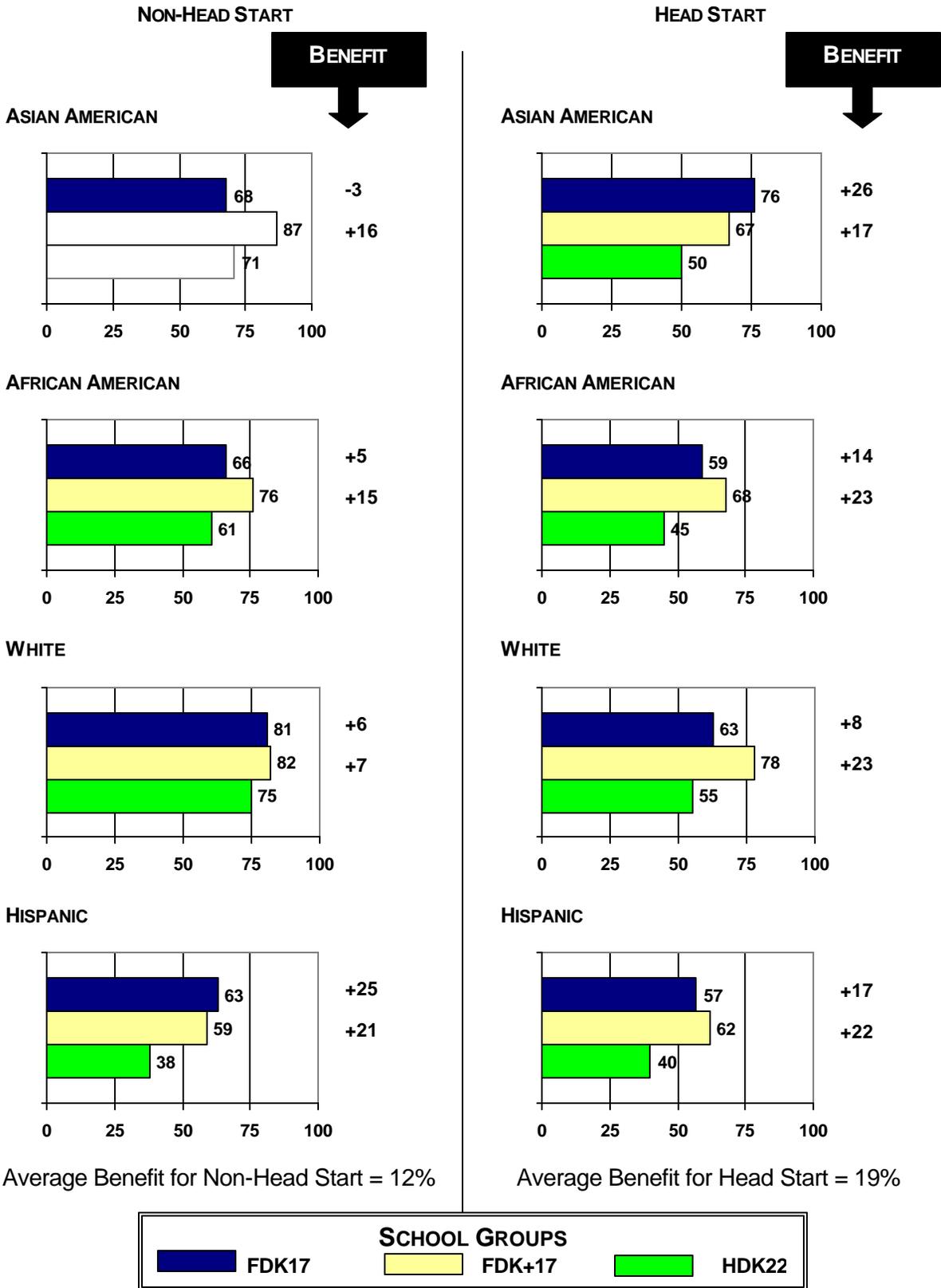
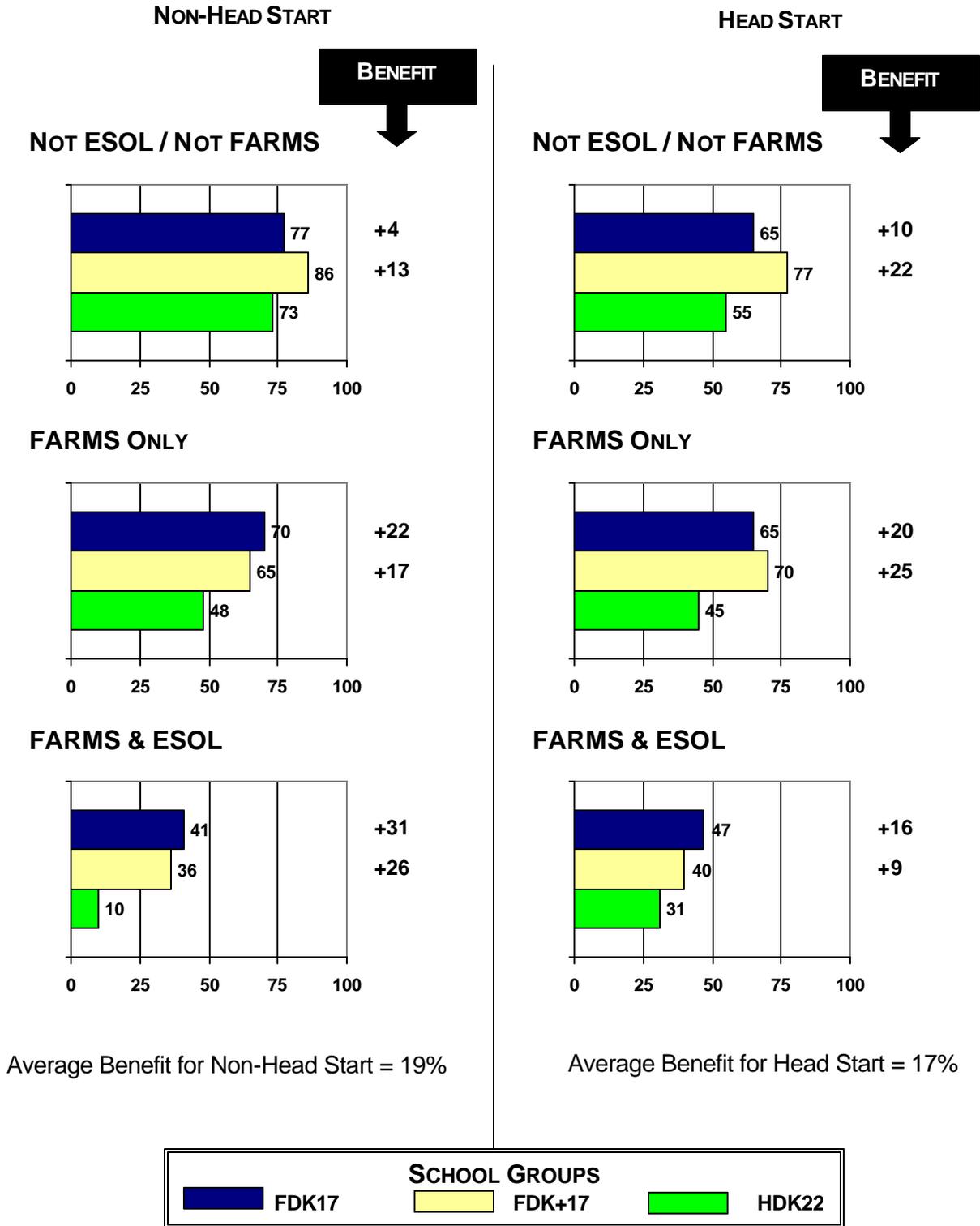


Figure 5.
Average Full-day Kindergarten Benefit for Cohort 2 Students by Risk Groups and Participation in Head Start



The top number equals the difference in percentage of students at benchmark between FDK 17 and HDK +22. In Figure 4, for non-Head Start students who are Asian American, this difference is -3. It means that, among Asian American students who attended Head Start, 3 percent less in FDK 17 schools, than in HDK +22 schools, met the benchmark. This negative difference indicates a negative full-day kindergarten benefit. The bottom number in the benefit column equals the difference in percentage of students at benchmark between FDK +17 schools and HDK +22 schools. For non-Head Start students who are Asian American, this difference is +16, indicating that 16 percent more of these students in FDK 17 schools, than in HDK +22 schools, met the four benchmarks. Again, this positive number represents a full-day kindergarten benefit. Except for the first comparison noted, all other comparisons in Figure 4 indicate a positive full-day kindergarten benefit. There is a full-day kindergarten benefit for each racial group among both non-Head Start and Head Start students, and for comparisons between each set of schools with full-day kindergarten and the set of schools with half-day kindergarten.

Figure 5 shows differences in percentages of students meeting the benchmark on four of four foundational skills broken down by ESOL/FARMS risk groups. For each of the three risk groups, for both students with and without Head Start, there is a full-day kindergarten benefit (as indicated by a positive difference).

More detail on the percentages of students who met benchmark on four of four foundational skills by the various demographic groups in Cohort 2 is presented in Table A-3 for children with Head Start and in appendix Table A-4 for children who did not attend Head Start. These overall percentages are *not* weighted. The percentages of

children who met benchmark on four of four in Figures 4 and 5 are taken from Tables A-3 and A-4, which are presented in Appendix 3.

Although the size of the full-day kindergarten benefit varies across racial groups (see Figure 4) and across ESOL/FARMS groups (see Figure 5), these differences are not statistically significant. This means that a full day-K benefit exists for every racial/ethnic group, and every ESOL/FARMS groups and that there is no statistical evidence that this benefit helps any one racial/ethnic group more than another or any one ESOL/FARMS group more than another. For non-Head Start students, the average benefit across the four racial/ethnic groups and all comparisons of full-day versus half-day is 12 percent and for Head Start students the average benefit is 9 percent (see Figure 4). For non-Head Start students, the average benefit across the three ESOL/FARMS groups and all comparisons of full-day versus half-day is 19 percent and for Head Start students the average benefit is 17 percent (see Figure 5).

In summary, for all racial/ethnic groups and for all ESOL/FARMS groups in year two of the kindergarten initiative, more students in full-day kindergarten met the benchmark than their peers in half-day kindergarten. For Head Start students, the statistical full-day kindergarten benefit is 18 percent for students in schools in their second year of full-day kindergarten (FDK 17) and 22 percent for students in schools in their first year of full-day kindergarten (FDK +17). For Non-Head Start students, the statistical benefit is 19 percent for students in schools in their second year of full-day kindergarten (FDK 17) and 18 percent for students in schools in their first year of full-day kindergarten (FDK +17) (see Table A-2 in Appendix 3).

Results for Grade 1 Reading Performance, Cohort 1 Kindergarten Initiative Students

The previous two sections of this report presented evidence of a full-day kindergarten benefit, for a variety of students, in both year one and year two of the Kindergarten initiative. These results were based on benchmark performance on kindergarten foundational skills. This section will examine whether the full-day kindergarten benefit continues into Grade 1. Specifically, the analysis examined the percentage of students who met the Grade 1 proficiency benchmark (this benchmark for text reading and comprehension is explained in detail in the first section of the report). This analysis includes only students who were in kindergarten in the first year of the initiative and had a valid reading assessment at the end of Grade 1, which was in spring 2002.

For Grade 1 results, there are two comparisons that examine the full-day kindergarten benefit. The first is the 17 schools with full-day kindergarten in 2000-01 (FDK 17) *versus* 17 schools with half-day kindergarten in 2000-01 (HDK +17) and full-day kindergarten in 2001-02 (FDK +17). The second comparison is the 17 schools with full-day kindergarten in 2000-01 (FDK 17) *versus* the 22 schools with half-day kindergarten in 2000-01 (HDK +22) and half-day kindergarten again in 2001-02 (HDK +22).

The percent of students achieving benchmark performance levels broken down by racial/ethnic groups and ESOL/FARMS risk groups are presented in Figures 6 and 7. (There were too few white students in Head Start to include in Figure 6.) The horizontal axis for each small bar chart in Figures 6 and 7 represents the percentage of children who met the Grade 1 reading proficiency benchmark.

FIGURE 6.
Average Full-day Kindergarten Benefit for Cohort 1 Progressing into Grade 1 by
Racial/Ethnic Groups and Participation in Head Start

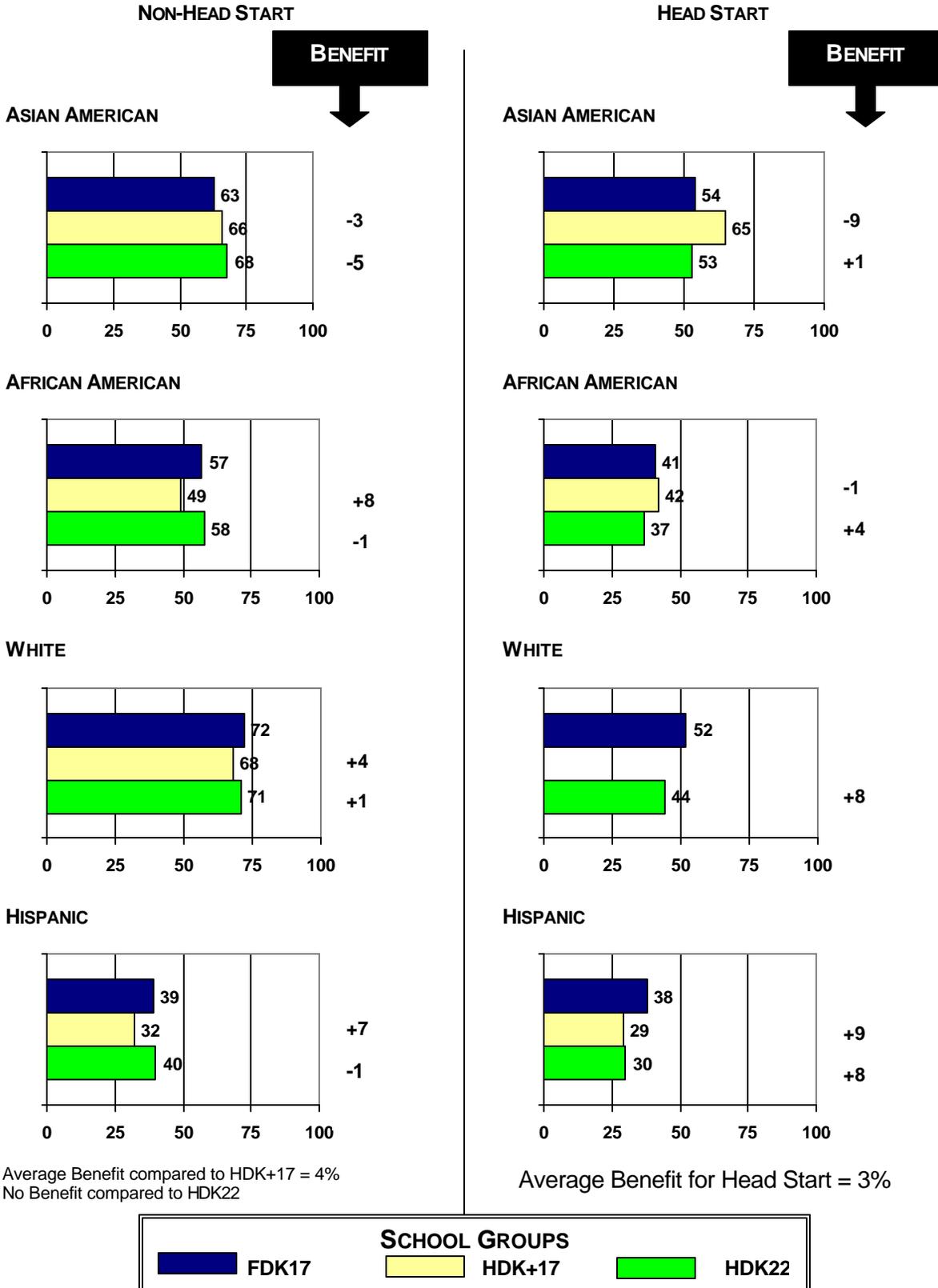
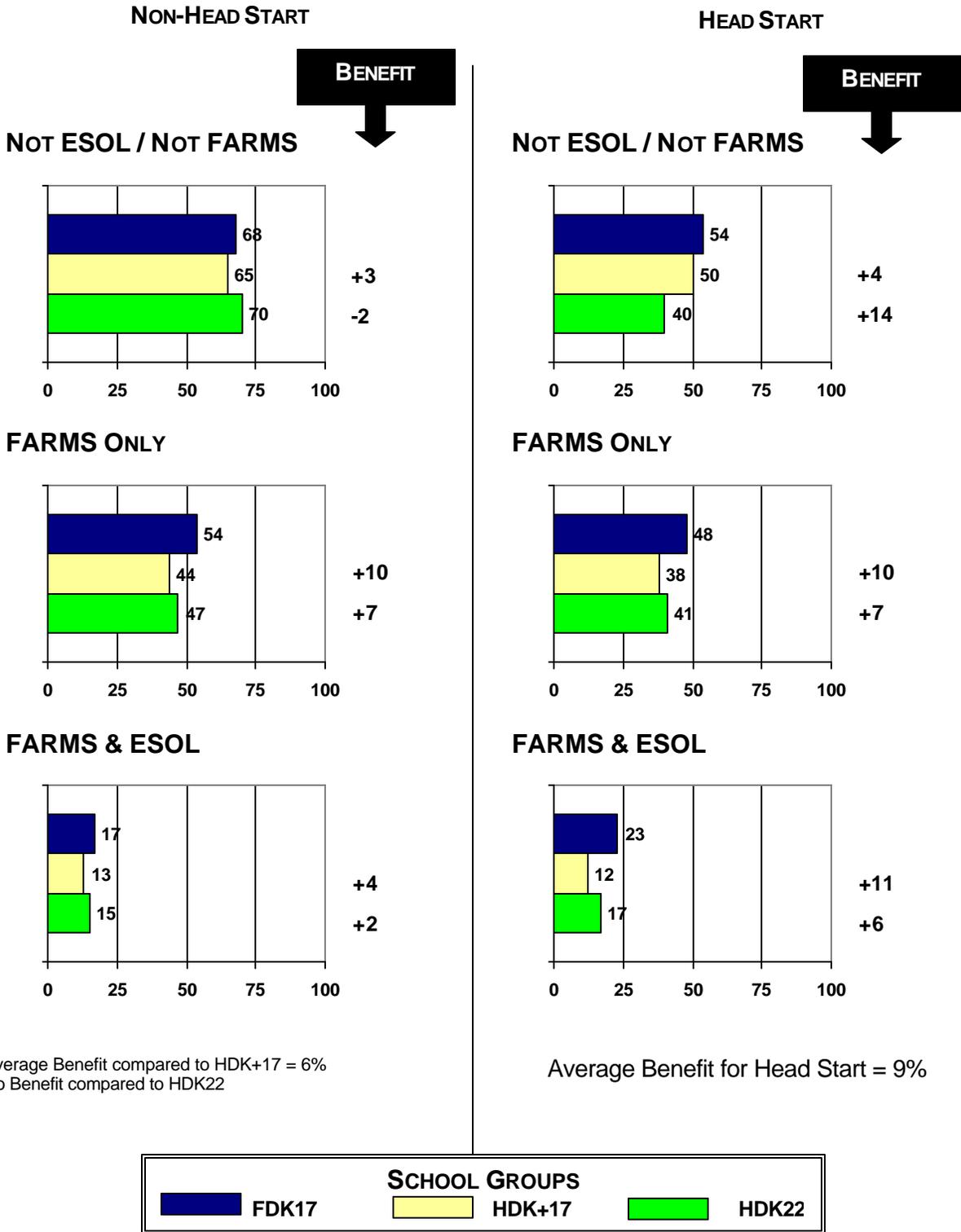


Figure 7.
Average Full-day Kindergarten Benefit for Cohort 1 Progressing into Grade 1 by Risk Groups and Participation in Head Start



For example, in Figure 6, for the group of non-Head Start students who are Asian American, 63 percent of this group in FDK 17 schools met the Grade 1 benchmark, 66 percent of this group of students in HDK +17 schools met the Grade 1 benchmark, and 68 percent of this group of students in HDK +22 schools met the Grade 1 benchmark.

In Figures 6 and 7, there are numbers with a plus sign to the right of the three bars in each small bar chart. Each of these numbers represents the difference in percentage of students at benchmark between the group of schools with *full-day kindergarten* and one of the group of schools with *half-day kindergarten*. The top number equals the difference in percentage of students at benchmark between FDK 17 and HDK +17. In Figure 6, for non-Head Start students who are Asian American, this difference is -3. It means that, among Asian American students who attended Head Start, 3 percent fewer in FDK 17 schools, than in HDK +17 schools, met the benchmark. This negative number represents the lack of a full-day kindergarten benefit. Three of the 12 comparisons show a small negative full-day kindergarten benefit. The bottom number in the benefit column equals the difference in percentage of students at benchmark between FDK 17 schools and HDK +22 schools. For non-Head Start students who are Asian American, this difference is -1, indicating that 1 percent fewer of these students in FDK 17 schools, than in HDK +22 schools, met the Grade 1 benchmark.

Among the Head Start students, there is a full-day kindergarten benefit for each racial group and for comparisons between the set of schools with full-day kindergarten and each set of schools with half-day kindergarten (see Figure 6). However, for non-Head Start students there is a full day kindergarten benefit only for comparisons between FDK 17 schools and HDK +17 schools. For non-Head Start students, there is no

statistically significant difference in the percentage that reach Grade 1 benchmark between students in FDK 17 and students in HDK +22.

Figure 7 shows differences in percentages of students meeting the Grade 1 benchmark broken down by ESOL/FARMS risk groups. As in the comparisons across the four racial/ethnic groups, among the Head Start students, there is a full-day kindergarten benefit for each racial group and for comparisons between the set of schools with full-day kindergarten and each set of schools with half-day kindergarten. However, for non-Head Start students there is a full day kindergarten benefit only for comparisons between FDK 17 schools and HDK +17 schools. For non-Head Start students, there is no statistically significant difference in the percentage that reach Grade 1 benchmark between students in FDK17 and students in HDK +22.

More detail on the percentages of students who met benchmark on four of four foundational skills by various demographic groups can be found in Table A-5 for children with Head Start and in Table A-6 for children who did not attend Head Start. These overall percentages are *not* weighted. The percentages of children who met benchmark on four of four in Figures 6 and 7 are taken from appendix Tables A-5 and A-6 which can be found in Appendix 3.

For Head Start students, the average benefit across the four racial/ethnic groups and all comparisons of full-day versus half-day is 3 percent and for non-Head Start students the average benefit of 4 percent is statistically significant only in comparison to HDK +17. For Head Start students, the average benefit across the three ESOL/FARMS groups and all comparisons of full-day versus half-day is 9 percent and for non-Head

Start students the average benefit of 6 percent is only statistically significant in comparison to HDK +17.

For Head Start students, the statistical full-day kindergarten benefit is 18 percent for students in schools in their second year of full-day kindergarten (FDK 17) and 22 percent for students in schools in their first year of full-day kindergarten (FDK +17). For Non-Head Start students, the statistical benefit is 19 percent for students in schools in their second year of full-day kindergarten (FDK 17) and 18 percent for students in schools in their first year of full-day kindergarten (FDK +17) (see Table A-3 in Appendix 3).

In summary, Head-Start students from full-day K outperform their half-day K peers in Grade 1 reading benchmark performance. For non-Head Start students, the full-day kindergarten students perform as well as or better than their half-day peers by the end of Grade 1 on the reading benchmark.

Overall Reading Performance of Grade 1 Students

The initial sample, cohort 1 of the Kindergarten Initiative, consisted of 7088 Grade 1 students who (a) had a data record for the spring 2002 administration of the MCPS assessments and (b) were included in the kindergarten analytic sample for 2000-01 that was used in the report by Bridges-Cline (2001, March). Out of the initial sample, 106 students had no scores and 158 had incomplete or invalid data, making it impossible to establish a reading level. Students classified as having incomplete data had no book title or word reading accuracy score reported. Students classified as having invalid data had an Upper Emergent level or higher reported with word reading accuracy of less than

90 percent or an oral comprehension score that was out of range for that specific title. Thus, the final sample, referred to as cohort 1 in the following analysis, consisted of 6824 students.

For cohort 1, success in meeting the Grade 1 reading benchmarks was clearly related to their reading achievement in kindergarten. As seen in Table 10, the majority of students (76%) who achieved benchmark performance on the four foundational reading skills measured in kindergarten met the Grade 1 reading proficiency benchmark. Again, the Grade 1 proficiency benchmark for 2001-02 was reading *Wibble-Wobble* or a higher text level with an accuracy rate of 90 percent or higher, along with a score of 2 or 3 (i.e., with partial or essential comprehension) on the written response. The target text has a Reading Recovery level of 14. (see Appendix 1)

Table 10.
Performance of MCPS Cohort 1 Kindergarten Initiative Students at the End of Grade One by Kindergarten Benchmark Performance Level

Achieved Benchmark Performance on Foundational Reading Skills in Kindergarten	Met Grade 1 Reading Proficiency Benchmark	Number of Students
All 4 foundational skill assessments (n=4316)	76%	3280
3 of 4 foundational skill assessments (n = 967)	41%	396
2 of 4 foundational skill assessments (n = 971)	22%	214
0 or 1 of 4 foundational skill assessments (n = 253)	8%	20

In the spring of 2002, at the end of Grade 1, the majority (84%) of students from cohort 1 were reading text at the Early Fluent (35%) or Fluent level (49%). Only 2 percent were not yet on text, 3 percent were at the Early Emergent level, and 11 percent were at the Upper Emergent level. A summary of these end of Grade 1 reading levels are

presented below in Table 10 and a detailed description of the Early Emergent through Fluent reading levels can be found in Appendix 1.

By examining Table 11, Grade 1 reading levels by risk group, we find that the percentage of cohort 1 Kindergarten Initiative students reading at the Early Fluent or Fluent level varies across risk group. Ninety-one percent of the Non-ESOL/Non-FARMS students from Cohort 1 were reading at the Early Fluent or Fluent level by the end of Grade 1. Only 76 percent of FARMS only students, 63 percent of ESOL only students, and a meager 51percent of ESOL and FARMS students were reading at these levels.

Table 11.
End of Grade One Reading Levels for MCPS Cohort 1 Kindergarten Initiative Students
by Risk Group

	Not Yet on Text	Early Emergent	Upper Emergent	Early Fluent	Fluent	At or Above Early Fluent
Non-ESOL Non-FARMS	1%	1%	7%	33%	58%	91%
FARMS Only	4%	5%	15%	41%	35%	76%
ESOL Only	6%	8%	23%	40%	23%	63%
ESOL & FARMS	12%	12%	25%	40%	11%	51%
All Cohort 1 Students	2%	3%	11%	35%	49%	84%
Number of Students	148	197	721	2397	3361	3361

We see a similar phenomenon when we look at the percentage of cohort 1 students that achieved the reading proficiency benchmark by the end of Grade 1. Across all cohort 1 students, 60 percent were able to meet the Grade 1 reading proficiency benchmark by spring 2002. When examined by risk group, as seen in Table 12, 68

percent of Non-ESOL/Non-FARMS students from cohort 1 met the proficiency benchmark by the end of Grade 1. Only 45 percent of FARMS only students, 42 percent of ESOL only students, and a scant 28 percent of ESOL and FARMS students were able to meet the reading proficiency benchmark by the end of Grade 1.

Table 12.
 Percentage of MCPS Cohort 1 Kindergarten Initiative Students Achieving Reading Benchmarks by the End of Grade One by Risk Group

Total % Number Achieving Proficiency Benchmark (Total Number of Students)	The 17 Full-Day Kindergarten Schools	All Schools including the 17 FDK Schools
Race/Ethnicity		
Asian American	60%(94)	71%(880)
African American	51%(296)	49%(1334)
White	69%(183)	70%(3272)
Hispanic	38%(521)	38%(1314)
Gender		
Female	51%(506)	63%(3403)
Male	47%(561)	57%(3421)
Risk Group		
Non-ESOL / Non-FARMS	66%(372)	68%(4840)
FARMS Only	51%(423)	45%(1053)
ESOL Only	33%(45)	42%(390)
ESOL & FARMS	20%(227)	28%(540)
Kindergarten Program		
No Head Start/Half-day Kindergarten		66%(4927)
No Head Start/Full-day Kindergarten	53%(678)	53%(759)
Head Start/Half-day Kindergarten		39%(703)
Head Start/Full-day Kindergarten	41%(389)	40%(436)
Special Education		
No	50%(1007)	61%(6388)
Yes (with IEP)	27%(60)	37%(436)
Total		
All Cohort 1 Students	49%(1067)	60%(6824)

Column one of Table 12 presents this same information for the cohort 1 students who participated in full-day kindergarten. These 17 schools were the first schools to

receive the full-day kindergarten program, as they were the most impacted schools in the county. When examined by risk group, 66 percent of Non-ESOL/Non-FARMS students from cohort 1 met the proficiency benchmark by the end of Grade 1. Only 51 percent of FARMS only students, 33 percent of ESOL only students, and a scant 20 percent of ESOL and FARMS students were able to meet the reading proficiency benchmark by the end of Grade 1.

4. *Did Cohorts 1 and 2 students make comparable gains during year one and year two of the Kindergarten Initiative?*

A Comparison of Cohorts 1 and 2 of the MCPS Kindergarten Initiative

Cohort 1 and cohort 2 Kindergarten Initiative students made significant progress in the acquisition of reading skills in both year one and year two of the program. Sixty-two percent of cohort 1 students had achieved benchmark performance levels on the letter identification, concepts about print, word recognition, and hearing and recording sounds foundational skill area assessments. In cohort 2, the percentage of students who achieved benchmark performance levels on these four functional skill areas increased to 73 percent, an increase of almost 10 percent.

The percentage of students from both cohorts 1 and 2 achieving benchmark performance in each of the four foundational skill areas in spring of both years of the program were relatively similar, as presented in Table 13. Both record of oral language and phonemic awareness skill area assessments were not consistently administered to cohort 1 students, and therefore do not appear in Table 13 for analysis. Also, during year one of this program, the year that cohort 1 students were enrolled in kindergarten, fewer students were assessed in the word recognition and hearing and recording sounds foundational skill areas due to the structure of the Kindergarten Decision Tree (Appendix 4). The Kindergarten Decision Tree, essentially a flow chart that assists teachers in making decisions regarding which assessments to administer to which students, allowed for a small number of more advanced students to be assessed in these areas. In year two of the program (the year that cohort 2 was enrolled in kindergarten) the Decision Tree was modified based on collaboration between DECPS and OSA to include teacher

feedback into year two program planning. As a result, more students in cohort 2 were assessed on these two foundational skill areas, and the percentage of students achieving benchmark performance levels on word recognition and hearing and recording sounds showed a slight decline from year one to year two.

Table 13.
 Percentage of MCPS Kindergarten Initiative Students Achieving Benchmark Performance Levels in the Six Foundational Skill Areas

	Cohort 1 (n = 7849)		Cohort 2 (n = 8005)	
	Fall 2000	Spring 2001	Fall 2001	Spring 2002
Letter ID	41%	90%	51%	93%
Print Concepts	20%	82%	28%	86%
Oral Language	N/A	N/A	68%	87%
Phonemic Awareness	N/A	N/A	45%	88%
Hearing & Recording Sounds	26%	82%	23%	77%
Word Recognition	12%	85%	16%	82%

When examining the achievement of benchmark performance levels in the foundational skill areas by risk group, it should be noted that the students who are at risk are still lagging behind those students with no risk factors present. Upon primary inspection of descriptive statistics across risk groups, it appears that for ESOL only students and ESOL and FARMS students from both cohorts 1 and 2, the gap between their performance and the performance of their peers with no risk factors present is still great. It does appear that this gap is narrowing for the FARMS only students. The percentage of FARMS only cohort 2 students that achieved benchmark performance levels on the four functional skill areas is almost equal to the percentage of students that achieved this performance level in cohort 1, in the Non-ESOL/Non-FARMS risk group. The percentages of cohort 1 and 2 students who achieved benchmark performance on all four foundational skill areas by risk group are presented below in Table 14.

Table 14.
 Percentage of MCPS Kindergarten Initiative Students Achieving Benchmark
 Performance Levels on All Four of the Foundational Skill Areas By Risk Group

	Cohort 1 (n = 7849)	Cohort 2 (n = 8005)
Non ESOL / Non FARMS	65%	77%
FARMS Only	47%	60%
ESOL Only	39%	37%
ESOL & FARMS	32%	36%
Total	58%	70%

To recap, the Kindergarten Initiative was designed to help all MCPS students acquire reading skills. The curriculum and assessments that were developed for this Initiative were done so to get every elementary school across the county on the same page, in hope that consistent progress could be made across the county. However, since there is an achievement gap with regard to race/ethnicity, and risk group, the Kindergarten Initiative design included a plan for delivering maximum services (i.e. full day kindergarten) to those schools with the most need first. The 17 schools slated to receive full-day kindergarten during year one of the Initiative were those schools that had the highest concentration of students who were the most academically disadvantaged and economically deprived.

In Table A-1, in the last row, we present the total number of cohort 1 students who attain benchmark performance levels on all four foundational skills by the end of kindergarten. These percentages, 53 percent in the full day kindergarten schools, 38 percent in the first group of half day schools (schools slated to receive full-day kindergarten during the 2001-02 school year), and 25 percent in the second group of half-day schools (schools slated to receive full-day kindergarten during the 2002-03 school year). Again these phases correspond with the level of need in the schools. In the last

row of Table A-3 we present the total number of cohort 2 students who attained benchmark performance levels on all four foundational skills by the end of kindergarten. These percentages are 60 percent, 66 percent, and 44 percent, respectively.

As, schools slated to offer full-day kindergarten programs in 2001-02 “switched teams” between year one and two of the kindergarten initiative (they received half-day kindergarten during year one and full-day kindergarten during year two), we cannot directly compare the change from year one to year two. However between year one and two of the Kindergarten Initiative, the full-day kindergarten schools demonstrated a 7 percentage point increase in the percentage of students meeting benchmark by the end of the school year. A 19 point increase was observed in the percentage of students meeting benchmark by the end of the school year in the half-day schools slated to receive full-day kindergarten during the 2002-03 school year. By doing the same calculations for the no Head Start students portrayed in Tables A-2 and A-4, we find ten point increases in the percentage of students meeting benchmark in both full- and half-day kindergarten. A summary of the percentage of students meeting benchmark performance levels on all four foundational skill area assessments across school groups and cohorts by Head Start participation is presented in Table 15.

Table 15.
 Percentage of Students Meeting Benchmark Performance Levels on all Four
 Foundational Skill Area Assessments Across School Groups and Cohorts by Head Start
 Participation

School Group	Head Start			Non-Head Start		
	17 Phase A	+17 Phase B	+22 Phase C	17 Phase A	+17 Phase B	+22 Phase C
Cohort 1	53%	38%	25%	58%	56%	55%
Cohort 2	60%	66%	44%	68%	76%	65%
Increase in Percentage of Students Meeting Benchmark	7%	28%	19%	10%	10%	10%

As seen in Table 15, both cohort 1 and cohort 2 students made gains during both years of the kindergarten initiative. Thus providing evidence of an “experience effect” in year two of the program. With the additional year of professional development that was provided to our teachers between year one and year two of the initiative, increased familiarity with the revised curriculum and the accompanying assessments, and reassurance from findings presented in the year one report that our students were making great progress in the acquisition of reading skills, our cohort 2 students out performed our cohort 1 students. Future reports will attempt to provide additional evidence of this experience effect in subsequent years of the Kindergarten Initiative.

RECOMMENDATIONS

1. It is recommended that funding for the Kindergarten Initiative continue into the 2003-04 school year and beyond. Results from the year one and year two reports on the Kindergarten Initiative show gains in student achievement each year from fall to spring as well as from year one to year two of the program. Students in Cohort 2, during year two of the program, made greater gains than those made by Cohort 1 students during year one of the program. These increases in performance can most likely be attributed to the experience effect as teachers received an additional year of professional development and gained increased familiarity with the revised curriculum and accompanying assessments. Continuing the Kindergarten Initiative and tracking cohorts of students through the program will tremendously benefit our students. Data from the longitudinal study would assist us in understanding student achievement as well as guiding the adjustment of our curriculum and our assessments to best serve our students' educational needs.

2. Individual student performance must be closely monitored to identify strengths and weaknesses, thus allowing the opportunity to provide appropriate instructional and developmental interventions to maximize achievement. If we do not use the findings of this report, and the reports that follow, this program will not provide the maximum benefit to our students, and our community. To ensure the perpetuation of a quality instructional program, we should look to student performance to help us learn where to better apply our resources and energy in an attempt to help every student succeed.

As a result of the findings presented in this report, it is clear that we must examine the ESOL services that we are currently providing to our second language-learning students. Services must be refined so that we can help this group of students achieve at the same levels as their peers. As seen in Table 27, the foundational skill areas where ESOL only students consistently under perform their English speaking peers all center around oral language. These finding suggests that the services that ESOL only students are receiving are not adequately assisting these students to meet our performance benchmarks.

An evaluation of the ESOL program should be conducted to examine the type of services provided, the consistency of those services across the county, and the type of professional development ESOL staff are receiving. Additionally, little system-wide data are gathered regarding those students who speak English as a second language, but receive no services from MCPS.

3. To ensure that the Kindergarten Initiative continues to benefit additional cohorts of kindergarten students who enter MCPS in the 2003-04 school year and beyond, it is imperative to continue offering professional development to our teachers. Rolling out full-day kindergarten programs in 13 additional schools each year from now until 2007 will mean the addition of many new teachers who have not received any training directly relating to the revised kindergarten curriculum and the accompanying assessments. To continue to see the experience effect that we have detected in this report, it is critical for all new teachers to understand the curriculum, the benchmarks, and student need as well as those teachers who have been with us since 2000-01. We

must continue to offer professional development to our seasoned professionals as well as the new recruits to let strategies and best practices be exchanged between the people who know best – our teachers. Findings from the reports detailing the progress of our kindergarteners in the acquisition of reading skills should inform the type of professional development offered. Teachers experienced in delivering full-day kindergarten program instruction should assist those teachers in subsequent years so that the best uses of the entire day for kindergarten students can be shared. In the schools that are not demonstrating benefits consistent with other schools across the county, additional implementation training could be offered during professional development sessions to establish continued success for all MCPS kindergarten students.

4. Additional funding for quality preschool programs, such as Head Start, should be sought to continue helping our youngest and most high risk students. It is clear that our students with risk characteristics are in greater need than their peers without these factors present. The high risk students who made the greatest gains received the maximum “dose” of services that our county provided. Those high risk students who participated in both Head Start and full-day kindergarten had the greatest gains throughout the school year in both years one and two of this program. It is essential that we secure additional funding and resources to help those in the greatest need so that they can meet the high standards that we have set for all our students.

5. This report should be presented to various stakeholders involved both directly and indirectly with the Kindergarten Initiative. Various community partners and stakeholders should be made aware of the merits of this program, and the progress that our students are demonstrating. This report should be presented to every member of our community who has a stake in the children that we are educating, from the School Board to the parents of our students.

This report, and the findings presented therein, should serve as a catalyst for collaboration between various stakeholders and offices within MCPS. Any cross-functional team that deals with issues surrounding early childhood education, narrowing the gap, ESOL, Title I, special education, or other related issues presented in this report, should use the findings to influence and guide their work. ESOL program personnel should have the opportunity to examine these findings and begin creating ways for our students learning English as a second language to make reading progress comparable to that of their MCPS peers.

6. It is recommended that MCPS continue conducting research that monitors the acquisition of reading skills in Kindergarten and Grade 1. The findings presented in this report explored the full day kindergarten benefit for both Head Start and non-Head Start students. The statistical analysis presented herein did not test for any difference in the full day Kindergarten benefit that may exist between Head Start and non-Head Start students. These data should be explored further with alternate models that will continue to inform us on the progress our students are making in kindergarten and beyond.

This report spent considerable amounts of time discussing school groups, racial ethnic groups, and risk groups, paying little attention to special education classification, gender, and other demographic variables. Future research should include examination of

the reading performance of our special education students by different disability classifications. Additional statistical analyses that compare differences between special education students and those without IEPs, including analysis of progress during the school year and of foundational reading skills that were given to selected Grade 1 students, should be conducted in future studies. The current analyses do allow for some descriptive statements, which are summarized in Appendix 3 following Tables A-1 through A-10.

Additional topics, such as the reading performance of cohort 1 students as they enter into grade two, should also be explored in subsequent research.

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APPENDICES

Appendix 1. Reading/Language Arts GLOSSARY OF TERMS

(Pre-K – Grade 2)

Foundational Reading Skills

Oral Language

the ability to speak clearly and use a wide variety of words to convey ideas effectively

Assessment Tool: Record of Oral Language

Measures a student's control of oral language and grammatical structures

Letter Knowledge

the ability to identify alphabet letters

Assessment Tool : Letter Identification

Assesses a student's ability to name upper and lower case letters

Print Concepts

the ability to demonstrate book handling skills and print awareness concepts

Assessment Tool: Concepts About Print

Assesses a student's understanding of how printed language works in books (i.e., directional movement, one to one matching, book conventions, such as front and back of the book, etc.)

Phonemic Awareness

the ability to hear the distinct sounds in spoken words

Assessment Tool: Phonemic Awareness

Measures a student's ability to separately articulate and manipulate the sounds of a spoken word (i.e., beginning sounds, rhyming)

Phonics

the ability to use knowledge of letter/sound relationships to decode and write words

Assessment Tool: Hearing and Recording Sounds

Assesses a student's ability to associate and write letters for sounds heard in words in a dictated sentence

Word Knowledge

the ability to identify high frequency words in print and decode unknown words

Assessment Tool: Word Recognition

Assesses a student's ability to read basic sight words (e.g., *is, the, look, here*)

Text Reading

Reading proficiency is determined by assessing one's oral reading accuracy, fluency, and comprehension of benchmark level texts.

Oral Reading/Fluency

the ability to fluently and accurately read text aloud

Assessment Tool: Running Records

Assesses a student's oral reading accuracy and fluency by the teacher checking and recording each word as a student reads a book or passage

Comprehension

the ability to gain meaning from reading text

Assessment Tool: Oral Retell

Assesses a student's ability to recall and tell the details of text read aloud

Assessment Tool: Oral Comprehension Questions

Assesses a student's ability to orally express an understanding of explicit and implicit details from text read

Assessment Tool: Written Response to Reading

Assesses a student's ability to demonstrate in writing an understanding of explicit and implicit details from text read

Benchmark Levels

~target reading levels at the end of Kindergarten, Grade 1, and Grade 2

READING READY TEXT

Book Levels 1-2 *Reading Ready Texts* typically have large print and spacing, repetition of very simple one or two sentence patterns, familiar content that children can relate to, and simple pictures that support the text. Children use pictures and memory for language to repeat the book pattern, point word by word, and move from left to right across print.

KINDERGARTEN BENCHMARK

Book Level 3 *Early Emergent Texts* typically have large print and spacing, a simple story line with familiar content, introduction of dialogue, and supportive illustrations. Children learn to read high frequency sight words, while reading simple stories for meaning.

GRADE 1 BENCHMARK

Book Level 16 *Early Fluent Texts* are significantly longer, and sentence patterns are more complex. Themes are varied and illustrations are less helpful. More informational text is introduced. Children have an ever-expanding sight word vocabulary, are able to decode unknown words, and are able to comprehend more sophisticated stories.

GRADE 2 BENCHMARK

Book Level M *Fluent Texts* have more print per page, few illustrations, and may take several days or more to complete. Language structure is far more sophisticated and vocabulary is more challenging. Automatic recognition of a larger number of words, beyond basic sight words, is needed. Children read a greater variety of genre, usually silently, with more varied plots and complex ideas and topics.

Primary Reading Stages and Levels

The numerical levels that are indicated represent Reading Recovery levels, 1-20. These levels are appropriate for kindergarten through Grade 2. The alphabetical leveling correlates to the Fountas and Pinnell book leveling found on page 26 of *Matching Texts to Readers*. Therefore, the levels in kindergarten through Grade 2 receive dual representation of both numerals and alphabet letters.

Grade	Reading Stage	Reading Level	
<u>Kindergarten</u>	Early Emergent	Levels 1-2 (A,B)	Reading Ready
		Level 3 (C)	*Benchmark (Level 3)
<u>Grade 1</u>	Upper Emergent	Levels 4-9 (D,E,F)	
	Early Fluent	Levels 10-16 (G,H,I)	*Benchmark (Level 16)
<u>Grade 2</u>	Fluent	Levels 17-20 + (J,K,L,M)	*Benchmark (Level M)

* End of Year Grade Level Benchmark Target

Appendix 2.MANOVA SPSS Ouput

Manova - Cohort 1 Kindergarten - Head Start Only

```
manova skils4 by fdk_hsl(1,3) race(2,5) kesolfrm(0,2)
  / CONTRAST(fdk_hsl)=SIMPLE(1)/ contrast(race) = simple(3) /
contrast(KESOLFRM) = simple(1)
  / print= param(est EFSIZE ) signif(brief efsiz)
  /analysis=skils4 / des=constant fdk_hsl RACE kesolfrm .
```

The default error term in MANOVA has been changed from WITHIN CELLS to WITHIN+RESIDUAL. Note that these are the same for all full factorial designs.

```
* * * * * A n a l y s i s   o f   V a r i a n c e * * * * *
      1106 cases accepted.
           0 cases rejected because of out-of-range factor values.
      17225 cases rejected because of missing data.
           35 non-empty cells.
```

1 design will be processed.

```
-----
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
* * *
```

Order of Variables for Analysis

Variates

SKILS4 '% of Students with all 4 Foundational Skills'

1 Dependent Variable

0 Covariates

INDEPENDENT VARIABLES:

(A) fdk_hsl 'Contrast FDK with 2 HDK Groups'

(B) Race 'Contrast White with Asian; African Am; Hispanic'

(C) kesolfrm 'Contrast NonESOL/NonFARMS with Farms-only; ESOL + FARMS'

```
-----
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
Tests of Significance for SKILS4 using UNIQUE sums of squares
```

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	2436283.93	1098	2218.84		
CONSTANT	885950.82	1	885950.82	399.29	.000
FDK_HSL	150555.38	2	75277.69	33.93	.000
RACE	49718.04	3	16572.68	7.47	.000
KESOLFRM	51048.90	2	25524.45	11.50	.000
(Corrected Model)	230922.22	7	32988.89	14.87	.000
(Corrected Total)	2667206.15	1105	2413.76		
R-Squared =	.087				
Adjusted R-Squared =	.081				

Effect Size Measures

Source of Variation	Partial ETA Sqd
FDK_HS1	.058
RACE	.020
KESOLFRM	.021

Estimates for SKILS4

--- Individual univariate .9500 confidence intervals

CONSTANT

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
1	41.7144290	2.08759	19.98214	.00000	37.61832	
45.81054	.26667					

FDK_HS1

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
(HDK17-FDK17)2	-18.233067	3.44547	-5.29190	.00000	-24.99351	
-11.47262	.02487					
(HDK22-FDK17)3	-29.150644	3.69012	-7.89964	.00000	-36.39113	
-21.91015	.05378					

RACE

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
(Asian -Wht.)4	19.4410476	7.31815	2.65655	.00801	5.08191	
33.80019	.00639					
(Af.Am.-Wht.)5	-4.6851967	5.73087	-.81754	.41380	-15.92988	
6.55949	.00061					
(Hisp. -Wht.)6	-5.7956668	5.77182	-1.00413	.31554	-17.12071	
5.52938	.00092					

KESOLFRM

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
(FARMS-None) 7	-1.4412622	3.97869	-.36225	.71724	-9.24795	
6.36543	.00012					
(ESOL/FARMS- 8	-18.254557	4.78031	-3.81869	.00014	-27.63414	
-8.87497	.01311					
None)						

Manova Cohort 1 Kindergarten - NonHead Start Group

```
manova skills4 by fdk_nhs1(1,3) race(2,5) kesolfrm(0,2)
  / CONTRAST(fdk_nhs1)=SIMPLE(1)/ contrast(race) = simple(3) /
contrast(KESOLFRM) = simple(1)
  / print= param(est EFSIZE ) signif(brief efsizer)
  /analysis=skills4 / des=constant fdk_nhs1 race kesolfrm
  /analysis=skills4 / des=constant fdk_nhs1 race kesolfrm fdk_nhs1 by
kesolfrm.
```

The default error term in MANOVA has been changed from WITHIN CELLS to WITHIN+RESIDUAL. Note that these are the same for all full factorial designs.

```
* * * * * A n a l y s i s   o f   V a r i a n c e * * * * *
  3177 cases accepted.
    0 cases rejected because of out-of-range factor values.
  15154 cases rejected because of missing data.
    36 non-empty cells.

    2 designs will be processed.
```

```
-----
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
* * *
  SKILS4   '% of Students with all 4 Foundational Skills'

  1 Dependent Variable
  0 Covariates
INDEPENDENT VARIABLES:
(A) fdk_nhs1 'Contrast FDK with 2 HDK Groups'
(B) Race     'Contrast White with Asian; African Am; Hispanic'
(C) kesolfrm 'Contrast NonESOL/NonFARMS with Farms-only; ESOL + FARMS'
```

```
-----
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
* * *
```

Tests of Significance for SKILS4 using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	7383810.03	3169	2330.01		
CONSTANT	3075538.94	1	3075538.9	1319.97	.000
FDK_NHS1	66308.90	2	33154.45	14.23	.000
RACE	118133.88	3	39377.96	16.90	.000
KESOLFRM	166526.52	2	83263.26	35.74	.000
(Corrected Model)	520949.18	7	74421.31	31.94	.000
(Corrected Total)	7904759.21	3176	2488.90		

R-Squared = .066
Adjusted R-Squared = .064

- Effect Size Measures

Source of Variation	Partial ETA Sqd
FDK_NHS1	.009
RACE	.016
KESOLFRM	.022

Estimates for SKILS4

--- Individual univariate .9500 confidence intervals

CONSTANT

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
1	46.2687548	1.27352	36.33135	.00000	43.77174	
48.76577	.29405					

FDK_NHS1

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
(HDK17-FDK17) 2	-9.5627274	2.28293	-4.18879	.00003	-	
14.03890	-5.08655	.00551				
(HDK22-FDK17) 3	-11.169062	2.19880	-5.07962	.00000	-	
15.48027	-6.85785	.00808				

RACE

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
(Asian-Wht) 4	.661989099	2.87860	.22997	.81813	-	
4.98213	6.30610	.00002				
(Af.Am.-Wht) 5	-11.276706	2.23866	-5.03726	.00000	-	
15.66607	-6.88734	.00794				
(Hisp-Wht) 6	-16.075192	2.72332	-5.90278	.00000	-	
21.41485	-10.73554	.01088				

KESOLFRM

Parameter Upper	Coeff. ETA Sq.	Std. Err.	t-Value	Sig. t	Lower -95%	CL-
(FARMS-None) 7	-13.100442	2.44121	-5.36637	.00000	-	
17.88696	-8.31393	.00901				
(ESOL/FARMS-None) 8	-26.168920	3.32561	-7.86891	.00000	-	
32.68948	-19.64836	.01916				

Manova Cohort 2 Kindergarten - Head Start Groups Only

```
manova skils4 by fdkhs2(1,3) race(2,5) kesolfrm(0,2)
/ CONTRAST(fdkhs2)=SIMPLE(3)/ contrast(race) = simple(3)
/ contrast(KESOLFRM) = simple(1)
/ print= param(est EFSIZE ) signif(brief efsiz)
/analysis=skils4 / des=constant fdkhs2 race kesolfrm .
```

The default error term in MANOVA has been changed from WITHIN CELLS to WITHIN+RESIDUAL. Note that these are the same for all full factorial designs.

```
* * * * * A n a l y s i s   o f   V a r i a n c e * * * * *
  1164 cases accepted.
    0 cases rejected because of out-of-range factor values.
 17167 cases rejected because of missing data.
    34 non-empty cells.

    1 design will be processed.
```

```
- - - - -
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
SKILS4   '% of Students with all 4 Foundational Skills'
```

```
  1 Dependent Variable
  0 Covariates
INDEPENDENT VARIABLES:
(A) fdkhs2   'Contrast 2 FDK groups with 1 HDK Group'
(B) Race     'Contrast White with Asian; African Am; Hispanic'
(C) kesolfrm 'Contrast NonESOL/NonFARMS with Farms-only; ESOL + FARMS'
```

```
- - - - -
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
```

Tests of Significance for SKILS4 using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	2665122.60	1156	2305.47		
CONSTANT	1603023.84	1	1603023.8	695.31	.000
FDKHS2	72546.57	2	36273.29	15.73	.000
RACE	24683.46	3	8227.82	3.57	.014
KESOLFRM	94874.65	2	47437.33	20.58	.000
(Corrected Model)	173734.79	7	24819.26	10.77	.000
(Corrected Total)	2838857.39	1163	2440.98		

R-Squared = .061
Adjusted R-Squared = .056

```
- - - - -
Effect Size Measures
```

Source of Variation	Partial ETA Sqd
FDKHS2	.026
RACE	.009
KESOLFRM	.034

Estimates for SKILS4

--- Individual univariate .9500 confidence intervals

CONSTANT

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
1	56.8092236	2.15441	26.36880	.00000	52.58223	
61.03622	.37558					

FDKHS2

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
(FDK17a-HDK22)2	17.5397652	3.68329	4.76199	.00000		
10.31309	24.76644	.01924				
(FDK17b-HDK22)3	20.5544172	3.91607	5.24873	.00000		
12.87101	28.23782	.02328				

RACE

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
(Asian-Wht)	4	6.44110595	7.14866	.90102	.36776	-
7.58470	20.46691	.00070				
(Af.Am.-Wht)	5	-9.6833939	5.89031	-1.64395	.10046	-
21.24029	1.87350	.00233				
(Hisp-Wht)	6	-3.4979429	5.88132	-.59475	.55212	-
15.03720	8.04132	.00031				

KESOLFRM

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
(FARMS-None)	7	-4.8530702	3.94649	-1.22972	.21905	-
12.59616	2.89002	.00131				
(ESOL/FARMS-	8	-28.087424	4.97163	-5.64954	.00000	-
37.84185	-18.33300	.02687				
None)						

 --

Manova Cohort 2 Kindergarten - Non-Head Start Groups

```
manova skills4 by fdknhs2(1,3) race(2,5) kesolfrm(0,2)
/ CONTRAST(fdknhs2)=SIMPLE(3)/ contrast(race) = simple(3)
/ contrast(KESOLFRM) = simple(1)
/ print= param(est EFSIZE ) signif(brief efsz)
/analysis=skills4 / des=constant fdknhs2 race kesolfrm .
```

The default error term in MANOVA has been changed from WITHIN CELLS to WITHIN+RESIDUAL. Note that these are the same for all full factorial designs.

```
* * * * * A n a l y s i s   o f   V a r i a n c e * * * * *
2057 cases accepted.
0 cases rejected because of out-of-range factor values.
16274 cases rejected because of missing data.
35 non-empty cells.

1 design will be processed.
```

```
-----
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
* * *
```

Order of Variables for Analysis

SKILS4 '% of Students with all 4 Foundational Skills'

1 Dependent Variable
0 Covariates

INDEPENDENT VARIABLES:

- (A) fdknhs2 'Contrast 2 FDK groups with 1 HDK Group'
- (B) Race 'Contrast White with Asian; African Am; Hispanic'
- (C) kesolfrm 'Contrast NonESOL/NonFARMS with Farms-only; ESOL + FARMS'

```
-----
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
* * *
```

Tests of Significance for SKILS4 using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	4384312.71	2049	2139.73		
CONSTANT	3748409.17	1	3748409.2	1751.81	.000
FDKNHS2	74314.51	2	37157.25	17.37	.000
RACE	62449.04	3	20816.35	9.73	.000
KESOLFRM	227819.21	2	113909.60	53.24	.000
(Corrected Model)	402473.87	7	57496.27	26.87	.000
(Corrected Total)	4786786.58	2056	2328.20		

R-Squared = .084
Adjusted R-Squared = .081

```
-----
```

Effect Size Measures

Source of Variation	Partial ETA Sqd
---------------------	--------------------

```

FDKNHS2          .017
RACE              .014
KESOLFRM         .049

```

Estimates for SKILS4

--- Individual univariate .9500 confidence intervals

CONSTANT

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
1	60.6425490	1.44888	41.85465	.00000	57.80111	
63.48399	.46090					

FDKNHS2

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
(FDK17a-HDK22) 2	16.1643363	3.16178	5.11242	.00000		
9.96370	22.36498	.01260				
(FDK17b-HDK22) 3	17.6562227	3.42094	5.16122	.00000		
10.94734	24.36511	.01283				

RACE

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
(Asian-Wht) 4	2.25801491	3.60317	.62667	.53094	-	
4.80824	9.32427	.00019				
(Af.Am.-Wht) 5	-13.131944	2.97656	-4.41179	.00001	-	
18.96934	-7.29455	.00941				
(Hisp-Wht) 6	-10.892348	3.28441	-3.31638	.00093	-	
17.33348	-4.45122	.00534				

KESOLFRM

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper	ETA Sq.					
(FARMS-None) 7	-14.898040	3.09667	-4.81099	.00000	-	
20.97099	-8.82509	.01117				
(ESOL/FARMS- 8	-41.068418	3.98982	-10.29329	.00000	-	
48.89295	-33.24389	.04917				
None)						

Grade 1 Performance, Includes only Students in Kindergarten 2000-2001, Non-Head Start

```
manova gdlbench by fullold1(1,3) race(2,5) kesolfrm (0,2)
/ CONTRAST(fullold1)=SIMPLE(1)/ contrast(race) = simple(3) /
contrast(kesolfrm)
= simple(1)
/ print= cell(means)param(est EFSIZE ) signif(brief efsiz)
/analysis=gdlbench/ des=constant fullold1 race kesolfrm.
The default error term in MANOVA has been changed from WITHIN CELLS to
WITHIN+RESIDUAL. Note that these are the same for all full factorial
designs.
```

```
***** Analysis of Variance *****
2054 cases accepted.
0 cases rejected because of out-of-range factor values.
0 cases rejected because of missing data.
35 non-empty cells.
```

1 designs will be processed.

```
----- *****
Analysis of Variance -- design 1 *****
Order of Variables for Analysis
```

Variates Covariates

GD1BENCH '% of Students at/above Text Reading Benchmark'

1 Dependent Variable

0 Covariates

INDEPENDENT VARIABLES:

(A)fullold1 'Contrast FDK with 2 HDK Groups'

(B)Race 'Contrast White with Asian; African Am; Hispanic'

(C)KESOLFRM 'Contrast NonESOL/NonFARMS with Farms-only; & ESOL + FARMS'

```
----- *****
***** Analysis of Variance -- design 1 *****
Tests of Significance for GD1BENCH using UNIQUE sums of squares
```

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	4459786.08	2046	2179.76		
CONSTANT	2264791.85	1	2264791.8	1039.01	.000
FULLOLD1	21806.32	2	10903.16	5.00	.007
RACE	134773.86	3	44924.62	20.61	.000
KESOLFRM	118834.74	2	59417.37	27.26	.000
(Corrected Model)	493865.34	7	70552.19	32.37	.000
(Corrected Total)	4953651.41	2053	2412.88		

R-Squared = .100

Adjusted R-Squared = .097

----- *****
Effect Size Measures

Partial

Source of Variation	ETA Sqd
FULLOLD1	.005
RACE	.029
KESOLFRM	.026

Estimates for GD1BENCH

--- Individual univariate .9500 confidence intervals

CONSTANT

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper						
1	51.4711235	1.59681	32.23368	.00000	48.33958	
	54.60267					

Parameter	ETA Sq.
1	.33679

FULLOLD1

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper						
(HDK17-FDK17) 2	-8.5963134	2.79493	-3.07568	.00213	-14.07751	
	-3.11511					
(HDK22-FDK17) 3	-3.2182045	2.69626	-1.19358	.23278	-8.50591	
	2.06950					

Parameter	ETA Sq.
(HDK17-FDK17) 2	.00460
(HDK22-FDK17) 3	.00070

* * * * * A n a l y s i s o f V a r i a n c e -- design 1 * * *

Estimates for GD1BENCH (Cont.)

RACE

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-
Upper						
(Asian-Wht) 4	2.90622742	3.46586	.83853	.40183	-3.89075	
	9.70321					
(Af.Am.-Wht) 5	-14.289782	2.69393	-5.30443	.00000	-19.57292	-
	9.00664					
(Hisp-Wht) 6	-21.029922	3.28055	-6.41049	.00000	-27.46348	-
	14.59636					

Parameter	ETA Sq.
(Asian-Wht) 4	.00034
(Af.Am.-Wht) 5	.01357
(Hisp-Wht) 6	.01969

KESOLFRM

Parameter		Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-	Upper
(FARMS-None)	7	-7.3691590	3.08167	-2.39129	.01688	-13.41270		
-1.32562								
(ESOL/FARMS- 22.29390 None)	8	-30.365749	4.11593	-7.37762	.00000	-38.43760	-	

Parameter		ETA Sq.
(FARMS-None)	7	.00279
(ESOL/FARMS- None)	8	.02591

Grade 1 Performance, Includes only Students in Kindergarten 2000-2001, Head Start

```

manova gdlbench by fullold1(1,3) race(2,5) kesolfrm (0,2)
/ CONTRAST(fullold1)=SIMPLE(1)/ contrast(race) = simple(3) /
contrast(kesolfrm)
= simple(1)
/ print= cell(means)param(est EFSIZE ) signif(brief efsiz)
/analysis=gdlbench/ des=constant fullold1 race kesolfrm.
* * * * * A n a l y s i s   o f   V a r i a n c e * * * * *
      808 cases accepted.
        0 cases rejected because of out-of-range factor values.
        0 cases rejected because of missing data.
        34 non-empty cells.

      1 designs will be processed.

```

```

- - - - -
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
Order of Variables for Analysis

```

```

Variates      Covariates

GD1BENCH      '% of Students at/above Text Reading Benchmark

1 Dependent Variable
0 Covariates
INDEPENDENT VARIABLES:
(A)fullold1   'Contrast FDK with 2 HDK Groups'
(B)Race       'Contrast White with Asian; African Am; Hispanic'
(C)KESOLFRM   'Contrast NonESOL/NonFARMS with Farms-only; & ESOL +
FARMS'

```

```

- - - - -
* * * * * A n a l y s i s   o f   V a r i a n c e -- design 1 * * *
Tests of Significance for GD1BENCH using UNIQUE sums of squares
Source of Variation      SS      DF      MS      F      Sig of F

```

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	1835636.19	800	2294.55		
CONSTANT	656622.16	1	656622.16	286.17	.000
FULLOLD1	14988.64	2	7494.32	3.27	.039
RACE	37107.34	3	12369.11	5.39	.001
KESOLFRM	39140.06	2	19570.03	8.53	.000
(Corrected Model)	86331.63	7	12333.09	5.37	.000
(Corrected Total)	1921967.82	807	2381.62		

```

R-Squared = .045
Adjusted R-Squared = .037

```

```

- - - - -
Effect Size Measures
Source of Variation      Partial
                          ETA Sqd

FULLOLD1                  .008

```

RACE .020
 KESOLFRM .021

 Estimates for GD1BENCH

--- Individual univariate .9500 confidence intervals

CONSTANT

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-Upper
1	41.7976976	2.47083	16.91646	.00000	36.94762	46.64777

Parameter	ETA Sq.
1	.26346

FULLOLD1

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-Upper
(HDK17-FDK17) 2	-8.9543446	4.13093	-2.16764	.03048	-17.06308	-.84561
(HDK22-FDK17) 3	-9.2429510	4.38917	-2.10585	.03553	-17.85860	-.62730

Parameter	ETA Sq.
(HDK17-FDK17) 2	.00584
(HDK22-FDK17) 3	.00551

* * * * * A n a l y s i s o f V a r i a n c e -- design 1 * * *
 Estimates for GD1BENCH (Cont.)

RACE

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-Upper
(Asian-Wht) 4	24.9584240	8.65566	2.88348	.00404	7.96793	41.94892
(Af.Am.-Wht) 5	1.01811750	6.92210	.14708	.88310	-12.56950	14.60574
(Hispanic-Wht) 6	.309573083	6.97976	.04435	.96463	-13.39124	14.01039

Parameter	ETA Sq.
(Asian-Wht) 4	.01029
(Af.Am.-Wht) 5	.00003
(Hispanic-Wht) 6	.00000

KESOLFRM

Parameter	Coeff.	Std. Err.	t-Value	Sig.	t Lower	-95% CL-	Upper
(FARMS-None)	7	-4.9144532	4.75279	-1.03401	.30144	-14.24386	4.41496
(ESOL/FARMS-None)	8	-20.883580	5.69907	-3.66439	.00026	-32.07047	-9.69669
Parameter	ETA Sq.						
(FARMS-None)	7	.00133					
(ESOL/FARMS-None)	8	.01651					

Manova Year 1 to Year 2 Comparison of Kndg Performance HEAD START GROUP

```
manova skills4 by pracths(0,1) cohort(1,2)
/ CONTRAST(pracths)=SIMPLE(1)/ contrast(cohort) = simple(1)
/ print=cell(means) param(est EFSIZE ) signif(brief efsiz)
/analysis=skills4 / des=constant pracths cohort within pracths .
```

```
* * * * * A n a l y s i s   o f   V a r i a n c e * * * * *
1678 cases accepted.
504 cases rejected because of out-of-range factor values.
18159 cases rejected because of missing data.
4 non-empty cells.
```

Cell Means and Standard Deviations

Variable .. SKILS4	CODE	4 of 4 Skills	Mean	Std. Dev.	N
PRACTHS	FDK/hs(1				
COHORT	Cohort 1	51.028	50.036	535	
COHORT	Cohort 2	59.239	49.184	552	
PRACTHS	HDK/hs(2				
COHORT	Cohort 1	25.087	43.427	287	
COHORT	Cohort 2	43.750	49.690	304	
For entire sample		47.974	49.974	1678	

SKILS4 '% of Students with all 4 Foundational Skills'

INDEPENDENT VARIABLES:

- (A) PRACTHS 'Contrast FDK group(17 schools) with HDK Group (22 schools)'
 - (B) COHORT 'Contrast Year 2 - Year 1'
-

Tests of Significance for SKILS4 using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	3957312.84	1674	2363.99		
CONSTANT	3068362.56	1	3068362.6	1297.96	.000
PRACTHS	164182.13	1	164182.13	69.45	.000
COHORT WITHIN PRACTH	69736.73	2	34868.36	14.75	.000
S					
(Corrected Model)	230798.01	3	76932.67	32.54	.000
(Corrected Total)	4188110.85	1677	2497.38		

R-Squared = .055

Adjusted R-Squared = .053

Effect Size Measures

Source of Variation	Partial ETA Sqd
PRACTHS	.040
COHORT WITHIN PRACTHS	.017

Estimates for SKILS4

--- Individual univariate .9500 confidence intervals

CONSTANT

	Parameter	Coeff.	Std. Err.	t-Value	Sig. t
1	44.7760690	1.24284	36.02723	.00000	42.33839

PRACTHS

	Parameter	Coeff.	Std. Err.	t-Value	Sig. t
(FDK - HDK)	2	-20.715030	2.48568	-8.33375	.00000

COHORT WITHIN PRACTHS

	Parameter	Coeff.	Std. Err.	t-Value	Sig. t
(Yr.2 - Yr.1)FDK	3	8.21109305	2.94979	2.78362	.00544
(Yr.2 - Yr.1)HDK	4	18.6628920	4.00164	4.66381	.00000

Manova Year 1 to Year 2 Comparison of Kindergarten Performance non-Head Start Group

```
manova skills4 by practnhs(0,1) cohort(1,2)
/ CONTRAST(practnhs)=SIMPLE(1)/ contrast(cohort) = simple(1)
/ print=cell(means) param(est EFSIZE ) signif(brief efsz)
/analysis=skills4 / des=constant practnhs cohort within practnhs .
```

```
4612 cases accepted.
1055 cases rejected because of out-of-range factor values.
14674 cases rejected because of missing data.
4 non-empty cells.
```

Cell Means and Standard Deviations

Variable .. SKILS4	4 of 4 Skills		Mean	Std. Dev.	N
FACTOR	CODE				
PRACTNHS	FDK/nhs(
COHORT	Cohort 1		52.317	49.969	1122
COHORT	Cohort 2		61.430	48.705	853
PRACTNHS	HDK/nhs(
COHORT	Cohort 1		51.192	50.004	1342
COHORT	Cohort 2		60.927	48.810	1295
For entire sample			56.093	49.633	4612

SKILS4 '% of Students with all 4 Foundational Skills'

INDEPENDENT VARIABLES:

- (A) PRACTHS 'Contrast FDK group(17 schools) with HDK Group (22 schools)'
- (B) COHORT 'Contrast Year 2 - Year 1'

Tests of Significance for SKILS4 using UNIQUE sums of squares

Source of Variation	SS	DF	MS	F	Sig of F
WITHIN+RESIDUAL	11256010.57	4608	2442.71		
CONSTANT	14246376.17	1	14246376	5832.20	.000
PRACTNHS	740.72	1	740.72	.30	.582
COHORT WITHIN PRACTNHS	102692.88	2	51346.44	21.02	.000
HS					
(Corrected Model)	102781.71	3	34260.57	14.03	.000
(Corrected Total)	11358792.28	4611	2463.41		

R-Squared = .009
Adjusted R-Squared = .008

Effect Size Measures

Source of Variation	Partial ETA Sqd
PRACTNHS	.000
COHORT WITHIN PRACTNHS	.009

Estimates for SKILS4

--- Individual univariate .9500 confidence intervals

CONSTANT

Parameter	Coeff.	Std. Err.	t-Value	Sig. t
1	56.4666070	.73939	76.36884	.00000

PRACTNHS

Parameter	Coeff.	Std. Err.	t-Value	Sig. t
(FDK - HDK) 2	-.81432272	1.47879	-.55067	.58189

COHORT WITHIN PRACTNHS

Parameter	Coeff.	Std. Err.	t-Value	Sig. t
(Yr.2 - Yr.1)FDK 3	9.11295564	2.24517	4.05892	.00005
(Yr.2 - Yr.1)HDK 4	9.73439055	1.92522	5.05625	.00000

Appendix 3. Tables A-1 through A-10

TABLE A-1
Percentage of Kindergarten Students Attaining Benchmark on All 4 Foundational Skills
By the End of Kindergarten, Spring 2001
Head Start Students Only

		School Group						TOTAL	
		FDK (17)		HDK (17)		HDK (22)			
		4 of 4 Skills		4 of 4 Skills		4 of 4 Skills			
		%	n	%	n	%	n	%	n
Racial/Ethnic Group	Asian American	69%	42	64%	28	43%	23	61%	93
	African American	51%	125	40%	116	31%	124	41%	365
	White	63%	38	33%	18	32%	22	47%	78
	Hispanic	50%	281	32%	138	10%	87	38%	506
Gender	Female	53%	234	41%	150	32%	128	44%	512
	Male	52%	252	35%	150	19%	128	39%	530
ESOL / FARMS Groups	Not ESOL or FARMS	62%	42	38%	64	34%	70	42%	176
	FARMS Only	60%	239	43%	164	28%	126	47%	529
	ESOL & FARMS	42%	192	25%	52	9%	46	33%	290
Head Start/Kndg Groups	HS/Half Day K	.	.	38%	300	25%	256	32%	556
	HS/Full Day K	53%	486	.	.	.	.	53%	486
Special Education	No	54%	456	39%	292	26%	239	43%	987
	Yes (With IEP)	30%	30	13%	8	12%	17	22%	55
TOTAL		53%	486	38%	300	25%	256	42%	1042

TABLE A-2
Percentage of Kindergarten Students Attaining Benchmark on All 4 Foundational Skills
By the End of Kindergarten, Spring 2001
NON-Head Start Students Only

		School Group						TOTAL	
		FDK (17)		HDK (17)		HDK (22)			
		4 of 4 Skills		4 of 4 Skills		4 of 4 Skills			
		%	n	%	n	%	n	%	n
Racial/Ethnic Group	Asian American	69%	90	66%	124	62%	158	65%	372
	African American	63%	245	48%	245	50%	284	53%	774
	White	69%	202	65%	309	66%	506	66%	1017
	Hispanic	47%	378	42%	170	27%	168	41%	716
Gender	Female	65%	433	59%	406	59%	545	61%	1384
	Male	52%	482	53%	442	53%	571	53%	1495
ESOL / FARMS Groups	Not ESOL or FARMS	69%	407	60%	610	62%	898	63%	1915
	FARMS Only	60%	234	45%	113	41%	98	52%	445
	ESOL & FARMS	39%	195	30%	47	11%	46	33%	288
Head Start/Kndg Groups	No HS/Half Day K	.	.	56%	848	55%	1116	56%	1964
	No HS/Full Day K	58%	915	.	.	.	.	58%	915
Special Education	No	59%	882	56%	815	56%	1053	57%	2750
	Yes (With IEP)	33%	33	45%	33	40%	63	40%	129
TOTAL		58%	915	56%	848	55%	1116	56%	2879

TABLE A-3
Percentage of Kindergarten Students Attaining Benchmark on All 4 Foundational Skills
By the End of Kindergarten, Spring 2002
Head Start Students Only

		School Groups						TOTAL	
		FDK (01&02)		FDK (02)		HDK (02)		%	n
		4 of 4 Skills		4 of 4 Skills		4 of 4 Skills			
		%	n	%	n	%	n		
Racial/Ethnic Group	Asian American	76%	49	67%	24	50%	30	66%	103
	African American	59%	137	68%	144	45%	116	58%	397
	White	63%	30	78%	23	55%	22	65%	75
	Hispanic	57%	287	62%	132	40%	102	55%	521
Gender	Female	63%	239	68%	149	52%	129	62%	517
	Male	57%	264	65%	174	38%	141	55%	579
ESOL / FARMS Groups	Not ESOL or FARMS	65%	52	77%	53	55%	76	65%	181
	FARMS Only	65%	313	70%	219	45%	147	62%	679
	ESOL & FARMS	47%	129	40%	45	31%	29	43%	203
Head Start/ Kndg Groups	HS/Half Day K	.	.	.	.	44%	270	44%	270
	HS/Full Day K	60%	503	66%	323	.	.	62%	826
Special Education	No	61%	477	68%	308	45%	248	59%	1033
	Yes (With IEP)	38%	26	40%	15	41%	22	40%	63
TOTAL		60%	503	66%	323	44%	270	58%	1096

TABLE A-4
Percentage of Kindergarten Students Attaining Benchmark on All 4 Foundational Skills
By the End of Kindergarten, Spring 2002
NON-Head Start Students Only

		School Group						TOTAL	
		FDK (01&02)		FDK (02)		HDK (02)		%	n
		4 of 4 Skills		4 of 4 Skills		4 of 4 Skills			
		%	n	%	n	%	n		
Racial/Ethnic Group	Asian American	68%	107	87%	178	71%	172	77%	457
	African American	66%	217	76%	278	61%	257	68%	752
	White	81%	207	82%	327	75%	488	78%	1022
	Hispanic	63%	416	59%	219	38%	186	56%	821
Gender	Female	72%	448	78%	485	68%	542	73%	1475
	Male	64%	499	74%	517	61%	561	67%	1577
ESOL / FARMS Groups	Not ESOL or FARMS	77%	473	86%	664	73%	856	78%	1993
	FARMS Only	70%	273	65%	201	48%	123	64%	597
	ESOL & FARMS	41%	151	36%	61	10%	48	34%	260
Head Start/Kndg Groups	No HS/Half Day K	.	.	.	.	65%	1103	65%	1103
	No HS/Full Day K	68%	947	76%	1002	.	.	72%	1949
Special Education	No	70%	883	78%	923	65%	1026	71%	2832
	Yes (With IEP)	36%	64	56%	79	56%	77	50%	220
TOTAL		68%	947	76%	1002	65%	1103	69%	3052

TABLE A-5
Percentage of Students Reading At or Above the Grade 1 Text Level Benchmark
HEAD START ONLY
By the End of Grade 1, Spring 2002

		School Groups					
		FDK (17)		HDK (17)		HDK (22)	
		%	n	%	n	%	n
Racial/Ethnic Group	Asian American	54%	35	65%	23	53%	17
	African American	41%	96	42%	95	37%	100
	White	52%	27	13%	15	44%	18
	Hispanic	38%	231	29%	115	30%	76
Gender	Female	43%	190	40%	131	39%	109
	Male	39%	199	32%	117	34%	102
ESOL / FARMS Groups	Not ESOL or FARMS	54%	50	50%	42	40%	42
	FARMS only	48%	213	38%	170	41%	124
	ESOL & FARMS	23%	112	12%	34	17%	36
Head Start / Kndg Groups	HS with HDK	.		36%	248	36%	211
	HS with FDK	41%	389	.		.	
Special Education	No	42%	361	37%	238	38%	197
	Yes (with IEP)	21%	28	10%	10	21%	14
TOTAL		41%	389	36%	248	36%	211

Includes only Spring 2002 Grade 1 students who remained in the same school group from Kindergarten 2001

TABLE A-6
Percentage of Students Reading At or Above the Grade 1 Text Level Benchmark
NON-HEAD START ONLY
By the End of Grade 1, Spring 2002

		School Groups					
		FDK (17)		HDK (17)		HDK (22)	
		%	n	%	n	%	n
Racial/Ethnic Group	Asian American	63%	59	66%	105	68%	132
	African American	57%	173	49%	176	58%	224
	White	72%	156	68%	245	71%	396
	Hispanic	39%	290	32%	138	40%	129
Gender	Female	56%	316	59%	324	65%	446
	Male	51%	362	52%	340	61%	435
ESOL / FARMS Groups	Not ESOL or FARMS	68%	322	65%	449	70%	684
	FARMS only	54%	210	44%	153	47%	130
	ESOL & FARMS	17%	115	13%	39	15%	34
Head Start / Kndg Groups	No HS with HDK	.		55%	664	63%	881
	No HS with FDK	53%	678	.		.	
Special Education	No	54%	646	57%	631	65%	815
	Yes (with IEP)	31%	32	30%	33	38%	66
TOTAL		53%	678	55%	664	63%	881

Includes only Spring 2002 Grade 1 students who remained in the same school group from Kindergarten 2001

TABLE A-7
Percentage of Students Attaining Benchmark On 4 out of 4 Foundational Reading Skills
By the End of Kindergarten
For Students Enrolled in K in MCPS in 2000-2001 and in K in MCPS in 2001-2002

		Kindergarten 2000-2001		Kindergarten 2001-2002	
		Spring		Spring	
		%	n	%	n
Race/Ethnic Group	American Indian	48%	29	64%	22
	Asian American	69%	983	76%	1162
	African American	49%	1560	62%	1555
	White	67%	3772	78%	3616
	Hispanic	40%	1505	53%	1650
Gender	Female	63%	3846	73%	3882
	Male	54%	4003	66%	4123
ESOL / FARMS Groups in K	Not ESOL or FARMS	65%	5534	77%	5594
	FARMS Only	47%	1219	60%	1532
	ESOL & FARMS	32%	628	36%	510
	ESOL Only	39%	468	37%	369
Head Start/ Kindergarten Groups	No HS/Half Day K	62%	5644	73%	4696
	No HS/Full Day K	58%	918	72%	1957
	HS/Half Day K	34%	798	43%	522
	HS/Full Day K	53%	489	62%	830
Special Education	No	59%	7441	71%	7460
	Yes (With IEP)	41%	408	50%	545
TOTAL		58%	7849	69%	8005

Only includes students who missed less than one month of kindergarten and had Fall & Spring assessments in K

TABLE A-8
Percentage of Students Attaining Benchmark On 4 out of 4 Foundational Reading Skills
In Fall of Kindergarten
For Students Enrolled in K in MCPS in 2000-2001 and in K in MCPS in 2001-2002

		Kindergarten 2000-2001		Kindergarten 2001-2002	
		Fall		Fall	
		%	n	%	n
Race/Ethnic Group	American Indian	0%	29	5%	22
	Asian American	4%	983	14%	1162
	African American	1%	1560	6%	1555
	White	4%	3772	13%	3616
	Hispanic	0%	1505	2%	1650
Gender	Female	3%	3846	10%	3882
	Male	2%	4003	9%	4123
ESOL / FARMS Groups in K	Not ESOL or FARMS	3%	5534	13%	5594
	FARMS Only	1%	1219	3%	1532
	ESOL & FARMS	0%	628	0%	510
	ESOL Only	1%	468	0%	369
Head Start/ Kindergarten Groups	No HS/Half Day K	3%	5644	12%	4696
	No HS/Full Day K	1%	918	7%	1957
	HS/Half Day K	1%	798	3%	522
	HS/Full Day K	1%	489	3%	830
Special Education	No	3%	7441	10%	7460
	Yes (With IEP)	1%	408	6%	545
TOTAL		3%	7849	10%	8005

Only includes students who missed less than one month of kindergarten
and had Fall & Spring assessments in K

N.B. Students received assessments in 2001-2002 after 6 weeks more of school than
students in 2000-2001

TABLE A-9
Percentage of Students Reading At or Above Benchmark by End of Year
On Grade 1 Text Reading Benchmark
For Students Enrolled in Grade 1 in MCPS in 2001-2002

		Enrolled in MCPS for K 2000-2001* & for G1 2001-2002**		All in Grade 1 2001-2002**	
		%	n	%	n
Racial/Ethnic Group	American Indian	63%	24	66%	35
	Asian American	71%	880	68%	1343
	African American	49%	1334	49%	1936
	White	70%	3272	70%	4375
	Hispanic	38%	1314	36%	1849
Gender	Female	63%	3403	63%	4687
	Male	57%	3421	55%	4851
ESOL / FARMS Groups in K	Not ESOL or FARMS	68%	4840	67%	5417
	FARMS Only	45%	1053	43%	1251
	ESOL & FARMS	28%	540	27%	633
	ESOL Only	42%	390	41%	516
Head Start/ Kindergarten Groups	No HS/Half Day K	66%	4926	64%	5654
	No HS/Full Day K	53%	759	52%	901
	HS/Half Day K	39%	703	38%	787
	HS/Full Day K	40%	436	39%	476
Special education	No	61%	6388	61%	8835
	Yes (with IEP)	37%	436	31%	703
TOTAL		60%	6824	58%	7818

*Only includes students who missed less than one month of kindergarten and had Fall & Spring assessments in K .

**Only includes students with valid Grade 1 spring assessment.

TABLE A-10
Percentage of Students At or Above Reading Benchmarks by End of Year
For Kindergarten and Grade 1
For Students Enrolled in K in MCPS in 2000-2001 and also in Grade 1 in MCPS in 2001-2002

		4 of 4 Skills in K		Grade 1 Text Reading	
		%	n	%	n
Race/Ethnic Group	American Indian	54%	26	58%	26
	Asian American	69%	884	71%	884
	African American	51%	1330	49%	1330
	White	68%	3272	70%	3272
	Hispanic	42%	1312	38%	1312
Gender	Female	64%	3411	63%	3411
	Male	56%	3413	57%	3413
ESOL / FARMS Groups in K	Not ESOL or FARMS	67%	4840	68%	4840
	FARMS Only	48%	1053	45%	1053
	ESOL & FARMS	35%	540	28%	540
	ESOL Only	40%	390	42%	390
Head Start/ Kindergarten Groups	No HS/Half Day K	63%	4926	66%	4926
	No HS/Full Day K	62%	759	53%	759
	HS/Half Day K	36%	703	39%	703
	HS/Full Day K	54%	436	40%	436
Special education	No	61%	6388	61%	6388
	Yes (with IEP)	41%	436	37%	436
TOTAL		60%	6824	60%	6824

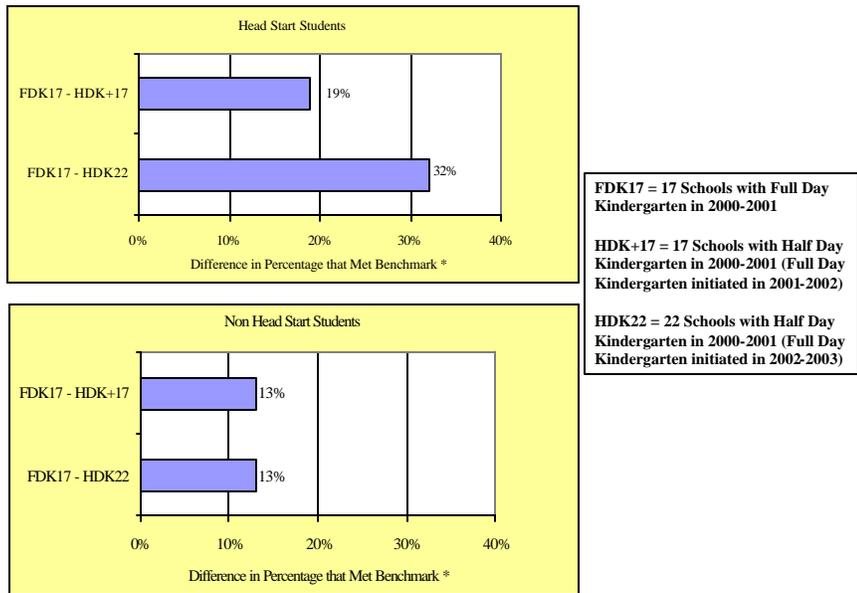
Only includes students who missed less than one month of kindergarten and had Fall & Spring assessments in K and had valid Grade 1 spring assessment

Reading Performance of Special Education Students

Starting with kindergarten reading performance, less than half (41%) of special education students met benchmark on four of four foundational reading skills by the end of kindergarten for cohort 1. For cohort 2, the comparable figure is 50%. For both cohorts, these percentages are lower than those for students without IEPs (see Table A-9 in this Appendix). However, like the students without IEPs, more special education students attained the kindergarten benchmarks in cohort 2, compared to cohort 1.

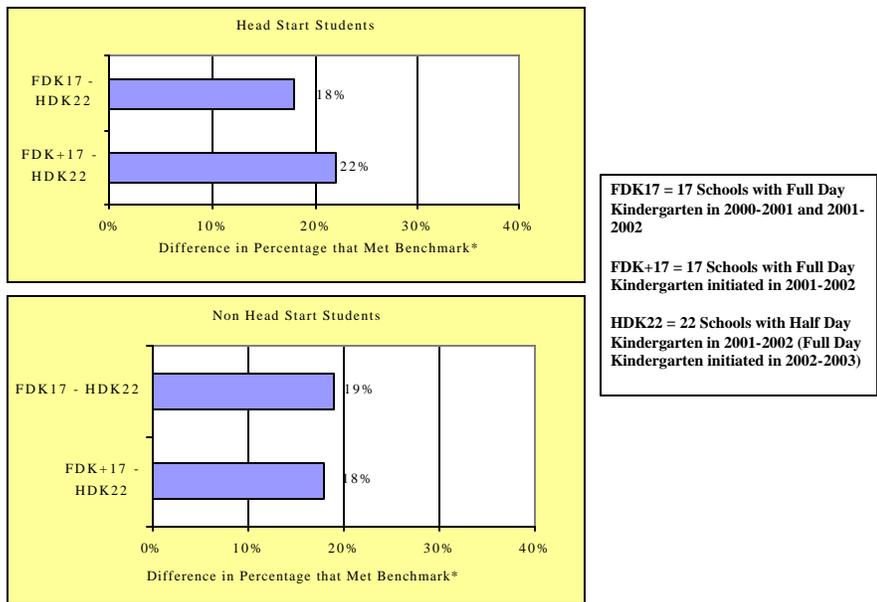
For cohort 1, there is information on meeting the Grade 1 reading proficiency benchmark. By the end of Grade 1, 37% of the special education students who were enrolled in MCPS kindergarten in 2000-2001 attained the Grade 1 reading proficiency benchmark (see Table A-10 in this Appendix). This percentage is similar to the percentage of special education students (41%) who met the kindergarten benchmarks on four of four foundational skills.

Figure A-1
Contrasts between Full Day Kindergarten and Half Day Kindergarten based on Multiple Analysis of Variance on Percentage of Students that met Kindergarten Benchmark By the End of Kindergarten, Spring 2001



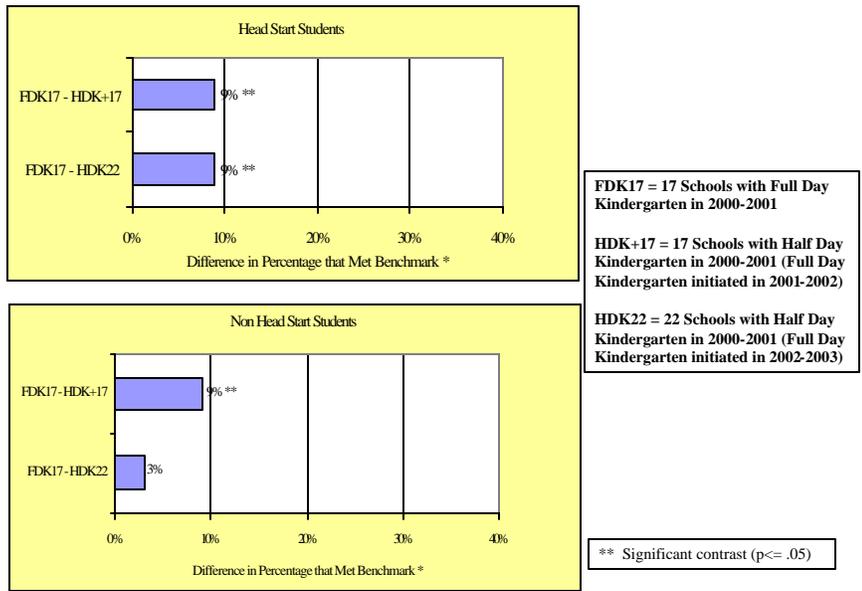
*Read as follows: 19% more students in FDK17 schools compared to HDK+17 schools met the benchmark on 4 of 4 foundational skills in kindergarten.

Figure A-2
Contrasts between Full Day Kindergarten and Half Day Kindergarten based on Multiple Analysis of Variance on Percentage of Students that met Kindergarten Benchmark By the End of Kindergarten, Spring 2002



*Read as follows: 18% more students in FDK17 schools compared to HDK22 schools met the benchmark on 4 of 4 foundational skills in kindergarten.

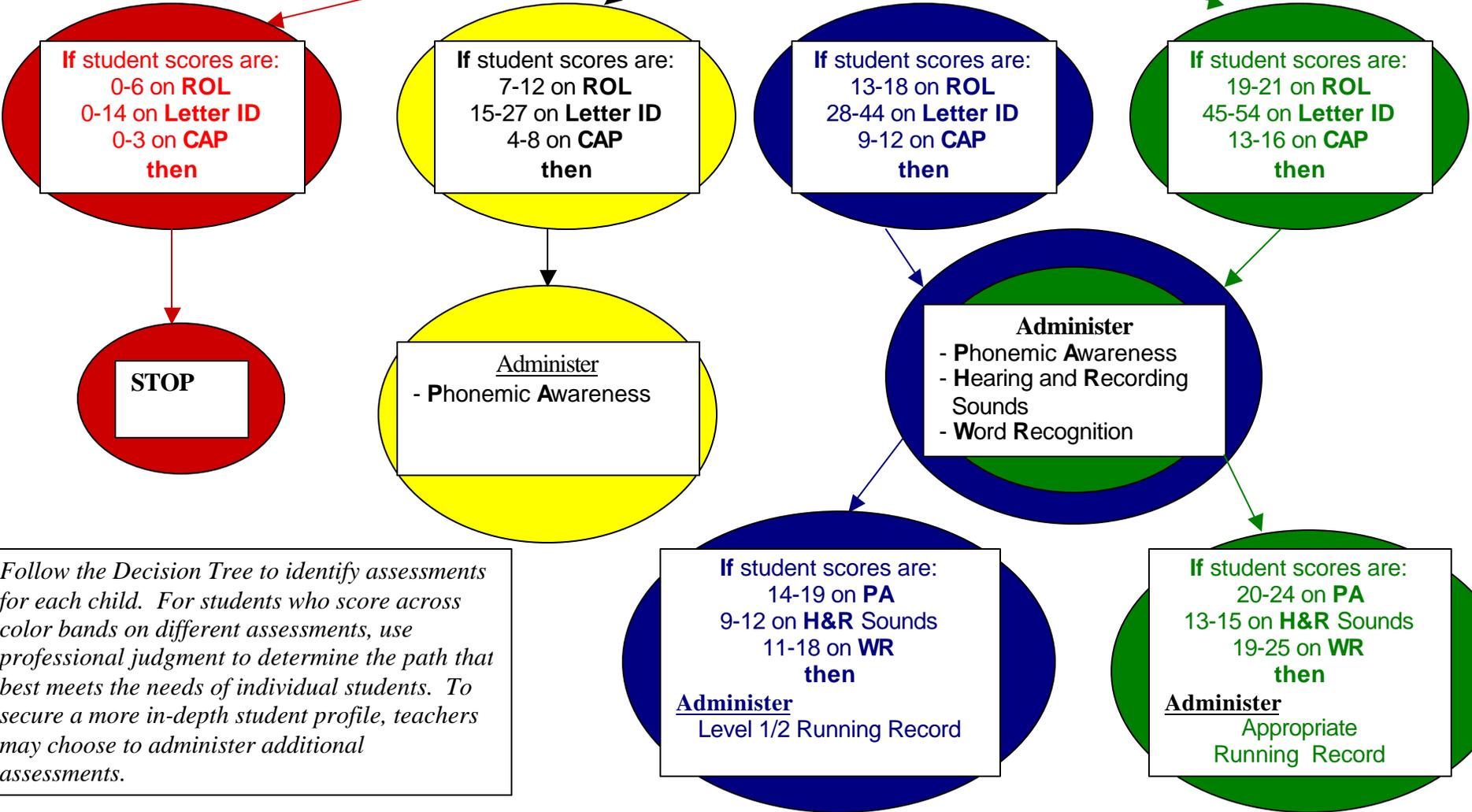
Figure A-3
Contrasts between Full Day Kindergarten and Half Day Kindergarten based on Multiple Analysis of Variance on Percentage of Students at or above Grade 1 Proficiency Benchmark By the End of Grade 1, Spring 2002



*Read as follows: 9% more students in FDK17 schools compared to HDK+17 schools met the Grade 1 proficiency benchmark.

Appendix 4. Kindergarten Decision Tree (2002-03)
Primary Assessment Decision Tree

Administer to all:
Record of Oral Language (ROL) **Letter Identification (Letter ID)** **Concepts About Print (CAP)**



Follow the Decision Tree to identify assessments for each child. For students who score across color bands on different assessments, use professional judgment to determine the path that best meets the needs of individual students. To secure a more in-depth student profile, teachers may choose to administer additional assessments.