

AN IMPACT STUDY OF LOCALLY-DESIGNED HEAD START PROGRAM MODELS  
ON CHILDREN'S ASSESSMENT SCORES

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## EXECUTIVE SUMMARY

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Head Start, a nationwide early childhood program, promotes the development and use of locally-designed program models, such as partnerships with child care centers, to expand enrollment opportunities and improve service delivery to eligible children and families. Partnerships are considered to be an efficient solution with positive benefits accruing to the Head Start grantee, partnering child care center, and participating families. It is not known, however, whether partnerships differ from standard, direct-managed centers in terms of promoting school readiness among children, the goal of Head Start. This study addresses that question, undertaking an assessment of the impact, if any, that program model type (direct-managed or partnership) has on children's assessment scores, a common indicator of school readiness.

This study relies on pre- and post-assessment scores, as well as child and teacher characteristics, from 686 children enrolled in 24 Head Start centers in Lexington-Fayette, Harrison, Nicholas and Scott counties (KY) during the 2007-2008 program year. The data are estimated using a value-added achievement educational production function model. Controlling for the effects of child and teacher characteristics, the data indicate that being enrolled in a partnership center correlates with higher post-assessment scores and greater assessment gain over the program year. This finding suggests that Head Start administrators and grantees may want to consider policy and programmatic decisions that support partnership programs. Further analysis of other determinants of assessment gain is recommended in order to better understand what features of the partnership program produce the best outcomes and, as follows, best promote school readiness among children.

## **INTRODUCTION**

Many factors come into play when determining how best to fulfill program goals under conditions of limited resources in publicly funded programs. In the case of Head Start, a \$6.8 billion, federally funded nationwide early childhood program, innovative use of locally-designed program models has been recommended as a means of offering more and better services to low-income children and families. In particular, partnership programs with child care centers are considered to offer benefits to participating families, the Head Start grantee, and the partnering child care provider by allowing an increase in the number of enrollment slots, longer operating hours, and more efficient use of funds. While partnership programs have the potential to offer Head Start services to a greater number of eligible children, no findings yet exist as to how well partnerships meet Head Start's goal of promoting school readiness by enhancing the cognitive and social development of low-income children (Improving Head Start for School Readiness Act, 2007). This study addresses that question in an attempt to provide additional considerations for Head Start grantees and administrators in making policy and programmatic decisions.

This paper outlines the conditions leading to the development of locally-designed program models and their role in meeting national and local priorities. It includes a description of the statistical model used to estimate the impact of program model type on assessment scores and a discussion of the limitations of using assessment scores to denote school readiness. Pre- and post-assessment scores for children in direct-managed and partnership program models are analyzed and the results discussed. This paper concludes with an application of the findings of this study to Head Start policy and programmatic decision-making at the national and local levels.

## **OVERVIEW OF HEAD START**

Head Start is an early childhood program which provides low-income pregnant women, children from birth to age five, and their families with comprehensive services including health, social, nutrition, mental health and child development services. Among its goals and purposes as specified in the Head Start Act (2007), Head Start promotes school readiness by enhancing the cognitive and social development of children. The following key assumptions and values underlie the program: (1) children who enter kindergarten ill prepared for school are less likely to achieve academic success; (2) academic success is economically beneficial to society because it builds a stronger workforce and increases quality of life; (3) children from low-income families are more likely to enter kindergarten ill prepared for school; and (4) early intervention with high quality childhood programs has been shown to yield positive child outcomes including improved school readiness (Winter & Kelley, 2008; RAND Corporation, 2008; U.S. Department of Health and Human Services, 2005). Although research has produced mixed results as to the long-term benefits of Head Start, it is widely considered to be a quality early childhood program that is associated with short-term benefits, namely improved assessment scores which may indicate school readiness (RAND Corporation, 2008). Since his election in 2008, President Barack Obama has placed early childhood education as a national priority and has pledged funds to increase the quantity and improve the quality of early childhood education programs including Head Start (Dillon, 2008).

Head Start, including its specialized programs, Early Head Start, Native American Head Start, and Migrant and Seasonal Head Start, is administered locally by more than 1,600 public and private nonprofit and for-profit agencies through grants provided by the U.S. Department of Health and Human Services, Administration for Families and Children, Office of Head Start.

The Head Start Act (2007) authorizes the appropriation of federal funds for this purpose. Since its inception in 1965, Head Start has enrolled more than 25 million children and has received continuous federal funding. In 2007, Head Start enrolled more than 900,000 children with a total appropriation of \$6,887,896,000 (U.S. Department of Health and Human Services, 2008).

### ***Supply and Demand for Head Start***

In 2007, only 20 percent of eligible children were enrolled in Head Start.<sup>1</sup> There are several reasons why this may be the case: (1) there are not enough enrollment slots to serve all eligible children; (2) the program is not offered in all locations; (3) parents do not want to enroll their children in the program; and (4) parents want to enroll their children, but the program does not meet their needs or fit their situation (The Urban Institute, 2006).

Local Head Start grantees are awarded funds competitively on the basis of demonstrated community need and capacity to meet that need. While the Office of Head Start aims to provide the program in as wide a service area as possible, the nature of the process means that some applicants will not receive funding, and thus some areas will not have Head Start programs. In other cases, grantees may not receive funding sufficient to meet the demand for the program. Factors limiting the number of eligible children served by a grantee include the availability of classrooms and qualified staff as well as the percentage of the funding request awarded. Further, the grantee applies Head Start funds to a variety of uses including staff salaries, facilities and equipment, professional development for teachers, and other overhead costs in addition to funding enrollment slots. Variations in federal funding levels for Head Start have an impact on local programs' operations and designs, including increasing or decreasing the number of

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<sup>1</sup> Estimate is approximate and is based on the number of children ages 0-4 in poverty in 2007, obtained from U.S. Census Bureau, Small Area Income and Poverty Estimates.

enrollment slots funded, the hours and days of operation offered, the number of staff positions supported, and the variety of services provided to families and children. In many instances, grantees face the problems of prioritizing needs and maximizing scarce resources.

Even if enrollment slots are available, however, parents may not choose to participate in Head Start for a variety of reasons based on preferences and constraints. Each of the following may factor into a parent's decision to enroll their child in Head Start: the variety and quality of early learning or child care options available in the community; availability of transportation; proximity of the program's location to home or the workplace; coordination with work schedules; special needs of the child; and personal preferences (The Urban Institute, 2006). A commonly cited reason for not participating in Head Start is that the program's part-day, part-year schedule does not meet the needs of families with parents in the workforce (Schilder et al. 2005)<sup>2</sup>. Mid-1990s welfare reform caused a notable increase in the number of low-income families with parents who work full-time (National Center for Children in Poverty, 2007). As such, many low-income families have a need for full-day, full-year child care services. In many cases, families have few child care options that meet their scheduling needs, are affordable, and provide quality care.

#### **PROGRAM MODELS: DIRECT-MANAGED AND LOCALLY-DESIGNED**

As specified by the Head Start Performance Standards (45 CFR Parts 1301-1311) grantees have the option of providing Head Start through a center-based program, home-based program, or a combination program incorporating both center- and home-based services, depending on the needs and resources available in the service area. The standard model for

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<sup>2</sup> Head Start Performance Standards specify that programs must operate 4 to 5 days per week for a minimum of 3.5 hours per day (maximum of 6 hours per day). Programs typically operate in tandem with the local school year schedule.

center-based programs is the direct-managed child development center which is owned and operated by the Head Start grantee. The grantee, thus, provides the classrooms, equipment, supplies and staff for the program, manages enrollment, and is responsible for meeting all requirements of the grant. The provision of direct-managed centers is determined both by need and availability of resources. Grantees must factor cost of purchase or renovation, location and accessibility for eligible families and regulatory requirements into selection of sites for direct-managed centers. As such, direct-managed centers represent significant investments of time and funds.

In response to the changing needs and demands of eligible families as well as to the priorities of the nation with regard to preparing children for school success, the Office of Head Start encourages grantees to explore locally-designed program models that “meet the needs of families for full-day, full-year services” as well as leveraging funds to provide more and better quality Head Start services (Head Start Performance Standards, 2007). As opposed to direct-managed child development centers, locally-designed program models - such as partnerships - pair Head Start grantees with other community organizations to expand service provision or make it more efficient. These programs blend funding and resources with the aims of improving quality, maximizing resource use, better meeting community needs, and improving access to services. Typical partners include child care centers, public school systems, and state-funded prekindergarten programs.

In a partnership program, a Head Start grantee enters into a contractual relationship with a child care center in which the child care center provides Head Start services - as well as classrooms, staff, equipment and supplies - to a specified number of eligible children, and the Head Start grantee makes a payment to the child care center for each eligible child to whom they

provide services. The partnering child care center must adhere to all Head Start Performance Standards including teacher qualifications, staffing ratios, curricula, and assessment and reporting requirements. Typically, the child care center already has the resources (i.e. staff, classrooms, equipment and supplies) in place and simply reallocates enrollment slots to eligible children. As such, this can be a relatively quick and low-cost expansion opportunity for the Head Start grantee. A comparison of direct-managed child development centers and partnerships is provided in Table 1.

**TABLE 1: DIFFERENCES BETWEEN HEAD START PROGRAM MODELS**

	<b>Direct-Managed</b>	<b>Locally-Designed: Partnership</b>
Maintains all Head Start Performance Standards?	yes	yes
Offers services to non-Head Start eligible children?	no	yes
Head Start grantee provides staff?	yes	no
Head Start grantee provides supplies and equipment?	yes	no
Head Start grantee provides classroom?	yes	no

Through the partnership model, the eligible child is able to receive Head Start services for up to six hours and child care services for the remainder of the day with a seamless transition<sup>3</sup>. As a benefit to the families, full-day, full-year quality child care is made both accessible and, in many cases, affordable. As a benefit to the Head Start grantee, more children may be served by increasing capacity for more enrollment slots and/or more children may be served by reducing the amount of funding that goes to facilities, staff, and other overhead costs and directing those monies toward funding more children. As a benefit to the partnering child care center, the payment received for each Head Start child is often greater than the payment for

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<sup>3</sup> Head Start is provided free of charge, but parents must secure a payment method for child care services.

a non-Head Start child to receive care. As such, the partnering child care center is receiving additional funds which it can use as it sees fit. In addition, research has found that partnering child care centers see an improvement in the quality of their child care services as a result of Head Start affiliation (Lim & Schilder, 2006); this is a benefit to a larger group of children than just those who are eligible for Head Start.

Community Action Council, the Head Start grantee for Lexington-Fayette, Harrison, Nicholas and Scott counties in Kentucky, has operated a partnership program since 1998. Head Start is currently offered through 10 direct-managed child development centers and 14 partnerships with local child care centers, with a total of 920 enrollment slots. Of the 920 funded Head Start enrollment slots, 340 are provided in partnership programs and 580 are provided through direct-managed child development centers (PY 2008-2009). Community Action Council offers full-day, full-year child development services in both its partnership and direct-managed centers. Community Action Council is a proponent of the partnership program model, citing benefits to the community, the partnering child care centers, and children and families (Community Action Council, 2002).

### ***Research Question***

Given the partnership program model's potential to serve more children eligible for Head Start by increasing the number of locations and/or enrollment slots available as well as by making the program more appealing to parents who require full-day, full-year child care services, it is intuitive to ask whether the model succeeds in meeting the other goal of Head Start: promoting school readiness by enhancing the cognitive and social development of children. In other words, although this model is more efficient, is it as effective? To address that question, this study undertakes an assessment of the impact, if any, that program model type has on

children's assessment scores, a common indicator of school readiness. The findings may provide additional considerations for policy and programmatic decision-making by Head Start administrators and grantees.

## **LITERATURE REVIEW**

### ***Educational Production Functions and the Use of Assessment Scores to Indicate School Readiness***

Measuring student achievement and understanding its determinants are important for designing policies with respect to such issues as program models, curricula, funding and staffing (Hanushek, 1979). An early study by the U.S. Department of Education, The Coleman Report, directed attention to the relationship between school inputs and student achievement (Coleman et al., 1966). Subsequent research has produced mixed results with regard to the relationship between various inputs such as teacher quality, family characteristics and innate ability and output, or student achievement, in education (Hanushek, 2007); nonetheless, analysis and understanding of these relationships remain important for policy.

Empirical approaches to estimating the relationship between inputs and output imply use of production functions. In general, production functions describe the maximum level of output possible from alternative combinations of inputs. As such, they provide a standard against which current practice can be evaluated with regard to productivity. Educational production functions, then, can be used to understand the effects of direct educational inputs such as teacher-student ratios, curricula and program design, as well as indirect inputs, such as the innate ability of the child, peer influence and family characteristics, on student achievement. Specifying the educational production function, however, is difficult given the complex nature of schools, pupils, and the learning process.

One approach to estimating the educational production function is the value-added achievement model. In this framework, student achievement at a given time is considered to be a function of multiple inputs both current and past (Hanushek, 1979). As such, this model includes student achievement at a previous time as an explanatory variable, incorporating the idea that this previous achievement was itself a function of multiple current and past inputs. The value added achievement model also includes current inputs to estimate student achievement at a given time. The inclusion of current and past inputs is considered sufficient to estimate current achievement levels (Toma, 1996). The variables in this study include pre- and post-assessment scores; the type of program in which the child is enrolled (direct-managed or partnership); and a vector of teacher, family and child characteristics including race, income, teacher's education level, and parent's education level, among others.

Assessment scores across eight curriculum domains in the Creative Curriculum Development Continuum Assessment are used in this analysis. The Creative Curriculum Development Continuum Assessment aligns, as mandated, with the Head Start Child Outcomes Framework which aims to assess developmental levels with regard to language knowledge and skills; literacy knowledge and skills; mathematics knowledge and skills; science knowledge and skills; cognitive abilities related to academic achievement and child development; approaches to learning related to child development; social and emotional development; abilities in creative arts; and, in the case of limited English proficient children, progress toward English language acquisition (Improving Head Start for School Readiness Act, 2007). The appropriateness of these outcomes and the assessment method for young children has been studied, per a 2006 congressional mandate, by the National Research Council and stands as the current accepted measure of assessing school readiness (National Research Council, 2008). Above all, adherence

to the Head Start Child Outcomes Framework allows comparisons to be made across children nationwide.

Assessment scores provide a measure of a child's developmental level which may indicate school readiness; however, several considerations arise with regard to the accuracy and validity of this measure as an indication of program success. Assessment scores may be used to both pinpoint a child's level at a particular time and provide a measure of progress between two points in time. Depending on which is used, assessment scores may fail to account for the level from which the child started or for factors outside of the program that influence a child's development such as having a disability or the child's living environment (National Research Council, 2008). According to the guidelines of the Creative Curriculum Development Continuum, scoring at either of the first two levels (Forerunner or Step I) indicates beginning levels of typical preschool development; the latter two scoring levels (Step II and Step III) represent progressively "higher levels in acquiring the skill and/or mastery" (Community Action Council, 2008). As such, children scoring Step II or Step III would be considered school ready; this may be an indication of program success, or it may reflect a child who, in spite of the program, is school ready. For children who make gains in assessment but fail to achieve scoring levels of Step II or higher, their assessment scores will indicate the program's failure to promote school readiness, and will overlook what may have been strong influence by the program on the child's development. Thus, caution needs to be exercised in estimating the success of a program based on assessment scores.

Additionally, while the Creative Curriculum Development Continuum Assessment aligns with the guidelines set forth by Head Start, there is debate as to whether the eight assessed curriculum domains fully capture school readiness and whether the assessment method

sufficiently and accurately assesses a child's performance (Government Accountability Office, 2005). This is of particular concern when assessing young children and when teachers are responsible for observing, assessing and recording scores. As such, assessment scores provide a ready measure of a child's level, but may not be a true measure or determinant of producing school readiness in children. Alternative measures of school readiness - and how best to measure them - are the subject of current research and debate (Government Accountability Office, 2005).

## **METHODOLOGY AND DATA**

The data in this study include pre- and post-assessment scores on eight curriculum domains for 686 four year old children enrolled in Head Start at Community Action Council during the 2007-2008 program year. These children were each enrolled in one of 10 direct-managed child development centers and 14 partnership programs with local child care centers. Assignment to centers is not random and is determined in most cases by geographic proximity to the child's residence. Pre- and post-assessment scoring required teachers to observe children in everyday activities and assess their progress against four benchmarked levels of progressively increasing development and skill mastery: Forerunner, Step I, Step II, and Step III. For purposes of this analysis, these levels have been recoded as 1.0, 2.0, 3.0, and 4.0 respectively. Pre-assessment scores were reported between August and November of 2007<sup>4</sup>; post-assessment scores were reported between March and May of 2008. On average, the time interval between pre- and post-assessment is eight months. These scores are provided in summary distribution for the 24 centers. Additionally, child and teacher characteristics for each center are provided. As such, many of the inputs desired for educational production function empirical estimates are

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<sup>4</sup> Children who enroll in the midst of the program year are given a pre-assessment screening within 60 days of enrollment. They are given post-assessment screening at the same time as the rest of the class.

available across centers. It should be noted that these data are aggregated at the center, rather than the individual, level.

**TABLE 2: DESCRIPTIVE STATISTICS**

VARIABLE	VARIABLE DESCRIPTION	MEAN		
		Full Sample (N=192)	Partnership (N=120)	Direct-Managed (N=72)
Partnership	Child was enrolled in a partnership center in 2007-2008	0.63	1.00	0.00
Post-assessment*	Mean post-assessment score for all subjects	3.20	3.33	2.98
Pre-assessment*	Mean pre-assessment score for all subjects	2.35	2.42	2.22
Age of child*	Mean age of children	4.47	4.46	4.50
Child is Black	Percentage of children who are Black	0.40	0.38	0.43
Child is Hispanic*	Percentage of children who are Hispanic	0.14	0.08	0.24
Child is of other race	Percentage of children who are bi-racial or of other race	0.07	0.08	0.06
Child is male	Percentage of children who are male	0.60	0.60	0.60
Spanish language*	Percentage of children who speak Spanish as their primary language	0.14	0.07	0.25
Private insurance*	Percentage of children who have private insurance coverage	0.14	0.17	0.11
No insurance*	Percentage of children who have no insurance coverage	0.08	0.10	0.06
Income*	Mean household income of families (thousands \$)	11.05	10.32	12.27
Single parent*	Percentage of children in families with single parents	0.80	0.85	0.71
Parent has a GED*	Percentage of families whose head of household has a GED or high school degree	0.46	0.51	0.39
Parent has had some college*	Percentage of families whose head of household has some college	0.20	0.21	0.17
Parent has a college degree*	Percentage of families whose head of household has a college degree	0.09	0.11	0.05
Parent has vocational training	Percentage of families whose head of household has vocational training	0.02	0.02	0.03
Teacher is Black*	Percentage of teachers who are Black	0.35	0.31	0.40
Teacher hours	Mean number of hours worked by teachers in 2007-2008 (thousands)	1.70	1.71	1.67
Associate's degree*	Percentage of teachers with an Associate's degree	0.14	0.13	0.17
Bachelor's degree	Percentage of teachers with a Bachelor's degree	0.41	0.43	0.38
Child Development Associate credential*	Percentage of teachers with a Child Development Associate credential	0.16	0.13	0.20
Master's degree*	Percentage of teachers with a Master's degree	0.01	0.00	0.02

\* Indicates that the means of partnership and direct-managed centers are statistically different from each other at the 0.05 significance level

Table 2 shows data organized by Head Start center and assessment category; there are 24 centers times eight assessments, or 192 observations. Data are not individual children. As indicated in Table 2, the mean pre-assessment score across all centers is 2.35 which translates approximately to the Step I level of child development. The mean pre-assessment score for partnership programs (2.42) is higher than for direct-managed centers (2.22). This difference is statistically significant and indicates that children enrolled in partnership programs entered the 2007-2008 Head Start program year at a higher developmental level than children enrolled in direct-managed child development centers. The mean post-assessment score across all centers is 3.20, or approximately Step II. As may be expected to follow given a higher mean pre-assessment score, partnerships also have a statistically higher mean post-assessment score than direct-managed centers.

The mean age of children in this study is 4.47 years, and sixty percent are male. Approximately 45 percent of children are White; 40 percent are Black; 14 percent are Hispanic; and less than one percent are bi-racial or of a race indicated as “Other.” Compared to national averages, this study has a larger percentage of White children and a smaller percentage of children of “Other” races. This can be attributed, however, to the demographic composition of Central Kentucky which is predominantly White. Approximately 14 percent of children in this study speak Spanish as their primary language; this aligns with the percentage of children who are Hispanic (14%). Notably, there are more Hispanic children in direct-managed child development centers than partnership programs. This is likely due to the fact that one direct-managed center is located in a neighborhood with a large Hispanic population.

The majority of children in Head Start receive some form of public assistance insurance such as Medicaid or the State Child Health Insurance Program (Family and Child Experiences

Survey, 2006); this is also true of the children in this study. Among children in this study, 24 percent of heads of households have less than a high school degree; 46 percent have a GED or high school degree; 20 percent have some college education but no degree; 8 percent have a college degree; and 2 percent have had vocational training. Between partnership and direct-managed centers, educational attainment is greater among heads of households of children in partnerships.

The mean income of families with children in Head Start is \$11,050. The median income is \$10,286, and the range of reported household incomes is zero (no income source) to \$118,992. This corresponds with the eligibility requirements for the program: most, but not all, participants have household incomes at or below 130 percent of the federal poverty level which, in 2008, was equal to \$27,560 for a family of four. Ten percent of enrollment slots can be provided to children whose household incomes exceed the eligibility requirement; typically, these over-income enrollment slots are reserved for children with disabilities. The mean income for partnerships is \$10,319, compared to \$12,269 for direct-managed centers. While this may simply reflect somewhat higher incomes among families whose children are enrolled in direct-managed centers, it may also indicate the presence of children with disabilities. In addition, the majority (80%) of children in this study live in single parent households. This is higher than the national average among Head Start children of 33 percent (Family and Child Experiences Survey, 2006). There are more single-parent households among children enrolled in partnerships than in direct-managed centers.

Among teachers employed at the centers in this study, approximately 35 percent are Black and 64 percent are White. Less than one percent of teachers identified themselves as being of another race. The number of teachers who are Black is significantly greater for direct-

managed centers than for partnerships. The mean number of hours worked by teachers across all centers during the program year was 1,695, and the range was 32 hours to 2,080 hours, indicating working full-day, full-year. A lower number of hours worked indicates that a teacher entered or left the position at some point during the year. There is not a statistically significant difference between partnerships and direct-managed centers in terms of the number of hours worked by teachers during the program year. Approximately 41 percent of teachers have a Bachelor's degree; 28 percent have a high school diploma or GED; 16 percent have a Child Development Associate credential (CDA); 14 percent have an Associate's degree; and less than one percent of teachers have a Master's degree. Direct-managed centers have more teachers with a CDA credential or an Associate's degree; partnerships have more teachers with a Bachelor's or Master's degree.

### ***Model***

The model is estimated with data organized by Head Start center and assessment score, thus 192 observations (24 centers, eight assessments). A value-added achievement model is estimated with mean assessment scores per center and two types of centers as well as child and teacher characteristics. The value-added achievement model estimates how much of the gain in assessment score is due to the type of center the child is enrolled in, controlling for child and teacher factors that differ between centers. The null hypothesis is that the type of center (partnership or direct-managed) has no effect on assessment gain between pre- and post-assessment. The alternative hypothesis is that there is a difference between the center types.

$$y = z\delta + x\beta + w\gamma + \varepsilon$$

In the model indicated above,  $y$  is the mean post-assessment score;  $z$  is the pre-

assessment score;  $x$  is a vector of teacher and child characteristics;  $w$  is the center type and  $\varepsilon$  is the disturbance term. The inclusion of the pre-assessment score as an explanatory variable is important to the value-added achievement model; it assumes that the pre-assessment score is a sufficient statistic for all past observed and unobserved inputs (Toma, 1996; Todd & Wolpin, 2003). The coefficients  $\beta$  provide interesting information about the relationship of teacher and child characteristics to assessment gain; however, they are auxiliary to this study. The coefficient  $\gamma$  on the type of center tests the hypothesis of interest. If, net of all other factors including pre-assessment score, there is an increase in post-assessment score associated with type of center, then a policy promoting that type of center or program model may be beneficial to children enrolled in Head Start.

## **EMPIRICAL ANALYSIS**

As demonstrated in Table 3, several variables have an effect on post-assessment scores. At the 95 percent confidence level, nearly all of the variables included in this model are statistically significant. Restricting evaluation to the 99 percent confidence level, the following variables are statistically significant in predicting higher post-assessment scores: having a higher pre-assessment score; being enrolled in a partnership program; speaking English as a primary language; being older, female or White; having a higher household income; and living in a two-parent household. Notably, teachers' education level also has a statistically significant impact on children's assessment scores. Being enrolled at a center with teachers who have a Bachelor's degree or CDA credential has a positive effect on assessment gain. This is not surprising as the literature suggests teachers' attitudes and knowledge about early childhood education practices have an impact on positive child outcomes (Family and Child Experiences Survey, 2006);

teacher's education level is a good proxy for this.

**TABLE 3: ESTIMATED MODEL OF ASSESSMENT GAIN AMONG HEAD START CHILDREN USING ORDINARY LEAST SQUARES (OLS) METHODS**

<b>INDEPENDENT VARIABLE</b>	<b>ESTIMATED COEFFICIENT</b>	<b>t-Statistic</b>	<b>P&gt; t </b>
Pre-assessment	0.495	13.05*	0.001
Partnership	0.454	9.33*	0.001
Age of child	0.779	2.35*	0.020
Child is Black	-0.955	-10.63*	0.001
Child is Hispanic	4.674	4.15*	0.001
Child is of other race	-1.694	-7.73*	0.001
Child is male	-0.767	-3.19*	0.002
Child's primary language is Spanish	-4.653	-7.11*	0.001
Child has private insurance	-0.604	-3.10*	0.002
Child is uninsured	-0.656	-1.59	0.114
Household income in 1000\$	0.049	8.11*	0.001
Single parent	1.770	10.60*	0.001
Parent has GED or high school diploma	-2.182	-4.42*	0.001
Parent has some college education	-2.829	-4.93*	0.001
Parent is a college graduate	-2.260	-2.24*	0.026
Parent has vocational training	-3.108	-5.53*	0.001
Teacher is Black	0.284	2.74*	0.007
Teacher hours in 1000s	-0.422	-4.64*	0.001
Teacher has an Associate's degree	-0.287	-0.73	0.467
Teacher has a Bachelor's degree	0.822	2.53*	0.012
Teacher has a Child Developmental Credential	0.905	2.61*	0.010
Teacher has a Master's degree	-6.502	-9.46*	0.001
Constant	-0.532	-0.50	0.615
R-squared	0.916		
F-value	163.2		
N	192		

\* indicates variable is significant at the 0.01 level

Of particular interest is the variable representing program model type. The partnership program has a positive and statistically significant impact on assessment gain at the 0.01 significance level, all else equal. Children enrolled in a partnership program score, on average, 0.45 points more than children enrolled in a direct-managed child development center, which is a large effect on a scale from 1.0 to 4.0.

## DISCUSSION

Children enrolled in partnership programs show greater assessment gain than children enrolled in direct-managed child development centers, all else equal. One reason for this may be that, because partnering child care centers provide services to both Head Start eligible and non-Head Start eligible children, partnerships offer economically diverse classroom settings. Research has shown that school-aged low-income students perform better in economically diverse settings than in homogeneous settings (Summers & Wolfe, 1977). If the same effect applies to pre-school aged children, it may factor into why children enrolled in partnership programs show greater assessment gain than children enrolled in direct-managed child development centers. More information regarding the socio-economic characteristics of all children at each center would be needed to test for this.

A limitation of this study that restricts policy reform considerations is that partnership programs appear to be better at the outset. That is to say, the Head Start grantee seems to have chosen high quality child care centers to become partners. While this is certainly an optimal and intuitive strategy and empirical analysis accounts for this “head start” by partnership programs, it is not clear whether the positive effect of partnership programs would continue if partnerships were extended to more - and lesser quality – child care centers. A broader study including more and varied partnership programs would address this concern. Additionally, the inclusion of variables such as whether or not the child care center is accredited and other indications of quality may enable specification of the *type* of child care center that would be the preferred partner.

There is also the concern that self-reported assessment scores present an opportunity for inaccuracy. If assessment scores are used as a measure of accountability, particularly for

retention of the partnership contractual agreement, there is an incentive for partnering child care centers to report gains between pre- and post-assessments by understating pre-assessment scores and inflating post-assessment scores. As such, these assessment scores would be an inaccurate indication of children's school readiness. The data in this study do not indicate this is the case; in fact, the mean pre-assessment scores were higher for partnerships than for direct-managed centers. Inflation of scores cannot be tested with these data. One potential way to reduce this risk is to conduct the children's assessments by an independent party. Other sources of inaccurate assessment reporting may include teacher inexperience (which may be indicated in this model by the variable for number of hours worked in the program year) or a lack of training on the assessment process. However, the mean number of hours worked by teachers does not differ significantly between partnerships and direct-managed centers in this study.

Finally, there are several concerns with regard to empirical estimation that should be considered in applying this study's findings to policy and programmatic decisions. While the model includes several variables that are considered important to the determination of achievement or assessment gain, there is a risk of omission of other important variables, particularly unobservable factors, that may impact outcomes. In addition to measures of parental involvement and teacher attitudes, one characteristic that is not recorded in the data is whether or not the child has a disability<sup>5</sup>. Disability and other factors are not expected to be equal across types of Head Start centers. Adding these variables to the model would allow us to control for additional factors that are expected to impact assessment gain. Also, the sample size could be increased to add further confidence to the estimation. Note, however, that estimates are sufficiently precise for many explanatory variables to have statistically significant estimated

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<sup>5</sup> A child with a disability might be correlated with income in these data because high income households are more likely to be found in Head Start centers when a child has a disability.

effects.

This study would be improved by having individual-level data and multiple years represented in the observations. This would allow for a more accurate estimate of the impact of program model type on children's assessment scores. Further, random assignment of children to centers and a greater number of observations - representing a wider geographic Head Start service area - would improve the degree to which these findings can be applied to other Head Start programs.

## CONCLUSION

Acknowledging that further research may reveal important policy considerations for other Head Start grantees, the findings of this study support Community Action Council's use of partnerships as an efficient and effective means of providing Head Start services to eligible children in Lexington-Fayette, Harrison, Nicholas and Scott counties, Kentucky. The use of partnership programs has been shown to provide quality improvements to the partnering child care center, more rapid and less costly enrollment expansion opportunities for the Head Start grantee, and more appealing service and location offerings to parents of eligible children. In addition, this study finds that children enrolled in partnership programs show greater gains in assessment scores over the course of a program year compared to children enrolled in direct-managed child development centers. As such, partnership programs appear to offer an opportunity for Community Action Council's Head Start program to serve more children and to better effect school readiness.

At the local level, Head Start grantees may consider partnerships as an efficient and effective means of expanding Head Start enrollment in their service areas. Given the national

agenda to expand and improve early childhood education and the immediacy of funding opportunities arising from the American Recovery and Reinvestment Act - with accelerated application and program implementation deadlines – partnerships present a “shovel-ready” option for Head Start grantees to pursue. Further, findings from this study regarding the effectiveness of partnerships may be applied to efforts to establish universal pre-K, another national focus on early childhood education and school readiness.

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