



## Third Grade Proficiency in DC: Little Progress (2007–2011)

Reading and math proficiency by the end of third grade can be a make-or-break benchmark in a child's educational development. Not being proficient can have long-term consequences of lowering earnings potential and productivity, both of which can limit a city's prosperity and dim its future.

To keep DC moving forward, we must ensure that our children are learning skills for success. This means teaching our children the fundamental early skills they need to learn and thrive, especially math and reading.

If children do not achieve proficiency by the end of third grade, they are significantly less likely to graduate from high school.<sup>1</sup> In 2011, only 42 percent of DC third graders were proficient<sup>a</sup> in reading; even fewer, 36 percent, were proficient in math.<sup>2</sup> Not only are proficiency levels low in DC, they have, distressingly, not shown compelling signs of improvement in the past five years.

DC Action for Children, in partnership with Elder Research, Inc., performed a unique analysis of third grade DC Comprehensive Assessment System (DC CAS) scores from 2007 to 2011. The analysis found no evidence of statistically significant changes in third grade proficiency at the citywide level, among traditional public schools or public charter schools, among racial and ethnic groups or by economic advantage or disadvantage.

<sup>a</sup> Proficiency is defined in this brief as scoring either "proficient" or "advanced" on the DC CAS standardized test, which is administered to all students in DC public and public charter schools, grades 2-12.

### Abstract

*Analysis of DC Comprehensive Assessment System (DC CAS) scores from 2007 to 2011 found no evidence of statistically significant changes in third grade math or reading proficiency at the citywide level, among traditional public schools or public charter schools, among racial and ethnic groups or by economic advantage or disadvantage.*

*Neighborhood-level analysis of 2011 third grade DC CAS reading and math scores showed wide variations in test performance among neighborhoods. The neighborhood analysis also indicated close correlations between aggregated proficiency in neighborhood schools and neighborhood economic indicators such as poverty and median family income.*

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## Why Third Grade Matters:

*Third grade is a turning point for many children. It is when they stop learning to read and start reading to learn.<sup>3</sup> One recent national study found that students who do not achieve reading proficiency by the end of third grade are four times more likely to leave school without graduating than their reading-proficient peers. Children from low-income families and black or Hispanic children who do not achieve reading proficiency by the end of third grade are six and eight times more likely, respectively, to leave school without a diploma.<sup>4</sup>*

*Math skills are equally important. A 2007 study found that early math skills, particularly early math concepts such as knowledge of numbers, were a stronger predictor of later academic success than reading.<sup>5</sup> This finding held true for children from both high and low socioeconomic backgrounds.<sup>6</sup>*

*Without a strong foundation in both reading and math, students will struggle with more advanced material in middle school and high school.*

Neighborhood-level analysis of 2011 third grade DC CAS scores showed wide variations in test performance among neighborhoods. The neighborhood analysis also indicated close correlations between aggregated proficiency in neighborhood schools and neighborhood economic indicators such as poverty and median family income in the neighborhood.

Based on no evidence of progress and strong evidence for the role of neighborhood economic indicators, DC Action for Children recommends that local policymakers and community advocates rethink current policies and try new approaches to improving the chances that every child achieves proficiency by third grade. This policy brief describes promising neighborhood-focused initiatives across the US and offers recommendations about how DC might improve reading and math proficiency for all children who live here.

DC has implemented several policies aimed at improving third grade proficiency through a mix of identification, intervention and retention.<sup>7</sup> Starting in kindergarten, teachers evaluate their students according to proficiency standards for each grade level.<sup>8</sup> When teachers identify struggling students, school districts must notify their parents and offer those students intervention services, such as tutoring. If support and intervention services have been provided and the student is still not proficient in math, reading or other required subjects by the end of third grade, they may be retained (held back to repeat the grade).<sup>9</sup>

Despite these policies, data show that grade-level proficiency among DC third grade students is unacceptably low, and that there has been no statistically significant progress over the past five years.

### Facts on Third Grade Proficiency in DC in 2011:

DC CAS measures students' performance based on the state content standards. Students receive one of four scores on their level of mastery:

- Advanced – exceeds mastery of content
- Proficient – mastered content
- Basic – approaching mastery
- Below basic – little mastery

#### In 2011:

- Overall, 42 percent of DC third graders scored proficient or advanced in reading, and 36 percent were proficient or advanced in math.
- For third grade math, 85 percent of white students scored proficient or advanced, compared to 27 percent of black students, a difference of 58 percentage points.
- For third grade reading, 88 percent of white students scored proficient or advanced, compared to 35 percent of black students, a difference of 53 percentage points.

Large differences in proficiency were also measured for third graders from economically disadvantaged families. In reading, for example, 33 percent of economically disadvantaged third graders scored proficient or advanced, compared to 62 percent of non-economically disadvantaged students. Math scores showed a similar difference.

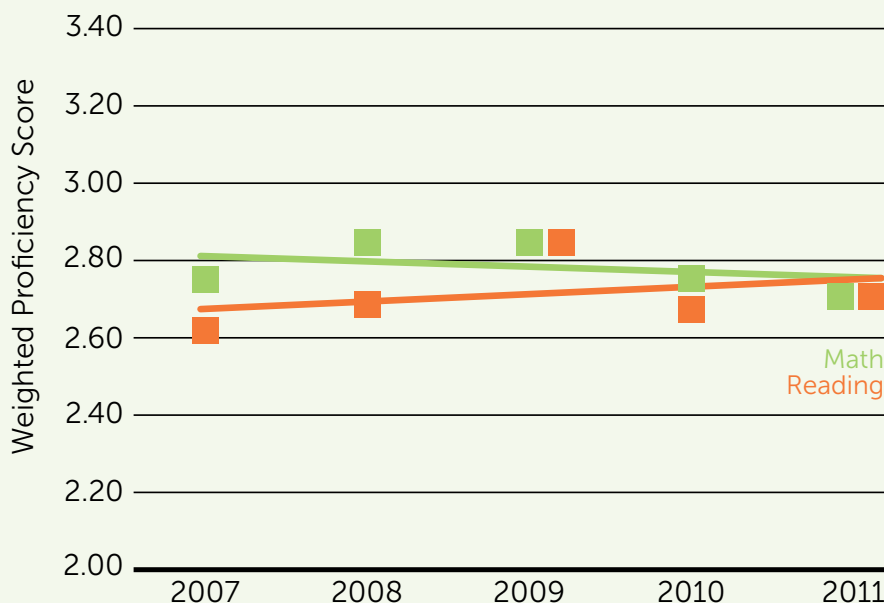
### Data Unable to Prove Progress Over Time

To get a more nuanced picture of the data, DC Action and our partners at Elder Research, Inc., created a weighted proficiency formula that takes into account the relative proportions of students at each score level: below basic, basic, proficient and advanced.<sup>b</sup> Weighted proficiency scores are given on a 1 to 4 scale. A weighted proficiency score of 1 means all students scored "below basic," while a weighted proficiency score of 4 means all students scored "advanced."

This method captures more shades of difference in the data than simply "percent proficient." For example, a school where 5 students scored "below basic" and 10 scored "basic" would receive a higher weighted proficiency score than a school where 15 students scored "below basic." We applied a similar weighted method to analyze proficiency based on race/ethnic group, individual family income and neighborhood.

**Our analysis of weighted proficiency scores for all tested third grade students from 2007 to 2011 could not prove any statistically significant changes over time. (See Figure 1.)**

**Figure 1. Third Grade Proficiency 2007–2011: Could Not Prove Significant Progress**



Weighted proficiency scores for each year are shown by the markers, trends are shown by the lines.

<sup>b</sup> The formula for weighted proficiency scores is:  

$$\frac{[1 * (\# \text{ Below Basic}) + 2 * (\# \text{ Basic}) + 3 * (\# \text{ Proficient}) + 4 * (\# \text{ Advanced})]}{\text{Total Students Tested}}$$

### Lack of Significant Progress Holds True for Public Charters and DCPS Schools

When we looked at scores for DC Public Schools (DCPS) and public charter schools (PCS) separately, the same trend – or lack of a trend – held true. We could not establish that changes in scores from 2007 to 2011 were statistically different from zero. We also could not establish significant differences between third grade scores at DCPS schools and public charter schools overall, with the exception of math scores in 2009, where DCPS schools appeared to outperform public charter schools. The spike in 2009 math scores, however, appeared to be a statistical anomaly. Without further information we cannot draw firm conclusions.

### Racial Achievement Gap Persists

DC has one of the widest racial achievement gaps in the country,<sup>10</sup> and our research could not conclude that any significant progress has been made towards closing that gap among third grade students in the past five years. (See Figure 2.)

### Gap Based on Economic Disadvantage – No Changes

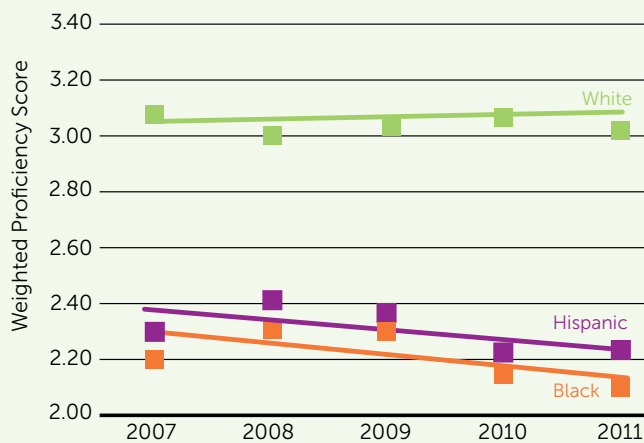
Our analysis of trends in scores for students who were from families that were economically disadvantaged (EDA) or not economically disadvantaged (non-EDA) followed the same pattern of no statistical differences between 2007 and 2011 in reading or in math. The DC CAS defines “economically disadvantaged” as eligible for free and reduced-price lunch based on family income. (See Figure 3.)

### Neighborhood Proficiency and Relationship to Poverty

Because the diversity in student achievement among DC neighborhoods is not fully captured by city-level data, DC Action and Elder Research analyzed third grade test scores by neighborhood. We were particularly interested in the relationships between school performance and neighborhood economic well-being. To achieve this, we:

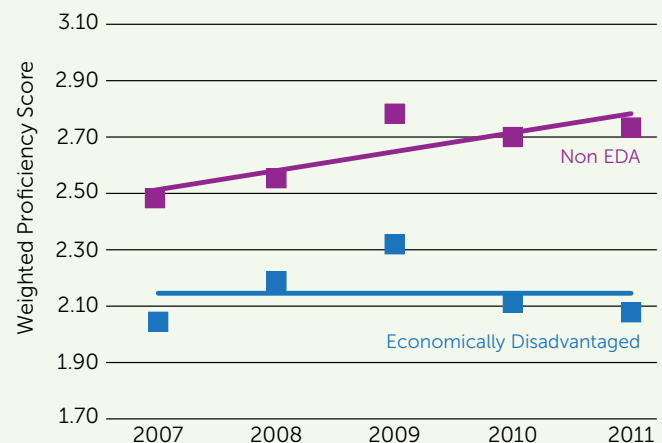
- Mapped each public and public charter school into a neighborhood, based on school addresses and the DC Office of Planning’s 39 neighborhood clusters.<sup>11</sup>
- Calculated weighted third grade scores for each neighborhood using the total number of third grade students enrolled in schools in those neighborhoods and the number of students testing at each DC-CAS score category.
- Tested the correlations between neighborhood third grade scores in 2011 and economic indicators in those neighborhoods.

**Figure 2. No Statistically Significant Change in Racial Achievement Gap (Reading)**



Weighted proficiency scores for each year, for each racial/ethnic group are shown by the markers, trends are shown by the lines.

**Figure 3. Math Proficiency by Individual Family Economic Status**



Weighted proficiency scores for each year, for each individual economic status group are shown by the markers, trends are shown by the lines.

An important factor to consider alongside these results is that the population of students attending school in a neighborhood does not necessarily align with the population living in a neighborhood. This happens for a number of reasons: unequal distribution of schools throughout the city, out-of-boundary students in traditional public schools and open citywide enrollment at charter schools. Schools can act as assets to neighborhoods and vice versa, however, even if a significant percentage of students do not live in the neighborhood. The mismatch between school and neighborhood level data is a data quality problem that cannot be solved until DC implements its student longitudinal educational data system

(SLED) and makes this student-level information available to researchers.<sup>12</sup>

**Maps Reveal Neighborhood Disparities**

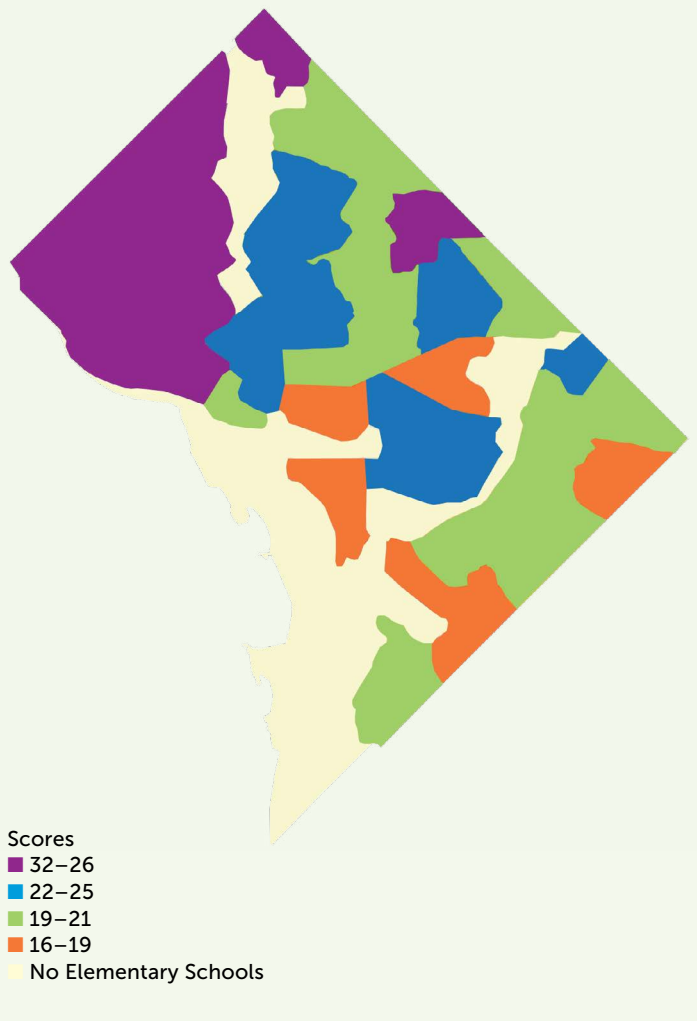
Our analysis of weighted third grade scores<sup>c</sup> from 129 elementary schools in 39 neighborhood clusters in 2011 is represented by Figures 4 and 5 (below), which show the uneven distribution of high-performing schools. Neighborhoods in purple represent scores leaning more heavily towards “advanced” and “proficient,” while neighborhoods in green fall around the middle, and neighborhoods in orange are high-priority for further investigation

and action. The maps also reveal several interesting juxtapositions of high performing zones next to much lower performing zones.

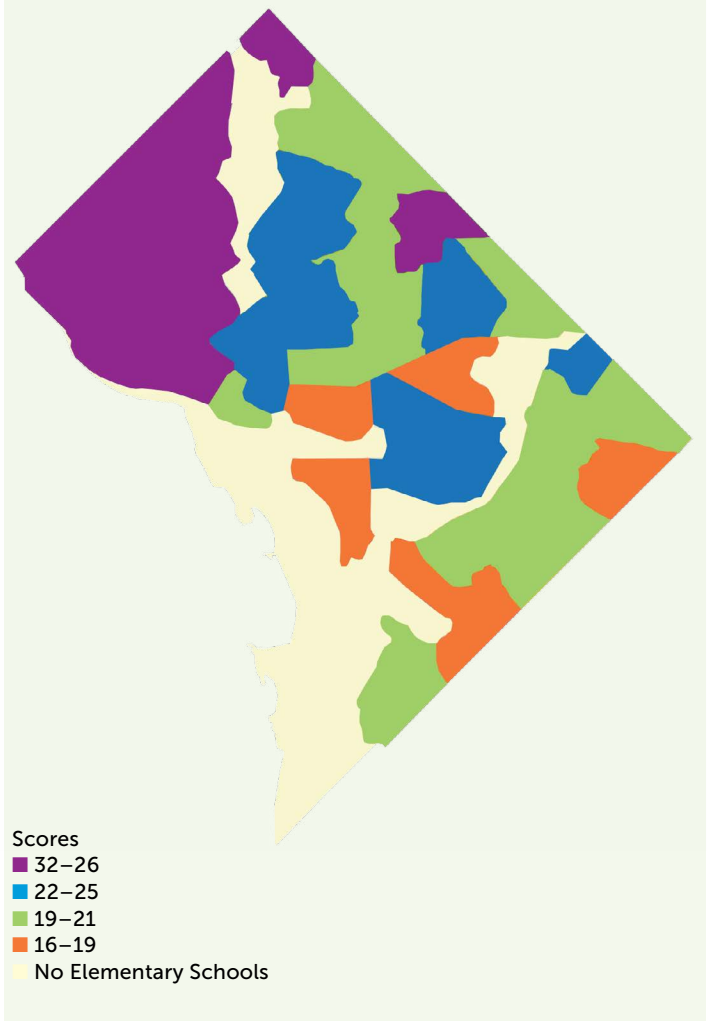
One important caveat to this approach: the maps do not show how many schools are in a neighborhood. One very high or low performing school in a neighborhood could skew results, while neighborhoods with many schools tend to even out to mid-level scores. While in-depth analysis of these results is outside the scope of this brief, we hope these maps will spark conversations about educational assets and distribution of resources in conjunction with our DC KIDS COUNT 2012 e-Databook.

<sup>c</sup> Formula:  $[1 * (\# \text{ Below Basic}) + 2 * (\# \text{ Basic}) + 3 * (\# \text{ Proficient}) + 4 * (\# \text{ Advanced})] / \text{Total Students Tested in Neighborhood}$

**Figure 4. Weighted Third Grade Math by Neighborhood (2011)**



**Figure 5. Weighted Third Grade Reading by Neighborhood (2011)**



**Strong Relationship between Proficiency and Economic Indicators Demands Further Investigation**

Our analysis showed close correlations between neighborhood schools' third grade proficiency and both median family income and poverty at the neighborhood level. As we expected, neighborhood proficiency scores generally increased as neighborhood median family income increased.

Our analysis showed that median neighborhood family income explains approximately 80 percent of the variation in proficiency among neighborhoods. Our analysis also showed that concentrated neighborhood poverty is correlated with lower third grade proficiency scores in neighborhood schools. (See Figure 6.)

In other words, neighborhood median family income and concentrated poverty are both strongly correlated with third grade reading and math proficiency scores in neighborhood schools. **While these results cannot imply any causal relationships between neighborhood income or concentrated poverty and third grade proficiency, strong correlations underscore the need for more reliable data on the relationship between student success and neighborhood economic well-being.**

**Early Education = Foundation of Third Grade Success in DC**

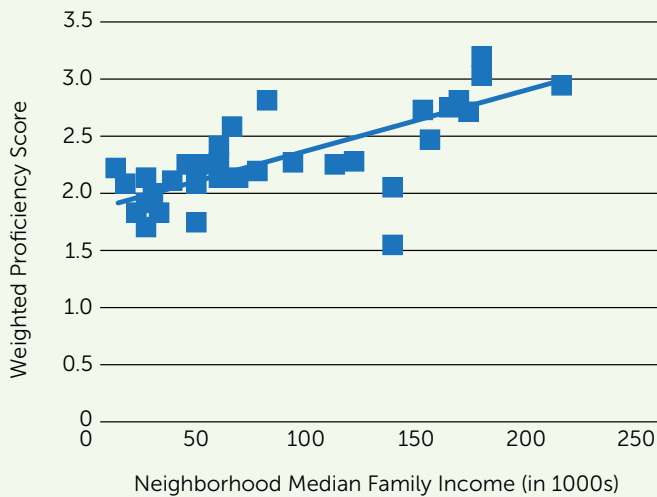
The city's own data show the power of early education in improving third grade proficiency. Analysis of 2012 DC CAS scores by the Office of the State Superintendent of Education (OSSE) found that students who attended Pre-K were more likely to achieve reading and

math proficiency in third grade than students who did not.<sup>13</sup>

DC has made significant strides to increase access to early childhood education in recent years. DCPS offers free full-day kindergarten and Pre-K to all children ages four to six, as well as limited preschool for children ages three and four. DCPS recently implemented a "blended" funding model to offer Head Start family support services in Title I Pre-K and preschool classrooms.<sup>14</sup>

Challenges still remain, however. The true state of supply and demand for quality, affordable early child care and education services is hard to discern based on available data. OSSE claims

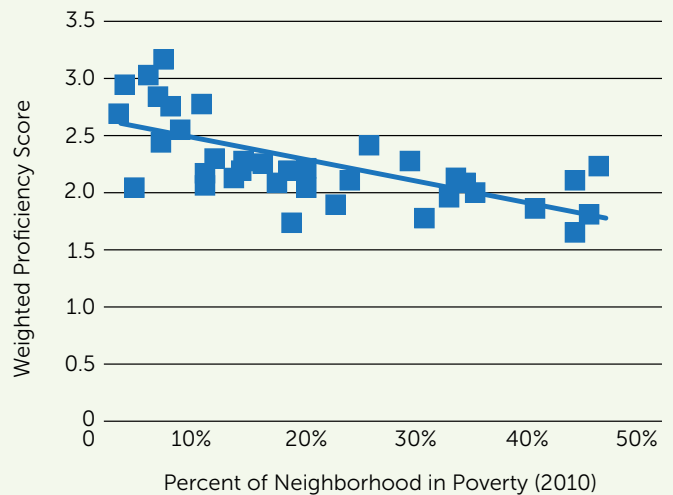
**Figure 6. Neighborhood Third Grade Reading Proficiency Closely Correlated with Neighborhood Median Family Income**



Note: Each box represents a different DC neighborhood cluster.

Source: DC-CAS 2010-2011 third grade results, aggregated to weighted neighborhood scores, and DC KIDS COUNT median family income data via Decennial Census 2010

**Figure 7. Neighborhood Third Grade Reading Proficiency Closely Correlated with Neighborhood Poverty Rates**



Note: Each box represents a different DC neighborhood cluster.

Source: DC-CAS 2010-2011 third grade results, aggregated to weighted neighborhood scores, and DC KIDS COUNT poverty data via Decennial Census 2010

to have achieved universal Pre-K access, as mandated by the 2008 Pre-K Enhancement and Expansion Act.<sup>15</sup> A recent capacity audit by Child Trends disagreed and suggested that preschool/Pre-K lottery and enrollment tracking procedures did not fully capture the number of children seeking access, especially to high-quality programs.<sup>16</sup> A recent DC KIDS COUNT publication identified gaps in capacity and quality, particularly in low-income communities in the city.

### Promising Practices

Other cities and states have taken steps to improve third grade reading and math proficiency. Their work and a growing body of literature suggest that the most promising models for improvement are comprehensive systems that thoughtfully include schools, parents, community organizations, policymakers and social service providers in planning and implementation.<sup>17</sup> If designed and implemented well, these systems can support young children's education in and out of school and target services to the neighborhoods where they are needed most. Early results are encouraging.

**A focus on coordinated planning in San Jose, CA.** San Jose has committed to eliminating the achievement gap and improving education for all with SJ2020. Under SJ2020, more than 100 educators, community leaders and child advocates contributed to the **Santa Clara County Early Learning Master Plan**.<sup>18</sup> The Master Plan frames early education in terms of equity, collaboration and innovation, assesses community assets in and out of public schools and lays out two-, five- and seven-year benchmarks in categories such as facilities, family engagement and program quality.<sup>19</sup> The Master Plan implementation guide

includes roles for government agencies, nonprofits, school systems, child care centers and community leaders. **Results: Under this initiative, third grade test scores increased among all students between 2007 and 2011, and the achievement gap between white and Hispanic students decreased from 43 to 37 percent for reading and from 41 to 32 percent for math.**

**A focus on neighborhoods in Boston.** Launched in 2008, **Thrive in 5** is Boston's initiative to improve young children's well-being and school readiness by strengthening early childhood systems in five targeted neighborhoods: Allston/Brighton, Dudley (Roxbury/North Dorchester), East Boston, Fields Corner (Dorchester) and the South End/Lower Roxbury.<sup>20</sup> The city launched "Boston Children Thrive" (BCT) programs in each of these neighborhoods. BCT helps families become partners in healthy development and early learning, connects families to high-quality family support services and engages the surrounding community as advocates for early childhood well-being.<sup>21</sup> BCT programs are housed within "hub agencies" that are already well-established in each neighborhood. For example, the Dudley BCT is housed in the Dudley Street Neighborhood Initiative, a community planning and organizing nonprofit. **Results: By year two of the program, more than 200 early childhood educators participated in training and professional development opportunities offered by Community Partnerships for Children. Thrive in 5 will evaluate the success of the model in the focus neighborhoods with an eye toward expanding it throughout the city.**

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A focus on data as a foundation for action in Maryland. DC's neighboring state is pioneering data collection on young children and translating it into statewide action. A kindergarten readiness exam combined with a longitudinal data system that tracks individual students through the K-12 system allows policymakers to study the links between kindergarten readiness and subsequent academic success and assess the performance of different early care options.<sup>22</sup> School leaders can now assess third grade test scores in light of kindergarten readiness.

**Results: In 2011-2012, 83 percent of kindergartners entered school "ready to learn" according to state assessments.<sup>23</sup> Kindergarten readiness has increased 2 percentage points in the past year and 34 points in the past 10 years. Simultaneously, from 2003-2012, Maryland third grade proficiency increased by nearly 30 percentage points in reading and 21 percentage points in math.<sup>24</sup> Increased scores are attributed to factors such as expanded funding for early education and child care, rapid statewide growth in early care accreditation and neighborhood-level programs such as the 25 "Judy Centers," which provide comprehensive birth-to-six services in low-income communities.<sup>25</sup> Maryland will continue expanding its early education system with a federal grant from Race to the Top: Early Education Challenge.**

A focus on the relationship between early education and economic health in Michigan. Further evidence for the importance of early education emerged from a recent study in Michigan. Students who attended the **Great Start** early education program for low-income families performed significantly better on fourth grade exams and graduated high school at higher rates than similar students who did not attend preschool.<sup>26</sup> The positive effects of preschool were even larger for black, Hispanic and Asian students: the graduation rate among students of color who attended Great Start was 60 percent, compared to 36 percent for students of color who did not receive formal early education. Michigan-based economic research suggests that expanding high-quality early education is one of the most effective reforms a region can make for long-term economic improvement.<sup>27</sup> Early education is an incentive for families to stay in the area, and early education will yield greater numbers of high-school graduates. **Results: Research estimates that every dollar invested in high-quality early childhood programs yields a \$2-3 increase in per-capita earnings in the long term.<sup>28</sup>**

### DC Call to Action

Our children and their educational progress deserve our immediate attention. Our city cannot prosper if its children are not adequately prepared for their future, which is really *our* future. Based on DC Action for Children's analysis of third grade DC CAS data, we recommend that all steps taken to address this challenge should be:

- Based on the data, which show no significant progress and demonstrate that neighborhood-based economic disparities are strongly correlated with student performance. Additional rigorous, individual level data on student progress could lead advocates and policymakers to stronger conclusions.
- Aligned with the reality that citywide data do not capture the diverse state of each neighborhood's early education landscape.
- Characterized by collaboration among a wide range of stakeholders in young children's success, including legislators, school leaders, parents, advocates and child care providers in neighborhoods and across the city.
- Focused strategically on improving early education services in neighborhoods where third grade performance is low and where quality early education is in short supply.
- Informed by results achieved by other states and localities that are already demonstrating progress in this area.

*Research estimates that every dollar invested in high-quality early childhood programs yields a \$2-3 increase in per-capita earnings in the long term.*



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