



# Research Review & Impact Summary

Metropolitan Action Commission  
Head Start/ Early Head Start Programs of Nashville &  
Davidson County

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# Executive Summary

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## Program Overview

The Metropolitan Action Commission (MAC) Head Start and Early Head Start Program of Nashville and Davidson County provides **pre-school and pre-K education** at no cost to income-eligible families with **children ages birth to five years old and pregnant moms**. The Head Start and Early Head Start programs **promote school readiness** for children through education, health, social, and other comprehensive services.

MAC's Head Start Program leaders selected four goals to guide the implementation of the Head Start and Early Head Start programs. The first goal was to **achieve full enrollment of children with disabilities and expand its service offerings to children with diverse special needs**, including services to children exhibiting challenging behaviors. The second goal was to **create a culture that embraces and effectively utilizes data** across program areas and agency departments to drive decision-making. The third goal was to **ensure that children would be ready for school** as a result of Metropolitan Action Commission Head Start and Early Head Start program's highly effective teaching practices. The last goal was to **support the Human Resources department** in building a reputation of living its core values while empowering current staff to grow, feel supported, and understand that their input makes a difference.

## Program Implementation & Pivots

Staff were asked to reflect on the past four years of Head Start/Early Head Start implementation and identify critical implementation changes that had an important and/or lasting effect on the delivery of program services and child outcomes. **Key program pivots identified by staff included:**

- Addition of behavioral health services
- Adoption of a data-driven culture
- Infusion of technological resources
- Restructure of program & administrative staff
- Support for teaching strategies
- Investment in leadership training

These pivots have **improved program efficiency, increased support to teachers and staff**, and, in some cases, **improved child outcomes**.

## Program Outcomes & Comparison

### Summary of MAC Correlational Study

There are several notable takeaways from MAC's correlational study. A key summative finding is that performance differences that existed between participant sub-groups at the start the year often faded or were greatly reduced at the end of the year. **Overall, the results from MAC's correlational study generally mirror the literature surrounding early childhood education.**

## Program Implementation

The correlational study indicated that a **longer length of enrollment** in MAC's Head Start programming and **classroom organization** both had positive impacts on students' outcomes. This finding aligns with

the literature on other Head Start programs. Though **teachers' credentials** did not have an impact on MAC Head Start student outcomes, the results are mixed in the literature. MAC's study did not examine **fidelity** of the program and there was little explicit information in the literature around this topic.

## Child Outcomes

The correlational study indicated that MAC's Head Start programming has a positive impact on all of the following areas of development: **language, literacy, social-emotional, physical, cognitive, and mathematics**. These results align with findings in the literature. However, the literature indicates that these effects fade when students enter elementary school. While MAC's correlational study indicated moderate effects of **average daily attendance** on student outcomes, the literature noted larger effects and tended to use chronic absenteeism as the standard metric, which may account for differences in the magnitude of findings.

## Demographic & Environmental Factors

In alignment with the literature, MAC's correlational study indicated that higher levels of **parental education and engagement** positively influenced student outcomes; that **females** and **older students** tend to score higher than their peers; and that **dual language learners** made significant gains in academic outcomes. The literature indicates more significant differences between **racial groups** and positive effects of Head Start programming on students with **behavioral concerns**. Differences in the way the literature selected, defined, or measured **parent employment status, social benefits, and health concerns** made one-to-one comparison difficult.

## Recommendations & Next Steps

Based on the research review, there are a few additional areas of focus that MAC can consider:

- **Examine Head Start's impact on child health and behavioral outcomes.** MAC's correlational study focused on how existing health concerns present among participants related to their assessment outcomes. It could be helpful to MAC to examine whether their programming also contributes to child physical and behavioral health outcomes.
- **Analyze other measures of "Parent Engagement".** In addition to volunteering in the classroom, the literature includes metrics related to other in-home activities and forms of school event participation. MAC currently collects similar data and should consider including it for analysis. Please note that MAC does analyze data on outcomes for families related to its Two Generation (2Gen) and Whole Family programming. This information is available in a separate study conducted by Thomas P. Miller and Associates.
- **Analyze metrics for chronic absenteeism.** MAC analyzes chronic absenteeism as a part of its daily operations and structures plans, which has resulted in improved attendance for children. However, including current data on chronic absenteeism as a variable for analysis as a part of its correlational study may provide a helpful lens to better support students who are chronically absent as well as make results more comparable with other studies on the effects of Head Start programming.

- **Assess program fidelity.** Defining consistent metrics around “adherence” to key curriculum and internal program standards would allow program administrators and staff to unpack the impact of specific program components on child outcomes and investigate further enhancements to implementation.
- **Conduct a longitudinal study of the Head Start’s impact on children in Davidson County.** The literature indicates that the effects of participating in Head Start programming fade as students enter elementary school. This type of study would support MAC in determining whether the effects of their Head Start and Early Head Start programming do in fact fade or remain into elementary school.

## Program Design & Purpose

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The Metropolitan Action Commission (MAC) Head Start and Early Head Start Program of Nashville and Davidson County provides pre-school/pre-K education at no cost to income-eligible families with children ages birth to five years old. There are seven Head Start Centers throughout Nashville. The Head Start and Early Head Start programs serve 1,485 children, making MAC the largest provider of early childhood education for children birth to five in Davidson County. MAC emphasizes a Two-Generation (2Gen) approach in its Head Start and Early Head Start services, addressing the complex and multi-level needs of both children and parents. The program provides dental, vision, hearing, speech, and language screenings for students at various points during the school year as well as job training, asset-building, and income supports for parents.

MAC's Head Start Program began with four program goals intended to effectively implement services using a 2Gen approach. The first goal was that the program would **achieve full enrollment of children with disabilities and expand its offerings to children with diverse special needs**, including services to children exhibiting challenging behaviors. In order to accomplish this goal, the program aimed to establish partnerships and/or contractual agreements with organizations serving children with disabilities; implement strategies to enhance staff support around providing services to children with disabilities and/or children who exhibit extreme challenging behaviors; and provide yearly opportunities for parents of children with special needs to advance their advocacy skills.

The second goal was to **create a culture that embraces and effectively utilizes data** across program areas and agency departments to drive decision-making and optimize service delivery to children and families. To accomplish this goal, the program aimed to enhance ChildPlus, the program's electronic data tracking system; provide effective training to current and new staff utilizing the system; and encourage data use among administrators and direct care staff to individualize service delivery to each child and family.

The third goal was that **children would be ready for school** as a result of Metropolitan Action Commission Head Start and Early Head Start program's highly effective teaching practices. To achieve this goal, the program selected a new curriculum to implement at each Head Start/Early Head Start site; implemented training and coaching opportunities around the new curriculum for staff; and worked to engage parents in the curriculum and support and augment the social-emotional and cognitive features of the curriculum.

Finally, the program aimed to **support its Human Resources Department in building a reputation of living its core values** while empowering current staff to grow, feel supported, and understand that their input makes a difference and that they are the best recruiters of the program's workforce. To achieve this, the program implemented strategies to employ parents and support staff retention; update internal Human Resources policies and procedures; and regularly engage in activities to support the retention of staff.

# Program Implementation & Pivots

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MAC implemented a variety of changes to their Head Start organizational structure and programming between 2015 and 2019. During a facilitated conversation, key Head Start staff were asked to identify changes they perceived to be the most influential on program service provision and child outcomes. Key program pivots identified by staff and the individual impact these pivots had on children, teachers, and service delivery are summarized below. It is worth noting how well-aligned the pivots staff identified were with MAC's grant goals. Though staff were not prompted to identify pivots based on the grant goals and did not specifically tie their discussion to the broader grant funding objectives, each pivot was a direct reflection of specific objectives in the grant narrative, indicating successes in generating staff buy-in and the operationalizing goals.

## Addition of Behavioral Health Services

Early in program implementation, staff identified an increase in challenging behaviors among children participating in Head Start and believed these were indicative of broader behavioral health needs. MAC staff felt it was essential to provide more support to children with behavioral health needs as well as their families and teachers. In response, MAC added behavioral health services to the Head Start service array in the 2016-2017 school year and began offering capacity-building opportunities for teachers to better address issues in the classroom and link children with care. MAC continued to expand behavioral health services in subsequent years by adding Allied Mental Health (2018-2019 school year) as a behavioral health service partner to further address children's behavioral health care needs and by adding two on-site Behavioral Intervention Specialist positions (2019-2020 school year) to boost support to teachers who have children with behavioral health needs or who exhibit behavioral challenges. Though staff indicated that they have not necessarily seen a decrease in challenging behaviors in the classroom or the level of need for behavioral health services, teacher support and children's access to behavioral health services has increased. Staff reported that improved processes have been developed to create behavior plans and link children to services and that the quantity and quality of both material and personnel resources available to teachers around children with behavioral health needs has increased.

## Adoption of a Data-Driven Culture

Staff also identified the switch to a more data-driven culture in the 2017-2018 school year as a key pivot with important implications for program implementation and children's outcomes. In addition to incorporating data use as a core programmatic value at the start of the grant, MAC also identified a need for enhanced strategies to support data use after the adoption of ChildPlus as an internal monitoring system to track program compliance. MAC assembled a data team responsible for monitoring site-level data and assisting sites with data use. For example, the data team conducts routine "data tours" at each site to engage site staff at all levels in the process and outcome data they collect. As a result, staff reported that the ChildPlus system has become more organized and now enables teaching staff to better identify areas for improvement in their implementation of the program. At an administrative level, this switch has allowed MAC to be more intentional about decision making and program shifts, understand

which sites are using and analyzing their data, and build better capacity around data use. This initial shift has also led to other efforts in subsequent years to enhance data quality and increase opportunities for data use. For example, MAC introduced the Teaching Strategies GOLD reports in the 2018-2019 school year to be more intentional about tracking child performance data. Staff report that these reports have contributed to improved child outcomes because they move performance measurement beyond anecdotal notes and allow teaching staff to both group and individualize instruction for their students. In addition, MAC recently began implementing pre-, mid-, and post- data collection on the electronic version of the Devereaux Early Childhood Assessment (EDECA) in the 2019-2020 school year. Though MAC rolled out the use of the EDECA in the 2017-2018 school year to streamline data collection using this tool, the shift to collecting the EDECA at multiple timepoints has encouraged staff to engage with the data on their students more regularly and track the progress of child outcomes over time.

Though staff indicated that the switch to a data-driven culture has been positive, it has not been without barriers. An increased focus on data and data collection has necessitated more time from administrative and teaching staff and consistent messaging around data as a means for growth and not as a punitive exercise. In addition, the technology needed to do data collection well can require more staff training and a steeper learning curve for those who have never engaged with technology in this way.

## Infusion of Technology

The infusion of technological resources in the classroom was another key pivot identified by staff. During the 2017-2018 school year, MAC provided tablets to teachers to engage staff more directly in the creation of student action plans and allow teachers to create and monitor individual child goals and classroom strategies. It was hoped that this increased engagement would also increase CLASS scores and further support teachers. Unfortunately, staff reported that connecting to the internet on the tablets has been a challenge and that many teachers do not log into them regularly. MAC pivoted to providing Head Start classrooms with Smartboards in the 2019-2020 school year. Though implementation has been relatively recent, staff report that the Smartboards have so far allowed teachers to accommodate large and small group learning as well as increase the level of individualization in their instruction.

## Restructure of Program & Administrative Staff

Staff also identified program and administrative staffing restructures as significant pivots that have affected program implementation. Starting in the first year of the grant (2015-2016 school year), MAC combined the Early Head Start Director and Head Start Director positions into one role. Staff reported that this was a critical first step in making the MAC Head Start program a “true” birth to 5-year-old program because it removed communication and program implementation siloes that had been built between the two programs and, most importantly, eliminated hurdles to a smooth transition for parents whose children were shifting from Early Head Start to Head Start. Following the change in the Directorship position, MAC also restructured the education team to include Education and Training Assistants (ETAs) as well as an EHS Coordinator (2016-2017 school year). This change was intended to provide targeted support to teachers and build their capacity for more effective teaching practices. Staff reported that this

change had numerous positive effects, including augmenting support to the sites, increasing the sense among staff of being part of an active “learning community”, and improving child outcomes. Finally, in an effort to address high staff turnover rates and increase retention, MAC made several changes to the structure and focus of their Human Resources Department (2018-2019 school year). These changes included making HR personnel more site-based so that they regularly visit teachers and their classrooms and placing an emphasis on strategies to increase staff pay. Staff reported that this change has decreased the length of time positions go unstaffed and increased the speed with which staffing issues are addressed. They also reported that this change has positioned the HR staff as more “neutral” and made staff feel more supported in their work knowing that they have someone they can talk to. Though these changes were primarily put in place to address program efficiency, teacher capacity, and staff retention, their successes in these domains likely have important implications for the outcomes of children who participate in MAC’s Head Start and Early Head Start programs.

## Support for Teaching Strategies

Staff also highlighted MAC’s implementation of new strategies to foster improved teaching approaches as a key pivot. MAC started using the Classroom Assessment Scoring System (CLASS) during the 2015-2016 school year after it became National priority for Head Start Program Performance Standards (HSPPS). Though the impetus for its adoption was more regulatory, use of the CLASS scores fostered the development of an internal feedback loop for teachers that increased information sharing and provided them with specific feedback, support, and training in the classroom. Similarly, the implementation of Practice-based Coaching for teachers (2015-2016 school year) in response to national programmatic requirements led to improved CLASS scores as well as increased engagement between teachers and the staff who supervise them. MAC took this a step further in the 2019-2020 school year, by hiring coaches to provide direct support to staff around teaching and classroom practices. Overall, staff report that these shifts in teacher support and training have led to improvements in child outcomes and teacher quality.

## Investment in Leadership Training

Finally, staff indicated that MAC’s investment in training for its leadership was an important program pivot. During the 2015-2016 school year, MAC began to provide yearly training for its executive leadership, center managers, and department leaders. This investment was intended to connect program leaders with the broader cultural shift the MAC administration was trying to achieve and better disseminate the program’s core values. Over time, these trainings have allowed for the introduction of an agency-wide framework for measuring and planning for outcomes, the Human Services Value Curve. Additionally, trainings included targeted instruction around crucial conversations, interpreting data, developing SMART goals, and operationalizing staff strengths using the StrengthsFinder tool, and more recently Human Centered Design. Not all of the individual trainings have had the level of desired impact, though. Staff report that the implementation of SMART goals following leadership training has not gotten to a place where it is truly impactful. They report that it has been difficult to monitor fidelity to the goals and that it is difficult to get staff buy-in when this feels like “an extra thing”. Despite some challenges, staff reported that overall these trainings have built capacity among Head Start and Early Head Start leadership

and shifted the organizational culture from a policy-driven, “regulative” environment to a “less punitive” and more collaborative one. They also report seeing a wider organizational effect on other individuals, such as teaching staff, who have not been through the training themselves but interact regularly with leadership staff who have attended.

## Program Outcomes & Comparison

### Summary of MAC Correlational Study

In 2018, MAC conducted a correlational study using data from 2015-2018 **to better understand the relationship between student performance on standardized assessments and key student, parent, and teacher factors**. MAC employed two assessments to measure participant academic achievement outcomes, the Brigance and Teaching Strategies GOLD (TSG). The Brigance assesses factors related to early development and kindergarten readiness and was administered at both the beginning and end of the year. The TSG assesses key developmental factors as well as predictors of school success in the areas of literacy and numeracy and was administered three times (beginning, middle, and end of the year). Student and parent categorical variables (listed in Appendix A) were analyzed using a mixed-model analysis of variance (ANOVA) to determine if there was a statistically significant difference between the groups on each of the standardized assessments. Student and parent continuous variables (listed in Appendix B) were analyzed using multiple regression. The following sections summarize the correlational study’s findings and compare them to similar studies conducted on Head Start programs throughout the country. A visual summary of these studies compared to the results of MAC’s correlational study can be found in Table 1 below.

Table 1: Summary of MAC Head Start Correlational Study Findings and Research Literature Review

✓ = Aligned      ✗ = Not aligned      --- = Inconclusive in the literature      / = No information found

Dimension	Variable	Do the correlational study & literature align?	Description
Program Implementation	Fidelity	/	MAC study does not explicitly examine this variable and no specific information around fidelity was found in literature.
	Dosage	✓	Children enrolled longer have better outcomes
	Teacher credentials	---	MAC study did not find differences based on teacher credentials. Results in the literature are mixed and evidence is inconclusive.
	Classroom quality	✓	Classroom organization has positive impact on students’ outcomes
Child Outcomes	Language & Literacy Development	✓	Head Start has positive impact on language and literacy development, especially for dual language learners and

✓ = Aligned

✗ = Not aligned

--- = Inconclusive in the literature

/ = No information found

Dimension	Variable	Do the correlational study & literature align?	Description
			other at-risk groups. However, the effects tend to dissipate by the end of kindergarten.
	Social-Emotional Development	✓	Head Start has positive impact on students' social-emotional development.
	Physical Development	✓	Head Start has a positive impact on students' physical development.
	Cognitive Development	✓	Head Start has positive impact on students' cognitive development.
	Math Development	✓	Head Start has positive impact on students' math development.
	Attendance	✗	Minimal effects in MAC study, but significant effects in literature. May be a result of "chronic absenteeism" as the metric for attendance in the literature.
Demographic Characteristics/ Environment	Parent Level of Education	✓	Students with mothers that had more than a high school degree showed better outcomes.
	Parent Employment Status	---	While the MAC study found slight benefits for students whose parents are employed, this variable is often bundled with other variables in the literature making direct effects difficult to determine.
	Parent Engagement	✓	Children whose parents were more engaged showed significant developmental gains and caught up with peers.
	Dual Language Learners (DLL)	✓	Head Start positively impacts DLLs and helps close achievement/language gaps between DLLs and monolinguals.
	Race	✗	The MAC study finds minimal differences between race groups at the start of the program that disappear by the end of the program, while the literature finds more significant differences at close.
	Gender	✓	Girls tend to score higher than boys.
	Age	✓	Older students tend to score higher than younger students.
	At-risk children	✗	Differences in measurement. Results do not align.
	Behavioral concerns	✗	MAC's study results were not significant enough to draw conclusions. Findings from the literature are presented below.

✓ = Aligned

✗ = Not aligned

--- = Inconclusive in the literature

/ = No information found

Dimension	Variable	Do the correlational study & literature align?	Description
	Health concerns/health outcomes	---	Differences in measurement. While MAC examined the impact of health issues on student assessment performance, the literature examined Head Start's impact on health outcomes.

## Program implementation

### Fidelity

MAC's study did not examine fidelity nor was there anything found in the literature that explicitly examined this variable. Research by Peck and Bell (2014) does examine the effects of "quality" on longitudinal child outcomes. They define quality along the dimensions of resources available in the program, interactions between teachers and children, and degree to which children are exposed to academic activities in the classroom. However, they found no lasting impacts (through 3<sup>rd</sup> grade) on child outcomes as a result of these quality dimensions.

### Dosage

MAC's correlational study found that children with more than one year of participation in the program were more likely to have higher scores on the third administration of the TSG assessments even when accounting for pretest scores.

This mirrors findings from various studies that indicate that children who entered Head Start at age three and stayed for two years showed higher academic outcomes than those enrolled later or for less time (Dickinson & Neuman, 2007; Puma et al, 2010; Lee, 2011; Wen et al, 2012; Aikens, Kopack, Tarullo, & West, 2013). However, one study examining half- versus full-day Head Start participation did not identify any significant differences in academic or social outcomes (Leow & Wen, 2017). This may indicate that the duration of participation over time, instead of the intensity of daily dosage, is a more important factor in student outcomes.

### Teacher Credentials & Classroom Quality

MAC's correlational study did not find significant differences in any of the assessments when compared by teachers' education level. Moreover, teachers' years of experience was not significant in all relationships, indicating that years of experience could not be used to predict student achievement.

One of the studies reviewed aligned with MAC's study findings and concluded that classroom-level factors including teacher background, classroom size, instructional quality, affective quality, structural features of

the center, and number of years that teachers spent in the field, were generally not significantly associated with children's literacy and mathematics skills at the start of the program or their development by the end of the program (Hindman, Skibbe, Miller, & Zimmerman, 2010).

However, more recent studies conflict with these results and find positive impacts of teacher qualifications on program quality and student outcomes. Head Start teachers with an early childhood education major provided higher-quality learning and social-emotional activities in the classroom and Head Start teachers who received coaching employed more effective social-emotional and parent involvement practices (Son et.al., 2013). These higher-quality teaching strategies were linked to improved school readiness in three-year-old and four-year-old Head Start participants, including better math skills, social skills, and receptive vocabulary (Son et.al., 2013). Furthermore, teacher's years of experience working in classrooms with Dual Language Learners (DLLs) had a positive effect on children's English spelling skills (Ramírez, López, & Ferron, 2019). In addition, some studies found positive impacts on outcomes other than academic achievement as a result of teacher credentials. For example, higher in-service training hours and proportions of Head Start teachers with preschool or elementary education teaching certificates were linked with greater parent involvement (Barnes et. al.).

In order to evaluate teacher quality, MAC's correlational study also examined teachers on the CLASS rubric, a tool used to assess the teacher-student interactions proven to drive learning and development. Regarding teachers' CLASS scores, MAC's study shows that Teachers' Classroom Organization CLASS scores may be a predictor of students' achievement. Similarly, the literature shows that children in higher-quality social-emotional classrooms had better math skills, social skills, and learning behaviors (Son et al, 2013; Rudasill et al, 2017). Dickinson & Neuman (2007) found that 80-95% of variation in children's scores at Head Start entry and graduation was due to within-classroom factors, though other studies find little evidence that either high- or low-quality Head Start in any dimension leads to Head Start impacts that last into third grade for either age cohort.

## Child Outcomes

According to MAC's Correlational Study results, students made gains from measurement to measurement (i.e., first to second to third assessments) both on the Brigance and in all of the following areas of the Teaching Strategies GOLD assessment:

- Language development (LAD)
- Literacy development (LID)
- Cognitive development (CD)
- Mathematics development (MD)
- Social-emotional development (SED)
- Physical development (PD)

As a whole, students increased their scores throughout the school year and achievement gaps between sub-groups that were present at Head Start entry were closed or significantly narrowed by the end of each Head Start year. These findings align with the literature, which also indicates that Head Start maximizes gains in short-term outcomes, particularly literacy skills, and minimizes sub-group differences

(Cooper & Lanza, 2014; Dickinson & Neuman, 2007; Puma, M., Bell, S., Cook, R., & Heid, C., 2010; Bloom & Weiland, 2015; Miller, Farkas, & Duncan, 2016; Aikens et al, 2017). However, the literature also shows that any gains students made during their Head Start years tend to fade in early elementary school, usually by 1<sup>st</sup>-3<sup>rd</sup> grade.

## Language & Literacy Development

The MAC Correlational Study indicated that participants made gains in Language Development and Literacy Development from the beginning to the end of the year.

The literature suggests that Head Start had a positive impact on children's language and literacy development while children were in Head Start, but the impact dissipated while children were in elementary school (Bell et al, 2012). Positive impacts of Head Start were also found on early literacy and receptive vocabulary (Miller, Farkas, Vandell, & Duncan, 2014; U.S. Department of Health and Human Services, 2010).

## Cognitive Development

The MAC Correlational Study indicated that participants made gains in Cognitive Development from the beginning to the end of the year.

According to the literature, Head Start attendance leads to large and statistically significant gains in cognitive achievement during the pre-school period. Once the children enter elementary school, the cognitive gains decrease for the full population. However, an important sub-population finding is that cognitive gains persist through elementary school for some Spanish speakers and for children from high-risk households (Bitler, Hoynes, & Domina, 2014; U.S. Department of Health and Human Services, 2010; Puma et al, 2012; Zhai, Brooks-Gunn, & Waldfogel, 2014).

## Mathematics Development

The MAC Correlational Study indicated that participants made gains in Mathematics Development from the beginning to the end of the year.

The literature also indicates positive impacts of Head Start on early math skills. Head Start boosted early math skills the most for children receiving low parental pre-academic stimulation (Miller, Farkas, Vandell, & Duncan, 2014). Moreover, children in three-year-old cohorts were found to have more advanced math skills than their two-year-old and four-year-old counterparts at the end of the Head Start year (U.S. Department of Health and Human Services, 2010).

## Social-Emotional Development & Physical Development

The MAC Correlational Study indicated that participants made gains in Social-emotional Development and Physical Development from the beginning to the end of the year.

The literature indicates that children in Head Start made progress in social-emotional development (SED), and physical development (PD) between Head Start entry and exit as reported by teachers and parents. However, kindergarten teachers reported more behavioral problems in Head Start children (Aikens et al, 2017). In most studies examining social-emotional development, parents tended to rate their children's behavior more positively than teachers (Bell et al, 2012; U.S. Department of Health and Human Services, 2010).

## Chronic Absenteeism & Attendance Rates

Average Daily Attendance (ADA) has had varying significance as a predictor of outcome variables in MAC's correlational study, though there has been a consistent positive relationship. Though ADA was significantly correlated with 6 outcomes in the 2015-2016 school year, it was only significantly correlated with 2 outcomes in the 2017-2018 school year, including Mathematic Development and Literacy Development on the third administration.

The literature mirrors this finding, but to a more extensive degree. Research suggests that children who missed more days of school, and especially those who were chronically absent, did not progress as much in math and literacy as their peers who attended more frequently. In the literature, chronic absenteeism is defined as missing 10% or more of the school year (Ansari & Purtell, 2018). Analyses indicated that chronic absenteeism translated to two months of lost academic skills in math and three months of lost academic skills in literacy. In addition, high levels of absenteeism were especially problematic for children who started Head Start with lower math and literacy scores than their peers (Ansari & Purtell, 2018). One study examined the effect of Head Start participation on chronic absenteeism in middle school, finding that middle school students who participated in Head Start for preschool had lower chronic absenteeism rates than their peers who did not attend Head Start (Phillips et.al., 2016).

## Demographic & Environmental Factors

### Parent Level of Education

In MAC's correlational study, the Brigance and the Literacy Development and Mathematics Development measures on the TSG indicated significant differences based on parents' education level. These results indicated that students with parents who had less than a high school degree scored lowest.

The literature shows similar trends in the effect of parental education status on children's academic outcomes in Head Start. Increases in maternal education, in particular, play a role in children's language and literacy outcomes. Children of more educated mothers or mothers completing higher education had higher vocabulary and word identification skills than the children of less educated mothers (Magnuson et.al., 2009; Scheffner, Farkas, & Maczuga, 2010). Children with mothers who had higher educational levels experienced more literacy activities than did children whose mothers had lower educational levels, which may explain the differences in the degree of their language development (Scheffner, Farkas, & Maczuga, 2010). It is important to note that though children whose parents were more-educated started and ended

higher than their peers, children whose parents were less-educated made more significant gains over the school year than those with parents who more-educated (Lee et.al., 2014).

## Parent Employment Status

The Cognitive Development, Literacy Development, and Mathematics Development assessment results in MAC's study indicated that students with employed parents scored higher than students with unemployed parents. However, this was only true for the 2017-2018 school year with previous years showing no differences between children of parents who were unemployed vs. those children of parents who were employed.

The literature included in this review does not link parental employment status alone to student outcomes and instead often bundles parental employment status with other factors that could compound "risk", including parental education level and single parenthood. These studies around varying sub-groups of students indicate that children with employed parents showed more gains in social-emotional and behavioral rather than academic domains (Cooper & Lanza, 2014) while students from "high risk households" that included an unemployed parent experienced more benefits in cognitive and academic skills (U.S. Department of Health and Human Services, 2010). Other studies linked parent employment status to other outcomes outside of student performance. For instance, parental employment status was a strong indicator of parental involvement and engagement in Head Start programming. One study found that parents who are employed tend to be less involved in school, likely as a result of reduced amounts of free time outside of work (Castro et al, 2004).

## Parent Engagement in School

MAC's study found that students with a parent who did not volunteer in their classroom began the school year with higher scores on every assessment except the Brigance, which showed the opposite. On three of the six TSG assessments (Language Development, Literacy Development, and Mathematics Development) students whose parents volunteered in the classroom had caught up with their peers by the end of the year, while on the other three TSG assessments (Social-emotional Development, Physical Development, and Cognitive Development) they were still significantly lower, though the difference between the two groups had decreased.

The literature finds similar results, but parental engagement encompasses many other behaviors in addition to volunteering in the classroom. The literature primarily examines Head Start's impact on parental engagement and parent behaviors while MAC's focused the impact of volunteering in the classroom on children's outcomes. According to the literature, Head Start participation is related to a substantial increase in parents' involvement with their children—such as time spent reading to children, math activities, and other cognitive stimulation at home — as well as decreased spanking, both during and after the period when their children are enrolled in Head Start (Gelber & Isen, 2013; Gershoff, Ansari, Purtell, & Sexton, 2016; Ansari & Gershoff, 2016; Puma, M., Bell, S., Cook, R., & Heid, C., 2010; Bell et al, 2012). These changes in parenting behaviors were associated with gains in children's academic and behavioral skills (Ansari & Gershoff, 2016). In addition, Miller, Farkas, Vandell, & Duncan (2014) found a

positive association between academic performance in Head Start and the degree to which parents engaged in academic activities at home prior to their child's enrollment in Head Start. These pre-academic activities included reading to children, helping them to recognize and pronounce letters and words, and encouraging early math skills through counting objects.

## Dual-Language Learners

Between the different language groups, MAC's study shows performance differences between different language groups both at the start of the school year and at the end of the school year, however, these differences have decreased from year to year. Results have only showed consistent significant differences on the Brigance test. These results indicated that scores for English speakers were higher than scores for Spanish speakers, a stable finding over the three years MAC has been collecting this data. Other than the Brigance, the Head Start program appears to close any gaps that exist in the students' scores between English speakers and Spanish speakers. MAC's study also found no evidence that students whose parents complete ESL classes experience higher academic achievement.

Similarly, other studies found that Head Start produced effects that indicate it substantially assisted dual language learners (DLLs) and Spanish-speaking children with low pretest scores (Bloom & Weiland, 2015; Puma, M., Bell, S., Cook, R., & Heid, C., 2010). However, literature also finds that vocabulary skill differences between Spanish-speaking DLLs and English monolinguals persisted over time while math skills differences narrowed by kindergarten (Choi, Rouse, & Ryu, 2018).

## Race

Consistently in the last two years, the MAC study found differences between race groups on one assessment only at the start of the program that disappeared by the end of the program. Black students scored higher than students in the Other category at the beginning and middle of the year in Language Development, though were statistically similar by the end of the year.

In the literature, Scheffner, Farkas, & Maczuga, (2010), find that black and Hispanic children scored lower than white children on receptive vocabulary. However, the authors attribute these results to the test being culturally and linguistically biased, impeding children from fully demonstrating their vocabulary knowledge. In addition, children who were Hispanic experienced fewer literacy-related events at home which is consistent with national data on the frequency with which parents of different ethnic background read to their children.

## Age

Older students outscored younger students on all six TSG measures used in MAC's study and this finding has remained consistent for the last three years of data collection and analysis. The only exception to this pattern was on the Brigance, where three-year-old children actually scored higher than their four and five-year-old peers. However, the small sample size of three-year-old children completing the Brigance may account for these results.

The literature also indicates that four-year-old students tend to start and end higher than three-year-old students on measures of literacy and math (US Department of Health and Human Services, 2010). When compared on measures of social-emotional development, both age groups started with similar scores and made comparable gains over the year except with regard to aggressive behaviors – three-year-old children scored higher on aggressive behaviors at the start of the year, but these decreased and were comparable to four-year-old children by the end of the year (US Department of Health and Human Services, 2010).

## Gender

In MAC's study, females scored higher on the Brigance and on all measures of the TSG except Physical Development and Mathematics Development. On some measures, including Cognitive Development and Social-emotional Development, the genders were similar at the beginning of the year and then females made larger gains. Across all three years of data collection and analysis, females have scored higher on more assessments than their male counterparts.

The literature mostly confirms this finding; females who participated in Head Start obtained higher scores than males in reading and literacy skills, but also in mathematics abilities (Lee, 2016; Scheffner, Farkas, & Maczuga, 2010). With regard to literacy specifically, gender impacted children's letter-word identification abilities at the end of Head Start, with males having a lower score than females (Scheffner, Farkas, & Maczuga, 2010).

## Children "At Risk"

MAC's study finds that on both Physical Development and Language Development, students who did not receive WIC benefits scored significantly higher than students who received WIC benefits at both the middle and end of the year. The significant difference in the Brigance indicated that students who received SNAP benefits didn't grow as much as students who did not receive SNAP benefits, but that finding is limited to just one assessment. The results for six parts of the TSG indicated significant differences at the beginning of the year that disappeared by the end of the year between children who did and did not receive SNAP. Overall, differences between children who receive WIC/SNAP and those who do not have decreased over the three years MAC has been collecting data.

Though few studies explicitly examining WIC and SNAP were found, one study found that children whose families accessed food stamps were more likely to start behind their peers and were also more likely to have behavioral issues (Cooper & Lanza, 2014). These results are likely mediated by other familial factors associated with accessing food stamps, including parental stress and family characteristics (Cooper & Lanza, 2014). More often, the literature examined other indicators that place a child "at risk". Some of the findings indicate that children who participated in Head Start were 93% less likely to be placed in foster care than children with no Early Childhood Education (Klein, Fries, and Emmons, 2017). Furthermore, children with special needs benefited from Head Start in the math and social-emotional areas at the end of first grade and children from higher-risk households showed increased cognitive gains through the end of first grade (U.S. Department of Health and Human Services, 2010). Additionally, Head Start was also

shown to have benefits for children with special needs and children with the lowest cognitive skills upon entry that last into early elementary school (Dickinson & Neuman, 2007; U.S. Department of Health and Human Services, 2010)

## Behavioral Concerns

In MAC's correlational study, the correlations between the behavioral concerns variable (collected on the Devereux Early Childhood Assessment) and other numeric variables, including well-being and parent-child relationship, were relatively small. Nevertheless, the study found that teachers tended to score their students more favorably than parents scored their children. Contrary to MAC's study, the literature showed that parents tended to rate their children's behavior more positively than teachers (Bell et al, 2012; Puma, M., Bell, S., Cook, R., & Heid, C., 2012).

Other studies examined how student's behavior affected their academic achievement and how Head Start impacted children's behavior. Children with high temperamental regulation were predicted to perform better on math and literacy assessments than their less regulated peers (Rudasill et al, 2017). By the end of one academic year, Head Start children had significantly fewer behavior problems and less hyperactive behavior compared with control group children (Miller, Farkas, & Duncan, 2016; Puma, M., Bell, S., Cook, R., & Heid, C., 2010).

## Health Concerns/ Health Outcomes

Similar to the MAC correlational study, the literature indicates that the presence of speech-language impairments does not impact children's vocabulary or early letter-word identification abilities. However the literature found that children showed disadvantages in reading ability later in kindergarten (Scheffner, Farkas, & Maczuga, 2010).

According to the results of MAC's study, students with anemia, asthma, impaired vision, hearing impairment, or general health concerns are not at a disadvantage academically. No studies could be found that examined the same health concerns that MAC's study examined. Moreover, while MAC explored how these health concerns affected Head Start participants' academic outcomes, the literature focused on examining how Head Start impacted individual students' health and access to healthcare.

Regarding Head Start's impact on participants' health outcomes, studies found that Head Start appears to have led to increases in children's health insurance coverage during the early school years (Lee et.al, 2013). In addition, Head Start participants were more likely to receive dental checkups, but showed no differences in getting medical checkups. Participants were also more likely to have healthy eating patterns, but showed no differences in Body Mass Index (BMI), being overweight, or obesity. However, these results varied depending on the comparison group. Participants in Head Start who started with an unhealthy weight status showed healthier BMIs by kindergarten than children not participating in Head Start (Lumeng et.al., 2015). Head Start participants showed lower BMI scores and lower probability of being overweight compared to those in other forms of care, and the effects on healthy eating and dental checkups differed by comparison group (Lee, Zhai, Han, Brooks-Gunn, & Waldfogel, 2013). However,

another study found no changes in children's body mass index (BMI) between the beginning and end of the program (Aikens, Kopack, Tarullo, & West, 2013).

## Recommendations & Next Steps

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Based on the research review and facilitated session, there are a few additional areas of focus that MAC should consider.

- **Examine Head Start's impact on child health and behavioral outcomes.** MAC's correlational study focused on how existing health concerns present among participants related to their assessment outcomes. However, the literature shows that participating in Head Start programming has mixed impacts on participant health itself, not just academic performance. It could be helpful to MAC to examine whether their programming also contributes to child health outcomes, such as access to health care, healthy eating, and body mass index (BMI). Another area for further investigation is the impact that MAC's Head Start program has on students with behavioral concerns. Currently, MAC's study only looks at the relationship between participants' performance outcomes and behavior concerns. The literature indicates that Head Start programming has a positive impact on students with behavioral concerns so it could be beneficial to see if MAC's Head Start program mirrors these findings.
- **Analyze other measures of "Parent Engagement".** MAC's correlational study looked at the impact of parents volunteering in the classroom on participant assessment performance outcomes, but the literature includes other metrics for "Parent Engagement" beyond volunteering in the classroom. Some of these included time spent reading to children, math activities, and other forms of academic and cognitive stimulation at home as well as attendance at parent meetings and other school events. MAC currently collects other measures of parent engagement and should consider including them for future analyses. Please note that MAC does analyze data on outcomes for families related to its 2Gen and Whole Family programming. This information is available in a separate study conducted by Thomas P. Miller and Associates. Similar to health outcomes, the literature also suggests that Head Start programming has the potential to impact the degree of parental engagement – both at school and at home - in a larger way.
- **Analyze metrics for chronic absenteeism.** While MAC does analyze chronic absenteeism as a part of its daily operations and structures plans, resulting improved attendance for those children, it does not include this analysis as a part of its correlational study. The MAC correlational study does not find major differences in the effect of absenteeism on performance; however, the research literature consistently does. It is possible that this discrepancy is a result of the way in which absenteeism was analyzed for the MAC correlational study as compared with the "chronic absenteeism" standard used in the literature. In the literature, chronic absenteeism is defined as missing 10% or more of the school year (Ansari & Purtell, 2018; Phillips et.al., 2016). Including the data MAC currently collects on chronic absenteeism as a variable for analysis may provide a

helpful lens to better support students who are chronically absent as well as make results more comparable with other studies on the effects of Head Start programming.

- **Assess program fidelity.** Even though the literature lacks an explicit definition of Head Start program fidelity, this could present an important area of exploration for MAC. Defining consistent metrics around “adherence” to key curriculum and internal program standards would allow program administrators and staff to unpack the impact of specific program components on child outcomes and investigate further enhancements to implementation.
- **Conduct a longitudinal study of the Head Start’s impact in Davidson County.** As a future study design that builds on the current data being collected, MAC could conduct a longitudinal study with their program participants. The literature indicates that the effects of participating in Head Start programming fade as students enter elementary school. This type of study would support MAC in determining whether the effects of their Head Start and Early Head Start programming do in fact fade or remain into elementary school. If they do fade, it would help MAC examine factors that may contribute to performance decreases when students leave the program and identify areas in which they could potentially support students through elementary school and beyond.
- **Engage in additional facilitated sessions with staff.** The facilitated session conducted with key staff elicited important qualitative information about the program’s progress and the context of program implementation. Additional facilitated sessions with staff, particularly staff who work directly with children and in other areas of the program’s administration, could preserve institutional knowledge and yield more information about the service environment, the operationalization of strategic decisions and goals, and the key levers for program success.

# Appendices

## Appendix A: Parent and Student Categorical Variables - MAC Correlational Study

Variable		N	%
Age	3 years old	267	22.4
	4 years old	622	52.1
	5 years old	305	25.5
Gender	Male	587	49.2
	Female	607	50.8
Race	Black	840	70.4
	White	219	18.3
	Other	135	11.3
Hispanic	No	1066	89.3
	Yes	128	10.7
English Proficiency	None	82	7.1
	Little	154	13.3
	Moderate	247	21.4
	Proficient	671	58.2
Participation Years	One	759	63.6
	Two	406	34.0
	Three or more	29	2.4
Individual Health Plan	Yes	45	3.6
	No	1207	96.4
Health Concerns	Yes	446	35.6
	No	806	64.4
Disability	Yes	93	7.4
	No	1159	92.6
IEP	Yes	93	7.4
	No	1159	92.6
Mental Health Consult	Yes	2	0.2
	No	1250	99.8
Hearing	Yes	19	1.5
	No	1231	98.5
Vision	Yes	42	3.4
	No	1208	96.6
Anemia	Yes	22	1.8
	No	1228	98.2
Lead	Yes	2	0.2
	No	1248	99.8
Asthma	Yes	54	4.3
	No	1196	95.7
Parent Type	One parent	856	71.8
	Two parents	337	28.2
Language in Home	English	876	73.4
	Spanish	105	8.8
	Arabic	142	11.9
	Other	71	5.9

Education Level	Less than high school degree	246	20.7
	High school degree	666	56.2
	Some college	105	8.9
	Associate's Degree	44	3.7
	Bachelor's or Master's Degree	125	10.5
Unemployed	Yes	321	27.4
	No	850	72.6
Homeless	Yes	15	1.4
	No	1068	98.6
SSI	Yes	85	7.1
	No	1109	92.9
TANF	Yes	95	8.0
	No	1099	92.0
SNAP	Yes	598	61.7
	No	371	38.3
WIC	Yes	440	39.7
	No	669	60.3
Health Insurance	Yes	669	95.2
	No	34	4.8
Parent is Incarcerated	Yes	5	0.8
	No	607	99.2
Parent is Class Volunteer	Yes	243	20.4
	No	951	79.6
Parent Earned COMPTIA Certification	Yes	9	0.8
	No	1185	99.2
Parent Passed CDA Course	Yes	14	1.2
	No	1180	98.8
Parent Attended ESL Classes	Yes	27	2.3
	No	1167	97.7

## Appendix B: Parent and Student Continuous Variables - MAC Correlational Study

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Age	1194	3	5	4.03	.69
Years of Participation	1194	1	5	1.40	.56
Number in House	1194	1	11	4.06	1.51
Well Being	1194	0	9	.85	.95
Parent-Child Relationship	1194	0	6	.29	.67
Connect: Peer & Community	1194	0	6	.37	.76
Lifelong Educators	1194	0	5	.08	.36
Families as Learners	1194	0	3	.08	.33
Engaged in Transitions	1194	0	5	.25	.60
Parent Advocate Leader	1194	0	4	.06	.30
Average Attendance	1194	38%	100%	85.71%	10.16%
Avg. ESL Class Attendance	27	5%	83%	36.53%	28.39%

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