

Chapter 2: Literature Review on Poverty and Public Policy Ages 0 to 5 Educational Achievement

Introduction

The previous chapter of the report provided a discussion of population and demographic shifts, and its relationship to poverty rates among individuals and families across South Carolina. An examination of the data revealed that when compared to other states, South Carolina's poverty rate is higher than the U.S. average, and the state's poverty rate is consistently one of the highest poverty rates within the Southeastern region of the United States. Many assume that high poverty rates are associated primarily with race. However a more comprehensive analysis would also examine how poverty is further explained within a multivariable context of the following variables in a systematic fashion: (1) income levels, (2) business or industry mix within the counties and persistently poor regions of the state, (3) the percentage of working age adults with higher than average or livable wages (above or below regional, state, and national averages), (4) migration of jobs into (and out-of) communities, (5) the educational attainment level of parents (a proxy measure for parental involvement), and (6) current and historical state investments in the yearly education of children in the state.

This section of the report provides a brief content review of the research literature involving early education and its relationship to closing the achievement gap for South Carolina's children. Most of the discussion of the achievement gap within the literature, and among educators and practitioners within the state, focus attention on the achievement gap differences between White students and African-American students. It is important to note however, that the education of children in South Carolina must take into consideration the increasing diversity by race and culture, namely the Native American, Hispanic Latino and Asian populations. In some cases, the South Carolina Commission for Minority Affairs' staff has found that many citizens, professionals and legislators are unaware of the changing, diverse mix of the state's population. In particular, while many may be aware of the presence of the Hispanic population in South Carolina, many in the aforementioned group are unaware of the Native American population within the state. Specifically, it is important to recognize as one moves across the state, that the state is both racially and culturally diverse, and therefore an increased knowledge of each population is essential to ensuring that the proper investments are continually made in early education so that the entire state population will benefit.¹

Organization and Discussion of the Literature on Achievement²

The research staff of the South Carolina Commission for Minority Affairs has grouped the research literature reviewed for the *Preliminary Report issued February 2009* and subsequent research findings on early education achievement and the achievement gap into five broad areas:

- [The] Cognitive Development of Children Ages 0 to 5
- The Role of Parental Involvement in Student Achievement
- Ages 0 to 5 School Readiness: National and South Carolina Perspectives
- The Root Causes of Poverty and Potential Achievement Gap Impacts
- Overview of State Efforts to Address the Achievement Gap Through Empirical Research

These five broad categories are non-exhaustive and chosen to reflect a limited, but fairly comprehensive range of examination on the achievement gap. The remainder of this chapter summarizes the research literature in these five areas.

(1) Cognitive Development of Children Ages 0 to 5³

Within the area of cognitive development of children ages 0 to 5, the recent literature has focused primarily in three key areas:

- [The] Proper brain development of children, especially between ages 0 to 3
- Importance of child nutrition, preventative health measures, and healthy child development
- Early parental outcomes of children – particularly the ability of children to enter Pre-Kindergarten, Kindergarten, or the First Grade ready to learn.

Proper Brain Development

A great deal of evidence in the public health, child and nutrition literature speaks to the impact that proper nutrition has on brain development. Both specialized studies as well as statistical data provided by the United States Department of Agriculture (USDA) specifically addresses issues of poor nutrition within a poverty context. In particular, state data published by USDA Food and Nutrition Service and the Food Research Action Center (FRAC) lists South Carolina in the top four high poverty, high food insecure states in terms of food insecurity⁴. South Carolina ranks fourth behind Texas, Mississippi and Maine (Maine is an anomaly due to its smaller population base, relative to the other states). Both the USDA and FRAC also provide evidence of how poor educational achievement levels, as measured by (lower) standardized test scores can be directly explained by high poverty and high food insecurity. Insecurity by definition relates to the adjustment in the provision of food made by households as a result of insufficient income earnings that can keep pace with the costs of purchasing food. Food insecurity is also measured in terms of the amount of time individual family members, including children go hungry throughout the month. In this regard, statistical data on free and reduced lunch for South Carolina public schools reveal that approximately fifty seven percent (57%) of all South Carolina public school students, regardless of school are eligible for free and/or reduced lunch. However school district percentages vary widely, from approximately less than one in four students to nine-out-of-ten students in both urban and rural districts across South Carolina.

The Role of Child Nutrition, and Preventative Child Health in Healthy Child Cognitive Development

An extension of poverty's impact on cognitive child development in South Carolina is associated with the lack of healthy food choices. This can be seen by looking at such indicators as low birth weight data and infant mortality rates by race and ethnicity⁵. The State of South Carolina has a high percentage of low birth weight babies as well as high minority infant mortality rates. These two trends can be explained in part by the historical under-investment in prenatal and adult healthcare by the state, the higher percentage of families in the state without adequate health insurance, the lack of available doctors in rural areas, and the delay of (new) mothers to seek prenatal care.

(2) The Role of Parental Involvement in Student Achievement

A number of studies have been published in recent years discussing the importance of parental involvement in early learning outcomes of children ages 0 to 5. The bulk of these studies have been national in scope. Based on research conducted by the Commission for Minority Affairs, few if any have focused specifically on South Carolina. The exception has been studies conducted by the Education Oversight Committee, the Office of Head Start (Health and Human Services, Early Knowledge and Learning Center) and the Research Triangle International.^{7,8}

Specific studies on parental involvement within the past decade have focused on key areas in which poverty and deprivation (and its reduction) has served to help explain part of the increase (decrease) in the educational achievement gap of children prior to the entering of the first grade. A summary of these studies is provided below.

First, a range of studies has focused in general on the mother's role in being actively involved in the early learning of the children. These studies have emphasized the role of the single mother, or in the broader context, "single parent families" or single heads of household and active involvement or learning outcomes in children. Few studies are readily available which focus solely on the role of the father, his active involvement with parenting, communication or articulation of learning outcomes with pre-school, kindergarten teachers and other officials on the learning outcomes of his children.

Rimm and Zhang (2005) specifically focused on the father's role of communication and its effect upon achievement of pre-school and kindergarten children. Communication involved face-to-face interaction between the father and the teacher, and this was used as the primary means of defining parental involvement. In terms of the potential impact of poverty, the authors utilized socioeconomic status as a specific factor in helping to explain its impact on father involvement and early educational achievement outcomes. The authors found that:

- Father-school involvement was highly variable across families, but present within communities.
- Father-school involvement and communication decreased between preschool and kindergarten, typically as the father pursued income earning and related job opportunities.
- Father interaction with children regarding educational achievement was more frequent when the father was able to return home (from work or other activities) and spend quality time with the children.
- With kindergarten age children (four and 5 year old children), frequent father-school communication was highly correlated with the presence of family rules in general, as well as those emphasizing educational achievement.^{9,10}

Other studies have emphasized family involvement from the traditional “[two-] parent” context. Overall, these studies focus on several dimensions of involvement, and in turn, its relationship to early educational outcomes of the child. These include: ¹¹

- The presence of both the father and mother in the home within the context of marriage;
- The “interaction effect” of socioeconomic variables of family and the external community environment, as determinants of child educational outcomes. These variables include married families with children, higher (median household or family) income levels [regardless of race or ethnicity], and communities characterized as low-income areas but which provide locational access to educational amenities (public libraries, museums, and other facilities or programs);
- A supportive, engaged, business, civic and faith community.

A third area of literature study related to family involvement relates to family-school communication, particularly in the context of transition of the child from pre-school to kindergarten.

Rimm-Kaufman and Pianta (2005) examined the importance of family-school communication for preschool children entering kindergarten. Several findings are critical regarding the family-school communication, the existing family experience of direct interaction with school teachers and officials, and the ability of children to make a smooth transition from pre-school to kindergarten, and on to the first grade. The authors note that:

- [Whether intended or not] Families experience great discontinuity in the frequency of family school communications between pre-school and kindergarten [and inferred, the first grade].
- Intervention programs personnel that address the transition to school should recognize the need to coach families with children shifting from pre-school to kindergarten. Coaching should involve both school officials and teachers identifying best practices of family involvement to assist each parent to ease the transition of children from kindergarten into elementary school. The implementation of these culturally identified best practice approaches by teachers who work with families is needed even when less communication is evident. This would include when the school structure and community conditions make it more difficult for parents to be involved, or if parents receive fewer invitations, particularly among low-income, minority or bilingual children.
- When frequent attempts by teachers and school officials fail, it can call into question their sincerity about getting families involved.

Rimm-Kaufman and Piata cite Hoover-Dempsey and Sander’s (1997) work which states: “It is not just enough for schools to invite families to be involved but rather [school officials and teachers] need to help families (regardless of race, ethnicity, community location and poverty status) realize their role and efficacy in influencing their child’s education.”

(3) Ages 0 to 5 School Readiness: National and State Perspectives

A third general area of importance in examining the achievement gap literature for children ages 0 to 5 involve national and state perspectives on existing programs of childcare and school readiness. These programs can be grouped as follows:

- Federally-funded national based or model preschool programs;
- State run preschool programs;
- Private sector and/or non-profit organization childcare programs;
- Faith-based pre-school programs.

The research literature is replete with journal articles and publications advocating each type. However, for small states such as South Carolina with its higher-than-the national average poverty population, we include a few summary articles on federally funded (national) pre-school and early education programs, and state run pre-school programs. The intention of the literature review covered, from the perspective of the South Carolina Commission for Minority Affairs, is not to advocate one type of program over the other, but to provide a brief summary of where the state's poverty populations are served.

The Rand Corporation (2004) examined the size of the achievement gap at the state level for pre-school age children within the context of poverty status, and which types of programs exist within California that are serving children to address the achievement gap.¹³ The RAND Corporation study sought to answer two questions:

- What can be done (by states) to promote healthy child development and school readiness?
- Will providing affordable childcare for low income working families make a difference?

To provide answers to these questions, the RAND Corporation examined the influence of living in poverty level families, other demographic variables, and the rate of access to high quality early childhood education programs on the size of achievement gap shortfalls in the early elementary grades. The study also examined how publicly funded early childhood education programs are structured, as well as how effective funds for these programs are being spent.

The principle findings of the RAND study were:

- **[Regarding children from impoverished backgrounds]:** In California, twenty-three percent (23%) of children fall below the federal poverty guidelines, and an additional thirty (30) percent of children live in families that are below the state's average income. In regards to publicly funded programs, slightly over fifty percent of three and four year old children are eligible for at least one targeted program.
- **[Regarding Publicly Subsidized Early Childhood Education Programs]** In California, eighty-one percent (81%) of preschool age children are served by developmentally oriented programs. [However,] There has been little systematic impact measurement of

care quality relative to the use of public resources to see if the utilization of public resources produces early child development benefits evident in research on high quality programs.

- **[On Funding]** Because of limited funding through state appropriations, most three year olds, and fifty percent (50%) of four year olds eligible for subsidized funding in early childhood education programs were not being served through publicly funded early childhood education programs.

Reports of the Brookings Institute

The Brookings Institute's Future of Children (FOC) Report Series provides a politically neutral assessment of both model child-parent programs, as well as the Federally Funded Head Start Program. The FOC Reports (2005) examined the achievement gap from a number of perspectives including:

- Assessment of Children
- Racial and Ethnic Resources
- Genetic Differences of School Readiness
- Cognitive Achievement
- Health Disparities
- Early Education and Care¹⁴

The Future of Children Reports provides feedback on programs such as both the nationally recognized model parent-child early education programs (High Scope-Perry, Chicago Child-Parent and Abecedarian programs) as well as federal to locally funded Head Start programs within states. The Brookings research examined the ability of program classroom teachers to help in the cognitive development of the child in order to help close the achievement gap. Particularly, Manguson and Woldfogel (2005) state that the Head Start program appears to have beneficial cognitive and behavioral effects for the children it serves, although the magnitude of the effects and length of time they persist can vary by race and ethnic group(s).¹⁵

Other researchers in the Future of Children Reports also emphasize the importance of publicly funded early childhood education programs like Head Start in providing early education and training as a vehicle for low income children who reside in families and communities who could not otherwise afford private early learning and care. These researchers identify the Head Start program as important to serving both low income and rural children. They also cite the importance of the community based structure of Head Start councils and their requirement of parents with school age children to be actively involved in the policy making and program implementation process of early learning and education. They also, however, note that while efforts in closing the achievement gap can vary from program to program and state to state, White and Other race children benefit from the achievement gains experienced by African American, Hispanic, and Native American children through learning and peer effects.

(4) The Root Causes of Poverty and Potential Achievement Gap Impacts

Thus far, this brief literature review has focused on national and state perspectives on studies which discuss reasons why the achievement gap continues to persist. The focus of this review now shifts to identifying the root causes of poverty for the state of South Carolina, and their potential impacts on the achievement gap between White and Minority children across the state. A clear understanding of the root cause of poverty involves identifying where poverty persists in the state and who is impacted the most by it. These are the first few steps needed for recognition of what potential actions can help to bring about improvement in achievement gap scores, thus ensuring that all children can have positive learning outcomes as they participate in school from the first grade and throughout their entire educational experience.

Root Causes of Poverty Linked to Current Policy Implementation

The root causes of poverty in the state are a historical problem with many facets. First, the root causes of poverty do not rest solely or specifically with the individual actions of certain populations or groups. The root causes of poverty can be traced to certain policies rooted in state laws that have not been properly addressed in a comprehensive manner. These include, but are not limited to:

- A lack of comprehensive tax policies, which can assist businesses to create jobs and pay livable wages.
- A review, assessment and realignment of the education funding formula that properly funds education at all levels and locations across the state.
- The coordination of culturally identified programs and best practices of early education, childcare, parental involvement and community services by local education agencies, state agencies, businesses, and concerned citizens within communities across South Carolina.
- Continued low investment in human capital, and a consistent lack of a sincere political commitment to invest in early education, secondary education, adult education and workforce development.

Root Causes of Poverty Impacting Individuals and Families

In addition to poverty impacts emanating from the lack of certain comprehensive policy implementation, persistent poverty can also be linked to problems impacting individuals and families. These include but are not limited to the following:

- Individuals and families living in situational or multi-generational poverty coupled with problems related to abuse, substance and drug use, and domestic violence.
- Individuals who have dropped out of high school.

- Individuals with criminal records particularly with felony or related criminal offenses that cannot be expunged.
- Individuals and families who have experienced long-term job loss, chronic unemployment and underemployment.
- Working individuals who cannot accept or afford childcare or do not have [transportation] access to childcare.
- Individuals or families who do not have health insurance or access to quality healthcare.
- Working individuals who desire new training, but who work for employers who are unwilling to invest in additional job training.

Potential Impacts on the Ages 0 to 5 Achievement Gap

The partial listing of each policy, and individual and family impacts listed above can contribute directly and indirectly to low levels of academic achievement for all South Carolina children. Low attainment levels and a widening achievement gap have each been identified as detrimental problems to the state's overall competitiveness by state agency educators, legislators. Efforts have been made over the past decade to address closing the achievement gap within the population ages 0 to 5. Efforts to close the achievement gap have been undertaken by each of the aforementioned groups. However (in some cases), much of the work has not been fully coordinated into a single comprehensive strategy that addresses closing the achievement gap. More importantly, there has not been a real sustained effort to seek sustained comprehensive funding investments towards educational initiatives aimed at closing the achievement gap.¹⁵

Since 2003, public/private efforts to address closing the achievement gap have been undertaken. These efforts have focused on addressing the issue of parental involvement and workforce development training for both the minority population in general, and the poverty population regardless of race. Parental involvement, workforce training and development within the context of the achievement gap, and the root causes of poverty have been the focus of the business and education communities, as well as other key partners and leaders.

Specifically, to begin a long term effort to address the root causes of poverty, representatives from New Carolina, the South Carolina Commission for Minority Affairs, the State Department of Commerce, the State Department of Education, the State Chamber of Commerce, and other public and private organizations view parental involvement, workforce [re-]training and economic development (linked to higher wage jobs that can lift families out of poverty) as not only important, but critical to improving the well-being of children and families. Not only are these efforts critical relative to addressing the achievement gap, but also to ensuring a long-term strong business and employment climate in South Carolina.^{16, 17, 18}

(5) Overview of State Efforts to Address the Achievement Gap Through Empirical Research

The final section of the literature review identifies research efforts by state researchers and entities responsible for examining closing the academic achievement gap and improving early learning outcomes. Much of this work involves two key focus areas:

- An examination of key risk factors prevalent in South Carolina which prevent the state's children from being ready to enter the first grade, or being successful in the first few years of elementary school, and
- An examination of general factors that influence educational achievement in children [in elementary and secondary education].

In addressing the risk factors associated with children being retained in school, Dr. Baron Holmes of the State Budget and Control Board (2000-2008) has utilized administrative data from state agencies to identify a [sub-] set of readiness risk factors associated with young children not being ready to enter school.¹⁹

Dr. Holmes' research provides estimates of the total and percentage statistics of students who have been retained or who score below basic in reading (language arts and/or mathematics). Holmes' research has been provided to several state agencies responsible for early education. The data provided has also been utilized in other state level grant initiatives that focus either on closing the achievement gap, or highlighting and providing recommendations in areas that state educators and elected officials should address if educational achievement outcomes are to be improved.²⁰

The RTI International I-95 Corridor Study

In December 2009, a study of the I-95 Corridor, arguably South Carolina's most economically depressed region was recently published by RTI International. The study in particular focused not only on broad based issues with education, but also looked at other areas that impact community policy and development outcomes. These include infrastructure, health disparities, poor fragmented leadership, and social service disparities. A summary of recommendations from the study highlighted the need for area leaders to work with state officials in a coordinated fashion to make sustained investments in public education and to work in collaboration to facilitate economic development in the region. This would help to address other problems associated with poverty and deprivation mentioned as outcomes in the RTI International study.²¹

Other State Level Studies on Addressing the Achievement Gap

Rainey and Murova (2004) examined the impact that parents' educational attainment levels, as well as a series of school policy variables, school resources and demographic variables have on academic achievement test scores. The authors examined elementary, middle, and high school test scores in four states: Arkansas, Louisiana, Oklahoma and Texas.²² Their test of several state

level regression models found that parents' educational levels have a great influence on the academic achievement levels of children. Other findings include:

- School size (in limited cases), the availability of more [yearly] educational funding resources allocated, and the efficient utilization of school resources also have a positive influence on academic achievement;
- School consolidation in economically distressed districts, where the community has a higher percentage of parents with limited education [or lack additional education] and training will not [necessarily] lead to significant improvement in student test scores;
- Both authors emphasized the importance of correctly specifying models of academic achievement, and the inclusion of expenditure and school policy variables, to increase the model(s)' explanatory power. This will enable the proper use by state education officials and legislators to help improve academic outcomes on behalf of the state's children.

Summary

This chapter has provided a summary of the research literature on closing the achievement gap. While not an exhaustive review of the education literature, the chapter has sought to provide literature summaries including national as well as the most recent efforts by state educators and policymakers. The research staff of the South Carolina Commission for Minority Affairs recognizes that there are other areas of research that are equally important in helping to understand and to address closing the educational achievement gap. These areas include:

- **Culturally Relevant Pedagogy and Teaching**
- **[Teaching] Curriculum and Instruction**
- **Community, School and the Classroom Environment**
- **Educational and Social Psychology of Children**
- **School Social Work**
- **School Counseling and Guidance**

The information summarized thus far can be used to develop a preliminary set of recommendations, which follow. Recommendations will also be given in subsequent chapters relative to the identification of state programs and other efforts aimed at closing the achievement gap for children ages 0 to 5 in South Carolina.

Recommendations Based on the Review of Poverty and Policy Literature

- Fund annually and maintain a state level initiative on early education to address the achievement gap in South Carolina.
- Seek state and private funding to conduct ongoing research on the achievement gap.
 - School District
 - Regionally for High Poverty Distressed Areas
 - Sub-regional County and other specially designated areas

- Form State approved regional alliances to address early education and achievement gap issues and their implications to the state.
- Implement a plan to align existing closing the achievement gap goals with National Education Standards on Education and Early Care.
- Seek legislative and private funding to conduct research on the factors influencing educational achievement in South Carolina.

Chapter 2 End Notes

¹The lack of racial and cultural diversity is also evidenced within key state agency data systems. This, however, is not a criticism of state agency staff data or systems, but highlights in some cases, the requirements of federal administrative programs on what specific types of data can and should be reported. Specifically, key agency data is often reported in the categories “White”, “Black” (African-American) and “Other”. The Commission research staff has found that the Native American population is not captured in most state data systems at all, and that the Hispanic and Asian populations are in some cases grossly undercounted. This has major policy and resource allocation implications in several areas, not excluding early educational investments to help reduce and eliminate the achievement gap.

²Several individuals are recognized for contributing to this section. These individuals include four student interns (Atensia Earp, Yvonne Cooper, Sabrina Guess, and Terrence Johnson). Additional assistance in the initial work on background literature and recommendations, and research was provided during the 2008-2009 Fiscal Year from the following individuals: Dr. Barron Holmes, Dr. Ann Winstead, Dr. Marion Sillah, Mr. Jim Darby, Mr. Bruce Mills, Ms. Janie Davis, Mr. Benjamin Washington, Jr., and Ms. Aisha Staggers. Ms. Staggers provided an extensive reference list in order to glean information on policies and programs. These individuals conducted a special review of the education, federal policies on education and attainment, and an identification of community structures that support early education. A synthesis of their findings can be made available upon request.

³A synopsis of each article, book or special study was developed by the research staff of the South Carolina Commission for Minority Affairs and is available upon request.

⁴See Nord and Prell, “What Does It Mean To Be Food Insecure”, USDA Amber Waves, June 2007. Also see www.frac.org regarding the Health Consequences of Hunger and its impact on learning outcomes in mathematics and reading.

⁵See End Note 1; The statistical data discussed in the previous Chapter on Demographic Shifts by County, Race and School Districts utilized the Bureau of the Census components of population change methodology. The primary formula is:

$$\text{Population Change} = (\text{Births-Deaths}) + (\text{Inmigration-Outmigration})$$
$$\text{or Population Change} = (\text{Natural Population Increase}) + (\text{Net Migration of Population})$$

Statistical data on births and death was provided through the SC Department of Health and Environmental Control. Data obtained from vital records while confidential, underreported Hispanic population and grossly underreported the Native American population.

⁶While not provided in this Report, these data can be provided upon request.

⁷We note that the Office of First Steps has recently released its 2003-2013 Strategic Plan study. The study does mention the role of parental involvement in early education.

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⁸The RTI International Study released in December 2009 was commissioned by the legislature to look specifically at counties in the I-95 corridor and highlight concerns across several areas including public education.

⁹The authors of this research recommended the development and adoption of policy guidelines created by the National Center for Early Development and Learning (NCEDL). The NCEDL's goals include:

- Improving the quality and frequency of relationships among peers, preschool, and kindergarten teachers to improve educational outcomes;
- To minimize children becoming at risk for academic failure.

¹⁰The authors also recommended that school officials, psychologists and social workers consider the father's role (in the schooling of their children). The father's role has been an under-utilized resource and more importantly, the link between the father and the school can bridge opportunities to ease the child's transition to kindergarten (regardless of the economic status of the community).

¹¹[Again] The SC Commission for Minority Affairs research staff can provide summary article information, as well as a partial listing of references upon request.

¹²Sara E. Rimm-Kaufman and Robert C. Pianta, "Family-School Communication in Preschool and Kindergarten in the context of a Relationship Enhancing Intervention", in *Early Education and Development*, Volume 16, Number 3, pages 287-316 (July 2005).

¹³Publicly Funded Early Care and Education Programs for California Pre-School Age children, RAND Corporation, 2004.

¹⁴The Future of Children; School Readiness: Closing Racial and Ethnic Gaps, (Volume 15, Spring 2005), Brookings Institution.

¹⁵Ibid, See pp 174-177. While there has been an admission that an achievement gap exists between the White and the African American population, examination of the reasons vary. Poverty and its various manifestations have been mentioned, but typically the focus has stressed individual and family variables or [hypothesized] causes, not policy implementation to increase funding for public education.

¹⁶Two significant outcomes have occurred through this work: The first is the recognition of parental involvement as essential in regards to a child's ability to learn. The work by the partners mentioned earlier also focused on ways to foster an understanding and to get the business community to provide alternatives for parents to address the educational and early learning needs of their children; also, where possible to assist parents in locating funding, purchasing books for their children, or locating high quality childcare and early learning activities which can aid in long term improvements in closing the achievement gap.

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¹⁷The second significant outcome resulted in the passage of key policies with educational (achievement) and key workforce development components in the state. The principal policy is the Education and Economic Development Act (EEDA) of 2005. Although the Act focuses heavily on 8th through 12th grade academic achievement and career outcomes, the EEDA does include exposure and the introduction of career concepts to students in the early grades.

¹⁸The Executive Director of the SC Commission for Minority Affairs has been instrumental in the development of a Draft Action Plan to Address the Root Causes of Poverty. This draft action plan is available upon request.

¹⁹Holmes' research identifies nine specific "Readiness Risk Factors". For each of these risk factors, he estimates, using administrative records data, the total number and percentage of children possessing each risk factor. From these totals (percentages), he estimates the percentage of children who (based on the risk factor) would subsequently be retained by the third grade. The South Carolina Commission for Minority Affairs Research staff views the findings from the work on Dr. Holmes as important to providing a clear understanding of the achievement gap by race and ethnicity.

It is therefore recommended that additional work is undertaken to identify and statistically model these Readiness Risk Factors by detailed race and ethnicity below the county level for each population that the Commission serves through state statute (the African-American, Native American, Hispanic-Latino, and Asian population). This research would include the School District level. This can be done, primarily through the Budget and Control Board's Data Warehouse function, and a cooperative agreement between the Commission for Minority Affairs and each agency responsible for the repository of the particular administrative data. Funding from the legislature is also critical to implementing this research. Please refer to the fifth bulleted recommendation provided earlier in the Recommendations at the end of this chapter.

²⁰These agencies include the State Head Start Collaboration Office, the Office of First Steps (which has utilized these findings in their strategic visioning process), and the Education Oversight Committee. As far as recent grants, this work has been used to assist with the Early Childhood Comprehensive Systems Grant. Other agency or grant omissions are due to an inability to obtain any other information.

²¹Copies of the RTI International Report on the I-95 Corridor were not available at the time of this report.

²²The Regression model estimated in the study of state educational attainment by Rainey and Murova is recommended for further study by the research staff of the South Carolina Commission for Minority Affairs. In particular, research economists, educators, and social researchers from the state's three research universities, South Carolina State University, Francis Marion University, and representatives from the State Budget and Control Board could work with the Minority Affairs staff to estimate this model and report its findings to the appropriate

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state legislators. For a complete explanation on estimating and testing this model, see “Factors Influencing Educational Achievement”, in Applied Economics, Volume 36, 2004, pages 2397-2404.

The explicit model (with some changes in variable names) for clarity is:

Model Specification by Rainey and Murova (2004):

$$\begin{aligned} \text{TESTSCORE} = & \alpha + \beta_1 \text{ LIBRARIANS} + \beta_2 \text{ COUNSELORS} + \\ & \beta_3 \text{ AVGTSALARY} + \beta_4 \text{ CHILD/TEACH} + \beta_5 \text{ TOTSTUDENTS} + \beta_6 \text{ RACESTUDENT} + \beta_7 \\ & \text{FREEREDLUNCH} + \beta_8 \text{ STUDISABLE} + \beta_9 \text{ DROPOUTS} + \beta_{10} \text{ MEDHINCOME} + \beta_{11} \\ & \text{PCTNODIPL} + \beta_{12} \text{ PCTDIPLOMA} + \beta_{13} \text{ PCTBACHDEG} + \beta_{14} \text{ NUMSTDTESTS} + v_i + e_t + \varepsilon \end{aligned}$$

where:

TESTSCORE (Dependent Variable) = State test score from state administered tests
LIBRARIANS = total number of librarians available
COUNSELORS = total number of (guidance or related school counselors)
AVGTSALARY = average teacher salary
CHILD/TEACH = child/student – teacher ratio
TOTSTUDENTS = total number of students
RACESTUDENT = race or ethnicity of student
FREEREDLUNCH = number of students receiving free or reduced lunch
STUDISABLE = total number of students in state (district or school) programs for students with disabilities
DROPOUTS = number of dropouts
MEDHINCOME = median household income
PCTNODIPL = percentage of population without a high school diploma
PCTDIPLOMA = percentage of population with a high school diploma
PCTBACHDEG = percentage of population with a Bachelor’s degree or higher
NUMSTDTESTS = number of students tested for the SAT (or ACT)

It is recommended by the research staff at the SC Commission for Minority Affairs that this model would be tested at both the regional and sub-regional (multi-county or school district) level for designated high poverty school districts. This approach [c]would not only highlight achievement gap differences (by race and ethnicity), but also shed light on where additional investments should be made over time to address closing the achievement gap. Research economists could work with researchers in education, social work, and the SC Department of Education to utilize several different regression approaches to correctly specify and estimate this model. Suggested partnering universities, state agencies (through the Budget and Control Board’s Data Warehouse) along with the Commission for Minority Affairs research staff who could assist in this work include, but are not limited to:

- (1) SC Department of Education
- (2) SC Head Start Collaboration Office
- (3) SC Office of First Steps
- (4) SC Budget and Control Board – Research and Statistical Services (Data Warehouse)
- (5) SC Education Oversight Committee
- (6) USC Moore School of Business

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- (7) Medical University of South Carolina**
- (8) USC School of Education and School of Social Work**
- (9) Clemson University – Houston Center**
- (10) Francis Marion University Center of Educational Excellence**
- (11) SC State University Schools of Education and Social Work**
- (12) SC State University 1890 Research.**

It is also recommended by Rainey and Murova that funding and investment variables are included in the model to increase its statistical explanatory power and relevance. Also, important would be including economic and taxation variables from South Carolina's economy that also impact funding. These include unemployment rate, capital investment, and job losses within industries at the county level. This data would need to be provided by the SC Employment Security Commission and the SC Department of Commerce. Finally, initial and continuous funding would need to be approved by the legislature for this work as part of the state's investment in efforts to close the achievement gap. Private funding would also be sought, where possible to continue the research long term. See the fifth bulleted recommendation in the Recommendations Section of this chapter stated earlier.